Bohn Park 50 % Design and Financing

Workshop 5:30 pm – 6:45

SHIRLEY F. JOHNSON COUCIL CHAMBERS
LYONS TOWN HALL, 432 5TH AVENUE, LYONS, COLORADO

I. 5:30 P.M. Workshop

I.1. Workshop - Bohn Park 50% Design Cover Memo

Documents:

COVER MEMO - BOHN PARK DESIGN-WORKSHOP.PDF

I.1.a. Bohn Park Final Design And Bid Process Project Binder

Documents:

LYONS_BOHNPARK_PROJECT BINDER_20160725.PDF

I.2. Workshop - Bohn Park Design BOT Presentation

Documents:

BOHN PARK DESIGN-BOT PRESENTATION.PDF

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DHM DESIGN

LANDSCAPE ARCHITECTURE | LAND PLANNING | ECOLOGICAL PLANNING | URBAN DESIGN

Meeting Date: August 1, 2016

Subject: Bohn Park Final Design and Bid Process, 50% Design Presentation and Workshop

BOT August 1, 2016 Packet Memorandum

Following and attached are narratives, design drawings, notes and backup documents to track design decisions that have been made to date. All design decisions have been documented and included in weekly meeting notes. Meeting notes are on the projects website and available for download and review via the below hyperlinks.

The Design Development (DD) plans/submittal on June 10 was a culmination of 9 weeks of design efforts including weekly design meetings with weekly updates, 1 public meeting to review skate park goals, and close collaboration amongst the design team and Town of Lyons to meet an aggressive schedule and to have critical decisions made in a timely manner. All design decisions, weekly design meeting notes, reports and project information was continually uploaded to the project website for public review and comment.

Since the submittal of Design Development plans on June 10 we have had 1 additional public meeting (total of 2), and have also met with the Parks and Recreation Board (with liaisons from the Ecology Board/Fay Marshall and the Sustainable Futures Commission/Jeff Christy Present, Colorado Parks and Wildlife (CPW), St. Vrain Creek Coalition (SVCC), and the Lyons Watershed Board. DD plans have also been submitted to the Ecology Board for review and comment at their regular meeting in June. Please find all Board and commission comments listed under item number 13 in the project binder (http://bit.ly/2a5vCOd). Plans have been updated to reflect all comments to date and are progressing based on anticipated schedule and bid requirements for fall 2016 bidding as noted in the original schedule.(located in the Project Binder Section 13)

All deliverables to date are included in a project binder that will be made available to the Mayor and all Trustees at Town Hall and as a downloadable pdf. The project binder is quite extensive and provides full detail of all comments and decisions made to date. The project binder includes all notes, presentations, concept imagery, budgets and plan submittals as noted at the end of this memo in further detail. Hyperlinks have been included throughout this memorandum for quick review and can be found in the project binder section 3.

Project Binder Section 3.
Programming Workshop Notes
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-programming-workshop-MM_20160414.pdf

April 21, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-BOT-20160421MM.pdf

April 28, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-BOT-20160428MM.pdf

May 3, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160503MM.pdf

May 12, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160512MM.pdf

Project Binder Section 5
May 13, 2016 - Schematic Design Report (30% designs)
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Bohn-Park-Design-narrative_ALL-FINAL.pdf

May 18, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160518MM.pdf

May 26, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160526MM.pdf

June 9, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160609MM.pdf

Project Binder Section 6
June 10, 2016 – Design Development Report (50% designs)
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Bohn-Park_Design-Development-Report_2016-06-10.pdf

June 16, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160616MM.pdf

June 23, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160623MM-DD.pdf

July 7 no weekly meeting held

July 14 no weekly meeting held

The website will remain active throughout the entire design and construction process for the Town Board of Trustees, various boards and commissions and the general public to review documents, progress and to provide opportunity for comment and feedback. The website is www.lyonsparksmp.com

Project Background

The following narrative has been provided for reference and has been published in the RFP for Bohn Park Final Designs and is a public document.

Lyons residents have identified the immediate rebuilding of Bohn Park, a river park located on the south side of Lyons, as a vital priority for parks recovery to be completed beginning in 2016. B o h n Park provides for major economic impacts for the Lyons community; it provides significant local and visitor recreational opportunities; and it provides ample opportunities to mitigate future flooding and to restore the river corridor's habitat. The selection of this park as the next priority in Lyons parks recovery efforts is supported heavily by both the Town government and the public at large.

Bohn Park is Lyons' largest and most popular park. It is not uncommon to see the park filled throughout the day with anywhere from 200 to 400 residents and visitors on any given weekend during the summer months. Consisting of over 50 acres Bohn Park is home to most of Lyons major athletic facilities. Pre-flood, there were two baseball/softball fields, batting cage, playground, multi-use soccer field, concession stand, whitewater features, picnic areas, shelters, restrooms, Lyons Dirt Jump Bike Skills Park, Bohn Bark Dog Park, Lyons Community Garden, and a multi-use sport court.

The Town of Lyons recently completed the Lyons Parks Flood Recovery Planning Process (www.lyonsparksmp.com) which included a series of public meetings that assisted in the development of several concept plans for all flood recovery areas related to parks. This process took several months to complete and involved soliciting input and feedback of the public, town staff, Town of Lyons board/commissions and the design team. The Bohn Park Flood Recovery Plan Preferred Alternate map is included with this document along with the Lyons St. Vrain Corridor Trail 6f boundary map.

Project Goals

The Bohn Park Flood Recovery Final Design and Bid Project will address the following fundamental goals outlined in the Lyons Recovery Action Plan and Lyons Parks Flood Recovery Planning Process for ensuring that Bohn Park continues to meet local and regional demands:

1) Reconstruction of facilities in Bohn Park to address the immediate recreational needs of Lyons, especially active/athletic uses. We will create a place to gather and play as a community again.
2) Creation of an attraction that will draw visitors to our Town. This is essential to ensure that the Town will remain economically viable and maintain its reputation and brand as a destination for healthy, active, outdoor lifestyles.
3) Reestablish trail connectivity, both locally and regionally, include loop trails.
4) Restore and augment river access and river habitat.
5) Restore/Replace picnic opportunities, including shelters and increase size.
6) Re-establish natural areas and consider wetlands.
7) Installation of public art along trails.

Anticipated Schedule for Design and Construction

The following timelines have been anticipated in the scope and communicated to the public during the planning process thus far along with the caveat that all flood related project schedules may be subject to change based on a multitude of variables including funding, project prioritization, permitting, planning/design, bidding, etc.
Final construction design and bid process began in April 2016 and will extend through the summer and early fall 2016. The Town intends to put the project out to bid for construction in late summer/ early fall 2016 in order to award a contract for construction to begin fall/ winter 2016 in order to have the park open to the public in the summer/fall of 2017.

Design Development Goals

Design Development (DD) plans have been submitted on June 10, 2016 and a work session was held on July 18, 2016 with the BOT to review designs, comments to date and to solicit feedback. The design development set is considered an approximate 50% design set that outlines preliminary site layout, preliminary grading, preliminary landscape designs and preliminary materials, equipment, and other site features, preliminary drainage analysis, preliminary hydraulic analysis and floodplain modeling, preliminary ecological restoration plans, and preliminary architecture designs including mechanical/electrical/plumbing, MEP and structural.

Design development (DD) services used the initial design documents from the schematic design phase and have taken them one step further into more detailed design drawings. Some decisions are still being reviewed with Town staff and further study, public input and review needs to be completed before providing more detail. Skate park schematic designs are in progress and a second public meeting was held June 21, 2016.

Hydraulic modeling/ Instream features/ Fish Habitat

Continuing with the defined project objectives to improve flood resiliency, fish habitat, ecological restoration and park user experience; a design solution is developing to achieve and balance these goals. Following the workshop with the Board of Trustees on the 18th of July, along with feedback provided by the Parks and Recreation Commission, the St Vrain Creek Coalition, the Lyons Watershed Board and Colorado Parks and Wildlife; the design has been refined to accommodate the feedback given.

One and two dimensional modeling results indicate that the flood resiliency goals can be achieved by constructing **three** instead of **five** double step cross vanes. As detailed in the basis of design report, hardened riffles will be installed in place of two of the original cross vane structures.

Through working with Colorado Parks and Wildlife, more appropriate river access points have been located, with the river's meander accentuated, to provide increased flood resiliency, valuable ecological benefits in the form of lateral scour pools, and an enjoyable park experience for all recreational users.

The Design Team will continue to work with stakeholders of the project to ensure all goals are being met, and encourages feedback throughout the design process.

Ecological Restoration Designs

Ecological restoration designs are dependent upon results of the hydraulic modeling and instream restoration features that are in progress of being developed. Progress has been made in coordination with the US Army Corp of Engineers/USACE for permitting. Mike Stanley at the Corps confirmed that we can process the Bohn Park stream restoration work as an addendum (additional information) under the existing NWP 27 since this reach was included in the original application. We will continue to document very specific permanent and temporary impact areas by feature type (in acres/s.f.) and provide a summary of why it fits the NWP 27 (needs to be a net ecological benefit).

ECOS is a sub consultant on the design team that is assisting with environmental permitting and ecological designs. Once ecos receives detailed hydraulic design information (including temp. & perm. impact area assumptions), they will be able to compile and submit this information for NWP 27 review.

Plantings that can be sustained as a result of being next to the creek will not need irrigation (i.e., bank-side willow and cottonwood at or near the capillary fringe). We will develop a temporary drip system in the higher, floodplain areas. Overhead spray will also help kick-start the grasses and will only be considered until the plants have established.

Another option for irrigation includes an overall concept to install a gravity fed system using elevated cisterns/tanks that feed drip. In some locations, we are also looking at deep planting where the root ball is set just above the ground water elevation. Many riparian plants are adapted to partial sediment burial which makes this possible.

Drainage design

Water Quality volumes have been assessed based on existing drainage analysis and proposed conditions. Adjustments have been made to the proposed water quality ponds to accommodate flows in anticipation of a storm connection to the St Vrain. It appears that the available grade to drain a pipe is going to be tight. An analysis of the existing drainage basins and off-site drainage basins has been completed. A draft drainage report is in progress and will be updated once hydraulic analysis and instream features have been developed.

Project Binder Section 6
DESIGN DEVLEOPMENT SUBMITTAL (50% DESIGNS)

Typically referred to as DD, this phase results in drawings that often specify design elements such as material types and location of site and architecture features.

Design Development drawings generally are the basis of an estimate of the Cost of the Work which would generally be a trade breakdown estimate. Design Development documents are also a significant milestone toward the completion of Construction Documents. The level of detail provided in the DD phase is a culmination of weekly meetings with the Town of Lyons, comments from the public, comments from various Boards and Commissions, results of an in depth planning process during the Lyons Parks Flood Recovery Planning Process, adherence to early planning documents prepared by the Town including previous master and comprehensive plans, the LRAP, SRCAP, FEMA damage assessments and scopes of work, input from the Board of Trustees, and per the owner's request and the project requirements. These Design Development Plans were presented to, various regulatory agencies, the Lyons Parks and Recreation Board on June 13, 2016, several other Lyons Boards and Commissions, and –to the Lyons Board of Trustees on July 18 and again scheduled for August 1, 2016.

Project Binder Section 14
UPDATED PROGRESS DESIGNS

Updated progress designs are the progression of efforts from the 50% Design Development phase that have

incorporated comments and feedback from the various Town Boards, regulatory agencies and others, including Town Staff and the design team. Some of these efforts entailed redesigning site features, additional hydraulic modeling and changes in direction from earlier decisions made during the planning process and schematic design phase. Updated designs are considered a progression of the DD plans towards Construction documents (CDs). Following the definition of the overall design in the design development phase and the direction by the BOT on July 18 and Aug 1to move designs forward, construction documentation is a natural continuation of the design process— one that sets the parameters for the building process. CDs outline the key interrelationships, rights, responsibilities, and dynamics that bring the park into being.

In a combination of written and graphic formats, construction documents translate the design of a project from the realm of ideas to physical form. They describe, in detail, the components of a project that need to be fabricated and assembled in order for it to be built. To that end, the contributions of myriad consultants are assembled into a coherent, artful whole.

Project Binder Section 2
PROCESS AND TIMELINE

The work effort identified for the project has been broken down into tasks to better understand the organization that needs to go into development of the designs into final construction documents. Our project approach is organized around four general task items. It includes the complete scope of services outlined in the request for proposals, organized in a manner that brings the most efficiency and value to the Town.

1. Project Management
2. Design Development (approximately 50% progress review set)
3. Construction Documents (90% progress review set and 100% Final Review Set)
4. Bid Phase/ Construction Administration services

We have provided a summary of task descriptions in our RFP proposal response, DHM proposal (Item number 2 in the project binder) for the proposed Phases of the project as well as project deliverables for each Phase. Breakdowns of specific project task items are listed within each project estimating sheet that show an estimate of manpower and expenses. Documents will be developed in accordance with the Town's standards and requirements.

Task 1-Project Management-Ongoing

Project management is key to the success of this project. DHM and select members of the design team held a project kickoff meeting and have weekly progress meetings during the design phase in order to secure feedback and to make critical decisions in order to expedite and move forward with the design to meet anticipated schedule requirements. Design meetings began in April and we estimate they may extend into September or when the project bids (approximately 20-26 weeks). All meetings are documented to note progress, schedule updates and decisions made in order to move forward with critical milestones for bidding the project.

TIMELINE:

Due to the complexity and sensitivity of working within an active stream channel, construction activities within normal high water levels are typically limited to take place between November and Mid-April. Activities outside these months require a much greater level of water control and would increase construction costs significantly. Based on the RFP, scope and proposal, the intent is to construct all in-stream and stream channel and bank work over the fall and winter before proceeding in constructing park amenities outside the normal high water mark. Designs are progressing to where we are hopeful to bid work in August/ September with construction beginning in October/ November pending direction of the BOT. If work cannot begin this fall, the project could push

construction back another year.

Task 2: DESIGN DEVELOPMENT OF SELECTED PLAN -
COMPLETED

During this phase our team leveraged its deep experience in park design and construction to thoroughly evaluate the approved Bohn Park Preferred Alternate and develop detailed plans to a 50% progress level.
We have developed a Design Development package that was used to vet out technical design of the park site improvements based upon the final master plan design evaluation and completion. ***THE FOLLOWING PLANS WERE DEVELOPED.***

- Material image board and cut sheets
- Construction details for the park site improvements
- Phasing of improvements will be reviewed based upon technical design parameters and budgeting.
- DHM will incorporate comments from the Parks Flood Recovery Planning Process and from review with Town staff, and stakeholders into a Design Development Plan set for use in permitting, interdepartmental coordination, and review prior to beginning Final Designs and Construction Documents.
- Preliminary site layout of the park,
- Preliminary grading plans
- Preliminary drainage plans,
- Preliminary utilities,
- Preliminary materials,
- Preliminary landscaping,

These plans have been prepared in AutoCAD format and will be the basis for accurate cost estimating. Plan review sets were provided to the Town at completion of Design Development for review and comment.

Detailed designs for the in-stream features were created based on feedback from the Town of Lyons, the public meetings, regulatory agencies and permitting requirements. Design drawings will be advanced to show specific design layout and elevations, as well as specific details.

Task 3: CONSTRUCTION DOCUMENTS (90% Submittal, 100% Final Review) – to be completed

Based upon final Design Development comments from the Town and various boards/commission and the findings from the Construction Cost Estimates, the design team will complete the remaining technical work effort to complete Construction Documents and Technical Specifications for the 90% and 100% Final Construction Set submittals.

90% and 100% complete construction drawings will be prepared for the project including major elements such as cover sheet, general notes, Site Preparation and Tree Protection Plans, Erosion and Sediment Control Plans, overall site layout and materials plans and grading sheets, miscellaneous site details, planting/ revegetation plan, irrigation plans, utility plans, and drainage plans. Detailed designs will be provided for all programming as noted in the Bohn Park Preferred Alternate Plan. 90% drawings will be prepared for submittal through the Town permitting process. DHM will continue developing plans to meet deadlines and schedule requirements for 100% Final Construction drawings during this review to maintain an accelerated schedule for fall and winter construction.

Task 4: Bidding and Construction Administration

Progress Meetings: DHM and S2O will be available for weekly on site OAC meetings to be held throughout the duration of the project.

Construction Administration: Tasks include site visits, availability to answer any RFI's, provide design clarifications and review submittals, visit the site to review critical site items and answer any other questions that may come up during construction that impact design. Our team of consultants will assist with construction administrative services for site, architecture, utilities, and in-stream work, and drainage and infrastructure improvements as it relates to their disciplines. A detailed scope and estimate of hours is included within our fee schedule.

Construction Administration: S2o will provide on-site construction inspection for the in channel structures and floodplain overflow elements. In addition to on-site inspection S2o will assist with any submittal review, Architects Supplemental Instruction ASI, Request for Information RFI, missing detail, or changes that arise during the construction phase.

Phasing/ Cash flow

We understand the BOT is reviewing options for phasing based on cash flow and priorities within the Town. Following are some details for consideration as discussions progress. Phasing of the project has been reviewed and discussed amongst the design team. We have also contacted Denver Front Range contractors to discuss options for possible phasing based on cash flow. There are essentially 3 ways to bid the project based on cash flow and availability of funds. They are as follows:

1) Bid the entire project together
2) Phasing of the project based on cash flow under one contract
3) Multiple contracts based on cash flow and construction sequencing.

Option 1 would be the least costly scenario where the contractor could determine construction means and methods based on the project schedule. They would be able to stack their subs to where they could move from one location on site to the next without demobilizing and returning at a later date when a new phase of work beings, have one mobilization cost and be more efficient with their crews and management.

Option 2 would see a cost increase of greater than 5%. The contractor would not be able to stack their subs and they would have to move off- site for large periods of time. Scheduling may get drawn out based on their availability. The schedule would extend according to cash flow, availability of crews, weather and timing of work within the river/channel and other park areas. Material escalations are unknown and cannot be predicted within the bid. Based on past experience if there are a lot of unknowns the contractor will bid very conservatively to cover their risk(s) which would see a substantial increase in costs. New permits would need to be pulled if the contractor is demobilized for too long. The contractor would be required to spend more time on site maintaining conditions which would lead to more management time.

Option 3 could see costs escalated as much as 50% pending time of year each phase was bid and how busy contractors are. Bidding in low season (typically the fall) is the most ideal time to bid for competitive pricing. Spring and summer bids tend to see a significant increase in costs when contractors are in their high season. There would also be concerns with quality, standard of workmanship and lack of continuity with potentially multiple contractors bidding and constructing the project. The number of mobilizations would greatly increase, the general overhead and bonding costs would increase, and inefficiencies in construction activities would add

to the increase in construction costs. It would be extremely difficult to control costs and potential change order requests due to the overlap in activities.

BUDGETS/ FUNDING STRATEGIES

At the 30% design phase/contract approval phase budgets were provided to the Board of Trustees that indicated available funding for Bohn Park. Significant funding for the Bohn Park Flood Recovery Plan is already in place, and town staff, consultants, and the Board of Trustees will need to prioritize phasing of non-flood related park enhancements in order to complete the park on the timeframe provided. True costs won't be known until the project goes through final design and the town receives bids from contractors. Staff has put together the following alternatives based on the preliminary estimates for the park.

The following is a list of available funds, estimated costs and alternatives for phasing of project enhancements:

FEMA PW20	Bohn Park	$3,129,297
FEMA PW35	Bohn Park WW Features	$414,151
FEMA PW20	2nd Ave Dog Park	$86,217
FEMA PW 20	Hwy 7 Trail	$124,093
FEMA PW 20	Corridor Trail 60%	$956,446

This number could increase by using a higher percentage of these funds based on the St. Vrain Corridor Trail Extension/Recovery Grant

CPW	Fishing is Fun Grant	$100,000
Rockies Funding / Can'd Aid-Ball Fields		$80,000
LCF	Bohn Park	$10,000
FEMA PW 20	Bank Reveg 50%Bohn Park	$477,197
CIRSA	Bohn Park	$520,792

Total Flood Recovery Funding for Bohn Park w/ CEF $5,898,193

In addition to the above funding, there may be a possible savings (and an available amount of funding remaining) from the Meadow Park Flood Recovery Project:

Meadow Park Funding Sources	**Amount**
PW20	$5,017,075
PW 35	2,817,550
PW 20 Mitigation	86,178
GOCO	1,122,000
LCF	10,000
Colorado Home and Garden	15,000
CDPHE	150,000
CIRSA	288,978

Total Flood Recovery Funding for Meadow Park $9,706,783

Meadow Park Phase I expenses, along with all other park project costs included in FEMA PW 20 to date total $2,486,038. The preferred bidder for the Meadow Park Phase II construction has submitted a bid for a 'not to exceed' amount of $6,172,760. From the available funding allocated for Meadow Park (above), if you add the Meadow phase II contract amount and the total spent on all parks projects to date and subtract it:

$6,172,760 + $2,486,038 = $8,658,798

$9,706,783 - $8,658,798 = $1,047,985 possible savings from Meadow Park Project

Total Flood Recovery Funding for Bohn w/ CEF = $5,898,193 plus
Possible saving from Meadow Park Project ($1,047,985) provides
$6,946,178 Available Funding For Bohn Flood Recovery Plan

The Preliminary Cost Estimate for the Bohn Park Flood Recovery Plan created by DHM Design and S2O Design and Engineering on November 4, 2015 suggests that the entire park could be built out to the public's vision for the following totals:

Subtotal	$6,035,628
15% Contingency	905,344
10% Design/Permitting	603,562
3% CA Services	181,068
TOTAL	**$7,725,605**

The available funding is near the needed amount outlined in the preliminary estimate; but poses a fairly significant gap when other services are added in. Based on actual bids, there will likely be a need to prioritize or phase-in a certain number of amenities that could be considered 'enhancements'.

DESIGN AND SEQUENCING CONSTRUCTION

Design services to complete all features of the Bohn Park Flood Recovery plan are 100% funded and can continue to be developed. Sequencing of park amenities and priorities for construction will need to be reviewed with the Board of Trustees to coincide with discussions on available budget, funds and cash flow. Final decisions on what is to be built can happen during the bidding process as we strategize on bidding options. Options may include phased construction, a series of bid alternates that can be chosen as budgets allow, or complete removal of park features from the bid documents. Not all features will be able to be developed based on final bids.

Budgets have been developed based on park amenities identified in the 50% Design Development plans. This is a

normal discussion to be had at this level of detail within the design process between 50% and 90%. Some park enhancements were not included in the originally presented 30% design budget such as the flood control measures in the Marten and Stacy parcels, additional skate park features, the concept of a possible Parks Office/Storage Facility/Community Building and other items. It's at this time in the design process we want to have more pointed discussions on funding strategies, available budget and priorities. As of now the design team has been instructed that available budget for the project will be approximately $7M. Additional funding sources may be needed or should be considered for park "enhancements" or amenities deemed not to be a priority by the Board of Trustees. These could be the Parks Building, Skatepark, the Proposed Stacey Parcel Overflow Channel, one or more of the multi-use sport or tennis courts, or others. .

Preliminary cost estimates are coming in higher than budget currently allows at the 50% level. We will be working on designs to reduce costs to align within available funding. We will continue to work on designs to achieve this. Some strategies to consider are reallocating savings from Meadow Park construction to Bohn Park, consideration of additional funds from new grants, reducing programming within the park to match current budgets. A detailed estimate is included in the project binder (Item #7).

The Parks Office/Storage Facility/Community Building adds considerable cost and increases the cost estimate well above budget. Given the difficulty the Town is facing finding a home for its Public Works Facility, it was considered as an option to relocate parks management and maintenance staff to within Bohn Park. This would assist in providing for much needed space for storage, maintenance equipment and bulk storage as well as needed office space for parks staff. In addition, such a facility could help provide for efficiencies in operations and maintenance costs by having staff, equipment and materials on-site. Better service to the community by having offices and programming within the park and opportunities for more programming space for the community.

A few options for reducing costs include acquiring donated material, phasing of Skate Park, removal/phasing of the parks office building, phasing of the overflow channels to be paid from a separate allocated fund, removal of topsoil from native areas, limiting irrigation to active park areas. We can also look at removal of tennis courts and shade shelters for future phasing as required.

OPPORTUNITIES FOR COMMENT AND FEEDBACK

Opportunities for comment and feedback will continue throughout the design phase-from the 50% to the 90%. This may mean presenting plans at a regularly scheduled meeting or sending plans for comment via email. Ideally comments will build off subsequent design phases and decisions made in order to move forward, however at times it may be necessary to change direction and go backwards to achieve the goals of the Town. This would require additional efforts and design to bring designs back in line. We currently scheduled opportunities for comment and review at the 30% schematic design phase (May 13), 50% Design Development Submittal (June 10), and projected for 90% and 100% designs. At each phase comments are based on plans and designs developed from decisions and approvals made during the previous phase.

All comments and feedback are welcome. Comments will be accepted between the 50% and 90% and we will review all comments at our weekly meetings and make those comments "actionable" as part of the design

process with a response in our weekly meeting notes. Continual feedback between all boards and commissions will be encouraged and plans presented when needed.

We currently have weekly Design Team meetings on Thursdays at 10:00 am at S2O's office. We have an active website and will provide weekly updates to the BOT via email. Continuous feedback is encouraged and accepted between design submittals and throughout the design process.

Plans have been presented to the PRC, WB, CPW, SVCC and BOT.

Project Binder Section 13
PRC Notes:

Mark Wilcox with DHM presenting
Overview of planning process: public meetings, LRAP, other master plan docs
Scope of work
Design goals
50% plan shown. 3 tennis courts, possible park office building
Skatepark options (bowl + street course behind softball fields) Concrete
sidewalk from parking lot to skatepark

Concerns voiced about skatepark location and concrete on west side.
Ian was concerned that the area between the two proposed skate parks could become over-developed and that the trail connection should remain the priority. Plans reflect removal of a concrete sidewalk behind the ballfields to the west and designed for a soft surface trail connection instead.

Water feature for kids near playground

Location of storage building and that the appearance match Steamboat Mtn. – Ian
If plans for the parks office building move forward we will review architecture character and viewsheds to make sure we meet Ian's requirements.

Concerns on Ecocycle appearance and traffic between Bohn and Ecocycle – Veronika

Scott Shipley of S2O reviewed stream structures Goals:
flood mitigation, access, riparian feel Funding sources
Several overflow channels added to guide water
Bank restoration
Rosgen cross-vane drop structures

Next steps in the planning process
Final design in late summer or fall
Phasing and implementation strategies for funding

PRC discussed making a statement to the board in support of the plan.
Continued discussion about concrete on west side

Ian motioned to approve 50% design. Mary second. All in favor.

Ecology Board Notes:

1) Review Design Documents

Marshall went through the 50 percent design presentation for Bohn Park. Simms said perhaps the riparian areas could be deeper with fencing until the plants mature. Designs will reflect these comments. A fence will be designed to separate the public from the ecological restoration areas similar to the fence constructed at Meadow Park.

CPW Comments: see project binder for formal comment letter and written response from the design team.

SVCC Comments: see project binder for formal comment letter and written response from the design team.

1. Will there be any pedestrian crossings near the confluence? We know there's one planned within the project, but was just wondering if there was consideration of another one or if another one that we don't know about already exists.
At this time we are not planning one.

2. What is the scope of work for the area river left (Stacey property) within the project? Will there be any trails?

At current no trails are planned at this time. Parks and Wildlife did suggest that fishermen might like to access on this side, but we had assumed that this would be through bushwhacking.

3. Is the SSV3 trailer park area being actively used? We are pretty sure it is not, but wanted to confirm.

It is going to be acquired through the buyout process but has not yet been acquired. We have not been a party to any plans there yet, but obviously have designed our flood-overflow channel to mesh with any potential braided channel options that might be installed upstream on this property.

DHM DESIGN

LANDSCAPE ARCHITECTURE | LAND PLANNING | ECOLOGICAL PLANNING | URBAN DESIGN

Watershed Board Comments: see project binder for formal comment letter and written response from the design team.

Please see below our official submission of the recommendations to the Bohn park river restoration:

The overall goal for this reach is to be as natural looking aesthetic with a natural riffle pool design with boulders and have minimal to no drop structures [cross veins]. But also provide safety to the park attendees and neighboring houses/buildings.

Specific recommendations are as follows:

1. Those drop structures [cross veins] needed for safety purposes should be as much at grade as possible- grade above and below the structure. So they function more as a grade control than recreational drop. All cross veins should have very quiet water at the sides with minimal to no flow or back eddy flow to allow for fish habitat. With back eddy flows and currents, the fish have to work hard for their food and a normal 'wild pool' does not have those kinds of water flows. Also, deep in the pools and thought the tail of the pool there should be boulders to allow fish to hide behind. For cross veins, double-steps can be utilized but also cross veins with spaces between the boulders .5-1x of the boulder diameter] should be considered to allow better fish habitat and fish passage. All cross veins should appear as natural looking as possible. Also, please consider having the low flow point through the veins and J hooks be eccentric and not in the center of the channel, providing a more natural flow and aesthetic.

2. Any J hooks should appear to be natural looking and not appear artificial. Large boulders [3-5ft diameter] can provide the habitat, energy dissipation, and river flow controls needed. Consideration of 'J hook type structures made out of wood and stone can provide excellent microorganism ecosystems and highly functional.

3. We propose greater amounts of wood installed and there are many different techniques that are safe for boaters and tubers but provide a healthy ecosystem for the aquatic biology [The bugs feed and proliferate on the woody debris and then become food source for the fish.] Logs can be installed looking similar to a random fallen tree along the bank that face either up or downstream that can be anchored by large boulders and and sit in holes to provide cover. Logs can also be installed to provide the same benefits as rock vanes, J hooks, v-weirs with one end buried in the bed of the channel and the other end buried in the riverbank while the middle is exposed providing a place for fish to get under and hide. Fish lunkers are constructed wood overhangs that can be built to look quite natural and provide ample cover for fish. These and other wood applications can add complexity to the stream bank and provide many small micro-eddys for additional aquatic habitat. Many of these techniques can be achieved to maximize the aquatic biology but also designed to be safe for tubers and boaters.

3. Vertical banks on the outside bends of the thalweg can be stabilized with large boulders and safe woody

debris and provide long shallow point bars on the opposite side of the river. These point bars are places where sand and gravel can deposit and provide low-gradient places for folks to get into the river.

4. Consideration of lowering the grade upstream to lower the overall drop through this reach should be considered.

5. Controlling the water access points is key and they should be designed to be consistent with fish 'habitat protection as well as bank preservation.

It is the goal of the LWB to work in concert, cohesively with the BoT and under their direction with the town parks and rec as well as any engineers and construction contractors. If there is a way we can do this better please advise us.

Project Binder:

Project binder can be downloaded here: http://bit.ly/2a5vCOd

1. Project RFP
2. DHM Proposal
3. Weekly Meeting Notes

- Programming Workshop Notes
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-programming-workshop-MM_20160414.pdf

- April 21, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-BOT-20160421MM.pdf

- April 28, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-BOT-20160428MM.pdf

- May 3, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160503MM.pdf

- May 12, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160512MM.pdf

- May 18, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160518MM.pdf

- May 26, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160526MM.pdf

- June 9, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160609MM.pdf

- June 16, 2016 weekly design meeting

- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160616MM.pdf

- June 23, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160623MM-DD.pdf

4. Monthly Reports to Administrator
5. 30% Schematic Design Report
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Bohn-Park-Design-narrative_ALL-FINAL.pdf
6. 50% Design Development Submittal
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Bohn-Park_Design-Development-Report_2016-06-10.pdf
7. 50% Design Development Budget Spreadsheet
8. Skate park Presentation April 28, 2016
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Public-meeting-1-PowerPoint.pdf

9. Skate Park Concepts Presentation June 21, 2016
- Concept 1
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Concept-1.pdf
- Concept 2
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Concept-2.pdf
10. Architecture Concepts – BRS Architecture
11. S2O Basis of Design Report
12. July 18, 2016 BOT presentations (DHM and S2O presentations)
13. Comments and Responses:
    - CPW (Colorado Parks and Wildlife)
    - SVCC (St. Vrain Creek Coalition)
    - WB (Watershed Board)
    - PRC (Parks and Recreation Commission)
    - EB (Ecology Board)
    - SFB (Sustainable Futures Board)
        - Jeff Christy was present for the PRC presentation
14. Updated designs
15. FEMA Scope and Versioning Documents

DHM DESIGN

LANDSCAPE ARCHITECTURE | LAND PLANNING | ECOLOGICAL PLANNING | URBAN DESIGN

Meeting Date: August 1, 2016

Subject: Bohn Park Final Design and Bid Process, 50% Design Presentation and Workshop

BOT August 1, 2016 Packet Memorandum

Following and attached are narratives, design drawings, notes and backup documents to track design decisions that have been made to date. All design decisions have been documented and included in weekly meeting notes. Meeting notes are on the projects website and available for download and review via the below hyperlinks.

The Design Development (DD) plans/submittal on June 10 was a culmination of 9 weeks of design efforts including weekly design meetings with weekly updates, 1 public meeting to review skate park goals, and close collaboration amongst the design team and Town of Lyons to meet an aggressive schedule and to have critical decisions made in a timely manner. All design decisions, weekly design meeting notes, reports and project information was continually uploaded to the project website for public review and comment.

Since the submittal of Design Development plans on June 10 we have had 1 additional public meeting (total of 2), and have also met with the Parks and Recreation Board (with liaisons from the Ecology Board/Fay Marshall and the Sustainable Futures Commission/Jeff Christy Present, Colorado Parks and Wildlife (CPW), St. Vrain Creek Coalition (SVCC), and the Lyons Watershed Board. DD plans have also been submitted to the Ecology Board for review and comment at their regular meeting in June. Please find all Board and commission comments listed under item number 13 in the project binder (attached link). Plans have been updated to reflect all comments to date and are progressing based on anticipated schedule and bid requirements for fall 2016 bidding as noted in the original schedule.(located in the Project Binder Section 13)

All deliverables to date are included in a project binder that will be made available to the Mayor and all Trustees at Town Hall and as a downloadable pdf. The project binder is quite extensive and provides full detail of all comments and decisions made to date. The project binder includes all notes, presentations, concept imagery, budgets and plan submittals as noted at the end of this memo in further detail. Hyperlinks have been included throughout this memorandum for quick review and can be found in the project binder section 3.

Project Binder Section 3.
Programming Workshop Notes
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-programming-workshop-MM_20160414.pdf

April 21, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-BOT-20160421MM.pdf

April 28, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-BOT-20160428MM.pdf

May 3, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160503MM.pdf

May 12, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160512MM.pdf

Project Binder Section 5
May 13, 2016 - Schematic Design Report (30% designs)
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Bohn-Park-Design-narrative_ALL-FINAL.pdf

May 18, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160518MM.pdf

May 26, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160526MM.pdf

June 9, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160609MM.pdf

Project Binder Section 6
June 10, 2016 – Design Development Report (50% designs)
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Bohn-Park_Design-Development-Report_2016-06-10.pdf

June 16, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160616MM.pdf

June 23, 2016 weekly design meeting
http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160623MM-DD.pdf

July 7 no weekly meeting held

July 14 no weekly meeting held

The website will remain active throughout the entire design and construction process for the Town Board of Trustees, various boards and commissions and the general public to review documents, progress and to provide opportunity for comment and feedback. The website is www.lyonsparksmp.com

Project Background

The following narrative has been provided for reference and has been published in the RFP for Bohn Park Final Designs and is a public document.

Lyons residents have identified the immediate rebuilding of Bohn Park, a river park located on the south side of Lyons, as a vital priority for parks recovery to be completed beginning in 2016. B o h n Park provides for major economic impacts for the Lyons community; it provides significant local and visitor recreational opportunities; and it provides ample opportunities to mitigate future flooding and to restore the river corridor's habitat. The selection of this park as the next priority in Lyons parks recovery efforts is supported heavily by both the Town government and the public at large.

Bohn Park is Lyons' largest and most popular park. It is not uncommon to see the park filled throughout the day with anywhere from 200 to 400 residents and visitors on any given weekend during the summer months. Consisting of over 50 acres Bohn Park is home to most of Lyons major athletic facilities. Pre-flood, there were two baseball/softball fields, batting cage, playground, multi-use soccer field, concession stand, whitewater features, picnic areas, shelters, restrooms, Lyons Dirt Jump Bike Skills Park, Bohn Bark Dog Park, Lyons Community Garden, and a multi-use sport court.

The Town of Lyons recently completed the Lyons Parks Flood Recovery Planning Process (www.lyonsparksmp.com) which included a series of public meetings that assisted in the development of several concept plans for all flood recovery areas related to parks. This process took several months to complete and involved soliciting input and feedback of the public, town staff, Town of Lyons board/commissions and the design team. The Bohn Park Flood Recovery Plan Preferred Alternate map is included with this document along with the Lyons St. Vrain Corridor Trail 6f boundary map.

Project Goals

The Bohn Park Flood Recovery Final Design and Bid Project will address the following fundamental goals outlined in the Lyons Recovery Action Plan and Lyons Parks Flood Recovery Planning Process for ensuring that Bohn Park continues to meet local and regional demands:

1) Reconstruction of facilities in Bohn Park to address the immediate recreational needs of Lyons, especially active/athletic uses. We will create a place to gather and play as a community again.
2) Creation of an attraction that will draw visitors to our Town. This is essential to ensure that the Town will remain economically viable and maintain its reputation and brand as a destination for healthy, active, outdoor lifestyles.
3) Reestablish trail connectivity, both locally and regionally, include loop trails.
4) Restore and augment river access and river habitat.
5) Restore/Replace picnic opportunities, including shelters and increase size.
6) Re-establish natural areas and consider wetlands.
7) Installation of public art along trails.

Anticipated Schedule for Design and Construction

The following timelines have been anticipated in the scope and communicated to the public during the planning process thus far along with the caveat that all flood related project schedules may be subject to change based on a multitude of variables including funding, project prioritization, permitting, planning/design, bidding, etc.
Final construction design and bid process began in April 2016 and will extend through the summer and early fall 2016. The Town intends to put the project out to bid for construction in late summer/ early fall 2016 in order to award a contract for construction to begin fall/ winter 2016 in order to have the park open to the public in the summer/fall of 2017.

Design Development Goals

Design Development (DD) plans have been submitted on June 10, 2016 and a work session was held on July 18, 2016 with the BOT to review designs, comments to date and to solicit feedback. The design development set is considered an approximate 50% design set that outlines preliminary site layout, preliminary grading, preliminary landscape designs and preliminary materials, equipment, and other site features, preliminary drainage analysis, preliminary hydraulic analysis and floodplain modeling, preliminary ecological restoration plans, and preliminary architecture designs including mechanical/electrical/plumbing, MEP and structural.

Design development (DD) services used the initial design documents from the schematic design phase and have taken them one step further into more detailed design drawings. Some decisions are still being reviewed with Town staff and further study, public input and review needs to be completed before providing more detail. Skate park schematic designs are in progress and a second public meeting was held June 21, 2016.

Hydraulic modeling/ Instream features/ Fish Habitat

Continuing with the defined project objectives to improve flood resiliency, fish habitat, ecological restoration and park user experience; a design solution is developing to achieve and balance these goals. Following the workshop with the Board of Trustees on the 18th of July, along with feedback provided by the Parks and Recreation Commission, the St Vrain Creek Coalition, the Lyons Watershed Board and Colorado Parks and Wildlife; the design has been refined to accommodate the feedback given.

One and two dimensional modeling results indicate that the flood resiliency goals can be achieved by constructing **three** instead of **five** double step cross vanes. As detailed in the basis of design report, hardened riffles will be installed in place of two of the original cross vane structures.

Through working with Colorado Parks and Wildlife, more appropriate river access points have been located, with the river's meander accentuated, to provide increased flood resiliency, valuable ecological benefits in the form of lateral scour pools, and an enjoyable park experience for all recreational users.

The Design Team will continue to work with stakeholders of the project to ensure all goals are being met, and encourages feedback throughout the design process.

Ecological Restoration Designs

Ecological restoration designs are dependent upon results of the hydraulic modeling and instream restoration features that are in progress of being developed. Progress has been made in coordination with the US Army Corp of Engineers/USACE for permitting. Mike Stanley at the Corps confirmed that we can process the Bohn Park stream restoration work as an addendum (additional information) under the existing NWP 27 since this reach was included in the original application. We will continue to document very specific permanent and temporary impact areas by feature type (in acres/s.f.) and provide a summary of why it fits the NWP 27 (needs to be a net ecological benefit).

ECOS is a sub consultant on the design team that is assisting with environmental permitting and ecological designs. Once ecos receives detailed hydraulic design information (including temp. & perm. impact area assumptions), they will be able to compile and submit this information for NWP 27 review.

Plantings that can be sustained as a result of being next to the creek will not need irrigation (i.e., bank-side willow and cottonwood at or near the capillary fringe). We will develop a temporary drip system in the higher, floodplain areas. Overhead spray will also help kick-start the grasses and will only be considered until the plants have established.

Another option for irrigation includes an overall concept to install a gravity fed system using elevated cisterns/tanks that feed drip. In some locations, we are also looking at deep planting where the root ball is set just above the ground water elevation. Many riparian plants are adapted to partial sediment burial which makes this possible.

Drainage design

Water Quality volumes have been assessed based on existing drainage analysis and proposed conditions. Adjustments have been made to the proposed water quality ponds to accommodate flows in anticipation of a storm connection to the St Vrain. It appears that the available grade to drain a pipe is going to be tight. An analysis of the existing drainage basins and off-site drainage basins has been completed. A draft drainage report is in progress and will be updated once hydraulic analysis and instream features have been developed.

Project Binder Section 6
DESIGN DEVLEOPMENT SUBMITTAL (50% DESIGNS)

Typically referred to as DD, this phase results in drawings that often specify design elements such as material types and location of site and architecture features.

Design Development drawings generally are the basis of an estimate of the Cost of the Work which would generally be a trade breakdown estimate. Design Development documents are also a significant milestone toward the completion of Construction Documents. The level of detail provided in the DD phase is a culmination of weekly meetings with the Town of Lyons, comments from the public, comments from various Boards and Commissions, results of an in depth planning process during the Lyons Parks Flood Recovery Planning Process, adherence to early planning documents prepared by the Town including previous master and comprehensive plans, the LRAP, SRCAP, FEMA damage assessments and scopes of work, input from the Board of Trustees, and per the owner's request and the project requirements. These Design Development Plans were presented to, various regulatory agencies, the Lyons Parks and Recreation Board on June 13, 2016, several other Lyons Boards and Commissions, and –to the Lyons Board of Trustees on July 18 and again scheduled for August 1, 2016.

Project Binder Section 14
UPDATED PROGRESS DESIGNS

Updated progress designs are the progression of efforts from the 50% Design Development phase that have

incorporated comments and feedback from the various Town Boards, regulatory agencies and others, including Town Staff and the design team. Some of these efforts entailed redesigning site features, additional hydraulic modeling and changes in direction from earlier decisions made during the planning process and schematic design phase. Updated designs are considered a progression of the DD plans towards Construction documents (CDs). Following the definition of the overall design in the design development phase and the direction by the BOT on July 18 and Aug 1to move designs forward, construction documentation is a natural continuation of the design process— one that sets the parameters for the building process. CDs outline the key interrelationships, rights, responsibilities, and dynamics that bring the park into being.

In a combination of written and graphic formats, construction documents translate the design of a project from the realm of ideas to physical form. They describe, in detail, the components of a project that need to be fabricated and assembled in order for it to be built. To that end, the contributions of myriad consultants are assembled into a coherent, artful whole.

Project Binder Section 2
PROCESS AND TIMELINE

The work effort identified for the project has been broken down into tasks to better understand the organization that needs to go into development of the designs into final construction documents. Our project approach is organized around four general task items. It includes the complete scope of services outlined in the request for proposals, organized in a manner that brings the most efficiency and value to the Town.

1. Project Management
2. Design Development (approximately 50% progress review set)
3. Construction Documents (90% progress review set and 100% Final Review Set)
4. Bid Phase/ Construction Administration services

We have provided a summary of task descriptions in our RFP proposal response, DHM proposal (Item number 2 in the project binder) for the proposed Phases of the project as well as project deliverables for each Phase. Breakdowns of specific project task items are listed within each project estimating sheet that show an estimate of manpower and expenses. Documents will be developed in accordance with the Town's standards and requirements.

Task 1-Project Management-Ongoing

Project management is key to the success of this project. DHM and select members of the design team held a project kickoff meeting and have weekly progress meetings during the design phase in order to secure feedback and to make critical decisions in order to expedite and move forward with the design to meet anticipated schedule requirements. Design meetings began in April and we estimate they may extend into September or when the project bids (approximately 20-26 weeks). All meetings are documented to note progress, schedule updates and decisions made in order to move forward with critical milestones for bidding the project.

TIMELINE:

Due to the complexity and sensitivity of working within an active stream channel, construction activities within normal high water levels are typically limited to take place between November and Mid-April. Activities outside these months require a much greater level of water control and would increase construction costs significantly. Based on the RFP, scope and proposal, the intent is to construct all in-stream and stream channel and bank work over the fall and winter before proceeding in constructing park amenities outside the normal high water mark. Designs are progressing to where we are hopeful to bid work in August/ September with construction beginning in October/ November pending direction of the BOT. If work cannot begin this fall, the project could push

construction back another year.

Task 2: DESIGN DEVELOPMENT OF SELECTED PLAN -
COMPLETED

During this phase our team leveraged its deep experience in park design and construction to thoroughly evaluate the approved Bohn Park Preferred Alternate and develop detailed plans to a 50% progress level.
We have developed a Design Development package that was used to vet out technical design of the park site improvements based upon the final master plan design evaluation and completion. ***THE FOLLOWING PLANS WERE DEVELOPED.***

- Material image board and cut sheets
- Construction details for the park site improvements
- Phasing of improvements will be reviewed based upon technical design parameters and budgeting.
- DHM will incorporate comments from the Parks Flood Recovery Planning Process and from review with Town staff, and stakeholders into a Design Development Plan set for use in permitting, interdepartmental coordination, and review prior to beginning Final Designs and Construction Documents.
- Preliminary site layout of the park,
- Preliminary grading plans
- Preliminary drainage plans,
- Preliminary utilities,
- Preliminary materials,
- Preliminary landscaping,

These plans have been prepared in AutoCAD format and will be the basis for accurate cost estimating. Plan review sets were provided to the Town at completion of Design Development for review and comment.

Detailed designs for the in-stream features were created based on feedback from the Town of Lyons, the public meetings, regulatory agencies and permitting requirements. Design drawings will be advanced to show specific design layout and elevations, as well as specific details.

Task 3: CONSTRUCTION DOCUMENTS (90% Submittal, 100% Final Review) – to be completed

Based upon final Design Development comments from the Town and various boards/commission and the findings from the Construction Cost Estimates, the design team will complete the remaining technical work effort to complete Construction Documents and Technical Specifications for the 90% and 100% Final Construction Set submittals.

90% and 100% complete construction drawings will be prepared for the project including major elements such as cover sheet, general notes, Site Preparation and Tree Protection Plans, Erosion and Sediment Control Plans, overall site layout and materials plans and grading sheets, miscellaneous site details, planting/ revegetation plan, irrigation plans, utility plans, and drainage plans. Detailed designs will be provided for all programming as noted in the Bohn Park Preferred Alternate Plan. 90% drawings will be prepared for submittal through the Town permitting process. DHM will continue developing plans to meet deadlines and schedule requirements for 100% Final Construction drawings during this review to maintain an accelerated schedule for fall and winter construction.

Task 4: Bidding and Construction Administration

Progress Meetings: DHM and S2O will be available for weekly on site OAC meetings to be held throughout the duration of the project.

Construction Administration: Tasks include site visits, availability to answer any RFI's, provide design clarifications and review submittals, visit the site to review critical site items and answer any other questions that may come up during construction that impact design. Our team of consultants will assist with construction administrative services for site, architecture, utilities, and in-stream work, and drainage and infrastructure improvements as it relates to their disciplines. A detailed scope and estimate of hours is included within our fee schedule.

Construction Administration: S2o will provide on-site construction inspection for the in channel structures and floodplain overflow elements. In addition to on-site inspection S2o will assist with any submittal review, Architects Supplemental Instruction ASI, Request for Information RFI, missing detail, or changes that arise during the construction phase.

Phasing/ Cash flow

We understand the BOT is reviewing options for phasing based on cash flow and priorities within the Town. Following are some details for consideration as discussions progress. Phasing of the project has been reviewed and discussed amongst the design team. We have also contacted Denver Front Range contractors to discuss options for possible phasing based on cash flow. There are essentially 3 ways to bid the project based on cash flow and availability of funds. They are as follows:

1) Bid the entire project together
2) Phasing of the project based on cash flow under one contract
3) Multiple contracts based on cash flow and construction sequencing.

Option 1 would be the least costly scenario where the contractor could determine construction means and methods based on the project schedule. They would be able to stack their subs to where they could move from one location on site to the next without demobilizing and returning at a later date when a new phase of work beings, have one mobilization cost and be more efficient with their crews and management.

Option 2 would see a cost increase of greater than 5%. The contractor would not be able to stack their subs and they would have to move off- site for large periods of time. Scheduling may get drawn out based on their availability. The schedule would extend according to cash flow, availability of crews, weather and timing of work within the river/channel and other park areas. Material escalations are unknown and cannot be predicted within the bid. Based on past experience if there are a lot of unknowns the contractor will bid very conservatively to cover their risk(s) which would see a substantial increase in costs. New permits would need to be pulled if the contractor is demobilized for too long. The contractor would be required to spend more time on site maintaining conditions which would lead to more management time.

Option 3 could see costs escalated as much as 50% pending time of year each phase was bid and how busy contractors are. Bidding in low season (typically the fall) is the most ideal time to bid for competitive pricing. Spring and summer bids tend to see a significant increase in costs when contractors are in their high season. There would also be concerns with quality, standard of workmanship and lack of continuity with potentially multiple contractors bidding and constructing the project. The number of mobilizations would greatly increase, the general overhead and bonding costs would increase, and inefficiencies in construction activities would add

to the increase in construction costs. It would be extremely difficult to control costs and potential change order requests due to the overlap in activities.

BUDGETS/ FUNDING STRATEGIES

At the 30% design phase/contract approval phase budgets were provided to the Board of Trustees that indicated available funding for Bohn Park. Significant funding for the Bohn Park Flood Recovery Plan is already in place, and town staff, consultants, and the Board of Trustees will need to prioritize phasing of non-flood related park enhancements in order to complete the park on the timeframe provided. True costs won't be known until the project goes through final design and the town receives bids from contractors. Staff has put together the following alternatives based on the preliminary estimates for the park.

The following is a list of available funds, estimated costs and alternatives for phasing of project enhancements:

FEMA PW20	Bohn Park	$3,129,297
FEMA PW35	Bohn Park WW Features	$414,151
FEMA PW20	2nd Ave Dog Park	$86,217
FEMA PW 20	Hwy 7 Trail	$124,093
FEMA PW 20	Corridor Trail 60%	$956,446

This number could increase by using a higher percentage of these funds based on the St. Vrain Corridor Trail Extension/Recovery Grant

CPW	Fishing is Fun Grant	$100,000
Rockies Funding / Can'd Aid-Ball Fields		$80,000
LCF	Bohn Park	$10,000
FEMA PW 20	Bank Reveg 50%Bohn Park	$477,197
CIRSA	Bohn Park	$520,792

Total Flood Recovery Funding for Bohn Park w/ CEF $5,898,193

In addition to the above funding, there may be a possible savings (and an available amount of funding remaining) from the Meadow Park Flood Recovery Project:

Meadow Park Funding Sources	**Amount**
PW20	$5,017,075
PW 35	2,817,550
PW 20 Mitigation	86,178
GOCO	1,122,000
LCF	10,000
Colorado Home and Garden	15,000
CDPHE	150,000
CIRSA	288,978

Total Flood Recovery Funding for Meadow Park $9,706,783

Meadow Park Phase I expenses, along with all other park project costs included in FEMA PW 20 to date total $2,486,038. The preferred bidder for the Meadow Park Phase II construction has submitted a bid for a 'not to exceed' amount of $6,172,760. From the available funding allocated for Meadow Park (above), if you add the Meadow phase II contract amount and the total spent on all parks projects to date and subtract it:

$6,172,760 + $2,486,038 = $8,658,798

$9,706,783 - $8,658,798 = $1,047,985 possible savings from Meadow Park Project

Total Flood Recovery Funding for Bohn w/ CEF = $5,898,193 plus
Possible saving from Meadow Park Project ($1,047,985) provides
$6,946,178 Available Funding For Bohn Flood Recovery Plan

The Preliminary Cost Estimate for the Bohn Park Flood Recovery Plan created by DHM Design and S2O Design and Engineering on November 4, 2015 suggests that the entire park could be built out to the public's vision for the following totals:

Subtotal	$6,035,628
15% Contingency	905,344
10% Design/Permitting	603,562
3% CA Services	181,068
TOTAL	**$7,725,605**

The available funding is near the needed amount outlined in the preliminary estimate; but poses a fairly significant gap when other services are added in. Based on actual bids, there will likely be a need to prioritize or phase-in a certain number of amenities that could be considered 'enhancements'.

DESIGN AND SEQUENCING CONSTRUCTION

Design services to complete all features of the Bohn Park Flood Recovery plan are 100% funded and can continue to be developed. Sequencing of park amenities and priorities for construction will need to be reviewed with the Board of Trustees to coincide with discussions on available budget, funds and cash flow. Final decisions on what is to be built can happen during the bidding process as we strategize on bidding options. Options may include phased construction, a series of bid alternates that can be chosen as budgets allow, or complete removal of park features from the bid documents. Not all features will be able to be developed based on final bids.

Budgets have been developed based on park amenities identified in the 50% Design Development plans. This is a

normal discussion to be had at this level of detail within the design process between 50% and 90%. Some park enhancements were not included in the originally presented 30% design budget such as the flood control measures in the Marten and Stacy parcels, additional skate park features, the concept of a possible Parks Office/Storage Facility/Community Building and other items. It's at this time in the design process we want to have more pointed discussions on funding strategies, available budget and priorities. As of now the design team has been instructed that available budget for the project will be approximately $7M. Additional funding sources may be needed or should be considered for park "enhancements" or amenities deemed not to be a priority by the Board of Trustees. These could be the Parks Building, Skatepark, the Proposed Stacey Parcel Overflow Channel, one or more of the multi-use sport or tennis courts, or others. .

Preliminary cost estimates are coming in higher than budget currently allows at the 50% level. We will be working on designs to reduce costs to align within available funding. We will continue to work on designs to achieve this. Some strategies to consider are reallocating savings from Meadow Park construction to Bohn Park, consideration of additional funds from new grants, reducing programming within the park to match current budgets. A detailed estimate is included in the project binder (Item #7).

The Parks Office/Storage Facility/Community Building adds considerable cost and increases the cost estimate well above budget. Given the difficulty the Town is facing finding a home for its Public Works Facility, it was considered as an option to relocate parks management and maintenance staff to within Bohn Park. This would assist in providing for much needed space for storage, maintenance equipment and bulk storage as well as needed office space for parks staff. In addition, such a facility could help provide for efficiencies in operations and maintenance costs by having staff, equipment and materials on-site. Better service to the community by having offices and programming within the park and opportunities for more programming space for the community.

A few options for reducing costs include acquiring donated material, phasing of Skate Park, removal/phasing of the parks office building, phasing of the overflow channels to be paid from a separate allocated fund, removal of topsoil from native areas, limiting irrigation to active park areas. We can also look at removal of tennis courts and shade shelters for future phasing as required.

OPPORTUNITIES FOR COMMENT AND FEEDBACK

Opportunities for comment and feedback will continue throughout the design phase-from the 50% to the 90%. This may mean presenting plans at a regularly scheduled meeting or sending plans for comment via email. Ideally comments will build off subsequent design phases and decisions made in order to move forward, however at times it may be necessary to change direction and go backwards to achieve the goals of the Town. This would require additional efforts and design to bring designs back in line. We currently scheduled opportunities for comment and review at the 30% schematic design phase (May 13), 50% Design Development Submittal (June 10), and projected for 90% and 100% designs. At each phase comments are based on plans and designs developed from decisions and approvals made during the previous phase.

All comments and feedback are welcome. Comments will be accepted between the 50% and 90% and we will review all comments at our weekly meetings and make those comments "actionable" as part of the design

process with a response in our weekly meeting notes. Continual feedback between all boards and commissions will be encouraged and plans presented when needed.

We currently have weekly Design Team meetings on Thursdays at 10:00 am at S2O's office. We have an active website and will provide weekly updates to the BOT via email. Continuous feedback is encouraged and accepted between design submittals and throughout the design process.

Plans have been presented to the PRC, WB, CPW, SVCC and BOT.

Project Binder Section 13
PRC Notes:

Mark Wilcox with DHM presenting
Overview of planning process: public meetings, LRAP, other master plan docs
Scope of work
Design goals
50% plan shown. 3 tennis courts, possible park office building
Skatepark options (bowl + street course behind softball fields) Concrete
sidewalk from parking lot to skatepark

Concerns voiced about skatepark location and concrete on west side.
Ian was concerned that the area between the two proposed skate parks could become over-developed and that the trail connection should remain the priority. Plans reflect removal of a concrete sidewalk behind the ballfields to the west and designed for a soft surface trail connection instead.

Water feature for kids near playground

Location of storage building and that the appearance match Steamboat Mtn. – Ian
If plans for the parks office building move forward we will review architecture character and viewsheds to make sure we meet Ian's requirements.

Concerns on Ecocycle appearance and traffic between Bohn and Ecocycle – Veronika

Scott Shipley of S2O reviewed stream structures Goals:
flood mitigation, access, riparian feel Funding sources
Several overflow channels added to guide water
Bank restoration
Rosgen cross-vane drop structures

Next steps in the planning process
Final design in late summer or fall
Phasing and implementation strategies for funding

PRC discussed making a statement to the board in support of the plan.
Continued discussion about concrete on west side

Ian motioned to approve 50% design. Mary second. All in favor.

Ecology Board Notes:

1) Review Design Documents

Marshall went through the 50 percent design presentation for Bohn Park. Simms said perhaps the riparian areas could be deeper with fencing until the plants mature. Designs will reflect these comments. A fence will be designed to separate the public from the ecological restoration areas similar to the fence constructed at Meadow Park.

CPW Comments: see project binder for formal comment letter and written response from the design team.

SVCC Comments: see project binder for formal comment letter and written response from the design team.

1. Will there be any pedestrian crossings near the confluence? We know there's one planned within the project, but was just wondering if there was consideration of another one or if another one that we don't know about already exists.
At this time we are not planning one.

2. What is the scope of work for the area river left (Stacey property) within the project? Will there be any trails?

At current no trails are planned at this time. Parks and Wildlife did suggest that fishermen might like to access on this side, but we had assumed that this would be through bushwhacking.

3. Is the SSV3 trailer park area being actively used? We are pretty sure it is not, but wanted to confirm.

It is going to be acquired through the buyout process but has not yet been acquired. We have not been a party to any plans there yet, but obviously have designed our flood-overflow channel to mesh with any potential braided channel options that might be installed upstream on this property.

DHM DESIGN

LANDSCAPE ARCHITECTURE | LAND PLANNING | ECOLOGICAL PLANNING | URBAN DESIGN

Watershed Board Comments: see project binder for formal comment letter and written response from the design team.

Please see below our official submission of the recommendations to the Bohn park river restoration:

The overall goal for this reach is to be as natural looking aesthetic with a natural riffle pool design with boulders and have minimal to no drop structures [cross veins]. But also provide safety to the park attendees and neighboring houses/buildings.

Specific recommendations are as follows:

1. Those drop structures [cross veins] needed for safety purposes should be as much at grade as possible- grade above and below the structure. So they function more as a grade control than recreational drop. All cross veins should have very quiet water at the sides with minimal to no flow or back eddy flow to allow for fish habitat. With back eddy flows and currents, the fish have to work hard for their food and a normal 'wild pool' does not have those kinds of water flows. Also, deep in the pools and thought the tail of the pool there should be boulders to allow fish to hide behind. For cross veins, double-steps can be utilized but also cross veins with spaces between the boulders .5-1x of the boulder diameter] should be considered to allow better fish habitat and fish passage. All cross veins should appear as natural looking as possible. Also, please consider having the low flow point through the veins and J hooks be eccentric and not in the center of the channel, providing a more natural flow and aesthetic.

2. Any J hooks should appear to be natural looking and not appear artificial. Large boulders [3-5ft diameter] can provide the habitat, energy dissipation, and river flow controls needed. Consideration of 'J hook type structures made out of wood and stone can provide excellent microorganism ecosystems and highly functional.

3. We propose greater amounts of wood installed and there are many different techniques that are safe for boaters and tubers but provide a healthy ecosystem for the aquatic biology [The bugs feed and proliferate on the woody debris and then become food source for the fish.] Logs can be installed looking similar to a random fallen tree along the bank that face either up or downstream that can be anchored by large boulders and and sit in holes to provide cover. Logs can also be installed to provide the same benefits as rock vanes, J hooks, v-weirs with one end buried in the bed of the channel and the other end buried in the riverbank while the middle is exposed providing a place for fish to get under and hide. Fish lunkers are constructed wood overhangs that can be built to look quite natural and provide ample cover for fish. These and other wood applications can add complexity to the stream bank and provide many small micro-eddys for additional aquatic habitat. Many of these techniques can be achieved to maximize the aquatic biology but also designed to be safe for tubers and boaters.

3. Vertical banks on the outside bends of the thalweg can be stabilized with large boulders and safe woody

debris and provide long shallow point bars on the opposite side of the river. These point bars are places where sand and gravel can deposit and provide low-gradient places for folks to get into the river.

4. Consideration of lowering the grade upstream to lower the overall drop through this reach should be considered.

5. Controlling the water access points is key and they should be designed to be consistent with fish 'habitat protection as well as bank preservation.

It is the goal of the LWB to work in concert, cohesively with the BoT and under their direction with the town parks and rec as well as any engineers and construction contractors. If there is a way we can do this better please advise us.

Project Binder:

1. Project RFP
2. DHM Proposal
3. Weekly Meeting Notes

- Programming Workshop Notes
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-programming-workshop-MM_20160414.pdf

- April 21, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-BOT-20160421MM.pdf

- April 28, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-BOT-20160428MM.pdf

- May 3, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160503MM.pdf

- May 12, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160512MM.pdf

- May 18, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160518MM.pdf

- May 26, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160526MM.pdf

- June 9, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160609MM.pdf

- June 16, 2016 weekly design meeting

- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160616MM.pdf

- June 23, 2016 weekly design meeting
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/LBP-20160623MM-DD.pdf

4. Monthly Reports to Administrator
5. 30% Schematic Design Report
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Bohn-Park-Design-narrative_ALL-FINAL.pdf
6. 50% Design Development Submittal
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Bohn-Park_Design-Development-Report_2016-06-10.pdf
7. 50% Design Development Budget Spreadsheet
8. Skate park Presentation April 28, 2016
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Public-meeting-1-PowerPoint.pdf

9. Skate Park Concepts Presentation June 21, 2016
- Concept 1
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Concept-1.pdf
- Concept 2
- http://www.lyonsparksmp.com/wp-content/uploads/2015/07/Concept-2.pdf
10. Architecture Concepts – BRS Architecture
11. S2O Basis of Design Report
12. July 18, 2016 BOT presentations (DHM and S2O presentations)
13. Comments and Responses:
    - CPW (Colorado Parks and Wildlife)
    - SVCC (St. Vrain Creek Coalition)
    - WB (Watershed Board)
    - PRC (Parks and Recreation Commission)
    - EB (Ecology Board)
    - SFB (Sustainable Futures Board)
        - Jeff Christy was present for the PRC presentation
14. Updated designs
15. FEMA Scope and Versioning Documents

1. Project RFP

2016 Lyons Bohn Park Flood Recovery Final Design and Bid Project
Request for Proposal
Project Number: PW 20E

Town Contact: Sloane Nystrom, Parks Project Manager or Dave Cosgrove, Director of Parks
Email Address: snystrom@townoflyons.com or DaveC@townoflyons.com
Telephone Number: (303) 823-6622 ex 16, (303) 823-6622 ex 20

Pre-Proposal Conference:
A Pre-Proposal Conference will be held on **February 10, 2016, @ 1 pm MST** at the Town of Lyons Town Hall, 432 5th Avenue, Lyons, CO. The purpose of this conference will be to discuss this RFP and to provide assistance to consultants in the interpretation of this Request for Proposal (RFP) or any terms and conditions contained herein.

Proposals must be received no later than: February 25, 2016 at 3 pm MST.
Proposals received after this date and time will only be considered at the Town's discretion. Copies of bidding documents obtained from any source other than the Town of Lyons or Rocky Mountain E-Purchasing are not considered authorized copies. Only vendors who obtain bidding documents from either the Town or Rocky Mountain E-Purchasing system are guaranteed to receive addendum information, if such information is issued. **If you have obtained this document from a source other than the Town of Lyons or the Rocky Mountain E-Purchasing system, it is recommended that you obtain an official copy.**

The TOWN will only accept proposals in bound hard copy format and does not accept proposals submitted via fax, email, or other electronic means. Proposals are to be submitted in a sealed Package with the following on the outside of the envelope:
Company Name
RFP Title
RFP Number
Due Date and Time

Package must include:
- One (1) Original Proposal, identified as "Original"
- Five (5) Copies of Proposal
- One copy of Proposal on a CD-ROM-Include both original and public viewing versions, if applicable

Deliver proposals to:
Town of Lyons Department of Park, Recreation and Cultural Events
Sloane Nystrom, Parks Project Manager
432 5th Avenue
Lyons, CO 80540

Schedule of Events (subject to change) All times are given in local Colorado time (AMEND AS NEEDED):

RFP Issued	February 3, 2016
Pre-Proposal Conference	February 10, 2016 @ 1 pm MST
Deadline for Questions	February 17, 2016 by 3 pm MST
Final Addendum Issued	February 19, 2016 by 3 pm MST
Proposal Due Date and Time	February 25, 2016 by 3 pm MST
Approximate Contract Approval	March 7, 2016
Notice to Proceed	Week of March 14, 2016

2016 Lyons Bohn Park Flood Recovery Final Design and Bid Project
Request for Proposal
Town of Lyons-Department of Parks, Recreation and Cultural Events
432 5th Avenue, P.O. Box 49, Lyons, CO 80540
PH: (303)823-6622
www.townoflyons.com
Project Number: PW 20E
PROPOSALS DUE: February 25, 2016 at 3 pm MST

The Town of Lyons is inviting proposals from highly qualified 'Teams' to provide final design and bid services for flood recovery efforts for Bohn Park, which was damaged as a result of the September 2013 flood. Design teams will focus on the final detail design to include final construction documents, drawings and specifications for the construction of Lyons Bohn Park based on the 30% concept plan recently completed as part of the Lyons Parks Flood Recovery Planning Process. The final design will address goals and priorities associated with the Parks Flood Recovery Planning Process, FEMA Project Worksheets and Project Scopes, the Lyons Recovery Action Plan (LRAP), associated Program Development Guides (PDG's), existing Town master plans, comprehensive plans and other relevant documentation and studies. Teams will assist the Town of Lyons through the bidding process and with associated construction administration related to the design as required.

Section I. BACKGROUND

The Town of Lyons was devastated by the Colorado floods of 2013. In the early morning hours of September 12th, 2013, following several days of record rainfall totaling an astonishing 17 inches of rain, the North and South St. Vrain Creeks, the confluence of which occurs in Bohn Park in Lyons, flooded their banks. Stream flows within the Town of Lyons crested above 26,500 CFS easily surpassing the previous record set in 1941. This is incredible considering typical stream flows for the St. Vrain average 67 CFS (USGS Data) for the month of September.

Lyons' parks system was absolutely decimated, accruing over $25 million dollars in damages. Nearly all community parks and facilities were affected in some way. Of the 80 acres of developed/in-development community parkland, 39 acres were severely impacted. Unfortunately, the 39 acres impacted the most house most of Lyons' major park facilities. The other 40 were acquired for future development and house only a few facilities and amenities. The following is a synopsis of Lyons park damages:

- Of nearly 5 miles of trails, only 1.2 miles have been unaffected by the flood. Most trails are completely gone or are inaccessible. This includes the destruction of Lyons' main arterial trail, the St. Vrain Corridor Trail which served as Lyons' major source of connectivity to neighborhoods, schools, parks, businesses and even Boulder County's Picture Rock Trail in Heil Valley Ranch Open Space, Hall Ranch and other future regional connections.
- Infrastructure to parks has been washed away; water, sewer, gas and electric will all have to be replaced at nearly all park facilities.
- Athletic fields are buried under feet of cobble and debris. Irrigation provided to 5 of Lyons 6 athletic fields and most other irrigated portions of parkland is either gone or no longer functional.
- Shelter facilities have been washed away and/or were flooded and no longer useable.
- Additional park features that are damaged or lost to flood damage include, among others: 14 whitewater features, 2 ponds, 2 pedestrian bridges, volleyball court/ice rink, batting cage, dog park, several parking lots, tent and RV camping facilities, picnic areas, 2 playgrounds, community garden, sheds and storage facilities, numerous benches, bleachers, signage and other park amenities that are associated with these park facilities.

Section II. PROJECT DESCRIPTION

Lyons residents have identified the immediate rebuilding of Bohn Park, a river park located on the south side of Lyons, as a vital priority for parks recovery to be completed beginning in 2016. Bohn Park provides for major economic impacts for the Lyons community; it provides significant local and visitor recreational opportunities; and it provides ample opportunities to mitigate future flooding and to restore the river corridor's habitat. The selection of this park as the next priority in Lyons parks recovery efforts is supported heavily by both the Town government and the public at large.

Though Lyons' population is small, just over 2000 residents, the outdoor recreational opportunities here are immense and this project will ultimately serve a much greater "community." Tens of thousands of hikers, runners, bikers, kayakers, tubers, anglers, spectators and wildlife enthusiasts are drawn to Lyons each year. Many head straight to Bohn Park because of its available amenities. Because the St. Vrain River is such a vital attraction, a myriad of water lovers also float, kayak, swim or fish in the park. The park's large, open areas enables the Town to attract thousands of festivarians and mountain sports enthusiasts to the Lyons Outdoor Games, Lyons Good Old Days, Rocky Grass Festival, Folks Festival, and numerous other special events held by the town.

Bohn Park, located on the southwest side of Lyons, is the town's largest park at approximately 50 acres. Three new housing developments are in close proximity to the park, in addition to the Lyons Middle/Senior High School. Lyons Valley Village is located to the immediate south entrance of the park. It consists of eight duplex homes and two single family homes. It houses approximately 26 residents. Lyons Valley Park is located just three blocks to the south and across the street from the Lyons Middle/Senior High School. 50+ homes have been built in the last seven years. It is in its final phase of building and has approximately 80 homes left to be built. Approximately 582 residents live in this area. Stone Canyon, located a bit further to the east, completed the building of 65 homes in 2007. Approximately 200 residents live in this development. That's over 210 homes in the past 9 years in the Bohn Park area. Although this may not be a staggering number for a larger community, consider that Lyons had an average number of only nine homes built each year from 2000-2004. Recent census data shows that Lyons' population has grown by nearly 500 residents in the last ten years (1,585 in 2000 to 2,033 in 2010), more rapidly than estimates have anticipated. Many new residents have younger families as school enrollment also seems to be on the rise. The influx of families with children under the age of 5 increased from 88 in 2000 to just under 200 in 2010 (10% of total population versus 7% statewide). Average family size has increased from 2.3 to 2.9.

A noticeably increasing number of residents and visitors continue to be drawn to the area by the town's increasing number of special events, development of homes, improvements to the downtown district, connectivity to area open spaces, and improvements to park amenities.

Bohn Park is Lyons' largest and most popular park. It is not uncommon to see the park filled throughout the day with anywhere from 200 to 400 residents and visitors on any given weekend during the summer months. Consisting of over 50 acres Bohn Park is home to most of Lyons major athletic facilities. Pre-flood, there were two baseball/softball fields, batting cage, playground, multi-use soccer field, concession stand, whitewater features, picnic areas, shelters, restrooms, Lyons Dirt Jump Bike Skills Park, Bohn Bark Dog Park, Lyons Community Garden, and a multi-use sport court.

Lyons being only a mile square, residents and visitors alike easily access Bohn Park using either the St. Vrain River Corridor Trail, one of Lyons main trails which intersects the park, or the main entrance off of Second Avenue, one of the town's main collector streets. Parking for existing facilities and town special events exists at Bohn Park. Connecting sidewalks and trails from adjacent neighborhoods, the downtown district, and the neighboring Middle/Senior High School lead people to Bohn Park easily and most are just a few minutes away. Recently, Lyons worked with Boulder County Parks and Open Space to create a trail link to Heil Valley Ranch Open Space via the Picture Rock Trail and many residents and visitors utilize Bohn Park and its amenities before and after their journey.

Bohn Park is ideally located in southwest Lyons and is easily accessible by car and foot because it is:

- Within easy walking distance (3 blocks) of downtown
- Adjacent to Lyons Middle/Senior High School (the Town and the St. Vrain Valley School District have a Joint Use Agreement for the sharing of facilities that allows the coordination of programming for the amenities at the school and Bohn Park)
- Adjacent to Boulder County open space

The Town of Lyons recently completed the Lyons Parks Flood Recovery Planning Process (www.lyonsparksmp.com) which included a series of public meetings that assisted in the development of several concept plans for all flood recovery areas related to parks. This process took several months to complete and involved soliciting input and feedback of the public, town staff, Town of Lyons board/commissions and the design team. The Bohn Park Flood Recovery Plan Preferred Alternate map is included with this document along with the Lyons St. Vrain Corridor Trail 6f boundary map.

The Bohn Park Flood Recovery Final Design and Bid Project will address the following fundamental goals outlined in the Lyons Recovery Action Plan and Lyons Parks Flood Recovery Planning Process for ensuring that Bohn Park continues to meet local and regional demands:

1) Reconstruction of facilities in Bohn Park to address the immediate recreational needs of Lyons, especially active/athletic uses. We will create a place to gather and play as a community again.

2) Creation of an attraction that will draw visitors to our Town. This is essential to ensure that the Town will remain economically viable and maintain its reputation and brand as a destination for healthy, active, outdoor lifestyles.

3) Reestablish trail connectivity, both locally and regionally, include loop trails.

4) Restore and augment river access and river habitat.

5) Restore/Replace picnic opportunities, including shelters and increase size.

6) Re-establish natural areas and consider wetlands.

7) Installation of public art along trails.

Section III. PROJECT TIMELINE

The Town of Lyons intends to select a qualified bidder and award a notice to proceed at an approximate date of the week of March 14, 2016. It is anticipated that the final construction design and bid process will take place from March 2016 through July 2016. The Town intends to put the project out to bid for construction in July/August 2016 in order to award a contract for construction to begin construction no later than September of 2016 in order to have the park open to the public in the summer of 2017. An initial conceptual plan for Bohn Park is available by PDF-Bohn Park Flood Recovery Planning Process Plan- Preferred Alternate.

It is anticipated that final construction of Bohn Park will be completed no later than July 1, 2017. Therefore, the Town of Lyons anticipates restoration to begin late summer of 2016 (August/September). Given the complexity and quantity of design work needed to complete the process, including public input, permitting, and bid process, the Town recognizes that successful firms may choose to split the process into two designs and separate bid documents: One that focuses on the stream restoration and whitewater features in preparation for work to begin in the Fall/Winter of 2016, and a second that focuses on the interior park design in preparation for work to begin in the summer of 2016. The Town is willing to consider various proposals in order for the project to stay on its projected timeline.

Section IV. SCOPE OF WORK

The Town of Lyons is issuing a Request for Proposals ("RFP") from qualified 'teams' to provide Disaster Recovery Design Services related to the flood disaster of September 2013 which caused extensive damage throughout Lyons.

The Town will serve as the lead agency during design, and with the input of Town Boards and Commissions, will choose a consultant. Funding for the project will come from FEMA, Town insurance and various other grant sources. The consultant will be required to provide reporting and accounting of the project design to facilitate the funding sources in order for the Town to be reimbursed for this work. The design must comply with the Town of Lyons Manual of Design Criteria and Standard Specifications for the Construction of Public Improvements, all other applicable Town, County and State design criteria, and other recognized parks and recreation design standards in-line with local and metro park development including ADA guidelines.

The Town of Lyons reserves the option to award contracts to multiple Teams but would prefer to award to a single Team that is able to provide all of the services requested.

Lead firms shall specialize in LANDSCAPE ARCHITECTURE/LANDSCAPE PLANNING AND STREAM RESTORATION, employing a capable team of civil, structural and hydraulic engineers (as needed), along with supporting ancillary trades, to complete the final design and prepare a complete, stamped set of construction plans usable for construction, specifications and bid documents for this project. The Town anticipates executing a contract with the top-ranked proposer and issuing a Notice to Proceed as soon as possible. Right-of-way (ROW) or easement acquisition is not expected, but may be needed. The consultant's design schedule should be as aggressive as practical.

The selected team shall perform or supply all necessary products and services as specified in this document with regards to surveying, research, public outreach, analysis, design,

geotechnical investigation, specification preparation, exhibits and sketches, environmental permitting, permitting, utility coordination, storm water modeling, right-of-way services, public process, and other associated engineering work.

All work shall be performed under the direction and supervision of a Licensed Professional Engineer (or Surveyor, Architect, or Landscape Architect), registered with the Colorado State Board of Registration for Professional Engineers and Professional Land Surveyors. Some activities may require work on land not controlled by the Town which would require owner permission to enter. In such cases, the Consultant shall obtain the necessary written permission to enter the premises on forms provided by the Town. Included in this written permission will be the names and telephone numbers of persons to contact should notification prior to entry be necessary. These written permissions will apply to Town of Lyons personnel as well as Consultant personnel. Signed copies of the written permission will be submitted to the Town's Project Manager prior to entering private property for any work.

A Pre-Proposal Meeting will be held to ensure that the Consultant is familiar with the existing conditions as well as the project requirements and Town/FEMA goals. This meeting will be coordinated by the Town.

The proposed work shall include, but is not limited to, the compilation of data; performing necessary field work (e.g. surveying, utility locating & potholing, etc.); designing all elements for the proposed improvements; preparing construction plans, specifications and bidding documents; utility coordination; cost estimating; project coordination and any needed public involvement or process.

As part of the proposal, the Consultant shall develop and submit a detailed scope of work and fee that meets the requirements of the FEMA Public Assistance Worksheets and the Town of Lyons Design Standards and Construction Specifications. The scope of work should include, but may not be limited to, the following tasks:

1. Providing extensive knowledge, experience and technical competence in dealing with design and construction of community parks, irrigation systems, earthwork, grading, drainage, erosion control, stream channel restoration, whitewater features and related structures.
2. Evaluating/confirming the extent of flood damage in relation to pre-flood conditions as it relates to the Town of Lyons Parks System. Damage to the following features/amenities includes, but is not limited to:

    - Parking Areas/Access Roads
    - Trails, Trail Heads and Pedestrian Bridges
    - Baseball Fields/Athletic Fields
    - Tennis Courts/Multi-Use Sport Courts
    - Concession Area/Food Truck Area
    - Batting Cage
    - Restroom Facilities
    - Park Host Area(s)
    - Picnic Areas
    - Any irrigation ditches that are located through the park-ditch systems/reconnections

- Retention Pond(s), Water Features
- Irrigation Systems and System Components
- Irrigation Pump Stations and Filtration Systems
- Siltation, erosion and debris deposits resulting in damage and degradation to the existing stream channel
- Whitewater/River Features
- ADA Fishing Structure/River Overlook
- Siltation, erosion, and debris deposits to entire park area
- Flower Beds, Planters and Memorials
- Trees, Vegetation and Landscape
- Displacement and loss of park signage, benches, trash receptacles, access gates, grills, picnic tables, dog bag dispensers, drinking fountains, and all other park amenities
- Existing Playground Facilities and Surfacing
- Shelter and Storage Facilities
- Utilities-water, sewer and electric to all buildings and areas needing service

3. Reviewing FEMA damage assessment documents provided by the Town giving itemized and detailed cost estimates of pre-flood conditions to better understand the park, its functions and previous uses.
4. Reviewing and understanding recent Lyons Parks Flood Recovery Planning Process public input, preferred alternate plans, and overall process.
5. Incorporating design for fish habitat for the St. Vrain River through Bohn Park which will include the scope of an existing Colorado Parks and Wildlife Fishing is Fun Grant that the Town of Lyons has been awarded (2014 Fishing is Fun Grant-Lyons St. Vrain Aquatic Restoration Project).
6. Incorporating design for the reconstruction of the St. Vrain Corridor Trail to include the scope of a Colorado Parks and Wildlife State Trails Grant funded through the Land and Water Conservation Fund (2013 Lyons St. Vrain Corridor Trail Recovery Project).
7. Incorporation of design of the park area east of the Second Avenue Bridge as depicted in the Bohn Flood Recovery Plan.
8. Consultation with the “Stream Team” currently engaged in the CDBG-DR Stream Restoration Project in Lyons to ensure that design objectives are being met by both groups, projects align, future project impacts can be minimized, and sequencing of projects can be maximized.
9. Reviewing and understanding of existing Parks, Open Space and Trails (P.O.S.T.) Master Plan documents-2000 and 2008.
10. Reviewing and understanding Lyons Recovery Action Plan (LRAP) with a focus on the Parks and Recreation Section/Parks and Recreation Recovery Working Group Program Development Guides (PDG’s) section, namely the Meadow Park Flood Recovery Project PDG.
11. Reviewing Lyons Ecology Board’s Sustainable River Corridor Action Plan.
12. Understanding park design in relation to Town of Lyons Comprehensive Planning Goals-2010.
13. Consulting with the St. Vrain Master Plan Team (Collaborative Decision Resources and Baker and Associates) to understand the current finding of the St. Vrain Master Plan Process as it relates to Bohn Park Design.

14. Working cooperatively with Colorado Parks and Wildlife on design of Whitewater Features to ensure inclusion of fish passage and other necessary environmental and habitat considerations.
15. Contacting and working cooperatively with local ditch companies to ensure reconnection and alignment of ditches through Bohn Park. Explore best case scenarios for fish passage, recreational consideration, and other habitat concerns regarding diversion structures.
16. Facilitating all necessary pre-permit meetings with Colorado Parks and Wildlife, Army Corps, USFWS and any other necessary agencies as appropriate.
17. Facilitating any needed public meetings to gather input in order to work from concept to final design phase.
18. Presenting concepts and final designs to Parks and Recreation Commission for recommendation and to Board of Trustees for final approval.
19. Reviewing trash and recycling collection with inclusion of design for on-site dumpsters.
20. Reviewing parking payment system with goal of instituting design for automated or gated system for vehicles at entrance and exit.
21. Designing improvements to park entrance.
22. Providing design development, construction plans/documents and specifications sufficient to complete bidding process and final construction of Bohn Park.
23. Providing construction plans/documents and specifications to reclaim and stabilize the St. Vrain Stream Channel in accordance with state and federal regulations.
24. Providing construction plans/documents and specifications to rebuild all access road and parking areas.
25. Taking responsibility for coordination of submittal reviews and ALL permitting processes including local flood plain permits, Army Corp 404 permits, environmental permitting, and so on.
26. Providing quantity take off's, volume calculations, pricing information and supporting documentation to the Town for its records and submittal to the Federal Emergency Management Agency ("FEMA") and other agencies for reimbursement of costs related to the flood disaster.
27. Providing a detailed project schedule highlighting the critical path and milestones.
28. Holding weekly progress meetings, record and distribute meeting minutes.
29. Preparing presentation materials, (graphics, charts, electronic presentation materials etc. as needed) and presenting to the Lyons community at stakeholder meetings, Parks and Recreation Commission, Lyons Town Board of Trustees and other stakeholders as requested.
30. Assisting the Town in determining "enhancements" to pre-flood conditions in the design phase to better determine which funding sources might be used to better fund components of the project.
31. Preparing and implementing detailed Bid Documents to include all design elements on drawings and specifications.
32. Evaluating bid documents and preparation of recommendation to Lyons staff.
33. Keeping and providing a project file or binder with all relevant project documentation.
34. Provide construction drawings stamped by designer/engineer and architect as required to include updated details, drawings, and current date.
35. Assisting the Town of Lyons with any construction administration that may be needed once the project is awarded for construction, including assisting with any ASI's, RFI's,

missing detail, or changes that may result during the construction phase as a result of lack of plan detail, needed updates or needed field adjustments.

Progress Reporting

The Consultant and the Town of Lyons project manager shall hold progress meetings as often as necessary, but in no case less than once a week until the final plan is approved by the Lyons Board of Trustees for the purpose of progress reporting. The consultant shall supply the project manager with at least two (2) copies of all completed or partially completed reports, studies, forecasts, maps or plans at least one (1) working day before each progress meeting. The project manager shall assist in scheduling all aforementioned staff, board and commission meetings and other meetings, as necessary, at key times during the development of the final plans and bid documents.

Consultant qualifications must, at a minimum, include the following:

- Demonstrated experience in developing and implementing successful innovative solutions to complex community park redevelopment and renovations and the ability to identify, recommend and implement cost-effective improvements that can be easily maintained with minimal staff while keeping sustainability and longevity in mind.
- Ability to work collaboratively with Lyons staff, Board and Commission members, Lyons residents, and various other stakeholders.

A. ITEMS TO BE PROVIDED TO THE TOWN OF LYONS:

At a minimum, the following items will be required as deliverable products for this project:

1) **Public Outreach and Diagrams** are required to depict the general work area and should include an aerial image underlay of the proposed line work for the roads and drainage features. The exhibit should be prepared on 24" x 36" or larger with a scale to fit the work area onto one or two sheets. The Consultant will also be required to provide a narrative that discusses the key and salient issues with this project including, but not limited to, drainage; construction sequencing, neighborhood impacts, user impacts and mitigation.
2) **Drainage and Hydraulic Report** of work area and upstream tributary basin including the reconciliation of the drainage features upstream, determining flow rates for minor and major storms, design the drainage system to fit within the existing lands owned by the Town including runoff mitigation detention ponds or similar. Consultant will work with the Town Engineer to determine limits of the basin in consideration of the Town's Drainage Master Plan and current conditions. The report shall include calculations and sketches of the existing and proposed hydraulic structures and the 100-year floodplains.

   Hydraulic models (HEC-RAS) of the selected alternative shall be prepared to compare the existing and proposed condition with the historic condition floodplain models. The Town will provide an "Existing Conditions" model. The Consultant will be required to provide a No-Rise certification based on the selected alternative and supporting conditions. This no-rise will be with respect to the current effective flood plain, as in place prior to the flood. The no-rise will be based on the current flow rate for the entire Town and not the recently adopted higher flow rate. If the consultant is not able to demonstrate no-rise, then a CLOMR/LOMR may be necessary for the project and would be accommodated by amendment to the contract.

Hydraulic Study

Existing Flood Plain Model

Using HEC-RAS, re-configure and update the Town's effective hydraulic model for this reach based on the new survey and mapping including the importing of the cross sectional data, and then adjusting the model to account for ineffective flow areas, obstructions, cross section data and other elements of the model that would need to be adjusted for the flood plain analysis for current FEMA rules and regulations.

Baseline Modeling

Run the new model to determine the effect of the current regulatory 10-year, 100-year and 500-year flood plains and the floodway and compare that to the current model and FIS Mapping.

Planning

Create options to build into the model to evaluate criteria as required in the restoration design of the various elements of infrastructure, creek structures and parks, including mitigation options. Complete an updated model in HEC-RAS to support the chosen design options. Determine if proposed improvements create a rise in the flood plain versus the current FIS. If so, consult with Town on process and if a CLOMR will be necessary. If not, provide a no-rise certification for the Town records. Expect iterations in this process to fine tune design. The desire is to avoid a CLOMR/LOMR process. Modeling efforts are expected to extend to tie into existing HEC-RAS conditions in the provide model of record.

3) **Geotechnical Report** showing the results of borings as needed for the project. The report shall provide recommendations for the required pavement thickness, foundations and related items for all project work. For this project, anticipate adequate borings (no less than three) for service roads, new shelter facilities/foundations, footers for play equipment, and various other park amenities.

4) **Utility Investigation Report** summarizing utility coordination contacts, results and descriptions of anticipated utility impacts, conflicts and relocations. In preparing the report the Consultant will locate and pothole existing utilities and irrigation structures and or ditches to identify any conflicts the proposed design. If conflicts are identified the Consultant will provide feasible solutions and coordinate the design with utility owners and irrigation ditch owners. The Consultant shall incorporate comments/solutions into the final design. All design services to relocate impacted utilities or supply new utilities for new facility design shall be included in this scope.

5) **Survey Work:** Design survey of work area depicted in concept plan extending offsite to including recently completed park improvements, creek cross sections, structures in creek and upstream/downstream bridges. Include above and below ground utilities. Include all above ground features and structures. All trees shall be surveyed and labeled by caliper and common name identified on the plan. Playground equipment and other existing park amenities shall be surveyed in sufficient detail to allow for expansion and further design purposes. Check with Town as some survey information is available for this area. The Town of Lyons has completed survey work of the area and that survey is available upon request. Supplemental surveying needs shall be identified and included as part of the proposal. A licensed

professional land surveyor in the State of Colorado shall prepare an updated land survey map focusing on the area of the project from Park Street south to the Bohn Park Entrance.

The Consultant shall research plats and county records to confirm the existing right-of-way, easements, property lines and ownership. Consultant shall updated and provide a property ownership map based on tax records and determine if any additional right-of-way and/or easement is required to construct the proposed improvements. This work shall be conducted in an aggressive manner to allow adequate time for any land acquisition or easement acquisition process if deemed necessary. If additional right-of-way or easement is required for the improvements, the Consultant will be asked to provide a proposal to prepare ROW and/or easement plans, hold a plan review with Town and land acquisition personnel to determine the sufficiency of ROW and or easement plans.

The Consultant shall plot existing and required right of way/easement, property lines and ownership information, on a right of way map. Calculate areas of parcels, easements and remainders using the CDOT Right of Way Manual as a guide. Prepare legal descriptions and exhibits, as necessary.

Creek and In-Creek Structures

- Collect cross sections and structure data for creek. Cross sections will be located at approximately 200' intervals and should include cross sections at existing FIS locations. Cross sections are generally located within the creek erosion zone.

Deliverables

- Autocad based survey with surface model and point data, layering per AIA for all existing features. Files shall be in town approved coordinate and datum and including all monuments and a minimum of four reference control points.

6) **Final Plans and Specifications** should have formatting and guidelines that at minimum should include (but may not be limited to):

- Cover Sheet
- Standard Plans List
- Typical Sections
- General Notes and Abbreviations
- Survey Control Diagram
- Removal/Demolition Sheets
- Plan and Profile Sheets
- Grading and Drainage Sheets, along with 3d model of site, 2nd sections as necessary
- Erosion Control and Scour Sheets
- Construction Phasing Plans
- Park Layout Plans
- Building Design Package including Specs
- Creek Design Plans and Whitewater Feature Designs

- Design and Specs for all individual Park Amenities-playgrounds, buildings, fences, gates, signage, grills, tables, etc.
- Erosion Control and Storm Water Management
- Detail Sheets
- Signing and Striping Plan
- Lighting and Electrical Plans
- Construction Traffic Control/Phasing Plan
- Erosion Control Plan & Details
- Cross Sections

7) **Environmental Documentation** including investigation and completion of all environmental documentation deemed necessary for constructing the project. The Consultant will perform and coordinate all environmental clearances for the project. The Town of Lyons will provide existing FEMA REC and other appropriate funding source documentation for guidance. Consideration of the consequences and impacts of the proposed project with respect to the following items is required and paramount: land use, air quality, floodplain/wetland, T&E species, noise impacts, hazardous waste, cultural/historical resources, impacts to existing residents, and flood mitigation/recovery. The FEMA *Record of Environmental Consideration (REC) Report will be* provided to guide the consultant through the required clearances and processes.

   The consultant will be responsible for investigating applicable requirements, and preparing documents in accordance with current federal and state environmental regulations including the National Environmental Policy Act of 1969 (NEPA) and current revisions.

   If existing wetlands within the project area are disturbed, the Consultant will conduct a wetland determination, and if needed, a wetland delineation survey. The wetland delineation shall be conducted in accordance with the federal guidelines of the U.S. Army Corps of Engineers. Wetland boundaries will be surveyed and inserted into the project plan sheets, and temporary and/or permanent impacts determined. Please see **Attachment D,** Environmental Clearance Requirements.

8) **Erosion Control Plan** for all project work will be submitted. The Erosion Control Plan will include permanent water quality features, suggested erosion and sediment control devices for construction the bridge and may be used by the construction contractor in developing the Storm Water Management Plan (SWMP).

9) **Final (Construction Documents and Bid Documents) Review** include construction plans, specifications and cost estimates for completeness and accuracy. The Consultant will deliver project Technical Specifications and Special Provisions and the final Engineer's Opinion of Cost estimate in hard copy and in electronic spreadsheet files. The Consultant will prepare 95% construction documents, including plans, tabulation sheets of all construction quantities and traffic control devices for the project, details, technical specifications and Special Provisions, and cost estimates for a final review.

   The Consultant will prepare 100% construction documents, including plans, tabulation sheets of all construction quantities and traffic control devices for the project, details, technical specifications and Special Provisions, and cost estimates for a final review.

   These documents when complete will be complete and sufficient to issue for bidding as well as stamped and useable construction documents.

10) **Design Standards for Park Amenities-**The consultant will work with town staff to update its existing "kit of parks" or parks design standard booklet (in compliance with state and federal guidelines including ADA standards) for trash and recycling stations, signage, picnic tables, benches, restroom features, etc. This will assist Lyons parks in its recovery process and assist with future operations.

11) **Park Signage Plan**-The consultant will work with Town Staff to ensure the park can fully operate upon construction by establishing a signage plan for traffic flow, pedestrian flow, and all facilities and amenities.

12) **Project Binder** must be prepared by the consultant in the form provided by the Town. The project binder is a comprehensive record of the project from design through construction. Consultant will prepare the binder and turn it over to the Town upon the completion of the design services. The binder includes primary and critical documents and photographs for the project including studies, reports, correspondence, contracting and other critical tracking items. At the end of this phase, all documents leading to the bidding phase will be included however the remainder through bidding and construction will remain vacant. The consultant will need to provide two versions of the project binder with a CD-ROM/flashdrive including pdf's and autocad files of all project data.

Required Submittals-All submittals are subject to approval by the Town of Lyons Project Manager.

The following is a list of items, at a minimum, to be submitted by the Consultant. The omission of an item from this list does not relieve the Consultant from preparing and submitting any required information to complete this project.

- Drainage/Hydraulic Report
- Geotechnical Report
- Utility Investigation Report
- Survey Report(s)
- Progress Reports
- Permission(s) to Enter Property
- Traffic Control Plan(s)
- Project Control Diagram Plan
- Copies of Research Documents (Plats, Deeds, etc.)
- Preliminary Ownership Map(s)
- Existing/Proposed Right of Way Plans
- Technical Specifications/Special Provisions
- Opinion of Probable Costs
- Environmental Documentation/Reports/Permitting
- Project Binder
- Park Standard Specification Book (Update)
- Park Signage Plan
- Final (95%), and 100% Design Plans
- Bid Documents

Electronic Data Submittals Electronic Data shall be submitted in a format that is usable by the Town of Lyons. The primary windows based computer software that is currently used by Town of Lyons is:

- Drafting –AutoCAD Civil 3D 2012 or greater
- Plotting -Adobe PDF
- Word Processing -Microsoft Word 2010
- Spreadsheets -Microsoft Excel 2010

B. ITEMS TO BE PROVIDED BY THE TOWN OF LYONS

- Lyons Flood Recovery Bohn Park Plan-Preferred Alternate
- Lyons Flood Recovery Planning Process-Public Comment, Information and Plans www.lyonsparksmp.com
- Lyons Recovery Action Plan (including Program Development Guides-PDG's) and Implementation Table in PDF Format
- 2014 Colorado Parks and Wildlife Fishing is Fun Grant-Lyons St. Vrain Aquatic Restoration Project
- Colorado Parks and Wildlife State Trails Grant-2013 Lyons St. Vrain Corridor Trail Recovery Project
- Lyons Parks, Recreation and Cultural Events Parks, Open Space and Trails (P.O.S.T.) Master Plans-2000 and 2008
- Lyons Valley River Park Master Plan
- Lyons Comprehensive Plan-2010
- Parks Damage Assessments for FEMA PW20 and PW35
- Lyons PW20 Hazard Mitigation Proposal for Meadow Park Whitewater Features
- Post-Flood LiDAR
- Draft of St. Vrain Watershed Masterplan
- Ecology Board's Sustainable River Corridor Action Plan
- All applicable FEMA Forms and information regarding program guidelines
- Basic Contract Forms for inclusion in the Project Manual – Contract; General Conditions; Invitation to Bid; Instructions to Bidders; Notice to Proceed; Notice of Intent to Award; Conditional and Final Lien Waiver Forms; Change Order Form
- Town of Lyons Design and Construction Standards in pdf form
- Special Details of the Town of Lyons in pdf form
- Construction plans for the St. Vrain Stream Restoration project along with all modeling of flows

Section V. RFP PROPOSAL RESPONSE

Submittals are due at the Lyons Department of Parks, Recreation and Cultural Events Office for time and date recording on or before **3 P.M. Mountain Time on Monday, February 25th, 2016 by 3 pm MST**.

Deliver Six (6) bound copies of your submittal and an electronic version on a CD ROM/flash drive, submitted in a sealed envelope, clearly marked as **2016 Lyons Bohn Park Flood Recovery Final Design and Bid Project PW20E**, to the Parks and Recreation Department, 432 5th Avenue, Lyons, CO 80540.

All Proposals must be received and time and date recorded by authorized Town staff by the above due date and time. Sole responsibility rests with consultant/team to see that their RFP response is received on time at the stated location. Any responses received after due date and time will be considered at the discretion of the town.

The Town of Lyons reserves the right to reject any and all responses, to waive any informalities or irregularities therein, and to accept the proposal that, in the opinion of the Town, is in the best interest of the Town of Lyons. Due to the complexity of work required, selection of a team or firm will not be based solely upon the lowest responsible bid but will also take into account experience gained from work on similar projects, previous knowledge and experience working with the Town of Lyons and an understanding of the project goals and approach to the project.

Digital copies of the Bidding Documents will be available beginning **February 3, 2016** on-line on the Town of Lyons website @ www.townoflyons.com

Section VI. PROPOSAL SUBMISSION

Following are the response requirements for this RFP. All specific response items represent the minimum information to be submitted. Deletions or incomplete responses in terms of content or aberrations in form may, at the Town's discretion, render the proposal non-responsive.

Offerors shall submit in a sealed package:

- One (1) Original Proposal, identified as "Original"
- Five (5) Copies of Proposal
- One Copy of Proposal on a CD-ROM/flashdrive – Include both original and public viewing versions, if applicable

To facilitate the evaluation, offeror shall submit and organize all responses in the same order as listed below in Response Format-Section VII. Proposals that are determined to be at a variance with this requirement may not be accepted. The Town only accepts proposals in hard copy format and does not accept proposals submitted via fax, email, or other electronic means.

The outside of the package will include the following information:

- Company Name
- RFP Number
- RFP Title
- Due Date and Time

Section VII. RESPONSE FORMAT

The following items are to be included in your proposal, in the order listed. Deviation may render your proposal non-responsive. Maximum proposal length is 35 pages (excluding cover letter, Illegal Alien Certificate, Proposal Acknowledgement, and any attachments).

A. Cover Letter

Include a cover letter introducing your company, summarizing your qualifications, and detailing any exceptions to this RFP (please note that significant exceptions may make your proposal nonresponsive). This letter should also provide principal contact information for this RFP, including address, telephone number, fax number, e-mail, and website (if applicable).

B. Use of Subcontractors/Partners

There may be areas for use of subcontractors or partners in this project. If you are utilizing this approach, your proposal must list the subcontractors/partners, their area(s) of expertise, and include all other applicable information herein requested for each subcontractor/partner. Please keep in mind that the Town will contract solely with your company, therefore subcontractors/partners remain your sole responsibility.

C. Minimum Mandatory Qualifications of Offeror. The lead proposer must specialize in providing LANDSCAPE ARCHITECTURE/LANDSCAPE PLANNING AND STREAM RESTORATION services and have successfully completed the design of at least two similar projects in the past five years. The Consultant's proposed Project Manager must have five (5) years of experience (minimum) in designing/managing similar projects. The Consultant team shall perform all work under the direction and supervision of a Licensed Professional Engineer, Surveyor, Architect, and Landscape Architect, registered with the Colorado State Board of Registration (DORA) currently licensed with the State of Colorado.

Include an itemized description of how your company meets the minimum mandatory qualifications. Failure to meet or exceed these requirements may disqualify your response.

D. Company Information

1. Provide the following information as listed: Company Name, Address, Phone Number, and Names of Principals.
2. Identify the year in which your company was established and began providing consulting services.
3. Describe any pending plans to sell or merge your company.
4. Provide a comprehensive listing of all the services you provide.

E. Evaluation Criterion #1 – Company and Personnel Qualifications. Describe your business philosophy and identify the individuals who will be involved in the project, their responsibilities and amount of time each is expected to spend on the project. Include a brief description of the design team's previous experience with similar projects. Provide resumes of the key personnel that will be performing the proposed services, including the primary project manager. Changes in the project team may not be made unless conditions beyond the control of Consultant develop, in which case, changes in above personnel may be made only upon advance written approval by Town. The Town reserves the right to request changes in personnel of Consultant working under this Agreement.

Information should include, but is not limited to:

1. Provide the names and resumes of the key personnel that will be performing the proposed services, including the primary project manager and the percentages of time they will be involved with the project.
2. Provide a complete list of all sub-consultants the lead firm will use for the project along with an organizational chart showing relationship of each consultant to the lead firm. Include the amount of time that each is expected to spend on the project.

    a. Provide a statement of past projects where the team or members of the team have worked together and identify which team members were involved and the name and location of those projects.

b. Indicate for each sub-consultant team member, the primary contact and names and titles of their work group members.

c. Provide a chart showing each sub-consultant, primary contact name, phone number, email address, and mailing address.

d. Provide a short statement for the lead consultant and each sub-consultant noting their expertise in their area of consulting and why they have been selected as part of the project team. It is important to clarify each team member's qualifications and experience in their area of responsibility.

3. Demonstrate the ability, capability and skills necessary to perform the Contract or provide the services required to successfully complete this project.

F. Evaluation Criterion #2 - Recent Experience with Similar Projects.

1. Demonstrate the ability, capability and skills necessary to perform the Contract or provide the services required to successfully complete this project.
2. List a minimum of two (2) projects of similar nature to this project that the lead consultant and the sub-consultants have had DIRECT involvement within the past five years. Be specific on why the referenced projects are similar to this project. Include the referenced project name, a brief description, original budget, final cost, if the project was completed on time and a reference name and phone number.
3. Discuss your familiarity with the Town of Lyons, Boulder County, CDOT Local Agency Projects and local construction conditions as they pertain to this project. The quality of performance on previous Town Contracts or services will be considered. Failure on the part of any Consultant to carry out a previous contract satisfactory shall be deemed sufficient cause for disqualification.
4. Additionally, provide a list of three (3) references/customers that either have received or are currently receiving services similar to the scope of services required by the Town under this RFP (list must include name, address, telephone number, email address and contact person). The Town reserves the right to contact the references provided in your proposal as well as other references without prior notification to you.

G. Evaluation Criterion #3 - Approach to Scope of Work.

1. Describe any project approaches or ideas that you would apply to this project that you think would enhance the quality of your services. Provide detailed information about what makes your approach unique and best suited for this project.
2. Describe how the firm will accomplish the work in an effective and timely manner. Include design philosophy, project control, project schedule, understanding of project scope, awareness of issues, and potential issues/problems that would need to be addressed early in the design process to prevent delays.
3. Explain the proposed work plan with a detailed description of the specific tasks as noted in the Scope of Services of this RFP. Include additional tasks and their purpose as needed to explain completing the work. Include critical path items, milestones and completion dates on the schedule.
4. Describe the methods and timeline of communication your firm will use with the Town's project manager, other involved Town staff, and other interested parties.

H. Evaluation Criterion #4 – Project Control.

1. Describe how your firm will control costs for this project and meet schedule requirements.
2. Describe what software or methods your company utilizes to establish and track the project timeline/schedule. Identify how the design schedule (internal checks & balances) is monitored to ensure that key milestone dates are met. Indicate if any previous project designs exceeded the project schedule and if so, explain why and what steps have been taken to ensure it does not occur on the future projects.

I. Evaluation Criterion #5 – Proposed Scope of Work and Fee.

1. Provide a detailed breakdown of fees and expenses to complete the scope of work identified. Include description of work items included in fee that are not specifically identified in the request, but the proposer believes are necessary to complete the scope. Include costs for these other items separate from the base fee. The Town is budgeting 3% of the design costs for reproduction and advertising and the consultant shall indicate if they believe this to be sufficient for their scope of work.

J. Illegal Alien Certificate. This required form is included as **Attachment A**.

K. Proposal Acknowledgement. Include this form as provided in **Attachment B**.

L. Affirmative Action Steps. Include this form as provided in **Attachment C.**

M. CONTRACTOR'S CERTIFICATION OF COMPLIANCE. Include this form as provided in **Attachment D.**

N. ATTACHMENT ENVIRONMENTAL CLEARANCE REQUIREMENTS. Attachment E.

O. FEMA Requirements. This required form is included as Attachment F.

Section VIII. EVALUATION AND AWARD

A. Proposal Evaluation

All proposals submitted in response to this RFP will be evaluated by a committee of Town and local board and commission representatives, in accordance with the criteria described below. These criteria will be the basis for review of the written proposals and for determining the short-list of consultants for interviews (if required). Total scores will be tabulated, and the consultant with the proposal that is deemed to be the most advantageous to the Town will be selected. If the Town requests presentations by short-listed offerors, committee members may revise their initial scores based upon additional information and clarification received in this phase. In preparing responses, offerors should describe in great detail how they propose to meet the specifications as detailed in the previous sections. Specific factors will be applied to proposal information to assist the Town in selecting the most qualified offeror for this contract. Evaluation criteria that will be used are as follows, listed in order of relative importance:

1. **Evaluation Criterion #1** - Company and Personnel Qualifications

- Qualifications and abilities of professional personnel
- Experience on similar projects as a team
- Commitment of key members to project
- Firm's size, organizational structure and flexibility
- Firms technical disciplines and capabilities of sub-consultants on team

2. **Evaluation Criterion #2** - Recent Experience with Similar Projects

- Firm's recent, relevant project history (Town, CDOT – Region 4, etc.)
- Demonstrated ability to control costs
- Demonstrated ability to meet schedule
- Demonstrated ability to do quality work

- **Evaluation Criterion #3** - Approach to Scope of Work
- Firm's demonstrated clear understanding of the project goals
- Aggressiveness of project schedule
- Has the firm formulated a successful approach to the project?
- Where appropriate, are possible design alternatives suggested?
- Where appropriate, has the firm exhibited sensitivity to public concerns?

3. **Evaluation Criterion #4** - Project Control

- Cost Control
- Scheduling Method
- Quality Control

4. **Evaluation Criterion #5** – Proposed Scope and Fee

- Does the Scope of Work align with the Listed Scope and the Town's Goals
- Has the consultant identified innovative alternatives or well thought out additions to the scope
- Is the fee commensurate with the scale and type of work

A presentation and/or demonstration may be requested by short-listed offerors prior to award. A presentation/demonstration may not be required, and therefore, complete information should be submitted with your proposal.

B. Determination of Responsibility of the Offeror

The Town awards contracts to responsible vendors only. The Town reserves the right to make its offeror responsibility determination at any time in this RFP process and may not make a responsibility determination for every offeror. As used in this RFP, "Responsible offeror" is one who has "the capability in all respects to perform fully the contract requirements, presents, perseverance, experience, integrity, reliability, capabilities, facilities, equipment, and credit which will assure good faith performance." The Town reserves the right to request information as it deems necessary to determine an offeror's responsibility. If the offeror fails to supply the requested information, the Town shall base the determination of responsibility upon any available information or may find the offeror non-responsible if such failure is unreasonable.

C. Period of Award

The effective date of providing the required product and services shall be from award of the contract through completion of final design services.

Section IX. ADMINISTRATIVE INFORMATION

A. Issuing Office:

The Town of Lyons agent listed herein is to be the sole point of contact concerning this RFP. Offerors shall not directly contact other personnel regarding matters concerning this RFP or to arrange meetings related to such.

B. Official Means of Communication:

All official communication from the Town to offerors will be via e-mail. The Town will post notices that will include, but not be limited to, any modifications to administrative or performance requirements, answers to inquiries received, clarifications to requirements, and the announcement of award.

C. Inquiries:

Prospective offerors may make written inquiries by e-mail before the written inquiry deadline concerning this RFP to obtain clarification of requirements. There will be opportunity to make inquiries during the pre-proposal conference, if any. No inquiries will be accepted after the deadline. Inquiries regarding this RFP (be sure to reference RFP number) should be referred to:

E-Mail: Snystrom@townoflyons.com

Subject Line: **2016 Lyons Bohn Park Flood Recovery Final Design and Bid Project PW20E**

Response to offerors' inquiries will be e-mailed in a timely manner. Offerors cannot rely on any other statements that clarify or alter any specification or other term or condition of the RFP.

Should any interested offeror, sales representative, or manufacturer find any part of the listed specifications, terms and conditions to be discrepant, incomplete, or otherwise questionable in any respect, it shall be the responsibility of the concerned party to notify the Town of such matters immediately upon discovery.

D. Insurance:

The successful contractor will be required to provide a Certificate of Insurance or other proof of insurance naming the Town of Lyons and it's agents as "additional insured". Coverage must include COMMERCIAL GENERAL LIABILITY coverage with minimum limits of $1,000,000, and WORKERS COMPENSATION coverage with limits in accordance with State of Colorado requirements. Contractor must provide Town with proof of EMPLOYER'S LIABILITY coverage with limits of at least $500,000.

COMPREHENSIVE AUTOMOBILE LIABILITY is also required, with minimum limits for bodily injury and property damage coverage of at least $1,000,000, plus an additional amount adequate to pay related attorneys' fees and defense costs, for each of Consultant's owned, hired or non-owned vehicles assigned to or used in performance of this Agreement. The Town, Boulder County, and Colorado Department of Transportation (CDOT) shall be named as additional insureds for General and Auto Liability Insurance. Awarded offeror must present the Town and CDOT with proof of PROFESSIONAL LIABILITY COVERAGE with a minimum limit of $1,000,000.

E. Modification or Withdrawal of Proposals:

Proposals may be modified or withdrawn by the offeror prior to the established due date and time.

F. Minor Informalities:

Minor informalities are matters of form rather than substance evident from the response or insignificant mistakes that can be waived or corrected without prejudice to other vendors. The Town may waive such informalities or allow the vendor to correct them depending on which is in the best interest of the Town.

G. Responsibility Determination:

The Town will make awards only to responsible vendors. The Town reserves the right to assess offeror responsibility at any time in this RFP process and may not make a responsibility determination for every offeror.

H. Acceptance of RFP Terms:

A proposal submitted in response to this RFP shall constitute a binding offer. The autographic signature of a person who is legally authorized to execute contractual obligations on behalf of the offeror shall indicate acknowledgment of this condition. A submission in response to this RFP acknowledges acceptance by the offeror of all terms and conditions as set forth herein. An offeror shall identify clearly and thoroughly any variations between its proposal and the RFP in the cover letter. Failure to do so shall be deemed a waiver of any rights to subsequently modify the terms of performance, except as outlined or specified in the RFP.

I. Protested Solicitations and Awards:

Any actual or prospective offeror who is aggrieved in connection with either the solicitation or award of a contract may protest in writing to the Town's Administrator. The protest shall be submitted within three calendar days after such aggrieved person knows, or reasonably should have known, of the facts giving rise thereto. With regard to requirements or specifications set forth in this RFP, it is important for offerors to note that a challenge should be made within three (3) calendar days of when the item being protested is known.

J. Confidential/Proprietary Information:

The Town neither requests nor encourages the submission of confidential/proprietary information in response to this RFP. All proposals will be confidential until a contract is awarded and fully executed. At that time, all proposals and documents pertaining to the proposals will be open for public inspection, except for the material that is proprietary or confidential. However, requests for confidentiality can be submitted to the Town provided that the submission is in accordance with the procedures in this section. Any such requests shall be the *sole responsibility* of the offeror. The Town will make no attempt to cure any information that is found to be at a variance with this procedure. The offeror may not be given an opportunity to cure any variances after proposal opening. **Neither a proposal in its entirety, nor proposal price information will be considered confidential/proprietary.** Questions regarding the application of this procedure must be directed to the contact for the Town listed in this RFP.

Procedure for requesting protection of confidential material:

1. The offeror will submit one (1) additional complete proposal clearly marked "FOR PUBLIC VIEWING." In this version of the proposal, the offeror will black out all text and/or data that it wishes to be considered confidential and denote the information as "proprietary" or "confidential".

2. A written description will accompany the "FOR PUBLIC VIEWING" copy of the proposal identifying the material that the offeror is considering proprietary or confidential. Specific reasoning as to why each item is to remain confidential*, other than* recitation of a specific state or federal statute, is required.

3. Where an offeror has submitted a "FOR PUBLIC VIEWING" version of their proposal, that version will be open to the public while the other copies of that offeror's proposals will be maintained as confidential material. Proposals that are determined to be at variance with this procedure may be declared non-responsive by the Town, and not given further consideration.

Notwithstanding the foregoing procedure, the Town is a public entity subject to the provisions of the Colorado Open Records Act (CORA), and is not waiving either the protections or the obligations of CORA.

K. Acceptance of Proposal Content:

The contents of the proposal (including persons specified to implement the project) of the successful contractor shall become contractual obligations into the contract award. Failure of the successful offeror to perform in accordance with these obligations may result in cancellation of the award and removal of such offeror from future solicitations.

L. RFP Cancellation:

The Town reserves the right to cancel this RFP at any time, without penalty.

M. Negotiation of Award:

In the event only one (1) responsive proposal is received by the Town, the Town reserves the right to negotiate the award for the services with the offeror submitting the proposal in lieu of accepting the proposal as is.

N. Contract:

The successful proposer must enter into a contract with the Town of Lyons in a form to be provided by the Town.

O. RFP Response/Material Ownership:

All material submitted regarding this RFP becomes the property of the Town of Lyons, unless otherwise noted in the RFP.

P. Incurring Costs:

The Town is not liable for any cost incurred prior to issuance of a legally executed contract and/or a purchase order.

Q. Utilization of Award by Other Agencies:

The Town of Lyons reserves the right to allow other Federal, State and local governmental agencies, political subdivisions, and/or school districts to utilize the resulting award under all terms and conditions specified and upon agreement by all parties. Usage by any other entity shall not have a negative impact on the Town of Lyons in the current term or in any future terms.

R. Non-Discrimination:

The offeror shall comply with all applicable state and federal laws, rules and regulations involving nondiscrimination on the basis of race, color, religion, national origin, age or sex.

S. News Releases:

Neither the Town, nor the offeror, shall make news releases pertaining to this RFP prior to execution of the contract without prior written approval of the other party. Written consent on the Town's behalf is provided by the Communications Specialist.

T. Taxes:

The Town of Lyons is exempt from all federal excise taxes and all Colorado state and local government sales and use taxes. Where applicable, Contractor will be responsible for payment of use taxes.

U. Assignment and Delegation:

Neither party to any resulting contract may assign or delegate any portion of the agreement without the prior written consent of the other party.

V. Availability of Funds:

Financial obligations of the Town of Lyons payable after the current fiscal year are contingent upon funds for that purpose being appropriated, budgeted and otherwise made available. In the event funds are not appropriated, any resulting contract will become null and void, without penalty to the Town.

W. Standard of Conduct:

The successful firm shall be responsible for maintaining satisfactory standards of employees' competency, conduct, courtesy, appearance, honesty, and integrity, and shall be responsible for taking such disciplinary action with respect to any employee, as may be necessary. The Town may request the successful firm to immediately remove from this assignment any employee found unfit to perform duties due to one or more of the following reasons:

(1) Neglect of duty.

(2) Disorderly conduct, use of abusive or offensive language, quarreling, intimidation by words or actions or fighting.

(3) Theft, vandalism, immoral conduct or any other criminal action.

(4) Selling, consuming, possessing, or being under the influence of intoxicants, including alcohol, or illegal substances while on assignment for the Town.

Agents and employees of Contractor or Consultant working in Town facilities shall present a clean and neat appearance. Prior to performing any work for the Town, the Contractor or Consultant shall require each of their employees to wear ID badges or uniforms identifying: the Contractor or Consultant by name, the first name of their employee and a photograph of their employee if using an ID badge. Their employee shall wear or attach the ID badge to the outer garments at all times.

X. Unlawful Employees, Contractors and Subcontractors:

Contractor shall not knowingly employ or contract with an illegal alien to perform work under this Contract. Contractor shall not knowingly contract with a subcontractor that (a) knowingly employs or contracts with an illegal alien to perform work under this Contract or (b) fails to certify to the Contractor that the subcontractor will not knowingly employ or contract with an illegal alien to perform work under this Contract.

1. **Verification Regarding Illegal Aliens:**

   Contractor has confirmed the employment eligibility of all employees newly hired for employment to perform work under this Contract through participation in either the E-verify program administered jointly by the United States Department of Homeland Security and the Social Security Administration or the employment verification program of the Colorado Department of Labor & Employment.

2. **Limitation Regarding E-Verify Program:**

   Contractor shall not use either E-verify or Colorado Department of Labor & Employment program procedures to undertake pre-employment screening of job applicants while performing this Contract.

3. **Duty to Terminate a Subcontract; Exceptions:**

   If Contractor obtains actual knowledge that a subcontractor performing work under this Contract knowingly employs or contracts with an illegal alien, the Contractor shall, unless the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien:

   a. Notify the subcontractor and the Town within three days that the Contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and

   b. Terminate the subcontract with the subcontractor if, within three days of receiving notice that the Contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien, the subcontractor does not stop employing or contracting with the illegal alien.

4. **Duty to Comply with State Investigation:**

   Contractor shall comply with any reasonable request of the Colorado Department of Labor and Employment made in the course of an investigation pursuant to C.R.S. 8-17.5-102 (5).

Y. Damages for Breach of Contract:

In addition to any other legal or equitable remedy the Town may be entitled to for a breach of this contract, if the Town terminates this contract, in whole or in part, due to Contractor's breach of any provision of this contract, Contractor shall be liable for actual and consequential damages to the Town.

Z. Other Statutes:

1. The signatory hereto avers that he/she is familiar with Colorado Revised Statutes, 18-8-301, et seq. (Bribery and Corrupt Influence) and 18-8-401, et seq. (Abuse of Public Office) as amended, and that no violation of such provisions is present.
2. The signatory hereto avers that to his/her knowledge, no Town of Lyons employee has any personal or beneficial interest whatsoever in the service or property described herein. See CRS 24-18-201 and CRS 24-50-507.

Section X. GENERAL REQUIREMENTS OF THE SELECTED PROPOSING FIRM

1. Teams are encouraged to familiarize themselves with the Town of Lyons and its parks system in order to evaluate/confirm the extent of flood damage in relation to pre-flood conditions. Failure to do so will be at the Team's risk.

2. Each proposer shall furnish the information required in the proposal.

3. The Contract/Purchase Order will be awarded to that responsible proposer whose submittal, conforming to the Request for Proposals, will be most advantageous to the Town of Lyons, price and other factors considered.

4. The Town of Lyons reserves the right to reject any or all proposals and to waive informalities and minor irregularities in proposals received, and to accept any portion of or all items proposed if deemed in the best interest of the Town of Lyons to do so.

5. Late or unsigned RFP responses will only be accepted and considered at the Town's discretion. It is the responsibility of proposers to ensure that the RFP response arrives at the Parks & Recreation Office no later than the time indicated in the "Request for Proposal."

6. The proposed price shall be exclusive of any Federal or State taxes from which the Town of Lyons is exempt by law.

7. Any interpretation, correction or change of the RFP documents will be made by Addendum. Interpretations, corrections and changes of the RFP documents made in any other manner will not be binding, and proposer shall not rely upon such interpretations, corrections and changes. The Town's Representative will not be responsible for oral clarification.

8. The successful proposer must maintain and submit to the Town a valid certificate of insurance coverage for the duration of the contract period as outlined in this RFP.

9. The successful proposer will operate as an independent contractor and will not be considered employee(s) of the Town of Lyons, CO.

10. The successful proposer will be paid on actual invoices as work is completed on a monthly basis upon receipt and acceptance.

Attachment A
Illegal Alien Certificate

CONTRACTOR'S CERTIFICATION OF COMPLIANCE

Pursuant to Colorado Revised Statute, § 8-17.5-101,et seq., as amended 5/13/08, as a prerequisite to entering into a contract for services with the Town of Lyons, Colorado, the undersigned Contractor hereby certifies that at the time of this certification, Contractor does not knowingly employ or contract with an illegal alien who will perform work under the attached contract for services and that the contractor will participate in the E-Verify Program or Department program, as those terms are defined in C.R.S. § 8-17.5-101, et seq., in order to confirm the employment eligibility of all employees who are newly hired for employment to perform work under the attached contract for services.

CONTRACTOR:
Company Name Date

_____
Name (Print or Type)

_____
Signature

_____
Title

Attachment B
Proposal Acknowledgement

PROPOSAL ACKNOWLEDGEMENT FORM

PROJECT NAME:_____

Failure to complete, sign and return this submittal page with your proposal may be cause for rejection.

Contact Information Response	Response
Company Name	
Name and Title of Primary Contact Person	
Company Address	
Phone Number	
Email Address	
Company Website	

By signing below I certify that:

- I am authorized to bid on my company's behalf**.**
- I am not currently an employee of the Town of Lyons.
- **N**one of my employees or agents are currently employees of the Town of Lyons.
- I am not related to any Town of Lyons employee or Elected Official.

_____ _____

Signature of Person Authorized on Company's Behalf Date

Note: If you cannot certify the above statements, please explain in the space provided below**.**

Attachment C
FEMA CFR 13.36
Affirmative Steps Taken

Project Name and Number:

Contractor:

1. Place or source you found qualified small and minority businesses and women's business enterprises on solicitation lists? How was this accomplished (please add supporting documentation if applicable)? If this was not done explain why.

2. Assure that small and minority businesses, and women's business enterprises are solicited whenever there are potential sources. How did you reach out to these businesses (add documentation if applicable)? If this was not done explain why.

3. Divide total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises? What requirements were broken out into smaller tasks or quantities? If this did not occur please explain why.

4. Establish delivery schedules, where requirement permits, which encourages participation by small and minority businesses, and women's owned business enterprises. Were you able to established delivery schedules that encouraged these businesses to participate? If not explain why.

5. Use the Small Business Administration and Minority Business Development Agency of Department of Commerce to solicit these businesses. Please confirm these sites were utilized, if they were not please explain why.

6. Require prime contractors to take these steps in subcontracting. Please document that you have encouraged your prime contractors take the five affirmative steps listed above to reach out to small and minority and women's owned business enterprises.

Prepared By:_____ Date:_____

Reviewed By:_____ Date:_____

Approved By:_____ Date:_____

****For each step enter what actions were taken to meet the requirement**

****If the step could not be fulfilled enter reason why in detail**

****Attach any supporting documentation or reports or responses of the businesses contacted**

****EVERY REQUIREMENT HAS TO BE ADDRESSED**

T. Sanders 7/16/15

Attachment D

CONTRACTOR'S CERTIFICATION OF COMPLIANCE

Pursuant to Colorado Revised Statute, § 8-17.5-101,et seq., as amended 5/13/08, as a prerequisite to entering into a contract for services with the Town of Lyons, Colorado, the undersigned Contractor hereby certifies that at the time of this certification, Contractor does not knowingly employ or contract with an illegal alien who will perform work under the attached contract for services and that the Contractor will participate in the E-Verify Program or Department program, as those terms are defined in C.R.S. § 8-17.5-101, et seq., in order to confirm the employment eligibility of all employees who are newly hired for employment to perform work under the attached contract for services.

CONTRACTOR:

_____

Company Name

Date

_____

Name (Print or Type)

_____

Signature

_____

Title

ATTACHMENT E
ENVIRONMENTAL CLEARANCE REQUIREMENTS

The consultant will be responsible for preparing documents in accordance with the National Environmental Policy Act of 1969 (NEPA) and federal, state and local environmental regulations. Most local agency projects will be covered by a Categorical Exclusion (Cat Ex). These documents will be in CDOT's format and the following clearances are expected:

Threatened or Endangered Species

If it is determined that habitat for any threatened or endangered (T&E) species could potentially occur within the project footprint or adjacent to the project site, a biologist qualified to conduct T&E assessments and/or surveys will need to be retained. It will be the biologist's responsibility to follow survey protocol and obtain all applicable permits to conduct the survey.

Wetlands

If it is determined that wetlands exist within the project area, a wetland ecologist or other qualified person will conduct a wetland determination and if needed, a wetland delineation. The wetland delineation shall be conducted according to the guidelines outlined in the 1987 Corps of Engineers (Corps) Wetland Delineation Manual. Wetland boundaries will be surveyed into the project plan sheets, and temporary and/or permanent impacts determined. If the wetlands are jurisdictional, project activities will be subject to Section 404 permitting through the U.S. Army Corps of Engineers (Corps).

Section 404 Permitting

If a Section 404 permit is required, the applicant will be responsible to ensure all conditions of the permit are adhered to, including preparation of a mitigation plan. CDOT requires a copy of the Corps permit.

Noxious Weeds

A noxious weed survey and management plan will be completed if directed. Noxious weed surveys and management plans will only be completed if there is a heavy weed infestation.

Senate Bill 40

Senate Bill 40 requires any state, or state funded project to obtain wildlife certification from the

Colorado Division of Wildlife when construction is planned in any stream, streambanks or tributaries, either under CDOT Programmatic protocol or a formal request, if required. Documentation will consist of the letter sent to the Colorado Division of Wildlife under the Programmatic agreement or a response from the Colorado Division of Wildlife if a formal request was made.

Storm water Discharge Permit Associated with Construction Activity (CDPS)

A CDPS permit is required. A Storm Water Management Plan (SWMP) is one of the requirements for the CDPS permit. All SWMP's must be approved by the Town.

Paleontology

If the project requires any type of excavation (six inches or greater in ground that is not on fill or will affect substrate that is not fill), a Paleontological Survey is required.

Archaeology

If the project requires any type of excavation (six inches or greater in ground that is not on fill or will affect substrate that is not fill), an Archaeological Survey and coordination with the SHPO in accordance with Section 106 of the National Historic Preservation Act must be conducted.

Other

Based on the preliminary determinations regarding the anticipated environmental clearances for a project, additional environmental clearances may be required. The additional environmental clearances could include Environmental Justice, Water Resources, Visual/Aesthetics, Socioeconomic regarding business access changes, etc.

Attachment F

ADDENDUM TO CONTRACT
FEDERAL EMERGENCY MANAGEMENT AGENCY'S GRANT PROGRAM REQUIREMENTS FOR PROCUREMENT CONTRACTS

This is an addendum to the _____ Agreement between ("Contractor"), and Town of Lyons, (the "TOWN").

The parties acknowledge that the above-referenced contract is subject to the provisions of 44 CFR § 13.36 and the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.).

This addendum is hereby expressly incorporated into the agreement between the TOWN and the Contractor. To the extent that the terms of the Agreement and this Addendum conflict, the terms of this Addendum shall control. Nothing in this Addendum shall be construed as making this Agreement contingent upon a Presidential disaster declaration or FEMA's approval or obligation of funds.

The following provisions are hereby added and incorporated into the above-referenced Agreement:

1. ***Contracting with small and minority firms, women's business enterprise and labor surplus area firms.*** (1) The grantee and subgrantee will take all necessary affirmative steps to assure that minority firms, women's business enterprises, and labor surplus area firms are used when possible. 44 CFR§13.36 (e) Procurment, (vi) Requiring the prime contractor, if subcontractors are to be let, to take the affirmative steps listed in paragraphs (e)(2)(i) through (v) of this section.

2. ***EQUAL EMPLOYMENT OPPORTUNITY COMPLIANCE*** *(applicable to all construction contracts awarded in excess of $10,000 by grantees and their contractors or subgrantees; 44 CFR§13.36(i)(3))*

Contractor agrees to comply with Executive Order 11246 of September 24, 1965, entitled "Equal Employment Opportunity," as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR Part 60).

3. ***ANTI-KICKBACK ACT COMPLIANCE*** *(applicable to all contracts and sub-grants for construction or repair; 44 CFR§13.36(i)(4))*

Contractor agrees to comply with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3).

4. ACCESS TO RECORDS

A. The Contractor agrees to provide the Town, FEMA, the Comptroller General of the United States or any their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this Agreement for the purposes of making audits, examinations, excerpts and transcriptions. 44 CFR§13.36(i)(10).

B. The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

C. The Contractor agrees to maintain all books, records, accounts and reports required under this Agreement for a period of not less than three years after the later of: (a) the date of termination or expiration of this Agreement or (b) the date Town makes final payment under this Agreement, except in the event of litigation or settlement of claims arising from the performance of this Agreement, in which case, Contractor agrees to maintain same until the Town, FEMA, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto.44 CFR§13.36(i)(11)

5. CONTRACT WORK HOURS AND SAFETY STANDARDS applicable to construction contracts awarded by grantees and subgrantees in excess of $2,000, and in excess of $2500 *for other contracts which involve the employment of mechanics or laborers; 44 CFR §13.36(i)(6))*

Contractor agrees that it shall comply with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327–330) as supplemented by Department of Labor regulations (29 CFR Part 5), which are incorporated herein.

NOTICE OF REPORTING REQUIREMENTS

A. Contractor acknowledges that it has read and understands the reporting requirements of FEMA stated in 44CFR§ 13.40 et seq., 13.50-13.52 and Part III of Chapter 11 of the United States Department of Justice's Office of Justice Programs Financial Guide, and agrees to comply with any such applicable requirements.

B. The Contractor agrees to include the above clause in each third party subcontract financed in whole or in part with Federal assistance provided by FEMA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions

5. PATENT RIGHTS *(applicable to contracts for experimental, research, or development projects financed by FEMA; 44 CFR §13.36(i)(8))*

A. General. If any invention, improvement, or discovery is conceived or first actually reduced to practice in the course of or under this Agreement, and that invention, improvement, or discovery is patentable under the laws of the United States of America or any foreign country, the Town and Contractor agree to take actions necessary to provide immediate notice and a detailed report to FEMA.

B. Unless the Government later makes a contrary determination in writing, irrespective of Contractor's status (a large business, small business, state government or state instrumentality, local government, nonprofit organization, institution of higher education, individual), the Town and Contractor agree to take the necessary actions to provide, through FEMA, those rights in that invention due the Federal Government as described in U.S. Department of Commerce regulations, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," 37 CFR, Part 401.

C. The Contractor agrees to include paragraphs A and B above in each third party subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance provided by FEMA.

6. NOTICE OF REQUIREMENTS PERTAINING TO COPYRIGHTS

A. Contractor agrees that FEMA shall have a royalty-free, nonexclusive, and irrevocable license to reproduce, publish or otherwise use, and to authorize others to use, for government purposes:

(1) The copyright in any work developed with the assistance of funds provided under this Agreement;

(2) Any rights of copyright to which Contractor purchases ownership with the assistance of funds provided under this Agreement. 44 CFR §13.34, 13.36(i)(8)- (9).

C. The Contractor agrees to include paragraph A above in each third party subcontract financed in whole or in part with Federal assistance provided by FEMA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

8. ENERGY CONSERVATION REQUIREMENTS

A. The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act. 44 CFR § 13.36(i)(13).

B. The Contractor agrees to include paragraph A above in each third party subcontract financed in whole or in part with Federal assistance provided by FEMA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

9. CLEAN AIR AND WATER REQUIREMENTS *(applicable to all contracts and subcontracts in excess $100,000, including indefinite quantities where the amount is expected to exceed $100,000 in any year; 44 CFR §13.36(i)(12)))*

A. Contractor agrees to comply with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR Part 15).

B. Contractor agrees to report each violation of these requirements to the Town and understands and agrees that the Town will, in turn, report each violation as required to assure notification to FEMA and the appropriate EPA regional office.

C. The Contractor agrees to include paragraph A and B above in each third party subcontract exceeding $100,000 financed in whole or in part with Federal assistance provided by FEMA.

10. TERMINATION FOR CONVENIENCE OF TOWN *(applicable to all contracts in excess of $10,000;44 CFR §13.36(i)(2))*

A. Town shall have the option, in its sole discretion, to terminate this Agreement, at any time during the term hereof, for convenience and without cause. Town shall exercise this option by giving Contractor written notice of termination. The notice shall specify the date on which termination shall become effective

B. Upon receipt of the notice, Contractor shall commence and perform, with diligence, all actions necessary on the part of Contractor to effect the termination of this Agreement on the date specified by Town and to minimize the liability of Contractor and Town to third parties as a result of termination. All such actions shall be subject to the prior approval of the Town. Such actions shall include, without limitation:

(1) Halting the performance of all services and other work under this Agreement on the date(s) and in the manner specified by Town.

(2) Not placing any further orders or subcontracts for materials, services, equipment or other items.

(3) Terminating all existing orders and subcontracts.

(4) At Town's direction, assigning to Town any or all of Contractor's right, title, and interest under the orders and subcontracts terminated. Upon such assignment, Town shall have the right, in its sole discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

(5) Subject to Town's approval, settling all outstanding liabilities and all claims arising out of the termination of orders and subcontracts.

(6) Completing performance of any services or work that Town designates to be completed prior to the date of termination specified by Town.

(7) Taking such action as may be necessary, or as the Town may direct, for the protection and preservation of any property related to this Agreement which is in the possession

C. Within 30 days after the specified termination date, Contractor shall submit to Town an invoice, which shall set forth each of the following as a separate line item:

(1) The reasonable cost to Contractor, without profit, for all services and other work the Town directed Contractor to perform prior to the specified termination date, for which services or work Town has not already tendered payment. Reasonable costs may include a reasonable allowance for actual overhead, not to exceed a total of 10% of Contractor's direct costs for services or other work. Any overhead allowance shall be separately itemized. Contractor may also recover the reasonable cost of preparing the invoice.

Taking such action as may be necessary, or as the Town may direct, for the protection and preservation of any property related to this Agreement which is in the possession of Contractor and in which Town has or may acquire an interest.

(2) A reasonable allowance for profit on the cost of the services and other work described in the immediately preceding subsection (1), provided that Contractor can establish, to the satisfaction of Town, that Contractor would have made a profit had all services and other work under this Agreement been completed, and provided further, that the profit allowed shall in no event exceed 5% of such cost.

(3) The reasonable cost to Contractor of handling material or equipment returned to vendor, delivered to the Town or otherwise disposed of as directed by the Town.

D. In no event shall the Town be liable for costs incurred by Contractor or any of its subcontractors after the termination date specified by Town, except for those costs specifically enumerated and described in the immediately preceding subsection (c). Such non-recoverable costs include, but are not limited to, anticipated profits on this Agreement, post-termination employee salaries, post-termination administrative expenses, post-termination overhead or

unabsorbed overhead, attorneys' fees or other costs related to the prosecution of a claim or lawsuit, prejudgment interest, or any other expense which is not reasonable or authorized under such subsection (c).
E. In arriving at the amount due to Contractor under this Section, the Town may deduct:
(1) All payments previously made by Town for work or other services covered by Contractor's final invoice;
(2) Any claim which Town may have against Contractor in connection with this Agreement; **(6)** Any invoiced costs or expenses excluded pursuant to the immediately preceding subsection (d); and
(3) In instances in which, in the opinion of the Town, the cost of any service or other work performed under this Agreement is excessively high due to costs incurred to remedy or replace defective or rejected services or other work, the difference between the invoiced amount and Town's estimate of the reasonable cost of performing the invoiced services or other work in compliance with the requirements of this Agreement.
F. The Town's payment obligation under this Section shall survive termination of this Agreement.

11. TERMINATION FOR DEFAULT
Contractor's failure to perform or observe any term, covenant or condition of this document (Federal Emergency Management Agency's Emergency Management Performance Grant Program Requirements for Procurement Contracts) shall constitute an event of default under this Agreement.
A. Each of the following shall also constitute an event of default ("Event of Default") under this Agreement:
(1) Contractor fails or refuses to perform or observe any other term, covenant or condition contained in this Agreement, and such default continues for a period of ten days after written notice thereof from the Town to Contractor.
(2) Contractor (a) is generally not paying its debts as they become due, (b) files, or consents by answer or otherwise to the filing against it of a petition for relief or reorganization or arrangement or any other petition in bankruptcy or for liquidation or to take advantage of any bankruptcy, insolvency or other debtors' relief law of any jurisdiction, (c) makes an assignment for the benefit of its creditors, (d) consents to the appointment of a custodian, receiver, trustee or other officer with similar powers of Contractor or of any substantial part of Contractor's property or (e) takes action for the purpose of any of the foregoing.

(3) A court or government authority enters an order (a) appointing a custodian, receiver, trustee or other officer with similar powers with respect to Contractor or with respect to any substantial part of Contractor's property, (b) constituting an order for relief or approving a petition for relief or reorganization or arrangement or any other petition in bankruptcy or for liquidation or to take advantage of any bankruptcy, insolvency or other debtors' relief law of any jurisdiction or (c) ordering the dissolution, winding-up or liquidation of Contractor.
B. On and after any Event of Default, Town shall have the right to exercise its legal and equitable remedies, including, without limitation, the right to terminate this Agreement or to seek specific performance of all or any part of this Agreement.

In addition, the Town shall have the right (but no obligation) to cure (or cause to be cured) on behalf of Contractor any Event of Default; Contractor shall pay to the Town on demand all costs and expenses incurred by Town in effecting such cure, with interest thereon from the date of incurrence at the maximum rate then permitted by law. Town shall have the right to offset from any amounts due to Contractor under this Agreement or any other agreement between Town and Contractor all damages, losses, costs or expenses incurred by the Town as a result of such

Event of Default and any liquidated damages due from Contractor pursuant to the terms of this Agreement or any other agreement.

C. All remedies provided for in this Agreement may be exercised individually or in combination with any other remedy available hereunder or under applicable laws, rules and regulations. The exercise of any remedy shall not preclude or in any way be deemed to waive any other remedy Except as modified herein, all terms and conditions of the existing contract between the parties remain in full force and effect.

Accepted by Contractor and Accepted by Town of Lyons on _____, 2015

By:_____
By:_____
Contractor Town Administrator

TOWN OF LYONS PARKS - FLOOD RECOVERY PLANNING PROCESS

JANUARY 19th, 2016

BOHN PARK
PREFERRED ALTERNATE

0 50 200
25 100

LYONS COLORADO · S.O.I · DHM DESIGN

A

B

C

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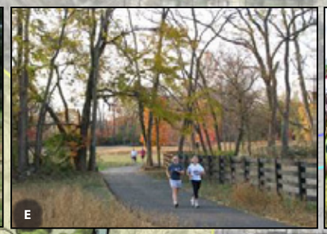
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G

SOFT SURFACE LOOP TRAILS
FUTURE SKATE PARK
BOULDERING/ CLIMBING AREA
EXISTING BIKE PARK
ENHANCE/ EXPAND BIKE PARK INTEGRATE FEATURES FOR YOUNG CHILDREN
NATIVE GRASS

ACCESS TO PICTURE ROCK TRAIL

PROPOSED PLANTING BUFFER PLANTING TO INCLUDE:
- APPROX. 12 TREES (MIX OF DECIDUOUS AND EVERGREEN)
- APPROX. 60-75 SHRUBS

OVERFLOW EVENT PARKING

UNINCORPORATED BOULDER COUNTY

PROPOSED PLANTING BUFFER - NORTH BERM 1 PLANTING TO INCLUDE:
- APPROX. 8 TREES (MIX OF DECIDUOUS AND EVERGREEN)
- APPROX. 20-40 SHRUBS

PROPOSED PLANTING BUFFER - NORTH BERM 2 ADDITIONAL PLANTING TO INCLUDE:
- APPROX. 10 TREES (MIX OF DECIDUOUS AND EVERGREEN)
- APPROX. 40-60 SHRUBS

EXISTING LANDSCAPE WITH PROPOSED PLANTING BUFFER ADDITIONAL PLANTING TO INCLUDE:
- APPROX. 12 TREES (MIX OF DECIDUOUS AND EVERGREEN)
- APPROX. 40-60 SHRUBS

BOHN PARK LIMITS

EXISTING DOG PARK
SHADE STRUCTURE

FOOTBALL FIELD

EXISTING MULTI-USE FIELD

FIELD #1 300' OUTFIELD

FIELD #2 300' OUTFIELD LIGHTED

F SPECIAL EVENT AREA/ MULTI- USE FIELD

SLACKLINE
PICNIC SHELTER
SMALL PLAYGROUND

BATTING CAGE
POSSIBLE CONCESSIONS/ FOOD TRUCK ACCESS

FUTURE 3RD FIELD OPTION/ NATURAL OPEN AREA

EXISTING RESTROOM
TRAIL GATE
SOFT SURFACE TRAIL
EXISTING DITCH

PARK HOST WITH WATER/ SEWER/ ELECTRIC HOOK UP
TENNIS COURTS
GRAVEL PARKING APPROX. 100 SPACES W/ AUTOMATED KIOSK FOR PAID PARKING
PARK ID SIGN
GRAVEL PARKING APPROX. 92 SPACES W/ AUTOMATED KIOSK FOR PAID PARKING
MAINTENANCE ACCESS
TRAILHEAD WITH WAYFINDING KIOSK AND BENCHES

500 YR FLOODPLAIN
100 YR FLOODPLAIN

MOUNTAIN BIKE LOOP TRAILS
RIVERINE AND RIPARIAN ECOLOGICAL RESTORATION
ST. VRAIN REGIONAL TRAIL

PICNIC SPOTS ALONG RIVER

SOUTH ST. VRAIN CREEK
HIGHWAY 7 TRAIL CONNECTION
4TH AVENUE PEDESTRIAN BRIDGE/ GATEWAY

POTENTIAL BUYOUT PROPERTY
WHITEWATER FEATURES

GRAVEL BED/ BEACH AREA
RIVER RECREATION ACCESS

EXISTING DITCH RELEASE WITH WATER FEATURES AND NATURAL PLAY
EXISTING PLAYGROUND WITH POSSIBLE ENHANCEMENTS
MEMORIAL STONE PICNIC AREA
STEPS DOWN TO RIVER
SAND VOLLEYBALL COURTS
PICNIC SHELTERS WITH RESTROOMS
ADA FISHING ACCESS
RIVER OVERLOOK STEPS DOWN TO RIVER

SAINT VRAIN CREEK

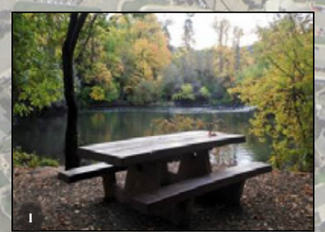
PICNIC SHELTER
EXISTING MULTI-USE COURT
PUBLIC ART ALONG RIVER
TRAIL GATE WITH SPLIT RAIL FENCE
FLOWER PLANTINGS ALONG RIVER
AT GRADE CROSSWALK
TRAIL UNDERPASS

2ND AVENUE

STEPS DOWN TO RIVER
MAYBE BUYOUT PROPERTY
RIPARIAN ECOLOGICAL RESTORATION
2ND AVENUE DOG PARK

OVERFLOW/ EVENT GRAVEL PARKING AREA (APPROX. 150 SPACES) W/ AUTOMATED KIOSK FOR PAID PARKING

H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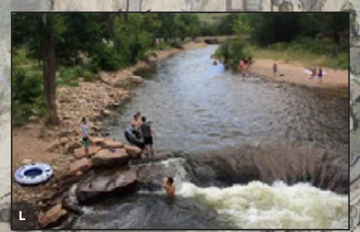
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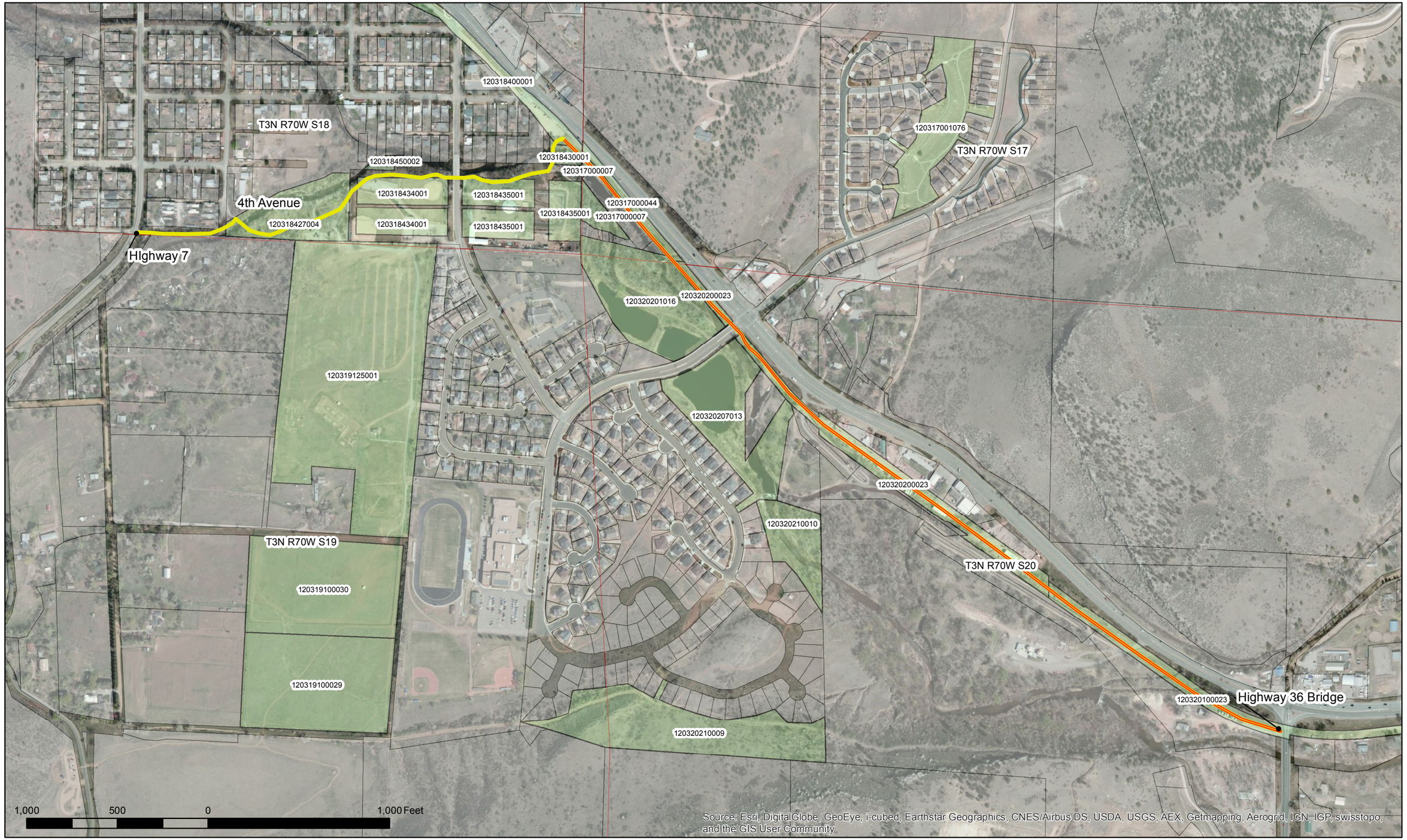


Lyons St. Vrain Corridor Trail Recovery Project
08-01128
July 31, 2014
6(f) Boundary Map Page 1

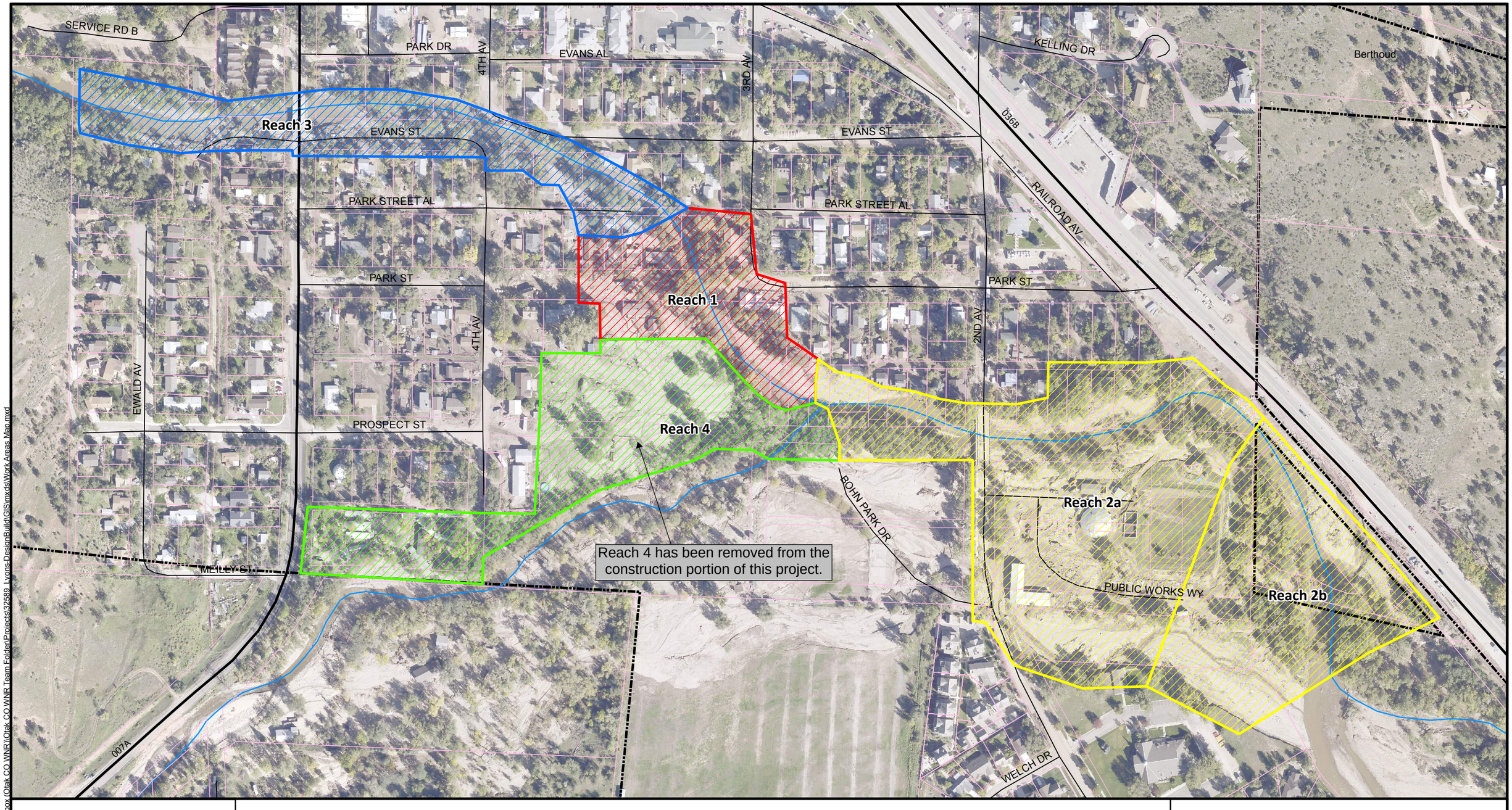
Legend

- Right of Way
- Private Property
- Town of Lyons
- Section Boundary
- 6(f) Boundary
- Lyons St. Vrain Corridor Trail

Project Site = 1.8 Acres
Trail Length = 7845 Feet
Trail Width = 10 Feet

N

S2O
REINVENTING WHITEWATER



otak
HanmiGlobal Partner

HIGHWAYS
LOCAL ROADS
LYONS PARCELS
CITY LIMITS

Reach
1
2a; 2b
3
4

REACH MAP
SAINT VRAIN CREEK DESIGN-BUILD
LYONS, COLORADO

Date: 11/19/2015

0 125 250 500 Feet

N

*This map contains data compiled from multiple sources and is for information purposes only. The data used to create the map are not guaranteed to be complete or accurate. The locations of all features are approximate.

Document Path: C:\Users\lukes\Dropbox (Otak CO WNR\Otak CO WNR Team Folder\Projects\32589_Lyons-DesignBuild\GIS\mxds\Work Areas Map.mxd

2. DHM Proposal

Response to Request for Proposals for

2016 LYONS BOHN PARK FLOOD RECOVERY FINAL DESIGN AND BID PROJECT

Project Number: PW20E

February 25, 2016

DHM DESIGN
LANDSCAPE ARCHITECTURE
URBAN DESIGN + LAND PLANNING
ECOLOGICAL PLANNING

2016 Lyons Bohn Park Flood Recovery Final Design and Bid Project

A. Cover Letter
Introductions to our company and summary of qualifications.

1 **B. Use of Subcontractor/partners**
List of subcontractors we will be using for this project.

1 **C. Minimum Mandatory Qualifications**
Meeting and exceeding the mandatory qualifications.

2 **D. Company Information**
Overview of company information requested.

3 **E. Evaluation Criterion #1 - Company and Personnel Qualifications**
Overview of company information requested and Resumes.

15 **F. Evaluation Criterion #2 - Recent Experience With Similar Projects**
Project experience of our team that are similar in nature to this project.

19 **G. Evaluation Criterion #3 - Approach to Scope of Work**
Our project approach,work plan, timeline, and communication overview.

32 **H. Evaluation Criterion #4 - Project Control**
How our firm will control costs along with software and methods used to stay on schedule and track progress.

33 **I. Evaluation Criterion #6 - Proposed Scope of Work and Fee**
A detailed breakdown of our fees and expenses to complete the scope of work.

J. Illegal Alien Certificate
Attachment A.

K. Proposal Acknowledgement
Attachment B.

L. Affirmative Action Steps
Attachment C.

M. Contractor's Certification of Compliance
Attachment D.

N. Attachment Environmental Clearance Requirements
Attachment E.

O. FEMA Requirements
Attachment F.

DHM DESIGN
LANDSCAPE ARCHITECTURE
URBAN DESIGN
PLANNING

February 25, 2016
Mr. Dave Cosgrove, Director of Parks
Ms. Sloane Nystrom, Parks Project Manager
Town of Lyons Department of Parks, Recreation and Cultural Events
432 5th Avenue
Lyons, Colorado 80540

Mr. Cosgrove, Ms. Nystrom, and Members of the Selection Committee:

We are excited to present to you this proposal for final design services for Bohn Park. You will see from our proposal that we've included a team that has the experience and skills to help you realize your vision to enhance recreation opportunities, build connections , and restore ecological heath to Bohn Park. We are team that has worked together on many complex projects and understand the requirements to develop accurate plans to secure accurate costs from contractors. We understand the volatility of the construction market and have the knowledge, experience and relationships with the construction industry to confidently develop final designs that are within budget, delivered on time, and are managed as smoothly as possible from design, permitting, and construction. You will see from our past work and clients that they have been completely satisfied with the work performed and how well the project has been managed.

Our team has been involved in flood restoration efforts on many of the watersheds affected by the 2013 flood events. We have also worked on numerous park projects with very similar aggressive schedules and programming. We recently completed master planning and designs for a $6.5 million sports park in Aurora within a 5 month time frame for design and construction occurring over the next 10 months.

Our long-standing partnership with S2O has been a seamless integration of services for clients from Montrose, to Boise, to Oklahoma City and with our recent work experience for the Town of Lyons. It is our history together and our understanding of each other's strengths that will allow for the most efficient possible project management for the Town.

We have assembled a team of highly qualified experts in park planning and design to cover a range of services for park and recreation types that are identified in the RFP. I will lead the design team as Principal-in-Charge and Project Manager. As a leader in recreational planning and design I have over 20 years of experience helping communities develop effective and sustainable solutions in park design and construction. My work experience with many of Colorado's communities will provide in-depth knowledge of design, construction, detailing, and project management.

Stephen Ellsperman, DHM Design's Director of Ecological Planning Services, will be a valuable resource in understanding the ecological needs associated with stream and ecological restoration as part of this design effort.

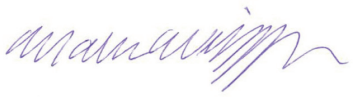
Our design and practice emphasizes the following:

- Deep understanding of construction and design detailing
- Significant track record of working with Colorado municipal parks departments
- Ability to shorten the discovery process by being knowledgeable of the Town's previous planning efforts and previous public meetings with the community
- Ability to meet an aggressive schedule and develop accurate plans
- Extensive experience working within Colorado's rivers and flood recovery projects
- Aligning with clients vision to develop final designs that work for you
- Consistent delivery of projects - on time and within budget
- Collaborative spirit of partnership with the stakeholders

Having assisted the Town of Lyons with Phase 1 of Meadow Park and FEMA Inventory and Flood Damage Assessments, and recently with the development of the Town of Lyons Parks Planning Recovery Process we believe our team has the familiarity and understanding necessary to hit the ground running and work with the Town to meet the accelerated project schedule. We have a strong personal and professional desire to help rebuild after the 2013 floods that will provide the Town of Lyons an even greater asset than before.

We thank you for this opportunity to submit our qualifications and proposal. Please don't hesitate to call me at 720.763.3966 with any questions or concerns.

Sincerely,
DHM Design Corporation



Mark Wilcox, ASLA, PLA
Principal
mwilcox@dhmdesign.com
720.763.3966

B. Use of Subcontractors/Partners

Uncompahgre Riverway: Durango, CO

As a small business with a specialized discipline focus, we team with firms around the country who are the best in their given field and offer the most competitive rates. This is a benefit to you as the client, because it offers a diversity of skills and innovation that you don't find with a single multi-disciplinary corporation. Through years of teaming on countless projects with these very same team members, we fine tuned our logistic and communication efficiencies that bring the best of all worlds to this project.

Our team has successfully collaborated on similar projects. These professional relationships have resulted in a very efficient, effective and creative project process that we will bring to the Town. This team provides the expertise and capacity to produce a plan that addresses the detailed requirements of the RFP, applies tried and true design and project bidding techniques that will result in practical site specific solutions that utilize graphic illustrations and mapping to help illustrate the vision of the final design of Bohn Paark

For the 2016 Lyons Bohn Park Flood Recovery Final Design and Bid Project we have assembled the following sub-consultants. Their Roles and Responsibilities are expanded in Evaluation Criterion #1.

S2O Design and Engineering
Icon Engineering
Barker Rinker Seacat
Ecosystems Services
CivilArts
Shannon & Wilson
Hydrosystems
K.Y.S.E Structural Engineers
The Ballard Group
AEDG
ID Sculpture
Pillar Design Studios
Redstone Cyclery

C. Minimum Mandatory Qualifications

Meeting and Exceeding Qualifications

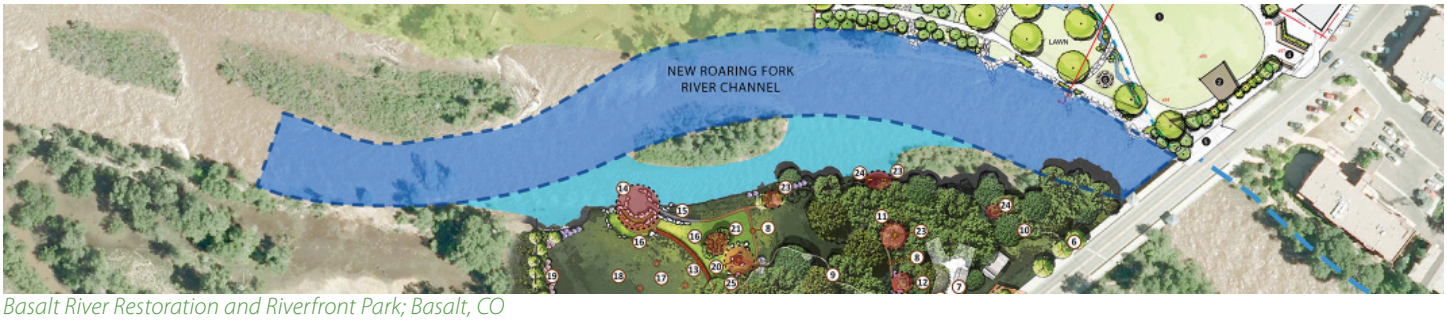
DHM Design is a Landscape Architecture and Planning firm with 40 years of experience. We have successfully completed many similar projects to this one. Recently DHM Design created the Parks Flood Recovery Master Plan for the town. Also, DHM performed damage assessments in Lyons for FEMA funding grants, which included an analysis of all pre-flood open space and recreation amenities determining a replacement cost following the September 2013 flooding. Subsequently, the team was hired to design a Phase 1 redevelopment of Meadow Park, which was a fast track design/construction project that would allow events to be held in 2014. DHM Design has also completed a master plan for Meadow Park that was used for a GOCO funding grant application which resulted in an award of a $1 million dollar grant presented by Governor John Hickenlooper, in order to begin construction in 2015. S2O Design and Engineering was the lead firm for that team and we are happy to have them on our team for this project.

S2O is the world's premier white water park design firm and has become the #1 firm for challenging, unique projects. S2O has worked closely with many communities around the world, including the Town of Lyons, guiding them through the public and design processes required to create internationally acclaimed river corridors and White water parks. DHM Design and S20 are thrilled to work together again for the Bohn Park Flood Recovery Final Design. We have an exemplary history together working on similar projects, such as the Montrose White Water Park and Oklahoma City White Water Park.

The Project Manager for the Final Design and Bid Project for Bohn Park will be Mark Wilcox. Mark has been a Landscape Architect in Colorado for over 20 years (License Number 204).

D. Company Information

DHM DESIGN LANDSCAPE ARCHITECTURE
URBAN DESIGN + LAND PLANNING
ECOLOGICAL PLANNING



Basalt River Restoration and Riverfront Park; Basalt, CO

1. Location and Principals

DHM Design Corporation
900 South Broadway, Suite 300
Denver, CO 80204
Tel: 303.892.5566

Principals:
Laura Kirk, ASLA, President
Mike Gasper, ASLA, CLARB
Bill Neumann, ASLA, LEED AP
Mark Wilcox, ASLA
Ann Christensen, LEED AP
Gregg Brown, ASLA, ULI
Dave Carpenter, AIA
Graham Smith, ASLA, LEED AP, CLARB
Stephen Ellsperman
Karen Current
Joy Gess

2. Year the firm was established

Established in 1975, we are an internationally recognized leader in landscape architecture, land planning, urban design and environmental planning.

3. Pending Plans to Sell or Merge

DHM Design has no plans to sell or merge our company. In 2001, we reorganized DHM Design's corporate structure to become an employee owned company thru the use of an ESOP. As business owners, we all place a higher degree of importance on client satisfaction and success. Our ESOP structure has allowed us to compile a significant cash reserve, quite challenging for most professional corporations. Our cash reserve allows us to "weather the storm" and plan for "sunny days", while maintaining our strong intellectual capacity. We are also able to operate without debt and maintain a strong line of credit, if needed, with well-established banking relations.

4. Comprehensive List of Services Provided

LANDSCAPE ARCHITECTURE
Master Plans
Site Analysis/Design
Revegetation Plans
Concept Alternatives
Construction Documentation/Administration
Landscape Assessments

RESTORATION
Ecological Restoration Design, Implementation, and Management
Wetland Permitting, Design, Delineation, and Monitoring
Constructed Wetland Design and Implementation
Natural Resource Inventory and Management
Natural Resource Permitting
Park and Open Space Management Planning
Sustainable Park Design
Community Forestry Investigation and Management
Trail Design and Management
Botanical Investigations, mapping, and protection
Noxious Vegetation Identification Mapping, and Management
Wildlife Resource Management and Planning

PLANNING
Master Planning
Ecological
Visioning
Entitlements
Regulation Review
Annexation
Zoning/Rezoning
Form Based Codes
Special Use Process
Subdividing
Site Approval
Rural Cluster
Conservation Easements
Permitting Services
Reclamation
Rural Planning
Design Review Committee
Final Design and Development

FACILITATION
Consensus Building
Public Facilitation

URBAN DESIGN
Codes and standards
Development/Design Guidelines
Streetscape
Metro Districts
Infill

VISUAL COMMUNICATION
MARKETING COMMUNICATIONS
Signage
3D Modeling
Graphic Design
Wayfinding
Online Strategies

E. Evaluation Criterion #1 - Company and Personnel Qualifications

Firm Overview and Business Philosophy

DHM is a story of innovation and growth.

Established in 1975, we are an internationally recognized leader in landscape architecture, land planning, urban design and environmental planning. Our experience embraces a diverse portfolio of planning and design projects:

National Park Service
Resorts and Communities
Historic and Civic Facilities
Parks, Open Space, and Greenways
Mixed-use Developments
Urban Transportation Systems
Private Estates and Rural Properties

DHM is employee-owned.

With a staff of 51, we have 5 office locations:
3 in Colorado: Denver, Carbondale, Durango
1 in Raleigh, North Carolina
1 in Bozeman, Montana

Organized around teams in various areas of expertise, we are able to draw on each other's talents and skills to offer integrated, place-based design.

We advocate a collaborative design process, working hand-in-hand with our clients, their communities and the design team to turn ideas into reality.

Skilled in facilitation and graphic presentations, we add significant value to the public process. Our ability to produce compelling and descriptive graphics on the spot brings visual meaning to the discussion and keeps the planning and design process accessible and engaging for all participants.

We understand the nuances of creating real places and engaging the people who use them.

Our calling is to create balance between form and function, vision and budget, desire and need. Our holistic approach incorporates all elements, including programming, site characteristics, culture and history, engineering, drainage, and environmental factors in order to create a balanced site plan. We excel at achieving project goals while satisfying diverse interests and creating places that fit within the larger context of environment and community.

We understand the power of place and our responsibility as landscape architects to positively impact people with our designs.

Our belief in community and place-based design has allowed us to grow a portfolio of significant projects that are rooted in both social and environmental sustainability. Through our dedication to creating community, we have gained valuable experience with site master planning, transportation planning, and facilitation of public involvement in the design process.

DHM DESIGN

Organizational Chart and Commitment

DHM Design has the capacity to devote the time, attention, and qualified staff necessary to complete your project. With a staff of 51 professionals supporting our team's efforts, we are very confident in our ability to produce documents and deliverables in a timely and efficient manner. If selected, DHM Design pledges to staff this project with the key individuals noted below and we will make all of these individuals available immediately to begin work on this project.

Town of Lyons

Landscape Architecture, Project Management

		% of Time dedicated to this project
DHM Design SBE	Mark Wilcox, PLA, ASLA - Principal in Charge, Project Manager, Day-to-Day Contact	60%
	Garrett Graham, Senior Designer	70%
	Michaela Kaiser - Designer	60%
	Stephen Ellsperman - Director of Ecology	15%
	Additional Support Staff Available As Needed	

Civil Engineering, Drainage, Hydraulics

S2O Design and Engineering SBE	
Scott Shipley, PE - Principal	20%
Nathan Werner - Senior Engineer	60%
Christine Clark, PE	40%
Dan Woolley, PE	20%

Civil Engineering, Site Engineering

ICON Engineering	
Doug Williams, PE - Principal	20%
Kent Barringer, PE	40%

Architecture

Barker Rinker Seacat	
Ken Berendt, NCARB, Building Design Architect	15%
Janine Glaeser, Building Design PM	30%
Joel Hermann, Building Design Designer	30%

Ecological Permitting

Ecosystem Services, LLC SBE	
Grant Gurnee, PWS	60%
Jon Dauzvardis, PWS	63%

Survey

CivilArts	
Frank Drexel, PLS	10%
Pete Steger, PLS	10%

Geotechnical Engineer

Shannon & Wilson, Inc.	
Greg Fischer, Principal/Project Manager	25-35%
Justin Crummett, Project Engineer	35-45%

Irrigation

Hydrosystems•KDI, Inc. SBE	
Ken DiPaolo (CID)	10%
Thomas Beall (CID)	10%

Site and Building Structural Engineering

K.Y.S.E. Structural Engineers	
Rodger Young, PE	15%

MEP

The Ballard Group	
Tim Harris, CPD, LEED AP	10%

Site and Building Lighting Electrical

AEDG	
Jon Brooks, PE, IALD, LEED AP BD+C, CxA	15%

Climbing Boulder Consultant

ID Sculpture	
Ian Glass	Volunteer

Skate Park Design

Pillar Design Studios SBE	
Brad Siedlecki	15%

Bike Park/Mountain Bike Loop Trail

Redstone Cyclery	
Dave Chase	Volunteer

Key Personnel and List of Sub Consultants

Primary Consultant

DHM Design
Mark Wilcox, PLA, ASLA
Garrett Graham
Michaela Kaiser
Stephen Ellsperman

Sub Consultants

S2O Design
Scott Shipley, PE
Nathan Werner, PE
Christine Clark, PE
Dan Woolley, PE

Icon Engineering
Doug Williams, PE, CFM
Kent Barringer, PE

Barker Rinker Seacat
Ken Berendt, NCARB
Janine Glaeser
Joel Hermann

Ecosystem Services, LLC
Grant Gurnee, PWS
Jon Dauzvardis, PWS

CivilArts
Frank Drexel, PLS
Pete Steger, PLS

Shannon & Wilson, Inc.
Greg Fischer
Justin Crummett

Hydrosystems KDI
Ken DiPaolo (CID)
Thomas Beall (CID)

K.Y.S.E. Structural Engineers
Rodger Young, PE

The Ballard Group
Tim Harris, CPD, LEED AP

AEDG
Jon Brooks, PE, IALD, LEED AP
BD+C, CxA

ID Sculpture
Ian Glass

Pillar Design Studios
Brad Siedlecki

Redstone Cyclery
Dave Chase

Sub-consultant Contact Information

Firm	Primary Contact	Address and Contact Information
S2O Design and Engineering	Nathan Werner	429 Main Street, Lyons, CO 80540 970.232.6486 nathan@S2Odesign.com
ICON Engineering	Doug Williams	7000 S. Yosemite Street, Suite 120, Centennial, CO 80112 303.221.0802 dwilliams@iconeng.com
Barker Rinker Seacat	Ken Berendt	3457 Ringsby Court, #200 Denver, CO 80216 303.455.1366 kenberendt@brsarch.com
Ecosystem Services	Grant Gurnee	11712 Montgomery Circle, Longmont, CO 80504 970.812.3267 grant@ecologicalbenefits.com
CivilArts	Frank Drexel	1500 Kansas Avenue, Suite 2-E, Longmont, CO 80501 303.682.1131 fdrexel@civilarts.us
Shannon & Wilson, Inc.	Greg Fischer	1321 Bannock Street, Suite 200, Denver, CO 80204 720.258.4102 grf@shanwil.com
Hydrosystems•KDI, Inc.	Ken DiPaolo	860 Tabor Street, Suite 200, Lakewood, CO 80401 303.980.5327 kend@hydrosystemskdi.com
K.Y.S.E. Structural Engineers	Rodger Young	1888 Sherman Street, Suite 770, Denver, Colorado 80203 720.932.3744 ry@kyse-structural.com
The Ballard Group	Tim Harris	2525 S Wadsworth Blvd #200, Lakewood, CO 80227 303.988.4514 tharris@theballardgroup.com
AEDG	Jon Brooks	1900 Wazee Street, Suite 350, Denver, CO 80202 303.296.3034 jbrooks@aedesign-Inc.com
ID Sculpture	Ian Glass	435 Industrial Park Road, Gunnison, CO 81230 970.641.1747 ian@ipsculture.com
Pillar Design Studios	Brad Siedlecki	1628 E Southern Ave #9-140, Tempe, AZ 85282 480.777.3470 brad@pillardesignstudios.com
Redstone Cyclery	Dave Chase	355 Main St, Lyons, CO 80540 303.823.5810 n/a

Consultant Expertise

DHM DESIGN

We have worked to create quality recreational experiences since 1975. We have come to understand that recreation is not just recreation anymore. It is interconnected with a myriad of issues, from public health and local economies to the protection of fragile ecosystems and the preservation of national treasures. Our knowledge of this mosaic has matured and deepened, fostering a sensitivity to the many interests at stake. The future of recreation depends on the widespread understanding of these complex relationships and their potential impact on our quality of life. As landscape architects, we have the opportunity to encourage this understanding and transcend perceived boundaries of what recreation is and what it can be. Rus Meinzer was the Project Manager that performed damage assessments in Lyons for FEMA funding grants, which included an analysis of all pre-flood open space and recreation amenities determining a replacement cost following the September 2013 flooding.

Mark Wilcox,PLA, ASLA

Mark Wilcox will be the day-to-day contact and will oversee the development of design plans, technical documents, bidding, and related products. His experience on parks and trails master plan projects of every size will guide the team throughout the contract. From park and trail master plans, to restoration projects, to natural and interpretive play and education, Mark has a great knowledge and appreciation for the Colorado park system and is eager to continue a relationship with the Town of Lyons on this project.

Mark was the lead designer and principal for Denver's newest park and premier outdoor environmental education center, Johnson Habitat Park. The vision behind Johnson Habitat Park was to create opportunities for inner city youth to explore and learn about nature and the South Platte River in fun, creative, and safe ways. The project is highlighted this springs Building Dialog Magazine and May's issue of 5280 Magazine, focusing on all the fun activities and opportunities to learn about the environment.

Mark will coordinate DHM staff, consultants, and will be responsible for quality control and product delivery. Mark will also provide scoping, staffing, and detailed project development for all task orders. Working closely with the Town, Mark will assign staff and manage subconsultants as required to meet the needs and schedule of the project. Mark will guide and lead the planning and designing efforts, as well as handle contracts and invoices. As an expert in trails, outdoor play and education, parks, rivers, and greenways, Mark has a skilled eye for turning sites into engaging spaces for education, play and recreation. He continually works to challenge his staff to strive for innovative, creative design solutions for the clients DHM is proud to serve.

S2O

Reinventing Whitewater

S2O has a passion for white water parks that are fun and that create an amenity for paddlers and other river based recreation in the community. Their design methodology has evolved to create white water parks for all types of river recreation and passive uses. They have found that this benefit, in turn, drives economic benefits for local businesses. White water parks are about inviting the community outside by creating healthy, active, outdoor recreation within the river corridor. They become community parks that provide a place to gather, play and learn.

Their parks are designed to accommodate a range of stream flows, as well as provide bank enhancements and river access to offer recreational opportunities for varied users, including paddlers, rafters, tubers, anglers, walkers/joggers, and spectators.

They design natural-looking attractive white water features that not only create unparalleled recreational opportunities but also provide for river function and fish passage.

S2O Design and Engineering, which is located in Lyons, Colorado, has extensive experience working with the Town of Lyons. They have provided design services for the 2012 Lyons Master Plan and the 2012 GOCO Grant application that the Town of Lyons submitted in conjunction with the Cities of Boulder and Longmont. In addition, following the devastating Flood of 2013, they have worked closely with the Town of Lyons on a number of temporary and long-term projects.

ICON Engineering, Inc. is a mid-sized consulting firm with a national reputation for excellence. ICON offers its clients expertise in the Planning, Design, and Management of civil engineering projects, with a particular emphasis on drainage, flood control, and watershed management. ICON specializes in complex floodplain modeling and hydrologic/hydraulic analyses, development of river master plans, stream stabilization and restoration, bridge hydraulics and design, in addition to design of utility and storm water infrastructure. Since the 2013 floods, our staff has been continuously active in communities including Boulder County, City of Boulder, City of Aurora, Weld County, City of Fort Collins, Town of Milliken, and Estes Park, completing flood documentation, updating flood risk maps, and preparing flood repair design and restorations plans.

Barker Rinker Seacat Architecture (BRS) will provide restroom and picnic shelter design documents and CA services. BRS has completed many projects with DHM, most notably our collaboration on National Park Service work for over 25 years.

BRS has completed design for many project types, including park facilities, comfort stations, concession buildings, park shelters, maintenance facilities, visitor centers and recreation centers. Our clients include National Park Service, U.S. Forest Service, Colorado State Parks, and municipalities.

Ecosystem Services, LLC (ecos) is an expert ecological consulting company that specializes in understanding natural systems in their context (wild or urban) and has a successful track record for successfully restoring and enhancing aquatic, wetland and riparian habitat throughout the Intermountain West, Colorado, and our local communities. Our passion for restoring ecological benefits and services is supported by our experience in regulatory compliance and the positive relationships that we have built with agency regulators to get projects permitted and constructed. Our background in fisheries biology, wetland ecology, threatened and endangered species, landscape architecture, understanding of geomorphology and water resource engineering principles, and integration of environmental education and recreational facilities makes ecos a strong collaborative team member.

CivilArts is uniquely qualified to provide all the contemplated services. CivilArts is a local firm that offers personalized project management by industry leading professionals, a highly qualified & experienced staff, state-of-the art equipment and software resources, and a track record of service to municipal and county government, including Town of Lyons.

Geotechnical site characterization is at the heart of what Shannon & Wilson does every day. Their understanding of geologic conditions and the ability to relate these conditions to design is a key differentiator. Shannon & Wilson's geologists and engineers are well-versed in all aspects of geologic site investigation, including: compilation of existing geologic information; air photo analysis and interpretation; geologic and structural mapping; geotechnical drilling in soil; rock coring; excavation of test pits; geophysical studies; environmental drilling and sampling; installation of groundwater monitoring wells, piezometers, and in situ pressuremeter testing; and installation and monitoring of geotechnical instrumentation.

HydroSystems• KDI is uniquely qualified to meet the needs of clients and project owners and is dedicated to providing a level of service and technical expertise in irrigation system design that is unmatched in the consulting industry.

K.Y.S.E. Structural provides design service to numerous local architectural clients as well as consultation to contractors, developers and owners. Project types are diversified, with experience in nearly all types of industrial, institutional, and corporate facilities. The relationships we have nurtured with our clients have produced a confidence and trust which has grown over the course of multiple projects.

The Ballard Group, Inc.
Mechanical Consulting Engineers

The Ballard Group, Inc. provides quality mechanical engineering services. The scope of our work is comprehensive and varied in the mechanical engineering field with specific emphasis on heating, ventilation, air conditioning, plumbing and fire protection design. Our operating philosophy is to provide sound, innovative engineering services tailored to the individual needs of our clients, on time and within budget. We accept each job as a challenge to deliver energy efficient and cost-effective mechanical systems utilizing our professional expertise.

Architectural Engineering Design Group, Inc.

Architectural Engineering Design Group, Inc. was established as a single discipline firm providing electrical engineering and lighting design services. The single discipline approach allows the firm to focus on our passion. Being able to hone in on our interests ultimately yields the best results.

ID Sculpture

ID Sculpture's mission is to foster creativity, community, and play with extraordinary playgrounds and interactive sculpture. ID Sculpture sets out to reinvent the playground--to transform it from something ordinary into an unexpected, innovative play space. ID Sculpture wants to spark the imagination, inspire learning, and surprise everyone with what a playground can be.

The ultimate goal of Pillar Design Studios is to provide quality, professional design and planning services from the knowledgeable view of a landscape architect and active Skateboarder. The Pillar Design Studios team embraces all types of action sport facilities and believes that each park should be unique, promote creativity, and are versatile enough to include all community members.

Redstone Cyclery is a world wide top 20 Turner dealer and a top 30 Intense dealer. Redstone started in 2003 as the "worlds smallest bike shop" but now has grown imensely. The shop is located in downtown Lyons and caters to cyclist from Larimie, Wyoming to Colorado Springs, Colorado.

MARK WILCOX

Principal | Professional Landscape Architect, Colorado | ASLA

DHM DESIGN

Education: B. of Landscape Architecture, Kansas State University, 1994

Relevant Project Experience

Mark has been involved in a variety of projects; planning and designing parks, trails, public facilities, athletic fields; streetscapes and community designs; resort master planning and development. Mark's contributions to DHM showcase his many diverse talents from managing projects to creating beautiful colorful renderings; planning and designing parks, trails, and greenways, and understanding the technical aspects of implementing these designs.

- Lyons Parks Flood Recover Planning
- Johnson Habitat Park
- Aurora Sports Park Expansion
- Blue River Trail
- Weir Gulch/Sun Valley River Front Park
- Silverthorne Parks Master Plan
- Sand Creek Trail and Greenway

GARRETT GRAHAM

Senior Designer

DHM DESIGN

Education: B. of Landscape Architecture, West Virginia University, 2010

Relevant Project Experience

- Coal Creek Watershed Master Plan
- Sun Valley River Front Park
- Johnson Habitat Park
- Blue River Trail

MICHAELA KAISER

Senior Designer

DHM DESIGN

Education: M. of Landscape II, PennDesign, University of Pennsylvania, 2014
B. of Science Landscape Architecture, Colorado State University, 2012

Relevant Project Experience

- Aurora Sports Park Expansion
- Johnson Habitat Park
- Silverthorne Parks Master Plan
- Pikes Peak Summit Complex

STEPHEN ELLSPERMAN

Principal | Director of Ecological Planning

DHM DESIGN

Education: B.S. in Natural Resource Management, Colorado State University, 1991

Relevant Project Experience

Stephen has 23 years of experience in all aspects of natural resource management, permitting, and planning. From park and open space management to wetland design and construction, Stephen's work is permeated by his deep connection to ecological relationships.

- Basalt River Restoration; Basalt, CO
- Old Pond Park; Basalt, CO
- Bear Dance Ranch; Eagle County, CO
- James H Smith Open Space; Aspen, CO
- Platte Farm Open Space; Denver, CO
- Crown Mountain Park Master Plan; El Jebel, CO

SCOTT SHIPLEY

President | MSME | Professional Engineer, Colorado

Education: M. of Mechachnical Engineering, Georgia Institute of Technology, 2002
B. of Mechanical Engineering, Georgia Institute of Technology, 2001

Relevant Project Experience
Currently operates a firm that specializes in top-end white water park planning, design, construction, and operations. Scott's firm either manages, or works in joint venture, to bring industry leading experts to the table to ensure that these white water super-parks are expertly and efficiently designed, implemented, and opened.

- 2012 Olympic White water Venue, UK
- Durango Boating Park, CO
- San Marcos Dam Stabilization Project, TX
- The U.S. National White Water Center Charlotte, NC
- The Bow River White Water Park, Calgary, AB. Canada

NATHAN WERNER

Civil Engineer | Professional Engineer, Colorado

Education: B. of Science in Civil Engineering, Colorado State University, 2008

Relevant Project Experience
Currently manages projects through planning, permitting, design, and construction. Primary work includes in-stream white water parks, stream channel restoration and stabilization, and flood impacts mitigation.

DOUG WILLIAMS

Principal | Professional Engineer, CO, WY, MD

Education: B. of Science in Civil Engineering, Clarkson University, 1978

Relevant Project Experience
Doug Williams has had a wide variety of engineering experience in water resources planning, design and construction, drainage and flood control projects. His practical approach to problem solving has been coupled with an awareness of aesthetics that has produced facilities that are functional as well as community amenities.

- Carson Park Drainage Improvements
- Johnson Habitat Park
- Star K Ranch Detention
- Four Star Park
- Aurora Jewell Wetlands
- Horseshoe Park
- Lakewood Gulch Confluence Park
- Piney Creek Trail
- Aurora Sports Park Expansion
- Weir Gulch/S. Platte River Park

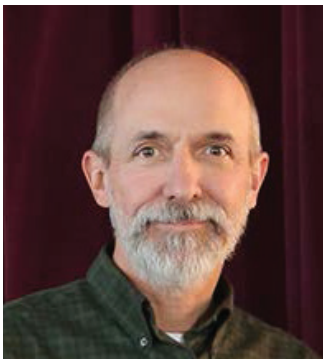
KENT BARRINGER

Senior Project Manager

Education: B. of Science in Civil Engineering, Colorado State University, 1979

Relevant Project Experience
Ken Barringer has a strong background in water resources, parks and roadway planning, design, and construction. He has served as the primary design engineer on numerous parks, trail, and flood control projects throughout Colorado, and has an extensive resume in working with Landscape Architects both active and passive recreation facilities.

- Johnson Habitat Park
- Weir Gulch/S. Platte River Confluence Park
- Lakewood & Dry Gulch Confluence Park
- Sloans Lake Soccer Fields



KEN BERENDT
Principal | NCARB

Education: B. of Architecture, University of Detroit, 1979
B. of Science in Architecture, University of Detroit, 1978

Relevant Project Experience
Ken Berendt is a Principal and Project Manager whose talent is in design and the ability to quickly put concept to paper. He has been the Principal in Charge of several community recreation centers on a national level. Ken is skilled at orchestrating the design team to bring a project in on time and on budget.

GRANT GURNEE
Owner | Senior Restoration Ecologist | Fisheries & Wildlife Biologist
Wetland Ecologist | PWS

Education: MCRP, Environmental Planning and Law Program, Rutgers University, 1989 – 1994
Bachelor of Science, Biology, Richard Stockton College of N.J., 1984

Relevant Project Experience
Grant has 31 years of experience in wetland ecology, restoration ecology, wildlife and fisheries biology, environmental planning, and regulatory compliance.

- Saint Vrain Creek Restoration and Floodplain Resiliency Plan, Town of Lyons, CO
- 2013 Flood and 2014 Runoff Events, Damage Restoration, Cache la Poudre River, CO
- Edwards Eagle River Restoration Project, Edwards, CO
- Front Range Umbrella Mitigation Bank, Colorado

JON DAUZVARDIS
Owner | Senior Restoration Ecologist | Landscape Arhcitect
Wetland Ecologist | PWS

Education: Master of Landscape Architecture, Texas A&M University, College Station, 1995
Bachelor of Science, Environmental Design, University of Missouri, Columbia, 1991
Architecture Study, Harvard University Graduate School of Design, 1989

Relevant Project Experience
As practitioner of restoration ecology and landscape architect, Jon specializes in restoring habitat structure and how to manage natural landscapes so that they function, change, and respond positively over time.

- St. Vrain Creek Lyons Valley River Park Riparian Corridor Enhancement, Lyons, CO
- Saint Vrain Creek Restoration and Floodplain Resiliency Plan, Town of Lyons, CO

FRANK DREXEL
President | Chief Surveyor | Professional Land Surveyor, Colorado

Education: University of Colorado – Continuing Education Program (1983)
Professional Land Surveyors of Colorado – Survey Refresher Course (1985)
Seminar, ION GPS Conference – GPS Tutorial (1989)

Relevant Project Experience
Frank has assembled a team of experts in engineering design, development consulting & entitlements, surveying, geodesy, and construction staking. Frank has placed great emphasis in the technical direction of the Firm's land surveying capability and is also responsible for company-wide business development, staffing, operations, and administration. He provides over 39 years of land surveying and geodetic experience and has been registered to practice land surveying in the State of Colorado since 1986.

GREGORY FISCHER

Senior Vice President | PhD | Professional Engineer, Colorado + 24 other states

Education: PhD, Civil Engineering, University of Washington, 1994
MS, Civil Engineering, University of Illinois, 1986
BS, Civil Engineering, University of Illinois, 1984

Relevant Project Experience
Greg Fischer has 30 years of geotechnical engineering experience in all aspects of geotechnical and civil design.

- McConnell Bridge Replacement, Lyons, CO
- Aurora Sports Park Expansion, Aurora, CO
- Bear Creek Trail and Greenway, Morrison, CO
- Sand Creek Pathway, Commerce City, CO

JUSTIN CRUMMETT

Senior Geotechnical Engineer | Professional Engineer, Colorado

Education: MSE, Civil Engineering, The University of Texas at Austin, 2009
BS, Civil Engineering, Oregon State University, 2007

Relevant Project Experience
Justin has over six years of experience on a wide variety of geotechnical engineering projects.

- Southeast Metro Stormwater Authority (SEMSWA), Arapahoe Lake Channel and Drop Structure Improvements, Centennial, CO
- Weld County Flood Repairs, Weld County, CO
- Westerly Creek Flood Control Improvements, Aurora, CO

KEN DIPAOLO

President | IA Certified Irrigation Designer

Education: University of Colorado – 2 years (General Studies)
Mechanical Drafting Certificate from Siebel School of Drafting

Relevant Project Experience
Ken DiPaolo has been in the irrigation industry for 38 years. Ken oversees the development of irrigation master plans, construction documents, construction administration, design-built irrigation designs for contractors. Ken has developed irrigation master plans, construction documents and construction period services for such notable projects as:

- Washington Park Renovations
- Barnum Park North
- Barnum Park East
- Civic Center park –Phase 1 & 2
- Alamo Placita Park
- Memorial Park for City of Arvada
- Dick's Sporting Goods Stadium and Soccer Complex
- Glendale Sports Complex

THOMAS BEALL

Project Manager | Water Feature & Pump Consultant
IA Certified Irrigation Designer

Education: Metro State College, Denver - 2 years (General Studies)

Relevant Project Experience
Mr. Beall is an Associate of HydroSystems-KDI and assists in irrigation system design, golf course design and planning and handles all aspects of pump design and water feature design. Thomas has developed water management plans, irrigation master plans and construction documents for such notable projects as :

- Aurora Sports Park, Aurora, CO
- Denver International Airport, Denver, CO
- Lowry Athletic Fields, Denver, CO
- Coors Ballfield Perimeter, Denver, CO

RODGER YOUNG
Professional Engineer, Colorado + 16 other states

Education: B. of Science in Civil Engineering, University of Nebraska - Lincoln, 1978-1981

Rodger Young has extensive experience in the design of wood, masonry, concrete, steel, composite steel, and post-tensioned concrete building systems. Representative projects have been built in various locations throughout the country including high seismic areas of California, mountain construction of Colorado, and major metropolitan areas of Boston and Washington D.C. He is experienced in project management, budgeting, scheduling and quality assurance as well as the business aspects of marketing, client maintenance, financial control, and long range strategic planning.

TIM HARRIS
Principal | CPD | LEED AP

Education: B.S. in Construction Technology, 1981

Relevant Project Experience
Tim Harris serves as Principal In Charge of Plumbing, Fire Protection and Medical Gas Engineering.

- Pioneer Park, Commerce City, CO
- Del Mar Park Aquatics, Aurora, CO
- Erie Community Park, Phase II, Erie, CO
- Richardson Ball Parks, Richardson, TX
- Beck Recreation Center, Aurora, CO
- Aurora Public Schools

JON BROOKS
Principal | PE | IALD | LEED AP BD+C | CxA

Education: B. of Science in Architectural Engineering, University of Colorado, Boulder

Relevant Project Experience
Jon Brooks helped to found AEDG, Inc. in 2004 and has been an integral part of the design team.
He provides the expertise and coordination commitment required for lighting, power systems, and sustainable systems.

- Aurora City Park, Aurora, CO
- Crestview Park Restrooms & Facilities, Jefferson County, CO
- Mary Carter Greenway Facilities, Littleton, CO
- St. Vrain Greenway, Longmont, CO
- Valverde Park Ballfields & Picnic Areas, Denver, CO
- Springhill Park, Aurora, CO
- Bond Park Master Plan, Estes Park, CO
- Staunton State Park, Pine, CO

BRIAN SIEDLECKI
Project Manager | Lead Designer

Education: B. of Science in Landscape Architecture, Arizona State University
Associates in Architectural Engineering, Alfred State College

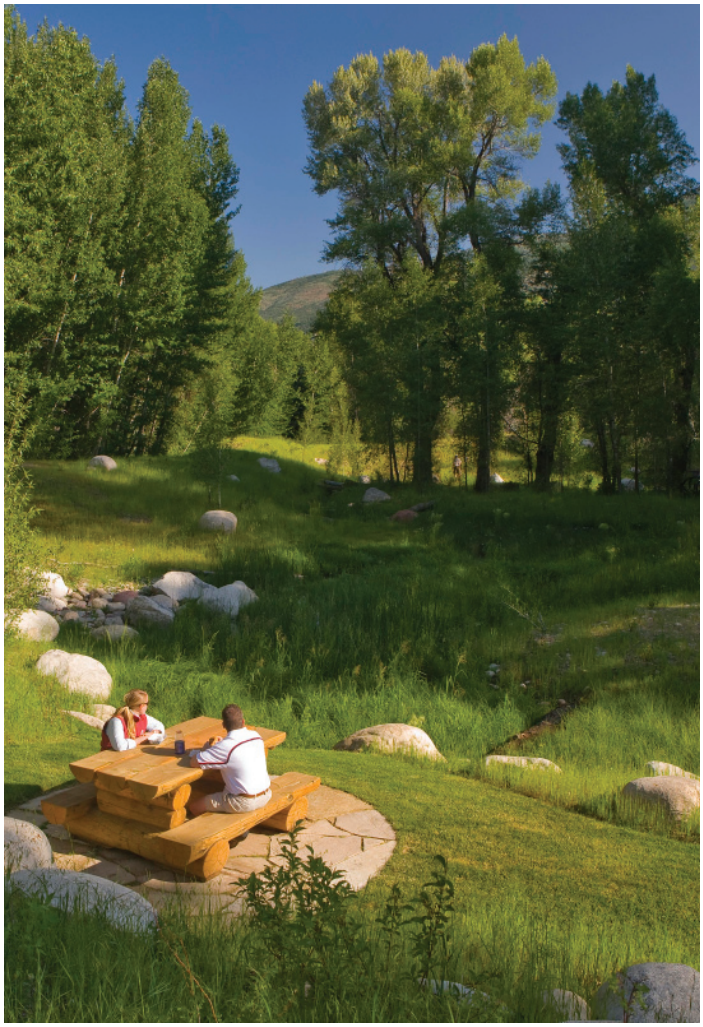
Relevant Project Experience
With years of experience serving the needs of municipal and private clients across the United States, Brian Siedlecki has designed some of the most distinctive and custom Skate, BMX, and Moto-cross facilities in the world. His reputation has been built on integrity, quality of service, the ability to deliver inimitable design concepts and impeccable skill in the production of construction documentation.

- Yamaguchi Skatepark, Pagosa Springs, CO
- Montez Skatepark, Monte Vista, CO
- Historic 4th Ward Skatepark, Atlanta, GA
- Lakeside Skatepark, Kissimmee, FL
- Historic 4th Ward Skatepark, Atlanta, GA
- Lafayette Bike Park, Lafayette, CA

Past Projects Our Team Has Worked Together On

As a small business, with a single discipline focus, we team with firms who are the best in their given field and offer the most competitive rates. This is a benefit to you, as the client, because it offers a diversity of skills and innovation that you don't find with a single multidisciplinary corporation. We feel these team members have dialed in the logistic and communication efficiencies that bring the best of all worlds to this project.

Below is a list of project that DHM Design has worked on with the current primary team members in the last five years.

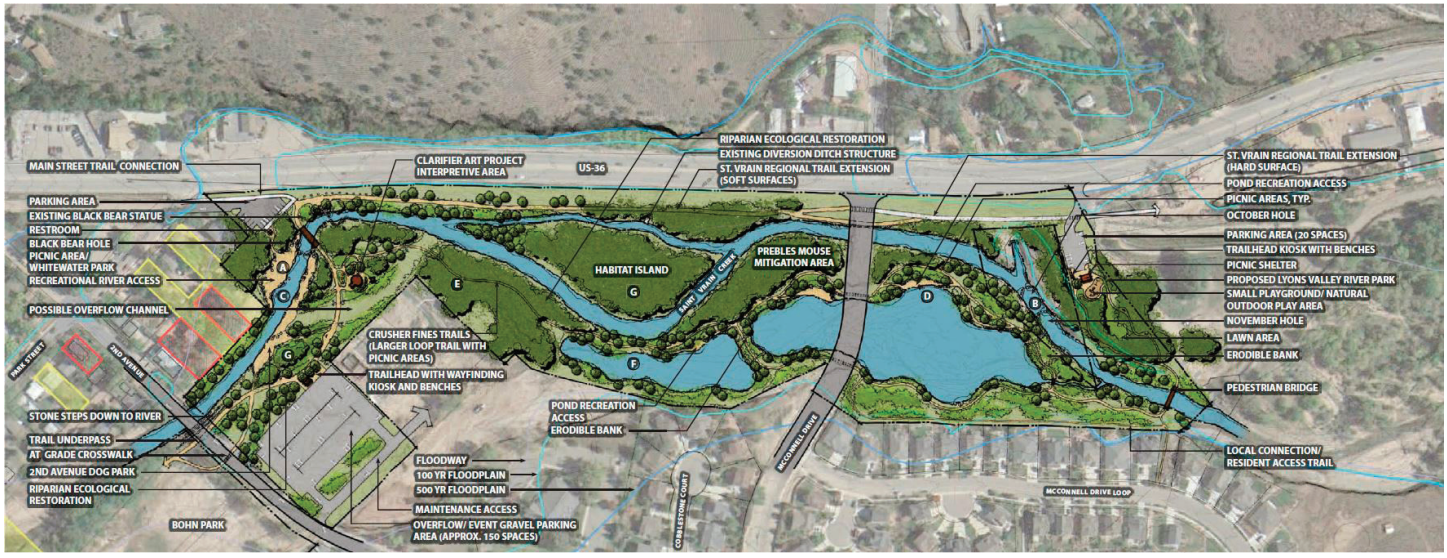


S2O Design and Engineering

Lyon's Park Flood Recovery Master Plan; Lyons, CO
Meadow Park Phase I; Lyons, CO
Flood Assessment; Lyons, CO
Montrose Whitewater Park; Montrose, CO
Oklahoma River Whitewater Facility; Oklahoma City, OK

ICON Engineering

Lyon's Park Flood Recovery Master Plan; Lyons, CO
Lyon's Stormwater Master Plan; Lyons, CO
Aurora Sports Park Expansion; Aurora, CO
Centennial Trail - Phase 3; Littleton, CO
Coal Creek Trail Disaster Recovery; Boulder, CO
Sun Valley Riverfront Park; Denver, CO
McClelland Creek Restoration; Ft. Collins, CO
Boulder Creek Master Plan; Boulder, CO
Pinery Creek; Douglas County, CO
Johnson Habitat Park; Denver, CO
Ft. Collins On-Call Services; Ft. Collins, CO
Greeley Downtown Stormater Master Plan; Greeley, CO



F. Evaluation Criterion #2 - Recent Experience with Similar Projects

Projects Similar In Nature To This Project

Johnson Habitat Park (DHM Design)
Denver, Colorado

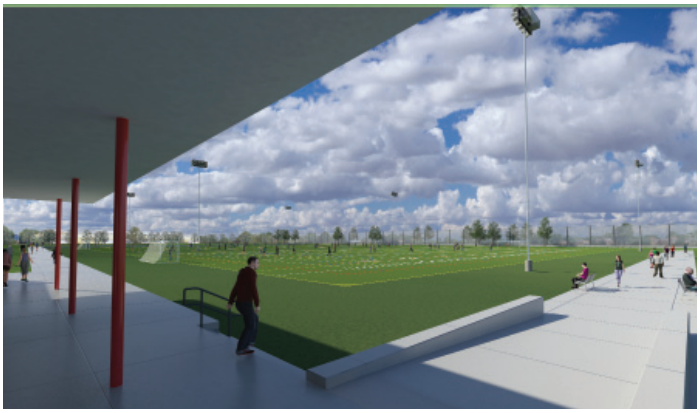
Cost: $5.5 Million (Construction est. and actual)
$376,000 (Design only, est. and actual)
Reference: Michael Bouchard, 720.913.0613
michael.bouchard@denvergov.org
Completed: June 2015

Description: The goal at Johnson-Habitat Park was to create an environmental education hub for urban children, families and outdoor enthusiasts, adjacent to the South Platte. Features include an outdoor classroom, fire ring and overlook plaza, and tent pads - many children and families will be experiencing the joy of camping outdoors overnight for the first time. Denver will add two river access platforms for boat put-ins/take-outs as well as fishing, trailhead rest areas, interpretive signage, and soft surface trails that connect with the improved hard surface South Platte River Regional Trail that traverses Johnson-Habitat Park. To extend the vision to adjacent Vanderbilt Park, improvements will include social and environmental education trails, and an interpretive overlook and dock at Vanderbilt Lake.

Aurora Sports Park Expansion (DHM Design)
Aurora, Colorado

Cost: $6.358 Million (Construction, est. and actual)
$678,000 (Design only, est. and actual)
Reference: Lori Tagawa, 303.739.7160
ltagawa@aurora.gov
Completed: 2015

Description: DHM Design was selected for the preparation of a Master Plan Amendment and to lead the public input process for the City of Aurora. The existing site is a 250-acre sports park located off East Colfax Avenue and Dunkirk Street. The site is currently at its capacity and additional facilities were needed to keep pace with demand. In 2014 the City of Aurora acquired two parcels of land adjacent to the existing park. This expansion project focuses on the west 17 acre parcel. The proposed expansion actives include 4 Multiuse Synthetic Turf Sports Fields and Support Facilities, Restrooms, Landscape and Irrigation, Parking, Roadways, Field and Site Lighting, Concessions, Pedestrian Pathways, and Landscaping. Construction is expected to begin early 2015 and be completed by October 2015.

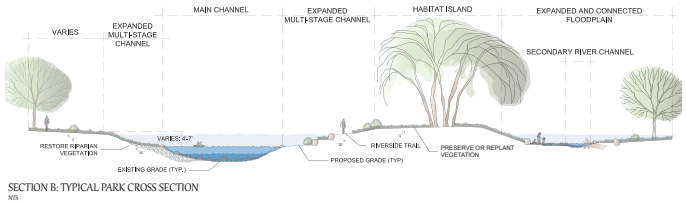


Meadow Park: Phase 2, Saint Vrain Creek (S2O)

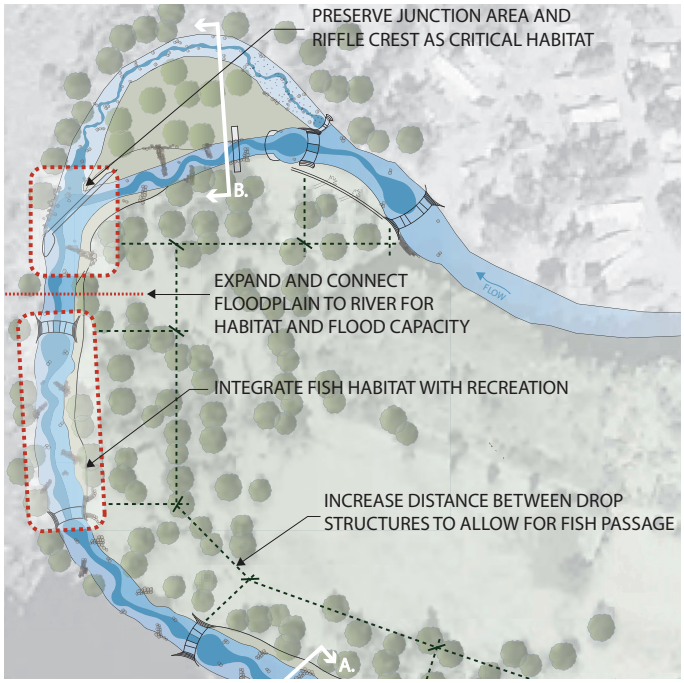
Town of Lyons, Colorado

Expected construction budget: $4.5 Million
Contractor's fee: $115,100 (Design) $50,000 (Fish Passage Study)
Project Manager/Project Engineer: Nathan Werner
Key Staff : Scott Shipley – QA/QC, Fish Passage Study Lead;
Dan Woolley – Geomorphic Analysis, Hydraulic Analysis
Project Dates: October 2014-April 2016.
Construction: Summer 2015 through April 2016
Reference: Dave Cosgrove, Director of Parks, Recreation and Cultural Events, Town of Lyons 303.823.8250

S2O Design and Engineering teamed with Ripley Design for Meadow Park Phase 2. The project goal is to rebuild Meadow Park, which was substantially damaged by the September 2013 flood. This project includes the reconstruction of an eight feature whitewater park, restoration of fish habitat and riparian areas, reconstruction of the Lyons Ditch diversion structure, and reconstruction of the park amenities. S2O is the lead designer and engineer for all river components and the lead engineer for the park site plan. The stream restoration design includes a grouted rock ramp diversion structure for the Lyons Ditch and grouted rock ramp whitewater park structures. All grouted rock ramp structure designs implement a variety of techniques to facilitate fish passage.



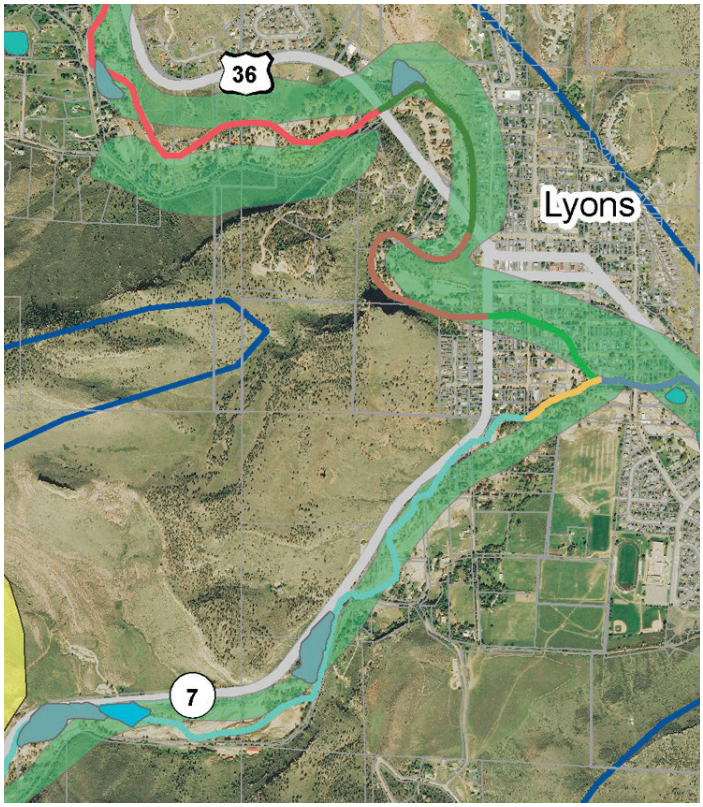
SECTION B: TYPICAL PARK CROSS SECTION
NTS



Saint Vrain Creek Watershed Master Plan (S2O)

Northern Front Range, Colorado

The South Saint Vrain Creek Watershed is one of the most important natural features in the Northern Front Range of Colorado. In September, 2013, a flood devastated the watershed, the infrastructure, and the communities along the Saint Vrain Creek and its tributaries. Boulder County and the Saint Vrain Creek Coalition collaborated efforts to propose a large scale master plan project that encompassed the entire watershed. The master plan was developed by S2o Design and Engineering and Baker Engineering, among others. The goal of the project was to create a science-based, community oriented, stream master plan. The goal was part of an initiative supported by the Colorado Water Conservation Board to approach river projects from a wholistic approach bearing in mind the morphology of the river, the role and importance of habitat to the entire ecosystem, and the needs of communities and private landowners in terms of land use, flood and debris risk, and all types of in-stream recreation. The master plan included assessments with regards to geomorphology, FEMA risk assessments, habitat needs, and other scientific inputs.



Familiarity With The Town Of Lyons

In September, 2013 the State of Colorado experienced extremely heavy rainfall along with catastrophic flooding. This resulted in major damage across a range of twenty-four counties, resulting in loss of life and causing more than 18,000 people to evacuate their communities. The Town of Lyons was hit hard by this event, causing considerable damage to property and belongings. The Town of Lyons in Boulder County was isolated by the flooding of St. Vrain Creek and sustained severe damage to roads and structures. Since then, DHM Design was hired to perform damage assessments in Lyons for FEMA funding grants, which included an analysis of all pre-flood open space and recreation amenities determining a replacement cost following the September 2013 flooding. Subsequently the team was hired to design a Phase 1 redevelopment of Meadow Park, a fast track design/construction project that allowed events to be held in 2014. DHM Design has also completed a master plan for Meadow Park that was used for GOCO funding grant application in order to begin construction in 2015. Governor John Hickenlooper announced that Meadow Park in Lyons was granted $1 million dollars as one of the recipients of the GOCO Flood Recovery Grant Program. DHM Design and S2O were thrilled to be a part of this project that helped the Town complete Phase 1 of Meadow Park just in time for the start of the many festivals and events held in Lyons throughout the summer.

S2o Design and Engineering, which is located in Lyons, Colorado, has extensive experience working with the Town of Lyons. Prior to the flood this experience included:

1. Design services for the 2012 Lyons Valley River Park Master Plan and the 2012 GOCO Grant application that the Town of Lyons submitted in conjunction with the Cities of Boulder and Longmont.
2. Permitting, and design/construction oversight for many river projects within the Town

Following the Flood of 2013, S2O worked closely with the Town of Lyons on a number of temporary and long-term projects. These projects include:

1. Assist the Town of Lyons with creating FEMA damage assessments for the stream corridor and parks;
2. Design and construction administration services for the Town of Lyons for emergency design of the St. Vrain Creek through Lyons. The goal of this project was to create a channel that would be able to convey a 5 year return period flow by the start of run-off;
3. Streambank stabilization for private property owners which included design services, plans and specifications, bid documents, and construction oversight. This project, while benefiting private property owners, was sponsored by the Town of Lyons; and
4. Design and construction administration services for Phase I of the Meadow Park project. S2o led the team that redesigned and restored the eastern section of Meadow Park and provided the following services: (a) permitting, (b) surveying, including all utilities, landscaping, structures and infrastructure, (c) project management (d) bid documentation and assistance, and (e) construction oversight.

Meadow Park Phase 1 Master Plan

Students with Governor Hickenlooper at the GOCO Award Ceremondy

In addition, S2o has volunteered numerous hours helping to write, create concepts, and supply engineering data to grants of all sizes to aid in the recovery of Lyons. These grants include the Community Development Block Grants (CDBG), grant applications to FEMA under the 404 Mitigation Program, Grants to the State of Colorado including multiple applications to Great Outdoors Colorado (GOCO) and the Colorado Water Conservation Board (CWCB). S2o participated in the Lyons St. Vrain River Task Force, now the Lyons Watershed Advisory Board, and facilitated the meetings as a part of the St. Vrain Creek Watershed Master Plan. Upon completion of the St. Vrain Creek Watershed Master Plan, we have maintained an active role on the Lyons Watershed Advisory Board, including being an official board member.

S2o has also worked with the Town of Lyons to develop a master schedule to assist the Town in coordinating the phasing and funding of the various recovery projects from all departments. This involvement gives S2o unmatched knowledge of the numerous infrastructure, parks, and stream recovery projects and will be invaluable in taking a holistic approach to the Lyons Parks Flood Recovery Master Plan project.

Specific projects that S2o has participated in with the Town of Lyons include FEMA Emergency Channel, NRCS Exigent Streambank Project, FEMA Damage Assessments, St. Vrain Master Plan, Meadow Park Phase 1 and 2, and Town Recovery Planning. S2o has also completed temporary repairs to the Black Bear Whitewater Park and assisted with numerous grants on a voluntary basis.

References

Michael Bouchard, Assistant Director of Design & Construction
City of Denver, Parks and Recreation
201 W. Colfax Avenue Suite 613
Denver, CO 80202

Phone: 720.913.0632
Email: michael.bouchard@denvergov.org

Dave Bennetts, Design, Construction & Maintenace Manager
Urban Drainage
2480 W. 26th Avenue Suite 156B
Denver, CO 80202

Phone: 303.455.6277
Email: dbennetts@udfcd.org

Lori Tagawa
City of Aurora, Parks, Recreation & Open Space Department
15151 E. Alameda PKWY STE 4600
Aurora, CO 80012

Phone: 303.739.7160
Email: ltagawa@aurora.gov

Bridge at Lyon's Valley River Park

G. Evaluation Criterion #3 - Approach to the Scope of Work

Kayakers on the St. Vrain River

Park Expertise

The DHM Design team demonstrates a high degree of expertise in parks planning, planning and zoning, public involvement, design, construction documentation, estimating, construction observation and administration. DHM Design strives to produce quality design efforts through creative analysis of all program elements. DHM Design has been designing parks for local communities in Colorado for more than 40 years, and we bring this collective knowledge of ideas to every project paired with a current knowledge of growing trends in park planning and design. Our design team has worked with many of the municipal governments within the Colorado Front Range and Western Slopes to develop parks and recreation amenities with over 35 Front Range municipalities.

Team Relationships

We at DHM and our project team members have a long history together working on many different park projects. We know how to work together and have a proven track record of success on many complex park projects. Many teams do not have the in-depth experience working on park and stream related projects as DHM and our team does. We understand what it takes for this kind of effort and do not undercut our fee to win a job only to submit change orders later for additional work. Instead we take a complete and comprehensive look at projects requirements to meet your goals which we understand are to have a project out for bid in July and under construction this Fall.

We value our relationship with the Town of Lyons and are invested in assisting the Town of Lyons recover over the long haul. As seen in our Parks Planning and Recovery efforts we have dedicated a lot of our time and passion in going above and beyond to gain community and Board of Trustees support for the park approvals. We want this to be as successful of an outcome as you do and don't underestimate the attention to detail and scope necessary to get you there.

Accurate Designs and Estimating

DHM Design takes pride in the development of projects that are within budget and completed in a timely manner. Construction cost estimates are developed at Schematic Design, Design Development and Construction Drawing stages of each project. Our approach in preparation of construction drawings is to provide a set of documents that are easily understood and result in competitive and thorough bid pricing from contractors. DHM has an extensive collection of recreational facility construction cost data, along with recent contractor bids for park construction that will be used to estimate costs. The table on the following page (Table A) is a comparison of DHM final estimates on selected park projects compared to awarded construction contracts based on lowest bid. It reflects DHM's ability to accurately design and prepare tight bid documents.

Managing a Complex Project

It is important that the execution of each phase of development initiates active use of the park, generates enthusiasm and commitment on the part of stakeholders, and propels later phases of development.

Table A

Related Experience in Large Community Parks	Design of Park Projects, Master	Community Park	Existing Facilities	Sports Fields	Volleyball	Baseball/ Softball	Multi-use PT Courts	Trails	Environmental Restoration	River Restoration/ Floodplain Improvements	Restrooms/ Custom Architecture	Construction Documents	Construction Administration	Playground	Skatepark	Parking	Field Lights
Johnson Habitat Park	✓	✓	✓					✓	✓	✓		✓	✓	✓		✓	
Aurora Sports Park Expansion	✓	✓	✓	✓							✓	✓	✓			✓	✓
Reunion Park	✓	✓	✓	✓				✓			✓	✓	✓	✓		✓	
Christopher Fields	✓	✓		✓		✓		✓	✓		✓	✓	✓			✓	✓
Ralston Central Park	✓							✓	✓	✓	✓	✓	✓	✓		✓	
4-Acre Lake Park	✓	✓							✓			✓	✓				
Margaret Carpenter Park	✓	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	
Sunrise Park	✓		✓									✓	✓	✓			
Westfield Village Park	✓			✓		✓						✓	✓	✓		✓	
Skyline Park	✓			✓		✓	✓					✓	✓	✓			
Fort Missoula Regional Park	✓		✓	✓	✓	✓	✓	✓			✓					✓	✓
Pioneer Park	✓		✓	✓		✓	✓				✓	✓	✓	✓	✓	✓	✓
Sun Valley Riverfront Park	✓							✓	✓	✓		✓	✓	✓			

DHM understands the realities of large projects and how their implementation is driven by factors such as budget, need, infrastructure, permitting and fundraising. Through a careful review of the program and phasing limits, we will work with the City to ensure that the Phase II scope is actionable and realistic in relation to the priorities of the project.

Preliminary budget estimate to line up with expectations / $7 million budget

We will review the budget early on to determine design details that can be used to move forward with and concept ideas that can progress into more detailed design. This will tie closely to the estimate completed as part of planning efforts. We may consider phasing alternatives and bid alternates to secure pricing for features that may be above the current parks budget (post tension sport courts, skatepark and some of the shade shelters). We also have had early conversations with some of the local businesses about volunteering time to help design and construct some of the park features including trails, bike park features and other park amenities.

DHM's Knowledge/ Expertise with Alternate Delivery/ CMGC Selection Process

DHM has successfully provided services for the evaluation and selection of a CM/GC for similar projects including Thornton's newest community park at Margaret Carpenter Recreation Center, the Aurora Sports Park Expansion and Johnson Habitat Park in Denver. In all cases the design process was far enough along to provide preliminary drawings to the contractors so that they understand the general scope of the work and we have had a chance to develop a preliminary opinion of cost for comparison with the client's budget. This helped the entire team, client, design team and prospective contractors understand that the project is financially within reach.

The benefit of an alternate delivery or CM/GC process is that the contractor can participate during the design process providing input related to implementation costs, materials and methods suggestions, general trend information in the construction trades (i.e. "the cost of steel is continuing to go up so the sooner any steel elements are finalized the better.") Another benefit is that it is possible to begin construction on some components before the entire construction drawing package is complete. This is done through a Guaranteed Maximum Price (GMP) Bid Package process. This might allow grading, drainage and site infrastructure to be started while the balance of the CD's are being completed. Key to this success is close collaboration

Table B

Project	Our Estimate	Successful Bid
Wolff Park	$1,206,891	$1,167,000
Arvada Skate Park	$928,270	$919,528
Skyline Park	$1,457,913	$1,523,559
Sunrise Park	$227,969	$254,384
Fairfax Park	$2,741,000	$2,685,000
Reunion Park	$2,055,000	$2,035,000
Frisco Adventure Park	$4,865,000	$4,239,000
Johnson Habitat Park	$6,080,000 - 90% plans	5,500,000 GMP bid
Aurora Sports Park	$6,321,131 – 90% plans	$6,358,032

between the design team and contractor team to make sure everyone is comfortable with the scope and preliminary costs. From our experience, the best way to make this happen is to take the entire project design and construction documents to 65% complete before developing individual GMP's. Alternate delivery also allows the contractor to begin work sooner than with a traditional design/ bid/ build contract. In the case of Aurora Sports Park, we were able to expedite the contract and start construction 2 months earlier than a traditional bid.

We will want to review alternate delivery methods with the Town to see if this delivery works within your needs and schedule without committing to it.

Irrigation

Included in our scope is site time with Parks staff to review park plans discuss requirements for the site, review water analysis to see what well and pump design will be required. We would assume standard irrigation practices for spraying the sod and drip in shrub bed applications. For native, we understand that native will not be irrigated and separate drip to the plants within native. We have also assumed that we will evaluate the well and pumping system, put together documents and spec's as to what is required to get back to operational. We will design the irrigation based on the current regulations and requirements of the Town of Lyons.

Ecological Restoration

ECOS has been a strong advocate for the Town of Lyons for many years. Prior to the flooding, they paired the Town with a benefactor to provide over $50,000 worth of plant material and professional services to enhance Preble's Meadow Jumping Mouse habitat at the Lyons Valley River Park at McConnell Ponds. More recently, they have the honor of being the revegetation, ecological permitting and compliance specialists on the design-build "Stream Team". ECOS brings their knowledge of the site, stream and plant community design, and regulatory background to the Bohn Park design team to help streamline the process and eliminate redundancies. They have a thorough understanding of the existing conditions of both the north and south forks of the St. Vrain Creek, the resiliency and ecological restoration goals and objectives of the creek restoration project, the specific conditions of the permits obtained, as well as the proposed creek and floodplain conditions throughout Town that will affect the design of Bohn Park and adjacent properties. Through their interaction with land owners and Town staff, ECOS has empathy for their struggles, frustrations, and desires to return to normalcy. They also have foresight of the positive effects that their actions and designs will have on the landscape, wildlife, people's lives, and the community as our whole team works to revitalize Bohn Park - a major tourism, event, and recreational feature that supports the economic base of the Town and the locals use to connect with nature, their neighbors, and community.

Skatepark

As part of the design process we want to explore alternatives to adding modular equipment or an off the shelf skate skills area with options for semi-custom poured-in-place events and custom poured-in-place concrete skate spots. We often hear from municipalities that, "they just cannot afford a custom poured-in-place skate area." As part of the design process, we want to review alternatives with staff, with skate park advocacy groups and with the public as part of our outreach in order to give you all the information needed to decide which type of facility is best for your community.

Some of the main differences between Poured-in-Place and Modular are Overall Cost, Maintenance, Life Expectancy, Liability, Actual "Sticker" Price, Size, Warranty, Quality, Noise, Aesthetics, and Experience of users.

Ultimately, we want to provide Lyons the best alternative that fits within your allocated budget and what the local skate park advocacy groups want. Our approach will offer a distinctive design that fits into the overall plan, while engaging and challenging the local users from a beginner to immediate level of skill.

We can work with local skate park equipment representatives to design skate skills areas with premanufactured equipment. We can also utilize the services of Pillar Design whom we have worked with on many occasions for custom concrete skate skills areas if this is the direction the Town is headed. If it is determined through the public outreach process and conversations with the Town of Lyons that a custom poured-in-place skate skills area is a top priority, we can develop parameters for Pillar Design to work within in order to complete conceptual and technical design documents. A scope and fee for Pillar Design is included as an optional service in the fee schedule.

Climbing/ Bouldering Area

ID Sculpture has joined our team to assist with developing concepts and alternatives for the boulder climbing area. They have extensive experience in developing rock climbing play features in many shapes and sizes to meet the Town of Lyons needs for the climbing area at Bohn Park. The character of the climbing feature will build off of the vision established by the community during the planning process and continue to be developed for review and final approval during the design process. Each project begins with the creation of either a physical or digital maquette. This allows them to work quickly and accurately at a variety of scales while maintaining creative control. It also means the model you approve is exactly what the fabrication team builds. Whether it's an initial concept or a final production model, IDS's digital workflow grants smooth and accurate collaboration and coordination. Once we establish a concept, we'll use this input to develop a digital 3-D model that will be presented for feedback to make sure we're on the right track. You'll have final approval before we develop complete sealed construction documents and shop drawings.

Playground Design

There are many ways we can look at planning and designing for the Play Environment and playgrounds within Bohn Park. We want to continue with the established theme within Meadow Park and create a unique experience for children of all ages to engage with the outdoors and be creative in their exploration. Following are some of our initial thoughts as we begin looking at what a play environment may look like.

Successful designs and planning for playgrounds acknowledge the context and relationship each location has to other programmed spaces within the park site. At Bohn Park, there are several elements that can work in concert to create a unified experience for each child as they move, play and learn within the Play Environment. These elements can be further enhanced by providing thematic elements to create their own individual experience. These elements include:

- Creating a hierarchy of spaces that delineate entry, primary play areas, thresholds, resting/ viewing areas, circulation routes
- Improved circulation and view corridors onto the entirety of Bohn Park and within context of the natural areas and St Vrain
- Use of existing site features and play features such as the adjoining open space properties, the St Vrain, the ditch return flows and other site features
- Arrangement of spaces to avoid conflict of uses between play events
- Enhancement of Existing Landscape Opportunities
- Security of play areas and visibility from all areas of the play environment
- Shade for children and activity areas
- The introduction of water and connections to the ditch water returns

Playgrounds have the most amazing opportunity to create spaces meant to encourage imaginative, unstructured play and enhance a child's sense of exploration and adventure. The Bohn Park Play Environment can take on a life of its own and become a destination playground within Lyons and the region where kids in the neighborhood as well as outside will come to play. We will want to plan around these elements to create an experience that encourages left brain thinking and not only exercises a child's body muscles and motor skills, but exercises the mind and creativity.

We understand that our job isn't to tell children how/where/ what to play, but to give them a safe, inspiring environment that lets them tap into their creative spirits. A lot of great thoughts have already been generated by Lyon's 4th and 5th graders in the essays they prepared. We have reviewed these and want to engage the school and students to assist with developing these ideas into the playground. We will work with the Town of Lyons to maintain safety in the design and make sure it fits with your needs and goals for park and playground maintenance and operations.

Natural Play

DHM continually searches out cutting edge concepts and trends to improve upon the outdoor environments where we live, work and play. Great examples of imaginative natural play can be found throughout the country and in our own backyard at places like the Denver's Children's Museum, and a recent project of DHM's, Johnson Habitat Park in Denver. Johnson Habitat Park looked at opportunities to get kids outside to explore and play

in nature in fun and safe ways. We integrated features into the park such as fallen trees from along the river for kids to climb and play on, branches for kids to stack and build forts, rocks to climb and play on, explorative paths to follow animal tracks. We also looked at opportunities for introducing forms and shapes found in nature into the play environment with the creation of GFRC/Gunnite Boulder formations for play elements. Ditch flow returns will also provide a great opportunity to introduce water into the play environment.

Playgrounds

DHM will work closely with multiple playground manufacturers to develop the play area with established themes in mind to achieve unique experience for all visitors. We have found that by securing design alternates for playgrounds from multiple playground manufacturers we can review alternates with the Town, a possible Youth Task Force and with the community to see what you would like to see built and vote on a preferred plan.

Mountain Bike Skills Park/ Mountain Bike Loop Trails

Today's parks can offer many more opportunities for more diverse sports and activities than traditional picnic and playfield parks have ever provided. These activities expand the reach to a broader range of users with a wider range of ages and physical abilities that would increase activity from within the Lyons community and from outside the region.

As plans were developed for Bohn Park, and as we met with the community during the park planning process, we understood the importance of the existing bike park to the Town and how a smaller addition for younger children learning bike skills would be of high value. The bike park could be designed with auxiliary activities for kids of all ages and abilities. Consideration should be given for alternate activities within a core area for families that are at the park all day during events and do not want to stay on the bike trails and in the bike or skate park that can be arranged around the bike park. We want to take a comprehensive look at the Bike Park and not only look at how it fits within the context of the park development but at other activities that supplement it - and even further activate it. We have been having conversations with Redstone Cyclery regarding design and construction of the mountain bike loop trail, the bike park expansion and trails within Bohn Park in general. They have offered to assist with design and attending workshops to brainstorm ideas on how to best develop these amenities for the Town.

Redstone Cyclery has offered assistance at no cost for design as well as construction. DHM will work with them to develop these designs and provide supporting documentation for bidding/ building the work.

Drainage

ICON Engineering has joined our team to assist with civil engineering and drainage requirements for the park. DHM has enjoyed an extensive working relationship with ICON for more than a decade and continues to work with them closely on constructing over $9 million of park improvements for the City of Denver and $7 million for the City of Aurora. ICON brings a thorough understanding of site drainage and innovative technologies in water quality solutions and general park development to the team.

Site Evaluation and Concept Refinement

As the team that assisted the Town with public outreach in developing the master plan for Bohn Park, we understand the site and have completed numerous site visits to understand the nuances of the programming and design in the master plan. The site offers many opportunities and challenges that will need to be explored within the development of master plan into detailed design development drawings and final designs and final construction documents. The DHM Design Team efforts will focus on:

- Site selection and evaluation of the programming
- Establish key functional relationships relative to phasing
- Designing of park elements and amenities to maximize development potential and minimize construction costs, including review of emergency access during construction and during operation.
- Integrating sustainability design principles into the design, construction, maintenance and operations of the park.
- Introducing theming and interactive play elements into the park environment to identify with the overall Town of Lyons character.
- Utilizing xeric design principles and use of alternate turfs in order to promote water wise landscape within the park. Installation and maintenance costs will be compared with water use worksheets to determine alternative feasibility for all options.
- Reviewing circulation patterns and activity areas is critical in refining the master plan to determine any adjustments necessary to create a first rate experience for the park users.

Phased Bid Sets and Schedule

It may be necessary to phase bid sets based on timing, schedules and permitting. We understand that the Stream Team has secured a 404 Nation Wide permit 27 for the St Vrain that includes the stretch in Bohn Park. ECOS is confident that the NW27 will still apply to the work we are doing in Bohn Park and will most likely only require an amendment for stream restoration. This will help to expedite the permitting process. Bid sets for upland park development outside the floodplain can be developed and ready for bid by July. In order to meet this aggressive schedule we will want to hold weekly meetingsto review designs and make critical decisions to keep the project moving forward. Plans for floodplain development and construction within the St Vrain may be phased to coincide with low water levels in the Fall and Winter months. This will help to focus on designing, engineering, permitting and bidding the upland park development while plans and permitting for instream work will continue to be developed.

Field and Park Lighting and Electrical Design

Lighting of one ballfield is noted in the planning document and has been supported and approved as part of the deed restrictions on the property. New ballfield lighting is to be included with the final park design and construction. We've worked with companies such as Musco and Qualite on many park projects to determine best lighting for our clients needs. Musco has already provided valuable input for Bohn Park on the light levels of the ballfield for use in the deed restriction with the Carroll's.

Our scope and fee includes developing a power source and supply for the field lighting, the irrigation pump and controller, restroom and park host site. We will coordinate with ballfield lighting suppliers such as Musco or Qualite for more detailed layout and designs of the field lighting. Field lighting suppliers have their own team of engineers to assist with foundation designs and lighting placement as part of the cost of their product. We have not included parking lot lighting or lights and electricity for the shade shelters in our fee as this is not code dependent.

AEDG will assist with review and feasibility of different automated parking payment systems for inclusion within the designs. Standard automated parking systems typically utilize a solar power panel. All options will be reviewed including a hardwired system for use by the Town.

Means and Methods/Project Approach

The work effort has been broken down into tasks to better understand the organization that needs to go into development of the final construction documents. Our project approach is organized around four general task items. It includes the complete scope of services outlined in the request for proposals, organized in a manner that brings the most efficiency and value to the Town.

1. Project Management
2. Design Development (approximately 50% progress review set)
3. Construction Documents (95% progress review set and 100% Final Review Set)
4. Bid Phase/ Construction Administration services

Below is a summary of task descriptions for the proposed Phases of the project, as well as project deliverables for each Phase. Breakdowns of specific project task items are listed within each project estimating sheet that show an estimate of manpower and expenses. Documents will be developed in accordance with the Town's standards and requirements.

Task I: Project Management

Project Management Plan

We begin the project with development of a Project Management Plan and a kickoff meeting with the Town sponsors, followed by initial gathering of information and physical site assessment. Communication with the design team will continue and be the basis of preparation of an outline of our work plan and schedule.

We will work with you to refine goals for Bohn Park and the St. Vrain Trail extension to create a framework for decision making that will guide the final design process.

The team will create a finalized Project Management Plan that includes data collection, stakeholder input, draft design process and opinion of probable construction costs, design guidelines, design reports, and final designs. This work plan will identify milestones, work sessions, opportunities for review and feedback and all the tasks necessary to seek approval for the final designs. A project schedule will be developed and updated weekly that highlights the critical path and milestones.

A project binder will be prepared that collects and organizes all data, reports, communications and graphics generated throughout the project.

Data Collection/Existing Conditions

Our goal is to gain a deep understanding of the park's existing conditions, opportunities and constraints. Our inventory and site analysis will be comprehensive, and include all existing facilities, circulation and wayfinding, and the ecology and history of the site. We will build off the existing master plan and continue to review the impacts of the master plan on the site. We want to appropriately respond to all functional and programmatic needs.

During the initial kickoff meeting, we will coordinate with you to establish a clear project schedule and milestones. The team will carefully re-evaluate the extent of the flood damage in relation to pre-flood conditions, including FEMA damage assessment documents, the LRAP, PDG, SRCAP and other documents. Our inventory and site analysis will be comprehensive, and include a thorough investigation of the park's infrastructure and existing conditions, so that we fully understand and appropriately respond to all functional and programmatic needs and concerns with the park. In this task, we will reach out to the coordinating and permitting agencies and meet regarding project intent and scope.

Weekly Progress Meetings

DHM and select members of the design team will attend a project kickoff meeting and weekly progress meetings during the design phase in order to secure feedback and to receive critical decisions in order to expedite and move forward with the design to meet schedule requirements. We estimate design meetings to extend from March 7 to July/ August for when the project bids (21 weeks).

Collection of Stakeholder/Data Input and Program Development

Stakeholder meetings will be structured around a work session format to engage everyone on their vision, priorities and in better understanding their keys to success. Design solutions will look at grading alternatives to provide better access to the St Vrain, limits and locations of fill operations to relocate and elevate park amenities, and removing of structures and amenities from the floodplain. We will continually review the master plan and estimates as we develop final designs to maintain budget, and continue discussions on what needs to be modified if anything.

We understand there are concerns from stakeholders regarding lighting of ballfields, parking and road access, overflow parking and river access. We will review all these concerns with the Town's project team to see how to best address them in the final designs. We will assist the Town in determining "enhancements" to preflood conditions in the design phase to best align with available funding.

We will continually coordinate with all other projects going on along the St Vrain including the Stream Team, the Lyons new Water and Sanitation Facility, Lyons Valley River Park, The Clarifier Art Project and others that are within close proximity and may be impacted by the work going on at Bohn Park.

Alternate Delivery/ CMGC Feasibility Review Process

DHM will review with the Town the feasibility in alternative bidding such as a CM/GC to assist with quality control and expediting the construction process. There will be a decision point in the schedule to recommend an appropriate alternative bidding process. Alternate delivery may include engaging a contractor as early as 50% designs for preconstruction and value engineering services; design/ build contracts, or prequalifying contractors to bid at 90% plans in order to expedite the schedule and maintain an aggressive completion. We will review all scenarios with the Town to see what fits the project requirements best.

Public Meetings

DHM will prepare, organize and lead 2 public meetings to gain input from the community and stakeholders during the design development task and final design and programming task. DHM will prepare all graphics, printing and PPT presentations for use at the public meeting. Lyons will provide announcements and a facility for meeting.

The first public meeting will review the design development plans and details developed to date. We want to solicit any feedback prior to beginning the next task of developing final designs.

At a second public meeting, we will present the final designs to date and open the floor for feedback. The most important part about this phase of the public process is to make sure public and stakeholder groups feel that they have had an opportunity to speak, and that they know we have heard what they said. We do this by reiterating main issues and comments from the first public meeting and giving the opportunity to refine and prioritize those issues before they are solidified in the final bid documents.

Pre-Design Meeting with CPW

A pre-design meeting will be held with Colorado Parks and Wildlife biologists to discuss design elements of the in-stream and floodplain areas that will best meet the goals of providing excellent fish habitat and a recreational experience.

Parks and Rec Commission/ Board of Trustees Presentations

DHM will attend and present at a Parks and Rec Commission/ Board of Trustees Meeting to present the final designs for final approval.

We will use this meeting with Town Staff, Parks and Recreation Commission, and Board of Trustees meeting to review comments and feedback from the public and validate the design decisions that are incorporated into the final designs. This provides one last opportunity to discuss any gaps of information and ensure that the final products are in complete alignment with the goals and objectives of the original intent of the staff and community. We will review the design details and leave with a recommended action to produce the final bid documents. This meeting will serve as a check and balance that the needs of the community can be met in the most cost effective and value added manner.

Deliverables:

- Public Outreach Diagrams and Graphics
- Public Outreach Summary
- Meeting Agendas and Notes
- Project Schedule
- Project Binder

Task 2: Design Development

Design Development of Selected Plan

Our team will leverage its deep experience in park design and construction to thoroughly evaluate the approved Master Plan and develop detailed plans to a 50% progress level.

We will begin preparation of a Design Development package that will be used to vet out technical design of the park site improvements based upon the final master plan design evaluation and completion. We anticipate the following plans to be developed:

- Material image board and cut sheets
- Construction details for the park site improvements
- First draft of technical specifications
- Phasing of improvements will be reviewed based upon technical design parameters and budgeting.
- DHM will incorporate comments from the Parks Flood Recovery Planning Process and from review with Town staff, and stakeholders into a Design Development Plan set for use in permitting, interdepartmental coordination, evaluation and possible selection of a CM/GC and review prior to beginning Final Designs and Construction Documents.
- Preliminary site layout of the park, including grading plans, drainage plans, utilities, materials, landscaping, irrigation and site details.

These plans will be prepared in AutoCAD format and will be the basis for accurate cost estimating. Plan review sets will be provided to the Town at completion of Design Development for review and comment.

Detailed design and specifications for the in-stream features will be created based on feedback from the Town of Lyons, the public meetings, regulatory agencies and permitting requirements. This includes all final calculations including piping, scour, sheer stress, etc. Detailed specifications will also be created. Design drawings will be advanced to show specific design layout and elevations, as well as specific details.

We will present plans to Town Staff for review comments before moving into the final design task.

In-stream Design

In Channel Structures Design: The in channel structure design will include detailed design analysis of the five drop structures and all additional habitat and grading in the creek channel. The design elements will be vetted and modified based on feedback from the Town of Lyons, regulatory agencies and permitting requirements. All in channel structures will be designed to meet multiple objectives of habitat, fish passage, and recreational benefits.

Floodplain Connection and Overflow Design: The floodplain and riparian areas will be analyzed to determine limits of potential future flooding. The floodplain design will identify areas where potential overflow channels and floodplain grading may be incorporated to reduce potential flood damage to park entities and neighboring property. The floodplain connection and overflow design will be closely coordinated with the design and layout of trails, creek access points, potential public art, memorials, parking lots, pedestrian bridge, and other park elements. The design elements will be vetted and modified based on feedback from the Town of Lyons, regulatory agencies and permitting requirements.

Conceptual Architectural Designs

We have brought to the project a group of highly qualified architects and engineers that includes BRS, KYSE Structural Consultants for structural engineering, as well as the Ballard Group for mechanical systems, and AEDG engineers for electrical design. We have a very collaborative working relationship with this team, which will ensure a successful outcome for the project. All of these architects and engineers have worked on similar projects with DHM on park restrooms and shelters. Our scope of work will include a very short programming discussion, Schematic Design, Design Development, and Construction Documents phases.

Definitive Cost Estimates with Possible Alternatives

Preparation of a Preliminary Construction Cost Estimate on the DD set will be completed and necessary adjustments will be made to the documents to bring the project within budget. Possible alternatives will be reviewed for construction sequencing and budget considerations.

We will provide a detailed estimate of probable costs of the design development plan set with costs by specific area within the park. DHM understands the importance of accurate cost estimating. We believe that very detailed estimates, all inclusive of permits, fees, utility services, construction, testing, design, administration and inflation lead to more accurate park development cost s. DHM will work closely with local consultants to prepare a detailed estimate for construction. Finally, a preliminary phasing approach will be developed that reviews breaking out bid packages for the instream work versus the upland park work and other items in the park that may not be currently funded.

Quality Control/ Quality Assurance

A Senior staff member at DHM, not directly involved in the project, will review plans for technical detailing and design prior to submitting to the City of Aurora for review.

DD Submittal/ DD Review Comments and respond/ DD Meeting

Provide Design Development level drawings and preliminary reports in PDF format to Denver PROS for review to obtain comments on the design. We will also submit any specific drawings to other review agencies as required. All comments will be reviewed and a response prepared that addresses all comments in a comment/ response matrix. Comments will be incorporated in the 75% CD progress set where applicable. Plans will include site layout, grading/drainage plans, utilities, site plan, landscaping, and site details. We will also prepare Stormwater Management and Erosion Control Plans. These plans will be prepared in AutoCAD format and will be the basis for accurate cost estimating. Plans will be printed and available as a pdf document on cd as required.

Geotechnical Report

Shannon and Wilson has joined our team to assist with geotechnical investigations. They will review the Bohn Park master plan and provide geotechnical investigative services for use in developing 100% designs Following is our proposal on borings and locations.

- Drill 8 borings total. Two bridge borings to depths of approximately 50 feet, five wall and structure borings to a depth of approximately 20 feet, and one pavement boring to a depth of approximately 10 feet for a total drilling footage of 230 feet. Samples will be collected at 5-foot intervals in accordance with the Standard Penetration Test (SPT) or using the modified California sampler.
- Borings will be staked at pertinent features based on the updated site plan at time of drilling.

Utility Investigation Report

Utilities / Locates / Potholing / Report – Collect utilities maps, provide on ground painted field locates for critical areas, determine potholing locations as required for design and provide one day of potholing (approximately 6 potholes). Complete Utilities Investigation Report.

Hydraulic Report

Existing Conditions Model

Existing conditions hydraulic models will be created with enough detail to model all design elements of the proposed park improvements. The hydraulic model created by OTAK in the St. Vrain Creek Channel Flood Recovery Design-Build project will be used as a base model. The modeling will be analyzed at a range of flows from base flows to the updated 500 year flows using the existing post flood conditions geometry.

Proposed Conditions Floodplain Model

A one dimensional model will be created with the proposed improvements in order to obtain a floodplain development permit. The 1D model will be compared to the existing conditions 1D model in order to show a no-rise condition. All improvements that have potential floodplain impacts will be modeling, including, drop structures, habitat structures, and the pedestrian bridge. The floodplain model will be analyzed at the regulatory 10 year, 100 year, and 500 year flows as well as the updated 100 year and 500 year flow rates.

Proposed Conditions Detailed Design Model: One and two dimensional models will be created in order to analyze the proposed conditions. The proposed condition model will be analyzed at a range of flows from base flow to the updated 500 year flow rate to determine how the proposed improvements will function during all conditions. Critical flow rates to analyze to will be determined to include base flows, critical flows for fish habitat, recreation, and flood conditions.

Hydraulic Report

A detailed hydraulic report will be produced that will present modeling assumptions and results, as well as a detailed description of how the proposed conditions will function

Floodplain Development Permit

A complete submittal for a floodplain development permit will be compiled. This submittal will include existing and proposed conditions model, the Hydraulic Report, a certificate of "no rise", design drawings, and the permit application. The permit will be submitted with both paper and digital copies. It is assumed a permitting meeting will be required to expedite the review process.

Drainage Report

Drainage Requirements – Determine overall drainage requirements for the project design including requirements for storm sewers, channels, irrigation ditch impacts, detention and water quality requirements.

Water & Sewer – Prepare preliminary layouts and requirements for water and sewer facilities for the site improvements. Coordinate requirements with the Town's Engineer and team mechanical engineer for sizing.

Draft Drainage Study / Report – Prepare drainage study based on grading and site plan for the proposed improvements. Evaluate on-site and off-site drainage basins, percent impervious areas, and develop a plan for sizing detention / water quality ponds that will be incorporated into the overall project concept as well as other drainage improvements such as storm sewers, channels, swales and irrigation ditch improvements. Water quality pond sizing and location will depend on the new impervious areas within the park.

Survey Work

CivilArts completed the existing survey work of the area as noted in the RFP. This work includes a de-facto boundary survey of the entire park property and the entire southerly side of Lyons, covering more than the extents of this project. In the park, it includes mapping of existing improvements, structures, and trails; mapping all surface features and underground lines of utilities; and mapping of selected trees. It includes detailed mapping of the Second Avenue Bridge and the Old South St. Vrain Road Bridge. They provided 17 cross-sections across St. Vrain Creek at 200-foot intervals between the west side of the Lyons Waste Water Treatment Plant and South St. Vrain Road Bridge, plus 2 upstream and 2 downstream cross-sections at each bridge, and in-creek structures. There is one FIS cross-section in this area. Their scope for this project includes the following.

- Design Mapping: Provide finished topographic and planimetric mapping of the Bohn Park area at an appropriate scale showing contours at 1' intervals. Mapping will be a supplement to the previous mapping provided by CivilArts to the Town of Lyons. CivilArts will provide cursory topographic mapping within the BMX bike area.
- Marking of Underground Utilities will be provided through Underground Consulting Solutions.
- Supplemental Surveying & Mapping
- Supplemental surveying and mapping on an on-call basis as the need arises
- Property Research / Surveying: CivilArts will prepare an updated Property Ownership Map of the Bohn Park mapping area
- Creek, In-creek Structures, & Bridges

Due to the extensive amount of existing cross sections and FIS cross section in this area, additional time and fee has not been given for surveying cross sections along the creek, in creek structures and bridge.

Environmental Documentation and Design

Site Assessment and Biological Benchmarks

Ecos's typical first step to restoration design is a site assessment, backed up by baseline data collection of climate, soils, vegetation, hydrology, wildlife, perturbation, and cultural resources of an undisturbed site in order to establish "biological benchmarks" that can be used for habitat restoration, enhancement, or creation. Depending on the scope and scale of the project, this step could include the use of historical photography, anecdotal evidence (e.g., reference sites), and the latest satellite imagery to establish the pre- and post-disturbance conditions of a site. For this project, ecos has already completed the site assessment and utilized existing data and reference literature to develop native plant palettes to restore the vegetation community.

Aquatic, Wetland and Riparian Habitat Restoration Design

Once the assessment data and design basis and criteria are set, our team gathers and draws ideas and solutions and then utilizes computer aided drafting (CAD) technology as a tool to prepare restoration/landscape designs that are both functional and self-sustaining.

Concept, preliminary, draft final and final design plans that gain more detail with each design iteration are typically produced and conveyed to the client for comment as the design develops. Cost estimates developed along the way help the client decide on cost saving measures or "value engineering" that may be needed to stay within budget while maintaining quality.

A design package is produced that typically consists of plans, profiles, details, notes, and specifications that cover the following:

- Site Location and Context;
- Limits of Disturbance/Protection of Individual Resources;
- Sensitive Habitat and Site Feature Protection;
- Grading and Drainage;
- Channel Improvements;
- Hydraulic Structures and Grade Controls;
- In-stream habitat/Fishery Improvement Structures;
- Plant Community Planting and Seeding;
- Wildlife Habitat Enhancements; and
- Site and Bioengineered Bank Stabilization

When working within a larger team, design information to support the development of design/construction documents is transmitted to the Prime Consultant to incorporate into the plan set.

Regulatory and Permitting Assistance

ECOS handles many projects that require regulatory assistance and ultimately, permit approvals, including:

- Clean Water Act (CWA) Section 404 Permits (Nationwide, Regional and Individual) through the U.S. Army Corps of Engineers (USACE)
- Endangered Species Act (ESA)Threatened and endangered (T&E) species consultation through the U.S. Fish and Wildlife Services (USFWS)
- Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA)
- Letters of Concurrence or Recommendation from the Colorado Parks and Wildlife (CPW)

Once ecological constraints are identified during the initial site assessment phase or detailed delineation, ECOS typically holds a strategy meeting with the project team and client. During the strategy meeting we discuss and explain the results of the assessment and data gaps; provide recommendations regarding avoidance and minimization of impacts; project timeline implications; and potential design modifications and regulatory strategy to avoid or minimize impacts or permitting altogether. Our track record has proven that this strategy meeting often leads to cost and time effective project planning. More complex projects may also require a pre-application meeting with the regulatory agencies to confirm a permit approval strategy.

Upon the completion of the strategy and pre-application meetings, ecos provides comprehensive support for resource agency consultation and permit application preparation. We are highly experienced in environmental policies, regulations and permit processes; and have developed excellent, long-term relationships with the federal, state and local regulatory communities in Colorado and the inter-mountain west. The level of respect and trust we have generated with the resource agencies who know our philosophy and core values, as well as our experience, insight and reliance on scientific data, allow us to guide our clients through the regulatory process in the most expeditious manner.

For the Bohn Park project, ECOS has already obtained a Nationwide Permit 27 authorization from the USACE and a Biological Opinion from the USFWS to conduct Aquatic Habitat Restoration on the South, North and main stem of St. Vrain Creek. As such, our regulatory approach would involve coordination with the project team, client and agencies to ensure design and construction stays in compliance with the permit and to provide the agencies with relevant updates or permit amendments that may reflect changes that may differ from the original permit applications. ECOS will also be assessing and monitoring any nests specifically within the project area that are regulated under the MBTA. Bald and golden eagle monitoring will be conducted separately, but ECOS will work with the project team and selected contractor to ensure compliance with the BGEPA.

ACOE Permitting

It is assumed that additional ACOE permitting will be required for the proposed work. It is anticipated that the permitting will qualify as a Nationwide 3 for maintenance of the previously permitted structures or Regional General Permit 12 for fish habitat improvements. There is a possibility that the Nationwide 27 permit acquired from the St. Vrain Creek Channel Flood Recovery Design-Build project can be carried over and amended for this project. The Nationwide 27 does not allow for whitewater park structures so it is anticipated additional permitting will be required.

Preliminary Erosion Control Plan

Prepare Erosion Control Plan Drawings – Develop an Erosion Control Plan on detailed drawings for the proposed improvements. It is assumed that the Contractor will use these drawings to prepare his own SWMP Plan and Report to obtain his stormwater permit.

Design Standards for Park Amenities

DHM will review the current design standards document that was prepared during the development of designs and construction for Meadow park and build on this design standard with features and project elements that are developed during the design of Bohn Park.

Park Signage Plan

DHM will work with Town Staff to ensure the park can fully operate upon construction by establishing a signage plan for traffic flow, pedestrian flow, and all facilities and amenities.

Deliverables:

- Comment response matrix at 50% submittal
- Draft Engineering Studies
- 50% Design Development Drawings (3 full size sets, 24"x36")
- 50% Draft Technical Specifications. (2 sets, 8 ½"x11")
- 50% Design Development Estimate of Probable Construction Costs and Pricing Schedule.

Task 3: CONSTRUCTION DOCUMENTS (95% Submittal, 100% Final Review)

Based upon final Design Development comments from the Town and the findings from the Draft Construction Cost Estimate, the design team will complete the remaining technical work effort to complete Construction Documents and Technical Specifications for the 95% and 100% Final Construction Set submittals.

In an effort to improve our construction document quality control, we have developed a plan checklist to make sure our packages are complete and well-coordinated with all consultants.

After a final meeting with the Town Staff, we will revise the complete package per any outstanding comments and deliver stamped drawings. We will at this point have a final plan set for construction

Prepare 95% and 100% Final Review Drawings

95% complete construction drawings will be prepared for the project including major elements such as cover sheet, general notes, Site Preparation and Tree Protection Plans, Erosion and Sediment Control Plans, overall site layout and materials plans and grading sheets, miscellaneous site details, planting/ revegetation plan, irrigation plans, utility plans, drainage plans. Detailed designs will be provided for all programming as noted in the master plan. 95% drawings will be prepared for submittal through the Town permitting process. DHM will continue developing plans to meet deadlines and schedule requirements for 100% Final Construction drawings during this review to maintain an accelerated schedule.

Electrical/ Lighting Design

The following assumptions have been made for electrical and lighting design.

1. Electrical coordination for one illuminated ballfield. It is anticipated that the lighting will be provided by MUSCO.
2. There are existing tennis courts and it is anticipated that the existing power can be reused.
3. There will be a new pay for parking kiosk. Assist team in researching the option for a solar powered station vs. a hard wired connection.
4. Assume no lighting or power for the new shelters.
5. Coordinate power requirements and connections for new well pump.
6. No lighting is anticipated in parking areas.
7. Provide one new RV connection at camp host site.
8. Coordinate incoming electrical utility requirements with civil and utility company.
9. Provide electrical construction drawings for permit and construction.
10. Provide construction administration including answering RFI's, reviewing submittals, and one final site observation.
11. Anticipate one meeting and initial site observation to occur at the same time and all other coordination meetings will be at DHM or S2O offices.
12. The power and lighting coordination and associated fees for the new restroom structure are provided under a separate document and are not included within this scope or fee.

Quantities/ Estimate of Probable Construction Costs

DHM will prepare 95% and 100% design level quantities and estimated construction costs for the proposed improvements. A component of the cost estimate will be to define the park designs into a logical sequence of phases, for which the Town can then explore additional funding opportunities in manageable segments.

95%/ 100% Submittal/ 95%/ 100% Review Comments and respond 95%/100% Review Meeting

DHM will submit 95% and 100% level drawings and reports in PDF format and hard copy (5 sets) to the Town of Lyons for review to obtain comments on the design. Also, we will submit any specific drawings to other review agencies as required. All comments will be reviewed and a response prepared that addresses all comments. Comments will be incorporated in the next phase of submittal documents.

Plans will be prepared in AutoCAD format and will be the basis for accurate cost estimating. Plans will be printed and available as a pdf document on cd as required.

Draft and Final Technical Construction Specifications with description of Bid Items

Draft and Final Technical bid specifications will be prepared based on CSI Master Format Standards in electronic format. Technical specifications, measurement & payment, and special contract conditions will be prepared. It is assumed that general provisions and Division 1 sections will be provided by the Town for incorporation into the contract documents.

Deliverables:

- Comment response matrix at 95% and 100% submittal
- Final Engineering Studies.
- 95% and 100% Final Construction Drawings (5 full size sets, 24"x36").
- 95% and 100% Draft and Final Technical Specifications. (2 sets, 8 ½"x11").
- 95% and 100% Estimate of Probable Construction Costs and Pricing Schedule.

Task 4: Bidding and Construction Administration

Final Acceptance

DHM will make final corrections to plans, specifications and other submittals until final acceptance of plans ready for bidding.

Contract Documents

DHM will submit one set of full size (24"x36") scanned drawings, and one set of prints. DHM will submit one set of reproducible special conditions, technical specifications and bid forms and a CD ROM containing electronic files.

Detailed construction bid documents for the park and in-stream features, including construction contract documents, general conditions, administrative forms, required FEMA forms, construction specifications and drawings, a detailed cost estimate, and an estimated construction timeline, will be prepared. We will issue addendums to the Town's bid documents, answer questions from potential bidders, review the bid documents, and make a recommendation of award.

Construction Administrative Assistance

DHM will provide clarification to the drawings as necessary through the entire bidding and construction process. We understand that the Town has a dedicated administrator for this and other projects. We have included limited construction administration (monthly meetings) to ensure that these specialty products and systems are installed properly and to be available to address any design questions that may come up.

Construction Administration

Tasks include site visits, availability to answer any RFI's, provide design clarifications and review submittals, visit the site to review critical site items and answer any other questions that may come up during construction that impact design. Our team of consultants will assist with construction administrative services for site, architecture, utilities, instream work, and drainage and infrastructure improvements as it relates to their disciplines. A detailed scope and estimate of hours is included within our fee schedule. S2o will provide onsite construction inspection for the in channel structures and floodplain overflow elements. In addition to onsite inspection S2o will assist with any submittal review, ASI, RFI, missing detail, or changes that arise during the construction phase.

DHM attendance at weekly construction meetings is shown as an optional service in the fee schedule.

Blue River Trail

H. Evaluation Criterion #4 - Project Control

Project Control

Quality Control

DHM has a formal "Quality Control" policy. All construction document projects must be reviewed by a Principal or Senior Project Manager, preferably someone who has not worked on the project (a fresh pair of eyes), before submitting/ bidding.

In an effort to improve our construction document quality control, we have developed a plan checklist to make sure our construction documents are complete and well coordinated with other consultants. Contractors are bidding projects very low and looking for opportunities for change orders. Documents must be concise to avoid change orders that impact client budgets.

Our team members have worked together on numerous projects so they understand the high level of expectations and quality required. This makes for a more streamlined and efficient process that adheres to the project schedule. DHM's quality control process includes:

- Establishing expectations, schedule and preferred methods of delivery at the start of every project.
- Establishing incremented reviews with the client to ensure program, materials, costs and maintenance considerations are being met.
- Provide high quality graphics that not only illustrate the design intent, but inspire project stakeholders.
- Providing an organized filing system for easy retrieval and gathering of documents.
- DHM documents the results of meetings, presentations and stakeholder comments to ensure all critical items are evaluated and included within the project.
- We use a series of scheduling programs such as Microsoft Projects and Outlook to monitor progress on projects as well as weekly team meetings and weekly company wide resource sharing meetings to ensure all critical deadlines are being met.

Cost Control Methodology

The design team prepares Opinions of Cost at each step in the design process to ensure we are adhering to the client's available budget. We believe that very detailed estimates, all inclusive of permits, fees, utility services, construction, testing, design, administration and inflation lead to more accurate park development costs. DHM typically provides for bid alternates and works with clients and contractors to value engineer specific components of a project to maximize the available budget.

Schedule Management

Management of a team requires good planning in order to have the required resources available to propose on and perform work. Furthermore, the qualifications of the key personnel must be understood to ensure that the project is bid and ultimately accomplished to the satisfaction of the client. Based upon the scope of work and project schedule for the project, we have compared the project personnel needs with the staff currently available to support new projects. We have determined our team has sufficient resources to successfully meet the project schedule. Additional staff can be committed to the work as needed. DHM Design uses Microsoft Projects.

DHM is working on a variety of projects in various stages of design. We have successfully completed similar park projects throughout the Front Range, while staying within the scheduling and budgeting parameters set for our team. In the past we have exceeded the project schedule, such as the Lyon's Phase 1 Master Plan, due to unforeseen contractor issue. Fortunately, delays like this are usually short and manageable. For this project, we have an adequate number of people, computer facilities, and the commitment of our staff to meet the challenges of the project. We will coordinate and adapt the proposed schedule to set realistic deadlines and allow you to track the progress of the project as it advances through to completion.

Schedule

March 7	Notice of Award
March 14	NTP - Kickoff Meeting (Thursday Afternoons - Weekly Meetings)
May 12	50% DD
May 19	Public Meeting
June 2	95% CD
June 9	Public Meeting
Mid June	Parks & Rec Commision
June 13	BOT
July 1	100% CD /Bid Documents
July/August	Bid
September	Construction (Fall/River) (Summer/Park)

(5 Months Design)

Attachment A
Illegal Alien Certificate

CONTRACTOR'S CERTIFICATION OF COMPLIANCE

Pursuant to Colorado Revised Statute, § 8-17.5-101,et seq., as amended 5/13/08, as a prerequisite to entering into a contract for services with the Town of Lyons, Colorado, the undersigned Contractor hereby certifies that at the time of this certification, Contractor does not knowingly employ or contract with an illegal alien who will perform work under the attached contract for services and that the contractor will participate in the E-Verify Program or Department program, as those terms are defined in C.R.S. § 8-17.5-101, et seq., in order to confirm the employment eligibility of all employees who are newly hired for employment to perform work under the attached contract for services.

CONTRACTOR: DHM Design
Company Name Date

Mark Wilcox
Name (Print or Type)

Signature

Principal
Title

Attachment B
Proposal Acknowledgement

PROPOSAL ACKNOWLEDGEMENT FORM

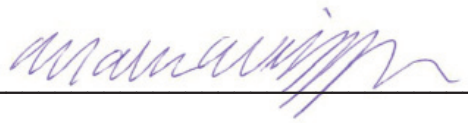
PROJECT NAME: 2016 Lyons Bohn Park Flood Recovery Final Design and Bid Project

Failure to complete, sign and return this submittal page with your proposal may be cause for rejection.

Contact Information Response	Response
Company Name	DHM Design
Name and Title of Primary Contact Person	Mark Wilcox, Principal
Company Address	900 S. Broadway Suite 300 Denver, CO 80209
Phone Number	303.892.5566
Email Address	mwilcox@dhmdesign.com
Company Website	www.dhmdesign.com

By signing below I certify that:

- I am authorized to bid on my company's behalf**.**
- I am not currently an employee of the Town of Lyons.
- **N**one of my employees or agents are currently employees of the Town of Lyons.
- I am not related to any Town of Lyons employee or Elected Official.



2-25-16

Signature of Person Authorized on Company's Behalf Date

Note: If you cannot certify the above statements, please explain in the space provided below**.**

L. Affirmative Action Steps

Attachment C
FEMA CFR 13.36
Affirmative Steps Taken

Project Name and Number: 2016 Lyons Bohn Park Flood Recovery Final Design and Bid Project PW20E

Contractor: DHM Design

1. Place or source you found qualified small and minority businesses and women's business enterprises on solicitation lists? How was this accomplished (please add supporting documentation if applicable)? If this was not done explain why.

   DHM Design and S2O are both considered small businesses under the federal guidelines. The majority of the work on this project will be completed by them.

2. Assure that small and minority businesses, and women's business enterprises are solicited whenever there are potential sources. How did you reach out to these businesses (add documentation if applicable)? If this was not done explain why.

   We reached out individually to firms. As prime, we are a small business, and thus meet this requirement.

3. Divide total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises? What requirements were broken out into smaller tasks or quantities? If this did not occur please explain why.

   Many of the specialty deliverables on this contract were broken out and given to small businesses such as skate park, irrigation, and ecology.

4. Establish delivery schedules, where requirement permits, which encourages participation by small and minority businesses, and women's owned business enterprises. Were you able to established delivery schedules that encouraged these businesses to participate? If not explain why.

   As prime, we are a small business, and thus meet this requirement.

5. Use the Small Business Administration and Minority Business Development Agency of Department of Commerce to solicit these businesses. Please confirm these sites were utilized, if they were not please explain why.

   As prime, we are a small business, and thus meet this requirement. DHM is listed on the SBA as a small business.

6. Require prime contractors to take these steps in subcontracting. Please document that you have encouraged your prime contractors take the five affirmative steps listed above to reach out to small and minority and women's owned business enterprises.

   As prime, we are a small business, and thus meet this requirement.

Prepared By: Karen Current Date: 2/24/16

Reviewed By: _____ Date: _____

Approved By: _____ Date: _____

****For each step enter what actions were taken to meet the requirement**

****If the step could not be fulfilled enter reason why in detail**

****Attach any supporting documentation or reports or responses of the businesses contacted**

****EVERY REQUIREMENT HAS TO BE ADDRESSED**

T. Sanders 7/16/15

Attachment D

CONTRACTOR'S CERTIFICATION OF COMPLIANCE

Pursuant to Colorado Revised Statute, § 8-17.5-101,et seq., as amended 5/13/08, as a prerequisite to entering into a contract for services with the Town of Lyons, Colorado, the undersigned Contractor hereby certifies that at the time of this certification, Contractor does not knowingly employ or contract with an illegal alien who will perform work under the attached contract for services and that the Contractor will participate in the E-Verify Program or Department program, as those terms are defined in C.R.S. § 8-17.5-101, et seq., in order to confirm the employment eligibility of all employees who are newly hired for employment to perform work under the attached contract for services.

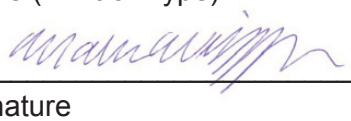
CONTRACTOR:

DHM Design 2-25-2016

Company Name Date

Mark Wilcox

Name (Print or Type)



Signature

Principal

Title

N. Attachment Environmental Clearance Requirements

ATTACHMENT E
ENVIRONMENTAL CLEARANCE REQUIREMENTS

The consultant will be responsible for preparing documents in accordance with the National Environmental Policy Act of 1969 (NEPA) and federal, state and local environmental regulations. Most local agency projects will be covered by a Categorical Exclusion (Cat Ex). These documents will be in CDOT's format and the following clearances are expected:

Threatened or Endangered Species

If it is determined that habitat for any threatened or endangered (T&E) species could potentially occur within the project footprint or adjacent to the project site, a biologist qualified to conduct T&E assessments and/or surveys will need to be retained. It will be the biologist's responsibility to follow survey protocol and obtain all applicable permits to conduct the survey.

Wetlands

If it is determined that wetlands exist within the project area, a wetland ecologist or other qualified person will conduct a wetland determination and if needed, a wetland delineation. The wetland delineation shall be conducted according to the guidelines outlined in the 1987 Corps of Engineers (Corps) Wetland Delineation Manual. Wetland boundaries will be surveyed into the project plan sheets, and temporary and/or permanent impacts determined. If the wetlands are jurisdictional, project activities will be subject to Section 404 permitting through the U.S. Army Corps of Engineers (Corps).

Section 404 Permitting

If a Section 404 permit is required, the applicant will be responsible to ensure all conditions of the permit are adhered to, including preparation of a mitigation plan. CDOT requires a copy of the Corps permit.

Noxious Weeds

A noxious weed survey and management plan will be completed if directed. Noxious weed surveys and management plans will only be completed if there is a heavy weed infestation.

Senate Bill 40

Senate Bill 40 requires any state, or state funded project to obtain wildlife certification from the

Colorado Division of Wildlife when construction is planned in any stream, streambanks or tributaries, either under CDOT Programmatic protocol or a formal request, if required. Documentation will consist of the letter sent to the Colorado Division of Wildlife under the Programmatic agreement or a response from the Colorado Division of Wildlife if a formal request was made.

Storm water Discharge Permit Associated with Construction Activity (CDPS)

A CDPS permit is required. A Storm Water Management Plan (SWMP) is one of the requirements for the CDPS permit. All SWMP's must be approved by the Town.

Paleontology

If the project requires any type of excavation (six inches or greater in ground that is not on fill or will affect substrate that is not fill), a Paleontological Survey is required.

Archaeology

If the project requires any type of excavation (six inches or greater in ground that is not on fill or will affect substrate that is not fill), an Archaeological Survey and coordination with the SHPO in accordance with Section 106 of the National Historic Preservation Act must be conducted.

Other

Based on the preliminary determinations regarding the anticipated environmental clearances for a project, additional environmental clearances may be required. The additional environmental clearances could include Environmental Justice, Water Resources, Visual/Aesthetics, Socioeconomic regarding business access changes, etc.

Attachment F

ADDENDUM TO CONTRACT
FEDERAL EMERGENCY MANAGEMENT AGENCY'S GRANT PROGRAM REQUIREMENTS FOR PROCUREMENT CONTRACTS

This is an addendum to the _____ Agreement between ("Contractor"), and Town of Lyons, (the "TOWN").

The parties acknowledge that the above-referenced contract is subject to the provisions of 44 CFR § 13.36 and the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.).

This addendum is hereby expressly incorporated into the agreement between the TOWN and the Contractor. To the extent that the terms of the Agreement and this Addendum conflict, the terms of this Addendum shall control. Nothing in this Addendum shall be construed as making this Agreement contingent upon a Presidential disaster declaration or FEMA's approval or obligation of funds.

The following provisions are hereby added and incorporated into the above-referenced Agreement:

1. ***Contracting with small and minority firms, women's business enterprise and labor surplus area firms.*** (1) The grantee and subgrantee will take all necessary affirmative steps to assure that minority firms, women's business enterprises, and labor surplus area firms are used when possible. 44 CFR§13.36 (e) Procurment, (vi) Requiring the prime contractor, if subcontractors are to be let, to take the affirmative steps listed in paragraphs (e)(2)(i) through (v) of this section.

2. ***EQUAL EMPLOYMENT OPPORTUNITY COMPLIANCE*** *(applicable to all construction contracts awarded in excess of $10,000 by grantees and their contractors or subgrantees; 44 CFR§13.36(i)(3))*

Contractor agrees to comply with Executive Order 11246 of September 24, 1965, entitled "Equal Employment Opportunity," as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR Part 60).

3. ***ANTI-KICKBACK ACT COMPLIANCE*** *(applicable to all contracts and sub-grants for construction or repair; 44 CFR§13.36(i)(4))*

Contractor agrees to comply with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3).

4. ACCESS TO RECORDS

A. The Contractor agrees to provide the Town, FEMA, the Comptroller General of the United States or any their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this Agreement for the purposes of making audits, examinations, excerpts and transcriptions. 44 CFR§13.36(i)(10).

B. The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

C. The Contractor agrees to maintain all books, records, accounts and reports required under this Agreement for a period of not less than three years after the later of: (a) the date of termination or expiration of this Agreement or (b) the date Town makes final payment under this Agreement, except in the event of litigation or settlement of claims arising from the performance of this Agreement, in which case, Contractor agrees to maintain same until the Town, FEMA, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto.44 CFR§13.36(i)(11)

5. CONTRACT WORK HOURS AND SAFETY STANDARDS applicable to construction contracts awarded by grantees and subgrantees in excess of $2,000, and in excess of $2500 *for other contracts which involve the employment of mechanics or laborers; 44 CFR §13.36(i)(6))*

Contractor agrees that it shall comply with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327–330) as supplemented by Department of Labor regulations (29 CFR Part 5), which are incorporated herein.

NOTICE OF REPORTING REQUIREMENTS

A. Contractor acknowledges that it has read and understands the reporting requirements of FEMA stated in 44CFR§ 13.40 et seq., 13.50-13.52 and Part III of Chapter 11 of the United States Department of Justice's Office of Justice Programs Financial Guide, and agrees to comply with any such applicable requirements.

B. The Contractor agrees to include the above clause in each third party subcontract financed in whole or in part with Federal assistance provided by FEMA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions

5. PATENT RIGHTS *(applicable to contracts for experimental, research, or development projects financed by FEMA; 44 CFR §13.36(i)(8))*

A. General. If any invention, improvement, or discovery is conceived or first actually reduced to practice in the course of or under this Agreement, and that invention, improvement, or discovery is patentable under the laws of the United States of America or any foreign country, the Town and Contractor agree to take actions necessary to provide immediate notice and a detailed report to FEMA.

B. Unless the Government later makes a contrary determination in writing, irrespective of Contractor's status (a large business, small business, state government or state instrumentality, local government, nonprofit organization, institution of higher education, individual), the Town and Contractor agree to take the necessary actions to provide, through FEMA, those rights in that invention due the Federal Government as described in U.S. Department of Commerce regulations, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," 37 CFR, Part 401.

C. The Contractor agrees to include paragraphs A and B above in each third party subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance provided by FEMA.

6. NOTICE OF REQUIREMENTS PERTAINING TO COPYRIGHTS

A. Contractor agrees that FEMA shall have a royalty-free, nonexclusive, and irrevocable license to reproduce, publish or otherwise use, and to authorize others to use, for government purposes:

(1) The copyright in any work developed with the assistance of funds provided under this Agreement;

(2) Any rights of copyright to which Contractor purchases ownership with the assistance of funds provided under this Agreement. 44 CFR §13.34, 13.36(i)(8)- (9).

C. The Contractor agrees to include paragraph A above in each third party subcontract financed in whole or in part with Federal assistance provided by FEMA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

8. ENERGY CONSERVATION REQUIREMENTS

A. The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act. 44 CFR § 13.36(i)(13).

B. The Contractor agrees to include paragraph A above in each third party subcontract financed in whole or in part with Federal assistance provided by FEMA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

9. CLEAN AIR AND WATER REQUIREMENTS *(applicable to all contracts and subcontracts in excess $100,000, including indefinite quantities where the amount is expected to exceed $100,000 in any year; 44 CFR §13.36(i)(12)))*

A. Contractor agrees to comply with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR Part 15).

B. Contractor agrees to report each violation of these requirements to the Town and understands and agrees that the Town will, in turn, report each violation as required to assure notification to FEMA and the appropriate EPA regional office.

C. The Contractor agrees to include paragraph A and B above in each third party subcontract exceeding $100,000 financed in whole or in part with Federal assistance provided by FEMA.

10. TERMINATION FOR CONVENIENCE OF TOWN *(applicable to all contracts in excess of $10,000;44 CFR §13.36(i)(2))*

A. Town shall have the option, in its sole discretion, to terminate this Agreement, at any time during the term hereof, for convenience and without cause. Town shall exercise this option by giving Contractor written notice of termination. The notice shall specify the date on which termination shall become effective

B. Upon receipt of the notice, Contractor shall commence and perform, with diligence, all actions necessary on the part of Contractor to effect the termination of this Agreement on the date specified by Town and to minimize the liability of Contractor and Town to third parties as a result of termination. All such actions shall be subject to the prior approval of the Town. Such actions shall include, without limitation:

(1) Halting the performance of all services and other work under this Agreement on the date(s) and in the manner specified by Town.

(2) Not placing any further orders or subcontracts for materials, services, equipment or other items.

(3) Terminating all existing orders and subcontracts.

(4) At Town's direction, assigning to Town any or all of Contractor's right, title, and interest under the orders and subcontracts terminated. Upon such assignment, Town shall have the right, in its sole discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

(5) Subject to Town's approval, settling all outstanding liabilities and all claims arising out of the termination of orders and subcontracts.

(6) Completing performance of any services or work that Town designates to be completed prior to the date of termination specified by Town.

(7) Taking such action as may be necessary, or as the Town may direct, for the protection and preservation of any property related to this Agreement which is in the possession

C. Within 30 days after the specified termination date, Contractor shall submit to Town an invoice, which shall set forth each of the following as a separate line item:

(1) The reasonable cost to Contractor, without profit, for all services and other work the Town directed Contractor to perform prior to the specified termination date, for which services or work Town has not already tendered payment. Reasonable costs may include a reasonable allowance for actual overhead, not to exceed a total of 10% of Contractor's direct costs for services or other work. Any overhead allowance shall be separately itemized. Contractor may also recover the reasonable cost of preparing the invoice.

Taking such action as may be necessary, or as the Town may direct, for the protection and preservation of any property related to this Agreement which is in the possession of Contractor and in which Town has or may acquire an interest.

(2) A reasonable allowance for profit on the cost of the services and other work described in the immediately preceding subsection (1), provided that Contractor can establish, to the satisfaction of Town, that Contractor would have made a profit had all services and other work under this Agreement been completed, and provided further, that the profit allowed shall in no event exceed 5% of such cost.

(3) The reasonable cost to Contractor of handling material or equipment returned to vendor, delivered to the Town or otherwise disposed of as directed by the Town.

D. In no event shall the Town be liable for costs incurred by Contractor or any of its subcontractors after the termination date specified by Town, except for those costs specifically enumerated and described in the immediately preceding subsection (c). Such non-recoverable costs include, but are not limited to, anticipated profits on this Agreement, post-termination employee salaries, post-termination administrative expenses, post-termination overhead or

unabsorbed overhead, attorneys' fees or other costs related to the prosecution of a claim or lawsuit, prejudgment interest, or any other expense which is not reasonable or authorized under such subsection (c).
E. In arriving at the amount due to Contractor under this Section, the Town may deduct:
(1) All payments previously made by Town for work or other services covered by Contractor's final invoice;
(2) Any claim which Town may have against Contractor in connection with this Agreement; **(6)** Any invoiced costs or expenses excluded pursuant to the immediately preceding subsection (d); and
(3) In instances in which, in the opinion of the Town, the cost of any service or other work performed under this Agreement is excessively high due to costs incurred to remedy or replace defective or rejected services or other work, the difference between the invoiced amount and Town's estimate of the reasonable cost of performing the invoiced services or other work in compliance with the requirements of this Agreement.
F. The Town's payment obligation under this Section shall survive termination of this Agreement.

11. TERMINATION FOR DEFAULT
Contractor's failure to perform or observe any term, covenant or condition of this document (Federal Emergency Management Agency's Emergency Management Performance Grant Program Requirements for Procurement Contracts) shall constitute an event of default under this Agreement.
A. Each of the following shall also constitute an event of default ("Event of Default") under this Agreement:
(1) Contractor fails or refuses to perform or observe any other term, covenant or condition contained in this Agreement, and such default continues for a period of ten days after written notice thereof from the Town to Contractor.
(2) Contractor (a) is generally not paying its debts as they become due, (b) files, or consents by answer or otherwise to the filing against it of a petition for relief or reorganization or arrangement or any other petition in bankruptcy or for liquidation or to take advantage of any bankruptcy, insolvency or other debtors' relief law of any jurisdiction, (c) makes an assignment for the benefit of its creditors, (d) consents to the appointment of a custodian, receiver, trustee or other officer with similar powers of Contractor or of any substantial part of Contractor's property or (e) takes action for the purpose of any of the foregoing.

(3) A court or government authority enters an order (a) appointing a custodian, receiver, trustee or other officer with similar powers with respect to Contractor or with respect to any substantial part of Contractor's property, (b) constituting an order for relief or approving a petition for relief or reorganization or arrangement or any other petition in bankruptcy or for liquidation or to take advantage of any bankruptcy, insolvency or other debtors' relief law of any jurisdiction or (c) ordering the dissolution, winding-up or liquidation of Contractor.
B. On and after any Event of Default, Town shall have the right to exercise its legal and equitable remedies, including, without limitation, the right to terminate this Agreement or to seek specific performance of all or any part of this Agreement.

In addition, the Town shall have the right (but no obligation) to cure (or cause to be cured) on behalf of Contractor any Event of Default; Contractor shall pay to the Town on demand all costs and expenses incurred by Town in effecting such cure, with interest thereon from the date of incurrence at the maximum rate then permitted by law. Town shall have the right to offset from any amounts due to Contractor under this Agreement or any other agreement between Town and Contractor all damages, losses, costs or expenses incurred by the Town as a result of such

Event of Default and any liquidated damages due from Contractor pursuant to the terms of this Agreement or any other agreement.

C. All remedies provided for in this Agreement may be exercised individually or in combination with any other remedy available hereunder or under applicable laws, rules and regulations. The exercise of any remedy shall not preclude or in any way be deemed to waive any other remedy Except as modified herein, all terms and conditions of the existing contract between the parties remain in full force and effect.

Accepted by Contractor and Accepted by Town of Lyons on _____, 2015

By:_____
By:_____
Contractor Town Administrator

DHM DESIGN

DENVER • CARBONDALE • DURANGO • RALEIGH • BOZEMAN

900 South Broadway, Suite 300 | Denver, Colorado 80209
tel: 303.892.5566 | www.dhmdesign.com
blog: www.DrawingOnTheLand.com

3. Weekly Meeting Notes

Lyons Bohn Park Final Design
Full Day Programming Workshop
Thu, Apr 14, 2016 10:00 AM - 5:00 PM Mountain Daylight Time
S2o Design and Engineering
429 B Main Street
Lyons. CO. 80540

- Please join my meeting from your computer, tablet or smartphone.
  https://global.gotomeeting.com/join/625845429
- You can also dial in using your phone.
  United States +1 (408) 650-3123
  Access Code: 625-845-429

9:00 AM at 2nd Avenue Trailhead area - Mark-DHM, Sloane-TOL, Jon and Grant – ECOS, Nathan – S2O

2nd Avenue Trailhead

Site walk/ review of trail alignment with stream plantings

9:30 to 10:30 am - River Restoration/ Ecology/ USACE Permitting – Jon and Grant with ECOS

Delayed discussion until April 21, 2016 meeting
- Ecological restoration goals
- Fish habitat/instream structures
- Raptor discussions
- planting plan and plant palettes
- river access/overlook
- miller memorial
- floodplain connectivity and resiliency
- bioengineering/bank protection
- trails and trail head (especially below 2nd ave.)

10:30 Irrigation/ Water source/ Well design coordination – Jill Bersano with KDI

- Town of Lyons to look into water rights and we can expect for irrigation and what is the acquifer capacity. Testing may need to be completed. We have assumed 90 GPM preflood
- Town of Lyons has requested 2 wells and pumps for more efficient distribution of irrigation water to landscapes along highway and future McConnell Ponds and Bohn Park.
- Need to review existing well capacity. Existing well preflood was around 35' deep with approximate 19' of water. It tended to pull air towards the end of the existing irrigation schedule.

- Existing well pumped water around 1500 to 2000 feet to Bohn Park and then out to the "Welcome to Lyons" sign.
- Town of Lyons to provide specifications from existing pump. John's Well Service is the company that has maintained and repaired the existing pump
- Town of Lyons has requested that new wells have remote access (Ethernet or cellular), a submersible pump, water filtration, and an above ground pump house

11:00 AM - Architecture Programming Discussion – Ken and Janine with BRS

- Shelters
    - Enclose during storm events but with open air feel
    -
- Restroom
    - With small utility storage room
- Storage
    - Stand alone storage for 1 tractor/ mower and sports equipment
    - 1 car garage with enclosed bays in back for bulk materials. 10yds per bay approximately
    - Locate behind ballfields
- Mechanical
- Structural
- Town of Lyons to forward link to park design standards (completed)
- Steamboat mountain is an iconic/ framing image for architecture
- Interaction with river is important
- Anything at Meadow Park we can integrate within Bohn Park
    - Local sandstone materials, natural materials, stone and wood
    - Less traditional detailing
    - Town of Lyons likes the use of river rock
    - Keep well lit – use of natural/ solar light tubes
- Historic Structures shown on Towns website. If not available Dave has information
- Concerns with vandalism of wood. How accessible? How is treated?
- Use of sliding doors on buildings? Town of Lyons is intrigued but not certain we can use
- Use of glass? Town of Lyons is concerned with maintenance and breaking
- Town of Lyons likes use of mix of colors in stone and different layers
- Town may route gas line through the park site. Do we need to connect gas lines to the building?
- No cooling needed
- Base Flood Elevation plus 2' for building ffe's – S2O to help with flood elevations
- Design for 2012 IBC
- Use 1 ½ car garage for storage
-
-

Pedestrian Bridge Structural Review

- Bridge situation sheet needed
- Existing preflood bridge is 69' chord length (plus or minus). Possibly reuse existing bridge at over flow?
- New bridge at 4th Avenue

DHM DESIGN

Electrical Requirements for Building and Site

- Lighting needs
- Need lighting at parking lot
- Need security lighting for park
- Need lighting along St Vrain Trail between 4th and 2nd.
- Lighting control to turn zones on and off.
- Add plug ins and panels for special events

Field lighting – Musco or Qualite

1:00 PM - Recreation and Playgrounds-

Water features/outdoor play/classroom/interpretive
River access/river overlooks
Miller memorial/stone picnic area
Baseball field needs/dugout design/scoreboard(s)/shelter- Naming of fields/memorials/etc.
Tennis court/sport court programming needs and design
Review other recreation opportunities

- Climbing feature for adults and kids. To include opportunities for recreation, classes, events, competition
- University of Washington has a good example of a climbing wall for reference
- Large Playground
    - Chance to remove eastern playground
    - There are 4 existing swings. Review condition and consider replacement?
    - Integrate an outdoor classroom
- Smaller playground – opportunity to make bigger if needed
    - Possible parkour course? (Kompan)
    - Include something for smaller kids
- Review playground options from different playground manufacturers with Town
    - RMR
    - Kompan
- ADA Overlook
    - Include gathering, picnic, informal concerts
    - Consider new location based on best experience
- Instream/ ADA overlook
    - ADA route to St Vrain, possible sculpted concrete jetty
    - Use of river rock and sandstone caps
    - Address CPW concerns with instream structures
    - More value for tubing recreation than kayaking
    - Stadium seating along river – similar to preflood stone work
    - Review photos from Ed Bruder of preflood conditions
- Ditch return flows
    - Add stone for features for play experience
- Flower planters

    - Get preflood count from Mike
    - Need to be irrigated
    - Discuss plant types
    - Strategically locate planters
- Public Art
    - Strategic placement at bridges, entrances, trail junctions
- Park ID Sign
    - Needs to be relocated
    - Originally built and supplied by Blue Mountain Stone
- Miller Memorial – label as picnic area
    - Existing memorial - Flat patio, sandstone benches, grill in middle
    - Use as rental space for events and picnicking
    - 35’ diameter (existing preflood)
    - Need 4x standard grill size with stone base
- Vasquez Memorial
- Remove and salvage plaque
- Add trail south side of multi-use field
- 8’ wide crusher fines for main trails
- 6’ wide for lesser trails
- Ballfields
    - 200 seating each field
    - Field #1 – Vasquez field
        - Removeable fence section in outfield
        - Gates in outfield
    - Field #2 – Bohn Field
        - Scoreboard
        - Town standards for skinned infield
        - Baseball/ softball use
    - Batting Cage
        - Removeable net
        - Electrical access
- Sand Volleyball Courts
    - Build only 1
    - Move behind field #1
    - Keep old location of volleyball courts as informal lawn area

2:00 PM – Instream Recreation/ Structures/ Floodplain Permitting

3:00 PM – General Site Discussion

Civil Site Discussions

Drainage/ Water Quality
Detention?

DHM DESIGN

Review ditch requirements
Utilities

- Follow UDFCD standards
- Detention may not be required – Town of Lyons to review with Jim
- Water quality will be important
- West side of Bohn Park is the South Ledge Ditch
- East side of Bohn Park is the Meadow Ditch (WQ basin at end of line)
- Will get alignment of ditch returns from Civil Arts
- Gas is Xcel
- Water is City of Longmont
- Electric – Town has substation
- Survey to shoot manholes, profile ditches, inverts
- ICON to size ditch return flows correctly
- 2 weeks review by Jim Blankenship
- Develop drainage for existing park
- ICON to take DHM grades and develop proposed drainage

Parking Lot Design and Paid Parking

2nd Avenue access
Traffic and pedestrian flow/gates
Parks host area design

- Outdoor yard area/ patio/ picnic tables, grill, lawn, berming?
- Lighting for security at host area
-

Food truck location and design/needs
Dumpster/ trash

- Need 3 – 8 yd dumpsters with steel doors

St Vrain Trail

- Consideration for disc golf – St Vrain Disc Golf

4:00 PM - Skate Park Goals/ Review

- Review budget versus timing with community
- Post flyer to project website
- Town of Lyons to send to Chris Cope and Greg Plavidal

Bike Park/ Bike Trails coordination

DHM DESIGN Landscape Architecture
Urban Design
Planning

Lyons Bohn Park Final Design
Progress Meeting Notes/
BOT Weekly Update
April 21, 2016
10:00 am

1. ECOS –River Restoration/ Ecology/ USACE Permitting – Jon and Grant with ECOS
    a. ECOS confirmed that the Biological Assessment completed for the stream work covers the entirety of Bohn Park
    b. The Nationwide Permit (NWP) 3A Maintenance covers all associated in restoring the instream structures. We can modify structures slightly from original locations
    c. SHPO has cleared Bohn Park of any historic structures
    d. NWP 27 is in place
    e. Dave Cosgrove has water rights information and is reviewing to determine what our availability to use ditch return flows.

2. Public Notification, Coordination, Meetings, Reporting
    a. Skate Park Public Meeting #1 – April 28 at Town Hall Board Room

3. Data Collection
        i. mapping & survey updates – field work in progress, expected to be completed week of May 2
        ii. geotechnical updates – scour depths, hydraulics being reviewed. Encountered large cobbles and boulders fairly shallow. Will need to utilize excavator provided by Town to dig exploratory pits. Pits at bridge abutment will need to get down below scour depth. Scour depth anticipated at 6' to 7' depth
        iii. Any additional information needs

4. 2nd Avenue Trailhead updates –trail alignment has been staked and Stream Team is installing

5. Program Refinement/ Programming discussions
    a. Review of concept plan for further program development
    b. Site Items
        i. Ditch return flows/ water quality ponds were reviewed. Preflood the Town had three ponds. Town wants to reconsider layout and introduce use of vegetation.

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ii. Possible eagles at Bohn Park and Black Bear Hole. ECOS has been notified and is monitoring. No documented locations and state has no information. With current permitting state has not alerted the Town of any active nests in the vicinity. Will continue to observe for signs of eagle habitat
iii. Instream fisheries – create a pool drop environment more so than a riffle pool
iv. Skatepark meeting coming up. May expect to see Team Payne attend. Present process, document the Parks Flood Recovery Process used to get us to where we are today, deed restrictions, flood plain.

c. Civil Items
d. Architecture Items
    i. Review architecture programming and updated program
e. 4th Avenue Bridge Discussion
    i. 6-7’ depth scour depth below stream is anticipated
    ii. Will need dewatering permit.
    iii. DHM to forward geotechnical information to team once information is known.
    iv. S2O to continue work on bridge situation sheet and update with current hydrology once available
    v. Town to verify bridge code
    vi. Review existing north bridge abutment for possible reuse
    vii. Use Big R bridge or approved equal. Bridge to be self-weathering steel, wood deck, wood rub rail
    viii. H5 or HS20 bridge rating is ok. 1’ of freeboard required

PRE-FLOOD BRIDGE LOCATION

BRIDGE BORING LOCATION

STRUCTURE BORING LOCATION

STRUCTURE BORING LOCATION

STRUCTURE BORING LOCATION

STRUCTURE BORING LOCATION

STRUCTURE BORING LOCATION

PAVEMENT BORING LOCATION

NOTE
1. BRIDGE BORING / EXCAVATED PIT PENDING SUBSOIL CHARACTERISTICS
2. SCOUR DEPTH APPROX. 6-7 ALONG SOUTH ST. VRAIN PER S2O DESIGN AND ENGINEERING

NORTH

0 100 200 400

SCALE 1"=200'-0"

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GEOTECHNICAL BORING LOCATIONS

BOHN PARK FINAL DESIGN
LYONS, COLORADO

PROJECT NUMBER: 16044
DATE: 04/25/2016
DESIGNED: MW
DRAWN: JB
CHECKED: MW

REVISIONS:

JOB DESCRIPTION:

SHEET TITLE:

SHEET NUMBER:

SHEET 1 OF 1

XREFS
X-Base: [X:\WELCOX\Lyons Bohn Park Final Design - 16044.00\4-GD\Xrefs\1179D-16 base_no_GS15.dwg]
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FILE NAME
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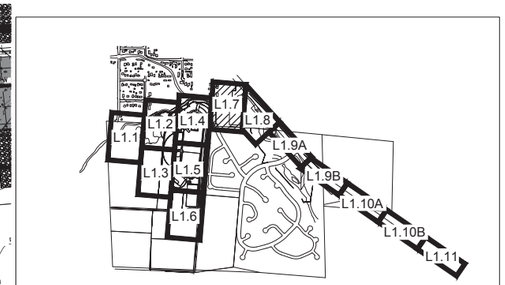
PLOT DATE: Apr 25, 2016 - 5:39pm

MATCHLINE - SEE SHEET L1.4

EX 100 YR FLOODPLAIN

EX FLOODWAY

EX 100 YR FLOODPLAIN



KEY MAP

MATCHLINE - SEE SHEET L1.8

NORTH

SCALE 1"=30'-0"

0 15 30 60

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BOHN PARK
2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

PROJECT NUMBER: 16044
DATE: 04/15/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SCALE: 1" = 1'-0"

SHEET NUMBER: L1.7

SHEET x1 OF XX

IMAGES
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DHM_Bohn Park – XEMAP [X:\MLCO\Lyons Bohn Park Flod Dwlpg – 16044.00\X-ref\DHM_Bohn Park – XEMAP.dwg]
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PLOT DATE: Apr 15, 2016 - 4:30pm

Lyons Bohn Park Final Design
Progress Meeting Notes/
Weekly Update
April 28, 2016
3:30 pm
Lyons Annex – trailer adjacent to S2O

Conference Call (712) 432-0926
Access Code: 564031

1. 3:30 PM Fire Review of 30% Design
    a. Met with JJ with Lyons Fire to review 30% designs and to receive comment
    b. 8' wide emergency access routes minimum. 10' preferred if possible. If not then maintain shoulders to accommodate emergency vehicles.
    c. Provide loop trail to center of ballfields for access from north, south and east.
    d. Provide emergency access to skate park from east side trail
    e. No sprinkling/ suppression of buildings required
    f. Provide flush knox box.
    g. Fire will want to review plans beginning at conceptual plans
    h. Fire access to restroom and signature shade structure area. Remove parking in this area to provide access.
    i. Recommended that we place a fire hydrant by building. Can be designed off of future water line
    j. Fire to review mechanical plans and other plans once available. Email plans@lyonsfire.org

2. 4:00 PM Architecture Review
    a. Food truck alley along north side of multi-use field to have electrical and water hookups
    b. Code review to be completed by Safe Built
    c. BOT to review plans at 50%, 75% and 90% levels. DHM to present
    d. Architecture concepts to be developed this week and early next week. Will plan on presenting at next Thursday's weekly meeting

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3. 4:30 PM Greenway/ Play Area Update Review
    a. Reviewed preliminary plans for approval

4. Skate Park Public Meeting #1 –
    a. Review presentation and approach to the meeting.
    b. Reviewed concerns with water table level and geotechnical soils. May need to elevate skate park above ground

5. Program Refinement/ Programming discussions
    a. DHM to provide weekly BOT updates with notes and updated diagrams/ sketches, etc.
    b. Continue to place updates on website for community review
    c. Excavator on site this week. Schedule geotechnical pits for next week
    d. Town has sustainability plan for use in review of the project requirements. Review goals for parks and incorporate as required. Document on town's website
    e. Forward tree survey completed by ECOS to design team
    f. Review parking slopes and design standards with Jim and Joe with the Town.

The Town of Lyons Presents

LYONS SKATEPARK PUBLIC DESIGN MEETING

[The Town of Lyons invites you to share your design ideas for your public skatepark]

Can't make it? Catch up on the action at WWW.LYONSPARKSMP.COM

BOHN PARK - LYONS, COLORADO

Architectural Program

4/29/2016

Restroom Building

Item	Space	Area		Comments
1.0	Mens Room	240	nsf	
	2 Toilets			
	2 Urinals			
	3 Lavatories			
	Baby changing counter			
	Hose bib under sink			
1.1	Womens Room	240	nsf	
	4 Toilets			
	3 Lavatories			
	Baby changing counter			
	Hose bib under sink			
1.2	Assisted Restroom	100	nsf	
	Toilet			
	Lavatory			
	Accessible room			
	Baby changing counter			
	Hose bib under sink			
1.3	Storage	120	nsf	
	Janitor sink			
	Sundries and cleaning equipment			
	Ballfield maintenance equipment			
	First aid equipment			
	xx			

	xx		
1.4	Mechanical/Electrical & Plumbing Chase	142	nsf
	Systems		
	All electric		
	Year round operations		
	Total Net Area	842	nsf
	Grossing Factor	0.2	
	Total Gross Area	1010	gsf

Picnic Shelter

Item	Space	Area		Comments
2.0	Mens Room	800	gsf	Provide 2 shelters
	Shelter area			
	Low side walls with counters			
	Lighting			
	Picnic table seating for 30 (6 per table)			
	Hose bib nearby			

CONCRETE WALK & PLAZA
EXISTING 500 YR FLOODPLAIN
EXISTING 100 YR FLOODPLAIN
PARK HOST SITE GRAVEL PARKING
SHADE SHELTER
RESTROOM
SPORT COURTS
PLAYGROUND
NATURAL PLAY
SCULPTURE
PICNIC TABLES, TYP. (10)
EXIST. SPORT COURT
RELOCATE PARK ID SIGN
4th AVE PEDESTRIAN BRIDGE
WATER QUALITY POND
STONE WALL STEPS TO WATER
PICNIC AREA
STONE WALL STEPS TO WATER
SCULPTURE
ADA FISHING OVERLOOK
IN-STREAM RECREATION
APPROXIMATE LOCATION OF EXISTING TREES
EXISTING FLOODWAY
2nd AVE BRIDGE
ST. VRAIN CREEK
FLOWER PLANTERS, TYP. (5)
GRAVEL PARKING

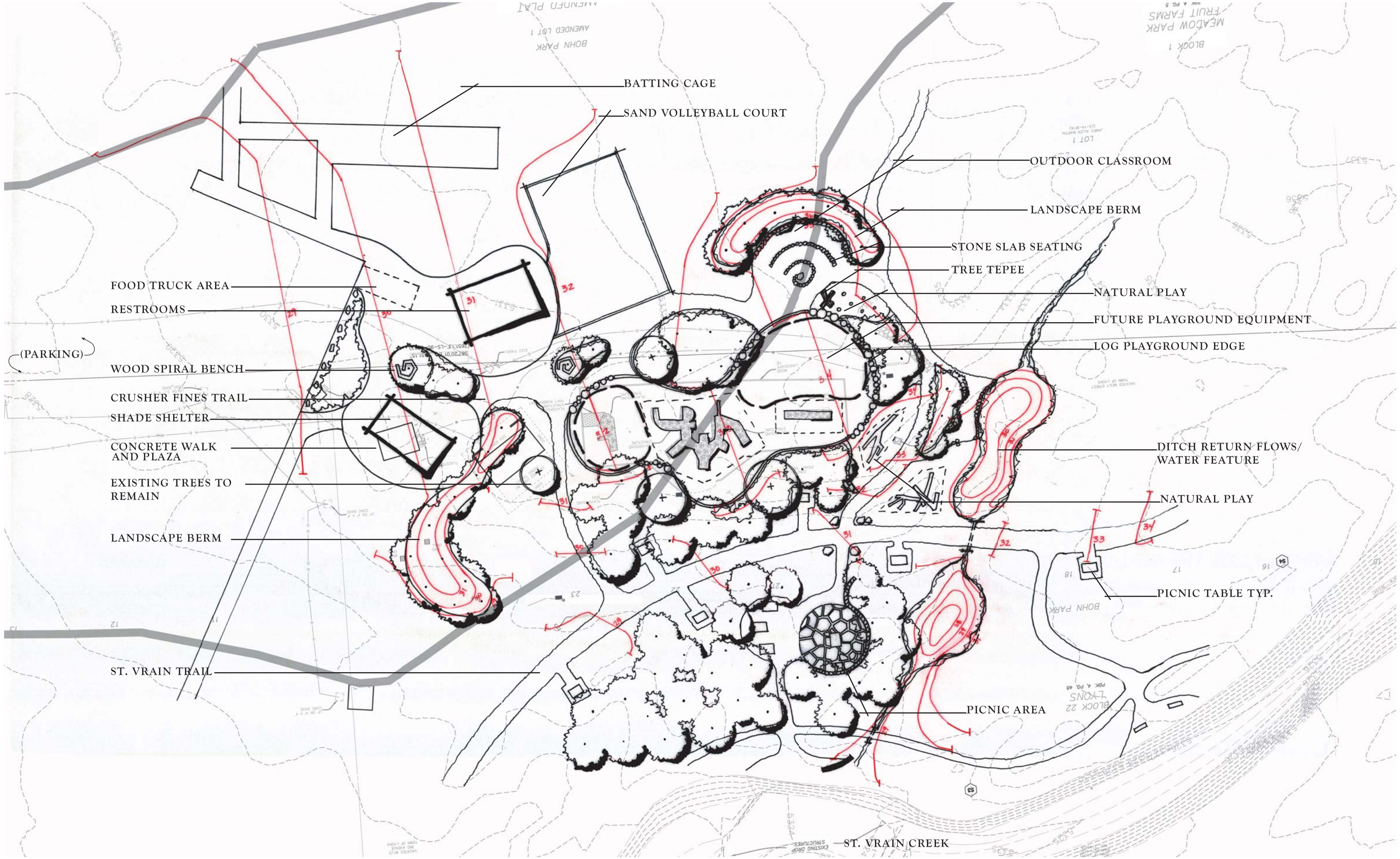
Grading & Layout Concept

Bohn Park Final Design

April 28th, 2016

NORTH

0 15 30 50
SCALE 1"=30'-0"



Grading & Layout Concept - Enlargement

Bohn Park Final Design

April 28th, 2016

NORTH

SCALE 1"=20'-0"

Lyons Bohn Park Final Design
Progress Meeting Notes
May 5, 2016
10:00 am
S2O office – 429 Main Street

1. Architecture Update/ Review of conceptual ideas
    a. Presentation of architecture conceptual ideas by Janine Glaeser- BRS Architecture
    b. BRS to explore ability to enclose sides of shade shelter with moveable doors to control exposure and review costs and maintenance considerations.
    c. Add seat wall on 1 ½ sides of shade shelter
    d. Use local materials for building façade
        i. River Cobbles greater than 6" diameter
        ii. Sandstone
        iii. Moss Rock
    e. Change restrooms to 2 sinks per side
    f. Prefer more storage in restrooms. Maximize storage area
    g. Building footprints approximately 32'x32'
    h. Provide drinking fountain with jug filler at restroom
    i. Utility service connections coming from 2nd Avenue
    j. Bikepark – prefabricated shade shelter with stone wraps on columns
    k. Tennis Court - prefabricated shade shelter with stone wraps on columns
    l. No new shelter at dog park
    m. Provide additional storage facility
        i. Option 1 - 1 ½ to 2 car garage with bulk storage on back
        ii. Option 2 – additional park office space with parking

2. Program Refinement/ Programming discussions
    a. Architecture
        i. Shade shelter to hold up to 50 people (6 tables) minimum
        ii. Add bank of grills
        iii. Add plaza seating/ picnic tables
    b. Skatepark

900 South Broadway, Suite 300 Denver, Colorado 80209 P: 303.892.5566 f: 303.892.4984

        i. Currnet budget is $300k for all skateable features
        ii. Review option to reduce the back bowl and add street course/ skateable plaza by playground and connect to back bowls with skateable trail section behind ballfields
    c. Playground/ Water Feature
        i. Remove sand volleyball
    d. Small Playground
    e. Climbing Area
    f. Outdoor Classroom
    g. Bike Park
        i. Lee McCormick, the original designer of the bike park, has expressed interest in assisting with the development of the bike park expansion. TOL to reach out to Lee to gage interest and availability
3. Greenway/ Play Area Update Review
    a. Review grading concepts
        i. Restore historic access points to the St Vrain. Manage access
        ii. Mitigate access as much as possible with information we have
        iii. Coordinate grading and hydraulics with other work going on upstream and downstream that affects what we are doing
        iv. Prepare narrative of efforts to explain why we are changing what we are at Bohn park
        v. Review information available from watershed plan
        vi. Review other ongoing stream projects with Jim Blankenship
    b. Review ECOS plan updates
    c. Schedule meeting with St Vrain Watershed Coalition to review plans for Bohn Park and seek input
    d. Review plans for LVRP and ditch return flows with the State Engineers Office and Watershed Commissioners to determine if it is ok to reestablish ditch return flows to LVRP. Contact is David Meadows with Division 1.
4. Data Collection
    a. Geotechnical Updates
        i. Waiting on town acquisition of excavator to dig exploratory pits
    b. Survey Updates – should be complete week of May 9

ARCHITECTURE

Lyons Bohn Park

Weekly Meeting May 4, 2016

DHM DESIGN

BARKER RINKER SEACAT ARCHITECTURE

LYONS COLORADO

Storage Building / Parks Staff Offices:

DHM & City asked if we could help with study of what could be included in a new combined Parks Staff / STorage building.

They want to find out if they can add it to the scope, but first need to get an idea of s.f., program, and costing.

Is this something we can help with? What Additional Services do we want to propose?

BARKER RINKER SEACAT ARCHITECTURE

DHM DESIGN

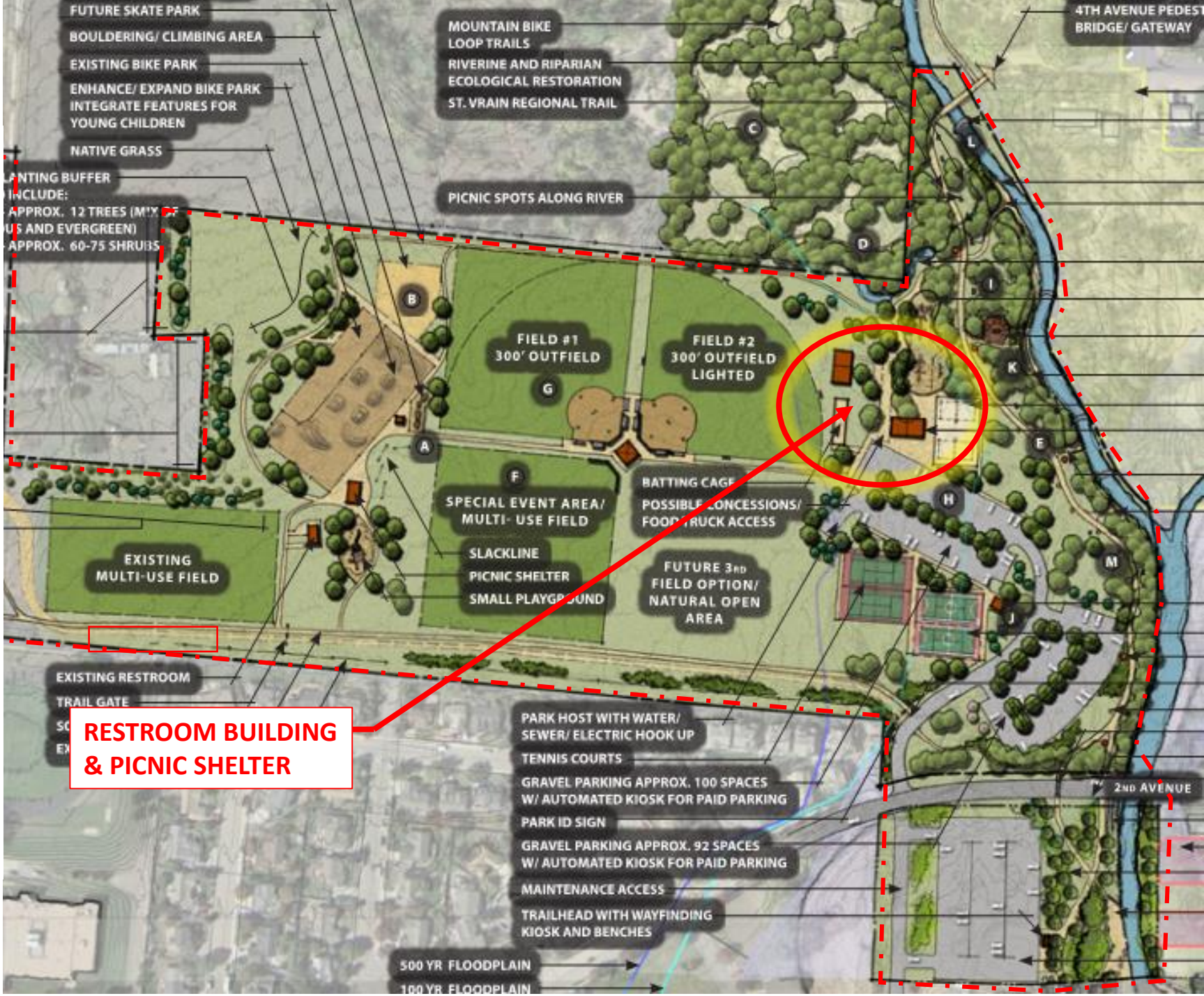
Milestones:

- May 13th 50% CDs (100%SD)
- June 3rd 75% CDs (100%DD)
- July 1st 100% CDs

SCHEDULE

ACTIVITY	PLAN START	PLAN DURATION
Schematic Design 50% CDs	**April 14 - May 13, 2016**	**3 weeks**
Kick Off	**April 14, 2016**	**1 day**
Consultant Kick Off	May 4, 2016	
Owner Review Design Concepts	May 5, 2016	
Owners Feedback to Consultants	**May 6, 2016**	
Submit 50% CDs (100% SD)	**May 13, 2016**	**1 day**
Design Development 75% CDs	**May 14 - June 3. 2016**	**3 weeks**
Kick Off	**May 16, 2016**	**1 day**
Owner Comments Due	May 19, 2016	
Consultant Coordination Meeting	May 23, 2016	
Owner Design Review - weekly meeting	May 26, 2016	
Consultant Drawings to BRS	**June 1 , 2016**	
Submit 75% CDs (100% DD)	**June 3, 2016**	**1 day**
Construction Documents 100%	**June 4 - July 1, 2016**	**4 weeks**
Kick Off	**June 6, 2016**	**1 day**
Owner Comments Due	June 9, 2016	
Consultant Coordination Meeting	June 13, 2016	
BRS QA/AC Review	June 14, 2016	
Owner Design Review - weekly meeting	June 16, 2016	
Consultant Drawings to BRS	**June 29 , 2016**	
100% CD Docs due	**July 1, 2016**	**1 day**
CD Owner Review	**July 1 - July 29, 2016**	**4 weeks**
CD Owner Comments		
100% SD Doc Updates		

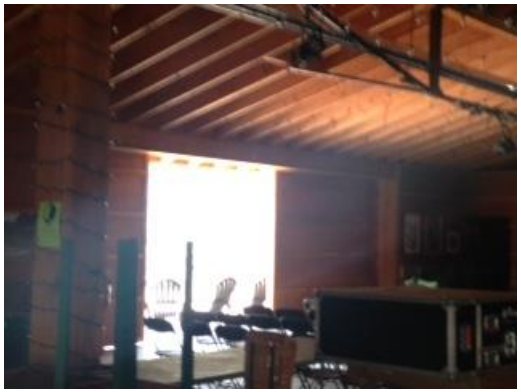
CONTEXT

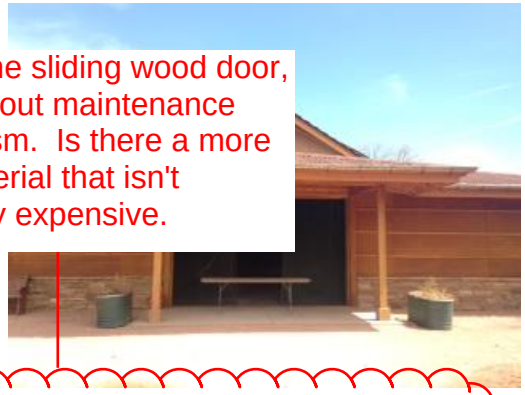

FUTURE SKATE PARK
BOULDERING/ CLIMBING AREA
EXISTING BIKE PARK
ENHANCE/ EXPAND BIKE PARK INTEGRATE FEATURES FOR YOUNG CHILDREN
NATIVE GRASS
PLANTING BUFFER INCLUDE:
APPROX. 12 TREES (MIX OF US AND EVERGREEN)
APPROX. 60-75 SHRUBS
MOUNTAIN BIKE LOOP TRAILS
RIVERINE AND RIPARIAN ECOLOGICAL RESTORATION
ST. VRAIN REGIONAL TRAIL
4TH AVENUE PEDESTRIAN BRIDGE/ GATEWAY
PICNIC SPOTS ALONG RIVER
FIELD #1 300' OUTFIELD
FIELD #2 300' OUTFIELD LIGHTED
SPECIAL EVENT AREA/ MULTI- USE FIELD
BATTING CAGE
POSSIBLE CONCESSIONS/ FOOD TRUCK ACCESS
EXISTING MULTI-USE FIELD
SLACKLINE
PICNIC SHELTER
SMALL PLAYGROUND
FUTURE 3RD FIELD OPTION/ NATURAL OPEN AREA
EXISTING RESTROOM
TRAIL GATE
RESTROOM BUILDING & PICNIC SHELTER
PARK HOST WITH WATER/ SEWER/ ELECTRIC HOOK UP
TENNIS COURTS
GRAVEL PARKING APPROX. 100 SPACES W/ AUTOMATED KIOSK FOR PAID PARKING
PARK ID SIGN
GRAVEL PARKING APPROX. 92 SPACES W/ AUTOMATED KIOSK FOR PAID PARKING
MAINTENANCE ACCESS
TRAILHEAD WITH WAYFINDING KIOSK AND BENCHES
500 YR FLOODPLAIN
100 YR FLOODPLAIN
2ND AVENUE
A
B
C
D
E
F
G
H
I
J
K
L
M

Bluegrass Park

Lyons

PRECIENTS





Really like the sliding wood door, but worry about maintenance and vandalism. Is there a more durable material that isn't outrageously expensive.

Bluegrass Park

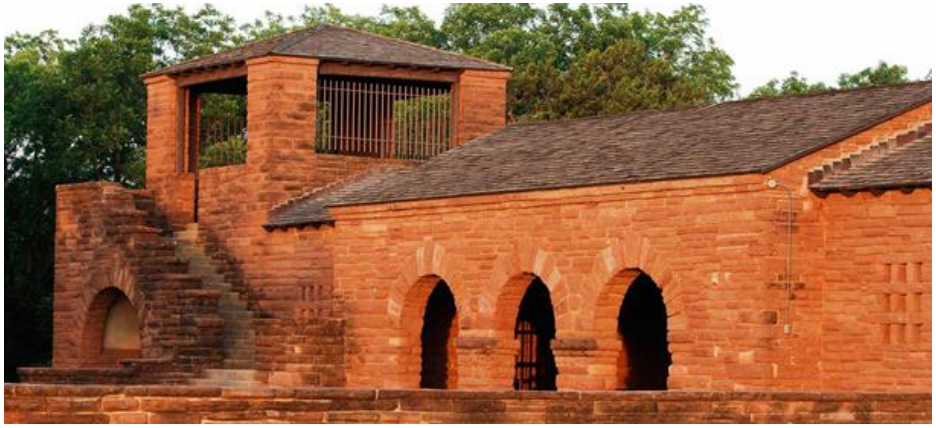
Bluegrass Park

Lyons

PRECEDENTS

Materials – Stone

PRECEDENTS



Materials – Stone

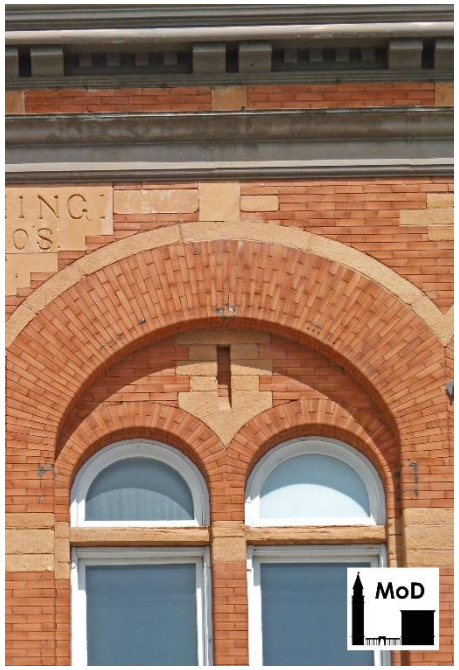
PRECEDENTS

PRECEDENTS

Shelters

Details

PRECEDENTS



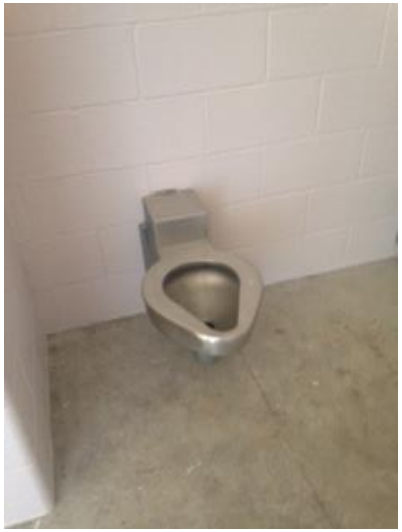
Sandstone preferred. Really like the river rock and moss rock.

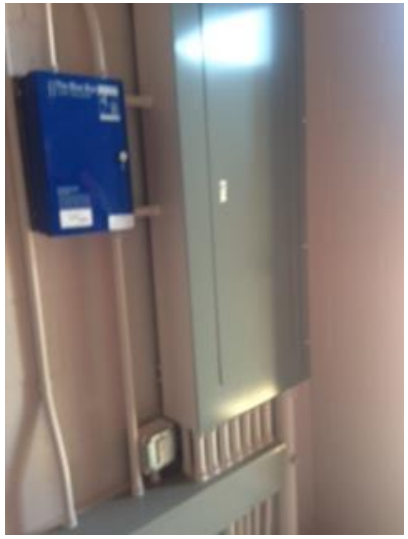
Don t necessarily want same linear masonry pattern as Meadow Park - open to more organic forms.

Note- use as much stone from the current site as possible - can we add this to the specs? Can we qualify masons? Have a good mason on Meadow park.

Fixtures

PRECEDENTS





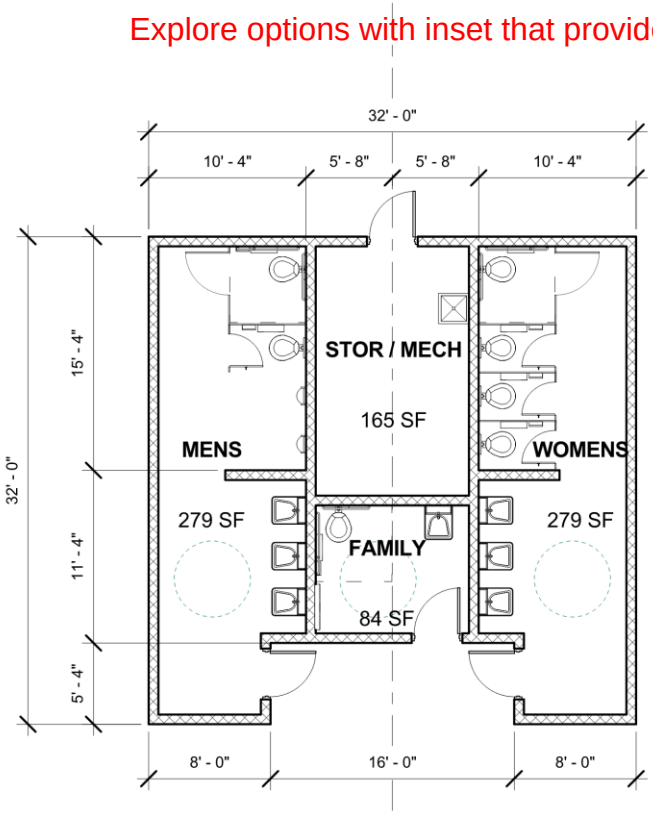
CONCEPTS

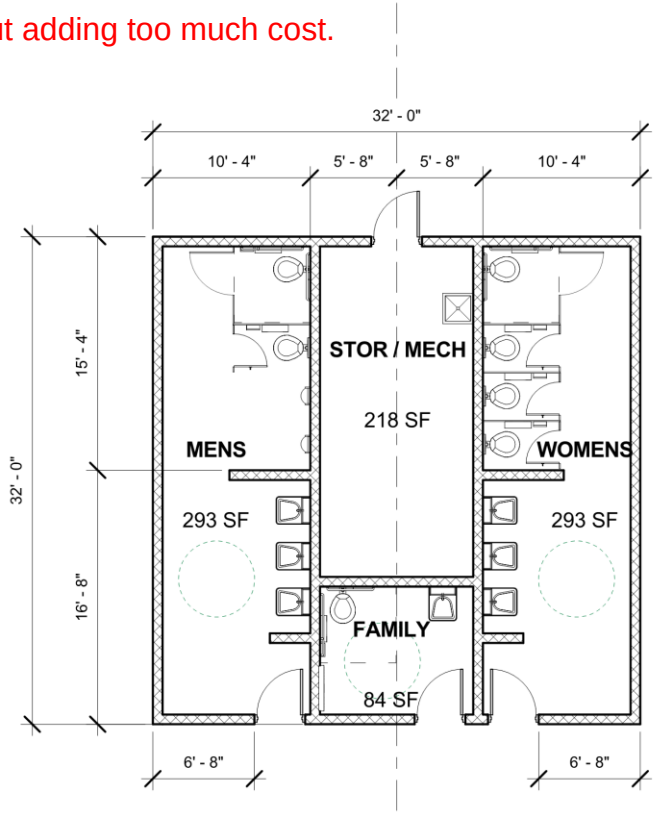
Plans

The Parks team preferred the inset entry (left), but liked the extra space allowed with the flush entry (right.) Need to have plenty of storage. Keep family restroom.

Parks requested - reduce to 2 lavs with a solid counter and stainless steel sinks. Suggested an option with baby changing station in line with sink counter, but thought might be too crowded.

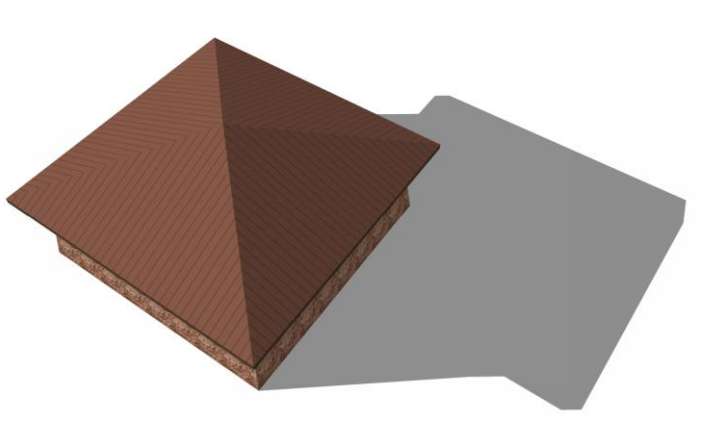
Explore options with inset that provide more storage without adding too much cost.

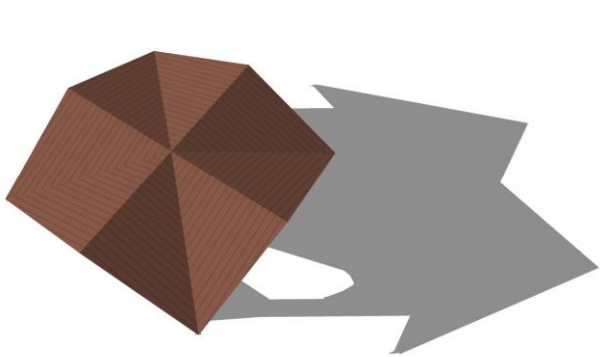


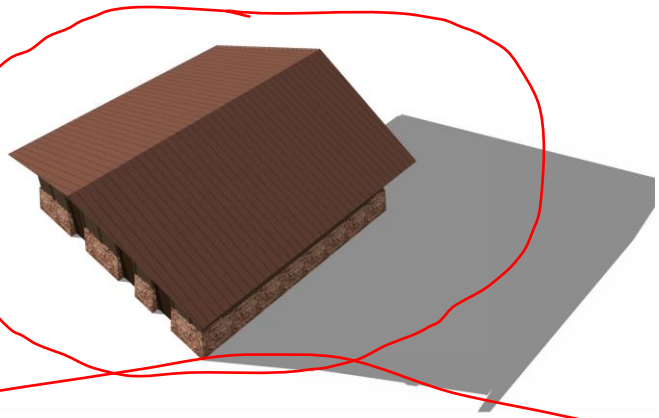


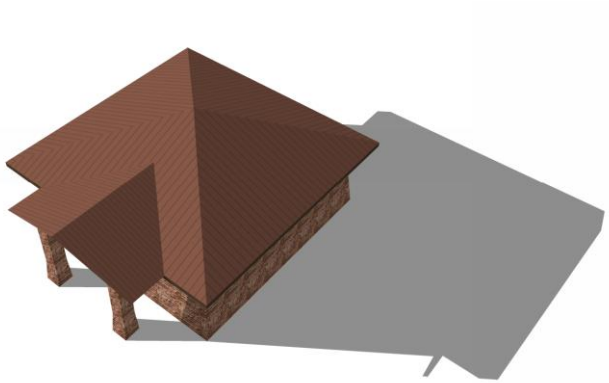
CONCEPTS

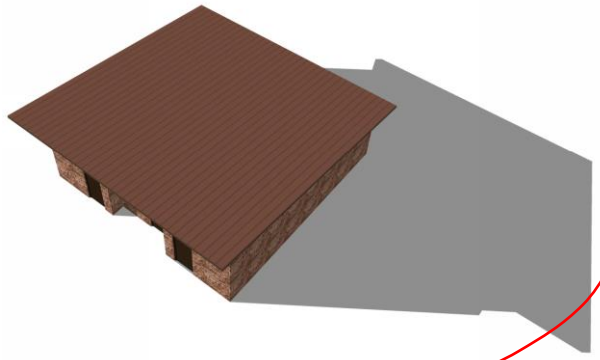
Roof Forms





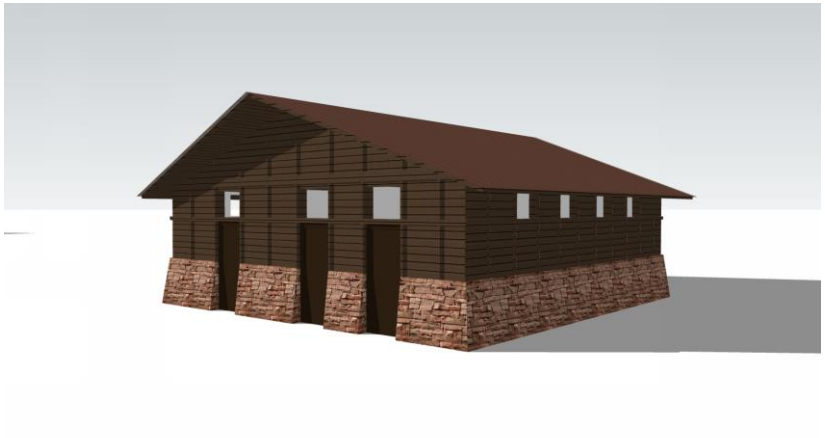






CONCEPTS

Roof Forms



Materials

CONCEPTS

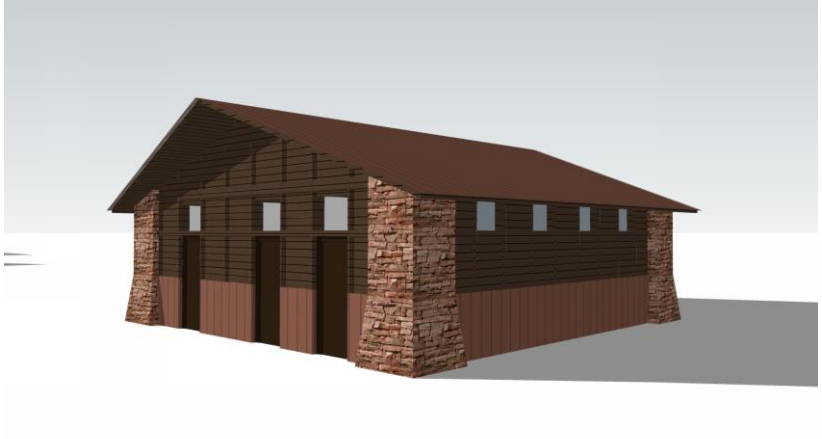
Two favorite options. Like the clean lines and potential for lots of daylighting with the clearestory windows.

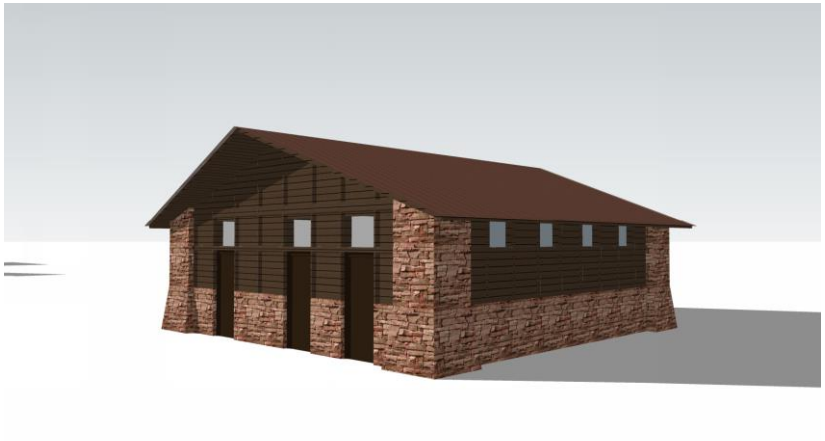
Study daylighting options - best window configuration. Like glazing in gable, but also wonder if there's more daylight coming in from shed roof.

Study materials - if use siding, make it lighter in color and durable surface. Can use different stone, but don't angle base - keep it streamlined, yet interesting.

Materials

CONCEPTS





The angled stone base and siding (too dark) make the building look too heavy.

Parks staff wasn't as dynamic about these options.

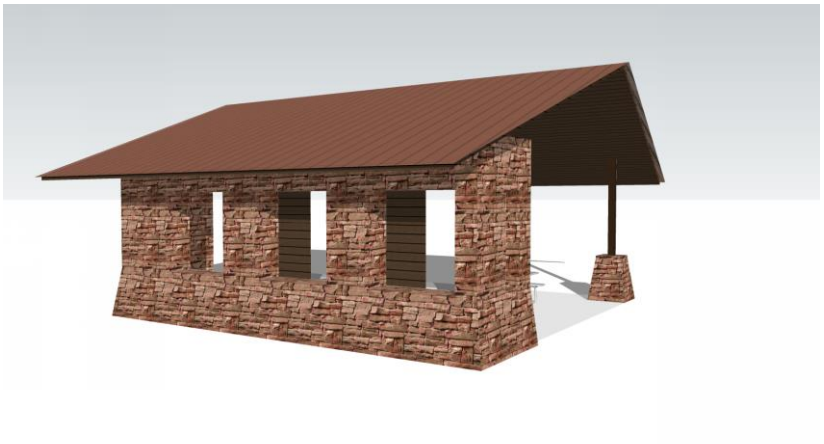
Shelters

CONCEPTS

Explore this option - like the massing of the stone wall, arch, and columns

Shelters

CONCEPTS



Can we come up with an enclosure system that is easy to maintain and cost appropriate?

Like the large stone base with smaller stones above. Provide more detailing and show roof framing/structure. Study stone wall openings and column treatments.

Look at a seat height shelf on masonry side, wraps around 1/3 of shelter. Provide seating for 50 - approximately (6) picnic tables. Note - could hold events for up to 200-500 Work with DHM on an uncovered plaza area that connects to shelter - frames views and connects to river.

BARKER RINKER SEACAT ARCHITECTURE

DHM DESIGN

PROGRAM

Restroom Building

reduce to 2 lavs with solid counter.

provide as much storage as possible

Restroom Building				
Item	Space	Area		Comments
1.0	Mens Room	240	nsf	
	2 Toilets			
	2 Urinals			
	3 Lavatories			
	Baby changing counter			
	Hose bib under sink			
1.1	Womens Room	240	nsf	
	4 Toilets			
	3 Lavatories			
	Baby changing counter			
	Hose bib under sink			
1.2	Assisted Restroom	100	nsf	
	Toilet			
	Lavatory			
	Accessible room			
	Baby changing counter			
	Hose bib under sink			
1.3	Storage	120	nsf	
	Janitor sink			
	Sundries and cleaning equipment			
	Ballfield maintenance equipment			
	First aid equipment			
	xx			
	xx			
1.4	Mechanical/Electrical & Plumbing Chase	142	nsf	
	Systems			
	All electric			
	Year round operations			
	Total Net Area	842	nsf	
	Grossing Factor	0.2		
	Total Gross Area	1010	gsf	

BARKER RINKER SEACAT ARCHITECTURE

DHM DESIGN

PROGRAM

Shelter Building

Picnic Shelter					
Item	**Space**		**Area**		**Comments**
2.0	Structure		800	gsf	Provide 2 shelters
	Shelter area				
	Low side walls with counters				
	Lighting				
	Picnic table seating for 30 (6 per table)				
	Hose bib nearby				

Size of shelter should accomodate 6 picnic tables - 50 + people plus a counter/seat wall. Possible partial enclosure - study. Size should be proportional to restroom building

QUESTIONS

Plumbing questions

- The park standard book only indicates shower plumbing fixture requirements but no other plumbing fixture selections. However, in reviewing Meadows park pictures it appears the city wants stainless steel fixtures.

  Yes, stainless steel fixtures. Standards book - working to add fixtures. We can use Meadow Park CDs for reference until the standards book is complete.

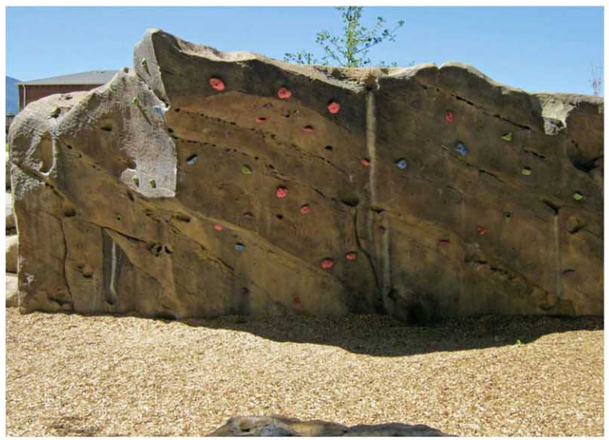
- Is there certain preferred plumbing fixture and faucet manufactures, none indicated in Park Standard Book?
- Where will the waste line route out of the building?
- Where will the water be coming from?

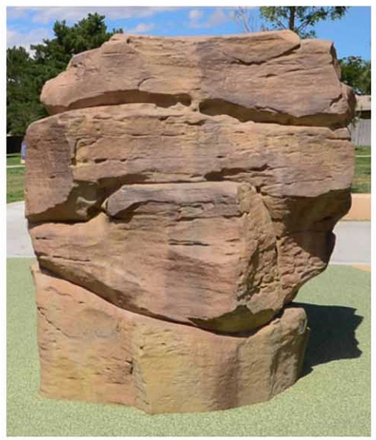
  All services, including water and sanitary, will be coming from the east at 2nd avenue.

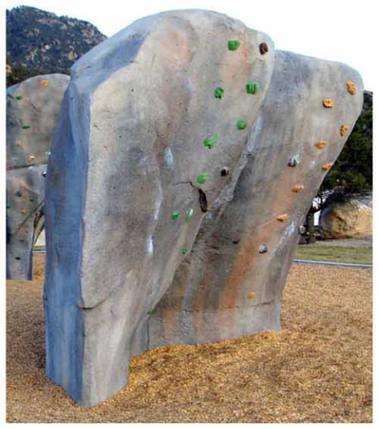
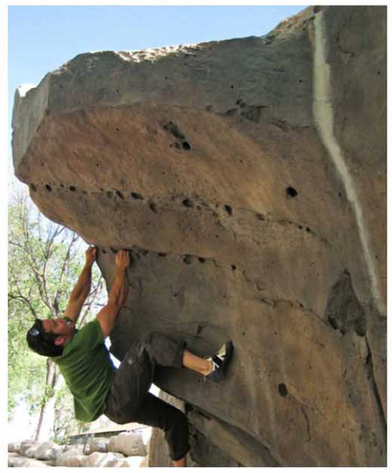
- Will a bottle fill station be required at the drinking fountains?

  Yes, bottle fill station and low jug filler wanted at restroom building. Should be in Meadow Park specs, but if we can provide additional recomendations for something that may be more durable (i.e. what you sent for Chatfield.)

ID STRUCTURES





NATURAL PLAY AREAS AND WATER FEATURE

WATER FEATURE

BOHN PARK FINAL DESIGN

MAY 3rd, 2016

LARGE PLAY AREA AND OUTDOOR CLASSROOM

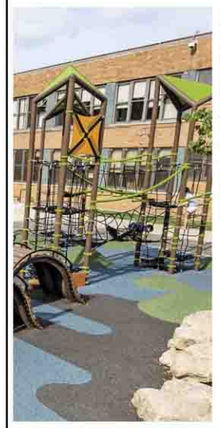
LYONS COLORADO

DHM DESIGN

KOMPAN

BURKE

LANDSCAPE STRUCTURES



OUTDOOR CLASSROOM

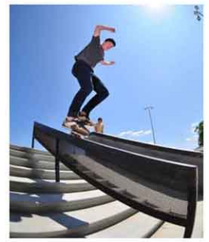
BOHN PARK FINAL DESIGN

MAY 3rd, 2016

SKATE PARK AREA

LYONS COLORADO

DHM DESIGN



BOHN PARK FINAL DESIGN

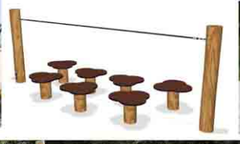
MAY 3rd, 2016

SMALL PLAY AREA

LYONS COLORADO

DHM DESIGN

KOMPAN



BURKE

LANDSCAPE STRUCTURES

DHM DESIGN Landscape Architecture
Urban Design
Planning

Lyons Bohn Park Final Design
Progress Meeting Agenda
May 12, 2016
10:00 am
S2O office – 429 Main Street

1. Program Refinement/ Programming discussions
    a. Review Park Design Standards
    b. Architecture-
        i. reviewed locations for possible parks office building and storage building.
        ii. Location off of 2nd Avenue does not work as part of building would be in floodway and entirely in 100 year floodplain. Will need to relocate further in the site. DHM to review possible location adjacent to parking where one of the new sports courts is located.
        iii. New storage/ office building to provide a landscape buffer around bulk storage area at back of building. Bulk storage will need access for a backhoe, workman, and a 2 axle dump truck.
        iv. TOL Parks asked design team to increase/ maximize size of storage from what is currently shown at 1,000 sf. Design team to review programming, space requirements and rough budgets for Town to review and make a decision on feasibility of developing storage and an office building on site.
        v. General programming to include the following.
            1. Public entry/ lobby
            2. Small conference room – 15 to 20 people
            3. Bathrooms
            4. 2 to 3 office spaces
        vi. TOL to review costs and feasibility versus other park costs to see what can get built with available budgets
        vii. New utility connections will need to be provided to building

    c. Baseball Fields
        i. Provide a digital scoreboard on the lit ballfield. Design team to review options.

ii. Daktronics, Fairplay, ElectroMech and Nevco are all recommended scoreboard suppliers
iii. Ballfield grading can deviate from Parks Design Standards and can be increased to 1 ½% slope to minimize fill and provide proper drainage of fields. Design team to review grades and possibly designing a small wall to minimize amount of fill required.

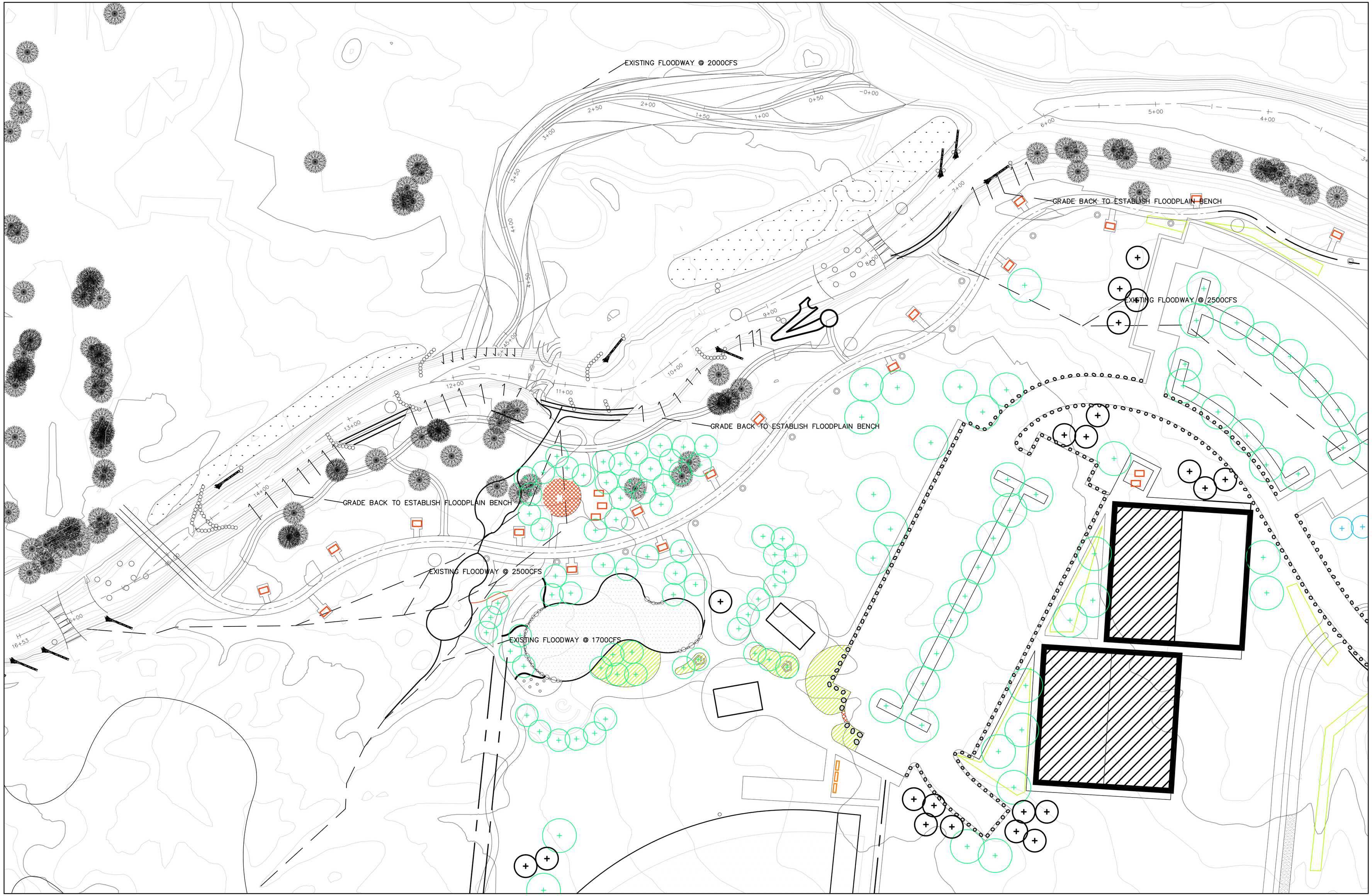
d. Small Playground
e. Climbing Area
f. Skatepark
    i. Provide a small crusher fines trail adjacent to the skateable path to the west of the ballfields
    ii.

2. Site Civil discussions
    a. Drainage/ Water Quality
        i. Review possibility of designing a small swale along the 2 track trail on the eastern border of the park site to accept runoff/ drainage. Review flows and volumes to determine sizing and opportunity to divert drainage back to St Vrain.
        ii. Concerns with storm water drainage to ditch returns and possible contamination with fertilizers. Intercept flows to onsite swales for water quality.
        iii. Utilize standard UDFCD standards for water quality.
        iv. Existing manhole at Meadow Ditch return flow basin is from ditch returns.
        v. No need for detention anticipated on site unless drainage analysis requires. Town will defer to UDFCD standards. Peak run off will need to be mitigated. Review with drainage analysis and existing versus proposed conditions. This analysis will determine a need based on increase.
    b. Utilities
        i. Provide new water and sewer connections to building.
        ii. Existing sewer line in 2nd Avenue – 10" main on east side of 2nd Avenue
        iii. Existing 8" water main in 2nd Avenue
        iv. Town is reviewing the possibility of extending a waterline through Bohn Park
    c. General Site Civil
        i. Review turning radius of emergency vehicles for access within the parking areas
        ii.
3. Greenway/ River Work Update Review
    a. Review grading concepts

i. Can the water feature handle capacity as an overflow?
ii.

b. Review instream recreation and channel improvements
    i. Enhance the upstream drop by 4th Avenue rather than rebuild. Grade down and extend into bank
    ii. Reviewed river restoration plans from S2O. Will need to review with property lines to determine impacts if any.
    iii. S2O/ ECOS will need to review with CPW spawning habitat at riffles. There may be potential opportunity.
    iv. Look at backwater feature at water feature return
    v. Realign water feature between trees surveyed. S2O to assist with sketching out some ideas they have for the backflow return.
    vi. 3' deep backwater pool with emergent wetlands is preferred

4. Data Collection
    a. Review Geotechnical Updates – Town has not been able to acquire an excavator. Town has a backhoe that is available for digging pits for exploration. DHM to coordinate schedules with Town and Geotechnical Engineer.
    b. Survey Updates – Civil Arts is continuing to develop survey data. They are completing field shots the week of May 16 and will have upland survey available by May 18 andfinal survey with all river work by early the week of May 23
5. Schedule Updates
    a. Progress submittal for Friday, May 13, 2016


EXISTING FLOODWAY @ 2000CFS
GRADE BACK TO ESTABLISH FLOODPLAIN BENCH
EXISTING FLOODWAY @ 2500CFS
GRADE BACK TO ESTABLISH FLOODPLAIN BENCH
GRADE BACK TO ESTABLISH FLOODPLAIN BENCH
EXISTING FLOODWAY @ 2500CFS
EXISTING FLOODWAY @ 1700CFS
0+00
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11+00
12+00
13+00
14+00
15+00
16+53

Baseball & Dirt Jump Area Concept

Bohn Park Final Design

May 11th, 2016

NORTH

SCALE 1"=30'-0"

Lyons Bohn Park Final Design
Progress Meeting Notes
May 18, 2016
2:00 pm
S2O office – 429 Main Street

1. Discussed the upcoming submittal scheduled for June 3. Due to late receipt of the field survey (received late Friday night, May 20), Lyons Outdoor Games and continued review and development of design decisions the team discussed moving the submittal back one week to June 10.
2. Architecture Update/ Review of conceptual ideas
    a. Review programming of buildings and possible parks office space/ storage area. 2 options were reviewed for locating the office/ storage area. Both options will be included in the upcoming submittal for review and for final decision.
    b. Shade Shelter/ Event Pavilion/ Restroom
        i. Use Meadow Park as reference for materials
        ii. Steel with wood accents is acceptable. TOL has concerns with large use of wood and potential vandalism
        iii. Use of stone and steel acceptable
        iv. Anticipating 2" site service from 2nd Avenue
        v. No alternate for pex piping will be allowed at this time. BRS to do some more research on use of pex pipe in the building.
        vi. Include gutters and downspouts
        vii. Review use of trench drain in restroom
        viii. Mount drinking fountain and jug filler to building with mechanical assembly in the building. Utilize recessed jug filler.
        ix. Floorplans for restroom, and shade shelter approved
        x. Add a seatwall to the shade shelter on 2 sides of structure
        xi. Remove inclement weather panels
        xii. Gable roof massing concept approved.
    c. Park Office/ Community Center/ Storage Building
        i. Add space for a community conference room

900 South Broadway, Suite 300 Denver, CO 80209 P: 303.892.5566 f: 303.892.4984

ii. Change office space to 700 NSF
iii. Lobby reception area to accommodate 2 to 3 spaces for staff
iv. Change garage storage to 1,250 NSF
v. Total Net Area to be 3,275 NSF

d. Discussed flood proofing of buildings and to what level and costs
    i. Raise buildings 2 feet above base flood elevation and locate outside of floodplain based on effective flow rate
    ii. No additional flood proofing measures are required

3. Site discussions
    a. Preliminary Site Layout
        i. No lighting required for the sports courts
        ii. Parking lot lights required
        iii. Building lights required
        iv. Playground lighting/ pedestrian level lighting required for safety/ security
        v. Bollard lighting along St Vrain required. Minimal for security purposes only.
        vi. Lightening protection – provide per standard code requirements
        vii. Provide receptacles only at specific light poles not at all poles. Review locations with TOL
        viii. Remove boulders along parking lot and place at strategic locations at entry. Utilize 3 rail wood fence to match fencing used at Meadow Park in its place.
    b. Preliminary Grading
    c. Recreation Programming
        i. Playground Equipment
            1. Utilize Kompan for smaller playground by Bike Park
            2. Utilize Landscape Structures for larger playground by shelter and restrooms
        ii. Climbing/ Bouldering Area
            1. Balance recreation and competition features
            2. Presented 2 concepts
                a. Option 1 was single signature boulder with features to accommodate all abilities. Price range of $75k
                b. Option 2 was 3 pieces with range of features to accommodate all abilities. Price range of $130k

3. TOL directed to develop designs for something in between the 2 that would include 2 pieces. Possibly the Paradise Boulder and the smaller piece.

iii. Baseball/ Softball Fields and Amenities
1. Incorporate foul poles into ballfields
2. PVC cover on chain-link fence in outfields/ foul lines
3. Review costs of upgraded padding for consideration
4. Baselines to be 65'. TOL to confirm

4. Greenway/ River Work Update/ Review
a. Instream recreation and channel improvements
i. There's an existing grade break by the playground with a possible overflow by the bridge. Design Team to look at options to develop an overflow by the bridge to activate at 2,000 CFS or 25 year and higher events.
ii. There exists a 1.7% slope in the St Vrain through Bohn Park. Very steep and challenging. Design Team to look at and review options.
iii. Creation of pools at access points to St Vrain to promote fishing
iv. Reviewing option to move existing instream structure above 4th Avenue Pedestrian Bridge. May still keep existing structure downstream of bridge due to steep slopes of St Vrain.
v. Design Team in process of reviewing proposed and existing hydraulic models
vi. Working on setting up a time to meet with CPW and St Vrain Watershed Coalition to review in stream improvements and to align with everyone's goals for the St Vrain.
vii. PW35 damage assessment identified 5 drop structures for replacement. Plans identify locations
viii. Fishing is Fun grant requests large woody debris for bank stabilization and vegetation to accommodate fish habitat. Riffles and pools to be integrated as well.
ix. Design team to document which features go to which grant for reimbursement purposes
x. Design team to show property lines on drawings to assist with designing of improvements within Town owned property and easements.
xi. USFW to review designs in order to secure funding

xii. Design team to provide tree removal specification that notes 18” to 36” diameter trees with single trunk to be salvaged for reuse as large woody debris in stream bank stabilization.

xiii. SVCC board members to review plans and progress. Design Team to set up a site walk and time to meet to review improvements to the St Vrain and Bohn Park.

5. Schematic Design Report Review
    a. General overview of submittal with questions asked during main discussion.
6. Data Collection
    a. Geotechnical Updates – backhoe was onsite earlier in week performing test pits. Preliminary results to be available soon
    b. Survey Updates – at time of meeting field work was wrapping up and anticipated survey to be completed early the week of May 23, 2016

Lyons Bohn Park

Weekly Meeting

May 18, 2016

DHM DESIGN

BARKER RINKER SEACAT ARCHITECTURE

LYONS COLORADO

ARCHITECTURE

DHM DESIGN

BARKER RINKER SEACAT ARCHITECTURE

Milestones:

- **May 13th 50% CDs (100%SD)**
- **June 3rd 75% CDs (100%DD)**
- **July 100% CDs (FLEX)**

SCHEDULE

Design Development 75% CDs	May 14 - June 3. 2016	3 weeks	
Kick Off	May 16, 2016	1 day	
Owner Comments Due	May 19, 2016		
Consultant Coordination Meeting	May 23, 2016		
Owner Design Review - weekly meeting	May 26, 2016		
Consultant Drawings to BRS	June 1 , 2016		
Submit 75% CDs (100% DD)	June 3, 2016	1 day	
Construction Documents 100%	**June 4 - July 1, 2016**	**4 weeks**	
Kick Off	June 6, 2016	1 day	
Owner Comments Due	June 9, 2016		
Consultant Coordination Meeting	June 13, 2016		
BRS QA/AC Review	June 14, 2016		
Owner Design Review - weekly meeting	June 16, 2016		
Consultant Drawings to BRS	June 29 , 2016		
100% CD Docs due	July 1, 2016	1 day	
CD Owner Review	July 1 - July 29, 2016	4 weeks	
CD Owner Comments			
100% SD Doc Updates			

CONTEXT

PICNIC SPOTS ALONG RIVER

FIELD #1
300' OUTFIELD

FIELD #2
300' OUTFIELD
LIGHTED

SPECIAL EVENT AREA/
MULTI- USE FIELD

BATTING CAGE

POSSIBLE CONCESSIONS/
FOOD TRUCK ACCESS

EXISTING
MULTI-USE FIELD

SLACKLINE

PICNIC SHELTER

SMALL PLAYGROUND

FUTURE 3RD
FIELD OPTION/
NATURAL OPEN
AREA

EXISTING RESTROOM

TRAIL GATE

**RESTROOM BUILDING
& PICNIC SHELTER**

PARK HOST WITH WATER/
SEWER/ ELECTRIC HOOK UP

TENNIS COURTS

GRAVEL PARKING APPROX. 100 SPACES
W/ AUTOMATED KIOSK FOR PAID PARKING

PARK ID SIGN

GRAVEL PARKING APPROX. 92 SPACES
W/ AUTOMATED KIOSK FOR PAID PARKING

MAINTENANCE ACCESS

TRAILHEAD WITH WAYFINDING
KIOSK AND BENCHES

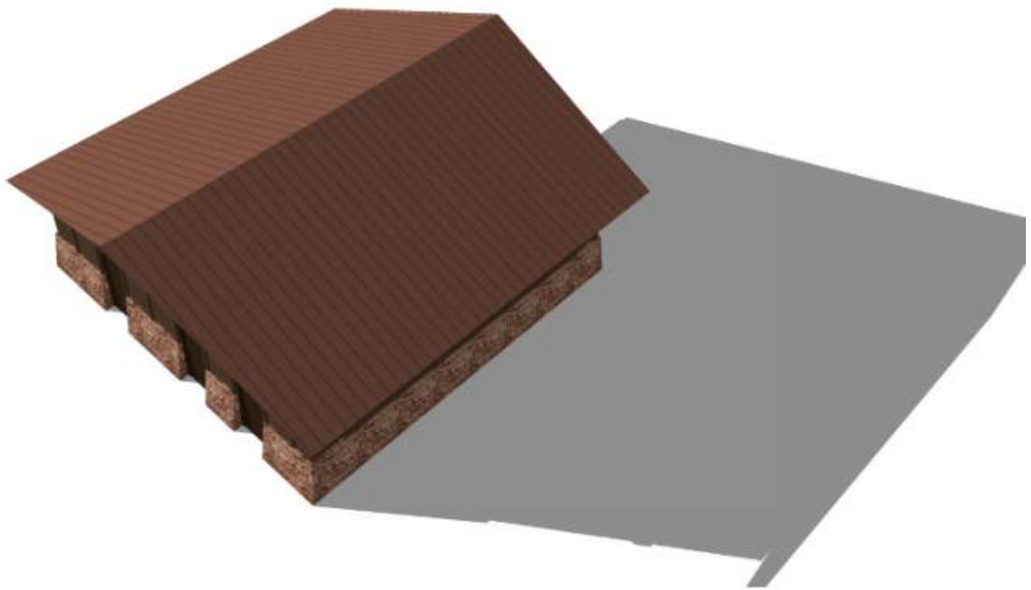
500 YR FLOODPLAIN

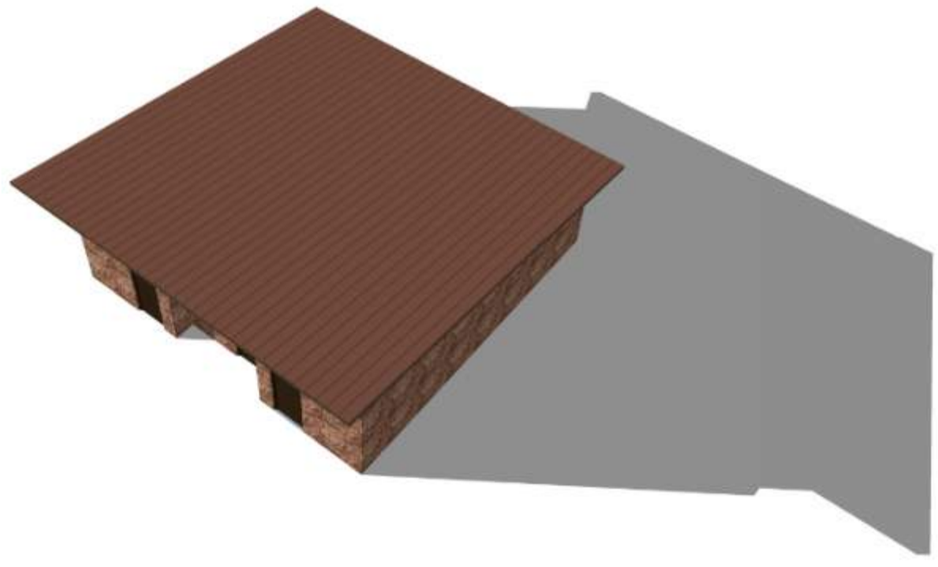
2ND AVENUE

May 5, 2016

CONCEPTS

Roof Forms





May 5, 2016

Massing:
Restroom

CONCEPTS

May 5, 2016

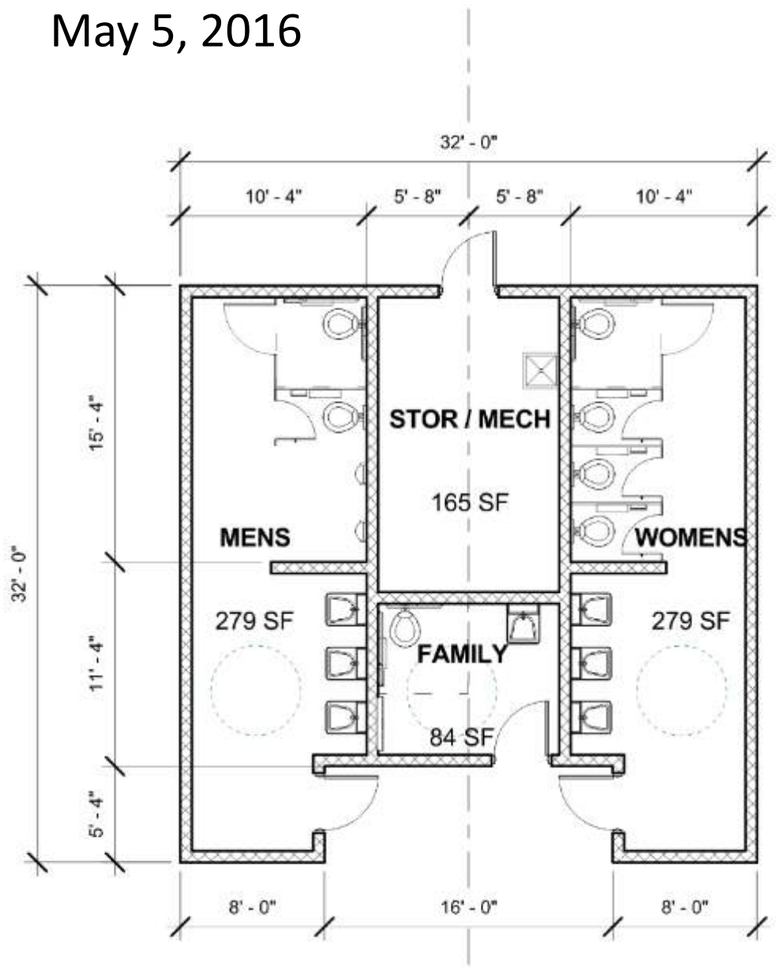
Massing:
Shelter

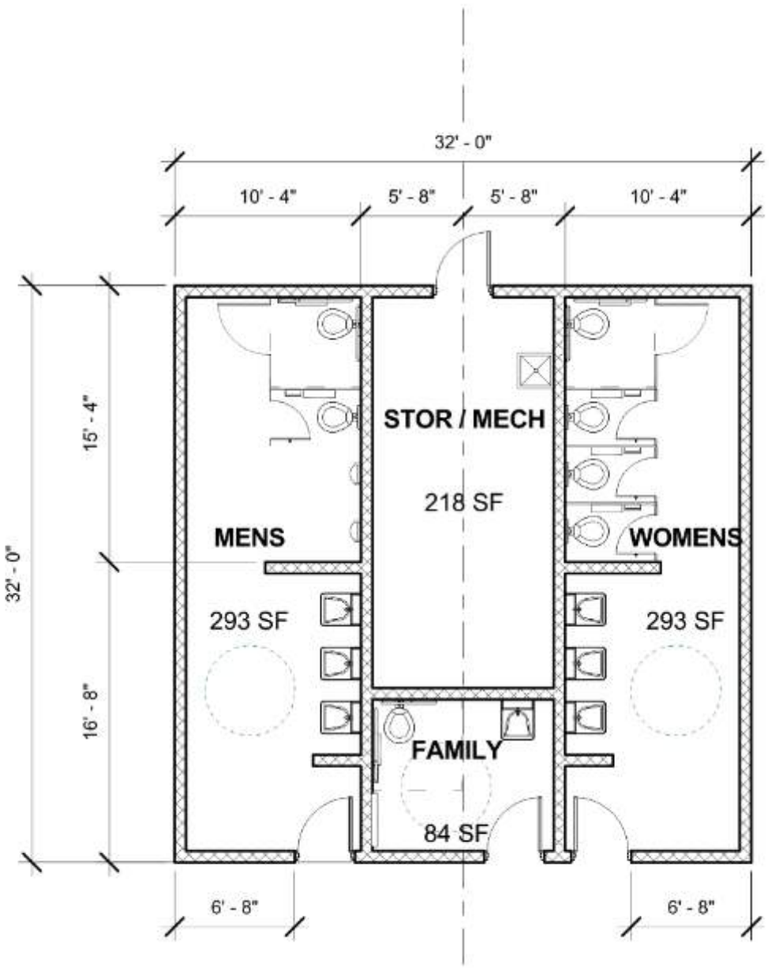
CONCEPTS

Plans
Restroom

May 5, 2016

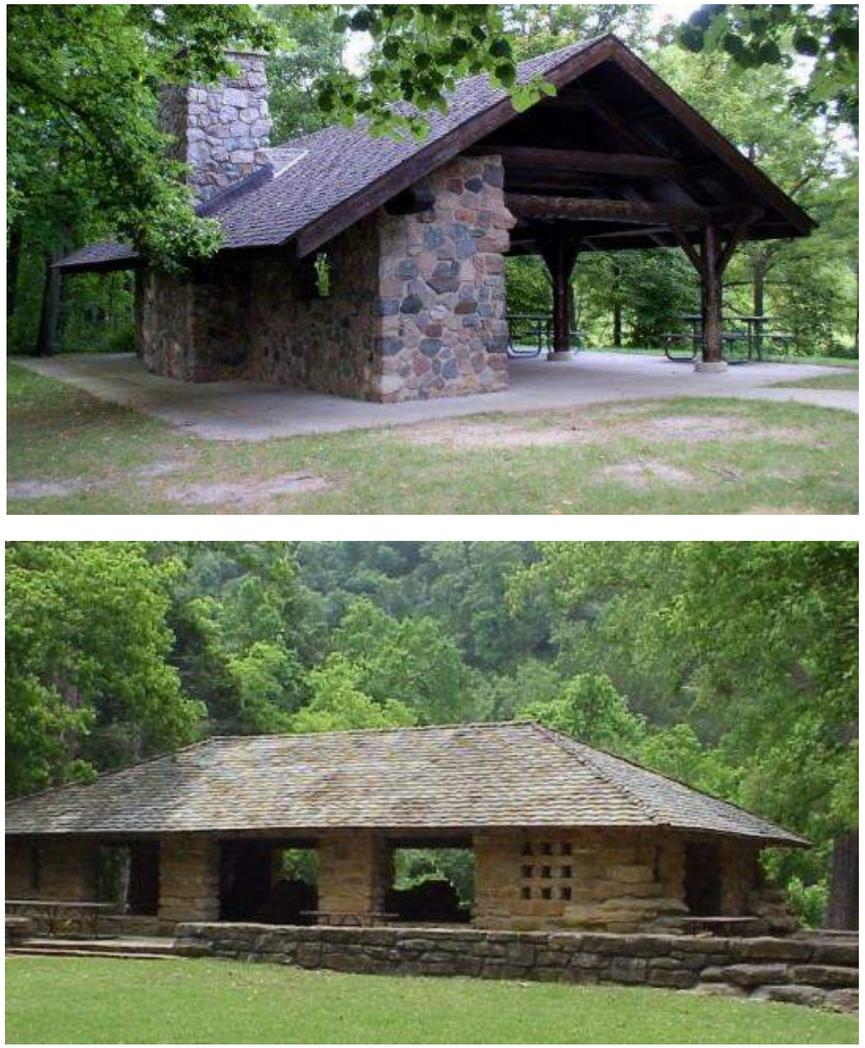
CONCEPTS



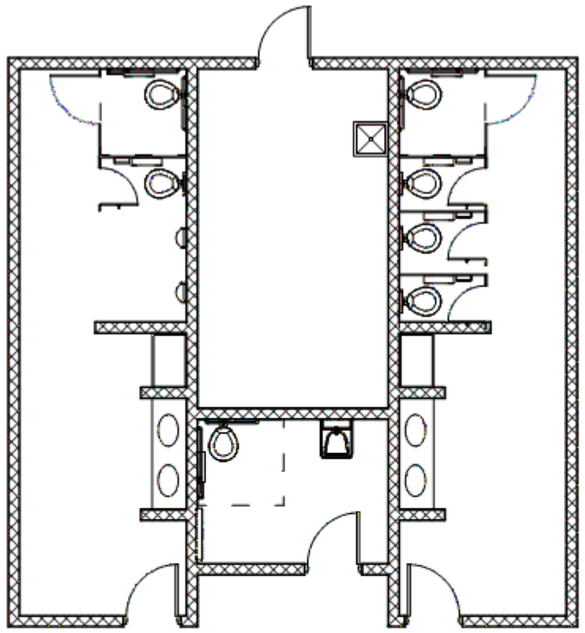


FINISH AND DETAIL CONCEPTS

BARKER RINKER SEACAT ARCHITECTURE



PLAN CONCEPT FOR FURTHER STUDY



1 / A-2 FIRST FLOOR PLAN - SD

1/8" = 1'-0"

0 4' 8' 16'

QUESTIONS

Questions:

- Status Geotech
- Foundation:
  - 5” Conc slab on grade with foundations below frost
- Roof Framing:
  - Gable – truss vs Shed – beam/purlin
  - Wood vs steel
  - Deck – OSB vs metal
- Walls
  - CMU
  - Fully Grouted? Partial
- Flood Design:
  - Flood Proof vs Floodable
  - Slow Rise vs rushing water with debris
  - EL – 2’ Above Flood Elevation - 100yr or 500yr?
  - Cost vs Risk

Design Narrative – Basis of Design :

Project Description

The project consists of a 1,000 square foot restroom building to serve the Lyons Bohn Park ball fields. The facility includes men's and women's restroom, a family restroom and a storage/mechanical room. The facility will be open year round.

STRUCTURAL SYSTEMS

BOHN PARK STRUCTURAL NARRATIVE

FOUNDATIONS

A sub-surface geotechnical evaluation of the building site has not been completed at this time. Based on general knowledge of the site, it is safe to assume that the soils will generally be sandy alluvial deposits from the adjacent St. Vrain Creek. It is likely to contain a significant amount of cobbles and boulders buried in the sandy soils.

This type of soil profile usually will support building loads on conventional spread footings and concrete stem wall. The amount of debris (cobbles, boulders) in the building footprint will have a significant impact on the total construction cost of the project.

Footing will be placed below the local frost depth as determined by relevant building code.

Concrete will be constructed with Type I-II cement and have 28 day design strengths of 4500 psi to achieve the durability requirements for this type of facility.

SLAB ON GRADE

The interior slab- on-grade will be 5" thick and reinforced with a single mat of Welded Wire Fabric. Portions of the STRUCTURE slab supporting interior non-load bearing masonry walls will be thickened.

Subgrade preparation including the use of a free draining gravel layer and use of vapor barrier will be designed and constructed in accordance with the recommendations of the geotechnical engineer.

To minimize cracking, the slab will include saw cut control joints. The slab will be isolated from all perimeter walls except at threshold locations, where the slab will be doweled to the exterior paving to prevent differential movements which would inhibit the opening of the exterior doors.

Concrete for the slab will incorporate Type I-II cement and have 28 day design strengths of 4500 psi to achieve the durability requirements for this type of facility.

ROOF FRAMING

The roof structure will depend on the final roof profile preferred by the Owner. A gable roof is likely to be framed with pre-engineered wood or light gauge steel roof trusses. A shed roof will more likely be framed with a beam and purlin system. This system may be either wood or steel depending on the durability requirements of the building.

It is likely that the roof diaphragm will be a plywood (OSB) sheet system with will tie directly into the perimeter walls.

WALL SYSTEM

Exterior walls will be 8 inch concrete masonry units reinforced their full height to meet design requirements. There is likely to be a significant amount of stone veneer to meet the design objectives of the building.

LATER FORCE RESISTING SYSTEM

The lateral force resisting system will be the perimeter masonry shear walls. These walls will resist all wind and seismic loads as required by code.

FLOOD DESIGN

A discussion should be undertaken with the Owner as to what level of flood risk is acceptable for the building. While a "flood proof" building is a theoretical possibility, it may not be the best expenditure of the construction budget. Ideally, the building should be sited so that the floor is above the 100 year flood elevation. This will minimize potential frequent damage caused by less significant flood events.

Even if sited above the 100 year flood elevation, significant damage may occur due to fast moving debris in the flood waters or the scouring of the soils surrounding the foundations. The only way to mitigate such damage would be the construction of flood water diversion structures upstream of the building.

The level of flood risk acceptable to the Owner will have a significant impact on the construction cost.

DESIGN CRITERIA

The building will be designed to conform to the IBC 2012 including the amendments adopted by the Town of Lyons. Specifically:

Risk Category:	II
Design Wind Speed:	170 mph (3 second gust) Exposure B
Ground Snow Load:	30 psf with consideration of any drifting loads
Seismic Design Category:	B
Flood Loads:	To be determined
Frost Depth:	30"

Mechanical
Plumbing

QUESTIONS

Questions:

- **Mech:**
  - Confirm no cooling
  - Heating: Elec Unit Heaters (1) ea restroom & storage/mech
  - Exhaust: (1) fan ea room

- **Plumbing:**
  - 2” site service
  - Alt – PEX piping?
  - Stormwater – roof gutters & downspouts? Drain to landscape area?
  - Fixtures – see slides
    - -find sink w/counter cuts
    - - freeze proof water fountain/bottle filler (incl jug filler?)
  - Floor drains: trench vs circular drain

Mechanical (HVAC, Plumbing & Fire Protection)

Design Criteria

Temperatures:

Summer Outdoor: 95°F db, 61°F wb

Summer Indoor:

There is no cooling provided for this building. Ventilation rates in the summer will be increased to keep temperatures moderate and similar to the outside temperatures.

Winter Outdoor: -10°F

Winter Indoor:

Winter indoor temperatures can be expected to be in the 60 degree range. Minimum ventilation rates will be maintained with spot heating provided.

Humidity:

Humidity is not specifically controlled other than dehumidification that occurs with the naturally dry Colorado ventilation air. Spaces will likely fluctuate between 10% to 60% RH.

Outside Air Ventilation:

Restrooms: 70 CFM / water closet and urinal (minimum in winter)

Storage / Mechanical: 70 CFM / mop service basin (minimum in winter)

Building Components – 2012 IECC:

Walls: U = .078 (Mass wall); 0.064 (framed wall)

Roof: U = .039

Glass: U = .38 S.C. = 40

Heating:

Source:

Electric cabinet unit heaters will serve as the heating source for the Men's and Women's Restrooms.

CUH-1: 4.5 kW

CUH-2: 4.5 kW

An electric wall heater will serve as the heating source for the Family Restroom.

EWH-1: 1.0 kW

An electric unit heater will serve as the heating source for the Storage / Mechanical Room.

EUH-1: 5.0 kW

Air Distribution:

Exhaust:

Two exhaust fans will be provided to exhaust and ventilate the Men's and Women's restrooms and the Mechanical / Storage Room. One fan, EF-1, shall serve as the minimum exhaust flow rate to meet code required ventilation rates. This fan shall operate at a constant volume during occupied hours. A second exhaust fan, EF-2, shall be controlled by a line voltage thermostat to increase the ventilation airflow when the temperatures rise in the spaces. Both fans will utilize the same distribution system.

EF-1 630 CFM Direct drive, ¼ HP, EC Motor

EF-2 1,430 CFM Direct Drive, ½ HP, EC Motor

A single ceiling mounted exhaust fan shall serve the Family Restroom. The fan shall be controlled from the lighting occupancy sensor.

EF-3 100 CFM Ceiling Fan, 175 W

Make-Up Air

Aluminum drainable blade louvers shall serve as the make-up air paths for all spaces. All louvers shall have motorized dampers to close the louvers off during unoccupied hours.

Ductwork:

Materials: Galvanized sheetmetal ductwork shall be used throughout., except as noted.
All exposed ducts shall be spiral.
Grilles, registers and diffusers shall be aluminum.

Sizing: All low velocity supply, return and exhaust ducts shall be sized at 0.08"/100'.

Temperature Controls:

General: An electric controls system shall be provided. This controls system shall schedule the exhaust fans and damper motors based on an owner's provided occupancy schedule and/or space occupancy sensors. There shall be one (1) temperature control panel in the Mechanical / Storage Room.

Cabinet Unit Heaters, Unit Heaters and Electric Wall Heaters shall be controlled by manufacturer provided thermostats. Locking covers shall be provided for the line voltage thermostats controlling the secondary exhaust fan (EF-2) and the cabinet unit heaters (CUH-1 & CUH-2).

Domestic Water:

Site Utilities:

A 2" water meter and service (65gpm demand) to ±5'-0" outside of building will be provided for this facility. Depending on water district requirements and site water pressure this project might be able to downsize to a 1-1/2" water meter with a 2" service to the building. Continuation will be by the civil engineer.

The lawn irrigation service will be separate and by others.

Piping:

The domestic cold water, hot water and hot water recirculation, condensate and pool condensate piping above ground in the building shall be Type "L" hard copper with no-lead solder and fittings.

Alternate material would be PEX piping with plastic or red brass fittings.

The cold water service entry shall have a reduced pressure backflow preventer.

Water Heater:

Domestic hot water will be an electric storage tank water heater (30 gallon, 4.5KW, 120/60/1 phase).

Master thermostatic mixing valves will be provided at the water heater and set a 110°F for all fixtures.

Domestic Water Recirculation Pump:

No HWC piping or pumps will be required.

Waste and Vent Piping:

Utilities:

A 4" building drain will be provided to ±5'-0" outside of the building. Continuation will be by the civil engineer.

Piping:

Construct below ground waste piping of schedule 40 PVC (solid core) with solvent welded joints within ±5'-0" of the building.

Waste and vent piping above grade in building shall be service weight cast iron with no-hub fittings. All plumbing VTR's shall be located 15' minimum from any outside air intakes. **Alternate piping above grade in the building shall be same as below ground.**

Storm Piping:

Roof drains and overflow roof drain systems are not anticipated.

Plumbing Fixtures:

Water Closets: Wall hung, stainless steel, blowout type (1.28 GPF) with a hard wired electronic operated flush valve.

Urinals: Stainless steel, washout type (1.0 GPF) with a hard wired electronic operated flush valve.

Lavatories: Stainless steel wall hung type. Faucet shall have a hard wired electronic operated faucet with a .5 GPM flow restrictor for water saving feature.

Mop Service Basins: Floor type, molded stone, 24"x24"x10" size.

Drinking Fountains/Bottle Fill Station Combination: Stainless steel, wall hung, high low with bottle fill station and with freeze protection valving.

Jug fill station will be provided on exterior wall near drinking fountain.

Insulation:

Domestic cold water will have ½" of fiberglass insulation.

Domestic hot and hot water recirculation will have 1" of fiberglass insulation for up to 1" piping, 1-1/2" fiberglass for piping above 1".

Miscellaneous Plumbing:

Provide exposed, chrome hose bibbs with vacuum breaker in mechanical rooms.

Provide (1) wall hydrant on the exterior of the building at drinking fountain.

Provide floor drains as follows:

Showers.

Shower hallways wet areas within the locker rooms.

Shower drying area.

Toilet rooms.

Mechanical equipment rooms.

Fire Protection

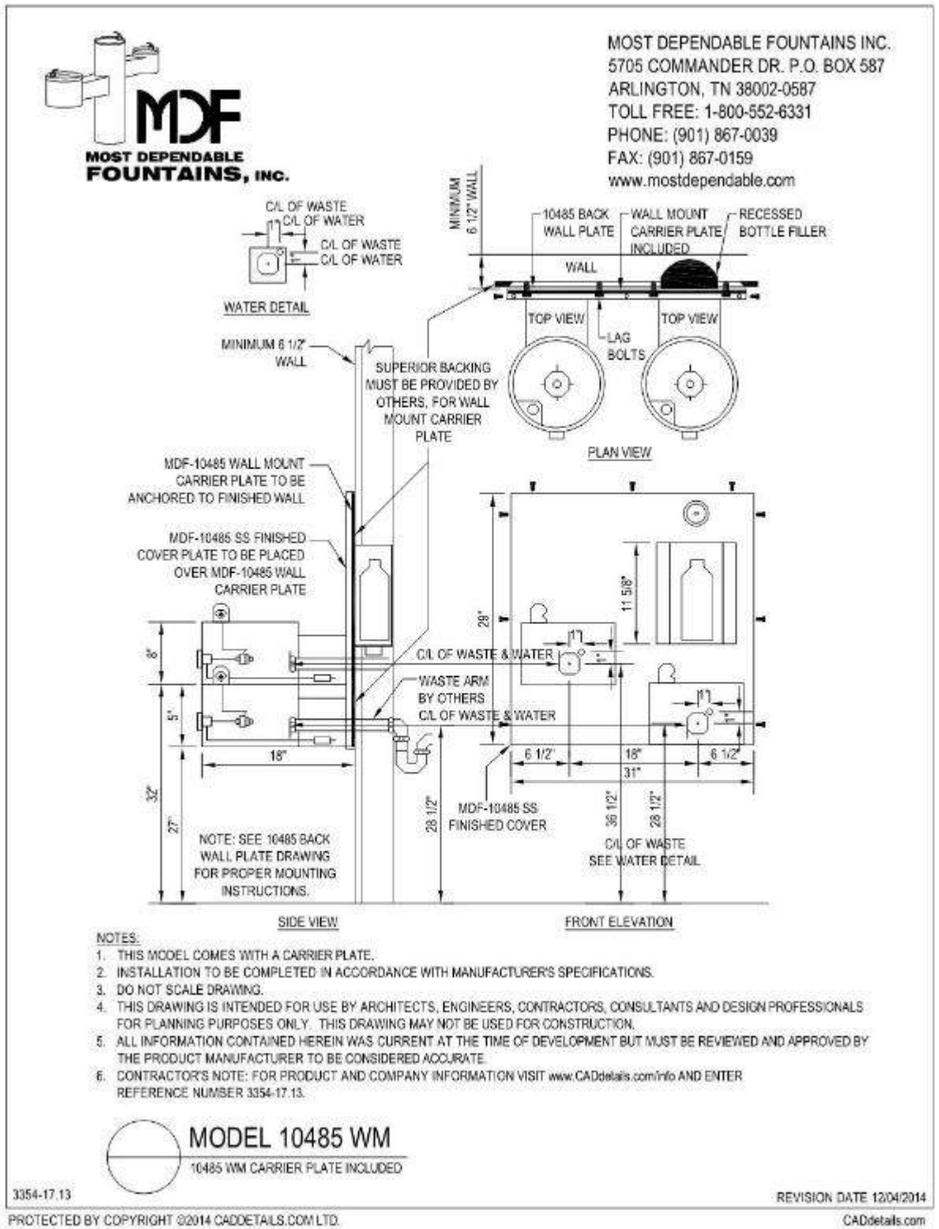
No Fire protection

BARKER RINKER SEACAT ARCHITECTURE

The Ballard Group, Inc.
Mechanical Consulting Engineers

BARKER RINKER SEACAT ARCHITECTURE

PLUMBING FIXTURE CUTS
Water Fountain



Questions:

- Freeze proof?
- Jug filler
- Separate from building?
- Alternate - below

ELKAY SPECIFICATIONS

Outdoor Tubular Bottle Filling Station

MODEL LK4405BFFRK

GENERAL
Steel Outdoor Freeze-Resistant Wall Mount Fountain with Bottle Filling Station with rounded corner design, heavy-duty steel with textured powder-coat finish and E-Coat immersion for year-round beauty with minimum maintenance. The E-Coat immersion process coats the inside and outside for the ultimate in corrosion protection.

BOTTLE FILLER
Provides a quick fill at 1 gallon per minute. Laminar flow provides a clean fill with minimal splash and easy maintenance.

FREEZE-RESISTANT VALVE SYSTEM
Freeze-Resistant system features box that installs behind non-freezing wall for housing water connection from the stop to the strainer.

PUSHBUTTON ACTUATION MECHANISM
Self-closing, vandal-resistant pushbutton does not require grasping or twisting.

WATER INLET & DRAIN OUTLET
Inlet: 3/8" O.D. Tubing
Outlet: 1-1/4" tube outlet for 1-1/4" slip joint connection

ACCESS PANELS
Heavy-gauge steel with vandal-resistant screws. Provides access for easy hook-up of all plumbing connections.

Freeze-Resistant Wall Mount Fountain

The Ballard Group, Inc.
Mechanical Consulting Engineers

PLUMBING FIXTURE CUTS
Lavatory Faucet

SLOAN
OPTIMA SYSTEMS

ETF-600

Sensor Activated
Electronic Hand Washing Faucet

▶ **Description**
Chrome Plated Brass, Sensor Activated, 4" Center-set Electronic Hand Washing Faucet for tempered or hot/cold water operation.

▶ **Flow Rate**
☒ 0.5 gpm/1.9 Lpm Vandal Resistant Spray Head
(See Accessories for other Spray Head options)

▶ **Specifications**
ADA Compliant, Sensor Activated, 24 VAC, Chrome Plated 4" Center-set Cast Brass, Hand Washing Faucet with the following features:
- Splash-proof Circuit Control Module
- Sensor Range Adjustment Screw
- Troubleshooting LED Indicator Lights
- User Friendly Variable Time Out Settings
- Filtered Solenoid Valve with serviceable Strainer Filter
- Bak-Chek® Tee for Hot/Cold Supply
- 120 VAC/24 VAC Transformer (specify Plug-in or Box Mount)
- Vandal Resistant Spray Head with Pressure Compensating Flow Control
- Metal Jacketed Wire Protection for Sensor and Solenoid Leads
- Modular Quick-Release Sensor and Solenoid Connections

▶ **Variations**
(Add suffix to Model Number for inclusion with Faucet)
- **Trim Plate (optional)**
  - ☐ **-8** Trim Plate for 8" Center-set Sink
- **Transformer Type (must be specified)**
  - ☐ **P** Plug-in Transformer (furnished with ETF-233)
  - ☐ **B** Box Mount (furnished with EL-248-40)
  - ☒ **LT** Less Transformer (specify Transformer separately - See Accessories)
- **Temperature Mixing Valves (optional)**
  - ☐ **BDM** Below Deck Mechanical Mixing Valve
  - ☐ **BDT** Below Deck Thermostatic Mixing Valve

  Bak-Chek® Tee not required or provided when a Temperature Mixing Valve is included with the faucet.
- **Finishes**
  Consult Factory for Finish Variations

▶ **Accessories (Specify separately)**
- **Transformers**
  - ☐ **ETF-233** 120 VAC/24 VAC, 50/60 Hz (35 VA) - Plug-In (will operate up to 2 faucets)
  - ☐ **EL-248-40** 120 VAC/24 VAC, 50/60 Hz (40 VA) - Box Mount (will operate up to 2 faucets)
  - ☒ **EL-154** 120 VAC/24VAC, 50/60 Hz (50 VA) - Box Mount (will operate up to 3 faucets)
  - ☐ **EL-208** 120 VAC/24 VAC, 50/60 Hz (100 VA) - Foot Mount (will operate up to 6 faucets)
  - ☐ **EL-342** 240 VAC/24 VAC, 50/60 Hz (50 VA) - Box Mount (will operate up to 3 faucets)
- **Vandal Resistant Spray Heads**
  - ☐ **ETF-1029-A** 2.2 gpm/8.3 Lpm Laminar Flow Spray Head (recommended for medical applications)
  - ☐ **ETF-1024-A** 2.2 gpm/8.3 Lpm Aerator
- **Grid Strainer**
  - ☐ **ETF-460-A** Chrome Plated Brass Grid Strainer w/1¼" Outlet Tube

See OPTIMA Accessories Section of the Sloan Catalog for a complete listing of OPTIMA Faucet Accessories and Variations.

Optima ETF-600 S.S. — Rev. 2a (07-12)

▶ **Automatic**
The Sloan OPTIMA® ETF-600 Electronic Hand Washing Faucet operates by means of an infrared sensor. Once the user's hands enter the sensor's effective range, the Solenoid activates the water flow. Tempered water flows from the Faucet until hands are moved away. The Faucet then automatically shuts off.

▶ **Hygienic**
The ultimate in sanitary protection — there are no handles to turn or buttons to push. Helps to control the spread of infectious diseases. Ideal for high traffic commercial installations.

▶ **Economical**
Automatic operation provides water usage savings over other faucet devices. Reduces maintenance and operation costs. The 4" Center-set design makes the ETF-600 Faucet secure against abuse and vandalism.

▶ **Warranty**
3 year (limited)

▶ **Compliant to:**
ASME A112.18.1

UL LISTED 376U

LOW-LEAD UPC C ® — This product may contribute to LEED credits. See details on LEED calculation worksheet.

This space for Architect/Engineer approval

Job Name _____ Date _____
Model Specified _____ Quantity _____
Variations Specified _____
Customer/Wholesaler _____
Contractor _____
Architect _____

The information contained in this document is subject to change without notice.

ETF-600

▶ **Description**
Chrome Plated Brass, Sensor Activated, 4" Center-set Electronic Hand Washing Faucet for tempered or hot/cold water operation.

▶ **Flow Rate**
☐ 0.5 gpm/1.9 Lpm Vandal Resistant Spray Head
(See Accessories for other Spray Head options)

ELECTRICAL SPECIFICATIONS

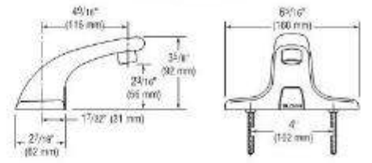
▶ **Control Circuit**
24 VAC Input/Output, 50/60 Hz
Adjustable Range & Time Out Settings, Modular Plugs & Troubleshooting LED Indicators

▶ **OPTIMA® Sensor Range**
Factory Set: 4" - 6" (102 mm - 127 mm)
Adjustable: 1" - 14" (25 mm - 356 mm)

▶ **Solenoid Valve**
24 VAC 50/60 Hz with integral strainer filter & 3/8" Compression Connection Inlet/Outlet.

▶ **Time Out Adjustment Settings**
3, 6, 12, 30 & 45 seconds; 1, 3 & 20 minutes. The Faucet Time Out Setting determines the maximum time the faucet will run upon continuous activation. This timing can be changed to meet individual application requirements. Unless otherwise specified the ETF-600 is factory set at the 30 second time out.

FAUCET DIMENSIONS



▶ **Transformer**
All Sloan Transformers are 50/60 Hz.
Multiple faucets can be powered by a single transformer, provided that the transformer has been properly sized. Allow a minimum of 15 VA of current rating for each faucet being used.

Plug-in	ETF-233	120 VAC/24 VAC - 35 VA (supplied with "P" variation)
Box Mount	EL-248-40	120 VAC/24 VAC - 40 VA (supplied with "B" variation)
Box Mount	EL-154	120 VAC/24 VAC - 50 VA
Foot Mount	EL-208	120 VAC/24 VAC - 100 VA
Box Mount	EL-342	240 VAC/24 VAC - 50 VA

▶ **Max. Distance Control Module may be Installed from Spout**
With Standard Cable: 12" (305 mm)

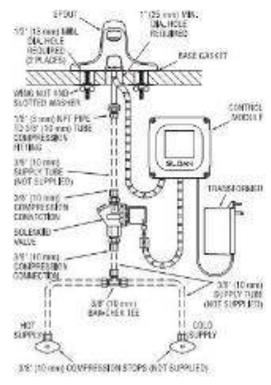
▶ **Extension Cables (Optional)**

From Sensor to Control Module			From Solenoid Valve to Control Module		
ETF-1005-24	24"	(610 mm)	ETF-1003-36	36"	(914 mm)
ETF-1005-36	36"	(914 mm)	ETF-1003-48	48"	(1219 mm)
ETF-1005-72	72"	(1829 mm)	ETF-1003-72	72"	(1829 mm)
ETF-1005-108	108"	(2743 mm)	ETF-1003-108	108"	(2743 mm)

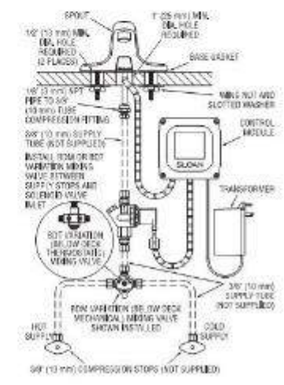
OPERATION

1. A continuous invisible beam of light is emitted from the OPTIMA® Sensor located at the base of the lavatory faucet.
2. As the user's hands enter the beam's effective range, the beam is reflected back into the Sensor Receiver and activates the Solenoid Valve allowing tempered water to flow from the faucet. Water will flow until the hands are removed or until the faucet reaches its automatic time out limit setting.
3. When hands are moved away from the OPTIMA® Sensor, the loss of reflected light initiates an electrical signal that deactivates the Solenoid Valve, shutting off the water flow. The Circuit then automatically resets and is ready for the next user.

ETF-600 Faucet with Bak-Chek® Tee for Hot and Cold Water Supply



ETF-600 Faucet with BDM and BDT Variation Mixing Valves for Hot and Cold Water Supply



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Optima ETF-600 S.S. — Rev. 2a (07-12)

PLUMBING FIXTURE CUTS

Mop Basin

Molded Stone® Mop Service Basins

FIAT

Mop Service Basin MSB-1

These rugged molded stone mop service basins are manufactured from the SMC process under the highest quality standards. The quality control molding is achieved in matched metal dies under intense heat and pressure with the result being a one-piece, dependable homogeneous product. Color is White.

SPECIFICATIONS

- 10" (254) high walls with 1" (25) wide shoulders. Model MSB-3624 includes an integrally molded shelf 10 9/16" (268) wide
- Stainless steel factory installed drain body complete with a QDC-3 joint connector for a 3" (76) drain pipe
- A combination dome strainer and stainless steel lint basket is included

Ces robustes cuves d'entretien de vadrouilles molded stone sont fabriquées grâce au procédé SMC selon les normes de qualité les plus rigoureuses afin d'en assurer la durabilité et d'éliminer les problèmes après l'installation. Le moulage se fait dans des matrices métalliques jumelées, à haute température et sous une forte pression, ce qui assure un produit homogène et fiable d'une seule pièce. La couleur est le blanc.

CARACTÉRISTIQUES

- Côtes de 10 po (254) avec épaulement de 1 po (25). Le modèle MSB-3624 comprend une tablette moulée intégrée de 10 9/16 po (268)
- Renvoi en acier inoxydable avec raccord QDC-3 pour tuyau de renvoi de 3 po (76)
- Crépine en coupole et filtre à charpie en acier inoxydable combinés compris

DIMENSIONS

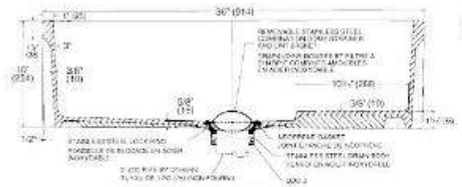
MSB-3624
- 36" x 24" x 10" (914 x 610 x 254)
- Shipping weight / Poids à l'expédition: 70 lbs (32 kg)

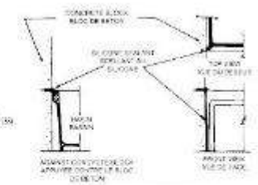
MSB-2424
- 24" x 24" x 10" (610 x 610 x 254)
- Shipping weight / Poids à l'expédition: 50 lbs (23 kg)

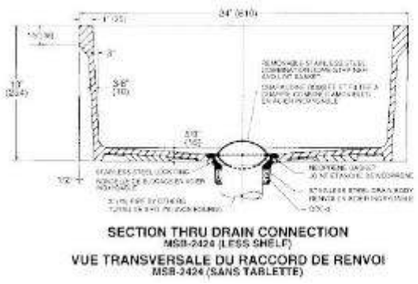
OPTIONAL EQUIPMENT / ÉQUIPEMENT FACULTATIF

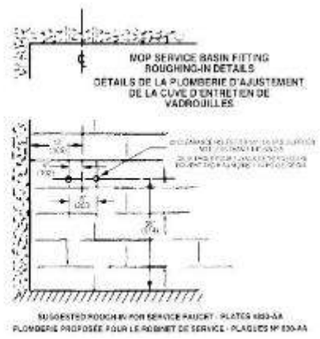
830 AA - Wall mounted service faucet, chrome plated with vacuum breaker, integral stops, adjustable wall brace, pail hook and 3/4" (19) hose thread on spout. Body inlets 8" (203) center to center, four arm handles. Centre of spout outlet from back of wall flange 9⅜" (238). CSA approved		**830 AA** - Robinet de service mural chrome avec coupe-vide, dispositif d'arrêt intégré, attache murale réglable et filets pour boyau 3/4 po (19) sur le bec. Conduites d'alimentation à 8 po (203) de centre à centre et clés à quatre ailettes. 9⅜ po (238) entre le centre du bec et l'arrière de la bride murale. Homologué par L'ANCOR
889 CC - Mop Bracket, 24" (610) long x 3" (76) wide, stainless steel with three (3) rubber grips		**889 CC** - crochet pour vadrouille, 24 po (610) de long par 3 po (76) de large, en acier inoxydable et muni de trois pinces à outils en caoutchouc
E-77-AA - Vinyl bumper guards in 24" or 36" length		**E-77-AA** - butoirs en vinyle en 24 po ou 36 po de long
1453 BB - Flat stainless steel strainer		**1453 BB** - Crépine plate en acier inoxydable pour utilisation résidentielle
Quick Drain Connectors (QDC's)		**Raccord rapide pour tuyau d'écoulement (QDC's)**

Pour Use With	QDC 3.2	QDC 35N	QDC 30H	QDC 4
CAST IRON SCH. PIPE	•	•	•	•
P.V.C. SCHED. 40	•		•	•
STEEL SCHED. 40	•		•	•





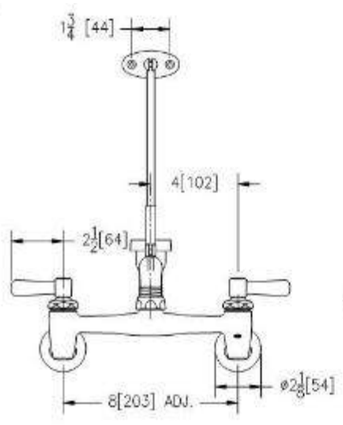


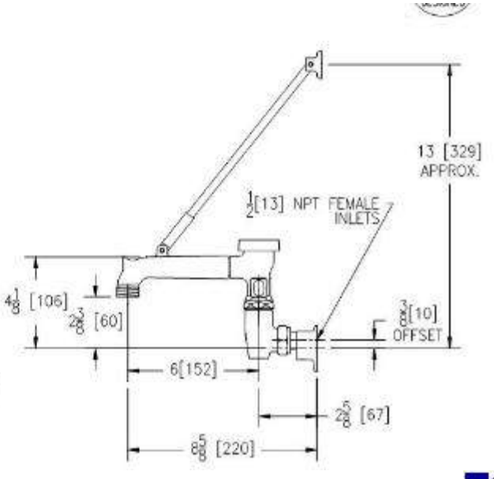


ZURN

SINK FAUCET

Z843M1-RC





PLUMBING FIXTURE CUTS
Toilet

Water Closet WC-1 and 2

Penal-Ware® 1675 Series
Blowout Jet Toilet - Off-Floor

1675-W-1
Fixture May Show Some Available Options

Please visit ***www.acorneng.com*** for most current specifications.

Blowout Jet Toilet - Off-Floor

Fixture is arranged to be installed on finished wall and serviced from an accessible pipe chase. Optional Wall Sleeve or Metal Template is recommended for all installations for required wall openings. Toilet bowl is fabricated from 14 gage, type 304 stainless steel and is seamless welded construction. Wall flange is structurally reinforced. Exterior is polished to a satin finish. The inside of the toilet bowl also has a satin finish. There are no accessible voids or crevices where contraband can be concealed.

Toilet is a blowout jet type with an elongated bowl manufactured to ASME A112.19.3 and CSA B45.4 requirements and will flush with a minimum of 25 PSI flow pressure when used in conjunction with a minimum of 1.28 GPF. Trap has a minimum 3-1/2" seal and will pass a 2-1/8" ball. Toilet waste outlet is 2-3/8" diameter plain end extending 3" beyond the back of the unit.

Regularly Furnished items include mounting hardware.

GUIDE SPECIFICATION

Provide and install Acorn Penal-Ware Blowout Jet Toilet (specify model number and options). Toilet bowl shall be fabricated from 14 gage, type 304 stainless steel. Construction shall be seamless welded and exposed surfaces shall have a satin finish. Toilet shall be concealed blowout jet type with an elongated bowl, a self-draining flushing rim, and an integral contoured seat. Toilet shall meet ASME A112.19.3 and CSA B45.4 requirements and will flush with a minimum of 25 PSI flow pressure when used in conjunction with a minimum of 1.28 GPF. Toilet trap shall have a minimum 3-1/2" seal that shall pass a 2-1/8" diameter ball and be fully enclosed. Fixture shall withstand loadings of 3,000 pounds without permanent damage. Fixture shall be furnished with necessary fasteners for proper installation.

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Tel: (800) 488-8999 • (626) 336-4561 • Fax: (626) 961-2200 • www.acorneng.com • E-mail: info@acorneng.com

Penal-Ware® 1675: Blowout Jet Toilet - Off-Floor

WALL THICKNESS AND TYPE (Must Specify)
Thickness: _____ Type: ❑ Concrete ❑ Block ❑ Steel

MODEL NUMBER AND OPTIONS SELECTION:

BASE MODEL NUMBER
☑ 1675 Blowout Jet Toilet

SUPPLY (Must Specify)
❑ -T Top (Exposed)
☒ -W Wall (Concealed)

FIXTURE MOUNTING AND WASTE (Must Specify)
☑ -1 Off-Floor, Wall Outlet

FLUSH VALVE GPFs (Must Specify)
☒ -1.28 GPF (HET)
❑ -1.6 GPF
❑ -3.5 GPF

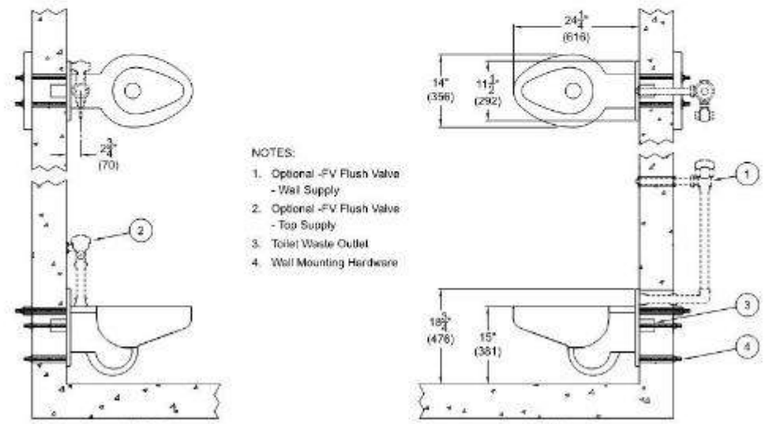
FLUSH VALVE OPTIONS (Must Specify)
SEE ACORN DURA-WARE SUPPLEMENTARY MATERIAL FOR FLUSH VALVE COVERS AND BOXES
❑ -EVSFV Electronic Flush Valve (N/A for Top Supply)
❑ -EVSPFV Electronic Flush Valve w/ Piezo Pushbutton (N/A for Top Supply)
❑ -FV Flush Valve, Mechanical (N/A for ADA)
☒ -FVBO Flush Valve by Others
❑ -FVH Flush Valve, Hydraulic (N/A for Top Supply)
❑ -FVL Flush Valve, ADA Lever Handle (Wall Supply)
❑ -MVCFV Time-Trol Flush Valve (N/A for Top Supply)

TOILET SEAT OPTIONS
❑ -HPS High Polish Integral Seat
☒ -HS Hinged Seat (N/A with #2802 Flush Valve Cover)
❑ -PFS Punched for Seat by Others

TOILET OPTIONS
❑ -CO1 Cleanout w/ O-Ring Connecting to No-Hub 4" (Plain End Only)
❑ -CO1-3 Cleanout w/ O-Ring Connecting to No-Hub 3" (Plain End Only, N/A with -WO3)
❑ -COH Cleanout Hook Assembly
❑ -FT Flood-Trol (N/A w/ Top Supply)
❑ -FTA Flood-Trol Auto-Reset (N/A w/ Top Supply)
❑ -FTE Flood-Trol Electronic
❑ -FVT Flush Thru Wall Connector
❑ -GW Gasketed Toilet Waste
❑ -PC Pinned Cleanout Plug (For -CO1 Options above)
❑ -TF Transformer, 120VAC to 24VAC (-MVCFV option)
❑ -TSC Toilet Shipping Cover
❑ -TWE Toilet Waste Extension (3" Standard) Specify Length Beyond Fixture:_____
❑ -WO3B 3" Bell Waste Outlet w/ Std. 2-3/8" Trap

PRODUCT OPTIONS
❑ -ADA 18" Integral Seat Height
❑ -EG Enviro-Glaze Color Specify:_____ Toilet Interior & Exterior
❑ -EGE Enviro-Glaze Color Specify:_____ Toilet Exterior Only
❑ -MT Metal Template (Only 1 Required Per Project)
❑ -SW Wall Sleeve
❑ -VAC AcornVac System

Please visit ***www.acorneng.com*** for most current specifications.



Important: Installation instructions and current rough-in are furnished with each fixture. Do not rough in without certified dimensions.
Dimensions are subject to manufacturer's tolerances of plus or minus 1/4" and change without notice. Acorn assumes no responsibility for use of void or superseded data. © Copyright 2005 Acorn Engineering Company

Selection Summary	Approved for Manufacturing
Model No. & Option_____	Company_____ Title_____
Quantity_____	Signature_____ Date_____

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PLUMBING FIXTURE CUTS
Urinal

Urinal UR-1 and 2

Penal-Ware® 1702 Series
Washout Urinal

1702-T-1-FV | 1702-W-1

Fixture May Show Some Available Options

Please visit **www.acorneng.com** for most current specifications.

Washout Urinal

Fixture is arranged to be installed on finished wall and serviced from an accessible pipe chase. Optional Wall Sleeve or Metal Template is recommended for all installations for required wall openings. Fixture is fabricated from 14 gage, type 304 stainless steel and is seamless welded construction. Exterior has a satin finish. Interior has a matte finish. Fixture is back wall washdown type, and is optionally available with a continuous flushing rim that washes all four walls. Corners are coved to facilitate cleaning. P-trap is fully enclosed. Back of fixture is sound-deadened with fire-resistant material. There are no accessible voids or crevices where contraband can be concealed.

Urinal is washout type. Flushing connection is 3/4" NPT male. Bottom is sloped to an integrally welded, high capacity, stainless steel beehive dome strainer. P-trap has a minimum of 2" seal.

Mounting Hardware is furnished for walls up to 8" thick.

GUIDE SPECIFICATION

Provide and install Acorn Penal-Ware Washout Urinal (specify model number and options). Urinal shall be back wall washdown type. Fixture shall be fabricated from 14 gage, type 304 stainless steel and shall have coved corners to facilitate cleaning. Bottom shall be sloped to an integrally welded, high capacity, stainless steel beehive dome strainer. Construction shall be seamless welded and exterior surfaces shall have a satin finish. P-trap shall be fully enclosed. Fixture shall be furnished with necessary fasteners for proper installation.

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Penal-Ware®: 1702 Washout Urinal

WALL THICKNESS AND TYPE (Must Specify)
Thickness: _____ Type: ❑ Concrete ❑ Block ❑ Steel

MODEL NUMBER AND OPTIONS SELECTION

BASE MODEL NUMBER
☑ 1702 Washout Urinal

SUPPLY (Must Specify)
❑ -T Top (Exposed)
☒ -W Wall (Concealed)

FIXTURE MOUNTING AND WASTE (Must Specify)
☑ -1 Off-Floor, Wall Outlet

FLUSH VALVE GPFs (Must Specify)
☒ -1.0 GPF
❑ -1.5 GPF

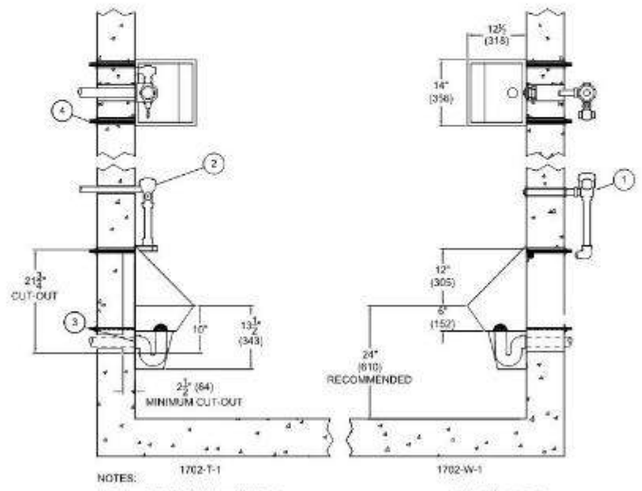
FLUSH VALVE OPTIONS (Must Specify)
Refer to Acorn Dura-Ware Supplementary for Box Cover(s) and Access Panel(s)

❑ -EVSFV	Electronic Flush Valve (N/A for Top Supply)
❑ -EVSPFV	Electronic Flush Valve w/ Piezo Pushbutton (N/A for Top Supply)
❑ -FV	Flush Valve, Mechanical (N/A for ADA)
☒ -FVBO	Flush Valve by Others
❑ -FVH	Flush Valve, Hydraulic (N/A for Top Supply)
❑ -FVL	Flush Valve, ADA Lever Handle
❑ -MVCFV	Time-Trol Flush Valve (N/A for Top Supply)

PRODUCT OPTIONS (Must Specify)

❑ -CFR	Continuous Flushing Rim
❑ -EG	Enviro-Glaze Color, Specify: _____
❑ -FVT	Flush Valve Thru Wall Connection
❑ -MT	Metal Template
❑ -SW	Wall Sleeve
❑ -TF	Transformer, 120VAC to 24VAC
❑ -TG	12 Gage Housing

Please visit **www.acorneng.com** for most current specifications.



NOTES:
1. Optional -FV Flush Valve - Wall Supply.
2. Optional -FV Flush Valve - Top Supply.
3. Urinal Waste Outlet.
4. Wall Mounting Hardware.

Important: Installation instructions and current rough-in are furnished with each fixture. Do not rough in without certified dimensions.
Dimensions subject to manufacturer's tolerance of plus or minus 1/4" and change without notice. Acorn assumes no responsibility for use of void or superseded data. © Copyright 2016 Acorn Engineering Company

Selection Summary	Approved for Manufacturing
Model No. & Option_____	Company_____ Title_____
Quantity_____	Signature_____ Date_____

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BARKER RINKER SEACAT ARCHITECTURE
The Ballard Group, Inc.
Mechanical Consulting Engineers

PLUMBING FIXTURE CUTS
Flush Valves

SLOAN

Royal® Model OPTIMA® Sensor Operated Flushometers 190-1

► Code Number
3453002

► Description
Concealed, Sensor Activated Royal® Model Urinal Flushometer, for 1¼" back spud urinals.

► Specifications
- PERMEX® Synthetic Rubber Diaphragm with Dual Filtered Fixed Bypass
- Flush Accuracy Controlled by CID Technology
- 1" I.P.S. Wheel Handle Bak-Chek® Angle Stop
- Non-Hold-Open Integral Solenoid Operator, Fixed Metering Bypass and No External Volume Adjustment to Ensure Water Conservation
- Courtesy Flush™ Non-Hold-Open True Mechanical Override
- OPTIMA® EL-1500 Self-Adaptive Infrared Sensor with Indicator Light
- Quiet, Concealed, Diaphragm Type, Rough Brass Urinal Flushometer with the following features:
- Stop Seat and Vacuum Breaker molded from PERMEX® Rubber Compound for Chloramine Resistance.
- High Back Pressure Vacuum Breaker Flush Connection and Spud Coupling for 1¼" Concealed Back Spud

Valve Body, Cover, Tailpiece and Control Stop shall be in conformance with ASTM Alloy Classification for Semi-Red Brass. Valve shall be in compliance with the applicable sections of ASSE 1037 and ANSI/ASME A112.19.2. Installation conforms to ADA requirements.

► L Dimension
Specify the "L" Dimension for the proper length of the Flush Connection. The "L" Dimension is equal to the Wall Thickness (to nearest whole inch) plus 2¾".

► Automatic Operation
Sloan OPTIMA® equipped Flushometers provide the ultimate in sanitary protection and automatic operation. There are no handles to trip or buttons to push. The Flushometer operates by means of an infrared sensor that adapts to its surrounding. Once the user enters the sensor's effective range and then steps away, the Flushometer Solenoid initiates the flushing cycle to flush the fixture.

► Economical
Automatic operation provides water usage savings over other flushing devices. Reduces maintenance and operation costs.

► Practical
Solid state electronic circuitry assures years of dependable, trouble-free operation. The operational components of the Flushometer are identical to a handle activated Royal® Flushometer, proven by 90 years of experience.

► Hygienic
User makes no physical contact with the Flushometer surface. Helps control the spread of infectious diseases. 24-Hour Sentinel Flush keeps fixture fresh during periods of nonuse.

► Compliance & Certifications

This space for Architect/Engineer Approval

► Control Circuit
- Solid State
- 8 Second Arming Delay
- 24 VAC Input

SLOAN

Royal® Model OPTIMA® Sensor Operated Flushometers 190-1

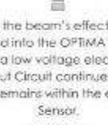
- 24 VAC Output
- 24-Hour Sentinel Flush

► Solenoid Operator
24 VAC, 50/60 Hz

► Sensor Range
Nominal 15" - 30" (381 mm - 762 mm) Self-adaptive Window ± 8" (203 mm)

► OPERATION

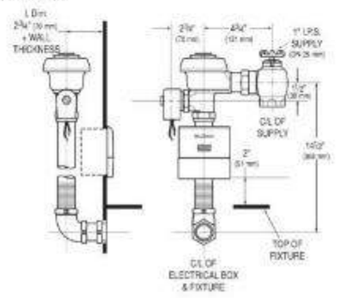
1. A continuous, invisible light beam is emitted from the OPTIMA Sensor.



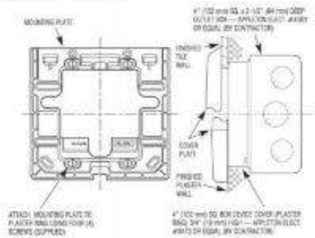
2. As the user enters the beam's effective range (15" to 30") the beam is reflected into the OPTIMA Scanner Window and transformed into a low voltage electrical circuit. Once activated, the Output Circuit continues in a "hold" mode for as long as the user remains within the effective range of the Sensor.

3. When the user steps away from the OPTIMA Sensor, the circuit immediately initiates an electrical "one-time" signal that operates the Solenoid. This initiates the flushing cycle to flush the fixture. The Circuit then automatically resets and is ready for the next user.

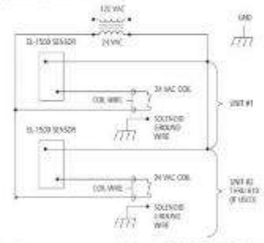
► ROUGH-IN



► ELECTRICAL BOX INSTALLATION
Failure to properly position the electrical boxes to the plumbing rough-in will result in improper installation and impair product performance. All tradesmen (plumbers, electricians, tile setters, etc.) involved with the installation of this product must coordinate their work to assure proper product installation. Installation Template furnished with Flushometer.



► WIRING DIAGRAM



One Transformer serves up to ten (10) OPTIMA Closet/Urinal Flushometers. Specify number of transformers required accordingly.

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2016-05-05

PLUMBING FIXTURE CUTS
Flush Valves

SLOAN
OPTIMA SYSTEMS

Royal® Model OPTIMA®
Sensor Activated Flushometers

152 ES-S

▶ **Description**
Concealed, Sensor Activated Royal® Model Water Closet Flushometer, for wall hung back spud bowls.

▶ **Flush Cycle** 1.28 gpf
☐ Model 152-1.6 ES-S Low Consumption (1.6 gpf/6.0 Lpf)
☐ Model 152 ES-S Water Saver (3.5 gpf/13.2 Lpf)

▶ **Specifications**
Quiet, Concealed, Diaphragm Type, Rough Brass Closet Flushometer with the following features:
- PERMEX™ Synthetic Rubber Diaphragm with Dual Filtered Fixed Bypass
- OPTIMA® EL-1500-L Self-Adaptive Infrared Sensor with Indicator Light
- User friendly three (3) second Flush Delay
- Courtesy Flush™ Override Button
- Non-Hold-Open Integral Solenoid Operator
- Die Cast Sensor Plate with no visible Fasteners (for 2-gang Electrical Box)
- 1" I.P.S. Wheel Handle Bak-Chek® Angle Stop
- Adjustable Tailpiece
- High Back Pressure Vacuum Breaker Flush Connection and Spud Coupling for 1½" Concealed Back Spud
- Sweat Solder Adapter
- High Copper, Low Zinc Brass Castings for Disinfection Resistance
- Non-Hold-Open Integral Solenoid Operator, Fixed Metering Bypass and No External Volume Adjustment to Ensure Water Conservation
- Flush Accuracy Controlled by CID™ Technology
- Diaphragm, Stop Seal and Vacuum Breaker molded from PERMEX™ Rubber Compound for Chloramine Resistance

Valve Body, Cover, Tailpiece and Control Stop shall be in conformance with ASTM Alloy Classification for Semi-Red Brass. Valve shall be in compliance with the applicable sections of ASSE 1037 and ANSI/ASME A112.19.2. Installation conforms to ADA requirements.

▶ **L Dimension**
Specify the "L" Dimension for the proper length of the Flush Connection. The "L" Dimension is equal to the Wall Thickness (to nearest whole inch) plus 2¾".

▶ **Variations**
☐ **TP** Trap Primer Elbow
☐ **YI** Two Wall Bumpers (for open front seat without cover)

▶ **Accessories**
☐ **EL-154** Transformer (120 VAC/24 VAC 50 VA)
☐ **EL-342** Transformer (240 VAC/24 VAC 50 VA)

See Accessories Section and OPTIMA Accessories Section of the Sloan catalog for details on these and other OPTIMA Flushometer variations.

Sloan Electronics are: UL LISTED 378U · LISTED BY LA,P,M,D.

This space for Architect/Engineer approval

Job Name _____ Date _____
Model Specified _____ Quantity _____
Variations Specified _____
Customer/Wholesaler _____
Contractor _____
Architect _____

The information contained in this document is subject to change without notice.

▶ **Automatic**
Sloan OPTIMA® equipped Flushometers provide the ultimate in sanitary protection and automatic operation. There are no handles to trip or buttons to push. The Flushometer operates by means of an infrared sensor that adapts to its surrounding. Once the user enters the sensor's effective range and then steps away, the Flushometer Solenoid initiates the flushing cycle to flush the fixture.

▶ **Hygienic**
User makes no physical contact with the Flushometer surface except to initiate the Override Button when required. Helps control the spread of infectious diseases. 24-Hour Sentinel Flush keeps fixture fresh during periods of nonuse.

▶ **Economical**
Automatic operation provides water usage savings over other flushing devices. Reduces maintenance and operation costs.

▶ **Practical**
Solid state electronic circuitry assures years of dependable, trouble-free operation. The operational components of the Flushometer are identical to a handle activated Royal® Flushometer, proven by 90 years of experience.

▶ **Warranty**
3 year (limited)

▶ **Made in the U.S.A.**

152 ES-S

▶ **Description**
Concealed, Sensor Activated Royal® Model Water Closet Flushometer, for wall hung back spud bowls.

▶ **Flush Cycle**
☐ Model 152-1.6 ES-S Low Consumption (1.6 gpf/6.0 Lpf)
☐ Model 152 ES-S Water Saver (3.5 gpf/13.2 Lpf)

ELECTRICAL SPECIFICATIONS

▶ **Control Circuit**
Solid State
24 VAC Input
24 VAC Output
8 Second Arming Delay
3 Second Flush Delay
24-Hour Sentinel Flush

▶ **OPTIMA Sensor Range**
Nominal 22" - 42" (559 mm - 1067 mm)
Self-adaptive Window ± 10" (254 mm)

▶ **Solenoid Operator**
24 VAC, 50/60 Hz

▶ **Transformer**
Sloan Part #EL-154
120 VAC, 50/60 Hz Primary
24 VAC, 50/60 Hz Secondary
Class II, UL Listed, 50 VA.

Sloan Part #EL-342
240 VAC, 50/60 Hz Primary
24 VAC, 50/60 Hz Secondary
Class II, UL Listed, 50 VA.

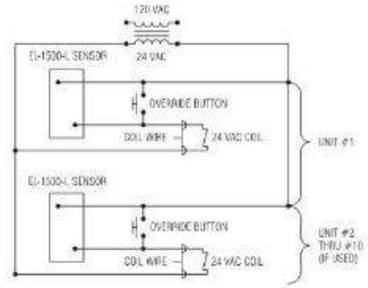
OPERATION

1. A continuous, invisible light beam is emitted from the OPTIMA Sensor.

2. As the user enters the beam's effective range (22" to 42"), the beam is reflected into the OPTIMA Scanner Window and transformed into a low voltage electrical circuit. Once activated, the Output Circuit continues in a "hold" mode for as long as the user remains within the effective range of the Sensor.

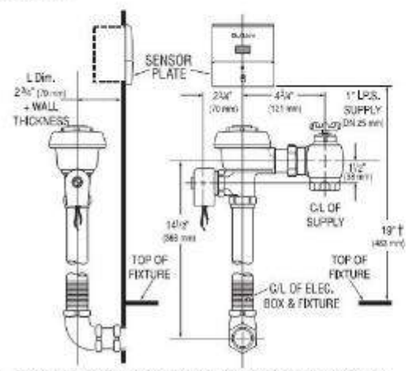
3. When the user steps away from the OPTIMA Sensor, the circuit waits 3 seconds (to prevent false flushing) then initiates an electrical "one-time" signal that operates the Solenoid. This initiates the flushing cycle to flush the fixture. The Circuit then automatically resets and is ready for the next user.

WIRING DIAGRAM



One Transformer serves up to ten (10) OPTIMA Closet/Urinal Flushometers. Specify number of transformers required accordingly.

ROUGH-IN

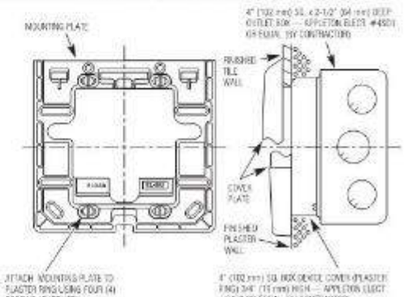


† Position of Sensor Box can be raised or lowered 1" (25 mm) if in conflict with Handicap Grab Bars.

ELECTRICAL BOX INSTALLATION

SENSOR LOCATION AND POSITIONING IS CRITICAL

Failure to properly position the electrical boxes to the plumbing rough-in will result in improper installation and impair product performance. All tradesmen (plumbers, electricians, tile setters, etc.) involved with the installation of this product must coordinate their work to assure proper product installation. Installation template furnished with Flushometer.



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The Ballard Group, Inc.
Mechanical Consulting Engineers

Electrical

QUESTIONS

Questions:

- **Electrical:**
  - Service for Building + Site (ball fields, parking, trails)
    400 Amp
    Restroom 240/120 – 1 phase
    Fields - 3 phase
  - Transformer location
  - Fixture types/locations
    occupancy sensors interior & daylight sensor or timer exterior
  - Lightning protection?

ELECTRICAL SYSTEMS
May 13, 2016

PURPOSE OF THE ELECTRICAL SCHEMATIC DESIGN PACKAGE

The Electrical Systems schematic pricing narrative is intended to facilitate three primary purposes. First, the narrative is intended to provide a descriptive outline of the electrical systems for the new Lyons Bohn Park scope of work. This outline will facilitate the development of schematic level preliminary pricing estimates for the interior and exterior building, and site amenity systems covered within the scope of the Division 26 Electrical Contractor. Second, this narrative is intended to give the Owner a basic understanding of the building and site amenity electrical systems. Such systems shall include: power, lighting, controls, and low voltage rough-in. The Owner can use this document as a method for reviewing project expectations and providing comments to AE Design Group for incorporation into the documents through the Construction Documents. Finally, the Schematic Design can be used by the Design Team as a catalyst for preliminary coordination and building design discussions.

PROJECT DESCRIPTION

This project is anticipated to consist of the following site amenity, and building structures. Please refer to the architectural schematic narrative for floorplans of all building and shelter elements, and the civil/landscape plans for site amenity items.

Restroom Building: ~ 1,000 SF, including Men's & Women's Room, Family Restroom, Storage, and Mechanical / Electrical space.

Picnic Shelter: ~ 800 SF, including accommodations for picnic tables, and a counter/seat wall.

Lighted Baseball Field: (1) baseball diamond to be illuminated, as designed per Musco. Scoreboard, and batting cage w/ electrical power for pitching machine

Lighted Tennis Courts: (3) Tennis courts to be illuminated, for recreational use.

Parking Lot Lighting: As needed for safety / security. And, power connection to pay-kiosk.

Lighting along St Vrain Trail: As needed for way-finding, safety / security

Special Events: Provide power provisions for vendors & other park uses.

Host Area: RV Hook-up provisions. Connection(s) to a well-pump.

DESCRIPTION OF WORK:

This Division 26 contractor scope includes all electrical work to constitute a complete installation.

Electrical work shall include all labor, materials, tools, equipment and services necessary for, or incidental to proper installation and completion of the work indicated on the drawings and stated within specifications.

Unless otherwise noted, provide labor and materials to make final electrical connections to motors, controllers and starters and electrical interconnections between equipment supplied by other trades to end at the load served.

Provide the temporary electrical power installation including materials, tools, and labor as required.
The contractor shall be responsible for all costs incurred for work of this section including all permits, fees, and other incidental costs associated with this work.

This Contractor shall be responsible for all applicable regulatory safety measures, including disposal of all materials.

POWER DENSITY DESIGN CRITERIA AND LOAD SUMMARY

The electrical density design criteria is based on estimated volt-amp per square foot allowances for interior lighting, exterior lighting, mechanical systems, and miscellaneous power systems. The estimates are based on historical data for similar facilities. The following watts/sf estimates are used for preliminary electrical service sizing. It is anticipated that this facility will be designed with efficient mechanical and electrical systems causing these preliminary estimates to be on the high side and specific equipment sizing is to be adjusted as the design progresses.

The anticipated electrical density load estimates are as follows:

Restroom Building & Picnic Shelter:

Load Type	System Sizing Load (VA/SF)
Mechanical Equipment Loads	10.0 (*)
Interior Lighting Loads	1.0
Exterior Lighting Loads	0.3
General Purpose Loads	3.0
Total	14.3 VA/SF

The overall square footage for this new scope of work is ~1,800 square foot. Based on the overall building use and the associated electrical loading, at a distribution voltage of 240/120 volts, 1-phase, the estimated calculated additional NEC demand load associated with the building expansion and existing building is ~107 amps. A 400 Amp, 240/120V, 1-phase, 4-wire electrical service expansion shall be used to feed the building, as it is anticipated to be used to feed additional external loads as noted below.

(*) This mechanical load is an estimate based upon similar space types, different mechanical systems are anticipated to be provided based upon the space layout option chosen.

Lighted Baseball Field: Anticipate 225A service required, 480V/3PH. It is unknown at this time, if an existing source of 480V power is available, or if a new service will be required.

Lighted Tennis Courts: Anticipate (3) 30A/2P circuits, @ 240V/1PH – one for each court, plus (3) 120V/20A receptacles for maintenance. Fed from existing tennis court electrical service.

Parking Lot Lighting & Kiosk: Anticipate (4) 120V/20A circuits, fed from the restroom service

Lighting along St Vrain Trail: Anticipate (2) 120V/20A circuits, fed from restroom service
Special Events: Anticipate (2) 50A/2P vendor receptacles, and (2) 20A/120V receptacles. Source of power is unknown at this time; potentially, fed from the existing restroom building service.

Host Area: Anticipate (1) 100A, 240V/1PH RV pedestal w/ various integral receptacle configurations. Fed from the restroom service.

APPLICABLE CODES AND STANDARDS

As of April 2016, the posted applicable code for the city of Superior, CO references the following standards:
2012 International Building Code
2012 International Fire Code
2009 International Energy Conservation Code
2014 National Electrical Code

ENERGY EFFICIENCY GUIDELINES
Refer to the lighting control section of this narrative for additional energy efficiency guidelines that are anticipated to be followed for this project.

ELECTRICAL UTILITY CONNECTION:
The Utility Company shall furnish a new 240/120V pad-mounted building utility transformer located at the building's exterior in proximity to the main electrical room. The primary service shall originate at the nearest underground facility, and the Utility will install the necessary primary underground conduit and service wires from that origination point and connect wires directly to pad mounted transformer. The Contractor shall perform all trenching and backfilling on the primary side of the transformer between the property line and the transformer. The transformer pad shall be furnished and installed by the Contractor in a manner coordinated with the Utility. The Utility shall furnish and install the transformer. A 400A CT cabinet with service entrance disconnect shall be provided by the Contractor, and shall be compliant with the Utility requirements. The contractor shall furnish and install all conduits and secondary wiring between the secondary side of the transformer and building electrical service CT Cabinet. The Utility shall make all connections of the secondary cabling to the secondary landings on the transformer. The Contractor shall perform all trenching and backfilling on the secondary side of the transformer. The Contractor shall furnish the required meter housing in a manner coordinated with the Utility. The Utility shall furnish, install, and connect that meter in that housing. All costs for work described above to be performed shall be carried as part of the project budget. AE Design has sized the distribution gear and panelboards based upon the electrical density load estimates. In the event that loads realized during design differ from those estimated, the ampacity of the electrical equipment will be revised as necessary.

ELECTRICAL DISTRIBUTION SYSTEM:
The electrical distribution system shall consist of a single 400A panel, 2-section, located in the main electrical / mechanical space of the restroom building. The sources of power for the baseball field, and special events area are T.B.D. at this time.
TELECOMMUNICATIONS & AUDIO VIDEO UTILITY
None, anticipated.

GENERAL POWER REQUIREMENTS

Restroom Building & Picnic Shelter: Minimal receptacles, anticipate electric hand dryers, and connections to the various site amenities listed below.

Lighted Baseball Field: Anticipate 225A service required, 480V/3PH. It is unknown at this time, if an existing source of 480V power is available, or if a new service will be required.

Lighted Tennis Courts: Anticipate (3) 30A/2P circuits, @ 240V/1PH – one for each court, plus (3) 120V/20A receptacles for maintenance. Fed from existing tennis court electrical service.

Parking Lot Lighting & Kiosk: Anticipate (4) 120V/20A circuits, fed from the new restroom service

Lighting along St Vrain Trail: Anticipate (2) 120V/20A circuits, fed from the new restroom service

Special Events: Anticipate (2) 50A/2P vendor receptacles, and (2) 20A/120V receptacles. Source of power is unknown at this time; potentially, fed from the existing restroom building service.

Host Area: Anticipate (1) 100A, 240V/1PH RV pedestal w/ various integral receptacle configurations. Fed from the new restroom service.

LIGHTING SYSTEMS SUMMARY
Interior Building Mounted Lighting
In order to obtain a desirable energy efficient design, the selection and layout of lighting fixtures throughout the facility and park will minimize excess wattage by utilizing proper lamp selections, light levels, and control strategies. In general, fluorescent, and LED sources will be utilized wherever possible to minimize the overall lighting watt/sf load as well as reducing maintenance costs. It is the intent of this design that no HID, CFL, or Incandescent sources will be used. The electrical contractor shall base their anticipated labor costs on the following lighting design descriptions. For purposes of this narrative, the recently completed Meadow Park will be used as the basis for design, as well as making reference to the Lyons Park Standards Booklet:

LIGHTING FIXTURE SCHEDULE

TYPE	LAMPS	DESCRIPTION	FINISH	MOUNTING	MANUFACTURER	CAT. NO.	VOLTS
AA	LED FURN. W/ UNIT	36" LONG 'LED' CUTOFF VANDAL TYPE WALL BRACKET (NOTE NO.1)	BRONZE (CONFIRM)	WALL @ +8'-0" AFF (CONFIRM)	LUMINAIRE	AEL-36-30WHP-120-277-3500K-DP-BZH-A/B-TX/SD	120
BB	LED FURN. W/ UNIT	24" LONG 'LED' CUTOFF VANDAL TYPE WALL BRACKET (NOTE NO.1)	BRONZE (CONFIRM)	WALL @ +8'-0" AFF (CONFIRM)	LUMINAIRE	AEL-24-20WHP-120-277-3500K-DP-BZH-A/B-TX/SD	120
CC	LED FURN. W/ UNIT	18" D.A. POST-TOP PEDESTRIAN POLE LIGHT 'LED' TYPE	BRONZE (CONFIRM)	POLE, SEE DETAIL NO. 1	LITHONIA	MRPLED-1-63B350/40K-SR5-120-DDBXD 12'-0" ROUND ALUMINUM POLE,NOTE NO. 5	120
DD	LED FURN. W/ UNIT	12" x 12" 'LED' VANDAL TYPE WALL BRACKET WET LOCATION (NOTE NO.1)	BRONZE (CONFIRM)	WALL @ +8'-0" AFF (CONFIRM)	LUMINAIRE	FFW1212-25WHP-3500K-120-277-OP-BRZ-WET-TX/SD-PS	120
EE	LED FURN. W/ UNIT	CUT-OFF TYPE 'LED' AREA LIGHT WITH TYPE 3 OPTICS AND HOUSESIDE SHEILD	BRONZE (CONFIRM)	POLE, SEE DETAIL NO. 2	LITHONIA	DSXO LED-20C-700-40K-T3M-MVOLT-RPA-HS-DDBXD-NOTE NO. 2,5	208
FF	LED FURN. W/ UNIT	CUT-OFF TYPE 'LED' AREA LIGHT WITH TYPE 3 OPTICS	BRONZE (CONFIRM)	POLE, SEE DETAIL NO. 2	LITHONIA	DSXO LED-20C-700-40K-T3M-MVOLT-RPA-DDBXD-NOTE NO. 2,5	208
GG	LED FURN. W/ UNIT	CUT-OFF TYPE 'LED' AREA LIGHT WITH TYPE 2 OPTICS	BRONZE (CONFIRM)	POLE, SEE DETAIL NO. 2	LITHONIA	DSXO LED-20C-700-40K-T2M-MVOLT-RPA-DDBXD-NOTE NO. 2,5	208
HH	LED FURN. W/ UNIT	CUT-OFF TYPE 'LED' AREA LIGHT WITH TYPE 4 OPTICS	BRONZE (CONFIRM)	POLE, SEE DETAIL NO. 2	LITHONIA	DSXO LED-20C-700-40K-T4M-MVOLT-RPA-DDBXD-NOTE NO. 3,5	208
KK	LED FURN. W/ UNIT	CUT-OFF TYPE 'LED' AREA LIGHT WITH TYPE 3 OPTICS	BRONZE (CONFIRM)	POLE, SEE DETAIL NO. 3	LITHONIA	DSXO LED-20C-700-40K-T3M-MVOLT-RPA-DDBXD-NOTE NO. 4,5	208
LL	LED FURN. W/ UNIT	42" HIGH 'LED' CUT-OFF TYPE BOLLARD WITH ASYMMETRIC OPTICS	BRONZE (CONFIRM)	SEE DETAIL NO. 4	LITHONIA	KBD8LED-12C-700-40K-120-ASY-MVOLT-DDBXD	120

BARKER RINKER SEACAT ARCHITECTURE

EXTERIOR LIGHTING

Sidewalk/Parking Areas: New parking areas shall be illuminated using a combination of LED style pedestrian scale luminaires, and parking lot poles mounted at heights to match existing. See above.

The St. Vrain Trail is anticipated to be illuminated using an LED style low level bollard. See above.

The baseball field shall be illuminated by sports specific light poles, provided by Musco.

The tennis courts shall be illuminated by sports specific LED light poles, as recommended by the chosen lighting manufacturer, per the level of anticipate play.

BUILDING LIGHTING CONTROL SYSTEM:

The restroom building shall utilize local occupancy sensor controls for interior spaces. The exterior building mounted fixture, site / parking lot lighting, and trail shall be fed from a simple lighting relay control panel. This panel shall be provided with a photocell and astronomic time-clock to allow a full array of park scheduling and controllability. It is anticipated that the baseball field shall be equipped with its own timer system, as will the tennis court lights (or match existing).

AE DESIGN
Integrated Lighting and Electrical Solutions

MECHANICAL SYSTEMS - ELECTRICAL COORDINATION

See below for a quick reference of major equipment to be provided, and refer to the Mechanical/Plumbing systems Schematic Design Report for more information:

Heating:

Electric cabinet unit heaters will serve as the heating source for the Men's and Women's Restrooms.
CUH-1: 4.5 kW
CUH-2: 4.5 kW
An electric wall heater will serve as the heating source for the Family Restroom.
EWH-1: 1.0 kW
An electric unit heater will serve as the heating source for the Storage / Mechanical Room.
EUH-1: 5.0 kW

Exhaust:

Two exhaust fans will be provided to exhaust and ventilate the Men's and Women's restrooms and the Mechanical / Storage Room. One fan, EF-1, shall serve as the minimum exhaust flow rate to meet code required ventilation rates. This fan shall operate at a constant volume during occupied hours. A second exhaust fan, EF-2, shall be controlled by a line voltage thermostat to increase the ventilation airflow when the temperatures rise in the spaces. Both fans will utilize the same distribution system.

EF-1 630 CFM Direct drive, ¼ HP, EC Motor
EF-2 1,430 CFM Direct Drive, ½ HP, EC Motor

A single ceiling mounted exhaust fan shall serve the Family Restroom. The fan shall be controlled from the lighting occupancy sensor.

EF-3 100 CFM Ceiling Fan, 175 W

Text here….

FIRE ALARM SYSTEM

None, required.

PUBLIC ADDRESS AND MUSIC SYSTEM; MAIN BOARDROOM

None, required.

VOICE/DATA AND CABLE SYSTEMS

None, required.

SECURITY SYSTEMS

None, required.

LIGHTNING PROTECTION SYSTEM

A lightning protection system for the building and picnic shelter shall be priced as a line item alternate. Please provide alternate cost to install a certified lightning protection system, for the entire building and shelter structure that complies with NFPA, LPI, and UL standards. Lighting protection system is to obtain a UL Master Label upon completion.

PROGRAM

Restroom Building

Restroom Building				
Item	**Space**	**Area**		**Comments**
1.0	Mens Room	315	nsf	
	2 Toilets			
	2 Urinals			
	2 Lavatories			
	Baby changing counter			
	Hose bib under sink			
1.1	Womens Room	315	nsf	
	4 Toilets			
	2 Lavatories			
	Baby changing counter			
	Hose bib under sink			
1.2	Assisted Restroom	80	nsf	
	Toilet			
	Lavatory			
	Accessible room			
	Baby changing counter			
	Hose bib under sink			
1.3	Storage	204	nsf	
	Janitor sink			
	Sundries and cleaning equipment			
	Ballfield maintenance equipment			
	First aid equipment			
	xx			
	xx			
1.4	Mechanical/Electrical & Plumbing Chase	(included in storage)		
	Systems			
	All electric			
	Year round operations			
	Total Net Area	914	nsf	
	Grossing Factor	0.2	+/-	
	Total Gross Area	1010	gsf	

Events Pavilion

Picnic Shelter			
Item	**Space**	**Area**	**Comments**
2.0	Structure	1000 gsf	Provide 1 Shelter
	Shelter area		
	Low side walls with counters		
	Lighting		
	Picnic table seating for 30 (6 per table)		
	Hose bib nearby		

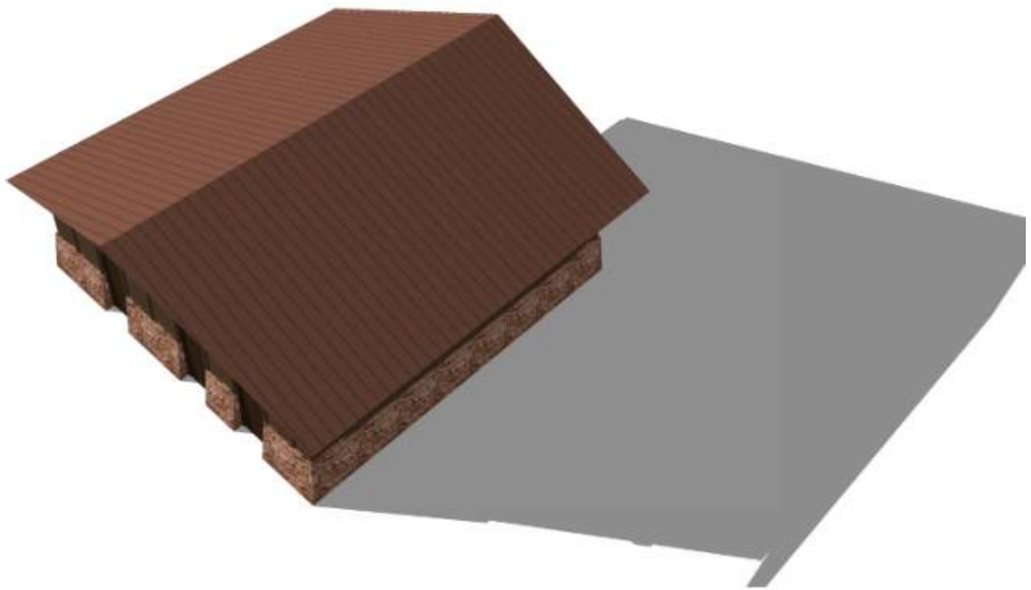
DHM DESIGN

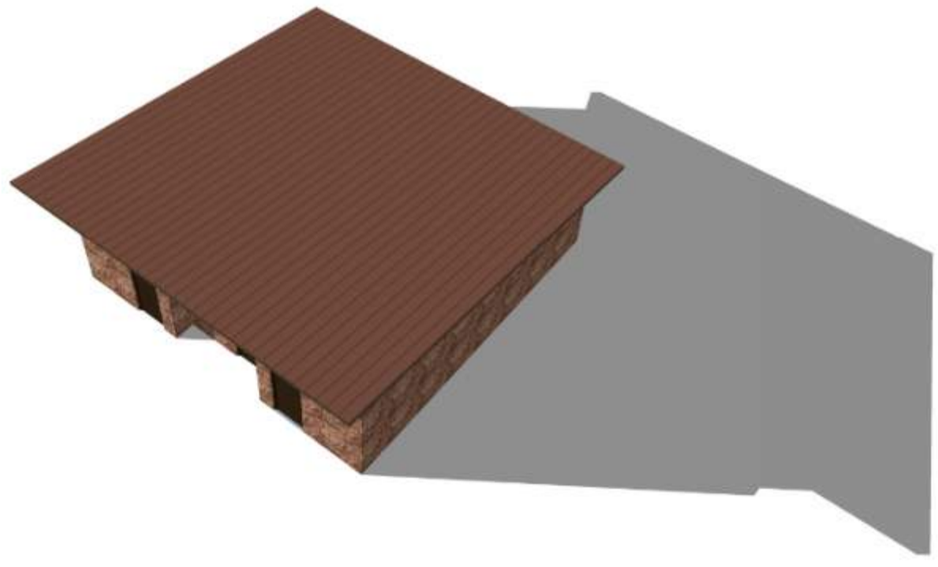
BARKER RINKER SEACAT ARCHITECTURE

May 18, 2016

CONCEPTS

Roof Forms



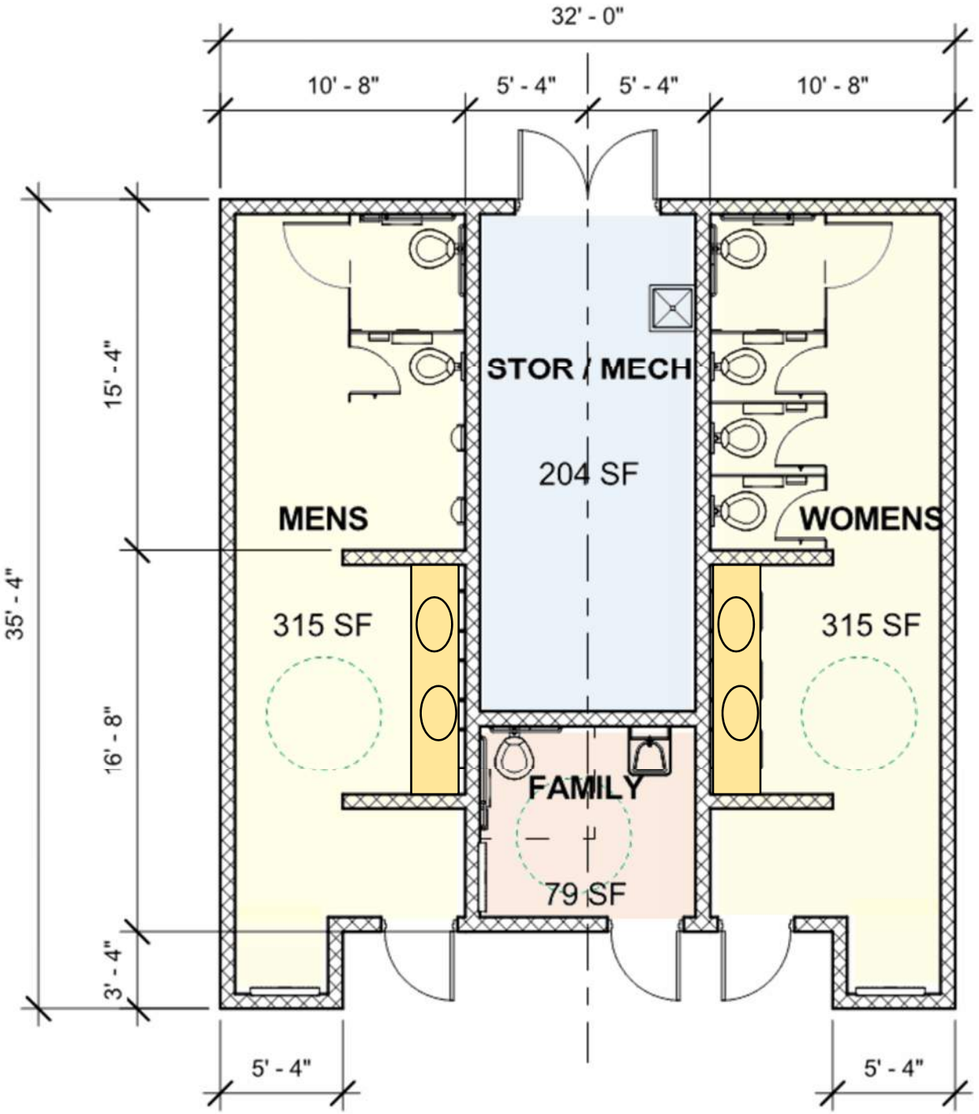


May 18, 2016

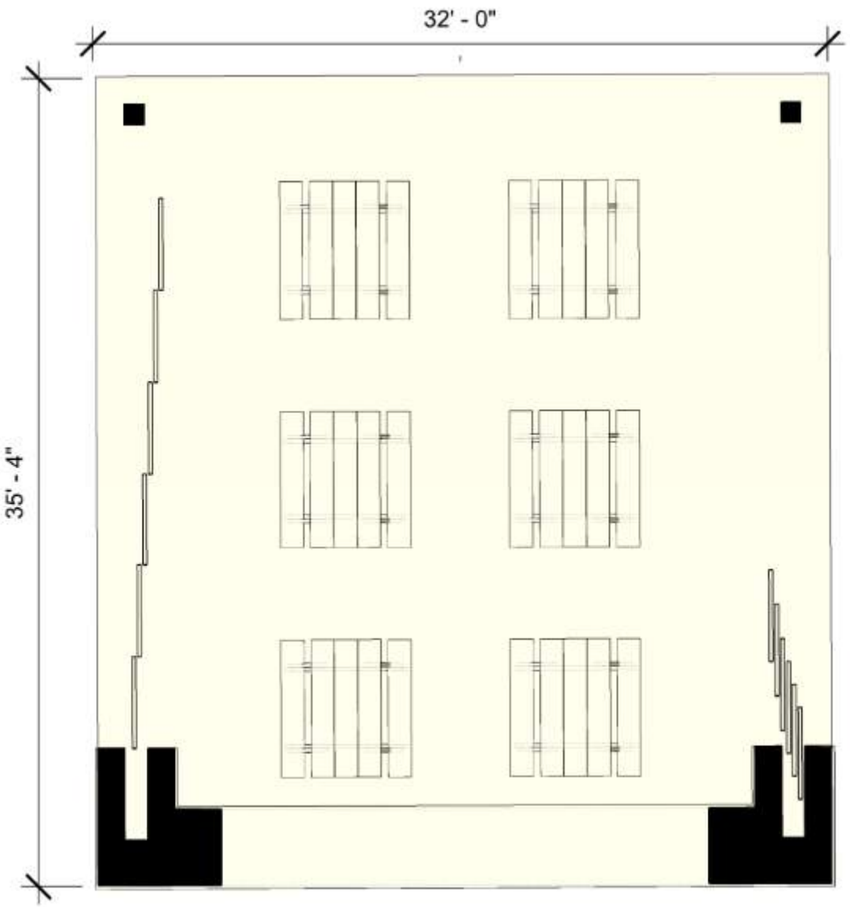
Floor Plans:

CONCEPTS

Restroom

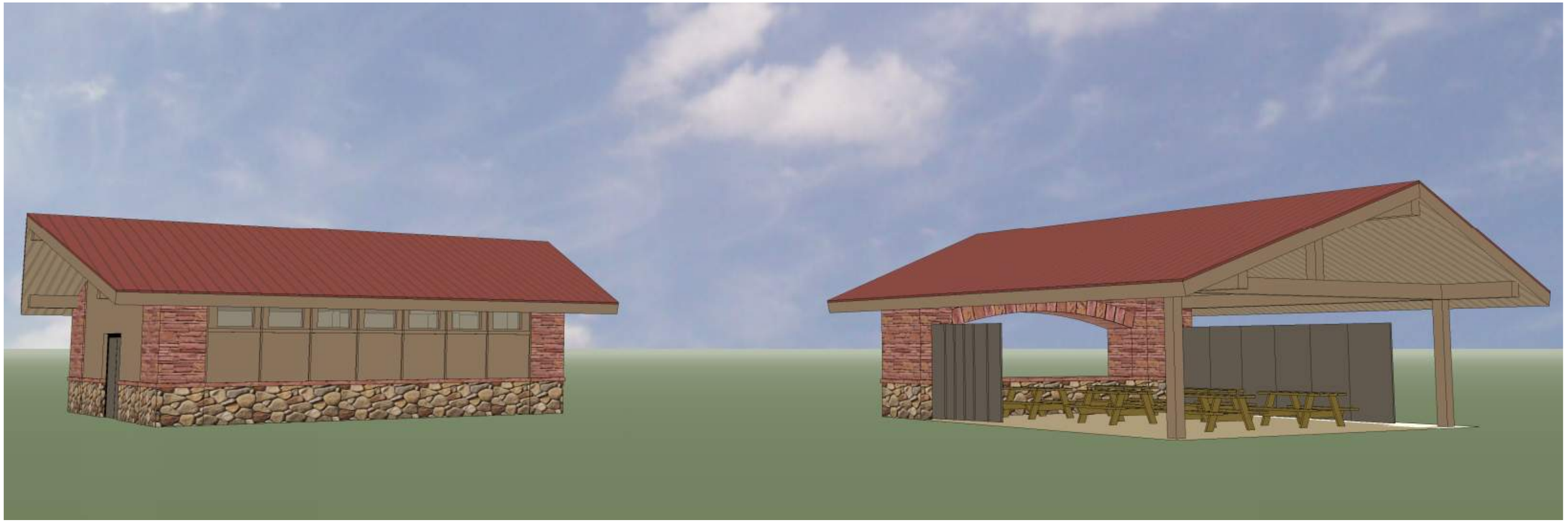


Events Pavilion



May 18, 2016

Gable Massing:



CONCEPTS

Gable Massing: May 18, 2016

CONCEPTS

May 18, 2016

Shed Massing:

CONCEPTS

Shed
Massing: May 18, 2016

CONCEPTS

EXISTING FLOODWAY @ 17000CFS

EXISTING FLOODWAY @ 25000CFS

GRADE BACK TO ESTABLISH FLOODPLAIN BENCH

GRADE BACK TO ESTABLISH FLOODPLAIN BENCH

EXISTING FLOODWAY @ 25000CFS

GRADE BACK TO ESTABLISH FLOODPLAIN BENCH

EXISTING FLOODWAY @ 20000CFS

Baseball & Dirt Jump Grading Concept

Bohn Park Final Design

May 23rd, 2016

NORTH

SCALE 1"=30'-0"

Lyons Bohn Park Final Design
Progress Meeting Agenda
May 26, 2016
10:00 am
S2O office – 429 Main Street

1. Site discussions
    a. Preliminary Site Layout
        i. Electrical service questions submitted by AEDG. TOL to review with PW.
            1. Schedule a site visit to review electrical service connections
            2. Since the flood occurred, has any of the electrical system been replaced? Mark was under the impression that there is still service there, but it has only been shut off. If systems haven't been replaced, do you know if they've been evaluated for functionality?
            3. Is it possible for you to mark where existing service exists and what is available? We'd like to inform the field lighting consultants ASAP for what they can plan on for supplied power.
            4. Do you have any other as-built drawings or information regarding the existing service? We'll take anything you have: panel schedules, photos, drawings, etc.
        ii. Review and define specifics for field lighting requirements
        iii. Design turning movements of roads to accommodate tractor trailer for special events in the park

    b. Preliminary Grading
        i. S2O presented 1d model results with changes to effective model. S2O working on updating hydrology – working towards no rise to update effective model.
        ii. S2O reviewing small overflow (informal design and layout) to intercept flows by lower parking lot. Will help with resiliency and flood conveyance.
        iii. Stream restoration plans in progress. Looking at opportunities to manage public access at streambank stabilization features at outside bends of the St Vrain and

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at sensitive locations at cross vanes in stream. Need to work with hydrology to certify no rise.

iv. Fishing/ ADA access – reviewed options for integrating ADA access and fishing at a riffle pool and cross vane. S2O has had conversations with CPW. CPW is generally in favor of these types of features and would support and endorse a NWP27 for stream restoration.

v. Reviewed Stream profile, pools and 1 dimensional models

vi. Reviewed effective versus updated hydrology

1. Updated shows 2' rise in some cases and doesn't currently include the overflow channel in the Stacey Parcel. S2O to work with DHM on defining the bank grading to meet no rise certification requirements.
2. Will need flood mitigation overflow in the Stacey Parcel to accommodate hydrology
3. Overflows to be more natural and not formal like the overflow by the Black Bear Hole. Overflow to be more in line with a 60'-70' wide and 1'-2' deep channel. Overflow is planned to activate around 2,000 CFS.

c. Recreation Programming

i. Bottom chord of 4th Avenue Pedestrian Bridge to be set 1' above 100 year floodplain. The 100 year flood elevation at bridge location is 5337 plus 1' of freeboard required. Chord depth is typically 14". Structures to be designed to updated model +1' or effective model +2'.

ii. Effective model indicates an BFE of 29 +/- at the restroom and pavilion structures. Elevation to be set at 31.

iii. Kompan playground equipment to be used in upper playground by bike park

iv. Landscape Structures playground equipment to be used in the lower playground by the existing playground.

d. Utility Discussions

i. Water line loop – Town to follow up with status and schedule for designing and constructing the water line loop

2. Greenway/ River Work Update/ Review

a. Reviewed updated Instream recreation and channel improvements

3. Schedule

a. Based on modeling, review of grading and updating grading once model works we will review ecology and vegetation in stream/ in stream habitat designs.

b. No plans have been identified for grout or white water/ kayak recreation in this stretch of the St Vrain. Designs will manage access to St Vrain with stream bank stabilization measures
c. Schedule of events
    i. Survey work was recently completed late Friday afternoon, May 20th, 2016.
    ii. Geotechnical investigations were recently completed in the field with use of Town owned equipment (Town backhoe). The preliminary geotechnical report was issued Tuesday, May 31.
    iii. Site plans and preliminary grading studies are in progress of being updated based on survey.
    iv. More detailed hydrology will be updated once revised grading is available.
    v. We are anticipating generating channel grading/ surface flows by mid-week the week of May 31.
    vi. It was discussed that plans are to be reviewed with the Carroll's at the DD submittal to confirm that designs are acceptable within terms of the deed restriction in place.
    vii. St Vrain Creek Coalition meeting is scheduled for June 16th to review plans for work along St Vrain through Bohn Park and to offer a site tour of all work being completed in Lyons. This meeting will review DD submittal scheduled for June 10.

NORTH

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NORTH

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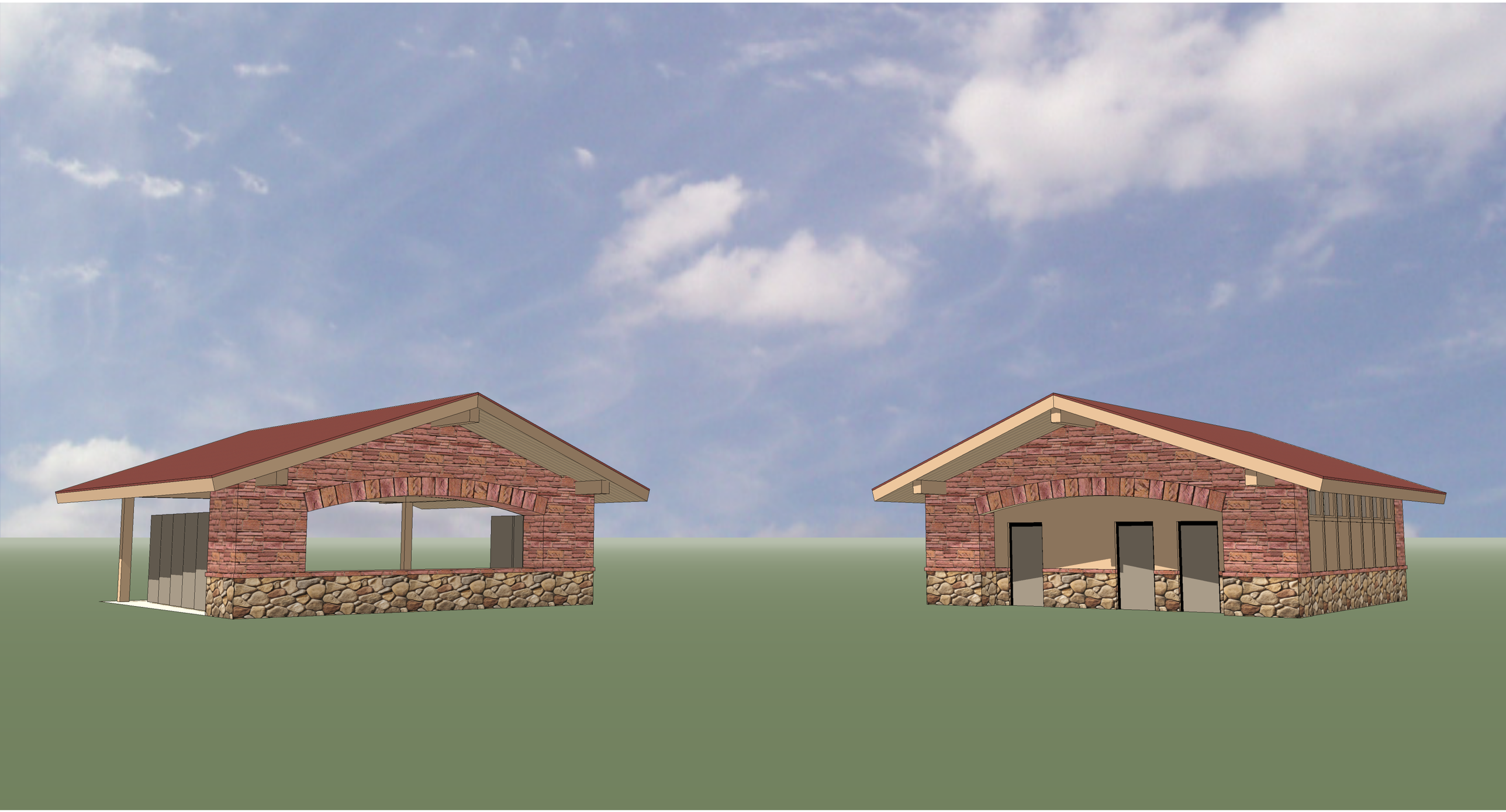
SCALE 1"=30'-0"



DHM DESIGN Landscape Architecture
Urban Design
Planning

Lyons Bohn Park Final Design
Progress Meeting Agenda
June 9, 2016
10:00 am
S2O office – 429 Main Street

1. General Discussions
    a. Parks and Recreation Board Meeting June 13, 2016 to present 50% plans
    b. BOT meeting not scheduled yet to present 50% plans
    c. Dave and Sloane out of the office beginning of July to mid July
    d. June 21 Skatepark public meeting
2. Site discussions
    a. Preliminary Site Layout
        i. Remove office from 50% set for now. Show as separate exhibit in back of set
        ii. Show instream structures on overall plan. S2O to send Cad files to DHM.
        iii. Irrigation/ pump review
            1. Go with one well/ pump system if pressures and quantity works
    b. Preliminary Grading
        i. Drainage review
    c. Recreation Programming
        i. Slackline Industries – coordinate with to determine best slackline post installations
        ii. Event programming review
    d. Utility Discussions
        i. Sewer connection to 2nd avenue – CivilArts is finalizing survey of sewer line and should have information available by June 10
        ii. Electrical
            1. Mitch with AEDG to coordinate time on site with TOL meeting setup for week of June 13
        iii. Water line loop – TOL is still reviewing feasibility with town engineer
3. Greenway/ River Work Update/ Review
    a. Instream recreation and channel improvements

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   b. Updates on modeling
   c. Preliminary trail routing on St Vrain to avoid impacts to trees and hydraulics
   d. 4th Avenue bridge to provide 30’ turning radius to accommodate movements along the South St Vrain/ Highway 7
4. Schematic Design Report Review
5. Design Development Submittal – scheduled for Friday June 10

The Town of Lyons Presents

LYONS SKATEPARK PUBLIC DESIGN MEETING #2

[The Town of Lyons invites you to share your design ideas for your public skatepark]

Can't make it? Catch up on the action at WWW.LYONSPARKSMP.COM

DHM DESIGN
LANDSCAPE ARCHITECTURE | LAND PLANNING | ECOLOGICAL PLANNING | URBAN DESIGN

Memorandum

TO: DAVE COSGROVE/ SLOANE NYSTROM – TOWN OF LYONS PARKS

FROM: MARK WILCOX

DATE: JUNE 10, 2016

RE: DESIGN DEVELOPMENT SUBMITTAL – BOHN PARK 2016 FLOOD RECOVERY PROJECT

Attached are design development drawings and backup documents to support design decisions that have been included within the DD set. All design decisions have been documented and included in weekly meeting notes. Meeting notes are on the projects website and available for download and review.

This design development submittal is the culmination of 9 weeks of design efforts including weekly Design meetings with weekly updates, 1 public meeting to review skate park goals, and close collaboration amongst the design team and Town of Lyons to meet an aggressive schedule and to have critical decisions made in a timely manner. All design decisions, weekly design meeting notes, reports and project information is continually uploaded to the project website for public review and comment. The website will remain active throughout the entire design and construction process for the Town Board of Trustees, various boards and commissions and the general public to review documents, progress and to provide opportunity for comment and feedback. The website is www.lyonsparksmp.com

Project Background

Lyons residents have identified the immediate rebuilding of Bohn Park, a river park located on the south side of Lyons, as a vital priority for parks recovery to be completed beginning in 2016. B o h n Park provides for major economic impacts for the Lyons community; it provides significant local and visitor recreational opportunities; and it provides ample opportunities to mitigate future flooding and to restore the river corridor's habitat. The selection of this park as the next priority in Lyons parks recovery efforts is supported heavily by both the Town government and the public at large.

Bohn Park is Lyons' largest and most popular park. It is not uncommon to see the park filled throughout the day with anywhere from 200 to 400 residents and visitors on any given weekend during the summer months. Consisting of over 50 acres Bohn Park is home to most of Lyons major athletic facilities. Pre-flood, there were two baseball/softball fields, batting cage, playground, multi-use soccer field, concession stand, whitewater features, picnic areas, shelters, restrooms, Lyons Dirt Jump Bike Skills Park, Bohn Bark Dog Park, Lyons Community Garden, and a multi-use sport court.

The Town of Lyons recently completed the Lyons Parks Flood Recovery Planning Process

(www.lyonsparksmp.com) which included a series of public meetings that assisted in the development of several concept plans for all flood recovery areas related to parks. This process took several months to complete and involved soliciting input and feedback of the public, town staff, Town of Lyons board/commissions and the design team. The Bohn Park Flood Recovery Plan Preferred Alternate map is included with this document along with the Lyons St. Vrain Corridor Trail 6f boundary map.

Project Goals

The Bohn Park Flood Recovery Final Design and Bid Project will address the following fundamental goals outlined in the Lyons Recovery Action Plan and Lyons Parks Flood Recovery Planning Process for ensuring that Bohn Park continues to meet local and regional demands:

1) Reconstruction of facilities in Bohn Park to address the immediate recreational needs of Lyons, especially active/athletic uses. We will create a place to gather and play as a community again.
2) Creation of an attraction that will draw visitors to our Town. This is essential to ensure that the Town will remain economically viable and maintain its reputation and brand as a destination for healthy, active, outdoor lifestyles.
3) Reestablish trail connectivity, both locally and regionally, include loop trails.
4) Restore and augment river access and river habitat.
5) Restore/Replace picnic opportunities, including shelters and increase size.
6) Re-establish natural areas and consider wetlands.
7) Installation of public art along trails.

Schedule

It is anticipated that the final construction design and bid process will take place beginning March 2016 and extend through the summer 2016. The Town intends to put the project out to bid for construction in late summer/ early fall 2016 in order to award a contract for construction to begin construction fall/ winter 2016 in order to have the park open to the public in the summer of 2017.
Following is a weekly breakdown of updates and submittals to date.

June 10, 216 Design Development Submittal
June 9, 2016 Weekly Update
May 26, 2016 Weekly Update
May 18, 2016 Weekly Update
May 13, 2016 Schematic Design Report
May 12, 2016 Weekly Update
May 5, 2016 Weekly Update
April 28, 2016 Weekly Update
April 21, 2016 Weekly Update
April 14, 2016 Programming Workshop

Design Development Goals

DHM DESIGN

The design development set is considered an approximate 50% design set that outlines preliminary site layout, preliminary grading, preliminary landscape designs and preliminary materials, equipment, and other site features, preliminary drainage analysis, preliminary hydraulic analysis and floodplain modeling, preliminary ecological restoration plans, and preliminary architecture designs including MEP and structural

Design development (DD) services used the initial design documents from the schematic design phase and have taken them one step further into more detailed design drawings. Some decisions are still being reviewed with Town staff and further study, public input and review needs to be completed before providing more detail. Skatepark schematic designs are in progress and a second public meeting is scheduled for June 21, 2016 before designs can be developed into DD's.

Hydraulic modeling/ Instream features/ Fish Habitat

We are in process of reviewing our 1D stream models and revising and building 2D hydraulic models to support stream restoration goals for improved fish habitat, ecological restoration, resiliency and flood control. This work effort is dependent upon the results of the OTAK report which was recently released to the design team on June 3, 2016. We continue to make progress and updates to the Town's boards and commissions. Stream design goals include improved access, restored riparian areas, and development of multipurpose structures for access, recreation and habitat.

Ecological Restoration Designs

Ecological restoration designs are dependent upon results of the hydraulic modeling and instream restoration features that are in progress of being developed. Progress has been made in coordination with the USACE for permitting. Mike Stanley at the Corps confirmed that we can process the Bohn Park stream restoration work as an addendum (additional information) under the existing NWP 27 since this reach was included in the original application. We will continue to document very specific permanent and temporary impact areas by feature type (in acres/s.f.) and provide a summary of why it fits the NWP 27 (needs to be a net ecological benefit).

Once ecos recieves detailed hydraulic design information (including temp. & perm. impact area assumptions), they will be able to compile and submit this information for NWP 27 review.

Plantings that can be sustained as a result of being next to the creek will not need irrigation (i.e., bank-side willow and cottonwood at or near the capillary fringe). We will develop a temporary drip system in the higher, floodplain areas. Overhead spray will also help kick-start the grasses and will only be considered until the plants have established.

Another option for irrigation includes an overall concept to install a gravity fed system using elevated cisterns/tanks that feed drip. In some locations, we are also looking at deep planting where the root ball is set just above the ground water elevation. Many riparian plants are adapted to partial sediment burial which make this possible.

Drainage design

Water Quality volumes have been assessed based on existing drainage analysis and proposed conditions,and adjustments have been made to the proposed water quality ponds to accommodate flows In anticipation of a storm connection to the St Vrain it appears that the available grade to drain a pipe is going to be tight. An analysis of the existing drainage basins and off-site drainage basins has been completed. A draft drainage report is in progress and will be updated once hydraulic ananlysis and instream features have been developed.

Survey

Survey work was completed and available to the design team on May 23, 2016. The sanitary sewer line within 2nd Avenue was not included and the manholes were buried by silt. CivilArts has uncovered the manholes and is shooting the rims and inverts for the design teams use in connecting the sewer connection to the new restroom facilities.

Geotechnical Engineering

The geotechnical report was completed May 31, 2016 after delays in drilling. Initially our drill rigs were on site early April and encountered large debris and cobble within the first few feet. Our drill rigs were not able to penetrate the onsite material. Coordination continued with the Town in acquisition and use of an excavator to dig test pits for sampling and review. The Town was not able to secure the use of an excavator but was able to offer a backhoe to dig test pits May 17, 2016. We had a hard time getting below about 6 feet due to caving soils below the groundwater table.

DD SUBMITTAL

Typically referred to as DD, this phase results in drawings that often specify design elements such as material types and location of site and architecture features. The level of detail provided in the DD phase is a culmination of weekly meetings with the Town of Lyons, comments from the public, results of an in depth planning process during the Lyons Parks Flood Recovery Planning Process, adherence to early planning documents prepared by the Town including the LRAP, SRCAP, PDG, input from the Board of Trustees, and per the owner's request and the project requirements. These Design Development Plans will be presented to the Lyons Parks and Recreation Board on June 13, 2016 and a follow up presentation to the Board of Trustees on a date yet to be determined.

Deliverables:

Design development drawing set includes the following sheets:

DHM DESIGN

SITE PACKAGE

G1.0	COVER SHEET & DRAWING INDEX
L1.1 - L1.7	EXISTING CONDITIONS & DEMOLITION PLAN
L2.1 - L2.7	LAYOUT & MATERIALS PLAN
L3.1 - L3.7	GRADING PLANS
L4.1 - L4.7	LANDSCAPE PLANS
L5.1 - L5.2	LANDSCAPE DETAILS
L6.1 - L6.3	SITE DETAILS
ECL-1	ECOLOGICAL RESTORATION NOTES
IR-0	IRRIGATION NOTES & SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS
E2.1 - E2.5	ELECTRICAL PARTIAL SITE PLAN
E2.6	ELECTRICAL ONE-LINE DIAGRAM, SCHEDULES, AND DETAILS
WW-0.0	INSTREAM COVER SHEET
WW-1.0	INSTREAM SITE PLAN
WW-2.0	INSTREAM ACCESS PLAN
WW-3.0	INSTREAM DEMOLITION PLAN
WW-4.0 -WW-4.3	INSTREAM PLAN AND PROFILE
WW-5.0	INSTREAM CROSS SECTIONS
WW-6.0	INSTREAM CHANNEL OVERFLOW
WW-7.0	INSTREAM CHANNEL OVERFLOW
WW-8.0	INSTREAM CHANNEL OVERFLOW
WW-9.0 – WW-9.5	TYPICAL DETAILS
WW-10.0-WW-10.1	WATER CONTROL
WW-11.0	TYPICAL BMP DETAILS

CIVIL PACKAGE

ER-1	EXISTING RUNOFF MAP
DR-1	PROPOSED DRAINAGE, WATER QUALITY, AND STORM SEWER PLAN
U-1	SANITARY SEWER AND WATER PLAN

ARCHITECTURAL PACKAGE

G000	ABBREVIATIONS, SYMBOLS, AND GENERAL NOTES
G020	WALL TYPES, ROOF TYPES, FLOOR TYPES
A101	RESTROOM FLOOR PLAN AND RCP
A102	PAVILION FLOOR PLAN AND RCP
A103	RESTROOM AND PAVILION ROOF PLAN
A301	RESTROOM ELEVATIONS
A302	PAVILION ELEVATIONS
A311	RESTROOM BUILDING SECTIONS
A312	PAVILION BUILDING SECTIONS
A501	RESTROOM PERSPECTIVE
A502	PAVILION PERSPECTIVE
A503	PAVILION PERSPECTIVE
A600	ACCESSORY SCHEDULES AND ELEVATIONS
A610	INTERIOR ELEVATIONS
E001	ELECTRICAL LEGEND AND GENERAL NOTES
E101	ELECTRICAL POWER AND LIGHTING PLANS
E501	ELECTRICAL ONE-LINE DIAGRAM

DHM DESIGN

MP000	MECHANICAL COVER SHEET - LEGEND, GENERAL NOTES & SHEET INDEX
M101	HVAC PLANS
M401	HVAC SECTIONS
M700	HVAC SCHEDULES, DETAILS & CONTROL DRAWINGS
P101	PLUMBING PLANS
P401	PLUMBING ISOMETRICS
P700	PLUMBING DETAILS AND SCHEDULES
S101	RESTROOM FND & ROOF FRAMING
S102	PAVILION FND & ROOF FRAMING PLAN
S301	FOUNDATION DETAILS
S401	MASONRY DETAILS
S501	ROOF FRAMING DETAILS

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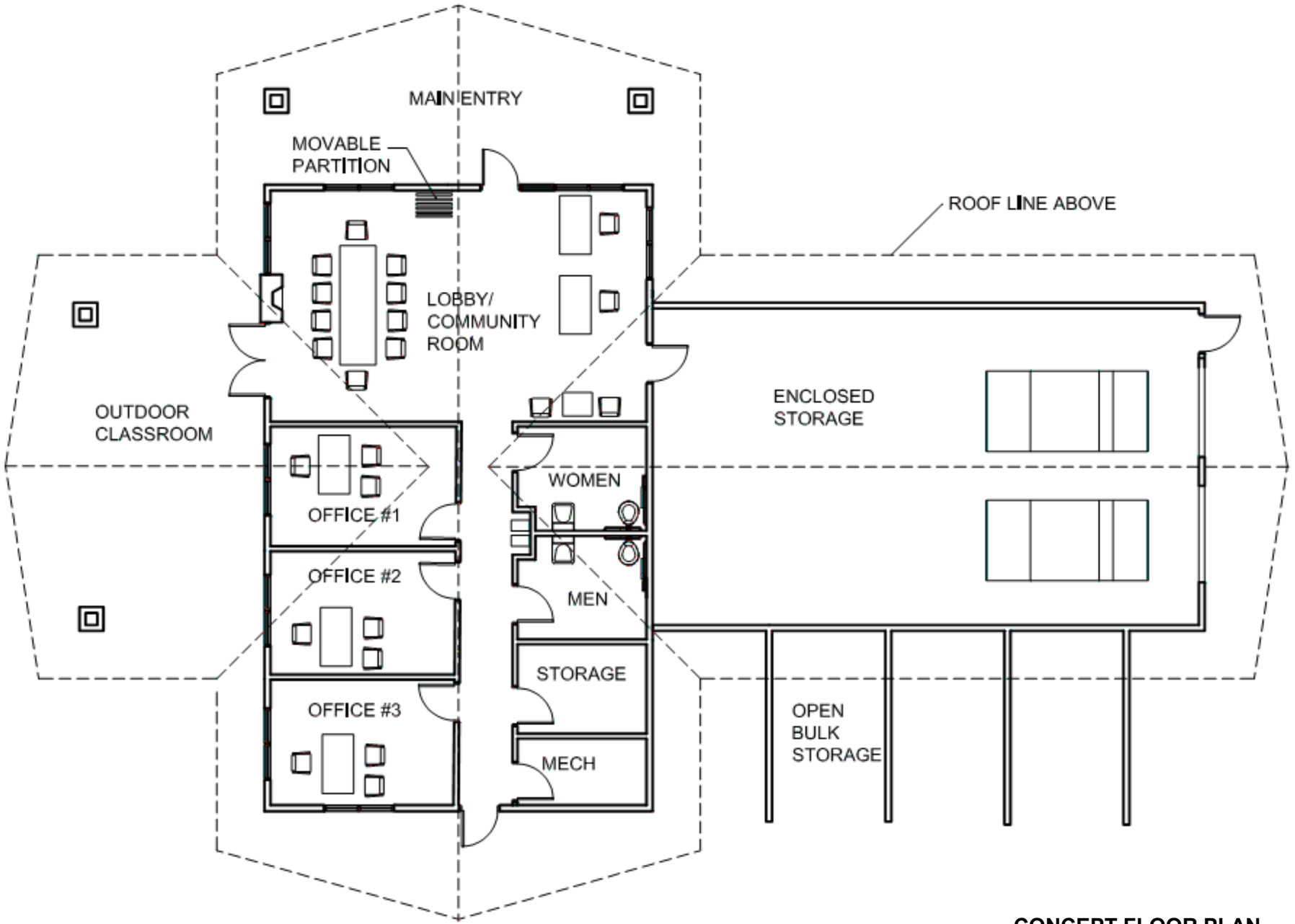

CONCEPT FLOOR PLAN
NOT TO SCALE

BOHN PARK - LYONS, COLORADO

Architectural Program & Preliminary Budget 6/10/2016

COMMUNITY CENTER

Item	Space	Area	Cost/s.f.	Area Cost	Comments
1.0	Mens Room 1 Toilets 1 Urinals 1 Lavatories	100 nsf	$400	$40,000	
1.1	Womens Room 1 Toilets 1 Lavatories	100 nsf	$400	$40,000	
1.2	Community Room Training Space Nature Center Conference Center	250 nsf	$250	$62,500	
1.3	Offices 3 Staff Offices Lobby / reception Office Storage	700 nsf	$250	$175,000	
1.4	Internal Circulation	250 nsf	$250	$62,500	
1.5	Storage Office Supplies Sundries and cleaning equipment	80 nsf	$185	$14,800	
1.6	Garage Storage (50x20') Janitor sink Large Equipment	1250 nsf	$165	$206,250	
1.7	Mechanical/Electrical & Plumbing Chase Systems All electric Year round operations	145 nsf	$185	$26,825	
1.8	Outdoor Nature Space / Porch	400 nsf	$125	$50,000	
	Total Net Area & Cost	**3275 nsf**		**$677,875**	
	Contingency		20.0%	$135,575	
	Total Cost			**$813,450**	

Lyons Bohn Park Final Design
Progress Meeting Agenda
June 16, 2016
10:00 am
S2O office – 429 Main Street

1. Architecture review – 10:00 am
    a. Presentation of concepts to date
    b. Comments:
        i. Darker color band and darker color doors – possible use of buff sandstone band – BRS to explore options with color
        ii. TOL doesn't like lighter colors – BRS to look at bronze color for doors and details
        iii. Use of natural colors to blend with stones
        iv. Drainage – use of drains with lambs tongues and trench drains within pavement
        v. Storage – for custodial supplies
        vi. Reduce exterior storage door back down to standard sized door
        vii. Equipment and fixtures to match design standards
        viii. Stainless steel counters
        ix. Permanent baby changing station
        x. TOL to provide and design team to review submittals from Meadow Park construction
        xi. Flooring: prefer epoxy coating floors if we can mitigate for high water table
        xii. Accessories: ok with everything used at Meadow Park
        xiii. Picnic tables: Colorado precast red concrete
        xiv. Park signage/ branding to come at a later date
        xv. Kiosks for information/ bulletin
        xvi. Hardware to match TOL standard
        xvii. Use standard trash receptacles. TOL to provide interior trash receptacles
        xviii. Use of central drain in restroom flooring
        xix. Hand dryers: same as Meadow Park
        xx. Electrical:
            1. 1 GFI in storage room, move to just inside door

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2. Add another GFI to restroom left
3. Electric water heater – no gas
4. Lockable wall hydrants
5. Hose bibs exterior: front, rear and picnic side (3)
6. Hose bibs interior: 1 each side of restroom (2) none in family room
7. Jug filler: provide at drinking fountain with freeze protection

xxi. Rotate restroom doors to mens and womens so they are not directly facing out

2. General Discussions
    a. Schedule
        i. BOT meeting to review 50% DD submittal mid July
        ii. Fall bid with possibly 2 bid sets
        iii. Possible Start Construction end of September
        iv. BOT to review plans again at 90%
3. Site discussions
    a. Preliminary Site Layout Updates
    b. Preliminary Grading Updates
    c. Recreation Programming
    d. Utility Discussions
        i. Electrical/ lighting – site discussion and review with TOL last week
        ii. Water line loop – TOL is still reviewing
4. Greenway/ River Work Update/ Review
    a. Instream recreation and channel improvements
        i. CPW wants fishing and access
        ii. Review of instream plans and design direction in flood control
        iii. Instream improvements need to match scope and versions shown in damage assessment
        iv. Possible change from 30% approved designs. Concept looked at changing 5 drops to 1 cross vane drop and series of riffle crests to accommodate requests of Watershed Advisory Board.
        v. Design team to review original scope, version scope, and damage assessment and match. If unable to match it may trigger another version dependent upon approval from FEMA. May delay project 6 months.
5. Design Development Review
    a. Continued review of DD submittal plans
6. Saint Vrain Watershed Coalition tour of park and stream projects in Lyons – 1:00 to 3:00

DHM DESIGN

Lyons Bohn Park Final Design
Progress Meeting Notes
June 23, 2016
10:00 am
S2O office – 429 Main Street

1. General Discussions
    a. Irrigation – getting prices from well driller then we can determine best location to place and test.
    b. TOL to review DD submittal from June 13 and provide comments. TOL anticipated to have comments/ review completed in 2 weeks
    c. Review bid schedule: Tracy Sanders from Town Finance attended to begin discussing strategies pertaining to the St. Vrain Trail Ext., FIF grant, how we might bid the skate park/RFQ, and possible phasing of the park within the bid to help with cash flow and various other funding, invoicing and procurement needs. Invoicing will need to separate out work tasks based on funding
        i. LWCF grant bid schedules will need to reflect work associated with the St Vrain Trail Extension
        ii. Fishing is Fun Grant will need to reflect fishing/ habitat improvements in stream within the bid schedule
            1. FIF grant does not provide monies for design. Construction only.
            2. Need NWP authorization letter
            3. Cash budget is approximately $129,200 and provides for the following
                a. Multistage stream geometry
                b. Instream habitat features
                c. Slope stabilization
                d. Ecological Restoration
        iii. Separate invoicing for river design work, bid and construction. Need to show actual hours and reimbursable expenses.
        iv. Consideration should be given to phasing of improvements to help with cashflow
        v. Contract documents to include prequalifications for skate park installation. Pillar Design to assist with developing qualification requirements.

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vi. Reviewed invoicing/ procurement needs

2. Site discussions
    a. Preliminary Site Layout Updates
        i. Need 10 – 3 bay bear proof trash receptacles as used in Meadow Park
        ii. Preflood Bohn Park had 25-30 55 gallon trash receptacles
        iii. Need trash dumpster that can handle 3 – 8 CY dumpsters similar to one used in Meadow Park. Location to be determined based on approval of certain park features by BOT
        iv. Coal bins to be located in core picnic areas
        v. Dog stations to be provided along trail and within park. TOL to provide specification
        vi. Utilize restoration signage and fencing/ railing techniques to keep pedestrians out of restoration areas
    b. Preliminary Grading Updates
        i. Skatepark drainage review. Reviewed options for drainage. DHM to explore options to determine feasible solution based on grades
        ii. Reviewed St Vrain grading and hydraulic model
        iii. S2O to provide ICON cross section information upstream of 2nd Avenue to determine outfall elevations for drainage
    c. Recreation Programming
        i. St Vrain trail extension. DHM to provide exhibit with options and costs for TOL to review with property owners
    d. Utility Discussions
        i. Electrical/ lighting requirements
        ii. Water line loop
3. Greenway/ River Work Update/ Review
    a. Instream recreation and channel improvements
4. Schedule
    a. Dave is out of office July 5 to July 15
    b. Sloane is out of office until July 7
    c. 7/7/16 meeting canceled
    d. 7/18/16 BOT meeting to review DD submittal and preliminary costs

LYONS PARKS & RECREATION

PROPOSED RESTROOM PERSPECTIVE
BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 10, 2016

A-1

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LYONS PARKS & RECREATION

PROPOSED PAVILION PERSPECTIVE
BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 10, 2016

A-2

© Barker Rinker Seacat Architecture

LYONS PARKS & RECREATION

PROPOSED PAVILION PERSPECTIVE
BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 10, 2016

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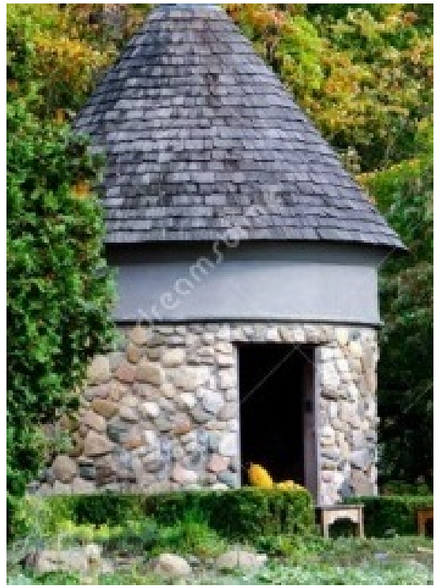

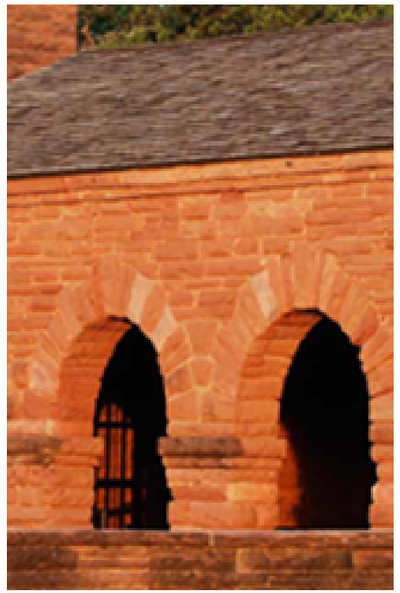

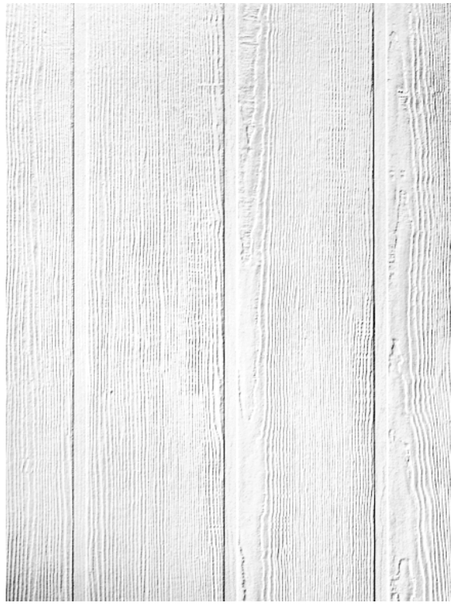

LYONS PARKS & RECREATION

PROPOSED BUILDING MATERIALS
BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 16, 2016

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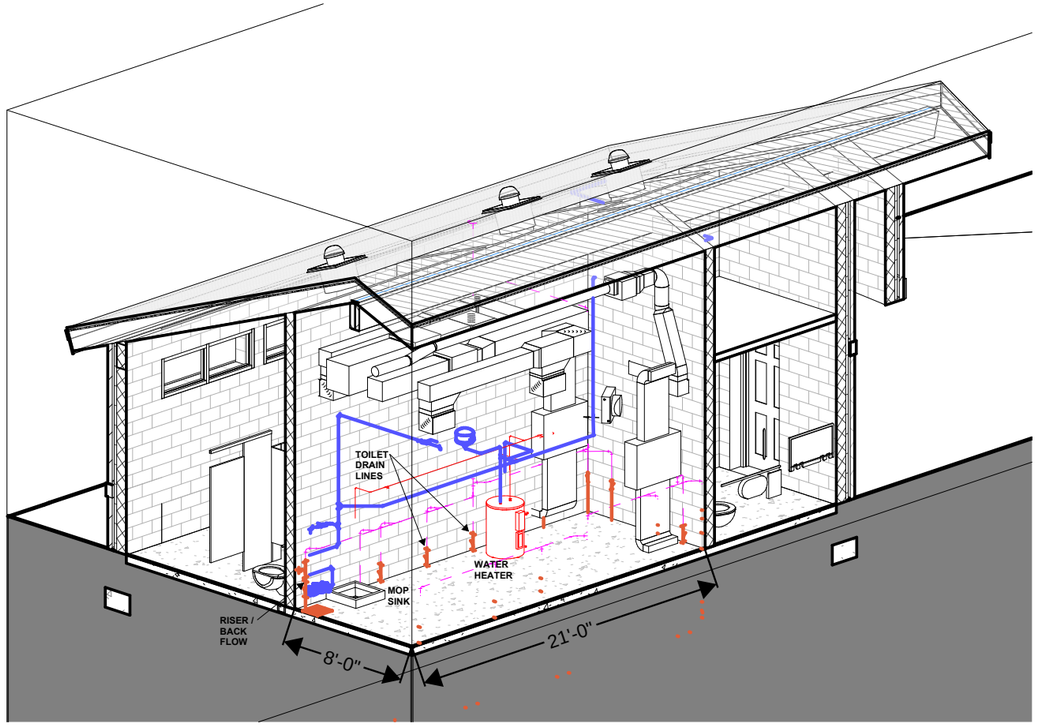
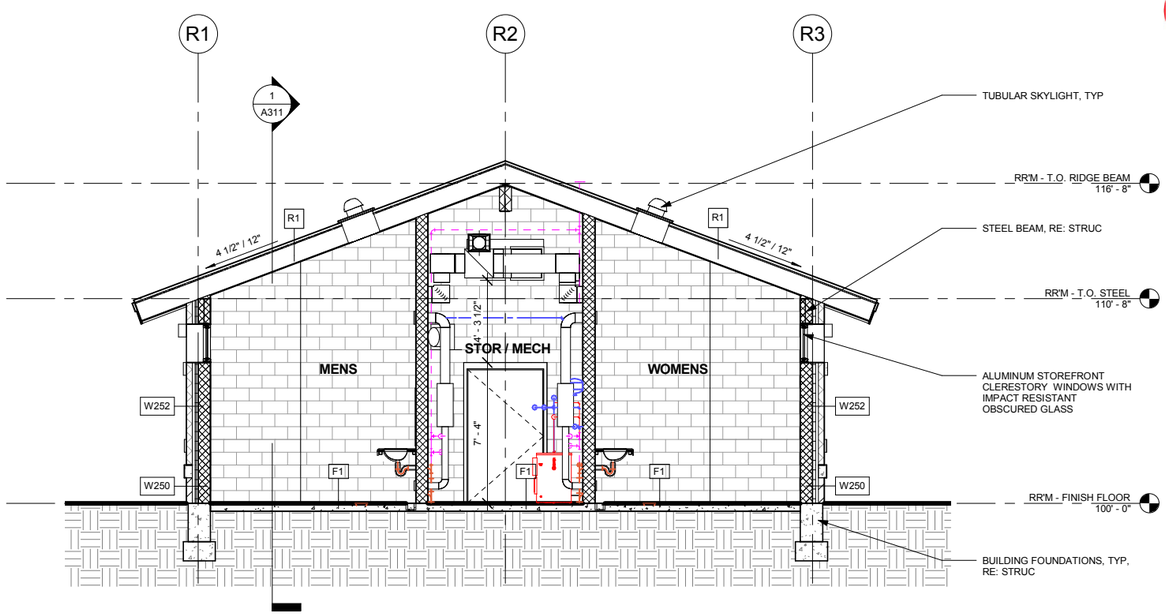
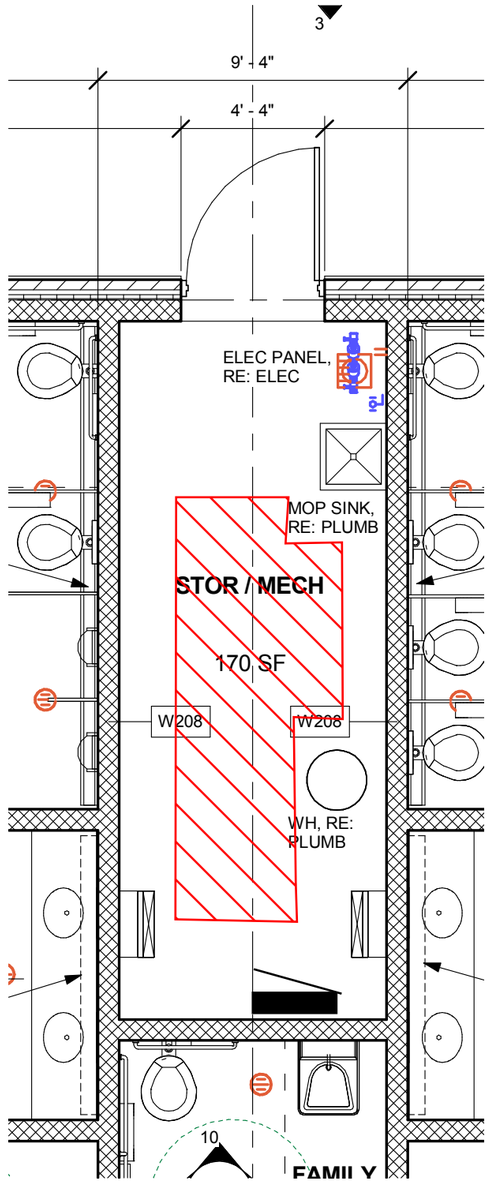




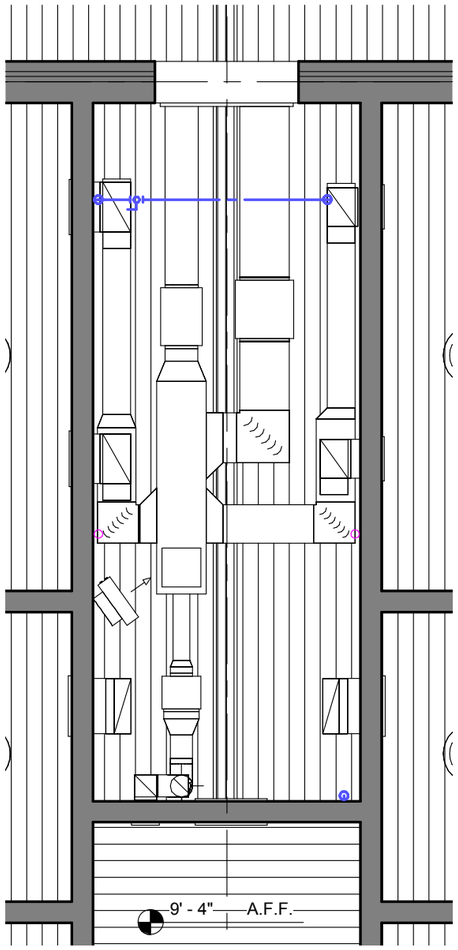
2 A311 RESTROOM BUILDING SECTION 02

1/4" = 1'-0"

0 2' 4' 8'



FLOOR PLAN



RELECTED CEILING PLAN

LYONS PARKS & RECREATION

RESTROOM STORAGE AREA DIAGRAMS

BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 16, 2016

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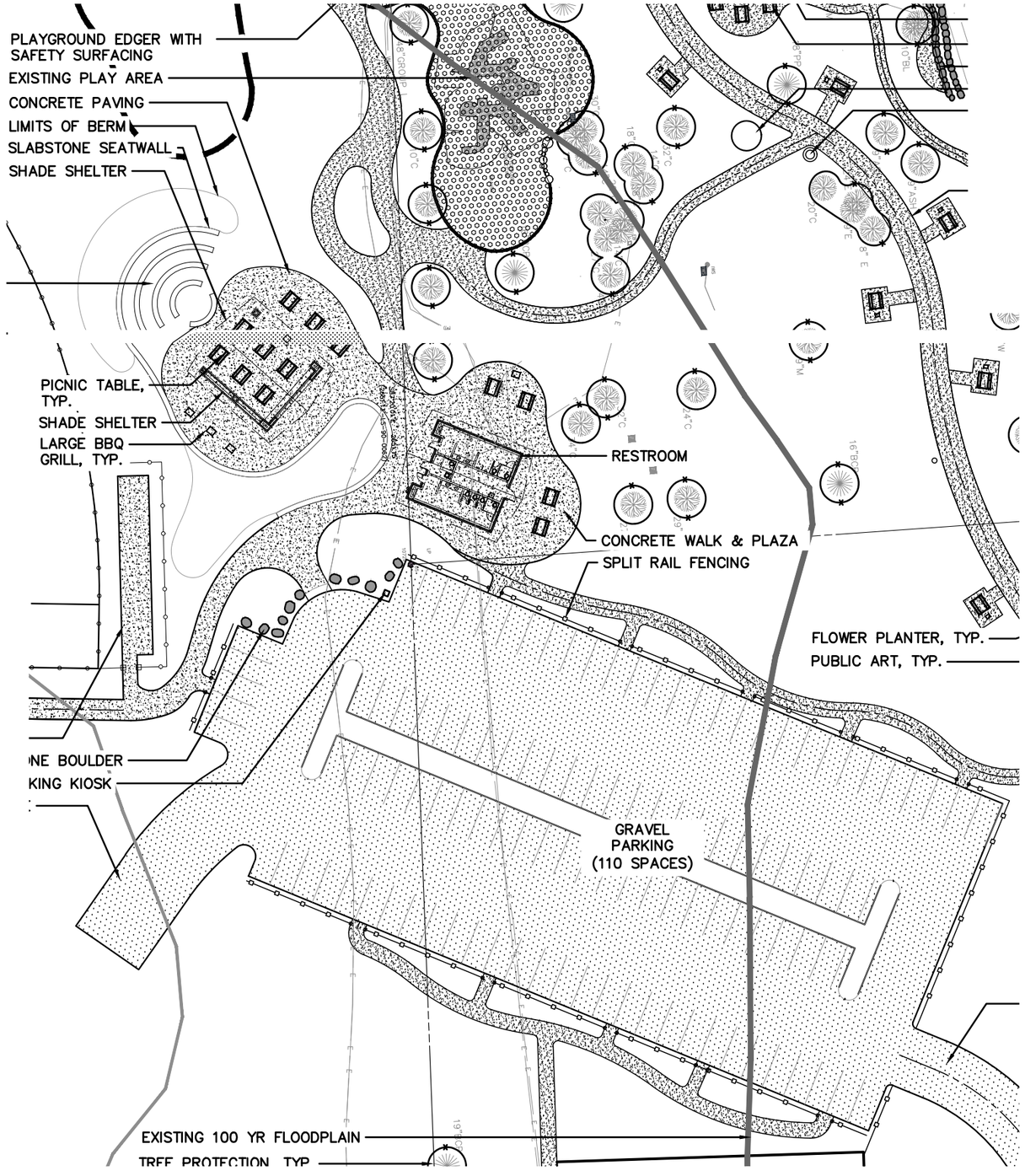

LYONS PARKS & RECREATION

PROPOSED SITE PLAN - RESTROOM & PAVILION
BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

A-6

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4. Monthly Reports to Administrator

Monthly Report to the Administrator

Department: Parks, Recreation & Cultural Events Period Ending: March, 2016

Highlights of the Month:

- Meadow Park construction and oversight continues. The main river restoration is scheduled to be completed by spring run off. All major structures in the river have been completed, and remaining river work includes terracing of banks and river bank re-vegetation. Landscaping has begun in the eastern core of the park. The playground wall has been installed; paths have been surveyed and laid out. The installation of the irrigation lines has begun with the main in this area completed. The bridge to the island was put into place on the last day of March. Clearing, grubbing of the island has been completed and the final grading and layout of the path will take place within a few weeks. The week of April 11th, we will begin putting in the tent/picnic sites along with the paths through this section of the project. All buildings are more than 80% complete and should be completed in the next couple of weeks. Crews will be working from east to west to get the front and middle sections of the park completed. Landscape crews will begin to install willows and erosion control blankets along the river banks prior to spring runoff to control erosion of the banks. Town staff and contractors met this week to discuss project schedule and milestones related to the following:

  Town of Lyons Project Schedule/Milestones:

  May 25, 2016-Park Open for RV Camping
  July1, 2016-Grand Opening Date per Contract
  July 16-July 25, 2016-Town of Lyons Lease with Planet Bluegrass for RockyGrass Festival

  Staging of Project to Meet Scheduling Objectives/Strategy:

  -Riparian Restoration Plan to Meet Spring Run-Off Demands
  -Completion of Work/Landscape to complete requirements of adjacent landowner agreements
  -Staging of work to ensure use of areas needed for opening of camping and festival season. i.e. completion of front entrance improvements, parking lot/access roads and turnaround, north trail from front entrance, clean up and repair of east parking lot and tent sites, water line construction coming out of park, east core completion including all tent/picnic sites and landscaping, river corridor work/restoration from structure 1 thru 4 including trails and all plant materials.

  It was determined that there may need to be some adjustments to the general public grand opening date to allow for proper "grow-in" times for certain landscape areas, but overall, milestone dates could be reached.
-
- The 2016 Lyons Bohn Park Final Design and Bid Project is underway and staff and consultants have been meeting weekly on Thursdays since the start of April. A public meeting to discuss skatepark design is scheduled for April 28 at Town Hall from 6-7:30 pm. Information is being posted and sent to stakeholders. Updates will be posted to the Lyonsparks.mp website and will be given to the BOT.
- Parks staff has had representation at the stream project meetings to ensure these projects are working together, particularly on possible areas of overlap, so there is consistency and coordination between projects through town. Grading, planting plans, seed and plant types in addition to other areas are all being considered.
- Parks staff is awaiting an answer from FEMA on the repair and upgrade for the irrigation at the Library/RTD/Sandstone Park areas as part of the Meadow Park contract as these areas are watered off of the Lyons Ditch and operated off of the irrigation clock in Meadow pre-flood.

These areas tie into the main that comes out of Meadow Park and need to be repaired in order to water these areas.

- Parks staff has completed the landscape plan for the Bohn Park Berms by March 1, 2016 per the Second Amendment to the Covenant and Agreement Respecting the Bradford Homestead and Use of Lot 1 and Agreement Respecting the Use of Lot E (Carroll Agreement) and has met with the Carroll's to finalize the plan. Based on that plan Parks staff solicited bids from several qualified landscape companies to complete the work by the June 1, 2016 deadline outlined in the agreement and will need to confirm which funding source to utilize to complete project. A contract has been prepared for the completion of this work.
- Planning for Good Old Days and the Lyons River Run 5k are proceeding and information should be available soon.
- Lyons Outdoor Games event planning is going well and press releases and other information will be released soon.
- The demolition of the Bohn Park structures will take place next week-rest room and concession stand.
- Sandstone Summer Concert Series has been planned:
- **Sandstone Summer Concert Series & Farmers Market scheduled**

1. June 9th- Lazer Bunny
2. June 16th- Take down the door
3. June 23rd- Halden Wofford & the Hi*Beams
4. June 30th- Blue Canyon Boys
5. July 7th- Bonnie & the Clydes
6. July 14- Tupelo Honey
7. July 21st- Interstate Stash Express
8- July 28th Arthur Lee Land
9. Aug. 4th- The Tiller's band
10. Aug. 11th- Samba Dende

- Parks staff is working to complete the process to ensure the continued eagle monitoring needed to fulfill the take permit granted to the Town. Currently monitoring services are being completed by Eco-System Services under the Stream Project and will be through the month of May. Received a final proposal from Ecos on the eagle monitoring. Starting the services agreement for legal to review and would like to take to the board on May 2nd.
- **HUNTER EDUCATION COURSE**- The Town of Lyons Department of Parks, Recreation & Cultural Events hosted State of Colorado Division of Wildlife volunteers who taught a hunter education course at the Walt Self Senior Housing community roomwith 40+ attendees on Saturday February 27th from 8am-5pm and Sunday February 28th from 9am-3pm.
- **Active Adult 50+ Birthday Celebration-** An Active Adult Birthday Celebration was held on February 26, 2016 the were 15 attendees.
- **Lyons Youth Soccer Practice began at the beginning of March on the Multi Use Field**
-

Board and/or Commission Items:

- PRC Meeting-April 11 @ 6pm Agenda:
  1) Meadow Park Phase II Update
  2) Bohn Park Flood Recovery Final Design and Bid Project-Timeline and Update

3) Parks Flood Recovery Plan-Approval/Plan to be available to PRC. Discussion regarding sharing with public.

4) Good Old Days/River Run Update

5) Sandstone Summer Concerts Update

6) Other Discussion

Employee Issues / Highlights:

- Job Postings-Parks currently has postings available for a Summer Park Host in Meadow Park and the Parks Summer Seasonal Maintenance Position

Safety Requirements Completed:

- Parks staff assisted in achieving 100% scoring on all CIRSA compliance audits related to Parks and Public Works.
- Required CIRSA paperwork-monthly vehicle, equipment, facility and park inspections, etc.

Upcoming Events to Communicate to Public / Board / Staff:

- April 18th board meeting –Parks Staff to present the following:
  1. Contract Approving Work for the Bohn Park Berms
- THURSDAY BASKETBALL LEAGUE-A pick up basketball league is held at the Lyons Elementary School Gym on Thursday nights from 8p.m. to 9:30 p.m. Please do not show up to play prior to 7:50 p.m. as the gym is scheduled for other uses. All are welcome to play.
  The league runs Thursdays October 1st, 2015 thru March 31, 2016. Cost is $80/season, $45/ Oct 1-Dec 31, $45 Jan. 7-Mar 31, or $5 per night drop in.
- **Lyons Kids Kayak Club -**The Town of Lyons Department of Parks, Recreation & Cultural Events would like to invite Lyons youth ages 7 to 16 and their parents to join them in Longmont at Centennial Pool to learn the basics of kayaking. The purpose of these open pool sessions is to prepare young kayakers for opportunities to participate in upcoming summer kayaking programs and learn basic kayaking skills in a comfortable environment. Fourteen open pool sessions will be offered on Fridays starting January 15th. Open Pool sessions will be held from 7:00pm-8:30pm at Centennial Pool in Longmont on the corner of Alpine and Mtn. View. There will be an ACA certified instructor on site. The cost is $85 as long as participants register by January 15, 2016. Drop in rates will be $10.00/ session. Contact the department for further details. Participants must be skilled swimmers and parents must provide transportation to and from the site. The Department of Parks, Recreation & Cultural Events has a limited amount of equipment it will lease to students for the duration of the pool sessions. Please contact the department for details.
- **Girls Softball-**Registration for recreational summer league youth softball will be offered by the Town of Lyons Parks and Recreation Department through the Indian Peaks Girls Softball Association for Lyons girls ages 5-18 this year. Anyone interested may register until the March 27th registration deadline. Registration is available at https://rec.ci.longmont.co.us/ (Please specify that you want to be on a Lyons team). Registration costs range from $80 to $106 this year depending on age group. For questions please contact Lyons Department of Parks and Recreation at recreation@townoflyons.com or call 303-823-8250.
- **BASEBALL REGISTRATIONS** -Just around the corner Registration for recreational summer league youth baseball will be offered through the Longmont Baseball League (LBL) for Lyons boys ages 6-18 this year. Anyone interested must register with the LBL and their staff will do all they can to create teams that consist of all Lyons players. This will allow Lyons kids to practice together on the same team here in Lyons with Lyons coaches. If a full roster is not filled in a given age group with all Lyons players, then children closest in proximity to Lyons will be used to fill the roster

(i.e. Hygiene). All games will be played in Longmont this year. Anyone interested in registering their child, coaching for a Lyons team, sponsoring a Lyons team, or learning more about the Longmont Baseball League may go to LBL website at www.Longmontbaseball.org. The site provides ample information and allows you to register as a player, coach or sponsor. For questions please contact Lyons Department of Parks and Recreation at recreation@townoflyons.com or call 303-823-8250.

- **BASEBALL/SOFTBALL COACHES AND SPONSORS NEEDED** -Lyons Softball and Baseball teams are in need of team sponsors and coaches for 2016. Having Lyons teams allows for the youth to practice together on the same team here in Lyons with Lyons coaches. Because the Lyons fields are under construction games will be played in Longmont this year. Team sponsorships will allow us to put your businesses name on Jersey's/Hats for these leagues. $400 is the team sponsorship fee. Sponsorship numbers and need of coaches will be available based on the number of teams fielded. If you are interested in coaching for a Lyons team, sponsoring a Lyons team, or learning more about the Baseball/Softball please contact the Lyons Department of Parks and Recreation at recreation@townoflyons.com or call 303-823-8250.
- **Meadow Park RV Camping Opening May 25th and Tent Camping Opening July 1st.**
- **Discount Dog Days** The Town of Lyons will be offering discounts on dog licenses throughout the month of April at Lyons Town Hall from 8am-4:30pm starting Friday, April 1st. Annual dog licenses are valid from May 1 to April 30th of each year. Discounted prices will only be available on Fridays throughout April. Those who are unable to come into Town Hall during normal business hours may visit the Town website to download the application and may place it, along with proof of rabies vaccination and the necessary fees in the green utility drop box outside of Town Hall. **2016 Dog Licensing Cost Information:** 1st dog license: $30.00…but with discount is $20.00! 2nd and additional dog license: $20.00…but with discount is $10.00! Note that the town will need proof of your dog's current rabies vaccination, so be sure to bring an extra copy.
- **American Red Cross Babysitter's Training** The American Red Cross Babysitter's Training course is fun and fast-paced with hands-on activities, exciting video, role-playing and lively discussions. Youth ages 11 to 15 will learn child-care, first aid, leadership and communication skills. The class participant fee includes a Babysitter's Training Handbook, Emergency Reference Guide and CD-ROM for babysitters to use both in the class and on the job. Class will be in the Lyons Town Hall Board Room on April 16th from 9 AM - 4:30 PM. The cost for this class is $55 per person. You must register by April 13th There is a minimum of 5 and a maximum of 15 person.
- **Renaissance Adventures Kids Camp:** In small groups of like ages, the heroes read maps, solve mysteries and riddles, overcome dynamic challenges, and battle using safe, foam swords. As with all Renaissance Adventures programs, Adventure Quest is designed to develop teamwork, critical thinking, ethical reasoning, communication, and other 21st century skills. With highly-trained staff, multiple awards, and over 20 years experience, it's no wonder Renaissance Adventures is so popular. Kids band together in small groups of six kids to develop a unique character, take part in exciting outdoor quests, and save the kingdom! There will be two camps held in Lyons this year, Aug. 1st -5th and Aug. 8th-12th, each camp will cost $369. The camp will be 8:30am-3pm. Parent sign-in/out is at Sandstone Park, and we will journey into Meadow Park. To register for this camp visit www.RenaissanceAdventures.com.
- **Active Adults 50+ Book Club** Let's gather and enjoy reading some great literature! This is a book club for Active Adults 50+ meeting at the Walt Self Building. The first book is an amazing novel called, "The Guernsey Literary and Potato Peel Pie Society" by Mary Ann Shaffer. To be a part of the book club, you must RSVP by either calling 303-823-8250 or e-mailing llegault@townoflyons.com to sign up. There is limited space (10 total copies available at the library). You can go to the Lyons Library to pick up your copy of the book. This book is available in one large print and one audio as well. The book club will meet on Thursday March 24th from 12:30-2PM at Walt Self to discuss the book and decide on the next book to read.
- **Free Active Adults 50+ Fitness Class** Let's get together and exercise for fitness and fun. Lori LeGault will be leading a 1 hour and 15 minute total body workout every Wednesday from 10:15 AM-11:30 AM. Starting and ending at the Walt Self Building we will do a 30 minute brisk walk on our back roads, then upon arrival back at Walt Self we will do 30 minutes of strength training

using tubing. We will end with 15 minutes of balance and flexibility. Class will start March 9th. You are allowed to join in/or duck out of a section of the class. For example, if you only want to do the strength part, you can join us at 11:15 to finish the class, or if you only want to walk with us, then you can join that part. Please dress appropriately for exercise with layers and bring a water bottle. Call 303-823-8250 for any questions.

- **Arbor Day** Colorado's Arbor Day is the third Friday in April-April 15, 2016. The Town of Lyons Ecology Board encourages residents to plant new trees on their property in strategic locations to begin to subsidize the number of older trees that won't be with us much longer or may have been damaged due to recent storms, drought or disease. The Town of Lyons Ecology Board and the Department of Parks, Recreation & Cultural Events will once again be holding a tree giveaway at the Lyons Elementary School. Students interested in being part of the tree giveaway may pick up an entry form at the Lyons Elementary School office, Lyons Town Hall, or on the Town of Lyons website. An assembly will be held Friday, April 22nd at the school. Students will receive a Tree for participating in the contest
- **Youth Mindfulness Summer Series** The Town of Lyons Parks and Recreation is pleased to offer a series of weekly mindfulness activities for kids ages 11-15. We will meet one day a week and do a variety of activities like yoga, musical guests and jam sessions, journal writing, summer reading volleyball, theater improv, painting, hiking and much more. We will journey around Lyons for all activities. Classes will be for youth 11-15 year old. Classes will b held in Sandstone Park June 23, 30, July 7, 14. Cost is $120 for all 4. Minimum 10/ Maximum 20. Deadline to Register: June 16th

- **Lyons Tennis Lessons for Kids** The Town of Lyons is pleased to offer entry level tennis lessons at the Bohn Park Tennis court twice weekly on Mondays and Wednesdays. Participants need to bring a tennis racquet and water. Classes will be **for 5-8 year olds, 9-12 year olds on May 2,4,9,11,16,18,23 at the Bohn Park Multi Use Sport Court. Cost is $106. Minimum 4/ Maximum 6.**
- **Lyons Tennis Camps for Kids** The Town of Lyons is pleased to offer entry level tennis lessons at the Bohn Park Tennis court Monday-Th. Participants need to bring a tennis raquet and water. Camp will be for ages **5-8 year olds, 9-12 year olds. Cost is $60 per weekly session. Classes will be held June 6-9, 5-8 yr old 9:00 AM-9:45 AM, 9-12 yr old 9:50 AM-10:35 AM, June 13-16, 5-8 year, 9:00 AM-9:45 AM, 9-12 yr 9:50 AM-10:35 AM, June 20-23, 5-8 yr , 9:00 AM-9:45 AM, 9-12 yr 9:50 AM-10:35 AM at the Bohn Park Multi Use Sport Court. Minimum 4/ Maximum 6.**
- **Day Trip to the Arvada Center** A day trip to the Arvada Center for the Arts and Humanities on a VIA transportation bus to see the performance "Death Takes a Holiday." Love defies death in this exquisitely written musical. It's just after World War I, a time of renewal after years of sadness and human suffering. After sparing a young woman who is in a fatal car crash, Death returns to walk among the living, hoping to understand why he chose to save her. As he experiences the simple charms of life, he also begins to comprehend the strength of human love. From the creative team of Titanic and Nine, this stunning musical's soaring melodies and lush score weave an enchanting tale of love and the preciousness of life.This trip is for adults 50+ and is **$18.00 per person (a normal price ticket for this show is $53). It is scheduled for Wednesday May 4th Leaving Lyons from Walt Self at 11:30 AM, Returning back to Lyons between 4:30 and 5:00 PM. Performance starts at 1PM. Meet at Walt Self to catch the bus. Minimum 10/ Maximum 20. Deadline to Register: April 13th**

Monthly Report to the Administrator

Department: Parks, Recreation & Cultural Events Period Ending: April, 2016

Highlights of the Month:

- Meadow Park construction continues: All of the river work completed prior to spring runoff. Punch list walk thru completed with the contractor for river work, sub contractor, the town and S2O. The items identified on the list were minor and are being addressed this week for a final inspection which should occur on or before May 13, 2016. All of the willows, seeding and blanketing have been completed for bank stabilization for spring runoff. The River Bend landscaping, that was agreed to in the MOA, between them and the town has been installed with only the irrigation to complete. We met on site with Steve Beck, Mike Whipp and the landscape contractor to layout the material and Sloane confirmed the planting was completed to their satisfaction with another on site meeting on Monday May 9, 2016. The buildings have all been painted and are receiving their graffiti coating application. Tent and picnic sites in the east core have all been installed. The concrete pour of patio areas will occur the week of May 9th which include around the new restroom, under the picnic shelter, trash enclosures and the WPA shelter. The front of the park is in the process of being cleaned up in preparation for the Memorial Day RV camping opening.

  Town of Lyons Project Schedule/Milestones:

  May 25, 2016-Park Open for RV Camping
  July1, 2016-Grand Opening Date per Contract
  July 16-July 25, 2016-Town of Lyons Lease with Planet Bluegrass for RockyGrass Festival

  Staging of Project to Meet Scheduling Objectives/Strategy:

  -Riparian Restoration Plan to Meet Spring Run-Off Demands
  -Completion of Work/Landscape to complete requirements of adjacent landowner agreements
  -Staging of work to ensure use of areas needed for opening of camping and festival season. i.e. completion of front entrance improvements, parking lot/access roads and turnaround, north trail from front entrance, clean up and repair of east parking lot and tent sites, water line construction coming out of park, east core completion including all tent/picnic sites and landscaping, river corridor work/restoration from structure 1 thru 4 including trails and all plant materials.

  It was determined that there may need to be some adjustments to the general public grand opening date to allow for proper "grow-in" times for certain landscape areas, but overall, milestone dates could be reached.
- The 2016 Lyons Bohn Park Final Design and Bid Project is underway and staff and consultants have been meeting weekly on Thursdays since the start of April. A public meeting to discuss skatepark design was held on April 28 at Town Hall from 6-7:30 pm. Attached please find the weekly updates as requested by the Board of Trustees regarding the meetings and design process. Please note these are posted on www.LyonsParksmp.com and will be the source to find these documents in the future. Conceptual building designs and material choices reviewed last week. Looking ahead we will be meeting to discuss utilities and resiliency of the river in the reach through Bohn Park and how to design for future flooding. That project will meet weekly to stay on schedule for specifications and drawings to be completed in July and the RFP for construction sent out for bid.
-
- The Bohn Park Berm project is scheduled to start the week of May 9, 2016 and be completed by June 1, 2016-depending on weather. Parks staff has screened the required additional dirt, set a backflow preventer and added a irrigation clock in order for the required work to begin.

- Parks staff has completed a summer recreation brochure. It has several program offerings for youth, adults and Lyons senior population. It is posted on the Town website at http://www.townoflyons.com/DocumentCenter/View/598 or copies can be picked up in the Parks and Recreation office.
- Eagle monitoring services agreement with Ecosystem Services was approved by the Board at the May 2, 2016 meeting. They will begin the monitoring and reporting June 1st for the USFWS permit.
-

Board and/or Commission Items:

- PRC Meeting-May 9, 2016 @ 6pm Agenda:
  1) Bohn Park Final Design and Bid Process Update
  2) Meadow Park Phase II Project Update
  3) Special Events Update-Overview, Vols. Needed for All Events, KidSpace organizer needed
  4) Staffing Update-Park Host/Parks Summer Seasonal
  5) Swimming Hole Update
  6) Other Discussion

Employee Issues / Highlights:

- Parks has filled the Meadow Park Host position and the new hosts, Dave and Diane Marquardt, will be coming to Lyons May 16.

Safety Requirements Completed:

- Required CIRSA paperwork-monthly vehicle, equipment, facility and park inspections, etc.

Upcoming Events to Communicate to Public / Board / Staff:

See the attached monthly newsletter for upcoming Parks and Recreation events and programs.

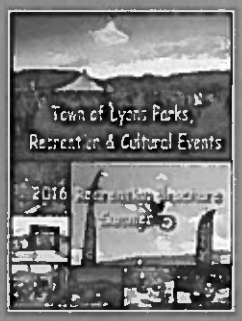
Check out www.lyonsoutdoorgames.com for information and to register for the Lyons Outdoor Games June, 4, 2016.

See the attached poster for the Lyons River Run 5K.

MAY 2016

VOLUME 12 ISSUE 5

Town of Lyons
Department of Parks,
Recreation & Cultural
Events
P.O. Box 49
Lyons, CO 80540
303-823-8250



To access the Town of Lyons full recreation brochure please visit www.townoflyons.com

Upcoming Events:

Active Adult 50+ Book Club
Walt Self Building
May 19th, 2016

Basic Computer Class
Lyons Library
May 20th, 2016

Active Adult 50+ Birthday Celebrations
Walt Self Building
May 27th, 2016

Town Hall Closed
May 30, 2016

Lyons Outdoor Games
Bohn Park
June 4, 2016

Sandstone Summer Concert
Sandstone Park
Thursdays
June 9th-August 11th

LYONS
Department of Parks, Recreation & Cultural Events

LYONS OUTDOOR GAMES

The Lyons Outdoor Games June 3-4 is a premier Colorado outdoor lifestyle, adventure sport and music festival. Celebrating 14 years this year! Send your kids up a climbing wall and drink craft micro-brew from over 50 craft microbreweries around the country as you watch world class athletes compete in professional kayaking, dirt jumping and slacklining comps! Get in on it and sign up for this year's Beer Relay or kick off your flip flops and jump on a slackline or throw a disc at our new disc golf event. Visit with some of the outdoor industry's leading companies and get some fun swag. Oh- and then see a national touring act while throwing down some awesome eats to satisfy your hunger! Tickets can be purchased at www.lyonsoutdoorgames.com.

Community Garage Sale and Clean Up Day

The Sustainable Futures Commission (SFC) is sponsoring Lyons' second annual Community Garage Sale Saturday May 21, from 8 AM till noon. To get the word out, the SFC will send announcements to the local papers, Craigslist, and other venues. Garage sale signs will be posted the day of the event indicating areas where sales will be held. Watch for upcoming Town eblasts for information on how to "register" your address as a garage sale participant.

The very next day, Sunday, May 22, the Town cleanup day will be held from 9-1. Upcoming Town emails will provide info on the exact location for Cleanup Day. As in the past, most types of materials, EXCEPT hazardous materials, can be dropped off. Some items will incur a cost, such as electronic waste (printers, computers, TVs, VCRs, etc.). Mattresses, tires, scrap metal, and all CHARM items will be accepted for free recycling. CHARM (Center for Hard to Recycle Materials) items include hard plastic items (lawn chairs, barrels, etc.), printer cartridges (no toner cartridges please), clothing, text books, bicycle tubes, plastic bags, and scrap metal. Please keep items separate to ease sorting.
The SFC is also looking for a charity to participate that can accept your donations of lightly used household items, clothing, books, and small furniture to promote reuse and recycle. Check the Town website and emails for information on whether these items can be dropped off for donation.
Branches and yard waste are accepted and will be recycled, but please keep separate from your other trash.

No "normal" recyclables, such as glass, cans, bottles, paper, or cardboard here please! Take those recyclable products to the recycle bins on Railroad Avenue, as usual.

Book Club

Let's gather and enjoy reading some great literature! This is a book club for Active Adults 50+ meeting at the Walt Self Building. To be a part of the book club, you must RSVP. Next, you can go to the Lyons Regional Library to pick up your copy of the book. The book club will meet on Thursdays on the listed dates at Walt Self to discuss the book and decide on the next book to read. We have lots of fun, don't miss out!

Age: 50+
Fee: FREE
Dates: May 19th, June 16th, July 14th, August 11th
Time: 12:30 PM-2:00 PM
Location: Walt Self Building
Instructor: Lori LeGault and Library Staff

Basic Computer Skills Class

Lyons Parks and Recreation in collaboration with the Lyons Regional Library is pleased to offer a basic computer skills class for Lyon's Seniors' at the Lyons Regional Library. This class will go over e-mail, Facebook, and internet skills, and can help you get more connected with all of the most used Lyons Facebook pages. There is a maximum of 5 participants for this class so you must RSVP..

Age: 50+
Fee: FREE
Dates: May 20th, June 10th, July 29th
Time: 1-2PM
Location: Lyons Regional Library Irary Staff
Group Size: Maximum 5

Monthly Birthday Celebration

Join us on the 4th Friday of every month to celebrate that month's birthdays! There will be birthday cake, coffee, and some other fun means of celebrating.

Age: 50+
Fee: FREE
Dates: May 27th, June 24th, July 22nd, August 26th
Time: 1-3PM
Location: Walt Self Building
Instructor: Parks & Recreation Staff

Fitness Class

Lyons Recreation Program Assistant, Lori LeGault will be leading a 1 hour and 15 minute total body workout. Participants will do a 30 minute brisk walk on back roads, then upon arrival back at Walt Self we will do 30 minutes of strength training using resistance bands. The session will end with 15 minutes of balance and flexibility. You are allowed to join in/or duck out during any portion of the class. Please dress appropriately for exercise with layers and bring a water bottle.

Age: 50+
Fee: FREE
Dates: Every Wednesday
Time: 10:15 AM-11:30 AM
Location: Walt Self Building Basement
Instructor: Lori LeGault

Recreational Adult Ultimate Frisbee

The Town of Lyons is pleased to offer a recreation league for Adults who wants to play ultimate Frisbee. Participants will meet and play at the Bohn Park Multi Use Field. Teams will be mixed on a weekly basis. To register call 303-823-8250 or e-mail recreation@townoflyons.com.

Age: 18 years and up
Fee: $42
Dates: June 9, 16, 23, 30, July 7, 14, 21
Time: 7:00-8:15 PM
Location: Bohn Park Multi Use Field
Instructor: Zach Martinez
Size: Minimum 10/ Maximum 30
Deadline to Register: May 26th

Recreational Team Sports for Kids

The Town of Lyons is pleased to offer a recreation non-competitive league for kids who want to play team sports for fun without committing to one thing for an entire season. Participants will meet and play a variety of ball sports. Teams will be regularly mixed and all participants are encouraged to play. To register call 303-823-8250 or e-mail recreation@townoflyons.com.

Age: 8-12 year olds
Fee: $42
Dates: June 9, 16, 23, 30, July 7, 14, 21
Time: 6:00-7:00 PM
Location: Bohn Park Multipurpose Field
Instructor: Zach Martinez
Size: Minimum 10/ Maximum 30
Deadline to Register: May 26th

Summer Running Club for Kids

The Town of Lyons is pleased to offer a recreation running club for kids who want to keep active and love to run! Since kids' goals are different, each child will be tasked in the beginning with choosing a realistic mileage goal and can then work toward meeting that goal with friends. A potluck will follow on the last day of running. To register call 303-823-8250 or e-mail recreation@townoflyons.com.

Age: Entering 1st Grade-6th Grade
Fee: $35
Dates: June 8, 13, 15, 20, 22, 27, 29
July 6, 11, 13, 18, 20, 25, 27
Time: 9:00 AM-10 AM
Deadline to Register: June 1st

Yoga for Teens

The Town of Lyons is pleased to offer yoga for teens throughout summer. Bring a yoga mat and water. To register e-mail recreation@townoflyons.com.

Age: 12-16 year olds
Fee: $8/per class
Dates: Tuesdays from June 7th-August 9th
Time: 10:30 AM-11:30 AM
Location: Walt Self Basement (May be at Sandstone Park some days, check door for sign)
Instructor: Lori LeGault
Size: Minimum 5/ Maximum 10

Youth Mindfulness Summer Series

The Town of Lyons Parks and Recreation is pleased to offer a 4-Part series of weekly mindfulness activities for kid's ages 11-15. Meeting one day a week and do a variety of activities including yoga, musical guests and jam sessions, journal writing, summer reading, ball sports, theater improv, hiking and much more. We will journey around Lyons for all activities. See www.townoflyons.com for more details.

Age: 11-15
Fee: $120 for all 4
Dates: June 23, 30, July 7, 14
Time: 10:00 AM-3:30 PM
Location: Meet at Lyons visitor's center **Instructor:** Lori LeGault plus many more
Size: Minimum 8/ Maximum 20

Tennis Camp for Kids (3 days/week)

The Town of Lyons is pleased to offer entry level tennis lessons at the Bohn Park Multi Use Sport Court. Participants need to bring a tennis racquet and water, it's advisable to wear a hat and sunscreen.

Age: 5-8 year olds, 9-12 year olds
Fee: $60 per weekly session
Dates: June 6-9 June 13-16
June 20-23
Time: 5-8 yr olds 9:00 AM -9:45 AM
9-12 yr old 9:50 AM -10:35 AM
Location: Bohn Park Multi Use Sport Court
Instructor: Judi Laursen, USPTA
Camp Size: Minimum 4/ Maximum 6

JumpBunch Sports Camps

JB Sports is an internationally-acclaimed fitness program that utilizes a non-competitive sports and fitness curriculum to develop important skills such as hand-eye coordination, teamwork, and self-confidence. Our custom-built program for school-agers will enhance your child's physical fitness as well as cognitive development. We'll teach your child two different sports or fitness activities each week, including golf, soccer, field hockey, volleyball, and many more! Let us show your child how much fun fitness can be!

JumpBunch Sports School Age Camp

Age: 7-12 Year Olds
Fee: $82
Dates: June 9,14,16,21,23,28,30
Time: 9:00 AM-10:00 AM
Location: Bohn Park Multipurpose Field
Instructor: Trained Jumpbunch Staff
Size: Minimum 4/ Maximum 20
To Register: http://suburban-denver.jumpbunch.com
Deadline to Register: June 2nd

JumpBunch Preschool Age Camp

Age: 3-6 Year Olds
Fee: $82
Dates: June 9,14,16,21,23,28,30
Time: 10:00 AM-11:00 AM
Location: Bohn Park Multipurpose Field
Instructor: Trained Jumpbunch Staff
Size: Minimum 4/ Maximum 15
Register at: http://suburban-denver.jumpbunch.com
Deadline to Register: June 2nd

LYONS REDSTONE MUSEUM

PO Box 9, Fourth & High Streets, Lyons, CO 80540
(303) 823-5925\5271 lavern921@aol.com

Museum open Weekends in May, and daily April 30 to Oct 2
(Mon.-Sat 9:30am-4:30pm, Sun 12:30-4:30pm)
Come & Enjoy: Old-time life in Lyons displays and photographs; high school grad photos; Gift Shop; 3,000 Used Book Sale; Genealogy and Newspaper Archives; New Exhibits every year; 2013 Flood Memorabilia. (Admission by Donation) Get more info through our Newsletter, Facebook and Web Pages.

QUASQUICENTENNIAL CELEBRATION 2016

The museum and Town of Lyons are celebrating the 125th Anniversary of Lyons Incorporation April 6, 1891-2016. We have developed a commemorative envelope with a sketch of the town in 1881, with postmark cancel April 6, 2016. Enclosed is a history of the town and copies of black and white historical photos. Buy in Town $5 or mail $7.00 to the Museum. Special program to be presented at Good Old Days; 1pm-Museum; 6pm-Sandstone Park.

MAY HISTORY MONTH

(Open weekends, 4\30-5\1; 5\7-8; 5\14-15; 5\21-22; 5\28-29)
May 7, 5-7 p.m., Redstone Museum, Opening Reception, Free.
"Art at the Redstone Museum" exhibition. Explore 103 years of Lyons history through its artists from the 1911 landscape works of Newt Thomas to the 2014 series of prints by artist Larry Cohan depicting scenes of the 2013 Lyons flood. Bring forth your "inner artist" in the Creative Corner. Take on the "I Spy" challenge. Art will be on display during the 2016 season.

40TH LYONS "GOOD OLD DAYS" June 25

9:30 am - 4:30 pm, Sat. & 1 pm - 4:30 pm Sun - Museum Open House.
1 p.m. - 3 p.m. Sat. June 25, Museum Lawn, Program and New Exhibits. HISTORY PROGRAM: Honor 125th Town Anniversary; Good Old Days 40th Anniv.; Honor Class of 1966 as Mr\Mrs. Good Old Days (50 years); Alumni stories and Reunions; Honor Classes of '06's (1926, 1936, etc.); Honor Pioneers attending, and Lyons Grad Class of 2016 from Pioneer families.
6 p.m. Sandstone Park: Welcome, Introductions, History Speeches

==========MUSEUM HAPPENINGS Summer 2016==========

***LYONS HISTORY CONVERSATIONS** 3rd Sunday
June 19, July 17, Aug. 21, Sept. 16, 4:30-6:30pm Walt Self Senior Center, 335 Railroad Avenue.
History conversations with historians and guests. Topics include: town's history; quarries; campaigns fought: our schools closing and Coffintop Dam construction; and Lyons Pioneers.

*** LYONS LAST THURSDAYS**
The Museum will also be participating in the Lyons Last Thursdays events organized by the Lyons Arts and Humanities Commission. It will have extended hours and special events.

Red Rock Ramblers Square Dances

Saturday Nights
June 18th-September 4th
Rounds 7:30Pm and Squares 8– 10:15PM
Lyons Elementary School Gym
Mainstream, W\2 + Tips; Wear soft soled shoes, wood floor

June 3-4; State Festival-Grand Junction
June 18th– Caller Mike Hogan
June 25th– Dave Guille
July 2nd– Mountain Magic
July 9th– Mike Sikorsky
July 16th-Jerry Junck
July 23rd– Dan Nordbye
July 30th– Lynn Stobel

August 6th– Barb Haines
August 13th– Deborah Carroll & Jon Jones
August 20th– Dean Dederman
August 27th– Dee Dee Dougherty
Sept. 3rd– Lanny Weakland
Sunday, Sept. 4th -Lanny Weaklend\E Glenn
(Special Plus) 2-5:00pm "Labor Day Wing Ding"

Join us at Lyons Good Old Days after the race

Amazing Prizes including Tickets to Planet Bluegrass Festivals

LYONS RIVER RUN 5K

Saturday, June 25th, 2016
8am Start
at Sandstone Park

Register Online at www.townoflyons.com

Kids Fun Run

Chip Timed Event

Please join us by registering at one of these convenient front range locations
(* indicates those stores that collect registration forms and money through 6/20/16)

LYONS	BOULDER	LONGMONT	FT. COLLINS
* Lyons Town Hall 432 5th Ave (303) 823-6622	* Flatirons Running 629 Broadway (303) 554-7837	* Longmont Athletic Club 10 Mountain View Ave. (303) 772-4700	* Runners Roost 2720 Council Tree Ave. (970) 224-9114
* Lyons Visitor Center 4th Ave. & Broadway (303) 823-6622	* Farrell's eXtreme Bodyshaping 2408 Arapahoe Ave. (720) 498-2841	* Shoes & Brews 63 S. Pratt PKWY (720) 340-4290	* Altitude Running 150 E. Harmony Rd. Unit 2c (970) 377-8005

GATEWAY REALTY GROUP
mocon Baseline Series
JLB
BARKING DOG CAFE Lyons, Colorado
Martin Marietta
NARANJO CIVIL
PLANET BLUEGRASS
KRISCHE CONSTRUCTION
LYONS PARKS & RECREATION
St. Vrain Market Lyons, CO
Lyons Automotive LA Lyons, Colorado

DHM DESIGN Landscape Architecture
Urban Design
Planning

Lyons Bohn Park Final Design
Full Day Programming Workshop
Thu, Apr 14, 2016 10:00 AM - 5:00 PM Mountain Daylight Time
S2o Design and Engineering
429 B Main Street
Lyons. CO. 80540

- Please join my meeting from your computer, tablet or smartphone.
  https://global.gotomeeting.com/join/625845429
- You can also dial in using your phone.
  United States +1 (408) 650-3123
  Access Code: 625-845-429

9:00 AM at 2nd Avenue Trailhead area - Mark-DHM, Sloane-TOL, Jon and Grant – ECOS, Nathan – S2O

2nd Avenue Trailhead

Site walk/ review of trail alignment with stream plantings

9:30 to 10:30 am - River Restoration/ Ecology/ USACE Permitting – Jon and Grant with ECOS

Delayed discussion until April 21, 2016 meeting
- Ecological restoration goals
- Fish habitat/instream structures
- Raptor discussions
- planting plan and plant palettes
- river access/overlook
- miller memorial
- floodplain connectivity and resiliency
- bioengineering/bank protection
- trails and trail head (especially below 2nd ave.)

10:30 Irrigation/ Water source/ Well design coordination – Jill Bersano with KDI

- Town of Lyons to look into water rights and we can expect for irrigation and what is the acquifer capacity. Testing may need to be completed. We have assumed 90 GPM preflood
- Town of Lyons has requested 2 wells and pumps for more efficient distribution of irrigation water to landscapes along highway and future McConnell Ponds and Bohn Park.
- Need to review existing well capacity. Existing well preflood was around 35' deep with approximate 19' of water. It tended to pull air towards the end of the existing irrigation schedule.

- Existing well pumped water around 1500 to 2000 feet to Bohn Park and then out to the "Welcome to Lyons" sign.
- Town of Lyons to provide specifications from existing pump. John's Well Service is the company that has maintained and repaired the existing pump
- Town of Lyons has requested that new wells have remote access (Ethernet or cellular), a submersible pump, water filtration, and an above ground pump house

11:00 AM - Architecture Programming Discussion – Ken and Janine with BRS

- Shelters
  - Enclose during storm events but with open air feel
  -
- Restroom
  - With small utility storage room
- Storage
  - Stand alone storage for 1 tractor/ mower and sports equipment
  - 1 car garage with enclosed bays in back for bulk materials. 10yds per bay approximately
  - Locate behind ballfields
- Mechanical
- Structural
- Town of Lyons to forward link to park design standards (completed)
- Steamboat mountain is an iconic/ framing image for architecture
- Interaction with river is important
- Anything at Meadow Park we can integrate within Bohn Park
  - Local sandstone materials, natural materials, stone and wood
  - Less traditional detailing
  - Town of Lyons likes the use of river rock
  - Keep well lit – use of natural/ solar light tubes
- Historic Structures shown on Towns website. If not available Dave has information
- Concerns with vandalism of wood. How accessible? How is treated?
- Use of sliding doors on buildings? Town of Lyons is intrigued but not certain we can use
- Use of glass? Town of Lyons is concerned with maintenance and breaking
- Town of Lyons likes use of mix of colors in stone and different layers
- Town may route gas line through the park site. Do we need to connect gas lines to the building?
- No cooling needed
- Base Flood Elevation plus 2' for building ffe's – S2O to help with flood elevations
- Design for 2012 IBC
- Use 1 ½ car garage for storage
-
-

Pedestrian Bridge Structural Review

- Bridge situation sheet needed
- Existing preflood bridge is 69' chord length (plus or minus). Possibly reuse existing bridge at over flow?
- New bridge at 4th Avenue

DHM DESIGN

Electrical Requirements for Building and Site

- Lighting needs
- Need lighting at parking lot
- Need security lighting for park
- Need lighting along St Vrain Trail between 4th and 2nd.
- Lighting control to turn zones on and off.
- Add plug ins and panels for special events

Field lighting – Musco or Qualite

1:00 PM - Recreation and Playgrounds-

Water features/outdoor play/classroom/interpretive
River access/river overlooks
Miller memorial/stone picnic area
Baseball field needs/dugout design/scoreboard(s)/shelter- Naming of fields/memorials/etc.
Tennis court/sport court programming needs and design
Review other recreation opportunities

- Climbing feature for adults and kids. To include opportunities for recreation, classes, events, competition
- University of Washington has a good example of a climbing wall for reference
- Large Playground
    - Chance to remove eastern playground
    - There are 4 existing swings. Review condition and consider replacement?
    - Integrate an outdoor classroom
- Smaller playground – opportunity to make bigger if needed
    - Possible parkour course? (Kompan)
    - Include something for smaller kids
- Review playground options from different playground manufacturers with Town
    - RMR
    - Kompan
- ADA Overlook
    - Include gathering, picnic, informal concerts
    - Consider new location based on best experience
- Instream/ ADA overlook
    - ADA route to St Vrain, possible sculpted concrete jetty
    - Use of river rock and sandstone caps
    - Address CPW concerns with instream structures
    - More value for tubing recreation than kayaking
    - Stadium seating along river – similar to preflood stone work
    - Review photos from Ed Bruder of preflood conditions
- Ditch return flows
    - Add stone for features for play experience
- Flower planters

    - Get preflood count from Mike
    - Need to be irrigated
    - Discuss plant types
    - Strategically locate planters
- Public Art
    - Strategic placement at bridges, entrances, trail junctions
- Park ID Sign
    - Needs to be relocated
    - Originally built and supplied by Blue Mountain Stone
- Miller Memorial – label as picnic area
    - Existing memorial - Flat patio, sandstone benches, grill in middle
    - Use as rental space for events and picnicking
    - 35' diameter (existing preflood)
    - Need 4x standard grill size with stone base
- Vasquez Memorial
- Remove and salvage plaque
- Add trail south side of multi-use field
- 8' wide crusher fines for main trails
- 6' wide for lesser trails
- Ballfields
    - 200 seating each field
    - Field #1 – Vasquez field
        - Removeable fence section in outfield
        - Gates in outfield
    - Field #2 – Bohn Field
        - Scoreboard
        - Town standards for skinned infield
        - Baseball/ softball use
    - Batting Cage
        - Removeable net
        - Electrical access
- Sand Volleyball Courts
    - Build only 1
    - Move behind field #1
    - Keep old location of volleyball courts as informal lawn area

2:00 PM – Instream Recreation/ Structures/ Floodplain Permitting

3:00 PM – General Site Discussion

Civil Site Discussions

Drainage/ Water Quality
Detention?

DHM DESIGN

Review ditch requirements
Utilities

- Follow UDFCD standards
- Detention may not be required – Town of Lyons to review with Jim
- Water quality will be important
- West side of Bohn Park is the South Ledge Ditch
- East side of Bohn Park is the Meadow Ditch (WQ basin at end of line)
- Will get alignment of ditch returns from Civil Arts
- Gas is Xcel
- Water is City of Longmont
- Electric – Town has substation
- Survey to shoot manholes, profile ditches, inverts
- ICON to size ditch return flows correctly
- 2 weeks review by Jim Blankenship
- Develop drainage for existing park
- ICON to take DHM grades and develop proposed drainage

Parking Lot Design and Paid Parking

2nd Avenue access
Traffic and pedestrian flow/gates
Parks host area design

- Outdoor yard area/ patio/ picnic tables, grill, lawn, berming?
- Lighting for security at host area
-

Food truck location and design/needs
Dumpster/ trash

- Need 3 – 8 yd dumpsters with steel doors

St Vrain Trail

- Consideration for disc golf – St Vrain Disc Golf

4:00 PM - Skate Park Goals/ Review

- Review budget versus timing with community
- Post flyer to project website
- Town of Lyons to send to Chris Cope and Greg Plavidal

Bike Park/ Bike Trails coordination

DHM DESIGN Landscape Architecture
Urban Design
Planning

Lyons Bohn Park Final Design
Progress Meeting Notes/
BOT Weekly Update
April 21, 2016
10:00 am

1. ECOS –River Restoration/ Ecology/ USACE Permitting – Jon and Grant with ECOS
    a. ECOS confirmed that the Biological Assessment completed for the stream work covers the entirety of Bohn Park
    b. The Nationwide Permit (NWP) 3A Maintenance covers all associated in restoring the instream structures. We can modify structures slightly from original locations
    c. SHPO has cleared Bohn Park of any historic structures
    d. NWP 27 is in place
    e. Dave Cosgrove has water rights information and is reviewing to determine what our availability to use ditch return flows.

2. Public Notification, Coordination, Meetings, Reporting
    a. Skate Park Public Meeting #1 – April 28 at Town Hall Board Room

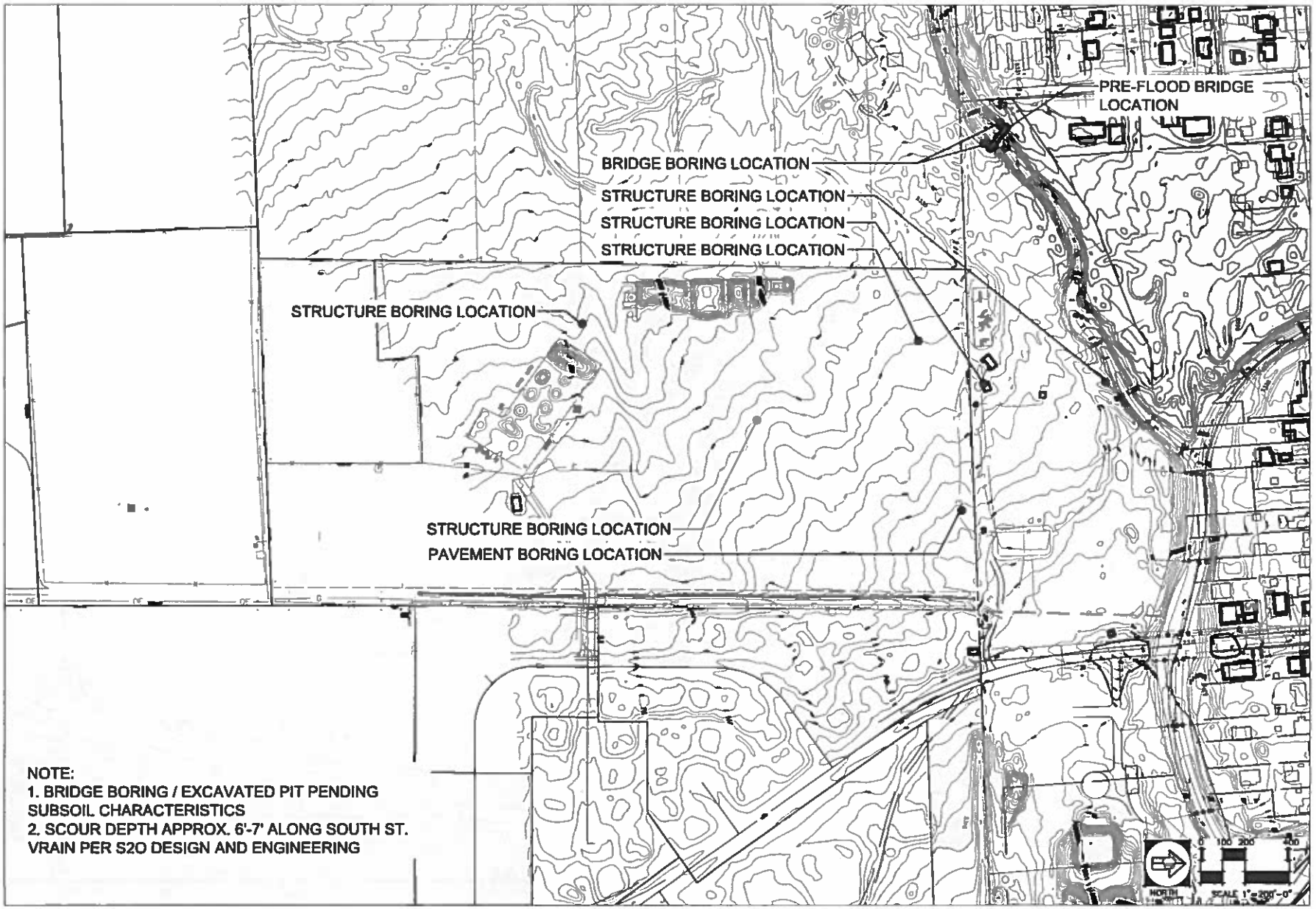
3. Data Collection
        i. mapping & survey updates – field work in progress, expected to be completed week of May 2
        ii. geotechnical updates – scour depths, hydraulics being reviewed. Encountered large cobbles and boulders fairly shallow. Will need to utilize excavator provided by Town to dig exploratory pits. Pits at bridge abutment will need to get down below scour depth. Scour depth anticipated at 6' to 7' depth
        iii. Any additional information needs

4. 2nd Avenue Trailhead updates –trail alignment has been staked and Stream Team is installing

5. Program Refinement/ Programming discussions
    a. Review of concept plan for further program development
    b. Site Items
        i. Ditch return flows/ water quality ponds were reviewed. Preflood the Town had three ponds. Town wants to reconsider layout and introduce use of vegetation.

ii. Possible eagles at Bohn Park and Black Bear Hole. ECOS has been notified and is monitoring. No documented locations and state has no information. With current permitting state has not alerted the Town of any active nests in the vicinity. Will continue to observe for signs of eagle habitat
iii. Instream fisheries – create a pool drop environment more so than a riffle pool
iv. Skatepark meeting coming up. May expect to see Team Payne attend. Present process, document the Parks Flood Recovery Process used to get us to where we are today, deed restrictions, flood plain.

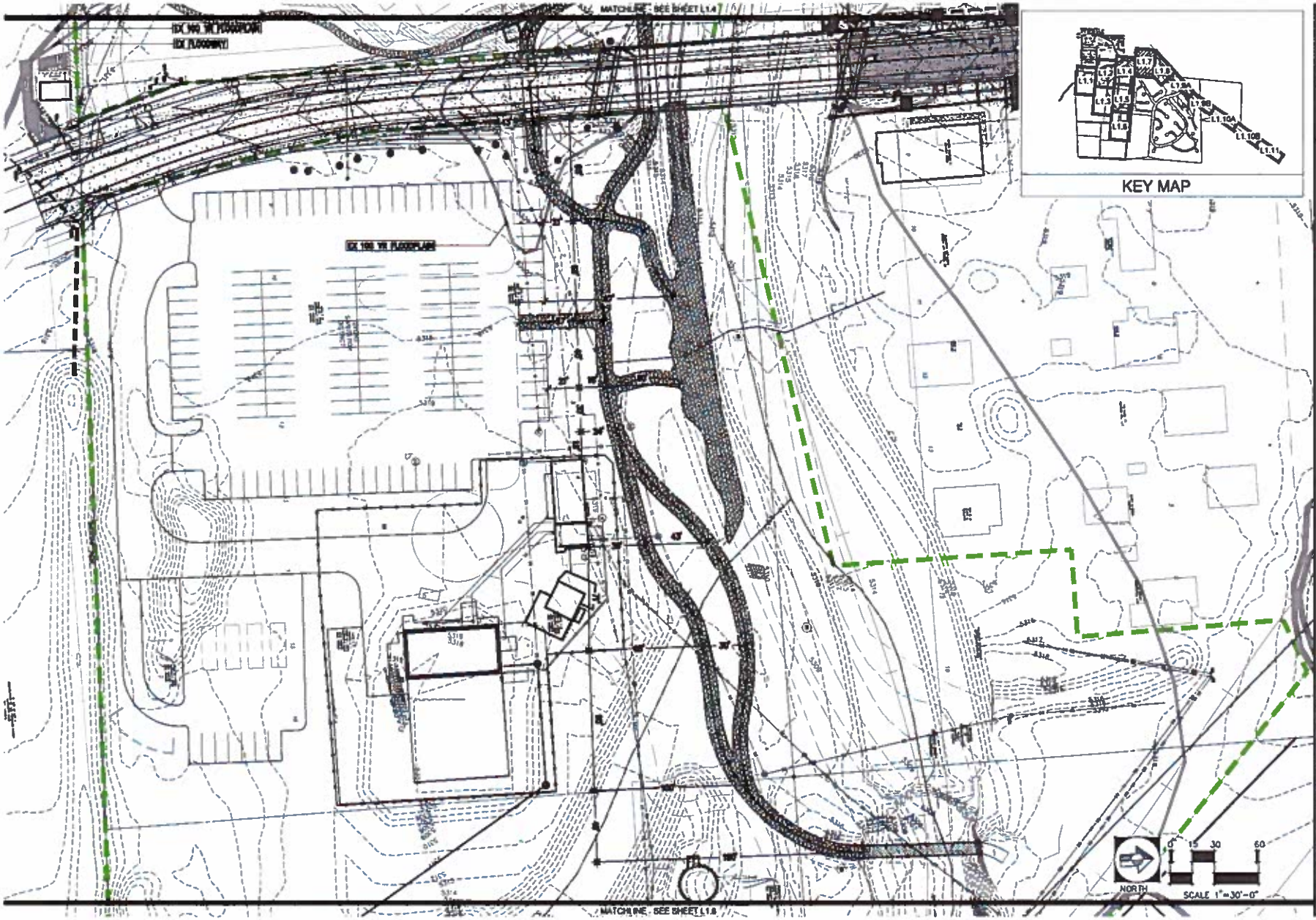
c. Civil Items
d. Architecture Items
    i. Review architecture programming and updated program
e. 4th Avenue Bridge Discussion
    i. 6-7' depth scour depth below stream is anticipated
    ii. Will need dewatering permit.
    iii. DHM to forward geotechnical information to team once information is known.
    iv. S2O to continue work on bridge situation sheet and update with current hydrology once available
    v. Town to verify bridge code
    vi. Review existing north bridge abutment for possible reuse
    vii. Use Big R bridge or approved equal. Bridge to be self-weathering steel, wood deck, wood rub rail
    viii. H5 or HS20 bridge rating is ok. 1' of freeboard required



DHM DESIGN

GEOTECHNICAL BORING LOCATIONS

BOHN PARK FINAL DESIGN
LYONS, COLORADO



DHN DESIGN

REUSE OF DOCUMENT
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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044
DATE: 04/15/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SCALE: 1"=30'-0"

SHEET NUMBER: L1.7

SHEET x1 OF XX

DHM DESIGN Landscape Architecture
Urban Design
Planning

Lyons Bohn Park Final Design
Progress Meeting Notes/
Weekly Update
April 28, 2016
3:30 pm
Lyons Annex – trailer adjacent to S2O

Conference Call (712) 432-0926
Access Code: 564031

1. 3:30 PM Fire Review of 30% Design
    a. Met with JJ with Lyons Fire to review 30% designs and to receive comment
    b. 8' wide emergency access routes minimum. 10' preferred if possible. If not then maintain shoulders to accommodate emergency vehicles.
    c. Provide loop trail to center of ballfields for access from north, south and east.
    d. Provide emergency access to skate park from east side trail
    e. No sprinkling/ suppression of buildings required
    f. Provide flush knox box.
    g. Fire will want to review plans beginning at conceptual plans
    h. Fire access to restroom and signature shade structure area. Remove parking in this area to provide access.
    i. Recommended that we place a fire hydrant by building. Can be designed off of future water line
    j. Fire to review mechanical plans and other plans once available. Email plans@lyonsfire.org

2. 4:00 PM Architecture Review
    a. Food truck alley along north side of multi-use field to have electrical and water hookups
    b. Code review to be completed by Safe Built
    c. BOT to review plans at 50%, 75% and 90% levels. DHM to present
    d. Architecture concepts to be developed this week and early next week. Will plan on presenting at next Thursday's weekly meeting

3. 4:30 PM Greenway/ Play Area Update Review
    a. Reviewed preliminary plans for approval

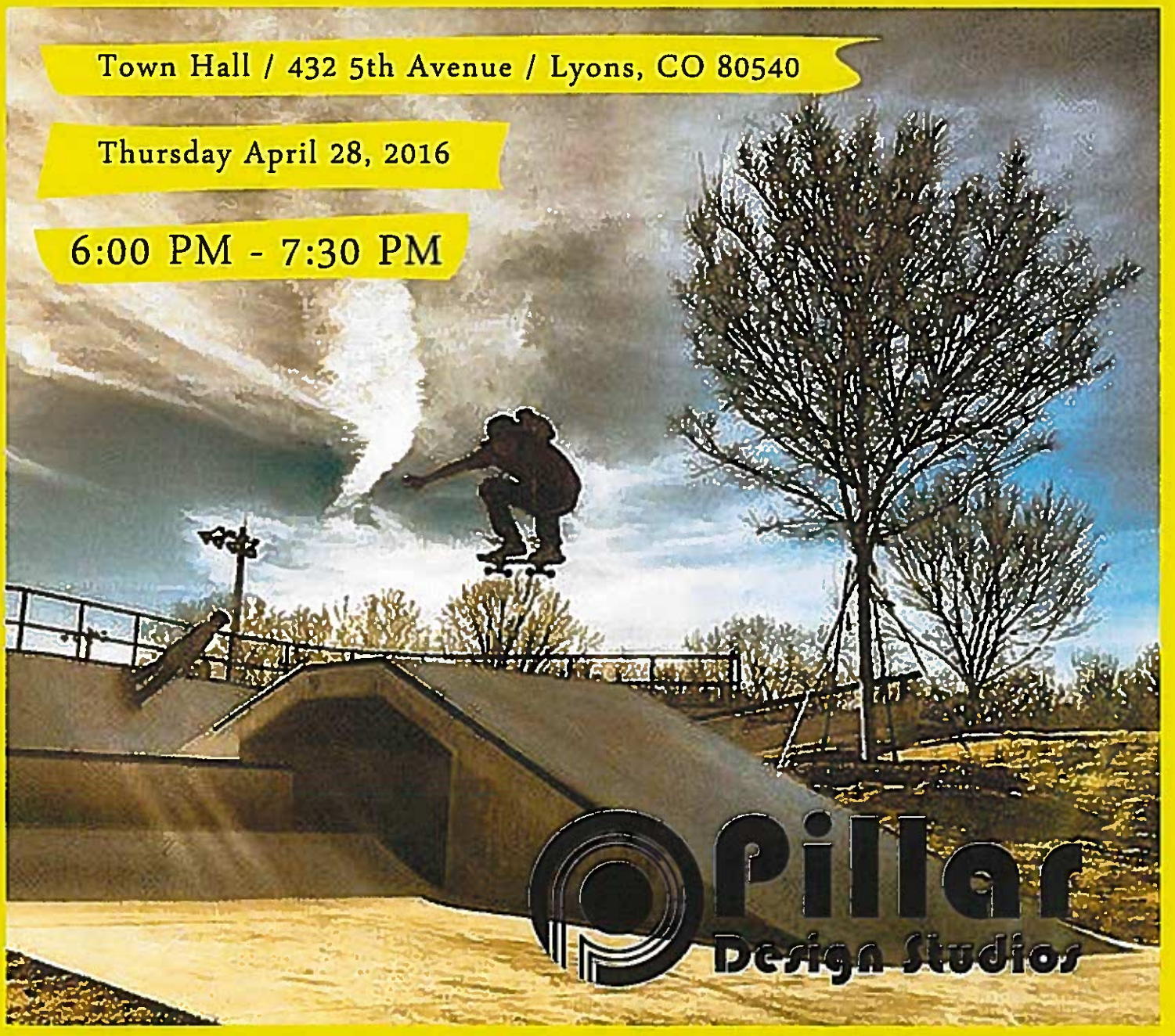
4. Skate Park Public Meeting #1 –
    a. Review presentation and approach to the meeting.
    b. Reviewed concerns with water table level and geotechnical soils. May need to elevate skate park above ground

5. Program Refinement/ Programming discussions
    a. DHM to provide weekly BOT updates with notes and updated diagrams/ sketches, etc.
    b. Continue to place updates on website for community review
    c. Excavator on site this week. Schedule geotechnical pits for next week
    d. Town has sustainability plan for use in review of the project requirements. Review goals for parks and incorporate as required. Document on town's website
    e. Forward tree survey completed by ECOS to design team
    f. Review parking slopes and design standards with Jim and Joe with the Town.

The Town of Lyons Presents

LYONS SKATEPARK PUBLIC DESIGN MEETING

[The Town of Lyons invites you to share your design ideas for your public skatepark]



Can't make it? Catch up on the action at WWW.LYONSPARKSMP.COM

BOHN PARK - LYONS, COLORADO

Architectural Program

4/29/2016

Restroom Building

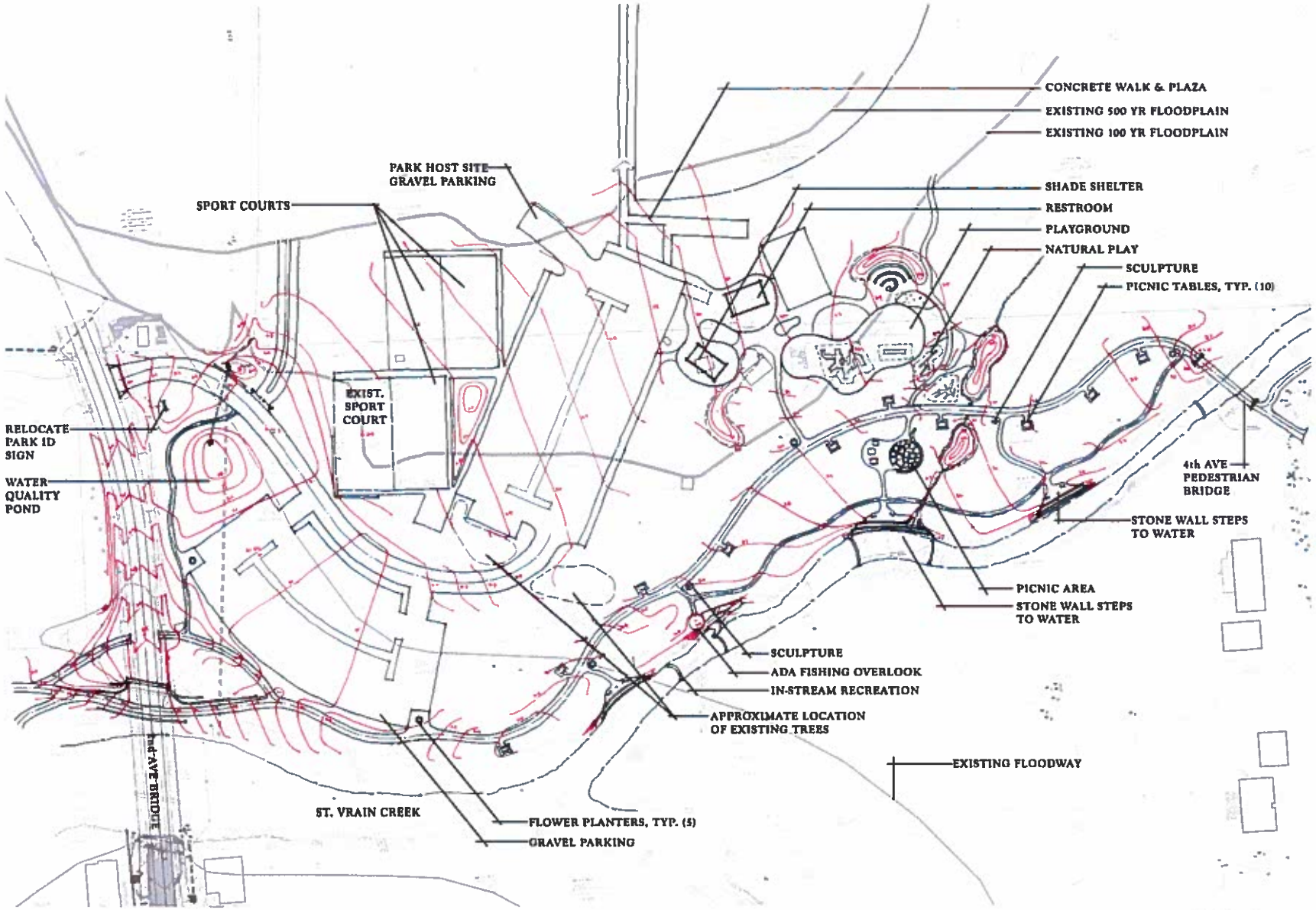
Item	Space	Area	Comments
1.0	Mens Room	240 nsf	
	2 Toilets		
	2 Urinals		
	3 Lavatories		
	Baby changing counter		
	Hose bib under sink		
1.1	Womens Room	240 nsf	
	4 Toilets		
	3 Lavatories		
	Baby changing counter		
	Hose bib under sink		
1.2	Assisted Restroom	100 nsf	
	Toilet		
	Lavatory		
	Accessible room		
	Baby changing counter		
	Hose bib under sink		
1.3	Storage	120 nsf	
	Janitor sink		
	Sundries and cleaning equipment		
	Ballfield maintenance equipment		
	First aid equipment		
	xx		

xx

1.4	Mechanical/Electrical & Plumbing Chase	142	nsf
	Systems		
	All electric		
	Year round operations		
	Total Net Area	842	nsf
	Grossing Factor	0.2	
	Total Gross Area	1010	gsf

Picnic Shelter

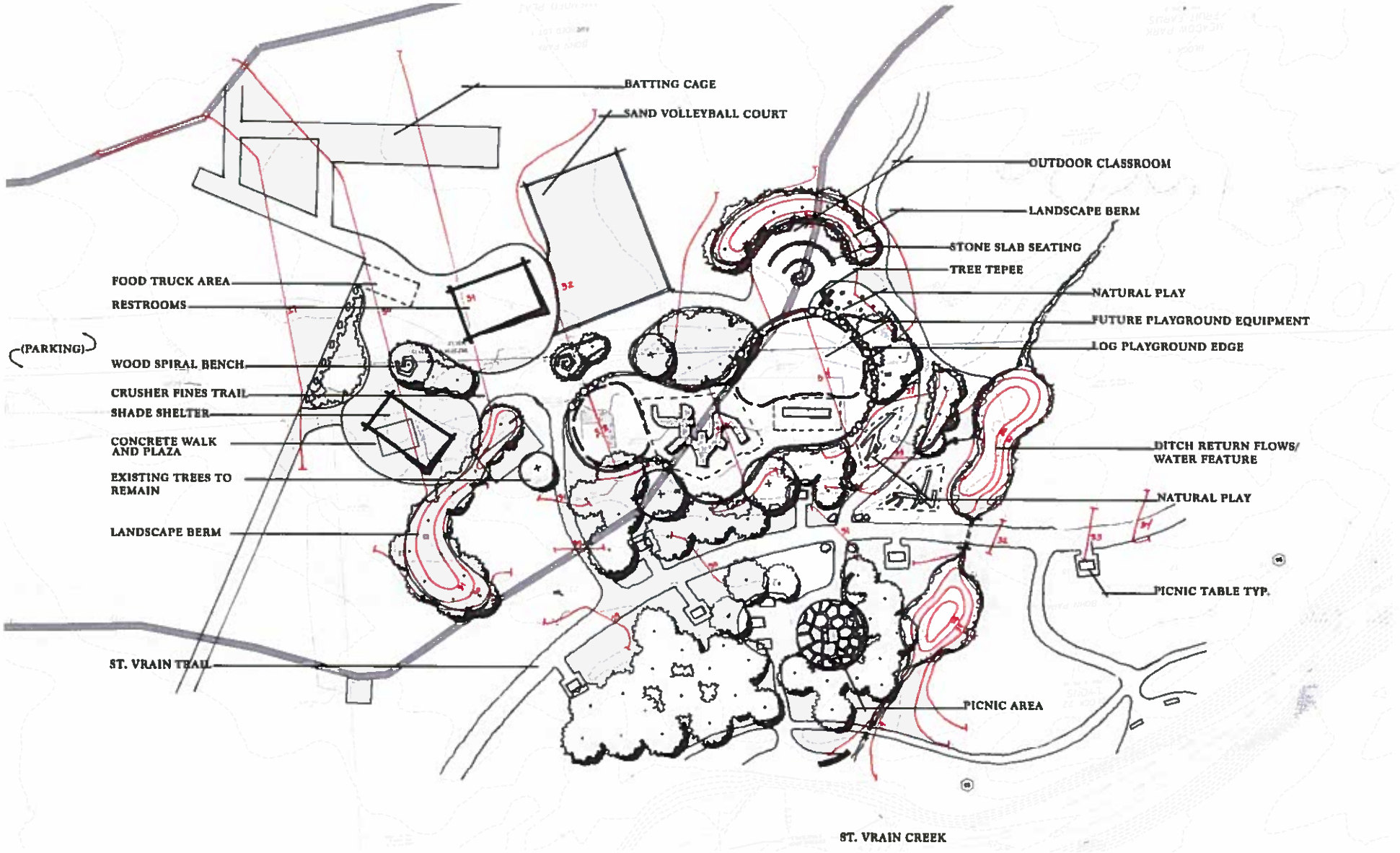
Item	Space	Area		Comments
2.0	Mens Room	800	gsf	Provide 2 shelters
	Shelter area			
	Low side walls with counters			
	Lighting			
	Picnic table seating for 30 (6 per table)			
	Hose bib nearby			



Grading & Layout Concept

Bohn Park Final Design

April 28th, 2016



Grading & Layout Concept - Enlargement

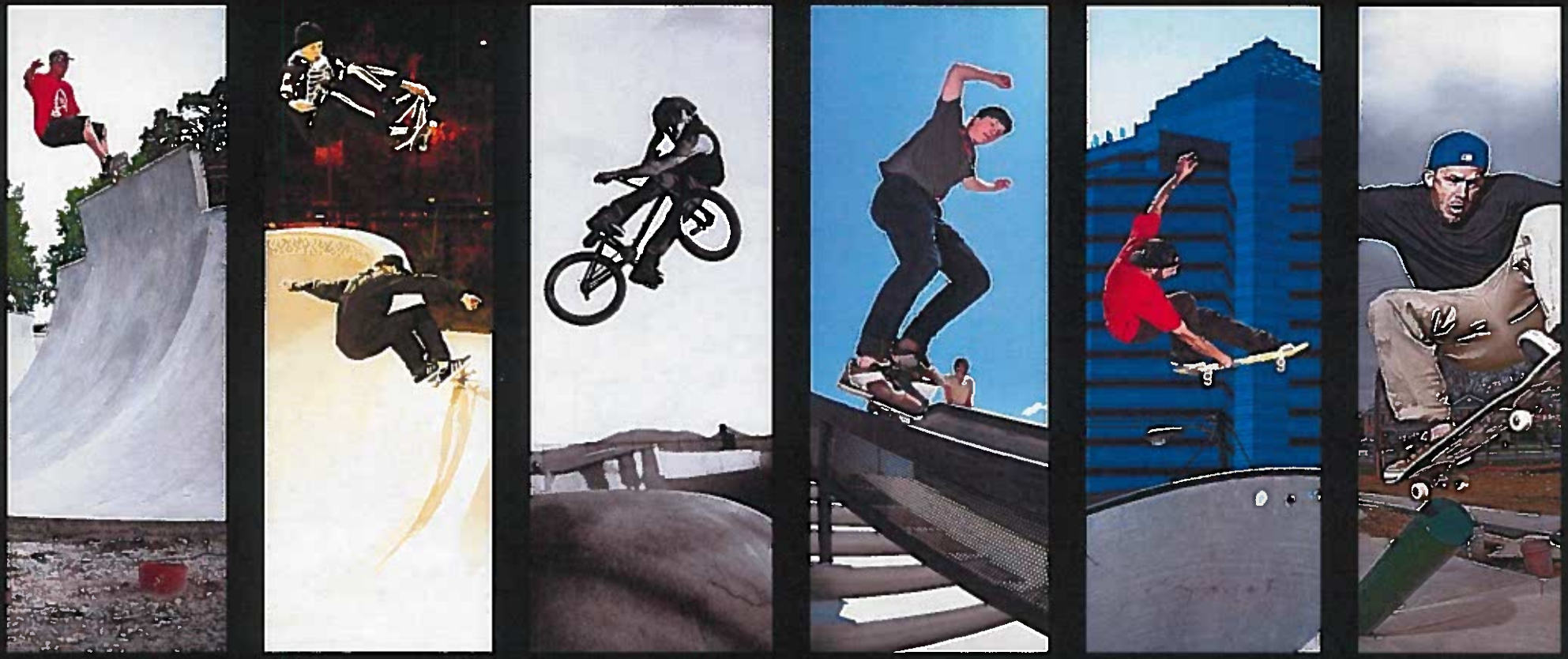
Bohn Park Final Design

April 28th, 2016

NOR

SCALE 1"=20'-0"

Skateparks Designed for your Community



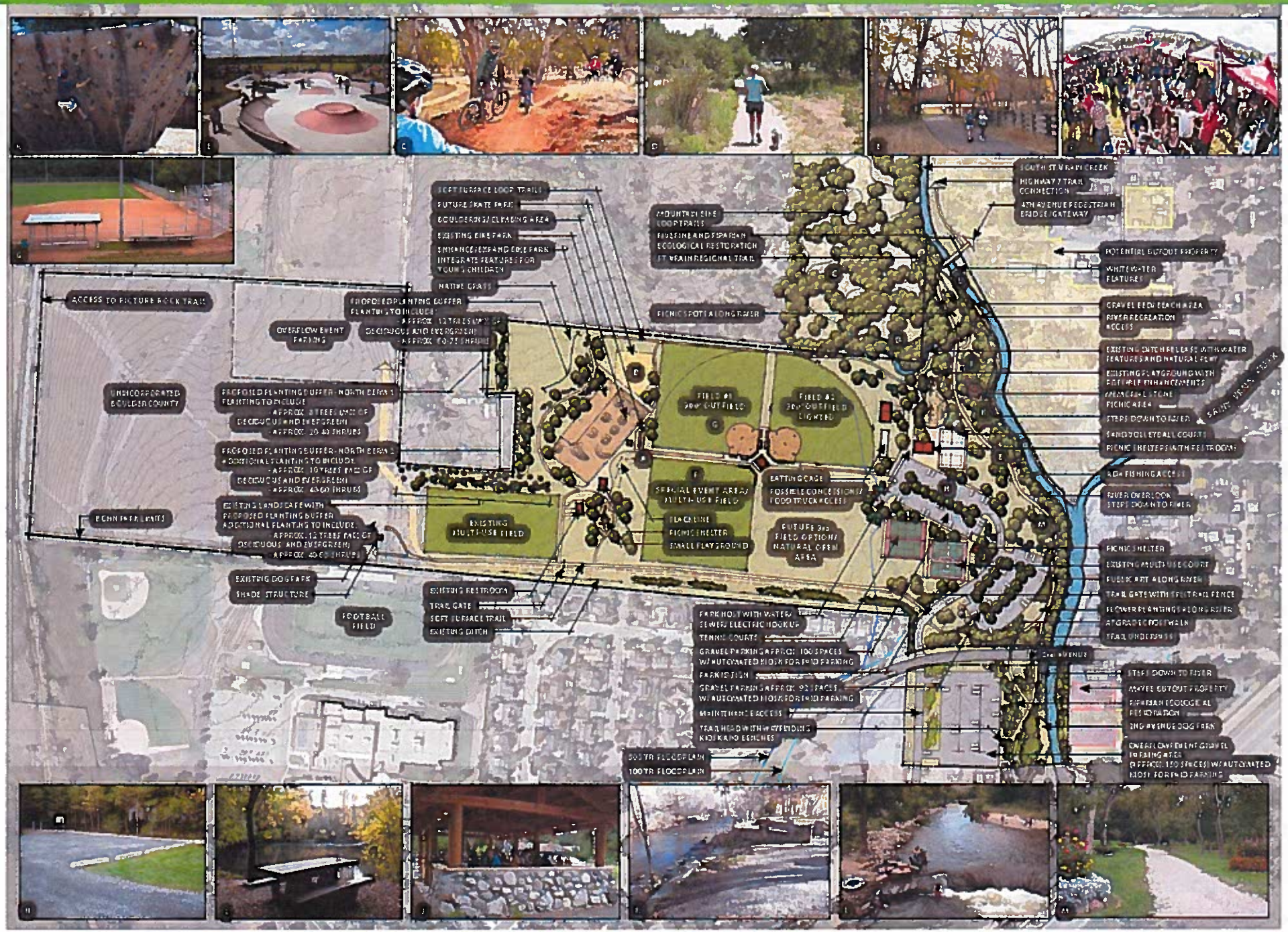
Pillar
Design Studios

TOWN OF LYONS PARKS - FLOOD RECOVERY PLANNING PROCESS

JANUARY 19th, 2016

BOHN PARK

PREFERRED ALTERNATE

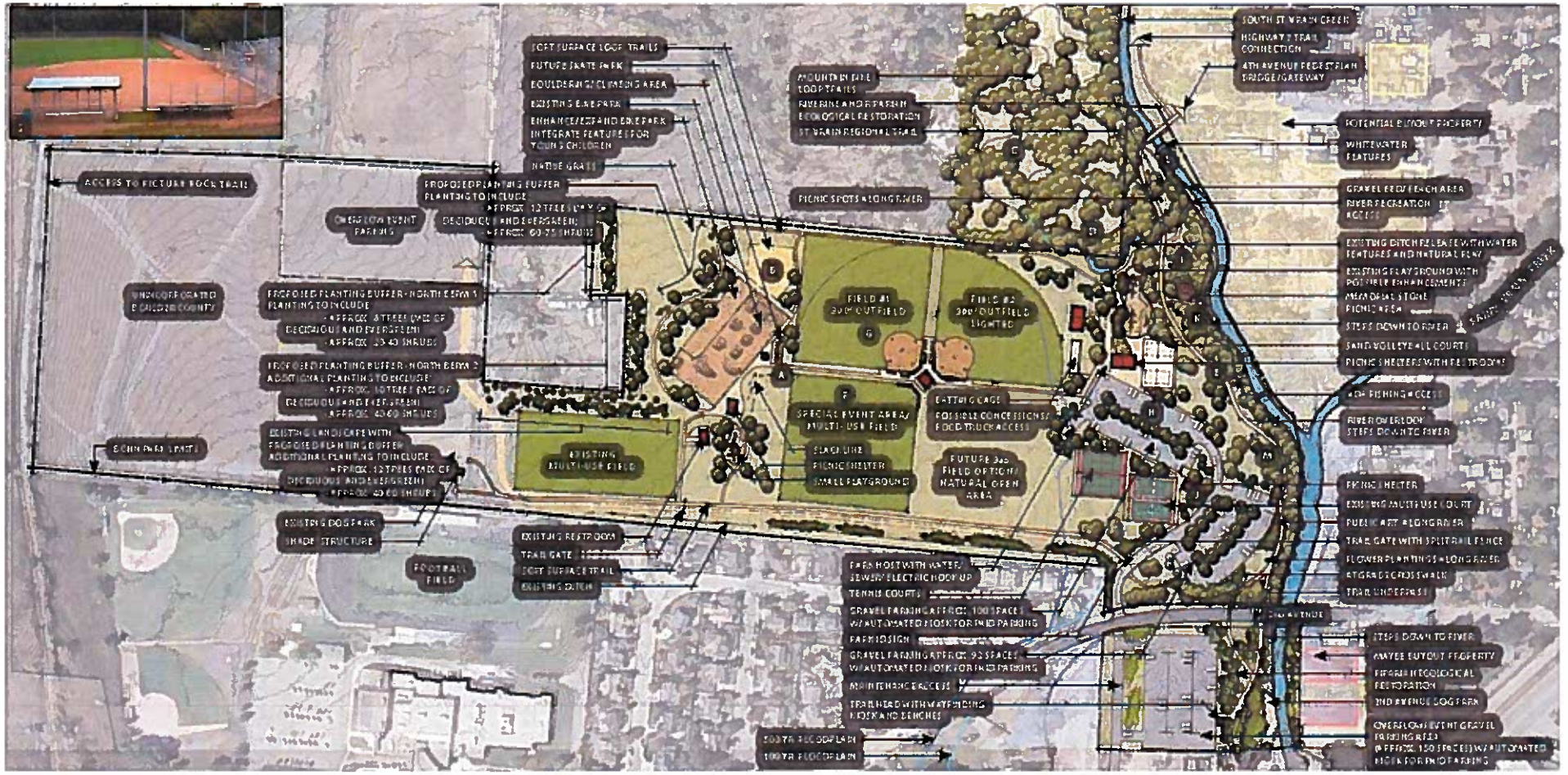


Previous Planning Efforts

- Feedback heard to date.
  - General comments - Prioritize the Skate Park
  - Skate Park high priority from the website comments
  - 13/50 comments on survey cards want a skate park

Budgets

- Balance budgets within context of full park development
- Design skate park within requirements of existing Deed restrictions



Precedent Skate Parks

NATHAN LAZARUS SKATE PARK - NEDERLAND, COLORADO
SIZE: 12,340 SF

DISCOVERY SKATE PARK - WHEAT RIDGE, COLORADO
SIZE: 12,000 SF

GUNNISON SKATE PARK - GUNNISON, COLORADO
SIZE: 14,000 SF

TRAIL WINDS SKATE PARK - THORNTON, COLORADO
SIZE: 14,000 SF

Precedent Skate Parks

Broomfield Skate park

- **General Information:** 150 Lamar St. Broomfield, CO 80020. 720 877 8285 – Aaron Stewart- astewart@broomfield.org - 303-464-5510
- **Hours of operation-** 6am- 10 pm
- **Size-** 10,000 - 20,000 sq. ft.
- **Type-** Concrete
- **Average daily attendance-** 26-50
- **Average yearly attendance-** 35,000

Precedent Skate Parks

JAYCEE SKATEPARK
General Information: 2000 Cedar Lane, Greenville, NC 27858 -**Hours of operation-** 9 a.m.- 10 p.m. Daily
Size- 10,000- 20,000 sq ft
Type- Outdoor, wooden
Average daily attendance- 26-50
Average yearly attendance- 3,000
.

Precedent Skate Parks

MARSH CREEK SKATEPARK
General Information: 3016 North New Hope Road, Raleigh, North Carolina **Size-** 10,000 - 20,000 sq. ft.
Type- Concrete
Average daily attendance- 51-100
Average yearly attendance- 5,500
Age of majority of park users- 16-20 years old

Schedules/ Timelines

- Available funds vs Community Preferences

Skatepark Project Information:

Town Website:
https://www.lyonsparksmp.com

Additional Info:
Facebook: Pillar Design Studios
Instagram: pillardesignstudios

Eastwoods Skate Plaza – Syracuse, NY

6,000 Sq.Ft.

Ocean Pines Skatepark – Ocean Pines,. MD

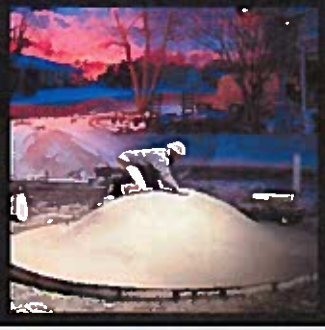
7,000 Sq.Ft.

Montague Skatpeark – Turners Falls, MA

7,200 Sq.Ft.

Roanoke Rapids Skatepark – Roanoke Rapids, NC

8,000 Sq.Ft.

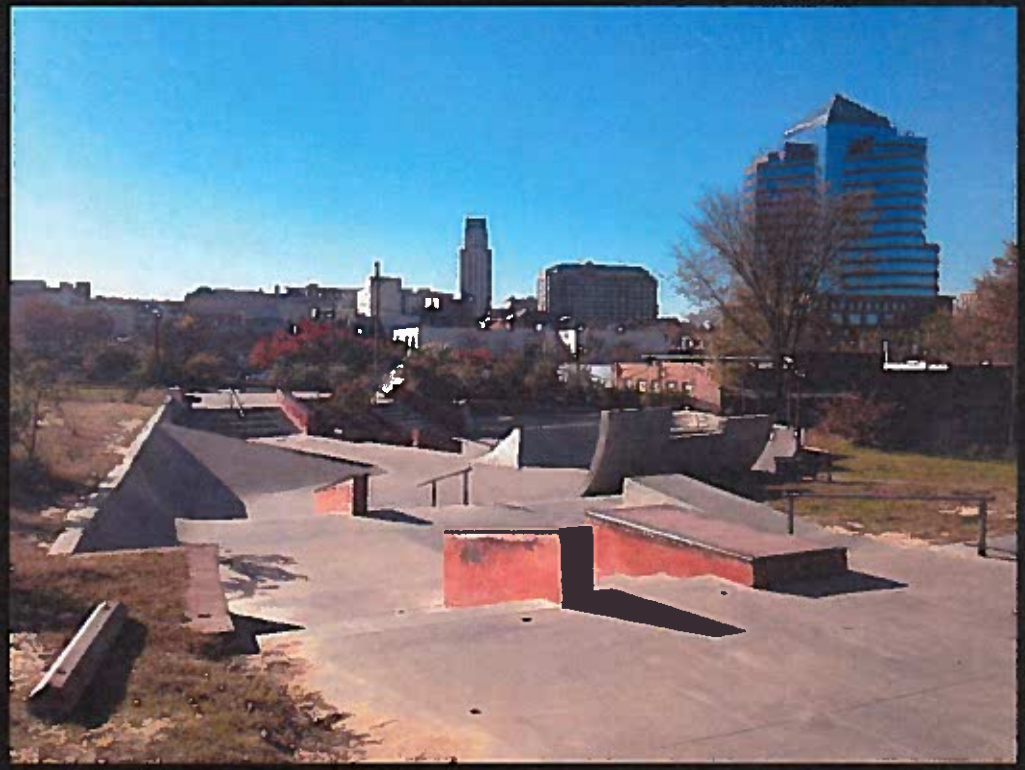


Vicksburg Skatepark – Vicksburg, MS

8,000 Sq.Ft.

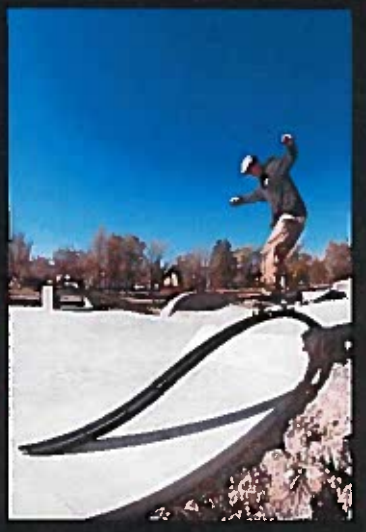
Durham Skatepark – Durham, NC

10,000 **Sq.Ft.**



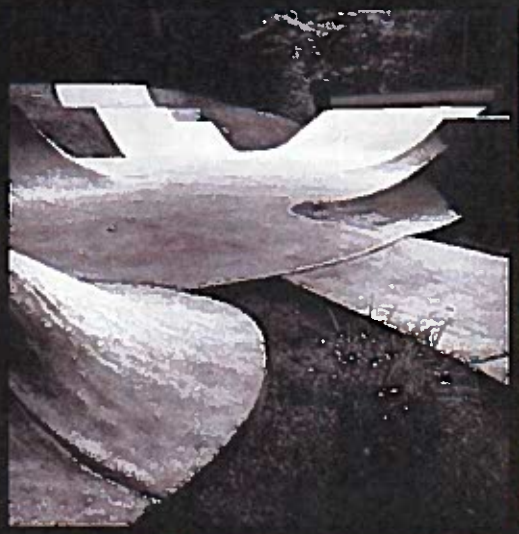
Montez Skatepark – Monte Vista, CO

12,000 Sq.Ft.



Cherokee Skatepark – Cherokee, NC

13,000 Sq.Ft.



Historic 4th Ward Skatepark – Atlanta, GA

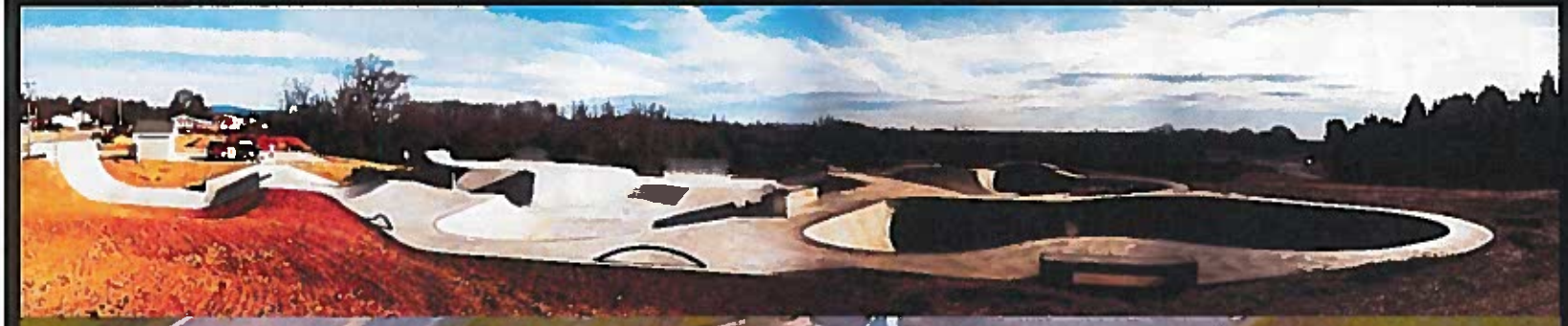
17,000 Sq.Ft.

Warren County Skatepark – Front Royal, VA

17,000 **Sq.Ft.**

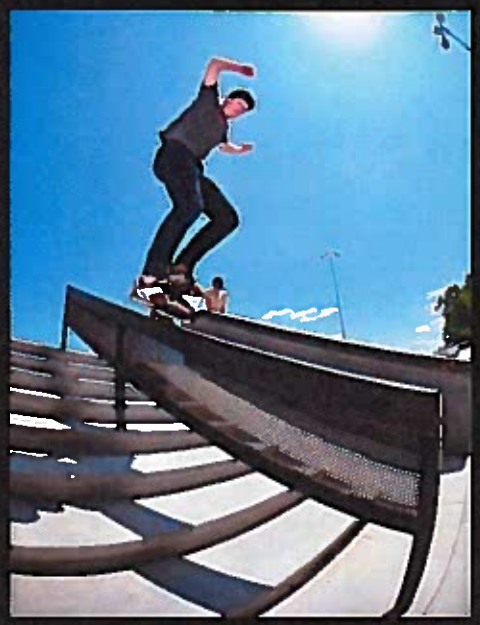
Falling Creek Skatepark – Bedford, VA

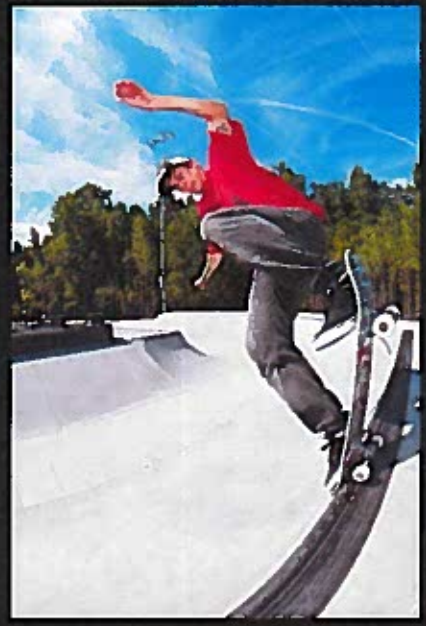
18,000 Sq.Ft.



Bay Creek Skatepark – Loganville, GA

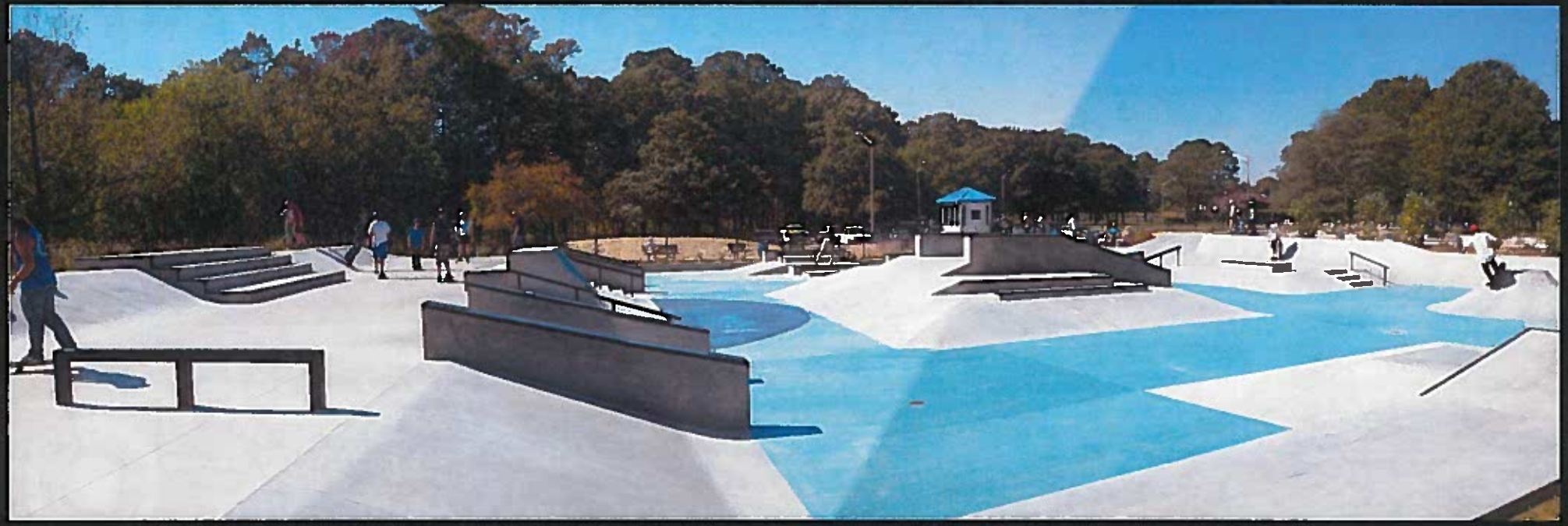
20,000 Sq.Ft.





North Side Skatepark – Norfolk, VA

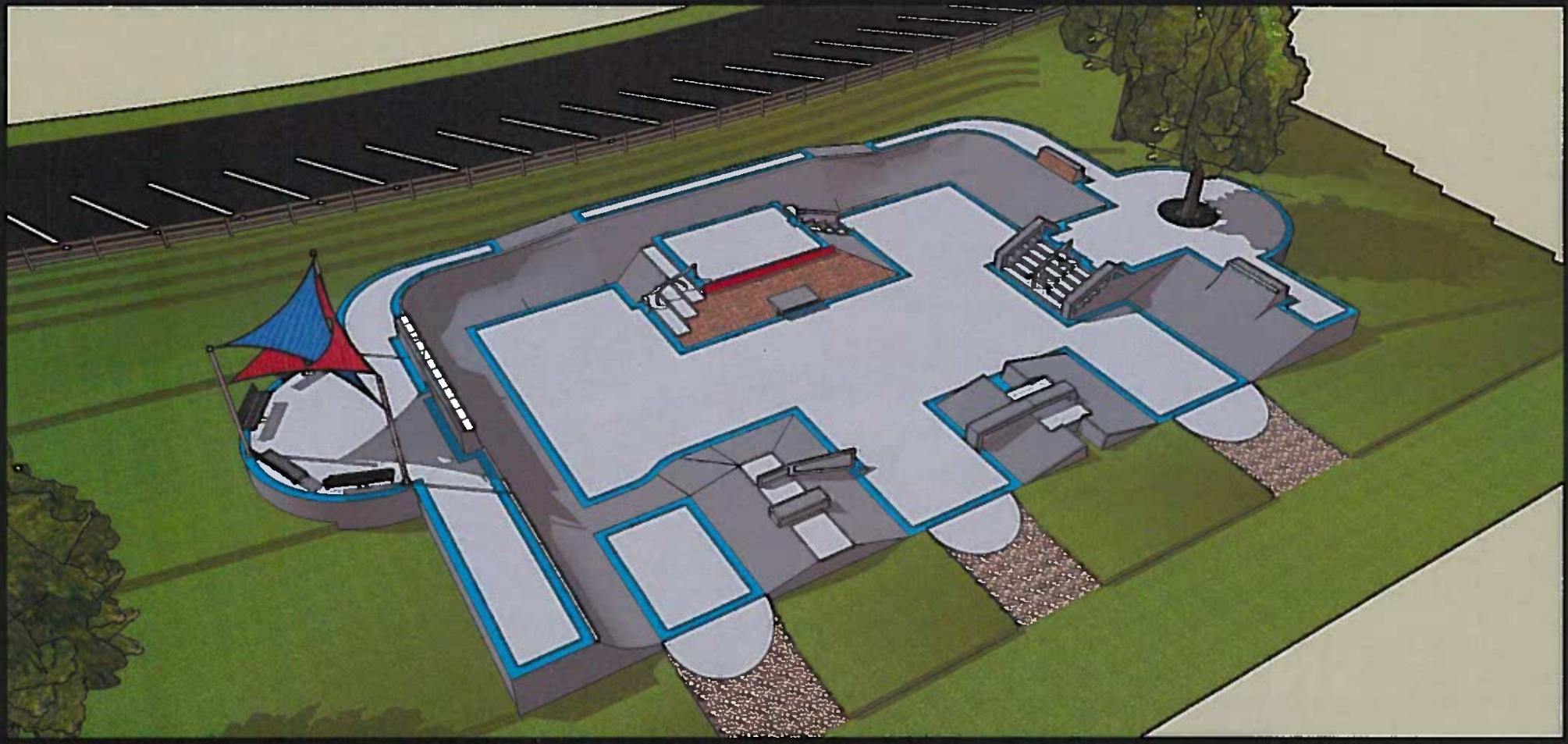
20,000 Sq.Ft.



High Valley Skate World – Stockholm, Sweden

40,000 Sq.Ft.

EXAMPLE DESIGNS



EXAMPLE DESIGNS

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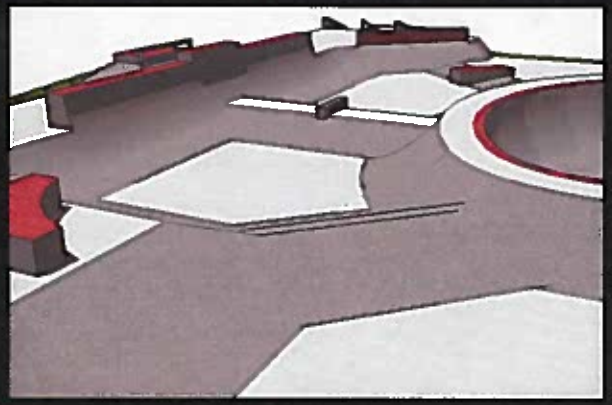
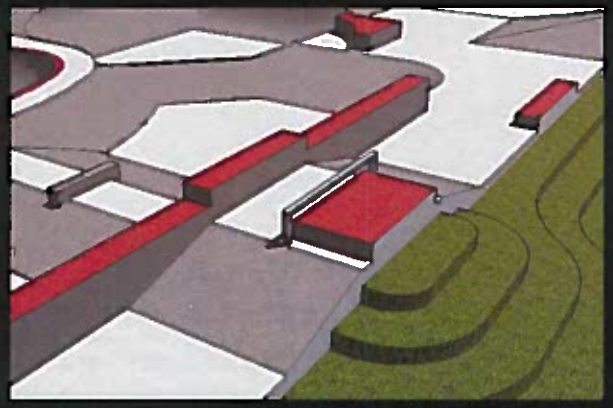
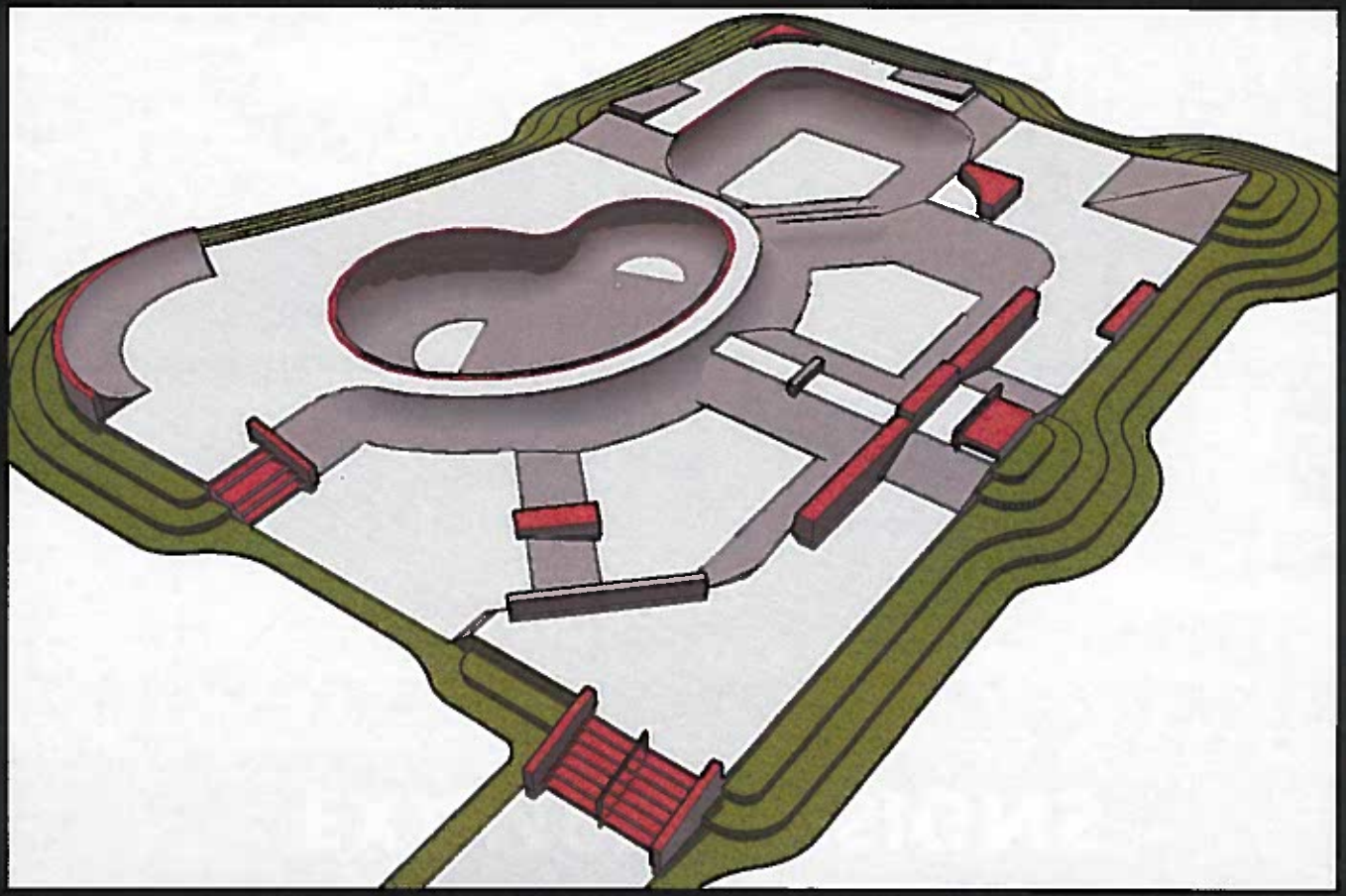
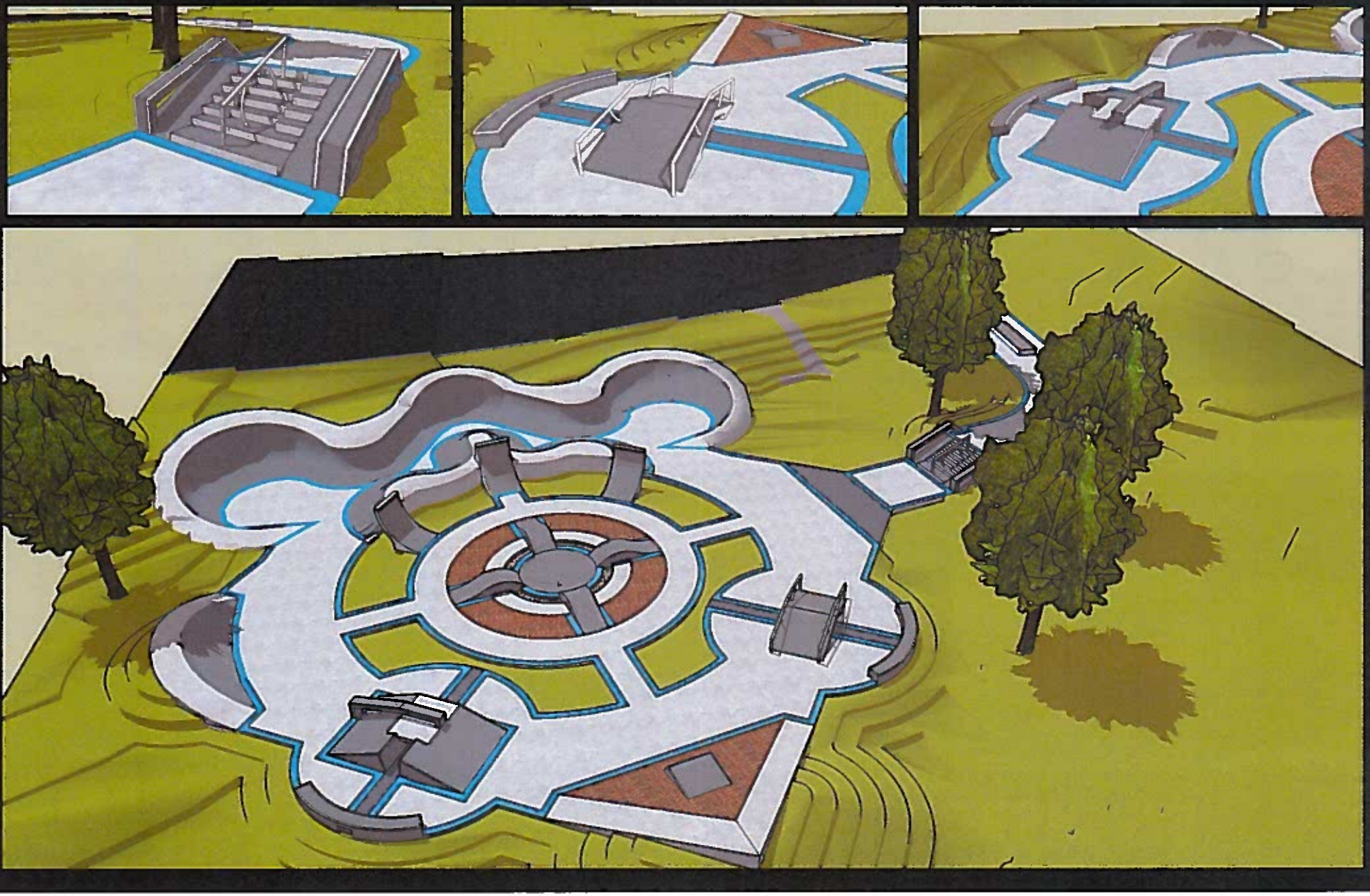






EXAMPLE DESIGNS



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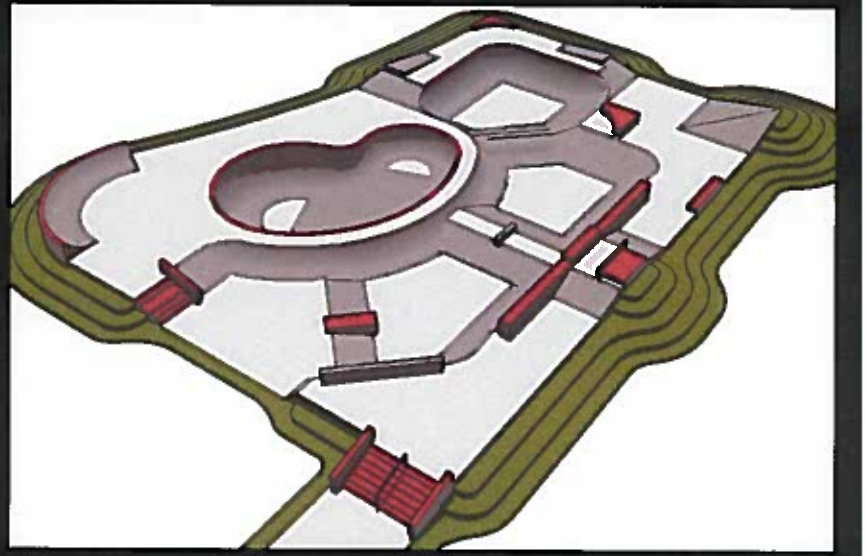

Monthly Report to the Administrator

Department: Parks, Recreation & Cultural Events Period Ending: May, 2016

Highlights of the Month:

- Meadow Park (Lavern Johnson Park) construction continues, the river restoration/bank stabilization was completed prior to spring run-off. All buildings have been completed and painted, receiving and anti-graffiti coating for maintenance purposes. Landscape installation has been completed from the new restroom area in the eastern portion of the park, around the tent and picnic sites on the south side to the ice rink area. All main line utilities have been installed to date and the lateral utilities that run to the buildings are in progress. The new park hosts have arrived and RV camping for the Memorial Day holiday weekend began. Tent camping is still closed but the RV sites have been full or close to full every weekend since opening despite construction activity. The park completion schedule has been delayed due to spring wet weather that delayed concrete pours, landscape installation and grading, along with the importance of allowing the sod and seed to establish prior to high volumes of people accessing the park. Park completion is being staged from east to west so the amenities are available for the Rocky Grass festival according to the signed contract with that event. Krische Construction will only be allowed to work in Meadow Park (Lavern Johnson Park) until July 22nd then will turn over the park for the Rocky Grass event until Aug 1st. Following the festivals due to high volumes of people and tent camping on the main lawn (potential other impacts) the sod will be heavily impacted and will need to be re-established using fertilizer and heavy amounts of watering. The park will remain closed and will be tentatively planned for a soft opening for Town of Lyons residents only on August 13th. This August 13th date is a goal date contingent on weather and other potential impacts on schedule. The park will then be closed again for Song School/Folks Fest from August 15th-21st, similar applications will have to be utilized in order to get the park restored in order to schedule a grand opening of Meadow Park (Lavern Johnson Park) which should occur around the Labor Day holiday.

  --Town of Lyons anticipated Project Schedule/Milestones:

  May 25, 2016-Park Open for RV Camping
  July 22-July 30, 2016-Town of Lyons Lease with Planet Bluegrass for RockyGrass Festival
  Aug. 1-Park available for pull in tent camping (possibly all tent camping)
  August 13-Grand Opening for Lyons Community
  August 15-21-FolksFest
  Sept. 1-General Public Park Opening

  Staging of Project to Meet Scheduling Objectives/Strategy:

  -Riparian Restoration Plan to Meet Spring Run-Off Demands
  -Completion of Work/Landscape to complete requirements of adjacent landowner agreements
  -Staging of work to ensure use of areas needed for opening of camping and festival season. i.e. completion of front entrance improvements, parking lot/access roads and turnaround, north trail from front entrance, clean up and repair of east parking lot and tent sites, water line construction coming out of park, east core completion including all tent/picnic sites and landscaping, river corridor work/restoration from structure 1 thru 4 including trails and all plant materials.

- The 2016 Lyons Bohn Park Final Design and Bid Project continues with good progress. Staff and consultants have been meeting weekly on Thursdays since the start of April. A second public meeting to discuss skate park design concepts will be held on Tuesday, June 21 at Town Hall from 6-7:30 pm. Concepts will be presented and discussed based on public input to date. Weekly updates as requested by the Board of Trustees regarding the meetings and design process are posted on www.lyonsparksmp.com-the still active project website. Notices being sent out to public on process and meetings. The 50% design submittals are due June 10th and there will be a presentation to the Parks and Recreation Commission on June 13th at their regularly scheduled meeting and a presentation to the Board of Trustees per project scope on a date yet to be determined in the near future. Presentation of project plans to date have also been made to the Lyons Watershed board for comment. That project will continue to meet weekly to stay on schedule for specifications and drawings to be completed in July/August.
- Sandstone Park recently had some upgrades. The stone walkway was extended from the stone bridge near the fountain out to Railroad Ave. and the Raul Vasquez Community Stage was upgraded and faced with stone. Thank you to Raul Vasquez and Blue Mountain Stone for their contributions. Staff is planning a re-dedication and thank you ceremony on Thursday, June 23 prior to the Sandstone Summer Concert.
- Town staff has sent an email to the Carrolls requesting to meet with them upon their return from vacation on June 20th to discuss completion of the Bohn Park Berms. Staff is making arrangements for some donated materials needed to complete the project.
- Parks staff has completed a summer recreation brochure. It has several program offerings for youth, adults and Lyons senior population. It is posted on the Town website at http://www.townoflyons.com/DocumentCenter/View/598 or copies can be picked up in the Parks and Recreation office.
- Eagle monitoring services agreement with Ecosystem Services was approved by the Board at the May 2, 2016 meeting. They will begin the monitoring and reporting June 1st for the USFWS permit. Ecos Systems has completed the eagle monitoring for January-May. The monitoring beginning in June and ending in 2020, according to the permit issued by USFWS, will be conducted and submitted to the town under the contract signed for this scope of work between the town and Ecos Systems. It has been documented that the eagles successfully had three eaglets this season and have been observed and photographed as healthy and doing well despite construction activity throughout Lyons.
- Parks staff has received some questions about standing water in Bohn Park near the multi-purpose field and concerns that it may be linked to our irrigation. A couple of items to note-the multi-purpose field irrigation is operated by the St. Vrain Valley School District in cooperation with the Town. Yearly there is standing water that seeps up through the ground in areas of Bohn Park as the water table rises, typically during the same period as the Meadow and South Ledge Ditches are flowing along the eastern and western edges of the southern portions of Bohn Park.
- Sandstone Park irrigation is currently temporarily functional after being reconnected due to Meadow Park Phase II construction impacts to the main line that controls irrigation to Sandstone Park. Staff is working with FEMA to see if permanent upgrades to the mainline may be eligible for funding to ensure the system is compatible and remains functional in the future.

Recreation Update:

To date the Recreation programs that have been able to run are:

1. Senior Fitness Class
2. Senior Computer Skills Class
3. Senior Trips—Arvada Center trip was attended by 9 people, the Rockies trip scheduled for June 29th is completely full with a wait list
4. American Red Cross Babysitting Classes
5. Monthly Senior Birthday Celebrations
6. Senior Book Club
7. Yoga for Teens
8. Pickleball
9. Senior Bird walks with Davis

Programs that have **NOT** been able to run due to lack of participation are:

1. Bicycle Maintenance class
2. Tennis Lessons for kids
3. Recreational team sports for kids
4. JumpBunch Preschool Age Camp
5. Summer running club for kids
6. Recreational Adult Ultimate Frisbee

Board and/or Commission Items:

- PRC Meeting-June 13, 2016 @ 6pm Lyons Depot Building
  Agenda:
  1) DHM and S2O-Bohn Park Plan Presentation-50% stage, PRC comment and recommendation to BOT
  2) Approval of May Minutes
  3) Meadow Park Phase II Update
  4) LOG Recap
  5) Good Old Days/River Run 5K
  6) Dog Access at Heil Valley Ranch Trailhead
  7) 2017 Budget
  8)Next meeting date
- The Lyons Watershed Board met and was given a presentation of the Bohn Park plan, specifically in regard to river design to this stage, in order to provide feedback and input. Those comments should be forthcoming.

Employee Issues / Highlights:

- Meadow Park Hosts, Dave and Diane Marquardt, have arrived and started work.
- Logan Watson has started as the Parks Maintenance Seasonal Employee

Safety Requirements Completed:

- Required CIRSA paperwork-monthly vehicle, equipment, facility and park inspections, etc.

Upcoming Events to Communicate to Public / Board / Staff:

See the attached monthly newsletter for upcoming Parks and Recreation events and programs.

Check out http://www.lyonscolorado.com/events/lyons-good-old-days for information regarding the Annual Lyons Good Old Days on June 25, 2016.

Check out http://www.lyonscolorado.com/do/lyons-river-run-5k for information regarding the Lyons River Run 5K on June 25, 2016.

5. 30% Schematic Design Report

TOWN OF LYONS

2016 LYONS BOHN PARK FLOOD RECOVERY
FINAL DESIGN AND BID PROJECT
Project Number: PW20E
Schematic Design Submittal – May 13, 2016

LYONS COLORADO

DHM DESIGN

S2O

TABLE OF CONTENTS

Design Narratives

Site Programming Design Narrative	6 pages
Site Cut Sheets	16 pages
Preliminary Instream River Restoration Narrative	10 pages
Preliminary Irrigation Well Report	4 pages
Preliminary BOD data for Revegetation Plans	31 pages
Preliminary Electrical Systems	8 pages
Preliminary Drainage and Utility Design	42 pages
Preliminary Architecture Design Report	17 pages

Schematic Design Sheets

Preliminary Site Grading

Preliminary Site Layout

Preliminary Instream Features

900 South Broadway, Suite 300 Denver, Colorado 80209 P: 303.892.5566 f: 303.892.4984

Design Narrative submittal – May 13, 2016

Site Program

Proposed Site Program

Bohn Park is intended to be a premier park facility within the Town of Lyons. This narrative is intended to provide an outline of descriptive work, programming and guidelines for the site program that will be utilized in developing final designs for the project. This outline will facilitate the development of designs and the development of preliminary pricing estimates for the site work and building. The facility will serve as a host venue for significant Town events in addition to serving Town of Lyons sports leagues. It is anticipated that this facility will also be used for various special events throughout the year and by the general public for picnicking, playgrounds, and other unprogrammed activities.

Conceptual program elements to be provided at the park include the following:

- Gravel parking for 200 vehicles in Bohn Park
- 2nd Avenue Trailhead Parking for 150 spaces
- Network of Trails/ St Vrain Trail
- network of pedestrian paths and walkways
- 2 softball/baseball fields (one lighted)
- Skate park (approx. 8,000 to 12,000 SF pending budget)
- Skateable spots/ plaza
- batting cage/ tunnel
- 3 post tension sport courts
- Flood memorial/ picnic area
- ADA Fishing Area
- Well/ Pump for Irrigation (see irrigation design narrative)
- Park Host Site
- Ecological Restoration (see ECOS design narrative)
- Stream Improvements (see S2O design narrative)
- 4th Avenue Pedestrian Bridge (see structural design narrative)
- Small playground
- Large Playground
- Bike Park addition
- Bouldering/ Climbing Area
- Landscape
- Site and Building electrical work (see AEDG's design narrative)
- 1 restroom buildings (approx. 1,000 sq.ft.) (see BRS design narrative)
- 1 maintenance building (approx. 900 sq.ft.) with maintenance/storage area (see BRS design narrative)
- 3 shade structures – prefabricated with semi-custom stone wraps (see BRS design narrative)
- 1 custom shade/ picnic structure (approx.. 1,000 sf) (see BRS design narrative)

900 South Broadway, Suite 300 Denver, Colorado 80209 P: 303.892.5566 f: 303.892.4984

1. **Parking:** Gravel parking for approximate 200 spaces will be provided in the park site and will meet the following requirements as noted in the Parks Design Standards book. Parking will include an automated parking kiosk for parking permits.
    - If parking area is a gravel surface, 6" x 6" x 8' Brown pressure timbers labelled/designated for "ground contact" and treated with inorganic chemicals should be used as space dividers
    - Parking stops shall be concrete
    - There should be a minimum 2% fall across all parking and drives, except for ADA access routes
    - If area is to be gravel, it should be a class 6 gravel road base, 6" deep.
    - It is recommended to confer with the site specific geotechnical report for recommended paving material options.
    - No grass and limited irrigation on any islands in parking lots
    - Parking islands should contain plantings that cover 50% area within three years of installation and mulch as necessary
    - Parking areas with no curbing should have flat pour parking blocks.
    - Parking areas will be enclosed by locally available sandstone boulders (2'x3'x3') placed approximately 8' o.c.
2. **2nd Avenue Trailhead, Access and Roads:** Access to Bohn Park will come off of 2nd Avenue directly opposite the proposed access for the new WWTP. The access point will be developed per towns requirements for access. The Bohn Park sign will need to be relocated to the north side of the entry drive. New stone material and a complete new sign will most likely need to be provided. It may prove too difficult to salvage the existing sign at time of construction. The 2nd Avenue Trailhead will consist of gravel parking to accommodate approximately 150 spaces with an automated parking kiosk for parking permits. The roadway will follow the requirements as set forth in the Parks Design Standards book as follows.
    - If parking area is a gravel surface, 6" x 6" x 8' Brown pressure timbers labelled/designated for "ground contact" and treated with inorganic chemicals should be used as space dividers
    - Parking stops shall be concrete
    - There should be a minimum 2% fall across all parking and drives, except for ADA access routes
    - If area is to be gravel, it should be a class 6 gravel road base, 6" deep.
    - It is recommended to confer with the site specific geotechnical report for recommended paving material options.
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    - Parking areas with no curbing should have flat pour parking blocks.
    - Parking areas will be enclosed by locally available sandstone boulders (2'x3'x3') placed approximately 8' o.c.
3. **Walks/ Trails:** Walks and Trails will follow the Park Design Standards Book and include the following.

Walks

- Any walks that are to be plowed in the winter must be a minimum of eight feet (8') wide
- If concrete is desired, all walks that will see vehicular traffic should be a minimum of five inches (5") thick with fibermesh. Concrete walks are designed to connect the parking area to the skatepark to form a skateable pavement.

Trails

- Any trails that are to be plowed in the winter must be a minimum of eight feet (8') wide
- All trails should be gray or red crusher fines, crushed stone or equal alternative.
- Trails should not utilize a metal landscape edger for maintenance and safety concerns

2 Track Trail along eastern boundary

- This trail is designed to accommodate pedestrian and overflow vehicular use including emergency access to the skatepark, overflow parking and food truck access to the foodtruck alley between the multi-use field and open space area. The 2 track trail will follow the material requirements of a gravel roadway/ parking area.

Food Truck Alley

- This trail is designed to accommodate pedestrian and vehicular use including emergency access and food truck access between the multi-use field and open space area. The trail will follow the material requirements of a gravel roadway/ parking area.
- Electrical hookups will be provided along the alley to accommodate 5 hookups.

4. **Baseball Fields:**
    a. **Areas Between Fields:** Thirty feet buffer zones from the edge of the field (sidelines) is recommended from any hard surfaces. The most likely surface is a continuation of the native grasses. How should the 'corridors' between the fields be treated? Large causeways with native grasses and trees? Concerns with wearing of native grasses if this area is used as warm up area.
    b. **Baseball Infield:** We are showing 60' baselines with homeplate 25' from center of backstop per the TOL Park Design Standards book. The infield grade is not to exceed 1%. Pitching distance is 46' the infield arc will be 50' and the outfield distance is 300'.
    c. **Baseball Fencing:** The backstop will by 40' long by 20' high per the Parks Design Standards book. All sides of the ballfields will be enclosed by 8' ht. chainlink fencing with fence padding. Color to be determined by Town. The southernmost field will have a removable fence section in the outfield. No Foul Poles will be installed per the Parks Design Standards Book.
    d. **Dugout:** Dugouts will be located on each ballfield. Dugouts will consist of 8' ht chainlink fencing, standing seam metal roof, and a players bench. Dugouts will be located on a concrete pad. Dugouts to be Sportsfield Specialties or approved equal. See attached cutsheet.
    e. **Bleachers:** Bleachers will be provided for each ballfield and will accommodate up to 200 people per field. Bleachers will be located on a concrete pad. Bleachers to be PW Athletics 3-row standard bleachers with 8" rise or approved equal. See attached cut sheet.
    f. **Ballfield Lighting:** The northern most field will have Musco field lighting or another approved equal per the deed restrictions for lighting requirements. See attached cut sheet.

g. **Scoreboard:** a digital scoreboard will be provided on the lighted ballfield to the north. Type and size to be determined.
h. **Baseball Outfield:** We have established a 1% grade in the outfields with varying drainage patterns to accommodate existing topography. Will water quality features be required to capture stormwater coming off the fields? We are anticipating upwards of 5' of fill in some areas to accommodate the 1% slope requirement as indicated in the Parks Design Standards Book. Outfield sod will be a hybrid, drought tolerant locally available Texas/ Kentucky bluegrass blend such as reveille or bandera.

5. **Skatepark:** The skatepark will incorporate comments from the public meeting in development of designs for a drop-in/ bowl cast-in-place concrete skate park. Size is limited by anticipated budget to approximately 8,000 SF. Options will look at incoroporating entire budget and features within area designated for a skatepark adjacent to the bike park and a second option of reducing the size of this skate park and incorporating a skateable spot adjacent to the large playground area next to the restroom facilities with a skateable connection between the bowl and the skateable multi-purpose plaza. Budgets are set at $300,000 for all skateable features. Drainage options are under review for the skateable bowl and how to best drain a feature like this. Options will look at raising the bowl above grade to allow for drainage within the site, piping drainage, and creating a low waterquality basin/ pond to accept drainage. We are not recommending a mechanical pump system or a dry well be incorporated into the drainage design.
6. **Batting Cage:** A concrete pad for a batting cage/ tunnel will be provided and located behind the outfield of the northern most field. The batting cage/ tunnel will incorporate a cantilever style batting tunnel as supplied by Sportsfield Specialties or approved equal. Framing to have 4" od aluminum tubing and a 14' wide x 75' long x 13' high batting tunnel net. Net to be black #36 nylon 1-3/4" square mesh net with entrance/ exit and block pulley system. Electric service to be provided for automated pitching machine. Town of Lyons to provide automated pitching machine. See attached cut sheet from Sportsfield Specialties.
7. **Sports Courts:** 3 new sports courts are designed around the existing sport court and will follow the Parks Design Standards Book.

Tennis

- Post Tension concrete court
- Fencing to be 10' high, if coated fabric is to be used, it should have a 9 gauge core
- All entrances to conform to ADA guidelines
- Service entrance to be easily accessible with 12' wide double swing gates and allowing unlimited height
- Court surface to be color coated with "medium" green on "light" green surface with white court dimension lines
- If lit, timers are recommended and should be coordinated to avoid conflicts with neighbors. All wiring under court surface must be sleeved in conduits
- Court shall be elevated to allow for drainage
- The perimeter of the court shall have a 6" concrete border mow strip outside the fence line
- Equipment selection:

Basketball

- Poles - Gared Sports brand constructed of 4 1/2" O.D. galvanized gooseneck post (model GN45)
- Goals - Gared Sports brand constructed with bumped ring to accept sc n fabric net (Titan model 7550)
- Backboards - Gared Sports brand aluminum construction (model 1750B)

Tennis

- Tennis nets and posts with detachable net adjusting handles to be Edwards brand.

8. **Flood memorial/ picnic area:** The flood memorial/ large picnic area along the river will consist of three picnic tables set within a crusher fines plaza area, flagstone paving area with a large central BBQ grill set within a stone base, and low stone seat wall that surrounds the flagstone plaza. Stone to be locally available Lyons Red Flagstone and available rounded river cobble. BBQ grill to be 28" x 36" Large Group Grill with utility shelf set in stone base and surround.
9. **Large Playground:** manufacturer to be determined based on input from town and outreach to middle school
10. **Small Playground:** manufacturer to be determined based on input from town and outreach to middle school
11. **Climbing Area:** The design team is working with IDS Sculpture to develop concepts for the climbing boulder feature that will be reviewed with the town.
12. **Bike Park:** The design team is working with the local bike shop Redstone Cyclery to develop concepts for the bike park that will be reviewed with the town. The town has also mentioned contacting Lee McCormick to gage his interest in assisting with the design.
13. **Drainage:** Drainage for Bohn Park will be primarily conveyed through a surface system of grassed swales and water quality ponds. The sandy nature of the site soils lends itself to infiltration of storm water, which will occur in the swales or in shallow, grassed expanses. Pipes or culverts may be used to convey water under park roadways or around park features that are not conducive to swales for functional or safety reasons. The majority of on-site flows will be directed to the low open space area within the park. Small storms will be dispersed into a series of small basins and allowed to infiltrate, while larger events will overtop the smaller basins and be directed to the St Vrain. See ICON's design narrative for more detail.
14. **Site Furnishings: Site furnishings to match furnishings as provided within Meadow Park as follows:**
    - Park Grills: Pilot Rock Model A-20/S B2 Premier Park Grill, Embedded. Color: Black. Supplier: Pilot Rock 1-800-762-5002.
    - Picnic Tables: Colorado Precast Concrete (6) PT72C 6'-0" Table Plank Top w/Davis Coloring and (2)) PT96H 8'-0" ADA Table Plank Top w/Davis Coloring. Color: Davis Coloring: Baja Red" (2.0 lbs./160) and a smooth finish. Supplier: Colorado Precast Concrete, 1(970)669-0535.
    - Trench grate: Iron Age 4" grate Locust, cast iron, natural finish
    - Trash Receptacle: Pilot Rock Model PRB3. Color: Black. Supplier: Pilot Rock 1-800-762- 5002. Provide 72x32" x 4" thick concrete base and hard wear for surface mounting.
    - Hot Coal Bin: Pilot Rock Model HCB/B-1. Color: Black. Supplier: Pilot Rock 1-800-762-5002. Provide 26" square 4" thick concrete base and hard wear for surface mounting
    - Parking Kiosk: Model CWT. Supplier: Cale U.S.A, 1-877-620-2253

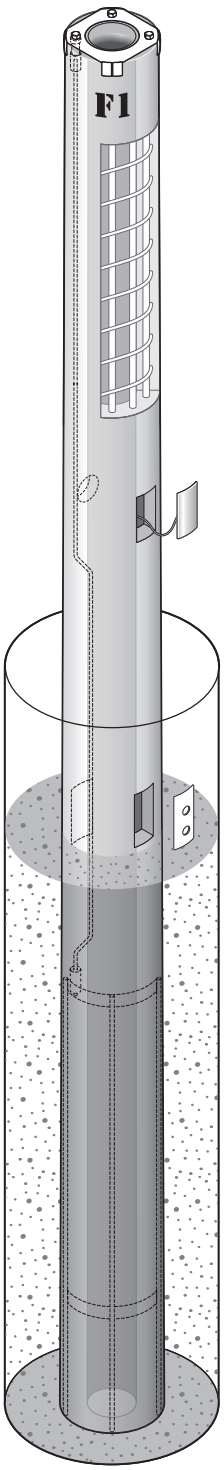
- Pedestal Drinking Fountain: Model 440 SM: Color green. Supplier: Most Dependable Fountains 1.800.552.6331

15. Landscape:

a. Riparian Landscape Areas: Is irrigation for the riparian/ native landscaped areas needed? And if so is it permanent and come off the proposed well system?

b. **General Landscape:** The park landscape will consist of a series of landscape types that will establish recognizable patterns throughout the site. These patterns will support and enhance proposed park uses by providing structure to the park plan. Groves and groupings of trees will be used in public areas to provide shade, define significant pedestrian routes, and establish a park-like atmosphere in more passive use areas of the site. Irrigated bluegrass turf will be used in the ballfields and central open space/multi-use field within the center of the park and around the sports fields. Wetland and riparian plants will be used in conjunction with the site drainage system and around the St Vrain to manage access to the water. Native grasses will be used at the outer reaches of the site and in low traffic areas to minimize maintenance and water requirements.

Precast Concrete Base



Overview

The precast concrete base is set directly into the ground and backfilled with concrete. The base includes an integrated lightning ground system.

Features

Base

- Set pole on base in 24 hours
- Tapered upper section for slip-fit steel pole
- Access holes for wire entry
- Epoxy coated ends prevent water intrusion
- Lifting hole accepts load-rated steel rod provided by Musco

Integrated Lightning Ground System

- Complies with NFPA 780 and UL 96A standards when installed per Musco installation instructions
- UL Listed, Class II Lightning Protection, file number E337467
- Tested up to 100 kA by independent laboratory
- Steel pole interfaces with integrated grounding system by means of the pole grounding connector
- 2/0 AWG grounding electrode conductor
- Concrete-encased grounding electrode, 20 feet (6.1 m) total length, ½ inch (12.7 mm) diameter

Technical Specifications

Base dimensions vary. For measurements refer to project specific foundation and pole assembly drawing.

Construction

- Spun concrete construction
- Prestressed vertical strands and steel coil spiral for radial reinforcement throughout base
- Minimum design strength is 9500 lb/in² (65.5 MPa) at 28 days

Quality Assurance Tests

- 28-day compressive strength
- Bending moment capacity
- Grounding system continuity

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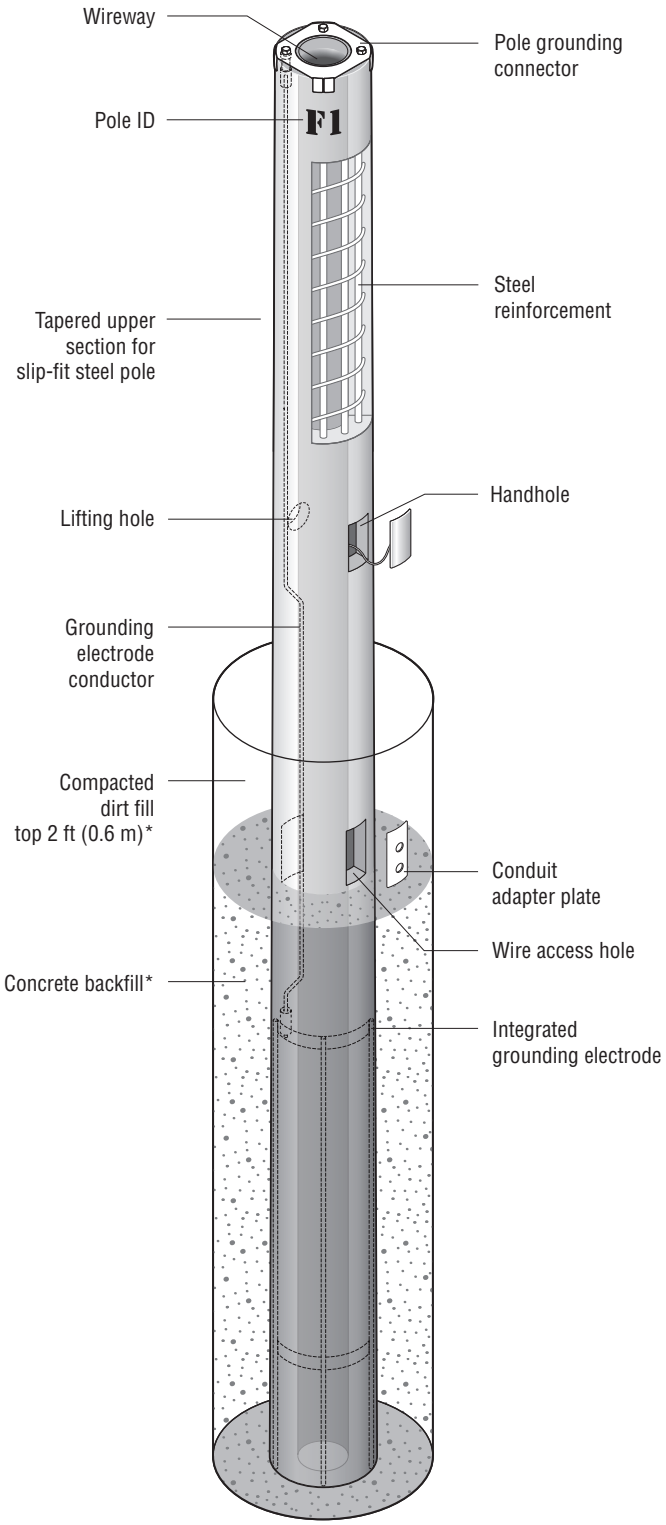
Precast Concrete Base



*Standard pier foundation shown. Foundation and/or backfill may vary per alternate foundation design.

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Galvanized Steel Pole

Overview

The galvanized steel pole is designed to slip-fit together with the precast concrete base and the poletop luminaire assembly.

Features

- Slip-fit connection allows pole assembly with come-alongs
- Built-in hardware for attaching electrical components enclosure
- Wire access from inside the pole (no exposed wiring or conduit)
- Shipped in sections for easier handling
- Labeled with pole identification for location on field

Technical Specifications

Pole dimensions vary. For measurements refer to project specific pole configuration drawing.

Construction

- Pole designs comply with all major building codes
- High strength, low alloy, tapered, round steel pole
- Hot-dip galvanized inside and outside after fabrication to ASTM-A123 standards
- Built to AASHTO stress standards
- Grounding lug
- Pole shipped in sections
- Stainless steel fasteners passivated and coated
- Material certifications are available

Quality Assurance Tests (periodic sampling)

- Bending stress
- Minimum galvanizing thickness
- Straightness measurement

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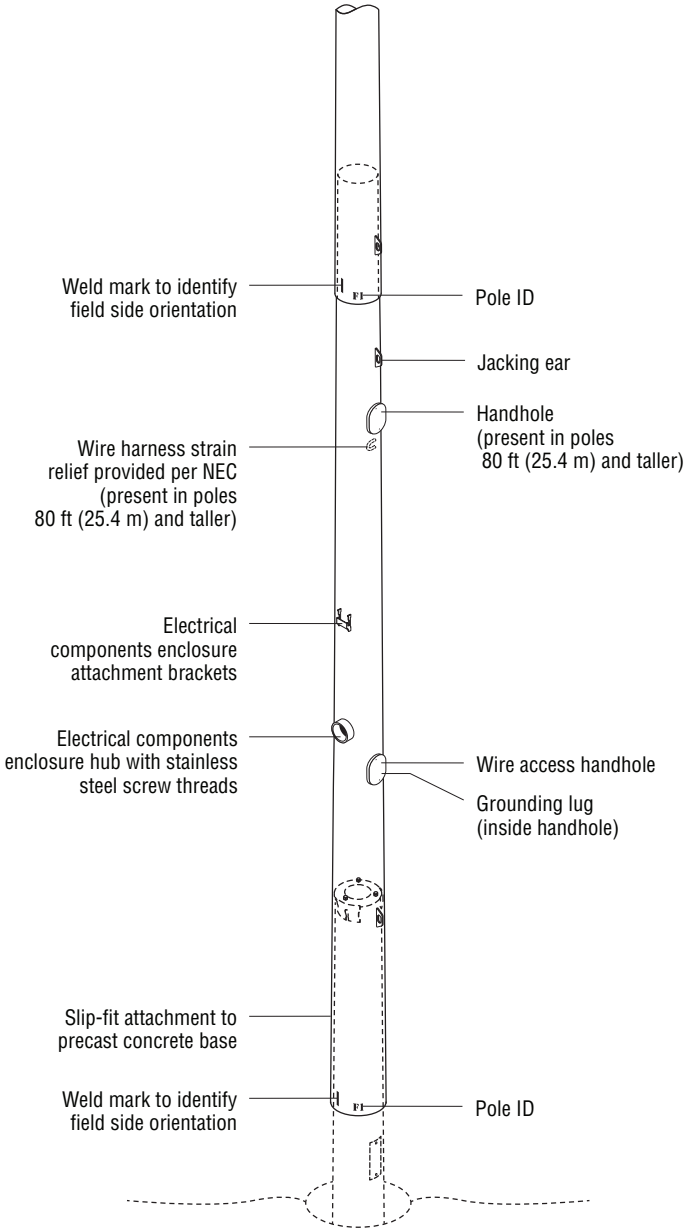
Galvanized Steel Pole



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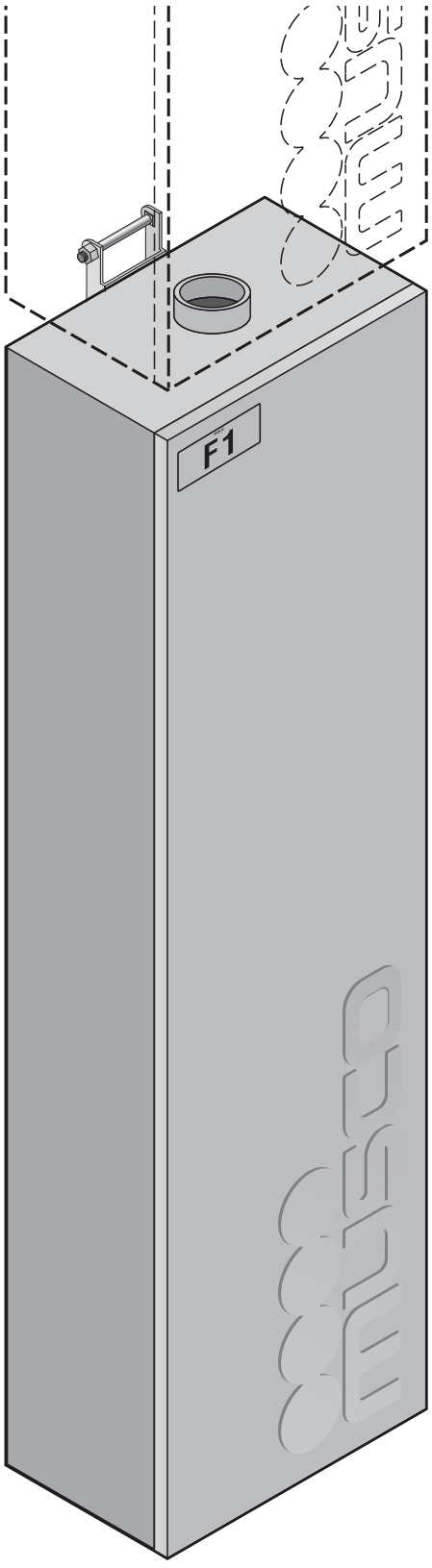
Electrical Components Enclosure



Overview

The electrical components enclosure contains all necessary equipment to operate luminaires. Built-in mounting hardware allows for easy attachment to the galvanized steel pole. Quick-connect plugs fasten to the wire harness.

Features

- Factory-built and tested as a unit
- Quick connect plug for easy field wiring
- Mounted 10 feet (3 m) above grade for servicing with ladder
- Labeled with pole identification and electrical information
- Luminaires individually fused and spare fuses supplied
- Wire access from inside the pole (no exposed wiring or conduit)
- Color coded wires and terminal blocks for phase wire distribution
- Disconnect per circuit
- Smart Lamp® control unit provides timed power adjustments

Technical Specifications

For amperage draws and circuitry refer to project-specific document.

Construction

- 0.08 inch (2 mm) thick, powder-coated aluminum
- NEMA type 3R (IP 44) enclosure
- Designed to operate in up to 55˚ C ambient temperature
- Full length stainless steel hinge
- All stainless steel fasteners passivated and coated
- Meets IEC touchsafe standards
- Up to six luminaires per enclosure

Quality Assurance Tests

- Grounding continuity
- High potential dielectric withstand
- Ballast and capacitor operation (open-circuit voltage and short-circuit current)
- Full functionality test

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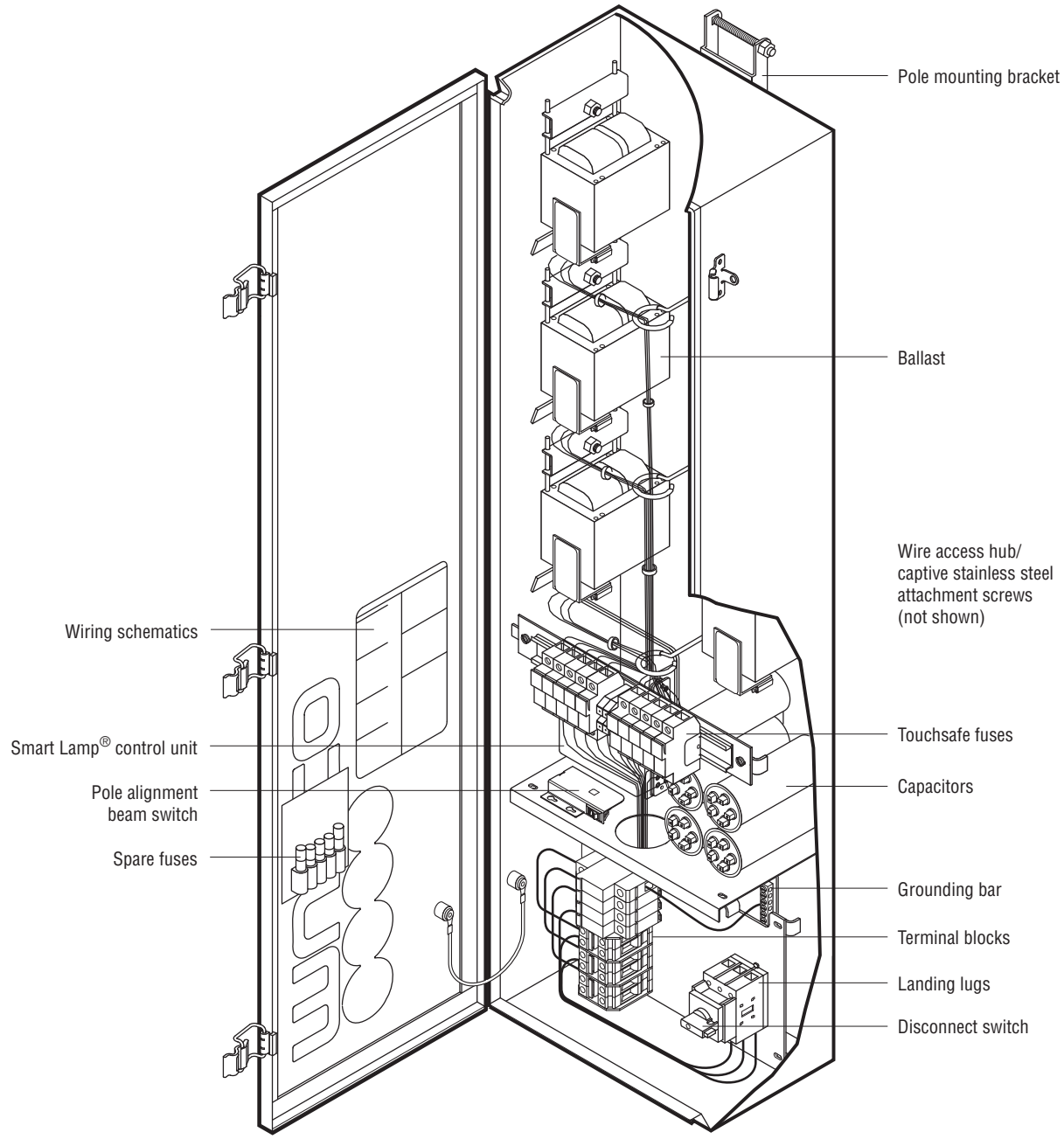
Electrical Components Enclosure



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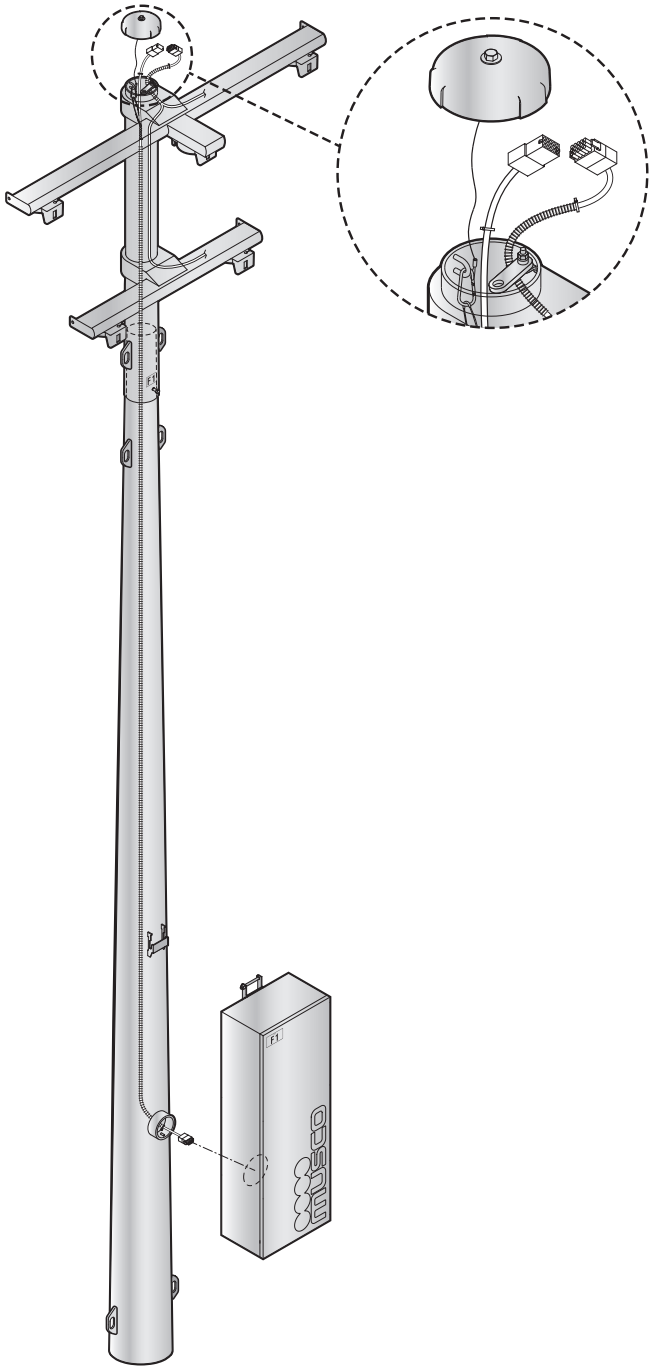
Wire Harness



Overview

The factory-built wire harness connects the electrical components enclosure to the poletop luminaire assembly.

Features

- Factory-assembled support grip alleviates strain on connections
- Quick connect plugs for easy field wiring
- Spiral wound cable eliminates slippage
- Protective sleeve prevents wire damage
- All internal wiring, no exposed wires
- Labels identify pole and luminaires

Technical Specifications

Construction

- Spiral wound, wrapped cable, 14 AWG copper wire
- Integral wire support grip
- Two wires per luminaire
- Each harness supports up to six luminaires

Quality Assurance Tests

- Connector/load resistance
- High potential dielectric withstand
- Grounding continuity
- Termination crimp

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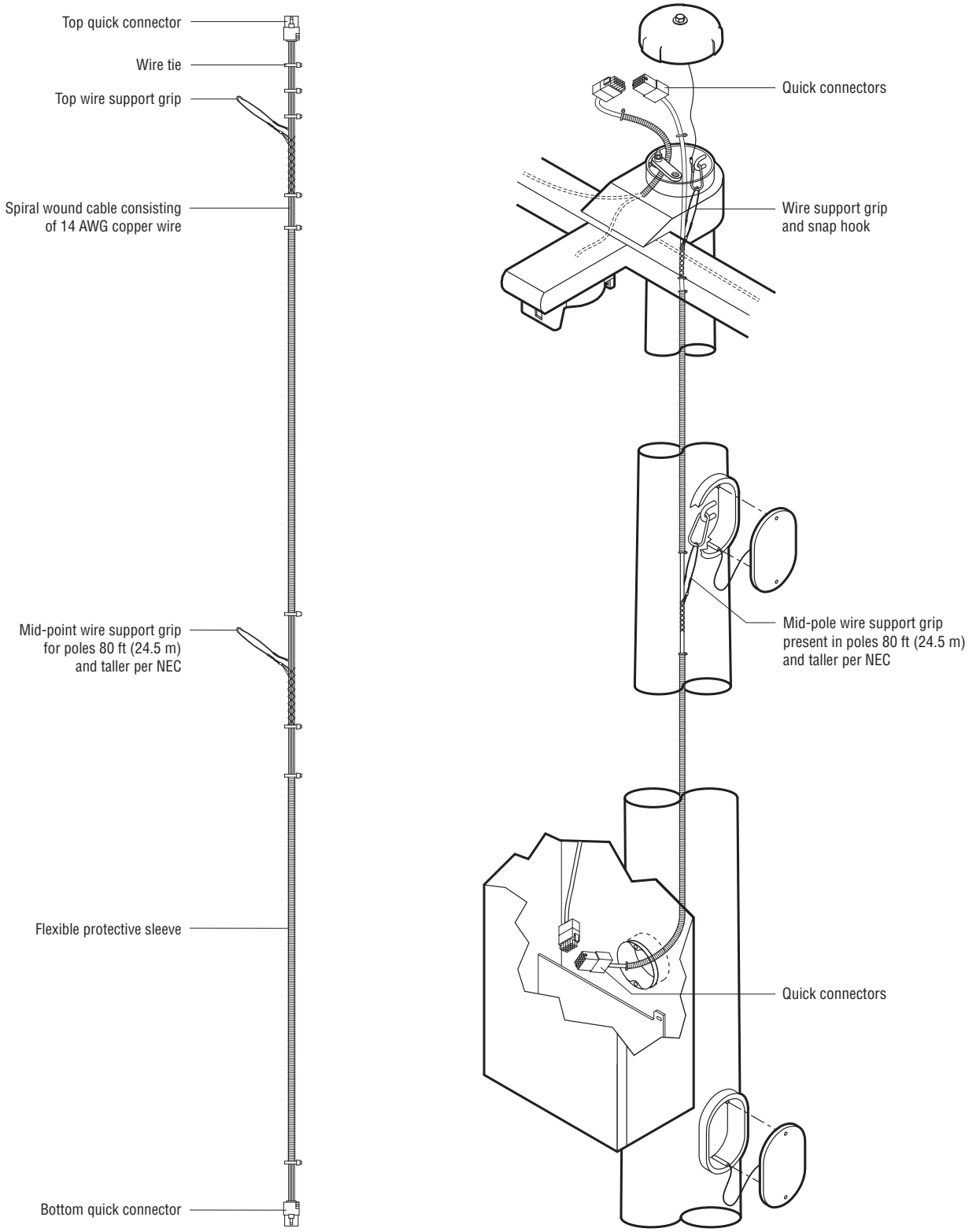
Wire Harness



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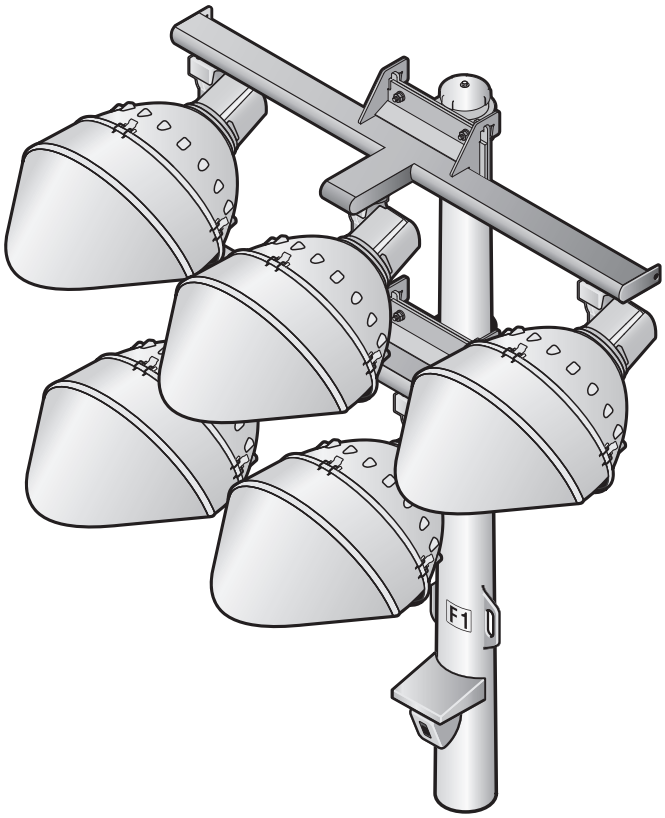
Poletop Luminaire Assembly



Overview

The factory-aimed poletop luminaire assembly is the upper section of the pole and slip-fits together with the galvanized steel pole. Crossarms are removed for shipping and assembled in the field.

Features

- Luminaire mounts and connects in a single step
- Slip-fit connection allows assembly with come-alongs
- D-shaped crossarm reduces wind loading
- Each luminaire is factory-built, tested, and ships as a unit
- Luminaries are factory-aimed to two-tenths degree of accuracy
- All luminaires are factory-wired to a quick-connect harness for easy installation
- Labels identify pole and luminaire location
- No exposed wiring or conduit
- Factory-set pole alignment beam allows easy field alignment
- Fail-safe crossarm attachment design

Technical Specifications

Construction

- Crossarms hot-dip galvanized after fabrication to ASTM-A123 standards
- All aluminum components powder-coated or anodized to mil-A-8625F
- Luminaire and knuckle powder-coated die-cast aluminum
- All stainless steel fasteners passivated and coated
- Crossarms constructed of ⅛ inch wall thickness D-shaped steel tubing
- Polecap attached with stainless steel lanyard and securing bolt
- Structural-grade fasteners with DTI (Direct Tension Indicating) washers attach crossarms to poletop

Quality Assurance Tests

- Reflector photometric test
- Lamp lumen output
- Galvanizing thickness
- High potential dielectric withstand
- Electrical continuity

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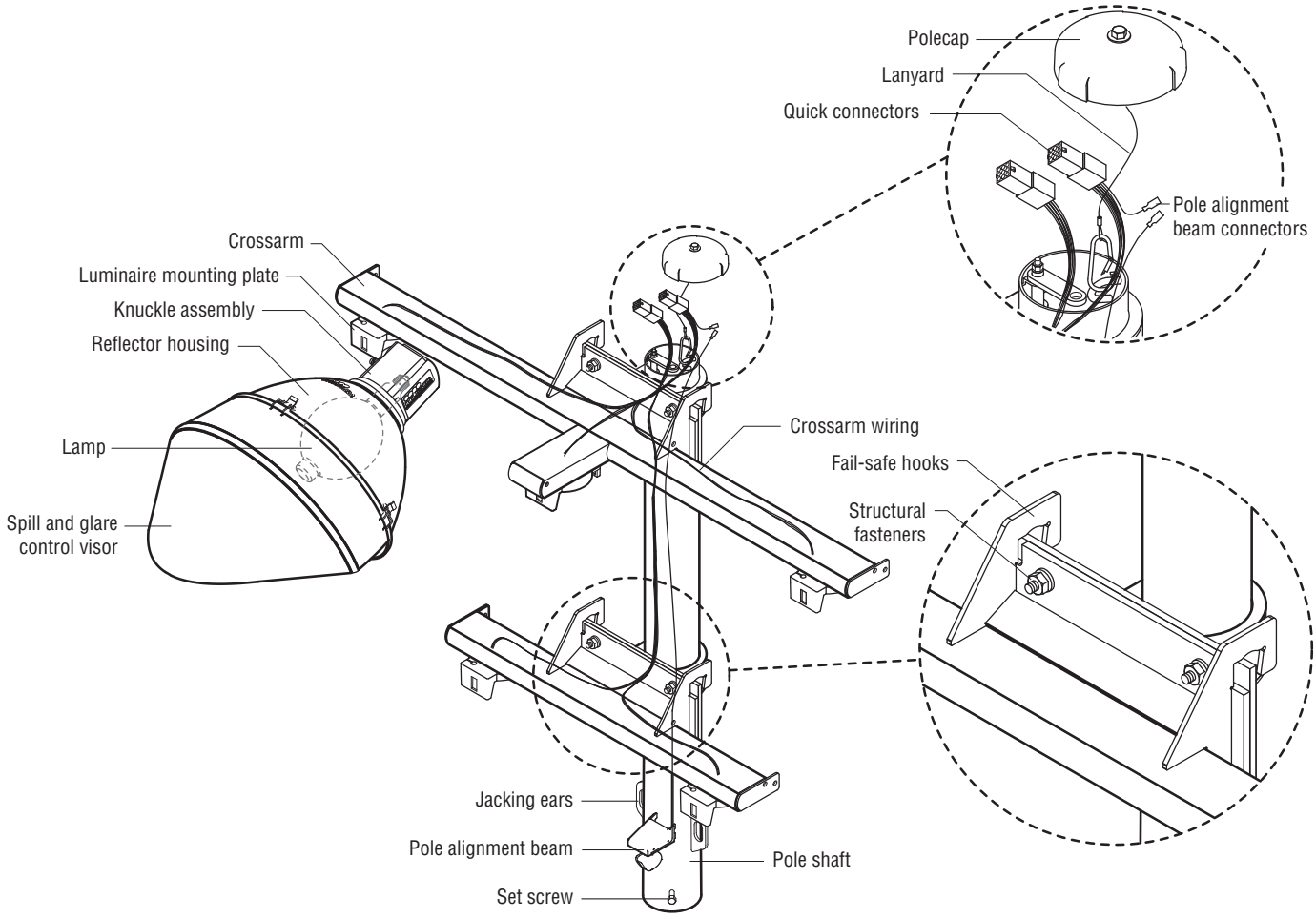
Poletop Luminaire Assembly



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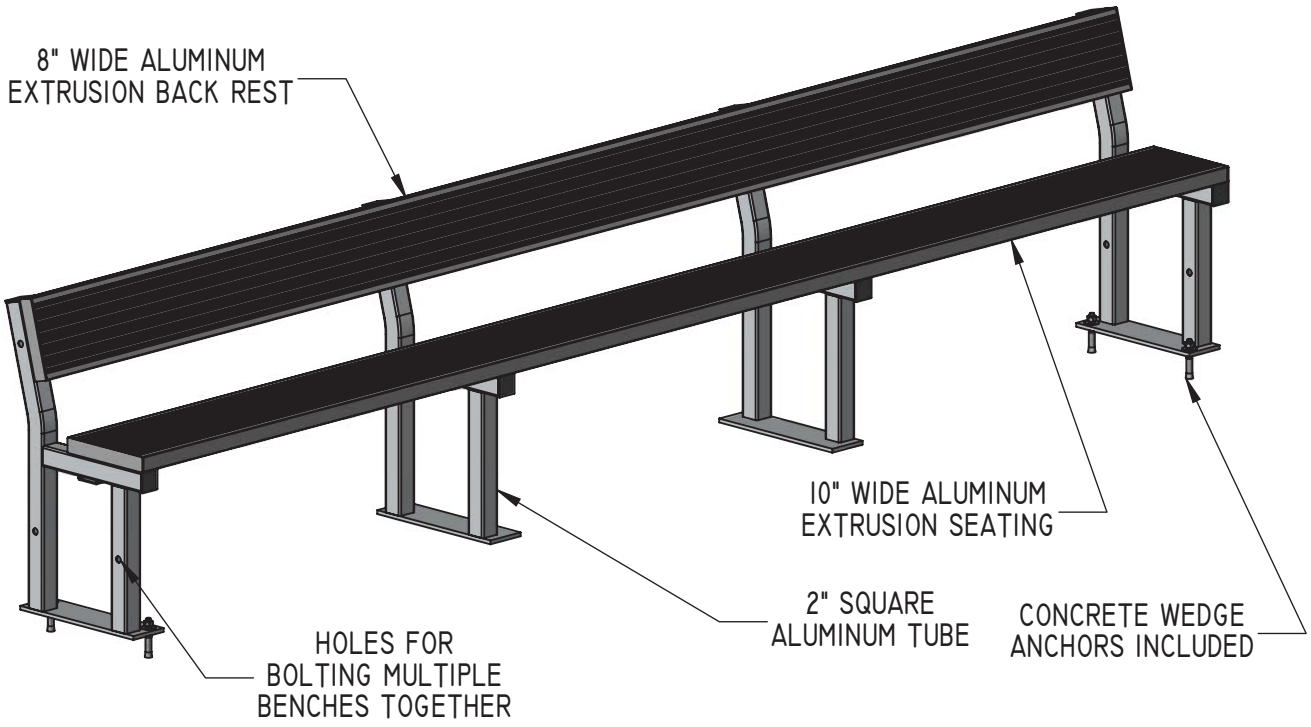

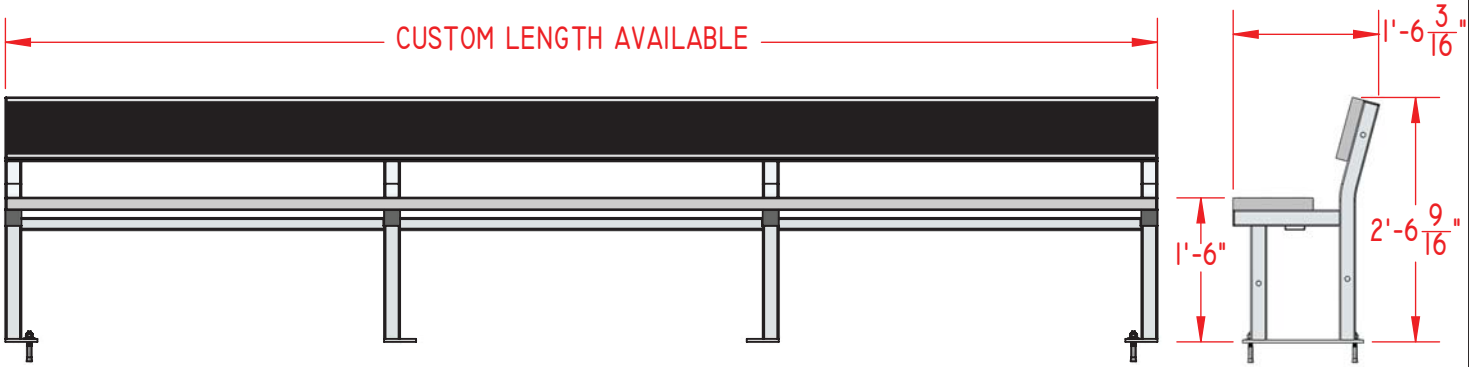

STANDARD PART NUMBERS AND WEIGHTS:	
LG-STAL-BRSP-08	50 LBS
LG-STAL-BRSP-10	62 LBS
LG-STAL-BRSP-12	70 LBS
LG-STAL-BRSP-15	88 LBS

POWDER COATED FRAME AND EXTRUSION AVAILABLE
IN A VARIETY OF STANDARD COLORS

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Single Tier
Semi-Permanent Aluminum Plank Bench with Back Rest

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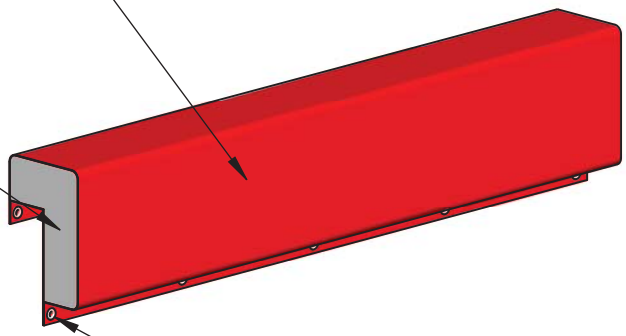
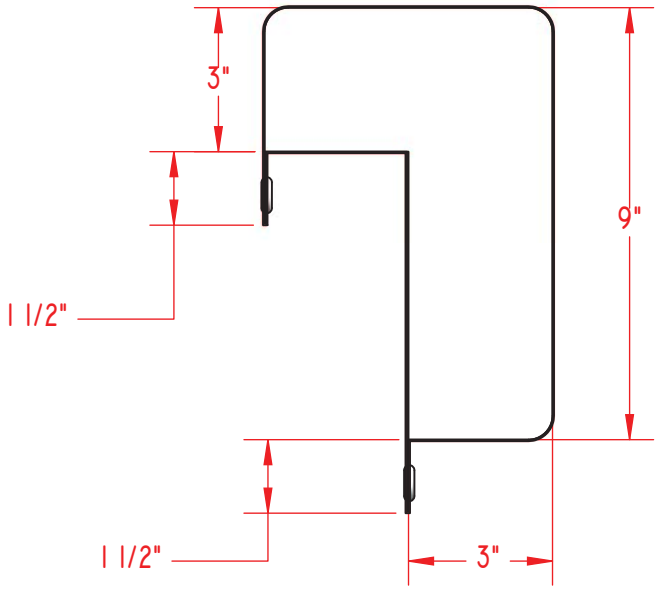
18 oz. EcoGuards Extruded Vinyl, Manufactured Using 33% Reproccessed Vinyl, High UV Resistance and Five (5) Year Limited Fade Warranty, Various Standard Colors Available

3" Thick High Impact Polyurethane Foam



Two (2) - 1.5" Wide Vinyl Flaps with #2 Stainless Steel Grommets Factory Installed Every 12" on Center for Securement Purposes, Attached to Horizontal Top Rail Using 14"L Nylon Zip Ties with 50 lb. Break Strength By Others



Optional Custom Digital Graphics and/or Lettering Available Upon Request

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CLTR Chain Link Top Rail Padding

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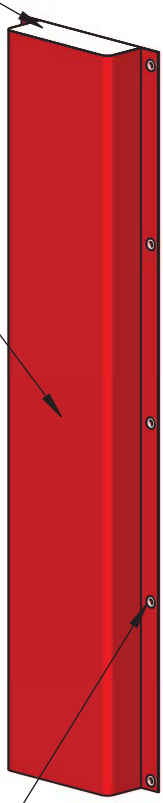
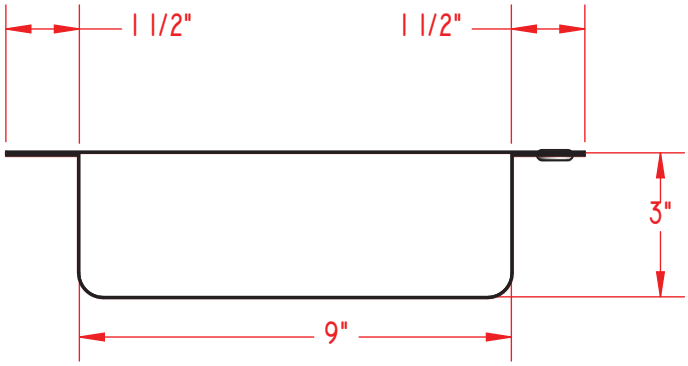
3" Thick High Impact Polyurethane Foam

18 oz. EcoGuard$ Extruded Vinyl, Manufactured Using 33% Reproccessed Vinyl, High UV Resistance and Five (5) Year Limited Fade Warranty, Various Standard Colors Available





Two (2) - 1.5" Wide Vinyl Flaps with #2 Stainless Steel Grommets Factory Installed Every 12" on Center for Securement Purposes, Attached to Vertical Post Using 14"L Nylon Zip Ties with 50 lb. Break Strength By Others

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CLP Chain Link Post Padding

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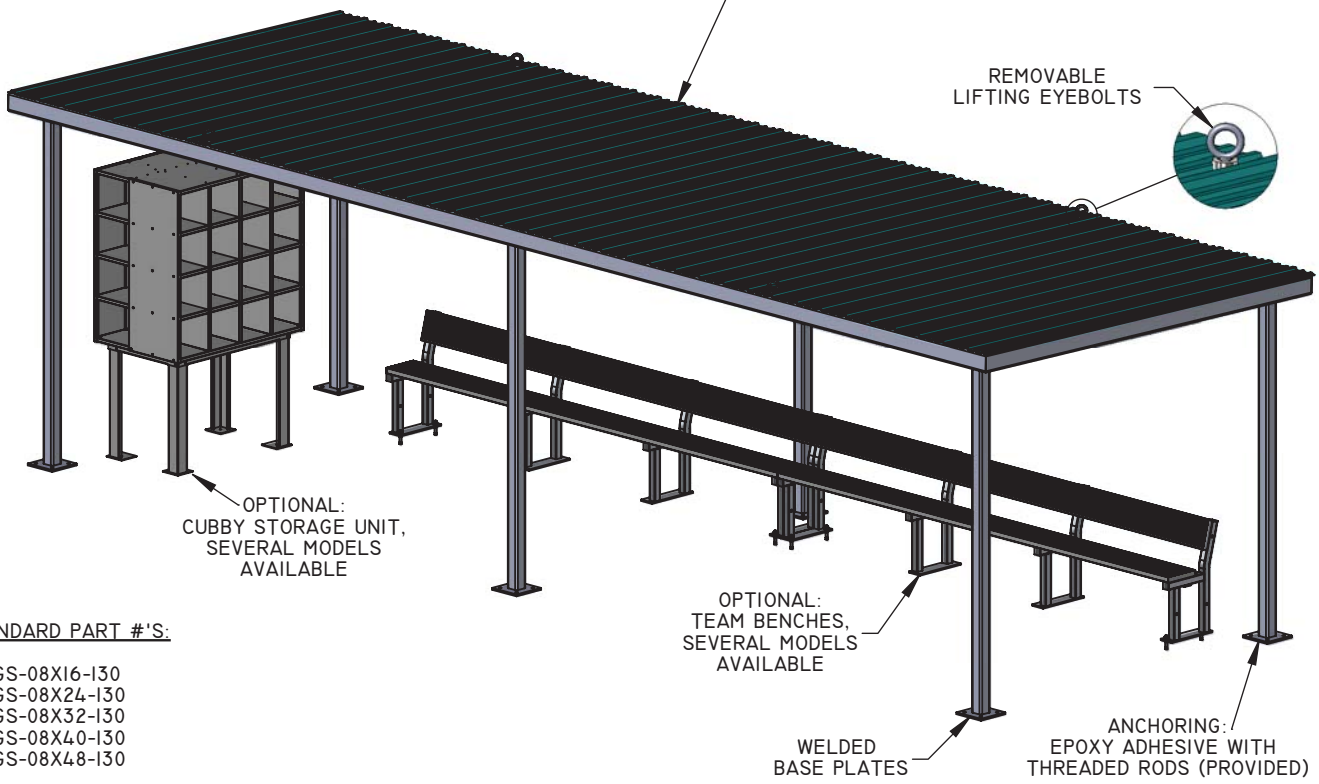
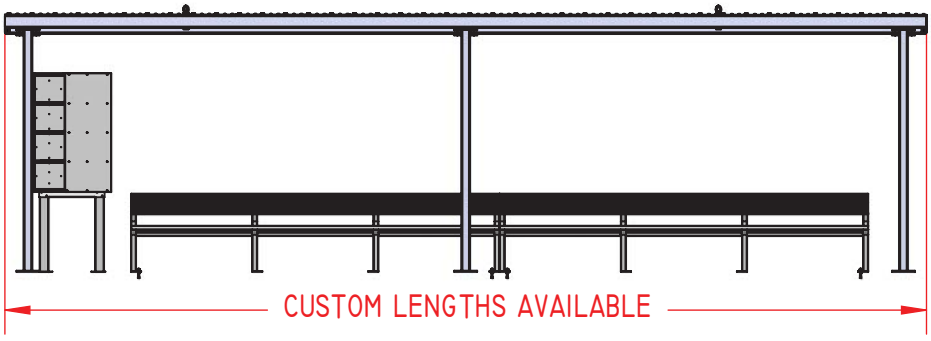
STEEL FRAME STRUCTURE:
PRIMED & POWDER COATED
TUBULAR STEEL DESIGN MEETS
130 MPH WIND SPEED & 50 PSF
GROUND SNOW LOAD REQUIREMENTS.

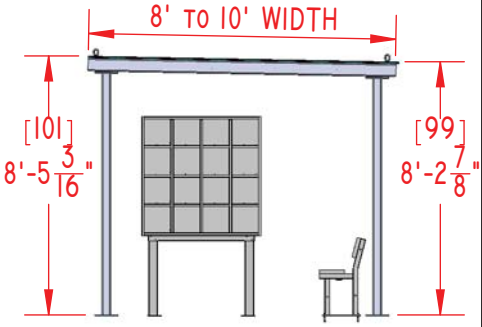


STANDARD PART #'S:

LG-GS-08X16-130
LG-GS-08X24-130
LG-GS-08X32-130
LG-GS-08X40-130
LG-GS-08X48-130

LG-GS-10X16-130
LG-GS-10X24-130
LG-GS-10X32-130
LG-GS-10X40-130
LG-GS-10X48-130





FOUNDATION DESIGN BY OTHERS
BASED ON LOCAL CODES
AND SOIL CONDITIONS

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GAMESHADE® DUGOUT

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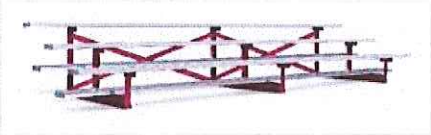
SPORTSFIELD SPECIALTIES INC 12312014

3-Row Standard Bleachers with 8″ Rise



These bleachers are standard with 2″ x 10″ anodized aluminum seat and foot boards. The frame is available in aluminum or galvanized steel. Optional ground sills are made of 2″ x 6″ pressure treated wood and sized according to length of frame. Planks may be powder coated for an additional charge of $3.00/foot.

3 Year Limited Warranty

Model #	Description	Seating Capacity	Weight
1171-315A	3-Row, 15′ Aluminum Frame bleachers w/o guardrails	30	235
1171-315G	3-Row, 15′ steel bleachers w/o guardrails	30	260
1171-321A	3-Row, 21′ Aluminum Frame bleachers w/o guardrails	42	338
1171-321G	3-Row, 21′ steel bleachers w/o guardrails	42	370
1171-327A	3-Row, 27′ Aluminum Frame bleachers w/o guardrails	66	441
1171-327G	3-Row, 27′ steel bleachers w/o guardrails	66	480
BTS	Bleacher Transport System w/2 wheels and hitch assembly		140
GS315	2″ x 6″ Ground sills (Set of 3 for 15′ bleacher)		60
GS321	2″ x 6″ Ground sills (Set of 4 for 21′ bleacher)		80
GS327	2″ x 6″ Ground sills (Set of 5 for 27′ bleacher)		100

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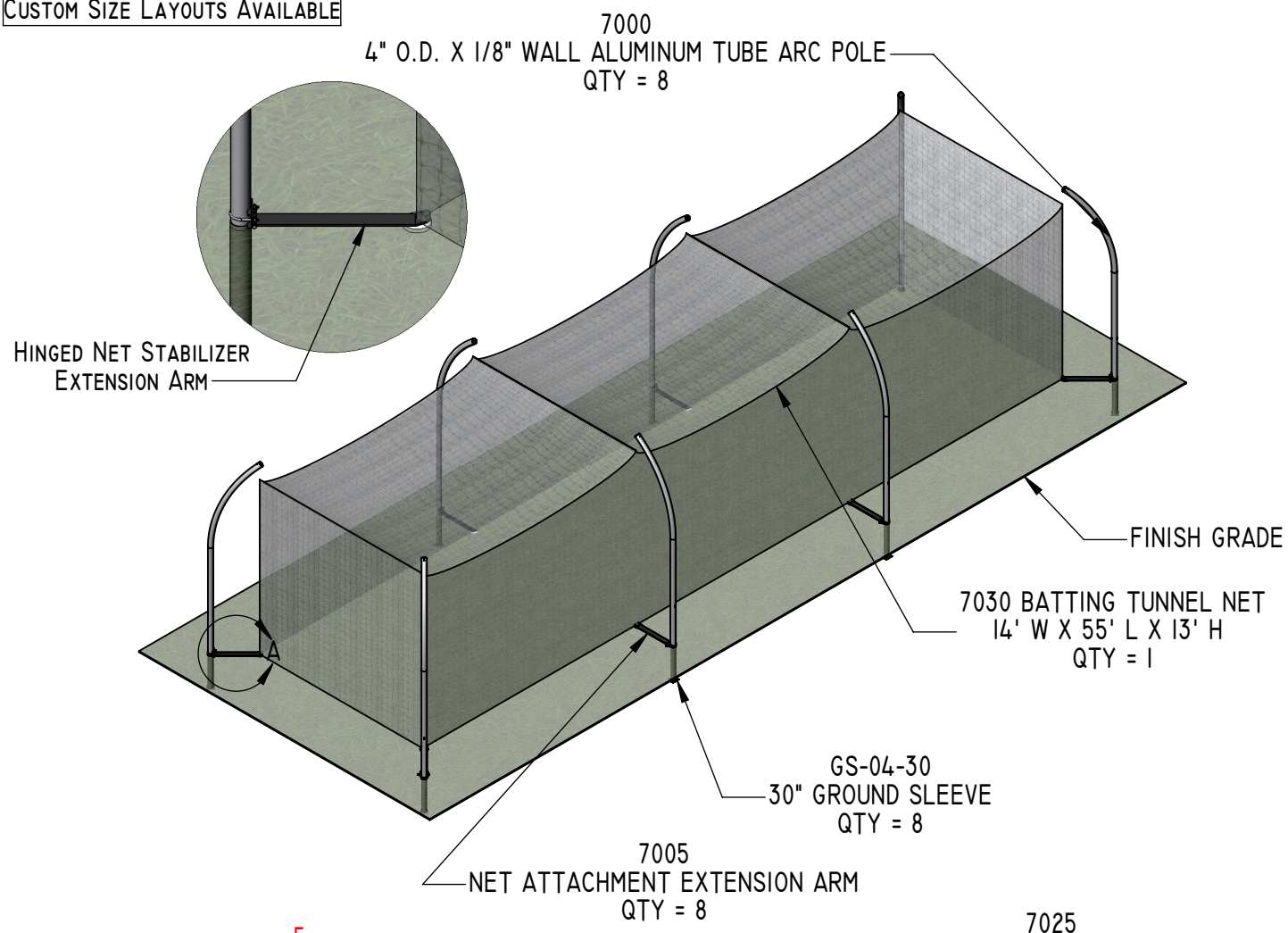
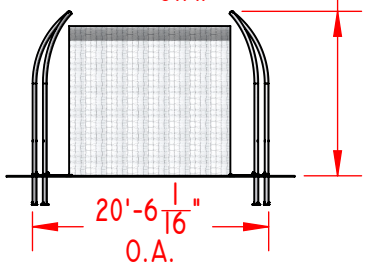
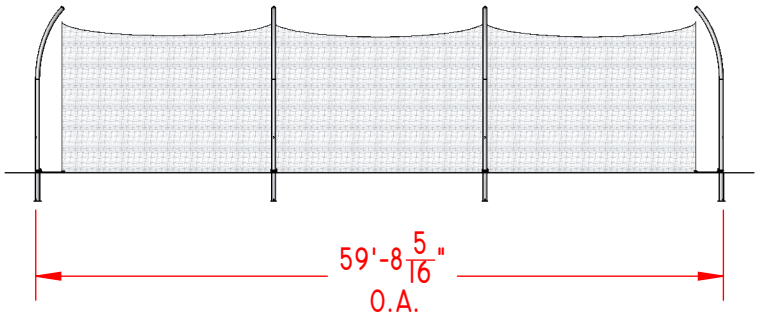
BASE PLATE MOUNTED AND/OR
CUSTOM SIZE LAYOUTS AVAILABLE

STANDARD BLACK POWDER COATED FINISH





7025
HARDWARE KIT INCLUDED
QTY = 1



FOUNDATION REQUIREMENTS
BASED ON LOCAL CODES
AND SOIL CONDITIONS

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LGSBT-P Softball Single Arc Pole Batting Tunnel

NOT TO SCALE

SPORTSFIELD SPECIALTIES INC 11012014

BOHN PARK CONCEPTUAL DESIGN

Submitted by:
S_2O Design and Engineering
318 McConnell Drive
Lyons, Colorado 80540

Introduction and Project Background

Prior to the September 2013 flood event, the 52 acre Bohn Park was Lyons' largest and most popular park with up to 400 users per weekend in the summer months. The park had an extensive range of amenities and activities for recreational visitors; with two baseball fields, a batting cage, playground, multi-use soccer field, concession stand, whitewater features, picnic areas, shelters, mountain bike course and a dog park amongst others. The park is located on South St. Vrain Creek, near the confluence. The river in this section, prior to the flood, was measured to be healthy and vital. Fishing is Fun grants had been used to provide habitat for species in the river, riparian and wetland environments.

The 2013 storm caused a catastrophic flood for the Town of Lyons, and especially so for Bohn Park. The St Vrain Creek reached peak flows of approximately 26,500 CFS in a 500-year event, and destroyed several homes in the confluence area, washed away the McConnell Bridge and caused significant damage to both Meadow Park and Bohn Park. The larger part of the park was inundated during the flow, with the majority of park amenities washed away. Much of the river system was destroyed, with all in-stream river structures scoured to failure, and the established habitat sustaining significant damage.

While Meadow Park is due for completion in mid-2016, design work is just beginning on the restorative project of Bohn Park. In a team of consultants lead by DHM, S2o Design and Engineering will design the bulk of the river corridor; to restore and enhance the in stream habitat and recreational structures while investigating opportunities to improve resiliency to these large flood events. This memo details the work performed thus far at the 30% completion milestone of the project, current concept designs and how they achieve the project's objectives, and provide a future direction for the later stages of this project.

Project Objectives

Through an extensive public process following the 2013 Flood, the objectives and scope of this project were defined in the Lyons Recovery Action Plan and in the Lyons Parks Flood Recovery Master Plan. The following primary objectives were identified:

1. **To restore and enhance Bohn Park**; to ensure recreation facilities, trails, natural areas and other amenities are safe and consistent with floodplain regulations.
2. **Reinforce hazard mitigation techniques to accommodate increased water capacity** and velocity from flooding and run-off, and augment recreational and flood mitigation benefits.
3. **Improve and restore riparian habitat and bank stabilization**, and re-vegetate the St. Vrain Creek Corridor.
4. **Develop and repair former trails and assets along the river corridor**; to create access points for fishermen and kayakers and safe crossing points for pedestrians and cyclists.
5. **Assess the ongoing water quality in the St. Vrain Creek** during flood response, recovery and restoration.

(Town of Lyons, 2013)

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318 McConnell Dr. Lyons, CO, 80540 303.819.3985

Design Considerations

With these project objectives in mind, S2o Design and Engineering identified several unique features on this reach of the South St Vrain Creek that must be included to improve flood resiliency, habitat restoration, and river access. Though these considerations have been separated for the purposes of this narrative, they are inter-related and design concepts can provide benefits several current issues.

The Gradient of the Reach

This reach of the South St Vrain is relatively steep compared to other reaches of similar stream types. From the project extents to the confluence of the North and South St Vrain Creeks the stream has a gradient of 1.7%. A profile of the reach is shown in Figure 1. As a result of this greater steepness, the river has developed a natural meander around sediment deposits to achieve stability and equilibrium. Through the design process, steps were taken to accentuate and protect these sand bars to improve the stability of the river.

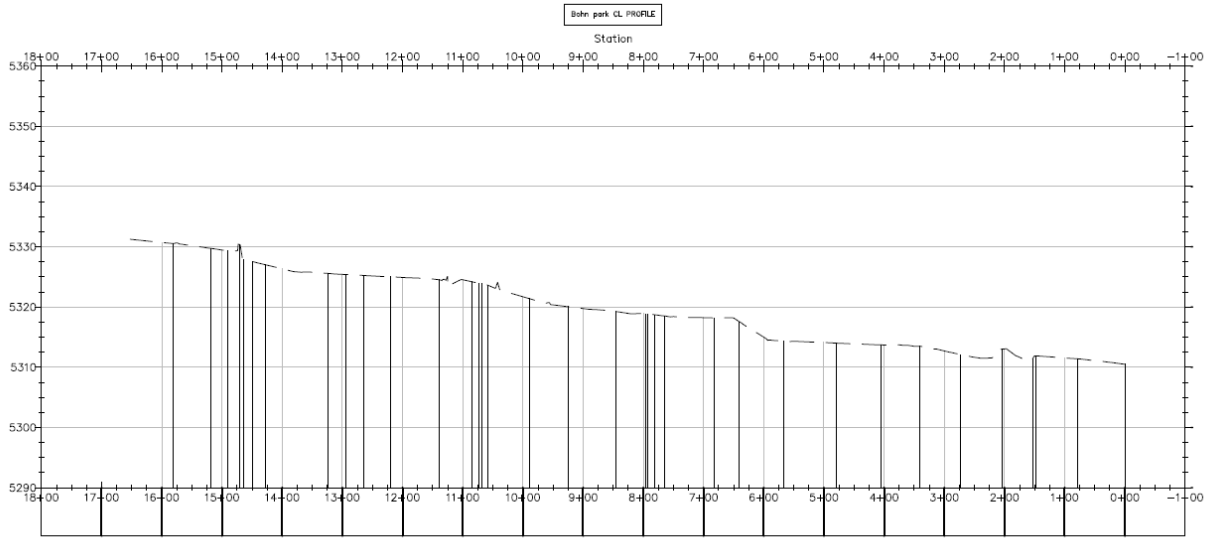

Figure 1: Thalweg profile of the project extexts of the St Vrain Creek, from above the site of the pedestrian bridge to below 2nd Avenue.

Thalweg Instability

FIGURE 1 shows a sudden change in river bed gradient at river station 600, at the confluence of the north and south forks of the St Vrain Creek. This sudden drop in river bed will eventually contribute to head cutting, where the base of the drop will continually erode and the step will migrate further upstream contributing to river instability, until such point as the river reaches a new equilibrium.

Bank Instability

Following the 2013 Flood, FEMA commissioned a temporary emergency channel be dug along the reach to provide temporary flood relief to safely pass the next run-off period. As a result, the channel's typical

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cross section is a simple trapezoidal passage, with relatively steep banks of approximately 3:1 gradient. This, combined with areas of insufficient vegetation, is contributing to erosion on portions of the channel banks.

River Flood Capacity and Existing Floodpaths

One of the largest issues identified thus far, is the potential for further flood damage as a result of the river's constriction. Currently, the South St Vrain begins overtopping its banks at approximately the 10 year flood event, with larger events potentially capable of further destruction to the Town of Lyons.

There are currently three locations on the project reach where overtopping occurs, with an additional breach location occurring approximately 1,500 ft above the project extents.

Insufficient Habitat

Much of the riparian and riverine habitat was destroyed or damaged in the 2013 flood event. This has had a negative impact on the local ecosystem; including fish, insects, birds and other members of the environment. The reduction in vegetation and wetland habitat opportunities also reduces water quality, and contributes to structural instability of the river corridor. Improving this aspect of the South St Vrain Creek will have positive impacts on many of the design concerns listed above, while providing a natural recreational area for members of the community.

Design Concepts

Following the identification of the concerns of the project reach, a concept design for the South St Vrain Corridor was developed. Otak has reportedly developed a preliminary plan and a series of recommendations for the South St Vrain Reach, but it has not been supplied yet. In the absence of this design, S2o Design and Engineering developed the following concept plan, shown in Figure 2:

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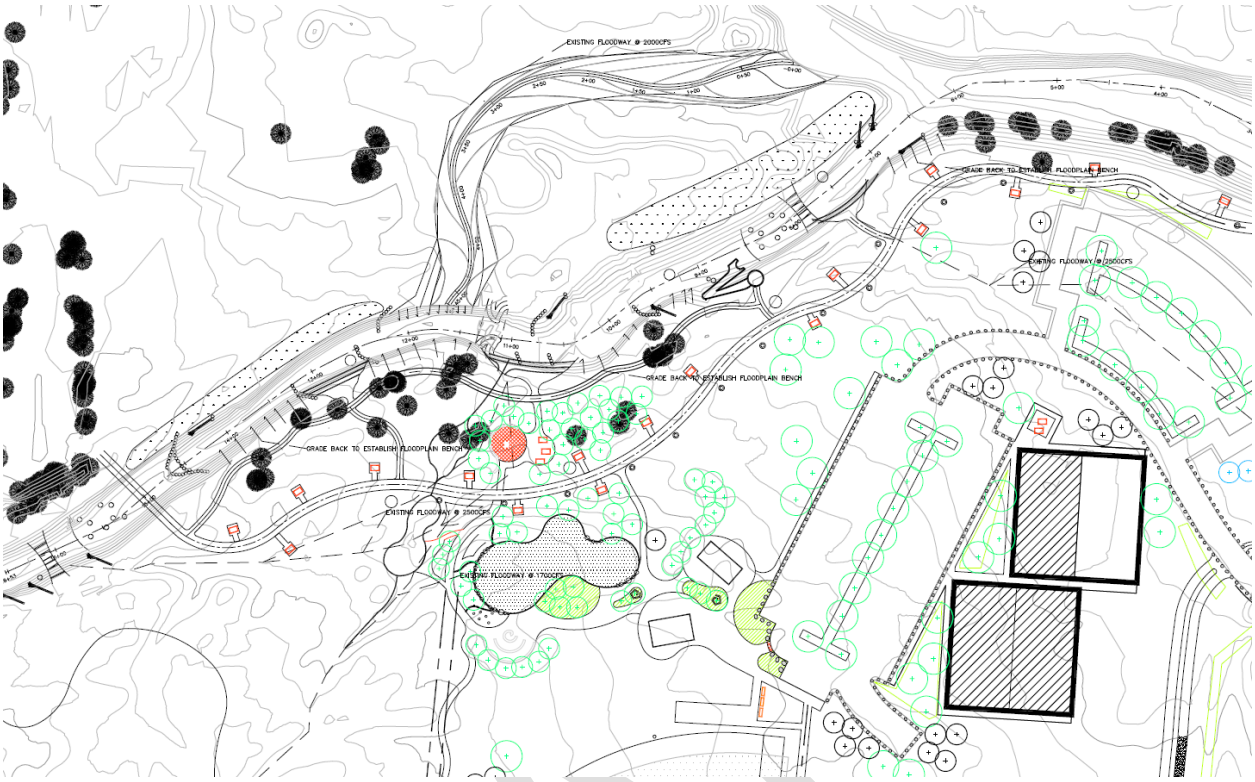

Figure 2: Plan view of the proposed improvements on the South St Vrain Creek.

There are several improvements proposed in Figure 2, addressing a number of the objectives and concerns identified in earlier chapters. Each concept will be examined in greater detail through this chapter.

Establishing an Expanded Floodplain Bench

Concerns Addressed: Bank Instability, Floodplain Capacity, Insufficient Habitat

Objectives Achieved: Increased stability of the St Vrain Creek Corridor, Increased floodplain capacity, improved habitat.

It has been proven through earlier projects on the St Vrain Creek that the creation of an expanded floodplain bench and a compound channel has substantial benefits on a number of issues in the river. Expanding a mid-flow bench outwards from the thalweg and raising the banks at a gentler slope reduces the risk of erosion along the streambanks, providing increased stability for the river system. Additionally, the expanded floodplain increases the total capacity of the stream for high flood events, reducing the severity of damage to public and private property in such an event. The expanded banks will be re-vegetated with a variety of local flora, as detailed by Ecos design, which will contribute to local habitat creation while increasing bank stability, reducing the velocity of high flow events and reducing the geomorphic risk of erosion. An example of a typical floodplain bench cross section is shown in Figure 3

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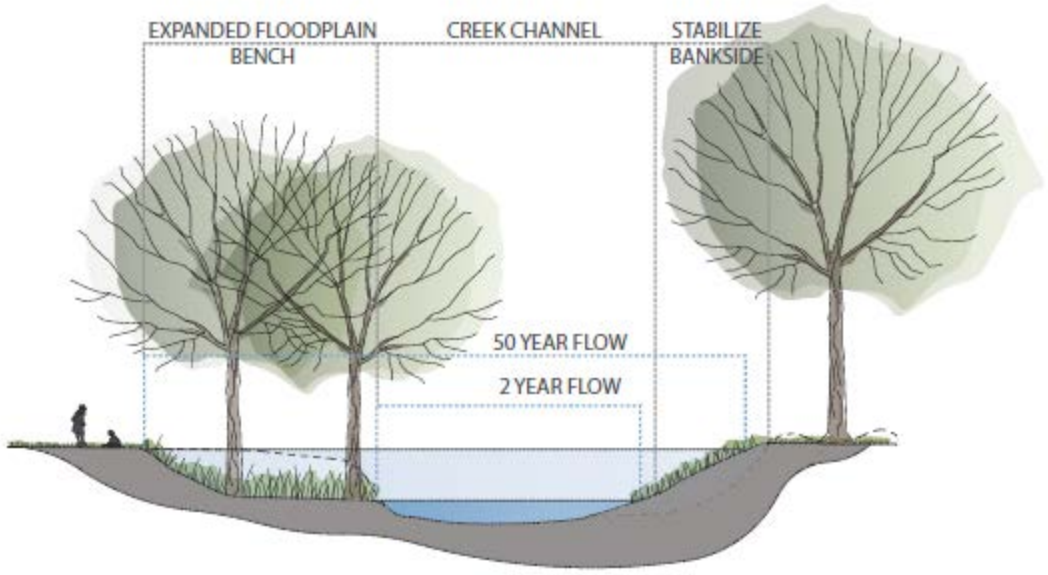

Figure 3: Typical section of an expanded flood plain bench

In Stream Structures

Concerns Addressed: Bank Instability, Floodplain Capacity, Insufficient Habitat, Thalweg Intability

Objectives Achieved: Increased stability of the St Vrain Creek Corridor, Increased floodplain capacity, improved habitat, safe access for river users.

A variety of in-stream structures are proposed in the current concept design. A cross vane structure is proposed downstream of the site of the pedestrian bridge, which will consolidate drop and energy of the stream to increase river stability. A fish notch design is implemented into the center of the structure, so that in low flow events there is still a section of sufficient depth to allow fish to pass upstream. This cross vane is shown in Figure 4

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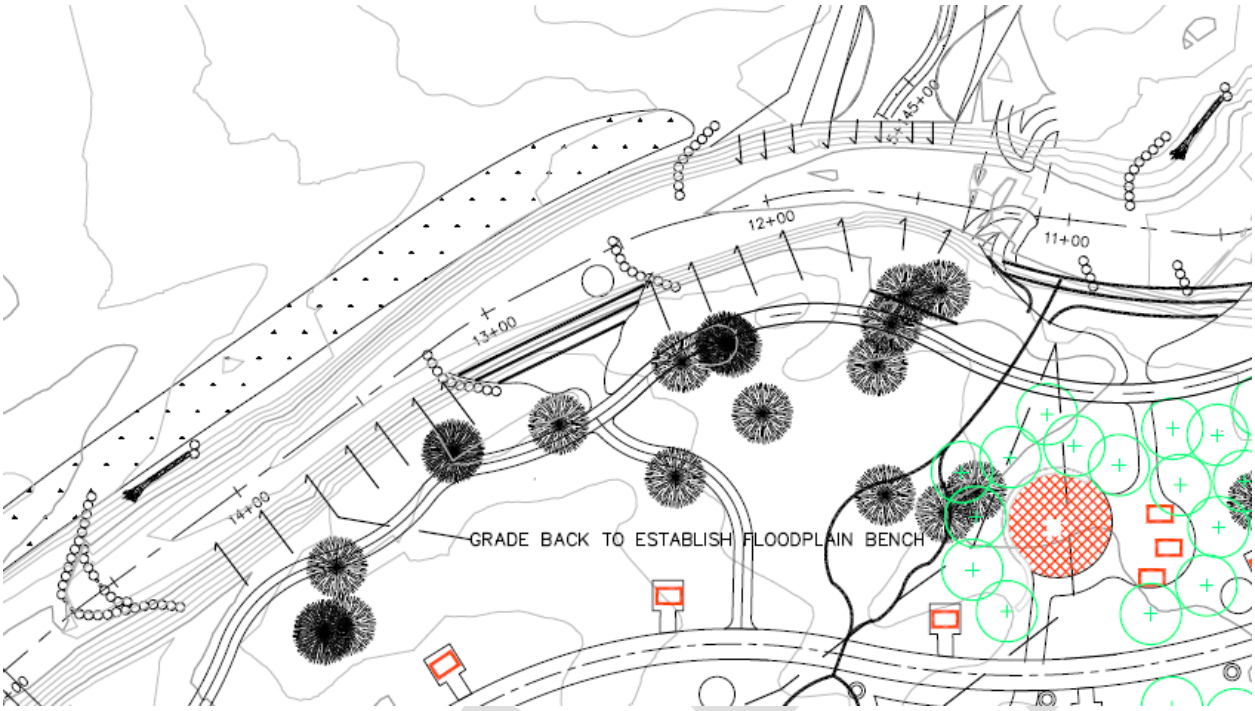

Figure 4: Cross Vane and J hook structures around proposed beach site.

A series of rock j-hook weirs are proposed at various points along the river. These weirs, which encourage sediment deposition and provide a natural meander to the river, are proposed to be installed on sections of existing sediment depositions. This will accentuate and enhance the current meander of the stream, contributing to a more stable and resilient stream corridor. In higher flow events, these structures provide eddies of low velocity, providing shelter and habitat for fish. These structures are also to be installed at the site of river access points identified by DHM, to protect the banks and encourage deposition and the development of a beach for play areas, as well as reducing velocity at these locations to provide safe access for fishermen, families and other river goers.

To combat the potential for head cutting from the confluence moving up the river, a drop structure is proposed upstream of the confluence. This will consolidate the drop of the section, increasing river stability, and providing a lower velocity section which is designed to incorporate further fish habitat opportunities. The combination of this structure and a hardened riffle are included to address the risk of head cutting.

Riffles are used to provide character to the stream, and have been identified as critical habitat for spawning. Following the successful implementation of riffles into stream design in Meadow Park, they were incorporated into the design of the South St Vrain creek.

Habitat Creation Structures

Concerns Addressed: Insufficient habitat opportunities, bank instability.

Objectives Achieved: Improved habitat, increased river stability.

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A number of habitat structures were incorporated into the design of Bohn Park. These structures were designed to be multi-functional, improving both fish habitat and the stability of the river.

The installment of woody debris is prevalent through this design, which will provide a unique character to the stream as well as habitat and stability benefits. Root-wads were implemented throughout the reach, and will provide shelter for fish by creating a slight undercut below the waterline. Root-wads serve as a multi-faceted design feature, and will be installed into the river banks and armored in place by local boulders. This will provide further stability for the banks, and reduce the geomorphic risk of the reach considerably.

Further woody debris is to be installed along the reach; logs will be stripped of excess branches and locked into the river bank by a series of cable anchors. Rock armoring on the downstream side will protect against scour failure, while the log will promote slight scour underneath along the length of the tree to provide an undercut for further fish shelter. The section of bank above the log will remain stable, and will be re-vegetated to provide further bank stability. An example of the installment of root wads and cabled logs is shown in Figure 5

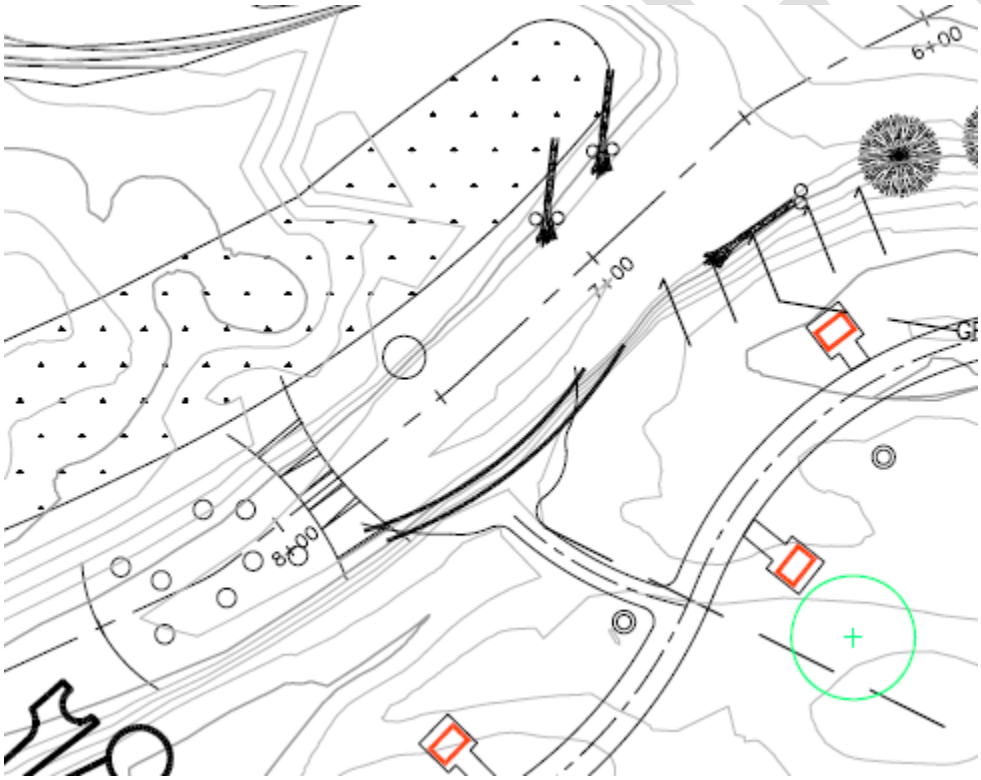

Figure 5: Root wads and cabled logs providing habitat and improved bank stability.

Random boulders and weirs are incorporated throughout the design, providing areas of slow moving water on the downstream end of the feature to allow for further fish shelter. Riffles are incorporated throughout the design to provide aerated sections of water for potential sites of fish spawning.

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Overflow Channels

Concerns Addressed: Floodplain Capacity

Objectives Achieved: Hazard Mitigation and improved floodplain capacity of the reach

Through an extensive series of two dimensional simulations of the St Vrain Watershed, a number of breaching locations were identified on the South St Vrain Creek. Three of these locations are within the extents of this project, while one is located 1,500 ft upstream.

The breach that occurs upstream on the Martin Place, while design work on the breach location is out of the extent of the project site, by strategically grading the southern portion of Bohn Park, any flooding from that location can be re-directed back into the channel at approximately river station 1100, avoiding damage to any higher value structures in the Park and on neighboring private property.

While detailed design on these features has not yet begun, several sites for overflow channels have been identified. These overflow channels will occur in the locations identified through 2-d modeling where the river will naturally breach, which will reduce earth moving costs and ensure successful activation. They will be designed to activate at specific flow events, and will aim to keep floodwaters away from existing and proposed structures. They will be designed to resemble the natural grade as much as possible, so as to not detract from the architectural design and layout of the park. An example of an overflow channel design is shown in Figure 6.

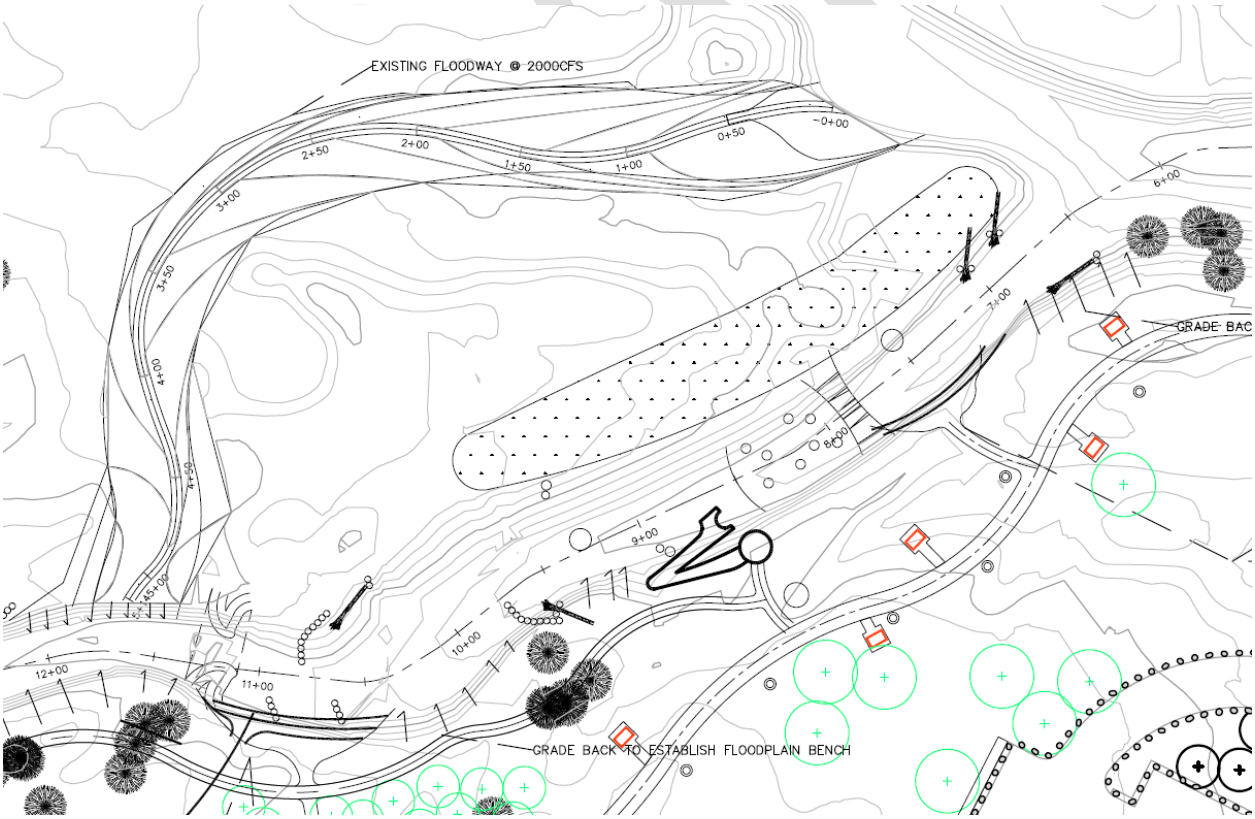

Figure 6: Overflow channel at the confluence of the North and South St Vrain Creeks.

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Future Direction

This 30% design study has provided the basic framework of the proposed improvements. Future design work will integrate the flood resiliency, habitat, and stabilization framework within the recreational needs and flow of the park. Following the development of the concept design S2o Design and Engineering will continue to work with DHM, the Town and other team members to refine the concepts through the detailed design phase of the project. The design work will continue to focus on multi-purpose features to achieve the objectives detailed by the Lyons Recovery Action Plan and the Lyons Parks Flood Recovery Master plan.

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Bohn Park

Lyons, Colorado

Preliminary Irrigation Well Report

May 11, 2016

Scope of Report

This report has been prepared to assist in your effort to determine the feasibility to use the existing irrigation well and pump or to consider installing one or two new wells and pumps for new landscape and irrigation to Bohn Park. The current source of water utilized one 35-foot-deep wet well (approximate) and pump, servicing the old park site. After reviewing the existing well conditions, it appears that it has been damaged beyond repair and it more than certainly has been breached and should not be reused. So for the purposes of sizing and establishing estimated cost, we have assumed that approximately 26-acre site, of which 7 acres will be turf and shrub application, with approx. 19 acres of native area.

This report addresses the implementation of one or two new well pumping systems. The attached water chart shows that we will need to consider an irrigation water demand of approximately 450 GPM for the entire park site. All calculations that pertain to the existing irrigated areas include estimated values and should be confirmed prior to implementing final construction documents.

Projected Site Water Requirements

HydroSystems•KDI has reviewed the existing irrigated landscape areas and off scale aerial bases at the onset of this effort. All anticipated irrigated landscaped areas were identified with DHM Design, and this report reflects all existing irrigated landscape areas and an allowance for all future undeveloped areas.

Based on the irrigated landscape areas identified by HydroSystems•KDI, the associated site water requirements have been established. The peak season application rate is based on a multi-year historical evaluation of the weather in the Lyons area. All water use projections and peak flow calculations are based on applying all required irrigation water within a six-night per week, six-hour per night watering window. This allows for all irrigation to take place when activity within the park is low and the wind and temperature conditions are at optimum levels for the most efficient application of the irrigation water.

We have contacted Colorado Water Well of Arvada and Hydro Resources in Lyons, to discuss the process of determining a new location for one or two wells. They also assisted in helping with budget cost. We are assuming that you will need to install a new well or wells for the new irrigation and that the existing well will be abandoned. The process that they recommended is as follows:

1. The process will start with Hydro Resources. They will research the geological maps for the area to determine the water tables present on the site. With the stream next within the project, water levels should be reasonably shallow -typically at 50' or less.
2. After determining possible locations, they would bring out a drill rig and drill several test holes to verify the water levels.

3. From the test holes, they can then determine the best location(s) for drilling the new well or wells and what the estimated depth will be to hit water.
4. The estimated cost for this first step of the process: $5500.00

Once a test hole has been determined, then a application for permit to drill a well or wells will need to be submitted to the State of Colorado. This could take up to 3-6 months to receive a permit. Once permitted, the drilling process can begin. It is typical that a 12" well will be drill to the depth required to hit water table. PVC casing will be installed and then a pumping system can be sized and installed.

1. Estimated cost for drilling one well, approximately 50' deep with 12" casing -$25,000.00
2. Estimated cost for a second well -$15,000.00 to $17,500.00. The cost is lower on the second because the drill rig and crew is already mobilized on the site.

The above process is done by Hydro Resources or a company that only specializes in drilling wells. Once the well is complete, a flow test will be done to determine the maximum flow that the well can produce and the water draw down and recovery of the water. This work is typically done by a pump company, such as Colorado Water Well. There have been some discussions if one or two wells would be better. It really will come down to a costing exercise of installing one well with a large mainline infrastructure to get water throughout the entire site. Or two wells with a smaller and short piping infrastructure. The flowing are some approximate cost ranges for each of these options.

The site will require approximately 450 GPM total, option one would be one well with one pumping assembly:

1. Pump Assembly, 450 PGM @ 90 PSI: $45,000.00 -$50,000.00, installed.
2. Additional cost will require a power drop (240V/460V, 3 phase) -$5000.00 -$7,500.00.
3. One Irrigation Controller for the entire site -$3500.00

Option Two, 2 wells with smaller pump assemblies, 225 GPM @ 80 PSI each:

1. Pump Assemblies, 225 PGM @ 80 PSI: $40,000.00 -$45,000.00 each, installed, x 2 = $90,000.00.
2. Additional cost will require a power drop (240V/460V, 3 phase) -$5,000.00 -$7,500.00 each, x 2 = $15,000.00.
3. Two Irrigation Controller for each pump location -$3500.00 each, x 2 = $7,000.00

There is very little difference between the larger pump assemblies and smaller pump assemblies, in terms of motor sizing, hence very little difference in cost. The rest of the pumping assembly remains the same (electrical controls, enclosure, control valves, installation cost etc…) The cost of the larger piping infrastructure will not be near enough to offset the cost of a second well and pump. For this reason, we feel like a the one well and pump option will be better suited for this site.

Proposed Irrigation Improvements

Irrigation Design and Concept

Our goal will be to design an irrigation system that will irrigate the plant materials with our focus on water conservation technologies and system efficiency to give the owner a system that minimizes water consumption and minimal maintenance cost.

The system will be designed per Town of Lyons standards and regulations and will utilize the industry preferred materials for this type of site. The irrigation system is to be composed of a combination of equipment to properly cover the landscaped areas. The turf will use a combination of pop-up sprays on areas 20' or less and low to medium range rotors in areas greater than 20'. Shrub beds will use a drip system and any native areas will be irrigated with a permanently installed system for establishment, but can be turned down or off once seed is established. Sprinklers will be spaced not to exceed the manufactures recommended maximum spacing. Overspray of the hard surfaces and areas outside of the project

limits will be minimized to avoid wasting water.This would allow periodical watering of the area in a drought situation after establishment or when re-seeding is required to replenish the flowering plants. The system will be zoned such that different plant materials, exposures and elevation will be considered and will be irrigated on separate zones.

For purposes of phasing, we would suggest that a 2-wire irrigation control system be utilized, allowing all mainline infrastructure to be installed first and then coming back and installing isolated areas as budgets allows. The 2-wire not only reduces cost for materials (copper wiring), it also saves from a maintenance prospective in being able to trace and deal with wire breaks. We would suggest an Internet Based ET clocks that can be tied to local area weather stations, full two way communications between central and field units and incorporate flow sensing features, which would allow remote capability of programming and better water management

The new pump station(s) will incorporate a self-flushing filtration system on the pump assembly. We would propose that a potable tap be installed to act as a backup. We would make sure that isolation gate valves and physical disconnects to be installed so that a separation is maintained and only opened when required. This would allow irrigation to continue in all areas short term, until a pump station is repaired and back in operation, in the event of a failure.

Let us know if you have any questions or concerns. Please don't hesitate to contact us to discuss.

Thank You,

Ken DiPaolo
President
kend@hydrosystemskdi.com

HydroSystems-KDI, Inc.
Irrigation Consulting and Water Management
860 Tabor Street, Suite 200
Lakewood, Colorado 80401
Phone: 303-980-5327
Cell: 720-849-1428
Fax: 303-980-5384

End of Report
May 11, 2016

Project Name:	**Bohn Park**
Project Location:	***Lyons, CO.***
Tap Description:	***Tap 1***
Date prepared:	***10-May-16***

Seasonal Water Use and Peak Flow Projections Prepared By HydroSystems-KDI, Inc.

Description	Irrigated Area (Acre)	Month	Application Rate (in/mo/sqft)	Water Application (gallons)	Peak Season Projected Demand (GPM)
Spray Irrigated	6.23	April	2.70	456,945	
Bluegrass Sod		May	6.38	1,079,260	
		June	8.49	1,436,112	
		July	9.17	1,551,436	162.1
		August	7.97	1,349,075	
		September	6.17	1,044,445	
		October	2.26	382,963	
Irrigation Season Totals			43.14	7,300,234	
				22.41	acre-feet
Spray Irrigated	19.24	April	1.50	783,618	
Native Seed		May	3.54	1,850,831	
		June	4.71	2,462,799	
		July	5.09	2,660,569	278.0
		August	4.43	2,313,539	
		September	3.43	1,791,127	
		October	1.26	656,746	
Irrigation Season Totals			23.96	12,519,229	
				38.42	acre-feet
Spray Irrigated	0.00	April	1.62	0	
Perennials & Annuals		May	3.82	0	
		June	5.08	0	
		July	5.48	0	0.0
		August	4.77	0	
		September	3.69	0	
		October	1.35	0	
Irrigation Season Totals			25.81	0	
				0.00	acre-feet
Drip Irrigated	0.64	April	1.17	20,362	
Shrubs & Perennials		May	2.76	48,094	
		June	3.67	63,996	
		July	3.96	69,135	7.2
		August	3.44	60,117	
		September	2.67	46,542	
		October	0.98	17,065	
Irrigation Season Totals			18.64	325,311	
				1.00	acre-feet

Site Totals

Irrigated Area:	***1,137,600***	***Sq.Ft.***	***26.12***	***Acres***
Water Use per Year:	***20,144,773***	***Gallons***	***61.83***	***Acre-feet***
Average Water per Year:	***17.71***	***Gallons/SqFt***	***28.40***	***Inches/SqFt***
Peak Season Water Use:	***4,281,140***	***Gallons***	***13.14***	***Acre-feet***
Average Peak Season Flow:	***447***	***GPM***		
Required Tap Size:	***6.00***	***Inches***		

Projections are based on a six day per week, six hour per day, peak season watering schedule.
Peak season application for Bluegrass Sod is 2.07" per week.
Peak season application for Native Seed is 1.15" per week.
Peak season application for Perennials & Annuals is 1.24" per week.
Peak season application for Shrubs & Perennials is 0.89" per week.

ecos ecosystem services LLC

TECHNICAL MEMORANDUM

DATE: May 13, 2016

TO: Mark Wilcox, DHM

FROM: Grant Gurnée & Jon Daužvardis, ecos

RE: Bohn Park Progress Summary & Initial Basis of Design

The purpose of this Technical Memorandum is to describe the progress of work performed to date by Ecosystem Services, LLC (Ecos or ecos) for the Bohn Park project (Project), and to summarize our initial basis of design data developed for the Revegetation Plans that will be prepared for the Creek corridor within the Project site (Site) in the near future.

I. EXISTING CONDITIONS ASSESSMENT

A. Data Collection and Desktop Assessment

Available resources and literature were reviewed to gather background information on the environmental setting of the Site and the broader riparian corridor of the South St. Vrain Creek, North St. Vrain Creek, and the main stem of St. Vrain Creek (cumulatively and separately referred to hereafter as "Creek"). Ecos consulted several organizations, agencies, and databases, including:

- Colorado Natural Area Program (CNAP) Native Plant Revegetation Guide for Colorado (CNAP, 1998).
- Colorado Natural Heritage Program (CNHP) Colorado Wetland Inventory Mapping Tool regarding the location and classification of wetlands and riparian areas in Colorado (CNHP, 2016);
- Colorado Native Plant Society (CNPS) regarding native plant communities, associations and profiles;
- CNHP Field Guide to the Wetland and Riparian Plant Associations of Colorado (CNHP, 2003).
- Google Earth current and historic aerial photography;
- Field guides on local flora and fauna;
- Draft (unpublished) St. Vrain Master Plan (S_20 2014);
- St. Vrain Creek Watershed Master Plan (Baker et al 2014); and
- Relevant and applicable assessment, permit, agency documents and data from the 2015/2016 Lyons St. Vrain Restoration Design-Build Project (SVR-DB Project), including:
    - Biological Assessment (BA) and U.S. Fish & Wildlife Service (USFWS) Concurrence Letter;
    - Nationwide Permit (NWP) 27 Pre-Construction Notice and U.S. Army Corps of Engineers (USACE) NWP 27 Permit Verification;
    - Office of Archeology and Historic Preservation (OAHP) File Search request and OAHP Colorado Inventory of Cultural Resources database review letter;
    - Plant and seed schedules; and
    - Basis of Design.

B. Field Reconnaissance Surveys

Following the collection and review of background information, ecos conducted an initial field reconnaissance survey of the Site and Creek corridor to:

- compare background information with present-day conditions;
- document the existing conditions of wetland, riparian and upland plant communities;
- identify potential sources of native plant materials;

- confirm the presence/absence of noxious or invasive weeds;
- identify areas of opportunity along the riparian corridor for native vegetation, terrestrial and fishery habitat restoration; and
- mark-up base maps to illustrate the approximate extent/location of any confirmed resources and habitat restoration opportunities.

Ecos also performed an inventory of native tress for the Town, which was subsequently surveyed for use in Site planning and design.

II. SUMMARY OF ASSESSMENT FINDINGS

A. Overview of Pre-Flood vs. Post-Flood in the South St. Vrain - Bohn Park Reach

The information in this Section provides a comparison of pre- and post-flood conditions, including vegetation, at the Site and Project sub-reach as provided by S_20 from their Draft (unpublished) St. Vrain Master Plan (S_20 2014).

The historic (pre-flood) channel morphology of the Bohn Park sub-reach was single-thread with alternating pool/riffle sequences. Similar to the North St. Vrain sub-reach, the river channel briefly escapes the confines of the sandstone escarpments as it flows northeast, across the valley floor between two hogbacks. Moving toward its confluence with the North St. Vrain, the river channel meanders through its broad floodplain. Development within the floodplain of this sub-reach included low density residential housing, a pedestrian bridge and trail, an industrial storage yard, and a municipal park that contained a tennis court, parking areas, baseball fields, playgrounds, picnic shelters, and restrooms. The river banks were, for the most part, undisturbed, generally composed of coarse alluvium, and had dense riparian vegetation along both banks.

The post-flood channel morphology of the North St. Vrain sub-reach remained largely unchanged from its historic condition. The alignment of the river channel had not shifted significantly but the width-to-depth ratio and pattern of pool/riffle sequences had changed. The most striking impact to this sub-reach occurred in the overbanks, where floodwaters carved numerous side channels and deposited vast amounts of sediment and debris throughout the floodplain. Furthermore, many of the dense riparian zones were impacted or lost, and the river channel had incised due to the extensive deposition along both banks.

Extensive in-channel work had been performed in this sub-reach following the flood in an effort to restore the previous channel form and stability, land use, and infrastructure. This work included excavation, fill, and grading activities necessary to construct the 5-year flood conveyance channel.

B. Onsite Assessment of Riparian Habitat

As summarized above, much of the riparian habitat that existed prior to the September 2013 flood was lost or degraded due to scouring and deposition of sediments ranging in size from fines to large cobbles. A continuous vegetated riparian corridor did not exist prior to the flood; rather it was comprised of patches of wetland and riparian vegetation that varied in width and quality.

The riparian corridor through the Site is primarily comprised of barren alluvial materials (cobbles, gravels, boulders) and flood debris. Remaining vegetation found includes some native species, but are primarily dominated by non-native trees and shrubs, numerous weeds and occasional grasses. The following is a list of vegetation inventoried on Site:

Scientific Name:	**Common Name:**
Andropogon gerardii	*big bluestem
Bouteloua curtipendula	*side-oats grama
Bouteloua gracilis	*blue grama
Bromus inermis	smooth brome
Elymus canadensis	*Canada wildrye
Elymus lanceolatus psammophilus	*streambank wheatgrass
Elymus trachycaulus	*slender wheatgrass
Panicum virgatum	*switchgrass

Pascopyrum smithii	*western wheatgrass
Phalaris arundinacea	reed canarygrass
Phleum pratense	common timothy
Poa pratensis	Kentucky bluegrass
Secale cereale	cereal rye
Setaria vulpiseta	bristlegrass
Sporobolus airoides	*alkali sacaton
Forbs (including Weeds):	
Ambrosia artemisifolia	common ragweed
Carduus nutans	musk thistle
Centaurea spp.	knapweed
Cirsium arvense	Canada thistle
Conyza canadensis	horseweed
Helianthus annuus	common sunflower
Kochia scoparia	kochia
Lactuca serriola	prickly lettuce
Melilotus alba	white sweet clover
Melilotus officinalis	yellow sweet clover
Salsola tragus	Russian thistle
Solidago spp.	goldenrod
Urtica dioica	Stinging nettle
Verbascum thapsus	mullein
Xanthium strumarium	common cocklebur
	bindweed
Vines:	
Parthenocissus quinquefolia	Virginia creeper
Vitis spp.	grape
Trees and Shrubs:	
Acer negundo	boxelder
Alnus incana	*thinleaf alder
Betula occidentalis	*water birch
Celtis reticulata	* netleaf hackberry
Gleditsia spp.	honey locust
Juniperus scopulorum	* Rocky Mountain juniper
Pinus ponderosa	*ponderosa pine
Populus angustifolia	*narrow-leaf cottonwood
Populus deltoides	*plains cottonwood
Prunus americanus	*wild plum
Prunus virginiana	*chokecherry
Rosa woodsii	* Wood's rose
Salix amygdaloides	*peachleaf willow
Salix exigua	*sandbar willow
Salix fragilis	crack willow
Ulmus parvifolia	Chinese elm

Note: Asterisk (*) indicates those plants that are native to Colorado.

C. Previous Restoration Project Data

Ecos performed an inventory of the McConnell Ponds (Ponds) area along the Creek in the summer 2012, which is downstream and adjacent to the Site. The purpose of this assessment was to establish the basis of design for a private mitigation Project that would be implemented later that year at the Ponds. The 2012 inventory yielded the following dominant species, which were utilized to plant the Ponds restoration areas:

Scientific Name:	**Common Name:**
Amelanchier alnifolia	serviceberry
Lonicera involucrata	twinberry
Populus angustifolia	narrowleaf cottonwood
Populus deltoides	plains cottonwood
Prunus virginiana ssp. melanocarpa	chokecherry
Ribes aureum	golden currant
**Rubus deliciosus*	Boulder raspberry
Salix amygdaloides	peachleaf willow
Salix exigua	sandbar willow
Symphoricarpos occidentalis	snowberry

*Not a dominant species but added for species diversity

D. Riparian Plant Communities

i. Potential Vegetation

1. CNHP Field Guide to Wetland and Riparian Plant Associations

The CNHP Field Guide to Wetland and Riparian Plant Associations indicates that the plant communities in the Bohn Park sub-reach are most closely associated with Group C - Deciduous Dominated Forests and Woodlands, and more specifically the Narrowleaf cottonwood/Chokecherry Woodland and Narrowleaf cottonwood/Sandbar Willow Woodland (CNHP, 2003).

Narrowleaf cottonwood/Chokecherry Woodland: This plant association occurs only along low elevation, foothill streams; and occurs on narrow, elevated or steeply sloping streambanks and benches in narrow to moderately broad valleys, 100 to 400 feet wide. The overstory is dominated by narrowleaf cottonwood (*Populus angustifolia*), and the shrub layer is comprised of chokecherry (*Prunus virginiana*), snowberry (*Symphoricarpos occidentalis*), and thinleaf alder (*Alnus incana* ssp. *tenuifolia*). The herbaceous undergrowth is diverse, depending on local site conditions and amount of past disturbance, and may include Kentucky bluegrass (*Poa pratensis*), cheatgrass (*Bromus tectorum*), Canada goldenrod (*Solidago canadensis*), creeping bentgrass (*Agrostis stolonifera*), and woolly sedge (*Carex pellita*) (CNHP, 2003).

Narrowleaf cottonwood/Sandbar Willow Woodland: Narrowleaf cottonwood is very commonly associated with sandbar willow and occupies point bars, gravel bars, benches and low areas that are frequently flooded. This association is usually well within the active channel and immediate floodplain of the stream and does not occur more than 3-6 feet above the ordinary high water mark (OHWM). Stream channels are wide and slightly to moderately sinuous. This plant association is an early, successional stage characterized by open to dense stands of young cottonwood trees, saplings and seedlings of the same height as sandbar willow. Other trees may be present along with ponderosa pine, and other shrubs including thinleaf alder, shining willow (*Salix lucida*), strapleaf willow (*Salix ligulifolia*), Drummond willow (*Salix drummondiana*), and Bebb willow (*Salix bebbiana*) (CNHP, 2003).

2. EPA Level IV Colorado Ecoregion Data

EPA Level IV data for Colorado Ecoregions describes the natural vegetation along the Creek corridor as follows:

Southern Rockies - Crystalline Mid-Elevation Forests (21c): Ponderosa pine forest with areas of Douglas-fir forest. Understory may include mountain mahogany, bitterbrush, wax currant, skunkbrush, woods rose, mountain muhly, Junegrass, Arizona fescue, king spike-fescue, and various sedges.

Southern Rockies - Foothills Shrublands (21d): Sagebrush shrubland, pinyon-juniper woodland, and foothill-mountain grasslands. Also includes areas of mountain mahogany shrublands and scattered Gambel oak woodlands. The woodlands are often interspersed with mountain big sagebrush, skunkbrush, serviceberry, fringed sage, rabbitbrush, blue grama, Junegrass, western wheatgrass, Indian ricegrass, Scribner needlegrass, muttongrass, and blue grama.

High Plains – Front Range Fans (25l): Shortgrass and mixed grass prairie with blue grama, needle-and-thread, western wheatgrass, buffalograss, Junegrass, and little bluestem. Big bluestem is scattered in low concentrations throughout the region. Riparian areas contain cottonwood/shrub/herbaceous species.

3. CNAP Native Plant Revegetation Guide

The CNAP Native Plant Revegetation Guide (CNAP 1988) plant community classification locates the Site within the Eastern Plains and Foothills Region. Foothills riparian areas often have dense shrub layers composed of willows, currants, plums, chokecherries and hawthorn. Along foothills streams, shrubs such as sandbar and other willows, red-osier dogwood and twinberry grow along the cool, moist banks. Riparian areas often include a mosaic of vegetation types, with wetlands at stream edges, in backwater areas, or old oxbows, and upland and transitional vegetation communities interspersed with wetland and riparian vegetation. Because the Site is located along an ecotone between the foothills and eastern plains, short-, mid- and tall-grass prairie species and wet meadow species listed in the Revegetation Guide are appropriate for restoration of the creek margins, banks, and overbanks.

The following is a list of target species (i.e., a plant palette) for restoration of riparian and upland/transitional grassland habitat including wetland and upland species outlined in the literature that are appropriate for use in restoring the Creek corridor adjacent to Bohn Park.

Cottonwood – Willow Shrubland and Forests (Riparian Plant Community):

Grasses, Rushes & Sedges:	
Scientific Name:	**Common Name:**
Achnatherum hymenoides	indian ricegrass
Andropogon gerardii	big bluestem
Bouteloua curtipendula	side-oats grama
Bouteloua gracilis	**blue grama**
Carex aquatilis	water sedge
Carex nebrascensis	Nebraska sedge
Carex praegracilis	meadow sedge
Distichlis spicata	inland saltgrass
Distichlis spicata	inland saltgrass
Elymus canadensis	Canada wildrye
Elymus trachycaulus	slender wheatgrass
Festuca ovina	sheep fescue
Glyceria grandis	American mannagrass
Glyceria striata	fowl mannagrass
Juncus arcticus	arctic rush
Juncus balticus	**Baltic rush**
Juncus confusus	Colorado rush

Juncus ensifolius	swordleaf rush
Juncus tenuis	Poverty rush
Juncus torreyi	Torrey rush
Panicum virgatum	**switchgrass**
Pascopyron smithii	**western wheatgrass**
Poa palustris	fowl bluegrass
Schizachryrium scoparium	**little bluestem**
Schoenoplectus americanus	three-square
Sorghastrum nutans	**yellow indian grass**
Sporobolus airoides	alkali sacaton
Sporobolus cryptandrus	sand dropseed
Sporobolus heterolepis	prairie dropseed
Stipa viridula	green needlegrass
Forbs:	
Apocynum cannabinum	Indian hemp
Clematis ligusticifolia	western white clematis
Cyclachaena xanthifolia	marsh-elder
Equisetum arvense	field horsetail
Glycyrrhiza lepidota	wild licorice
Heracleum sphondylium	cow-parsnip
Hydrophyllum fendleri	Fendler's waterleaf
Hypericum formosum	St. Johnswort
Iris missouriensis	Rocky Mountain iris
Maianthemum stellatum	starry false Solomon's seal
Mentha arvensis	wild mint
Mertensia ciliata	mountain bluebells
Monarda fistulosa	wildbergamot beebalm
Potentilla rivalis	brook cinquefoil
Solidago canadensis	Canada goldenrod
Vicia americana	American vetch
Trees and Shrubs:	
Acer glabrum	Rocky Mountain maple
Acer negundo	box-elder
Alnus incana	**thinleaf alder**
Betula occidentalis	water birch
Crataegus rivularis	river hawthorn
Picea pungens	Colorado blue spruce
Populus angustifolia	**narrowleaf cottonwood**
Populus deltoides	**plains cottonwood**
Populus tremuloides	quaking aspen
Prunus americana	**American plum**
Prunus virginiana	**black chokecherry**
Pseudotsuga menziesii	Douglas-fir
Ribes aureum	**golden currant**
Ribes cereum	**wax currant**

Rosa woodsii	**Woods' rose**
Rubacer parviflorum	Thimbleberry
Salix amygdaloides	peachleaf willow
Salix bebbiana	Bebb willow
Salix drummondiana	Drummond's willow
Salix exigua	**Sandbar willow**
Salix geyeriana	Geyer's willow
Salix irrorata	bluestem willow
Salix lucida	shining willow
Salix monticola	mountain willow
Swida sericea	red-osier dogwood

Note: dominant species in bold type.

4. Boulder County Parks and Open Space Revegetation Guide

The Boulder County Parks and Open Space Revegetation Guide was also used as a reference to enhance and/or support the selection of native grasses, trees and shrubs.

5. Colorado Native Plant Society

The Colorado Native Plant Society makes plant inventories from field trips available to the public. No such data is available for the St. Vrain Creek watershed.

ii. Potential Sources of Native Plant Materials

1. Onsite Collection

Due to the devastation of the flood, very little existing vegetation, especially shrubs, grasses and grass-like wetlands plants are present to provide a source of plant materials (seed, roots, cuttings or transplants) for revegetating the corridor without doing more harm. What vegetation that remains should be left in place to the maximum extent possible depending on creek realignment and landowner desires.

2. Native Plant and Seed Suppliers

Ecos contacted several native plant and seed suppliers to assess availability of ecotypic plant materials for the previous SVR-DB Project. Native plant suppliers included:

- AloTerra Restoration Services, LLC (working in conjunction with CSFS Nursery)
- Alpine Eco Nursery
- Colorado State Forest Service Nursery
- Green Spot Nursery
- Los Luna Plant Materials Center
- Little Valley Wholesale Nursery
- North Fork Natives

Native seed suppliers included:

- Southern Rockies Seed Network
- Arkansas Valley Seed
- Granite Seed
- Pawnee Buttes Seed
- Western Native Seed

III. BASIS OF DESIGN

A. Project Goals:

i. Bohn Park Flood Recovery Final Design and Bid Project RFP

The Bohn Park Flood Recovery Final Design and Bid Project – Request for Proposals (RFP) identified the fundamental goals outlined in the Lyons Recovery Action Plan and Lyons Parks Flood Recovery Planning Process for ensuring that Bohn Park continues to meet local and regional demands. Two of these goals are pertinent to Site revegetation and restoration:

1) Restore and augment river access and river habitat.

2) Re-establish natural areas and consider wetlands.

ii. Lyons Recovery Action Plan (LRAP)

The LRAP contained many community-defined goals, all of which are important to the recovery of the community. The specific goals incorporated in this Basis of Design include those listed under the Streams section. The LRP highlights the importance of the Creek in the Sustainability statement in the Stream section: *The North and South St. Vrain Creeks meet in the heart of Lyons and are the centerpieces of the local natural ecosystems and community outdoor activities. These projects are based in the intention of restoring the stream in a way that provides resilience in the face of future flooding events, with an eye towards natural features such as densely planted vegetation for bank stabilization, and new engineered and managed floodplain.*

The specific goals outlined in the Stream section of the LRP are:

- Goal #1: Protect and promote Lyons' unique natural environment and resources and lead the community toward environmental sustainability
    - Maximize opportunities to restore and conserve riverine natural resources
- Goal #2: Protect the natural and built environment from flood events and other hazards along the St. Vrain River
    - Reinforce hazard mitigation techniques

iii. Town of Lyons Parks – Flood Recovery Planning Process, Bohn Park Preferred Alternative

During the Flood Recovery Planning Process, the Town, DHM Design and S_2O selected a preferred alternative conceptual design for Bohn Park which outlines the primary goals for Creek restoration within the Site, as summarized below:

- Riverine and Riparian Ecological Restoration;
- Water Features;
- Gravel Bed/Beach Area;
- River Recreation Access;
- Steps Down to River;
- ADA Fishing Access;
- River Overlook;
- Future riparian Park Experience.

iv. Federal Emergency Management Agency (FEMA) Record of Environmental Consideration (REC) Reports

Two FEMA REC Reports (LYONS20- RECREATIONAL OR OTHER- PARKS AND RECREATION, LYONS35 - RECREATIONAL OR OTHER - WHITEWATER FEATURES) outlines the regulatory reviews and approvals required for the Project, including the NEPA Determination, Categorical Exclusions, Environmental Law/Executive Order, Special Conditions Required on Implementation of the Project, and Standard Conditions. The FEMA REC Reports require that once funded by FEMA, the Project must be reviewed for environmental compliance prior to initiation.

v. Lyons Park Standards Booklet

This booklet is intended to be provided as a resource to anyone designing, remodeling, or renovating any park in Lyons, Colorado in order to assure that the park system has a cohesive and consistent character. These standards will enable the park maintenance

department to easily maintain and reorder products when needed. The booklet is intended to be a guideline. The Parks Director, Board of Trustees, Park and Recreation Commission and the public of the Town of Lyons will be involved in all design solutions and plan review on a park-to-park basis.

B. Proposed Plant Communities

The data collected during the previous SVR-DB Project and the current Site assessment process form the basis of design of the proposed plant community, including: historic/pre-flood vegetation community data; the non-invasive, native plant communities inventoried within the Site; the potential vegetation listed by the CNHP and CNAP; the native plant and seed materials available from local suppliers, reference data and guidance provided by previous studies and agencies such as Boulder County; and best professional judgement. Please refer to the species listed above for those riparian and upland/transitional plants that are appropriate for restoring the Site.

C. Innovative Approaches to Plant Materials Selection

i. Ecotypic Plant Materials

"Ecotypic" is defined as: *A genetically distinct population of plants, animals, or other organisms that is found in a particular habitat.* Therefore, ecotypic plant materials for the Project are those species that are adapted to the particular environmental conditions of riparian corridors in the Southern Rocky Mountain region. Ecos queried commercial plant materials suppliers during the SVR-DB Project to determine if the materials that they would be providing are ecotypic of the region. Many of the plant suppliers stated that much of the material that they grow or trade with other suppliers dates back decades and that the information that they keep track of now was not recorded in the past. Although the exact genealogy of the plants is not certain, the suppliers report that much of stock was sourced in the Colorado, the Rocky Mountains, or came from suppliers from out of state who in some instances used seed or cuttings that originated from Colorado stock. A concerted effort was made to reach out to the Southern Rockies Seed Network (SRSN), as this network is being established to assist in flood recovery throughout northern Colorado to provide ecotypic materials. Like commercial nurseries, the SRSN is in the early stages of establishment and was not yet ready to supply materials for this Project.

ii. Live Cuttings

During the previous SVR-DB Project ecos worked with CDOT to obtain permission to collect live willow cuttings (live stakes) in areas immediately adjacent to Lyons along the Highway 66 right-of-way. This material is also available for use at the Bohn Park Site. The live stakes are specified by ecos to be 3-foot long to ensure contact with the saturated soil/capillary fringe associated with the Creek.

iii. Broad-spectrum Seed Mixes

Ecos developed a broad-spectrum seed mix composed of a diversity of cool and warm-season upland and wetland species that are capable of germinating and flowering in different seasons and under a variety of soil type and soil moisture conditions (hydric, mesic and xeric) that are present throughout the Site and Creek corridor. This approach ensures that the native herbs and forbs will germinate and establish under any condition.

iv. Companion Crop

A companion crop (sometimes referred to as a cover crop) provides short-term temporary vegetation cover until perennial vegetation establishes. Companion crops also increase competition with early successional weeds. In order to not introduce a species that may inadvertently escape and become a nuisance in the landscape in the future, ecos specified QuickGuard Sterile Triticale (Triticum aestivum x Secale cereale). This is a sterile, annual species that is a hybrid between common wheat and cereal rye to stabilize the site in the short term until the perennial species begin to establish

D. Revegetation Plans

As the Team design process proceeds further, the Creek corridor within the Site will ultimately be divided into restoration and enhancement areas such that detailed Revegetation Plans may be prepared. Restoration areas are those portions of the Site

where trees, shrubs or grasses are absent. Enhancement areas consist of those portions of the Site where existing trees are present, but are generally lacking in shrubs or grasses. Enhancement areas also tend to have only one age class of existing matures trees and therefore will benefit from adding younger trees to improve age diversity. Gross-level planting plans cross-referenced with plant schedules that define the species, aerial cover percentages, percentage of the species mix, and quantities of plant and seed material to be planted in restoration and enhancement areas were prepared. Absolute cover for tree, shrub, or herbaceous strata is based on optimal percentages for Preble's meadow jumping mouse habitat which consists of 20% tree cover, 40% shrub cover and 80% herbaceous cover (i.e., percent target cover). Plant spacing for riparian trees and wetland shrubs was set at approximately 1/2 mature spread and assumes canopy closure in approx. 10 years. Plant spacing for riparian shrubs was set at the maximum spread at maturity. Average plant spacing was then established for all trees and then all shrubs. Average spacing for trees in restoration areas is approximately 12' on center. Average spacing for shrubs in restoration areas is approximately 6' on center. Average spacing for trees in enhancement areas is approximately 15' on center. Average spacing for shrubs in enhancement areas is approximately 10' on center. Data on mature height and spread of each plant was derived from USDA Plants Database, plant guides, and professional judgement of species form and habit. Plant quantities were calculated by multiplying the restoration and enhancement planting areas by percent target cover and then dividing by the average plant spacing. Seeding quantities were based on the percent of mix, number of seeds per pound for each species and the number of seeds to be applied to each square foot. Refer to Appendix A for the preliminary Bohn Park Plant Schedules, Seed Schedules and Typical Riparian Cross-Section.

IV. PERMITTING AND REGULATORY CLEARANCES

Ecos contacted Michael Stanley at the U.S. Army Corps of Engineers to discuss the Project permitting related to the Creek corridor. Mike agreed that the NWP 27 obtained for the previous SVR-DB Project would be applied to all stream restoration work on the Site, which may include channel realignment, bank layback/grading, instream stabilization and habitat features and other associated restoration work. Mike also confirmed that NWP 3a would apply to the rehabilitation and maintenance of the pre-existing instream features (Note: The FEMA REC Reports also indicate that repair of said structures is applicable to a Categorical Exclusion). NWP3a does not require Pre-Construction Notification, however it does require compliance with the National Historic Preservation Act (NHPA) and the Endangered Species Act (ESA). Therefore, ecos prepared and submitted a figure via email to Mike with our previous OAHP database information to illustrate that there are no NHPA issues within the Site. We also contacted Alison Michael at the USFWS to discuss ESA issues. Alison confirmed that the Biological Assessment (BA) prepared for, and the USFWS Concurrence Letter received for, the previous SVR-DB Project would be applied to the riparian corridor and all stream restoration work on the Site. She further confirmed that the Lyons Park Programmatic Consultation that USFWS conducted with FEMA in 2014 (06E24000-2014-I-0774) would apply to the remainder of the Site (i.e., the park area outside of the riparian corridor. Please refer to Appendix B for copies of the emails between ecos and the USACE and USFWS.

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APPENDIX A

Preliminary Bohn Park Plant Schedules, Seed Schedules and Typical Riparian Cross-Section

BOHN PARK - SOUTH ST. VRAIN CREEK PLANT PALETTE

FLOODPLAIN

SYMBOL	Scientific Name	Common Name	Indicator Status	Height at 20 years	Approx. Spread	Size / Form	Plant Spacing
	RIPARIAN TREES - 20% Cover Target						
PIN PON - 5	**Pinus ponderosa	ponderosa pine	UPL	40	20	5 gal	IND
PIN PON - 1	**Pinus ponderosa	ponderosa pine	UPL	40	20	1 gal.	IND
PRU AME - 30	*Prunus americana	American Plum	UPL	24	24	30" tall 1 gal	10
POD DEL - 2.5	Populus deltoides var. monilifera	plains cottonwood	FAC	80	40	2.5" cal	20
POP DEL - 1.25	Populus deltoides var. monilifera	plains cottonwood	FAC	80	40	1.25" cal	20
POP DEL - 5	Populus deltoides var. monilifera	plains cottonwood	FAC	80	40	5 gal	20
POP ANG - 2.0	Populus angustifolia	narrowleaf cottonwood	FACW	60	30	2" cal	15
POP ANG - 5	Populus angustifolia	narrowleaf cottonwood	FACW	60	30	5 gal	15
SAL AMY - 30	Salix amygdaloides	peachleaf willow	FACW	45	45	30" tall 1 gal	IND
							TOTAL
	RIPARIAN SHRUBS - 40% Cover Target						
SYM OCC - 5	Symphoricarpos occidentalis	snowberry	UPL	3	3	5 gal	3
SYM OCC - 30	*Symphoricarpos occidentalis	snowberry	UPL	3	3	30" tall 1 gal	3
PRU VIR - 5	Prunus virginiana var. melanocarpa	chokecherry	FACU	15	15	5 gal	10
PRU VIR - 14	Prunus virginiana var. melanocarpa	chokecherry	FACU	15	15	14" tall 1 gal	10
ROS WOO - 30	*Rosa woodsii	Wood's rose	FACU	3	3	30" tall 1 gal	3
ROS WOO - 14	Rosa woodsii	Wood's rose	FACU	3	3	14" tall 1 gal	3
RIB AUR - 5	Ribes aureum	golden currant	FACU	10	10	5 gal	5
RIB AUR - 30	*Ribes aureum	golden currant	FACU	10	10	30" tall 1 gal	5
RIB AUR - 1	Ribes aureum	golden currant	FACU	10	10	1 gal	5
RIB CER - 5	Ribes cereum	wax currant	NI	5	5	5 gal	5
RIB CER - 1	Ribes cereum	wax currant	NI	5	5	1 gal	5
COR SER - 5	Cornus sericea	redosier dogwood	FACW	12	12	5 gal	10
COR SER - 30	*Cornus sericea	redosier dogwood	FACW	12	12	30" tall 1 gal	10
							TOTAL

STREAMBANK PLANT SCHEDULE

SYMBOL	Scientific Name	Common Name	Indicator Status	Height at 20 years	Approx. Spread	Size / Form	Plant Spacing
	WETLAND SHRUBS - 100% Cover Target						
ALN INC - 40	Alnus incana ssp. Tenuifolia	thinleaf alder	FACW	15	15	40 cu. inch tubling	IND
SAL BEB - 5	Salix bebbiana	Bebb willow	FACW	10	10	5 gal	2.5
SAL BEB - 1	Salix bebbiana	Bebb willow	FACW	10	10	1 gal	2.5
SAL EXI - 5	Salix exigua	coyote willow	FACW	5	5	5 gal	2.5
SAL EXI - 30	*Salix exigua	coyote willow	FACW	5	5	30" tall 1 gal	2.5
SAL EXI - 1	Salix exigua	coyote willow	FACW	5	5	1 gal	2.5
SAL EXI - 40	Salix exigua	coyote willow	FACW	5	5	40 cu. inch tubling	2.5
SAL EXI - 16	Salix exigua	coyote willow	FACW	5	5	16 cu. inch tubling	2.5
SAL IRR - 5	Salix irrorata	bluestem willow	FACW	20	20	5 gal	2.5
SAL IRR - 30	*Salix irrorata	bluestem willow	FACW	20	20	30" tall 1 gal	2.5
SAL BEB - 5	Salix bebbiana (July availability)	Bebb willow	FACW	10	10	5 gal	2.5
SAL BEB - 1	Salix bebbiana (July availability)	Bebb willow	FACW	10	10	1 gal	2.5
SAL EXI - 5	Salix exigua (July availability	coyote willow	FACW	5	5	5 gal	2.5
							TOTAL

LOW BENCH PLANT SCHEDULE

SYMBOL	Scientific Name	Common Name	Indicator Status	Height at 20 years	Approx. Spread	Size / Form	Plant Spacing
	WETLAND SHRUBS (FLOODPLAIN/LOW BENCH) - 100% Cover Target (Over 50% of the Area)						
SAL EXI - C	Salix exigua	coyote willow	FACW	5	5	3/4" dia. x 3'	3
							TOTAL

BOHN PARK - SOUTH ST. VRAIN CREEK SEED SCHEDULE

*** Seeds per SF** **75**

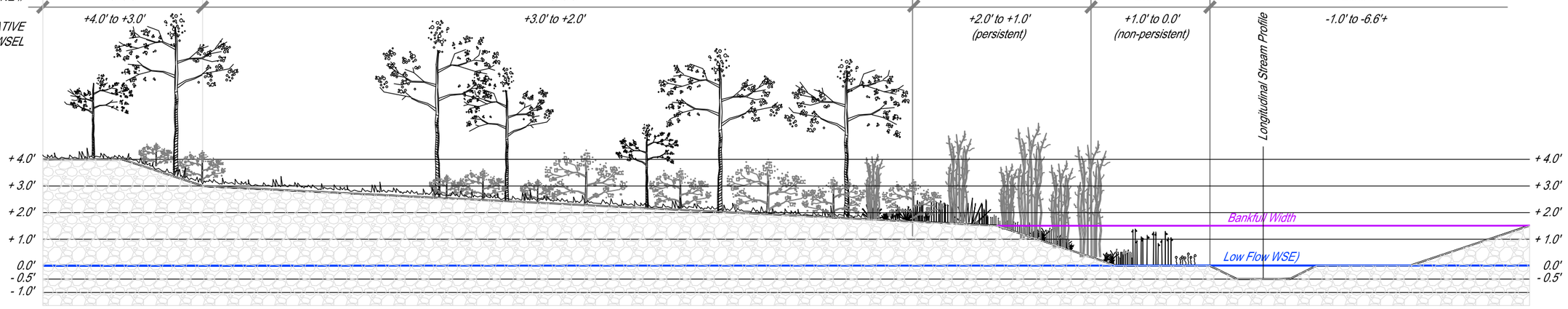
*** Acres** **1**

UPLAND - RIPARIAN SEED

5/12/2016

Scientific Name	Common Name	Region 5 Indicator Status	Seasonality	* Percent of Mix	* LBS/PLS per AC	Drill Seeding Total LBS	Broadcast Seeding Total LBS
Moist to Dry Soils							
Achnatherum hymenoides	indian ricegrass	FACU	C	2.0%	0.46	0.46	0.93
Andropogon gerardii	big bluestem	FACU	W	2.0%	0.50	0.50	1.01
Bouteloua curtipendula	side-oats grama	NI	W	2.0%	0.34	0.34	0.68
Bouteloua gracilis	blue grama	NI	W	5.0%	0.20	0.20	0.40
Carex aquatilis	water sedge	OBL	C	2.0%	0.13	0.13	0.27
Carex nebrascensis	Nebraska sedge	OBL	C	2.0%	0.12	0.12	0.24
Carex praegracilis	meadow sedge	FACW	C	2.0%	0.04	0.04	0.07
Distichlis spicata	inland saltgrass	FACW	W	2.0%	0.13	0.13	0.25
Elymus canadensis	Canada wildrye	FACU	C	5.0%	1.42	1.42	2.84
Elymus trachycaulus	slender wheatgrass	FACU	C	7.0%	1.44	1.44	2.88
Festuca ovina	sheep fescue	NI	C	7.0%	0.34	0.34	0.67
Juncus balticus	Baltic rush	OBL	C	7.0%	0.03	0.03	0.06
Juncus ensifolius	swordleaf rush	FACW	C	2.0%	0.02	0.02	0.04
Juncus tenuis	Poverty rush)	FACW	C	2.0%	0.01	0.01	0.02
Juncus torreyi	Torrey rush	FACW	C	2.0%	0.01	0.01	0.02
Panicum virgatum	switchgrass	FAC	W	5.0%	0.42	0.42	0.84
Pascopyrum smithii	western wheatgrass	FACU	C	12.0%	3.56	3.56	7.13
Poa palustris	fowl bluegrass	FACW	C	5.0%	0.05	0.05	0.10
Schizachryrium scoparium	little bluestem	FACU	W	5.0%	0.63	0.63	1.26
Schoenoplectus americanus	three-square	OBL	C	10.0%	0.82	0.82	1.63
Sorghastrum nutans	yellow indian grass	FACU	W	2.0%	0.38	0.38	0.77
Sporobolus airoides	alkali sacaton	FAC	W	5.0%	0.09	0.09	0.19
Sporobolus cryptandrus	sand dropseed	FACU	W	5.0%	0.03	0.03	0.06
				100.0%	**11.18**	**11.18**	**22.36**
Companion Crop							
Triticum aestivum x Secale cereale	QuickGuard Sterile Triticale		C	100.0%	20.00	20.00	40.00

PLANT COMMUNITY:		COTTONWOOD - WILLOW - DECIDUOUS SHRUB	WILLOW - SEDGE- RUSH:	SEDGE - RUSH:	
INDICATOR STATUS:	(FACU - FAC)	(FAC-FACW)	(FACW - OBL)	(OBL)	NOTES:
SPECIES:	Cottonwood-Deciduous Shrub: ponderosa pine plains cottonwood chokecherry Wood's rose golden currant wax currant western snowberry	Cottonwood-Deciduous Shrub: narrowleaf cottonwood red-twig dogwood thinleaf alder Willow : coyote willow Bebb willow bluestem willow whiplash willow Rocky Mtn. willow	Willow : peachleaf willow coyote willow Bebb willow bluestem willow whiplash willow Rocky Mtn. willow Sedge/Rush : water sedge Nebraska sedge meadow sedge baltic rush swordleaf rush poverty rush Torrey's rush switchgrass three-square prairie cordgrass switchgrass	Sedge/Rush: water sedge Nebraska sedge meadow sedge baltic rush swordleaf rush poverty rush Torrey's rush switchgrass three-square prairie cordgrass switchgrass	Ideal PMJM Habitat consists of 20% tree, 40% shrub & 80% herbaceous cover.
USFWS CLASSIFICATION:	Forest/Shrub-Scrub (FO/SS)	Forest/Shrub-Scrub (FO/SS)	Shrub-Scrub / Palustrine Emergent (PEM/SS)	Palustrine Emergent (PEM)	Unconsolidated Bottom/Open Water (UB/OW)
ZONE #	Zone 3	Zone 3	Zone 2	Zone 1	Zone 0
ELEVATION RELATIVE TO LOW FLOW WSEL	+4.0' to +3.0'	+3.0' to +2.0'	+2.0' to +1.0' (persistent)	+1.0' to 0.0' (non-persistent)	-1.0' to -6.6'+



NOTES:
1. ALL ZONES ARE TO BE SEEDED WITH ONE BROAD-SPECTRUM SEED MIX CONTAINING THE SPECIES SHOWN ON THE SEED SCHEDULES.
2. REFER TO PLANTING AND SEEDING SCHEDULES FOR SPECIES SIZE/FORM AND QUANTITY.
3. RIPARIAN ZONE ZONES MAY EXTEND ACROSS THE ENTIRE FLOODPLAIN AND CONTAIN BOTH UPLAND & WETLAND SPECIES.

PCS

TYPICAL RIPARIAN PLANT COMMUNITY CROSS-SECTION

CROSS-SECTION NTS

SHEET D1

JAMES CREEK FLOOD RECOVERY
JAMES CREEK RESTORATION
TYPICAL PLANT COMMUNITY CROSS-SECTION

NO:	REVISIONS:	BY:	DATE:
#1			
#2			
#3			
#4			

DRAWN BY: JBD
CHECKED BY:
DATE: 5-11-16
PROJECT NO: 5015-10-5

ecos ecosystem services LLC
1455 Washburn Street
Erie, Colorado 80516
(p): 970-812-3267

C:\Users\Jon Douzvardis\Documents\0-EcoS\0-Projects\2015-5-5 Lyons St Vrain\Mapping\CAD\ecos_ Planting Details 1-25-16.dwg

APPENDIX B

Regulatory Emails Between Ecos
and the
USACE and USFWS

Grant Gurnee

From: Stanley, Michael G NWO
Sent: Friday, April 08, 2016 2:51 PM
To: Grant Gurnee
Subject: RE: [EXTERNAL] ESA Compliance for Lyons St Vrain Restoration to include Bohn Park

Looks good.
Thanks,

Michael Stanley
Regulatory Specialist
Denver Regulatory Office
9307 S. Wadsworth Blvd.
Littleton, CO 80128-6901
Ph: (303) 979-4120
Fax: (303) 979-0602

-----Original Message-----
From: Grant Gurnee [mailto:grant@ecologicalbenefits.com]
Sent: Friday, April 08, 2016 2:14 PM
To: Stanley, Michael G NWO <Michael.G.Stanley@usace.army.mil>
Subject: [EXTERNAL] ESA Compliance for Lyons St Vrain Restoration to include Bohn Park

Hello Michael –

I am forwarding the USFWS concurrence email for your records.

Thank you for your assistance,

Grant

From: Michael, Alison [mailto:alison_michael@fws.gov <mailto:alison_michael@fws.gov>]
Sent: Friday, April 08, 2016 2:10 PM
To: Grant Gurnee <grant@ecologicalbenefits.com <mailto:grant@ecologicalbenefits.com> >
Subject: Re: BA Addendum for Lyons St Vrain Restoration to include Bohn Park

Hi Grant,

I compared the figures you sent with the figures in the Lyons Park Programmatic Consultation that we conducted with FEMA in 2014 (06E24000-2014-I-0774) and the project boundaries appear to be the same. In that consultation, we concurred with FEMA's determination that the project was unlikely to adversely affect the Preble's meadow jumping mouse, the Colorado butterfly plant, and the Ute ladies'-tresses orchid because it is unlikely that these species occurred in the parks prior to the flooding and habitat was destroyed or degraded by the flood, so impacts due to the project are expected to be discountable. Because the work was addressed in the 2014 consultation with FEMA and that neither the project description nor the habitat conditions have changed, additional consultation is not necessary.

Please let me know if you have any questions.

Alison

On Fri, Apr 8, 2016 at 1:55 PM, Grant Gurnee <grant@ecologicalbenefits.com <mailto:grant@ecologicalbenefits.com> > wrote:

Hi Allison –

Based on my assessment last week the site is still very decimated, and particularly the northern area adjacent to the riparian corridor where these species/habitat could potentially exist. The mown pastures (southern area) have not changed at all from pre-flood and your 2014 assessment. I would still agree with NLTAA.

Thanks

Grant

From: Michael, Alison [mailto:alison_michael@fws.gov <mailto:alison_michael@fws.gov>]
Sent: Friday, April 08, 2016 1:51 PM
To: Grant Gurnee <grant@ecologicalbenefits.com <mailto:grant@ecologicalbenefits.com> >
Subject: Re: BA Addendum for Lyons St Vrain Restoration to include Bohn Park

Hi Grant,

In 2014, we concurred with a NLTAA because there was no remaining habitat for the mouse, the butterfly plant, or the orchid, and that these species likely did not occupy the site prior to the flood because of the development. Do you think that the the habitat has changed enough in the past two years to be able to support any of these species?

Thanks,

Alison

On Fri, Apr 8, 2016 at 9:44 AM, Grant Gurnee <grant@ecologicalbenefits.com <mailto:grant@ecologicalbenefits.com> > wrote:

Hello Alison –

I would like to discuss the potential need for another Addendum to our BA, as we are now working on the Bohn Park project. We included the creek and riparian corridor adjacent to Bohn Park in our Figure 2 – Work Area Map in the BA and BA Addendum, but neglected to include the upland area of Bohn Park.

Please refer to the attached figures:

1) Figure 2 – Work Area Map - Bohn Park is immediately adjacent to the south side of Reach 4a (green hatch) and Reach 2a (yellow hatch) on Figure 2;

2) Google Earth Aerial (10/9/15). Bohn Park is immediately adjacent to the south side of Reach 4a and Reach 2a, and extends southward to the Picture Rock Trail.

3) Bohn Park Preferred Alternative – illustrates the proposed park improvements.

This Park area is currently comprised of:

1) North area: a denuded field that has been used for materials stockpile since the 2014 flood, destroyed baseball diamond, existing tennis court and dirt parking area;

2) Central area: an existing multi-use area that survived the flood; and

3) South area: mown hay fields.

Please let me know if you think this addition warrants another BA Addendum. We would be glad to provide additional information, photos, etc. to assist in your determination.

Thank you,

Grant

--

Alison Deans Michael

CDOT/USFWS Liaison

Colorado Field Office

303 236-4758

--

Alison Deans Michael

CDOT/USFWS Liaison

Colorado Field Office

303 236-4758

Grant Gurnee

From: Grant Gurnee
Sent: Friday, April 08, 2016 2:37 PM
To: Mark Wilcox
Cc: Nathan Werner; Scott Shipley; Jon Dauzvardis
Subject: CWA NP 3 Permit, ESA Section 7 & NHPA Section 106 Compliance documentation - email 3 of 3

From: Grant Gurnee [mailto:grant@ecologicalbenefits.com]
Sent: Friday, April 08, 2016 2:14 PM
To: Stanley, Michael G NWO <Michael.G.Stanley@usace.army.mil>
Subject: ESA Compliance for Lyons St Vrain Restoration to include Bohn Park

Hello Michael –

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Thank you for your assistance,
Grant

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To: Grant Gurnee <grant@ecologicalbenefits.com>
Subject: Re: BA Addendum for Lyons St Vrain Restoration to include Bohn Park

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>
> Thanks
>
> Grant
>
> **From:** Michael, Alison [mailto:alison_michael@fws.gov]
> **Sent:** Friday, April 08, 2016 1:51 PM
> **To:** Grant Gurnee <grant@ecologicalbenefits.com>
> **Subject:** Re: BA Addendum for Lyons St Vrain Restoration to include Bohn Park
>
> Hi Grant,
>
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Please let me know if you think this addition warrants another BA Addendum. We would be glad to provide additional information, photos, etc. to assist in your determination.

Thank you,

Grant

--

Alison Deans Michael

CDOT/USFWS Liaison

Colorado Field Office

303 236-4758

--
Alison Deans Michael
CDOT/USFWS Liaison
Colorado Field Office
303 236-4758

Grant Gurnee

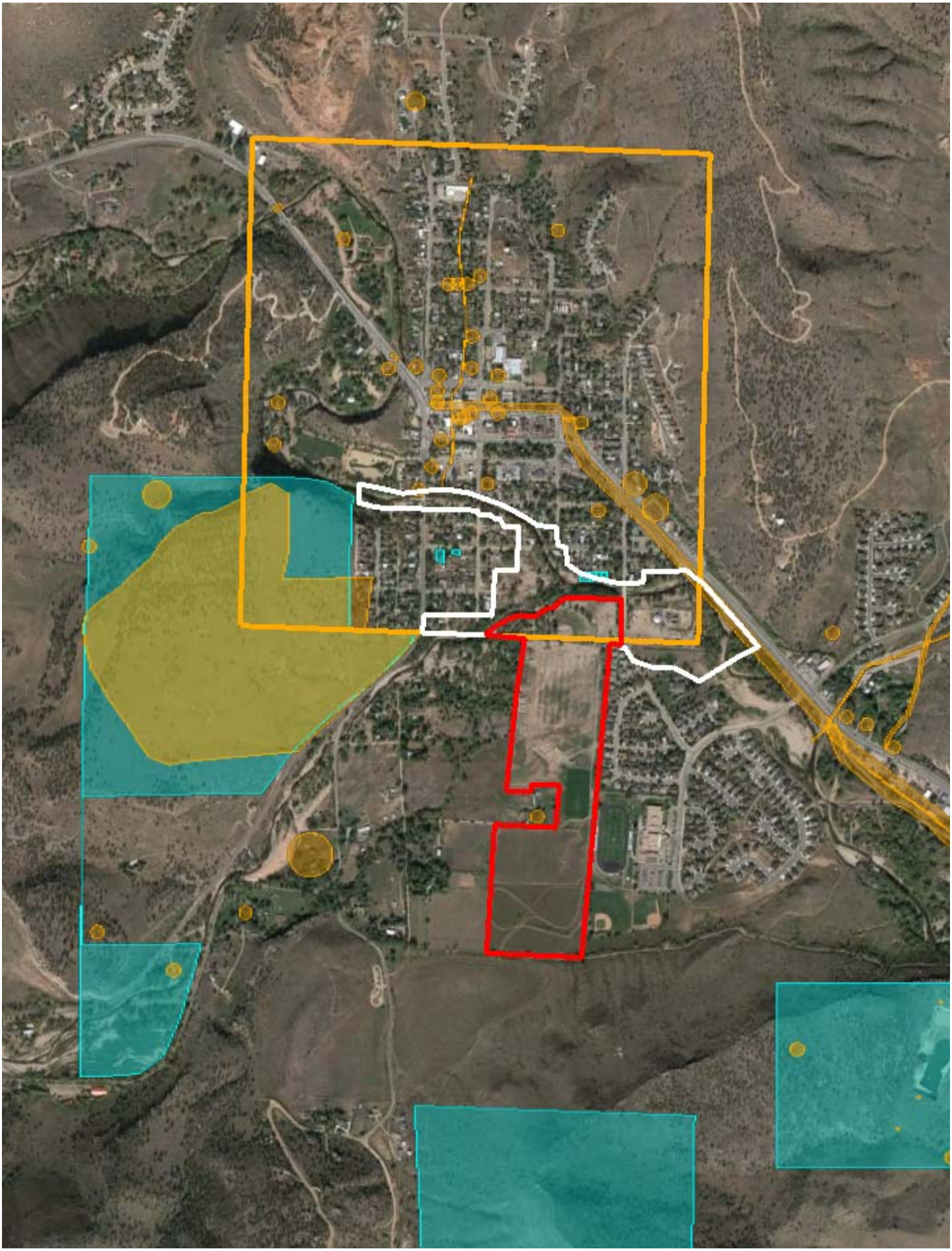
From: Grant Gurnee
Sent: Friday, April 08, 2016 2:36 PM
To: Mark Wilcox
Cc: Nathan Werner; Scott Shipley; Jon Dauzvardis
Subject: CWA NP 3 Permit, ESA Section 7 & NHPA Section 106 Compliance documentation - email 2 of 3

From: Grant Gurnee [mailto:grant@ecologicalbenefits.com]
Sent: Friday, April 08, 2016 11:52 AM
To: Stanley, Michael G NWO <Michael.G.Stanley@usace.army.mil>
Subject: Bohn Park OAHP Data - No Issues

Hello Mike –

Ecos requested that OAHP provide a data review for Sections 17, 18 and 19 during our original NP27 assessment. Bohn Park is in Section 19. OAHP provided us with a of data that covers a vast area, as well as the requested Sections. Please refer to the image below. Bohn Park is outlined in red and the OAHP Surveys are in blue and Sites are in orange. No OAHP listed surveys or sites are within Bohn Park. Therefore, we are good under NHPA.

Thanks,
Grant



Grant Gurnée, P.W.S.

Owner – Restoration Ecologist

ecosystem services LLC

(o): 970-812-ECOS (3267)
(c): 303-746-0091
(w): www.ecologicalbenefits.com
(e): grant@ecologicalbenefits.com

Life is like a river…we all must learn to adapt to the challenges of dynamic equilibrium

Grant Gurnee

From: Grant Gurnee
Sent: Friday, April 08, 2016 2:35 PM
To: Mark Wilcox
Cc: Jon Dauzvardis; Nathan Werner; Scott Shipley
Subject: CWA NP 3 Permit, ESA Section 7 & NHPA Section 106 Compliance documentation - email 1 of 3

Importance: High

Hello Mark & Team -

Ecos has closed the loop with the Corps (NP3) for the maintenance of the existing structures, including concurrence from FWS and compliance with NHPA (which both apply to entire Bohn Park project).

As stated in my previous email, we will confirm all CWA impacts under our existing NP 27 as design proceeds.

Please keep these 3 emails with your Project files. The first one is directly below this email.

Thank you,
Grant

Grant Gurnée, P.W.S.
Owner – Restoration Ecologist

ecosystem services LLC

(o): 970-812-ECOS (3267)
(c): 303-746-0091
(w): www.ecologicalbenefits.com
(e): grant@ecologicalbenefits.com

 Life is like a river…we all must learn to adapt to the challenges of dynamic equilibrium

-----Original Message-----
From: Stanley, Michael G NWO [mailto:Michael.G.Stanley@usace.army.mil]
Sent: Friday, April 08, 2016 10:20 AM
To: Grant Gurnee <grant@ecologicalbenefits.com>
Subject: RE: [EXTERNAL] FW: Bohn Park River Structure Repair - Corps telecon

Grant,
I concur, non-reporting NWP 3 as long as there is no effect to ESA species and no potential to cause effect to historic properties.
Thanks,

Michael Stanley
Regulatory Specialist

Denver Regulatory Office
9307 S. Wadsworth Blvd.
Littleton, CO 80128-6901
Ph: (303) 979-4120
Fax: (303) 979-0602

-----Original Message-----
From: Grant Gurnee [mailto:grant@ecologicalbenefits.com]
Sent: Friday, April 08, 2016 9:53 AM
To: Stanley, Michael G NWO <Michael.G.Stanley@usace.army.mil>
Cc: Jon Dauzvardis <jon@ecologicalbenefits.com>
Subject: [EXTERNAL] FW: Bohn Park River Structure Repair - Corps telecon

Hello Michael –

Thank you for speaking with me today regarding the Bohn Park project. FEMA requires documentation of all permit actions, even those that are non-reporting. Would you mind reading the email I sent to the Team (below) and responding via email to let me know if you see any issues requiring revision to the statement below or that you concur?

Thank you,

Grant

From: Grant Gurnee [mailto:grant@ecologicalbenefits.com <mailto:grant@ecologicalbenefits.com>]
Sent: Friday, April 08, 2016 8:28 AM
To: Mark Wilcox <MWilcox@dhmdesign.com <mailto:MWilcox@dhmdesign.com> >
Cc: Nathan Werner <nathan@s2odesign.com <mailto:nathan@s2odesign.com> >; Scott Shipley <scott@s2odesign.com <mailto:scott@s2odesign.com> >; Jon Dauzvardis <jon@ecologicalbenefits.com <mailto:jon@ecologicalbenefits.com> >
Subject: Bohn Park River Structure Repair - Corps telecon

Mark, Nathan, Scott & Jon –

I just spoke to Mike Stanley, the Corps PM for the NP27 we received for the St. Vrain Restoration (which includes the Bohn Park reach). I informed him that we would like to repair the existing structures that were present before the flood and he confirmed that we may use Nationwide Permit 3, and specifically sub-section 3a – which is non-reporting (i.e., requires no Pre-Construction Notification) as long as we stay within the parameters of the NP3a conditions (refer to text below):

3. Maintenance. (a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications must be immediately adjacent to the project. This NWP also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

Note: The Corps is waiving the 2-year timeframe for most all of the 2013 flood damage.

Thank you,

Grant

Grant Gurnée, P.W.S.

Owner – Restoration Ecologist

ecosystem services LLC

(o): 970-812-ECOS (3267)

(c): 303-746-0091

(w): www.ecologicalbenefits.com <http://www.ecologicalbenefits.com/>

(e): grant@ecologicalbenefits.com <mailto:grant@ecologicalbenefits.com>

P Life is like a river…we all must learn to adapt to the challenges of dynamic equilibrium

ICON ENGINEERING, INC.

Memorandum

TO: DHM Design; Mark Wilcox

FROM: ICON Engineering, Inc, Daniel Loewen

DATE: May 13, 2016

RE: Bohn Park Drainage and Utility Design

The purpose of this memo is to summarize the work completed to date for the Bohn Park drainage and utilities as well as summarize the anticipate path forward for completing the design of the drainage and utility improvements for the park.

I. Drainage
   a. Hydrology – An analysis of the existing drainage basins and off-site drainage basins has been completed. Attached to this memo is an Existing Drainage Basin Map and corresponding rational method calculations for the 2, 5, and 100 year storm events. The existing topography in the area is relatively flat which results in little runoff during minor storm events. The topography used for the basin delineation was provided by the Town of Lyons (Town) and will be supplemented with field survey that is still being processed. Basin delineations will be updated as necessary once the survey information is received. In summary, there are six off-site basins and five on-site basins. The overall discharge point for the site is near the existing park access from 2nd Avenue. Once a final plan is determined for the park, a proposed drainage map will be prepared and analyzed to determine the increase in runoff and if mitigation to prevent adverse impacts downstream is necessary. Based on preliminary plans, detention is not anticipated as part of this project as the runoff from the site is discharged directly to St. Vrain Creek.
   b. Water Quality – Water quality will be implemented into the design improvements to the park. Water quality will be designed to meet Urban Drainage and Flood Control District (UDFCD) criteria. If for some reasons the water quality criteria cannot be met, detailed explanations will be provided in the final drainage report to identify these conditions. Anticipated water quality BMPs to be considered for the site are Grass Swales, Grass Buffers, and Constructed Wetland Ponds.

II. Irrigation Return Flows – There are two irrigation return flows located within and adjacent to the project site. Unless specifically requested by the town, irrigation return flows will remain separate from the stormwater flows. The irrigation return flow for the Meadow Ditch (east side of the site) may need to be rerouted if the proposed improvement plan includes a Lyons Park and Recreation Office/Garage in the location of the existing return flow Reinforced Concrete Pipe (RCP). Other

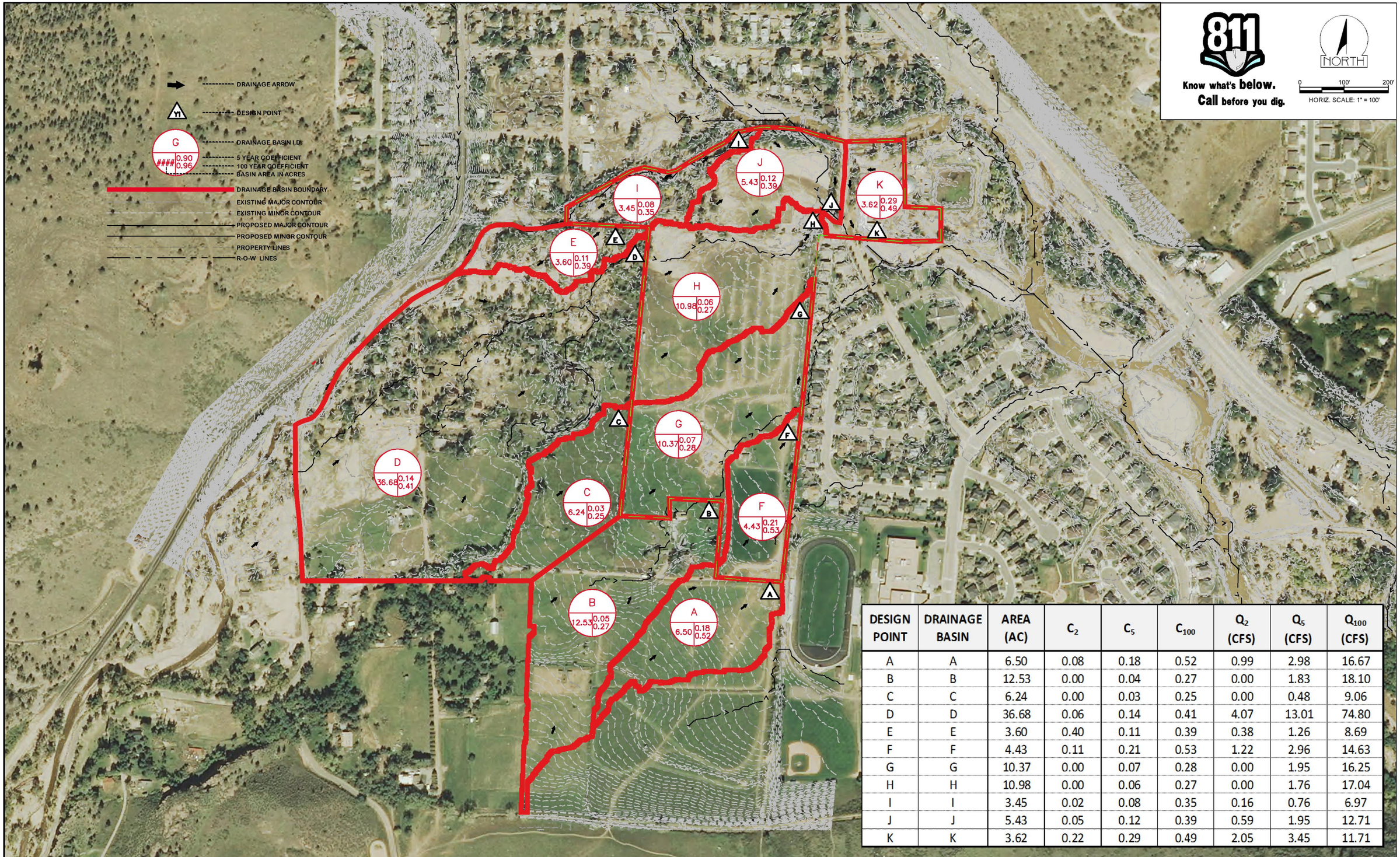
7000 S. Yosemite Street, Suite 120, Centennial, CO 80112
p 303.221.0802 | f 303.221.4019
www.iconeng.com

improvements to the irrigation return flows may also be necessary pending the results of the Town's ongoing water rights research.

III. Park Utilities – An existing utility map is attached for reference. This utility map will be updated once the updated survey information is completed.

a. Water Service – The Town is currently investigating constructing a water main loop through Bohn Park prior to the construction of the park improvements. The Town currently estimates that there is a 70% chance that the water main is approved and constructed. If the water main is constructed the service line water tap will be connected to this new main line and a fire hydrant will be included adjacent to the proposed restroom facility. If the water main loop is not constructed, the service line water tap will be off of the existing water main in 2nd Avenue and no fire hydrant will be included adjacent to the proposed restroom facility.

b. Sanitary Sewer Service – The proposed sanitary sewer service will tap into the existing 10-inch sanitary sewer main line located on the east side of 2nd Avenue. The ideal alignment for the service line will be determined once a final park improvement plan is available.



DESIGN POINT	DRAINAGE BASIN	AREA (AC)	C_2	C_5	C_{100}	Q_2 (CFS)	Q_5 (CFS)	Q_{100} (CFS)
A	A	6.50	0.08	0.18	0.52	0.99	2.98	16.67
B	B	12.53	0.00	0.04	0.27	0.00	1.83	18.10
C	C	6.24	0.00	0.03	0.25	0.00	0.48	9.06
D	D	36.68	0.06	0.14	0.41	4.07	13.01	74.80
E	E	3.60	0.40	0.11	0.39	0.38	1.26	8.69
F	F	4.43	0.11	0.21	0.53	1.22	2.96	14.63
G	G	10.37	0.00	0.07	0.28	0.00	1.95	16.25
H	H	10.98	0.00	0.06	0.27	0.00	1.76	17.04
I	I	3.45	0.02	0.08	0.35	0.16	0.76	6.97
J	J	5.43	0.05	0.12	0.39	0.59	1.95	12.71
K	K	3.62	0.22	0.29	0.49	2.05	3.45	11.71

No.	DATE	REVISIONS	APPR.

PLAN
DRAWN NAS
DESIGNED NAS/DPL
CHECKED KDB

UTILITIES
RESEARCHED N/A
DRAWN N/A
CHECKED N/A

ICON ENGINEERING, INC.
7000 South Yosemite Street, Suite 120, Centennial, CO 80112
Phone (303) 221 0802 / Fax (303) 221 0810
www.CONENG.COM

BOHN PARK IMPROVEMENTS
EXISTING DRAINAGE MAP

ICON PROJECT No. 16019BON

DATE May 2016

SHEET Exhibit A

811
Know what's **below.**
Call before you dig.

NORTH

0 60' 120'
HORIZ. SCALE: 1" = 60'

No.	DATE	REVISIONS	APPR.

PLAN
DRAWN **DPL**
DESIGNED **N/A**
CHECKED **N/A**

UTILITIES
RESEARCHED
DRAWN
CHECKED

ICON ENGINEERING, INC.
7000 S. Yosemite Street, Suite 120, Centennial CO 80112
Phone (303) 221-0802 / Fax (303) 221-1019
WWW.ICONENG.COM

BOHN PARK IMPROVEMENTS

EXISTING UTILITY MAP

ICON PROJECT No. 16-019-BON-352

DATE
MAY 2016

SHEET
EXHIBIT B

P:\PJ\16\019BON\Dwg\05_FINAL SHEETS\EXHIBIT B EXISTING UTILITY MAP.dwg Disown Page Setup: ------ COMM-TECH-D-SIZE_BW.ctb 5/17/2016 4:24 PM

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: A

I. Catchment Hydrologic Data

Catchment ID = A
Area = 6.50 Acres
Percent Imperviousness = 5.32 %
NRCS Soil Type = C A, B, C, or D

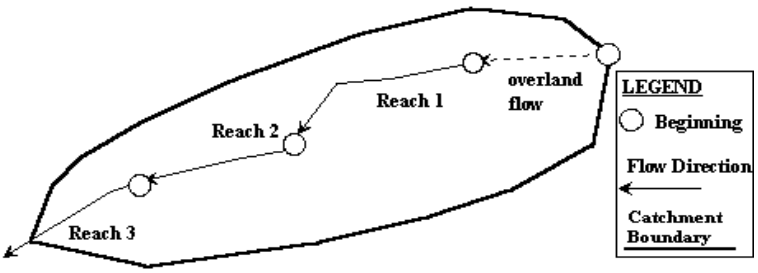
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	2	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.04	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.08
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.18
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0236	1,100	0.18	N/A	0.44	41.33
1	0.0230	780		7.00	1.06	12.25
2	0.0213	375		10.00	1.46	4.28
3						
4						
5						
	Sum	2,255				

Computed Tc = 57.86
Regional Tc = 22.53
User-Entered Tc = 22.53

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.08	inch/hr	Peak Flowrate, Qp =	0.55 cfs
Rainfall Intensity at Regional Tc, I =	1.92	inch/hr	Peak Flowrate, Qp =	0.99 cfs
Rainfall Intensity at User-Defined Tc, I =	1.92	inch/hr	Peak Flowrate, Qp =	0.99 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: A

I. Catchment Hydrologic Data

Catchment ID = A
Area = 6.50 Acres
Percent Imperviousness = 5.32 %
NRCS Soil Type = C A, B, C, or D

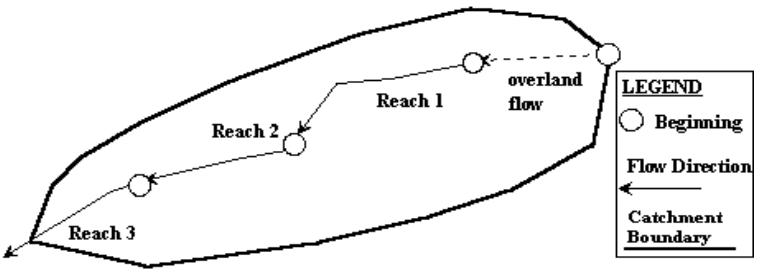
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	5	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.35	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.18
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.18
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0236	1,100	0.18	N/A	0.44	41.33
1	0.0230	780		7.00	1.06	12.25
2	0.0213	375		10.00	1.46	4.28
3						
4						
5						
	Sum	2,255				

Computed Tc = 57.86
Regional Tc = 22.53
User-Entered Tc = 22.53

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.40	inch/hr	Peak Flowrate, Qp =	1.67 cfs
Rainfall Intensity at Regional Tc, I =	2.49	inch/hr	Peak Flowrate, Qp =	2.98 cfs
Rainfall Intensity at User-Defined Tc, I =	2.49	inch/hr	Peak Flowrate, Qp =	2.98 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: A

I. Catchment Hydrologic Data

Catchment ID = A
Area = 6.50 Acres
Percent Imperviousness = 5.32 %
NRCS Soil Type = C A, B, C, or D

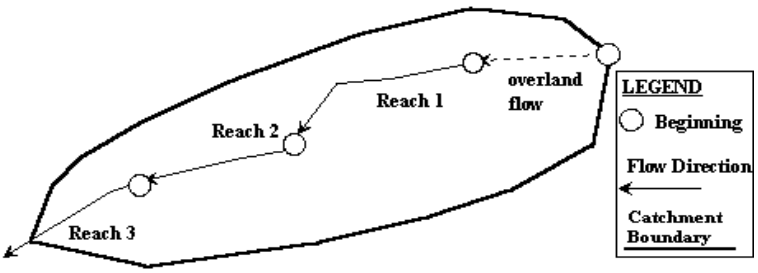
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.68	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.52
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.18
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0236	1,100	0.18	N/A	0.44	41.33
1	0.0230	780		7.00	1.06	12.25
2	0.0213	375		10.00	1.46	4.28
3						
4						
5						
	Sum	2,255				

Computed Tc = 57.86
Regional Tc = 22.53
User-Entered Tc = 22.53

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	2.78	inch/hr	Peak Flowrate, Qp =	9.35	cfs
Rainfall Intensity at Regional Tc, I =	4.95	inch/hr	Peak Flowrate, Qp =	16.67	cfs
Rainfall Intensity at User-Defined Tc, I =	4.95	inch/hr	Peak Flowrate, Qp =	16.67	cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: B

I. Catchment Hydrologic Data

Catchment ID = B
Area = 12.53 Acres
Percent Imperviousness = 8.95 %
NRCS Soil Type = A A, B, C, or D

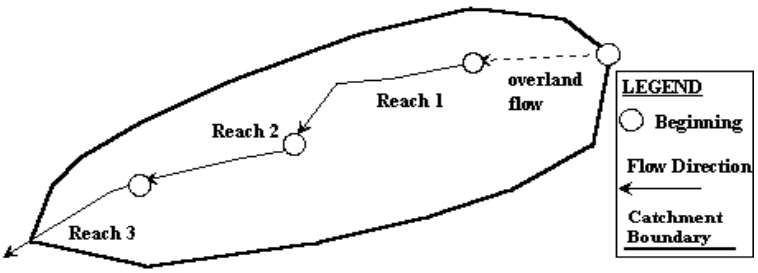
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr = 2 years (input return period for design storm)
C1 = 28.50 (input the value of C1)
C2= 10.00 (input the value of C2)
C3= 0.786 (input the value of C3)
P1= 1.04 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.00
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.05
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0331	1,240	0.05	N/A	0.46	44.81
1	0.0165	425		15.00	1.93	3.68
2						
3						
4						
5						
	Sum	1,665				

Computed Tc = 48.49
Regional Tc = 19.25
User-Entered Tc = 19.25

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I = 1.21 inch/hr — Peak Flowrate, Qp = 0.00 cfs
Rainfall Intensity at Regional Tc, I = 2.09 inch/hr — Peak Flowrate, Qp = 0.00 cfs
Rainfall Intensity at User-Defined Tc, I = 2.09 inch/hr — Peak Flowrate, Qp = 0.00 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: B

I. Catchment Hydrologic Data

Catchment ID = B
Area = 12.53 Acres
Percent Imperviousness = 8.95 %
NRCS Soil Type = A A, B, C, or D

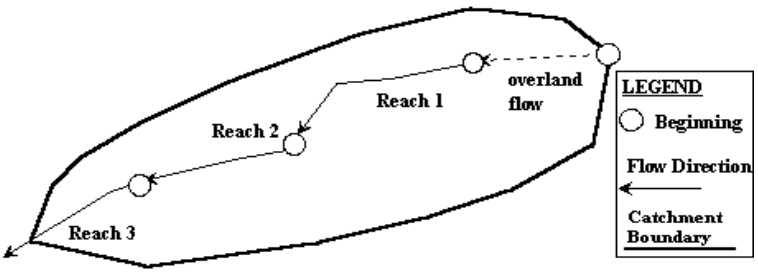
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr = 5 years (input return period for design storm)
C1 = 28.50 (input the value of C1)
C2= 10.00 (input the value of C2)
C3= 0.786 (input the value of C3)
P1= 1.35 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.05
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.05
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0331	1,240	0.05	N/A	0.46	44.81
1	0.0165	425		15.00	1.93	3.68
2						
3						
4						
5						
	Sum	1,665				

Computed Tc = 48.49
Regional Tc = 19.25
User-Entered Tc = 19.25

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I = 1.57 inch/hr — Peak Flowrate, Qp = 1.06 cfs
Rainfall Intensity at Regional Tc, I = 2.71 inch/hr — Peak Flowrate, Qp = 1.83 cfs
Rainfall Intensity at User-Defined Tc, I = 2.71 inch/hr — Peak Flowrate, Qp = 1.83 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: B

I. Catchment Hydrologic Data

Catchment ID = B
Area = 12.53 Acres
Percent Imperviousness = 8.95 %
NRCS Soil Type = A A, B, C, or D

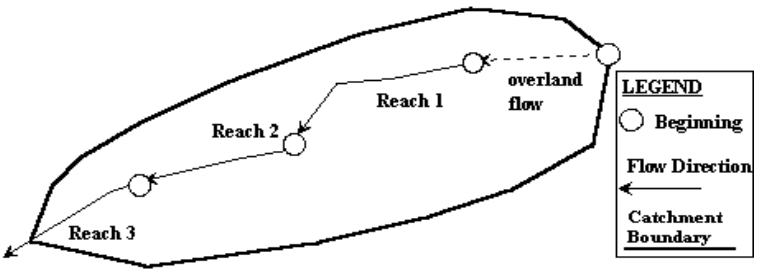
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr = 100 years (input return period for design storm)
C1 = 28.50 (input the value of C1)
C2= 10.00 (input the value of C2)
C3= 0.786 (input the value of C3)
P1= 2.68 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.27
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.05
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0331	1,240	0.05	N/A	0.46	44.81
1	0.0165	425		15.00	1.93	3.68
2						
3						
4						
5						
	Sum	1,665				

Computed Tc = 48.49
Regional Tc = 19.25
User-Entered Tc = 19.25

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I = 3.12 inch/hr — Peak Flowrate, Qp = 10.50 cfs
Rainfall Intensity at Regional Tc, I = 5.38 inch/hr — Peak Flowrate, Qp = 18.10 cfs
Rainfall Intensity at User-Defined Tc, I = 5.38 inch/hr — Peak Flowrate, Qp = 18.10 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: C

I. Catchment Hydrologic Data

Catchment ID = C
Area = 6.24 Acres
Percent Imperviousness = 5.73 %
NRCS Soil Type = A A, B, C, or D

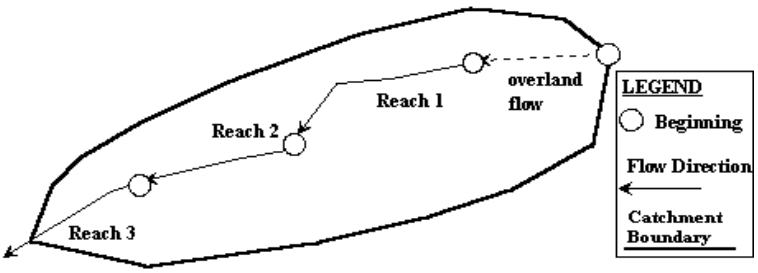
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	2	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.04	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.00
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.03
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0175	1,085	0.03	N/A	0.34	53.10
1						
2						
3						
4						
5						
	Sum	1,085			Computed Tc =	53.10
					Regional Tc =	16.03
					User-Entered Tc =	16.03

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.14	inch/hr	Peak Flowrate, Qp =	0.00 cfs
Rainfall Intensity at Regional Tc, I =	2.29	inch/hr	Peak Flowrate, Qp =	0.00 cfs
Rainfall Intensity at User-Defined Tc, I =	2.29	inch/hr	Peak Flowrate, Qp =	0.00 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: C

I. Catchment Hydrologic Data

Catchment ID = C
Area = 6.24 Acres
Percent Imperviousness = 5.73 %
NRCS Soil Type = A A, B, C, or D

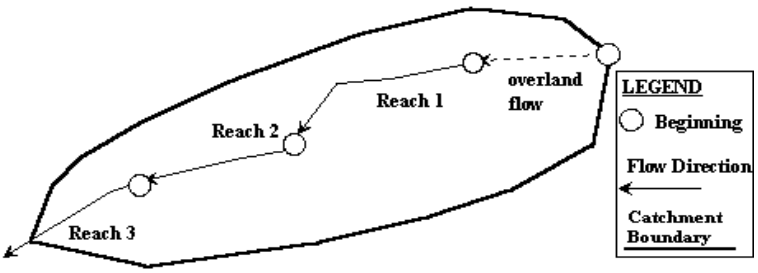
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	5	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.35	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.03
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.03
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0175	1,085	0.03	N/A	0.34	53.10
1						
2						
3						
4						
5						
	Sum	1,085			Computed Tc =	53.10
					Regional Tc =	16.03
					User-Entered Tc =	16.03

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.48	inch/hr	Peak Flowrate, Qp =	0.24 cfs
Rainfall Intensity at Regional Tc, I =	2.97	inch/hr	Peak Flowrate, Qp =	0.48 cfs
Rainfall Intensity at User-Defined Tc, I =	2.97	inch/hr	Peak Flowrate, Qp =	0.48 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: C

I. Catchment Hydrologic Data

Catchment ID = C
Area = 6.24 Acres
Percent Imperviousness = 5.73 %
NRCS Soil Type = A A, B, C, or D

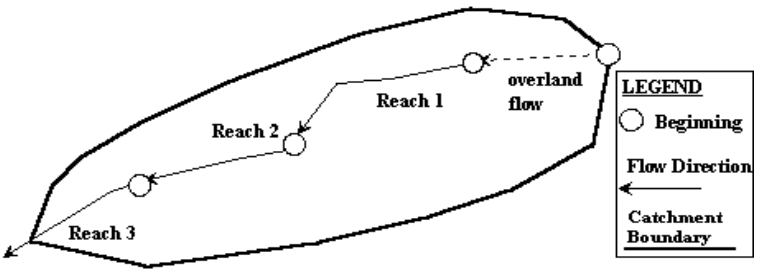
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.68	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.25
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.03
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0175	1,085	0.03	N/A	0.34	53.10
1						
2						
3						
4						
5						
	Sum	1,085			Computed Tc =	53.10
					Regional Tc =	16.03
					User-Entered Tc =	16.03

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	2.94	inch/hr	Peak Flowrate, Qp =	4.52 cfs
Rainfall Intensity at Regional Tc, I =	5.89	inch/hr	Peak Flowrate, Qp =	9.06 cfs
Rainfall Intensity at User-Defined Tc, I =	5.89	inch/hr	Peak Flowrate, Qp =	9.06 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: D

I. Catchment Hydrologic Data

Catchment ID = D
Area = 36.68 Acres
Percent Imperviousness = 10.55 %
NRCS Soil Type = B A, B, C, or D

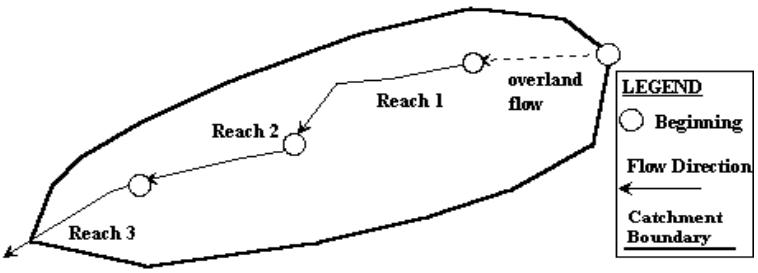
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	2	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.04	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.06
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.14
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0173	1,795	0.14	N/A	0.49	61.28
1	0.0116	345		15.00	1.62	3.56
2				.		
3						
4						
5						
	Sum	2,140				

Computed Tc = 64.84
Regional Tc = 21.89
User-Entered Tc = 21.89

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I = 1.00 inch/hr — Peak Flowrate, Qp = 2.08 cfs
Rainfall Intensity at Regional Tc, I = 1.95 inch/hr — Peak Flowrate, Qp = 4.07 cfs
Rainfall Intensity at User-Defined Tc, I = 1.95 inch/hr — Peak Flowrate, Qp = 4.07 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: D

I. Catchment Hydrologic Data

Catchment ID = D
Area = 36.68 Acres
Percent Imperviousness = 10.55 %
NRCS Soil Type = B A, B, C, or D

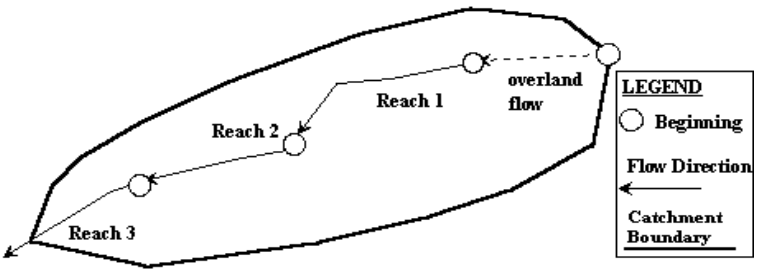
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	5	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.35	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.14
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.14
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0173	1,795	0.14	N/A	0.49	61.28
1	0.0116	345		15.00	1.62	3.56
2						
3						
4						
5						
	Sum	2,140				

Computed Tc = 64.84
Regional Tc = 21.89
User-Entered Tc = 21.89

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.29	inch/hr	Peak Flowrate, Qp =	6.65 cfs
Rainfall Intensity at Regional Tc, I =	2.53	inch/hr	Peak Flowrate, Qp =	13.01 cfs
Rainfall Intensity at User-Defined Tc, I =	2.53	inch/hr	Peak Flowrate, Qp =	13.01 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: D

I. Catchment Hydrologic Data

Catchment ID = D
Area = 36.68 Acres
Percent Imperviousness = 10.55 %
NRCS Soil Type = B A, B, C, or D

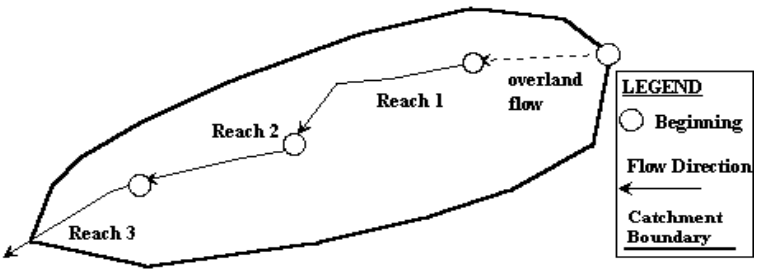
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.68	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.41
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.14
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0173	1,795	0.14	N/A	0.49	61.28
1	0.0116	345		15.00	1.62	3.56
2						
3						
4						
5						
	Sum	2,140				

Computed Tc = 64.84
Regional Tc = 21.89
User-Entered Tc = 21.89

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I = 2.57 inch/hr — Peak Flowrate, Qp = 38.25 cfs
Rainfall Intensity at Regional Tc, I = 5.02 inch/hr — Peak Flowrate, Qp = 74.80 cfs
Rainfall Intensity at User-Defined Tc, I = 5.02 inch/hr — Peak Flowrate, Qp = 74.80 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: E

I. Catchment Hydrologic Data

Catchment ID = E
Area = 3.60 Acres
Percent Imperviousness = 6.42 %
NRCS Soil Type = B A, B, C, or D

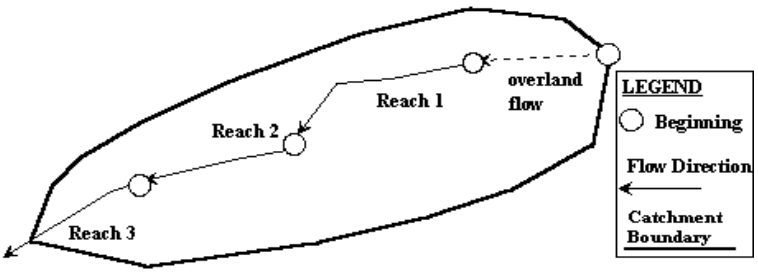
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	2	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.04	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.04
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.11
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0199	755	0.11	N/A	0.32	39.09
1						
2						
3						
4						
5						
	Sum	755			Computed Tc =	39.09
					Regional Tc =	14.19
					User-Entered Tc =	14.19

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.39	inch/hr	Peak Flowrate, Qp =	0.22 cfs
Rainfall Intensity at Regional Tc, I =	2.42	inch/hr	Peak Flowrate, Qp =	0.38 cfs
Rainfall Intensity at User-Defined Tc, I =	2.42	inch/hr	Peak Flowrate, Qp =	0.38 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: E

I. Catchment Hydrologic Data

Catchment ID = E
Area = 3.60 Acres
Percent Imperviousness = 6.42 %
NRCS Soil Type = B A, B, C, or D

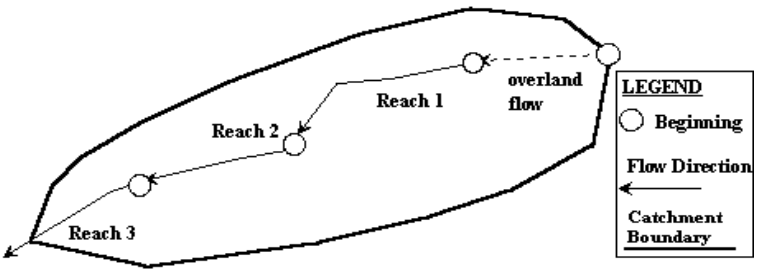
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	5	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.35	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.11
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.11
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0199	755	0.11	N/A	0.32	39.09
1						
2						
3						
4						
5						
	Sum	755			Computed Tc =	39.09
					Regional Tc =	14.19
					User-Entered Tc =	14.19

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.80	inch/hr	Peak Flowrate, Qp =	0.72 cfs
Rainfall Intensity at Regional Tc, I =	3.15	inch/hr	Peak Flowrate, Qp =	1.26 cfs
Rainfall Intensity at User-Defined Tc, I =	3.15	inch/hr	Peak Flowrate, Qp =	1.26 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: E

I. Catchment Hydrologic Data

Catchment ID = E
Area = 3.60 Acres
Percent Imperviousness = 6.42 %
NRCS Soil Type = B A, B, C, or D

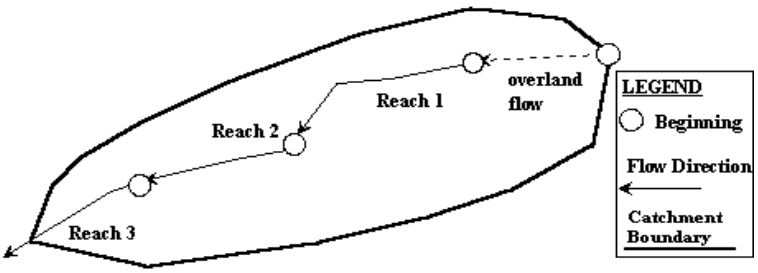
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.68	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.39
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.11
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0199	755	0.11	N/A	0.32	39.09
1						
2						
3						
4						
5						
	Sum	755			Computed Tc =	39.09
					Regional Tc =	14.19
					User-Entered Tc =	14.19

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	3.58	inch/hr	Peak Flowrate, Qp =	4.98 cfs
Rainfall Intensity at Regional Tc, I =	6.24	inch/hr	Peak Flowrate, Qp =	8.69 cfs
Rainfall Intensity at User-Defined Tc, I =	6.24	inch/hr	Peak Flowrate, Qp =	8.69 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: F

I. Catchment Hydrologic Data

Catchment ID = F
Area = 4.43 Acres
Percent Imperviousness = 10.69 %
NRCS Soil Type = C A, B, C, or D

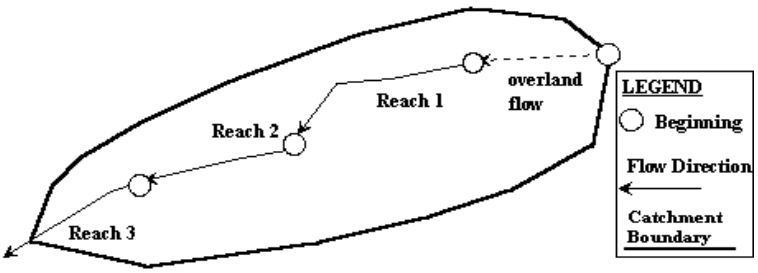
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	2	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.04	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.11
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.21
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0188	800	0.21	N/A	0.36	36.73
1						
2						
3						
4						
5						
	Sum	800			Computed Tc =	36.73
					Regional Tc =	14.44
					User-Entered Tc =	14.44

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.44	inch/hr	Peak Flowrate, Qp =	0.73 cfs
Rainfall Intensity at Regional Tc, I =	2.40	inch/hr	Peak Flowrate, Qp =	1.22 cfs
Rainfall Intensity at User-Defined Tc, I =	2.40	inch/hr	Peak Flowrate, Qp =	1.22 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: F

I. Catchment Hydrologic Data

Catchment ID = F
Area = 4.43 Acres
Percent Imperviousness = 10.69 %
NRCS Soil Type = C A, B, C, or D

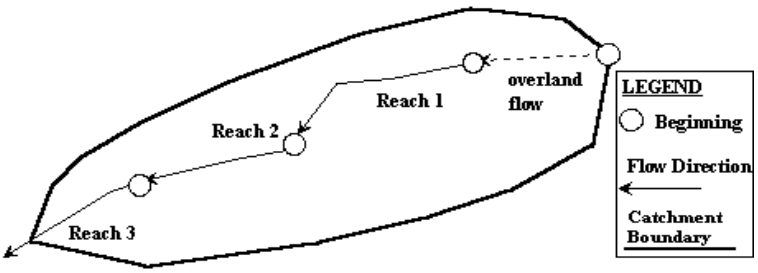
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	5	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.35	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.21
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.21
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0188	800	0.21	N/A	0.36	36.73
1						
2						
3						
4						
5						
	Sum	800			Computed Tc =	36.73
					Regional Tc =	14.44
					User-Entered Tc =	14.44

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.87	inch/hr	Peak Flowrate, Qp =	1.78 cfs
Rainfall Intensity at Regional Tc, I =	3.12	inch/hr	Peak Flowrate, Qp =	2.96 cfs
Rainfall Intensity at User-Defined Tc, I =	3.12	inch/hr	Peak Flowrate, Qp =	2.96 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: F

I. Catchment Hydrologic Data

Catchment ID = F
Area = 4.43 Acres
Percent Imperviousness = 10.69 %
NRCS Soil Type = C A, B, C, or D

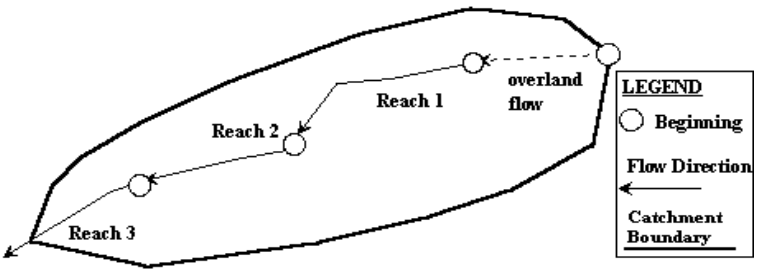
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.68	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.53
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.21
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0188	800	0.21	N/A	0.36	36.73
1						
2						
3						
4						
5						
	Sum	800			Computed Tc =	36.73
					Regional Tc =	14.44
					User-Entered Tc =	14.44

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	3.72	inch/hr	Peak Flowrate, Qp =	8.79 cfs
Rainfall Intensity at Regional Tc, I =	6.19	inch/hr	Peak Flowrate, Qp =	14.63 cfs
Rainfall Intensity at User-Defined Tc, I =	6.19	inch/hr	Peak Flowrate, Qp =	14.63 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: G

I. Catchment Hydrologic Data

Catchment ID = G
Area = 10.37 Acres
Percent Imperviousness = 10.50 %
NRCS Soil Type = A A, B, C, or D

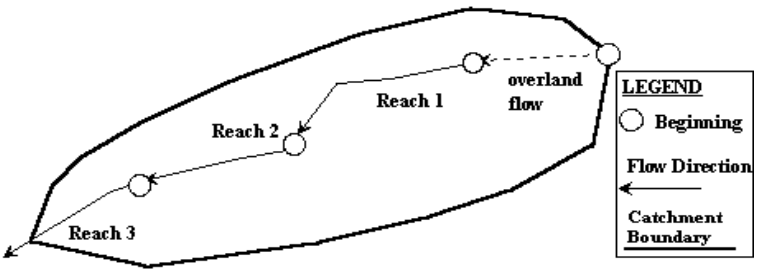
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr = 2 years (input return period for design storm)
C1 = 28.50 (input the value of C1)
C2= 10.00 (input the value of C2)
C3= 0.786 (input the value of C3)
P1= 1.04 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.00
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.07
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0156	960	0.07	N/A	0.32	49.93
1	0.0097	412		15.00	1.48	4.65
2						
3						
4						
5						
	Sum	1,372				

Computed Tc = 54.58
Regional Tc = 17.62
User-Entered Tc = 17.62

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I = 1.12 inch/hr — Peak Flowrate, Qp = 0.00 cfs
Rainfall Intensity at Regional Tc, I = 2.18 inch/hr — Peak Flowrate, Qp = 0.00 cfs
Rainfall Intensity at User-Defined Tc, I = 2.18 inch/hr — Peak Flowrate, Qp = 0.00 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: G

I. Catchment Hydrologic Data

Catchment ID = G
Area = 10.37 Acres
Percent Imperviousness = 10.50 %
NRCS Soil Type = A A, B, C, or D

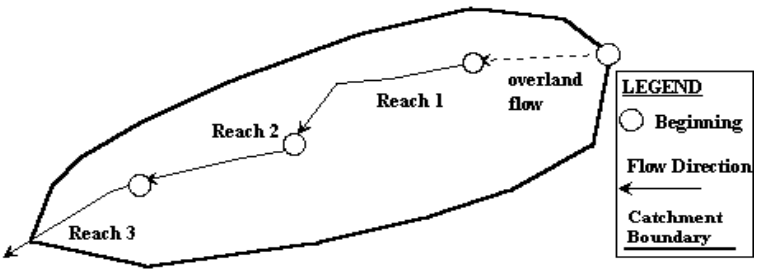
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr = 5 years (input return period for design storm)
C1 = 28.50 (input the value of C1)
C2= 10.00 (input the value of C2)
C3= 0.786 (input the value of C3)
P1= 1.35 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.07
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.07
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0156	960	0.07	N/A	0.32	49.93
1	0.0097	412		15.00	1.48	4.65
2						
3						
4						
5						
	Sum	1,372				

Computed Tc = 54.58
Regional Tc = 17.62
User-Entered Tc = 17.62

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I = 1.45 inch/hr — Peak Flowrate, Qp = 1.00 cfs
Rainfall Intensity at Regional Tc, I = 2.83 inch/hr — Peak Flowrate, Qp = 1.95 cfs
Rainfall Intensity at User-Defined Tc, I = 2.83 inch/hr — Peak Flowrate, Qp = 1.95 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: G

I. Catchment Hydrologic Data

Catchment ID = G
Area = 10.37 Acres
Percent Imperviousness = 10.50 %
NRCS Soil Type = A A, B, C, or D

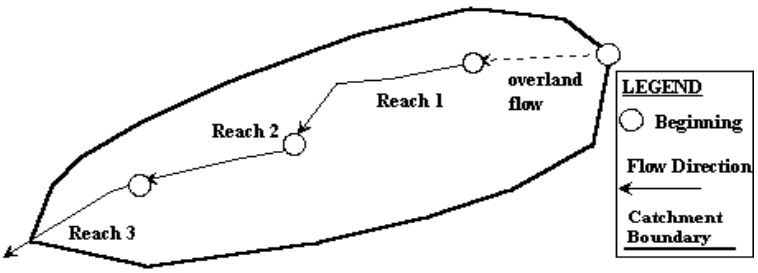
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.68	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.28
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.07
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0156	960	0.07	N/A	0.32	49.93
1	0.0097	412		15.00	1.48	4.65
2						
3						
4						
5						
	Sum	1,372				

Computed Tc = 54.58
Regional Tc = 17.62
User-Entered Tc = 17.62

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	2.89	inch/hr	Peak Flowrate, Qp =	8.34 cfs
Rainfall Intensity at Regional Tc, I =	5.63	inch/hr	Peak Flowrate, Qp =	16.25 cfs
Rainfall Intensity at User-Defined Tc, I =	5.63	inch/hr	Peak Flowrate, Qp =	16.25 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: H

I. Catchment Hydrologic Data

Catchment ID = H
Area = 10.98 Acres
Percent Imperviousness = 9.11 %
NRCS Soil Type = A A, B, C, or D

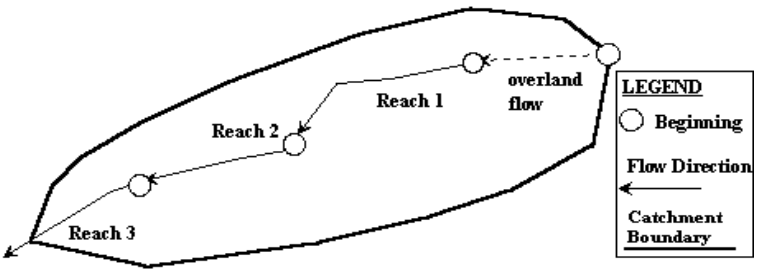
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr = 2 years (input return period for design storm)
C1 = 28.50 (input the value of C1)
C2= 10.00 (input the value of C2)
C3= 0.786 (input the value of C3)
P1= 1.04 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.00
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.06
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0192	1,040	0.06	N/A	0.35	49.05
1	0.0312	192		15.00	2.65	1.21
2						
3						
4						
5						
	Sum	1,232				

Computed Tc = 50.26
Regional Tc = 16.84
User-Entered Tc = 16.84

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I = 1.18 inch/hr — Peak Flowrate, Qp = 0.00 cfs
Rainfall Intensity at Regional Tc, I = 2.23 inch/hr — Peak Flowrate, Qp = 0.00 cfs
Rainfall Intensity at User-Defined Tc, I = 2.23 inch/hr — Peak Flowrate, Qp = 0.00 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: H

I. Catchment Hydrologic Data

Catchment ID = H
Area = 10.98 Acres
Percent Imperviousness = 9.11 %
NRCS Soil Type = A A, B, C, or D

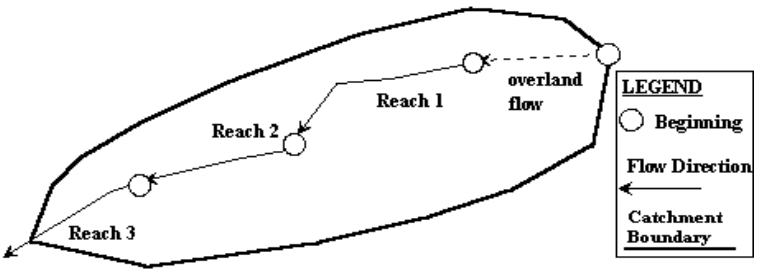
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	5	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.35	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.06
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.06
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0192	1,040	0.06	N/A	0.35	49.05
1	0.0312	192		15.00	2.65	1.21
2						
3						
4						
5						
	Sum	1,232			Computed Tc =	50.26
					Regional Tc =	16.84
					User-Entered Tc =	16.84

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.53	inch/hr	Peak Flowrate, Qp =	0.93	cfs
Rainfall Intensity at Regional Tc, I =	2.90	inch/hr	Peak Flowrate, Qp =	1.76	cfs
Rainfall Intensity at User-Defined Tc, I =	2.90	inch/hr	Peak Flowrate, Qp =	1.76	cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: H

I. Catchment Hydrologic Data

Catchment ID = H
Area = 10.98 Acres
Percent Imperviousness = 9.11 %
NRCS Soil Type = A A, B, C, or D

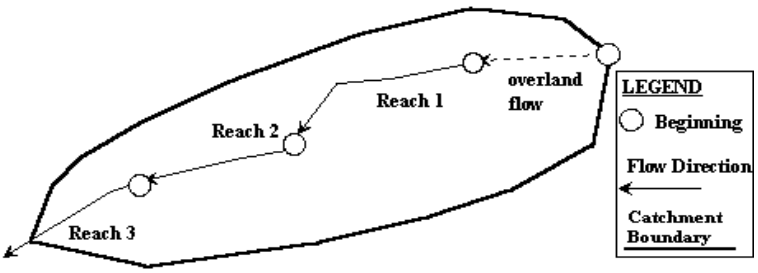
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr = 100 years (input return period for design storm)
C1 = 28.50 (input the value of C1)
C2= 10.00 (input the value of C2)
C3= 0.786 (input the value of C3)
P1= 2.68 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.27
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.06
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0192	1,040	0.06	N/A	0.35	49.05
1	0.0312	192		15.00	2.65	1.21
2						
3						
4						
5						
	Sum	1,232			Computed Tc =	50.26
					Regional Tc =	16.84
					User-Entered Tc =	16.84

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I = 3.05 inch/hr — Peak Flowrate, Qp = 9.02 cfs
Rainfall Intensity at Regional Tc, I = 5.75 inch/hr — Peak Flowrate, Qp = 17.04 cfs
Rainfall Intensity at User-Defined Tc, I = 5.75 inch/hr — Peak Flowrate, Qp = 17.04 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: I

I. Catchment Hydrologic Data

Catchment ID = I
Area = 3.45 Acres
Percent Imperviousness = 0.17 %
NRCS Soil Type = B A, B, C, or D

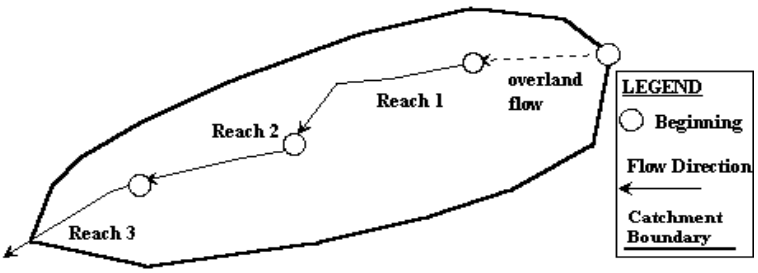
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	2	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.04	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.02
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.08
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0307	228	0.08	N/A	0.20	19.29
1	0.0130	1,000		15.00	1.71	9.75
2						
3						
4						
5						
	Sum	1,228				

Computed Tc = 29.03
Regional Tc = 16.82
User-Entered Tc = 16.82

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.66	inch/hr	Peak Flowrate, Qp =	0.12 cfs
Rainfall Intensity at Regional Tc, I =	2.23	inch/hr	Peak Flowrate, Qp =	0.16 cfs
Rainfall Intensity at User-Defined Tc, I =	2.23	inch/hr	Peak Flowrate, Qp =	0.16 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: I

I. Catchment Hydrologic Data

Catchment ID = I
Area = 3.45 Acres
Percent Imperviousness = 0.17 %
NRCS Soil Type = B A, B, C, or D

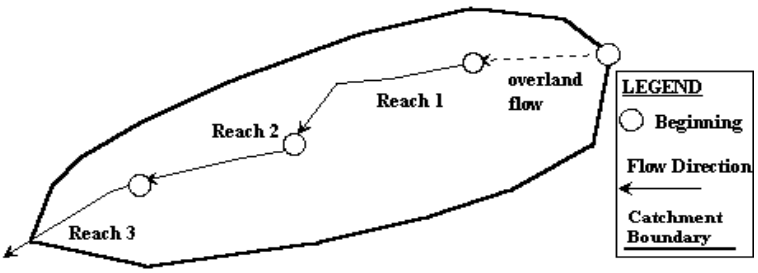
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	5	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.35	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.08
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.08
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0307	228	0.08	N/A	0.20	19.29
1	0.0130	1,000		15.00	1.71	9.75
2						
3						
4						
5						
	Sum	1,228				

Computed Tc = 29.03
Regional Tc = 16.82
User-Entered Tc = 16.82

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I = 2.16 inch/hr — Peak Flowrate, Qp = 0.56 cfs
Rainfall Intensity at Regional Tc, I = 2.90 inch/hr — Peak Flowrate, Qp = 0.76 cfs
Rainfall Intensity at User-Defined Tc, I = 2.90 inch/hr — Peak Flowrate, Qp = 0.76 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: I

I. Catchment Hydrologic Data

Catchment ID = I
Area = 3.45 Acres
Percent Imperviousness = 0.17 %
NRCS Soil Type = B A, B, C, or D

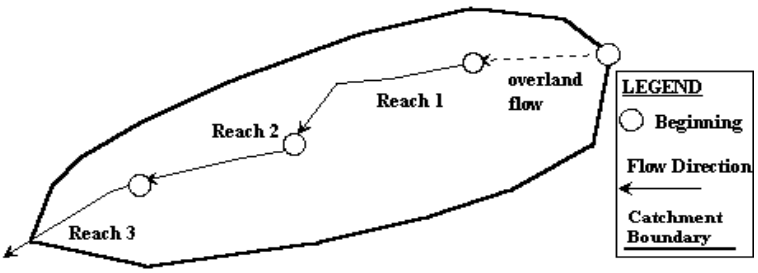
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.68	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.35
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.08
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0307	228	0.08	N/A	0.20	19.29
1	0.0130	1,000		15.00	1.71	9.75
2						
3						
4						
5						
	Sum	1,228				

Computed Tc = 29.03
Regional Tc = 16.82
User-Entered Tc = 16.82

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	4.29	inch/hr	Peak Flowrate, Qp =	5.19 cfs
Rainfall Intensity at Regional Tc, I =	5.76	inch/hr	Peak Flowrate, Qp =	6.97 cfs
Rainfall Intensity at User-Defined Tc, I =	5.76	inch/hr	Peak Flowrate, Qp =	6.97 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: J

I. Catchment Hydrologic Data

Catchment ID = J
Area = 5.43 Acres
Percent Imperviousness = 7.53 %
NRCS Soil Type = B A, B, C, or D

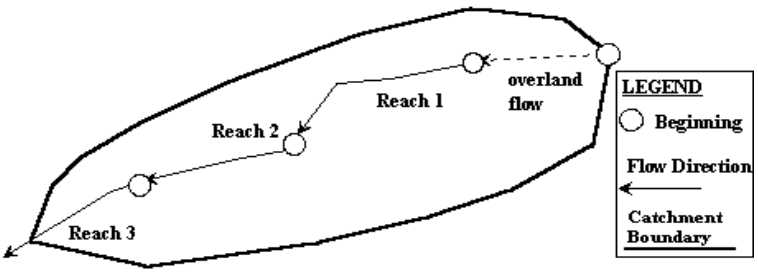
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr = 2 years (input return period for design storm)
C1 = 28.50 (input the value of C1)
C2= 10.00 (input the value of C2)
C3= 0.786 (input the value of C3)
P1= 1.04 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.05
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.12
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0078	770	0.12	N/A	0.24	53.33
1	0.0506	237		15.00	3.37	1.17
2						
3						
4						
5						
	Sum	1,007				

Computed Tc = 54.51
Regional Tc = 15.59
User-Entered Tc = 15.59

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I = 1.12 inch/hr — Peak Flowrate, Qp = 0.29 cfs
Rainfall Intensity at Regional Tc, I = 2.32 inch/hr — Peak Flowrate, Qp = 0.59 cfs
Rainfall Intensity at User-Defined Tc, I = 2.32 inch/hr — Peak Flowrate, Qp = 0.59 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: J

I. Catchment Hydrologic Data

Catchment ID = J
Area = 5.43 Acres
Percent Imperviousness = 7.53 %
NRCS Soil Type = B A, B, C, or D

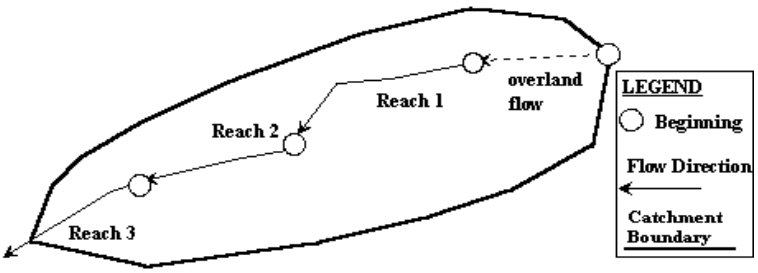
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	5	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.35	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.12
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.12
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0078	770	0.12	N/A	0.24	53.33
1	0.0506	237		15.00	3.37	1.17
2						
3						
4						
5						
	Sum	1,007				

Computed Tc = 54.51
Regional Tc = 15.59
User-Entered Tc = 15.59

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.45	inch/hr	Peak Flowrate, Qp =	0.94 cfs
Rainfall Intensity at Regional Tc, I =	3.01	inch/hr	Peak Flowrate, Qp =	1.95 cfs
Rainfall Intensity at User-Defined Tc, I =	3.01	inch/hr	Peak Flowrate, Qp =	1.95 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: J

I. Catchment Hydrologic Data

Catchment ID = J
Area = 5.43 Acres
Percent Imperviousness = 7.53 %
NRCS Soil Type = B A, B, C, or D

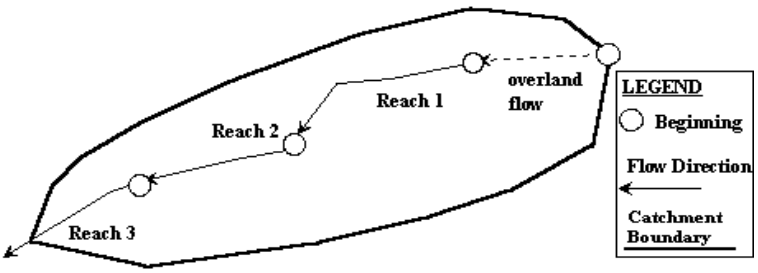
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.68	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.39
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.12
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0078	770	0.12	N/A	0.24	53.33
1	0.0506	237		15.00	3.37	1.17
2						
3						
4						
5						
	Sum	1,007				

Computed Tc = 54.51
Regional Tc = 15.59
User-Entered Tc = 15.59

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	2.89	inch/hr	Peak Flowrate, Qp =	6.15 cfs
Rainfall Intensity at Regional Tc, I =	5.97	inch/hr	Peak Flowrate, Qp =	12.71 cfs
Rainfall Intensity at User-Defined Tc, I =	5.97	inch/hr	Peak Flowrate, Qp =	12.71 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: K

I. Catchment Hydrologic Data

Catchment ID = K
Area = 3.62 Acres
Percent Imperviousness = 37.80 %
NRCS Soil Type = B A, B, C, or D

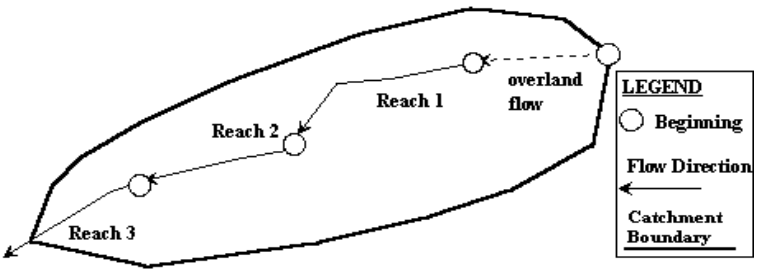
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	2	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.04	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.22
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.29
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0155	450	0.29	N/A	0.28	26.97
1						
2						
3						
4						
5						
	Sum	450				

Computed Tc = 26.97
Regional Tc = 12.50
User-Entered Tc = 12.50

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	1.74	inch/hr	Peak Flowrate, Qp =	1.38 cfs
Rainfall Intensity at Regional Tc, I =	2.56	inch/hr	Peak Flowrate, Qp =	2.05 cfs
Rainfall Intensity at User-Defined Tc, I =	2.56	inch/hr	Peak Flowrate, Qp =	2.05 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: K

I. Catchment Hydrologic Data

Catchment ID = K
Area = 3.62 Acres
Percent Imperviousness = 37.80 %
NRCS Soil Type = B A, B, C, or D

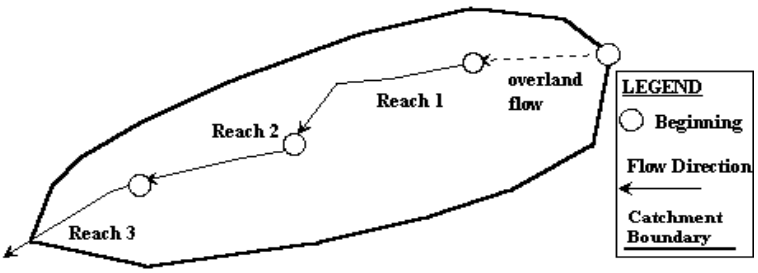
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	5	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	1.35	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.29
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.29
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0155	450	0.29	N/A	0.28	26.97
1						
2						
3						
4						
5						
	Sum	450				

Computed Tc = 26.97
Regional Tc = 12.50
User-Entered Tc = 12.50

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	2.25	inch/hr	Peak Flowrate, Qp =	2.34 cfs
Rainfall Intensity at Regional Tc, I =	3.33	inch/hr	Peak Flowrate, Qp =	3.45 cfs
Rainfall Intensity at User-Defined Tc, I =	3.33	inch/hr	Peak Flowrate, Qp =	3.45 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: BOHN PARK
Catchment ID: K

I. Catchment Hydrologic Data

Catchment ID = K
Area = 3.62 Acres
Percent Imperviousness = 37.80 %
NRCS Soil Type = B A, B, C, or D

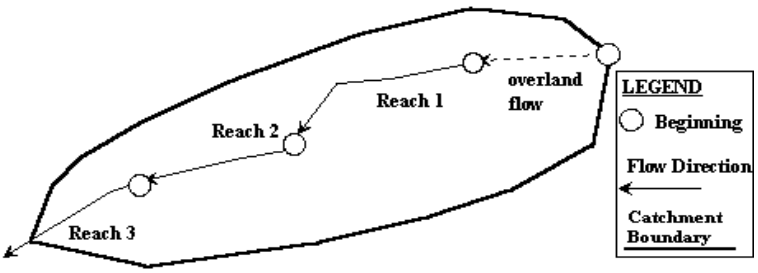
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.68	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.49
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.29
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0155	450	0.29	N/A	0.28	26.97
1						
2						
3						
4						
5						
	Sum	450			Computed Tc =	26.97
					Regional Tc =	12.50
					User-Entered Tc =	12.50

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	4.47	inch/hr	Peak Flowrate, Qp =	7.92 cfs
Rainfall Intensity at Regional Tc, I =	6.61	inch/hr	Peak Flowrate, Qp =	11.71 cfs
Rainfall Intensity at User-Defined Tc, I =	6.61	inch/hr	Peak Flowrate, Qp =	11.71 cfs

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

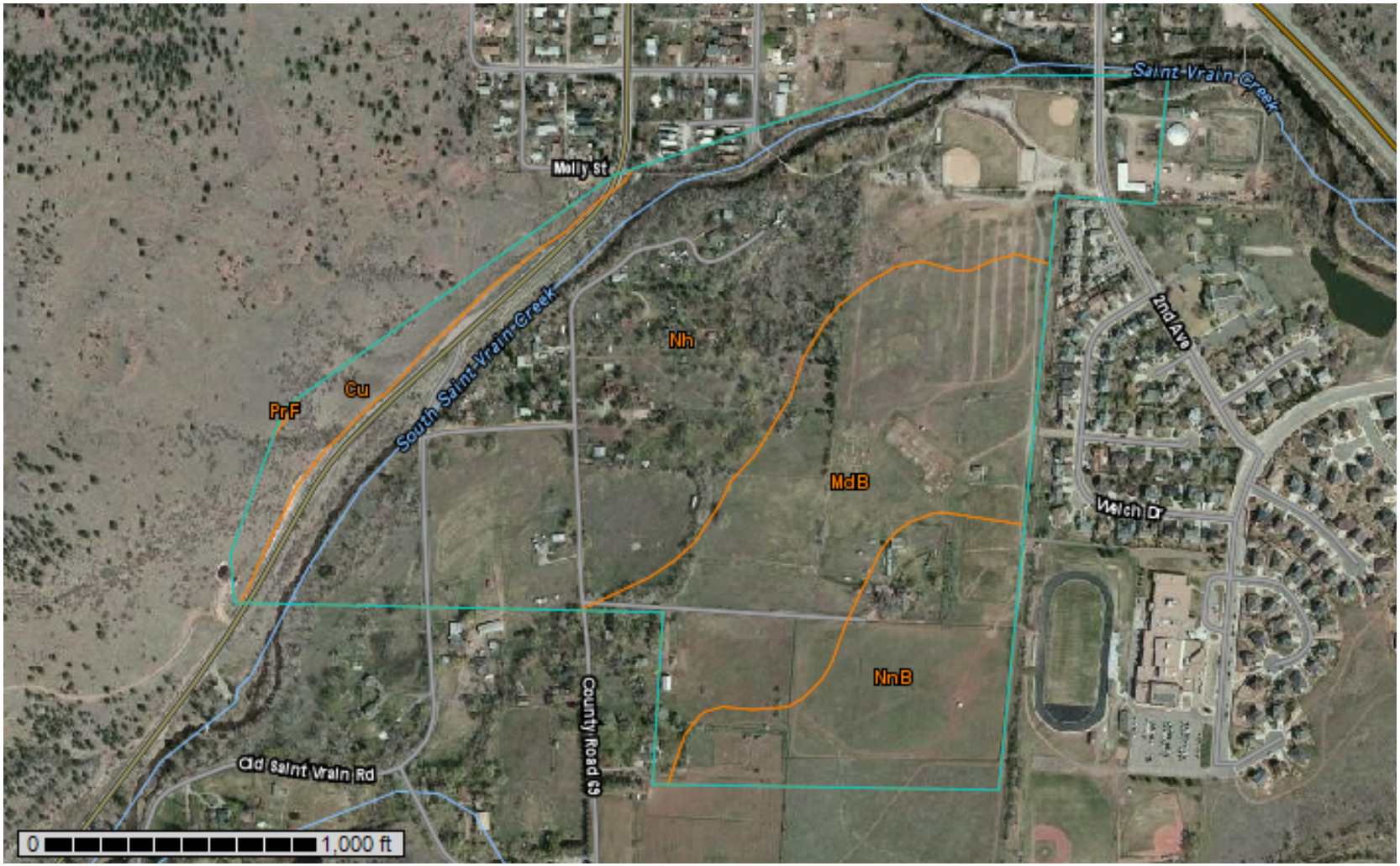
Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba).

Engineering Properties–Boulder County Area, Colorado														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*Pct*	*Pct*					*Pct*	
Cu—Colluvial land														
Colluvial land	80	A	0-3	Gravelly sandy loam	GC-GM, GM, SC-SM, SM	A-1, A-2	0- 0- 0	0- 5- 10	60-70-80	55-65-75	35-43-50	20-25-30	20-23-25	NP-3 -5
			3-60	Gravelly sand, very gravelly sand, gravelly loamy sand	GM, GW, GW-GM, SW	A-1	0- 0- 0	0-13- 25	40-55-70	35-50-65	20-33-45	0- 8- 15	20-23-25	NP-3 -5
MdB—Manter sandy loam, 1 to 3 percent slopes														
Manter	85	A	0-6	Sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0- 0- 0	0- 0- 0	95-98-100	75-88-100	45-65-85	25-40-55	20-25-30	NP-5 -10
			6-16	Fine sandy loam, sandy loam	CL-ML, ML, SC-SM, SM	A-2, A-4	0- 0- 0	0- 0- 0	95-98-100	75-88-100	50-68-85	30-43-55	15-20-25	NP-5 -10
			16-60	Sandy loam, loamy sand, loamy fine sand	SM	A-1, A-2, A-4	0- 0- 0	0- 0- 0	95-98-100	75-88-100	40-63-85	15-33-50	—	NP

Engineering Properties–Boulder County Area, Colorado														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*Pct*	*Pct*					*Pct*	
Nh—Niwot soils														
Niwot	85	B	0-14	Loam	CL, CL-ML	A-4	0- 0- 0	0- 3- 5	85-93-100	80-90-100	70-83-95	50-63-75	25-28-30	5-8 -10
			14-60	Gravelly sand	SW-SM	A-1	0- 0- 0	0- 3- 5	60-70-80	55-65-75	30-40-50	5- 8- 10	—	NP
NnB—Nunn sandy clay loam, 1 to 3 percent slopes														
Nunn	85	C	0-10	Sandy clay loam	CL, CL-ML, SC, SC-SM	A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	80-85-90	35-45-55	25-28-30	5-8 -10
			10-14	Clay	CL	A-7	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-95-100	75-85-95	40-45-50	15-20-25
			14-60	Clay loam	CL	A-6	0- 0- 0	0- 0- 0	100-100-100	100-100-100	90-95-100	70-75-80	30-35-40	10-15-20
PrF—Pinata-Rock outcrop complex, 5 to 55 percent slopes														
Pinata	45	D	0-12	Very stony loamy fine sand	GC-GM, GM, SC-SM, SM	A-1, A-2, A-4	25-38-50	0-15- 30	45-68-90	40-63-85	30-53-75	15-28-40	20-23-25	NP-3 -5
			12-32	Very stony clay	CL, GC	A-2, A-7	25-43-60	0-15- 30	45-68-90	40-63-85	35-60-85	30-58-85	40-45-50	20-23-25
			32-36	Unweathered bedrock	—	—	—	—	—	—	—	—	—	—
Rock outcrop	35	D	0-60	Unweathered bedrock	—	—	—	—	—	—	—	—	0-7 -14	—

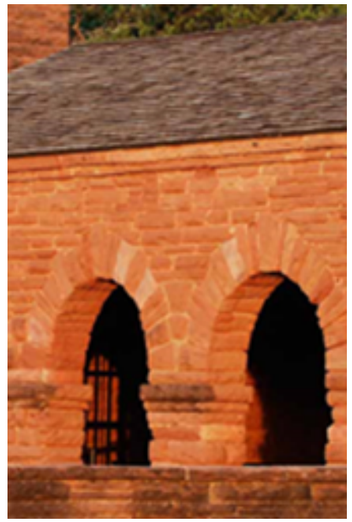
Data Source Information

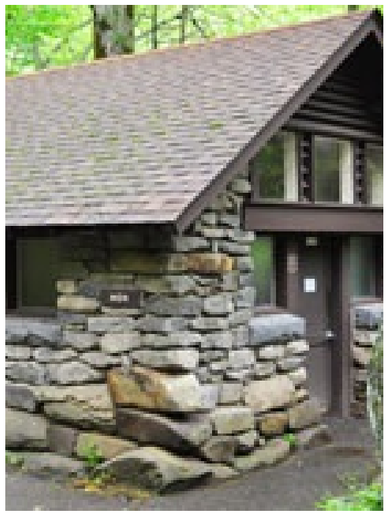
Soil Survey Area: Boulder County Area, Colorado
Survey Area Data: Version 12, Sep 22, 2015



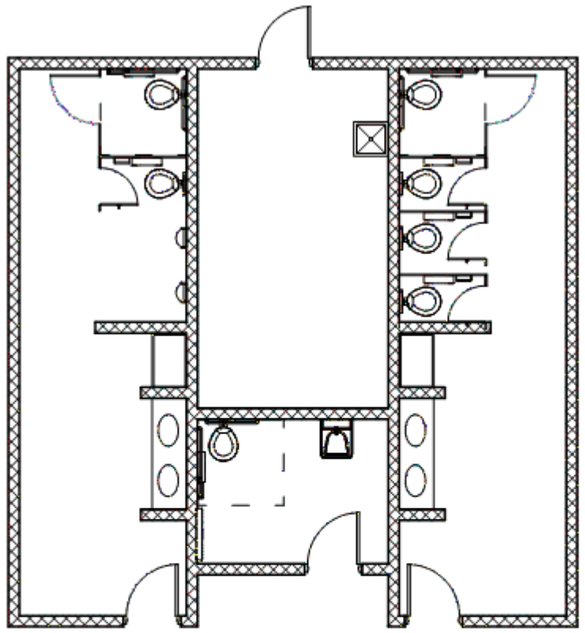
CUSTOM RESTROOM AND SHELTER BUILDINGS

FINISH AND DETAIL CONCEPTS





PLAN CONCEPT FOR FURTHER STUDY

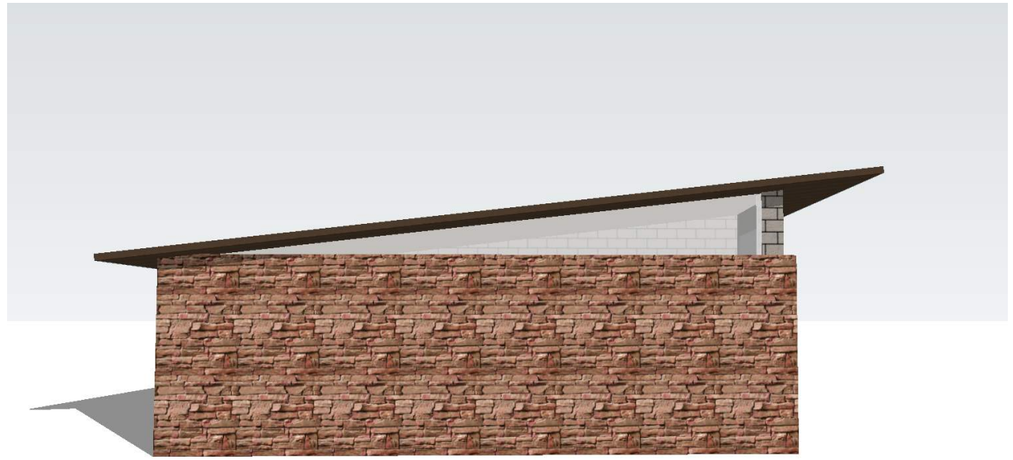


1 / A-2 FIRST FLOOR PLAN - SD

1/8" = 1'-0"

0 4' 8' 16'

MASSING CONCEPTS FOR FURTHER STUDY



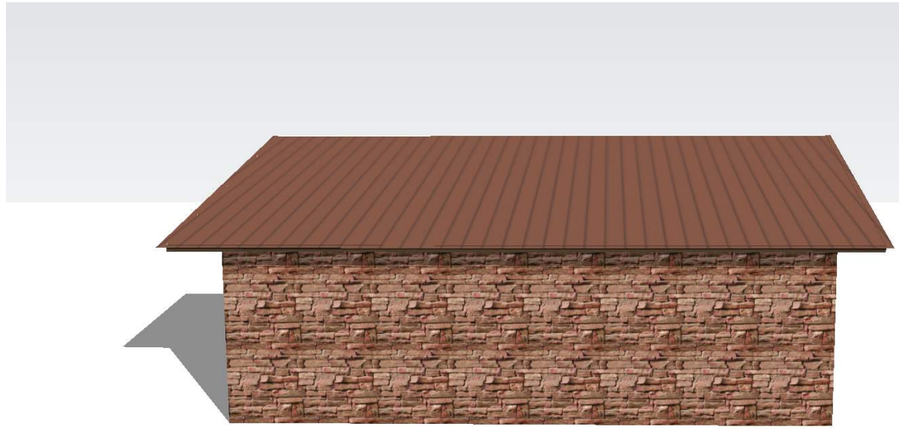
SIDE ELEVATION

OPTION "1A"

FRONT ELEVATION

MASSING CONCEPTS FOR FURTHER STUDY

OPTION "1B"

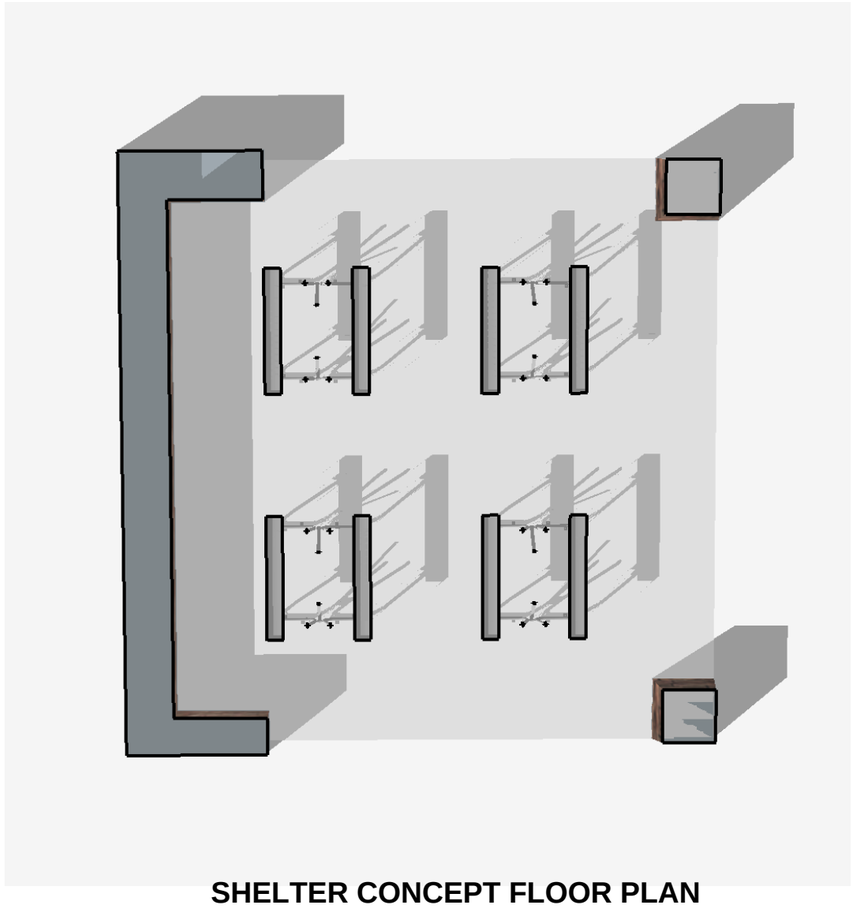


SIDE ELEVATION

OPTION "1C"

FRONT ELEVATION

MASSING CONCEPTS FOR FURTHER STUDY



SHELTER CONCEPT FLOOR PLAN

Design Narrative – Basis of Design :

Project Description

The project consists of a 1,000 square foot restroom building to serve the Lyons Bohn Park ball fields. The facility includes men's and women's restroom, a family restroom and a storage/mechanical room. The facility will be open year round.

STRUCTURAL SYSTEMS

BOHN PARK STRUCTURAL NARRATIVE

FOUNDATIONS

A sub-surface geotechnical evaluation of the building site has not been completed at this time. Based on general knowledge of the site, it is safe to assume that the soils will generally be sandy alluvial deposits from the adjacent St. Vrain Creek. It is likely to contain a significant amount of cobbles and boulders buried in the sandy soils.

This type of soil profile usually will support building loads on conventional spread footings and concrete stem wall. The amount of debris (cobbles, boulders) in the building footprint will have a significant impact on the total construction cost of the project.

Footing will be placed below the local frost depth as determined by relevant building code.

Concrete will be constructed with Type I-II cement and have 28 day design strengths of 4500 psi to achieve the durability requirements for this type of facility.

SLAB ON GRADE

The interior slab- on-grade will be 5" thick and reinforced with a single mat of Welded Wire Fabric. Portions of the STRUCTURE slab supporting interior non-load bearing masonry walls will be thickened.

Subgrade preparation including the use of a free draining gravel layer and use of vapor barrier will be designed and constructed in accordance with the recommendations of the geotechnical engineer.

To minimize cracking, the slab will include saw cut control joints. The slab will be isolated from all perimeter walls except at threshold locations, where the slab will be doweled to the exterior paving to prevent differential movements which would inhibit the opening of the exterior doors.

Concrete for the slab will incorporate Type I-II cement and have 28 day design strengths of 4500 psi to achieve the durability requirements for this type of facility.

ROOF FRAMING

The roof structure will depend on the final roof profile preferred by the Owner. A gable roof is likely to be framed with pre-engineered wood or light gauge steel roof trusses. A shed roof will more likely be framed with a beam and purlin system. This system may be either wood or steel depending on the durability requirements of the building.

It is likely that the roof diaphragm will be a plywood (OSB) sheet system with will tie directly into the perimeter walls.

WALL SYSTEM

Exterior walls will be 8 inch concrete masonry units reinforced their full height to meet design requirements. There is likely to be a significant amount of stone veneer to meet the design objectives of the building.

LATER FORCE RESISTING SYSTEM

The lateral force resisting system will be the perimeter masonry shear walls. These walls will resist all wind and seismic loads as required by code.

FLOOD DESIGN

A discussion should be undertaken with the Owner as to what level of flood risk is acceptable for the building. While a "flood proof" building is a theoretical possibility, it may not be the best expenditure of the construction budget. Ideally, the building should be sited so that the floor is above the 100 year flood elevation. This will minimize potential frequent damage caused by less significant flood events.

Even if sited above the 100 year flood elevation, significant damage may occur due to fast moving debris in the flood waters or the scouring of the soils surrounding the foundations. The only way to mitigate such damage would be the construction of flood water diversion structures upstream of the building.

The level of flood risk acceptable to the Owner will have a significant impact on the construction cost.

DESIGN CRITERIA

The building will be designed to conform to the IBC 2012 including the amendments adopted by the Town of Lyons. Specifically:

Risk Category:	II
Design Wind Speed:	170 mph (3 second gust) Exposure B
Ground Snow Load:	30 psf with consideration of any drifting loads
Seismic Design Category:	B
Flood Loads:	To be determined
Frost Depth:	30"

BARKER RINKER SEACAT ARCHITECTURE

K·Y·S·E·STRUCTURAL STRUCTURAL ENGINEERS • LLC

Mechanical (HVAC, Plumbing & Fire Protection)

Design Criteria

Temperatures:

Summer Outdoor: 95°F db, 61°F wb

Summer Indoor:

There is no cooling provided for this building. Ventilation rates in the summer will be increased to keep temperatures moderate and similar to the outside temperatures.

Winter Outdoor: -10°F

Winter Indoor:

Winter indoor temperatures can be expected to be in the 60 degree range. Minimum ventilation rates will be maintained with spot heating provided.

Humidity:

Humidity is not specifically controlled other than dehumidification that occurs with the naturally dry Colorado ventilation air. Spaces will likely fluctuate between 10% to 60% RH.

Outside Air Ventilation:

Restrooms: 70 CFM / water closet and urinal (minimum in winter)

Storage / Mechanical: 70 CFM / mop service basin (minimum in winter)

Building Components – 2012 IECC:

Walls: U = .078 (Mass wall); 0.064 (framed wall)

Roof: U = .039

Glass: U = .38 S.C. =.40

Heating:

Source:

Electric cabinet unit heaters will serve as the heating source for the Men's and Women's Restrooms.

CUH-1: 4.5 kW

CUH-2: 4.5 kW

An electric wall heater will serve as the heating source for the Family Restroom.

EWH-1: 1.0 kW

An electric unit heater will serve as the heating source for the Storage / Mechanical Room.

EUH-1: 5.0 kW

Air Distribution:

Exhaust:

Two exhaust fans will be provided to exhaust and ventilate the Men's and Women's restrooms and the Mechanical / Storage Room. One fan, EF-1, shall serve as the minimum exhaust flow rate to meet code required ventilation rates. This fan shall operate at a constant volume during occupied hours. A second exhaust fan, EF-2, shall be controlled by a line voltage thermostat to increase the ventilation airflow when the temperatures rise in the spaces. Both fans will utilize the same distribution system.

EF-1 630 CFM Direct drive, ¼ HP, EC Motor

EF-2 1,430 CFM Direct Drive, ½ HP, EC Motor

A single ceiling mounted exhaust fan shall serve the Family Restroom. The fan shall be controlled from the lighting occupancy sensor.

EF-3 100 CFM Ceiling Fan, 175 W

Make-Up Air

Aluminum drainable blade louvers shall serve as the make-up air paths for all spaces. All louvers shall have motorized dampers to close the louvers off during unoccupied hours.

Ductwork:

Materials: Galvanized sheetmetal ductwork shall be used throughout., except as noted.
All exposed ducts shall be spiral.
Grilles, registers and diffusers shall be aluminum.

Sizing: All low velocity supply, return and exhaust ducts shall be sized at 0.08"/100'.

Temperature Controls:

General: An electric controls system shall be provided. This controls system shall schedule the exhaust fans and damper motors based on an owner's provided occupancy schedule and/or space occupancy sensors. There shall be one (1) temperature control panel in the Mechanical / Storage Room.

Cabinet Unit Heaters, Unit Heaters and Electric Wall Heaters shall be controlled by manufacturer provided thermostats. Locking covers shall be provided for the line voltage thermostats controlling the secondary exhaust fan (EF-2) and the cabinet unit heaters (CUH-1 & CUH-2).

Domestic Water:

Site Utilities:

A 2" water meter and service (65gpm demand) to ±5'-0" outside of building will be provided for this facility. Depending on water district requirements and site water pressure this project might be able to downsize to a 1-1/2" water meter with a 2" service to the building. Continuation will be by the civil engineer.

The lawn irrigation service will be separate and by others.

Piping:

The domestic cold water, hot water and hot water recirculation, condensate and pool condensate piping above ground in the building shall be Type "L" hard copper with no-lead solder and fittings.

Alternate material would be PEX piping with plastic or red brass fittings.

The cold water service entry shall have a reduced pressure backflow preventer.

Water Heater:

Domestic hot water will be an electric storage tank water heater (30 gallon, 4.5KW, 120/60/1 phase).

Master thermostatic mixing valves will be provided at the water heater and set a 110°F for all fixtures.

Domestic Water Recirculation Pump:

No HWC piping or pumps will be required.

Waste and Vent Piping:

Utilities:

A 4" building drain will be provided to ±5'-0" outside of the building. Continuation will be by the civil engineer.

Piping:

Construct below ground waste piping of schedule 40 PVC (solid core) with solvent welded joints within ±5'-0" of the building.

Waste and vent piping above grade in building shall be service weight cast iron with no-hub fittings. All plumbing VTR's shall be located 15' minimum from any outside air intakes. **Alternate piping above grade in the building shall be same as below ground.**

Storm Piping:

Roof drains and overflow roof drain systems are not anticipated.

Plumbing Fixtures:

Water Closets: Wall hung, stainless steel, blowout type (1.28 GPF) with a hard wired electronic operated flush valve.

Urinals: Stainless steel, washout type (1.0 GPF) with a hard wired electronic operated flush valve.

Lavatories: Stainless steel wall hung type. Faucet shall have a hard wired electronic operated faucet with a .5 GPM flow restrictor for water saving feature.

Mop Service Basins: Floor type, molded stone, 24"x24"x10" size.

Drinking Fountains/Bottle Fill Station Combination: Stainless steel, wall hung, high low with bottle fill station and with freeze protection valving.

Jug fill station will be provided on exterior wall near drinking fountain.

Insulation:

Domestic cold water will have ½" of fiberglass insulation.

Domestic hot and hot water recirculation will have 1" of fiberglass insulation for up to 1" piping, 1-1/2" fiberglass for piping above 1".

Miscellaneous Plumbing:

Provide exposed, chrome hose bibbs with vacuum breaker in mechanical rooms.

Provide (1) wall hydrant on the exterior of the building at drinking fountain.

Provide floor drains as follows:

Showers.

Shower hallways wet areas within the locker rooms.

Shower drying area.

Toilet rooms.

Mechanical equipment rooms.

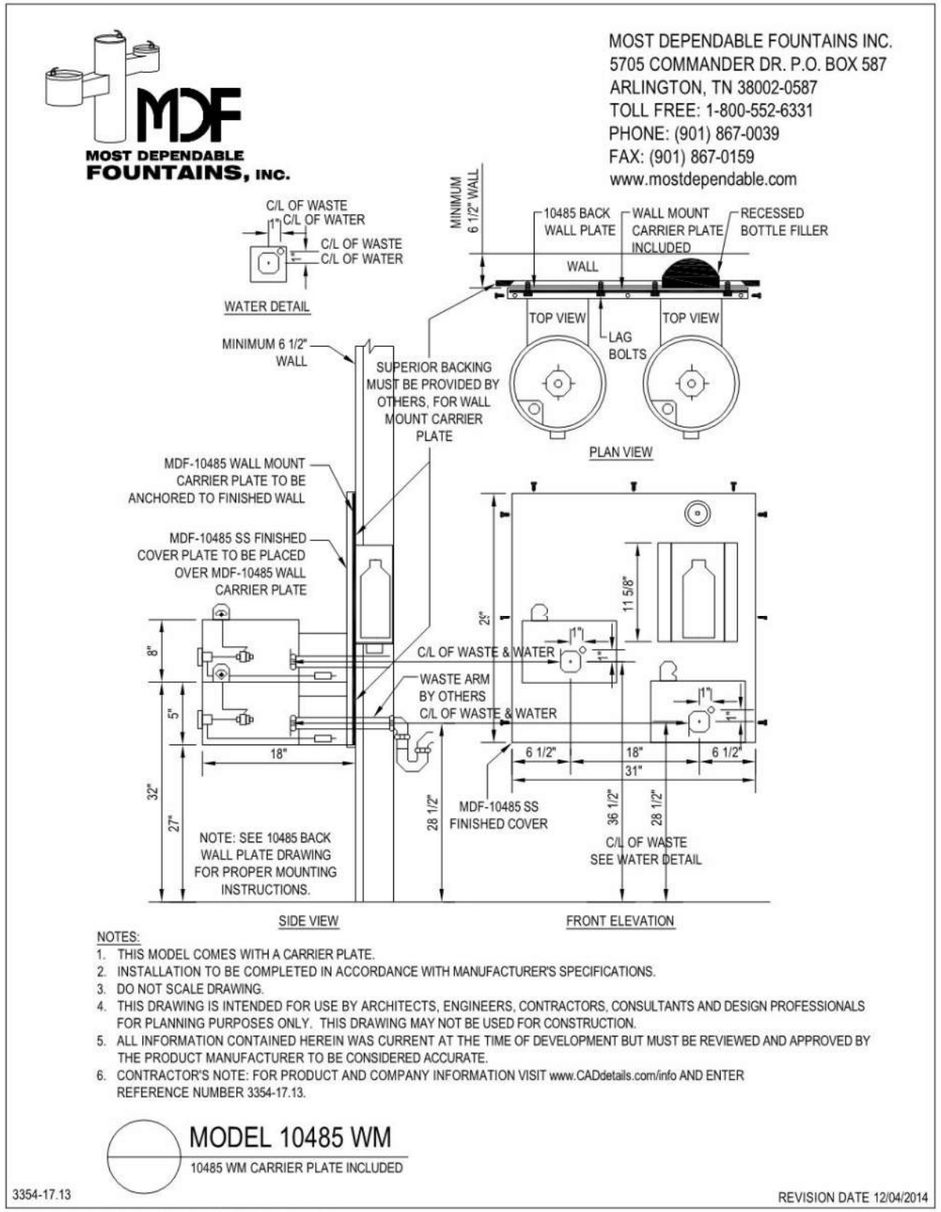
Fire Protection

No Fire protection

BARKER RINKER SEACAT ARCHITECTURE

The Ballard Group, Inc.
Mechanical Consulting Engineers

PLUMBING FIXTURE CUTS
Water Fountain



NOTES:
1. THIS MODEL COMES WITH A CARRIER PLATE.
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. DO NOT SCALE DRAWING.
4. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
5. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
6. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER 3354-17.13.

MODEL 10485 WM
10485 WM CARRIER PLATE INCLUDED

3354-17.13
REVISION DATE 12/04/2014

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PLUMBING FIXTURE CUTS
Lavatory Faucet

SLOAN
OPTIMA SYSTEMS

ETF-600

Sensor Activated
Electronic Hand Washing Faucet

- **Description**
  Chrome Plated Brass, Sensor Activated, 4" Center-set Electronic Hand Washing Faucet for tempered or hot/cold water operation.
- **Flow Rate**
  ☒ 0.5 gpm/1.9 Lpm Vandal Resistant Spray Head
  (See Accessories for other Spray Head options)
- **Specifications**
  ADA Compliant, Sensor Activated, 24 VAC, Chrome Plated 4" Center-set Cast Brass, Hand Washing Faucet with the following features:
  - Splash-proof Circuit Control Module
  - Sensor Range Adjustment Screw
  - Troubleshooting LED Indicator Lights
  - User Friendly Variable Time Out Settings
  - Filtered Solenoid Valve with serviceable Strainer Filter
  - Bak-Chek® Tee for Hot/Cold Supply
  - 120 VAC/24 VAC Transformer (specify Plug-in or Box Mount)
  - Vandal Resistant Spray Head with Pressure Compensating Flow Control
  - Metal Jacketed Wire Protection for Sensor and Solenoid Leads
  - Modular Quick-Release Sensor and Solenoid Connections
- **Variations**
  (Add suffix to Model Number for inclusion with Faucet)
  - **Trim Plate (optional)**
    - ☐ -8 — Trim Plate for 8" Center-set Sink
  - **Transformer Type (must be specified)**
    - ☐ P — Plug-in Transformer (furnished with ETF-233)
    - ☐ B — Box Mount (furnished with EL-248-40)
    - ☒ LT — Less Transformer (specify Transformer separately - See Accessories)
  - **Temperature Mixing Valves (optional)**
    - ☐ BDM — Below Deck Mechanical Mixing Valve
    - ☐ BDT — Below Deck Thermostatic Mixing Valve

    Bak-Chek® Tee not required or provided when a Temperature Mixing Valve is included with the faucet.
  - **Finishes**
    Consult Factory for Finish Variations
- **Accessories (Specify separately)**
  - **Transformers**
    - ☐ ETF-233 — 120 VAC/24 VAC, 50/60 Hz (35 VA) - Plug-in (will operate up to 2 faucets)
    - ☐ EL-248-40 — 120 VAC/24 VAC, 50/60 Hz (40 VA) - Box Mount (will operate up to 2 faucets)
    - ☒ EL-154 — 120 VAC/24VAC, 50/60 Hz (50 VA) - Box Mount (will operate up to 3 faucets)
    - ☐ EL-208 — 120 VAC/24 VAC, 50/60 Hz (100 VA) - Foot Mount (will operate up to 6 faucets)
    - ☐ EL-342 — 240 VAC/24 VAC, 50/60 Hz (50 VA) - Box Mount (will operate up to 3 faucets)
  - **Vandal Resistant Spray Heads**
    - ☐ ETF-1029-A — 2.2 gpm/8.3 Lpm Laminar Flow Spray Head (recommended for medical applications)
    - ☐ ETF-1024-A — 2.2 gpm/8.3 Lpm Aerator
  - **Grid Strainer**
    - ☐ ETF-460-A — Chrome Plated Brass Grid Strainer w/1¼" Outlet Tube

See OPTIMA Accessories Section of the Sloan Catalog for a complete listing of OPTIMA Faucet Accessories and Variations.

- **Automatic**
  The Sloan OPTIMA® ETF-600 Electronic Hand Washing Faucet operates by means of an infrared sensor. Once the user's hands enter the sensor's effective range, the Solenoid activates the water flow. Tempered water flows from the Faucet until hands are moved away. The Faucet then automatically shuts off.
- **Hygienic**
  The ultimate in sanitary protection — there are no handles to turn or buttons to push. Helps to control the spread of infectious diseases. Ideal for high traffic commercial installations.
- **Economical**
  Automatic operation provides water usage savings over other faucet devices. Reduces maintenance and operation costs. The 4" Center-set design makes the ETF-600 Faucet secure against abuse and vandalism.
- **Warranty**
  3 year (limited)
- **Compliant to:**
  ASME A112.18.1

UL LISTED 376U

LOW-LEAD UPC

This product may contribute to LEED credits. See details on LEED calculation worksheet.

This space for Architect/Engineer approval

Job Name _____ Date _____

Model Specified _____ Quantity _____

Variations Specified _____

Customer/Wholesaler _____

Contractor _____

Architect _____

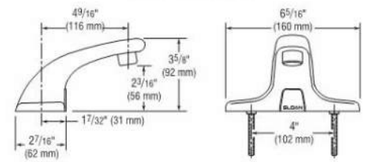
Optima ETF-600 S.S. — Rev. 2a (07/12)

The information contained in this document is subject to change without notice.

ETF-600

- **Description**
  Chrome Plated Brass, Sensor Activated, 4" Center-set Electronic Hand Washing Faucet for tempered or hot/cold water operation.
- **Flow Rate**
  ☐ 0.5 gpm/1.9 Lpm Vandal Resistant Spray Head
  (See Accessories for other Spray Head options)

FAUCET DIMENSIONS



ELECTRICAL SPECIFICATIONS

- **Control Circuit**
  24 VAC Input/Output, 50/60 Hz, Adjustable Range & Time Out Settings, Modular Plugs & Troubleshooting LED Indicators
- **OPTIMA® Sensor Range**
  Factory Set: 4" - 5" (102 mm - 127 mm)
  Adjustable: 1" - 14" (25 mm - 356 mm)
- **Solenoid Valve**
  24 VAC 50/60 Hz with integral strainer filter & 3/8" Compression Connection Inlet/Outlet.
- **Time Out Adjustment Settings**
  3, 6, 12, 30 & 45 seconds; 1, 3 & 20 minutes. The Faucet Time Out Setting determines the maximum time the faucet will run upon continuous activation. This timing can be changed to meet individual application requirements. Unless otherwise specified the ETF-600 is factory set at the 30 second time out.
- **Transformer**
  All Sloan Transformers are 50/60 Hz.
  Multiple faucets can be powered by a single transformer, provided that the transformer has been properly sized. Allow a minimum of 15 VA of current rating for each faucet being used.

Plug-in	ETF-233	120 VAC/24 VAC - 35 VA (supplied with "P" variation)
Box Mount	EL-248-40	120 VAC/24 VAC - 40 VA (supplied with "B" variation)
Box Mount	EL-154	120 VAC/24 VAC - 50 VA
Foot Mount	EL-208	120 VAC/24 VAC - 100 VA
Box Mount	EL-342	240 VAC/24 VAC - 50 VA

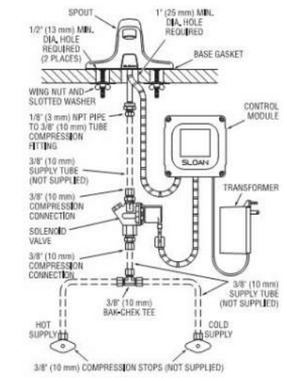
- **Max. Distance Control Module may be installed from Spout**
  With Standard Cable: 12" (305 mm)
- **Extension Cables (Optional)**

From Sensor to Control Module:			From Solenoid Valve to Control Module:		
ETF-1005-26	26"	(660 mm)	ETF-1003-36	36"	(914 mm)
ETF-1005-36	36"	(914 mm)	ETF-1003-48	48"	(1219 mm)
ETF-1005-72	72"	(1829 mm)	ETF-1003-72	72"	(1829 mm)
ETF-1005-108	108"	(2743 mm)	ETF-1003-108	108"	(2743 mm)

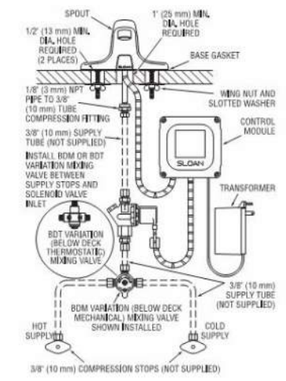
OPERATION

1. A continuous invisible beam of light is emitted from the OPTIMA® Sensor located at the base of the lavatory faucet.
2. As the user's hands enter the beam's effective range, the beam is reflected back into the Sensor Receiver and activates the Solenoid Valve allowing tempered water to flow from the faucet. Water will flow until the hands are removed or until the faucet reaches its automatic time out limit setting.
3. When hands are moved away from the OPTIMA® Sensor, the loss of reflected light initiates an electrical signal that deactivates the Solenoid Valve, shutting off the water flow. The Circuit then automatically resets and is ready for the next user.

ETF-600 Faucet with Bak-Chek® Tee for Hot and Cold Water Supply



ETF-600 Faucet with BDM and BDT Variation Mixing Valves for Hot and Cold Water Supply



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Optima ETF-600 S.S. — Rev. 2a (07/12)

BARKER RINKER SEACAT ARCHITECTURE

PLUMBING FIXTURE CUTS
Mop Basin

Molded Stone® Mop Service Basins

FIAT

Mop Service Basin MSB-1

These rugged molded stone mop service basins are manufactured from the SMC process under the highest quality standards. The quality control molding is achieved in matched metal dies under intense heat and pressure with the result being a one-piece, dependable homogeneous product. Color is White.

SPECIFICATIONS
- 10" (254) high walls with 1" (25) wide shoulders. Model MSB-3624 includes an integrally molded shelf 10 9/16" (268) wide
- Stainless steel factory installed drain body complete with a QDC-3 joint connector for a 3" (76) drain pipe
- A combination dome strainer and stainless steel lint basket is included

Ces robustes cuves d'entretien de vadrouilles molded stone sont fabriquées grâce au procédé SMC selon les normes de qualité les plus rigoureuses afin d'en assurer la durabilité et d'éliminer les problèmes après l'installation. Le moulage se fait dans des matrices métalliques jumelées, à haute température et sous une forte pression, ce qui assure un produit homogène et fiable d'une seule pièce. La couleur est le blanc.

CARACTÉRISTIQUES
- Côtés de 10 po (254) avec épaulement de 1 po (25). Le modèle MSB-3624 comprend une tablette moulée intégrée de 10 9/16 po (268)
- Renvoi en acier inoxydable avec raccord QDC-3 pour tuyau de renvoi de 3 po (76)
- Crépine en coupole et filtre à charpie en acier inoxydable combinés compris

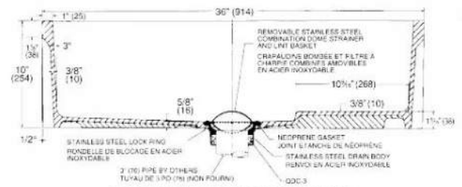
DIMENSIONS

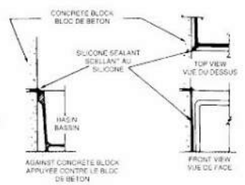
MSB-3624
- 36" x 24" x 10" (914 x 610 x 254)
- Shipping weight / Poids à l'expédition: 70 lbs (32 kg)

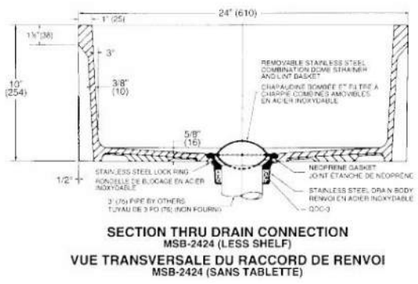
MSB-2424
- 24" x 24" x 10" (610 x 610 x 254)
- Shipping weight / Poids à l'expédition: 50 lbs (23 kg)

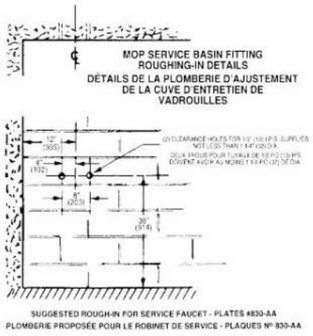
OPTIONAL EQUIPMENT / ÉQUIPMENT FACULTATIF

830 AA - Wall mounted service faucet, chrome plated with vacuum breaker, integral stops, adjustable wall brace, pail hook and 3/4" (19) hose thread on spout. Body inlets 8" (203) center to center, four arm handles. Centre of spout outlet from back of wall flange 9⅜" (238). CSA approved		**830 AA** - Robinet de service mural chromé avec coupe-vide, dispositif d'arrêt intégré, attache murale réglable et filets pour boyau 3/4 po (19) sur le bec. Conduites d'alimentation à 8 po (203) de centre à centre et clés à quatre ailettes. 9⅜ po (238) entre le centre du bec et l'arrière de la bride murale. Homologué par L'ANCOR
889 CC - Mop Bracket, 24" (610) long x 3" (76) wide, stainless steel with three (3) rubber grips		**889 CC** - crochet pour vadrouille, 24 po (610) de long par 3 po (76) de large, en acier inoxydable et muni de trois pinces à outils en caoutchouc
E-77-AA - Vinyl bumper guards in 24" or 36" length		**E-77-AA** - butoirs en vinyle en 24 po ou 36 po de long
1453 BB - Flat stainless steel strainer		**1453 BB** - Crépine plate en acier inoxydable pour utilisation résidentielle
Quick Drain Connectors (QDC's) For Use With: CAST IRON SOIL PIPE; P.V.C. SCHED. 40 D.W.V.; STEEL SCHED. 40 QDC 3.2: •; • QDC 3SN: • QDC 3XH: •; •; • QDC 4: •; •; •		**Raccord rapide pour tuyau d'écoulement (QDC's)** For Use With: CAST IRON SOIL PIPE; P.V.C. SCHED. 40 D.W.V.; STEEL SCHED. 40 QDC 3.2: •; • QDC 3SN: • QDC 3XH: •; •; • QDC 4: •; •; •



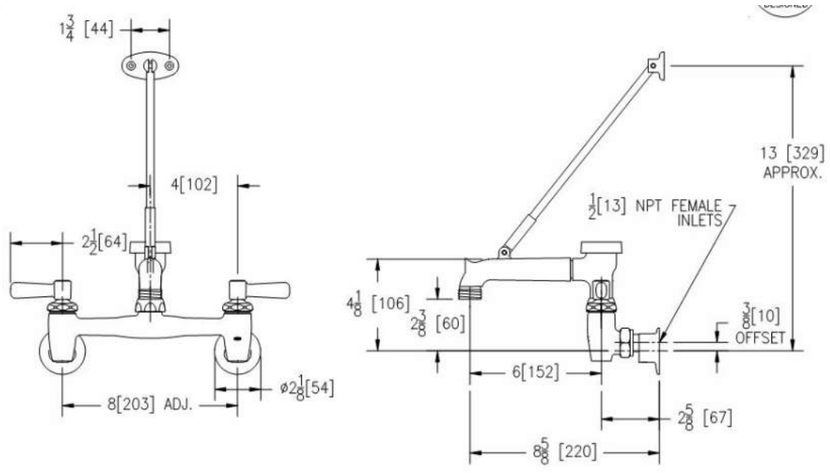






ZURN

SINK FAUCET
Z843M1-RC



The Ballard Group, Inc.
Mechanical Consulting Engineers

PLUMBING FIXTURE CUTS
Toilet

Water Closet WC-1 and 2

Penal-Ware® 1675 Series
Blowout Jet Toilet - Off-Floor

1675-W-1
Fixture May Show Some Available Options

Please visit ***www.acorneng.com*** for most current specifications.

Blowout Jet Toilet – Off-Floor

Fixture is arranged to be installed on finished wall and serviced from an accessible pipe chase. Optional Wall Sleeve or Metal Template is recommended for all installations for required wall openings. Toilet bowl is fabricated from 14 gage, type 304 stainless steel and is seamless welded construction. Wall flange is structurally reinforced. Exterior is polished to a satin finish. The inside of the toilet bowl also has a satin finish. There are no accessible voids or crevices where contraband can be concealed.

Toilet is a blowout jet type with an elongated bowl manufactured to ASME A112.19.3 and CSA B45.4 requirements and will flush with a minimum of 25 PSI flow pressure when used in conjunction with a minimum of 1.28 GPF. Trap has a minimum 3-1/2" seal and will pass a 2-1/8" ball. Toilet waste outlet is 2-3/8" diameter plain end extending 3" beyond the back of the unit.

Regularly Furnished items include mounting hardware.

GUIDE SPECIFICATION

Provide and install Acorn Penal-Ware Blowout Jet Toilet (specify model number and options). Toilet bowl shall be fabricated from 14 gage, type 304 stainless steel. Construction shall be seamless welded and exposed surfaces shall have a satin finish. Toilet shall be concealed blowout jet type with an elongated bowl, a self-draining flushing rim, and an integral contoured seat. Toilet shall meet ASME A112.19.3 and CSA B45.4 requirements and will flush with a minimum of 25 PSI flow pressure when used in conjunction with a minimum of 1.28 GPF. Toilet trap shall have a minimum 3-1/2" seal that shall pass a 2-1/8" diameter ball and be fully enclosed. Fixture shall withstand loadings of 3,000 pounds without permanent damage. Fixture shall be furnished with necessary fasteners for proper installation.

Acorn Engineering Company • 15125 Proctor Avenue • P.O. Box 3527 • City of Industry, CA 91744-0527 U.S.A.
Tel: (800) 488-8999 • (626) 336-4561 • Fax: (626) 961-2200 • www.acorneng.com • E-mail: info@acorneng.com

Penal-Ware® 1675: Blowout Jet Toilet - Off-Floor

WALL THICKNESS AND TYPE (Must Specify)
Thickness: _____ Type: ❑ Concrete ❑ Block ❑ Steel

MODEL NUMBER AND OPTIONS SELECTION:

BASE MODEL NUMBER
☑ 1675 Blowout Jet Toilet

SUPPLY (Must Specify)
❑ -T Top (Exposed)
☒ -W Wall (Concealed)

FIXTURE MOUNTING AND WASTE (Must Specify)
☑ -1 Off-Floor, Wall Outlet

FLUSH VALVE GPFs (Must Specify)
☒ -1.28 GPF (HET)
❑ -1.6 GPF
❑ -3.5 GPF

FLUSH VALVE OPTIONS (Must Specify)
SEE ACORN DURA-WARE SUPPLEMENTARY MATERIAL FOR FLUSH VALVE COVERS AND BOXES

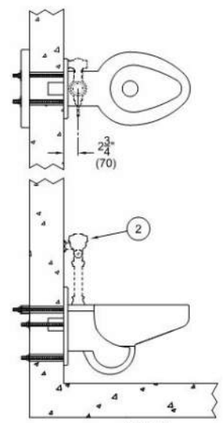
❑ -EVSFV Electronic Flush Valve (N/A for Top Supply)
❑ -EVSPFV Electronic Flush Valve w/ Piezo Pushbutton (N/A for Top Supply)
❑ -FV Flush Valve, Mechanical (N/A for ADA)
☒ -FVBO Flush Valve by Others
❑ -FVH Flush Valve, Hydraulic (N/A for Top Supply)
❑ -FVL Flush Valve, ADA Lever Handle (Wall Supply)
❑ -MVCFV Time-Trol Flush Valve (N/A for Top Supply)

TOILET SEAT OPTIONS
❑ -HPS High Polish Integral Seat
☒ -HS Hinged Seat (N/A with #2802 Flush Valve Cover)
❑ -PFS Punched for Seat by Others

TOILET OPTIONS
❑ -CO1 Cleanout w/ O-Ring Connecting to No-Hub 4" (Plain End Only)
❑ -CO1-3 Cleanout w/ O-Ring Connecting to No-Hub 3" (Plain End Only, N/A with -WO3)
❑ -COH Cleanout Hook Assembly
❑ -FT Flood-Trol (N/A w/ Top Supply)
❑ -FTA Flood-Trol Auto-Reset (N/A w/ Top Supply)
❑ -FTE Flood-Trol Electronic
❑ -FVT Flush Thru Wall Connector
❑ -GW Gasketed Toilet Waste
❑ -PC Pinned Cleanout Plug (For -CO1 Options above)
❑ -TF Transformer, 120VAC to 24VAC (-MVCFV option)
❑ -TSC Toilet Shipping Cover
❑ -TWE Toilet Waste Extension (3" Standard) Specify Length Beyond Fixture: _____
❑ -WO3B 3" Bell Waste Outlet w/ Std. 2-3/8" Trap

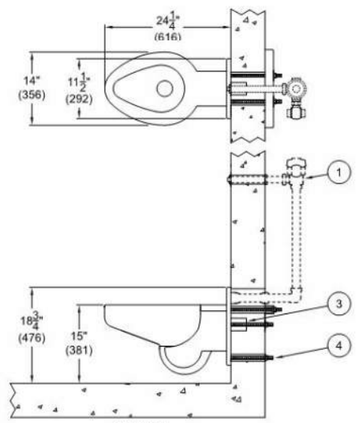
PRODUCT OPTIONS
❑ -ADA 18" Integral Seat Height
❑ -EG Enviro-Glaze Color Specify:_____ Toilet Interior & Exterior
❑ -EGE Enviro-Glaze Color Specify:_____ Toilet Exterior Only
❑ -MT Metal Template (Only 1 Required Per Project)
❑ -SW Wall Sleeve
❑ -VAC AcornVac System

Please visit ***www.acorneng.com*** for most current specifications.



1675-T-1

NOTES:
1. Optional -FV Flush Valve - Wall Supply
2. Optional -FV Flush Valve - Top Supply
3. Toilet Waste Outlet
4. Wall Mounting Hardware



1675-W-1

Important: Installation instructions and current rough-in are furnished with each fixture. Do not rough in without certified dimensions.
Dimensions are subject to manufacturer's tolerance of plus or minus 1/4" and change without notice. Acorn assumes no responsibility for use of void or superseded data. © Copyright 2009 Acorn Engineering Company

Selection Summary	Approved for Manufacturing
Model No. & Option_____	Company_____ Title_____
Quantity_____	Signature_____ Date_____

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Tel: (800) 488-8999 • (626) 336-4561 • Fax: (626) 961-2200 • www.acorneng.com • E-mail: info@acorneng.com

PLUMBING FIXTURE CUTS
Urinal

Urinal UR-1 and 2

Penal-Ware® 1702 Series
Washout Urinal

1702-T-1-FV | 1702-W-1

Fixture May Show Some Available Options

Please visit ***www.acorneng.com*** for most current specifications.

Washout Urinal

Fixture is arranged to be installed on finished wall and serviced from an accessible pipe chase. Optional Wall Sleeve or Metal Template is recommended for all installations for required wall openings. Fixture is fabricated from 14 gage, type 304 stainless steel and is seamless welded construction. Exterior has a satin finish. Interior has a matte finish. Fixture is back wall washdown type, and is optionally available with a continuous flushing rim that washes all four walls. Corners are coved to facilitate cleaning. P-trap is fully enclosed. Back of fixture is sound-deadened with fire-resistant material. There are no accessible voids or crevices where contraband can be concealed.

Urinal is washout type. Flushing connection is 3/4" NPT male. Bottom is sloped to an integrally welded, high capacity, stainless steel beehive dome strainer. P-trap has a minimum of 2" seal.

Mounting Hardware is furnished for walls up to 8" thick.

GUIDE SPECIFICATION

Provide and install Acorn Penal-Ware Washout Urinal (specify model number and options). Urinal shall be back wall washdown type. Fixture shall be fabricated from 14 gage, type 304 stainless steel and shall have coved corners to facilitate cleaning. Bottom shall be sloped to an integrally welded, high capacity, stainless steel beehive dome strainer. Construction shall be seamless welded and exterior surfaces shall have a satin finish. P-trap shall be fully enclosed. Fixture shall be furnished with necessary fasteners for proper installation.

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Penal-Ware®: 1702 Washout Urinal

WALL THICKNESS AND TYPE (Must Specify)
Thickness: _____ Type: ❑ Concrete ❑ Block ❑ Steel

MODEL NUMBER AND OPTIONS SELECTION

BASE MODEL NUMBER
☑ 1702 Washout Urinal

SUPPLY (Must Specify)
❑ -T Top (Exposed)
☒ -W Wall (Concealed)

FIXTURE MOUNTING AND WASTE (Must Specify)
☑ -1 Off-Floor, Wall Outlet

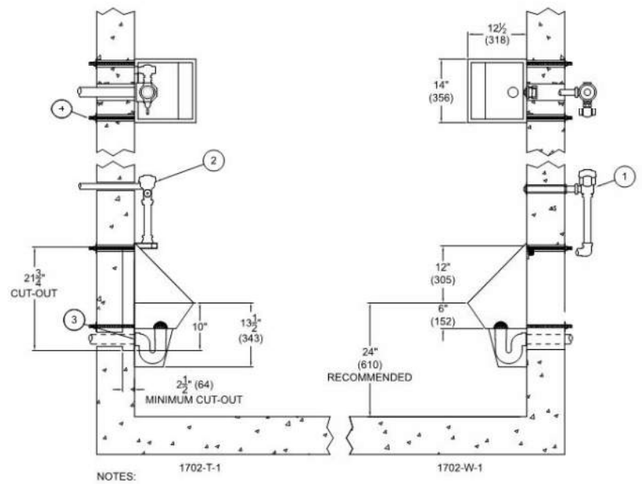
FLUSH VALVE GPFs (Must Specify)
☒ -1.0 GPF
❑ -1.5 GPF

Please visit ***www.acorneng.com*** for most current specifications.

FLUSH VALVE OPTIONS (Must Specify)
Refer to Acorn Dura-Ware Supplementary for Box Cover(s) and Access Panel(s)

❑ -EVSFV Electronic Flush Valve (N/A for Top Supply)
❑ -EVSPFV Electronic Flush Valve w/ Piezo Pushbutton (N/A for Top Supply)
❑ -FV Flush Valve, Mechanical (N/A for ADA)
☒ -FVBO Flush Valve by Others
❑ -FVH Flush Valve, Hydraulic (N/A for Top Supply)
❑ -FVL Flush Valve, ADA Lever Handle
❑ -MVCFV Time-Trol Flush Valve (N/A for Top Supply)

PRODUCT OPTIONS (Must Specify)
❑ -CFR Continuous Flushing Rim
❑ -EG Enviro-Glaze Color, Specify: _____
❑ -FVT Flush Valve Thru Wall Connection
❑ -MT Metal Template
❑ -SW Wall Sleeve
❑ -TF Transformer, 120VAC to 24VAC
❑ -TG 12 Gage Housing



NOTES:
1. Optional -FV Flush Valve - Wall Supply.
2. Optional -FV Flush Valve - Top Supply.
3. Urinal Waste Outlet.
4. Wall Mounting Hardware.

Important: Installation instructions and current rough-in are furnished with each fixture. Do not rough in without certified dimensions.
Dimensions are subject to manufacturer's tolerance of plus or minus 1/4" and change without notice. Acorn assumes no responsibility for use of void or superseded data. © Copyright 2006 Acorn Engineering Company

Selection Summary	Approved for Manufacturing
Model No. & Option_____	Company_____Title_____
Quantity_____	Signature_____ Date_____

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PLUMBING FIXTURE CUTS
Flush Valves

SLOAN®

Royal® Model OPTIMA® Sensor Operated Flushometers 190-1

► **Code Number**
3453002

► **Description**
Concealed, Sensor Activated Royal® Model Urinal Flushometer, for 1¼" back spud urinals.

► **Specifications**
- PERMEX® Synthetic Rubber Diaphragm with Dual Filtered Fixed Bypass
- Flush Accuracy Controlled by CID Technology
- 1" I.P.S. Wheel Handle Bak-Chek® Angle Stop
- Non-Hold-Open Integral Solenoid Operator, Fixed Metering Bypass and No External Volume Adjustment to Ensure Water Conservation
- Courtesy Flush™ Non-Hold-Open True Mechanical Override
- OPTIMA® EL-1500 Self-Adaptive Infrared Sensor with Indicator Light
- Quiet, Concealed, Diaphragm Type, Rough Brass Urinal Flushometer with the following features:
- Stop Seat and Vacuum Breaker molded from PERMEX® Rubber Compound for Chloramine Resistance
- High Back Pressure Vacuum Breaker Flush Connection and Spud Coupling for 1¼" Concealed Back Spud

Valve Body, Cover, Tailpiece and Control Stop shall be in conformance with ASTM Alloy Classification for Semi-Red Brass. Valve shall be in compliance with the applicable sections of ASSE 1037 and ANSI/ASME A112.18.2. Installation conforms to ADA requirements.

► **L Dimension**
Specify the "L" Dimension for the proper length of the Flush Connection. The "L" Dimension is equal to the Wall Thickness (to nearest whole inch) plus 2¾".

► **Automatic Operation**
Sloan OPTIMA® equipped Flushometers provide the ultimate in sanitary protection and automatic operation. There are no handles to trip or buttons to push. The Flushometer operates by means of an infrared sensor that adapts to its surrounding. Once the user enters the sensor's effective range and then steps away, the Flushometer Solenoid initiates the flushing cycle to flush the fixture.

► **Economical**
Automatic operation provides water usage savings over other flushing devices. Reduces maintenance and operation costs.

► **Practical**
Solid state electronic circuitry assures years of dependable, trouble-free operation. The operational components of the Flushometer are identical to a handle activated Royal® Flushometer, proven by 90 years of experience.

► **Hygienic**
User makes no physical contact with the Flushometer surface. Helps control the spread of infectious diseases. 24-Hour Sentinel Flush keeps fixture fresh during periods of nonuse.

► **Compliance & Certifications**

UL LISTED 376U

This space for Architect/Engineer Approval

► **Control Circuit**
- Solid State
- 8 Second Arming Delay
- 24 VAC Input

SLOAN 10500 SEYMOUR AVE. • FRANKLIN PARK, • IL. 60131
Ph: 1-800-9-VALVE-9 or 1-847-671-4300 • Fax: 1-800-447-8329 or 1-847-671-4380 • http://www.sloan.com

SLOAN®

Royal® Model OPTIMA® Sensor Operated Flushometers 190-1

- 24 VAC Output
- 24-Hour Sentinel Flush

► **Solenoid Operator**
24 VAC, 50/60 Hz

► **Sensor Range**
Nominal 15" - 30" (381 mm - 762 mm) Self-adaptive Window ± 8" (203 mm)

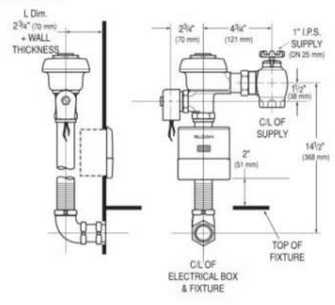
► **OPERATION**

1. A continuous, invisible light beam is emitted from the OPTIMA Sensor.

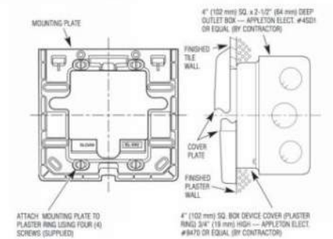
2. As the user enters the beam's effective range (15" to 30") the beam is reflected into the OPTIMA Scanner Window and transformed into a low voltage electrical circuit. Once activated, the Output Circuit continues in a "hold" mode for as long as the user remains within the effective range of the Sensor.

3. When the user steps away from the OPTIMA Sensor, the circuit immediately initiates an electrical "one-time" signal that operates the Solenoid. This initiates the flushing cycle to flush the fixture. The Circuit then automatically resets and is ready for the next user.

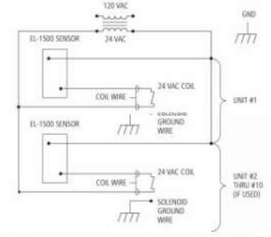
► **ROUGH-IN**



► **ELECTRICAL BOX INSTALLATION**
Failure to properly position the electrical boxes to the plumbing rough-in will result in improper installation and impair product performance. All tradesmen (plumbers, electricians, tile setters, etc.) involved with the installation of this product must coordinate their work to assure proper product installation. Installation Template furnished with Flushometer.



► **WIRING DIAGRAM**



One Transformer serves up to ten (10) OPTIMA Closet/Urinal Flushometers. Specify number of transformers required accordingly.

PLUMBING FIXTURE CUTS
Flush Valves

SLOAN
OPTIMA SYSTEMS

Royal® Model OPTIMA®
Sensor Activated Flushometers

152 ES-S

▶ **Description**
Concealed, Sensor Activated Royal® Model Water Closet Flushometer, for wall hung back spud bowls.

▶ **Flush Cycle** 1.28 gpf
☐ Model 152-1.6 ES-S Low Consumption (1.6 gpf/6.0 Lpf)
☐ Model 152 ES-S Water Saver (3.5 gpf/13.2 Lpf)

▶ **Specifications**
Quiet, Concealed, Diaphragm Type, Rough Brass Closet Flushometer with the following features:
- PERMEX™ Synthetic Rubber Diaphragm with Dual Filtered Fixed Bypass
- OPTIMA® EL-1500-L Self-Adaptive Infrared Sensor with Indicator Light
- User friendly three (3) second Flush Delay
- Courtesy Flush™ Override Button
- Non-Hold-Open Integral Solenoid Operator
- Die Cast Sensor Plate with no visible Fasteners (for 2-gang Electrical Box)
- 1" I.P.S. Wheel Handle Bak-Chek® Angle Stop
- Adjustable Tailpiece
- High Back Pressure Vacuum Breaker Flush Connection and Spud Coupling for 1½" Concealed Back Spud
- Sweat Solder Adapter
- High Copper, Low Zinc Brass Castings for Dezincification Resistance
- Non-Hold-Open Integral Solenoid Operator, Fixed Metering Bypass and No External Volume Adjustment to Ensure Water Conservation
- Flush Accuracy Controlled by CID™ Technology
- Diaphragm, Stop Seat and Vacuum Breaker molded from PERMEX™ Rubber Compound for Chloramine Resistance

Valve Body, Cover, Tailpiece and Control Stop shall be in conformance with ASTM Alloy Classification for Semi-Red Brass. Valve shall be in compliance with the applicable sections of ASSE 1037 and ANSI/ASME A112.19.2. Installation conforms to ADA requirements.

▶ **L Dimension**
Specify the "L" Dimension for the proper length of the Flush Connection. The "L" Dimension is equal to the Wall Thickness (to nearest whole inch) plus 2¾".

▶ **Variations**
☐ **TP** Trap Primer Elbow
☐ **YI** Two Wall Bumpers (for open front seat without cover)

▶ **Accessories**
☐ **EL-154** Transformer (120 VAC/24 VAC 50 VA)
☐ **EL-342** Transformer (240 VAC/24 VAC 50 VA)

See Accessories Section and OPTIMA Accessories Section of the Sloan catalog for details on these and other OPTIMA Flushometer variations.

Sloan Electronics are: UL LISTED 376U UPC LISTED BY I.A.P.M.O.

This space for Architect/Engineer approval

Job Name _____ Date _____
Model Specified _____ Quantity _____
Variations Specified _____
Customer/Wholesaler _____
Contractor _____
Architect _____

The information contained in this document is subject to change without notice.

Made with Renewable Energy

▶ **Automatic**
Sloan OPTIMA® equipped Flushometers provide the ultimate in sanitary protection and automatic operation. There are no handles to trip or buttons to push. The Flushometer operates by means of an infrared sensor that adapts to its surrounding. Once the user enters the sensor's effective range and then steps away, the Flushometer Solenoid initiates the flushing cycle to flush the fixture.

▶ **Hygienic**
User makes no physical contact with the Flushometer surface except to initiate the Override Button when required. Helps control the spread of infectious diseases. 24-Hour Sentinel Flush keeps fixture fresh during periods of nonuse.

▶ **Economical**
Automatic operation provides water usage savings over other flushing devices. Reduces maintenance and operation costs.

▶ **Practical**
Solid state electronic circuitry assures years of dependable, trouble-free operation. The operational components of the Flushometer are identical to a handle activated Royal® Flushometer, proven by 90 years of experience.

▶ **Warranty**
3 year (limited)

▶ **Made in the U.S.A.**

152 ES-S

▶ **Description**
Concealed, Sensor Activated Royal® Model Water Closet Flushometer, for wall hung back spud bowls.

▶ **Flush Cycle**
☐ Model 152-1.6 ES-S Low Consumption (1.6 gpf/6.0 Lpf)
☐ Model 152 ES-S Water Saver (3.5 gpf/13.2 Lpf)

ELECTRICAL SPECIFICATIONS

▶ **Control Circuit**
Solid State
24 VAC Input
24 VAC Output
8 Second Arming Delay
3 Second Flush Delay
24-Hour Sentinel Flush

▶ **OPTIMA Sensor Range**
Nominal 22" - 42" (559 mm - 1067 mm)
Self-adaptive Window ± 10" (254 mm)

▶ **Solenoid Operator**
24 VAC, 50/60 Hz

▶ **Transformer**
Sloan Part #EL-154
120 VAC, 50/60 Hz Primary
24 VAC, 50/60 Hz Secondary
Class II, UL Listed, 50 VA.

Sloan Part #EL-342
240 VAC, 50/60 Hz Primary
24 VAC, 50/60 Hz Secondary
Class II, UL Listed, 50 VA.

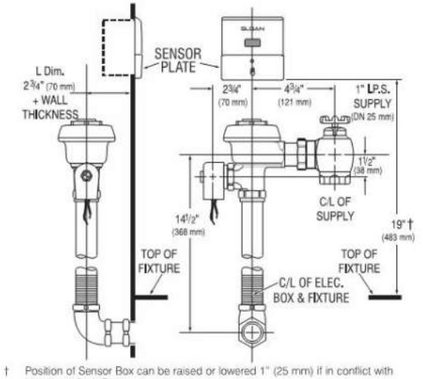
OPERATION

1. A continuous, invisible light beam is emitted from the OPTIMA Sensor.

2. As the user enters the beam's effective range (22" to 42") the beam is reflected into the OPTIMA Scanner Window and transformed into a low voltage electrical circuit. Once activated, the Output Circuit continues in a "hold" mode for as long as the user remains within the effective range of the Sensor.

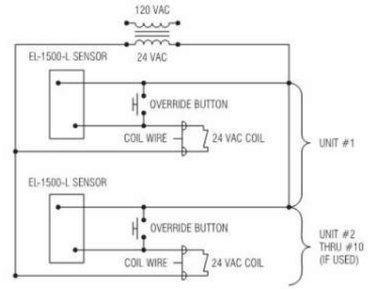
3. When the user steps away from the OPTIMA Sensor, the circuit waits 3 seconds (to prevent false flushing) then initiates an electrical "one-time" signal that operates the Solenoid. This initiates the flushing cycle to flush the fixture. The Circuit then automatically resets and is ready for the next user.

ROUGH-IN



† Position of Sensor Box can be raised or lowered 1" (25 mm) if in conflict with Handicap Grab Bars.

WIRING DIAGRAM

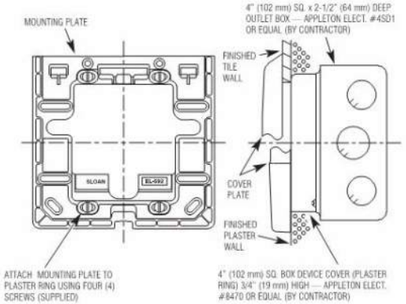


One Transformer serves up to ten (10) OPTIMA Closet/Urinal Flushometers. Specify number of transformers required accordingly.

ELECTRICAL BOX INSTALLATION

SENSOR LOCATION AND POSITIONING IS CRITICAL

Failure to properly position the electrical boxes to the plumbing rough-in will result in improper installation and impair product performance. All tradesmen (plumbers, electricians, tile setters, etc.) involved with the installation of this product must coordinate their work to assure proper product installation. Installation Template furnished with Flushometer.



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ELECTRICAL SYSTEMS
May 13, 2016

PURPOSE OF THE ELECTRICAL SCHEMATIC DESIGN PACKAGE

The Electrical Systems schematic pricing narrative is intended to facilitate three primary purposes. First, the narrative is intended to provide a descriptive outline of the electrical systems for the new Lyons Bohn Park scope of work. This outline will facilitate the development of schematic level preliminary pricing estimates for the interior and exterior building, and site amenity systems covered within the scope of the Division 26 Electrical Contractor. Second, this narrative is intended to give the Owner a basic understanding of the building and site amenity electrical systems. Such systems shall include: power, lighting, controls, and low voltage rough-in. The Owner can use this document as a method for reviewing project expectations and providing comments to AE Design Group for incorporation into the documents through the Construction Documents. Finally, the Schematic Design can be used by the Design Team as a catalyst for preliminary coordination and building design discussions.

PROJECT DESCRIPTION

This project is anticipated to consist of the following site amenity, and building structures. Please refer to the architectural schematic narrative for floorplans of all building and shelter elements, and the civil/landscape plans for site amenity items.

Restroom Building: ~ 1,000 SF, including Men's & Women's Room, Family Restroom, Storage, and Mechanical / Electrical space.

Picnic Shelter: ~ 800 SF, including accommodations for picnic tables, and a counter/seat wall.

Lighted Baseball Field: (1) baseball diamond to be illuminated, as designed per Musco. Scoreboard, and batting cage w/ electrical power for pitching machine

Lighted Tennis Courts: (3) Tennis courts to be illuminated, for recreational use.

Parking Lot Lighting: As needed for safety / security. And, power connection to pay-kiosk.

Lighting along St Vrain Trail: As needed for way-finding, safety / security

Special Events: Provide power provisions for vendors & other park uses.

Host Area: RV Hook-up provisions. Connection(s) to a well-pump.

DESCRIPTION OF WORK:

This Division 26 contractor scope includes all electrical work to constitute a complete installation.

Electrical work shall include all labor, materials, tools, equipment and services necessary for, or incidental to proper installation and completion of the work indicated on the drawings and stated within specifications.

Unless otherwise noted, provide labor and materials to make final electrical connections to motors, controllers and starters and electrical interconnections between equipment supplied by other trades to end at the load served.

Provide the temporary electrical power installation including materials, tools, and labor as required.
The contractor shall be responsible for all costs incurred for work of this section including all permits, fees, and other incidental costs associated with this work.

This Contractor shall be responsible for all applicable regulatory safety measures, including disposal of all materials.

POWER DENSITY DESIGN CRITERIA AND LOAD SUMMARY

The electrical density design criteria is based on estimated volt-amp per square foot allowances for interior lighting, exterior lighting, mechanical systems, and miscellaneous power systems. The estimates are based on historical data for similar facilities. The following watts/sf estimates are used for preliminary electrical service sizing. It is anticipated that this facility will be designed with efficient mechanical and electrical systems causing these preliminary estimates to be on the high side and specific equipment sizing is to be adjusted as the design progresses.

The anticipated electrical density load estimates are as follows:

Restroom Building & Picnic Shelter:

Load Type	System Sizing Load (VA/SF)
Mechanical Equipment Loads	10.0 (*)
Interior Lighting Loads	1.0
Exterior Lighting Loads	0.3
General Purpose Loads	3.0
Total	14.3 VA/SF

The overall square footage for this new scope of work is ~1,800 square foot. Based on the overall building use and the associated electrical loading, at a distribution voltage of 240/120 volts, 1-phase, the estimated calculated additional NEC demand load associated with the building expansion and existing building is ~107 amps. A 400 Amp, 240/120V, 1-phase, 4-wire electrical service expansion shall be used to feed the building, as it is anticipated to be used to feed additional external loads as noted below.

(*) This mechanical load is an estimate based upon similar space types, different mechanical systems are anticipated to be provided based upon the space layout option chosen.

Lighted Baseball Field: Anticipate 225A service required, 480V/3PH. It is unknown at this time, if an existing source of 480V power is available, or if a new service will be required.

Lighted Tennis Courts: Anticipate (3) 30A/2P circuits, @ 240V/1PH – one for each court, plus (3) 120V/20A receptacles for maintenance. Fed from existing tennis court electrical service.

Parking Lot Lighting & Kiosk: Anticipate (4) 120V/20A circuits, fed from the restroom service

Lighting along St Vrain Trail: Anticipate (2) 120V/20A circuits, fed from restroom service
Special Events: Anticipate (2) 50A/2P vendor receptacles, and (2) 20A/120V receptacles. Source of power is unknown at this time; potentially, fed from the existing restroom building service.

Host Area: Anticipate (1) 100A, 240V/1PH RV pedestal w/ various integral receptacle configurations. Fed from the restroom service.

APPLICABLE CODES AND STANDARDS

As of April 2016, the posted applicable code for the city of Superior, CO references the following standards:
2012 International Building Code
2012 International Fire Code
2009 International Energy Conservation Code
2014 National Electrical Code

BARKER RINKER SEACAT ARCHITECTURE
AE DESIGN Integrated Lighting and Electrical Solutions

ENERGY EFFICIENCY GUIDELINES
Refer to the lighting control section of this narrative for additional energy efficiency guidelines that are anticipated to be followed for this project.

ELECTRICAL UTILITY CONNECTION:
The Utility Company shall furnish a new 240/120V pad-mounted building utility transformer located at the building's exterior in proximity to the main electrical room. The primary service shall originate at the nearest underground facility, and the Utility will install the necessary primary underground conduit and service wires from that origination point and connect wires directly to pad mounted transformer. The Contractor shall perform all trenching and backfilling on the primary side of the transformer between the property line and the transformer. The transformer pad shall be furnished and installed by the Contractor in a manner coordinated with the Utility. The Utility shall furnish and install the transformer. A 400A CT cabinet with service entrance disconnect shall be provided by the Contractor, and shall be compliant with the Utility requirements. The contractor shall furnish and install all conduits and secondary wiring between the secondary side of the transformer and building electrical service CT Cabinet. The Utility shall make all connections of the secondary cabling to the secondary landings on the transformer. The Contractor shall perform all trenching and backfilling on the secondary side of the transformer. The Contractor shall furnish the required meter housing in a manner coordinated with the Utility. The Utility shall furnish, install, and connect that meter in that housing. All costs for work described above to be performed shall be carried as part of the project budget. AE Design has sized the distribution gear and panelboards based upon the electrical density load estimates. In the event that loads realized during design differ from those estimated, the ampacity of the electrical equipment will be revised as necessary.

ELECTRICAL DISTRIBUTION SYSTEM:
The electrical distribution system shall consist of a single 400A panel, 2-section, located in the main electrical / mechanical space of the restroom building. The sources of power for the baseball field, and special events area are T.B.D. at this time.
TELECOMMUNICATIONS & AUDIO VIDEO UTILITY
None, anticipated.

GENERAL POWER REQUIREMENTS

Restroom Building & Picnic Shelter: Minimal receptacles, anticipate electric hand dryers, and connections to the various site amenities listed below.

Lighted Baseball Field: Anticipate 225A service required, 480V/3PH. It is unknown at this time, if an existing source of 480V power is available, or if a new service will be required.

Lighted Tennis Courts: Anticipate (3) 30A/2P circuits, @ 240V/1PH – one for each court, plus (3) 120V/20A receptacles for maintenance. Fed from existing tennis court electrical service.

Parking Lot Lighting & Kiosk: Anticipate (4) 120V/20A circuits, fed from the new restroom service

Lighting along St Vrain Trail: Anticipate (2) 120V/20A circuits, fed from the new restroom service

Special Events: Anticipate (2) 50A/2P vendor receptacles, and (2) 20A/120V receptacles. Source of power is unknown at this time; potentially, fed from the existing restroom building service.

Host Area: Anticipate (1) 100A, 240V/1PH RV pedestal w/ various integral receptacle configurations. Fed from the new restroom service.

LIGHTING SYSTEMS SUMMARY
Interior Building Mounted Lighting
In order to obtain a desirable energy efficient design, the selection and layout of lighting fixtures throughout the facility and park will minimize excess wattage by utilizing proper lamp selections, light levels, and control strategies. In general, fluorescent, and LED sources will be utilized wherever possible to minimize the overall lighting watt/sf load as well as reducing maintenance costs. It is the intent of this design that no HID, CFL, or Incandescent sources will be used. The electrical contractor shall base their anticipated labor costs on the following lighting design descriptions. For purposes of this narrative, the recently completed Meadow Park will be used as the basis for design, as well as making reference to the Lyons Park Standards Booklet:

LIGHTING FIXTURE SCHEDULE

TYPE	LAMPS	DESCRIPTION	FINISH	MOUNTING	MANUFACTURER	CAT. NO.	VOLTS
AA	LED FURN. W/ UNIT	36" LONG 'LED' CUTOFF VANDAL TYPE WALL BRACKET (NOTE NO.1)	BRONZE (CONFIRM)	WALL @ +8'-0" AFF (CONFIRM)	LUMINAIRE	AEL-36-30WHP-120-277-3500K-DP-BZH-A/B-TX/SD	120
BB	LED FURN. W/ UNIT	24" LONG 'LED' CUTOFF VANDAL TYPE WALL BRACKET (NOTE NO.1)	BRONZE (CONFIRM)	WALL @ +8'-0" AFF (CONFIRM)	LUMINAIRE	AEL-24-20WHP-120-277-3500K-DP-BZH-A/B-TX/SD	120
CC	LED FURN. W/ UNIT	18" D.A. POST-TOP PEDESTRIAN POLE LIGHT 'LED' TYPE	BRONZE (CONFIRM)	POLE, SEE DETAIL NO. 1	LITHONIA	MRPLED-1-63B350/40K-SR5-120-DDBXD 12'-0" ROUND ALUMINUM POLE,NOTE NO. 5	120
DD	LED FURN. W/ UNIT	12" x 12" 'LED' VANDAL TYPE WALL BRACKET WET LOCATION (NOTE NO.1)	BRONZE (CONFIRM)	WALL @ +8'-0" AFF (CONFIRM)	LUMINAIRE	FFW1212-25WHP-3500K-120-277-OP-BRZ-WET-TX/SD-PS	120
EE	LED FURN. W/ UNIT	CUT-OFF TYPE 'LED' AREA LIGHT WITH TYPE 3 OPTICS AND HOUSESIDE SHEILD	BRONZE (CONFIRM)	POLE, SEE DETAIL NO. 2	LITHONIA	DSXO LED-20C-700-40K-T3M-MVOLT-RPA-HS-DDBXD-NOTE NO. 2,5	208
FF	LED FURN. W/ UNIT	CUT-OFF TYPE 'LED' AREA LIGHT WITH TYPE 3 OPTICS	BRONZE (CONFIRM)	POLE, SEE DETAIL NO. 2	LITHONIA	DSXO LED-20C-700-40K-T3M-MVOLT-RPA-DDBXD-NOTE NO. 2,5	208
GG	LED FURN. W/ UNIT	CUT-OFF TYPE 'LED' AREA LIGHT WITH TYPE 2 OPTICS	BRONZE (CONFIRM)	POLE, SEE DETAIL NO. 2	LITHONIA	DSXO LED-20C-700-40K-T2M-MVOLT-RPA-DDBXD-NOTE NO. 2,5	208
HH	LED FURN. W/ UNIT	CUT-OFF TYPE 'LED' AREA LIGHT WITH TYPE 4 OPTICS	BRONZE (CONFIRM)	POLE, SEE DETAIL NO. 2	LITHONIA	DSXO LED-20C-700-40K-T4M-MVOLT-RPA-DDBXD-NOTE NO. 3,5	208
KK	LED FURN. W/ UNIT	CUT-OFF TYPE 'LED' AREA LIGHT WITH TYPE 3 OPTICS	BRONZE (CONFIRM)	POLE, SEE DETAIL NO. 3	LITHONIA	DSXO LED-20C-700-40K-T3M-MVOLT-RPA-DDBXD-NOTE NO. 4,5	208
LL	LED FURN. W/ UNIT	42" HIGH 'LED' CUT-OFF TYPE BOLLARD WITH ASYMMETRIC OPTICS	BRONZE (CONFIRM)	SEE DETAIL NO. 4	LITHONIA	KBD8LED-12C-700-40K-120-ASY-MVOLT-DDBXD	120

EXTERIOR LIGHTING

Sidewalk/Parking Areas: New parking areas shall be illuminated using a combination of LED style pedestrian scale luminaires, and parking lot poles mounted at heights to match existing. See above.

The St. Vrain Trail is anticipated to be illuminated using an LED style low level bollard. See above.

The baseball field shall be illuminated by sports specific light poles, provided by Musco.

The tennis courts shall be illuminated by sports specific LED light poles, as recommended by the chosen lighting manufacturer, per the level of anticipate play.

BUILDING LIGHTING CONTROL SYSTEM:

The restroom building shall utilize local occupancy sensor controls for interior spaces. The exterior building mounted fixture, site / parking lot lighting, and trail shall be fed from a simple lighting relay control panel. This panel shall be provided with a photocell and astronomic time-clock to allow a full array of park scheduling and controllability. It is anticipated that the baseball field shall be equipped with its own timer system, as will the tennis court lights (or match existing).

BARKER RINKER SEACAT ARCHITECTURE

MECHANICAL SYSTEMS - ELECTRICAL COORDINATION

BARKER RINKER SEACAT ARCHITECTURE

See below for a quick reference of major equipment to be provided, and refer to the Mechanical/Plumbing systems Schematic Design Report for more information:

Heating:

Electric cabinet unit heaters will serve as the heating source for the Men's and Women's Restrooms.
CUH-1: 4.5 kW
CUH-2: 4.5 kW
An electric wall heater will serve as the heating source for the Family Restroom.
EWH-1: 1.0 kW
An electric unit heater will serve as the heating source for the Storage / Mechanical Room.
EUH-1: 5.0 kW

Exhaust:

Two exhaust fans will be provided to exhaust and ventilate the Men's and Women's restrooms and the Mechanical / Storage Room. One fan, EF-1, shall serve as the minimum exhaust flow rate to meet code required ventilation rates. This fan shall operate at a constant volume during occupied hours. A second exhaust fan, EF-2, shall be controlled by a line voltage thermostat to increase the ventilation airflow when the temperatures rise in the spaces. Both fans will utilize the same distribution system.

EF-1 630 CFM Direct drive, ¼ HP, EC Motor
EF-2 1,430 CFM Direct Drive, ½ HP, EC Motor

A single ceiling mounted exhaust fan shall serve the Family Restroom. The fan shall be controlled from the lighting occupancy sensor.

EF-3 100 CFM Ceiling Fan, 175 W

FIRE ALARM SYSTEM

None, required.

PUBLIC ADDRESS AND MUSIC SYSTEM; MAIN BOARDROOM

None, required.

VOICE/DATA AND CABLE SYSTEMS

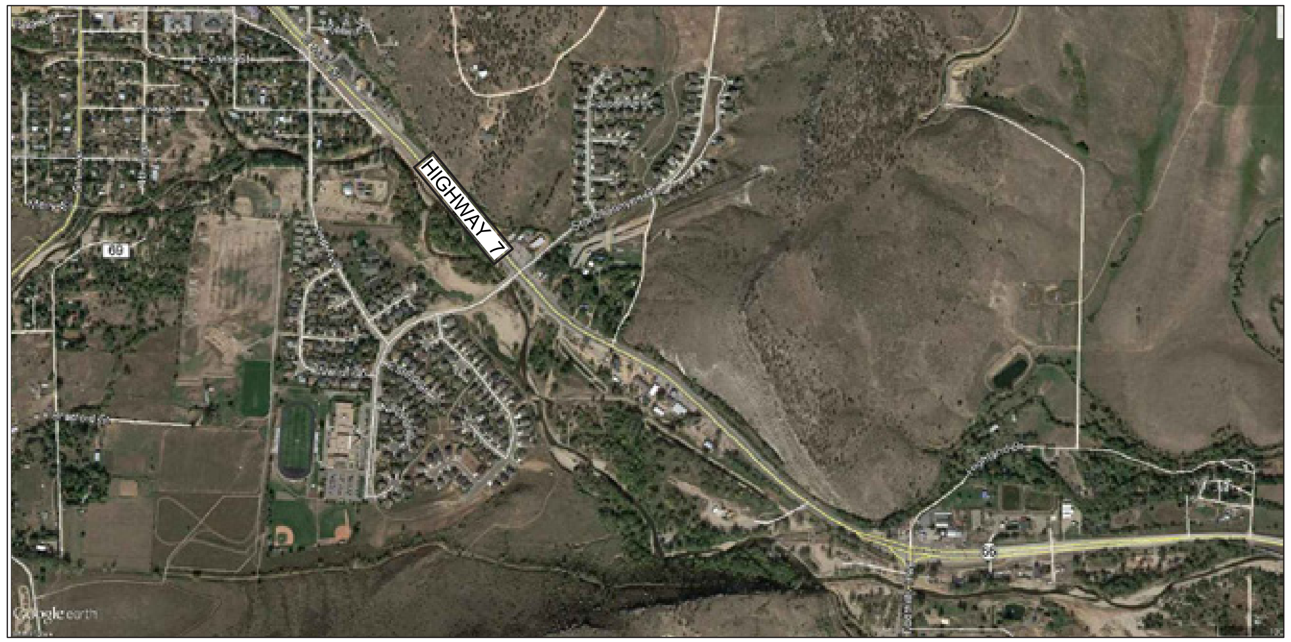
None, required.

SECURITY SYSTEMS

None, required.

LIGHTNING PROTECTION SYSTEM

A lightning protection system for the building and picnic shelter shall be priced as a line item alternate. Please provide alternate cost to install a certified lightning protection system, for the entire building and shelter structure that complies with NFPA, LPI, and UL standards. Lighting protection system is to obtain a UL Master Label upon completion.



AREA MAP

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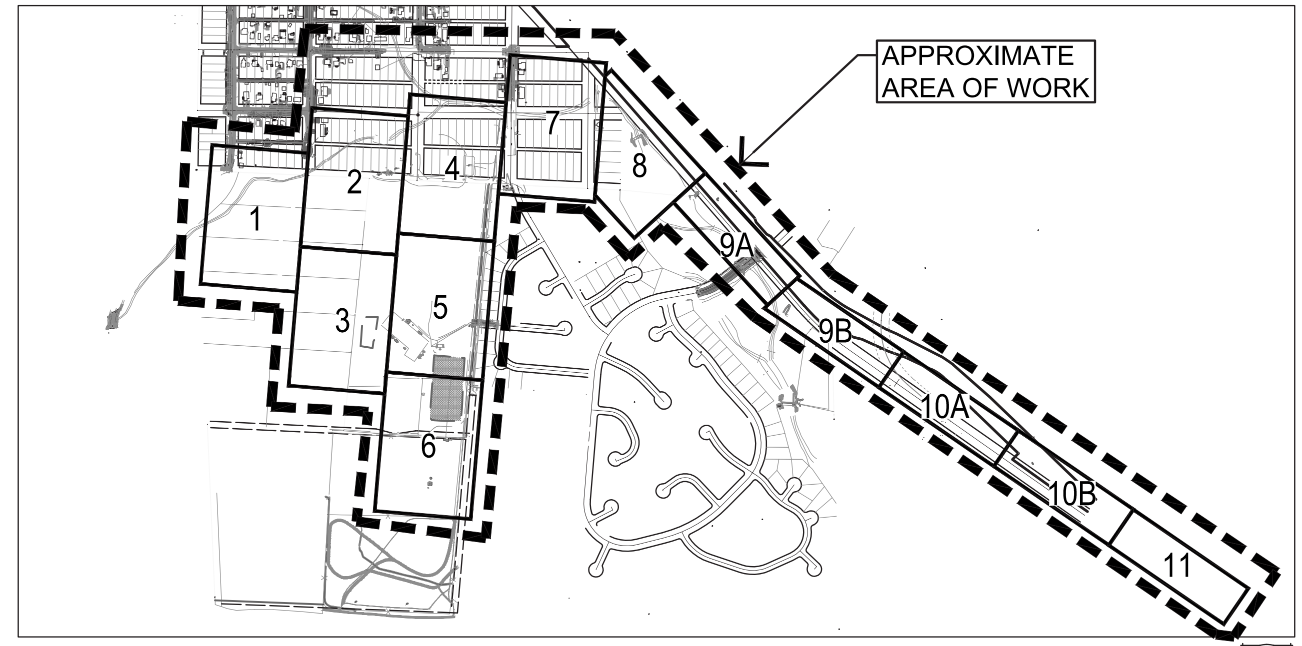
NORTH



KEY MAP

NOT TO SCALE

NORTH

SHEET INDEX

SHT #	SHEET NAME	SHEET TITLE
1	CV.0	COVER SHEET
2-8	L1.1-L1.7	GRADING PLANS
9-15	L2.1-L2.7	LAYOUT PLANS

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Lyons, Colorado

PROJECT NUMBER: 16044.00 DATE 05/13/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW
REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
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SHEET NUMBER:
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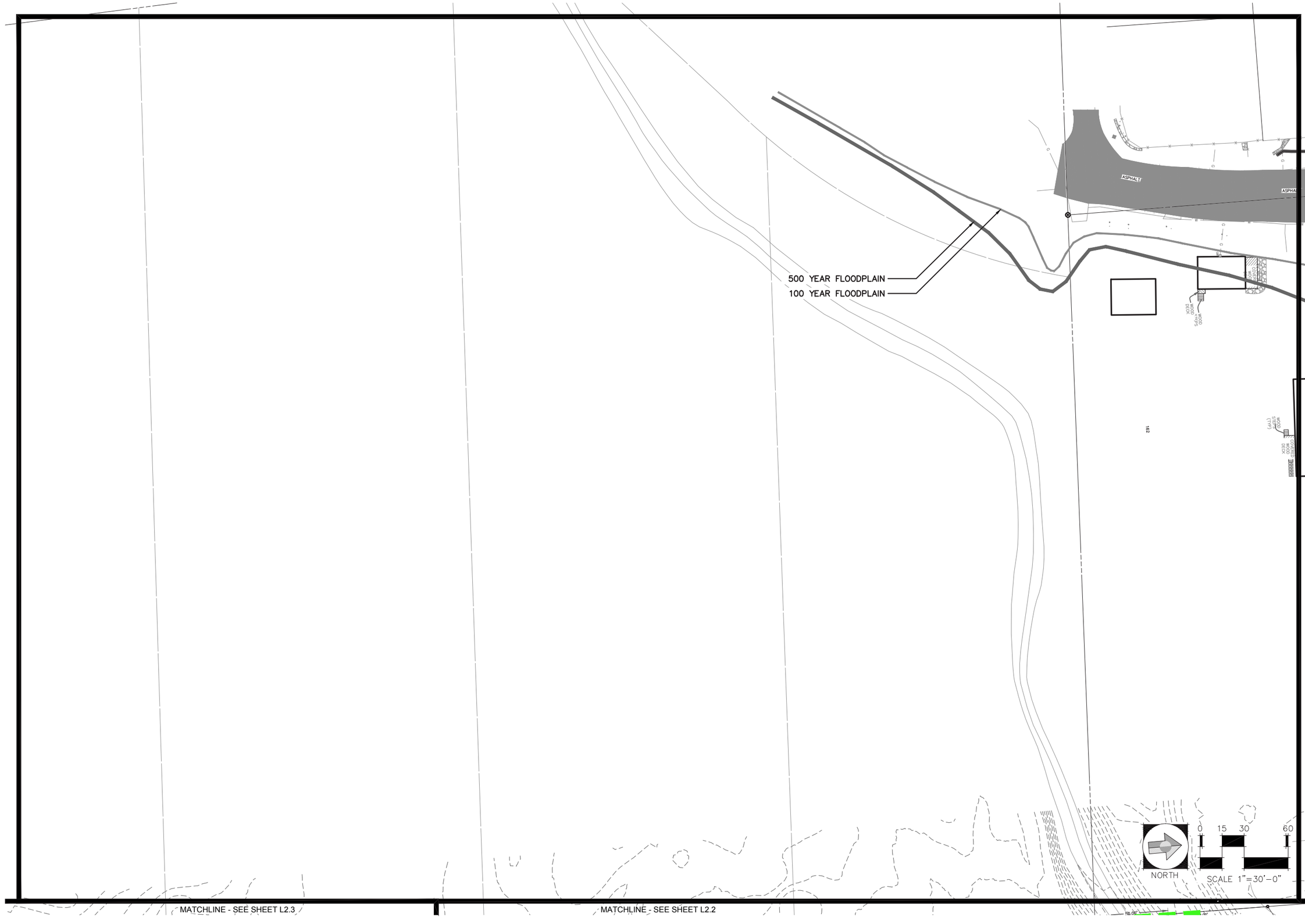

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

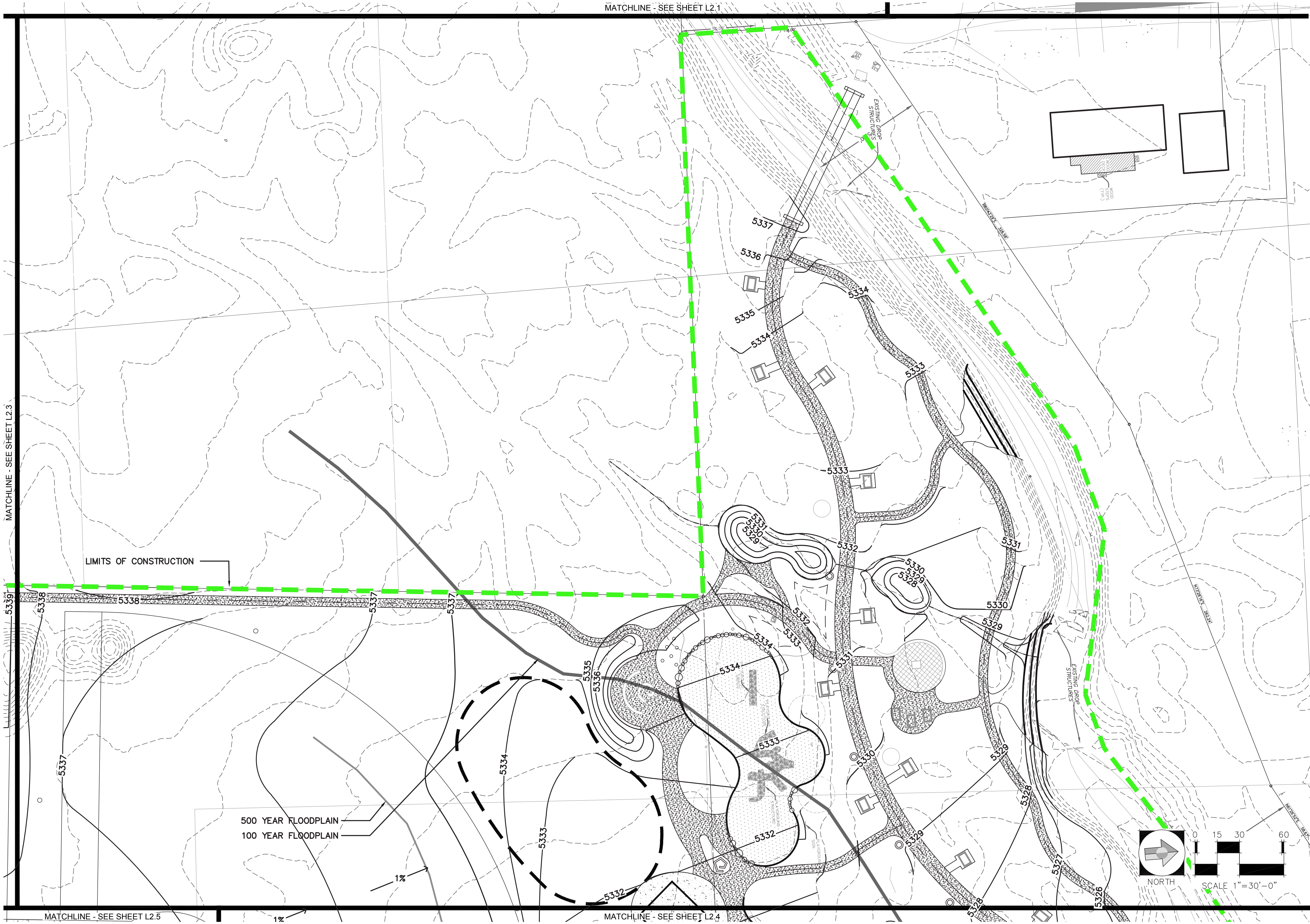
PROJECT NUMBER: 16044.00
DATE: 05/13/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
GRADING PLANS

SHEET NUMBER:
L1.1
SHEET x1 OF XX



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REVISIONS:

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DESIGN DEVELOPMENT

SHEET TITLE:
GRADING PLANS

SHEET NUMBER:
L1.2

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LIMITS OF CONSTRUCTION

SKATE PARK AREA

(15952.55'--MEADOW PARK FRUIT FARMS)
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S00°44'30"E 1320.84'
HOME 55'

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NORTH
SCALE 1"=30'-0"

MATCHLINE - SEE SHEET L2.6

MATCHLINE - SEE SHEET L2.5

MATCHLINE - SEE SHEET L2.2

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Lyons, Colorado

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JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
GRADING PLANS

SHEET NUMBER:
L1.3
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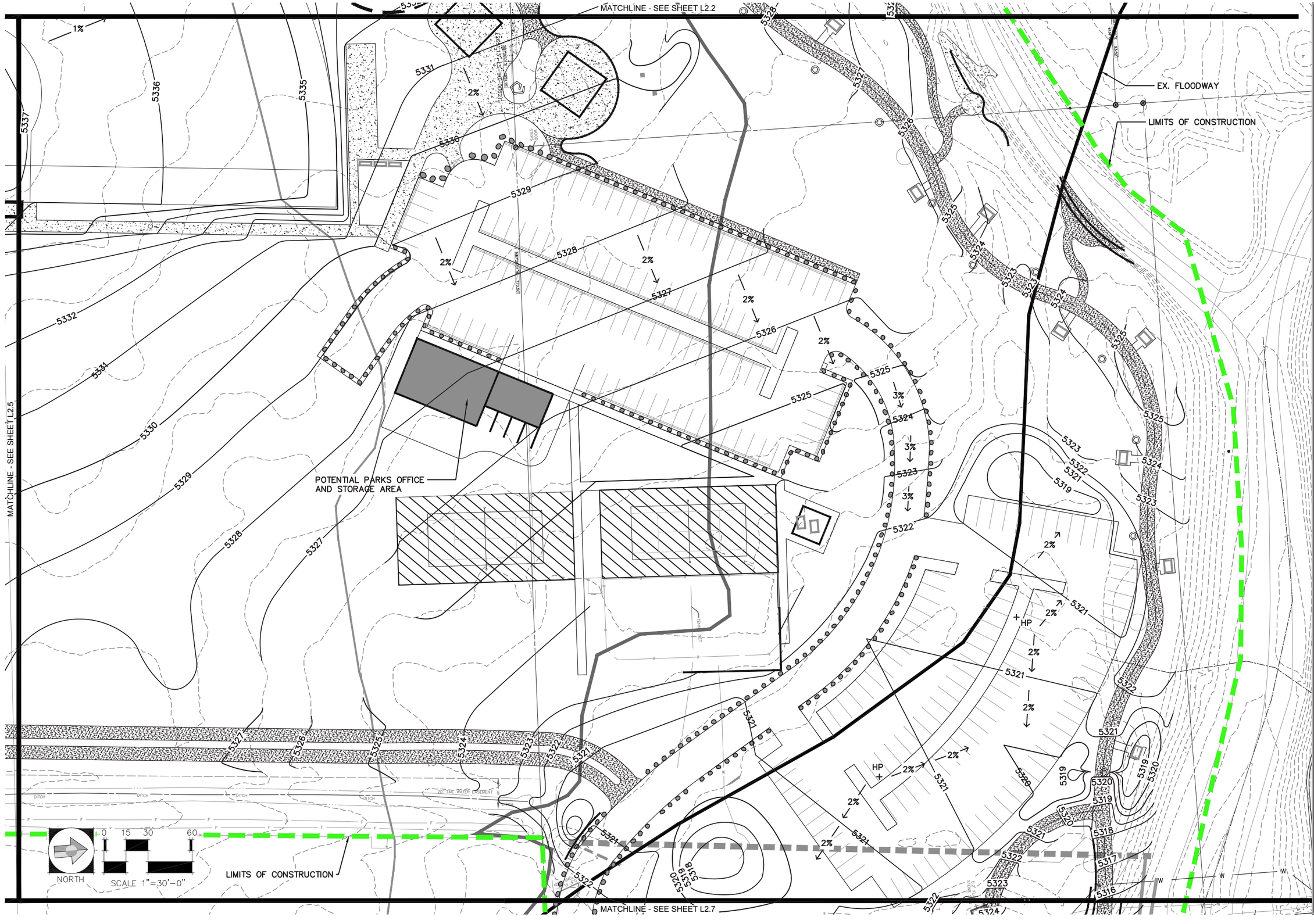

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REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L1.4

SHEET x1 OF XX

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MATCHLINE - SEE SHEET L2.2

MATCHLINE - SEE SHEET L2.6

MATCHLINE - SEE SHEET L2.4

LIMITS OF CONSTRUCTION

NORTH

SCALE 1"=30'-0"

0 15 30 60

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JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L1.5

SHEET x1 OF XX

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PLOT DATE:

MATCHLINE - SEE SHEET L2.3

MATCHLINE - SEE SHEET L2.5

LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

NORTH

SCALE 1"=30'-0"

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 05/13/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

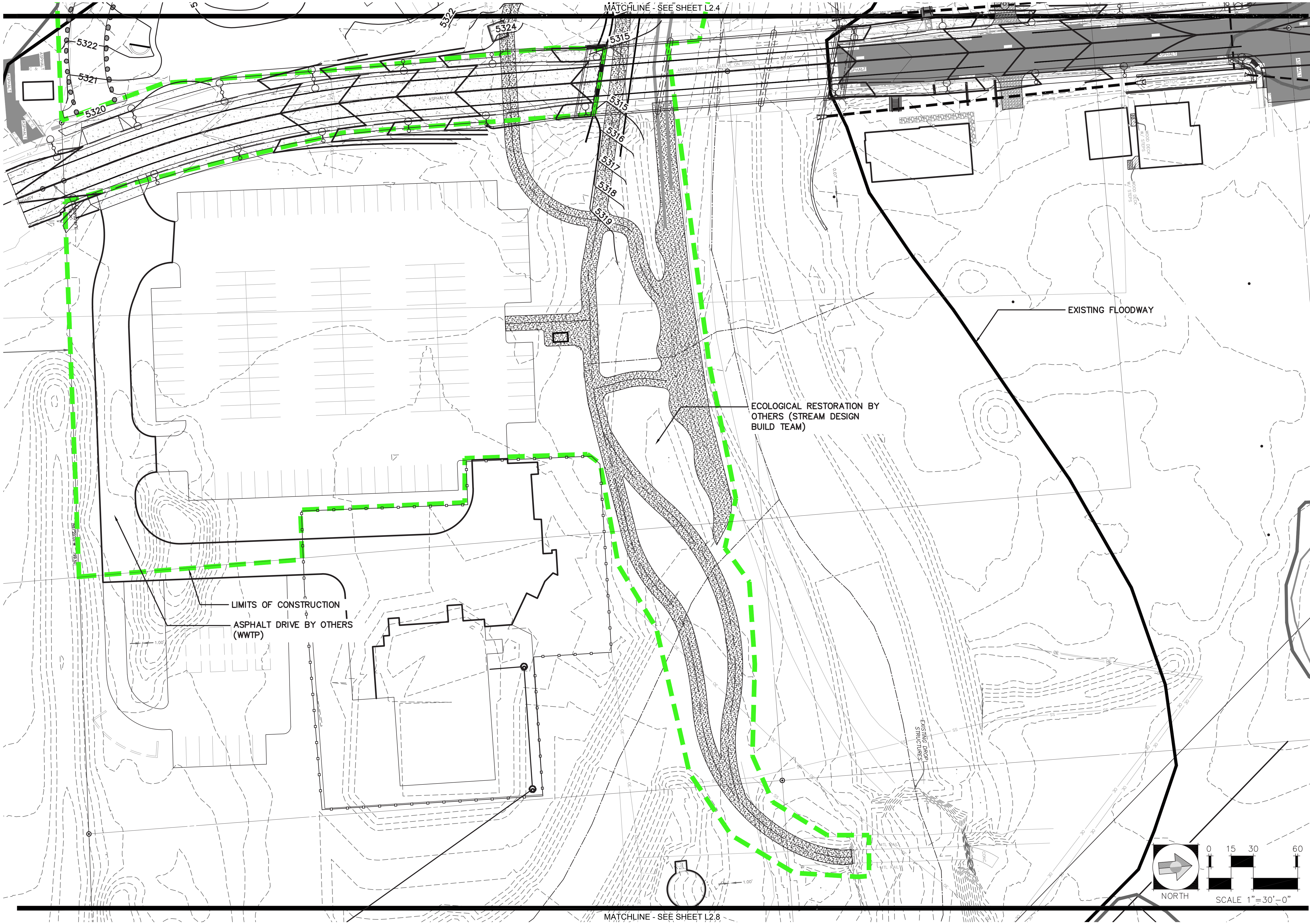
REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
GRADING PLANS

SHEET NUMBER:
L1.6

SHEET x1 OF XX



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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

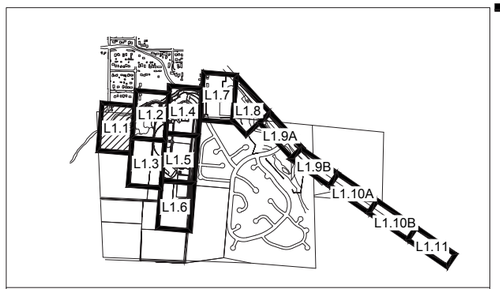
PROJECT NUMBER: 16044.00
DATE 05/13/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW
REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L1.7

SHEET x1 OF XX



KEY MAP

100 YEAR FLOODPLAIN

500 YEAR FLOODPLAIN

MATCHLINE - SEE SHEET L1.3

MATCHLINE - SEE SHEET L1.2

NORTH

0 15 30 60

SCALE 1"=30'-0"

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BOHN PARK

2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 05/13/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.1

SHEET_x1_OF_XX

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FILE NAME
PLOT DATE: May 13, 2016 - 2:39pm

MATCHLINE - SEE SHEET L1.1

MATCHLINE - SEE SHEET L1.3

MATCHLINE - SEE SHEET L1.5

MATCHLINE - SEE SHEET L1.4

80' BRIDGE

PICNIC TABLE

DITCH RETURN FLOWS/WATER FEATURE

EXISTING 100 YEAR FLOODPLAIN

CRUSHER FINES TRAIL

LOG PLAYGROUND EDGE

NATURAL PLAY

PLAYGROUND EDGER WITH SAFETY SURFACING

OUTDOOR CLASSROOM

EXISTING PLAY AREA

CONCRETE PAVING

EXISTING 500 YEAR FLOODPLAIN

BOHN FIELD (300' OUTFIELD)

LIMITS OF CONSTRUCTION

CREEK ACCESS POINT

CRUSHER FINES TRAIL

PICNIC AREA

FLOWER PLANTER

10' WIDE CRUSHER FINES REGIONAL TRAIL

RESTROOM

EXISTING DROP STRUCTURES

KEY MAP

L2.1 L2.2 L2.3 L2.4 L2.5 L2.6 L2.7 L2.8 L2.9A L2.9B L2.10A L2.10B L2.11

NORTH

0 15 30 60

SCALE 1"=30'-0"

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 05/13/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.2

SHEET x1 OF XX

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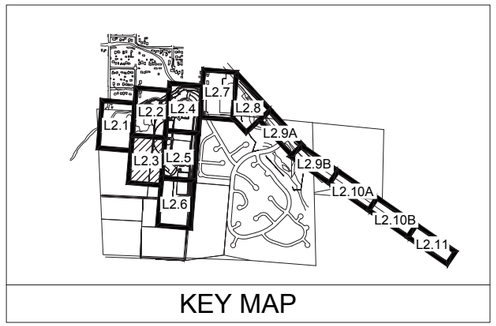

KEY MAP

LIMITS OF CONSTRUCTION

CRUSHER FINES TRAIL

SKATE PARK AREA
(8,000 SF)

8' WIDE CONCRETE
PATH

SANDSTONE SEATWALL
BUILT INTO LANDSCAPE
BERM

VASQUEZ
FIELD

DIRT JUMP SKILLS
EXPANSION AREA

EXISTING DIRT JUMP
SKILLS AREA

3 STRANDS BW FENCE

MATCHLINE - SEE SHEET L1.6

MATCHLINE - SEE SHEET L1.5

MATCHLINE - SEE SHEET L1.2

NORTH

0 15 30 60

SCALE 1"=30'-0"

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 05/13/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
LAYOUT PLANS

SHEET NUMBER:
L2.3

SHEET x1 OF XX

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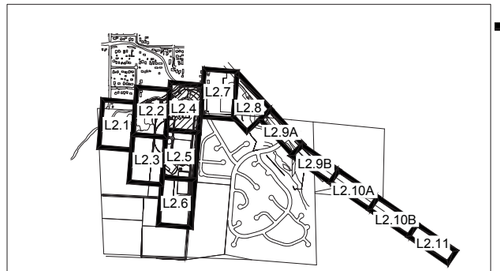

KEY MAP

MATCHLINE - SEE SHEET L1.2

MATCHLINE - SEE SHEET L1.5

MATCHLINE - SEE SHEET L1.7

RESTROOM

SHADE SHELTER

WOOD SPIRAL BENCH

CONCRETE WALK AND PLAZA

SANDSTONE SEATWALL

8' WIDE CONCRETE PATH

BATTING CAGE

CAMP HOST SITE

GRAVEL PARKING

POTENTIAL PARKS OFFICE AND STORAGE AREA

SPORT COURT STRIPED FOR TENNIS/PICKLEBALL

(CRUSHER FINES SURFACE)

EXISTING SPORT COURT TO REMAIN

EX 500 YR FLOODPLAIN

DOUBLE TRACK SPECIAL EVENT VEHICULAR ACCESS

VEHICULAR ACCESS GATE

LIMITS OF CONSTRUCTION

ADA FISHING ACCESS

EXISTING FLOODWAY

PICNIC TABLE

CREEK ACCESS POINT

10' WIDE CRUSHER FINES REGIONAL TRAIL

FLOWER PLANTERS

ST. VRAIN CREEK

SHADE SHELTER

GRAVEL SURFACING

GRAVEL PARKING

NORTH

SCALE 1" = 30'-0"

0 15 30 60

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 05/13/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.4

SHEET x1 OF XX

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PLOT DATE:

MATCHLINE - SEE SHEET L1.3

MATCHLINE - SEE SHEET L1.2

MATCHLINE - SEE SHEET L1.6

MATCHLINE - SEE SHEET L1.4

CRUSHER FINES TRAL

VASQUEZ FIELD

DUGOUT

BLEACHERS

8' WIDE CONCRETE PATH

SHADE SHELTER

BACKSTOP

10' WIDE GRAVEL ACCESS

CONCRETE PAVING

SHADE SHELTER

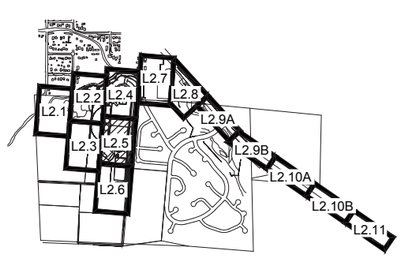
PLAY AREA WITH SAFETY SURFACING

NEIGHBORHOOD ACCESS

LIMITS OF CONSTRUCTION

NORTH

SCALE 1"=30'-0"



KEY MAP

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 05/13/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.5

SHEET x1 OF XX

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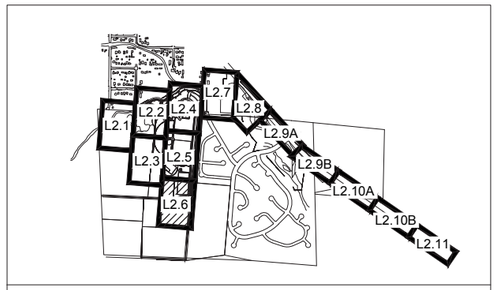

KEY MAP

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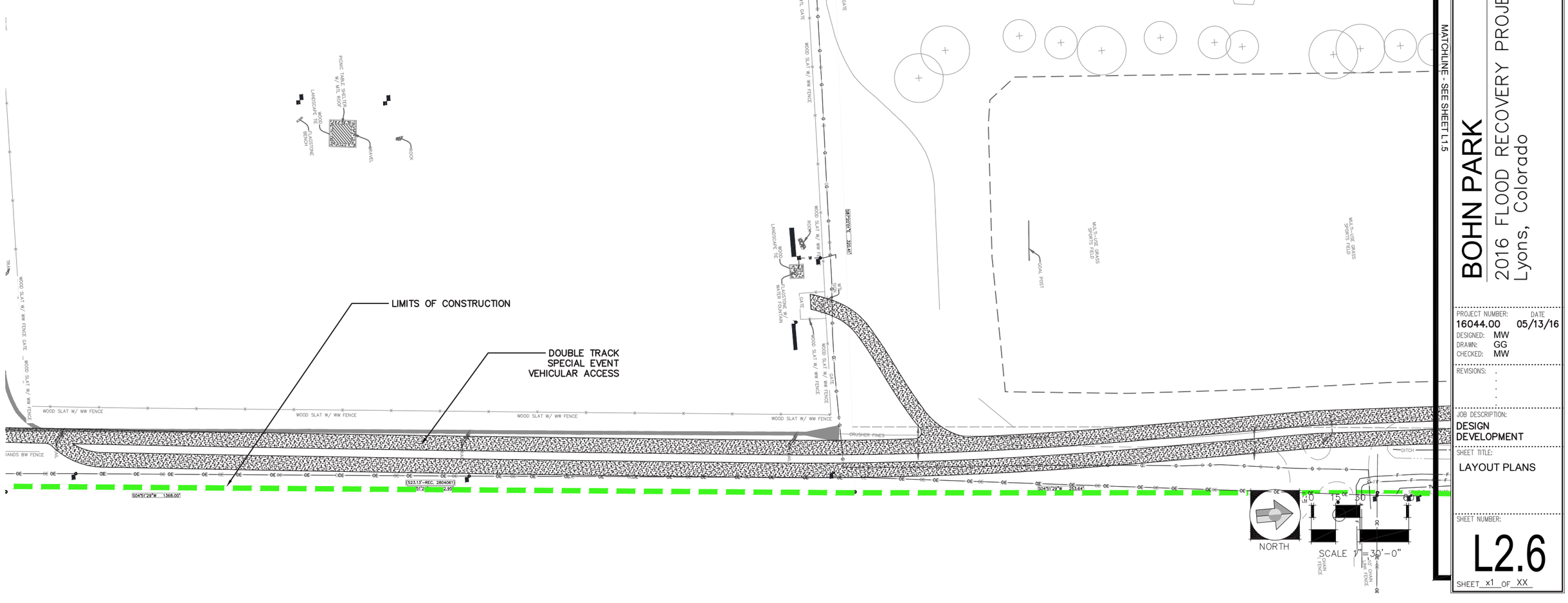

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 05/13/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

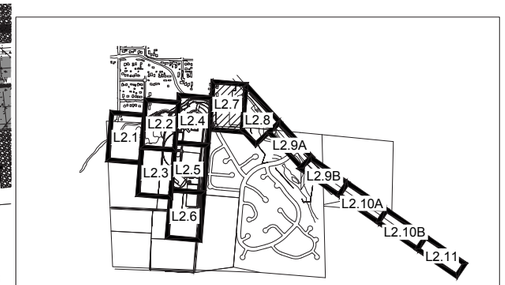
JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
LAYOUT PLANS

SHEET NUMBER:
L2.6
SHEET x1 OF XX

MATCHLINE - SEE SHEET L1.4

EX 100 YR FLOODPLAIN
EX FLOODWAY
PARK ID SIGN
EX 100 YR FLOODPLAIN
WAYFINDING KIOSK
EXISTING DROP STRUCTURE
MTL RAIL
MTL RAIL
CONC
1.00'
1.00'



KEY MAP

NORTH

0 15 30 60

SCALE 1"=30'-0"

MATCHLINE - SEE SHEET L1.8

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DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.7

SHEET x1 OF XX

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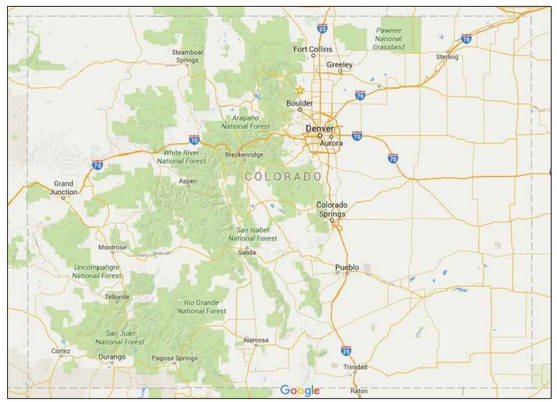
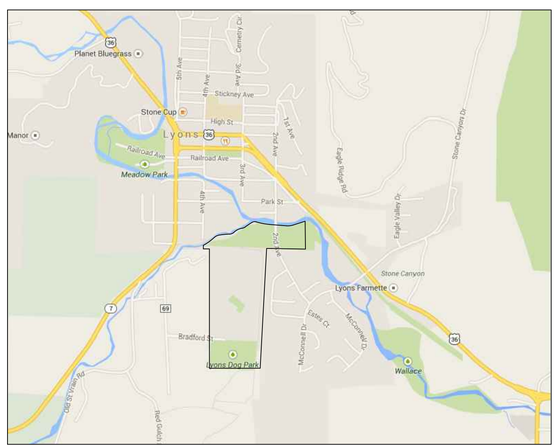
BOHN PARK RECOVERY DESIGN

LYONS, COLORADO

CLIENT
TOWN OF LYONS



OVERVIEW MAP STATE OF COLORADO



SITE LOCATION MAP BOHN PARK, LYONS, CO

Sheet List Table	
Sheet Number	Sheet Title
0.0	COVER
1.0	SITE PLAN
2.0	ACCESS PLAN
3.0	Demolition Plan
4.0	Plan and Profile (1)
4.1	Plan and Profile (2)
4.2	Plan and Profile (3)
4.3	Plan and Profile (4)
5.0	CROSS SECTIONS (1)
6.0	Channel Overflow (1)
7.0	Channel Overflow (2)
8.0	Channel Overflow (3)
9.0	Typical Details (1)
9.1	Typical Details (2)
9.2	Typical Details (3)
9.3	Typical Details (4)
9.4	Typical Details (5)
9.5	Typical Details (6)
10.0	Water Control (1)
10.1	Water Control (2)
11.0	Typical BMP DETAILS

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S2O Design and Engineering

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Lyons CO, 80540,
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(303) 819-3985

Client Name
Town of Lyons

Project Name
Bohn Park Recovery Design

Status
30% Design Drawings

Drawn Name
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Revisions
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Drawn By
Christian Clark, James Robinson

Checked By
Scott Shipley

Date
05/13/2016

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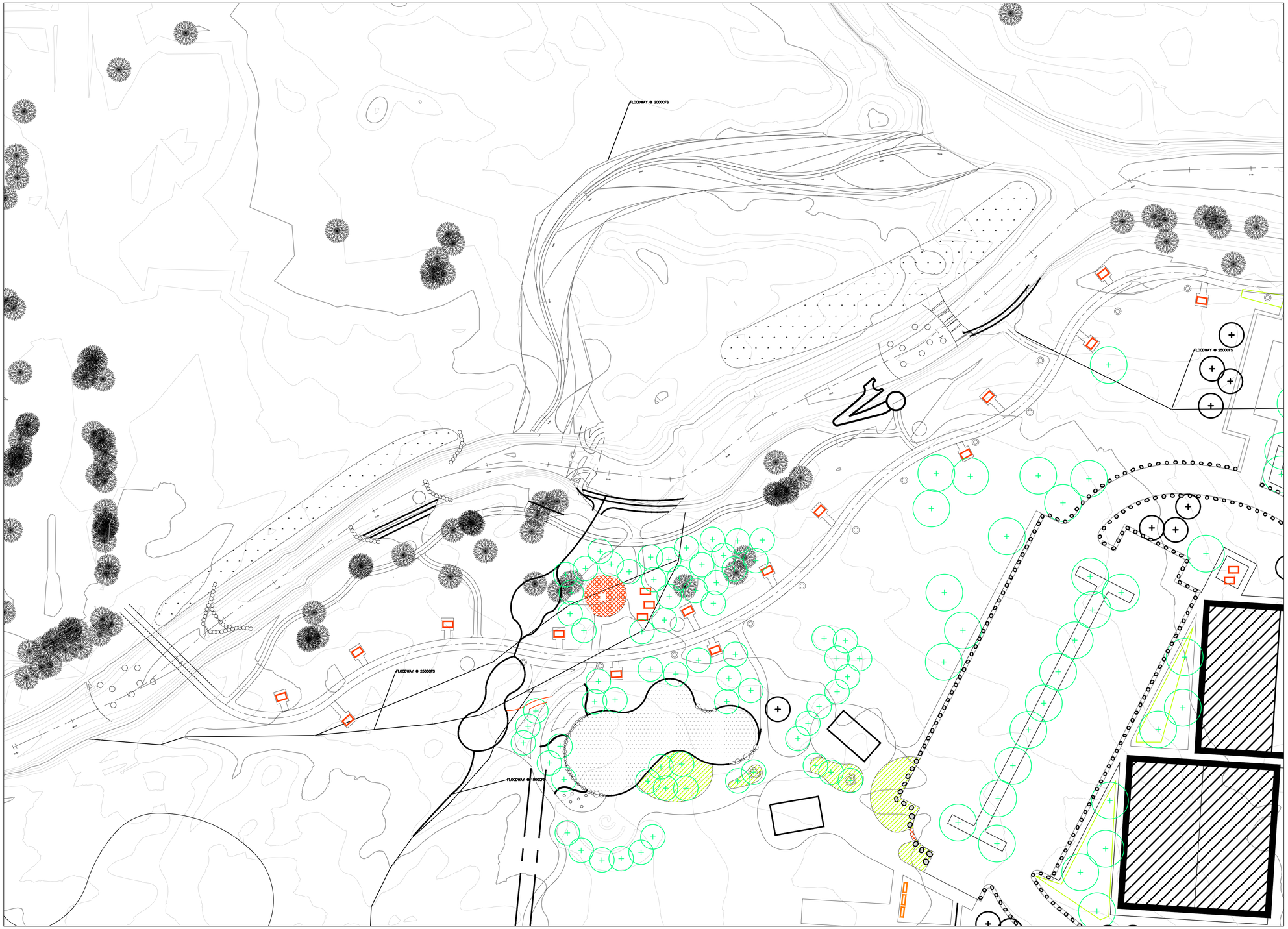

PLANVIEW - SITE PLAN

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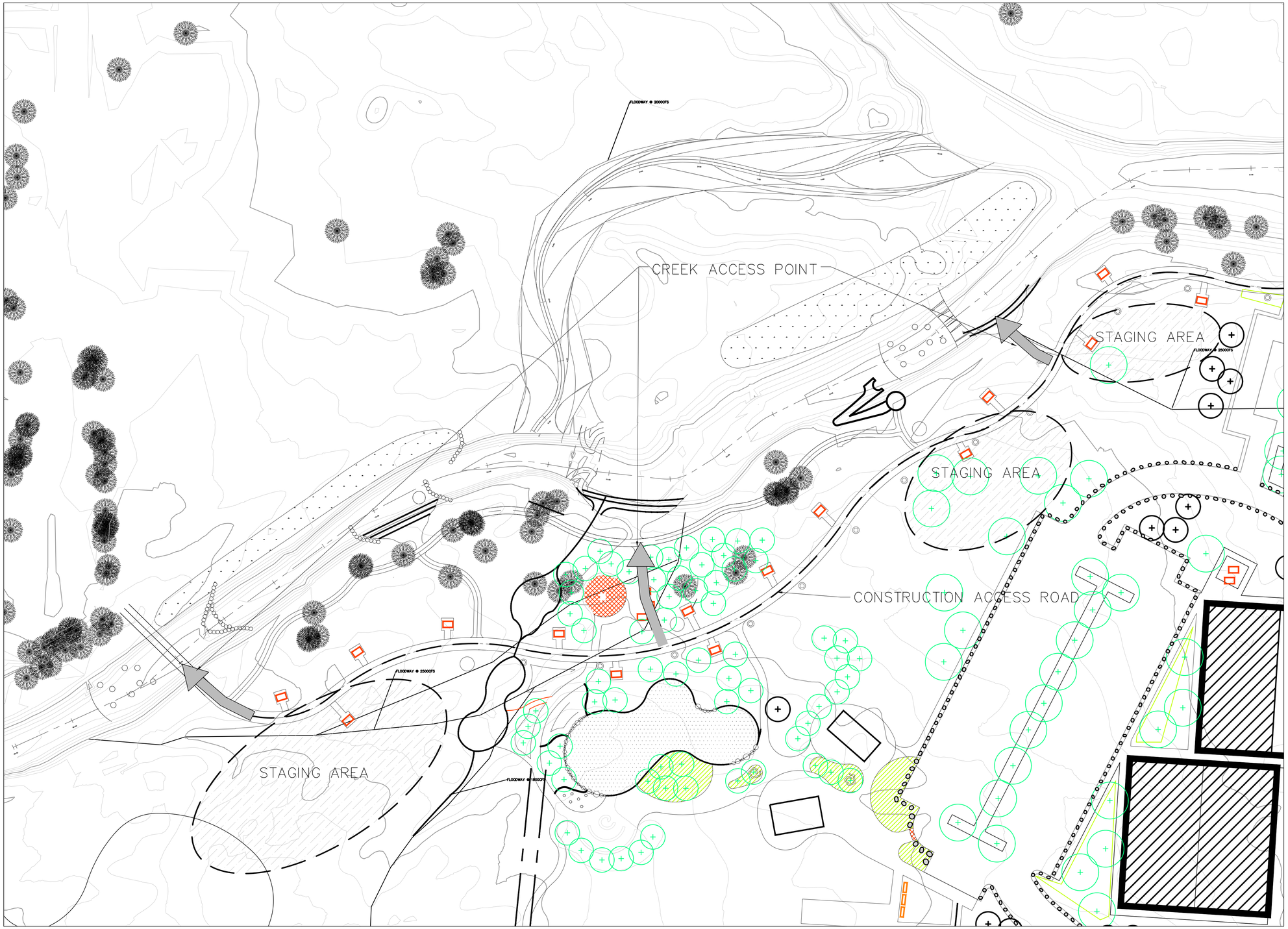

PLANVIEW ACCESS PLAN

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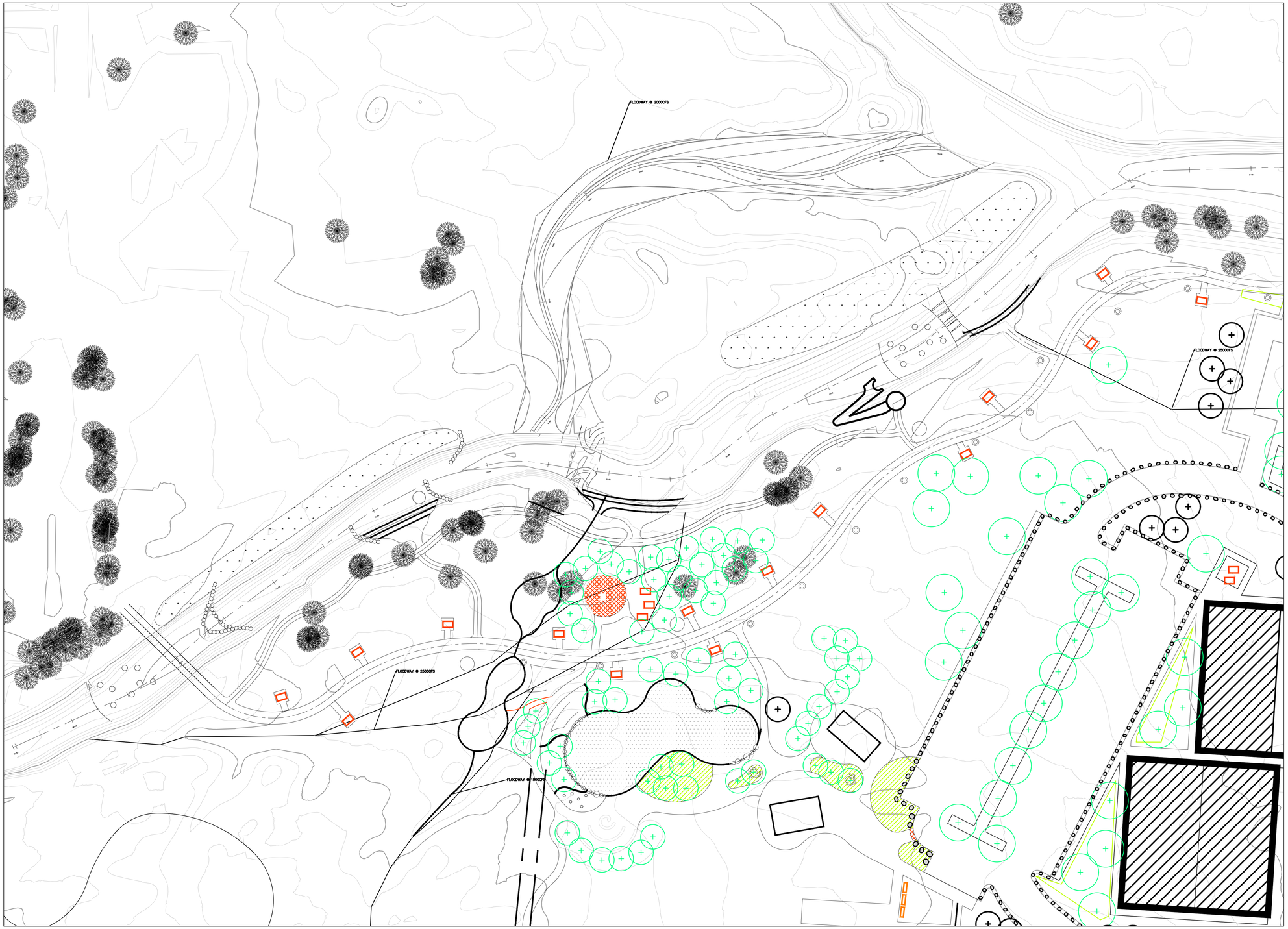

PLANVIEW DEMOLITION PLAN

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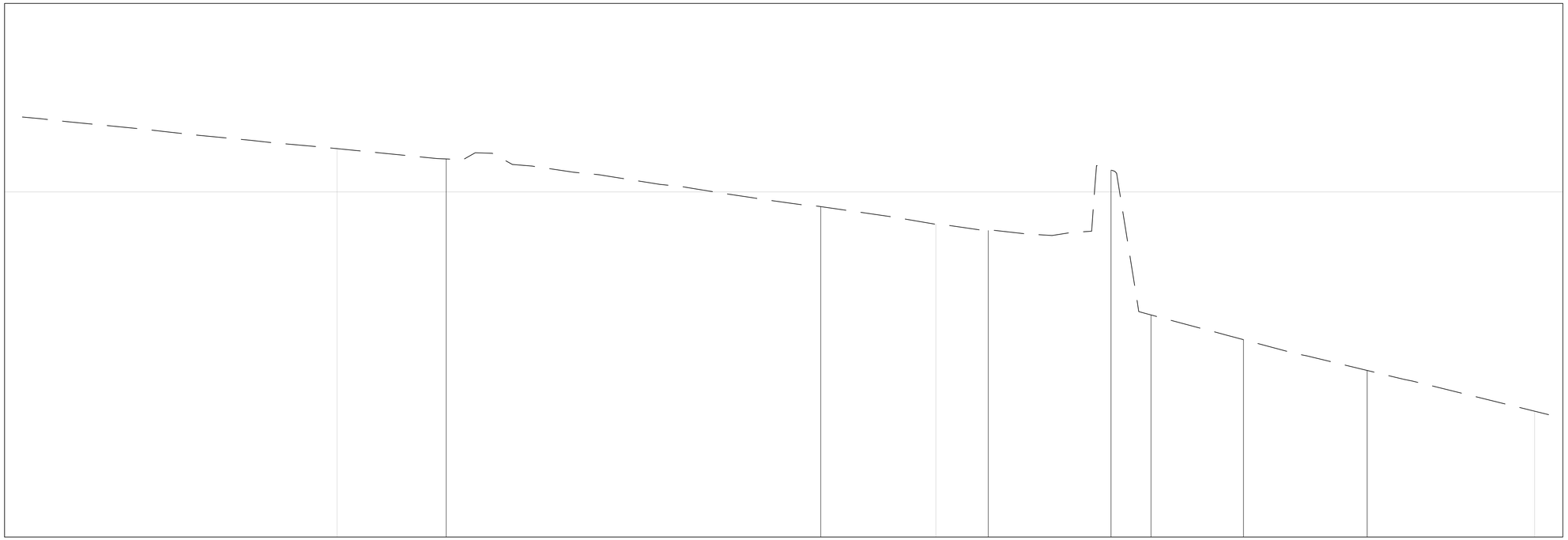

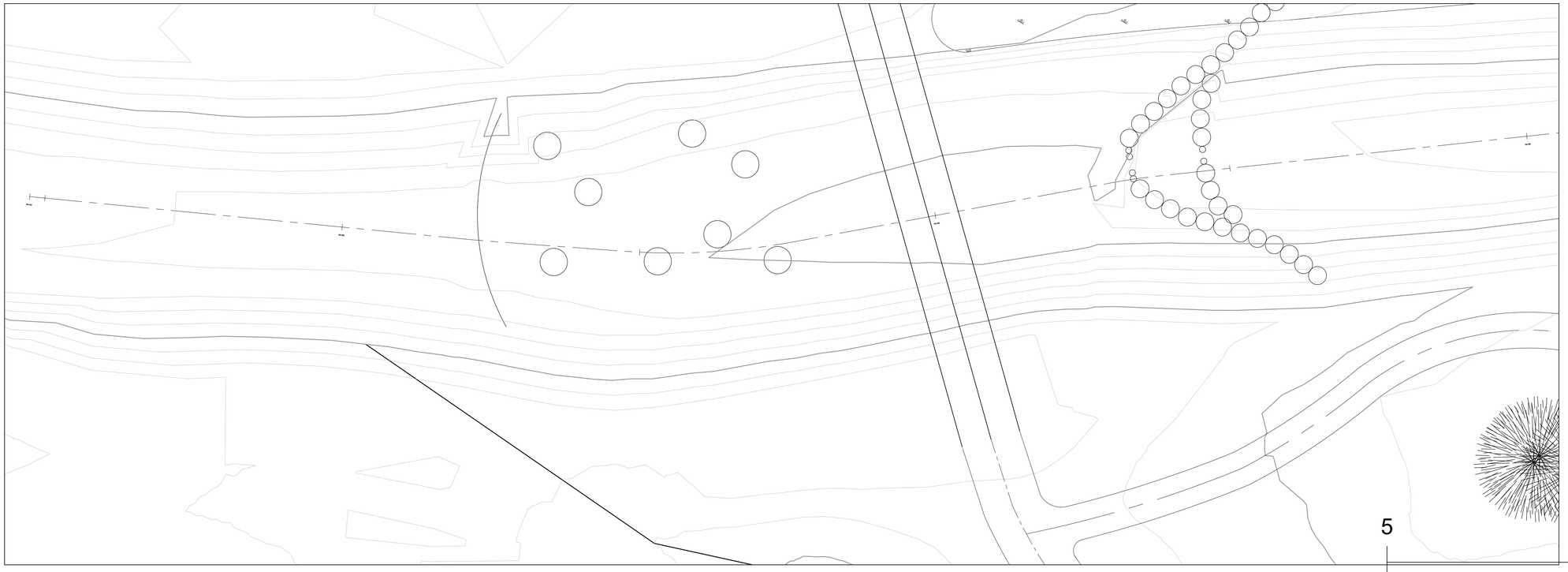

PLAN AND PROFILE 1

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Project Name
Bohn Park Recovery Design

Status
30 Design Drawings

Drawing Name
Plan and Profile 1

Revisions
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Scott Shipley

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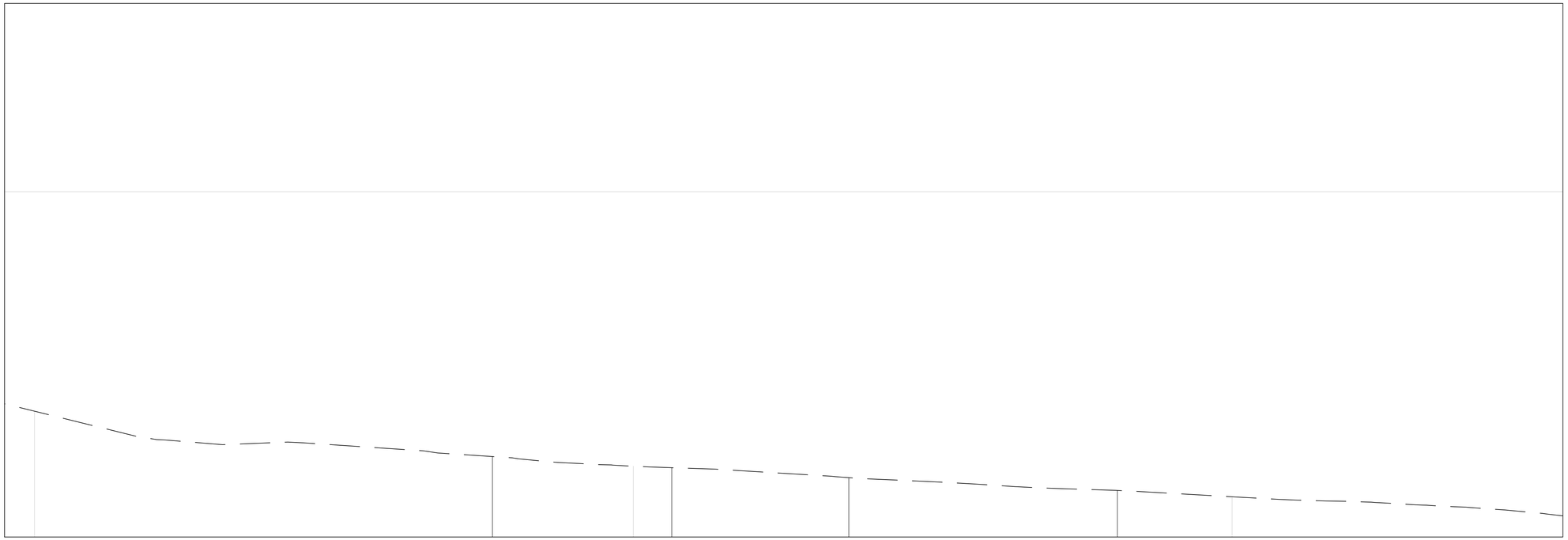

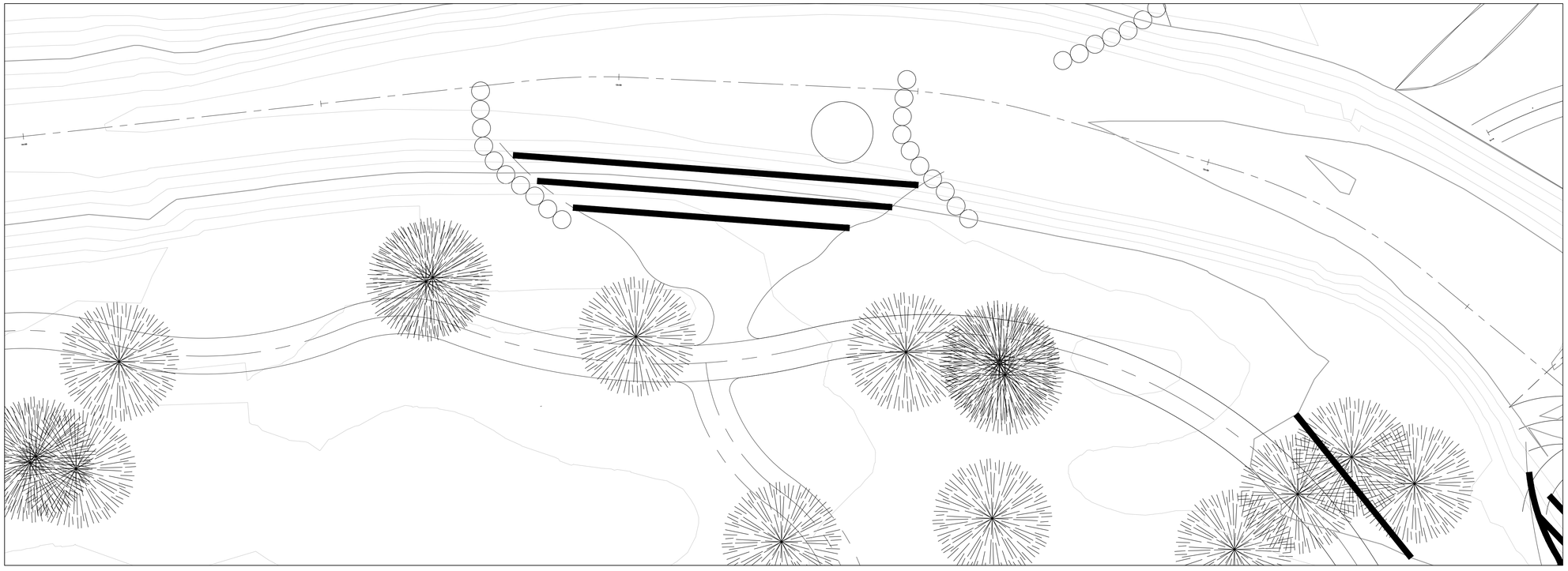

PLAN AND PROFILE □2□

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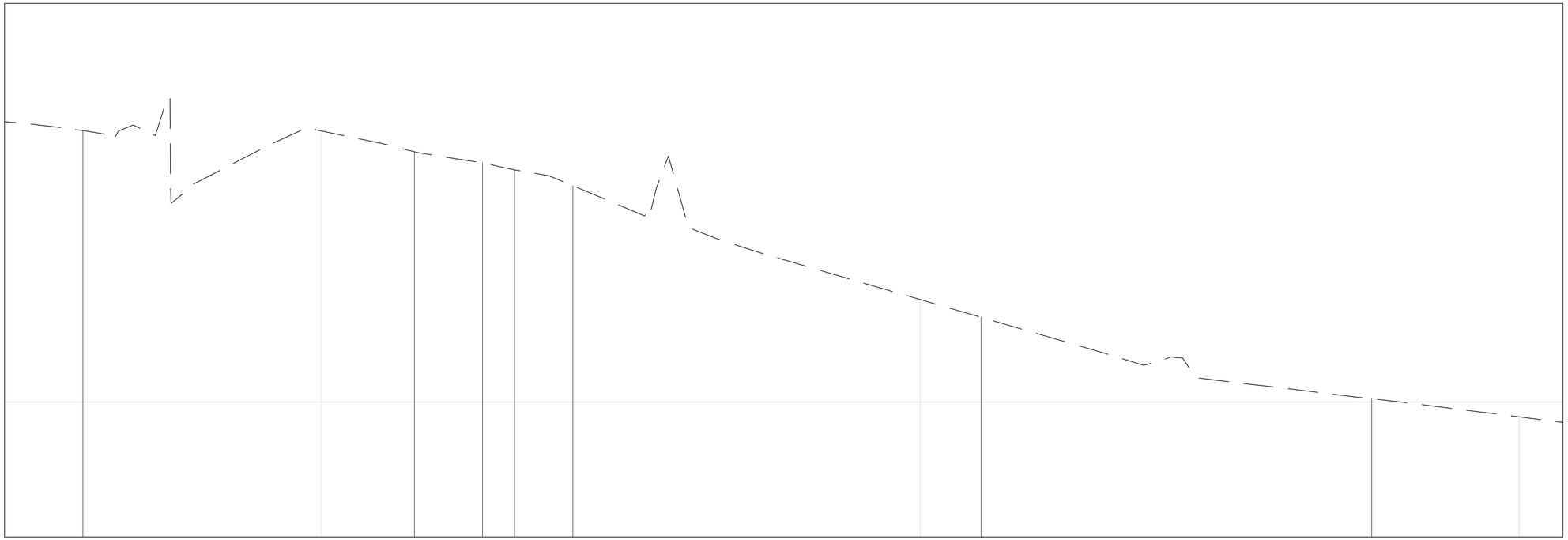

PLAN AND PROFILE 2

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Client Name:
Town of Lyons

Project Name:
Bohn Park Recovery Design

Sheet Name:
30% Design Drawings

Drawing Name:
Plan and Profile 3

Revisions:
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Drawn By:
Christian Clark, James Robinson

Checked By:
Scott Shipley

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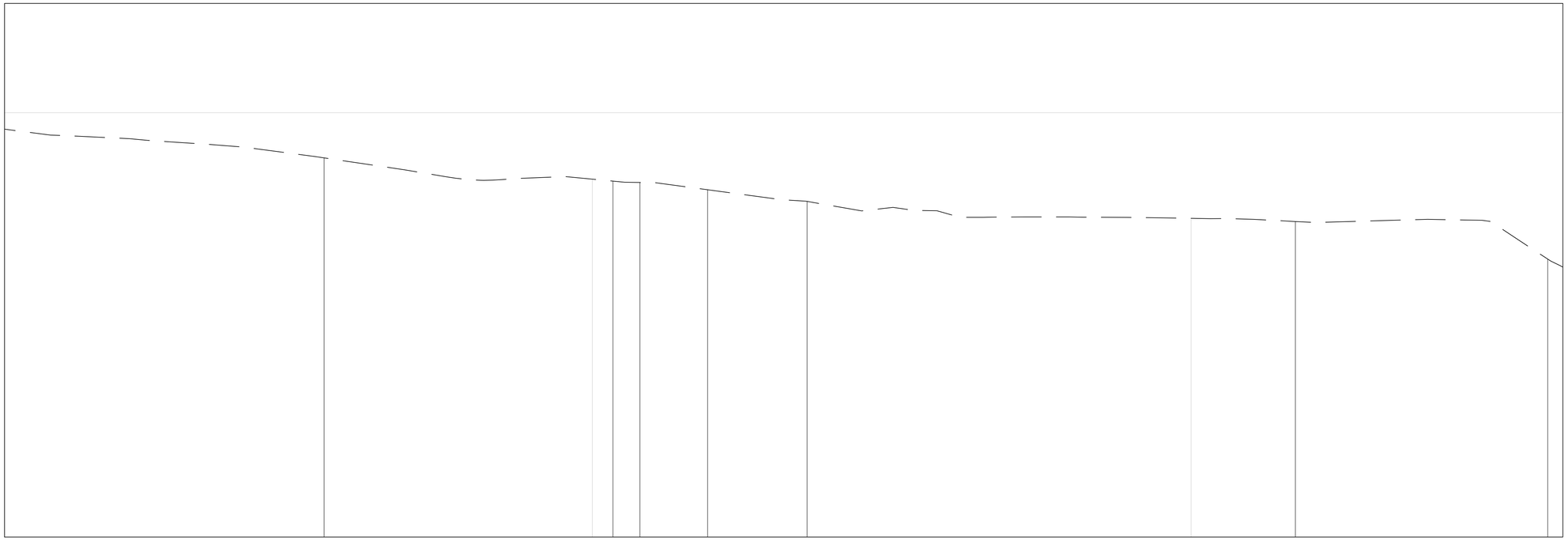

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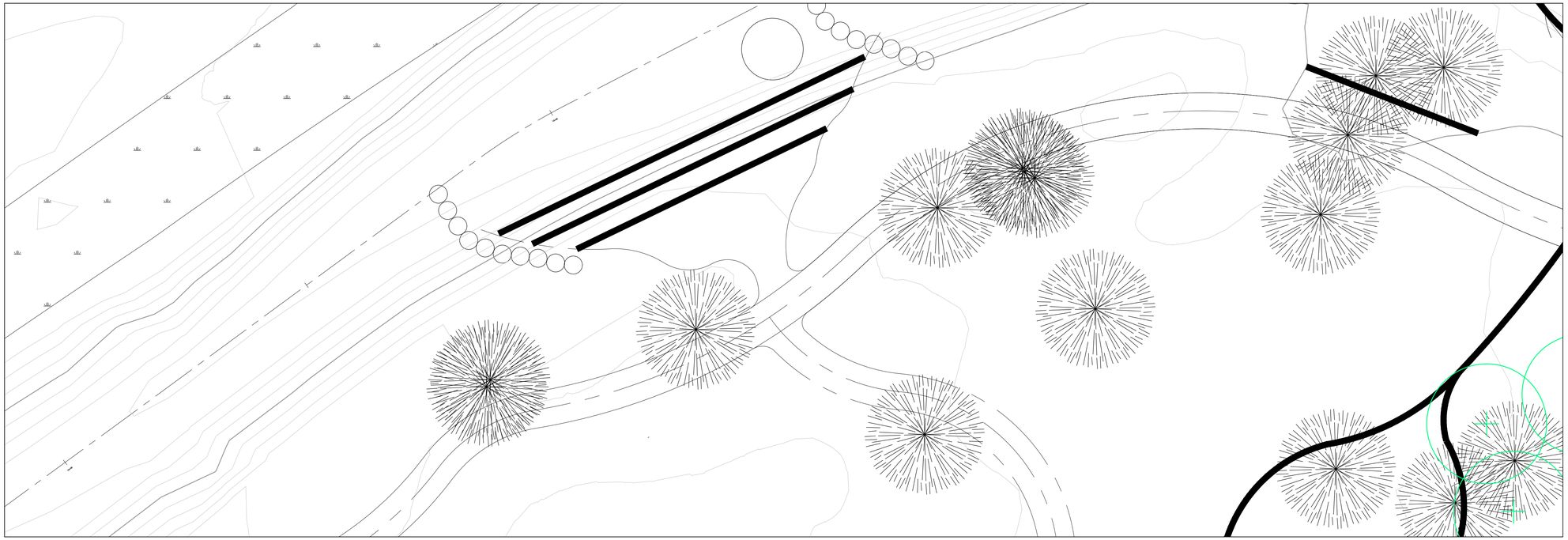

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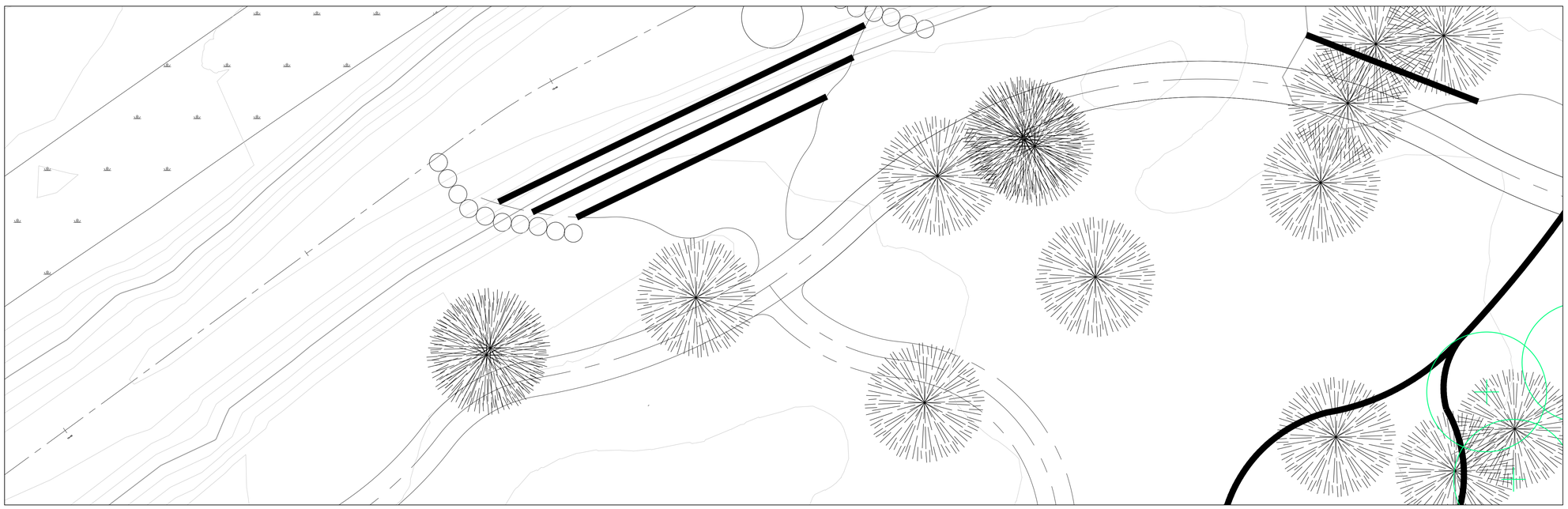

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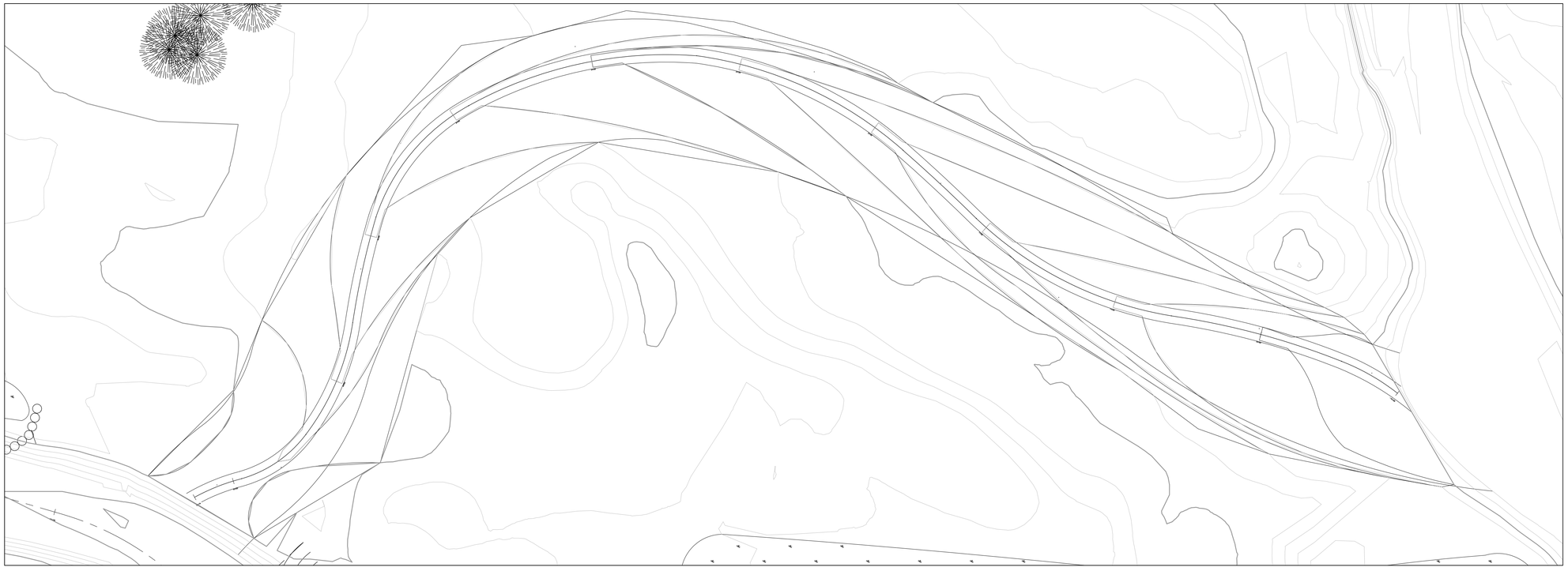

CHANNEL OVERFLOW PLAN AND PROFILE □1□

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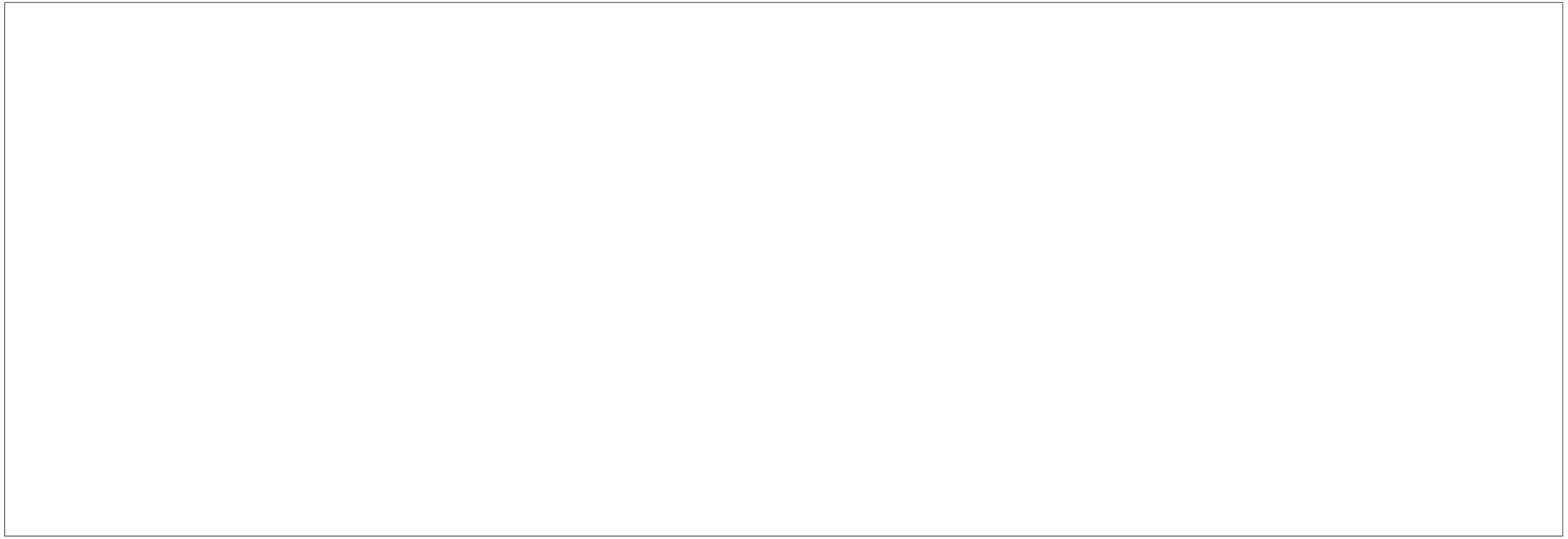

CHANNEL OVERFLOW PLAN AND PROFILE 2

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Town of Lyons

Project Name
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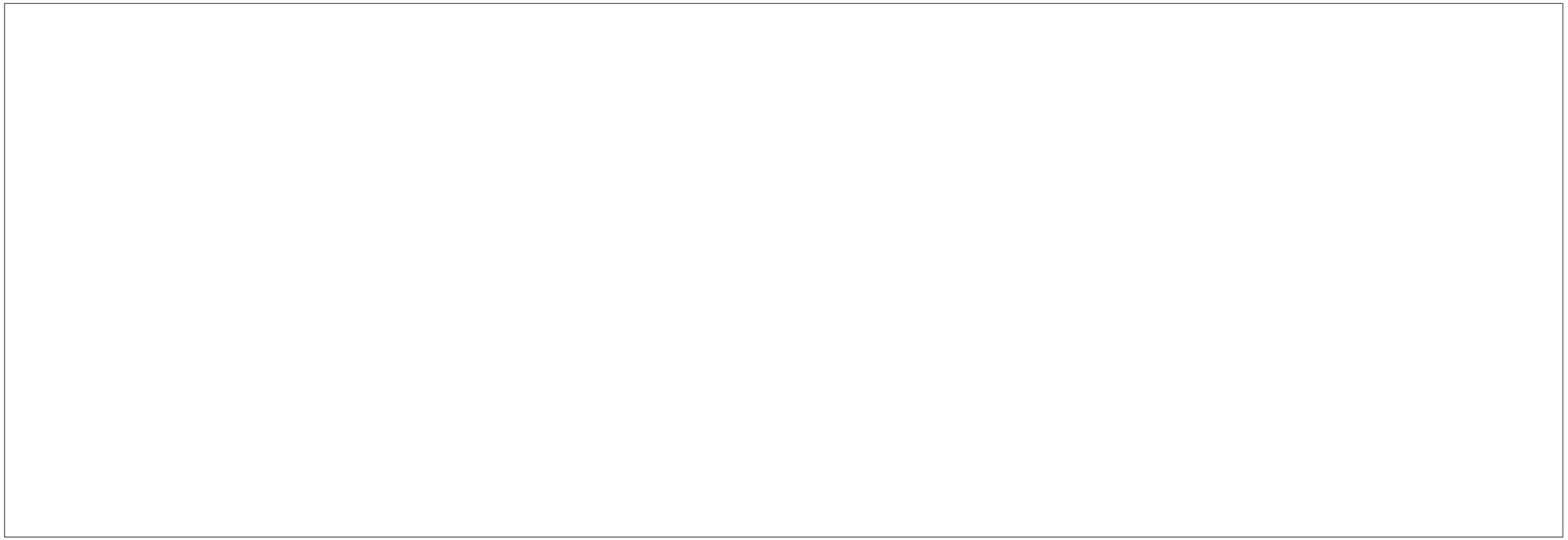

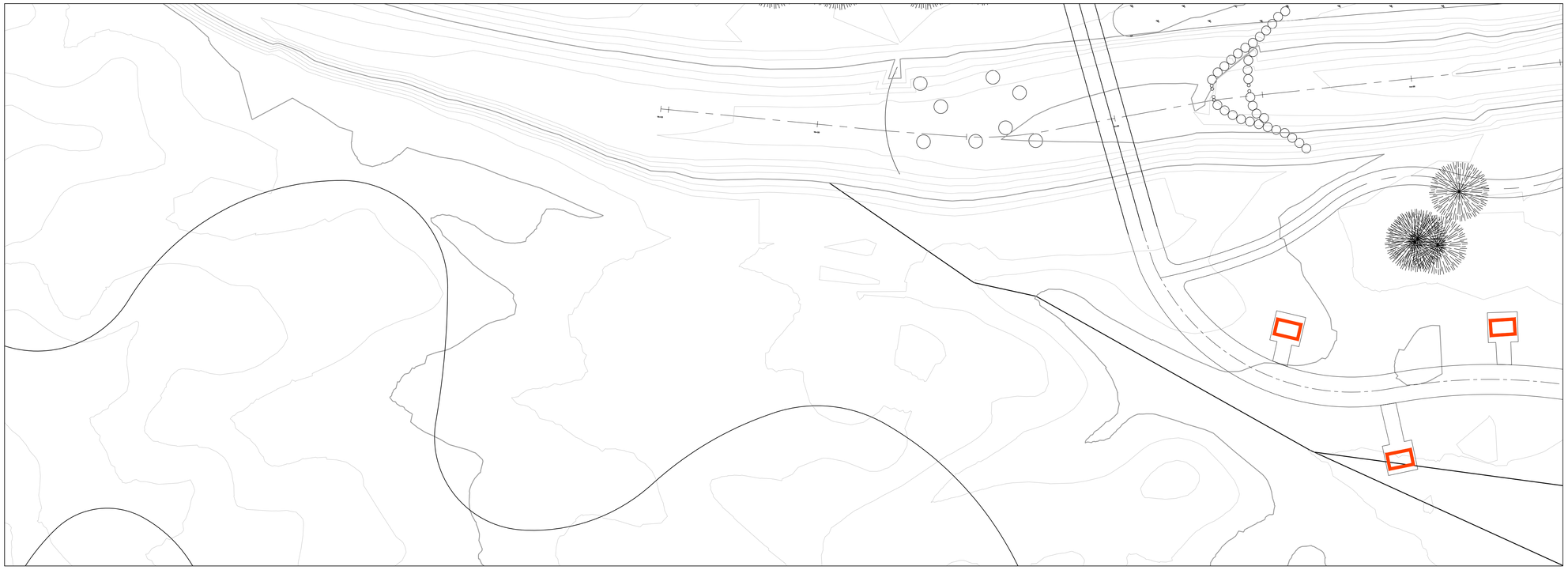

CHANNEL OVERFLOW PLAN AND PROFILE □3□

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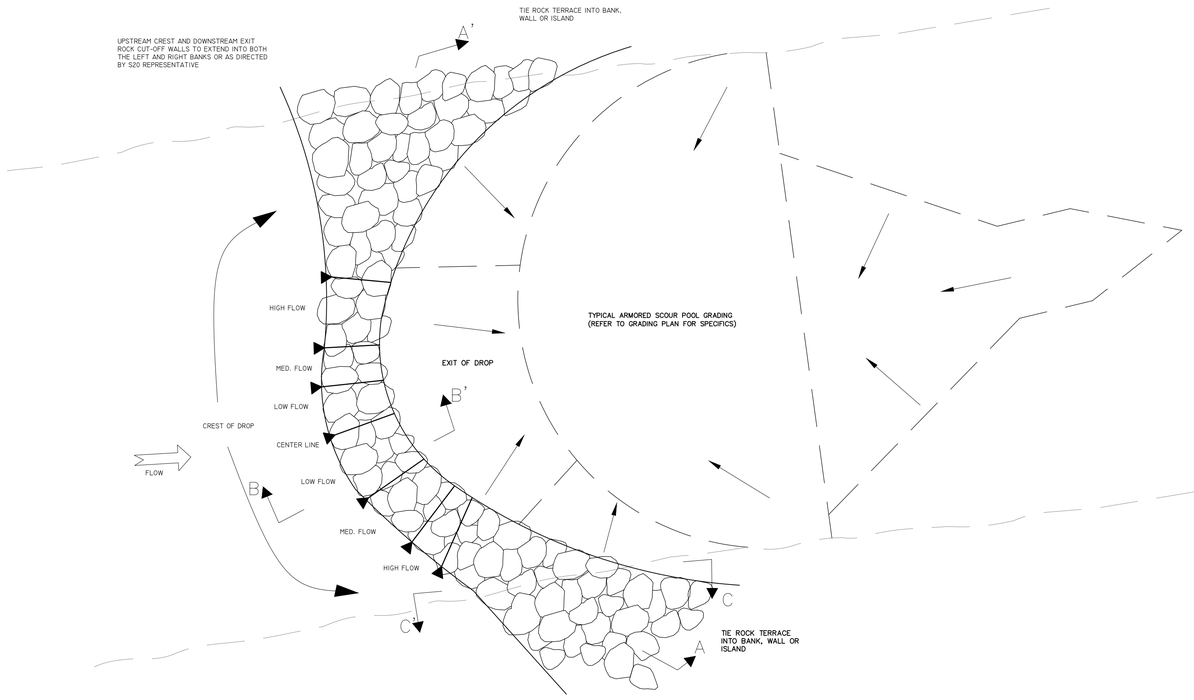
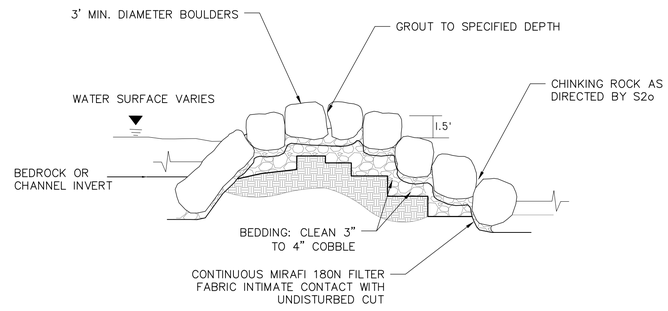
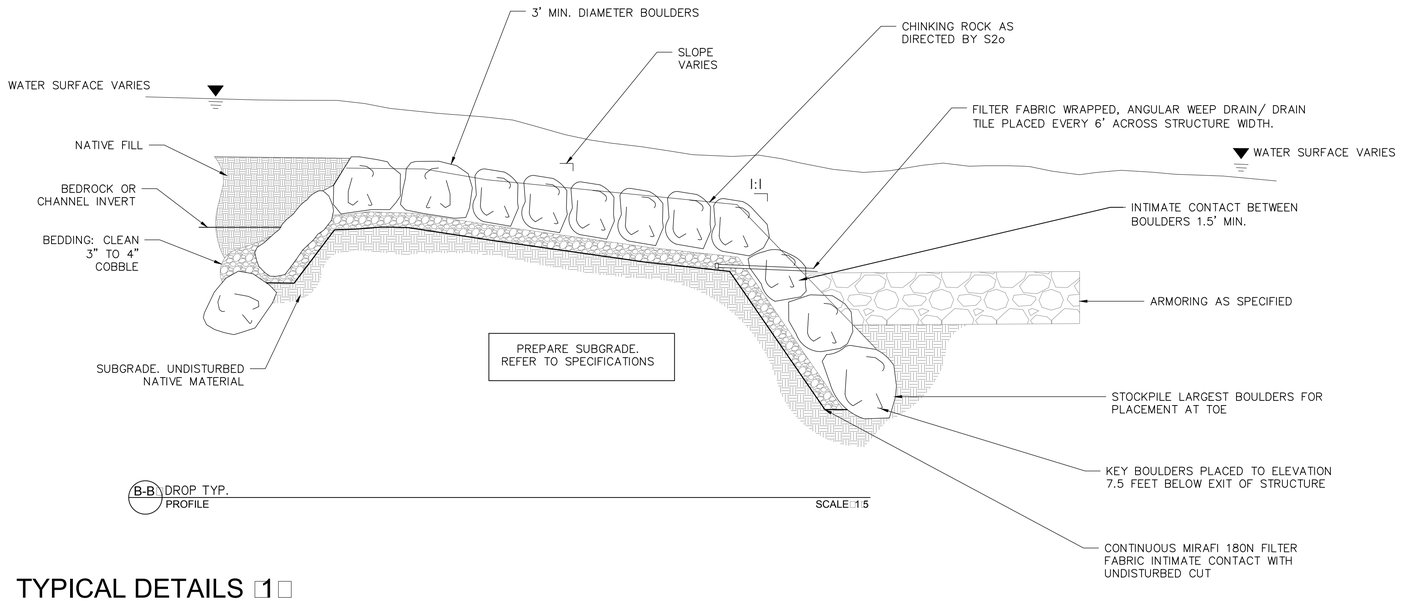


1 DROP TYP.
PLAN
SCALE: 1:8



C-C WING TYP.
PROFILE
SCALE: 1:5



B-B DROP TYP.
PROFILE
SCALE: 1:5

TYPICAL DETAILS 10

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REINVENTING WHITEWATER

S2O Design and Engineering

Scott Shipley, P.E.
318 Mcconnell Drive
Lyons CO, 80540,
USA
(303) 819-3985

Client:
Town of Lyons

Project Name:
Bohn Park Rock Structures

Status:
30% Design Drawings

Drawing Name:
Typical Details 10

Revisions:
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Drawn By:
Christian Clark, James Robinson

Checked By:
Scott Shipley

Date:
05/13/2016

Seal:

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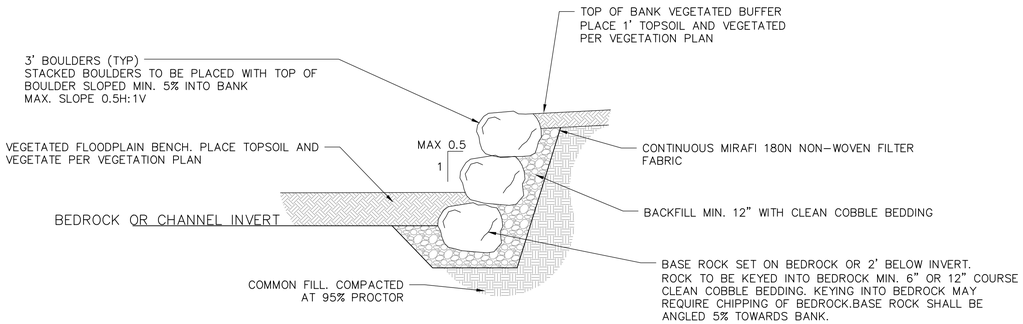
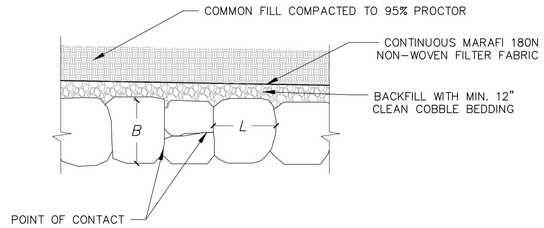
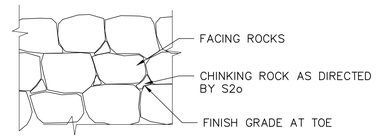


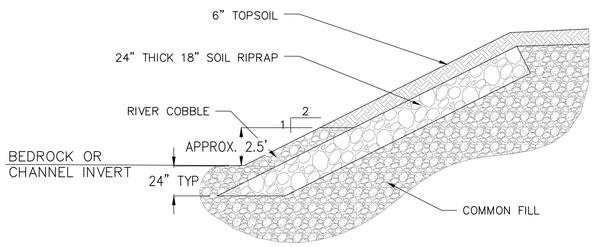
2 BOULDER RETAINING WALL TYP.
SECTION SCALE: 1:5



3 BOULDER RETAINING WALL TYP.
PLAN SCALE: 1:5



4 BOULDER RETAINING WALL TYP.
PROFILE SCALE: 1:5



5 SOIL COVERED RIPRAP TYP.
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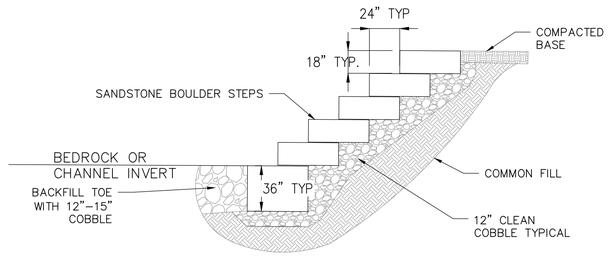
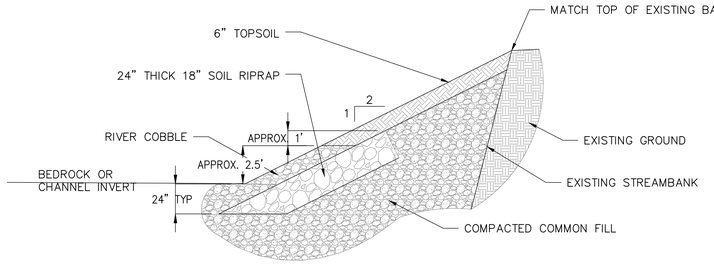
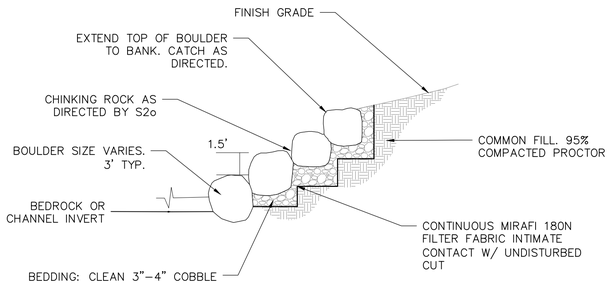


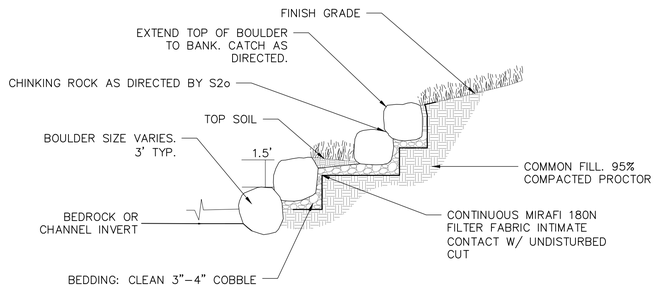
6 SANDSTONE BOULDER STEPPED ACCESS
SECTION SCALE: 1:5



7 SLOPED BANK REVETMENT WITH ARMORED TOE TYP.
SECTION SCALE: 1:5



8 TERRACED ROCK TYP.
SECTION SCALE: 1:5



□ TERRACED ROCK WITH VEGETATION TYP.
SECTION SCALE: 1:5

TYPICAL DETAILS □2□

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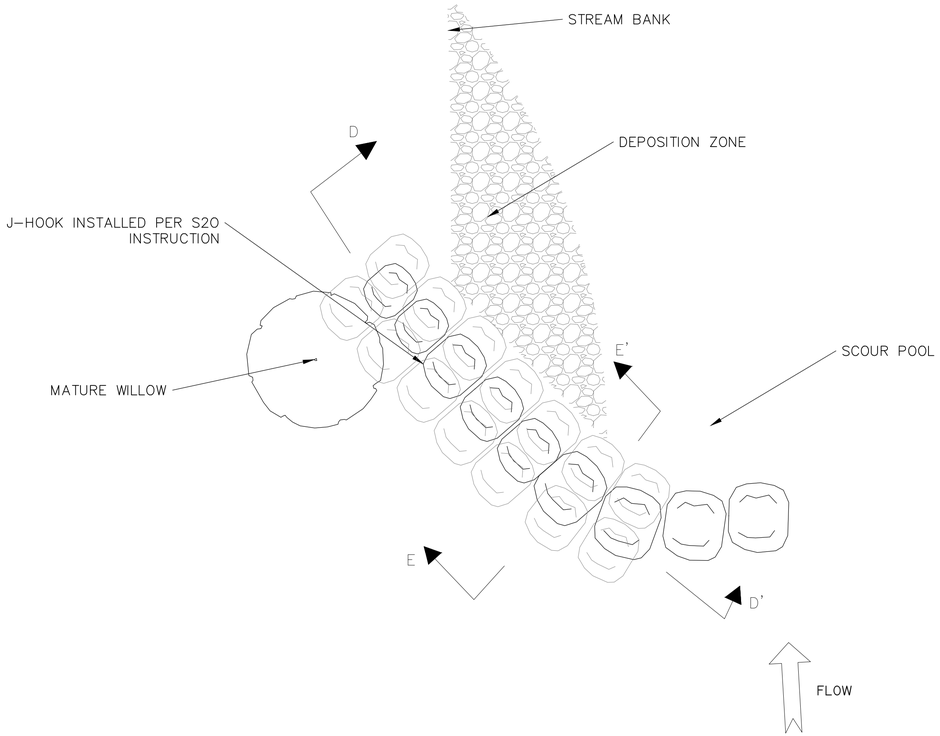
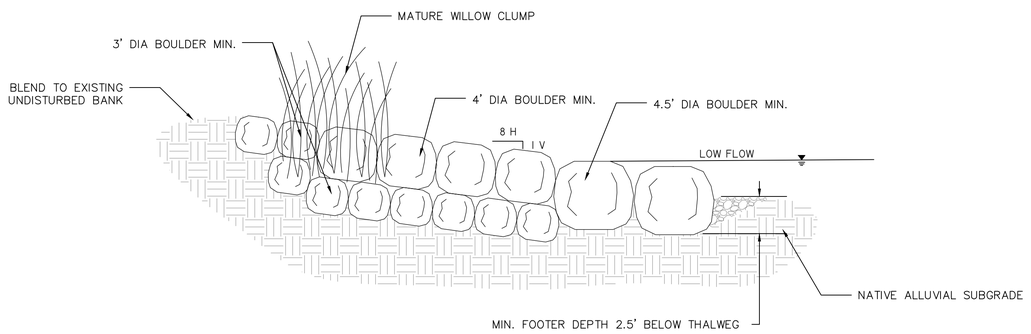


10 J-HOOK TYPICAL PLAN
PLAN NTS



NOTES:
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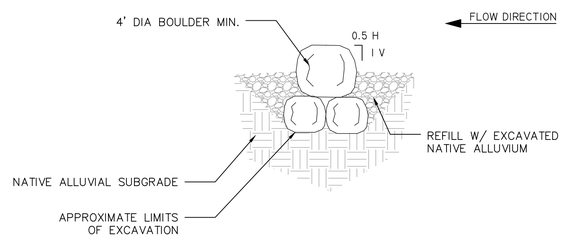
D-D J-HOOK TYPICAL
SECTION NTS



E-E J-HOOK TYPICAL
PROFILE NTS

TYPICAL DETAILS □3□

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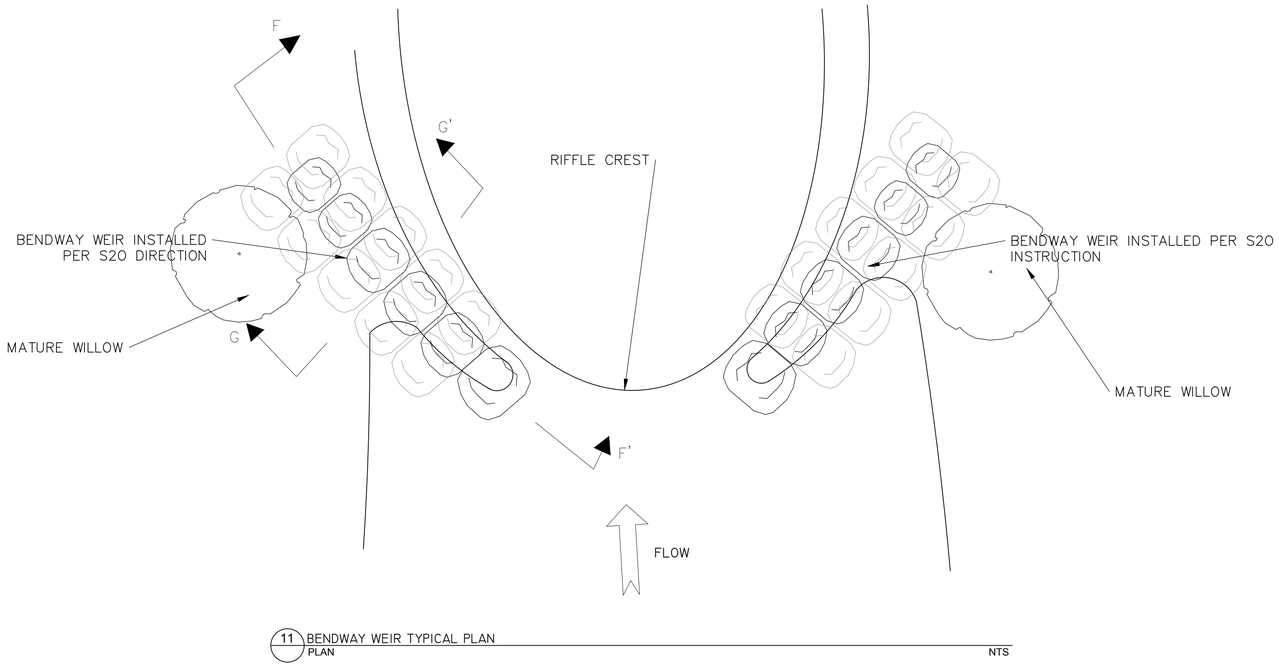
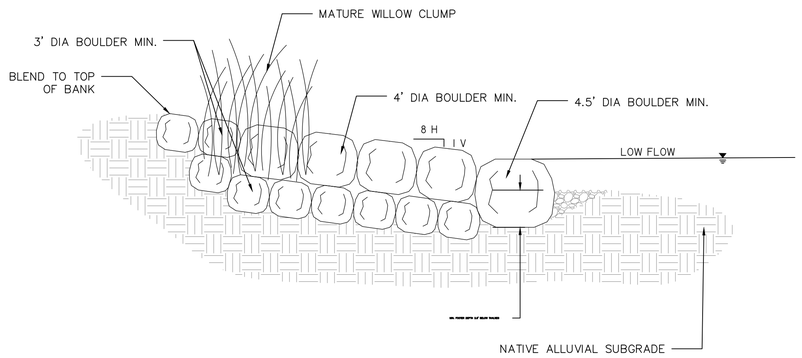
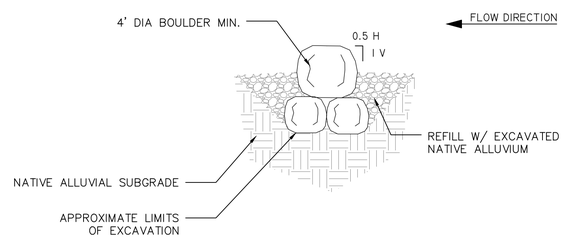


11 BENDWAY WEIR TYPICAL PLAN
PLAN NTS



NOTES:
(1) CONSTRUCT BENDWAY WEIR PER DIRECTION OF ENGINEER.

F-F BENDWAY WEIR TYPICAL
SECTION NTS



G-G BENDWAY WEIR TYPICAL
PROFILE NTS

TYPICAL DETAILS 50

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Client
Town of Lyons

Project Name
Bohn Park Recovery Design

Stage
30% Design Drawings

Drawing Name
Typical Details 4

Revisions
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Drawn By
Christian Clark, James Robinson

Checked By
Scott Shipley

Date
05/13/2016

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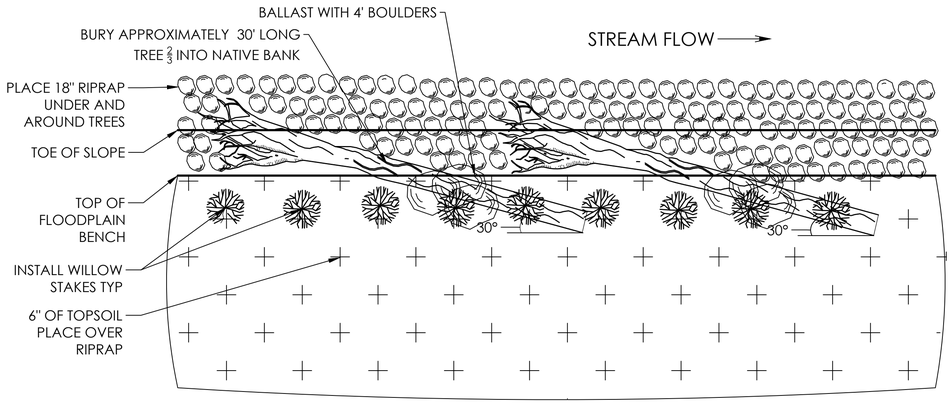
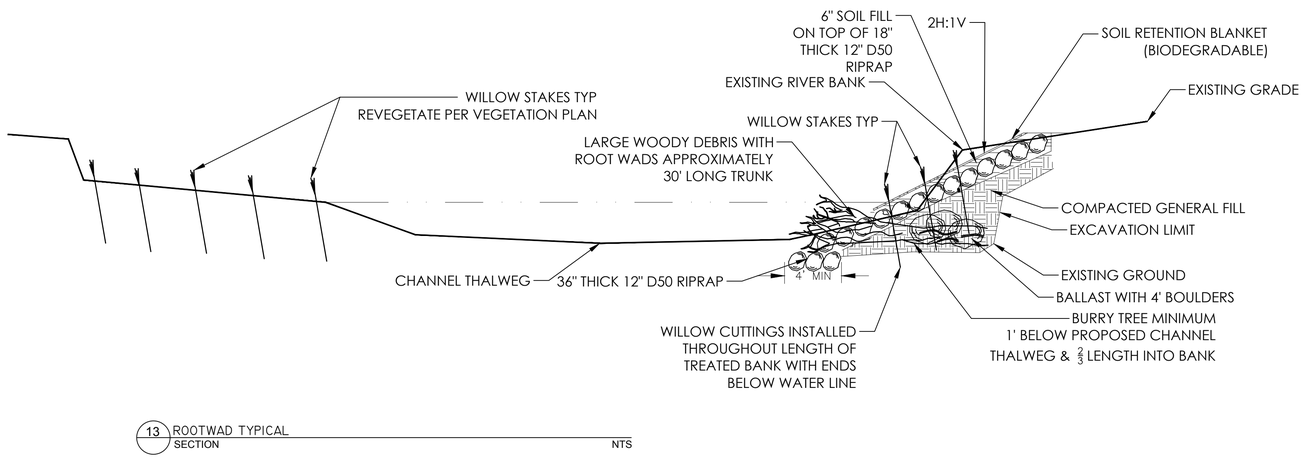


12 ROOTWAD TYPICAL
PLAN NTS



13 ROOTWAD TYPICAL
SECTION NTS

ADD CABLE TREE DETAIL HERE (14)

TYPICAL DETAILS (5)

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REINVENTING WHITEWATER

S2O Design and Engineering

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Client Name
Town of Lyons

Project Name
Bohn Park Recovery Design

Status
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Drawing Name
Typical Details (5)

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ADD RIFFLE CREST DETAILS HERE (15)

TYPICAL DETAILS (6)

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REINVENTING WHITEWATER

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Client
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Project Name
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Status
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Drawing Name
Typical Details (6)

Revisions
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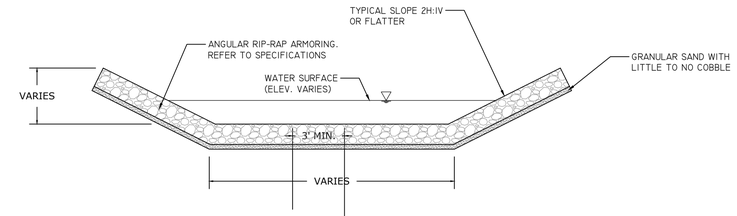
GENERAL NOTES:

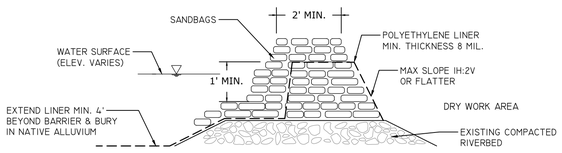
(1) ALTERNATE COFFERDAM CONSTRUCTION METHODS SHOWN HEREIN ARE INTENDED TO DESCRIBE FUNCTIONALITY ONLY. ACTUAL METHODS NECESSARY TO ACHIEVE A DRY WORK AREA ARE TO BE DETERMINED BY THE CONTRACTOR.
(2) COFFERDAM CONSTRUCTION METHODS SHALL COMPLY WITH ALL PERMIT CONDITIONS AND ARE SUBJECT TO ENGINEERS APPROVAL.
(3) ALL DEWATERING ACTIVITIES MUST OCCUR DURING THE CONSTRUCTION WINDOW DESCRIBED IN THE SPECIFICATIONS.
(4) THE COFFERDAM MUST BE DESIGNED TO WITHSTAND TYPICAL FLOWS, ANTICIPATED DURING THE PERIOD OF CONSTRUCTION.
(5) ANY WORK DONE OUTSIDE THE SPECIFIED CONSTRUCTION WINDOW REQUIRES SPECIAL PERMISSION AND REQUIRES THAT THE CONTRACTOR REDESIGN THE WATER CONTROL FOR HIGH-FLOWS DURING THE EXPANDED CONSTRUCTION WINDOW.
(6) THE CONTRACTOR SHALL HAVE NO MORE THAN ONE (1) COFFER DAM IN PLACE IN THE RIVER AT ANY GIVEN TIME. PREVIOUS WATER CONTROL MUST BE COMPLETELY REMOVED FROM RIVERBED PRIOR TO PLACEMENT OF SUBSEQUENT WATER CONTROL.
(7) SUGGESTED DIMENSIONS SHOWN IN THE TYPICAL DETAILS ARE MINIMUMS UNLESS THE CONTRACTOR ESTABLISHES, TO THE ENGINEER'S SATISFACTION, THAT AN ALTERNATIVE FORM OF WATER CONTROL MEETS THE ENGINEER'S OBJECTIVES.
(8) DEWATERING OPERATIONS SHALL USE ONE OR MORE OF THE DEWATERING SUMPS SHOWN, WELL POINTS, OR OTHER MEANS APPROVED BY LOCAL JURISDICTION TO REDUCE THE PUMPING OF SEDIMENT, AND SHALL PROVIDE A TEMPORARY SEDIMENT BASIN OR FILTRATION BMP TO REDUCE SEDIMENT TO ALLOWABLE LEVELS PRIOR TO RELEASE OFF SITE OR TO A RECEIVING WATER. A SEDIMENT BASIN MAY BE USED IN LIEU OF SUMP DISCHARGE SETTLING BASIN SHOWN IF A 4-FOOT SQUARE RIPRAP PAD IS PLACED AT THE DISCHARGE POINT AND THE DISCHARGE END OF THE LINE IS STAKED IN PLACE TO PREVENT MOVEMENT OF THE LINE.
(9) THE CONTRACTOR SHALL NOTIFY ENGINEER AND OWNER'S REPRESENTATIVE AT LEAST 24 HOURS PRIOR TO BUILDING OR REMOVING A COFFER DAM. IN THE INSTANCE THAT A COFFER DAM NEEDS TO BE REMOVED DUE TO FLOOD THREAT THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND OWNER AS SOON AS POSSIBLE BUT SHALL PROCEED IMMEDIATELY WITH THE EXPEDIENT REMOVAL OF THE COFFERDAM.
(10) THE CONTRACTOR MUST BE AVAILABLE FOR FLOOD EVENTS 24 HOURS A DAY, 7 DAYS A WEEK, DURING CONSTRUCTION.



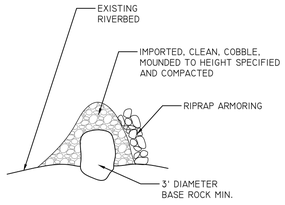
NOTES:
(1) WATER CONTROL CHANNELS TO BE ARMORED, MAINTAINED, AND PROTECTED.
(2) WATER CONTROL CHANNEL TO BE REMOVED FROM RIVERBED IN THE INSTANCE OF A FORECASTED FLOOD.
(3) WATER CONTROL CHANNEL TO BE OF MINIMUM LENGTH TO ALLOW CONTRACTOR TO WORK IN THE AREA OF CONSTRUCTION.
(4) WATER CONTROL CHANNELS SHALL BE NO STEEPER THAN A 1% SLOPE AND NO FLATTER THAN 0.5% SLOPE (1" IN 100 TO 1" IN 200) AND SHALL NOT TO EXCEED 2.5' IN DEPTH AT FLOWS LESS THAN 200 CFS.

NTS

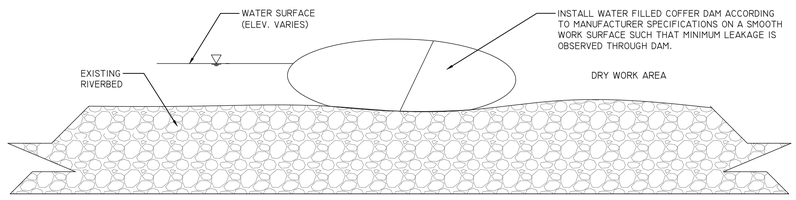
1 WATER CONTROL DIVERSION CHANNEL TYPICAL
SECTION



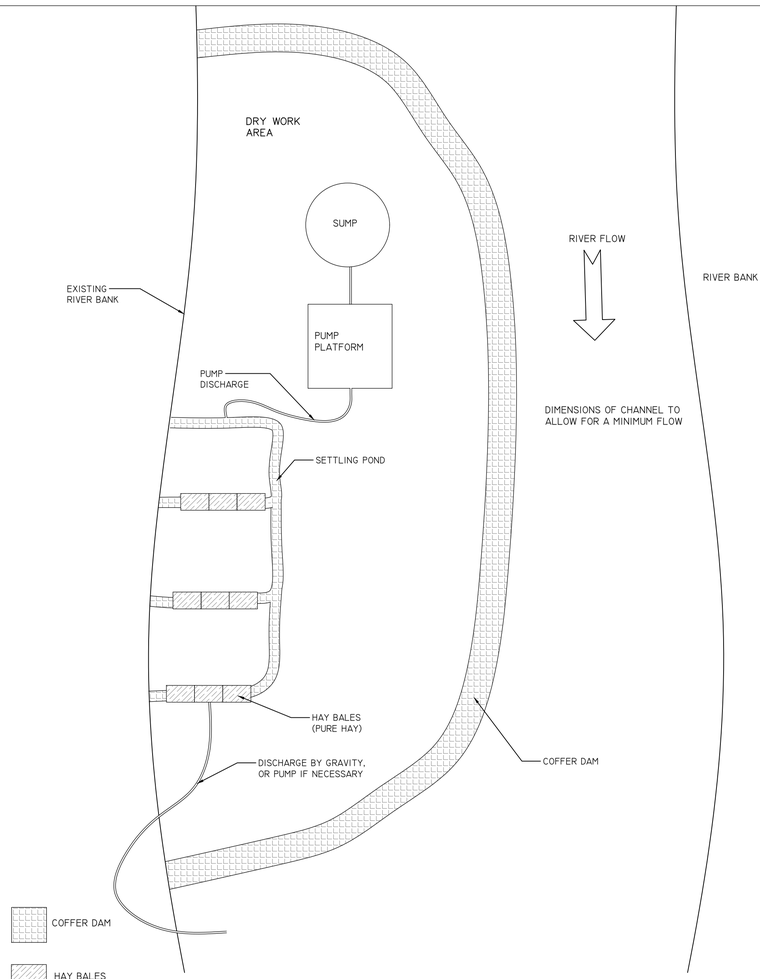
2 SANDBAG COFFER DAM TYPICAL
SECTION NTS



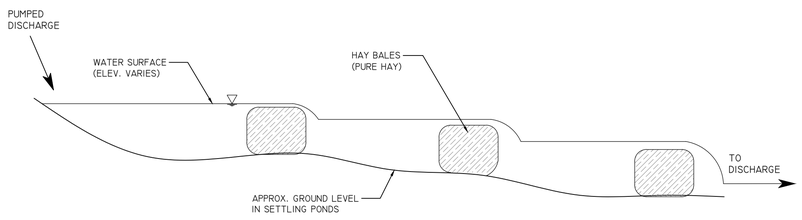
3 ALLUVIAL COFFER DAM TYPICAL
SECTION NTS



4 WATER FILLED COFFER DAM TYPICAL
SECTION NTS



5 TYPICAL COFFER DAM
PLAN NTS



NOTE:
I. SCHEMATIC LAYOUT TO DESCRIBE FUNCTIONALITY ONLY. ACTUAL LAYOUT TO BE DETERMINED BY CONTRACTOR, PER PERMIT CONDITIONS.

6 TYPICAL SETTLING POND
SECTION NTS

TYPICAL WATER CONTROL DETAILS □1□

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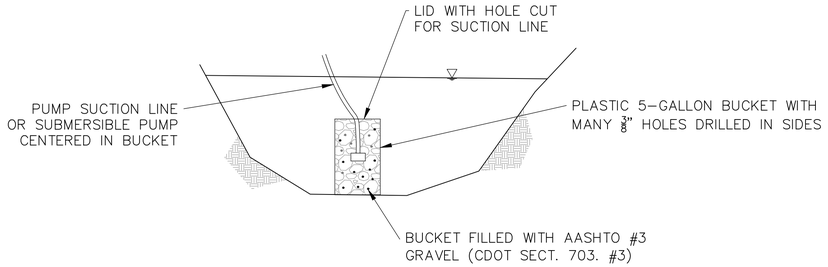
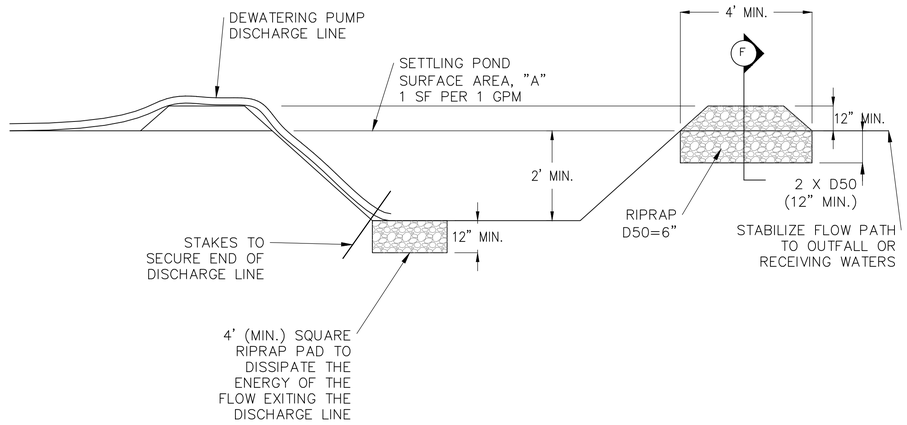
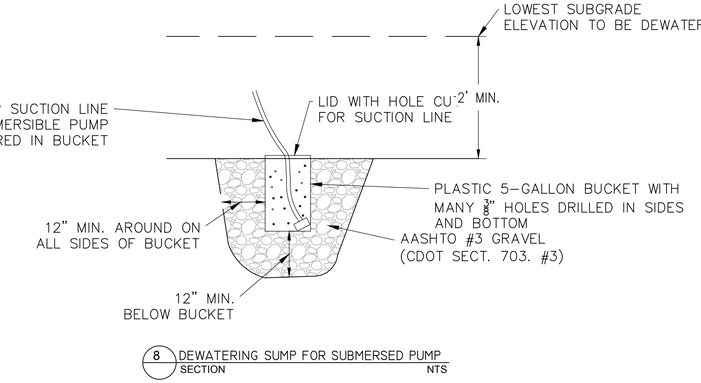


7 DEWATERING POND ALREADY FILLED WITH WATER
SECTION NTS



9 SUMP DISCHARGE SETTLING BASIN
SECTION NTS



8 DEWATERING SUMP FOR SUBMERSED PUMP
SECTION NTS

10 SETTLING BASIN
SECTION NTS

TYPICAL WATER CONTROL DETAILS (2)

S2O Design and Engineering
Scott Shipley, P.E.
318 Mcconnell Drive
Lyons CO, 80540,
USA
(303) 819-3985

Client:
Town of Lyons

Project Name:
Bohn Park Recovery Division

Status:
30% Design Drawings

Drawing Name:
Typical Water Control Details (2)

Revisions:
--

Drawn By:
Christian Clark, James Robinson

Checked By:
Scott Shipley

Date:
05/13/2016

Seal:

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Sheet:
WW-10.1

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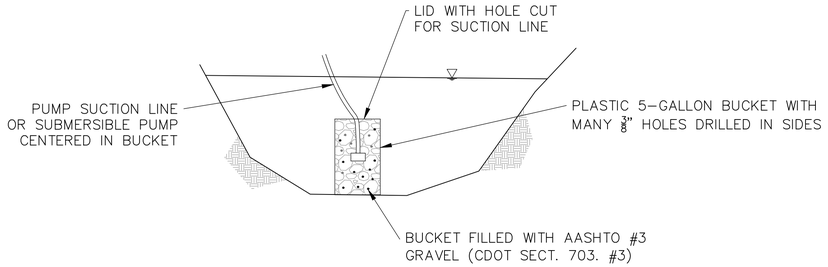
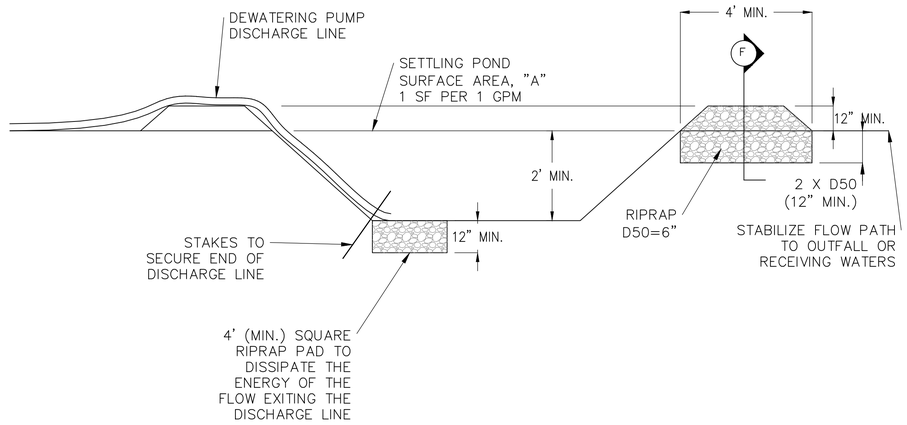
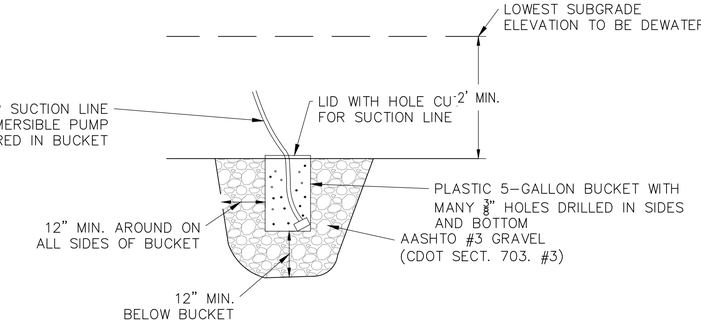


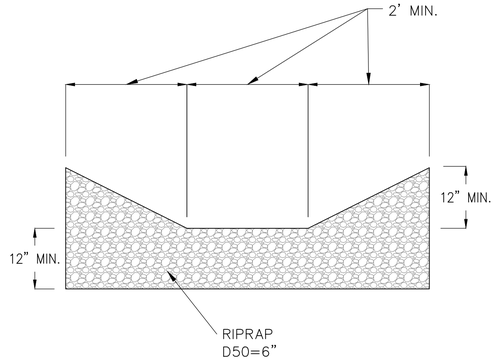
7 DEWATERING POND ALREADY FILLED WITH WATER
SECTION NTS



□ SUMP DISCHARGE SETTLING BASIN
SECTION NTS



8 DEWATERING SUMP FOR SUBMERSED PUMP
SECTION NTS



10 SETTLING BASIN
SECTION NTS

TYPICAL BMP DETAILS □1□

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7. 50% Design Development
Budget Spreadsheet

DHM DESIGN
LANDSCAPE ARCHITECTURE | LAND PLANNING | ECOLOGICAL PLANNING | URBAN DESIGN

Memorandum

TO: DAVE COSGROVE/ SLOANE NYSTROM – TOWN OF LYONS PARKS

FROM: MARK WILCOX

DATE: JUNE 10, 2016

RE: DESIGN DEVELOPMENT SUBMITTAL – BOHN PARK 2016 FLOOD RECOVERY PROJECT

Attached are design development drawings and backup documents to support design decisions that have been included within the DD set. All design decisions have been documented and included in weekly meeting notes. Meeting notes are on the projects website and available for download and review.

This design development submittal is the culmination of 9 weeks of design efforts including weekly Design meetings with weekly updates, 1 public meeting to review skate park goals, and close collaboration amongst the design team and Town of Lyons to meet an aggressive schedule and to have critical decisions made in a timely manner. All design decisions, weekly design meeting notes, reports and project information is continually uploaded to the project website for public review and comment. The website will remain active throughout the entire design and construction process for the Town Board of Trustees, various boards and commissions and the general public to review documents, progress and to provide opportunity for comment and feedback. The website is www.lyonsparksmp.com

Project Background

Lyons residents have identified the immediate rebuilding of Bohn Park, a river park located on the south side of Lyons, as a vital priority for parks recovery to be completed beginning in 2016. B o h n Park provides for major economic impacts for the Lyons community; it provides significant local and visitor recreational opportunities; and it provides ample opportunities to mitigate future flooding and to restore the river corridor's habitat. The selection of this park as the next priority in Lyons parks recovery efforts is supported heavily by both the Town government and the public at large.

Bohn Park is Lyons' largest and most popular park. It is not uncommon to see the park filled throughout the day with anywhere from 200 to 400 residents and visitors on any given weekend during the summer months. Consisting of over 50 acres Bohn Park is home to most of Lyons major athletic facilities. Pre-flood, there were two baseball/softball fields, batting cage, playground, multi-use soccer field, concession stand, whitewater features, picnic areas, shelters, restrooms, Lyons Dirt Jump Bike Skills Park, Bohn Bark Dog Park, Lyons Community Garden, and a multi-use sport court.

The Town of Lyons recently completed the Lyons Parks Flood Recovery Planning Process

(www.lyonsparksmp.com) which included a series of public meetings that assisted in the development of several concept plans for all flood recovery areas related to parks. This process took several months to complete and involved soliciting input and feedback of the public, town staff, Town of Lyons board/commissions and the design team. The Bohn Park Flood Recovery Plan Preferred Alternate map is included with this document along with the Lyons St. Vrain Corridor Trail 6f boundary map.

Project Goals

The Bohn Park Flood Recovery Final Design and Bid Project will address the following fundamental goals outlined in the Lyons Recovery Action Plan and Lyons Parks Flood Recovery Planning Process for ensuring that Bohn Park continues to meet local and regional demands:

1) Reconstruction of facilities in Bohn Park to address the immediate recreational needs of Lyons, especially active/athletic uses. We will create a place to gather and play as a community again.
2) Creation of an attraction that will draw visitors to our Town. This is essential to ensure that the Town will remain economically viable and maintain its reputation and brand as a destination for healthy, active, outdoor lifestyles.
3) Reestablish trail connectivity, both locally and regionally, include loop trails.
4) Restore and augment river access and river habitat.
5) Restore/Replace picnic opportunities, including shelters and increase size.
6) Re-establish natural areas and consider wetlands.
7) Installation of public art along trails.

Schedule

It is anticipated that the final construction design and bid process will take place beginning March 2016 and extend through the summer 2016. The Town intends to put the project out to bid for construction in late summer/ early fall 2016 in order to award a contract for construction to begin construction fall/ winter 2016 in order to have the park open to the public in the summer of 2017.
Following is a weekly breakdown of updates and submittals to date.

June 10, 216 Design Development Submittal
June 9, 2016 Weekly Update
May 26, 2016 Weekly Update
May 18, 2016 Weekly Update
May 13, 2016 Schematic Design Report
May 12, 2016 Weekly Update
May 5, 2016 Weekly Update
April 28, 2016 Weekly Update
April 21, 2016 Weekly Update
April 14, 2016 Programming Workshop

Design Development Goals

DHM DESIGN

The design development set is considered an approximate 50% design set that outlines preliminary site layout, preliminary grading, preliminary landscape designs and preliminary materials, equipment, and other site features, preliminary drainage analysis, preliminary hydraulic analysis and floodplain modeling, preliminary ecological restoration plans, and preliminary architecture designs including MEP and structural

Design development (DD) services used the initial design documents from the schematic design phase and have taken them one step further into more detailed design drawings. Some decisions are still being reviewed with Town staff and further study, public input and review needs to be completed before providing more detail. Skatepark schematic designs are in progress and a second public meeting is scheduled for June 21, 2016 before designs can be developed into DD's.

Hydraulic modeling/ Instream features/ Fish Habitat

We are in process of reviewing our 1D stream models and revising and building 2D hydraulic models to support stream restoration goals for improved fish habitat, ecological restoration, resiliency and flood control. This work effort is dependent upon the results of the OTAK report which was recently released to the design team on June 3, 2016. We continue to make progress and updates to the Town's boards and commissions. Stream design goals include improved access, restored riparian areas, and development of multipurpose structures for access, recreation and habitat.

Ecological Restoration Designs

Ecological restoration designs are dependent upon results of the hydraulic modeling and instream restoration features that are in progress of being developed. Progress has been made in coordination with the USACE for permitting. Mike Stanley at the Corps confirmed that we can process the Bohn Park stream restoration work as an addendum (additional information) under the existing NWP 27 since this reach was included in the original application. We will continue to document very specific permanent and temporary impact areas by feature type (in acres/s.f.) and provide a summary of why it fits the NWP 27 (needs to be a net ecological benefit).

Once ecos recieves detailed hydraulic design information (including temp. & perm. impact area assumptions), they will be able to compile and submit this information for NWP 27 review.

Plantings that can be sustained as a result of being next to the creek will not need irrigation (i.e., bank-side willow and cottonwood at or near the capillary fringe). We will develop a temporary drip system in the higher, floodplain areas. Overhead spray will also help kick-start the grasses and will only be considered until the plants have established.

Another option for irrigation includes an overall concept to install a gravity fed system using elevated cisterns/tanks that feed drip. In some locations, we are also looking at deep planting where the root ball is set just above the ground water elevation. Many riparian plants are adapted to partial sediment burial which make this possible.

Drainage design

Water Quality volumes have been assessed based on existing drainage analysis and proposed conditions,and adjustments have been made to the proposed water quality ponds to accommodate flows In anticipation of a storm connection to the St Vrain it appears that the available grade to drain a pipe is going to be tight. An analysis of the existing drainage basins and off-site drainage basins has been completed. A draft drainage report is in progress and will be updated once hydraulic ananlysis and instream features have been developed.

Survey

Survey work was completed and available to the design team on May 23, 2016. The sanitary sewer line within 2nd Avenue was not included and the manholes were buried by silt. CivilArts has uncovered the manholes and is shooting the rims and inverts for the design teams use in connecting the sewer connection to the new restroom facilities.

Geotechnical Engineering

The geotechnical report was completed May 31, 2016 after delays in drilling. Initially our drill rigs were on site early April and encountered large debris and cobble within the first few feet. Our drill rigs were not able to penetrate the onsite material. Coordination continued with the Town in acquisition and use of an excavator to dig test pits for sampling and review. The Town was not able to secure the use of an excavator but was able to offer a backhoe to dig test pits May 17, 2016. We had a hard time getting below about 6 feet due to caving soils below the groundwater table.

DD SUBMITTAL

Typically referred to as DD, this phase results in drawings that often specify design elements such as material types and location of site and architecture features. The level of detail provided in the DD phase is a culmination of weekly meetings with the Town of Lyons, comments from the public, results of an in depth planning process during the Lyons Parks Flood Recovery Planning Process, adherence to early planning documents prepared by the Town including the LRAP, SRCAP, PDG, input from the Board of Trustees, and per the owner's request and the project requirements. These Design Development Plans will be presented to the Lyons Parks and Recreation Board on June 13, 2016 and a follow up presentation to the Board of Trustees on a date yet to be determined.

Deliverables:

Design development drawing set includes the following sheets:

DHM DESIGN

SITE PACKAGE

G1.0	COVER SHEET & DRAWING INDEX
L1.1 - L1.7	EXISTING CONDITIONS & DEMOLITION PLAN
L2.1 - L2.7	LAYOUT & MATERIALS PLAN
L3.1 - L3.7	GRADING PLANS
L4.1 - L4.7	LANDSCAPE PLANS
L5.1 - L5.2	LANDSCAPE DETAILS
L6.1 - L6.3	SITE DETAILS
ECL-1	ECOLOGICAL RESTORATION NOTES
IR-0	IRRIGATION NOTES & SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS
E2.1 - E2.5	ELECTRICAL PARTIAL SITE PLAN
E2.6	ELECTRICAL ONE-LINE DIAGRAM, SCHEDULES, AND DETAILS
WW-0.0	INSTREAM COVER SHEET
WW-1.0	INSTREAM SITE PLAN
WW-2.0	INSTREAM ACCESS PLAN
WW-3.0	INSTREAM DEMOLITION PLAN
WW-4.0 -WW-4.3	INSTREAM PLAN AND PROFILE
WW-5.0	INSTREAM CROSS SECTIONS
WW-6.0	INSTREAM CHANNEL OVERFLOW
WW-7.0	INSTREAM CHANNEL OVERFLOW
WW-8.0	INSTREAM CHANNEL OVERFLOW
WW-9.0 – WW-9.5	TYPICAL DETAILS
WW-10.0-WW-10.1	WATER CONTROL
WW-11.0	TYPICAL BMP DETAILS

CIVIL PACKAGE

ER-1	EXISTING RUNOFF MAP
DR-1	PROPOSED DRAINAGE, WATER QUALITY, AND STORM SEWER PLAN
U-1	SANITARY SEWER AND WATER PLAN

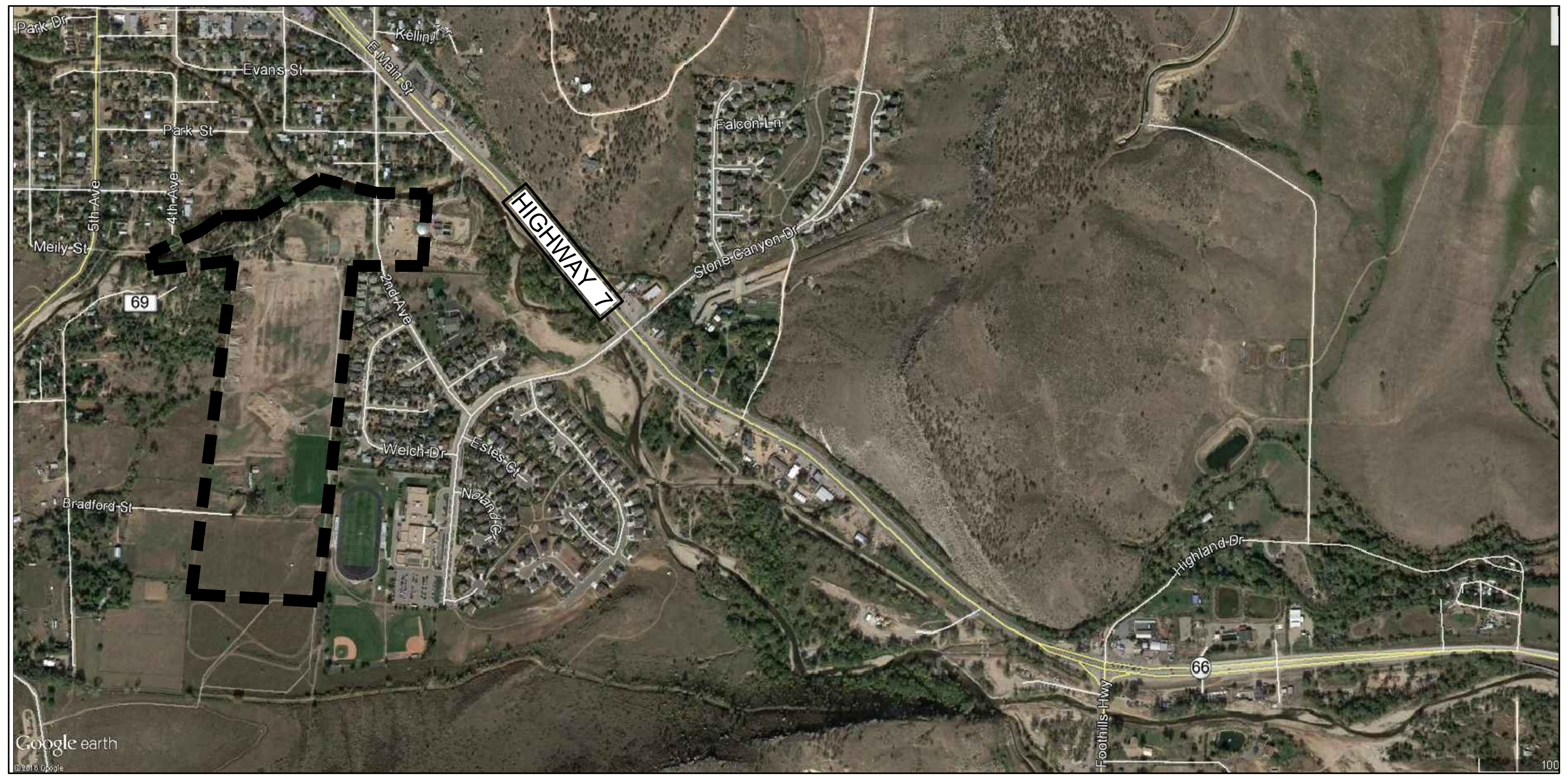
ARCHITECTURAL PACKAGE

G000	ABBREVIATIONS, SYMBOLS, AND GENERAL NOTES
G020	WALL TYPES, ROOF TYPES, FLOOR TYPES
A101	RESTROOM FLOOR PLAN AND RCP
A102	PAVILION FLOOR PLAN AND RCP
A103	RESTROOM AND PAVILION ROOF PLAN
A301	RESTROOM ELEVATIONS
A302	PAVILION ELEVATIONS
A311	RESTROOM BUILDING SECTIONS
A312	PAVILION BUILDING SECTIONS
A501	RESTROOM PERSPECTIVE
A502	PAVILION PERSPECTIVE
A503	PAVILION PERSPECTIVE
A600	ACCESSORY SCHEDULES AND ELEVATIONS
A610	INTERIOR ELEVATIONS
E001	ELECTRICAL LEGEND AND GENERAL NOTES
E101	ELECTRICAL POWER AND LIGHTING PLANS
E501	ELECTRICAL ONE-LINE DIAGRAM

DHM DESIGN

MP000	MECHANICAL COVER SHEET - LEGEND, GENERAL NOTES & SHEET INDEX
M101	HVAC PLANS
M401	HVAC SECTIONS
M700	HVAC SCHEDULES, DETAILS & CONTROL DRAWINGS
P101	PLUMBING PLANS
P401	PLUMBING ISOMETRICS
P700	PLUMBING DETAILS AND SCHEDULES
S101	RESTROOM FND & ROOF FRAMING
S102	PAVILION FND & ROOF FRAMING PLAN
S301	FOUNDATION DETAILS
S401	MASONRY DETAILS
S501	ROOF FRAMING DETAILS

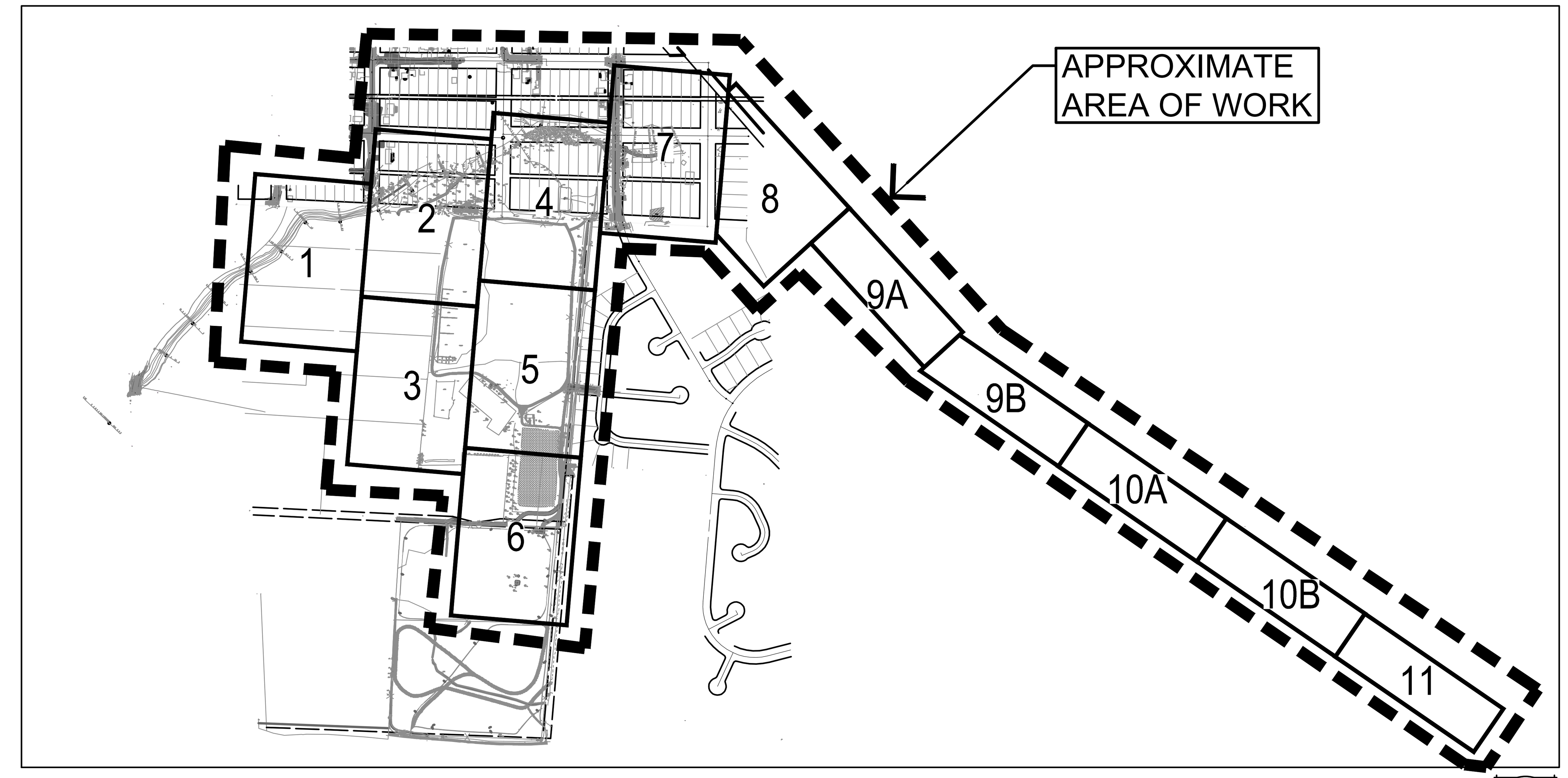
AREA MAP



NOT TO SCALE

NORTH

KEY MAP



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NORTH

SHEET INDEX

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

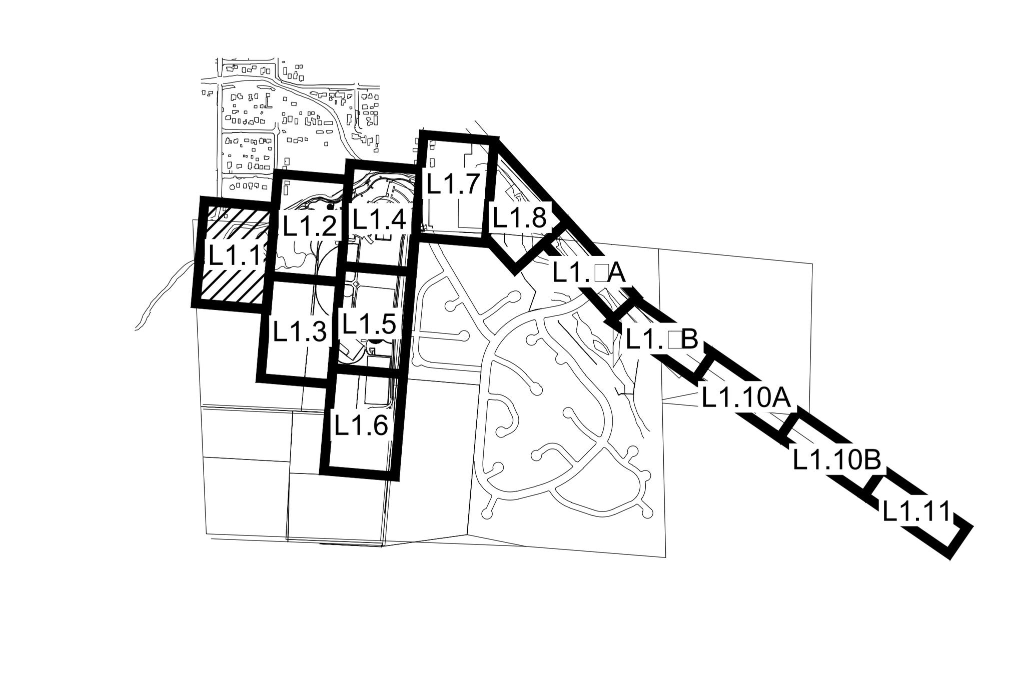
PROJECT NUMBER: 16044.00
DATE 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW
REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
COVER SHEET
DRAWING INDEX

SHEET NUMBER:
G1.0

SHEET X OF XX



KEY MAP

TO BE REMOVED

TO REMAIN

EXISTING TREE TO REMAIN

EXISTING TREE TO BE REMOVED

EXISTING OVERHEAD ELECTRIC

EXISTING ELECTRIC LINE

EXISTING TELEPHONE LINE

EXISTING FENCE LINE

EXISTING FIBER OPTIC LINE

EXISTING GAS LINE

EXISTING WATER LINE

EXISTING STORM SEWER LINE

EXISTING MANHOLE

EXISTING TREE

EXISTING FLOODWAY

EXISTING 100 YEAR FLOODPLAIN

EXISTING 500 YEAR FLOODPLAIN

LIMITS OF CONSTRUCTION

LEGEND

MATCHLINE - SEE SHEET L1.3

MATCHLINE - SEE SHEET L1.2

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Lyons, Colorado

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DESIGNED: MW

DRAWN: GG

CHECKED: MW

REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
EXISTING CONDITIONS AND DEMOLITION PLANS

SHEET NUMBER:

L1.1

SHEET X OF XX

MATCHLINE - SEE SHEET L1.1

KEY MAP

TO BE REMOVED

TO REMAIN

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EXISTING 500 YEAR FLOODPLAIN

LIMITS OF CONSTRUCTION

LEGEND

MATCHLINE - SEE SHEET L1.3

MATCHLINE - SEE SHEET L1.5

MATCHLINE - SEE SHEET L1.4

TREE PROTECTION TYP.

LIMITS OF CONSTRUCTION

FLAGSTONE TO BE REMOVED

MATERIALS STORAGE BAY TO BE REMOVED

EXISTING 100 YEAR FLOODPLAIN

EXISTING 500 YEAR FLOODPLAIN

EXISTING SMALL PLAY STRUCTURE AND SAFETY SURFACING TO BE REMOVED

SWING SET TO REMAIN

CONCRETE PICNIC TABLE TO REMAIN

PLAYGROUND TO REMAIN

BOHN PARK

BLOCK 1 MEADOW PARK FRUIT FARMS PBK. 4, PG. 3

AMENDED PLAT OF LOTS 1 & 2 BOHN PARK ADDITION REC. 3094646

BLOCK 22 LYONS PBK. 5, PG. 47

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CHECKED: MW

REVISIONS:

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SHEET TITLE: EXISTING CONDITIONS AND DEMOLITION PLANS

SHEET NUMBER: L1.2

SHEET X OF XX

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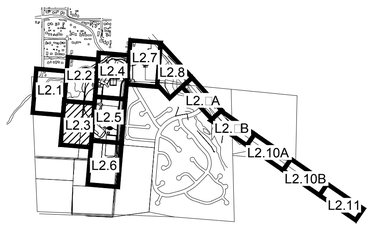

KEY MAP

TO BE REMOVED

TO REMAIN

EXISTING TREE TO REMAIN

EXISTING TREE TO BE REMOVED

EXISTING OVERHEAD ELECTRIC

EXISTING ELECTRIC LINE

EXISTING TELEPHONE LINE

EXISTING FENCE LINE

EXISTING FIBER OPTIC LINE

EXISTING GAS LINE

EXISTING WATER LINE

EXISTING STORM SEWER LINE

EXISTING MANHOLE

EXISTING TREE

EXISTING FLOODWAY

EXISTING 100 YEAR FLOODPLAIN

EXISTING 500 YEAR FLOODPLAIN

LIMITS OF CONSTRUCTION

LEGEND

MATERIALS STORAGE BAY TO BE REMOVED

COMMUNITY GARDEN STRUCTURES TO BE REMOVED

DIRT JUMP SKILLS PARK TO REMAIN

BLOCK 1 MEADOW PARK FRUIT FARMS PBK. 4, PG. 5

AMENDED PLAT OF LOTS 1 & 2 BOHN PARK ADDITION REC. 259446 TOWN OF LYONS

AMENDED OF LOTS BOHN PARK REC. 259

BOHN PARK

FOUND #5 REBAR W/ 1-1/2" ALUM CAP ILLEGIBLE "LS 37810"

FOUND #5 REBAR W/ 1-1/2" ALUM CAP ILLEGIBLE "LS 37810" 0.03'S & 0.04'E

FOUND #5 REBAR W/ 2" ALUM CAP ILLEGIBLE "LS 4846" 0.06'N.

3 STRANDS BW FENCE

WW W/ 3 STRANDS BW FENCE

GATE

S01°46'54"E 90.00'

S89°44'55"W 1325.84'

MATCHLINE - SEE SHEET L1.6

MATCHLINE - SEE SHEET L1.5

MATCHLINE - SEE SHEET L1.2

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS: . . . . .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: EXISTING CONDITIONS AND DEMOLITION PLANS

SHEET NUMBER: L1.3

SHEET X OF XX

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KEY MAP

TO BE REMOVED

TO REMAIN

EXISTING TREE TO REMAIN

EXISTING TREE TO BE REMOVED

OE — EXISTING OVERHEAD ELECTRIC

E — EXISTING ELECTRIC LINE

T — EXISTING TELEPHONE LINE

X — EXISTING FENCE LINE

F — EXISTING FIBER OPTIC LINE

G — EXISTING GAS LINE

W — EXISTING WATER LINE

SS — EXISTING STORM SEWER LINE

EXISTING MANHOLE

EXISTING TREE

EXISTING FLOODWAY

EXISTING 100 YEAR FLOODPLAIN

EXISTING 500 YEAR FLOODPLAIN

LIMITS OF CONSTRUCTION

LEGEND

MATCHLINE - SEE SHEET L1.5

MATCHLINE - SEE SHEET L1.2

CONCESSION STAND TO BE REMOVED

BBQ GRILLS TO REMAIN AND BE RESET RE: PLANS

FRAME SHED TO BE REMOVED

FRAME SHED TO BE REMOVED

BACKSTOP TO BE REMOVED

CONCRETE BASES TO BE REMOVED

FRAME SHED TO BE REMOVED

EXISTING SPORT COURT TO REMAIN

EX 500 YR FLOODPLAIN

TREE PROTECTION TYP.

EXISTING 100 YEAR FLOODPLAIN

LIMITS OF CONSTRUCTION

EXISTING FLOODWAY

PARK ID SIGN TO BE SALVAGED AND RESET RE: PLANS

MATCHLINE - SEE SHEET L1.7 00 YR FLOODPLAIN)

AMENDED PLAT OF LOTS 1 & 2 BOHN PARK ADDITION

BOHN PARK

IMAGES
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PLOT DATE: Jun 16, 2016 - 3:07pm

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS: . . . .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: EXISTING CONDITIONS AND DEMOLITION PLANS

SHEET NUMBER: L1.4

SHEET X OF XX

BLEACHERS TO BE SALVAGED AND TO BE RESET RE: PLANS

FLAGSTONE TO BE REMOVED

MATCHLINE - SEE SHEET L1.3

DIRT JUMP SKILLS PARK TO REMAIN

SHADE SHELTER AND WATER FOUNTAIN TO REMAIN

FLAGSTONE BENCH TO REMAIN

BLEACHERS TO BE SALVAGED AND TO BE RESET RE: PLANS

FLAGSTONE TO BE REMOVED

FLAGSTONE TO BE REMOVED

EXISTING RESTROOM AND CONCRETE WALKS TO REMAIN

PICNIC TABLE TO REMAIN AND BE RESET RE: PLANS

EXISTING MULTI-USE SPORTS FIELD TO REMAIN

LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

MATCHLINE - SEE SHEET L1.6

MATCHLINE - SEE SHEET L1.4

MATCHLINE - SEE SHEET L1.2

AMENDED PLAT OF LOTS 1 & 2, JOHN PARK ADDITION REC. 2594646 TOWN OF LYONS

BOHN PARK

LYONS VALLEY FILING NO. 2

S05°17'29"W 1263.84'

30" CMP

KEY MAP

L2.1 L2.2 L2.3 L2.4 L2.5 L2.6 L2.7 L2.8 L2_A L2_B L2.10A L2.10B L2.11

LEGEND

- TO BE REMOVED
- TO REMAIN
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- OE — EXISTING OVERHEAD ELECTRIC
- E — EXISTING ELECTRIC LINE
- T — EXISTING TELEPHONE LINE
- X — EXISTING FENCE LINE
- F — EXISTING FIBER OPTIC LINE
- G — EXISTING GAS LINE
- W — EXISTING WATER LINE
- SS — EXISTING STORM SEWER LINE
- EXISTING MANHOLE
- EXISTING TREE
- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS: . . . .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: EXISTING CONDITIONS AND DEMOLITION PLANS

SHEET NUMBER: L1.5

SHEET X OF XX

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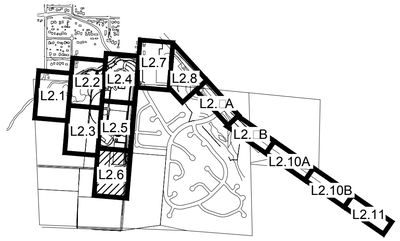

KEY MAP

LEGEND

- TO BE REMOVED
- TO REMAIN
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- OE — EXISTING OVERHEAD ELECTRIC
- E — EXISTING ELECTRIC LINE
- T — EXISTING TELEPHONE LINE
- X — EXISTING FENCE LINE
- F — EXISTING FIBER OPTIC LINE
- G — EXISTING GAS LINE
- W — EXISTING WATER LINE
- SS — EXISTING STORM SEWER LINE
- EXISTING MANHOLE
- EXISTING TREE
- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION

MATCHLINE - SEE SHEET L1.3

MATCHLINE - SEE SHEET L1.5

LIMITS OF CONSTRUCTION

ROCK TO REMAIN

FLAGSTONE AND WATER FOUNTAIN TO REMAIN

EXISTING MULTI-USE SPORTS FIELD TO REMAIN

BOHN PARK

AMENDED PLAT OF LOTS 1 & 2, BOHN PARK ADDITION

S04°51'29"W 1368.00'

S04°51'29"W 350.26'

S05°17'29"W 68.16'

S87°20'07"E 330.41'

S87°20'07"E 243.77'

SET 24" CONC. Ø W/ 3" ALUM. CAP STAMPED "PLS 38497" FLUSH W/ GRADE

FOUND Ø REBAR W/ 1-1/2" ALUM. CAP STAMPED "PLS 38497" 0.32'N & 0.53'E

FOUND Ø REBAR W/ 2" ALUM. CAP STAMPED "PLS 19405" 0.23'N & 0.12'E

FOUND Ø REBAR W/ 2" ALUM. CAP STAMPED "PLS 38497" 0.10'N & 0.12'E

FOUND Ø REBAR W/ 2" ALUM. CAP STAMPED "PLS 38497" 0.21'E (DATE OF LINE)

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS: . . . .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: EXISITNG CONDITIONS AND DEMOLITION PLANS

SHEET NUMBER: L1.6

SHEET X OF XX

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PLOT DATE: Jun 10, 2016 - 1:05pm

EXISTING 100 YR FLOODPLAIN

EXISTING FLOODWAY

MATCHLINE - SEE SHEET L1.4

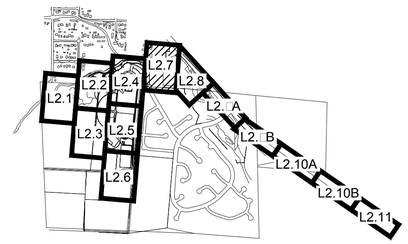
EXISTING 100 YR FLOODPLAIN

TREE PROTECTION TYP.

EXISTING TREE TO REMAIN

LIMITS OF CONSTRUCTION

MATCHLINE - SEE SHEET L1.8



KEY MAP

TO BE REMOVED

TO REMAIN

EXISTING TREE TO REMAIN

EXISTING TREE TO BE REMOVED

EXISTING OVERHEAD ELECTRIC

EXISTING ELECTRIC LINE

EXISTING TELEPHONE LINE

EXISTING FENCE LINE

EXISTING FIBER OPTIC LINE

EXISTING GAS LINE

EXISTING WATER LINE

EXISTING STORM SEWER LINE

EXISTING MANHOLE

EXISTING TREE

EXISTING FLOODWAY

EXISTING 100 YEAR FLOODPLAIN

EXISTING 500 YEAR FLOODPLAIN

LIMITS OF CONSTRUCTION

LEGEND

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BOHN PARK

2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: EXISTING CONDITIONS AND DEMOLITION PLANS

SHEET NUMBER: L1.7

SHEET X OF XX

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PLOT DATE: Jun 03, 2016 - 9:50pm

KEY MAP

COBBLE
CONCRETE
CRUSHER FINES
GRAVEL
FIBAR PLAY SURFACE
LYONS SANDSTONE BOULDER
SLABSTONE SEATWALL
WATER FEATURE BOUNDARY
PICNIC TABLE
PUBLIC ART
FLOWER PLANTER

TREE PROTECTION
EXISTING OVERHEAD ELECTRIC
EXISTING ELECTRIC LINE
EXISTING TELEPHONE LINE
EXISTING FENCE LINE
EXISTING FIBER OPTIC LINE
EXISTING GAS LINE
EXISTING WATER LINE
EXISTING STORM SEWER LINE
EXISTING MANHOLE
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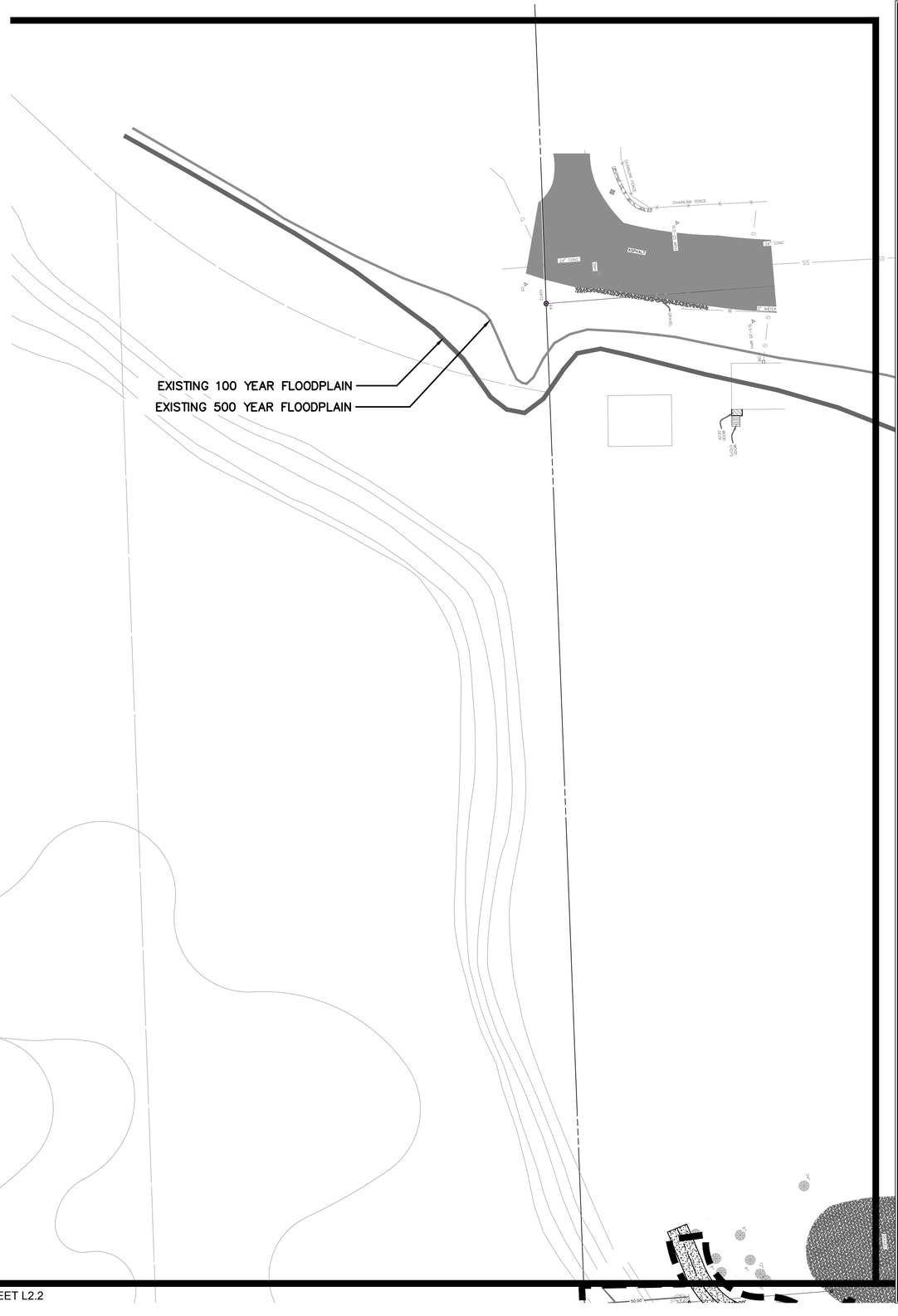
EXISTING FLOODWAY
EXISTING 100 YEAR FLOODPLAIN
EXISTING 500 YEAR FLOODPLAIN
LIMITS OF CONSTRUCTION

LEGEND



NORTH

0 15 30 60

SCALE 1"=30'-0"

MATCHLINE - SEE SHEET L2.3

MATCHLINE - SEE SHEET L2.2

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS: .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.1

SHEET X OF XX

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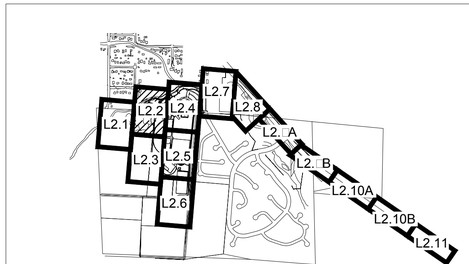

KEY MAP

- COBBLE
- CONCRETE
- CRUSHER FINES
- GRAVEL
- FIBAR PLAY SURFACE
- LYONS SANDSTONE BOULDER
- SLABSTONE SEATWALL
- WATER FEATURE BOUNDARY
- PICNIC TABLE
- PUBLIC ART
- FLOWER PLANTER
- TREE PROTECTION
- EXISTING OVERHEAD ELECTRIC
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE LINE
- EXISTING FENCE LINE
- EXISTING FIBER OPTIC LINE
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING MANHOLE
- EXISTING TREE
- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION

LEGEND

NORTH

0 15 30 60

SCALE 1"=30'-0"

MATCHLINE - SEE SHEET L2.3

MATCHLINE - SEE SHEET L2.1

EXISTING 100 YEAR FLOODPLAIN

CRUSHER FINES TRAIL

NON-REMOVABLE FENCING

LIMITS OF CONSTRUCTION

BASEBALL FIELD LIGHTING

EXISTING 500 YEAR FLOODPLAIN

BOHN FIELD (300' OUTFIELD)

OUTDOOR CLASSROM

FUTURE SKATE AREA

NATURAL PLAY AREA

LOG PLAYGROUND EDGE

NATURAL PLAY

PLAYGROUND EDGER WITH SAFETY SURFACING

EXISTING PLAY AREA

CONCRETE PAVING

LIMITS OF BERM

SLABSTONE SEATWALL

SHADE SHELTER

PICNIC TABLE, TYP.

DITCH RETURN FLOWS/ WATER FEATURE LINED WITH COBBLE

CRUSHER FINES TRAIL

BRIDGE ABUTMENT

80' BRIDGE

BRIDGE ABUTMENT

CREEK ACCESS POINT

SLABSTONE RETAINING WALL

LIMITS OF CONSTRUCTION

TRASH CAN/COAL BIN, TYP.

CONCRETE CHAISE

DITCH RETURN FLOWS/ WATER FEATURE LINED WITH COBBLE

CRUSHER FINES TRAIL

SLABSTONE SEATWALL

CREEK ACCESS POINT

FLAGSTONE PAVING WITH LARGE BBQ GRILL

PICNIC TABLE, TYP.

SLABSTONE RETAINING WALL

PUBLIC ART, TYP.

FLOWER PLANTER, TYP.

10' WIDE CRUSHER FINES REGIONAL TRAIL

MATCHLINE - SEE SHEET L2.5

MATCHLINE - SEE SHEET L2.4

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.2

SHEET_X_OF_XX

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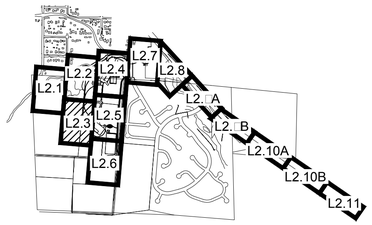

KEY MAP

COBBLE
CONCRETE
CRUSHER FINES
GRAVEL
FIBAR PLAY SURFACE
LYONS SANDSTONE BOULDER
SLABSTONE SEATWALL
WATER FEATURE BOUNDARY
PICNIC TABLE
PUBLIC ART
FLOWER PLANTER

TREE PROTECTION
EXISTING OVERHEAD ELECTRIC
EXISTING ELECTRIC LINE
EXISTING TELEPHONE LINE
EXISTING FENCE LINE
EXISTING FIBER OPTIC LINE
EXISTING GAS LINE
EXISTING WATER LINE
EXISTING STORM SEWER LINE
EXISTING MANHOLE
EXISTING TREE
EXISTING FLOODWAY
EXISTING 100 YEAR FLOODPLAIN
EXISTING 500 YEAR FLOODPLAIN
LIMITS OF CONSTRUCTION

LEGEND

NORTH

0 15 30 60
SCALE 1"=30'-0"

REMOVABLE FENCING
CRUSHER FINES TRAIL
8' WIDE CONCRETE PATH
NON-REMOVABLE FENCING
SKATE PARK AREA (8,000 SF)
SLABSTONE SEATWALL BUILT INTO LANDSCAPE BERM
DIRT JUMP SKILLS EXPANSION AREA
EXISTING DIRT JUMP SKILLS AREA
VASQUEZ FIELD

MATCHLINE - SEE SHEET L2.6

MATCHLINE - SEE SHEET L2.5

MATCHLINE - SEE SHEET L2.2

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.3

SHEET_X_OF_XX

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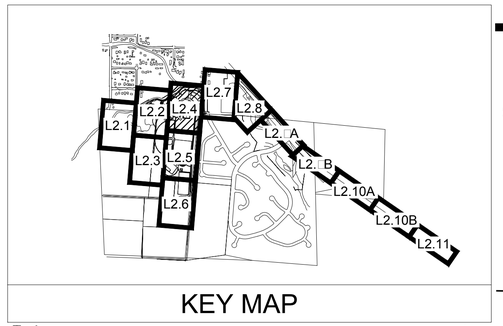

KEY MAP

MATCHLINE - SEE SHEET L2.2

PICNIC TABLE, TYP.
SHADE SHELTER
LARGE BBQ GRILL, TYP.
RESTROOM
CONCRETE WALK & PLAZA
SPLIT RAIL FENCING
ADA FISHING ACCESS W/ SCULPTED CONCRETE JETTY
FLOWER PLANTER, TYP.
PUBLIC ART, TYP.
PICNIC TABLE & GRILL, TYP.
SLABSTONE RETAINING WALL
CREEK ACCESS POINT
NON-REMOVABLE FENCING
8' WIDE CONCRETE PATH
BATTING CAGE
LYONS SANDSTONE BOULDER
AUTOMATED PARKING KIOSK
CAMP HOST SITE
GRAVEL PARKING (110 SPACES)
10' WIDE CRUSHER FINES REGIONAL TRAIL
ST. VRAIN CREEK
TRASH CAN/COAL BIN, TYP.
EXISTING FLOODWAY
GRAVEL SURFACING
AUTOMATED PARKING KIOSK
EXISTING 100 YR FLOODPLAIN
TREE PROTECTION, TYP.
SPORT COURT STRIPED FOR TENNIS/PICKLEBALL
SHADE SHELTER
SPORT COURT STRIPED FOR TENNIS/PICKLEBALL
SPLIT RAIL FENCING
SLABSTONE RETAINING WALL
EXISTING SPORT COURT TO REMAIN
TREE PROTECTION, TYP.
EXISTING 500 YEAR FLOODPLAIN
GRAVEL DOUBLE TRACK SPECIAL EVENT VEHICULAR ACCESS
SLABSTONE RETAINING WALL
SPLIT RAIL FENCING
GRAVEL PARKING (100 SPACES)
VEHICULAR ACCESS GATE
FLOWER PLANTER
LIMITS OF CONSTRUCTION
PARK ID SIGN TO BE RELOCATED
SLABSTONE RETAINING WALL
MATCHLINE - SEE SHEET L2.7
MATCHLINE - SEE SHEET L2.5

NORTH
0 15 30 60
SCALE 1"=30'-0"

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.4

SHEET X OF XX

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MATCHLINE - SEE SHEET L2.3

MATCHLINE - SEE SHEET L1.2

DIRT JUMP SKILLS AREA ADDITION

SPLIT RAIL FENCING

CRUSHER FINES TRAIL

CLIMBING BOULDER AREA

EXISTING SHELTER

RELOCATE EXISTING WATER FOUNTAIN

EXISTING DIRT JUMP SKILLS AREA

VASQUEZ FIELD

BOHN FIELD

REMOVABLE FENCE

DUGOUT, TYP.

BLEACHERS, TYP.

8' WIDE CONCRETE PATH

SHADE SHELTER (30' x 30')

SLABSTONE SEATWALL

BACKSTOP

10' WIDE GRAVEL ACCESS

REPLACE (4) EXISTING SLACKLINE POSTS WITH (4) NEW POSTS

CONCRETE PAVING

SHADE SHELTER (16' x 20')

PLAY AREA WITH SAFETY SURFACING

MATCHLINE - SEE SHEET L2.6

TREE PROTECTION, TYP

PLAYGROUND EDGER

EXISTING RESTROOM

EVENT SPACE AREA

CRUSHER FINES SURFACE TO JOIN FLUSH WITH EXISTING CONCRETE PATH

EXISTING MULTI -USE SPORTS FIELD

CRUSHER FINES TRAIL

DOUBLE TRACK SPECIAL EVENT VEHICULAR ACCESS

LIMITS OF CONSTRUCTION

NEIGHBORHOOD ACCESS

S05°17'29"W 1263.84'

MATCHLINE - SEE SHEET L2.4

NORTH

SCALE 1"=30'-0"

0 15 30 60

KEY MAP

L2.1 L2.2 L2.3 L2.4 L2.5 L2.6 L2.7 L2.8 L2.A L2.B L2.10A L2.10B L2.11

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BOHN PARK

2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.5

SHEET X OF XX

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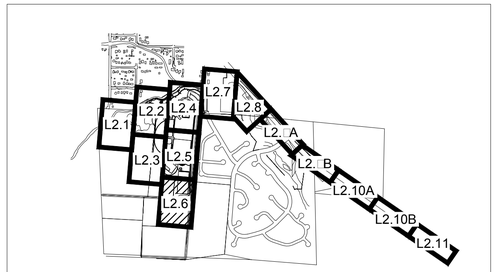
PLOT DATE: Jun 10, 2016 - 3:05pm

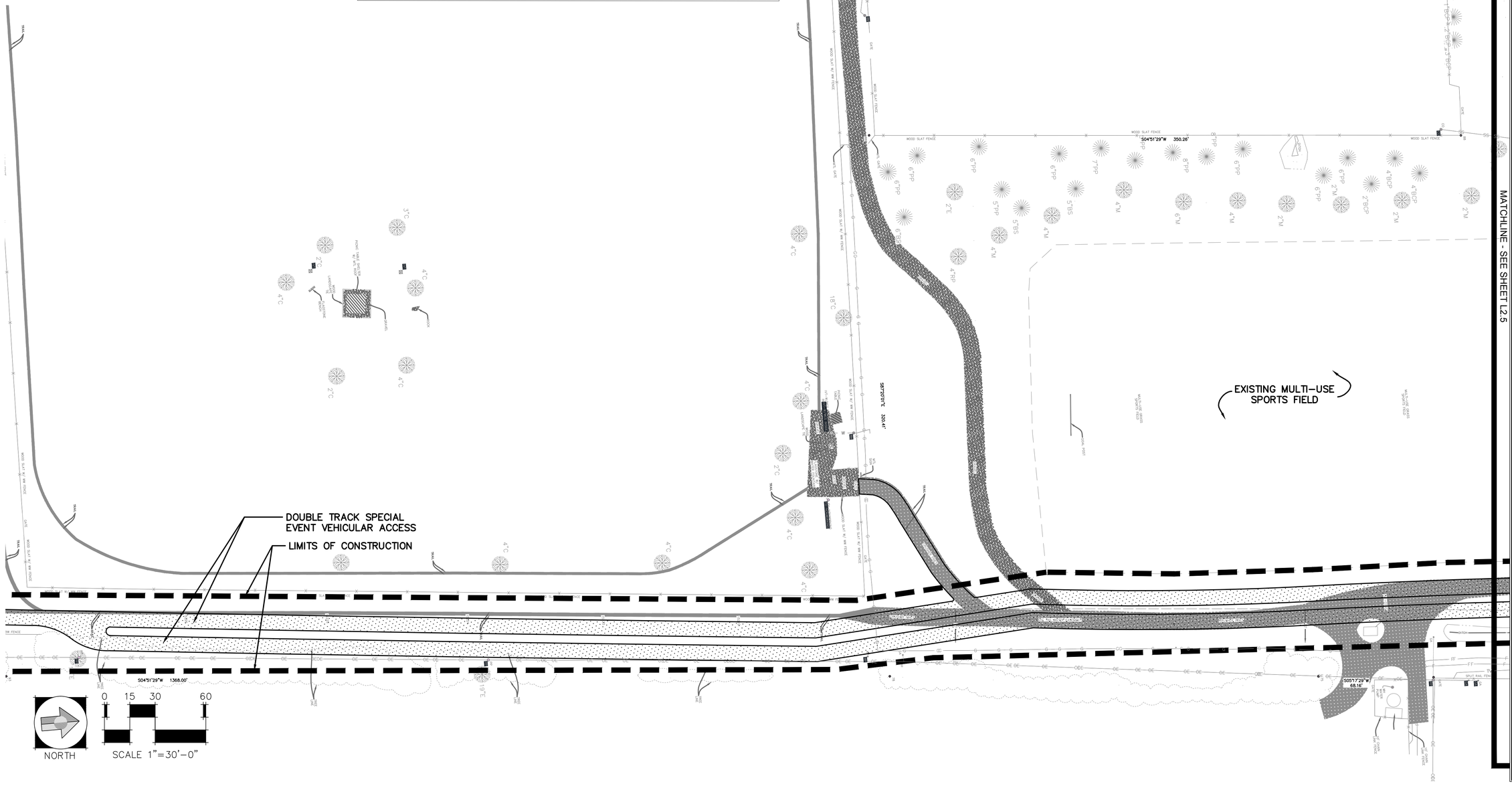


KEY MAP

COBBLE
CONCRETE
CRUSHER FINES
GRAVEL
FIBAR PLAY SURFACE
LYONS SANDSTONE BOULDER
SLABSTONE SEATWALL
WATER FEATURE BOUNDARY
PICNIC TABLE
PUBLIC ART
FLOWER PLANTER

TREE PROTECTION
EXISTING OVERHEAD ELECTRIC
EXISTING ELECTRIC LINE
EXISTING TELEPHONE LINE
EXISTING FENCE LINE
EXISTING FIBER OPTIC LINE
EXISTING GAS LINE
EXISTING WATER LINE
EXISTING STORM SEWER LINE
EXISTING MANHOLE
EXISTING TREE
EXISTING FLOODWAY
EXISTING 100 YEAR FLOODPLAIN
EXISTING 500 YEAR FLOODPLAIN
LIMITS OF CONSTRUCTION

LEGEND



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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS: . . . .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.6

SHEET X OF XX

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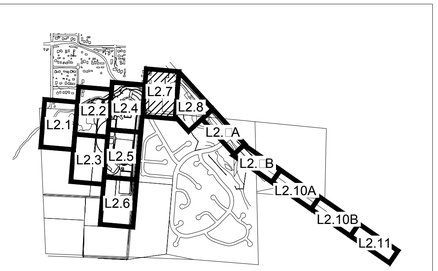
FILE NAME
PLOT DATE: Jun 10, 2016 - 1:04pm

MATCHLINE - SEE SHEET L2.4

EXISTING 100 YR FLOODPLAIN
EXISTING FLOODWAY
GRAVEL SURFACING
SPLIT RAIL FENCE
SLABSTONE RETAINING WALL
10' WIDE CRUSHER FINES REGIONAL TRAIL
TREE PROTECTION, TYP.
EXISTING 100 YR FLOODPLAIN
AUTOMATED PARKING KIOSK
WAYFINDING KIOSK
LIMITS OF CONSTRUCTION
ASPHALT PAVING BY OTHERS (WWTP PLANS)
GRAVEL PARKING (133 SPACES)
LIMITS OF CONSTRUCTION

MATCHLINE - SEE SHEET L2.8



KEY MAP

- COBBLE
- CONCRETE
- CRUSHER FINES
- GRAVEL
- FIBAR PLAY SURFACE
- LYONS SANDSTONE BOULDER
- SLABSTONE SEATWALL
- WATER FEATURE BOUNDARY
- PICNIC TABLE
- PUBLIC ART
- TREE PROTECTION
- FLOWER PLANTER
- OE — EXISTING OVERHEAD ELECTRIC
- E — EXISTING ELECTRIC LINE
- T — EXISTING TELEPHONE LINE
- X — EXISTING FENCE LINE
- F — EXISTING FIBER OPTIC LINE
- G — EXISTING GAS LINE
- W — EXISTING WATER LINE
- SS — EXISTING STORM SEWER LINE
- EXISTING MANHOLE
- EXISTING TREE
- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION

LEGEND

NORTH

0 15 30 60

SCALE 1"=30'-0"

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS: .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.7

SHEET X OF XX

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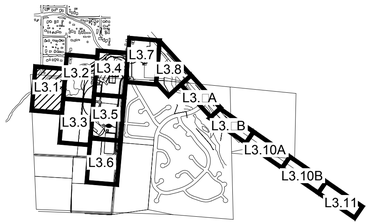


KEY MAP

NOTE: NO GRADING ON THIS SHEET

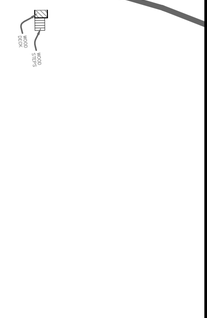
- EXISTING CONTOUR
- 5329 MINOR PROPOSED CONTOUR
- 5330 MAJOR PROPOSED CONTOUR
- CONCRETE
- CRUSHER FINES
- GRAVEL
- FIBAR PLAY SURFACE
- LYONS SANDSTONE BOULDER
- SLABSTONE SEATWALL
- WATER FEATURE BOUNDARY
- PICNIC TABLE
- PUBLIC ART
- FLOWER PLANTER
- OE EXISTING OVERHEAD ELECTRIC
- E EXISTING ELECTRIC LINE
- T EXISTING TELEPHONE LINE
- X EXISTING FENCE LINE
- F EXISTING FIBER OPTIC LINE
- G EXISTING GAS LINE
- W EXISTING WATER LINE
- SS EXISTING STORM SEWER LINE
- EXISTING MANHOLE
- EXISTING TREE
- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION

LEGEND

ABBREVIATIONS

TW	–	TOP OF WALL
BW	–	BOTTOM OF WALL (AT FINISHED GRADE)
HP	–	HIGH POINT
LP	–	LOW POINT
PA	–	PLANTING AREA

500 YEAR FLOODPLAIN
100 YEAR FLOODPLAIN



MATCHLINE - SEE SHEET L3.3
MATCHLINE - SEE SHEET L3.2

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.1

SHEET x1 OF XX

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ABBREVIATIONS

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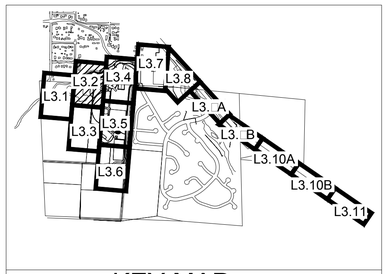
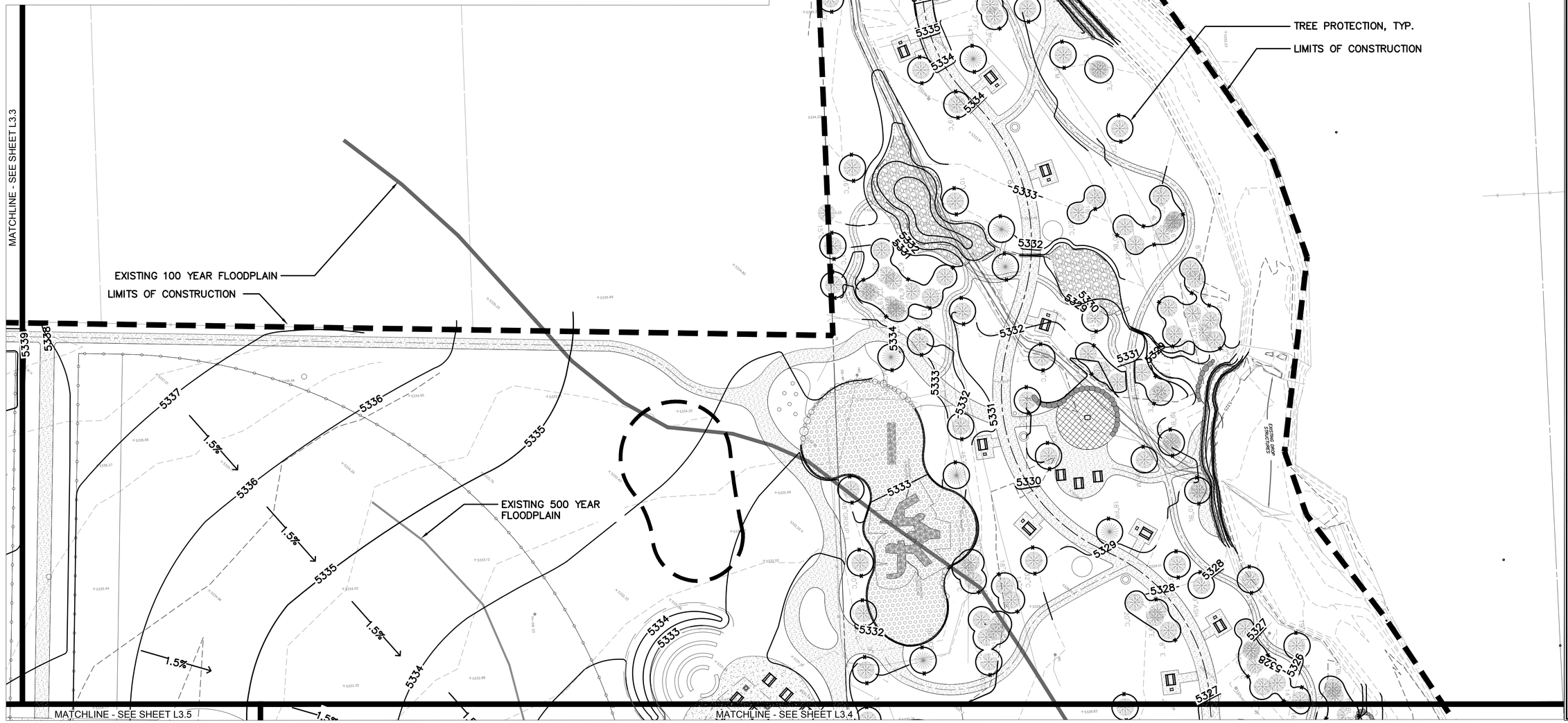
HP	–	HIGH POINT
LP	–	LOW POINT
PA	–	PLANTING AREA



KEY MAP

5325	EXISTING CONTOUR		PUBLIC ART
5329	MINOR PROPOSED CONTOUR		FLOWER PLANTER
5330	MAJOR PROPOSED CONTOUR	OE	EXISTING OVERHEAD ELECTRIC
	CONCRETE	E	EXISTING ELECTRIC LINE
	CRUSHER FINES	T	EXISTING TELEPHONE LINE
	GRAVEL	X	EXISTING FENCE LINE
	FIBAR PLAY SURFACE	F	EXISTING FIBER OPTIC LINE
	LYONS SANDSTONE BOULDER	G	EXISTING GAS LINE
	SLABSTONE SEATWALL	W	EXISTING WATER LINE
	WATER FEATURE BOUNDARY	SS	EXISTING STORM SEWER LINE
	PICNIC TABLE		EXISTING MANHOLE
			EXISTING TREE
			EXISTING FLOODWAY
			EXISTING 100 YEAR FLOODPLAIN
			EXISTING 500 YEAR FLOODPLAIN
			LIMITS OF CONSTRUCTION

LEGEND



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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS: . . . .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.2

SHEET X OF XX

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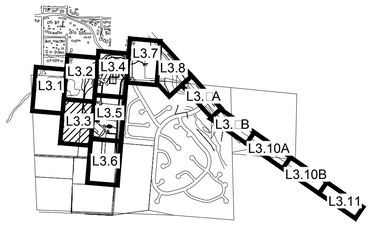

KEY MAP

ABBREVIATIONS

TW	–	TOP OF WALL
BW	–	BOTTOM OF WALL (AT FINISHED GRADE)
HP	–	HIGH POINT
LP	–	LOW POINT
PA	–	PLANTING AREA

- 5325 EXISTING CONTOUR
- 5329 MINOR PROPOSED CONTOUR
- 5330 MAJOR PROPOSED CONTOUR
- CONCRETE
- CRUSHER FINES
- GRAVEL
- FIBAR PLAY SURFACE
- LYONS SANDSTONE BOULDER
- SLABSTONE SEATWALL
- WATER FEATURE BOUNDARY
- PICNIC TABLE
- PUBLIC ART
- FLOWER PLANTER
- OE EXISTING OVERHEAD ELECTRIC
- E EXISTING ELECTRIC LINE
- T EXISTING TELEPHONE LINE
- X EXISTING FENCE LINE
- F EXISTING FIBER OPTIC LINE
- G EXISTING GAS LINE
- W EXISTING WATER LINE
- SS EXISTING STORM SEWER LINE
- EXISTING MANHOLE
- EXISTING TREE
- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION

LEGEND

NORTH

0 15 30 60

SCALE 1"=30'-0"

LIMITS OF CONSTRUCTION

SKATE PARK AREA

5343 5346 5345 5344 5343 5342 5341 5345 5344 5343 5341 5343 5342 5341 5340 5342 5340 5339 5340 5339

1.5%

MATCHLINE - SEE SHEET 3.6

MATCHLINE - SEE SHEET L3.5

MATCHLINE - SEE SHEET L3.2

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.3

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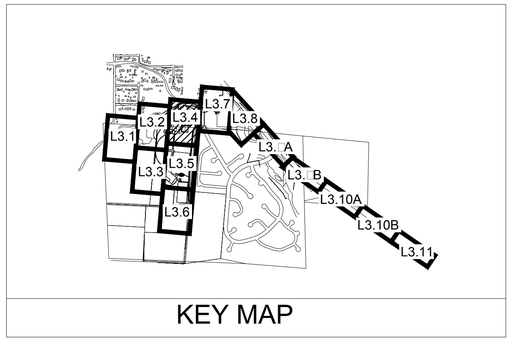

KEY MAP

MATCHLINE - SEE SHEET L3.2

MATCHLINE - SEE SHEET L3.5

MATCHLINE - SEE SHEET L3.7

EXISTING FLOODWAY

LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

NORTH

SCALE 1"=30'-0"

0 15 30 60

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DATE: 06/10/16
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CHECKED: MW

REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
GRADING PLANS

SHEET NUMBER:
L3.4

SHEET X OF XX

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PLOT DATE: Jun 10, 2016 - 1:56pm

MATCHLINE - SEE SHEET L3.3

MATCHLINE - SEE SHEET L3.2

MATCHLINE - SEE SHEET L3.6

MATCHLINE - SEE SHEET L3.4

5340
5341
5339
5338
5337
5336
5335
5334
5333
5332
5331
5330
5329
5328

1.5%
2%
3.3%
4:1 MAX

HP

SWALE CENTERLINE AT 1.25%

LIMITS OF CONSTRUCTION

30' TAIL WATER EASEMENT

20' TAIL WATER EASEMENT

KEY MAP

L3.1 L3.2 L3.3 L3.4 L3.5 L3.6 L3.7 L3.8 L3. A L3. B L3.10A L3.10B L3.11

NORTH

0 15 30 60

SCALE 1"=30'-0"

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DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.5

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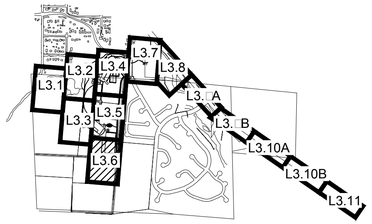

KEY MAP

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- W EXISTING WATER LINE
- SS EXISTING STORM SEWER LINE
- EXISTING MANHOLE
- EXISTING TREE
- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION

LEGEND

MATCHLINE - SEE SHEET L3.3

MATCHLINE - SEE SHEET L3.5

LIMITS OF CONSTRUCTION

NORTH

0 15 30 60

SCALE 1"=30'-0"

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CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.6

SHEET_X__OF_XX_

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PLOT DATE: Jun 15, 2016 - 4:57pm

MATCHLINE - SEE SHEET L3.4

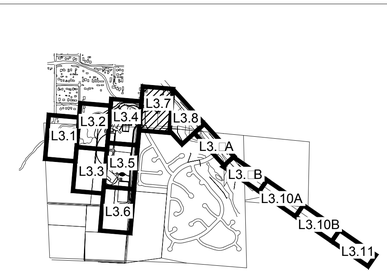
MATCHLINE - SEE SHEET L3.8

EXISTING FLOODWAY

ECOLOGICAL RESTORATION BY OTHERS (STREAM DESIGN BUILD TEAM)

LIMITS OF CONSTRUCTION

ASPHALT DRIVE BY OTHERS (WWTP)



KEY MAP

EXISTING CONTOUR
5329 MINOR PROPOSED CONTOUR
5330 MAJOR PROPOSED CONTOUR
CONCRETE
CRUSHER FINES
GRAVEL
FIBAR PLAY SURFACE
LYONS SANDSTONE BOULDER
SLABSTONE SEATWALL
WATER FEATURE BOUNDARY
PICNIC TABLE
PUBLIC ART
FLOWER PLANTER
OE EXISTING OVERHEAD ELECTRIC
E EXISTING ELECTRIC LINE
T EXISTING TELEPHONE LINE
X EXISTING FENCE LINE
F EXISTING FIBER OPTIC LINE
G EXISTING GAS LINE
W EXISTING WATER LINE
SS EXISTING STORM SEWER LINE
EXISTING MANHOLE
EXISTING TREE
EXISTING FLOODWAY
EXISTING 100 YEAR FLOODPLAIN
EXISTING 500 YEAR FLOODPLAIN
LIMITS OF CONSTRUCTION

LEGEND

ABBREVIATIONS

TW	–	TOP OF WALL
BW	–	BOTTOM OF WALL (AT FINISHED GRADE)
HP	–	HIGH POINT
LP	–	LOW POINT
PA	–	PLANTING AREA

0 15 30 60

NORTH SCALE 1"=30'-0"

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.7

SHEET X OF XX

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PLOT DATE: Jun 6, 2016 - 9:05pm

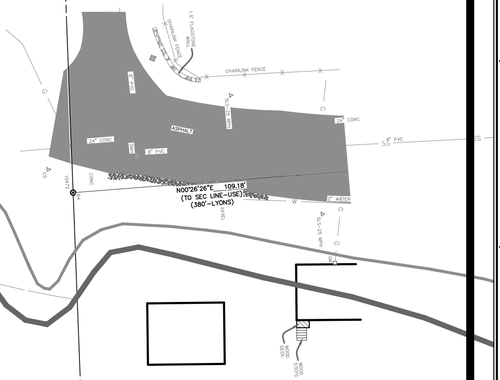
LEGEND

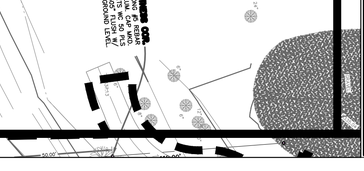
- NATIVE SEED
- BLUEGRASS SOD
- SHRUB AREAS
- PROPOSED DECIDUOUS TREE
- PROPOSED EVERGREEN TREE
- PROPOSED ORNAMENTAL TREE
- EXISTING TREE
- LYONS SANDSTONE BOULDER
- SLABSTONE SEATWALL
- WATER FEATURE BOUNDARY
- PICNIC TABLE
- PUBLIC ART
- FLOWER PLANTER
- EXISTING OVERHEAD ELECTRIC
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE LINE
- EXISTING FENCE LINE
- EXISTING FIBER OPTIC LINE
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING MANHOLE
- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION

NOTE: NO LANDSCAPE PLANTINGS ON THIS SHEET

EXISTING 500 YEAR FLOODPLAIN

EXISTING 100 YEAR FLOODPLAIN





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NORTH SCALE 1"=30'-0"

MATCHLINE - SEE SHEET L4.3

MATCHLINE - SEE SHEET L4.2

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS: .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LANDSCAPE PLANS

SHEET NUMBER: L4.1

SHEET X OF XX

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PLOT DATE: Jun 10, 2016 - 1:06pm

MATCHLINE - SEE SHEET L4.1

MATCHLINE - SEE SHEET L4.3

MATCHLINE - SEE SHEET L3.5

MATCHLINE - SEE SHEET L4.4

LEGEND

- NATIVE SEED
- BLUEGRASS SOD
- SHRUB AREAS
- PROPOSED DECIDUOUS TREE
- PROPOSED EVERGREEN TREE
- PROPOSED ORNAMENTAL TREE
- EXISTING TREE
- LYONS SANDSTONE BOULDER
- SLABSTONE SEATWALL
- WATER FEATURE BOUNDARY
- PICNIC TABLE
- PUBLIC ART
- FLOWER PLANTER
- EXISTING OVERHEAD ELECTRIC
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE LINE
- EXISTING FENCE LINE
- EXISTING FIBER OPTIC LINE
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING MANHOLE
- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

EXISTING 100 YEAR FLOODPLAIN

NATIVE SEED

BLUE GRASS SOD

LIMITS OF CONSTRUCTION

DECIDUOUS TREE

EVERGREEN TREE

EXISTING 500 YEAR FLOODPLAIN

ORNAMENTAL TREE

NORTH

0 15 30 60

SCALE 1"=30'-0"

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2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LANDSCAPE PLANS

SHEET NUMBER: L4.2

SHEET X OF XX

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NATIVE SEED

BLUEGRASS SOD

SHRUB AREAS

PROPOSED DECIDUOUS TREE

PROPOSED EVERGREEN TREE

PROPOSED ORNAMENTAL TREE

EXISTING TREE

LYONS SANDSTONE BOULDER

SLABSTONE SEATWALL

WATER FEATURE BOUNDARY

PICNIC TABLE

PUBLIC ART

FLOWER PLANTER

EXISTING OVERHEAD ELECTRIC

EXISTING ELECTRIC LINE

EXISTING TELEPHONE LINE

EXISTING FENCE LINE

EXISTING FIBER OPTIC LINE

EXISTING GAS LINE

EXISTING WATER LINE

EXISTING STORM SEWER LINE

EXISTING MANHOLE

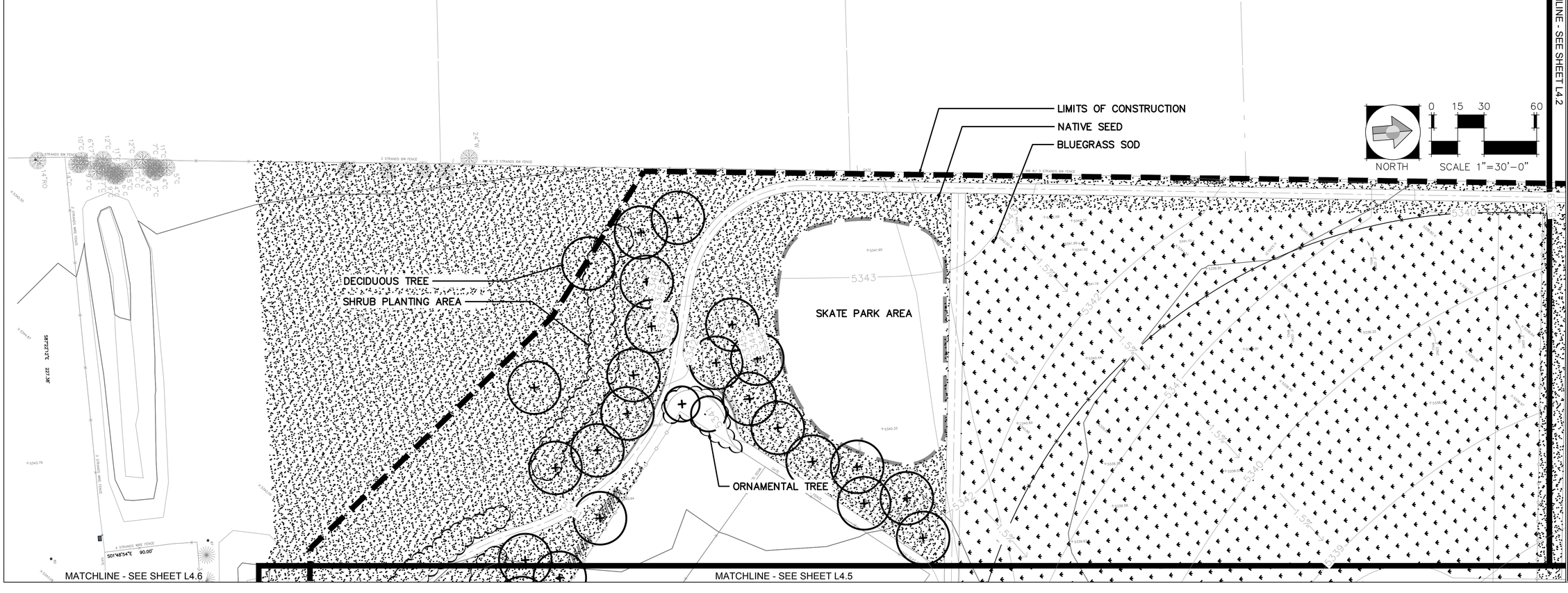
EXISTING FLOODWAY

EXISTING 100 YEAR FLOODPLAIN

EXISTING 500 YEAR FLOODPLAIN

LIMITS OF CONSTRUCTION

LEGEND



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BOHN PARK

2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LANDSCAPE PLANS

SHEET NUMBER: L4.3

SHEET X OF XX

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PLOT DATE: Jun 10, 2016 - 1:10pm

MATCHLINE - SEE SHEET L4.2

MATCHLINE - SEE SHEET L4.5

MATCHLINE - SEE SHEET L4.7

EXISTING 500 YEAR FLOODPLAIN

EVERGREEN TREE

DECIDUOUS TREE

BLUEGRASS SOD
NATIVE SEED

EXISTING 100 YEAR FLOODPLAIN

EXISTING FLOODWAY

LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

NORTH

SCALE 1"=30'-0"

0 15 30 60

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
LANDSCAPE PLANS

SHEET NUMBER:
L4.4

SHEET X OF XX

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PLOT DATE: Jun 10, 2016 - 5:10pm

MATCHLINE - SEE SHEET L4.3

MATCHLINE - SEE SHEET L4.2

MATCHLINE - SEE SHEET L4.6

MATCHLINE - SEE SHEET L4.4

SHRUB PLANTING AREA

DECIDUOUS TREES

EXISTING MULTI –USE SPORTS FIELD TO REMAIN

LIMITS OF CONSTRUCTION

NATIVE SEED

BLUEGRASS SOD

NORTH

SCALE 1"=30'-0"

0 15 30 60

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PLOT DATE: Jun 6, 2016 - 1:19pm

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LANDSCAPE PLANS

SHEET NUMBER: L4.5

SHEET X OF XX

LEGEND

- NATIVE SEED
- SOD
- SHRUB AREAS
- PROPOSED DECIDUOUS TREE
- PROPOSED EVERGREEN TREE
- PROPOSED ORNAMENTAL TREE
- EXISTING TREE
- GREY GRANITE BOULDER
- SANDSTONE SEATWALL
- WATER FEATURE BOUNDARY
- PICNIC TABLE
- PUBLIC ART
- FLOWER PLANTER
- EXISTING OVERHEAD ELECTRIC
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE LINE
- EXISTING FENCE LINE
- EXISTING FIBER OPTIC LINE
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING MANHOLE
- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION

MATCHLINE - SEE SHEET L4.3

MATCHLINE - SEE SHEET L4.5

EXISTING MULTI –USE SPORTS FIELD TO REMAIN

NATIVE SEED

LIMITS OF CONSTRUCTION

NORTH

SCALE 1"=30'-0"

0 15 30 60

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LANDSCAPE PLANS

SHEET NUMBER: L4.6

SHEET_X__OF_XX_

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MATCHLINE - SEE SHEET L3.4

ORNAMENTAL TREE

DECIDUOUS TREE

EVERGREEN TREE

DECIDUOUS TREE

EVERGREEN TREE

NATIVE SEED

ORNAMENTAL TREE

NATIVE SEED

EXISTING FLOODWAY

EXISTING 100 YEAR FLOODPLAIN

EXISTING 500 YEAR FLOODPLAIN

LIMITS OF CONSTRUCTION

MATCHLINE - SEE SHEET L4.8

LEGEND

- NATIVE SEED
- BLUEGRASS SOD
- SHRUB AREAS
- PROPOSED DECIDUOUS TREE
- PROPOSED EVERGREEN TREE
- PROPOSED ORNAMENTAL TREE
- EXISTING TREE
- LYONS SANDSTONE BOULDER
- SLABSTONE SEATWALL
- WATER FEATURE BOUNDARY
- PICNIC TABLE
- PUBLIC ART
- FLOWER PLANTER
- EXISTING OVERHEAD ELECTRIC
- EXISTING ELECTRIC LINE
- EXISTING TELEPHONE LINE
- EXISTING FENCE LINE
- EXISTING FIBER OPTIC LINE
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING STORM SEWER LINE
- EXISTING MANHOLE
- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION

NORTH

0 15 30 60

SCALE 1"=30'-0"

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LANDSCAPE PLANS

SHEET NUMBER: L4.7

SHEET X OF XX

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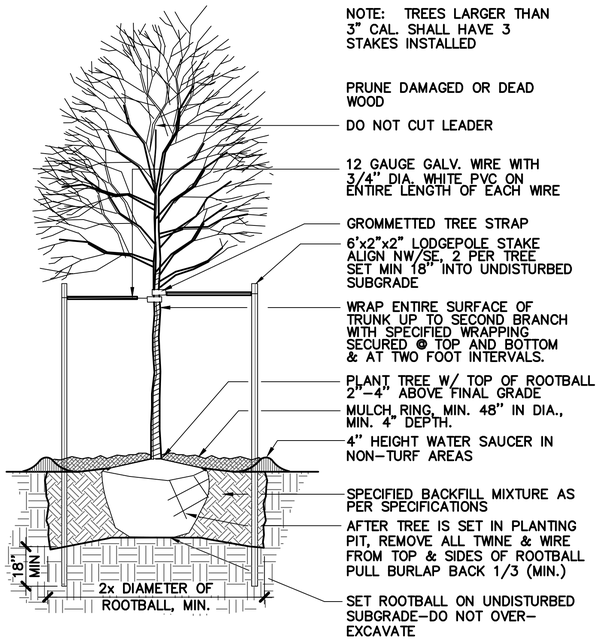
PLOT DATE: Jun 10, 2016 - 4:19pm

LANDSCAPE NOTES

1. THE SHRUB BEDS SHALL BE PREPARED WITH ORGANIC MATTER AT THE RATE OF 4 CUBIC YARDS PER 1,000 SQUARE FEET. THIS PREPARATION SHALL BE THOROUGHLY INCORPORATED INTO THE TOP 6" OF SOIL.
2. ALL TREES AND SHRUBS WILL BE WATERED BY AN UNDERGROUND FULLY AUTOMATED IRRIGATION SYSTEM. IRRIGATION SYSTEM TO BE DESIGN/ BUILD. WATER TO CONNECT TO EXISTING RESTROOM OR EXISTING IRRIGATION SYSTEM PER TOWN'S APPROVAL.
3. ALL SHRUB BED LOCATIONS ARE TO BE STAKED OUT ON THE SITE FOR APPROVAL BY THE TOWN PRIOR TO INSTALLATION. PROVIDE SHRUB BED LAYOUT BASED UPON THIS LANDSCAPE PLAN, TOWN. TREE LOCATION TO BE NO CLOSER THAN 6' FROM ALL CURBS & WALKWAYS (EXCEPT IN TREE LAWNS).
4. ALL PLANT MATERIAL ARE TO BE APPROVED BY THE TOWN PRIOR TO INSTALLATION.
5. ALL SHRUB BEDS TO BE MULCHED WITH 4" DEPTH FIR FIBER MULCH UNLESS OTHERWISE NOTED. SUBMIT SAMPLE FOR APPROVAL.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE TO EXISTING UTILITIES, CURB AND GUTTER, WALLS, OR WALKWAYS AND OTHER STRUCTURES THAT IS A RESULT OF HIS WORK. THE REPAIR OF SUCH DAMAGE WILL BE AT NO ADDITIONAL COST OF THE OWNER.
7. THE CONTRACTOR SHALL FINE GRADE ALL AREAS TO BE PLANTED. THE CONTRACTOR SHALL REMOVE REQUIRED DEPTH OF SOIL ALONG WALKWAYS TO ACCOMMODATE SEED OR MULCH DEPTH.
8. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM ALL STRUCTURES AND WALKWAYS.

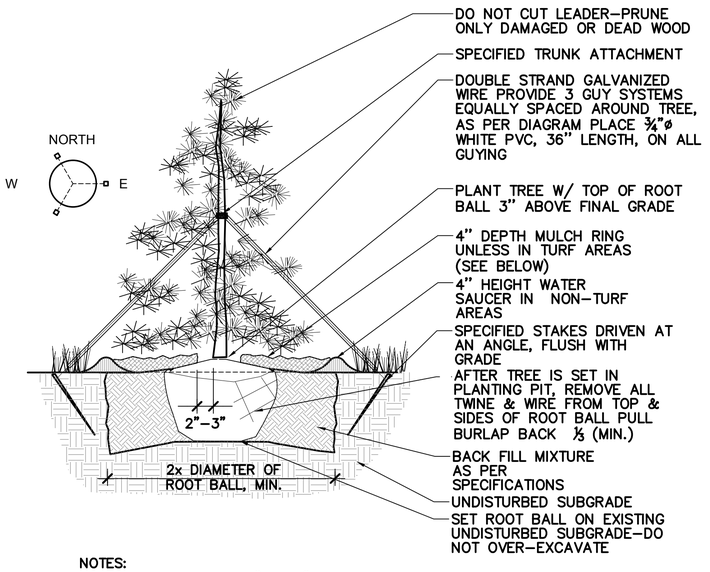
PLANT LIST

Common Name	Botanic Name	Size	Spacing	Comments
Western Hackberry	Celtis occidentalis	2.5" Cal.		B&B, Specimen Quality
Western Catalpa	Catalpa speciosa	2.5" Cal.		B&B, Specimen Quality
Kentucky Coffee Tree	Gymodadus dicious	2.5" Cal.		B&B, Specimen Quality
Evergreen Trees				
Common Name	**Botanic Name**	**Size**	**Spacing**	**Comments**
Colorado Blue Spruce	Picea pungens 'Glauca'	8'-10' Ht.		B&B, Full Crown, Staked, Specimen Quality
Pinion Pine	Pinus edulis	8'-10' Ht.		B&B, Full Crown, Staked, Specimen Quality
Austrian Pine	Pinus nigra	8'-10' Ht.		B&B, Full Crown, Staked, Specimen Quality
Shrubs				
Common Name	**Botanic Name**	**Size**	**Spacing**	**Comments**
Pawnee Buttes Sandcherry	Prunus besseyi 'Pawnee Buttes'	#5	4' OC	Container, 5 canes min., 18"-24" ht.
Golden Currant	Ribes aureum	#5	4' OC	Container, 5 canes min., 18"-24" ht.
Russian Sage	Perovskia atriplicifolia	#5	4' OC	Container, 5 canes min., 18"-24" ht.
Potenilla	Potentilla fruticosa 'Abbottswood'	#5	4' OC	Container, 5 canes min., 18"-24" ht.
Bluemist Spirea	Caryopteris dandonensis	#5	4' OC	Container, 5 canes min., 18"-24" ht.
Western Sandcherry	Prunus besseyi	#5	4' OC	Container, 5 canes min., 18"-24" ht.
Cistena Plum	Prunus cistena	#5	4' OC	Container, 5 canes min., 18"-24" ht.
Woods Rose	Rosa woosii	#5	4' OC	Container, 5 canes min., 18"-24" ht.
Dwarf Rabbitbrush	Chrysothamnus nauseosus ssp. Nauseosus	#5	4' OC	Container, 5 canes min., 18"-24" ht.
Russian Sage	Perovskia atriplicifolia	#5	4' OC	Container, 5 canes min., 18"-24" ht.
Pawnee Buttes Sandcherry	Prunus besseyi 'Pawnee Buttes'	#5	4' OC	Container, 5 canes min., 18"-24" ht.
Bailey Compact Maple	Acer ginnala 'Bailey Compact'	#5	4' OC	Container, 5 canes min., 18"-24" ht.
Perennials / Ornamental Grasses				
Common Name	**Botanic Name**	**Size**	**Spacing**	**Comments**
Karl Foerster Feather Reed Grass	Calamagrostis acutiflora 'Karl Foerster'	#1	4' OC	Well established
Ravenna Grass	Erianthus ravennae	#1	4' OC	Well established



2 DECIDUOUS TREE PLANTING

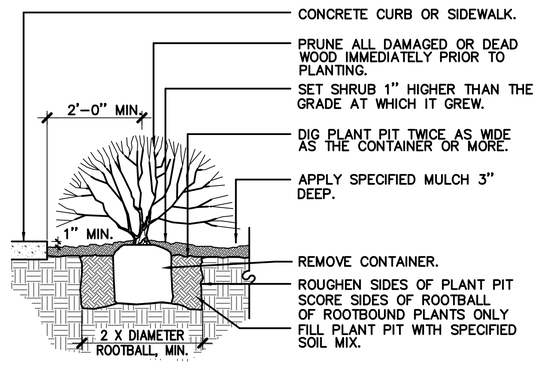
NOT TO SCALE



NOTES:
1. PULL MULCH BACK 2" TO 3" FROM TRUNK OF TREE
2. INSTALL SPECIFIED MULCH TO DRIP LINE OF TREE WHERE PLANTED IN LAWN AREAS. MULCH TO BE 2" DEEP IN LAWN AREAS.
3. DO NOT PROVIDE WATER BASIN IN IRRIGATED LAWN AREAS.

3 EVERGREEN TREE PLANTING

NOT TO SCALE



GENERAL NOTES

- HOLD GRADE 1" BELOW EDGE OF WALK OR CURB
- SHRUB PLANTING – REFER TO SHRUB BED LAYOUT FOR PLACEMENT OF SHRUBS.
- FOR GROUPINGS OF SHRUBS, MULCH ENTIRE PLANTING AREA. FOR INDIVIDUAL SHRUBS, MULCH PLANTING PIT AREA ONLY.
- GRADE EDGE OF PLANTING AREAS TO RETAIN MULCH.
- ANY BROKEN OR CRUMBLING ROOTBALL WILL BE REJECTED. REMOVING THE CONTAINERS WILL NOT BE AN EXCUSE FOR DAMAGED ROOTBALLS.

1 SHRUB PLANTING

NOT TO SCALE

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED:
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LANDSCAPE DETAILS

SHEET NUMBER: L5.1

SHEET X OF XX

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WOOD FENCE [X:\MLCO\Lyons Bohn Park Final Design - 16044.00\4-CD\Work\Site Details\WOOD FENCE.dwg]
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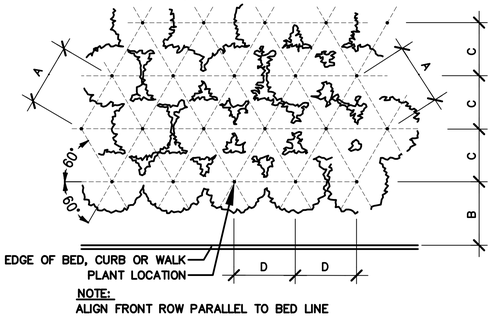
FILE NAME: L5.1 Landscape Details.dwg
PLOT DATE: Jun 9, 2016 - 4:19pm

**PLANT SPACING	A	B	C	D
6"	6"	6"	5"	6"
8"	8"	6"	7"	8"
12"	12"	8"	10"	12"
18"	18"	9"	15½"	18"
24"	24"	18"	21"	24"
30"	30"	15"	26"	30"
36"	36"	30"	31"	36"
48"	48"	30"	42"	48"
60"	60"	36"	52"	60"

**OR AS SHOWN ON PLAN

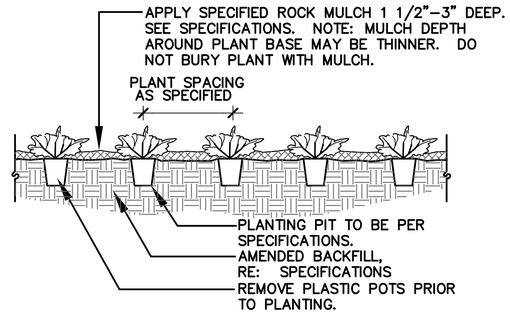


NOTE:
ALIGN FRONT ROW PARALLEL TO BED LINE

2 SHRUB/ORN. GRASS/GROUNDCOVER

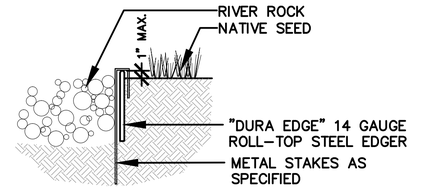
PLANTING LAYOUT
TRIANGULAR SPACED

NOT TO SCALE



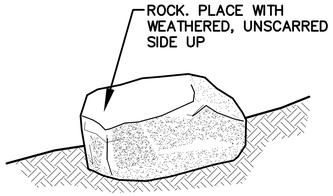
3 ORNAMENTAL GRASSES □ PERENNIALS

NOT TO SCALE



NOTES:
1. SET ALL EDGING 1" MAXIMUM ABOVE FINISH GRADE AS SHOWN
2. EDGING SHALL ABUT ALL CONCRETE CURBS, WALKS AND CRUSHER FINES TRAILS FLUSH WITH ADJACENT GRADES
3. ALL JOINTS TO BE SECURELY STAKED

4 STEEL EDGER



NOTES:
1. ROCK TO BE LYONS SANDSTONE BOULDER WITH EXPOSED NATURAL WEATHERED FACES. ROCK TO RANGE IN SIZE (UNLESS OTHERWISE NOTED) AS FOLLOWS:
   WIDTH: 2'–3'
   HEIGHT: 2'–3'
   DEPTH: 3'–4'
2. CONTRACTOR TO SUBMIT ROCK SAMPLE (APPROX. 3'X3'X4') FOR APPROVAL PRIOR TO DELIVERY OF ROCK TO SITE
3. PLACE ROCKS TO CONFIGURATIONS AND LOCATIONS AS SHOWN ON PLAN.
4. BURY ROCK ⅓ TO ½ OF TOTAL DEPTH
5. WASH OFF ROCKS COMPLETELY AFTER PLACEMENT.
6. ROCKS TO BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO PLACEMENT.
7. DO NOT FRACTURE ROCK DURING PLACEMENT, SUCH ACTION WILL BE CAUSE FOR REJECTION.
8. CHOOSE AND PLACE ROCKS SO THAT A MINIMUM OF EXCAVATION SCARS ARE VISIBLE.
9. OWNERS REPRESENTATIVE TO APPROVE BOULDER SELECTION PRIOR TO DELIVERY TO SITE.

5 LANDSCAPE BOULDER

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Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED:
DRAWN: GG
CHECKED: MW
REVISIONS: . . . .
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: LANDSCAPE DETAILS
SHEET NUMBER: L5.2
SHEET X OF XX

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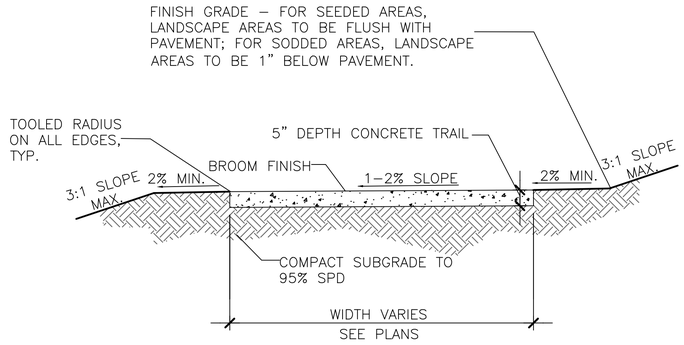
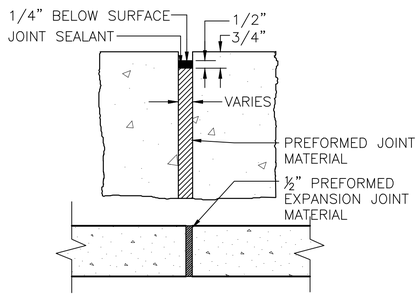


NOTES:

1. CONCRETE MIX TO BE 4200 PSI CDOT CLASS P AT 28 DAYS MIX WITH FIBERMESH ADDITIVE. SEE SPECIFICATION FOR ADDITIONAL INFORMATION.
2. TRANSVERSE JOINTS TO BE SAWCUT (1/8" WIDE x 1–1/4" DEEP) AND PLACED 10' ON CENTER, OR AS DIRECTED.
3. EXPANSION JOINTS, WITH FILLER AND SEALANT, TO BE PLACED EVERY 100', WHERE PAVEMENT ABUTS EXISTING PAVEMENTS OR STRUCTURES, OR AS DIRECTED.
4. PROVIDE ADDITIONAL ROAD BASE AS NEEDED FOR CONSTRUCTION OR COMPACTION OF PAVEMENT.
5. COMPACT SUBGRADE UNDER AND 1' BEYOND EACH SIDE OF PAVEMENT, PRIOR TO PLACING FORMS.
6. BACKFILL EDGES OF PAVEMENT WITH ON–SITE MATERIAL, PREPARE LANDSCAPE AREA PER SPECIFICATIONS, AND SEED OR SOD PER PLANS.
7. CROSS SLOPE ON PAVEMENT SHALL BE THE MINIMUM SLOPE NECESSARY TO PROVIDE POSITIVE DRAINAGE OFF OF THE PAVEMENT. MAXIMUM CROSS SLOPE SHALL BE 2%. LONGITUDINAL SLOPE SHALL BE LESS THAN 5%.
8. 2' WIDE CLEAR ZONE ON EACH SIDE OF PAVEMENT SHALL BE FREE OF OBSTRUCTIONS.
9. SLOPE SHALL BE A MAXIMUM OF 2%. AT INTERSECTIONS, PROVIDE 20' RADII
10. COLORED CONCRETE PAVEMENT SECTIONS / PAVEMENT AS NOTED ON PLANS TO BE DAVIS COLOR OMAHA TAN, RATES TO BE AS RECOMMENDED BY MANUFACTURER. ALL OTHER CONCRETE PAVEMENT SECTIONS NOT TO RECEIVE COLOR.

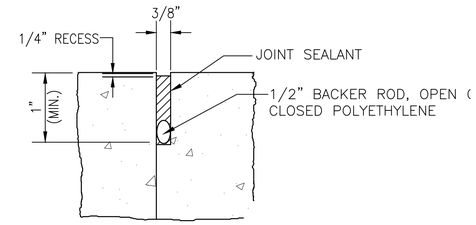
1 CONCRETE PAVING

SCALE: 1/2" = 1'-0"



1 EXPANSION JOINT

SCALE: 3/4" = 1'-0"



1 CONTROL JOINT

SCALE: 3/4" = 1'-0"

1 CRUSHER FINES PAVING

SCALE: 1/2" = 1'-0"

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: SITE DETAILS

SHEET NUMBER: L6.1

SHEET X OF XX

XREFS
Xref Bohn Park: [V:\WLCO\Lyons Bohn Park Final Design – 16044.00\4-CD\Vrefs\DWK Bohn Park – TITLE BLOCK.dwt]
CRUSHER FINES: [V:\WLCO\Lyons Bohn Park Final Design – 16044.00\4-CD\Vrefs\Site Details\CRUSHER FINES.dwg]
CONTROL & EXP JOINTS: [V:\WLCO\Lyons Bohn Park Final Design – 16044.00\4-CD\Vrefs\Site Details\CONTROL & EXP. JOINTS.dwg]
CONC-ACCESSIBLE PLAY RAMP: [V:\WLCO\Lyons Bohn Park Final Design – 16044.00\4-CD\Vrefs\Site Details\CONC-ACCESSIBLE PLAY RAMP.dwg]
CONC-FLAT: [V:\WLCO\Lyons Bohn Park Final Design – 16044.00\4-CD\Vrefs\Site Details\CONC-FLAT.dwg]
LANDSCAPE BOULDER: [V:\WLCO\Lyons Bohn Park Final Design – 16044.00\4-CD\Vrefs\Site Details\LANDSCAPE BOULDER.dwg]
PLAYGROUND EDGING: [V:\WLCO\Lyons Bohn Park Final Design – 16044.00\4-CD\Vrefs\Site Details\PLAYGROUND EDGING.dwg]
WOOD FENCE: [V:\WLCO\Lyons Bohn Park Final Design – 16044.00\4-CD\Vrefs\Site Details\WOOD FENCE.dwg]

IMAGES

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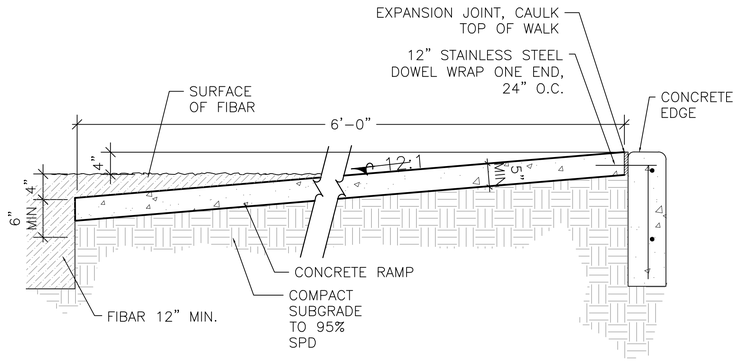
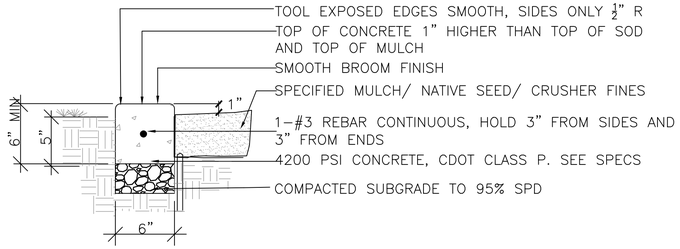


NOTE:
INSTALL RAMP OUTSIDE OF PLAY EQUIPMENT
SAFETY ZONES

1 CONCRETE ACCESSIBLE PLAY RAMP

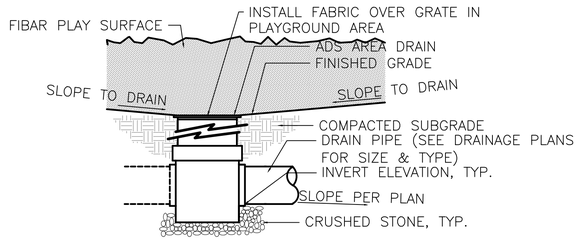
SCALE: 1" = 1'-0"



CONCRETE PLAY
EDGER

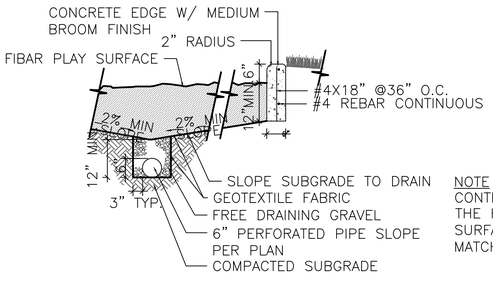
1 CONCRETE PLAY EDGER

SCALE: 3/4" = 1'-0"



1 PLAY AREA DRAIN

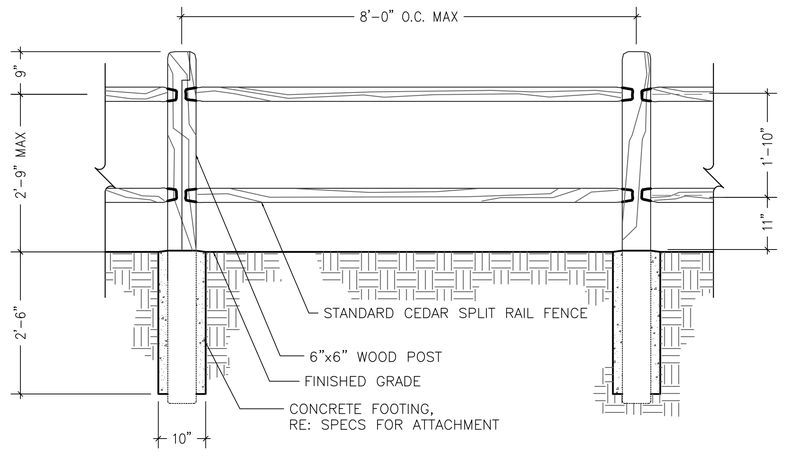
SCALE: 1/2" = 1'-0"



NOTE
CONTROL JOINTS SHOULD OCCUR ON THE HORIZONTAL AND VERTICAL SURFACE EVERY 10' O.C. OR TO MATCH ADJACENT WALK JOINTS

1 PLAYGROUND CURB, UNDERDRAIN AND PLAY SURFACE MATERIAL

SCALE: 1/2" = 1'-0"



1 SPLIT RAIL FENCE

SCALE: 3/4" = 1'-0"

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

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REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
SITE DETAILS

SHEET NUMBER:
L6.2
SHEET X OF XX

XREFS
Attached: 16044.00(4-02)\Work\Lyons Bohn Park Final Design - 16044.00(4-02)\Work\[NAME_Bohn Park – TITLE BLOCK.dwg]
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ACCESSIBLE PLAY RAMP [X:\MLCO\Lyons Bohn Park Final Design – 16044.00(4-02)\Work\Site Details\CONC- ACCESSIBLE PLAY RAMP & EXP. JOINTS.dwg]
CONC- ACCESSIBLE PLAY RAMP [X:\MLCO\Lyons Bohn Park Final Design – 16044.00(4-02)\Work\Site Details\CONC- ACCESSIBLE PLAY RAMP.dwg]
PLAY AREA DRAIN [X:\MLCO\Lyons Bohn Park Final Design – 16044.00(4-02)\Work\Site Details\PLAY AREA DRAIN.dwg]
LANDSCAPE BOULDER [X:\MLCO\Lyons Bohn Park Final Design – 16044.00(4-02)\Work\Site Details\LANDSCAPE BOULDER.dwg]
PLAYGROUND CURB, UNDERDRAIN AND PLAY SURFACE MATERIAL [X:\MLCO\Lyons Bohn Park Final Design – 16044.00(4-02)\Work\Site Details\PLAYGROUND CURB, UNDERDRAIN AND PLAY SURFACE MATERIAL.dwg]
WOOD FENCE [X:\MLCO\Lyons Bohn Park Final Design – 16044.00(4-02)\Work\Site Details\WOOD FENCE.dwg]

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PLOT DATE: Jun 13, 2016 - 5:13pm

IMAGES

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PLANTING NOTES:

DELIVERY:

1. PLANTS SHALL BE DELIVERED TO THE SITE WITHIN 5 DAYS OF WHEN PLANTING IS TO BEGIN.

2. PLANT MATERIAL WILL BE DELIVERED TO THE SITE IN THE SPECIES, SI□E/FORM, AND □UANTITIES SPECIFIED. PLANT MATERIAL WILL BE ACCOMPANIED BY A SHIPPING CERTIFICATE ATTESTING TO THE SAME. THE SUBCONTRACTOR SHALL COUNT AND CONFIRM THE DELIVERY IS ACCURATE AND INSPECT PLANT MATERIAL TO ENSURE THE PLANT MATERIAL IS IN GOOD CONDITION AND HEALTH.

4. PLANT MATERIAL SHALL BE STAGED BY SPECIES IN SEPARATE AND IDENTIFIABLE GROUPS DURING UNLOADING.

5. PLANT MATERIAL SHALL BE IDENTIFIED WITH ATTACHED, DURABLE, WATERPROOF LABELS AND WEATHER RESISTANT INK, STATING THE CORRECT SCIENTIFIC AND COMMON NAME.

6. PLANT MATERIAL SHALL BE PROTECTED DURING DELIVERY TO PREVENT DESICCATION AND DAMAGE TO THE BRANCHES, TRUNK, ROOT SYSTEMS, OR EARTH/ROOTBALL. BRANCHES SHALL BE PROTECTED BY TYING-IN. EXPOSED BRANCHES SHALL BE COVERED DURING TRANSPORT.

7. PLANT MATERIAL SHALL BE KEPT SHADED, WATERED AND MAINTAINED IN GOOD HEALTH DURING TRANSPORT AND THEREAFTER UNTIL THE PROJECT IS APPROVED.

PLANT QUALITY:

1. ALL PLANTS WILL BE CHECKED AND APPROVED BY THE DESIGNER □ SUBCONTRACTOR PRIOR TO PLANTING TO ENSURE CONFORMITY OF SPECIES, □UALITY AND □UANTITY. PLANT MATERIAL SHALL□

A. BE WELL SHAPED, VIGOROUS AND HEALTHY WITH A WELL BRANCHED ROOT SYSTEM, FREE FORM DISEASE, HARMFUL INSECTS AND INSECT EGGS, SUN-SCALD INJURY, DISFIGUREMENT OR ABRASION□

B. BE CHECKED FOR UNAUTHORI□ED SUBSTITUTION AND EXHIBIT TYPICAL FORM OF BRANCH TO HEIGHT RATIO□

C. MEET THE CONTAINER, CALIPER AND HEIGHT MEASUREMENTS SPECIFIED AND NOT BE CROPPED□

D. SHOW NEW FIBEROUS ROOTS AND MAINTAIN ITS SHAPE WHEN REMOVED FROM THE CONTAINER AND NOT HAVE BROKEN OR CRACKED ROOTBALLS, OR BROKEN CONTAINERS□

E. CONFORM TO THE AMERICAN ASSOCIATION OF NURSERYMEN'S AMERICAN STANDARD FOR NURSERY STOCK.

2. IF WITHIN 24 HOURS OF DELIVERY THE DESIGNER DETERMINES THAT THE PLANT MATERIAL DOES NOT MEET THESE SPECIFICATIONS, THE UNACCEPTABLE MATERIAL SHALL BE REJECTED, REMOVED, AND REPLACED AT NO EXPENSE TO THE CLIENT.

3. IF OVER THE COURSE OF THE PROJECT THE DESIGNER DISCOVERS THE CONTRACTOR HAS FAILED TO PROPERLY STORE, INSTALL □ MAINTAIN ANY PREVIOUSLY ACCEPTED PLANT MATERIAL, SAID MATERIAL WILL BE REMOVED AND REPLACED WITH ACCEPTABLE MATERIAL AT THE EXPENSE OF THE SUBCONTRACTOR.

STORAGE:

1. COMMERCIALLY AVAILABLE PLANT MATERIALS NOT INSTALLED WITHIN 5 DAYS OF ARRIVAL AT THE SITE SHALL BE STORED AND PROTECTED IN DESIGNATED TEMPORARY ON-SITE NURSERY AREA. NURSERY GROWN PLANT MATERIAL SHALL NOT BE STORED ON SITE LONGER THAN 15 CALENDAR DAYS. PLANT MATERIAL SHALL BE PROTECTED FROM DIRECT EXPOSURE TO WIND AND SUN, KEPT SHADED AND MOIST BY WATERING, EITHER BY HAND OR A TEMPORARY IRRIGATION SYSTEM UNTIL INSTALLED.

ONLY THE NUMBER OF WILLOW CUTTINGS □IF SPECIFIED□THAT CAN BE PLANTED IN ONE DAY WILL BE DELIVERED TO THE PLANTING SITE. IMMEDIATELY AFTER HARVESTING, WILLOW CUTTINGS WILLOW CUTTINGS SHALL BE FULLY SUBMERGED AND STORED IN A COLD/COOL WATER □EITHER IN A TANK OR NATURAL WATER BODY□IN A DARK OR SHADED LOCATION FOR A MINIMUM OF 5 DAYS. FAILURE TO PROPERLY STORE AND HYDRATE WILLOW CUTTINGS OR IF CUTTINGS LINGER ON SITE MORE THAN 2 DAYS BEFORE PLANTING WILL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE CLIENT IF SAID CUTTINGS FAIL TO THRIVE.

HANDLING:

PLANT MATERIAL SHALL NOT BE INJURED DURING HANDLING OR PLANTING. ROOTS OR WILLOW CUTTINGS OR POLES, IF SPECIFIED, SHALL NOT BE ALLOWED TO BECOME DRY.

MULCH:

1. ORGANIC MULCH USED TO HELP RETAIN SOIL MOSITURE IN PLANTING SAUCERS SHALL CONSIST OF SHREDDED WOOD FIBER □A.K.A., GORRILA HAIR□TO A DEPTH OF 4". MULCH SHALL BE FREE FROM WEEDS, MOLD, AND OTHER DELETERIOUS MATERIALS

TREE STAKING AND GUYING:

1. TREE STAKING WILL BE RE□UIRED FOR TREES 2 INCHES IN CALIPER OR GREATER. ONE BRACING STAKE IS RE□UIRED FOR TREES 4 TO 6 FEET HIGH. TWO BRACING STAKES ARE RE□UIRED FOR TREES 6 TO 8 FEET HIGH. THREE BRACING OR GROUND STAKES ARE RE□UIRED FOR TREES OVER 8 FEET HIGH OR GREATER THAN 6 CALIPER INCHES. AT LEAST ONE BRACING STAKE SHALL BE PLACED ON THE SIDE OF THE TREE FACING THE PREVAILING WIND WITH THE REMAINDER SPACED E□UIDISTANTLY AROUND. THE BRACING STAKE SHALL BE DRIVEN VERTICALLY INTO FIRM GROUND OUTSIDE OF THE ROOTBALL AND SHALL NOT INJURE THE BALL OR ROOT SYSTEM.

THE TREE SHALL BE HELD FIRMLY TO THE STAKE WITH A DOUBLE STRAND OF GUYING MATERIAL. GUYING MATERIAL SHALL BE ATTACHED TO A TREE STRAP □OF APPROVE EQUIVALENT) PLACED APPROXIMATELY ½ THE TREE HEIGHT OR ABOVE THE FIRST MAJOR BRANCH. ONE TURNBUCKLE SHALL BE CENTERED ON EACH GUY LINE FOR TREE STRAIGHTENING PURPOSES.

2. TREE STAKES SHALL BE T-POSTS □OR E□UIVALENT□AND A MINIMUM 6 FEET LONG WITH A PROTECTIVE END CAP. GUYING MATERIAL SHALL BE A MINIMUM 14-16 GAUGE WIRE. TURNBUCKLES SHALL BE GALVANI□ED OR CADMIUM-PLATED STEEL, AND SHALL BE A MINIMUM 3 INCHES LONG WITH CLOSED SCREW EYES ON EACH END. TREE STRAPS SHALL BE USED TO PROTECT TREE TRUNK AND BRANCHES FROM GUYING MATERIAL. LENGTH SHALL BE 1.5 TIMES THE CIRCUMFERENCE OF THE PLANT TRUNK AT ITS BASE.

INSTALLATION:

1. UNLESS DIRECTED OTHERWISE OR THE HEIGHT OR SMALL STATURE OF THE PLANT DOES NOT ALLOW, ALL PLANTS WILL BE DEEP PLANTED SO THAT THEIR ROOT BALL IS IN CONTACT WITH OR JUST ABOVE THE LOW GROUNDWATER LEVEL. PLANTS NOT DESIGNATED FOR DEEP PLANTING □REFER TO PLANT SCHEDULES□SHALL BE DUG TO A DEPTH E□UAL TO THE HEIGHT OF THE ROOT BALL AS MEASURED FROM THE BASE OF THE BALL TO THE BASE OF THE PLANT TRUNK SO THAT THE TOP OF THE ROOT BALL IS LEVEL WITH THE FINAL GRADE. ALL PLANT PITS SHALL BE DUG A MINIMUM 2 TIMES THE WIDTH OF THE ROOT BALL TO ALLOW FOR ROOT EXPANSION. THE PIT SHALL EXCAVATED WITH ROUGHENED SIDES, SLOPING TOWARDS THE BASE AS A CONE. CYLINDRICAL PITS WITH VERTICAL SIDES, ESPECIALLY IN CLAY, SHALL NOT BE USED. **(REFER TO PLANTING DETAILS).**

2. PLANT MATERIAL SHALL BE INSERTED INTO THE CENTER OF THE PIT, SET PLUMB, AND HELD IN POSITION UNTIL SUFFICIENT SOIL HAS BEEN FIRMLY PLACED AROUND THE ROOT SYSTEM.

3. ROOT BOUND PLANTS WILL BE SCORED OR RIPPED 1/4 TO 1/2 INCH DEEP AROUND THE EDGES OF THE ROOT BALL AT 3 TO 4 LOCATIONS AROUND THE EDGES OF THE ROOT BALL.

4. BACKFILL SOIL SHALL BE COMPOSED OF 50 PERCENT NATIVE SOIL AND 50□ TOPSOIL. IF NATIVE SOIL IS GREATER THAN 50 PERCENT ROCK THEN TOPSOIL SHALL BE USED.

5. PRIOR TO BACKFILLING, ALL BURLAP □ WIRE BASKETS SHALL BE REMOVED FROM THE BALL OR ROOT SYSTEM AVOIDING DAMAGE TO THE ROOT SYSTEM.

6. BACKFILL SOIL SHALL BE CAREFULLY WORKED AROUND AND OVER THE PLANT ROOTS AND THOROUGHLY AND PROPERLY SETTLED BY FIRMING, HAND TAMPING AND "WATERING IN".

7. A 6" MINIMUM HIGH COMPACTED EARTH BERM OR SAUCER, CONSISTING OF BACKFILL EXCAVATED FROM THE PIT, SHALL BE FORMED AROUND THE EDGE OF THE PLANT PIT TO AID IN WATER RETENTION AND TO PROVIDE SOIL SETTLING ADJUSTMENTS. PLANTS SMALLER THAN 1 GAL. DO NOT RE□UIRE A SAUCER.

8. SOIL EXCAVATED FROM THE PLANT PIT WILL BE HANDLED DELIBERATELY TO FORM THE PLANT SAUCER AND WILL NOT BE CARELESSLY SPREAD OUT OR COVER EXISTING VEGETATION OR SEEDING AREAS. WHEN INTER-PLANTING IN EXISTING, MATURE GRASSLAND OR WETLAND, EXCAVATED SOIL WILL BE PLACED ON A TARP OR SIMILAR TO AVOID INDISCRIMINATE SPOILS FROM BURYING SAID EXISTING VEGETATION. EXCESS SOIL EXCAVATED FROM THE PLANT PIT THAT IS NOT USED TO TO FORM THE SAUCER WILL BE HAULED AWAY FROM THE PROJECT SITE AND DISPOSED OF PROPERLY. THE PLANT SAUCER AND BASIN WILL BE SEEDED.

8. ALL PLANT MATERIAL SHALL BE WATERED IMMEDIATELY AFTER BACKFILLING UNTIL COMPLETELY SATURATED. **SEE WATERING PARAMETERS.**

□. WOOD MULCH SHALL BE PLACED WITHIN 48 HOURS AFTER PLANTING. MULCH, SHALL BE WITHIN THE PLANT SAUCER TO A MINIMUM DEPTH OF 4 UNIFORM INCHES.

10. PRUNING SHALL BE ACCOMPLISHED BY TRAINED AND EXPERIENCED PERSONNEL. ONLY DEAD OR BROKEN MATERIAL SHALL BE PRUNED FROM INSTALLED PLANTS. THE TYPICAL GROWTH HABIT OF INDIVIDUAL PLANT MATERIAL SHALL BE RETAINED.

HARVESTED/SALVAGED PLANTS (IF SPECIFIED):

1. PLANTS HARVESTED/SALVAGED FROM DESIGNATED ON SITE SOURCES SHALL BE CAREFULLY REMOVED FROM THE SITE PRIOR TO ANY CLEARING OR GRUBBING ACTIVITIES.

2. THE ROOTBALL OF HARVESTED PLANTS SHALL BE PRESERVED, AND EITHER BALLED □ BURLAPPED □B□B□OR PLACED IN APPROPRIATELY SI□ED CONTAINERS. □SEE TREE □ SHRUB SALVAGE SCHEDULE□

3. WILLOW ROOTBALLS □I.E., CLUMPS□SHALL BE STOCKPILED, MAINTAINED AND KEPT MOIST UNTIL FINAL PLANTING. ALL OTHER PLANTS □POTTED OR B□B□SHALL BE MAINTAINED IN GOOD HEALTH UNTIL FINAL PLANTING.

4. WILLOW CUTTINGS WILL BE CLEANLY CUT AT THE BASE OF THE WILLOW SHRUB □APPROXIMATELY. 8" FROM THE GROUND SURFACE□PRIOR TO REMOVING WILLOW CLUMP.

5. ALL SALVAGED PLANTS WILL SHALL BE E□UIVALENT IN □UALITY AND HANDLED, PLANTED AND MAINTAINED WITH THE SAME CARE AS A NURSERY GROWN PLANT MATERIAL..

MAINTENANCE :

1. ALL PLANTED MATERIAL AND SEEDED AREAS SHALL BE WARRANTED AND MAINTAINED BY THE CONTRACTOR UNTIL FINAL ACCEPTANCE AND THEREAFTER UNTIL PERFORMANCE CRITERIA ARE MET OR A **PERIOD OF 2 FULL GROWING SEASONS** FOLLOWING INSTALLATION, WHICHEVER COMES FIRST. REFER TO PERFORMANCE CRITERIA □WARRANTY□NOTES.

2. MAINTENANCE TASKS WILL INCLUDE WEED CONTROL, SEEDING □ MULCH REPAIR, PLANTING SAUCER REPAIR, WATERING OF PLANTINGS, AND PLANT REPLACEMENT □IF NECESSARY□

WEED CONTROL:

1. NOXIOUS □ RESTRICTED WEEDS SHALL BE MONITORED □ CONTROLLED BY A □UALIFIED WEED MANAGEMENT SPECIALIST WHERE WEEDS PREVENT THE ESTABLISHMENT OF NATIVE STANDS OF VEGETATION. THE AREA WHERE WEEDS SHALL BE MANAGED INCLUDES□

- THE ACTIVE FOOTPRINT OF THE PROJECT AS DEFINED BY THE LIMITS OF DISTURBANCE □LOD□□
- ANY AREAS DISTURBED BY THE CONTRACTOR OUTSIDE OF THE LOD□
- ADJACENT, WEED INFESTED AREAS WITHIN 100 FEET OF THE LOD□AND
- ANY AREAS SPECIFICALLY INDICATED ON THE PLANS.

POTENTIAL CONTROLS SHALL INCLUDE□

A. MOWING ENTIRE SEEDED AREAS □TO CONTROL ANNUAL WEEDS PRIOR TO SEED SET□
B. MOWING LOCALI□ED INFESTATIONS WITH A STRING TRIMMER.
C. HAND-DIGGING OR PULLING OF THE ROOTS.
D. HERBICIDE APPLICATION OF WATER SAFE OR OTHER APPROVED HERBICIDES □DEPENDING ON WEED TYPE□INCLUDING, BUT NOT LIMITED TO CANADA THISTLE, TOADFLAX, KNAPWEED, LEAFY SPURGE, AND LAMBS □UARTERS. A LICENSED HERBICIDE/PESTICIDE APPLICATOR MAY BE RE□UIRED.

SEEDING MAINTENANCE:

1. BARREN AREAS GREATER THAN **FIVE (5) SQUARE FEET**, OR THOSE AREAS THAT FAIL TO PRODUCE A SATISFACTORY STAND OF NATIVE GRASSES OR GRASS-LIKE SPECIES SHALL BE RESEEDED AND MULCHED ACCORDING TO THESE SPECIFICATIONS.

2. GULLY, RILL AND EROSIONAL AREAS WILL BE REPAIRED AS NECESSARY UNTIL PLANTS HAVE ESTABLISHED AND EROSION PROBLEMS CEASE. EROSION CONTROL BLANKET AND/OR FABRIC MAY NEED TO BE INSTALLED, REINSTALLED OR REPAIRED.

PLANTING SAUCER MAINTENANCE:

1. TWICE PER YEAR □IN APRIL AND AUGUST□, ALL PLANTING SAUCERS SHALL BE INSPECTED AND THE FOLLOWING COMPLETED□

A. REMOVAL □BY PULLING OR STRING TRIMMER, DEPENDING ON CONDITIONS□OF ANY PLANTS THAT ARE NOT OF THE SPECIES PLANTED.

B. RE-BUILDING OF SAUCERS AND REPAIR OF BLOW-OUTS, IF NEEDED, TO A MINIMUM HEIGHT OF 6 INCHES.

C. APPLICATION OF ADDITIONAL WOOD MULCH UP TO THE 4 INCHES THAT MAY HAVE BLOWN AWAY OR BEEN DISPLACED.

D. OBSERVATION OF THE HEALTH OF TREES AND REPORTING TO THE CLIENT AND DESIGNER IF ANY EVIDENCE OF DAMAGE IS NOTICED.

WATERING:

ALL WOODY PLANT MATERIAL SPECIFIED, INCLUDING TREES, SHRUBS, CUTTINGS, AND POLES SHALL BE WATERED BY THE CONTRACTOR BY HAND, HOSE, BUCKET, PORTABLE OR FIXED PUMP, WATER TANK OR TRUCK, TEMPORARY IRRIGATION SYSTEM □OVERHEAD SPRAY AN/OR DRIP□, OR OTHER EFFECTIVE METHOD OR WATERING DEVICE AS DETERMINED BY THE CONTRACTOR, AS NEEDED, UNTIL FINAL ACCEPTANCE.

NOTE: CLIENT WILL MAKE AVAILABLE AN ON-SITE WATER SOURCE OR WATER RIGHTS THAT CAN BE USED TO IRRIGATE AND MAINTAIN SEEDING AREAS AND PLANT MATERIAL.

THEREAFTER, THE CONTRACTOR SHALL CONTINUE TO WATER ALL PLANT MATERIALS ACCORDING TO THE FOLLOWING GENERAL PARAMETERS□

1. TREES □ SHRUBS

YEAR 1 - WATERING WILL NEED TO OCCUR ON THE FOLLOWING SCHEDULE DURING THE FIRST GROWING SEASON□

- NOVEMBER - FEBRUARY□ONCE EVERY THREE WEEKS
- MARCH - MAY□ONCE EVERY TWO WEEKS
- JUNE - AUGUST□ONCE EVERY WEEK
- SEPTEMBER - OCTOBER□ONCE EVERY TWO WEEKS

YEAR 2 - WATERING WILL NEED TO OCCUR ON THE FOLLOWING SCHEDULE DURING THE SECOND GROWING SEASON□

- NOVEMBER - FEBRUARY□ONCE EVERY FOUR WEEKS
- MARCH - MAY□ONCE EVERY THREE WEEKS
- JUNE - AUGUST□ONCE EVERY TWO WEEKS
- SEPTEMBER - OCTOBER□ONCE EVERY THREE WEEKS

THE SUBCONTRACTOR SHALL DILIGENTLY MONITOR THE PLANTS, SOIL MOISTURE LEVELS AND THE AMOUNT OF NATURAL PRECIPITATION THEY ARE RECEIVING. IF TREES □ SHRUBS NEED TO BE WATERED MORE OR LESS FRE□UENTLY THAN OUTLINED ABOVE, THE CONTRACTOR SHALL MAKE ADJUSTMENTS TO THE SCHEDULE ACCORDINGLY TO ENSURE THAT THE PLANTS ARE WATERED APPROPRIATELY.

2. WILLOW CLUMPS, CUTTINGS □ TUBLINGS

WILLOW CUTTINGS AND/OR TUBLINGS □IF SOIL IS NOT NATURALLY □ PERSISTENLY SATURATED□SHALL BE WATERED TO COMPLETELY SATURATE THE SOIL AT LEAST ONCE A WEEK.

3. SEEDING AREAS

SEEDED AREAS SHALL BE ALLOWED TO ESTABLISH NATURALLY WITHOUT ARTIFICIAL/SUPPLEMENTAL IRRIGATION FOR THE FIRST 2 GROWING SEASONS.

WATER SHALL BE APPLIED USING A METHOD DETERMINED BY THE SUBCONTRACTOR AT A FRE□UENCY AND TIME OF DAY □EARLY MORNING OR LATE EVENING□TO ENSURE THAT SEEDLINGS THRIVE. THE DURATION OF EACH IRRIGATION SESSION SHALL NOT PRODUCE GULLIES, RILLS OR OTHERWISE ERODE THE SOIL.

WATERING PARAMETERS:

1. AT EACH WATERING, WOODY PLANTS SHALL RECEIVE THE FOLLOWING MINIMUM AMOUNTS OF WATER BASED ON CONTAINER SI□E OR AN AMOUNT SUFFICIENT TO SATURATE THE SOIL WITHIN THE PLANTING SAUCER TO A DEPTH OF 12 INCHES□

A. □UART-SI□ED CONTAINERS SHALL RECEIVE 1 GALLON
B. ONE-GALLON SI□ED CONTAINERS SHALL RECEIVE 2.5 GALLONS,
C. FIVE-GALLON SI□ED CONTAINERS SHALL RECEIVE 5 GALLONS
D. SEVEN-GALLON-SI□ED CONTAINERS SHALL RECEIVE 7.5 GALLONS
E. TEN-GALLON SI□ED CONTAINERS SHALL RECEIVE 10 GALLONS
F. 2" CAL-SI□ED TREES SHALL RECEIVE 20 GALLONS
G. TWENTY-FIVE GALLON SI□ED CONTAINERS SHALL RECEIVE 25 GALLONS

2. WATER SHALL BE DISTRIBUTED EVENLY WITHIN THE SAUCER AND NOT BREACH OR DAMAGE THE SAUCER. WATER SHALL BE DISTRIBUTED EVENLY OVER SEEDED AREAS. WATERING SHALL BE ACCOMPLISHED WITHOUT DAMAGE TO EXISTING OR RECENTLY PLANTED VEGETATION.

3. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING THE WATER SOURCE, OBTAINING ANY APPROVALS AND PERMITS FROM THE CLIENT THAT MAY BE RE□UIRED TO USE SAID WATER SOURCE, AND DELIVERY OF THE WATER TO THE SITE.

4. WATERING TUBES SHALL BE INSTALLED ALONG WITH DEEP PLANTED NUSERY STOCK TO ALLOW FOR DEEP WATERING OF THE ROOTBALL DURING TIMES OF DROUGHT. DEEP PLANTED MATERIALS SHALL RECEIVE THE SAME AMOUNT OF WATER AS DESIGNATED ABOVE. □REFER TO DEEP PLANTING DETAIL□

FIGURE N2

TOWN OF LYONS FLOOD RECOVERY
ST. VRAIN CREEK RESTORATION
NOTES/PERFORMANCE SPECIFICATIONS

BY: JBD
DATE: 2-24-16

NO: REVISIONS:
#1 NOTES ADDED
#2
#3
#4

DRAWN BY:
CHECKED BY:
DATE: 11-25-15
PROJECT NO: 2015-5-5

ecos ecosystem services llc
1455 Washburn Street
Erie, Colorado 80516
(p): 970-812-3267

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER	MODEL NO.	DESCRIPTION	DETAIL NO.
	HUNTER	PROS-06-CV-PRS30-R WITH PRO-SPRAY NOZZLE	POPUP SPRAY HEAD	6
L R S	HUNTER	PROS-06-CV-PRS30-R WITH PRO-SPRAY SST, CORNER NOZZLE	POPUP SPRAY HEAD	6
	HUNTER	PROS-12-CV-PRS30-R WITH PRO-SPRAY NOZZLE	HI-POP SPRAY HEAD	7
L R S	HUNTER	PROS-12-CV-PRS30-R WITH PRO-SPRAY SST, CORNER NOZZLE	HI-POP SPRAY HEAD	7
#6 #6 #6	RAIN BIRD	5006-PL-PC-SAM-R-NP-SS WITH #NOZ	GEAR DRIVEN ROTOR	8
#6	RAIN BIRD	5006-PL-FC-SAM-R-NP-SS WITH #NOZ	GEAR DRIVEN ROTOR	8
#6 #6 #6		5012-PL-PC-SAM-R-NP WITH #NOZ	HI-POP GEAR DRIVEN ROTOR	9
#6		5012-PL-FC-SAM-R-NP WITH #NOZ	HI-POP GEAR DRIVEN ROTOR	9
	RAIN BIRD	PESB SERIES W/ FD-TURF	ELECTRIC CONTROL VALVE	10 & 11
	RAIN BIRD	5-NP	QUICK COUPLING VALVE	12
A	RAIN BIRD	ESP-LXD WITH LXMM AND LXMMPED	ELECTRIC CONTROLLER	1 & 2
R	RAIN BIRD	WR2-RFC	RAIN SHUT-OFF DEVICE	3
N/S	MATCO	201X	MANUAL DRAIN VALVE	15
		LINE SIZE - 2½" AND SMALLER	GATE VALVE	13
		LINE SIZE - 3" AND LARGER	GATE VALVE	14
	RAIN BIRD	EFB SERIES W/ FD-TURF	MASTER CONTROL VALVE	5
FS	RAIN BIRD	FS-350B	FLOW SENSOR	4
N/S			THRUST BLOCKS	21
		CLASS 200 BE - 2½" & SMALLER	PVC MAINLINE	19
		CLASS 200 RT - 3" & LARGER	PVC MAINLINE	20
		CLASS 200 BE	PVC LATERAL	19 & 20
		CLASS 160	PVC SLEEVING	22
	TORO	BLUE STRIPE	POLY DRIP TUBING -¾" MIN. WIDTH	16 - 18
	RAIN BIRD	XCZ-PRB-100-COM W/ FD-TURF	DRIP VALVE ASSEMBLY	16 & 11
			DRIP LINE BLOW-OUT STUB	18
N/S	RAIN BIRD	XERI-BUG	DRIP EMITTERS	17
N/S	RAIN BIRD	FD-TURF	VALVE DECODER	10, 11 & 16
N/S	RAIN BIRD	SD-210	SENSOR DECODER	4
N/S	PAIGE	P7072D	2-WIRE DECODER CABLE	4, 5. 10 & 16
G A	RAIN BIRD	LSP1TURF	SURGE PROTECTION	11
	APCO	50 SERIES	AIR RELIEF VALVE	23
P	PRECISION	TBD	PUMP STATION	24

GPM — CONTROLLER & STATION NO.
CONTROL VALVE SIZE

REFER TO SHEET

IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

IRRIGATION CONSTRUCTION NOTES

1. DRAWINGS AND BASE INFORMATION - ALL BASE AND PLANTING INFORMATION HAVE BEEN PROVIDED BY DHM DESIGN. THE CONTRACTOR IS RESPONSIBLE TO NOTIFY HYDROSYSTEMS*KDI OF ANY DISCREPANCIES BETWEEN THE UTILITY OR PLANTING PLANS AND THE IRRIGATION PLAN. IF CONTRACTOR FAILS TO NOTIFY HYDROSYSTEMS*KDI AND MAKES CHANGES TO THE IRRIGATION SYSTEM DESIGN, HE ASSUMES ALL COSTS AND LIABILITIES ASSOCIATED WITH THOSE FIELD CHANGES. REFER TO SPECIFICATIONS FOR ADDITIONAL PROJECT REQUIREMENTS.

2. SYSTEM PRESSURE - HYDROSYSTEMS*KDI WILL COORDINATE WITH WELL DRILLING COMPANY FOR PUMP SIZING AND PRESSURE REQUIRED FOR THE SITE (**TBD** PSI). THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY PRESSURE PRIOR TO COMMENCING ANY CONSTRUCTION AND NOTIFY HYDROSYSTEMS*KDI OF ANY VARIANCE FROM THE STATED PRESSURE IMMEDIATELY. WRITTEN DOCUMENTATION OF PRESSURE TEST AND RESULTS SHALL BE PROVIDED TO HYDROSYSTEMS*KDI AT CONSTRUCTION ONSET. IF CONTRACTOR FAILS TO FIELD VERIFY PRESSURE AND/OR NOTIFY HYDROSYSTEMS*KDI OR ANY VARIATIONS FROM THIS PRESSURE, THEN HE ASSUMES ALL CONSTRUCTION AND ENGINEERING COSTS ASSOCIATED WITH SYSTEM MODIFICATIONS REQUIRED TO ACCOMMODATE ACTUAL SITE PRESSURE. THIS SYSTEM HAS BEEN DESIGNED FOR A REQUIRED STATIC PRESSURE OF **110** PSI MINIMUM.

3. NON-POTABLE WATER SOURCE - THIS SITE HAS BEEN DESIGNED TO BE IRRIGATED WITH NON-POTABLE WATER. ALL CAPS ON HEADS, VALVE HANDLES, VALVE BOX LIDS SHALL BE CONSTRUCTED OF PURPLE MATERIALS AND LABELED TO INDICATE NON-POTABLE WATER SUPPLY. ALL MAINLINE PIPING SHALL BE HAVE PURPLE MARKING TAPE. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING SIGNS NOTIFYING THE PUBLIC OF THE USE OF NON-POTABLE WATER ON THIS SITE. SEE STATE REGULATIONS FOR CONTENT AND SIZE OF NOTIFICATION SIGNS. INSTALLATION CREWS ARE TO BE INFORMED OF THE USE OF NON-POTABLE WATER.

4. IRRIGATION SYSTEM OPERATION INTENT - THIS IRRIGATION SYSTEM HAS BEEN DESIGNED TO IRRIGATE THE ESTABLISHED LANDSCAPE WITHIN A SIX NIGHT PER WEEK, SIX HOUR PER NIGHT WATERING WINDOW. ESTABLISHMENT WATERING WILL REQUIRE UP TO TWICE AS MUCH IRRIGATION FOR A FOUR TO SIX WEEK PERIOD. THE DESIGN IS BASED ON THE FOLLOWING PROJECTED WEEKLY APPLICATION RATES AFTER ESTABLISHMENT. THESE FIGURES ARE BASED ON A 30-YEAR AVERAGE WEATHER DATA AND WILL NEED TO BE ADJUSTED DUE TO SEASONAL CHANGES AND WEATHER CONDITIONS ABOVE AND BELOW THE AVERAGE VALUES UTILIZED.

BLUEGRASS TURF	2.07" PER WEEK PEAK SEASON
ORNAMENTAL PLANTINGS	0.89" PER WEEK PEAK SEASON
NATIVE SEED MIXES	1.15" PER WEEK PEAK SEASON (TWO SEASONS)

NOTE: IT IS THE INTENT OF THIS DESIGN THAT NATIVE AREAS WOULD ONLY BE IRRIGATED FOR ESTABLISHMENT. SYSTEM WILL REMAIN FOR USE DURING YEARS WITH LESS THAN NORMAL RAINFALL.

4. EQUIPMENT INSTALLATION - IT IS THE INTENT OF THIS DESIGN THAT ALL IRRIGATION EQUIPMENT BE INSTALLED WITHIN PROPERTY LIMITS AND WITHIN LANDSCAPED AREAS. ANY EQUIPMENT OTHER THAN VALVE BOXES OR SLEEVING THAT CONTAINS PIPE OR WIRES SHOWN OUTSIDE OF THESE LIMITS IS SHOWN IN THAT LOCATION FOR GRAPHICAL CLARITY ONLY. ALL VALVE BOXES SHALL BE INSTALLED A MINIMUM OF 2'-0" FROM EDGE OF ANY PAVED SURFACES UNLESS INDICATED ON PLANS. ALL VALVE BOXES SHALL BE PLACED A MINIMUM OF 3'-0" FROM THE CENTERLINE OF ANY DRAINAGE SWALE. ALL VALVE BOXES WITHIN PAVEMENT SHALL BE TIER 15 RATED BOXES FOR HEAVY DUTY NON-DELIBERATE TRAFFIC. BOX LID COLOR SHALL MATCH ADJACENT MATERIALS, I.E. GREEN IN TURF, TAN IN WOOD MULCH, GRAY IN STONE MULCH, PURPLE FOR RECLAIMED WATER SYSTEMS (IF REQUIRED). REFER TO LANDSCAPE PLANS FOR MATERIAL COLORS AND TYPES.

5. MANUAL DRAIN VALVES - CONTRACTOR TO INSTALL ONE MANUAL DRAIN VALVE AT ALL LOW POINTS AND DEAD ENDS OF PRESSURE SUPPLY PIPING TO INSURE COMPLETE DRAINAGE OF SYSTEM. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THESE LOCATIONS IN-FIELD AND INSTALLATION LOCATIONS SHALL BE NOTED ON AS-BUILTS.

6. POP-UP SPRAY NOZZLES - CONTRACTOR TO INSTALL PLASTIC NOZZLES ON ALL POP-UP SPRAY HEADS. INSTALL 15 SERIES NOZZLES ON ALL HEADS SPACED AT 12' TO 14'. INSTALL 12 SERIES NOZZLES ON ALL HEADS SPACED 10' TO 11'. INSTALL 10 SERIES NOZZLES ON ALL HEADS SPACED AT 8' TO 9'. INSTALL 8 SERIES NOZZLES ON ALL HEADS SPACED AT 6' TO 7'. INSTALL 5' NOZZLES ON ALL HEADS SPACED AT 5'. INSTALL SIDE STRIP NOZZLES ON ALL HEADS WITH AN "S" DESIGNATION AND RIGHT AND LEFT CORNER STRIP NOZZLES ON ALL HEADS WITH AN "L" OR "R" DESIGNATION. VARIABLE ARC NOZZLES SHOULD BE UTILIZED ADJACENT TO CURVILINEAR SHRUB BEDS OR FOR ANY ANGLES THAT ARE NOT A STANDARD NOZZLE ANGLE. WHERE INDICATED, INSTALL LOW FLOW SQ SERIES SQUARE NOZZLES AT SPACING SHOWN.

7. DRIP IRRIGATION - REFER TO IRRIGATION DETAIL SHEET FOR DRIP EMITTER QUANTITIES AND PLACEMENT.

8. UNLABELED PIPING - ALL UNLABELED LATERAL PIPING SHALL BE 1" MINIMUM UNLESS OTHERWISE NOTED.

9. SLEEVING - ALL SLEEVING UNDER PAVED SURFACES SHOWN ON PLANS IS BY CONTRACTOR UNLESS OTHERWISE NOTED. SLEEVING SHALL BE INSTALLED IN THE SIZES AND QUANTITIES SHOWN ON PLANS OR BASED ON THE SCHEDULE BELOW. WHERE SLEEVES ARE SHOWN, BUT NOT LABELED, FOLLOW THE SCHEDULE BELOW. ALL MAINLINE, CONTROL WIRES AND DRIP LINES UNDER PAVED SURFACES ARE TO BE INSTALLED IN SLEEVING. ALL MAINLINE SLEEVE LOCATIONS TO INCLUDE A SEPARATE WIRE SLEEVE.

SLEEVED PIPE SIZE/WIRE QUANTITY	REQUIRED SLEEVE SIZE & (QUANTITY)
¾" - 1¼" PIPING	2" PVC (1)
1½" - 2" PIPING	4" PVC (1)
2½" - 3" PIPING	6" PVC (1)
4" PIPING	8" PVC (1)
6" PIPING	10" PVC (1)
2-WIRE CABLE	3" PVC (1)
COMMUNICATION CABLE	3" PVC (1)

10. 2-WIRE SYSTEM NOTES - CONTRACTOR SHALL INSTALL ALL TWO-WIRE COMPONENTS PER MANUFACTURES RECOMMENDATIONS AND STANDARDS.
    - 10.1. CONTRACTOR SHALL USE ONLY MANUFACTURED 2-WIRE DECODER CABLE (SEE SCHEDULE FOR SPECIFIC 2-WIRE CABLE).
    - 10.2. ONLY USE SINGLE STATION DECODERS (SEE SCHEDULE FOR SPECIFIC MODEL).
    - 10.3. ONLY USE SENSOR DECODER FOR FLOW SENSOR (SEE SCHEDULE FOR SPECIFIC MODEL) IF INDICATED ON PLANS.
    - 10.4. LOOP 5' OF 2-WIRE DECODER CABLE INTO ALL VALVE BOXES (WITH DECODERS AND SPLICES) FOR MAINTENANCE.
    - 10.5. USE ONLY 3M DBR-6 WATERPROOF CONNECTORS ON ALL WIRE SPLICES AND ALL WIRE SPLICES ARE TO BE MADE WITHIN A VALVE BOX WITH CONTROL VALVES OR A SEPARATE 10" ROUND VALVE BOX FOR WIRE SPLICES.
    - 10.6. INSTALL SURGE PROTECTOR RODS OR PLATES 8 LF. FROM VALVES, DECODERS, AND COMMUNICATION WIRE.
    - 10.7. GROUND ALL DECODERS AND DECODER WIRE A MINIMUM OF EVERY 500' OF WIRE OR EVERY 8TH DECODER AND AT ALL ENDS OF 2-WIRE DECODER CABLE RUN.

11. ADJUSTMENT - CONTRACTOR SHALL FINE TUNE/ADJUST THE IRRIGATION SYSTEM TO REDUCE/AVOID OVERSPRAY ONTO HARD SURFACES BY ADJUSTING NOZZLE DIRECTION AND NOZZLE RADIUS.

12. PLANS AND SPECIFICATIONS - CONTRACTOR RESPONSIBLE TO ENSURE WORK CONFORMS TO PLANS AND SPECIFICATIONS. AT ONSET OF CONSTRUCTION, VERIFY PLANS ARE CURRENT. WHERE REQUIRED BY CITY, CONTRACTOR SHALL CONSTRUCT ONLY OFF CITY STAMPED PLANS. REVISIONS TO CITY STAMPED PLANS SHALL CONFORM TO CITY FIELD CHANGE PROCEDURES AND DOCUMENTATION.

13. EXISTING IRRIGATION DAMAGE - CONTRACTOR SHALL REPAIR OR REPLACE ANY EXISTING IRRIGATION SYSTEMS DAMAGED DURING NEW INSTALLATION. REPAIR OR REPLACEMENT SHALL BE DETERMINED BY OWNER OR OWNER'S REPRESENTATIVE AND PAID FOR BY THE LANDSCAPE CONTRACTOR.

14. EXISTING IRRIGATION COORDINATION - EXISTING IRRIGATION SYSTEM SHALL NOT BE TURNED OFF FOR MORE THAN 24 HOURS MAXIMUM. CONTRACTOR SHALL COORDINATE TURN OFF OF SYSTEM WITH OWNER OR MAINTENANCE STAFF 72 HOURS PRIOR TO ANY NEW CONSTRUCTION.

15. SIMULTANEOUS ZONE OPERATION - THIS IRRIGATION SYSTEM HAS BEEN DESIGNED TO OPERATE MULTIPLE ZONES SIMULTANEOUSLY BASED ON INDIVIDUAL ZONE FLOW. THE DESIGN IS INTENDED TO OPERATE MULTIPLE VALVES, UP TO THE MAXIMUM FLOW IN THE POINT OF CONNECTION NOTE. REFER TO CONTROLLER SPECIFICATION FOR MAXIMUM SIMULTANEOUS VALVE COUNT.

811
Know what's below.
Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

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Lakewood, Colorado 80401
303-980-5327
303-980-5384 (fax)

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900 S. Broadway
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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD
REVISIONS: .
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: IRRIGATION NOTES & SCHEDULE
SHEET NUMBER: IR-0

KEY MAP

REFER TO SHEET	
IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

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NO IRRIGATION ON THIS SHEET

NORTH

0 15' 30' 60'
SCALE: 1"=30'

MATCHLINE - SEE SHEET IR-3

MATCHLINE - SEE SHEET IR-2

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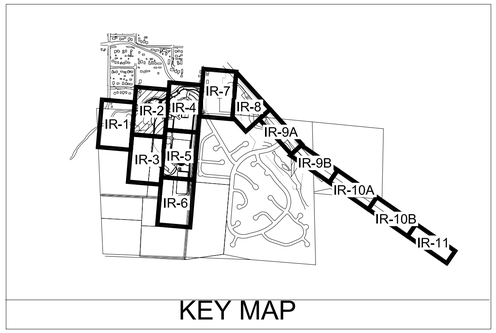
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD
REVISIONS:
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: IRRIGATION PLAN
SHEET NUMBER: IR-1



KEY MAP

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REFER TO SHEET

IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

MATCHLINE - SEE SHEET IR-1

MATCHLINE - SEE SHEET IR-3

MATCHLINE - SEE SHEET IR-5

MATCHLINE - SEE SHEET IR-4

NORTH

SCALE: 1"=30'

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Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD

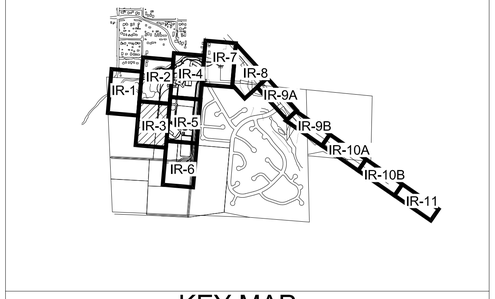
REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
IRRIGATION PLAN

SHEET NUMBER:
IR-2
SHEET x1 OF XX

XREFS
IMAGES
FILE NAME:
PLOT DATE: Jun 6, 2016 - 9:53am



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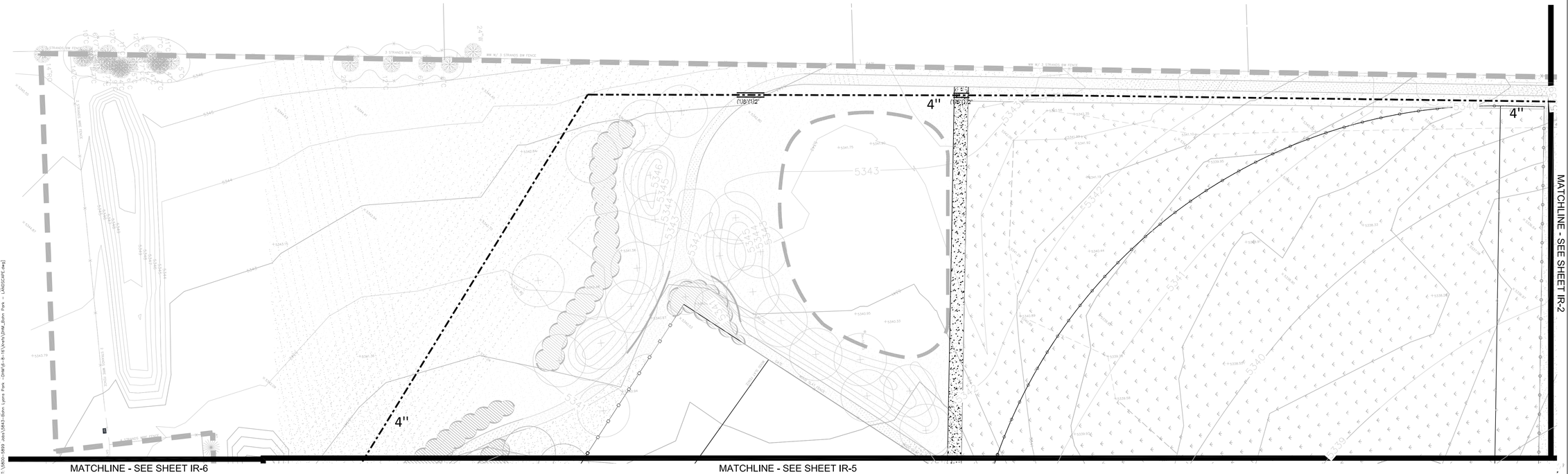

NORTH

0 15' 30' 60'

SCALE: 1"=30'

REFER TO SHEET	
IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: IRRIGATION PLAN

SHEET NUMBER: IR-3

SHEET x1 OF XX

XREFS
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IMAGES
X-Existing Trail Aerial.jpg
X-Existing Trail Aerial.jpg

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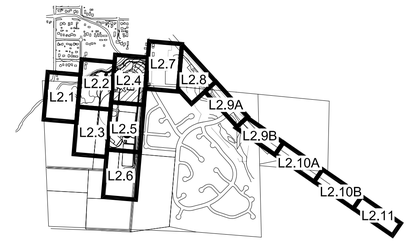
PLOT DATE: Jun 10, 2016 - 10:13pm

MATCHLINE - SEE SHEET IR-2

MATCHLINE - SEE SHEET IR-5

MATCHLINE - SEE SHEET IR-7



KEY MAP

Bohn Park Pump Station		
TAP #	110	PRESSURE REQUIRED
1	450	GPM MAXIMUM FLOW

REFER TO SHEET	
IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

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NORTH

0 15' 30' 60'
SCALE: 1"=30'

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: IRRIGATION PLAN

SHEET NUMBER: IR-4

SHEET x1 OF XX

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DHM_Bohn Park - 14402LSAT [T:\1800-1899 Jobs\1843-Bohn Lyons Park - DHM\X-R-15\Work\DHM_Bohn Park - 14402SAT.dwg]

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PLOT DATE: Jun 6, 2016 - 10:11am

MATCHLINE - SEE SHEET IR-3

MATCHLINE - SEE SHEET IR-2

MATCHLINE - SEE SHEET IR-6

MATCHLINE - SEE SHEET IR-4

4"

2"

4"

CONNECT TO EXISTING DRIP SYSTEM LOCATED WITHIN THIS AREA AT THIS APPROXIMATE LOCATION.

CONNECT TO EXISTING MULTI-USE SPORTS FIELD IRRIGATION SYSTEM LOCATED WITHIN THIS AREA AT THIS APPROXIMATE LOCATION.

4"

(1)8"(1)2"

4"

(1)8"(1)2"

4"

HP

IMAGES
...\Images\Existing Trail Aerial.jpg
...\Images\Existing Trail Aerial.jpg

XREFS
x:\...\Landscape [T:\5800-5899 Jobs\5843-Bohn Lyons Park - DHM\5-8-16\Work\2010-1 base.dwg, 6/20/16 dwg]
x:\...\Ex Flood [T:\5800-5899 Jobs\5843-Bohn Lyons Park - DHM\5-8-16\Work\Ayres Floodplain - NAD88_2727(5).dwg]
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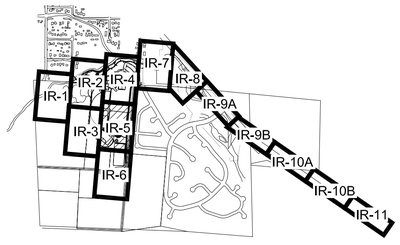
PLOT DATE:
Jun 10, 2016 - 10:13am



KEY MAP

REFER TO SHEET

IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

811
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Lakewood, Colorado 80401
303-980-5327
303-980-5384 (fax)

NORTH

0 15' 30' 60'
SCALE: 1"=30'

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

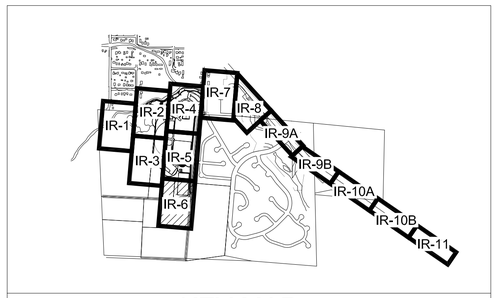
PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD

REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
IRRIGATION PLAN

SHEET NUMBER:
IR-5
SHEET x1 OF XX



KEY MAP

REFER TO SHEET

IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

MATCHLINE - SEE SHEET IR-3

MATCHLINE - SEE SHEET IR-5

NO IRRIGATION ON THIS SHEET

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...\Images\Existing Trail Aerial.jpg

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DHM_Bohn Park - LANDSCAPE [T:\3800-3899 Jobs\3843-Bohn Lyons Park - DHM\6-8-16\Vwrk\DHM_Bohn Park - LANDSCAPE.dwg]

FILE NAME
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PLOT DATE: Jun 10, 2016 - 9:11am

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD

REVISIONS:

ISSUE DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
IRRIGATION PLAN

SHEET NUMBER:
IR-6
SHEET x1 OF XX

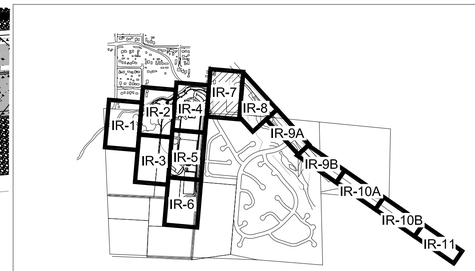
MATCHLINE - SEE SHEET IR-4

2"

2"

2"

CONNECT TO EXISTING DRIP SYSTEM TO PLANTERS ALONG HWY 36 AT THIS APPROXIMATE LOCATION.



KEY MAP

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Lakewood, Colorado 80401
303-980-5327
303-980-5384 (fax)

NORTH

0 15' 30' 60'

SCALE: 1"=30'

REFER TO SHEET

IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

MATCHLINE - SEE SHEET IR-8

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD

REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
IRRIGATION PLAN

SHEET NUMBER:
IR-7
SHEET x1 OF XX

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PLOT DATE: Jun 6, 2016 10:11am

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FILE NAME
PLOT DATE:

MATCHLINE AA - SEE SHEET IR-9

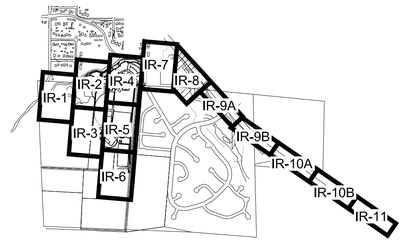
MATCHLINE - SEE SHEET IR-7

MATCHLINE - SEE SHEET L1.5

NO IRRIGATION ON THIS SHEET

REFER TO SHEET

IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS



KEY MAP

NORTH

0 15' 30' 60'

SCALE: 1"=30'

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD

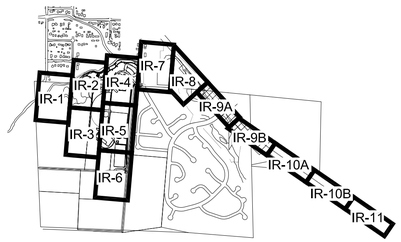
REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
IRRIGATION PLAN

SHEET NUMBER:
IR-8

SHEET x1 OF XX



KEY MAP

MATCHLINE BB - SEE SHEET L1.10

811
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303-980-5384 (fax)

IMAGES
..\Images\Existing Trail Aerial.jpg
..\Images\Existing Trail Aerial.jpg

XREFS
X-Ex Conditions [T:\3800-3899 Jobs\3843-Bohn Lyons Park - DHM\E-B-1E\Work\1200's Imagine 2020\E-Base.dwg]
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MATCHLINE AA - SEE ABOVE, THIS SHEET

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PLOT DATE: Jun 10, 2016 - 10:11am

REFER TO SHEET	
IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

NO IRRIGATION ON THIS SHEET

NORTH

0 15' 30' 60'
SCALE: 1"=30'

MATCHLINE AA - SEE BELOW, THIS SHEET

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD
REVISIONS:
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: IRRIGATION PLAN
SHEET NUMBER: IR-9
SHEET x1 OF XX

MATCHLINE - SEE SHEET IR-8

MATCHLINE CC - SEE BELOW THIS SHEET

MATCHLINE BB - SEE SHEET L1.9

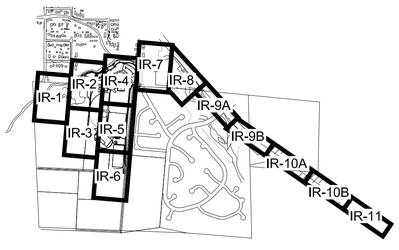
NO IRRIGATION ON THIS SHEET

NORTH

0 15' 30' 60'

SCALE: 1"=30'

MATCHLINE DD - SEE SHEET IR-11



KEY MAP

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303-980-5327
303-980-5384 (fax)

REFER TO SHEET

IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

NORTH

0 15' 30' 60'

SCALE: 1"=30'

MATCHLINE CC - SEE ABOVE THIS SHEET

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2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD

REVISIONS:

SUBMISSION DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
IRRIGATION PLAN

SHEET NUMBER:
IR-10

SHEET x1 OF XX

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x-Base WWTP [T:\1ARCH-5899 Jobs\5843-Bohn Lyons Park - DHM\5-8-16\Work\Site_web1728.dwg]
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IMAGES
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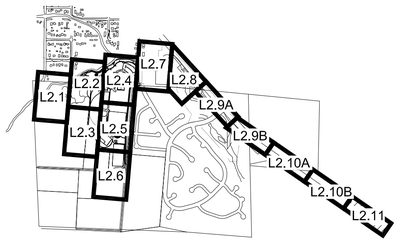
PLOT DATE: Jun 10, 2016 - 10:11pm



KEY MAP

NO IRRIGATION ON THIS SHEET

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IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

NORTH

0 15' 30' 60'

SCALE: 1"=30'

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303-980-5384 (fax)

MATCHLINE DD - SEE SHEET IR-10

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD
REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
IRRIGATION PLAN

SHEET NUMBER:
IR-11

SHEET x1 OF XX

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DHM_Bohn Park - LANDSCAPE [T:\SBCO-5899 Jobs\5843-Bohn Lyons Park - DHM\X-8-15\Work\DHM_Bohn Park - LANDSCAPE.dwg]

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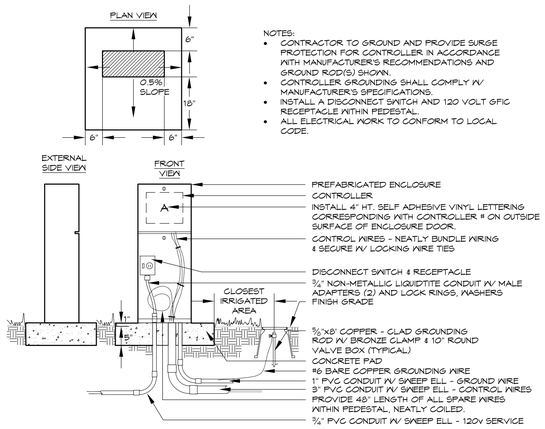
PLOT DATE: Jun 6, 2016 - 9:53am

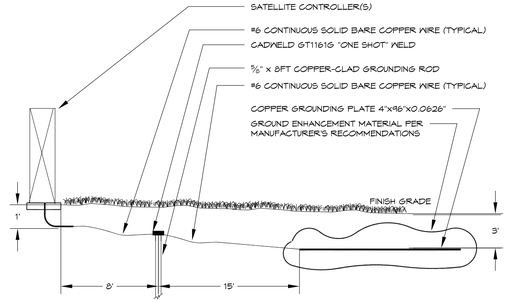


NOTES:
- CONTRACTOR TO GROUND AND PROVIDE SURGE PROTECTION FOR CONTROLLER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND GROUND ROD(S) SHOWN.
- CONTROLLER GROUNDING SHALL COMPLY W/ MANUFACTURER'S SPECIFICATIONS.
- INSTALL A DISCONNECT SWITCH AND 120 VOLT GFIC RECEPTACLE WITHIN PEDESTAL.
- ALL ELECTRICAL WORK TO CONFORM TO LOCAL CODE.

ELECTRIC CONTROLLER

PEDESTAL

1



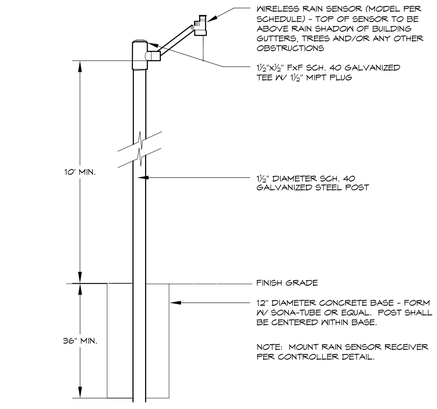
GROUNDING PLATE DESIGN CONSISTS OF ONE VERTICAL 8-FOOT COPPER CLAD GROUNDING ROD (AT LEAST EIGHT FEET FROM THE EQUIPMENT), AND ONE COPPER GROUNDING PLATE PER 40 STATIONS REQUIRING GROUNDING. INSTALL GROUNDING PLATE HORIZONTALLY, THREE FEET DEEP AND 15' FROM THE GROUNDING ROD. SHOULD MULTIPLE RODS/PLATES BE REQUIRED, THEY SHALL BE PLACED A MINIMUM OF 3 LINEAR FEET FROM EACH OTHER. REFER TO ASIC STANDARDS FOR MORE INFORMATION.

NOTE: PERFORM CADWELD CONNECTION TO GROUNDING ROD(S) AND PLACEMENT OF GROUNDING PLATE(S) IN OWNER'S PRESENCE PRIOR TO BACKFILL.

CONTROLLER GROUNDING

TWO-WIRE SYSTEM

2

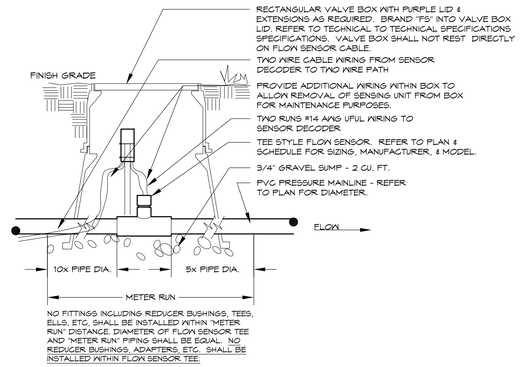


NOTE: MOUNT RAIN SENSOR RECEIVER PER CONTROLLER DETAIL.

WEATHER SENSOR

POLE MOUNTED - Wireless

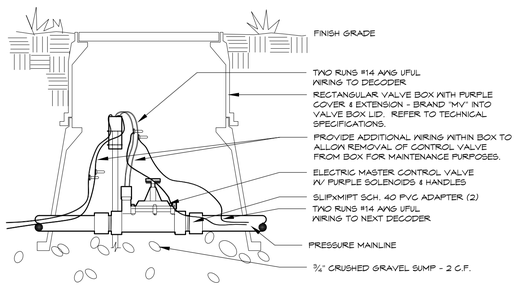
3



NO FITTINGS INCLUDING REDUCER BUSHINGS, TEES, ELLS, ETC, SHALL BE INSTALLED WITHIN "METER RUN" DISTANCE. DIAMETER OF FLOW SENSOR TEE AND "METER RUN" PIPING SHALL BE EQUAL. NO REDUCER BUSHINGS, ADAPTERS, ETC. SHALL BE INSTALLED WITHIN FLOW SENSOR TEE.

FLOW SENSOR

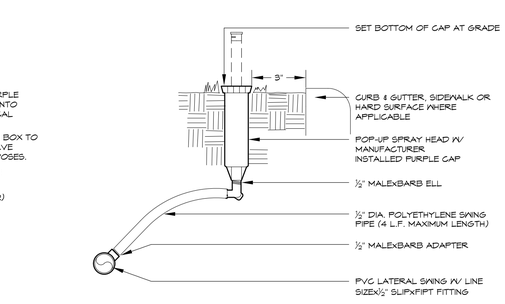
4



MASTER VALVE

TWO WIRE SYSTEM - NON-POTABLE TAPS 2" & SMALLER

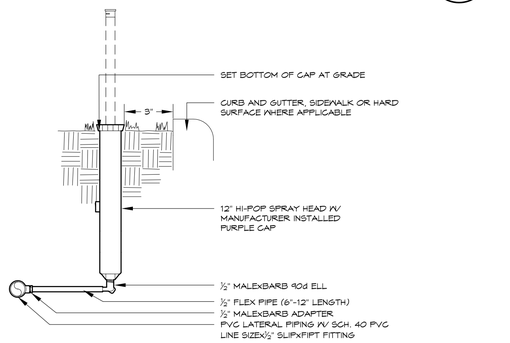
5



NOTE:
- SET HEAD PERPENDICULAR TO FINISH GRADE.
- APPLY TEFLON TAPE TO MALE PVC THREADED FITTINGS.
- DOUBLE CLAMP ½" & 2" DIAMETER FITTINGS.

POP-UP SPRAY HEAD

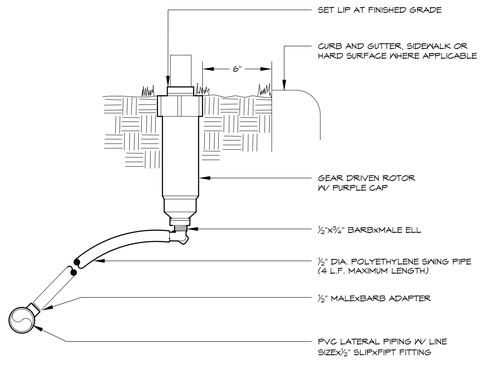
6



NOTE:
- SET HEAD PERPENDICULAR TO FINISH GRADE SWING.
- FLEX PIPE SHALL BE ATTACHED TO BOTTOM SPRAY HEAD INLET ONLY.
- APPLY TEFLON TAPE TO ALL MALE PVC THREADED FITTINGS AND NIPPLES.

HI-POP SPRAY HEAD

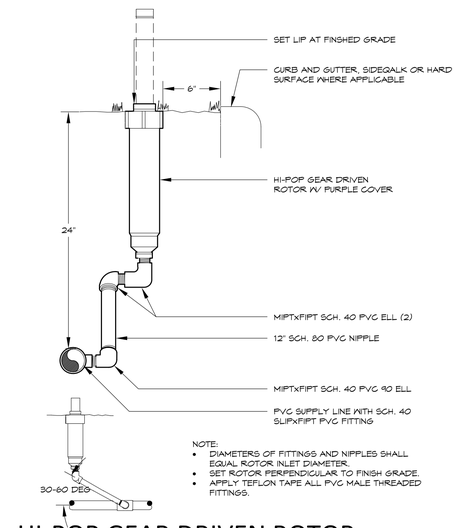
7



SET HEAD PERPENDICULAR TO FINISH GRADE

GEAR DRIVEN ROTOR

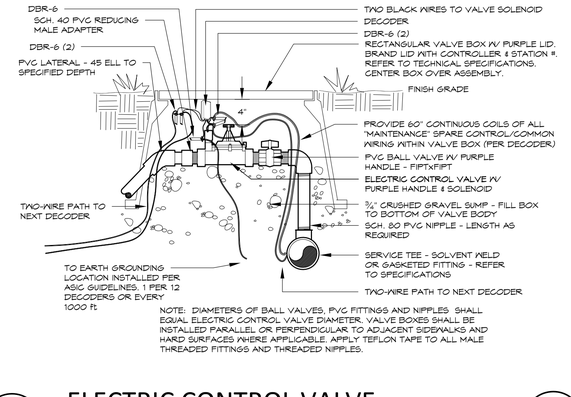
8



NOTE:
- DIAMETERS OF FITTINGS AND NIPPLES SHALL EQUAL ROTOR INLET DIAMETER.
- SET ROTOR PERPENDICULAR TO FINISH GRADE.
- APPLY TEFLON TAPE ALL PVC MALE THREADED FITTINGS.

HI-POP GEAR DRIVEN ROTOR

9

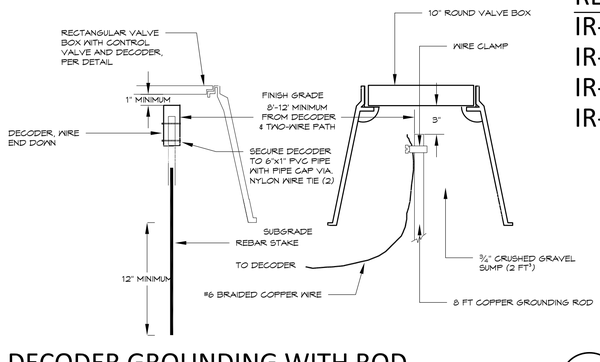


NOTE: DIAMETERS OF BALL VALVES, PVC FITTINGS AND NIPPLES SHALL EQUAL ELECTRIC CONTROL VALVE DIAMETER. VALVE BOXES SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO ADJACENT SIDEWALKS AND HARD SURFACES WHERE APPLICABLE. APPLY TEFLON TAPE TO ALL MALE THREADED FITTINGS AND THREADED NIPPLES.

ELECTRIC CONTROL VALVE

TWO WIRE SYSTEM

10



DECODER GROUNDING WITH ROD

TWO-WIRE SYSTEM

11

REFER TO SHEET

IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD
REVISIONS:
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: IRRIGATION DETAILS
SHEET NUMBER: IR-12
SHEET x1 OF XX

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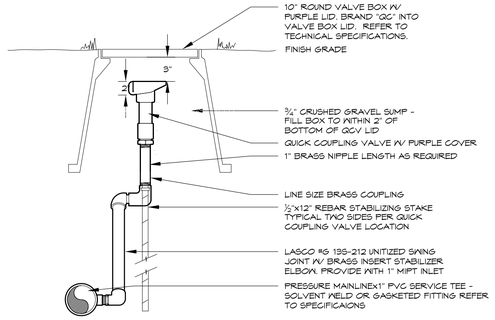
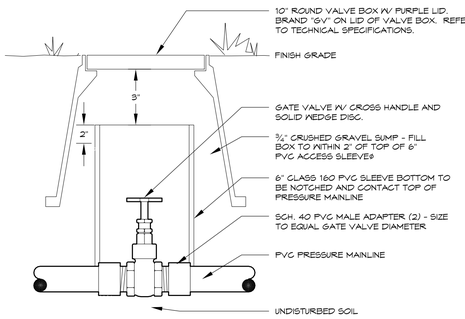


APPLY TEFLON TAPE TO ALL THREADED NIPPLES

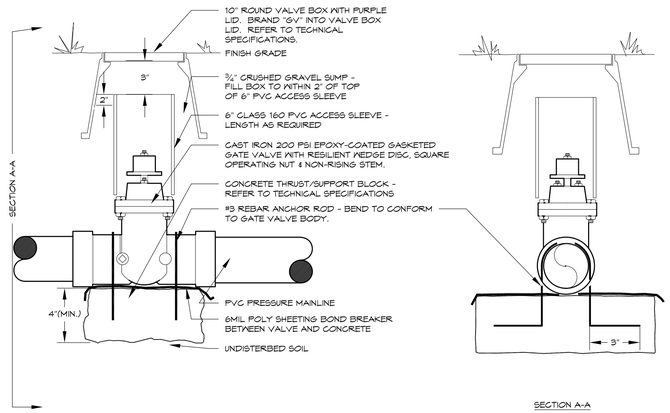
QUICK COUPLING VALVE

12



GATE VALVE

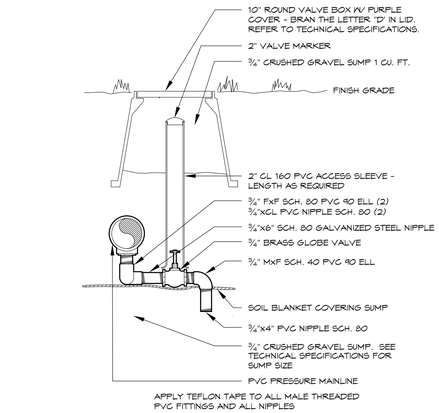
13



GATE VALVE

3" and LARGER

14

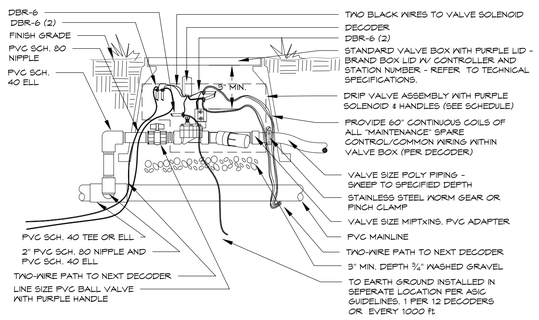


APPLY TEFLON TAPE TO ALL MALE THREADED PVC FITTINGS AND ALL NIPPLES

MANUAL DRAIN VALVE

15

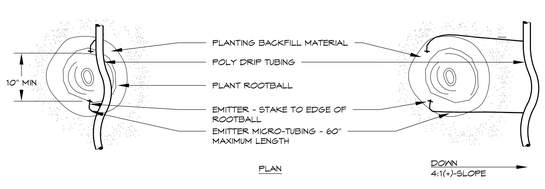
NOTE:
INSTALL ASSEMBLY TO REST ON GRAVEL SUMP. CONTAIN ENTIRE ASSEMBLY WITHIN BOX. NO VALVE BOX EXTENSIONS WILL BE ACCEPTED. PROVIDE 3"-4" CLEARANCE BETWEEN TOP OF CONTROL VALVE SOLENOID AND BOTTOM OF VALVE BOX LID. TOP OF VALVE BOX TO BE FLUSH WITH FINISH GRADE. VALVE BOX SHALL NOT REST ON DRIP TUBING.



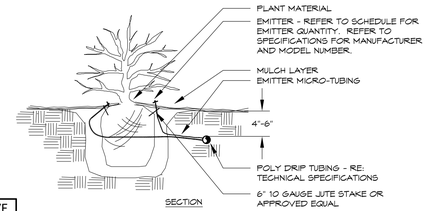
DRIP VALVE

TWO-WIRE SYSTEM

16



PLANT SIZE	EMITTER FLOW RATE	EMITTER QTY. AT MULCHED BED LOCATIONS	EMITTER QTY. AT NATIVE SEED LOCATIONS
1 - 2 GALLON MATERIAL	0.5 GPH	ONE EACH	ONE EACH
5 GALLON MATERIAL	0.5 GPH	TWO EACH	TWO EACH
1½" CALIPER TREE	1.0 GPH	THREE EACH	FOUR EACH
2" CALIPER TREE	1.0 GPH	FOUR EACH	SIX EACH
2½" CALIPER TREE	1.0 GPH	SIX EACH	EIGHT EACH
3" CALIPER TREE	1.0 GPH	EIGHT EACH	TEN EACH
3½" CALIPER TREE	1.0 GPH	NINE EACH	ELEVEN EACH
4" CALIPER TREE	1.0 GPH	TEN EACH	TWELVE EACH
6 FT. CONIFEROUS TREE	1.0 GPH	FOUR EACH	SIX EACH
8 FT. CONIFEROUS TREE	1.0 GPH	SIX EACH	NINE EACH
10 FT. CONIFEROUS TREE	1.0 GPH	EIGHT EACH	TWELVE EACH
12 FT. CONIFEROUS TREE	1.0 GPH	TEN EACH	FOURTEEN EACH

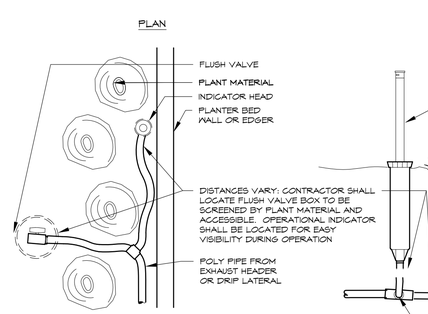


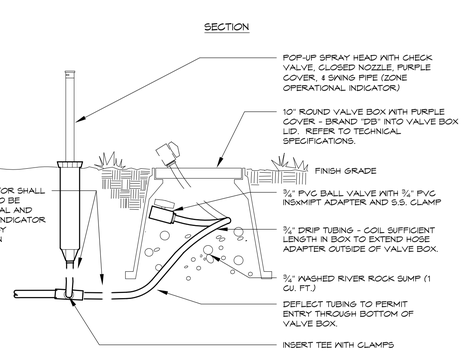
NOTES:
- INSTALL EMITTERS ON OPPOSING SIDES OF ROOTBALL. THREE OR MORE EMITTERS SHALL BE EQUALLY SPACED AROUND ROOT BALL.
- EMITTERS ARE TO BE INSTALLED TO CLEAR SURFACE BY A MINIMUM OF 1" AND A MAXIMUM OF 2".
- FLUSH ALL LINES THOROUGHLY, INCLUDING EMITTER MICRO-TUBING PRIOR TO EMITTER INSTALLATION.
- IF PLANTING ON A 4:1 SLOPE OR STEEPER, INSTALL BOTH EMITTERS ON UPHILL SIDE OF ROOT BALL.
- EMITTERS SHALL BE SELF-FLUSHING, PRESSURE COMPENSATING-TYPE UNLESS NOTED OTHERWISE WITHIN TECHNICAL SPECIFICATIONS.
- DRIP VALVE ZONES ARE DESIGNED TO ACCOUNT FOR DIFFERENCES IN PLANT REQUIREMENTS (HYDROZONES) AND SUN EXPOSURE.
- CONTRACTOR SHALL ENSURE HYDROZONES ARE VALVED SEPARATELY AS SHOWN ON PLAN.
- SITE CONDITIONS MAY DICTATE THAT MULTIPLE SUN EXPOSURES ARE VALVED TOGETHER. DURING THE DESIGN PROCESS, CONTRACTOR SHALL ADJUST EMITTER SCHEDULE AS FOLLOWS:
  - EMITTER QUANTITIES SHALL REMAIN THE SAME BUT EMITTER GALLONAGES SHALL BE DOUBLED FOR PLANTS WITH SOUTH AND WEST EXPOSURES.
  - EMITTER QUANTITIES AND GALLONAGE SHALL BE AS SHOWN IN SCHEDULE FOR PLANTS WITH NORTH AND EAST EXPOSURES.
  - PLANTINGS WITH NORTH AND EAST EXPOSURE SHALL DICTATE VALVE RUN-TIMES AND CONTRACTOR SHALL ADJUST SCHEDULING ACCORDINGLY.

DRIP EMITTER

BELOW GRADE

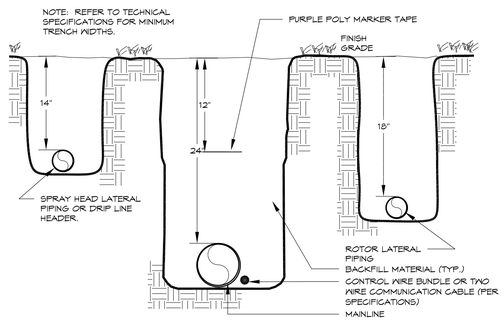
17





DRIP FLUSH VALVE

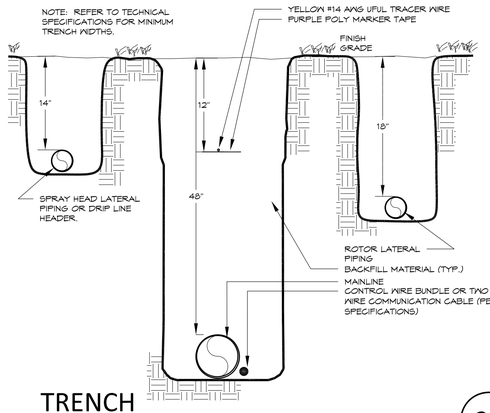
18



TRENCH

2 1/2" & SMALLER

19



TRENCH

3" & LARGER

20

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD

REVISIONS: - - - -

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: IRRIGATION DETAILS

SHEET NUMBER: IR-13

SHEET X1 OF XX

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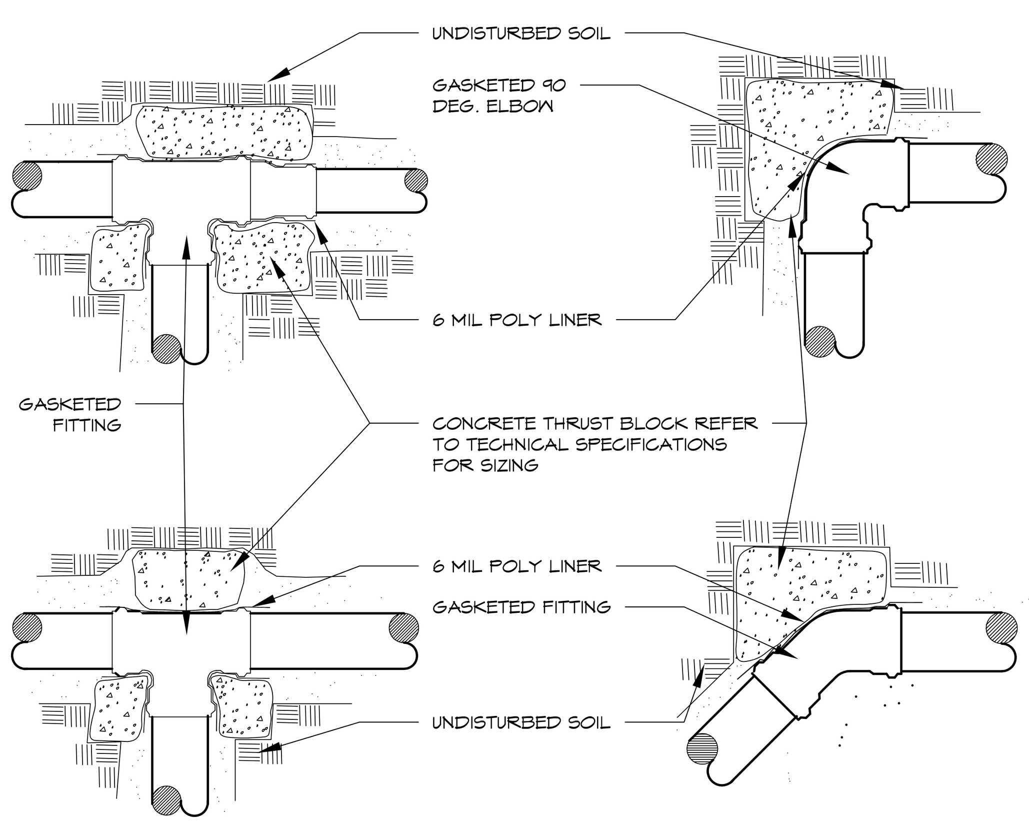
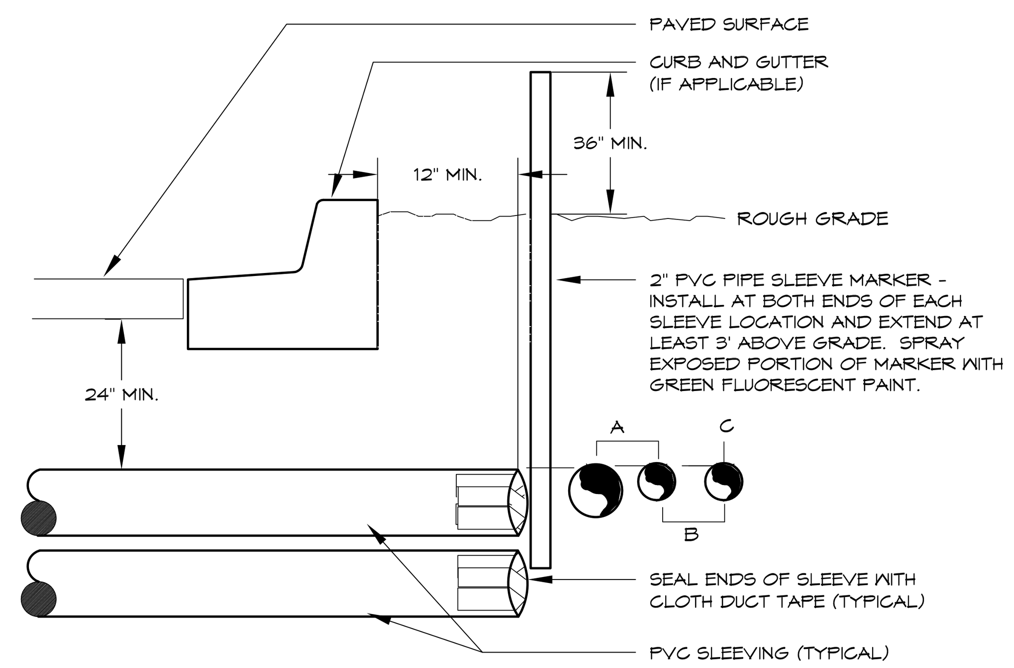


THRUST BLOCKS

21

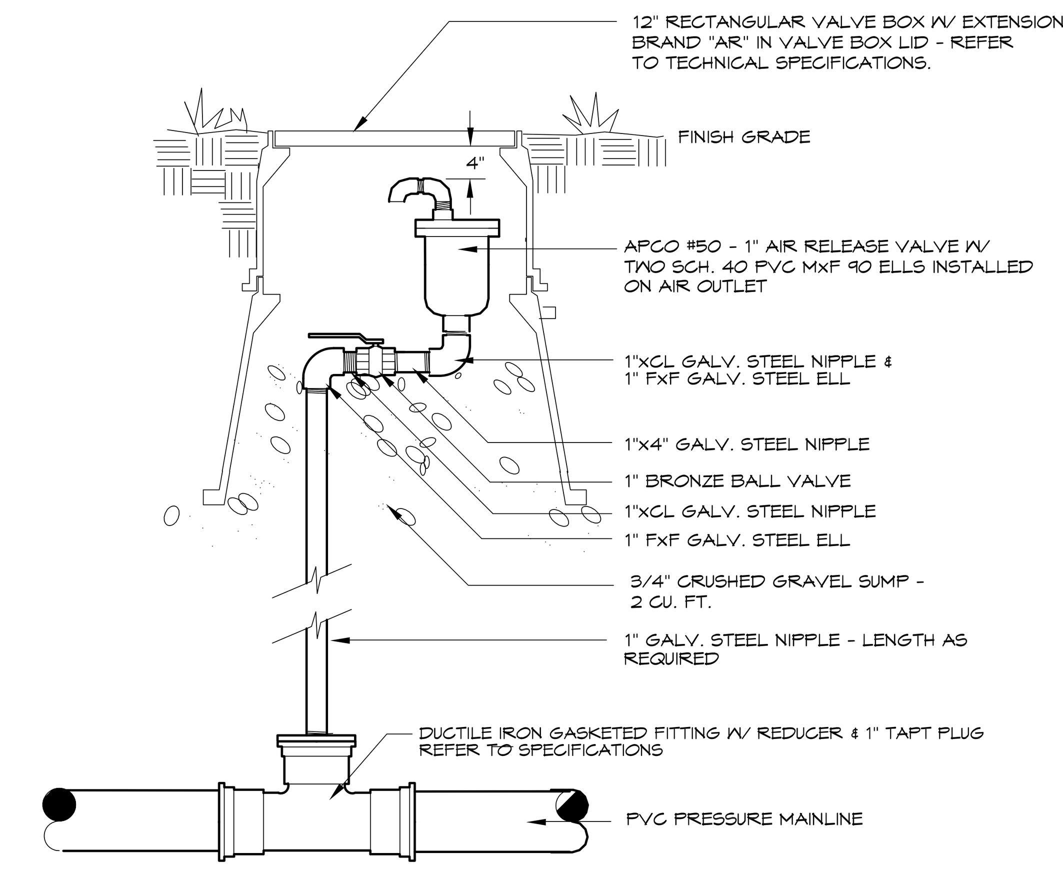


NOTE:

- ALL SLEEVE MATERIAL PER IRRIGATION SCHEDULE, SIZE AS NOTED ON PLAN.
- INSTALL SLEEVES IN SIDE-BY-SIDE CONFIGURATION WHERE MULTIPLE SLEEVES ARE TO BE INSTALLED. SPACE SLEEVES 4" TO 6" APART. DO NOT STACK SLEEVES VERTICALLY.
- CONTRACTOR TO COORDINATE WITH FLATWORK INSTALLER TO BRAND A "V" IN SIDEWALK OR CURB AT BOTH ENDS OF SLEEVE CROSSING.

IRRIGATION SLEEVING

22



NOTE: AIR RELEASE ASSEMBLY SHALL REST ON GRAVEL SUMP
FIELD-LOCATE AIR RELEASE AT HIGH POINT IN MAINLINE PIPING

AIR RELEASE VALVE

23

TBD

PUMP STATION

24

REFER TO SHEET

IR-0	IRRIGATION NOTES
IR-0	IRRIGATION SCHEDULE
IR-1 - IR-11	IRRIGATION PLANS
IR-12 - IR-14	IRRIGATION DETAILS

811
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Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

HydroSystems-KDI, Inc.
Irrigation Consulting
860 Tabor Street, Suite 200
Lakewood, Colorado 80401
303-980-5327
303-980-5384 (fax)

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

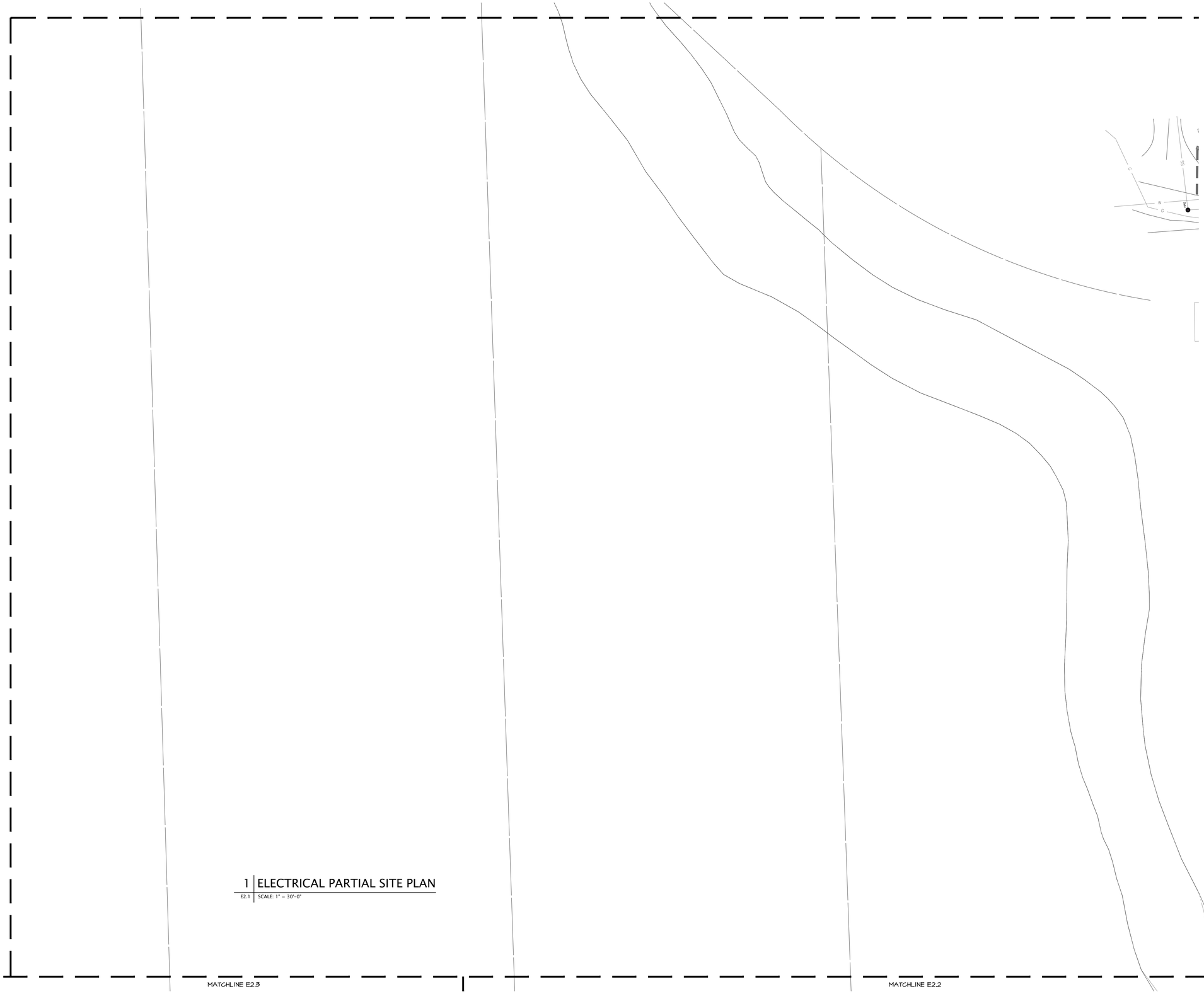
PROJECT NUMBER: 16044.00 DATE: 06/10/16
DESIGNED: JSB
DRAWN: JSB
CHECKED: KJD
REVISIONS: .
.
.
.
.

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
IRRIGATION DETAILS

SHEET NUMBER:
IR-14

SHEET x1 OF XX



1 | ELECTRICAL PARTIAL SITE PLAN
E2.1 | SCALE: 1" = 30'-0"

GENERAL NOTES	
A.	ALL DETAIL NOTES BELOW MAY NOT PERTAIN TO THIS ELECTRICAL SHEET.

KEYNOTE LEGEND	
KEY VALUE	
1.	POWER PEDESTAL FOR FOOD TRUCK ELECTRICAL HOOK-UP. EC SHALL PROVIDE 45" BOLLARD SERIES 4701B BY STERNBERG LIGHTING OR APPROVED EQUAL. PEDESTAL SHALL BE WEATHER PROOF AND PROVIDE (1) 240V, 50A/2P SPECIALTY RECEPTACLE AND (1) 120V, 20A DUPLEX RECEPTACLE.
2.	POWER PEDESTAL FOR RV ELECTRICAL HOOK-UP. EC SHALL PROVIDE 45" BOLLARD SERIES 4701B BY STERNBERG LIGHTING OR APPROVED EQUAL. PEDESTAL SHALL BE WEATHER PROOF AND PROVIDE (1) 240V, 50A/2P SPECIALTY RECEPTACLE AND (1) 120V, 20A DUPLEX RECEPTACLE.
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6.	RECEPTACLE TO BE MOUNTED TO A UNISTRUT STAKE IN THE BACK CORNER OF THE DUGOUT. COORDINATE EXACT LOCATION WITH OWNER.
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8.	JUNCTION BOX FOR 120V POWER CONNECTION TO PARKING PAY-KIOSK. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH OWNER.

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aedesign-inc.com
Project #:3317.00

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: BJJ
DRAWN: CNL, MJH
CHECKED: JEB

REVISIONS: . . . .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: ELECTRICAL PARTIAL SITE PLAN

SHEET NUMBER: E2.1

SHEET____OF____

IMAGES

XREFS

FILE NAME
PLOT DATE: Jul 06, 2016 - 11:42a

1 | ELECTRICAL PARTIAL SITE PLAN
E2.2 | SCALE: 1" = 30'-0"

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GENERAL NOTES

A.	ALL DETAIL NOTES BELOW MAY NOT PERTAIN TO THIS ELECTRICAL SHEET.

KEYNOTE LEGEND

KEY VALUE	
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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: BJJ
DRAWN: CNL, MJH
CHECKED: JEB
REVISIONS:
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: ELECTRICAL PARTIAL SITE PLAN
SHEET NUMBER: E2.2

SHEET_____OF_____

MATCHLINE E2.1

1 | ELECTRICAL PARTIAL SITE PLAN
E2.3 | SCALE: 1" = 30'-0"

GENERAL NOTES	
A.	ALL DETAIL NOTES BELOW MAY NOT PERTAIN TO THIS ELECTRICAL SHEET.

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: BJJ
DRAWN: CNL, MJH
CHECKED: JEB

REVISIONS:
.
.
.
.

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
ELECTRICAL PARTIAL SITE PLAN

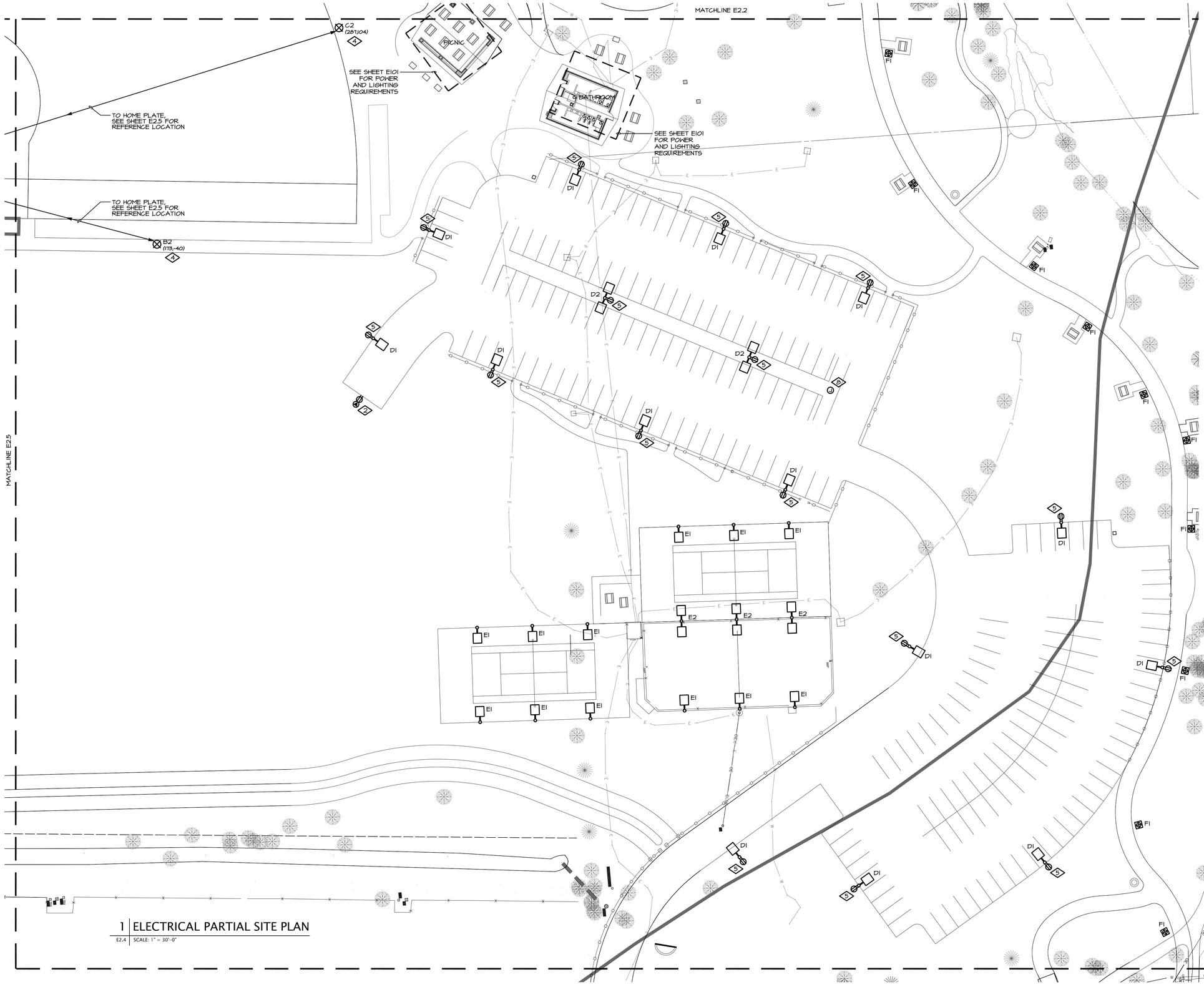
SHEET NUMBER:
E2.3

SHEET____OF____

IMAGES

XREFS

FILE NAME:
J:\3317.00 - Bohn Park Lyons\E2 - 3317.00 - E2 - Partial Site Plan.dwg
PLOT DATE: Jun 15, 2016 - 1:42pm



1 | ELECTRICAL PARTIAL SITE PLAN

E2.4 | SCALE: 1" = 30'-0"

GENERAL NOTES

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Lyons, Colorado

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DATE: 06/10/16
DESIGNED: BJJ
DRAWN: CNL, MJH
CHECKED: JEB

REVISIONS: . . . .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: ELECTRICAL PARTIAL SITE PLAN

SHEET NUMBER: E2.4

SHEET____OF____

IMAGES
XREFS
FILE NAME: J:\2016\16044 Bohn Park Lyons\Docs\2016 Electrical Plans.dwg
PLOT DATE: Jun 16, 2016 - 1:39pm

GENERAL NOTES	
A.	ALL DETAIL NOTES BELOW MAY NOT PERTAIN TO THIS ELECTRICAL SHEET.

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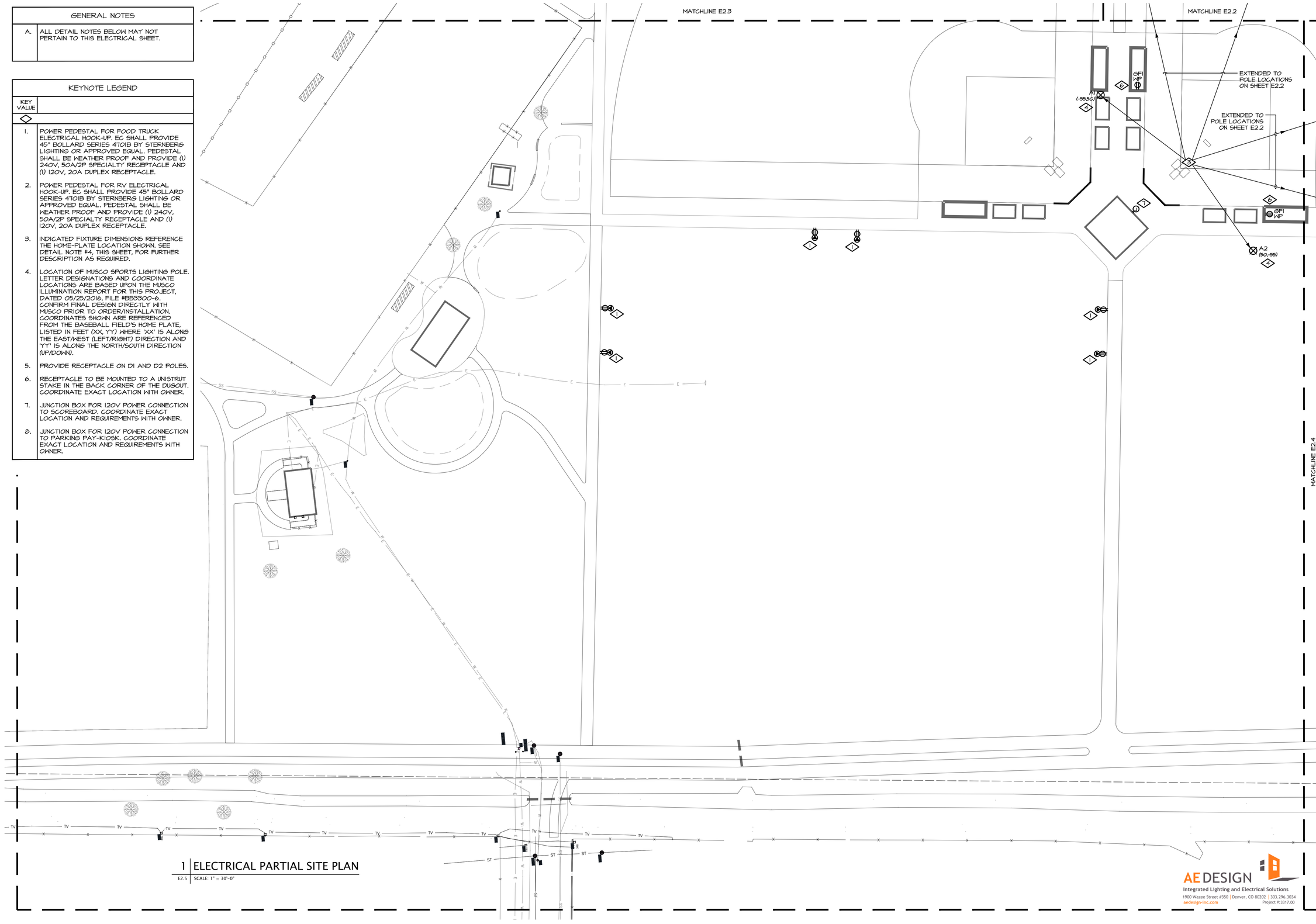

1 | ELECTRICAL PARTIAL SITE PLAN
E2.5 | SCALE: 1" = 30'-0"

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: BJJ
DRAWN: CNL, MJH
CHECKED: JEB
REVISIONS: . . . .
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: ELECTRICAL PARTIAL SITE PLAN
SHEET NUMBER: E2.5
SHEET_____OF_____

AE DESIGN
Integrated Lighting and Electrical Solutions
1900 Wazee Street #350 | Denver, CO 80202 | 303.296.3034
aedesign-inc.com
Project #:3317.00

IMAGES
XREFS
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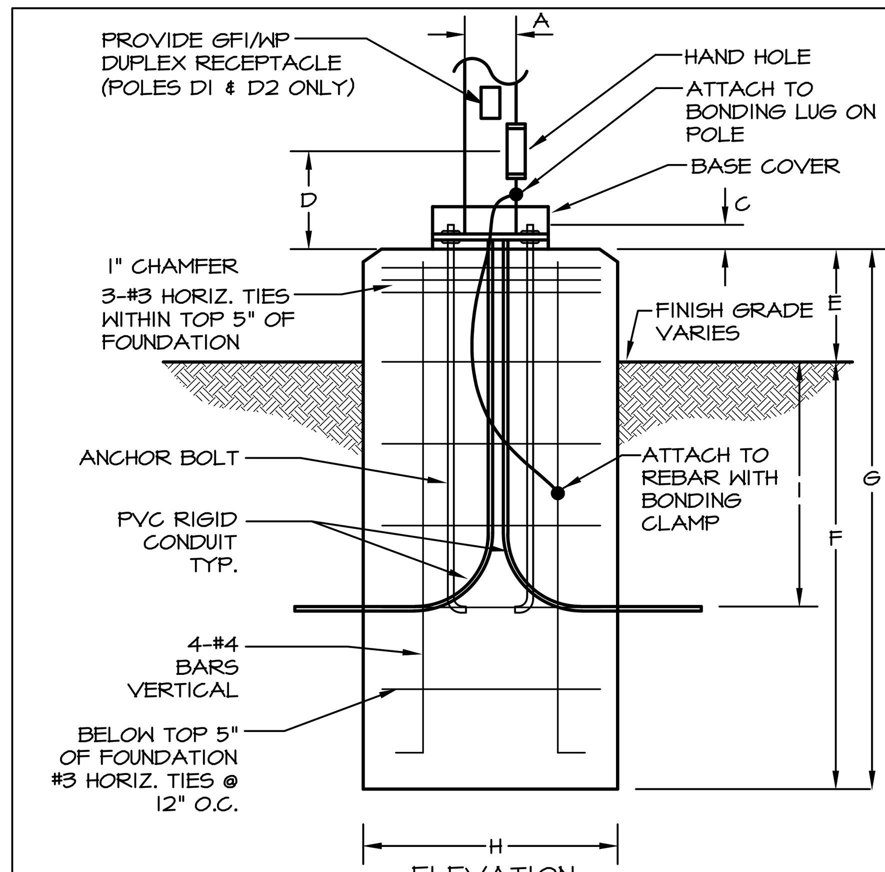
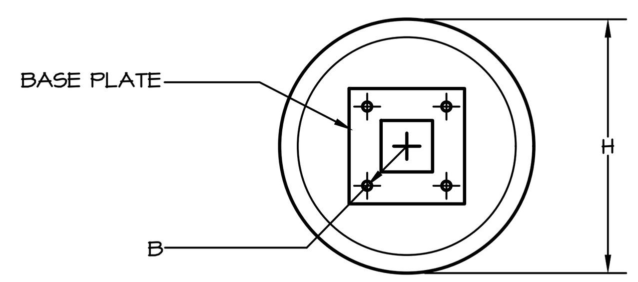
PLOT DATE: Jun 16, 2016 - 11:42a





POLE KEY	OVERALL HEIGHT	A	ANCHOR BOLT DATA			D	E	F	G	H	I
			B	SIZE	C						
D1/D2	25'-0"	5"	PER LITHONIA 'RSS' POLE				2'-6"	6'-0"	8'-6"	24"	36"
E1/E2	22-'0"	4.5"	PER LITHONIA 'RSS' POLE				2'-6"	6'-0"	8'-6"	24"	36"
-	-	-	-				-	-	-	-	-
-	-	-	-				-	-	-	-	-
-	-	-	-				-	-	-	-	-

2 | POLE BASE DETAIL

E2.6 | SCALE: NONE

LIGHTING FIXTURE SCHEDULE (SITE)

TYPE	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	VOLTAGE	LAMP			MAX WATTS	MOUNTING INFORMATION		NOTES
					QTY	WATT	TYPE		LOCATION	BOF/RFD/OFH	
D1	D-SERIES SIZE 0 AREA LUMINAIRE	LITHONIA	DSX0 LED-20C-700-40K-T3M-MVOLT-RPA-DM19AS-DDBXD	UNIV	1	45	LED	45	POLE		1
D2	D-SERIES SIZE 0 AREA LUMINAIRE	LITHONIA	DSX0 LED-20C-700-40K-T3M-MVOLT-RPA-DM28AS-DDBXD	UNIV	2	45	LED	90	POLE		2
E1	COURTBLADE SPORTS LIGHTING	LSI	XARL-FT-LED-HO-NW-UE-BLK-SINGLE	UNIV	1	528	LED	528	POLE		3
E2	COURTBLADE SPORTS LIGHTING	LSI	XARL-FT-LED-HO-NW-UE-BLK-D180	UNIV	2	528	LED	1056	POLE		4
F1	KBD8 BOLLARD	LITHONIA	KBD8-LED-12C-700-40K-ASY-MVOLT-DDBXD	UNIV	1	31	LED	31	GROUND		

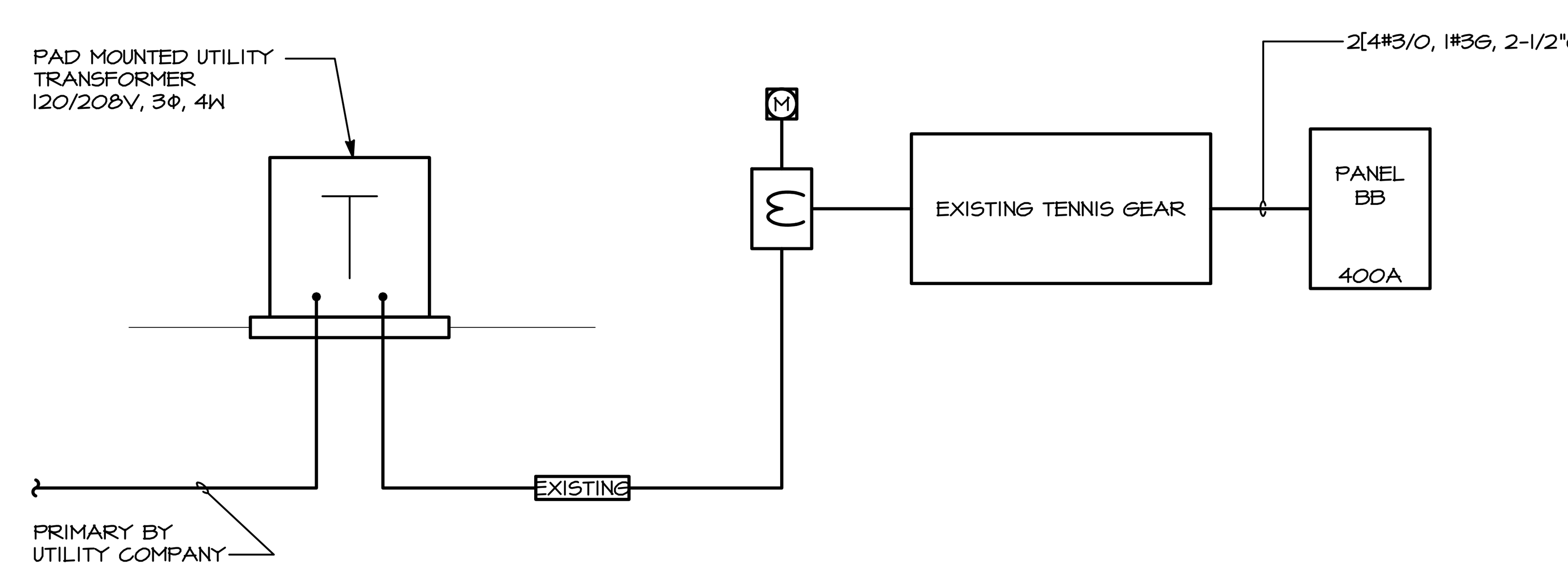
ABBREVIATIONS: BOF - BOTTOM OF FIXTURE, RFD - RECESSED FIXTURE DEPTH, OFH - OVERALL FIXTURE HEIGHT

GENERAL NOTES:

A. ALL FLUORESCENT LAMPS TO BE 3500K COLOR TEMPERATURE AND A MINIMUM OF 82CRI, UNLESS NOTED OTHERWISE.
B. ALL REFLECTOR LAMPS TO BE PROVIDED AS WIDE FLOOD DISTRIBUTION, UNLESS NOTED OTHERWISE.
C. ALL FLUORESCENT LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLASTS THAT CAN BE SERVICED IN PLACE SHALL HAVE A DISCONNECTING MEANS AS DESCRIBED IN NEC 410.130(G).
D. PROVIDE LUMINAIRES SHOWN AS SHADED WITH EMERGENCY BATTERY BALLASTS. EMERGENCY LUMINAIRES SHALL SENSE UN-SWITCHED POWER TO THE SPACE AND OPERATED AUTOMATICALLY UPON LOSS OF NORMAL POWER. ALL SHADED LUMINAIRES WITH 2FT AND 4FT LAMPS SHALL HAVE ONE (1) 90 MINUTE RATED, TWO LAMP, 1400 LUMEN EMERGENCY BALLAST. ALL SHADED LUMINAIRES WITH COMPACT FLUORESCENT LAMPS SHALL HAVE A FACTORY INSTALLED 90 MINUTE EMERGENCY BALLAST. ALL EMERGENCY LUMINAIRES SHALL HAVE REMOTE TEST SWITCHES AND VISIBLE INDICATING LIGHTS. CONNECT THE EMERGENCY BATTERY BALLAST TO THE UN-SWITCHED LEG OF THE LIGHTING CIRCUIT INDICATED.

SPECIFIC NOTES:

1. PROVIDE 25'-0" ROUND STEEL POLE, LITHONIA #RSS-25-5B-DM19-TP-DDB (1 AT 90 DEGREES)
2. PROVIDE 25'-0" ROUND STEEL POLE, LITHONIA #RSS-25-5B-DM28-TP-DDB (2 AT 180 DEGREES)
3. PROVIDE 22'-0" ROUND STEEL POLE, LITHONIA #RSS-22-4-5B-DM19-TP-DDB (1 AT 90 DEGREES)
4. PROVIDE 22'-0" ROUND STEEL POLE, LITHONIA #RSS-22-4-5B-DM28-TP-DDB (2 AT 180 DEGREES)



1 | EXISTING TENNIS ONE-LINE DIAGRAM

E2.6 | SCALE: NONE

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

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DESIGNED: BJJ
DRAWN: CNL, MJH
CHECKED: JEB

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: ELECTRICAL ONE-LINE DIAGRAM, SCHEDULES, AND DETAILS

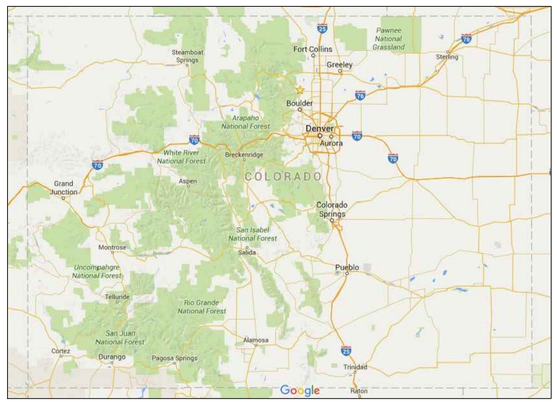
SHEET NUMBER: E2.6

SHEET_____OF_____

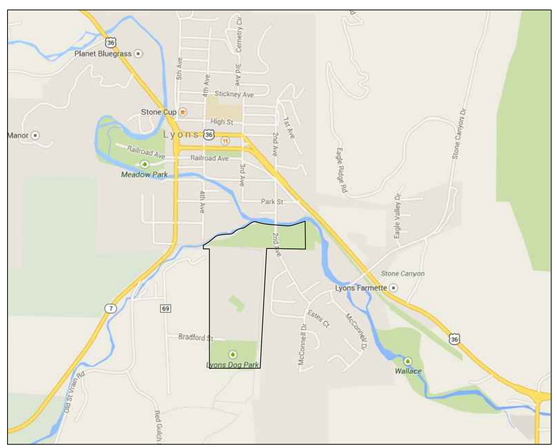
BOHN PARK RECOVERY DESIGN

LYONS, COLORADO

CLIENT
TOWN OF LYONS



OVERVIEW MAP STATE OF COLORADO



SITE LOCATION MAP BOHN PARK, LYONS, CO

Sheet List Table	
Sheet Number	Sheet Title
0.0	COVER
1.0	SITE PLAN
2.0	ACCESS PLAN
3.0	Demolition Plan
4.0	Plan and Profile (1)
4.1	Plan and Profile (2)
4.2	Plan and Profile (3)
4.3	Plan and Profile (4)
5.0	CROSS SECTIONS (1)
6.0	Channel Overflow (1)
7.0	Channel Overflow (2)
8.0	Channel Overflow (3)
9.0	Typical Details (1)
9.1	Typical Details (2)
9.2	Typical Details (3)
9.3	Typical Details (4)
9.4	Typical Details (5)
9.5	Typical Details (6)
10.0	Water Control (1)
10.1	Water Control (2)
11.0	Typical BMP DETAILS

S2O
REINVENTING WHITEWATER

S2O Design and Engineering

Scott Shipley, P.E.
318 Mcconnell Drive
Lyons CO, 80540,
USA
(303) 819-3985

Client Name
Town of Lyons

Project Name
Bohn Park Recovery Design

Status
30% Design Drawings

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Christian Clark, James Robinson

Checked By
Scott Shipley

Date
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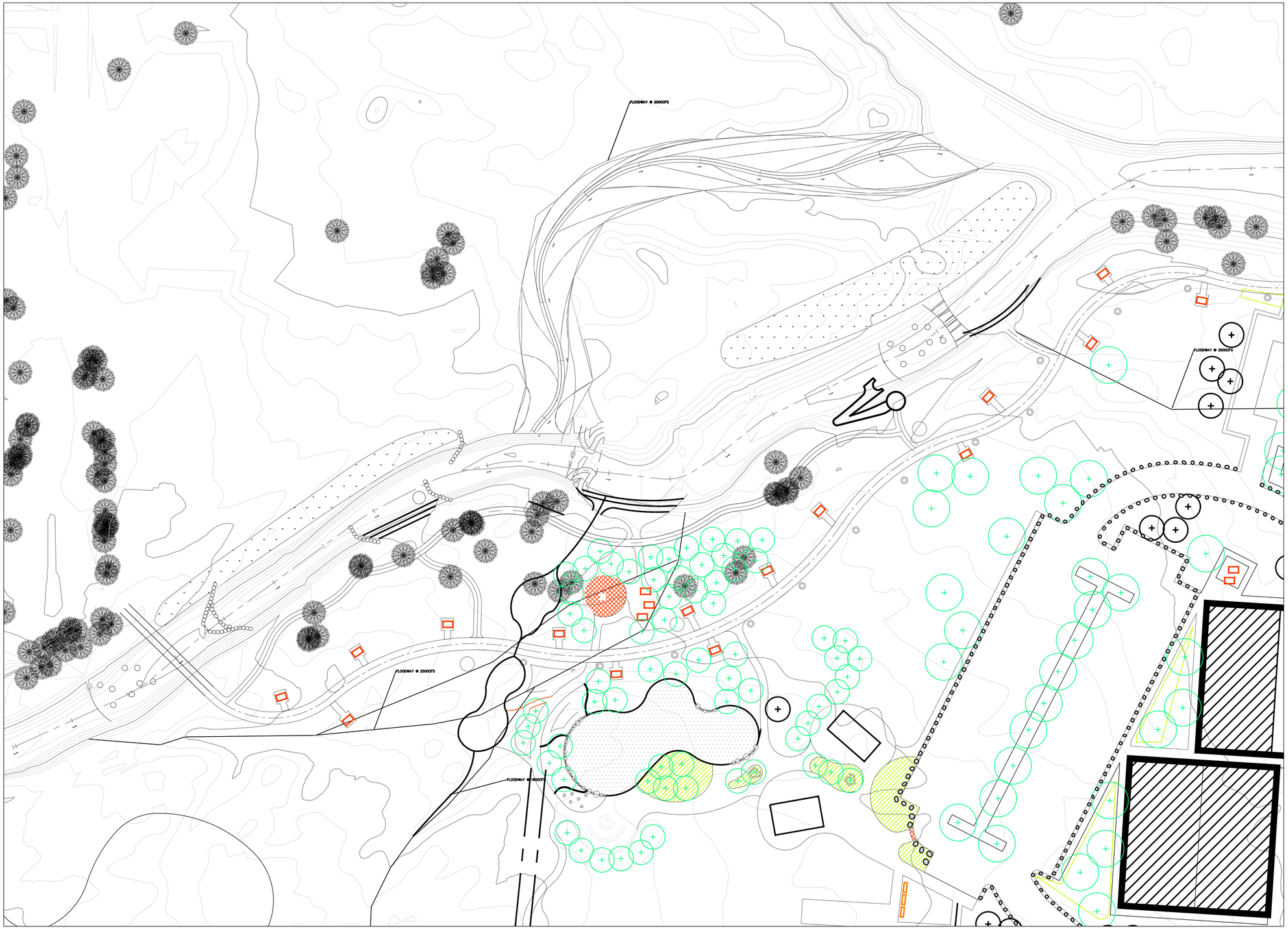

PLANVIEW - SITE PLAN

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REINVENTING WHITEWATER

S2O Design and Engineering

Scott Shipley, P.E.
318 Mcconnell Drive
Lyons CO, 80540,
USA
(303) 819-3985

Client
Town of Lyons

Project Name
Bohn Park Recovery Design

Status
30% Design Drawings

Drawing Name
Site Plan

Revisions
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Drawn By
Christian Clark, James Robinson

Checked By
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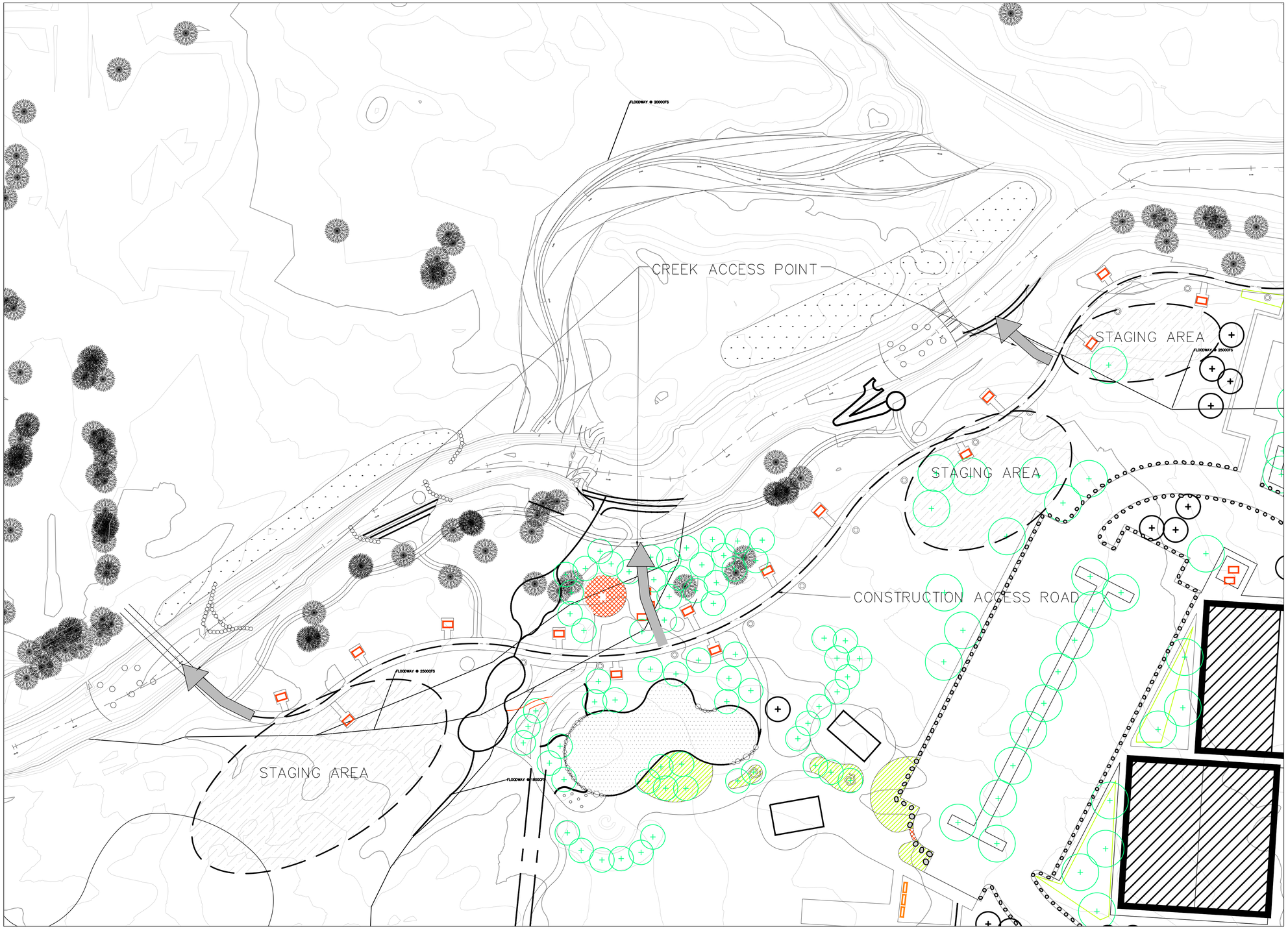

PLANVIEW ACCESS PLAN

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USA
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Client
Town of Lyons

Project Name
Bohn Park Recovery Design

Sheet Name
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Drawing Name
Access Plan

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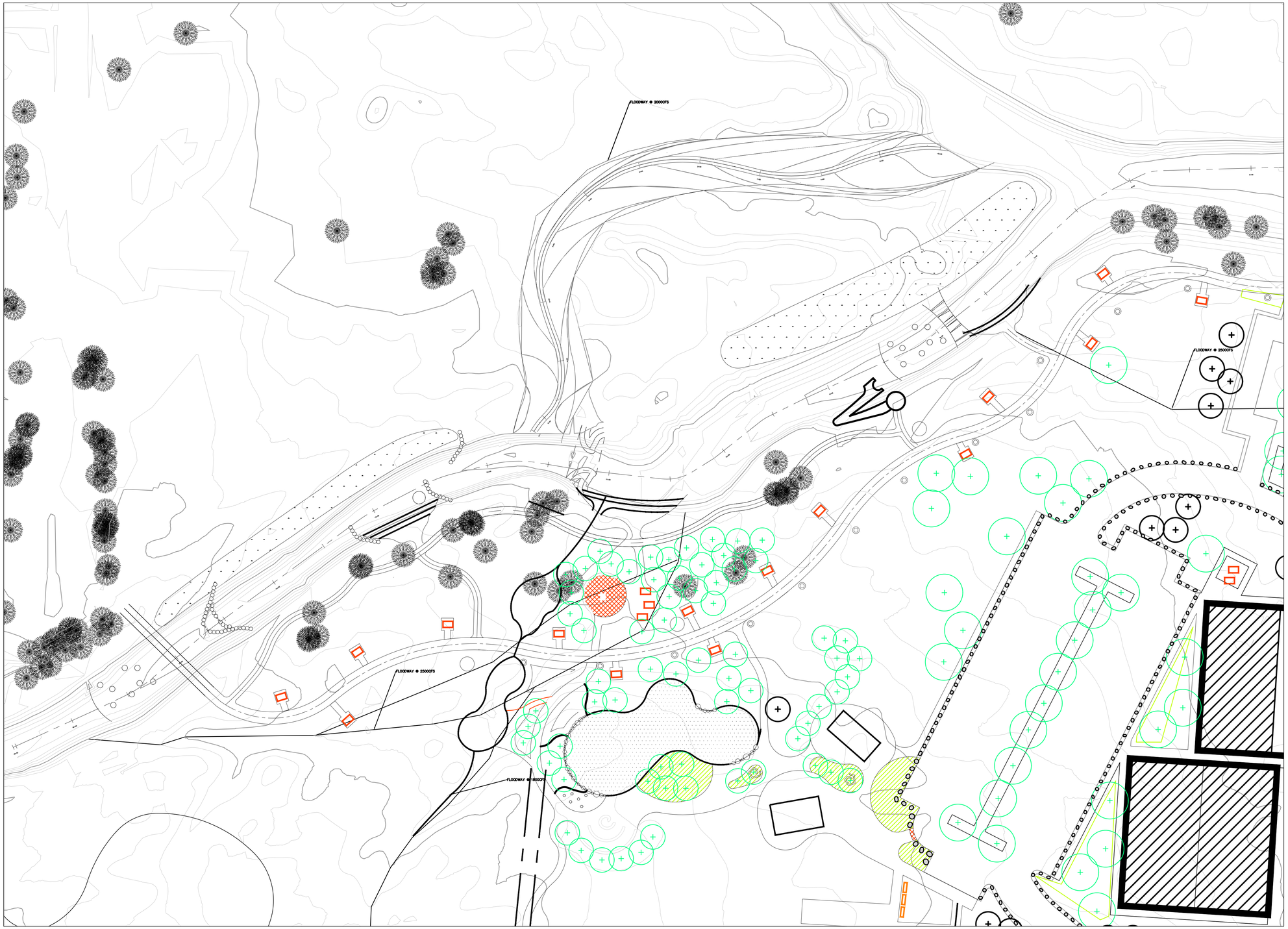

PLANVIEW DEMOLITION PLAN

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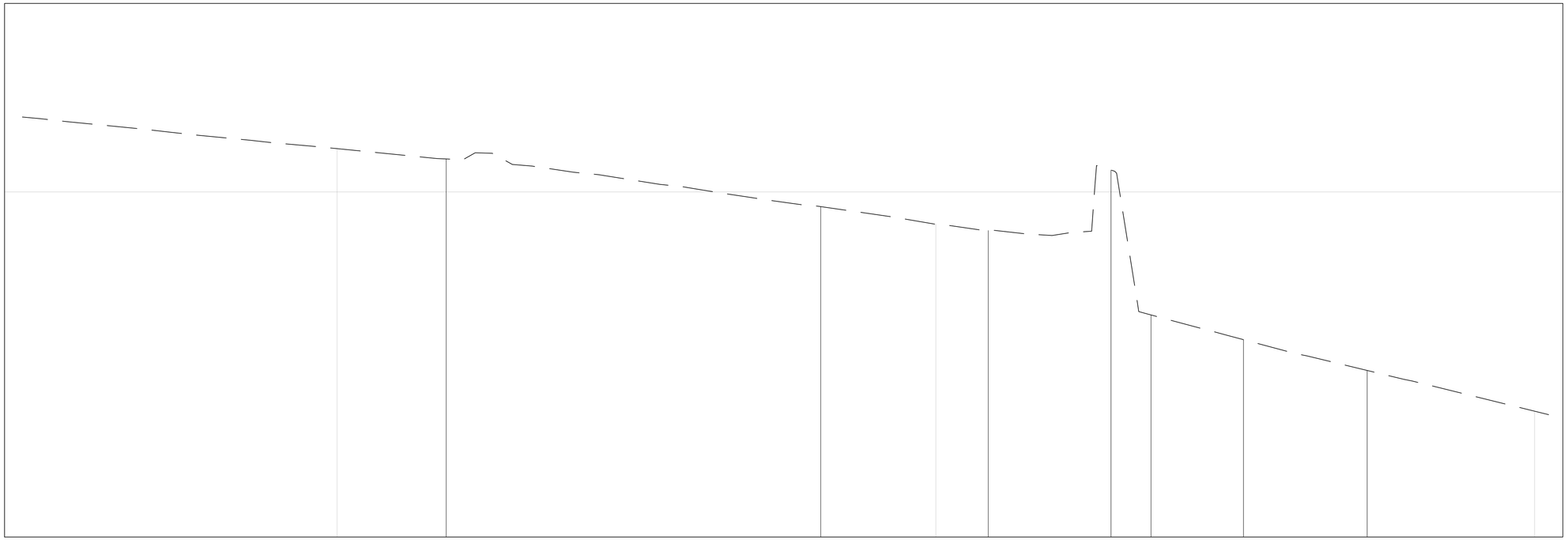

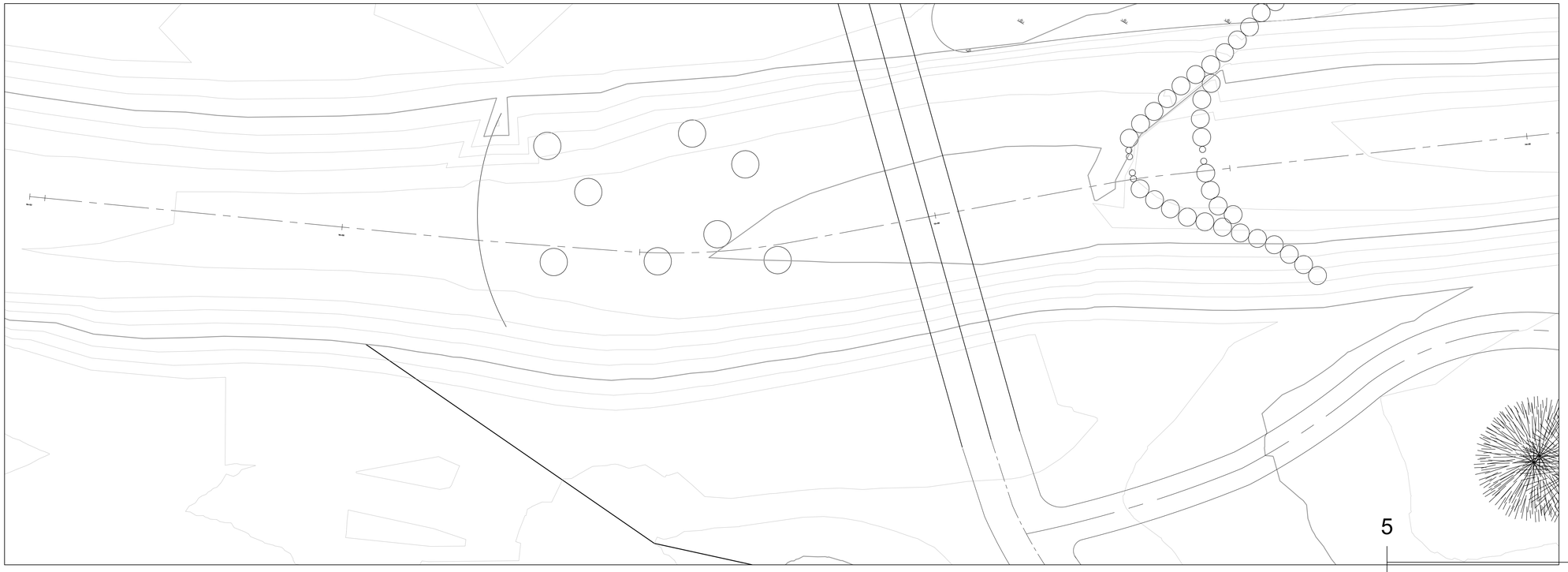

PLAN AND PROFILE 1

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Client
Town of Lyons

Project Name
Bohn Park Recovery Design

Status
30 Design Drawings

Drawing Name
Plan and Profile 1

Revisions
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Drawn By
Christian Clark, James Robinson

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Scott Shipley

Date
05/13/2016

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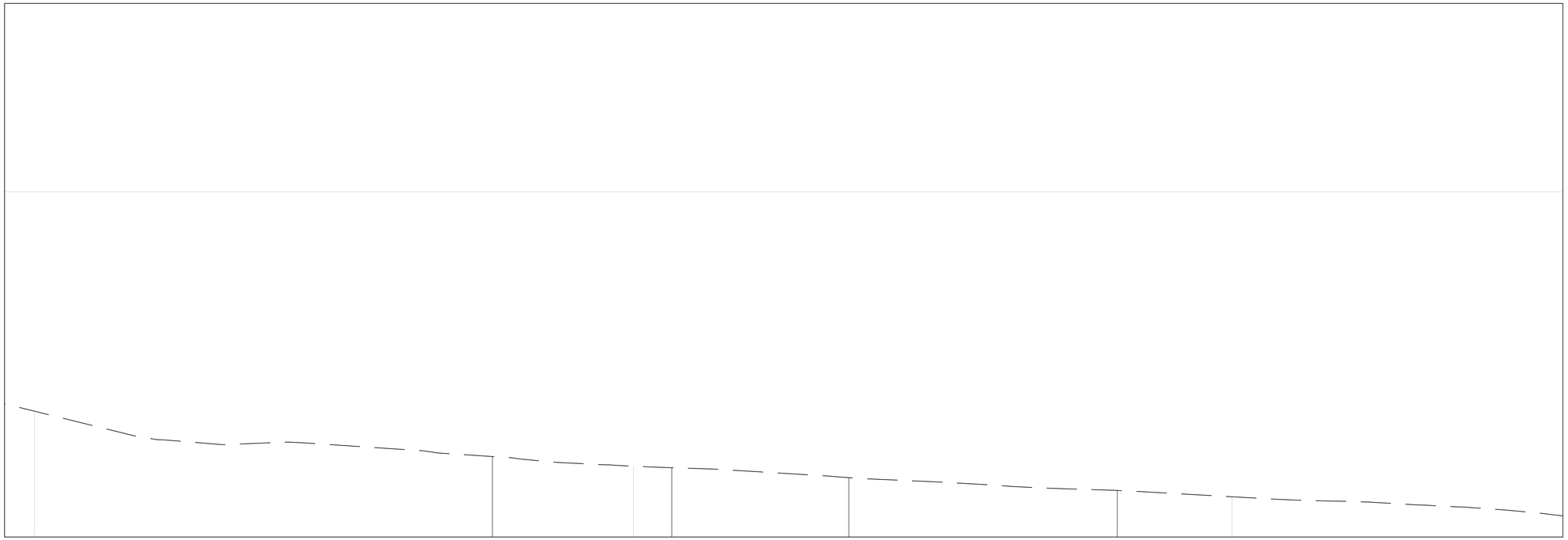

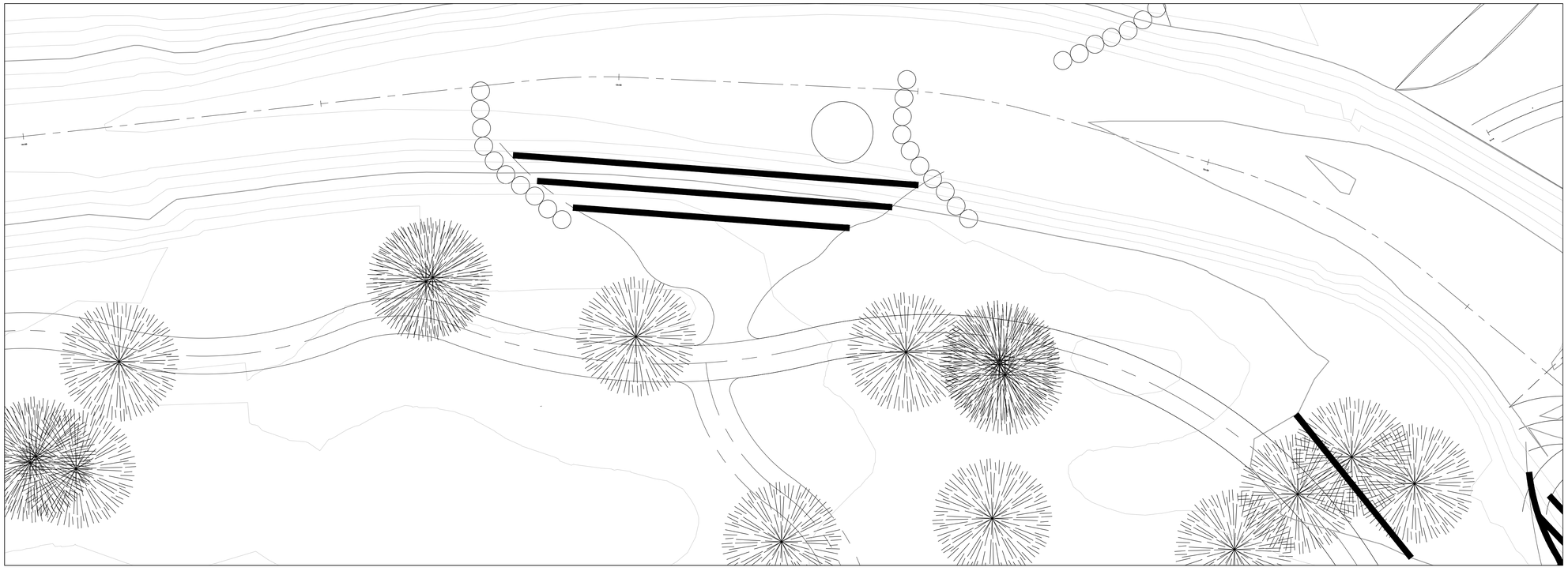

PLAN AND PROFILE □2□

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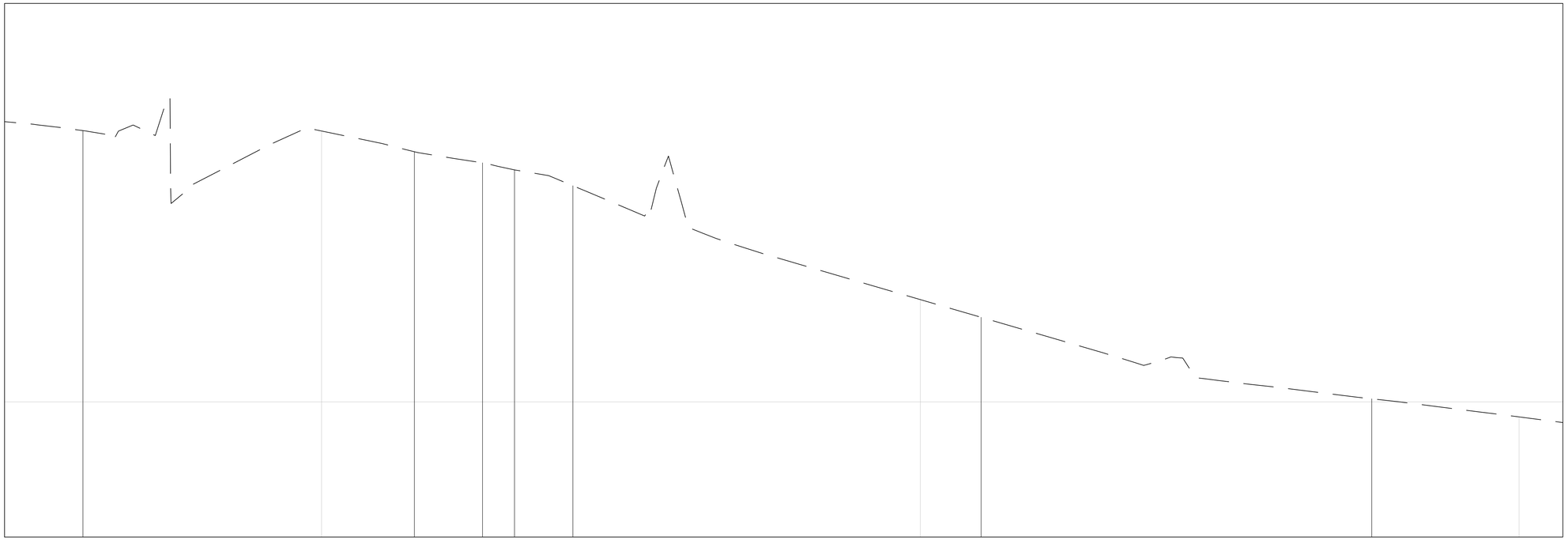

PLAN AND PROFILE 2

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Client Name:
Town of Lyons

Project Name:
Bohn Park Recovery Design

Sheet Name:
30% Design Drawings

Drawing Name:
Plan and Profile 3

Revisions:
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Drawn By:
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Checked By:
Scott Shipley

Date:
05/13/2016

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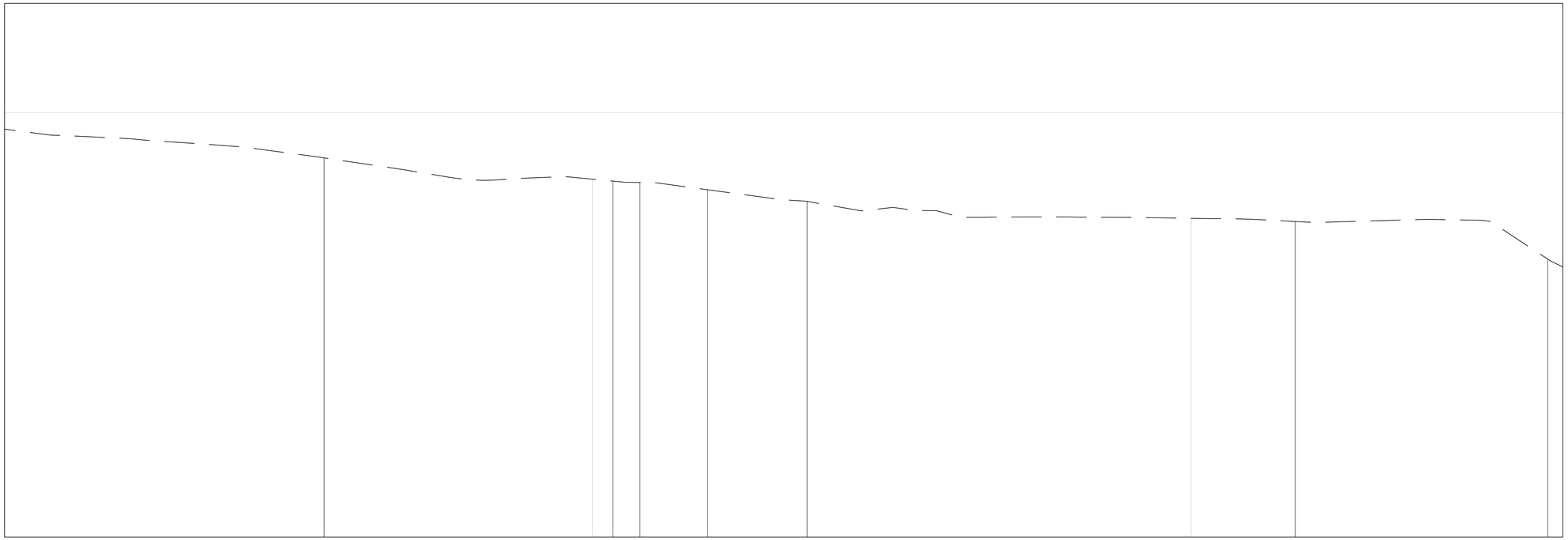

PLAN AND PROFILE □4□

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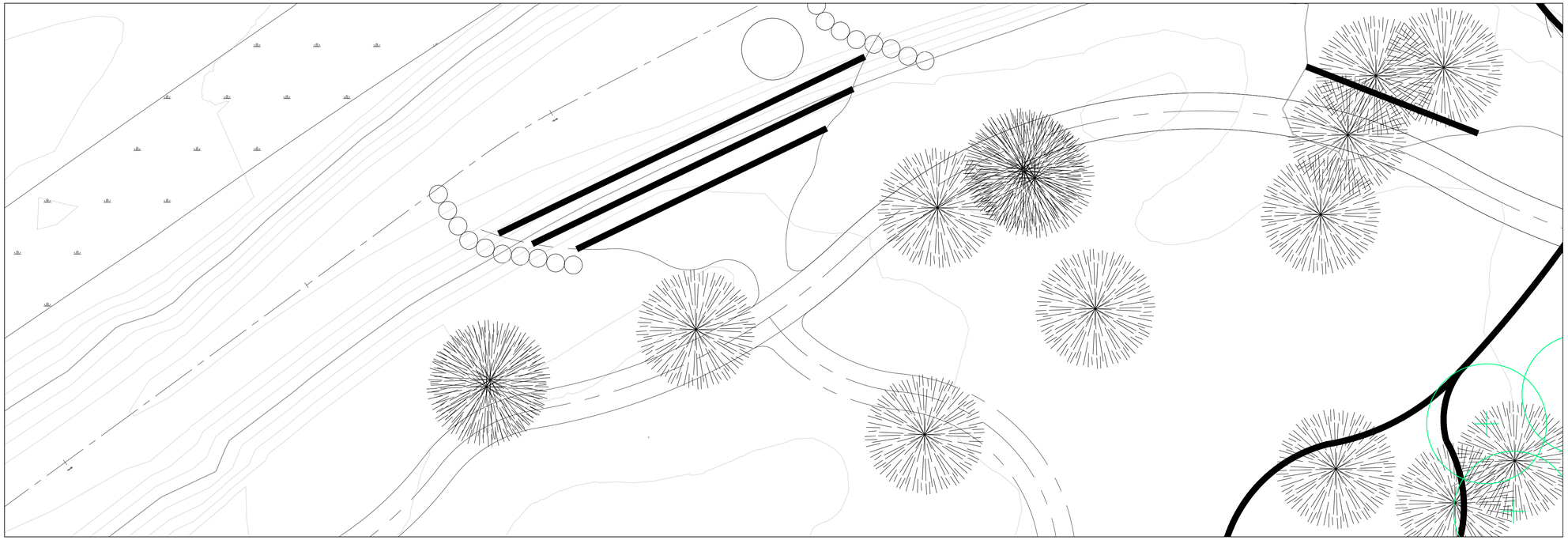

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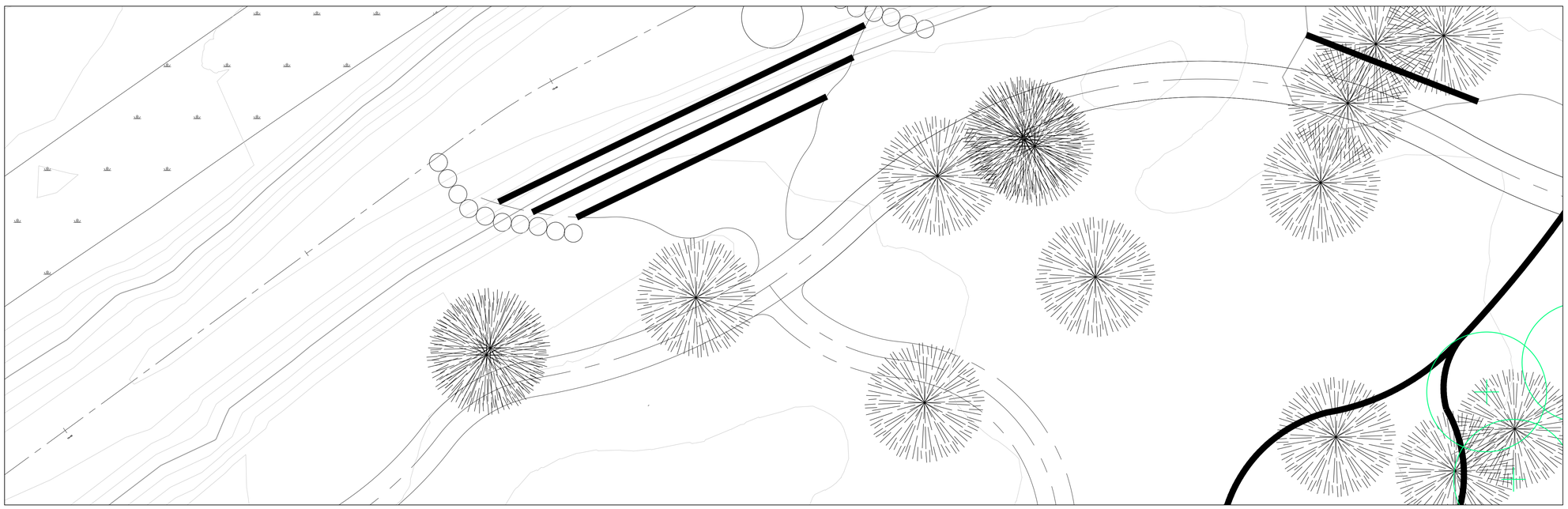

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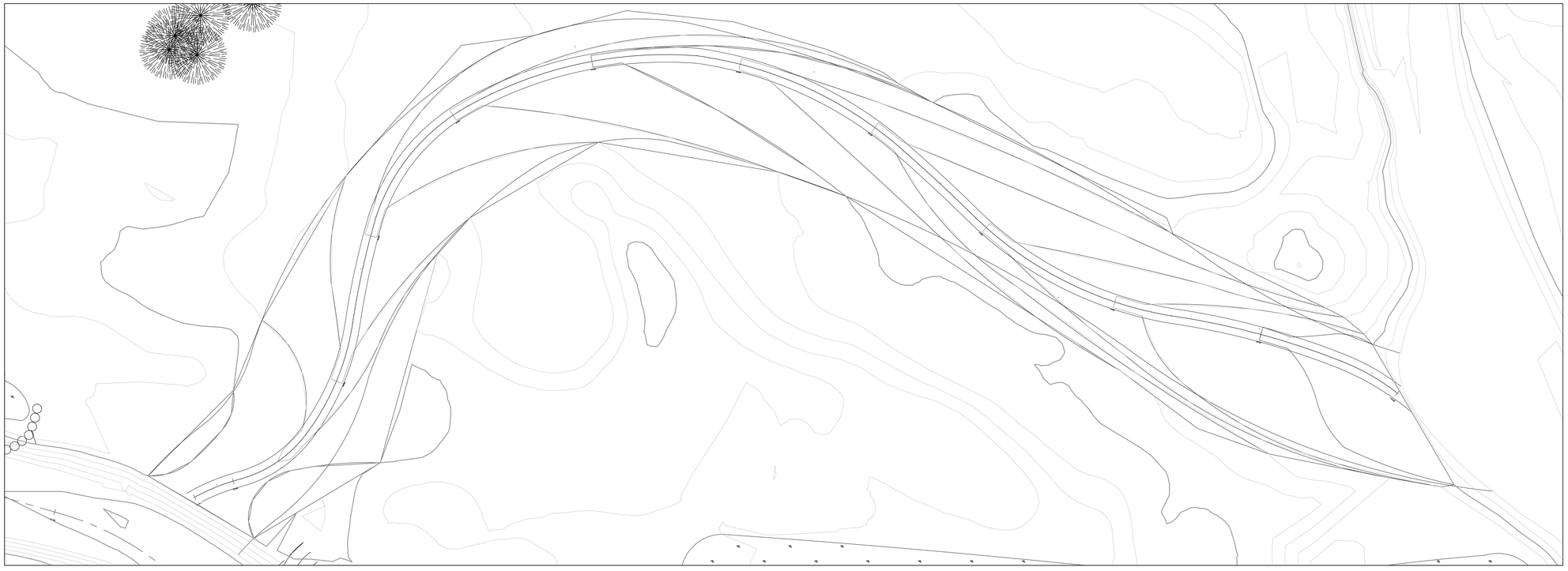

CHANNEL OVERFLOW PLAN AND PROFILE □1□

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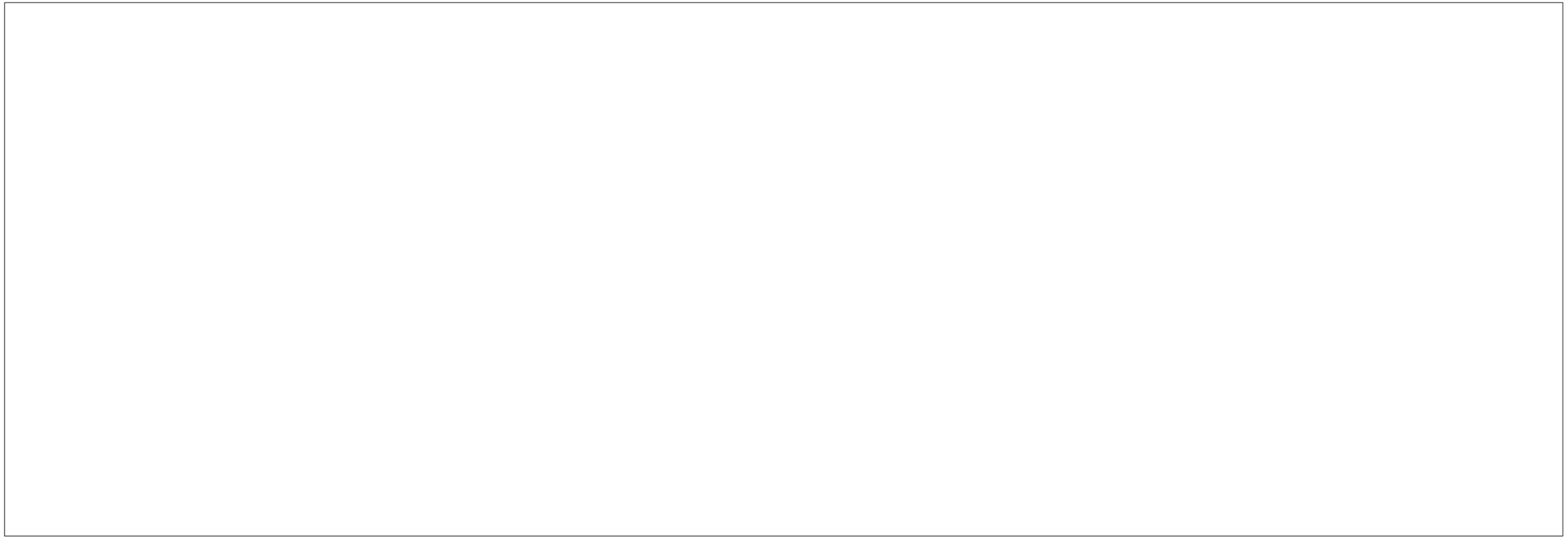

CHANNEL OVERFLOW PLAN AND PROFILE 2

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Client
Town of Lyons

Project Name
Bohn Park Recovery Design

Status
30% Design Drawings

Drawn Name
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Drawn By
Christian Clark, James Robinson

Checked By
Scott Shipley

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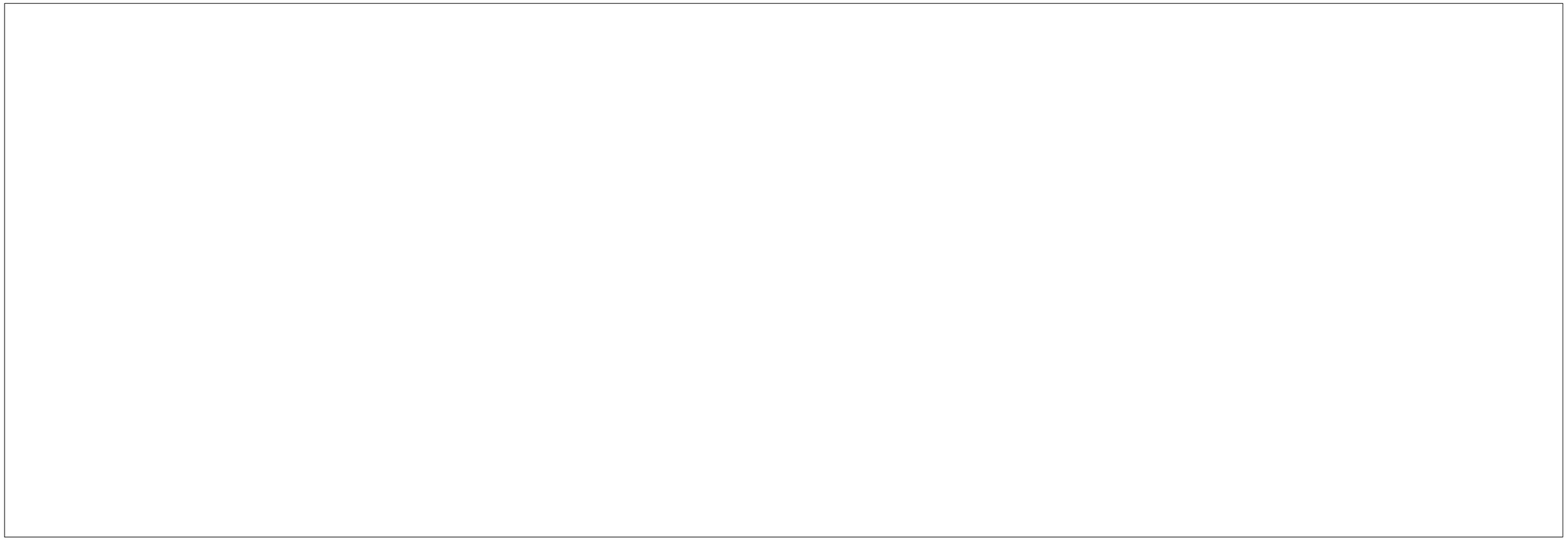

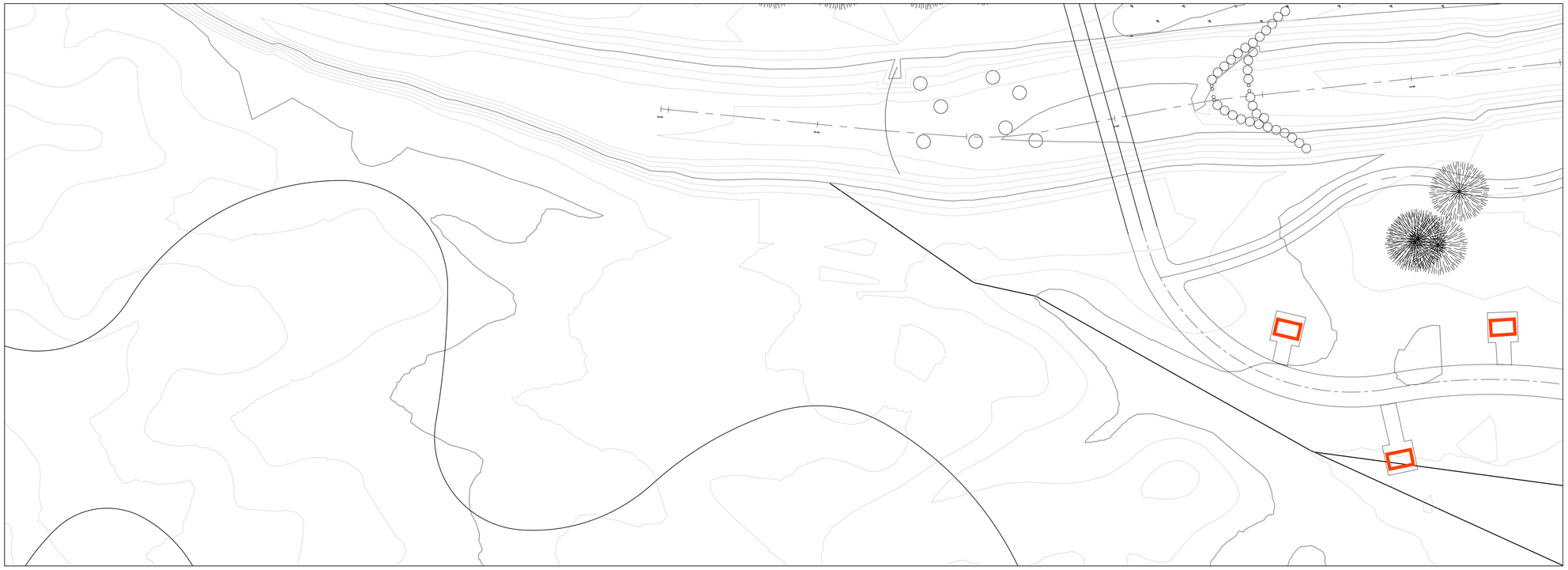

CHANNEL OVERFLOW PLAN AND PROFILE □3□

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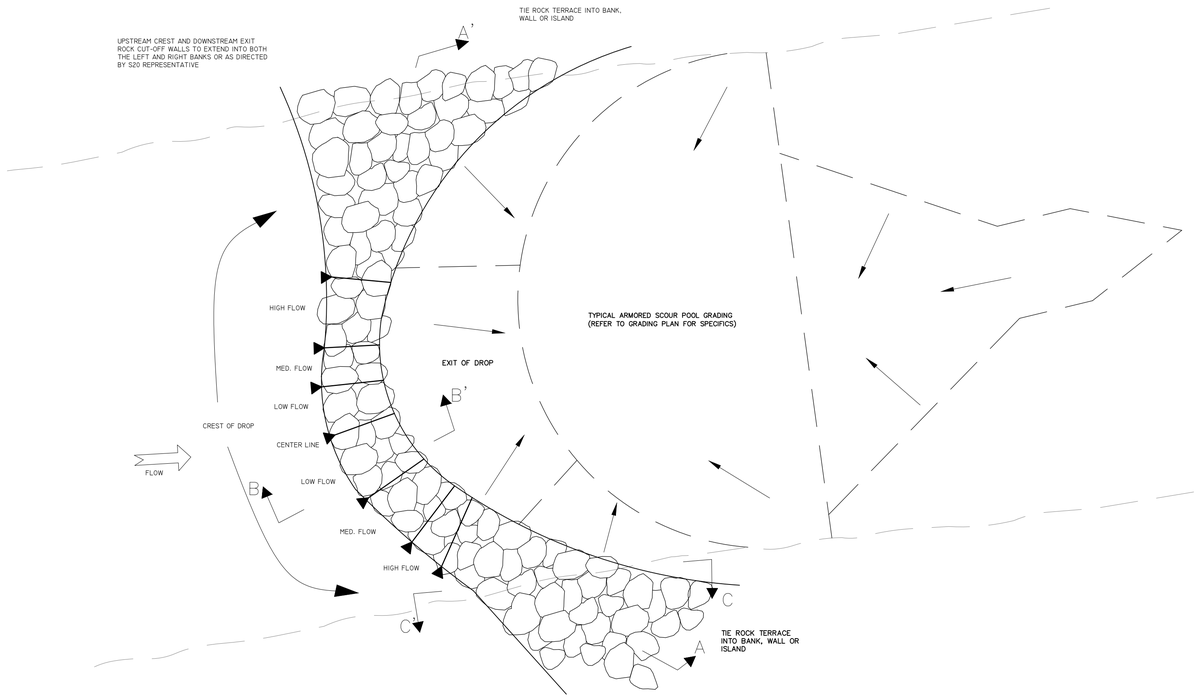

1 DROP TYP.
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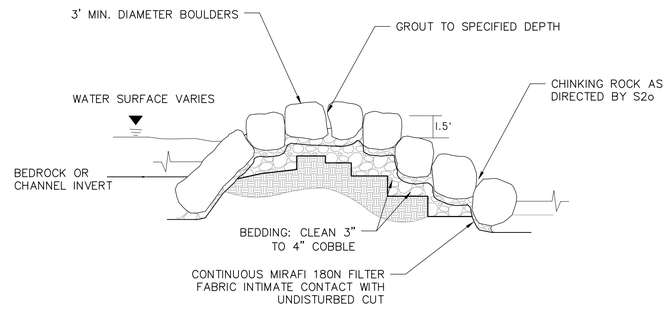

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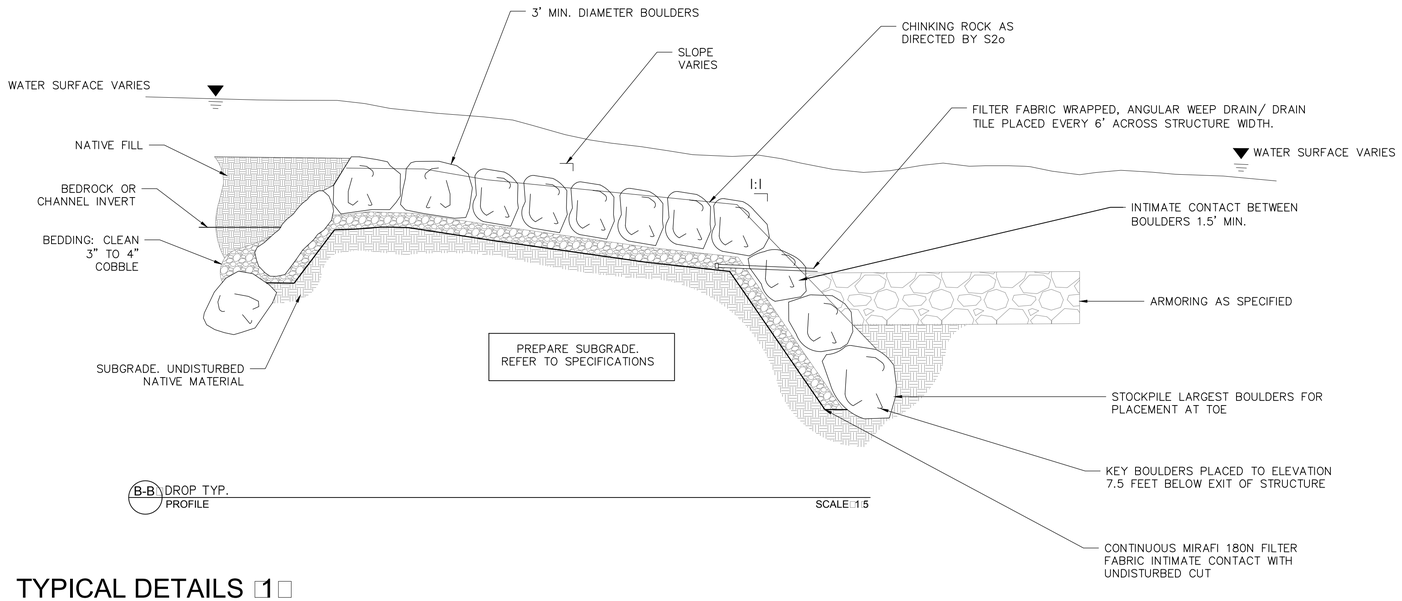

B-B DROP TYP.
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TYPICAL DETAILS 10

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Town of Lyons

Project Name:
Bohn Park Rock Structures

Status:
30% Design Drawings

Drawing Name:
Typical Details 10

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Drawn By:
Christian Clark, James Robinson

Checked By:
Scott Shipley

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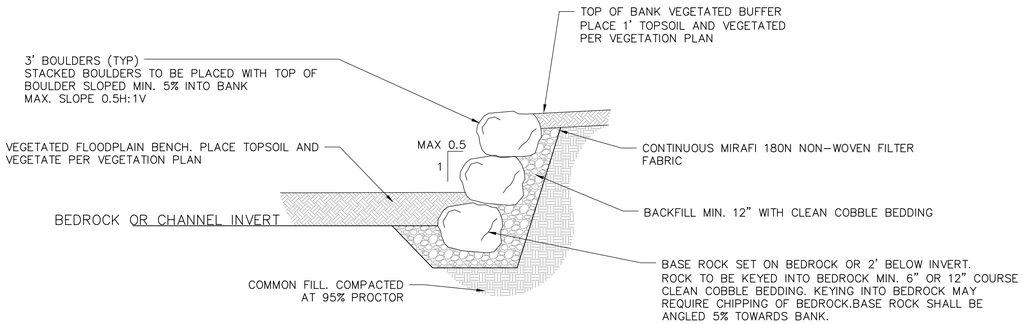

2 BOULDER RETAINING WALL TYP.
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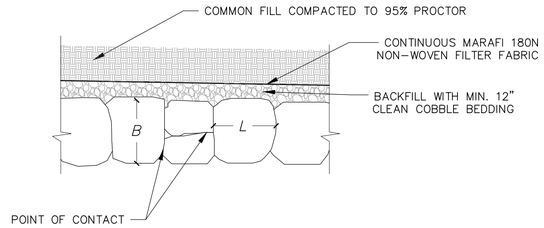

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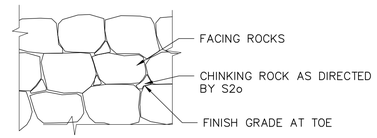
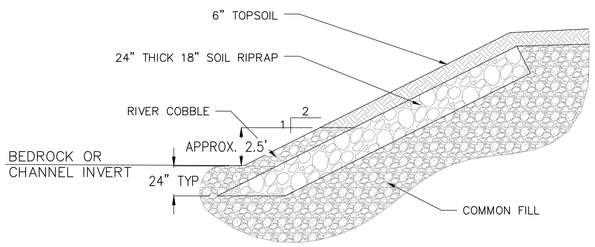
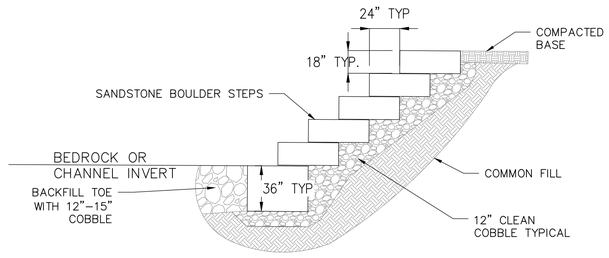


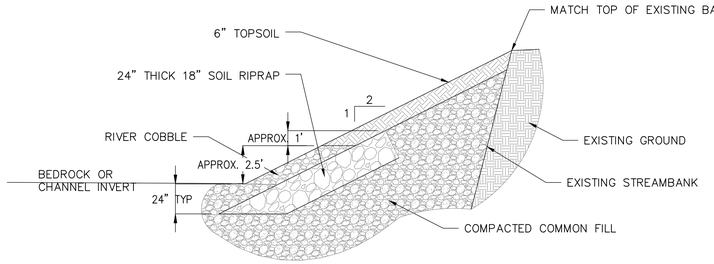
4 BOULDER RETAINING WALL TYP.
PROFILE SCALE: 1:5



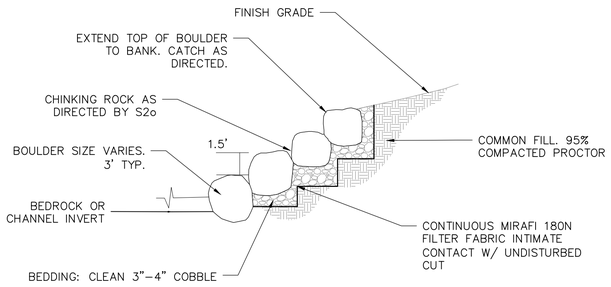
5 SOIL COVERED RIPRAP TYP.
SECTION SCALE: 1:5



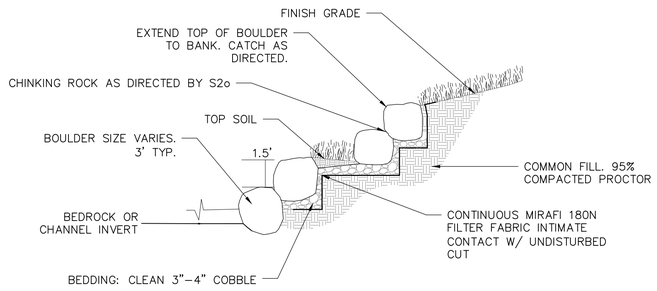
6 SANDSTONE BOULDER STEPPED ACCESS
SECTION SCALE: 1:5



7 SLOPED BANK REVETMENT WITH ARMORED TOE TYP.
SECTION SCALE: 1:5



8 TERRACED ROCK TYP.
SECTION SCALE: 1:5



□ TERRACED ROCK WITH VEGETATION TYP.
SECTION SCALE: 1:5

TYPICAL DETAILS □2□

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REINVENTING WHITEWATER
S2O Design and Engineering
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Lyons CO, 80540,
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(303) 819-3985

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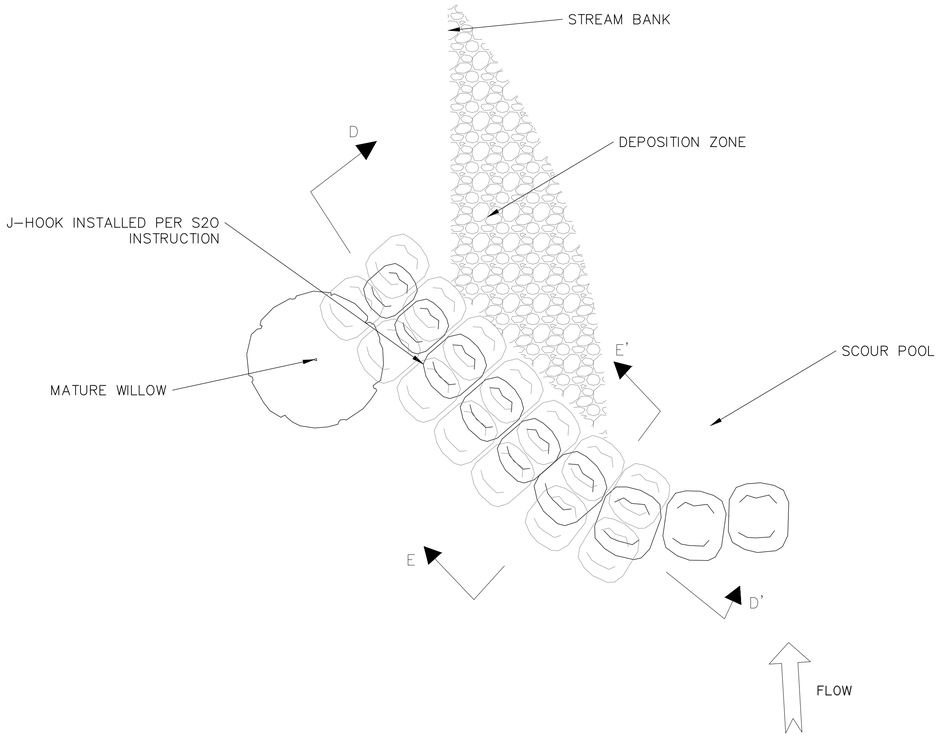
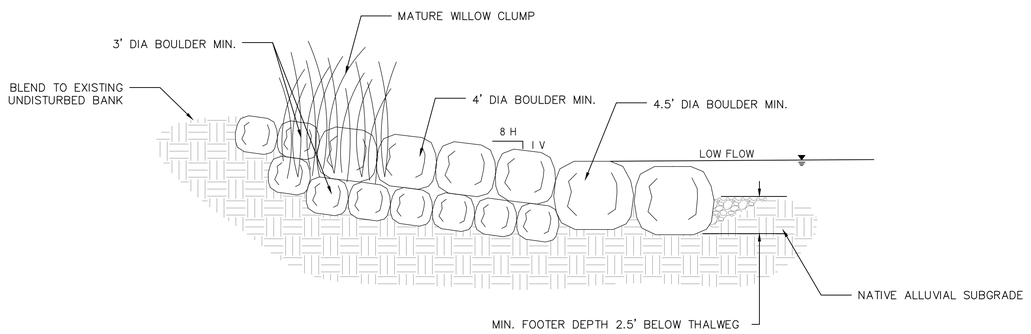
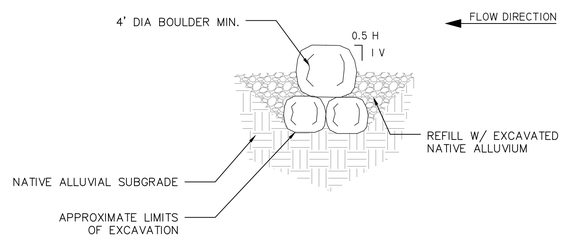


10 J-HOOK TYPICAL PLAN
PLAN NTS



NOTES:
(1) CONSTRUCT BENDWAY WEIR PER DIRECTION OF ENGINEER.

D-D J-HOOK TYPICAL
SECTION NTS



E-E J-HOOK TYPICAL
PROFILE NTS

TYPICAL DETAILS □3□

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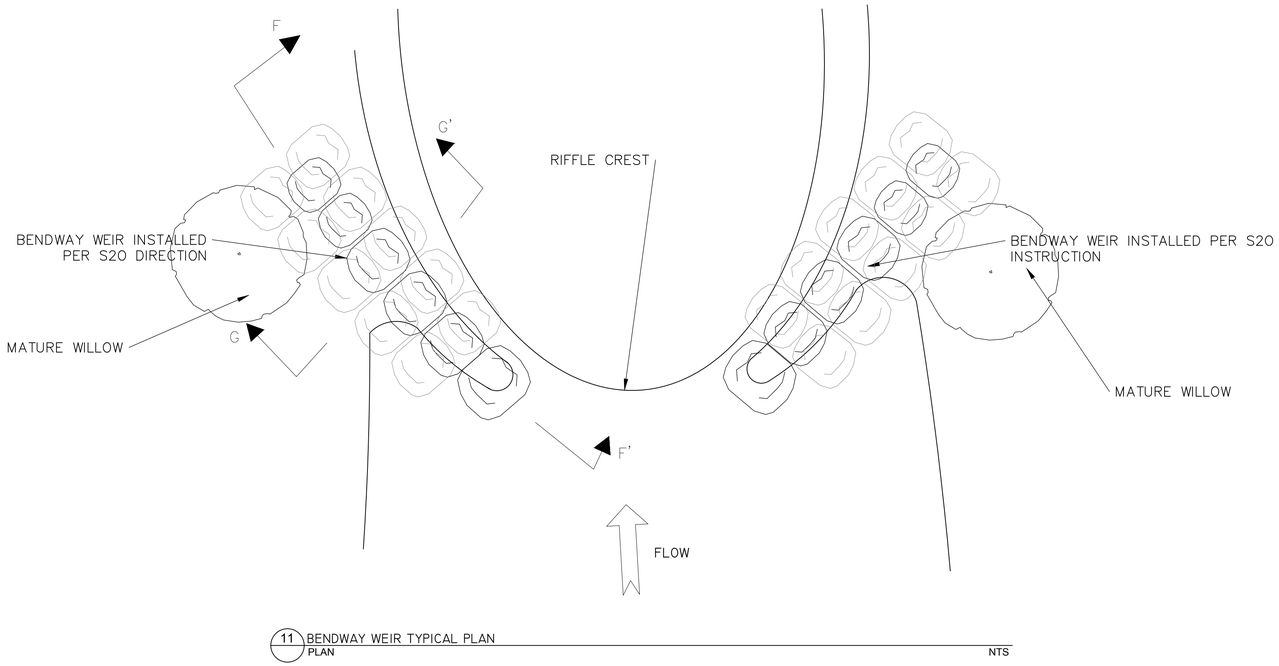
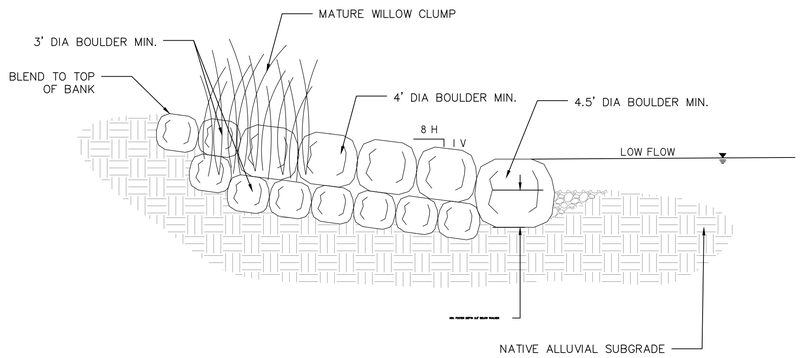
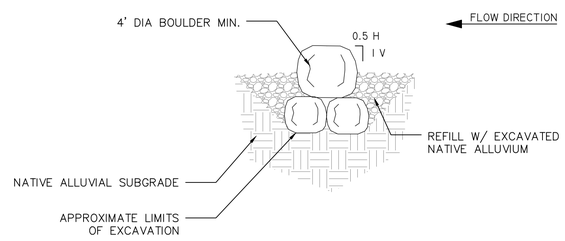


11 BENDWAY WEIR TYPICAL PLAN
PLAN NTS



NOTES:
(1) CONSTRUCT BENDWAY WEIR PER DIRECTION OF ENGINEER.

F-F BENDWAY WEIR TYPICAL
SECTION NTS



G-G BENDWAY WEIR TYPICAL
PROFILE NTS

TYPICAL DETAILS 50

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Client
Town of Lyons

Project Name
Bohn Park Recovery Design

Sheet
30% Design Drawings

Drawing Name
Typical Details 4

Revisions
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Drawn By
Christian Clark, James Robinson

Checked By
Scott Shipley

Date
05/13/2016

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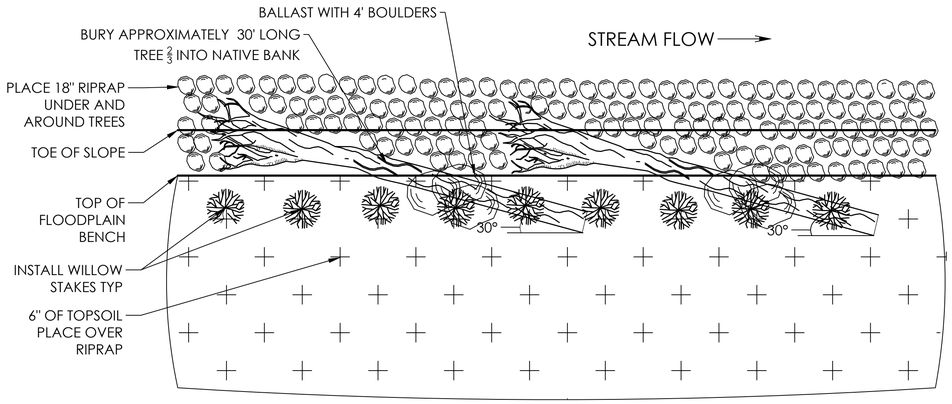
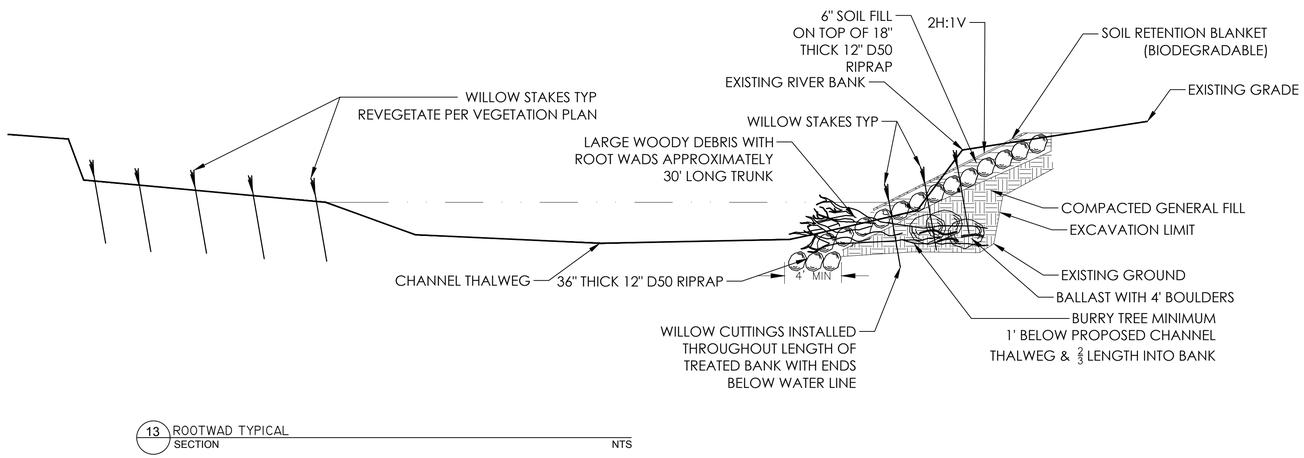


12 ROOTWAD TYPICAL
PLAN NTS



13 ROOTWAD TYPICAL
SECTION NTS

ADD CABLE TREE DETAIL HERE (14)

TYPICAL DETAILS (5)

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Project Name
Bohn Park Recovery Design

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ADD RIFFLE CREST DETAILS HERE (15)

TYPICAL DETAILS (6)

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Project Name
Bohn Park Recovery Design

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Drawing Name
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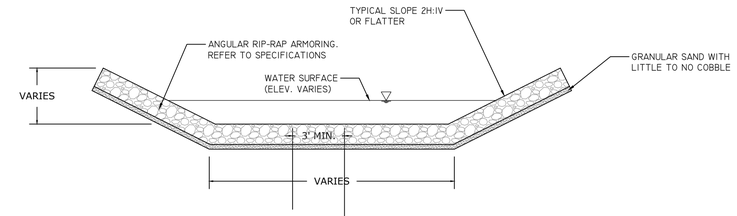
GENERAL NOTES:

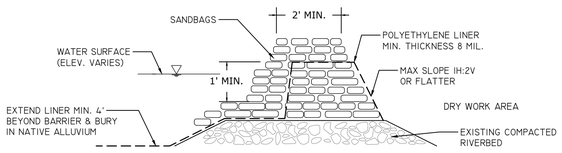
(1) ALTERNATE COFFERDAM CONSTRUCTION METHODS SHOWN HEREIN ARE INTENDED TO DESCRIBE FUNCTIONALITY ONLY. ACTUAL METHODS NECESSARY TO ACHIEVE A DRY WORK AREA ARE TO BE DETERMINED BY THE CONTRACTOR.
(2) COFFERDAM CONSTRUCTION METHODS SHALL COMPLY WITH ALL PERMIT CONDITIONS AND ARE SUBJECT TO ENGINEERS APPROVAL.
(3) ALL DEWATERING ACTIVITIES MUST OCCUR DURING THE CONSTRUCTION WINDOW DESCRIBED IN THE SPECIFICATIONS.
(4) THE COFFERDAM MUST BE DESIGNED TO WITHSTAND TYPICAL FLOWS, ANTICIPATED DURING THE PERIOD OF CONSTRUCTION.
(5) ANY WORK DONE OUTSIDE THE SPECIFIED CONSTRUCTION WINDOW REQUIRES SPECIAL PERMISSION AND REQUIRES THAT THE CONTRACTOR REDESIGN THE WATER CONTROL FOR HIGH-FLOWS DURING THE EXPANDED CONSTRUCTION WINDOW.
(6) THE CONTRACTOR SHALL HAVE NO MORE THAN ONE (1) COFFER DAM IN PLACE IN THE RIVER AT ANY GIVEN TIME. PREVIOUS WATER CONTROL MUST BE COMPLETELY REMOVED FROM RIVERBED PRIOR TO PLACEMENT OF SUBSEQUENT WATER CONTROL.
(7) SUGGESTED DIMENSIONS SHOWN IN THE TYPICAL DETAILS ARE MINIMUMS UNLESS THE CONTRACTOR ESTABLISHES, TO THE ENGINEER'S SATISFACTION, THAT AN ALTERNATIVE FORM OF WATER CONTROL MEETS THE ENGINEER'S OBJECTIVES.
(8) DEWATERING OPERATIONS SHALL USE ONE OR MORE OF THE DEWATERING SUMPS SHOWN, WELL POINTS, OR OTHER MEANS APPROVED BY LOCAL JURISDICTION TO REDUCE THE PUMPING OF SEDIMENT, AND SHALL PROVIDE A TEMPORARY SEDIMENT BASIN OR FILTRATION BMP TO REDUCE SEDIMENT TO ALLOWABLE LEVELS PRIOR TO RELEASE OFF SITE OR TO A RECEIVING WATER. A SEDIMENT BASIN MAY BE USED IN LIEU OF SUMP DISCHARGE SETTLING BASIN SHOWN IF A 4-FOOT SQUARE RIPRAP PAD IS PLACED AT THE DISCHARGE POINT AND THE DISCHARGE END OF THE LINE IS STAKED IN PLACE TO PREVENT MOVEMENT OF THE LINE.
(9) THE CONTRACTOR SHALL NOTIFY ENGINEER AND OWNER'S REPRESENTATIVE AT LEAST 24 HOURS PRIOR TO BUILDING OR REMOVING A COFFER DAM. IN THE INSTANCE THAT A COFFER DAM NEEDS TO BE REMOVED DUE TO FLOOD THREAT THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND OWNER AS SOON AS POSSIBLE BUT SHALL PROCEED IMMEDIATELY WITH THE EXPEDIENT REMOVAL OF THE COFFERDAM.
(10) THE CONTRACTOR MUST BE AVAILABLE FOR FLOOD EVENTS 24 HOURS A DAY, 7 DAYS A WEEK, DURING CONSTRUCTION.



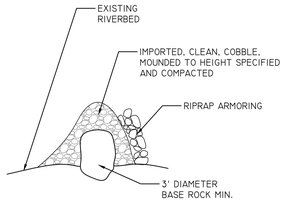
NOTES:
(1) WATER CONTROL CHANNELS TO BE ARMORED, MAINTAINED, AND PROTECTED.
(2) WATER CONTROL CHANNEL TO BE REMOVED FROM RIVERBED IN THE INSTANCE OF A FORECASTED FLOOD.
(3) WATER CONTROL CHANNEL TO BE OF MINIMUM LENGTH TO ALLOW CONTRACTOR TO WORK IN THE AREA OF CONSTRUCTION.
(4) WATER CONTROL CHANNELS SHALL BE NO STEEPER THAN A 1% SLOPE AND NO FLATTER THAN 0.5% SLOPE (1" IN 100 TO 1" IN 200) AND SHALL NOT TO EXCEED 2.5' IN DEPTH AT FLOWS LESS THAN 200 CFS.

NTS

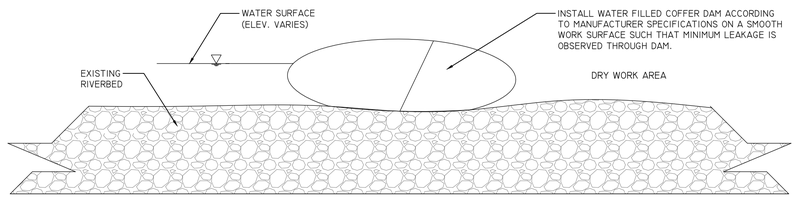
1 WATER CONTROL DIVERSION CHANNEL TYPICAL
SECTION



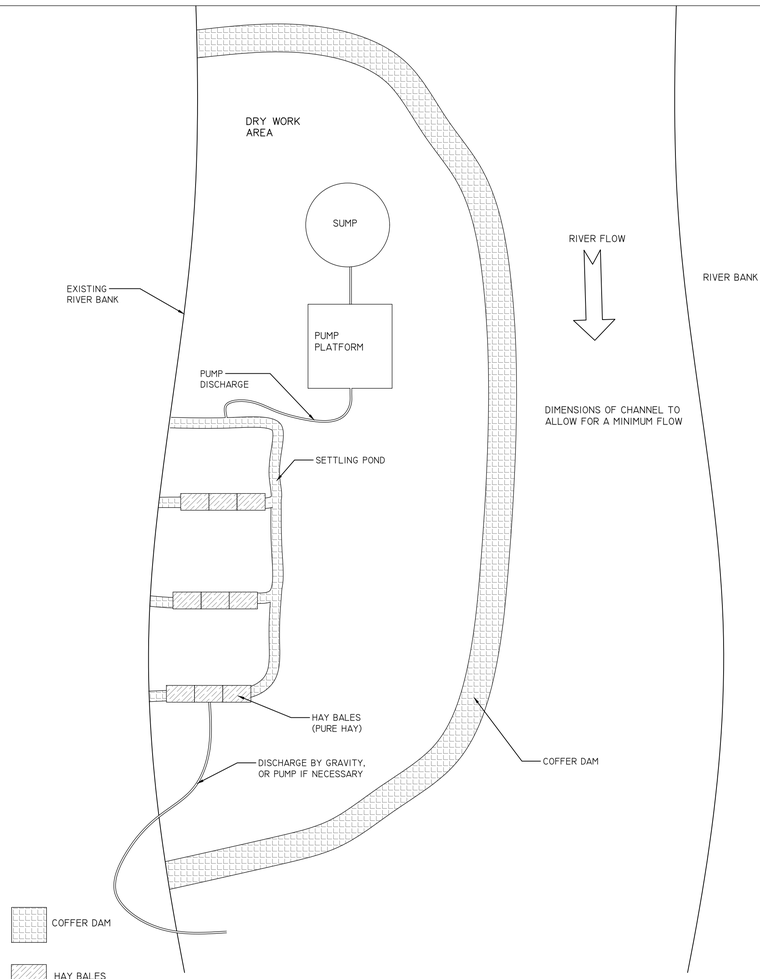
2 SANDBAG COFFER DAM TYPICAL
SECTION NTS



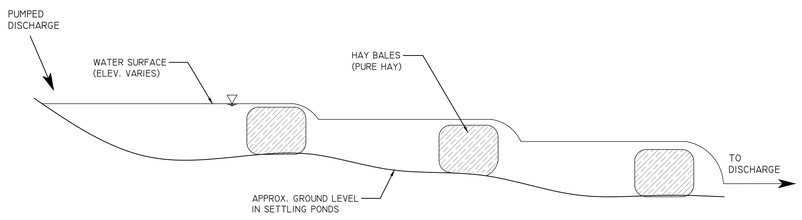
3 ALLUVIAL COFFER DAM TYPICAL
SECTION NTS



4 WATER FILLED COFFER DAM TYPICAL
SECTION NTS



5 TYPICAL COFFER DAM
PLAN NTS



NOTE:
I. SCHEMATIC LAYOUT TO DESCRIBE FUNCTIONALITY ONLY. ACTUAL LAYOUT TO BE DETERMINED BY CONTRACTOR, PER PERMIT CONDITIONS.

6 TYPICAL SETTLING POND
SECTION NTS

TYPICAL WATER CONTROL DETAILS □1□

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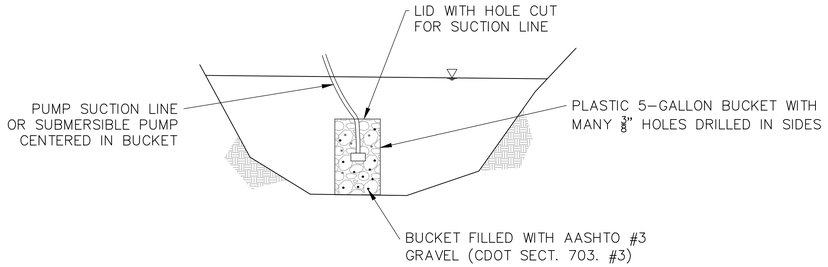
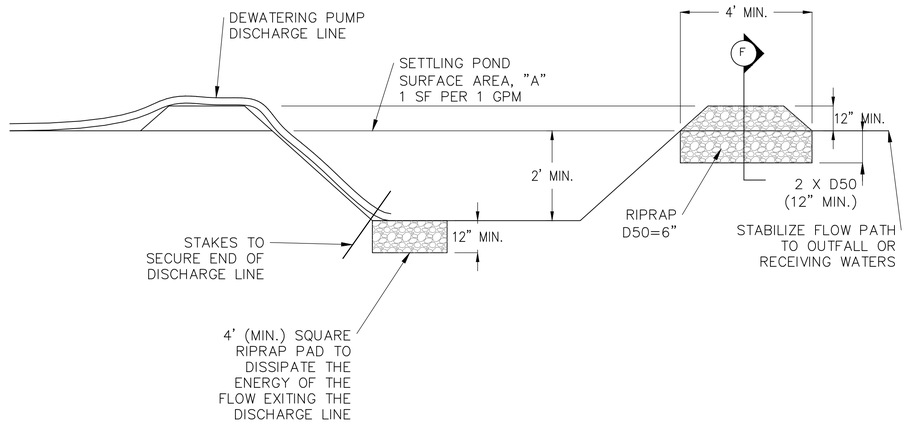
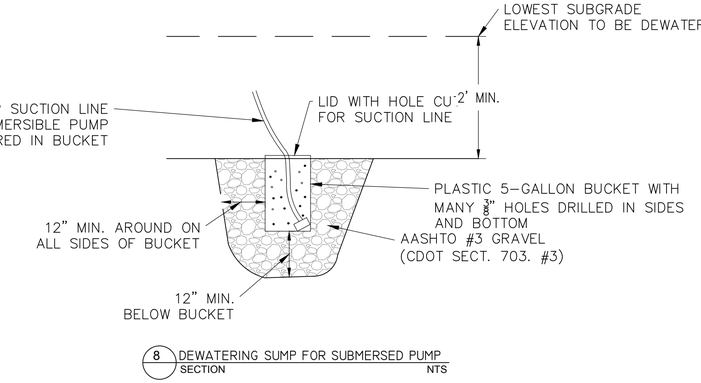


7 DEWATERING POND ALREADY FILLED WITH WATER
SECTION NTS



9 SUMP DISCHARGE SETTLING BASIN
SECTION NTS



8 DEWATERING SUMP FOR SUBMERSED PUMP
SECTION NTS

10 SETTLING BASIN
SECTION NTS

TYPICAL WATER CONTROL DETAILS (2)

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Client:
Town of Lyons

Project Name:
Bohn Park Recovery Division

Status:
30% Design Drawings

Drawing Name:
Typical Water Control Details (2)

Revisions:
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Drawn By:
Christian Clark, James Robinson

Checked By:
Scott Shipley

Date:
05/13/2016

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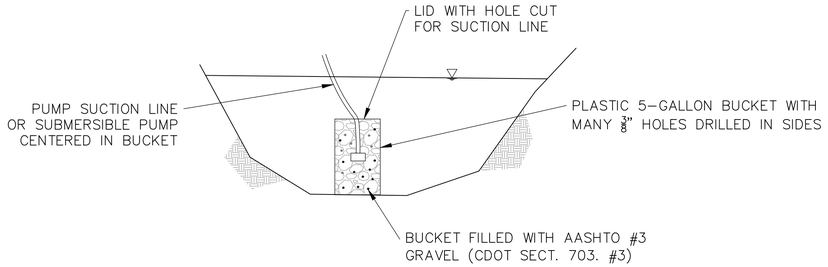
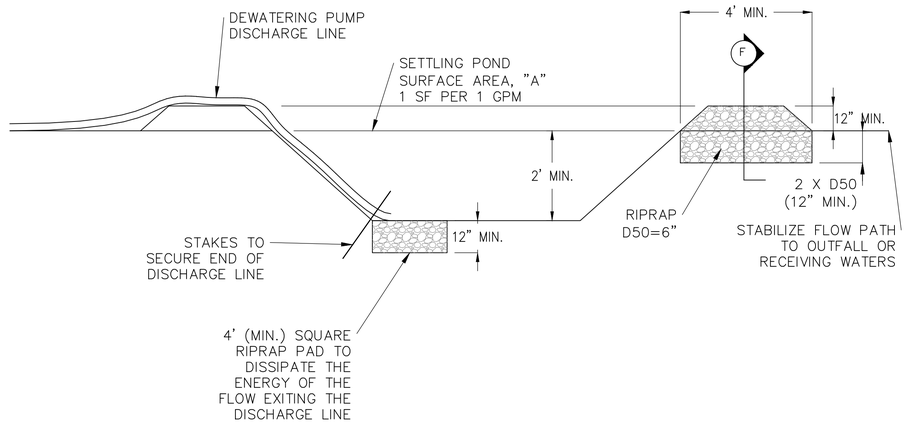
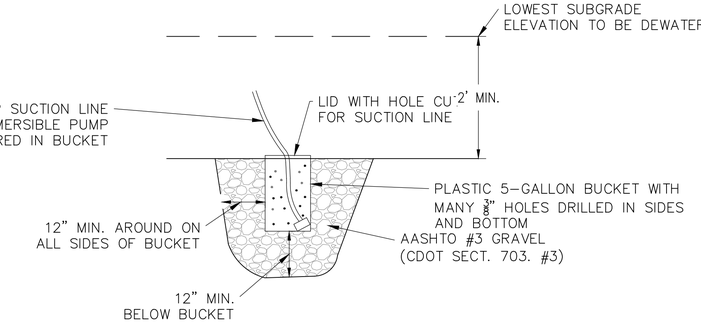


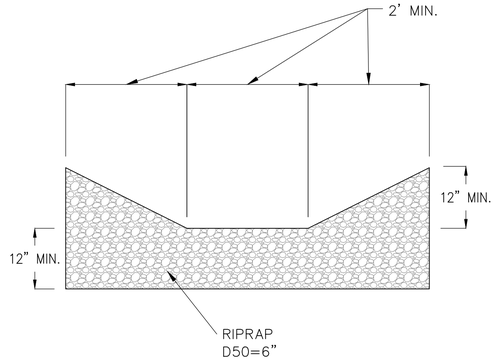
7 DEWATERING POND ALREADY FILLED WITH WATER
SECTION NTS



□ SUMP DISCHARGE SETTLING BASIN
SECTION NTS



8 DEWATERING SUMP FOR SUBMERSED PUMP
SECTION NTS



10 SETTLING BASIN
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TYPICAL BMP DETAILS □1□

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05/13/2016

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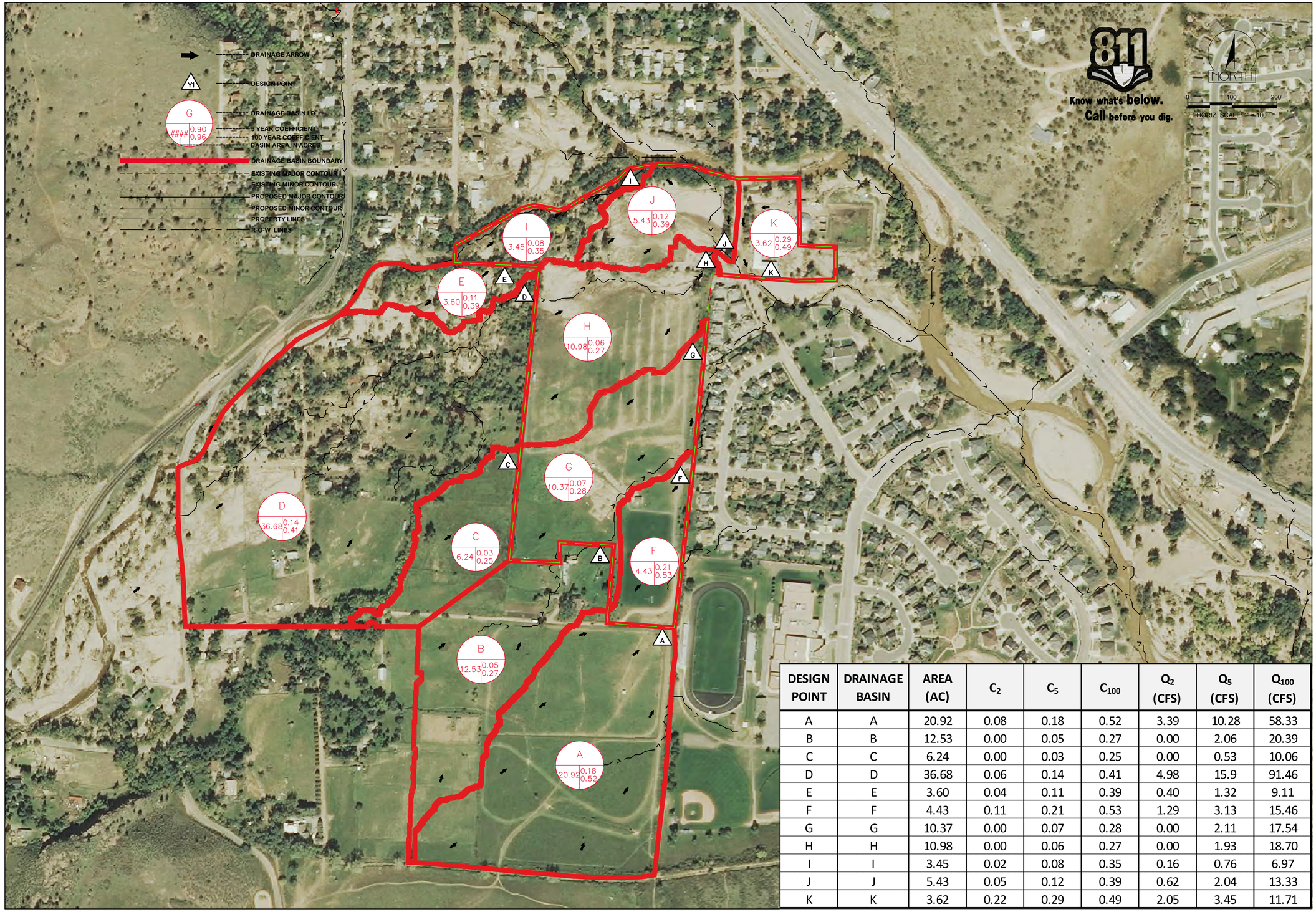

DESIGN POINT	DRAINAGE BASIN	AREA (AC)	C_2	C_5	C_{100}	Q_2 (CFS)	Q_5 (CFS)	Q_{100} (CFS)
A	A	20.92	0.08	0.18	0.52	3.39	10.28	58.33
B	B	12.53	0.00	0.05	0.27	0.00	2.06	20.39
C	C	6.24	0.00	0.03	0.25	0.00	0.53	10.06
D	D	36.68	0.06	0.14	0.41	4.98	15.9	91.46
E	E	3.60	0.04	0.11	0.39	0.40	1.32	9.11
F	F	4.43	0.11	0.21	0.53	1.29	3.13	15.46
G	G	10.37	0.00	0.07	0.28	0.00	2.11	17.54
H	H	10.98	0.00	0.06	0.27	0.00	1.93	18.70
I	I	3.45	0.02	0.08	0.35	0.16	0.76	6.97
J	J	5.43	0.05	0.12	0.39	0.62	2.04	13.33
K	K	3.62	0.22	0.29	0.49	2.05	3.45	11.71

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www.dhmdesign.com

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2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED:
DRAWN:
CHECKED:
REVISIONS:
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE:
SHEET NUMBER:
SHEET_____OF_XX

IMAGES
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XREFS
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ME-PLAT [P:\P\16019BOW\Dwg\03_MASTER EXISTING\ME-PLAT.dwg]
ME-CIVILSITE [P:\P\16019BOW\Dwg\03_MASTER EXISTING\ME-CIVILSITE.dwg]
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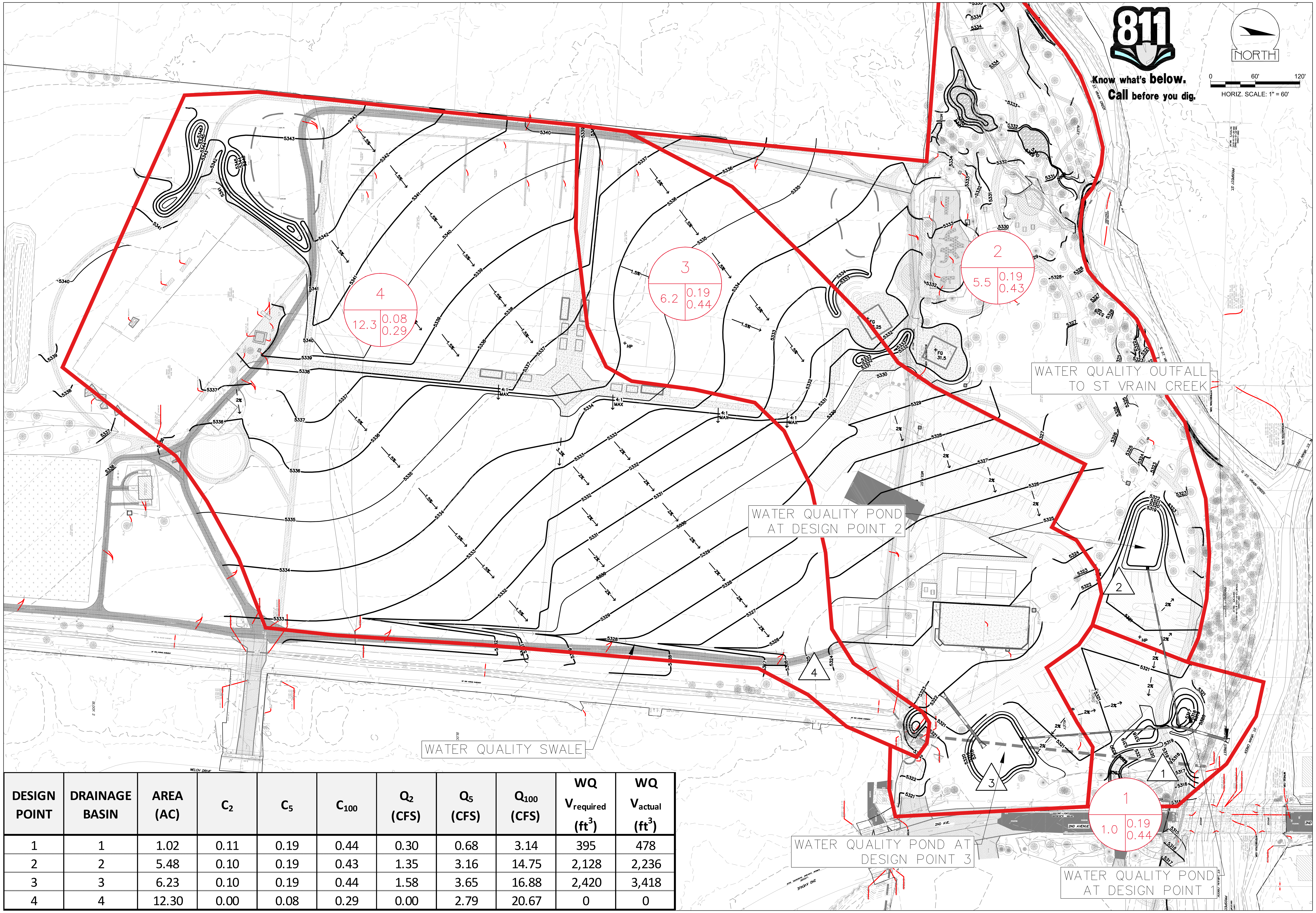

DESIGN POINT	DRAINAGE BASIN	AREA (AC)	C_2	C_5	C_{100}	Q_2 (CFS)	Q_5 (CFS)	Q_{100} (CFS)	WQ $V_{required}$ (ft^3)	WQ V_{actual} (ft^3)
1	1	1.02	0.11	0.19	0.44	0.30	0.68	3.14	395	478
2	2	5.48	0.10	0.19	0.43	1.35	3.16	14.75	2,128	2,236
3	3	6.23	0.10	0.19	0.44	1.58	3.65	16.88	2,420	3,418
4	4	12.30	0.00	0.08	0.29	0.00	2.79	20.67	0	0

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BOHN PARK

2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED:
DRAWN:
CHECKED:

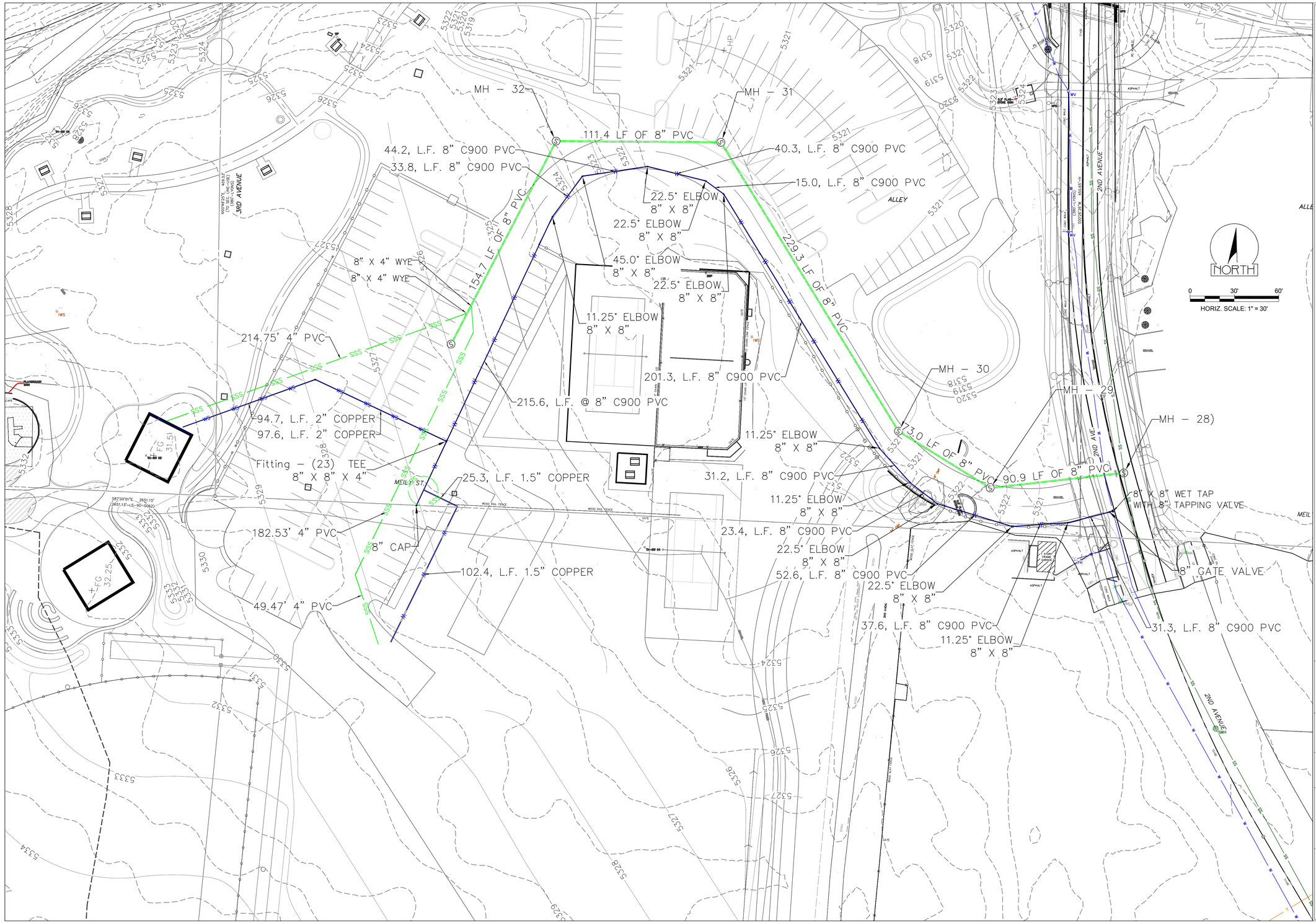
REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
PROPOSED DRAINAGE, WATER QUALITY, AND STORM SEWER PLAN

SHEET NUMBER:
DR-1

SHEET____OF_XX_



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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED:
DRAWN:
CHECKED:

REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
SANITARY SEWER AND WATER PLAN

SHEET NUMBER:
U-1

SHEET_____OF_XX

XREFS
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Dwg_Bohn Park – LAYOUT (P:\FLVS\16016BOH\Dwg\07_OTHERS\DHM\2016-6-7\Vivek\DHM_Bohn Park – LAYOUT.dwg)
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IMAGES
Dwg_Bohn Park – Existing Trail Aerial.jpg
Dwg_Bohn Park – Existing Underlay.jpg

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PLOT DATE: Jun 10, 2016 - 10:56am

ABBREVIATIONS

AB	ANCHOR BOLT
ACC	ACCESSIBLE
ACOUST	ACOUSTICAL
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJUSTABLE
ADJT	ADJACENT
AFF	ABOVE FINISH FLOOR
ALUM	ALUMINUM
ALT	ALTERNATE
APPROX	APPROXIMATE
ARCH	ARCHITECT/ARCHITECTURAL
AUTO	AUTOMATIC
AWI	AMERICAN WOODWORKING INST.
BD	BOARD
BITUM	BITUMINOUS
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BENCH MARK
BM	BEAM
B.O.	BOTTOM OF
BRG	BEARING
BSMT	BASEMENT
CAB	CABINET
CBB	CEMENTITIOUS BACKER BOARD
CHNLS	CHANNELS
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CONSTR	CONSTRUCTION
COORD	COORDINATE
CSI	CONSTRUCTION SPECIFICATIONS INSTITUTE
CTP	CERAMIC TILE PAVERS
CUH	CABINET UNIT HEATER
CWT	CERAMIC WALL TILE
D	DRYER (IN PLAN)
DBL	DOUBLE
DEMO	DEMOLISH, DEMOLITION
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIM.	DIMENSION
DISP	DISPENSER
DN	DOWN
DR	DOOR
DS	DOWN SPOUT
DTL	DETAIL
DW	DISHWASHER
DWG	DRAWING
(E)	EXISTING
EA	EACH
EJ	EXPANSION JOINT
ELEV/EL	ELEVATION
ELEV	ELEVATOR
ELEC	ELECTRICAL
ENCL	ENCLOSURE
ENGR	ENGINEERED
EPF	EPOXY POURED FLOOR
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
EX	EXPOSED
EXH	EXHAUST
EXP	EXPANSION
EXP-JT	EXPANSION JOINT
EXT	EXTERIOR
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
FBGL	FIBERGLASS
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FF&E	FURNITURE, FIXTURES & EQUIPMENT
FG	FINISH GRADE
FIN	FINISH(ED)
FIN-FLR	FINISH FLOOR
FIXT	FIXTURE
FLR	FLOOR
FLRG	FLOORING
FO	FACE OF
FOS	FACE OF STUD
FR	FIRE RESISTIVE
FR	FRAME
FRMG	FRAMING
FRP	FIBER REINFORCED PANEL
FT	FOOT/FEET
FTG	FOOTING
FUT	FUTURE
GA	GAUGE
GAL	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GHM	GALVANIZED HOLLOW METAL
GL	GLASS
GLU LAM	GLUE LAMINATED WOOD
GMGU	GLASS MESH GYPSUM UNIT
GR	GRADE
GYP BD/GWB	GYPSUM BOARD
HB	HOSE BIB
HC	HOLLOW CORE
HDBD	HARDBOARD
HDR	HEADER
HDWR	HARDWARE
HM	HOLLOW METAL
HORZ/H	HORIZONTAL
HPC	HIGH PERFORMANCE COATING
HT/H	HEIGHT
HTR	HEATER
HVAC	HEATING, VENTING & AIR COND
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
INDIC	INDICATOR
INSUL	INSULATION
INT	INTERIOR
JAN	JANITOR
JT	JOINT
JST	JOIST
KD	KNOCK DOWN
LAM	LAMINATE
LAV	LAVATORY
LF	LINEAR FOOT
LIN	LINOLEUM
LT	LIGHT
MAT.	MATERIAL
MANUF	MANUFACTURE
MAX	MAXIMUM
MD	METAL DECK
MDF	MEDIUM DENSITY FIBERBOARD
MECH	MECHANICAL
MISC	MISCELLANEOUS
MIN	MINIMUM
MIR	MIRROR
MO	MASONRY OPENING
MTD	MOUNTED
MTG	MEETING
MTL	METAL
(N)	NEW
N	NORTH
NA	NOT APPLICABLE
NAT	NATATORIUM
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NO.	NUMBER
NOM	NOMINAL
NON-COM	NON-COMBUSTIBLE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFC/OFF	OFFICE
OH	OVER HEAD
OPG	OPENING
OPP	OPPOSITE
OV	OVER
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
PC	PRECAST CONCRETE
PCV	POLYVINYL CHLORIDE
PL	PROPERTY LINE
PL	PLATE
PLG	PLUMBING
PLAM	PLASTIC LAMINATE
PLYWD	PLYWOOD
PNL	PANEL
PR	PAIR
PREFAB	PREFABRICATED
POR	PORCELAIN TILE
PT	PAINT
PTN	PARTITION
QT	QUARRY TILE
R	RISER
RAD	RADIUS
RB	RACQUETBALL
RB	RUBBER BASE
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
RE:	REFER/REFERENCE
REF	REFRIGERATOR
REINF	REINFORCED
REQ	REQUIRED
RESIL	RESILIENT
REV	REVISION
RFG	ROOFING
RM	ROOM
R-NOSING	RUBBER STAIR NOSING
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RTFS	RUN TRACK FLR SYSTEM
RTU	ROOF TOP UNIT
SAT	SUSPENDED ACOUSTICAL TILE
SC	SOLID CORE
SCHED	SCHEDULE
S-CONC	SEALED CONCRETE
SEAL	SEALER
SECT	SECTION
SF	SQUARE FOOT/FEET
SHT	SHEET
SHWR	SHOWER
SIM	SIMILAR
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTOR NATIONAL ASSOCIATION
SPEC	SPECIFICATIONS
SPRL	SPANDREL
SQ	SQUARE
SS	SOLID SURFACE
S-STL	STAINLESS STEEL
ST	STAIN
STA	STATION
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STHG	SHEATHING
STL	STEEL
SUPPL	SUPPLIED
SUSP	SUSPENDED
STOR	STORAGE
STR	STRINGER
STRL	STRUCTURAL
STRUCT	STRUCTURE, STRUCTURAL
SYM	SYMMETRICAL
SYST	SYSTEM
T	TREAD (IN PLAN)
T	TEMPERED (ON WINDOW)
TB	TACK BOARD
TBB	TILE BACKER BOARD
TBD	TO BE DETERMINED
T&B	TOP & BOTTOM
TC	TOP OF CURB
T&G	TONGUE & GROOVE
TEL	TELEPHONE
TEMP	TEMPERED
THK	THICKNESS
THLD	THRESHOLD
T.O.	TOP OF
T.O. B	TOP OF BEAM
T.O. C	TOP OF CONCRETE
T.O. F	TOP OF FLR/FOOTING
T.O. M	TOP OF MASONRY
T.O. S	TOP OF SLAB
T.O. STL	TOP OF STEEL
TS	TUBE STEEL
TV	TELEVISION
TYP	TYPICAL
TYPE 'X'	FIRE RATED GYPSUM BOARD
UBC	UNIFORM BUILDING CODE
UL	UNDERWRITER'S LABORATORY
UNFIN	UNFINISHED
UON	UNLESS OTHERWISE NOTED
VAR	VARIES
VNR	VENEER
VER/V	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VOC	VOLATILE ORGANIC COMPOUND
W	WASHER (IN PLAN)
W	WIRE GLASS (ON WINDOW)
W/	WITH
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WF	WIDE FLANGE
WH	WATER HEATER
WI	WROUGHT IRON
W/O	WITHOUT
WP	WATERPROOF
WR	WATER RESISTANT
WT	WEIGHT
WWF	WELDED WIRE FABRIC

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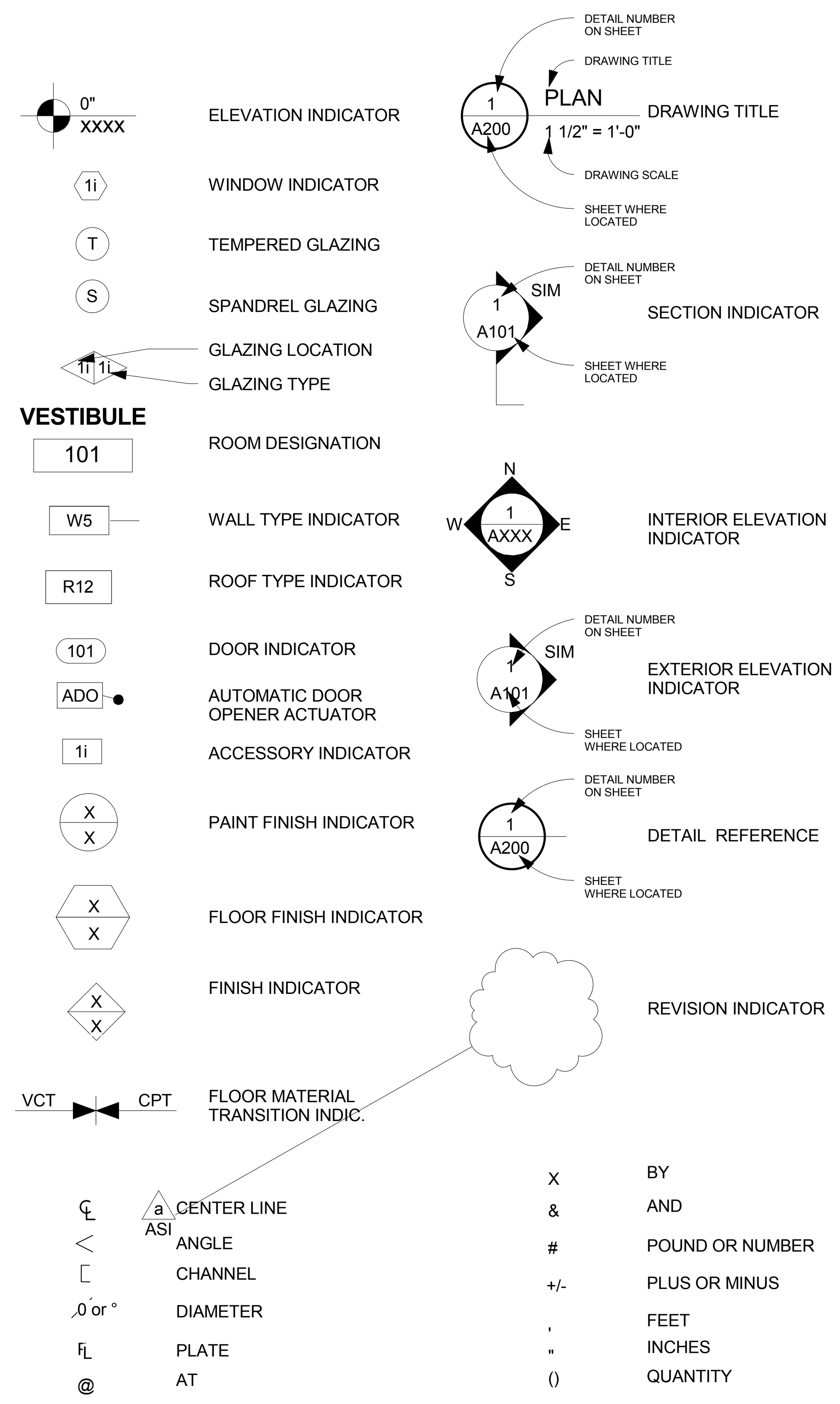
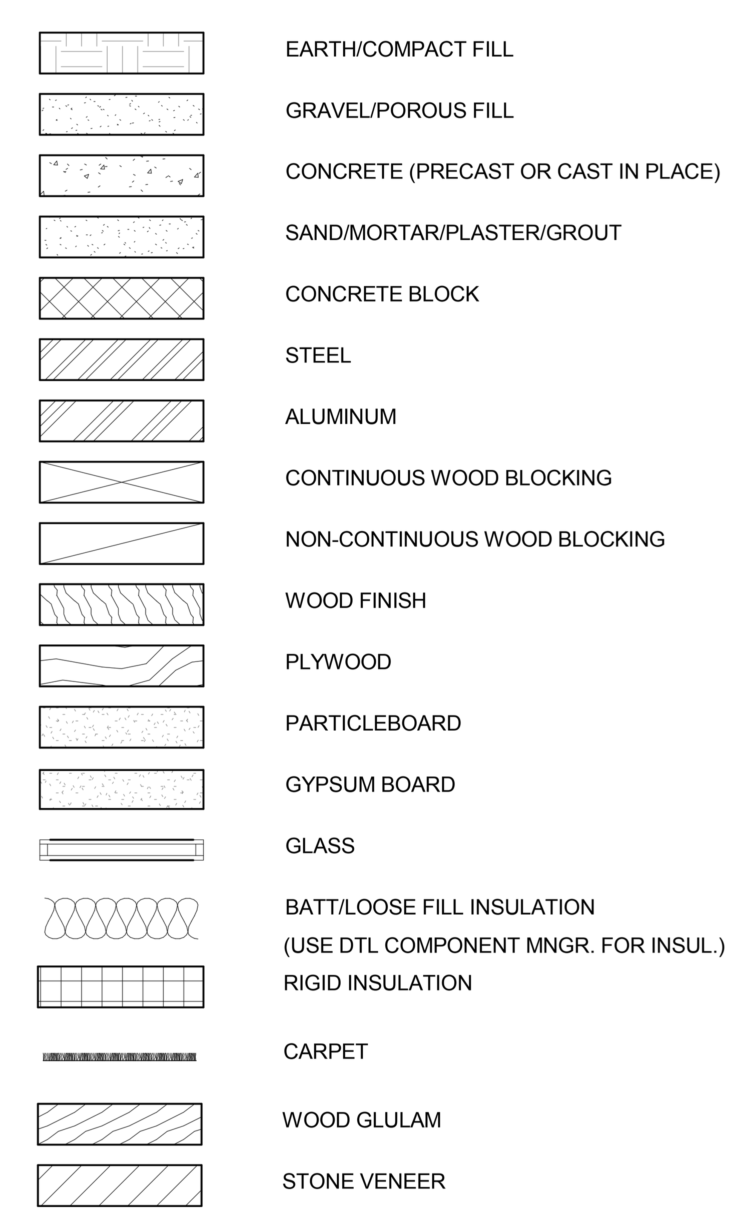
6/10/2016 12:19:25 PM

SYMBOLS LEGEND



MATERIALS LEGEND



GENERAL NOTES

GENERAL REQUIREMENTS

1. ATTENTION ALL USERS OF THESE DRAWINGS, GENERAL CONTRACTORS, SUB-CONTRACTORS, MANUFACTURERS, SUPPLIERS: CAREFULLY AND THOROUGHLY REVIEW THESE GENERAL NOTES. IT IS YOUR RESPONSIBILITY TO KNOW AND ADHERE TO THESE REQUIREMENTS.

2. THE DRAWINGS AND SPECIFICATIONS ARE SEPARATED INTO DISCIPLINES FOR THE CONVENIENCE OF THE ARCHITECT AND THE CONTRACTOR. THE SEPARATIONS USED HEREIN ARE USED ONLY FOR THE PURPOSES OF CONVENIENCE AND REFERENCE, AND IN NO WAY DO THEY DEFINE OR LIMIT THE SCOPE OR INTENT OF ANY PART OF THE DRAWINGS, OR OF THE DRAWINGS AND SPECIFICATIONS AS A WHOLE. THE FACT THAT THE DRAWINGS ARE SEPARATED IN NO WAY SUGGESTS THAT THE WORK IS NOT TO BE CONSTRUCTED AS A COMPLETE, INTEGRATED AND UNIFIED WHOLE.

3. EVERY EFFORT HAS BEEN MADE TO MAKE THESE DOCUMENTS CONCISE AND COORDINATED, TO DEFINE WORK IN THE MOST LOGICAL PLACE AND TO ELIMINATE REDUNDANCY. DO NOT PRESUME THAT YOUR SCOPE OF WORK IS SINGULARLY DEFINED. YOUR SCOPE OF WORK IS DEFINED THROUGHOUT THE ENTIRE SET OF DRAWINGS AND SPECIFICATIONS AND IS NOT CONTAINED IN JUST ONE SERIES OF DRAWINGS OR DIVISION OF SPECIFICATIONS. YOU MUST REVIEW THE ENTIRE SET OF CONTRACT DOCUMENTS TO DETERMINE YOUR SCOPE OF WORK.

4. THE DRAWINGS AND SPECIFICATIONS, INCLUDING DRAWINGS PREPARED BY SPECIFIC ENGINEERING DISCIPLINES (SUCH AS CIVIL, STRUCTURAL, MECHANICAL, ELECTRICAL, ETC.) ARE COMPLEMENTARY; ITEMS SHOWN IN ANY ONE LOCATION IN THE DRAWINGS SHALL BE CONSIDERED TO BE REQUIREMENTS OF THE CONTRACT FOR CONSTRUCTION. IN THE EVENT OF AN INCONSISTENCY BETWEEN THE DRAWINGS AND SPECIFICATIONS, OR WITHIN EITHER DOCUMENT, THE CONTRACTOR SHALL SEEK CLARIFICATION OR INTERPRETATION FROM THE ARCHITECT PRIOR TO BIDDING. WHERE INCONSISTENCIES ARE NOT CLARIFIED PRIOR TO BIDDING, AND WHERE THE ACTUAL SOLUTION OR INTENT CANNOT BE REASONABLY INFERRED, THE CONTRACTOR SHALL PROVIDE THE BETTER QUALITY OR GREATER QUANTITY OF WORK.

5. MECHANICAL AND ELECTRICAL DRAWINGS SHOW INFORMATION IN A DIAGRAMMATIC FASHION WITHOUT DIMENSIONING. THE GENERAL CONTRACTOR IS TO COORDINATE THE LOCATIONS OF ALL M.E. EQUIPMENT WITH RESPECT TO THE ARCHITECTURAL AND STRUCTURAL DETAILING OF SHAFTS, CHASES, AND SUCH.

6. THE CONTRACTOR AND ALL SUB-CONTRACTORS SHALL VISIT THE SITE AND BECOME FAMILIAR WITH SITE CONDITIONS AS THEY MAY AFFECT CARRYING OUT THE WORK AS DESCRIBED IN THESE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL INVESTIGATE, VERIFY, AND BE RESPONSIBLE FOR ALL CONDITIONS OF THE PROJECT, AND NOTIFY THE ARCHITECT OF ANY CONDITIONS THAT REQUIRE MODIFICATION BEFORE PROCEEDING WITH THE WORK.

7. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITY LINES. LOCATIONS SHOWN ARE APPROXIMATE. REPAIR ALL DAMAGE TO UTILITY LINES CAUSED BY CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.

8 ALL PERSONS DIRECTLY OR INDIRECTLY ASSOCIATED WITH THE PROJECT SHALL BE FAMILIAR WITH THE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT, AND IMPLEMENT THOSE RULES AS THEY APPLY TO THIS PROJECT.

9. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, EQUIPMENT, LABOR, AND SERVICES NECESSARY TO COMPLETE THE WORK.

10. ALL WORK PERFORMED SHALL BE IN ACCORDANCE WITH THE BUILDING CODE & LOCAL AMENDMENTS. RE: A010.

11. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ALL TRADES AND THE PREVENTION OF CONFLICT BETWEEN ALL TRADES.

12. PRIOR TO BEGINNING ANY WORK, THE CONTRACTOR SHALL CONDUCT A WALK THROUGH INSPECTION WITH THE OWNER TO DETERMINE IN WRITING THE CONDITION OF THE WORK ALREADY IN PLACE. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING OR REPLACING EQUIPMENT PRESENTLY IN PLACE THAT IS DAMAGED DURING CONSTRUCTION.

13. CONTRACTOR SHALL SUBMIT CONFIRMATION OF ORDERED MATERIALS OR ITEMS NECESSARY TO COMPLETE THE PROJECT WITH PROJECTED DELIVERY DATE GREATER THAN FOUR WEEKS.

14. ALL SUB-CONTRACTORS SHALL SUBMIT SHOP DRAWINGS AS REQUIRED FOR ARCHITECTS APPROVAL PRIOR TO COMMENCING ANY WORK.

15. SEAL AROUND ALL PENETRATIONS THROUGH EXISTING AND PROPOSED FIRE RATED PARTITIONS. PROVIDE UL APPROVED FIRESTOP SYSTEM TO MEET REQUIRED RATING.

REFER TO CONSTRUCTION SPECIFICATION INSTITUTE, UNIFORM DRAWING SYSTEM AND TO PROJECT SPECIFICATIONS FOR REFERENCE STANDARDS & ADDITIONAL ABBREVIATIONS

DRAWINGS AND DIMENSIONS

1. DO NOT SCALE THE DRAWINGS.

2. ALL DIMENSIONS ON PLANS ARE TO FACE OF BLOCK OR TO FACE OF STUD UNLESS NOTED OTHERWISE.

3. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT IMMEDIATELY SHOULD ANY DISCREPANCIES BE FOUND IN THE DRAWINGS AND SPECIFICATIONS.

4. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL FIELD CONDITIONS AND DIMENSIONS AS THEY RELATE TO THIS PROJECT. SHOULD DISCREPANCIES EXIST BETWEEN THE WORK INDICATED AND ACTUAL FIELD CONDITIONS NOTIFY THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK.

5. ACTUAL CONTRACT LIMITS ARE TO BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE OWNER BEFORE ACTUAL CONSTRUCTION WORK BEGINS. ANY INDICATION OF PROJECT LIMITS OR LINES OF DEMARCATION ARE SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, AND ARE NOT TO BE TAKEN LITERALLY.

6. SEE GENERAL NOTES ON ALL 'A' SERIES DRAWINGS FOR INFORMATION RELATED TO PLANS AND DETAILS ON THOSE SHEETS.

7. THE TERM "ALIGN" REFERS TO LOCATING DIFFERENT COMPONENTS OF CONSTRUCTION TO PROVIDE A FLUSH FINISH SURFACE.

8. CONTRACTORS AND ALL SUB-CONTRACTORS SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION AND/OR ORDERING OF MATERIALS.

9. USE OF THE WORD "VERIFY" POINTS OUT A SITUATION WHICH MUST BE CONFIRMED PRIOR TO PROCEEDING WITH THE WORK, FABRICATION OF EQUIPMENT, OR ORDERING MATERIAL. NOTIFY THE ARCHITECT OF ANY DISCREPANCY.

10. REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATIONS OF ALL CEILING FIXTURES. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR COMPLETE CONSTRUCTION REQUIREMENTS.

11. ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS SHOW WHERE EXPOSED DUCTWORK IS TO BE INSTALLED AT A SPECIFIC ELEVATION IN A CONTROLLED PATTERN. THE CONTRACTOR MUST RELY ON ALL OF THESE DISCIPLINES TO COMPLETE THE WORK AND SHOULD NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

12. THE GENERAL CONTRACTOR SHALL COORDINATE THE WORK OF ALL TRADES INSTALLING THEIR RESPECTIVE EQUIPMENT IN THE CEILING PLENUMS. MECHANICAL, ELECTRICAL, STRUCTURAL, AND FIRE SPRINKLER SYSTEMS ALL SHARE THIS SAME SPACE. EACH SUB CONTRACTOR IS TO REVIEW THE REQUIREMENTS OF THEIR WORK WITH THE AWARENESS OF THE OTHER TRADES THAT NEED TO SHARE THESE SPACES AND MUST NOT ASSUME THAT THEIR INSTALLATION HAS BEEN CONSIDERED IN THE DESIGN AND SHOP DRAWINGS OF THE OTHER TRADES.

13. ALL DOORS TO BE LOCATED 4" OFF ADJACENT CMU OR METAL STUD WALL UNLESS DIMENSIONED OTHERWISE ON THE PLAN.

PARTITION NOTES

1. PROVIDE AND INSTALL ALL BLOCKING STIFFENERS, BRACING, BACK-UP PLATES AND SUPPORTING BRACKETS REQUIRED FOR THE INSTALLATION OF ALL CASEWORK AND OF ALL FLOOR MOUNTED OR SUSPENDED MECHANICAL AND ELECTRICAL EQUIPMENT.

2. COORDINATE METAL STUD GAUGE WITH PRE-APPROVED EQUIPMENT ANCHORAGE. WHERE A DISCREPANCY OCCURS, THE MORE STRINGENT REQUIREMENT SHALL GOVERN.

3. THERE SHALL BE NO BACK-TO-BACK ELECTRICAL TELEPHONE, OR OTHER OUTLETS, EXCEPT WHERE SPECIFICALLY SHOWN

4. PROVIDE ACOUSTIC (SOUND) SEALANT AT NON-RATED WALLS AND FIRE-RATED SEALANT AT SMOKE PARTITION AND AS REQUIRED BY TEST NUMBER

Sheet Number	Sheet Name
1.0 - ARCHITECTURE	
A101	RESTROOM FLOOR PLAN AND RCP
A102	PAVILION FLOOR PLAN AND RCP
A103	RESTROOM AND PAVILION ROOF PLAN
A301	RESTROOM ELEVATIONS
A302	PAVILION ELEVATIONS
A311	RESTROOM BUILDING SECTIONS
A312	PAVILION BUILDING SECTIONS
A501	RESTROOM PERSPECTIVE VIEWS
A502	PAVILION PERSPECTIVE VIEWS
A600	ACCESSORY SCHEDULES AND ELEVATIONS
A610	INTERIOR ELEVATIONS
2.0 - GENERAL	
G000	ABBREVIATIONS, SYMBOLS, AND GENERAL NOTES
G020	WALL TYPES, ROOF TYPES, FLOOR TYPES

CONSTRUCTION NOTES

1. DRAWINGS ARE PREPARED USING DIMENSIONS AND PRODUCT CONFIGURATIONS OR DETAILS OF SPECIFIC MANUFACTURERS (TYPICALLY THE FIRST MANUFACTURER LISTED UNDER "ACCEPTABLE MANUFACTURERS" IN THE SPECIFICATIONS). DIMENSIONS AND DETAILS FOR SPECIFIC PRODUCTS MAY CHANGE BEFORE THEY ARE ACTUALLY INCORPORATED INTO THE WORK, AND PRODUCTS BY OTHER MANUFACTURERS MAY ALSO BE ACCEPTABLE. THEREFORE, ACTUAL INSTALLATION DETAILS AND DIMENSIONS MAY DIFFER FROM THOSE SHOWN. CONTRACTOR SHALL VERIFY INSTALLATION REQUIREMENTS FOR ALL PRODUCTS TO BE INCORPORATED IN THE WORK (INCLUDING PARTITION THICKNESS FOR RECESSED OR SEMI-RECESSED PRODUCTS), AND IS RESPONSIBLE FOR ACCOMMODATING AND COORDINATING CHANGES TO OTHER MATERIALS OR PRODUCTS THAT ARE NECESSARY BECAUSE OF THESE DIFFERENCES.

2. PROVIDE SOLID BLOCKING WITHIN PARTITIONS AT ALL LOCATIONS WHERE ITEMS WILL BE MOUNTED ON PARTITIONS INCLUDING, BUT NOT LIMITED TO: ACCESSORIES, CASEWORK TRIM, FLASHING, WALL MOUNTED EQUIPMENT, TACK/BULLETIN/MARKER BOARDS, ETC.

3. ALL WOOD BLOCKING SHALL BE FIRE-RETARDANT WOOD. VERIFY PER IBC 603

4. MAINTAIN RATING AT ALL BLOCKOUTS FOR ALL FIRE EXTINGUISHERS AND TOILET ACCESSORIES THAT ARE TO BE INSTALLED IN RATED WALLS.

5. PROVIDE 24" X 24" ACCESS PANELS IN PARTITIONS WHERE REQUIRED FOR MECHANICAL EQUIPMENT EXCEPT WHERE SIZES ARE OTHERWISE NOTED.

6. PROVIDE GYPSUM BOARD CONTROL JOINTS IN PARTITIONS AND CEILINGS AT 30'-0" MAX SPACING. COORDINATE TO MEET FIRE RESISTIVE RATINGS OF THE ASSEMBLY, FIRESTOP JOINTS AT RATED PARTITIONS. SUB-CONTRACTOR MUST PROVIDE A SUBMITTAL FOR JOINT MATERIAL.

7. CAULK ALL JOINTS OR CRACKS WHICH OCCUR WHERE DISSIMILAR MATERIALS INTERSECT PERPENDICULAR TO EACH OTHER AND WHERE THE INTERSECTION IS EXPOSED TO VIEW, UNLESS INDICATED OTHERWISE ON THE DRAWINGS.

8. FIREBLOCK ALL CONCEALED SPACES, SOFFITS, SHAFTS, CHASES AND CEILING AREAS PER REQUIREMENTS OF THE 2006 IBC AND THE LOCAL JURISDICTION'S AMENDMENTS.

9. PROVIDE CONTINUOUS PERIMETER BUILDING INSULATION AT ALL EXTERIOR WALLS FROM SLAB TO ROOF DECK.

10. THE ARCHITECTURAL AND STRUCTURAL DRAWINGS BOTH DESCRIBE VARIOUS FLOOR SLAB SLOPE REQUIREMENTS, RECESSES, AND EDGE CONDITIONS. USE BOTH SETS OF DRAWINGS WHEN INSTALLING THE FLOOR SLAB.

11. PROVIDE SLIP JOINT CONNECTIONS AT PARTITIONS THAT EXTEND TO STRUCTURE ABOVE. PROVIDE BRACING ABOVE AS REQUIRED. REFER TO STRUCTURAL DRAWINGS AND TO SLIP JOINT DETAILS.

12. ASSUME LEVEL 4 FINISH FOR ALL GYPSUM BOARD PARTITIONS, UNLESS NOTED OTHERWISE.

13. ALL EXPOSED CMU CORNERS TO BE BULLNOSE UON

14. GROUT CMU CENTER SCORE JOINT SIMILAR TO OTHER ADJACENT JOINTS.

15. IT IS THE INTENT OF THE DESIGN THAT ALL METAL STUD PARTITIONS BE OF SUFFICIENT WIDTH TO ADEQUATELY ENCLOSE PIPING, CONDUITS, AND RECESSED EQUIPMENT. NOTIFY THE ARCHITECT OF ANY DISCREPANCIES WITH THIS INTENT.

16. ALL VERTICAL AND HORIZONTAL PIPES, CONDUITS, DUCTS, ETC. IN FINISHED ROOMS OR AREAS THROUGHOUT THE BUILDING SHALL BE FURRED IN TO MATCH THE ROOM FINISH, UNLESS OTHERWISE NOTED.

17. WHERE MECHANICAL WORK PENETRATES ANY COMPONENT OF A FIRE-RATED ASSEMBLY, PROVIDE THE APPROPRIATE FIRE AND/OR SMOKE DAMPERS. IF IT IS NOT CLEAR WHETHER DUCTWORK PENETRATES A PORTION OF THE RATED ASSEMBLY, OBTAIN CLARIFICATION FROM THE ARCHITECT PRIOR TO BIDDING. SEAL AROUND ALL PENETRATIONS THROUGH PROPOSED FIRE RATED PARTITIONS. PROVIDE UL APPROVED FIRESTOP SYSTEM TO MEET REQUIRED RATING.

BARKER RINKER SEACAT ARCHITECTURE

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16

DRAWN: Author
CHECKED: Checker

REVISIONS:
No. Date:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

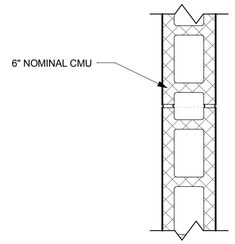
SHEET TITLE:
ABBREVIATIONS, SYMBOLS, AND GENERAL NOTES

G000

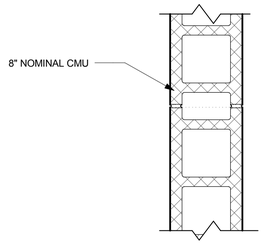
SHEET OF

WALL TYPES

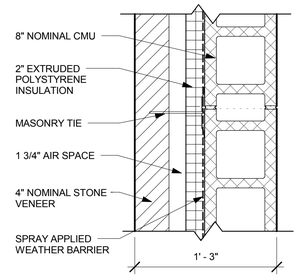
W206 6" MASONRY WALL



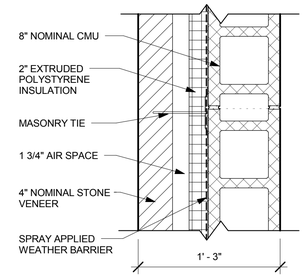
W208 8" MASONRY WALL



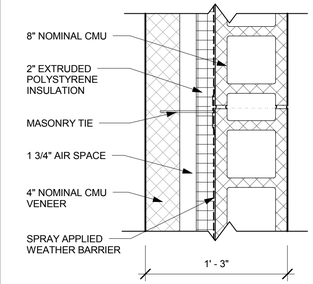
W250 8" MASONRY WALL w/ BRICK VENEER



W251 8" MASONRY WALL w/ BRICK VENEER & GYP BD



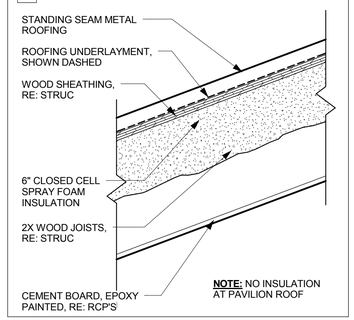
W252 8" MASONRY WALL w/ CMU VENEER



GENERAL WALL TYPE NOTES:
1. WALL SECTIONS ARE CUT IN PLAN VIEW.
2. ALL CMU TO RECEIVE CEMENTITIOUS BLOCK FILLER PRIOR TO PAINTING. ALL EXPOSED INTERIOR CMU TO RECEIVE EPOXY PAINT FINISH.
3. ALL INTERIOR EXPOSED CMU TO HAVE BULL NOSED CORNERS.
4. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL MASONRY & CONCRETE INFORMATION.

ROOF TYPES

R1 WOOD FRAMED ROOF WITH STANDING SEAM MTL ROOFING



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SHEET TITLE:
WALL TYPES, ROOF TYPES, FLOOR TYPES

G020

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RCP GENERAL NOTES

1. ALL CEILING ELEVATIONS LISTED AS A.F.F. DIMENSIONS. SEE INTERIOR ELEVATIONS FOR CLARIFICATION IF NECESSARY.

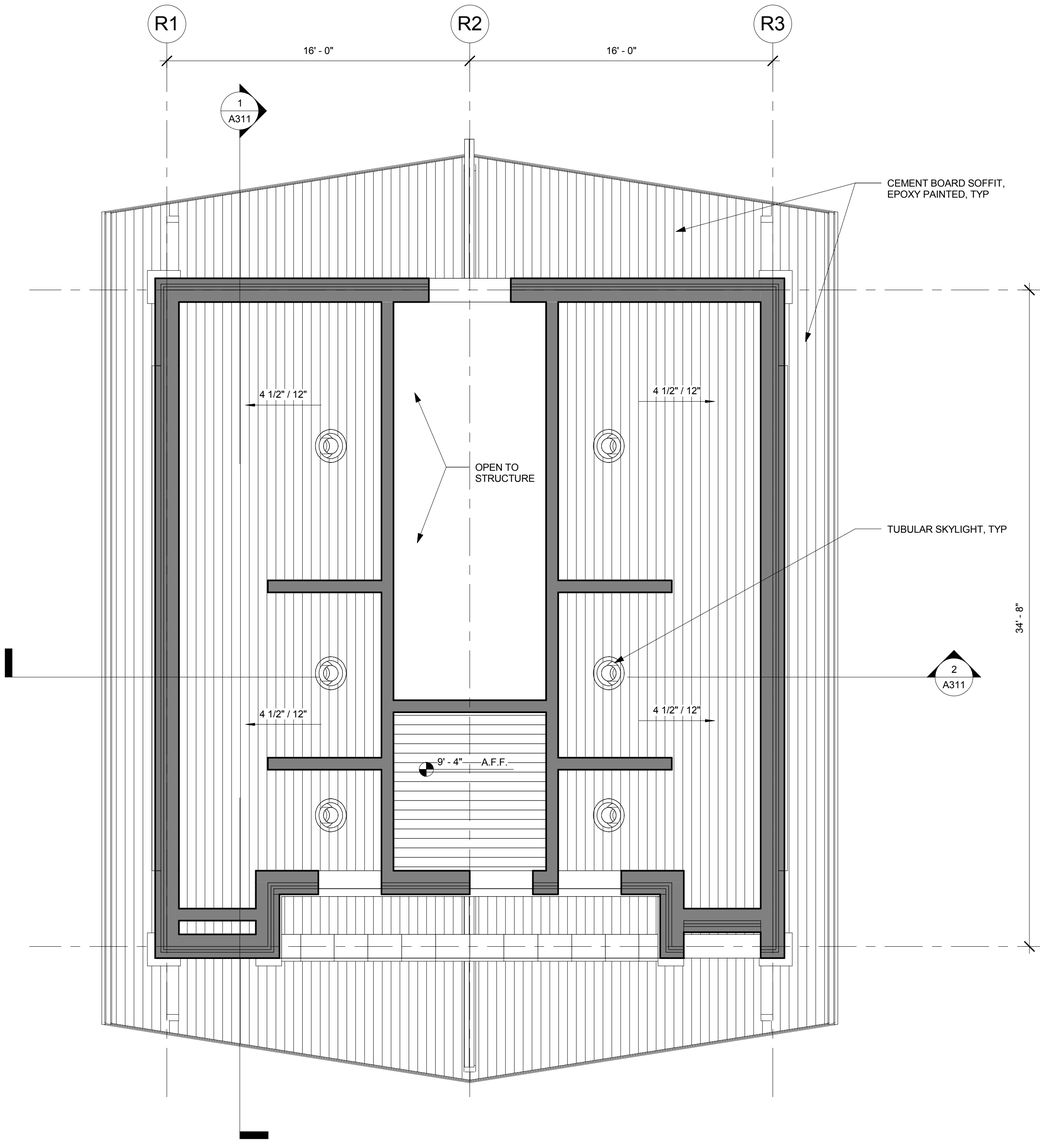
2. ALL WALLS SHALL TERMINATE 6" ABOVE CEILING ELEVATION UNLESS OTHERWISE NOTED.

RCP LEGEND

EPOXY PAINTED CEMENT PANEL BOARD

EXPOSED STRUCTURE

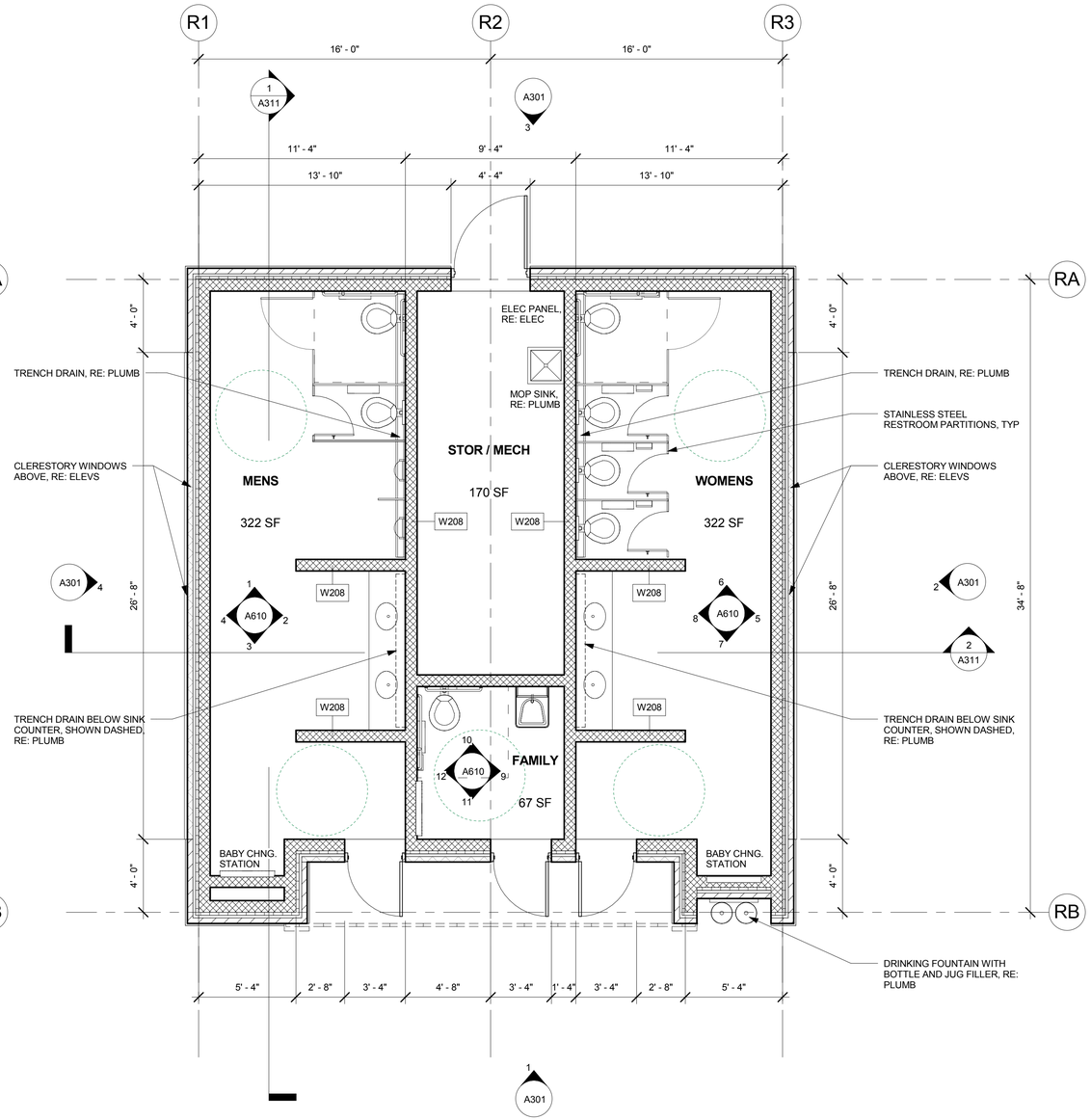
SEE MECHANICAL AND ELECTRICAL LEGENDS FOR ADDITIONAL SYMBOLS



2 A101 RESTROOM REFLECTED CEILING PLAN

1/4" = 1'-0"

0 2' 4' 8'



1 A101 RESTROOM FLOOR PLAN

1/4" = 1'-0"

0 2' 4' 8'

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SHEET TITLE:
RESTROOM FLOOR PLAN AND RCP

A101

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RCP GENERAL NOTES

1. ALL CEILING ELEVATIONS LISTED AS A.F.F. DIMENSIONS. SEE INTERIOR ELEVATIONS FOR CLARIFICATION IF NECESSARY.

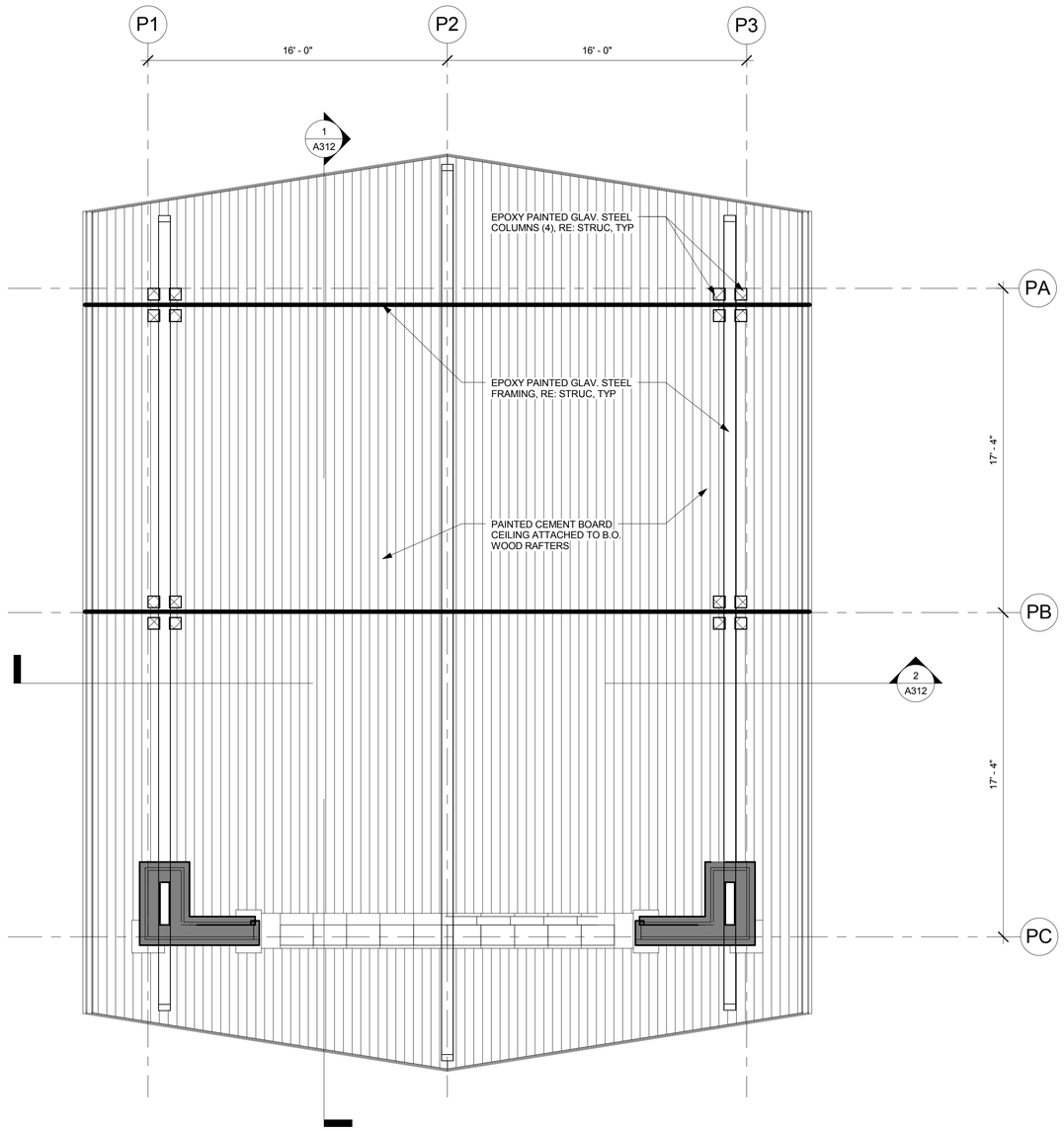
2. ALL WALLS SHALL TERMINATE 6" ABOVE CEILING ELEVATION UNLESS OTHERWISE NOTED.

RCP LEGEND

EPOXY PAINTED CEMENT PANEL BOARD

EXPOSED STRUCTURE

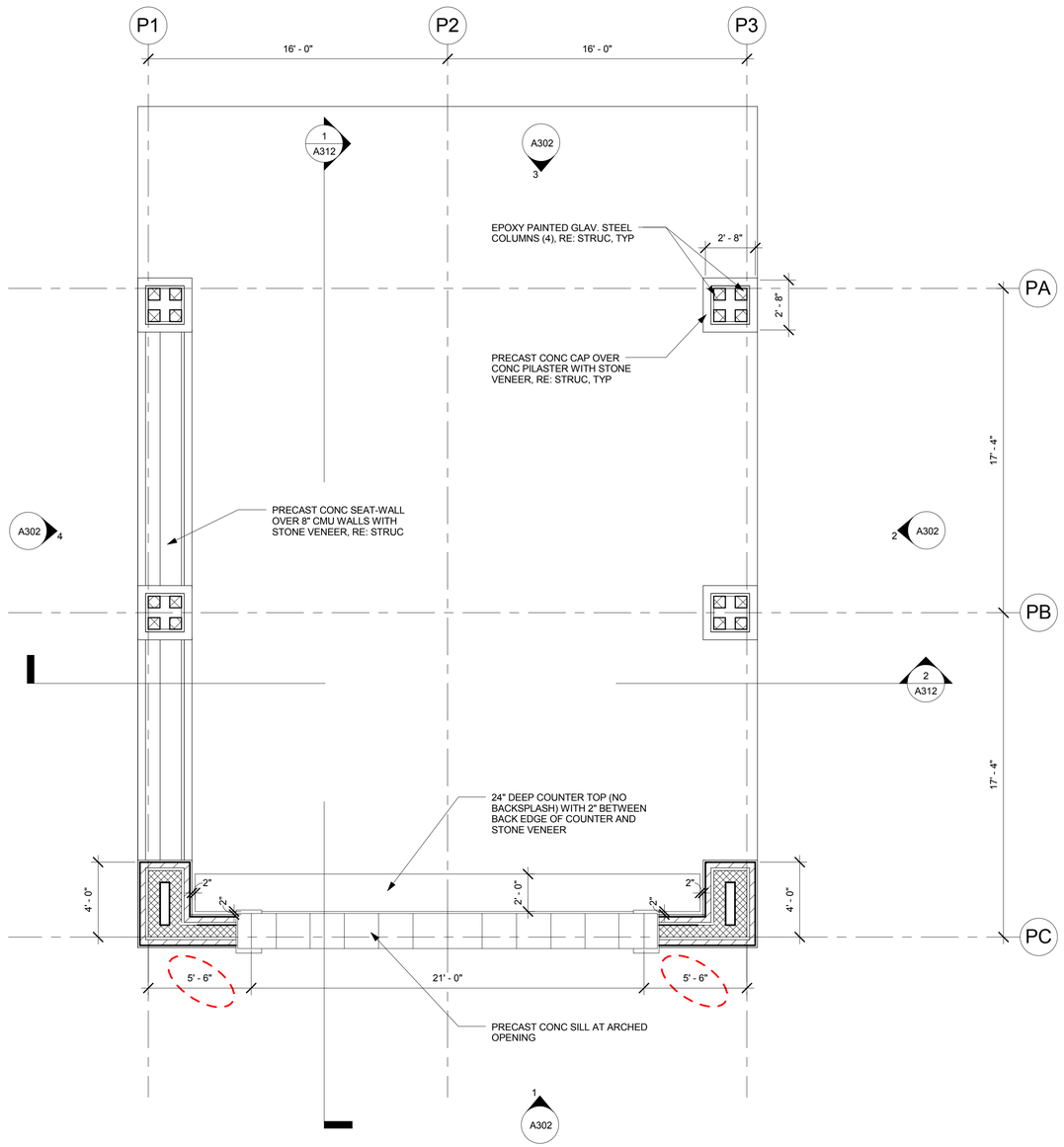
SEE MECHANICAL AND ELECTRICAL LEGENDS FOR ADDITIONAL SYMBOLS



1 A102 PAVILION REFLECTED CEILING PLAN

1/4" = 1'-0"

0 2' 4' 8'



3 A102 PAVILION FLOOR PLAN

1/4" = 1'-0"

0 2' 4' 8'

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JOB DESCRIPTION:
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SHEET TITLE:
PAVILION FLOOR PLAN AND RCP

A102

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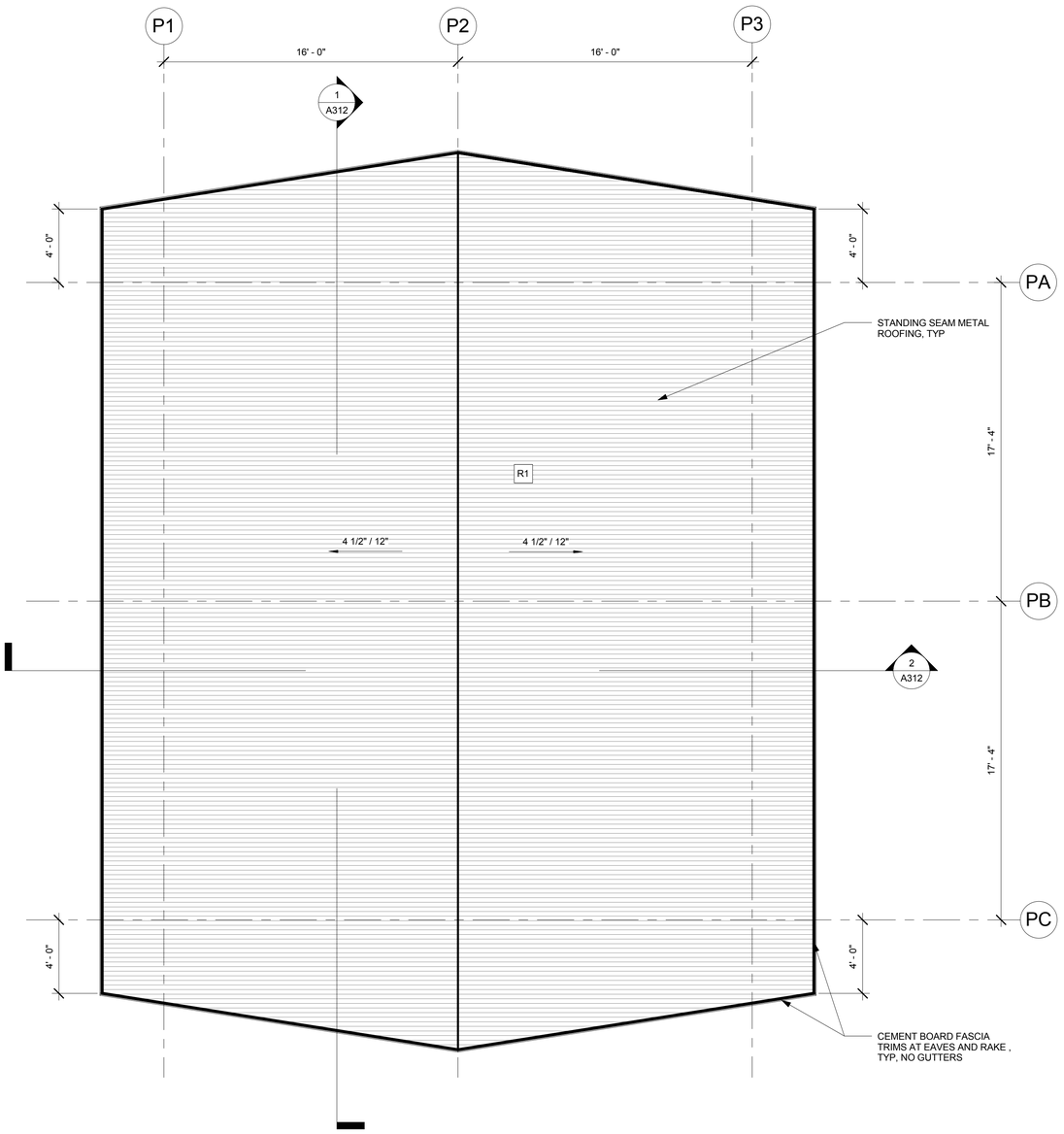
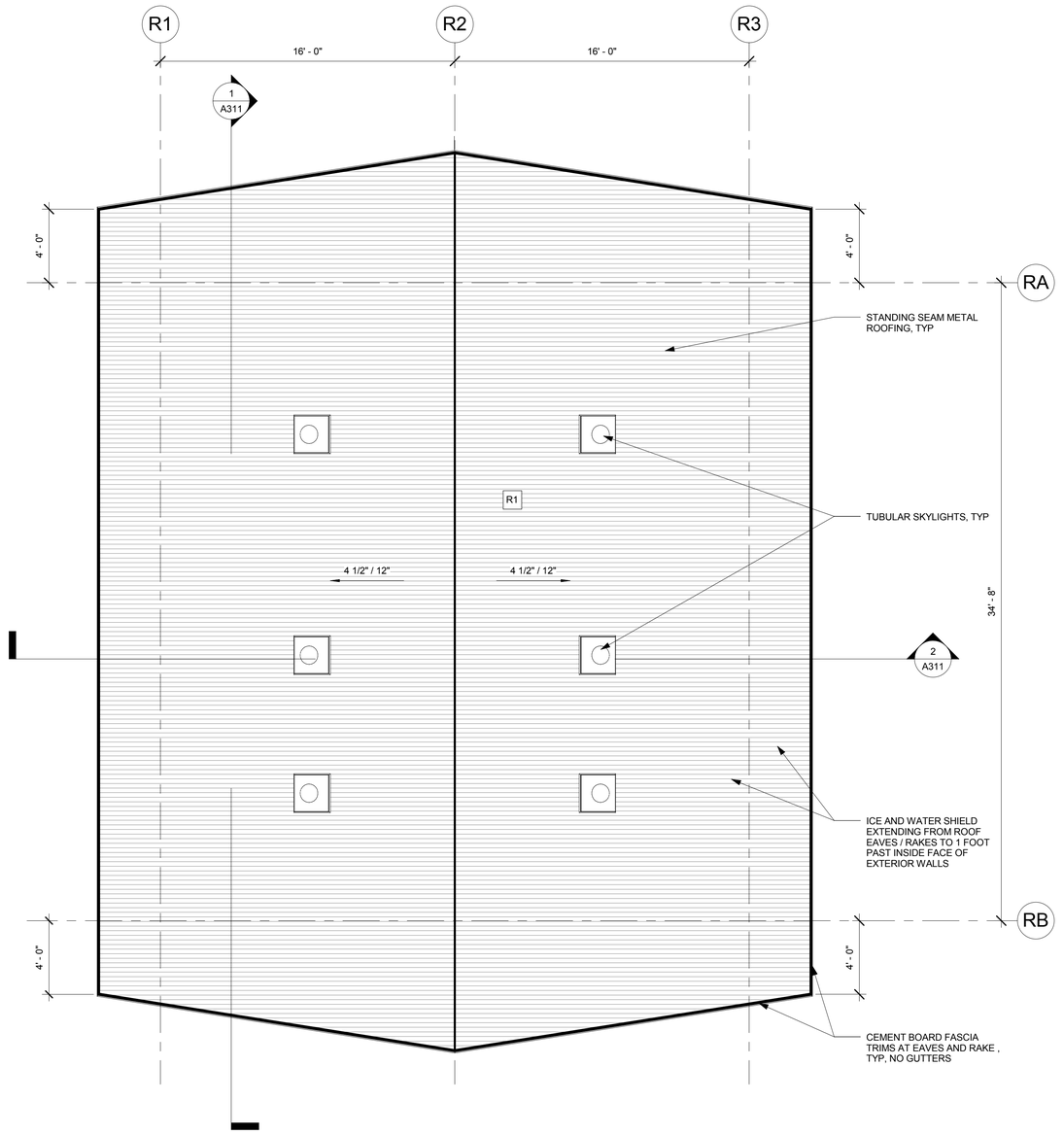


4 A103 PAVILION ROOF PLAN

1/4" = 1'-0"

0 2' 4' 8'



3 A103 RESTROOM ROOF PLAN

1/4" = 1'-0"

0 2' 4' 8'

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JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
RESTROOM AND PAVILION ROOF PLAN

A103

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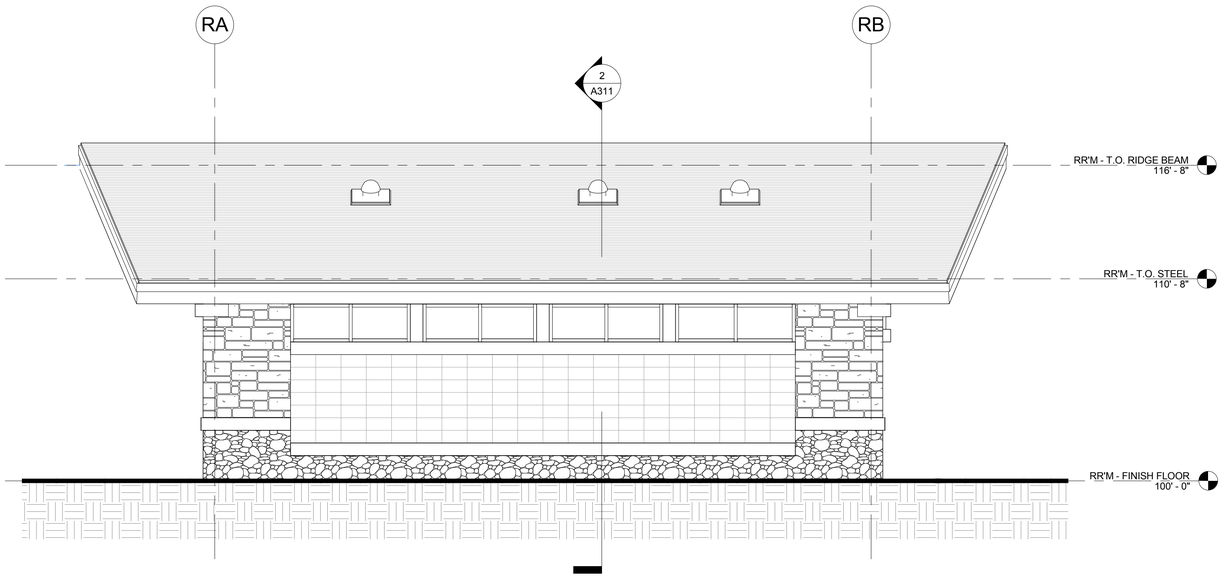
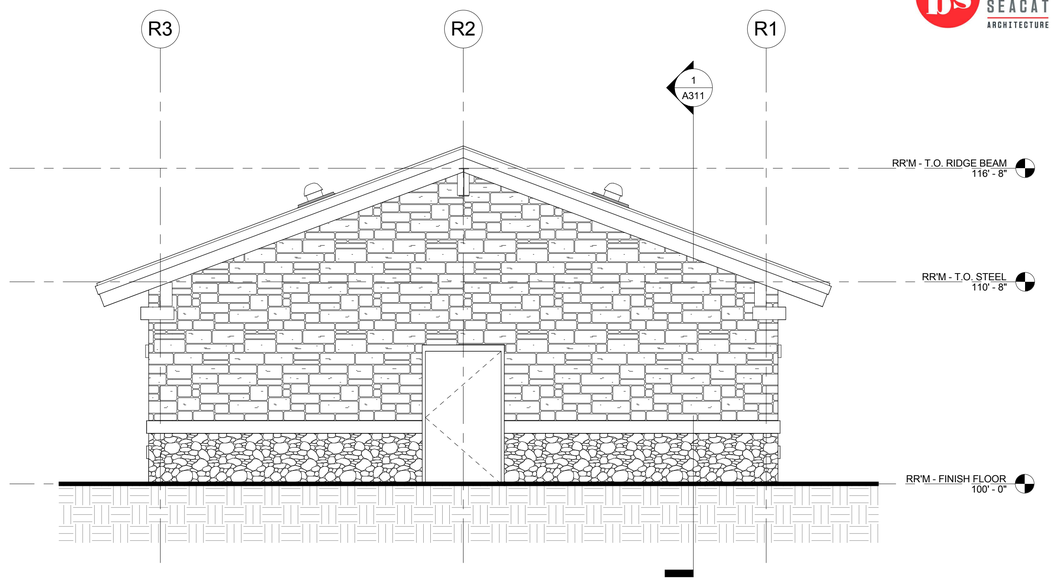


4 A301 RESTROOM ELEVATION 04

1/4" = 1'-0"

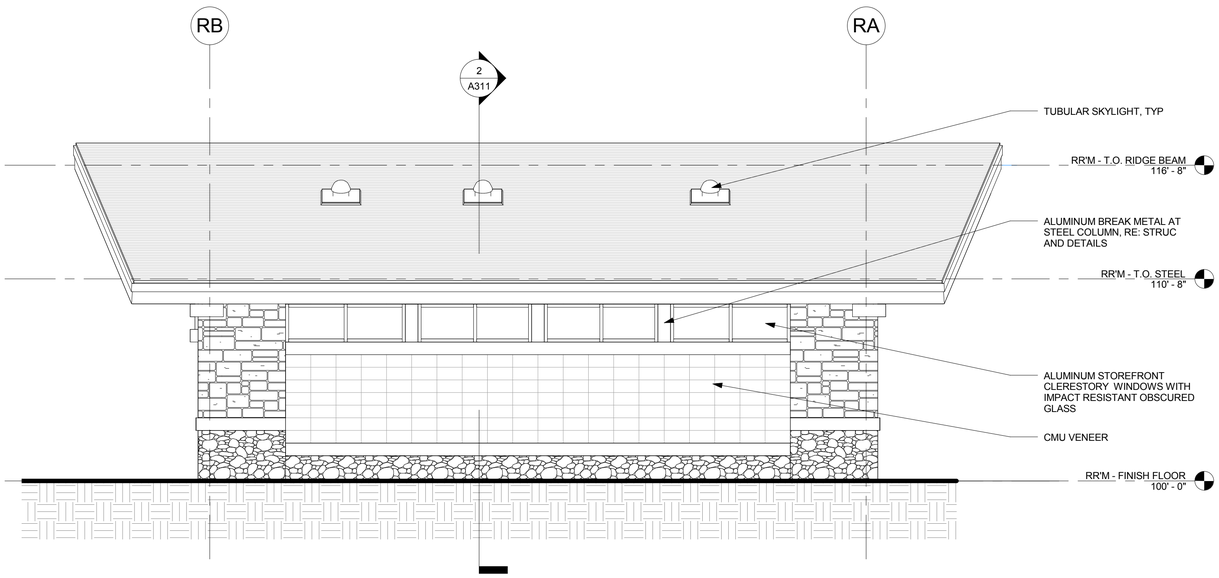
0 2' 4' 8'



3 A301 RESTROOM ELEVATION 03

1/4" = 1'-0"

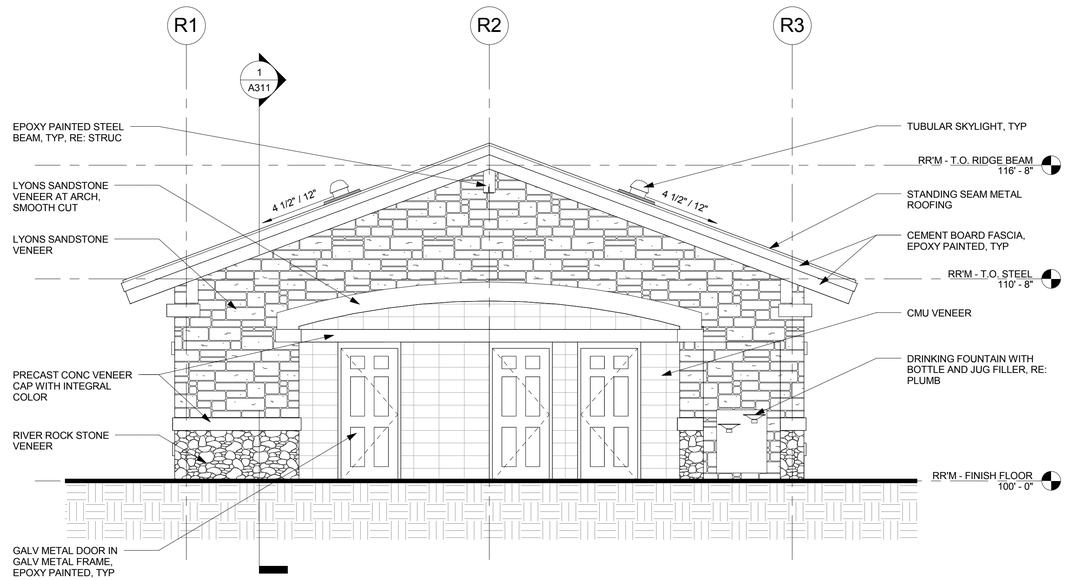
0 2' 4' 8'



2 A301 RESTROOM ELEVATION 02

1/4" = 1'-0"

0 2' 4' 8'



1 A301 RESTROOM ELEVATION 01

1/4" = 1'-0"

0 2' 4' 8'

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DESIGN DEVELOPMENT

SHEET TITLE:
RESTROOM ELEVATIONS

A301

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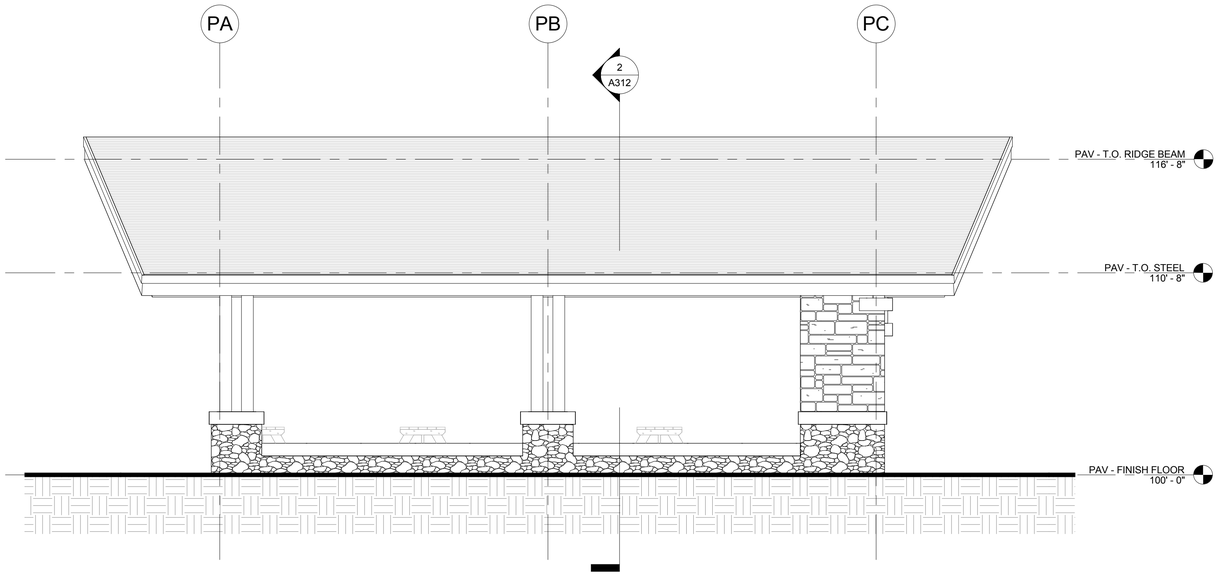
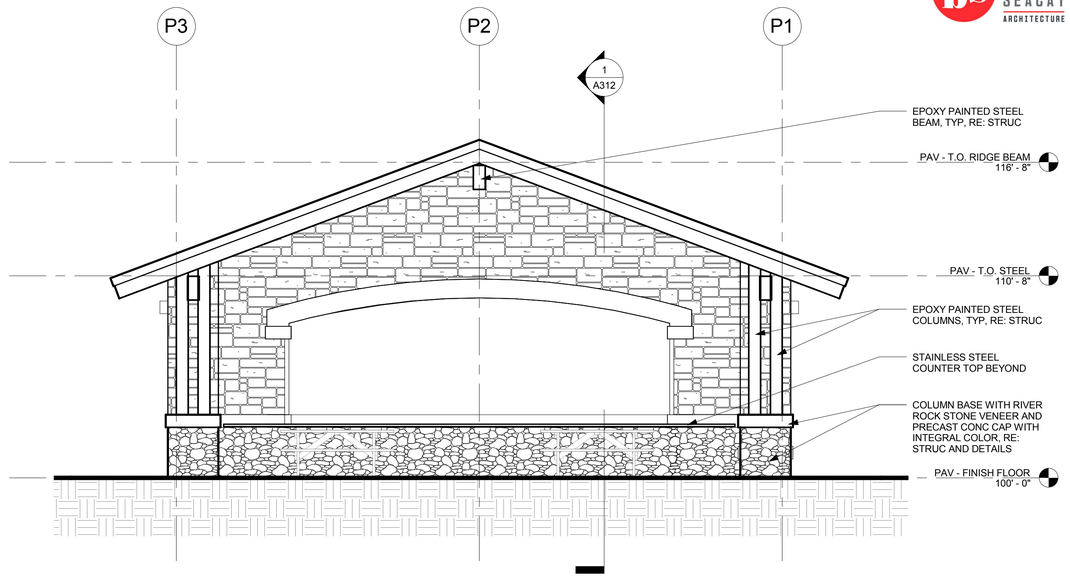


4 A302 PAVILION ELEVATION 04

1/4" = 1'-0"

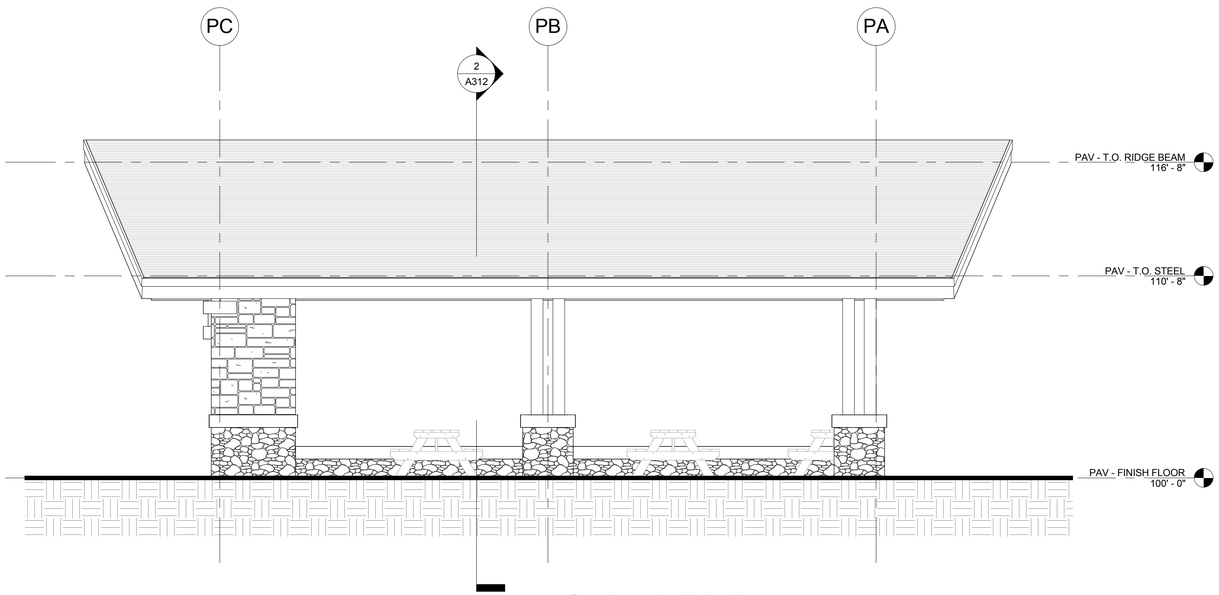
0 2' 4' 8'



3 A302 PAVILION ELEVATION 03

1/4" = 1'-0"

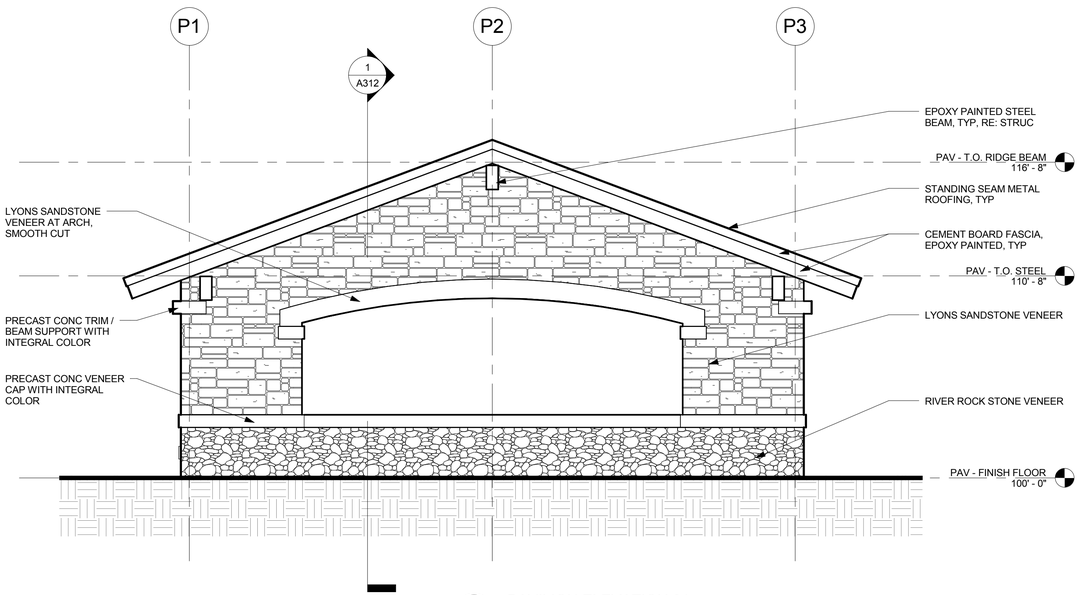
0 2' 4' 8'



2 A302 PAVILION ELEVATION 02

1/4" = 1'-0"

0 2' 4' 8'



1 A302 PAVILION ELEVATION 01

1/4" = 1'-0"

0 2' 4' 8'

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PAVILION ELEVATIONS

A302

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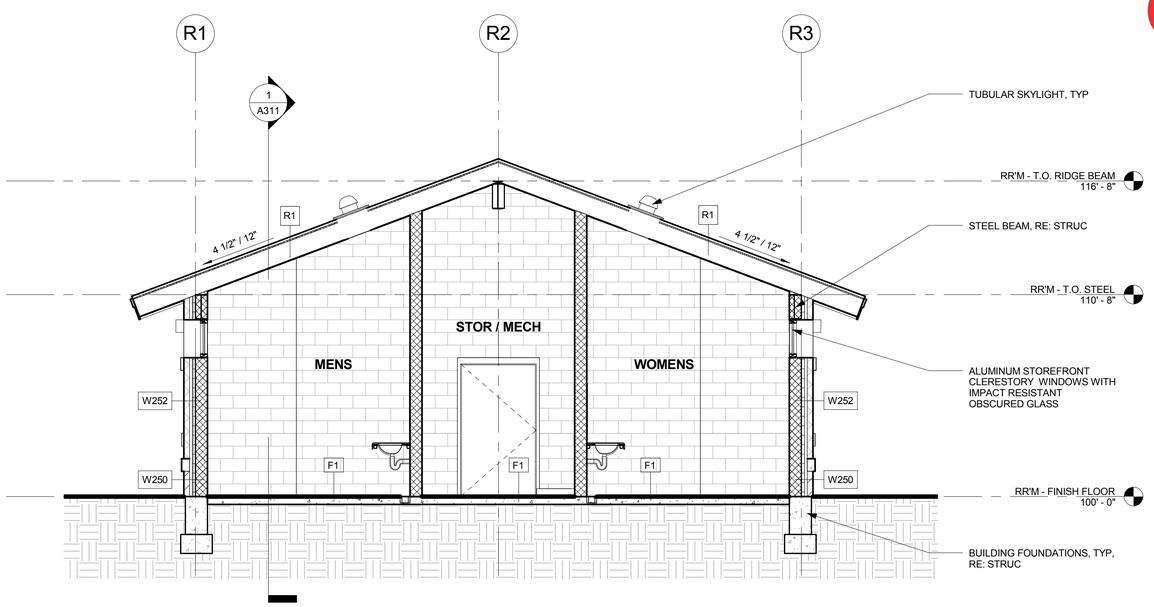
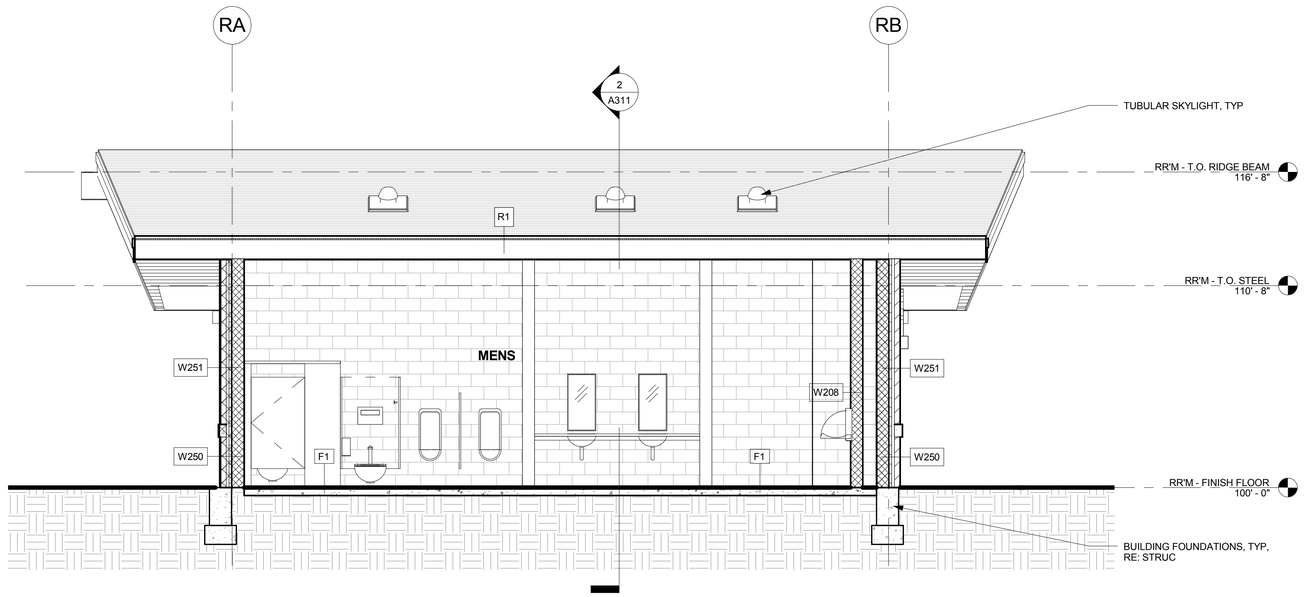


2 A311 RESTROOM BUILDING SECTION 02

1/4" = 1'-0"

0 2' 4' 8'



1 A311 RESTROOM BUILDING SECTION 01

1/4" = 1'-0"

0 2' 4' 8'

BARKER RINKER SEACAT ARCHITECTURE

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SHEET TITLE:
RESTROOM BUILDING SECTIONS

A311

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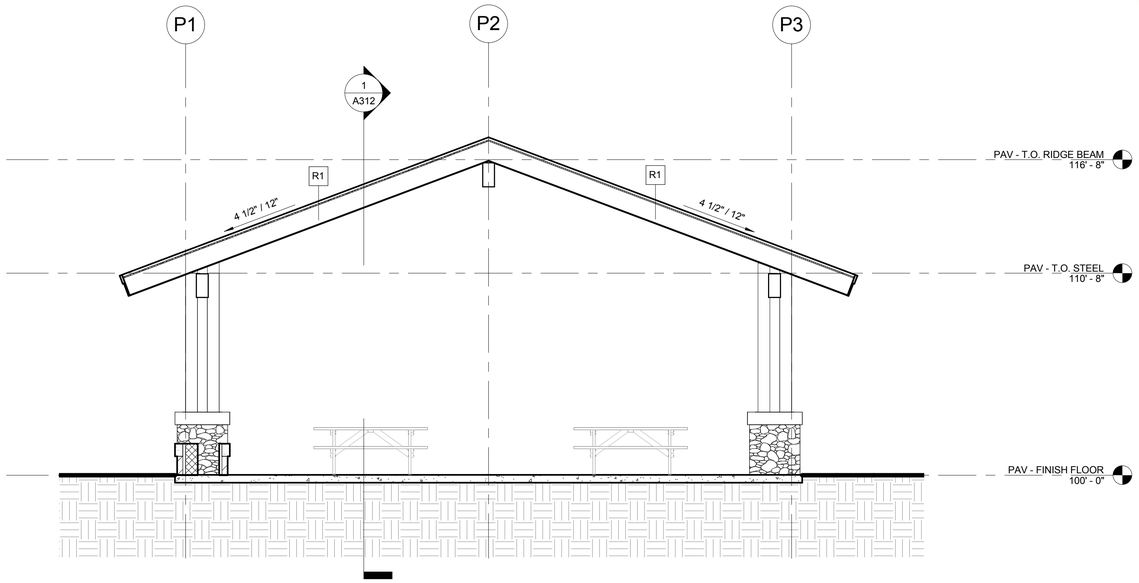
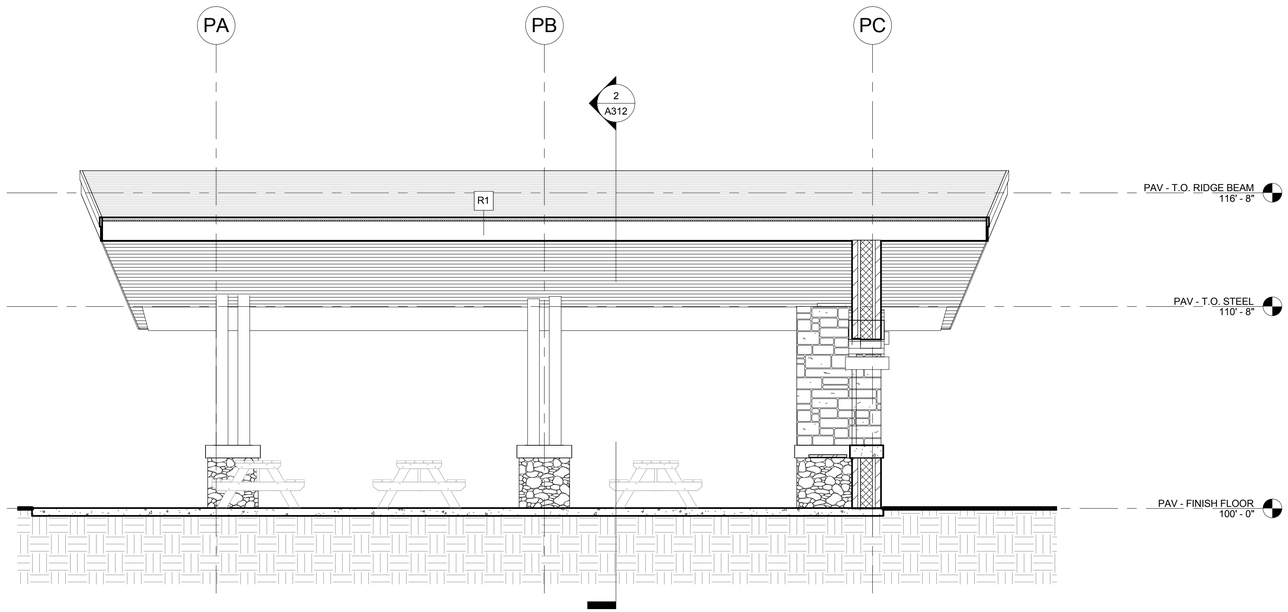


2 A312 PAVILION BUILDING SECTION 02

1/4" = 1'-0"

0 2' 4' 8'



1 A312 PAVILION BUILDING SECTION 01

1/4" = 1'-0"

0 2' 4' 8'

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SHEET TITLE:
PAVILION BUILDING SECTIONS

A312

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SHEET TITLE:
RESTROOM PERSPECTIVE

A501

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JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
PAVILION PERSPECTIVE

A502

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SHEET TITLE:
PAVILION PERSPECTIVE

A503

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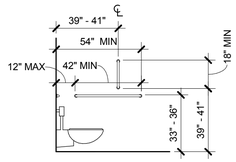
RESTROOM ACCESSORY LIST

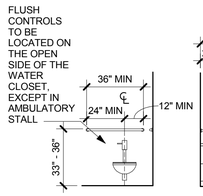
TYPICAL FAMILY RESTROOM:
1 SOAP DISPENSER PER SINK
1 MIRROR OVER SINK
1 HAND DRYER
1 PAPER TOWEL DISPENSER
1 WASTE RECEPTACLES
1 TOILET SEAT COVER
1 TOILET PAPER DISPENSER
1 36" GRAB BAR AT ADA TOILET
1 42" GRAB BAR AT ADA TOILET
1 18" VERTICAL GRAB BAR AT ADA TOILET
1 BABY CHANGING TABLE
1 HOOK BY CHANGING TABLE
1 FEMININE NAPKIN DISPENSER
1 HOOK PER DOOR

TYPICAL RESTROOM:
1 SOAP DISPENSER PER SINK
1 MIRROR OVER EACH SINK
2 HAND DRYERS
2 PAPER TOWEL DISPENSERS
1 WASTE RECEPTACLE
1 TOILET SEAT COVER PER TOILET
1 TOILET PAPER TOWEL DISPENSER PER TOILET
1 FEMININE NAPKIN DISPENSER PER WOMENS TOILET
1 36" GRAB BAR AT ADA TOILET
1 42" GRAB BAR AT ADA TOILET
1 18" VERTICAL GRAB BAR AT ADA TOILET
1 BABY CHANGING TABLE
1 HOOK BY CHANGING TABLE
1 HOOK AT EACH TOILET STALL DOOR

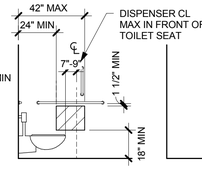
7 A600 TYPICAL ACCESSORIES LIST - FOR DD
1/4" = 1'-0"



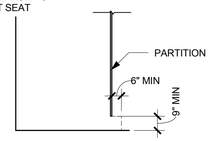
SIDE WALL ACCESSIBLE GRAB BAR DIMENSIONS



REAR ACCESSIBLE GRAB BAR DIMENSIONS

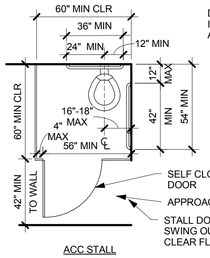


ACCESSIBLE PROTRUDING DISPENSER OPENING AREA



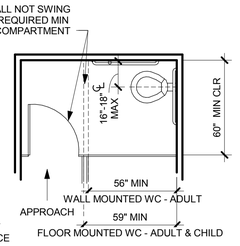
ACCESSIBLE COMPARTMENT TOE CLEARANCE

6 A600 TOILET ACCESSIBILITY GUIDELINES
1/4" = 1'-0"

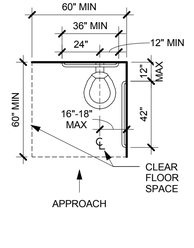


ACC STALL

TYPICAL CLEAR FLOOR SPACE, AND LOCATION OF GRAB BARS AND TOILET IN ALL ACCESSIBLE - STALLS



TYPICAL CLEAR FLOOR SPACE, AND LOCATION OF GRAB BARS AND TOILET IN ALL ACCESSIBLE - STALLS ALTERNATE



TYPICAL CLEAR FLOOR SPACE, AND LOCATION OF GRAB BARS AND TOILET IN ALL ACCESSIBLE - NOT IN STALLS

ACCESSORY NOTES:

1. NOT ALL ITEMS ON VERTICAL ACCESSORY & FIXTURE LOCATIONS DRAWING WILL BE USED. RE: PLANS, ENLARGED PLANS AND INTERIOR ELEVATIONS FOR ITEMS USED.

2. [X] ACCESSORY INDICATOR.

3. REFER TO PLAN, INTERIOR ELEVATIONS AND VERTICAL ACCESSORY AND FIXTURE LOCATIONS DRAWINGS TO COORDINATE ACCESSORY AND FIXTURE LOCATIONS.

4. REFER TO VERTICAL ACCESSORY AND FIXTURE LOCATIONS & TOILET ACCESSIBILITY GUIDELINES DRAWINGS FOR MOUNTING HEIGHTS AND NOTES.

5. ALL ACCESSORIES AT ACC CABANA AND IN ACC TOILET STALLS TO BE MOUNTED AT ACC HEIGHTS.

6. PROVIDE 3/8" PLYWOOD BACKING AT ALL ACCESSORIES WHERE ACCESSORY EXTENDS ABOVE TO FLUSH OUT TILE. PAINT PLYWOOD TO MATCH WALL COLOR AND CUT PLYWOOD IN 1" AROUND ACCESSORY EDGES TO CONCEAL IT.

7. MOUNT 3-4 HEAVY DUTY COAT HOOKS (SEE SCHEDULE & ENLARGED PLAN) ABOVE EACH CABANA BENCH. ADD 1 HOOK ON EACH TOILET PARTITION DOOR, RESTROOM DOOR, BABY CHANGING STATION AND SHOWER.

8. ALL BABY CHANGING STATIONS AND CHILD PROTECTION SEATS TO BE SUPPLIED AND INSTALLED BY CONTRACTOR. CONTRACTOR TO PROVIDE CODE COMPLIANT BLOCKING.

9. MAINTAIN CLEAR FLOOR SPACE AT ALL ACCESSORIES, LOCKER AND BENCHES, PER ACC CLEAR FLOOR GROUND SPACE, TYP.

5 A600 TOILET ACCESSORY - NOTES & HC LAYOUT
1/4" = 1'-0"

1. SEE INTERIORS SHEETS WALL PATTERN. ALL EXPOSED WALLS CMU WITH HIGH PERFORMANCE COATING, RE: WALLS TYPES.

2. REFER TO WALL TYPES & PLANS FOR WALL TYPE INDICATORS.

3. RESTROOM FLOORS, REFER TO FLOOR DRAIN ENLARGED PLAN FOR EXACT FLOOR SLOPES AND DRAIN ELEVATIONS, TYP.

4. ALL WALLS AND CEILINGS TO HAVE HIGH PERFORMACE COATING.

5. OR 'FD' DENOTES FLOOR DRAIN, U.O.N.

6. ALL FLOOR AND GROUND SURFACES - SLOPES NOT STEEPER THAN 1:48 SHALL BE PERMITTED.

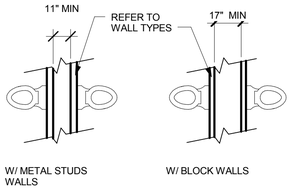
4 A600 GENERAL RESTROOM NOTES
1/4" = 1'-0"

ACCESSORY SCHEDULE-BRADLEY

NO.	Vendor	Accessory Description	Model Number	Mount Type	Electrical Requirement	Comments
1	Bradley	Toilet Tissue Dispenser-Jumbo Roll	5425	Surface	N/A	
2	Bradley	Napkin Disposal	4722-15	Surface	N/A	
4	Bradley	Toilet Seat Cover	5831	Surface	N/A	
11a	Bradley	Grab Bar	812	Surface	N/A	
11b	Bradley	Grab Bar	812	Surface	N/A	
11c	Bradley	Grab Bar	812	Surface	N/A	
14	Bradley	Coat Hook With Bumper	915	Surface	N/A	
18	Koala Kare	Horizontal Baby Changing Station	KB200	Recessed	N/A	

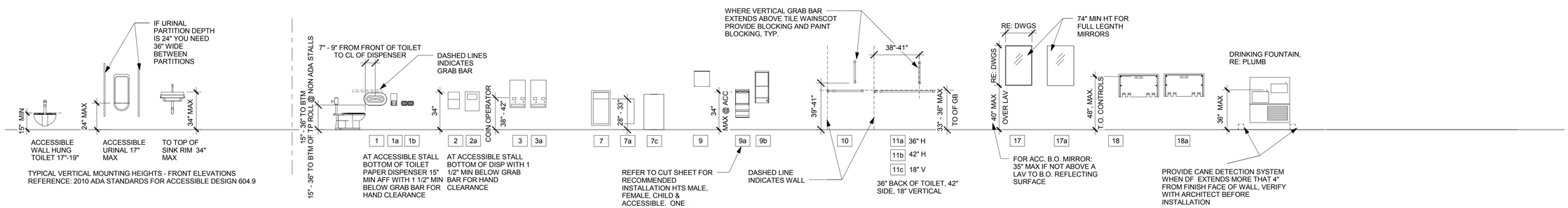
ACCESSORY SCHEDULE BOBRICK

NO.	Vendor	Accessory Description	Model Number	Mount Type	Electrical Requirement	Comments
1	Bobrick	Toilet Tissue Dispenser-Jumbo Roll	B-2892	Surface	N/A	
2	Bobrick	Napkin Disposal	B-254	Surface	N/A	
4	Bobrick	Toilet Seat Cover	B-221	Surface	N/A	
11a	Bobrick	Grab Bar	B-6806	Surface	N/A	
11b	Bobrick	Grab Bar	B-6806	Surface	N/A	
11c	Bobrick	Grab Bar	B-6806	Surface	N/A	
14	Bobrick	Coat Hook With Bumper	B-76717	Surface	N/A	
18	Koala Kare	Horizontal Baby Changing Station	KB200	Recessed	N/A	



MINIMUMS REQUIRED FOR 'SHAFT' BETWEEN DOUBLE WALL HUNG TOILETS TO ALLOW DOE ADJUSTABLE CARRIERS (SEE BRS INTRANET SHARED DOCS). MAKE CHASE WIDER IF ACCESS TO THIS SPACE IS DESIRED FOR MAINTENANCE.

3 A600 TYPICAL LAYOUTS FOR - SHOWER, TOILET & PLUMBING CHASE
1/4" = 1'-0"



1 A600 VERTICAL ACCESSORY & FIXTURE LOCATIONS
1/4" = 1'-0"

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BARKER RINKER SEACAT ARCHITECTURE

DHM DESIGN
900 S. Broadway
Suite 300
Denver, CO 80209
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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16

DRAWN: Author
CHECKED: Checker

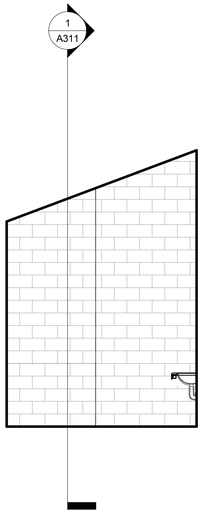
REVISIONS:
No. Date:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

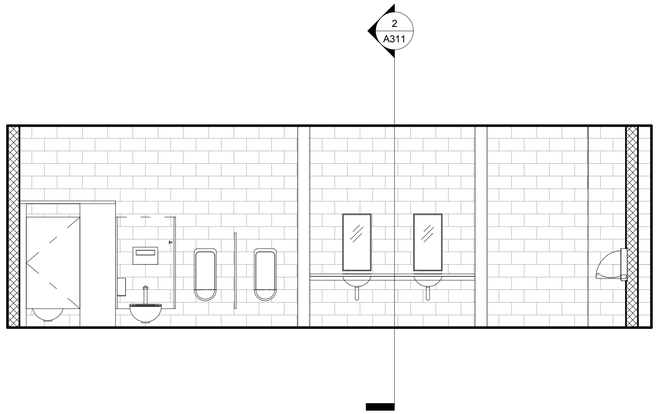
SHEET TITLE:
ACCESSORY SCHEDULES AND ELEVATIONS

A600

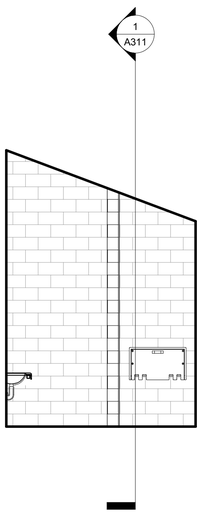
SHEET OF



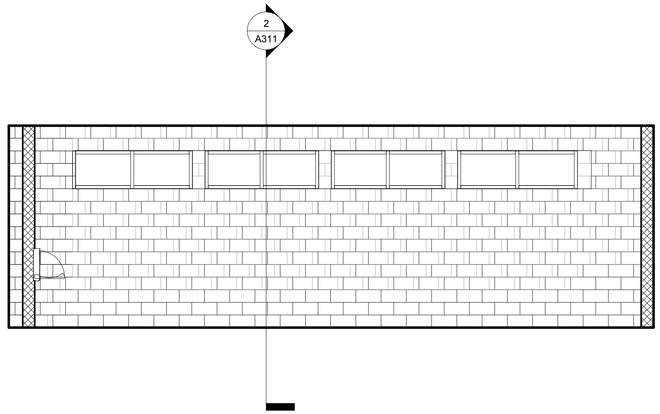
1 A610 MEN'S RESTROOM NORTH
1/4" = 1'-0"



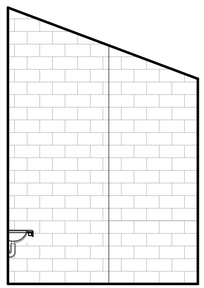
2 A610 MEN'S RESTROOM EAST
1/4" = 1'-0"



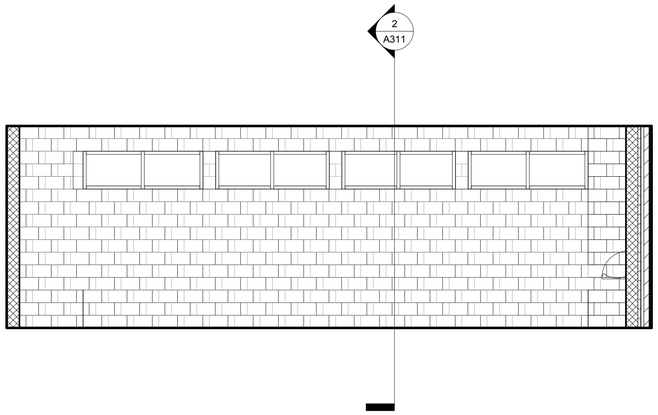
3 A610 MEN'S RESTROOM SOUTH
1/4" = 1'-0"



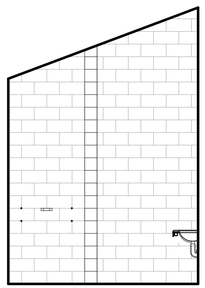
4 A610 MEN'S RESTROOM WEST
1/4" = 1'-0"



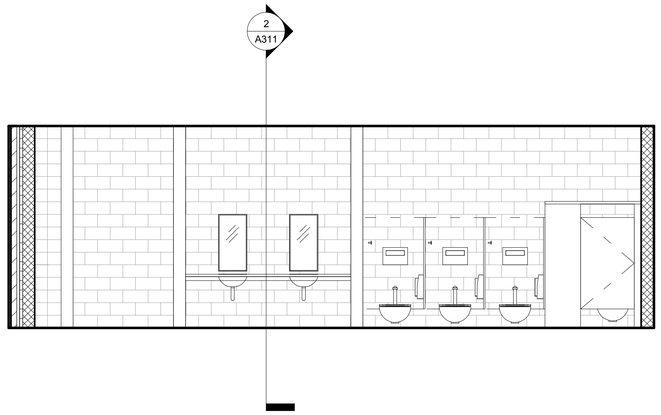
6 A610 WOMEN'S RESTROOM NORTH
1/4" = 1'-0"



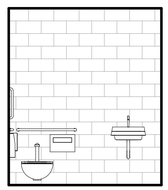
5 A610 WOMEN'S RESTROOM EAST
1/4" = 1'-0"



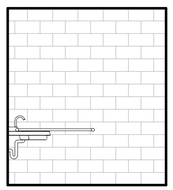
7 A610 WOMEN'S RESTROOM SOUTH
1/4" = 1'-0"



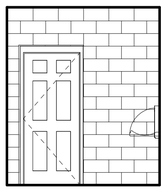
8 A610 WOMEN'S RESTROOM WEST
1/4" = 1'-0"



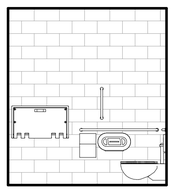
10 A610 FAMILY RESTROOM NORTH
1/4" = 1'-0"



9 A610 FAMILY RESTROOM EAST
1/4" = 1'-0"



11 A610 FAMILY RESTROOM SOUTH
1/4" = 1'-0"



12 A610 FAMILY RESTROOM WEST
1/4" = 1'-0"

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BARKER RINKER SEACAT ARCHITECTURE

DHM DESIGN
900 S. Broadway
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Denver, CO 80209
303.892.5566
www.dhmdesign.com

BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16

DRAWN: Author
CHECKED: Checker

REVISIONS:
No. Date:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
INTERIOR ELEVATIONS

A610

SHEET OF

LIGHTING FIXTURES

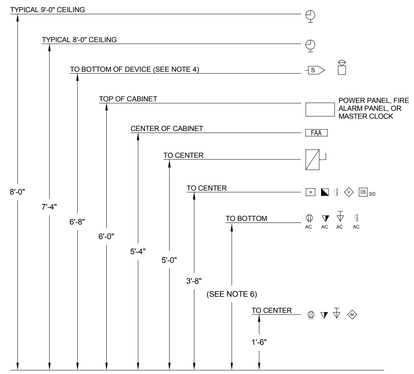
A a	LUMINAIRE TYPE, REFERENCING LUMINAIRE SCHEDULE, TYPICAL ALL FIXTURES. SUBSCRIPT, IF SHOWN, REFERENCES WALL SWITCH.
	WALL MOUNTED LUMINAIRE
	SURFACE MOUNTED LUMINAIRE
	RECESSED LUMINAIRE
	DOWNLIGHT LUMINAIRE
	SURFACE CEILING LUMINAIRE
	PENDANT LUMINAIRE
	WALLWASH LUMINAIRE
	STRIP LUMINAIRE
	SURFACE OR PENDANT TRACK LUMINAIRE
	LINEAR PENDANT LUMINAIRE (LENGTH AS INDICATED ON DRAWINGS/SCHEDULE)
	EXIT LUMINAIRE - SHADED INDICATES FACE/ DIRECTIONAL ARROWS AS SHOWN.
	BATTERY PACK EMERGENCY LUMINAIRE
	EMERGENCY LUMINAIRE - SHADED PROVIDE WITH INTEGRAL BATTERY BACKUP
K	PORCELAIN LAMP HOLDER
	STEP LIGHT TYPE LUMINAIRE
	BOLLARD OR POST TOP LUMINAIRE
	EXTERIOR AREA LIGHT

WIRING DEVICES

	DUPLEX RECEPTACLE
	FOUR PLEX RECEPTACLE
	SINGLE RECEPTACLE
	COMBO RECEPTACLE/SWITCH
	SWITCHED DUPLEX RECEPTACLE
	SPECIAL PURPOSE RECEPTACLE
	FLOOR MOUNTED SPECIAL PURPOSE RECEPTACLE
	FLOOR MOUNTED RECEPTACLE DUPLEX/QUAD
SR	SURFACE RACEWAY
	CLOCK RECEPTACLE
J	JUNCTION BOX
J	WALL MOUNTED J-BOX
J	FLOOR MOUNTED JUNCTION BOX
	MOLDED CASE CIRCUIT BREAKER IN ENCLOSURE
	NON-FUSED DISCONNECT SWITCH
	FUSED DISCONNECT SWITCH
	MAGNETIC CONTROLLER (STARTER)
	COMBINATION STARTER/DISCONNECT SWITCH
HP	MOTOR
R	RELAY
TC	TIME CLOCK
PC	PHOTOCELL
$_{TO}$	THERMAL OVERLOAD SWITCH
$	SINGLE POLE SWITCH
$_3	3-WAY SWITCH
$_4	4-WAY SWITCH
$_K	KEY OPERATED SWITCH
$_D	DIMMER SWITCH
$_DOOR	RECESSED DOOR SWITCH
WS(x)	LIGHTING CONTROL SYSTEM LOW VOLTAGE DIGITAL WALL STATION. (X) INDICATES INDIVIDUAL WALL STATION ADDRESS. REFER TO LIGHTING CONTROL ONELINE DRAWING.
OS $_S$	SINGLE RELAY OCCUPANCY SENSOR/SWITCH.
OS $_D$	DOUBLE RELAY OCCUPANCY SENSOR/SWITCH.
OS $_C$	CEILING MOUNTED OCCUPANCY SENSOR.
OS $_W$	WALL MOUNTED OCCUPANCY SENSOR.

ABBREVIATIONS AND SYMBOLS

A	AMPERE(S)
AC	ABOVE COUNTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERES INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
BFF	BELOW FINISHED FLOOR
C	CONDUIT
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CT	CURRENT TRANSFORMER
DISC	DISCONNECT
DW	DISHWASHER
DWG(S)	DRAWING(S)
(E)	EXISTING TO REMAIN
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
(ER)	EXISTING TO BE RELOCATED
EM	EMERGENCY
EPO	EMERGENCY POWER OFF
EWC	ELECTRIC WATER COOLER
(R)	EXISTING TO BE REMOVED
F	FUSE
FLA	FULL LOAD AMPS
FD	GARBAGE DISPOSAL
G	GROUND
GC	GENERAL CONTRACTOR
GFI	GROUND FAULT CIRCUIT INTERRUPTER
HP	HORSEPOWER
IDF	INTERMEDIATE DISTRIBUTION FACILITY
IG	ISOLATED GROUND
ISC	SHORT CIRCUIT CURRENT
KVA	KILOVOLT AMPERE(S)
KW	KILOWATT(S)
LTG	LIGHTING
MCA	MINIMUM CIRCUIT AMPERE(S)
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION CENTER
MDF	MAIN DISTRIBUTION FACILITY
MLO	MAIN LUGS ONLY
MTS	MANUAL TRANSFER SWITCH
MW	MICROWAVE
NC	NORMALLY CLOSED
NL	NIGHT LIGHT - SEE GENERAL NOTES
NO	NORMALLY OPEN
OAE	OR APPROVED EQUAL
OH	OVERHEAD
P	POLE
PART	PARTIAL CIRCUIT
PH	PHASE
PNL	PANEL
RCPT	RECEPTACLE
REF	REFRIGERATOR
(RL)	RELOCATED
SPD	SURGE PROTECTION DEVICE
UC	UNDER COUNTER/CABINET
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V	VOLT(S)
W	WATT(S) OR WIRE
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER
X	POOL EQUIPMENT SCHEDULE NOTATION
X	KITCHEN EQUIPMENT SCHEDULE NOTATION
X X	MECHANICAL EQUIPMENT SCHEDULE NOTATION
X	CONTROL INTENT SCHEDULE NOTATION
X	DETAIL NOTE
X	DELTA REVISION NOTE
X	ELECTRICAL WIRE SIZE
X	LIGHTING CONTROL DEVICE SCHEDULE NOTATION



NOTES:

1. WHERE MULTIPLE LINE VOLTAGE DEVICES ARE SHOWN ADJACENT TO EACH OTHER, THEY ARE ALL TO SHARE THE SAME JUNCTION BOX, UP TO FOUR GANGS.
2. WHERE MORE THAN FOUR DEVICES ARE SHOWN ADJACENT TO EACH OTHER, DEVICES ARE TO STACK VERTICALLY ABOVE ONE ANOTHER IN TWO ROWS IN AS SMALL OF GANG BOXES AS POSSIBLE. I.E. SIX DEVICES WILL USE TWO THREE GANG BOXES, FIVE DEVICES WILL USE ONE THREE GANG AND ONE TWO GANG BOX.
3. SEPARATELY GANGED DEVICES ARE NOT ALLOWED TO BE INSTALLED ADJACENT TO ONE ANOTHER HORIZONTALLY WITHIN THE SAME STUD BAY.
4. AUDIBLE/VISUAL FIRE ALARM DEVICES SHOWN ARE TO BE MOUNTED AT 90" OR 6" BELOW CEILING, WHICHEVER IS LOWER. ADA STROBES TO BE MOUNTED AT 80" AFF OR 6" BELOW CEILING, WHICHEVER IS LOWER.
5. MAXIMUM ELEVATION FOR ALL LOAD CENTER CIRCUIT BREAKERS SHALL NOT EXCEED 48" AFF, WITHIN DWELLING UNITS.
6. THE E.C. SHALL REFER TO ARCHITECTURAL ELEVATIONS TO COORDINATE ALL COUNTER HEIGHTS. ALL "AC" DEVICES SHALL HAVE BOTTOM OF BACK-BOX MOUNTED 4" ABOVE THE BACK/SIDE Ssplash.

1 DEVICE MOUNTING HEIGHT
NTS

DISTRIBUTION AND RACEWAY

MDC	MAIN DISTRIBUTION CENTER (MDC)
	SURFACE MTD PANELBOARD
	RECESSED PANELBOARD
T	TRANSFORMER
	BRANCH CIRCUIT HOMERUN
	CONDUIT CONCEALED IN FLOOR OR UNDERGROUND
	CONDUIT EXPOSED OR CONCEALED IN WALL OR CEILING
	RACEWAY UP
	RACEWAY DOWN
	CAPPED CONDUIT
	CURRENT TRANSFORMER
	CIRCUIT BREAKER SWITCH
	FUSED SWITCH
	GROUNDING ELECTRODE CONDUCTOR
M	METER

AE DESIGN
Integrated Lighting and Electrical Solutions

ELECTRICAL GENERAL NOTES

1	THE CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIAL NECESSARY FOR A COMPLETE AND FUNCTIONING ELECTRICAL SYSTEM.
2	MATERIALS AND INSTALLATION SHALL COMPLY WITH CODES, LAWS AND ORDINANCES OF FEDERAL, STATE AND LOCAL GOVERNING BODIES HAVING JURISDICTION.
3	MATERIALS AND EQUIPMENT SHALL BE LISTED AND/OR LABELED BY U.L., ETL, CSA OR ANOTHER RECOGNIZED TESTING LAB.
4	ALL WORK REQUIRED FOR THE INSTALLATION AS SHOWN ON DRAWINGS INCLUDING LABOR, EQUIPMENT AND MATERIALS SHALL BE IN STRICT COMPLIANCE WITH THE BUILDING STANDARDS, EXCEPT AS NOTED OTHERWISE.
5	THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, GOVERNMENTAL FEES, TAXES AND LICENSES NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE ELECTRICAL WORK.
6	THE CONTRACTOR SHALL PREPARE AND SUBMIT TO GOVERNMENTAL AGENCIES AND UTILITY COMPANIES SHOP DRAWINGS, WHICH ARE REQUIRED BY THESE AGENCIES, FOR THEIR APPROVAL.
7	THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER/OWNER OF ANY MATERIALS OR APPARATUS BELIEVED TO BE INADEQUATE, UNSUITABLE, IN VIOLATION OF LAWS, ORDINANCES, RULES OR REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
8	FOR ALL JOBS THAT INCLUDE DEMOLITION WORK BY THE ELECTRICAL CONTRACTOR, DURING AND AFTER DEMOLITION, EC SHALL MAINTAIN CIRCUIT CONTINUITY TO ALL EXISTING DEVICES THAT ARE TO REMAIN. EC SHALL REMOVE, RELOCATE, AND/OR REWORK ANY CONDUIT AND WIRING TO FACILITATE THE NEW CONSTRUCTION SCOPE OF WORK. FOR A LUMINAIRES THAT ARE EXISTING TO REMAIN OR EXISTING TO BE RELOCATED, EC SHALL CLEAN LENSES AND REPLACE ALL EXTINGUISHED LAMPS, UON.
9	THE CONTRACTOR SHALL CAREFULLY EXAMINE THE CONTRACT DOCUMENTS, VISIT THE SITE, AND THOROUGHLY BECOME FAMILIAR WITH THE BUILDING STANDARDS AND LOCAL CONDITIONS RELATING TO THE WORK. FAILURE TO DO SO WILL NOT RELIEVE THE CONTRACTOR OF THE OBLIGATIONS OF THE CONTRACT.
10	ALL MATERIALS, AND EQUIPMENT SHALL BE ERECTED, INSTALLED, CONNECTED, CLEANED, ADJUSTED, TESTED, CONDITIONED, AND PLACED IN SERVICE IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS AND RECOMMENDATIONS.
11	ALL CUTTING, DRILLING AND PATCHING OF MASONRY, STEEL OR IRON WORK BELONGING TO THE BUILDING MUST BE DONE BY THIS CONTRACTOR IN ORDER THAT HIS WORK MAY BE PROPERLY INSTALLED, BUT UNDER NO CONDITIONS MAY STRUCTURAL WORK BE CUT, EXCEPT AT THE DIRECTION OF THE ARCHITECT-DESIGNER OR THEIR REPRESENTATIVE.
12	E.C. IS TO REFER TO ARCHITECTURAL PLANS AND SPECIFICATIONS FOR ALL FIRE RATED PENETRATION INSTALLATION REQUIREMENTS. E.C. IS TO NOTIFY ENGINEER AND ARCHITECT PRIOR TO INSTALLING ANY FIXTURES WITHIN A FIRE RATED CEILING OR WALL. FIRE RATING MUST BE MAINTAINED FOR THIS TYPE OF INSTALLATION WITH DRYWALL TENTING.
13	E.C. SHALL PROVIDE COORDINATION STUDY OF NEW AND/OR NEW GEAR COMBINED WITH EXISTING GEAR DURING THE SUBMITTAL PROCESS.
14	SHOP DRAWINGS SHALL INCLUDE MANUFACTURER'S NAMES, CATALOG NUMBERS, CUTS, DIAGRAMS AND OTHER SUCH DESCRIPTIVE DATA AS MAY BE REQUIRED TO IDENTIFY AND REVIEW THE EQUIPMENT. SUBMITTALS SHALL BE IN LOGICAL GROUPS, FOR EXAMPLE, ALL LIGHTING FIXTURES, PARTIAL SUBMITTALS WILL NOT BE REVIEWED.
15	SUBMIT (3) COPIES OF THE FOLLOWING SHOP DRAWINGS FOR REVIEW.
	A. SWITCH BOARD, PANELBOARDS, AND METERING EQUIPMENT
	B. DISCONNECTS
	C. LIGHT FIXTURES
	D. LIGHTING CONTROLS
	E. TRANSFORMERS
	F. PROVIDE "AS-BUILT" DRAWINGS AND SUBMIT TO ARCHITECT/DESIGNER.
16	PROVIDE THE FOLLOWING INFORMATION, PER IECC 2015 C408.2.5.2 TO THE PARTY RESPONSIBLE FOR PROJECT COMMISSIONING PLAN (COMMISSIONING AGENT/ MECHANICAL ENGINEER) AND ELECTRICAL ENGINEER.
	A. CUTSHEETS FOR ALL INSTALLED LIGHTING AND LIGHTING CONTROLS.
	B. OPERATION AND MAINTENANCE MANUALS FOR EACH PIECE OF INSTALLED LIGHTING, REQUIRED ROUTINE MAINTENANCE ACTIONS, CLEANING AND RECOMMENDED RELAMPING SHALL BE CLEARLY IDENTIFIED.
	C. SCHEDULE FOR INSPECTING AND RECALIBRATING ALL LIGHTING CONTROLS. INSPECTION OF ALL LIGHTING CONTROLS SHALL BE PERFORMED PRIOR TO ELECTRICAL ENGINEER'S COMMISSIONING SITE VISIT. RECALIBRATION OF LIGHTING CONTROLS SHALL BE PERFORMED FOLLOWING SITE VISIT AND SHALL BE BASED UPON THE RECOMMENDATIONS OF THE ELECTRICAL ENGINEER.
17	ALL MATERIAL, EQUIPMENT, WIRING DEVICES, ETC. SHALL BE NEW, UNLESS SPECIFICALLY INDICATED AS EXISTING TO BE REUSED.
18	CONTRACTOR SHALL OBTAIN AND VERIFY EXACT UTILITY COMPANY DRAWINGS AND REQUIREMENTS. ELECTRICAL CONTRACTOR IS TO SUBMIT A COMPLETE CONSTRUCTION DRAWING SET TO THE ELECTRICAL UTILITY COMPANY WITHIN 10 DAYS OF AWARD OF CONTRACT. COORDINATE TIMELINE OF THE REVIEW, APPROVAL, ALL ASSOCIATED DOWN TIME, CONSTRUCTION SCHEDULING, DELIVERY, AND INSTALLATION OF THE UTILITY TRANSFORMER. NOTIFY OWNER OF SCHEDULING CONFLICTS.
19	ALL NEW CIRCUIT BREAKERS FOR NEW OR EXISTING PANELBOARDS SHALL MATCH EXISTING BUILDING PANELBOARD MANUFACTURER AND BREAKER TYPE. THE CONTRACTOR SHALL PROVIDE NEW TYPE WRITTEN PANEL DIRECTORIES FOR ALL NEW PANELS AND EXISTING PANELS WHICH HAVE CHANGED. PANELBOARD SHALL BE MARKED WHERE THE SOURCE OF POWER SUPPLY ORIGINATES, AND IF SERIES COMBINATION SYSTEMS ARE UTILIZED AND THEIR LISTED AMPERE RATING.
20	DO NOT SHARE NEUTRAL CONDUCTORS FOR MULTIWIRE BRANCH CIRCUITS. WHERE THE E.C. PROPOSES THE USE OF SHARED NEUTRAL CONDUCTORS OR SHARED NEUTRAL CONDUCTORS ARE REQUIRED (SUCH AS POWERED FURNITURE SYSTEMS), HANDLE TIES SHALL BE PROVIDED ON THE CIRCUIT BREAKERS, WITH SHARED NEUTRALS, SUCH THAT IT WILL SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS. ALL HANDLE TIES ARE REQUIRED TO BE INDICATED ON THE PANELBOARD SHOP DRAWINGS.
21	SHOULD ACTUAL FIELD CONDITIONS REQUIRE INDICATED CIRCUIT DESIGNATIONS TO VARY, INDICATE THE CIRCUIT NUMBER USED ON THE "AS-BUILT" DRAWINGS.
22	ALL SERVICE EQUIPMENT (OTHER THAN IN DWELLING UNITS) SHALL BE LEGIBLY MARKED IN THE FIELD BY THE ELECTRICAL CONTRACTOR WITH THE MAXIMUM AVAILABLE FAULT CURRENT AS INDICATED WITHIN THESE DOCUMENTS. THE FIELD MARKING(S) SHALL COMPLY WITH ELECTRICAL SPECIFICATIONS FOR READABILITY AND DURABILITY.
23	PROVIDE COMPLETE METAL RACEWAY SYSTEMS AND ENCLOSURES FOR ALL WIRING THROUGHOUT THE EXTENT OF THE REQUIRED DISTRIBUTION SYSTEM.
	A. UTILIZE RIGID POLYVINYL CHLORIDE CONDUIT (PVC) IN THE FOLLOWING LOCATIONS:
	- UNDERGROUND
	B. UTILIZE ELECTRICAL METALLIC TUBING (EMT), MINIMUM SIZE OF 3/4", IN THE FOLLOWING LOCATIONS:
	- SERVICE & FEEDERS
	- POWER CIRCUIT HOMERUN
	- BRANCH CIRCUITS IN CONCEALED OR EXPOSED LOCATIONS
	- TELEPHONE/DATA/CATV ROUGH-IN
	C. UTILIZE METAL-CLAD CABLE (MC) IN THE FOLLOWING LOCATIONS:
	- BRANCH CIRCUIT IN CONCEALED LOCATIONS
	- FINAL CONNECTION TO RECESSED LIGHTING FIXTURES
	- FINAL CONNECTION TO STEP-DOWN TRANSFORMERS
24	ALL NEW CIRCUITS SHALL HAVE A GROUND WIRE INSTALLED.
25	ALL WIRING NOT INSTALLED IN CONDUIT AND INSTALLED IN THE CEILING SPACE SHALL BE PLENUM RATED.
26	ELECTRICAL CONTRACTOR SHALL PROVIDE ALL SPECIAL OUTLET BOXES THAT MAY BE REQUIRED TO ENCLOSE RECEPTACLES.
27	EACH SWITCH, LIGHT, RECEPTACLE AND OTHER MISCELLANEOUS DEVICE SHALL BE PROVIDED WITH A GALVANIZED OR PRESSED STEEL OUTLET BOX OF THE KNOCKOUT TYPE, OF NOT LESS THAN NO. 14 U.S. GAUGE STEEL. CONDUITS SHALL BE FASTENED WITH LOCKNUTS AND BUSHINGS AND ALL UNUSED KNOCKOUTS MUST BE LEFT SEALED. THERE MUST BE SUFFICIENT ROOM FOR WIRES AND BUSHINGS AND DEEP BOXES SHALL BE INSTALLED WHERE REQUIRED. BOXES SHALL BE SECURELY AND ADEQUATELY SUPPORTED.
28	IN EXPOSED AND SUSPENDED CEILING APPLICATIONS, ROUTE CONDUIT AS CLOSE TO STRUCTURAL SLAB OR DECK AS POSSIBLE, AND SUPPORT CONDUIT AND JUNCTION BOXES DIRECTLY FROM THE STRUCTURAL SLAB, DECK, OR FRAMING PROVIDED FOR THAT PURPOSE. LIGHTING BRANCH CIRCUIT CONDUITS SHALL NOT BE CLIPPED TO THE CEILING SYSTEM HAS BEEN SPECIFICALLY DESIGNED FOR THAT PURPOSE.
29	ALL EXPOSED CONDUIT SHALL BE CONCEALED TO THE GREATEST EXTENT POSSIBLE, AND SHALL BE INSTALLED PARALLEL AND CLOSE TO STRUCTURAL MEMBERS. GENERAL CONTRACTOR SHALL PAIN CONDUIT TO MATCH ADJACENT FINISHES.
30	WHERE FLOOR FITTINGS REQUIRE PENETRATION OF THE FLOOR SLAB, THEY SHALL BE STANDARD DEVICE LISTED BY UL FOR THE PURPOSE AND HAVE A UL FIRE RATING EQUAL TO THE FLOOR RATING. FLOOR SERVICE BOXES SHALL BE MODULAR, ADJUSTABLE FLUSH TYPE, DUAL SERVICE UNITS SUITABLE FOR WIRING METHOD USED. COMPARTMENT BARRIERS SHALL SEPARATE POWER FROM LOW VOLTAGE CABLING. PROVIDE RECTANGULAR SERVICE PLATE WITH SATIN FINISH.
31	ALL RECEPTACLES SHALL BE SPECIFICATION GRADE NEMA 5-20R, UNLESS OTHERWISE NOTED.
32	ALL LIGHT SWITCHES SHALL BE SPECIFICATION GRADE, QUIET OPERATION RATED 120/277 VOLT, 20 AMPS, UNLESS OTHERWISE NOTED.
33	ALL FACE PLATE AND DEVICE COLORS SHALL BE APPROVED BY ARCHITECT OR OWNER/LEASEE.
34	PROVIDE LUMINAIRES SHOWN AS SHADED WITH EMERGENCY BATTERY BALLASTS. EMERGENCY LUMINAIRES SHALL SENSE UNSWITCHED POWER TO THE SPACE AND OPERATED AUTOMATICALLY UPON LOSS OF NORMAL POWER. ALL SHADED LUMINAIRES WITH 2' AND 4' LAMPS OR LONG BIAX LAMPS SHALL HAVE ONE (1) 90 MINUTE, TWO LAMP, 1400 LUMEN EMERGENCY BALLAST. ALL SHADED LUMINAIRES WITH COMPACT FLUORESCENT LAMPS SHALL HAVE A FACTORY INSTALLED 90 MINUTE EMERGENCY BALLAST. ALL EMERGENCY LUMINAIRES SHALL HAVE REMOTE TEST SWITCHES AND VISIBLE INDICATING LIGHTS. CONNECT THE EMERGENCY BATTERY BALLAST TO THE UN-SWITCHED LEG OF THE LIGHTING CIRCUIT INDICATED.
35	ALL BATTERY BACKUP EMERGENCY LIGHTING AND EXIT LIGHTS SHALL BE WIRED AHEAD OF ANY LOCAL SWITCHING, UON.
36	UNLESS OTHERWISE NOTED, LUMINAIRES DESIGNATED AS NIGHT LIGHT (NL) SHALL BE CONNECTED AHEAD OF LOCAL SWITCHING AND REMAIN ON 24 HOURS A DAY.
37	ALL DIMMED LIGHTING CIRCUITS ARE TO RECEIVE DEDICATED NEUTRALS. DO NOT SHARE NEUTRALS ON DIMMED LIGHTING CIRCUITS.
38	WHERE DUAL LEVEL SWITCHING IS INDICATED, THE SWITCH CLOSEST TO THE DOOR SHALL CONTROL ALL OUTER LAMPS IN THE INDICATED LUMINAIRE AND THE ADJACENT SWITCH SHALL CONTROL ALL INNER LAMP(S) IN THE INDICATED LUMINAIRES, UON.
39	PROVIDE OWNER WITH A COMPLETE LISTING OF ALL LAMPS UTILIZED ON THE PROJECT INCLUDING MANUFACTURER AND CATALOG INFORMATION. PROVIDE A SUGGESTED SOURCE, INCLUDING CONTACT NAME AND PHONE NUMBER, FOR REORDERING.
40	THE CONTRACTOR SHALL VERIFY THE CEILING TYPE BEFORE ORDERING LIGHTING.
41	ROUGH-IN FOR MECHANICAL EQUIPMENT SHALL ONLY OCCUR AFTER MECHANICAL EQUIPMENT SUBMITTALS ARE THOROUGHLY REVIEWED FOR CHANGES. NOTIFY ENGINEER OF ANY DISCREPANCIES.
42	FINAL LAYOUT AND QUANTITY OF ALL FIRE ALARM DEVICES SUBJECT TO APPROVAL OF LOCAL AUTHORITY HAVING JURISDICTION.
43	PROVIDE NEMA 3R AND CORROSION RESISTANT ELECTRICAL EQUIPMENT AND WIRING METHODS WITHIN POOL EQUIPMENT, POOL AND WHIRLPOOL AREAS. REFER TO DRAWINGS AND SPECIFICATION.
44	THE POWER AND CONTROL REQUIREMENTS FOR ALL EQUIPMENT CONNECTIONS SHALL BE CONFIRMED WITH APPROVED SHOP DRAWINGS PRIOR TO ELECTRICAL ROUGH-IN. FINAL POWER REQUIREMENTS, DIMENSIONED ROUGH-IN LOCATIONS, LOW VOLTAGE SYSTEM CONNECTIONS, ETC. SHALL BE CONFIRMED AND MODIFIED AS REQUIRED.
45	ALL DEVICES IN OR ABOVE COUNTERS SHALL HAVE LOCATIONS AND MOUNTING HEIGHTS CONFIRMED WITH ARCHITECTURAL ELEVATIONS & OWNER PRIOR TO ROUGH-IN. ANY ADJUSTMENTS TO MOUNTING HEIGHTS REQUIRED BY LACK OF COORDINATION WILL BE AT THE CONTRACTOR'S EXPENSE.
46	ALL EXISTING ELECTRICAL SERVICES NOT SPECIFICALLY INDICATED TO BE REMOVED OR ALTERED SHALL REMAIN AS THEY PRESENTLY EXIST.
47	G.C. SHALL INCLUDE IN HIS COST THE REMOVAL OF ALL EXISTING ELECTRICAL DEVICES, CONDUITS, FIXTURES AND EQUIPMENT. TURN EQUIPMENT OVER TO OWNER AS INDICATED OR RECYCLE/DISCARD ALL EQUIPMENT AS REQUIRED. E.C. SHALL BE RESPONSIBLE FOR DISCONNECTING PRIMARY SERVICE AND TEMPORARY POWER.
48	WHERE EXISTING CEILINGS ARE REVISED FROM ACCESSIBLE TO NON-ACCESSIBLE, CONTRACTOR IS TO INCLUDE IN HIS BID THE COSTS ASSOCIATED WITH RELOCATING ALL ELECTRICAL EQUIPMENT REQUIRING ACCESS ABOVE THE EXISTING CEILING TO A NEW ACCESSIBLE CEILING LOCATION APPROVED BY ARCHITECT AND ENGINEER. THE USE OF ACCESS PANELS IN THE NEW CEILING TO AVOID RELOCATION OF THIS EQUIPMENT IS NOT ACCEPTABLE.
49	CONTRACTOR TO CONDUCT FUNCTIONAL TESTING OF LIGHTING CONTROLS EQUIPMENT AS REQUIRED BY IECC 2012/2015, SECTION C408.3. AFTER THIS TESTING IS OBSERVED AND COMPLETED, THE REGISTERED DESIGN PROFESSIONAL OR COMMISSIONING AUTHORITY SHALL PROVIDE DOCUMENTATION TO THE AHJ THAT CERTIFIES THAT THE INSTALLATION MEETS THE DOCUMENTED PERFORMANCE CRITERIA OF SECTION C405.

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BOHN PARK
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DRAWN: CNL, MJH
CHECKED: JEB

REVISIONS:
No. Date:

JOB DESCRIPTION:
DESIGN DEVELOPEMENT

SHEET TITLE:
ELECTRICAL LEGEND AND GENERAL NOTES

E001

SHEET OF

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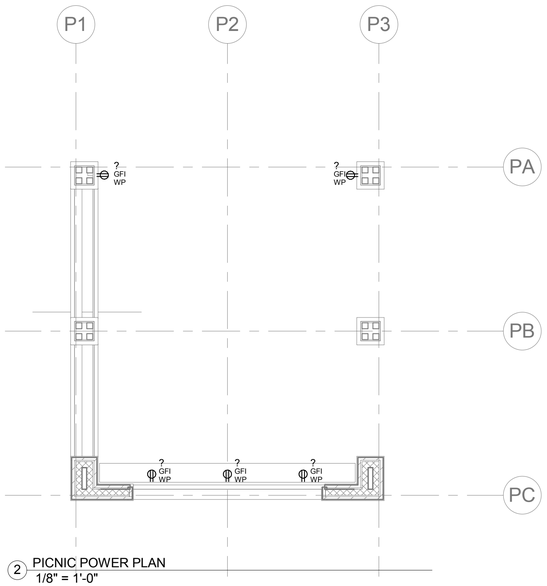
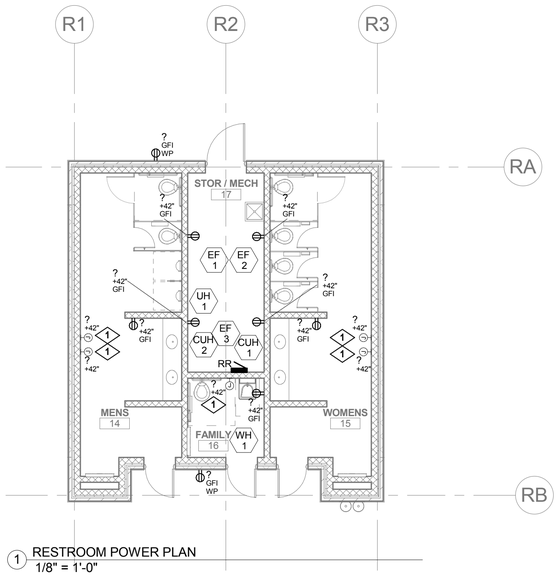
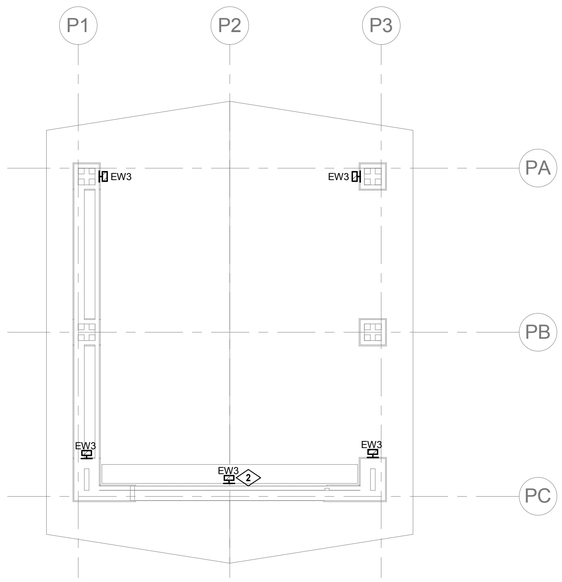


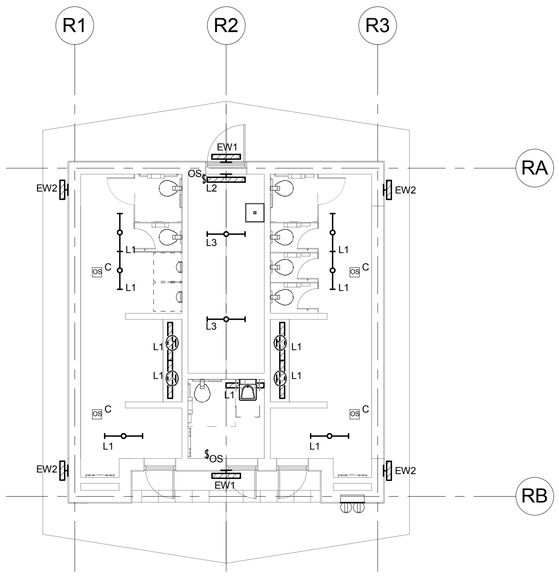
2 PICNIC POWER PLAN
1/8" = 1'-0"



1 RESTROOM POWER PLAN
1/8" = 1'-0"



4 PICNIC LIGHTING PLAN
1/8" = 1'-0"



3 RESTROOM LIGHTING PLAN
1/8" = 1'-0"

GENERAL NOTES

A	UNLESS OTHERWISE NOTED, ALL CIRCUIT NUMBERS INDICATED ON THIS SHEET SHALL REFER TO CIRCUIT ORIGINATING IN PANELBOARDS BASED UPON THE FOLLOWING CONVENTION, (THIS SHEET ONLY): TBD-# = CIRCUIT TO PANEL 'TBD'
B	ALL EXTERIOR LIGHTING SHALL BE CONTROLLED BY ASTRONOMICAL TIME CLOCK UNLESS NOTED OTHERWISE.

KEYNOTE LEGEND	
KEY VALUE	KEYNOTE TEXT
1	WALL MOUNTED JUNCTION BOX FOR 120V, 30A POWER CONNECTION TO HAND DRYER.EC SHALL PROVIDE 2#10, 1#10G, 3/4"C. COORDINATE EXACT LOCATION AND CONNECTION REQUIREMENTS WITH APPROVED SHOP DRAWINGS PRIOR TO ROUGH-IN.
2	LIGHTING FIXTURE TO BE MOUNTED AT 12'-0" AFG.

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ELECTRICAL POWER AND LIGHTING PLANS

E101

SHEET OF

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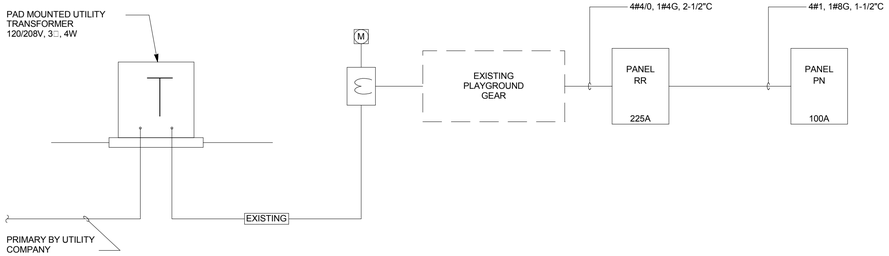
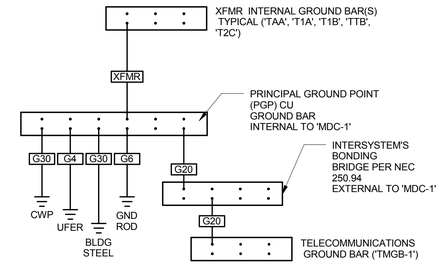


1 ONE-LINE DIAGRAM
1/8" = 1'-0"

GROUNDING ELECTRODE SYSTEMS NOTES

1	METAL UNDERGROUND WATER PIPE - MAKE CONNECTION TO METAL UNDERGROUND WATER PIPE INDIRECT CONTRACT WITH THE EARTH FOR 10' OR AND ELECTRICALLY CONTINUOUS TO THE POINTS OF CONNECTION TO THE GROUNDING ELECTRODE CONDUCTOR AND BONDING CONDUCTORS. CONNECTION POINT TO BE AT A MAXIMUM OF 5' OF THE POINT OF ENTRANCE ON THE INTERIOR OF THE BUILDING.
2	BUILDING STEEL - THE METAL FRAME OF THE BUILDING OR STRUCTURE, WHERE ANY OF THE FOLLOWING METHODS ARE USED TO MAKE AN EARTH CONNECTION: A. AT LEAST ONE STRUCTURAL METAL MEMBER THAT IS IN DIRECT CONTACT WITH THE EARTH FOR 10' OR MORE, WITH OR WITHOUT CONCRETE ENCASEMENT. B. HOLD-DOWN BOLTS SECURING THE STRUCTURAL STEEL COLUMN THAT ARE CONNECTED TO A CONCRETE ENCASED ELECTRODE THAT COMPLIES WITH 250.52(A)(3) AND IS LOCATED IN THE SUPPORT FOOTING OR FOUNDATION. THE HOLD-DOWN BOLTS SHALL BE CONNECTED TO THE CONCRETE-ENCASED ELECTRODE BY WELDING, EXOTHERMIC WELDING, THE USUAL STEEL TIE WIRES, OR OTHER APPROVED MEANS.
3	UFER GROUND (CONCRETE-ENCASED ELECTRODE) - AN ELECTRODE ENCASED BY AT LEAST 2" OF CONCRETE, LOCATED WITHIN AND NEAR THE BOTTOM OF A CONCRETE FOUNDATION OR FOOTING THAT IS IN DIRECT CONTACT WITH EARTH, CONSISTING OF AT LEAST 20' OF ONE OR MORE BARE OR ZINC GALVANIZED OR OTHER ELECTRICALLY CONDUCTIVE COATED STEEL REINFORCING BARS OR RODS OF NOT LESS THAN 1/2" IN DIAMETER, OR CONSISTING OF AT LEAST 20' OF BARE COPPER CONDUCTOR NOT SMALLER THAN NO. 4 AWG. REINFORCING BARS SHALL BE PERMITTED TO BE BONDED TOGETHER BY THE USUAL STEEL TIE WIRES OR OTHER EFFECTIVE MEANS.
4	GROUND ROD - ROD IS TO BE 8FT IN LENGTH AND SHALL BE MADE OF IRON OR STEEL AT LEAST 5/8" DIAMETER. INSTALLATION METHODS FOR GROUND ROD SHALL BE IN COMPLIANCE WITH THE NEC SUCH THAT AT LEAST 8' OF LENGTH IS IN CONTACT WITH THE EARTH.



GENERAL GROUNDING NOTES

1	ALL CABLES TO BE TERMINATED ONTO BUS BAR WITH TWO HOLE COMPRESSION LUGS AND ATTACHED TO BUS BAR WITH TAB COMPRESSION BELLEVILLE WASHERS AND TORK BOLT ASSEMBLY.
2	ALL GROUND CONNECTORS SHALL BE STRANDED.
3	ALL BUS BARS SHALL BE ATTACHED TO SURFACE WITH NON-CONDUCTIVE STAND-OFFS.
4	GROUND BUS BAR AND GROUNDING SYSTEM SHALL BE UL LISTED AND COMPLY WITH MANUFACTURERS INSTALLATION INSTRUCTIONS.

2 ELEC DISTRIBUTION GROUNDING ONE-LINE DIAGRAM & NOTES
NTS

NORTH

MECHANICAL SCHEDULE

KEY		EQUIPMENT DESCRIPTION	ELECTRICAL	MOCP	FEEDER	DISCONNECT	PANEL	CIRCUIT	NOTES
CUH	1	CABINET UNIT HEATER	208 V/2-5720 VA	40A	2#8, 1#10G, 1"C	60A/2P			
CUH	2	CABINET UNIT HEATER	208 V/2-5720 VA	40A	2#8, 1#10G, 1"C	60A/2P			
EF	1	EXHAUST FAN	120 V/1-560 VA	30A	2#10, 1#10G, 3/4"C	30A/1P			
EF	2	EXHAUST FAN	120 V/1-560 VA	30A	2#10, 1#10G, 3/4"C	30A/1P			
EF	3	EXHAUST FAN	120 V/1-41 VA	15A	2#12, 1#12G, 3/4"C	$TO			
UH	1	UNIT HEATER	208 V/1-2500 VA	30A	2#10, 1#10G, 3/4"C	30A/2P			
WH	1	WALL HEATER	120 V/1-1500 VA	20A	2#12, 1#12G, 3/4"C	$TO			

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	CATALOGUE NUMBER	VOLTAGE	LAMP QUAN.	LAMP WATTAGE	LAMP	MAX WATTAGE	DIMMING	LOCATION	BOF/RFD/OFH	NOTES
EW1	3' LINEAR CUTOFF VANDAL TYPE WALL BRACKET	LUMINAIRE	AEL-36-30W-3500K-120-277-DP-BZH-A/B-TX/SD	120V	1	30 W	LED	30 VA		SURFACE WALL		BRONZE FINISH MOUNT 8'-0" AFG UNLESS NOTED OTHERWISE.
EW2	2' LINEAR CUTOFF VANDAL TYPE WALL BRACKET	LUMINAIRE	AEL-24-20W-3500K-120-277-DP-BZH-A/B-TX/SD	120V	1	20 W	LED	20 VA		SURFACE WALL		BRONZE FINISH MOUNT 8'-0" AFG UNLESS NOTED OTHERWISE.
EW3	12" X 12" VANDAL TYPE WALL BRACKET	LUMINAIRE	FFW1212-25W-3500K-120-277-OP-BRZ-WET-PS-TX/SD	120V	1	25 W	LED	25 VA		SURFACE WALL		BRONZE FINISH MOUNT 8'-0" UNLESS NOTED OTHERWISE.
L1	4' LINEAR VANDAL TYPE WITH BUILT-IN OCCUPANCY SENSOR	LUMINAIRE	VPF-4-40WHO-3500K-120-OP-BRZ-OCC	120V	1	40 W	LED	40 VA		SURFACE WALL/CEILING		BRONZE FINISH
L2	4' LINEAR WALL BRACKET	LITHONIA	WC-2-32-A12-MVOLT-GEB10PS	120V	2	64 W	FL	64 VA		SURFACE WALL		WHITE FINISH
L3	4' LINEAR WRAPAROUND	LITHONIA	LB-2-32-MVOLT-GEB10PS	120V	2	64 W	FL	64 VA		SURFACE CEILING		WHITE FINISH

MECHANICAL EQUIPMENT NOTES

A	REFER TO MECHANICAL PLANS FOR SPECIFIC EQUIPMENT LOCATIONS AND REQUIREMENTS.
B	PRIOR TO ROUGH-IN, COORDINATE ALL MECHANICAL EQUIPMENT POWER AND CONNECTION REQUIREMENTS WITH MECHANICAL CONTRACTOR'S FINAL SHOP DRAWINGS.
C	PROVIDE ALL 120V CONTROL WIRING, REFER TO SPECIFICATIONS FOR FURTHER CONTROL WIRING CLARIFICATION.
D	FOR ANY VAV SYSTEM COORDINATE POWER REQUIREMENTS WITH MECHANICAL CONTRACTOR AND PROVIDE 120V CONNECTIONS AT EACH VAV BOX, OR AT CENTRAL CONTROL PANEL LOCATION(S) AS REQUIRED. IF EXACT QUANTITIES AND LOCATIONS FOR CONTROL PANELS ARE NOT KNOWN AT BID TIME, E.C. IS TO INCLUDE ONE 120V CONNECTION AT EACH VAV DEVICE IN THE BASE BID PRICE AND PROVIDE A CREDIT DURING CONSTRUCTION IF LESS CONNECTIONS ARE REQUIRED.
E	EXTERIOR DISCONNECT SWITCHES ARE TO BE PROVIDED AS NEMA 3R EQUIPMENT UNLESS OTHERWISE NOTED.
F	PROVIDE WEATHERPROOF 120 VOLT GFCI RECEPTACLES WITHIN 25' OF ALL ROOFTOP HEATING, VENTILATING, AND AIR CONDITIONING EQUIPMENT. CIRCUIT TO SPARE CIRCUIT ON NEAREST 120V PANELBOARD OR AS INDICATED ON PLANS.
G	PROVIDE DUCT DETECTION ON ALL RETURN AIR SYSTEMS OF 2,000 CFM OR GREATER, AND FOR ALL SUPPLY AIR SYSTEMS 15,000 CFM OR GREATER, INCLUDING THOSE SYSTEMS SERVING MULTIPLE FLOORS. PROVIDE ADDITIONAL DUCT DETECTORS AND INSTALL REMOTE INDICATOR LIGHTS AS REQUIRED BY LOCAL AUTHORITY HAVING JURISDICTION.
H	FOR ANY BOILER MECHANICAL SYSTEM, E.C. IS TO PROVIDE AN EMERGENCY PUSHBUTTON OFF AND ANY CONTROL WIRING REQUIRED. COORDINATE EXACT REQUIREMENTS WITH MECHANICAL CONTRACTOR AND EQUIPMENT PRIOR TO INSTALLATION.
I	EC TO PROVIDE HAND/OFF/AUTO STARTERS FOR ALL MOTORS WHEN NOT INDICATED AS TO BE PROVIDED BY THE MECHANICAL CONTRACTOR ON THE MECHANICAL PLANS. SIZE OF STARTER TO BE BASED UPON SIZE OF MOTOR HORSEPOWER INDICATED.

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E501

SHEET OF

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6/10/2016 12:44:28

GENERAL LEGEND

ABBV.	SYMBOL	DESCRIPTION
G.C.		GENERAL CONTRACTOR
M.C.		MECHANICAL CONTRACTOR
E.C.		ELECTRICAL CONTRACTOR
T.C.C.		TEMPERATURE CONTROL CONTRACTOR
F.P.C.		FIRE PROTECTION CONTRACTOR
A.F.F.		ABOVE FINISHED FLOOR
A.F.G.		ABOVE FINISHED GRADE
B.F.F.		BELOW FINISHED FLOOR
B.F.G.		BELOW FINISHED GRADE
N.I.C.		NOT IN CONTRACT
		CONTROL WIRING
AD/AP		ACCESS DOOR/ACCESS PANEL
	X / XXX	X = SECTION/DETAIL NUMBER XXX = SHEET NUMBER WHERE SECTION/DETAIL IS DRAWN

HVAC LEGEND

ABBV.	SYMBOL	DESCRIPTION
EF		EXHAUST FAN
UH		UNIT HEATER
CUH		CABINET UNIT HEATER
WH		WALL HEATER
ER		EXHAUST REGISTER
EG		EXHAUST GRILLE
EA		EXHAUST AIR
TG		TRANSFER GRILLE
	T	THERMOSTAT
	OS	OCCUPANCY SENSOR
MCD	M	MOTORIZED CONTROL DAMPER
	B	BACKDRAFT DAMPER
MVD		MANUAL VOLUME DAMPER
		DUCT ELBOW WITH TURNING VANES
		SQUARE TO ROUND TRANSITION
	UP / DN	OFFSET DUCT UP / DOWN IN DIRECTION OF ARROW
		45° TAKEOFF
		STANDARD RADIUS ELBOW
	10x8	DUCTWORK - WIDTH x DEPTH
		AIRFLOW - RETURN/EXHAUST
		AIRFLOW - SUPPLY

PLUMBING LEGEND

ABBV.	SYMBOL	DESCRIPTION
DF		DRINKING FOUNTAIN
L		LAVATORY
MSB		MOP SERVICE BASIN
TP/TS		TRAP PRIMER/TRAP SEAL
UR		URINAL
WC		WATER CLOSET
TMV		THERMOSTATIC MIXING VALVE
PET		PLUMBING EXPANSION TANK
RPBP		REDUCED PRESSURE BACKFLOW PREVENTER
CW		DOMESTIC COLD WATER
HW		DOMESTIC HOT WATER
W		SANITARY WASTE BELOW FLOOR
V		SANITARY VENT
D		DRAIN PIPING
GCO		GRADE CLEANOUT
WCO	OR / OR	WALL CLEANOUT
		HOSE END DRAIN VALVE
		SOLENOID VALVE
		THERMOSTATIC MIXING VALVE
		SHOCK ABSORBER (ELEVATION)
		SHOCK ABSORBER (PLAN)
HB/WH	OR	HOSE BIBB/WALL HYDRANT
	F	FLOW SWITCH
		AQUASTAT
VTR		VENT THRU ROOF
AD		AREA DRAIN
FD		FLOOR DRAIN
FS		FLOOR SINK

PLUMBING GENERAL NOTES

1. FIELD VERIFY EXACT LOCATION OF ALL CONNECTION PRIOR TO CONSTRUCTION.
2. ROUGH-IN AND FINAL CONNECT ALL FIXTURES, EQUIPMENT, ETC.
3. CONTRACTOR SHALL INSPECT SITE TO THOROUGHLY FAMILIARIZE HIMSELF WITH THE AREA OF WORK. ANY DISCREPANCES BETWEEN THESE DOCUMENTS AND ACTUAL CONDITIONS SHALL BE REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION PRIOR TO BID PRICING. NO EXTRAS WILL BE ALLOWED DUE TO LACK OF KNOWLEDGE OF EXISTING CONDITIONS.
4. ALL WORK SHALL BE PER LOCAL BUILDING AND HEALTH DEPARTMENT REQUIREMENTS.
5. PROVIDE BALL VALVES ON ALL BRANCH LINES FOR BUILDING ISOLATION WHETHER SHOWN OR NOT.
6. REFERENCE HVAC DRAWINGS FOR EXACT LOCATION OF ALL HVAC EQUIPMENT REQUIRING PLUMBING CONNECTIONS. COORDINATE WITH HVAC CONTRACTOR EXACT PLUMBING CONNECTION REQUIREMENTS PRIOR TO COMMENCING WORK.
7. ALL STORM DRAINAGE PIPING WITHIN THE BOUNDARIES OF THE BUILDING SHALL BE SLOPED AT 1/8" PER FOOT UNLESS OTHERWISE NOTED.
8. ALL VENTS THROUGH THE ROOF (VTR) SHALL BE POSITIONED A MINIMUM OF 15'-0" FROM ANY OUTSIDE AIR INTAKE.
9. REFERENCE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL FIRE RATED WALLS. ALL PIPE PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE SEALED IN ACCORDANCE WITH THE BUILDING CODE.
10. OFFSET ALL PIPING AS REQUIRED TO AVOID STRUCTURAL MEMBERS, CANTS, FLASHING, MECHANICAL, OR ELECTRICAL EQUIPMENT.
11. PROVIDE CHROME PLATED SET SCREW TYPE ESCUTCHEONS AT ALL EXPOSED PIPE PENETRATIONS THROUGH WALLS AND CASEWORK.
12. PROVIDE TRAP PRIMERS TO ALL FLOOR DRAINS & FLOOR SINKS WITH ACCESS THAT HAVE THE POSSIBILITY FOR EVAPORATION PROBLEMS AND AS INDICATED IN THE SPECIFICATION.
13. PROVIDE PROSET TRAP GUARDS ON ALL FLOOR DRAINS PER CODE WHERE EVAPORATION OR LOSS OF TRAP SEAL WILL OCCUR.
14. PLUMBING CONTRACTORS SHALL PROVIDE ALL INDIRECT WASTE PIPING AND MAKE FINAL CONNECTIONS TO SINKS, KITCHEN EQUIPMENT, ETC. VERIFY SIZES AND LOCATIONS WITH KITCHEN EQUIPMENT CONTRACTOR'S SHOP DRAWINGS.
15. COMPLY WITH ALL BUILDING AND HEALTH DEPARTMENT REGULATIONS FOR PLUMBING INSTALLATION. VERIFY ALL REQUIREMENTS PRIOR TO SUBMITTING BID OR COMMENCING WORK.
16. FLUSH MOUNT ALL FLOOR SINKS IN KITCHEN AREA FOR FLOOR DRAINAGE USE.

DRAWING INDEX

DRAWING NUMBER	MECHANICAL & PLUMBING SHEET TITLES	DRAWING SCALE
MP000	MECHANICAL COVER SHEET - LEGEND, GENERAL NOTES AND SHEET INDEX	NONE
M101	HVAC PLANS	1/4"=1'-0"
M401	HVAC SECTIONS	1/4"=1'-0"
M700	HVAC SCHEDULES, DETAILS & CONTROL DRAWINGS	NONE
P101	PLUMBING PLANS AND ISOMETRICS	1/4"=1'-0"
P401	PLUMBING ISOMETRICS	NONE
P700	PLUMBING DETAILS AND SCHEDULES	NONE

MECHANICAL GENERAL NOTES

1. THE MECHANICAL CONTRACTOR SHALL INSPECT SITE TO BECOME FAMILIAR WITH SCOPE OF THE WORK. THESE DOCUMENTS DO NOT REFLECT AS-BUILT CONDITIONS. ANY DISCREPANCIES BETWEEN THESE DOCUMENTS AND ACTUAL CONDITIONS SHALL BE REPORTED TO THE ARCHITECT/ENGINEER FOR RESOLUTION PRIOR TO BID PRICING. NO EXTRAS WILL BE ALLOWED DUE TO LACK OF KNOWLEDGE OF ACTUAL CONDITIONS.
2. THE MECHANICAL CONTRACTOR SHALL COORDINATE LOCATION OF ALL ABOVE CEILING EQUIPMENT, DUCTWORK AND CEILING MOUNTED AIR DEVICES WITH ARCHITECTURAL, STRUCTURAL, ELECTRICAL AND MECHANICAL CONDITIONS.
3. MECHANICAL WORK SHALL COMPLY WITH ALL APPLICABLE CODES. VERIFY ALL REQUIREMENTS PRIOR TO SUBMITTING BID OR COMMENCING WORK.
4. THE MECHANICAL SYSTEM SHOWN SHALL BE RUN AS HIGH AS POSSIBLE. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING REQUIREMENTS WITH ALL TRADES PRIOR TO CONSTRUCTION.
5. THE MECHANICAL CONTRACTOR SHALL COORDINATE THERMOSTAT, SENSOR, AND SWITCH LOCATIONS WITH ARCHITECT/ENGINEER PRIOR TO INSTALLATION. ALL THERMOSTATS, SENSORS, AND SWITCHES SHALL BE LOCATED 48" A.F.F. UNLESS INDICATED OTHERWISE.
6. BALANCE AIR SYSTEMS TO THE QUANTITIES SHOWN AND SUBMIT BALANCE REPORT(S) TO THE ARCHITECT/ENGINEER FOR REVIEW.

MECHANICAL HVAC NOTES

1. DUCTWORK DIMENSIONS LISTED ON THE DRAWINGS ARE CLEAR, INSIDE DIMENSIONS.
2. PROVIDE DUCT TRANSITIONS FROM EQUIPMENT CONNECTIONS TO DUCT SIZES AS SHOWN.
3. PROVIDE FLEXIBLE CONNECTION TO INTAKE AND DISCHARGE OF ALL MECHANICAL EQUIPMENT HAVING ROTATING PARTS. FLEXIBLE CONNECTION SHALL COMPLY WITH ALL APPLICABLE CODES.
4. ALL DUCTWORK SHALL BE A MINIMUM 26 GAUGE SHEETMETAL, OR AS REQUIRED BY ALL APPLICABLE CODES. MEET OR EXCEED SMACNA STANDARDS.
5. ALL SUPPLY, RETURN, TRANSFER AND EXHAUST DUCTWORK SHALL BE SEALED AIRTIGHT WITH DUCT SEALANT (SMACNA SEAL CLASS "A") ALONG ALL SEAMS AND JOINTS.
6. ALL EXHAUST DUCTWORK SHALL BE UNLINED SHEETMETAL, UNLESS NOTED OTHERWISE.
7. ALL UNLINED DUCTWORK THAT IS VISIBLE THROUGH THE AIR DEVICE SHALL BE PAINTED FLAT BLACK.
8. MAINTAIN A MINIMUM 10'-0" SEPARATION FROM OUTSIDE AIR INTAKES TO EXHAUST TERMINATIONS.
9. COORDINATE LOCATION AND ELEVATION OF ALL EXPOSED DUCTWORK WITH THE ARCHITECT AT THE JOB SITE.
10. MAINTAIN A MINIMUM OF 15'-0" FROM OUTSIDE AIR INTAKES TO PLUMBING VENTS.
11. ALL EXPOSED DUCTWORK SHALL BE FREE OF IMPERFECTIONS AND DAMAGE. SEAL EXPOSED DUCTWORK IN A NEAT WORKMANSHIP LIKE MANNER.
12. MAINTAIN A MINIMUM 3'-0" SEPARATION FROM EXHAUST TERMINATIONS TO OPERABLE WINDOWS AND DOORS.
13. COORDINATE LOUVER WITH BRICK OR BLOCK COURSING WHERE APPLICABLE.
14. RECTANGULAR BRANCH DUCT TAKEOFFS SHALL HAVE 45° TAKEOFFS.
15. ALL ELBOWS, BOTH HORIZONTAL AND VERTICAL, SHALL BE LONG RADIUS ELBOWS WHEREVER POSSIBLE, OR SHALL HAVE TURNING VANES WHERE SHOWN.
16. ALL JOB SITE DUCTWORK PRIOR TO INSTALLATION SHALL BE COVERED AND PROTECTED FROM DIRT, DUST, AND DAMAGE; PER SMACNA STANDARDS.
17. ALL RECTANGULAR SUPPLY, RETURN AND TRANSFER DUCTWORK SHALL BE SHEETMETAL LINED WITH 1" DUCT LINER.

BARKER RINKER SEACAT ARCHITECTURE

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BOHN PARK
2016 FLOOD RECOVER PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16

DRAWN: AB/TRH
CHECKED: PWF/TRH

REVISIONS:
No. Date:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
MECHANICAL COVER SHEET - LEGEND, GENERAL NOTES AND SHEET INDEX

MP000

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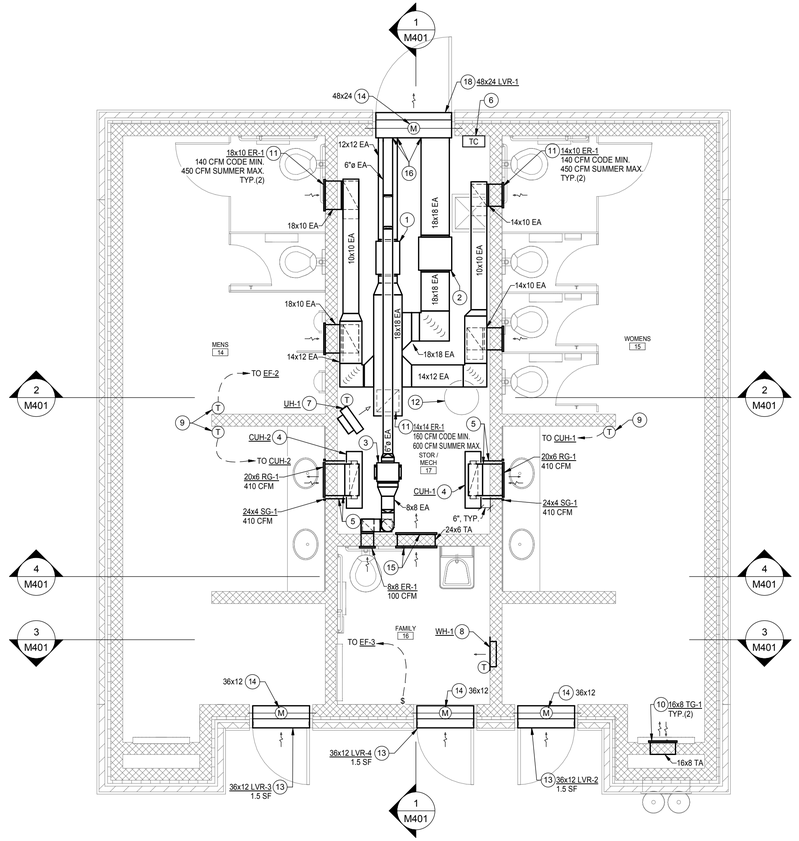

FIRST FLOOR HVAC PLAN

SCALE: 1/4" = 1'-0"

FIRST FLOOR HVAC KEYNOTES:

1. CODE MINIMUM EXHAUST FAN EF-1. REFER TO SCHEDULE. REFER TO DETAIL. REFER TO CONTROL DRAWINGS. REFER TO SPECIFICATION SECTION 23 09 24 FOR SEQUENCE OF OPERATION.
2. SUMMER VENTILATION EXHAUST FAN EF-2. REFER TO SCHEDULE. REFER TO DETAIL. REFER TO CONTROL DRAWINGS. REFER TO SPECIFICATION SECTION 23 09 24 FOR SEQUENCE OF OPERATION.
3. TOILET EXHAUST FAN EF-3. REFER TO SCHEDULE. REFER TO DETAIL. REFER TO CONTROL DRAWINGS. REFER TO SPECIFICATION SECTION 23 09 24 FOR SEQUENCE OF OPERATION.
4. INVERTED VERTICAL CABINET UNIT HEATER SUPPORTED FROM WALL WITH BOTTOM AT 48" A.F.F. REFER TO SCHEDULE. REFER TO SPECIFICATION SECTION 23 09 24 FOR SEQUENCE OF OPERATION.
5. 24"x4" RETURN AIR DUCTWORK UP TO 20x6 RG-1 WITH TOP AT 10'-0" A.F.F. 24"x4" SUPPLY AIR DUCTWORK DOWN TO 20x4 SG-1 WITH BOTTOM AT 12" A.F.F.
6. TIME CLOCK AND CONTROL ACCESSORIES IN LOCKABLE CONTROL PANEL.
7. UNIT HEATER WITH INTEGRAL THERMOSTAT SUPPORTED FROM STRUCTURE ABOVE. REFER TO SCHEDULE. REFER TO SPECIFICATION SECTION 23 09 24 FOR SEQUENCE OF OPERATION.
8. RECESSED WALL HEATER WITH INTEGRAL THERMOSTAT. REFER TO SCHEDULE. REFER TO SPECIFICATION SECTION 23 09 24 FOR SEQUENCE OF OPERATION.
9. PROVIDE THERMOSTAT WITH LOCKING COVER.
10. PROVIDE TWO (2) 16x8 TG-1 (HIGH/LOW). BOTTOM EDGE OF GRILLES SHALL BE MOUNTED 8" AND 8'-8" A.F.F.
11. EXHAUST TERMINAL TO BE BALANCED TO CODE MINIMUM AIR FLOW WITH ONLY EF-1 OPERATING. PROVIDE AIR FLOW MEASUREMENTS WITH BOTH EF-1 AND EF-2 OPERATING IN SUMMER VENTILATION MODE, TYPICAL.
12. ELECTRIC WATER HEATER SHOWN FOR REFERENCE ONLY, REFER TO PLUMBING PLANS.
13. MAKE-UP AIR LOUVER MOUNTED 7'-4" A.F.F. IN EXTERIOR WALL, CENTERED OVER DOORWAY. LOUVER SHALL PROVIDE FREE AREA NOTED. REFER TO SECTION ON SHEET M700.
14. MOTORIZED DAMPER OF SIZE INDICATED. REFER TO CONTROL DRAWINGS. REFER TO SPECIFICATION SECTION 23 09 24 FOR SEQUENCE OF OPERATION.
15. 24x6 TG-1 WITH BOTTOM EDGE OF GRILLE AT 8'-8" A.F.F. TURN BLADES UPWARD.
16. TRANSITION EXHAUST AIR DUCTWORK TO 24" IN HEIGHT (HEIGHT OF PLENUM).
17. 48"x24" SHEETMETAL PLENUM. CONNECT 24"x24", 18"x24" AND 6"ø EXHAUST AIR DUCTS. PROVIDE SHEETMETAL PANEL BELOW 6"ø DUCT AS REQUIRED.
18. EXHAUST AIR LOUVER MOUNTED APPROXIMATELY 11'-8" A.F.F. IN EXTERIOR WALL, CENTERED OVER DOORWAY. COORDINATE EXACT MOUNTING LOCATION WITH BLOCK COURSING. REFER TO SCHEDULE ON SHEET M700.

BARKER RINKER SEACAT ARCHITECTURE

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DESIGN DEVELOPMENT

SHEET TITLE:
HVAC PLANS

M101

SHEET OF

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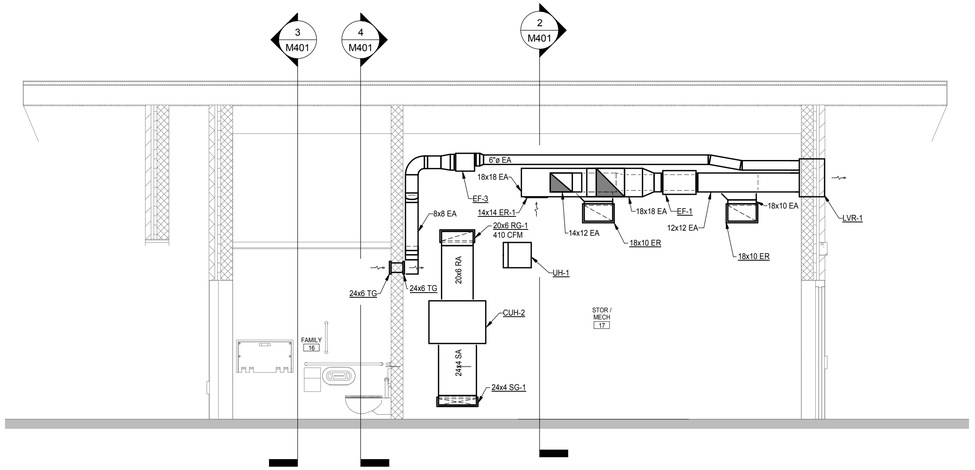
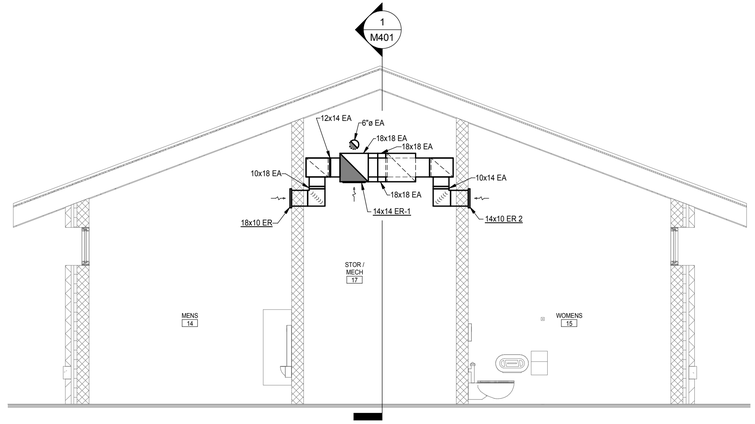


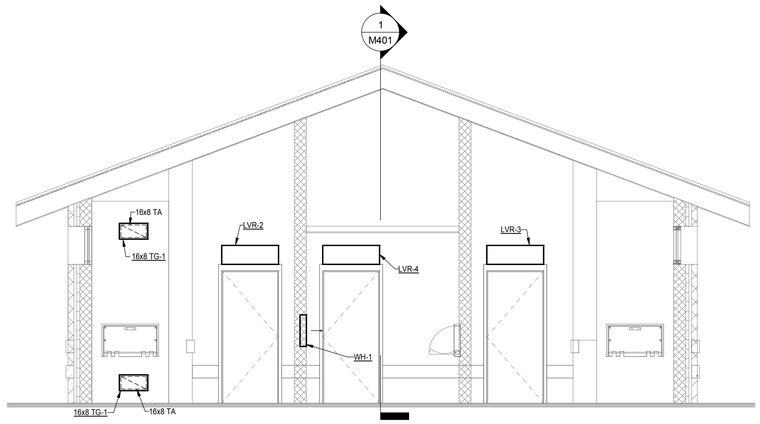
1 M401 MECHANICAL ROOM DUCTWORK SECTION 1

SCALE: 1/4" = 1'-0"



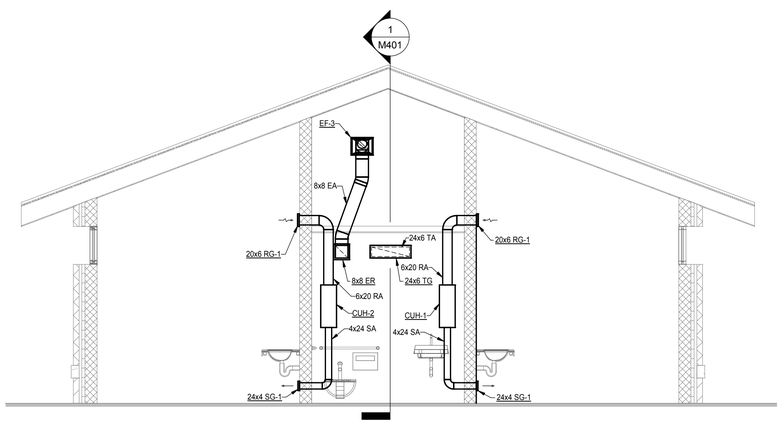
2 M401 MECHANICAL ROOM DUCTWORK SECTION 2

SCALE: 1/4" = 1'-0"



3 M401 FAMILY RESTROOM SECTION

SCALE: 1/4" = 1'-0"



4 M401 FAMILY RESTROOM/MECHANICAL ROOM SECTION

SCALE: 1/4" = 1'-0"

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DESIGN DEVELOPMENT

SHEET TITLE:
HVAC SECTIONS

M401

SHEET OF

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UNIT HEATER SCHEDULE (ELECTRIC)

PLAN CODE	MANUFACTURER & MODEL NO.	CAP. (MBH)	ELEMENT KW	ELEMENT V	ELEMENT Φ	CFM	EAT (°F)	FLA (A)	MCA (A)	MOTOR HP	MOTOR V	MOTOR Φ	MOTOR RPM	WT. (LBS)	CONTROL	REMARKS
UH-1	TRANE UHEC-05	17.1	5.0	208	1	350	55.0	24.1	30.3	1/125	208	1	1550	20	NOTE: 1	NOTE: 2,3

NOTES:
1. UNIT MOUNTED THERMOSTAT PROVIDED BY UNIT HEATER MANUFACTURER.
2. FLA (FULL LOAD AMPS) INCLUDES HEATING ELEMENT AND MOTOR CURRENT REQUIREMENTS, SINGLE POINT POWER REQUIRED.
3. PROVIDE UNIT HEATER WITH MANUFACTURER'S MOUNTING BRACKET.

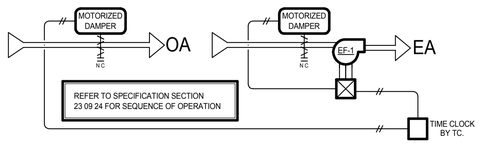
GRILLES, REGISTERS & DIFFUSERS SCHEDULE

PLAN CODE	MANUFACTURER & MODEL NO.	TYPE & SERVICE	NECK SIZE	FACE SIZE	VOLUME DAMPER (OBD)	MATERIAL	MOUNTING TYPE	FINISH	REMARKS
SG-1	PRICE 520L	SUPPLY	AS NOTED	NECK + 1.75"	NO	STEEL	SURFACE	WHITE	NOTE: 2
RG-1	PRICE 530L	RETURN	AS NOTED	NECK + 1.75"	NO	STEEL	SURFACE	WHITE	NOTE: 2
ER-1	PRICE 630D	EXHAUST	AS NOTED	NECK + 1.75"	YES	ALUMINUM	SURFACE	WHITE	NOTE: 1
EG-1	PRICE 630	EXHAUST	AS NOTED	NECK + 1.75"	NO	ALUMINUM	SURFACE	WHITE	
TG-1	PRICE 630	TRANSFER	AS NOTED	NECK + 1.75"	NO	ALUMINUM	SURFACE	WHITE	

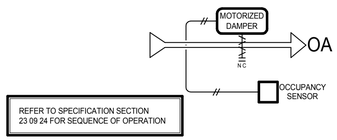
LOUVER SCHEDULE

PLAN CODE	MANUFACTURER & MODEL NO.	SERVICE	FREE AREA (SF)	CFM	VELOCITY (FPM)	APD (IN WC)	MOUNTING TYPE	MATERIALS	DIMENSIONS (IN) L	H	W	REMARKS
LVR-1	RUSKIN 375 DXH	RR/MAINT. EXHAUST	4.0	2,500	622	0.08	FLANGED	NOTE: 3	24"	48"	4"	NOTE: 1,2,4
LVR-2	RUSKIN 375 DXH	WOMEN'S RR INTAKE	0.9	900	1034	0.23	FLANGED	NOTE: 3	12"	36"	4"	NOTE: 1,2,4
LVR-3	RUSKIN 375 DXH	MEN'S RR INTAKE	0.9	900	1034	0.23	FLANGED	NOTE: 3	12"	36"	4"	NOTE: 1,2,4
LVR-4	RUSKIN 375 DXH	FAMILY RR/MAINT. INTAKE	0.9	700	805	0.14	FLANGED	NOTE: 3	12"	36"	4"	NOTE: 1,2,4

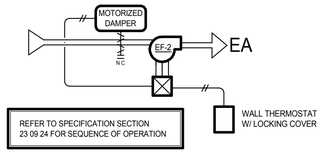
NOTES:
1. PROVIDE LOUVER WITH ANODIZED FINISH. COLOR SELECTION BY ARCHITECT.
2. HEAVY GUAGE CONSTRUCTION.
3. EXTRUDED ALUMINUM.
4. PROVIDE LOUVER WITH 1/2" BIRD SCREEN.



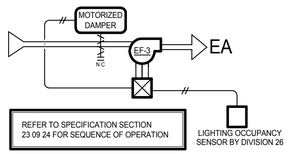
EF-1 CONTROL DIAGRAM
SCALE: NONE



MOTORIZED DAMPER CONTROL DIAGRAM
SCALE: NONE



EF-2 CONTROL DIAGRAM
SCALE: NONE



EF-3 CONTROL DIAGRAM
SCALE: NONE

CABINET UNIT HEATER SCHEDULE (ELECTRIC)

PLAN CODE	MANUFACTURER & MODEL NO.	LOCATION	CAP. (MBH)	CFM	ELEMENT KW	ELEMENT V	ELEMENT Φ	ELEMENT FLA	MOTOR HP	MOTOR V	MOTOR Φ	ARRANGEMENT	DIMENSIONS (IN) L	W	H	WT. (LBS)	CONTROL	REMARKS
CUH-1	TRANE FFMB040	WOMEN'S RR	19.4	410	5.7	208	1	27.5	1/10	115	1	NOTE: 1	39"	10"	27"	125	NOTE: 2	NOTE: 3,4,5,6
CUH-2	TRANE FFMB040	MEN'S RR	19.4	410	5.7	208	1	27.5	1/10	115	1	NOTE: 1	39	10"	27"	125	NOTE: 2	NOTE: 3,4,5,6

NOTES:
1. INVERTED VERTICAL CABINET.
2. WALL MOUNTED THERMOSTAT PROVIDED BY CABINET UNIT HEATER MANUFACTURER.
3. TOP INLET, BOTTOM OUTLET DUCT COLLARS.
4. 0.2" E.S.P., HIGH STATIC MOTOR.
5. THROWAWAY FILTERS.
6. UNIT MOUNTED ELECTRIC DISCONNECT SWITCH.

RECESSED WALL HEATER SCHEDULE (ELECTRIC)

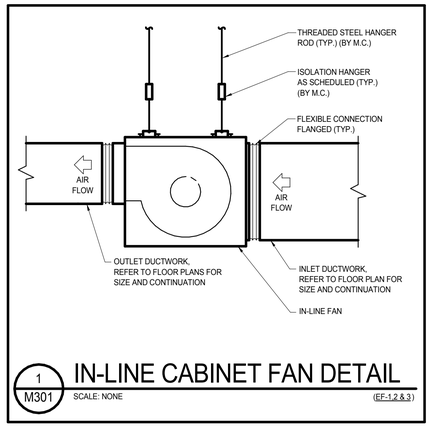
PLAN CODE	MANUFACTURER & MODEL NO.	AREA SERVED	CAP. (MBH)	ELEMENT KW	ELEMENT V	ELEMENT Φ	CFM	EAT (°F)	FLA (A)	MOTOR HP	MOTOR V	MOTOR Φ	MOTOR RPM	WT. (LBS)	CONTROL	REMARKS
WH-1	MARLEY AWH	FAMILY RR	5.1	1.5	120	1	-	65.0	12.5	-	-	-	-	2	NOTE: 1	NOTE: 2,3,4,5

NOTES:
1. UNIT MOUNTED THERMOSTAT PROVIDED BY WALL HEATER MANUFACTURER.
2. FLA (FULL LOAD AMPS) INCLUDES HEATING ELEMENT AND MOTOR CURRENT REQUIREMENTS.
3. PROVIDE UNIT WITH MANUFACTURER'S SURFACE MOUTING FRAME FOR FULLY RECESSED MOUNTING.
4. PROVIDE UNIT WITH MANUFACTURER'S 14 GAUGE SECURITY FRONT COVER.
5. COLOR SELECTION BY ARCHITECT.

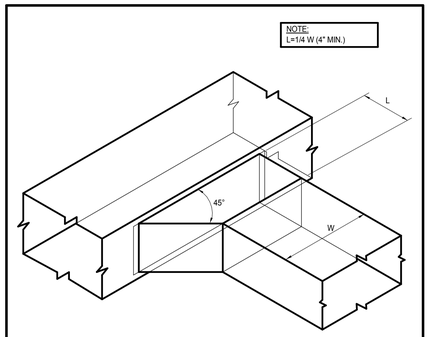
FAN SCHEDULE

PLAN CODE	MANUFACTURER & MODEL NO.	TYPE	SERVICE	SONES	CFM	E.S.P. @ S.L. (IN WC)	MOTOR RPM	MOTOR HP	MOTOR V/Φ/Hz	DIMENSIONS H (IN)	W (IN)	L (IN)	WT. (LBS)	CONT.	VIB. ISOL.	DAMPER TYPE	REMARKS
EF-1	GREENHECK SQ-99-VG	INLINE	RR/MAINT.-CODE MIN.	15.7	720	0.75	2,200	0.75	115/1/60	15"	15"	21"	65	NOTE: 4	SPRING	NOTE: 1	NOTE: 6
EF-2	GREENHECK G-130-VG	INLINE	RR/MAINT.-SUMMER VENT.	13.7	1,680	0.75	1,725	0.75	115/1/60	21"	21"	24"	70	NOTE: 3	SPRING	NOTE: 1	NOTE: 6
EF-3	GREENHECK CSP-A200	INLINE	FAMILY RR	1.5	100	0.50	900	41 W	115/1/60	12"	14"	14"	25	NOTE: 5	R.I.S.	NOTE: 2	NOTE: 6

NOTES:
1. PROVIDE FAN WITH MOTORIZED BACKDRAFT DAMPER.
2. PROVIDE FAN WITH GRAVITY BACKDRAFT DAMPER.
3. FAN SHALL BE CONTROLLED BY SPACE TEMPERATURE SENSOR. REFER TO SPECIFICATION 230923 FOR SEQUENCE OF OPERATION.
4. FAN SHALL OPERATE ON OCCUPIED/UNOCCUPIED MODE. REFER TO SPECIFICATION 230923 FOR SEQUENCE OF OPERATION.
5. FAN SHALL BE TIED INTO LIGHTING OCCUPANCY SENSORS.
6. PROVIDE FAN WITH UNIT MOUNTED SPEED CONTROLLER.



1 M301 IN-LINE CABINET FAN DETAIL
SCALE: NONE (EF-1,2 & 3)



2 M301 BRANCH DUCT TAKE-OFF DETAIL
SCALE: NONE

BARKER RINKER SEACAT ARCHITECTURE

DHM DESIGN
900 S. Broadway
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Fort Collins, CO 80525
(970) 568-8762

BOHN PARK
2016 FLOOD RECOVER PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DRAWN: AB
CHECKED: PWF
REVISIONS: No. Date:
JOB DESCRIPTION: **DESIGN DEVELOPMENT**
SHEET TITLE: HVAC SCHEDULES, DETAILS & CONTROL DRAWINGS

M700
SHEET OF

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BARKER RINKER SEACAT ARCHITECTURE

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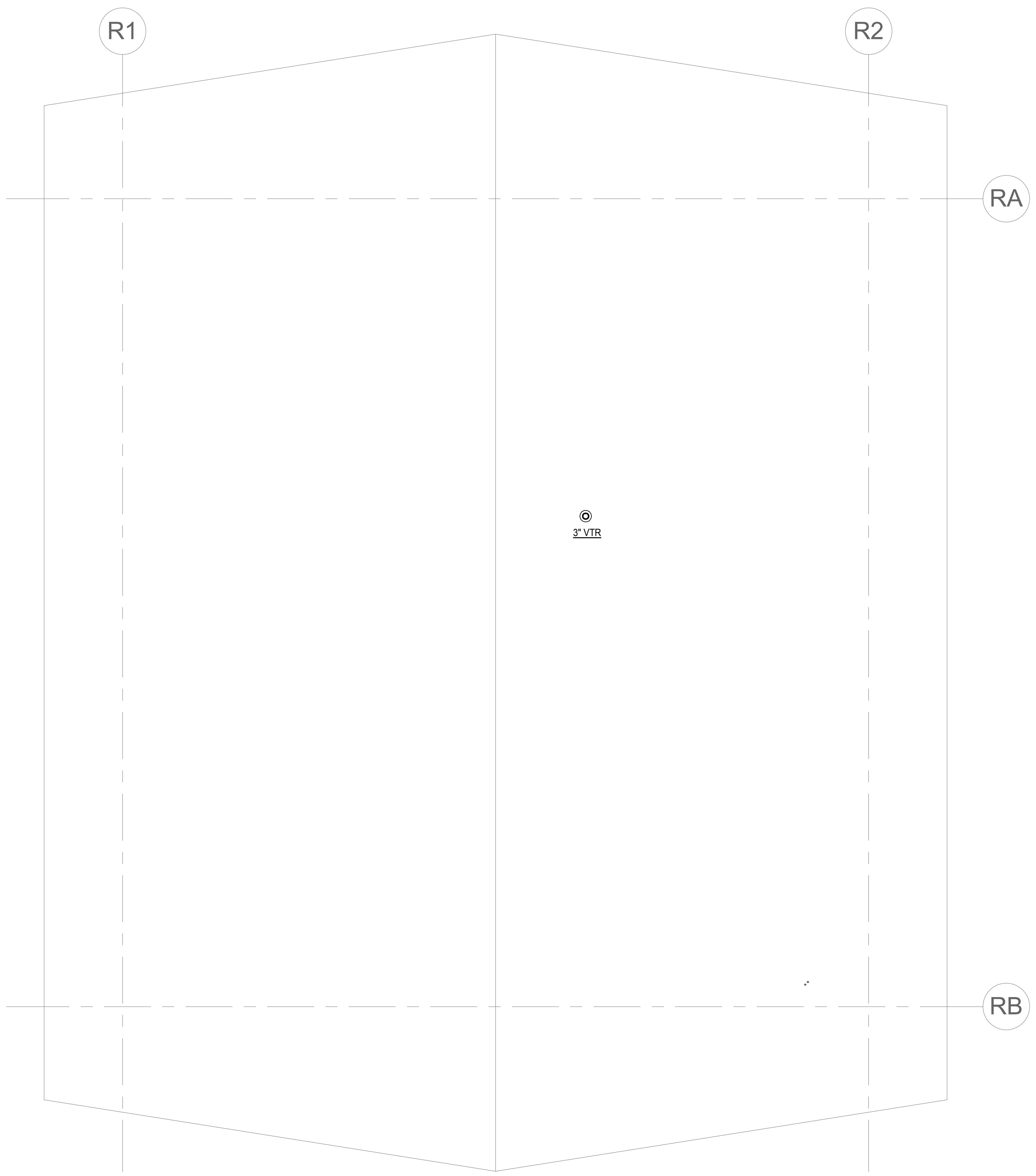
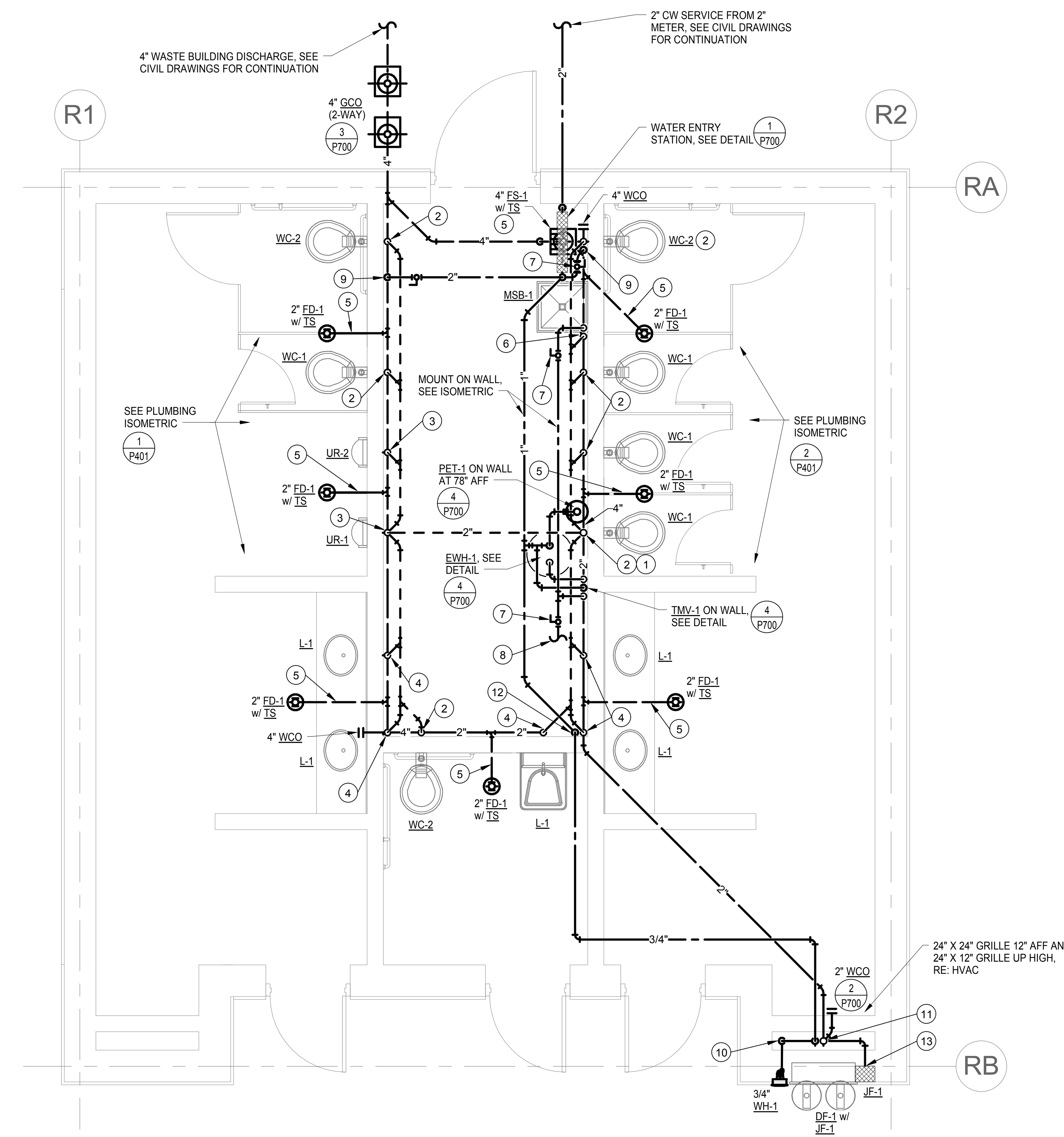


ROOF PLUMBING PLAN

SCALE: 1/4" = 1'-0"



FIRST FLOOR PLUMBING PLAN

SCALE: 1/4" = 1'-0"

PLUMBING KEYNOTES:

1. 2" VENT RISE TO 3" VTR.
2. 4" WASTE, 2" VENT, 1" CW TO WC.
3. 2" WASTE, 1-1/2" VENT, 3/4" CW TO UR.
4. 2" WASTE, 1-1/2" VENT, 1/2" MIXED HW TO LAV.
5. COMBINATION WASTE AND VENT SYSTEM.
6. 3" WASTE, 1-1/2" VENT, 1/2" CW AND 1/2" HW TO MSB.
7. BALL VALVE (FULL SIZE) WITH SERVICE ACCESS.
8. 1" HW(110°F) TO LAV'S.
9. 2" CW DOWN ON WALL AND OFFSET TO FIXTURES.
10. 3/4" CW DOWN IN WALL TO WALL HYDRANT.
11. 2" WASTE, 1-1/2" VENT RISE TO STUDOR VENT IN CHASE, 1/2" CW TO DRINKING FOUNTAIN.
12. BALL VALVE IN RISE.
13. 3/4" CW TO JUG FILLER.

BOHN PARK
2016 FLOOD RECOVER PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16

DRAWN: JJOP
CHECKED: TRH

REVISIONS:
No. Date:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
PLUMBING PLANS

P101

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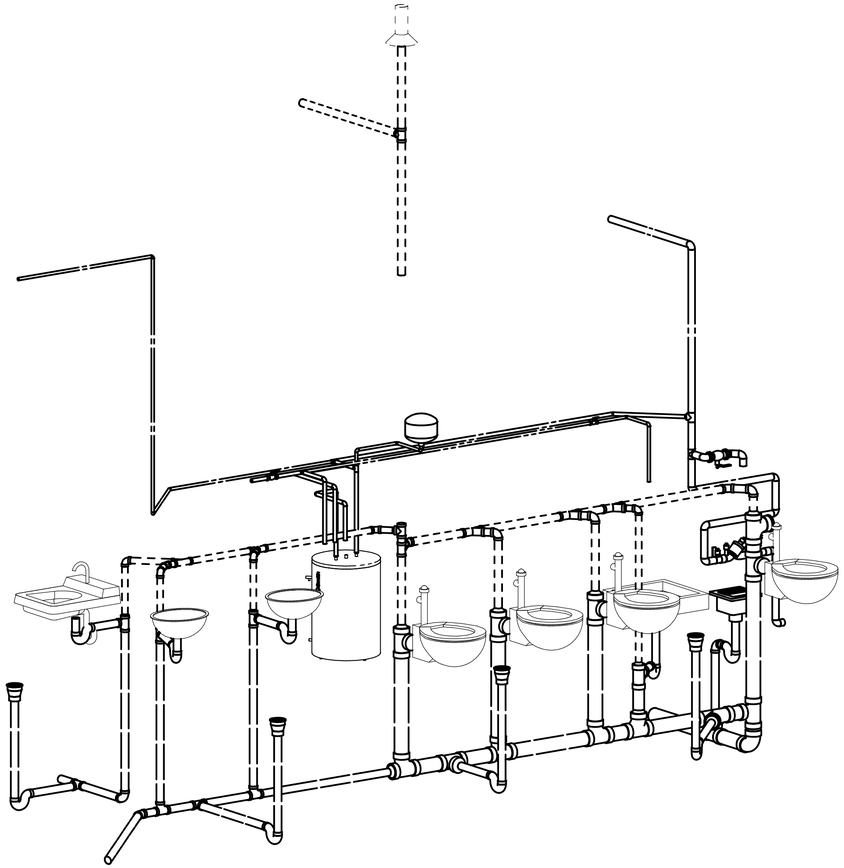
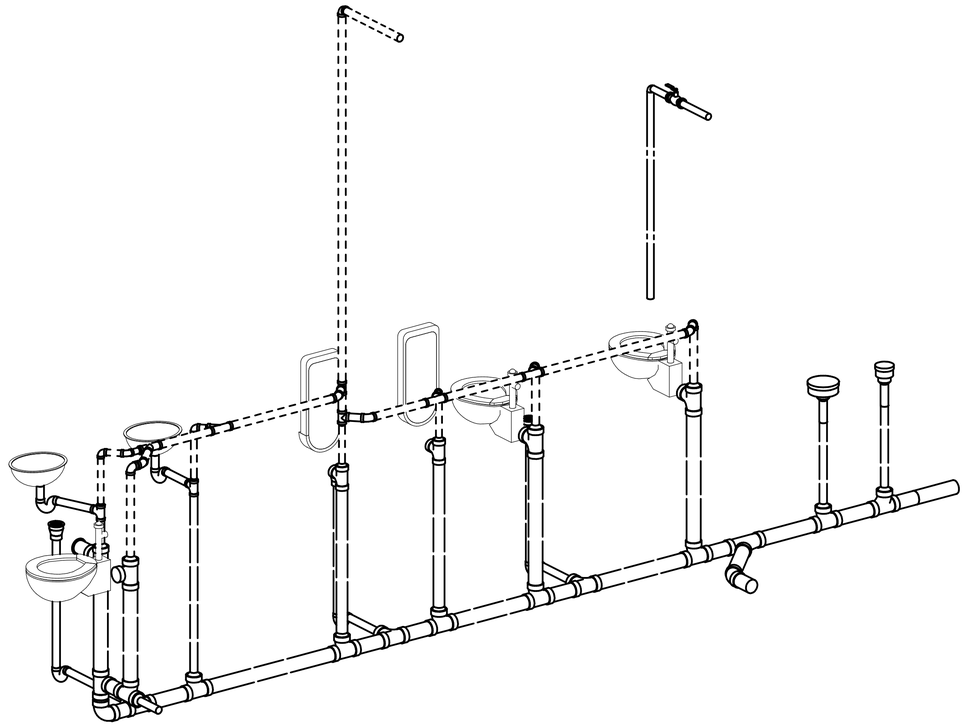


2 P401 PLUMBING ISOMETRIC
SCALE: NONE



1 P401 PLUMBING ISOMETRIC
SCALE: NONE

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BOHN PARK
2016 FLOOD RECOVER PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
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CHECKED: TRH

REVISIONS:
No. Date:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
PLUMBING ISOMETRICS

P401

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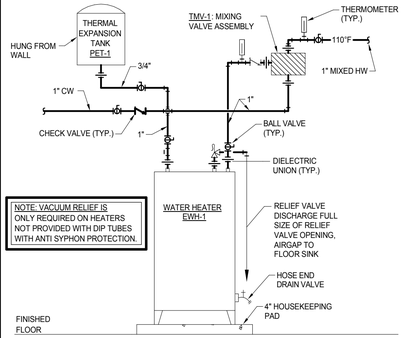
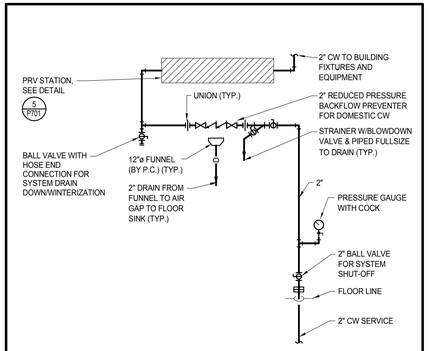


4 P700 ELECTRIC WATER HEATER DETAIL

SCALE: NONE

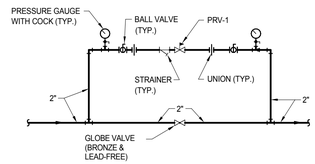


1 P700 DOMESTIC CW ENTRY PIPING DETAIL

SCALE: NONE

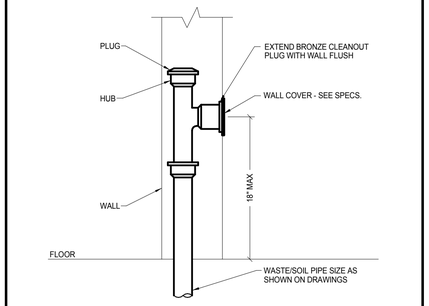
PRV SCHEDULE

CODE	MANUFACTURER	MODEL	GPM	PRESS. IN	PRESS. OUT	SIZE
PRV-1	WATTS	LF223S	68	120	60	2"



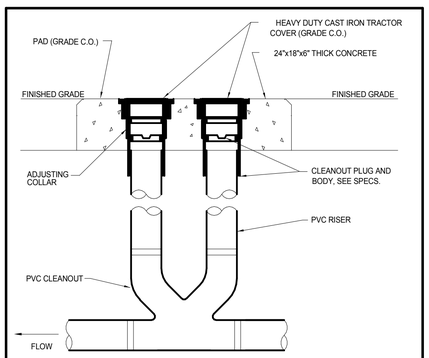
5 P700 PRESSURE REDUCING STATION DETAIL

SCALE: NONE (WATER)



2 P700 WALL CLEANOUT DETAIL

SCALE: NONE



3 P700 GRADE CLEANOUT (2-WAY)

SCALE: NONE

PLUMBING FIXTURE SCHEDULE

PLAN CODE	DESCRIPTION	MANUF.	MODEL	COLOR FINISH	FITTINGS	MANUF.	MODEL	COLOR FINISH	
WC-1	WATER CLOSET WALL MOUNTED BACK SPUD-1.28GPF	ACORN	1675-W-1.28-FVBO-HS	STAINLESS STEEL	FLUSH VALVE	SLOAN	152 ESS	CHROME	NOTES:2,3,4,5,6,8
WC-2	WATER CLOSET (ACCESSIBLE) WALL MOUNTED BACK SPUD-1.28GPF	ACORN	1675-W-1.28-FVBO-HS	STAINLESS STEEL	FLUSH VALVE	SLOAN	152 ESS	CHROME	NOTES:2,3,4,5,7,8
UR-1	URINAL (.125GPF)	ACORN	1702-W-1.0-FVBO	STAINLESS STEEL	FLUSH VALVE	SLOAN	190-1	CHROME	NOTES:2,3,4,5,8,9
UR-2	URINAL (ACCESSIBLE)(.125GPF)	ACORN	1702-W-1.0-FVBO	STAINLESS STEEL	FLUSH VALVE	SLOAN	190-1	CHROME	NOTES:2,3,4,5,8,9
L-1	LAVATORY-UNDERCOUNTER MTD. (ACC.)	ELKAY	ELVWO2219CS	STAINLESS STEEL	FAUCET	SLOAN	ETF-600-1.5 GPM	CHROME	NOTES:1,8,10,11,12
MSB-1	MOP SERVICE BASIN	FIAT	MSB2424	WHITE	FAUCET	ZURN	Z843M1-RC-CS	CHROME	NOTES: 13,19
DF-1	DRINKING FOUNTAIN (FREEZEPROOF) AND BOTTLE FILL STATION	MOST DEPENDABLE FOUNTAIN	10485-SS W/ 3 FR KITS	STAINLESS STEEL	-	-	-	-	NOTES:14,15
JF-1	JUG FILLER	MOST DEPENDABLE FOUNTAIN	WMSSJF W/ FR KIT	STAINLESS STEEL	-	-	-	-	NOTES:16,17

NOTES:

1. 17 GA. P-TRAP, ANGLE SUPPLIES WITH L.K. STOPS.
2. WITH CARRIER.
3. BACK SPUD.
4. CONCEALED FLUSH VALVE, HARDWIRED.
5. TRANSFORMER SLOAN #EL-154, UP TO 10 FLUSH VALVES, COORDINATE WITH EC.
6. MOUNTED AT 15" AFF.
7. MOUNTED AT 17" AFF.
8. CONTROL WIRING BY PLUMBING CONTRACTOR
9. MOUNTED AT 17" AFF.
10. TRANSFORMER SLOAN #EL-154, UP TO 3 FAUCETS.
11. HARDWIRED FAUCET.
12. INSULATION KIT, GRID STRAINER.
13. VACUUM BREAKER, CHECK STOPS.
14. PROVIDE CARRIER AND INTERCONNECT WITH BOTTLE FILL STATION.
15. FREEZEPROOF (3) #FR KITS.
16. FREEZEPROOF #FR KIT.
17. PROVIDE BALL VALVE FOR DF/3/4" WH/JF-1 IN CHASE.

MISCELLANEOUS PLUMBING FIXTURE

PLAN CODE	DESCRIPTION	MANUFACTURER	MODEL	FINISH	REMARKS
PET-1	PLUMBING EXPANSION TANK	AMTROL	ST-12V	STEEL	NOTE: 1,4

NOTES:

1. HUNG FROM STRUCTURE.

WATER HEATER SCHEDULE (ELECTRICAL)

PLAN CODE	MANUFACTURER & MODEL NO.	STORAGE GALLONS	G.P.H. RECOVERY @ 100' RISE	KW/ INPUT	ELECTRICAL VOLTS	CYCLE	Ø	NO. ELEM.	KW/ ELEM.	TANK SIZE DIA.	TANK SIZE HT.	OPER. WEIGHT	REMARKS
EWH-1	STATE PCE 30 20LSA	30	18	4.5	120	60	1	2	4.5	21.75"	30.875"	250 LBS	NOTES: 1

NOTES:

1. 120/60/1Ø CONTROL VOLTAGE.

PLUMBING FIXTURE CONNECTION SCHEDULE

PLAN CODE	FIXTURE	PIPE SIZE (INCHES, MINIMUM) WASTE TRAP & ARM	WASTE VERT. DRAIN	VENT (MIN.)	COLD WATER SUPPLY (MIN.)	COLD WATER CONNECTION (ACTUAL)	HOT WATER SUPPLY (MIN.)	HOT WATER CONNECTION (ACTUAL)	REMARKS
WC	WATER CLOSET	INT.	4"	2"	1"	1"	-	-	
U	URINAL	INT.	2"	1-1/2"	3/4"	3/4"	-	-	
L	LAVATORY	1-1/2"	2"	1-1/2"	1/2"	3/8"	1/2"	3/8"	
DF/BF	DRINKING FOUNTAIN/BOTTLE FILL STATION	1-1/2"	2"	1-1/2"	1/2"	3/8"	-	-	
WH/HB	WALL HYDRANT	-	-	-	3/4"	3/4"	-	-	
MSB	MOP SERVICE BASIN	3"	3"	1-1/2"	1/2"	1/2"	1/2"	1/2"	

BARKER RINKER SEACAT ARCHITECTURE

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Lakewood, CO 80227
(303) 988-4514
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Fort Collins, CO 80525
(970) 568-8762

BOHN PARK
2016 FLOOD RECOVER PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16

DRAWN: JJOP
CHECKED: TRH

REVISIONS:
No. Date:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
PLUMBING DETAILS AND SCHEDULES

P700

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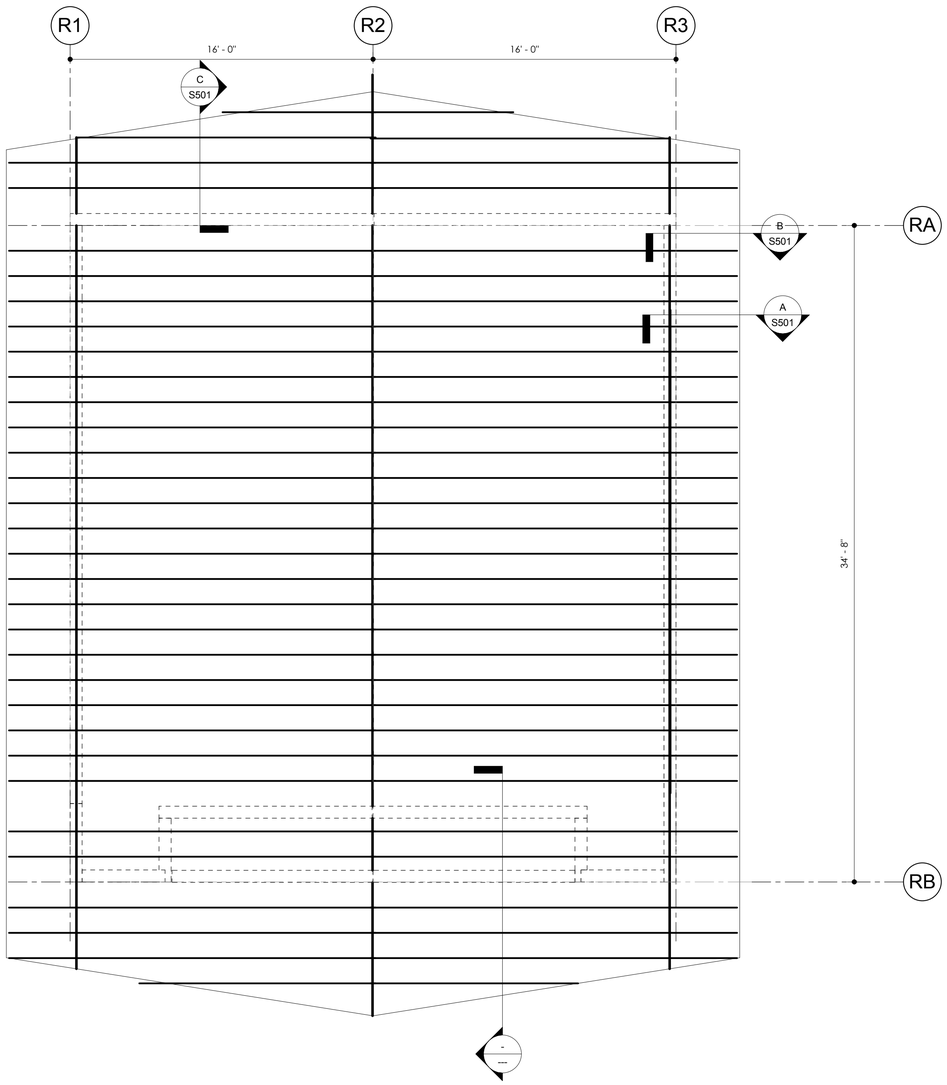


1 S101 RESTROOM ROOF FRAMING PLAN

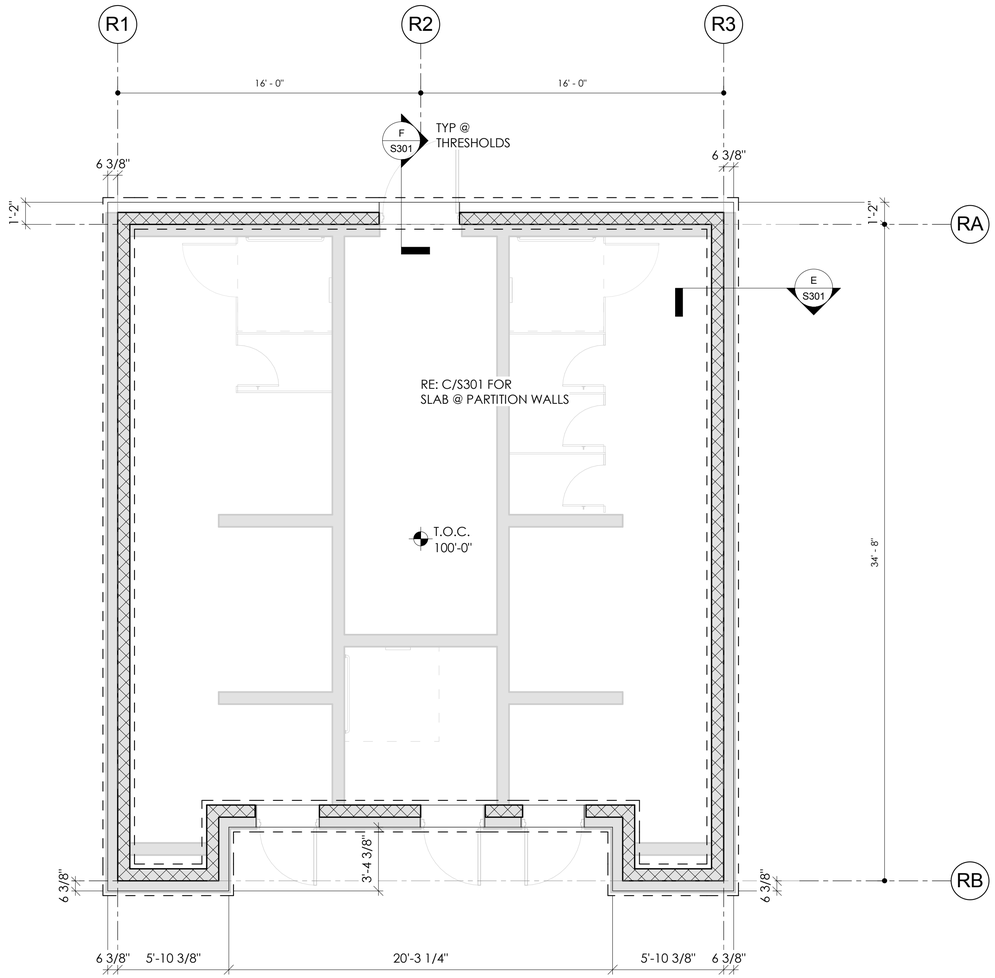
1/4" = 1'-0"

PLAN NOTES:

1. ROOF DECKING SHALL BE 15/32" THICK APA-RATED SHEATHING. REFER TO SCHEDULE FOR NAILING REQUIREMENTS.

PLAN REFERENCES:

TOP OF WALL PLATE	XX'-0"
GENERAL PROJECT NOTES	S001



2 S101 FOUNDATION PLAN

1/4" = 1'-0"

PLAN NOTES:

1. SLAB-ON-GRADE IS TO BE 5" THICK NORMAL WEIGHT CONCRETE OVER VAPOR BARRIER AND 4 INCHES OF GRANULAR FILL UNLESS NOTED OTHERWISE. REINFORCE WITH 6x6-W2.1xW2.1 WWF CENTERED AT MID-DEPTH OF SLAB. PROVIDE IN SHEETS ONLY.
2. LOCATE SLAB-ON-GRADE CONTROL JOINTS AND CONSTRUCTION JOINTS TO CREATEAPPROXIMATELY SQUARE PANELS MEASURING LESS THAN 200 SQ. FEET IN AREA. CONTRACTOR TO SUBMIT PROPOSED JOINT LOCATION PLAN FOR REVIEW AND APPROVAL BY ENGINEER.
3. CENTER FOOTINGS UNDER COLUMNS, GRADE BEAMS OR WALLS UNLESS DIMENSIONED OTHERWISE ON PLAN.
4. COORDINATE ALL CONSTRUCTION WITH ARCHITECTURAL, MECHANICAL, PLUMBING AND CIVIL DRAWINGS.
5. REFERENCE ALL OTHER DRAWINGS FOR NON-STRUCTURAL ITEMS SUCH AS EQUIPMENT PADS, DRAINS, CURBS, UNDERSLAB UTILITIES, ETC.

PLAN REFERENCES:

ELEVATION 100'-0" ON PLAN	XX.XX' U.S.G.S.
TOP OF CONCRETE SLAB	100'-0" U.N.O.
TOP OF EXTERIOR FOOTING	98'-0" U.N.O.
TOP OF INTERIOR FOOTING	98'-0" U.N.O.
GENERAL PROJECT NOTES	S001
SUBGRADE PREPARATION	RE: GEOTECHNICAL REPORT
SLAB-ON-GRADE JOINTING	RE: A/S301
STEP TOP OF CONCRETE WALL	
STEP TOP OF FOOTING	
STEP TOP OF FOOTING	RE: D/S301

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BARKER RINKER SEACAT ARCHITECTURE

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STRUCTURAL ENGINEERS PLLC
1888 Sherman St, Suite 770 · Denver, Colorado 80203
(720) 932-3744 · Fax (720) 932-3745

BOHN PARK
2016 FLOOD RECOVER PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16

DRAWN: Author
CHECKED: Checker

REVISIONS:
No. Date:

JOB DESCRIPTION:

SHEET TITLE:
RESTROOM FND & ROOF FRAMING

S101

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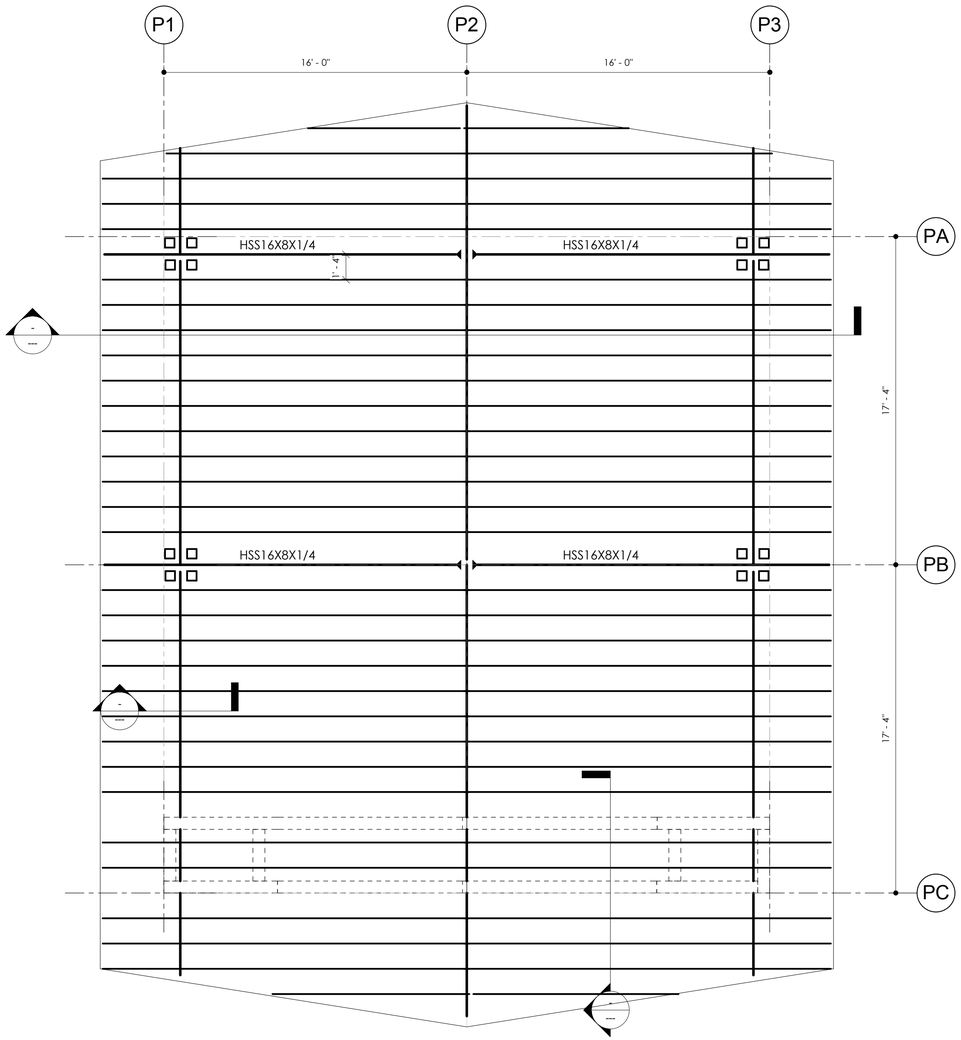


2 S102 PAVILLION ROOF FRAMING PLAN

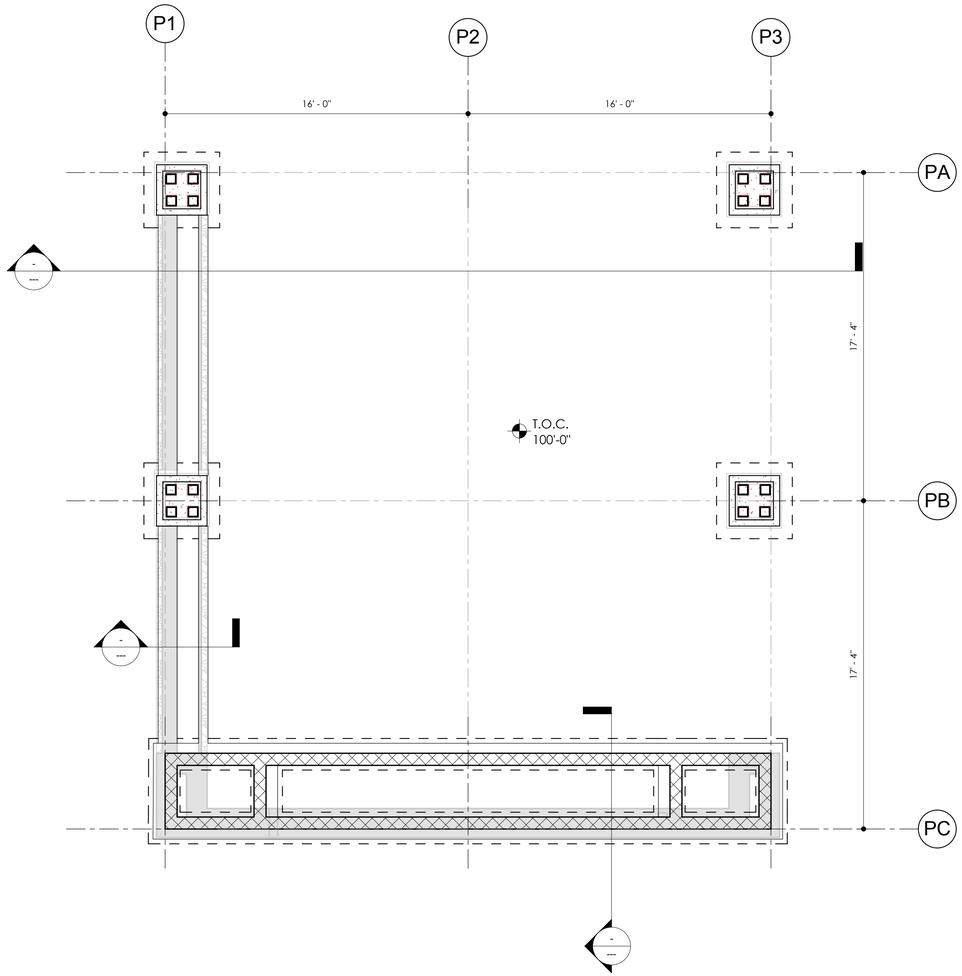
1/4" = 1'-0"

PLAN NOTES:

1. ROOF DECKING SHALL BE 15/32" THICK APA-RATED SHEATHING. REFER TO SCHEDULE FOR NAILING REQUIREMENTS.

PLAN REFERENCES:

TOP OF WALL PLATE	XX'-0"
GENERAL PROJECT NOTES	S001



1 S102 FOUNDATION PLAN

1/4" = 1'-0"

PLAN NOTES:

1. SLAB-ON-GRADE IS TO BE 5" THICK NORMAL WEIGHT CONCRETE OVER VAPOR BARRIER AND 4 INCHES OF GRANULAR FILL UNLESS NOTED OTHERWISE. REINFORCE WITH 6x6-W2.1xW2.1 WWF CENTERED AT MID-DEPTH OF SLAB. PROVIDE IN SHEETS ONLY.
2. LOCATE SLAB-ON-GRADE CONTROL JOINTS AND CONSTRUCTION JOINTS TO CREATEAPPROXIMATELY SQUARE PANELS MEASURING LESS THAN 200 SQ. FEET IN AREA. CONTRACTOR TO SUBMIT PROPOSED JOINT LOCATION PLAN FOR REVIEW AND APPROVAL BY ENGINEER.
3. CENTER FOOTINGS UNDER COLUMNS, GRADE BEAMS OR WALLS UNLESS DIMENSIONED OTHERWISE ON PLAN.
4. COORDINATE ALL CONSTRUCTION WITH ARCHITECTURAL, MECHANICAL, PLUMBING AND CIVIL DRAWINGS.
5. REFERENCE ALL OTHER DRAWINGS FOR NON-STRUCTURAL ITEMS SUCH AS EQUIPMENT PADS, DRAINS, CURBS, UNDERSLAB UTILITIES, ETC.

PLAN REFERENCES:

ELEVATION 100'-0" ON PLAN	XX.XX' U.S.G.S.
TOP OF CONCRETE SLAB	100'-0" U.N.O.
TOP OF EXTERIOR FOOTING	98'-0" U.N.O.
TOP OF INTERIOR FOOTING	98'-0" U.N.O.
GENERAL PROJECT NOTES	S001
SUBGRADE PREPARATION	RE: GEOTECHNICAL REPORT
SLAB-ON-GRADE JOINTING	RE: A/S301
STEP TOP OF CONCRETE WALL	
STEP TOP OF FOOTING	
STEP TOP OF FOOTING	RE: D/S301

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BOHN PARK
2016 FLOOD RECOVER PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16

DRAWN: Author
CHECKED: Checker

REVISIONS:
No. Date:

JOB DESCRIPTION:

SHEET TITLE:
PAVILLION FND & ROOF FRAMING PLAN

S102

SHEET OF

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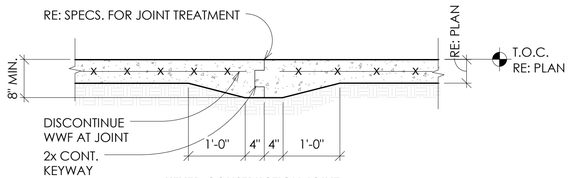
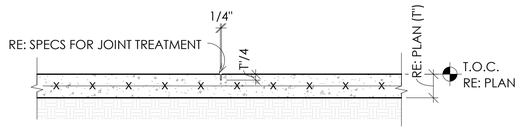


KEYED CONSTRUCTION JOINT

1. LOCATED AT CONTRACTORS DISCRETION.

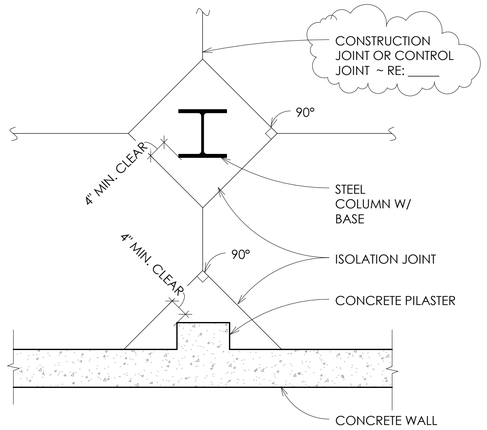


SAWCUT OR PREFORMED CONTROL JOINT

1. SAW BETWEEN 4 TO 12 HOURS AFTER POURING.
2. RE: PLAN AND NOTES FOR SPACING OF JOINTS.

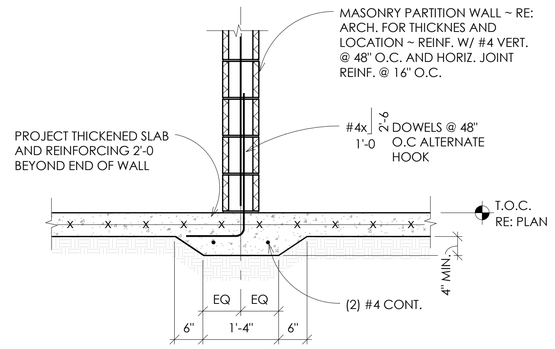
A S301 **SLAB ON GRADE JOINTS**

3/4" = 1'-0"



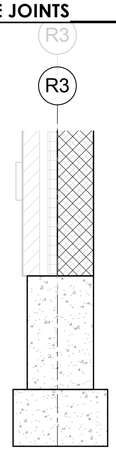
B S301 **SLAB ON GRADE ISOLATION JOINTS**

3/4" = 1'-0"



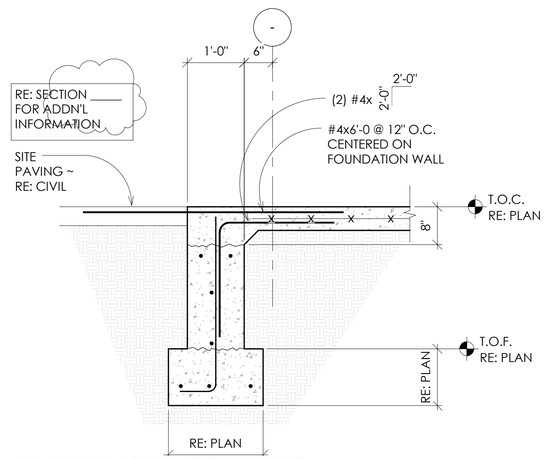
C S301 **THICKENED SLAB AT MASONRY PARTITION**

3/4" = 1'-0"



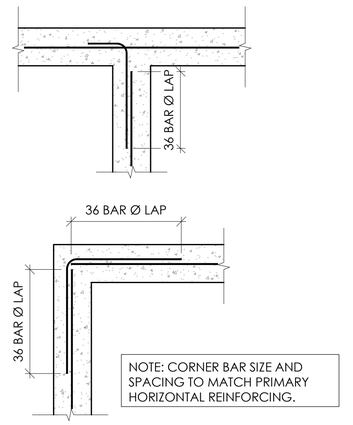
E S301 **E 301 TYP FND**

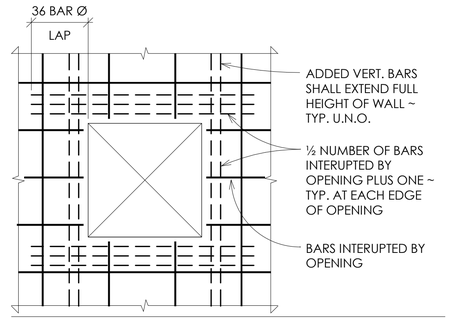
3/4" = 1'-0"



F S301 **FOUNDATION AT THRESHOLD**

3/4" = 1'-0"





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BARKER RINKER SEACAT ARCHITECTURE

K·Y·S·E·STRUCTURAL
STRUCTURAL ENGINEERS PLLC
1888 Sherman St, Suite 770 · Denver, Colorado 80203
(720) 932-3744 · Fax (720) 932-3745

BOHN PARK
2016 FLOOD RECOVER PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16

DRAWN: Author
CHECKED: Checker

REVISIONS:

No.	Date:
1	Date 1

JOB DESCRIPTION:

SHEET TITLE:
FOUNDATION DETAILS

S301

SHEET OF

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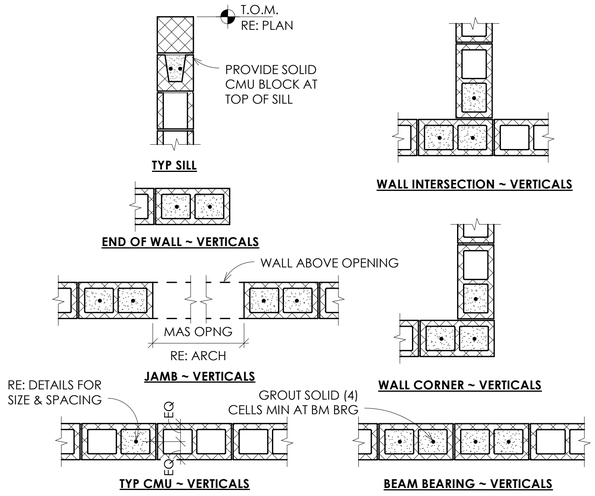
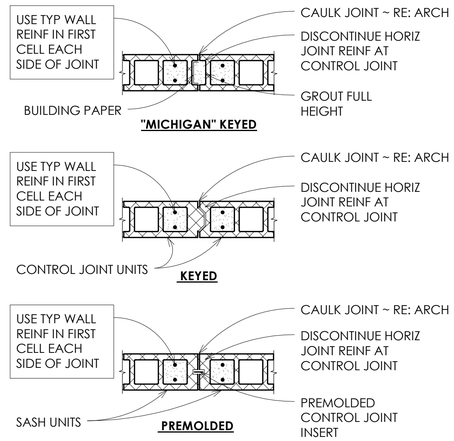


A S401 TYP 8" CMU REINFORCING DETAILS

3/4" = 1'-0"



B S401 MASONRY CONTROL JOINTS

3/4" = 1'-0"

LOOSE LINTEL SCHEDULE

OPENING WIDTH	LINTEL SIZE	BEARING EACH END
5'-3" OR LESS	L3 1/2 x 3 1/2 x 1/4	6"
OVER 5'-3" TO 7'-0"	L4 x 3 1/2 x 1/4 (LLV)	6"
OVER 7'-0" TO 8'-0"	L5 x 3 1/2 x 1/4 (LLV)	6"
OVER 8'-0" TO 9'-6"	L6 x 3 1/2 x 5/16 (LVL)	8"

NOTES:

1. PROVIDE ONE ANGLE FOR EACH 4" OR LESS THICKNESS OF MASONRY.
2. FOR OPENING WIDTHS GREATER THAN 6'-3", PROVIDE SOLID GROUTED OR SOLID MASONRY JAMB UNDER EACH END OF LINTEL.
3. FOR WIDTHS GREATER THAN 9'-6", RE: PLAN AND DETAILS FOR LINTEL.

D S401 LOOSE LINTEL SCHEDULE

3/4" = 1'-0"

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BOHN PARK

2016 FLOOD RECOVER PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
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No. Date:

JOB DESCRIPTION:

SHEET TITLE:
MASONRY DETAILS

S401

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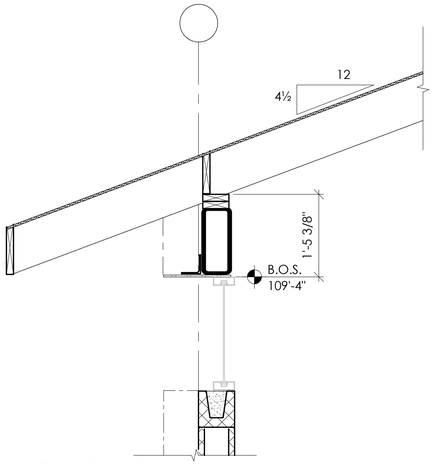
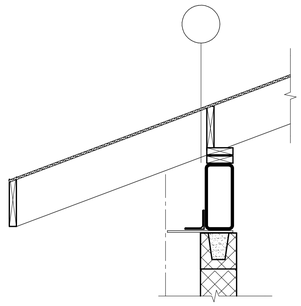
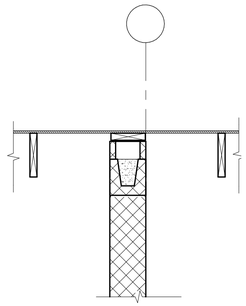


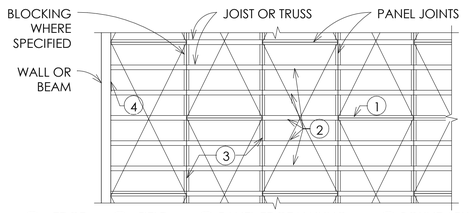
A S501 **A 501 TYP EAVE**
3/4" = 1'-0"



B S501 **B 501 EAVE @ CMU**
3/4" = 1'-0"



C S501 **C 501**
3/4" = 1'-0"



1 EDGE NAILING 2 FIELD NAILING 3 PANEL EDGE NAILING TO BLOCKING OR BEAMS 4 BOUNDARY NAILING

DECKING FASTENING SCHEDULE

LEVEL	SHEATHING MATERIAL	BLOCKED EDGES?	FASTENER TYPE / SPACING
ROOF	15/32" APA-RATED SHEATHING	NO	1. 8d COMMONS AT 6" O.C. 2. 8d COMMONS AT 12" O.C. 3. 8d COMMONS AT 6" O.C. 4. 8d COMMONS AT 6" O.C.
FLOORS	23/32" APA-RATED SHEATHING	NO	1. 10d COMMONS AT 6" O.C. 2. 10d COMMONS AT 12" O.C. 3. 10d COMMONS AT 6" O.C. 4. 10d COMMONS AT 6" O.C.

NOTE: FLOOR DECKING SHALL BE GLUED TO FRAMING MEMBER.

1 S501 **DECKING FASTENING SCHEDULE**
3/4" = 1'-0"

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BOHN PARK
2016 FLOOD RECOVER PROJECTT
Lyons, Colorado

PROJECT NUMBER: 16044.00
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DRAWN: Author
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REVISIONS:
No. Date:

JOB DESCRIPTION:

SHEET TITLE:
ROOF FRAMING DETAILS

S501

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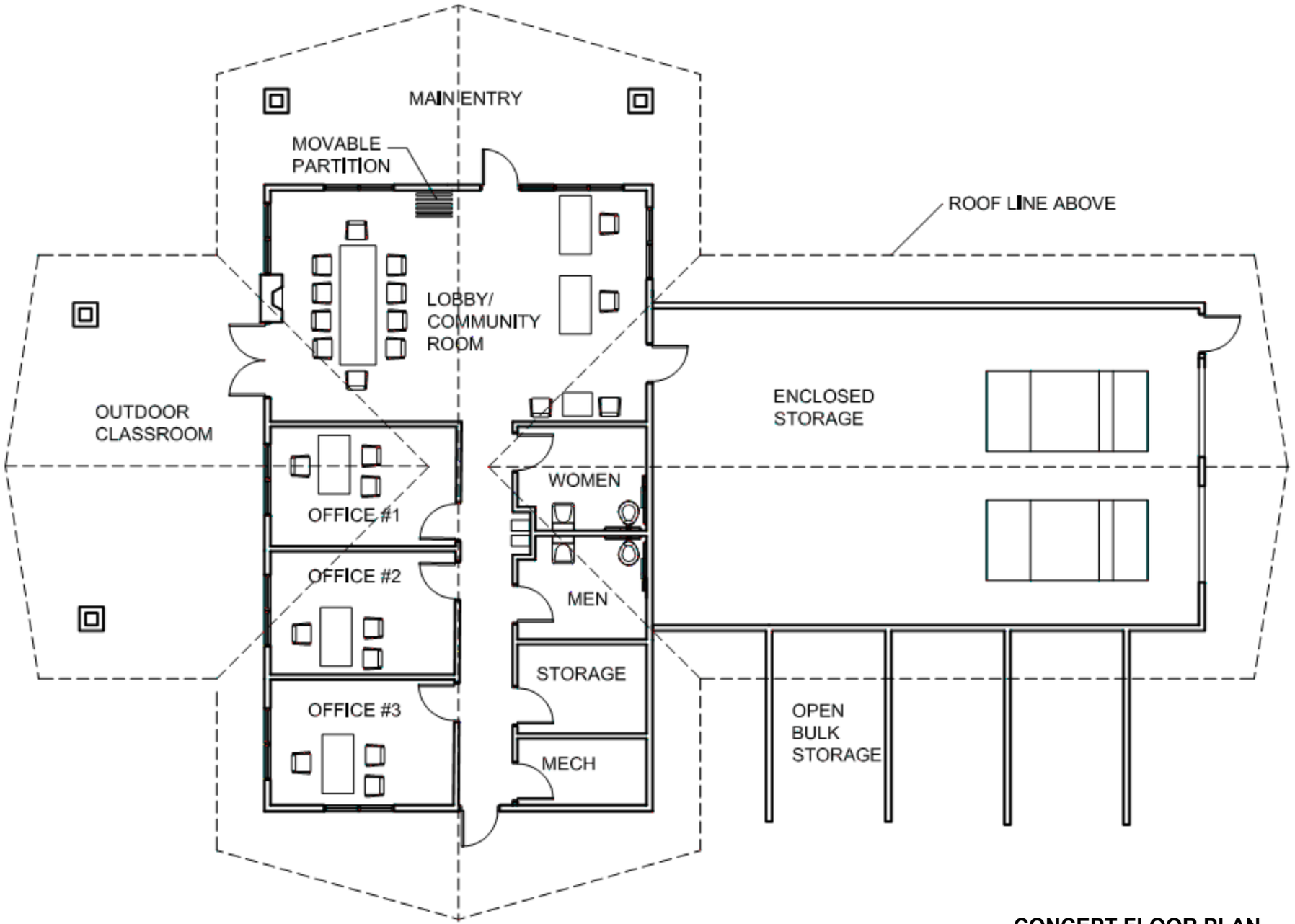


CONCEPT FLOOR PLAN
NOT TO SCALE

7. 50% Design Development
Budget Spreadsheet

Bohn Park

Final Design

50% Design Cost Estimate

- July18, 2016 -

items are currently funded by other sources

Prepared By: DHM DESIGN LANDSCAPE ARCHITECTURE URBAN DESIGN + LAND PLANNING ECOLOGICAL PLANNING

S2O REINVENTING WHITEWATER

BARKER RINKER SEACAT ARCHITECTURE

ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL	Notes	source	Planning estimate
General Conditions / Mobilization (5%)	LS			$ 450,000.00	365000		
Miscellaneous Demolition / Debris Removal	LS	1	$ 25,000.00	$ 25,000.00			
Clearing and Grubbing	AC	26	$ 3,500.00	$ 91,000.00	sum of all areas	26	
Earthwork (Complete In Place)	CY	15,000	$ 15.00	$ 225,000.00	8000 from river		
Earthwork (Import / Fill)	CY	9,000	$ 35.00	$ 315,000.00			
Civil							
Erosion Control	LS	1	$ 78,000.00	$ 78,000.00		ICON	
Storm Sewer	LS	1	$ 86,742.50	$ 86,742.50			
Water Quality Pond Structures	LS	1	$ 97,500.00	$ 97,500.00			
Sanitary Sewer	LS	1	$ 107,822.00	$ 107,822.00			
Waterline	LS	1	$ 126,009.00	$ 126,009.00			
			Subtotal	$ 496,073.50			
Electrical						AEDG	
Electrical Service Distribution	LS	1	$ 56,000.00	$ 56,000.00			
Bathroom Power and Lighting	LS	1	$ 19,300.00	$ 19,300.00			
Picnic Structure Power	LS	1	$ 4,400.00	$ 4,400.00			
Site Lighting and Power	LS	1	$ 134,300.00	$ 134,300.00			
			Subtotal	$ 214,000.00			
River Restoration						S2O	
Area 1: Main channel	LS	1	$ 401,631.00	$ 401,631.00			
Area 2: Bohn Park Overflow Channel	LS	1	$ 60,278.00	$ 60,278.00	assuming 8000 haul off		
Area 3: Proposed Stacey Parcel Overflow Channel	LS	1	$ 105,631.20	$ 105,631.20	may be covered by other funding pending FEMA approval		
Additional Excavator Time	LS	1	$ 8,800.00	$ 8,800.00			
			Subtotal	$ 576,340.20			415000
Ecological Restoration						ECOS	
Ecological Restoration	AC	0.87	$ 161,109.64	$ 140,165.39			700000
Bohn Field (Lighted)							
Field Lighting	LS	1	$ 200,000.00	$ 200,000.00	Musco		
Backstop (40' long x 20' high)	EA	1	$ 11,600.00	$ 11,600.00	PW		
Chainlink Fencing (8' height)	LF	1,122	$ 50.00	$ 56,100.00			
Fence Padding	LF	1,122	$ 1.50	$ 1,683.00			
Dugout (PW Athletics)	EA	2	$ 16,500.00	$ 33,000.00	ICON shelters		
Bench	EA	4	$ 600.00	$ 2,400.00	8' players bench/ PW		
Bat Racks	EA	2	$ 728.00	$ 1,456.00	PW		
Bleachers (PW Athletics 3 row/std with 8" rise)	EA	4	$ 2,224.00	$ 8,896.00	PW		
Foul Poles	EA	2	$ 1,733.00	$ 3,466.00	PW		
Bases Package	LS	1	$ 1,271.00	$ 1,271.00	PW		
Digital Scoreboard	EA	1	$ 26,000.00	$ 26,000.00	Daktronics		
12' Wide Access Gate	EA	1	$ 750.00	$ 750.00			
Topsoil	CY	1,341	$ 35.00	$ 46,935.00			
Bluegrass Sod	SF	72,425	$ 1.50	$ 108,637.50			
Dirt Infield	SF	13,790	$ 4.00	$ 55,160.00			
			Subtotal	$ 557,354.50			525000
Vasquez Field (Non-Lighted)							
Backstop (40' long x 20' high)	EA	1	$ 11,600.00	$ 11,600.00	PW		
Chainlink Fencing (8' height)	LF	300	$ 50.00	$ 15,000.00			
Removable Chainlink Fencing	LF	822	$ 75.00	$ 61,650.00			
Fence Padding	LF	1,122	$ 1.50	$ 1,683.00			
Dugout	EA	2	$ 16,500.00	$ 33,000.00	ICON Shelters		
Foul Poles	EA	2	$ 1,733.00	$ 3,466.00	PW		
Bases Package	LS	1	$ 1,271.00	$ 1,271.00	PW		
Bench	EA	4	$ 600.00	$ 2,400.00	PW		
Bat Racks	EA	2	$ 728.00	$ 1,456.00	PW		
Bleachers (PW Athletics 3row/std with 8 "rise)	EA	4	$ 2,224.00	$ 8,896.00	PW		
12' Wide Access Gate	EA	1	$ 750.00	$ 750.00			
Topsoil	CY	1,716	$ 35.00	$ 60,050.93			
Bluegrass Sod	SF	92,650	$ 1.50	$ 138,975.00			
Dirt Infield	SF	13,790	$ 4.00	$ 55,160.00			
			Subtotal	$ 395,357.93			350000
Batting Cage							
Concrete Pad	SF	840	$ 6.50	$ 5,460.00			
Batting Tunnel Structure (PW Athletics)	EA	1	$ 6,059.00	$ 6,059.00	PW		
Chainlink Fence	LF	132	$ 50.00	$ 6,600.00			
Gate	EA	1	$ 250.00	$ 250.00			
			Subtotal	$ 18,369.00			10000
Sports Courts							
Post Tension Concrete Courts	EA	2	$ 65,000.00	$ 130,000.00	call renner sports		
10' High Chainlink Fence	LF	720	$ 75.00	$ 54,000.00			
12' Wide Double Swing Gate	EA	3	$ 1,500.00	$ 4,500.00			
Perimeter Concrete 6" Mow Strip	LF	548	$ 7.50	$ 4,110.00			
Tennis Net	EA	2	$ 421.00	$ 842.00	PW Athletics		
Tennis Posts	EA	2	$ 1,407.00	$ 2,814.00	PW Athletics		
Basketball Poles- Gaded Sports (model GN45)	EA	4	$ 990.00	$ 3,960.00			
Basketball Goals- Gaded Sports (model Titan7550)	EA	4	$ 314.00	$ 1,256.00			
Basketball Backboards- Gaded Sports (model 1750 B)	EA	4	$ 810.00	$ 3,240.00			
			Subtotal	$ 204,722.00			195000
Skate Park							
Skate Park (8000 SF)	LS	1	$ 300,000.00	$ 300,000.00	Pillar		
Skatepark (Additional 4000 SF)	LS	1	$ 150,000.00	$ 150,000.00	Pillar		
			Subtotal	$ 450,000.00			300000
Stone Picnic Area							
Pre-Cast Concrete Picnic Table	EA	3	$ 1,000.00	$ 3,000.00			
28"x36" Large Group Grill	EA	1	$ 893.00	$ 893.00	PW		
Stone Base for Grill	EA	1	$ 1,000.00	$ 1,000.00			
Lyons Sandstone Stone Seatwall	LF	72	$ 150.00	$ 10,800.00			
Lyons Red Flagstone Plaza	SF	695	$ 25.00	$ 17,375.00			
Crusher Fines	SF	967	$ 3.50	$ 3,384.50			
			Subtotal	$ 36,452.50			15000
ADA Fishing Access							
Lyons Sandstone Boulder Wall	LF	222	$ -	$ -	see s2o's riverwork		
Sculpted Decorative Concrete	SF	902	$ 45.00	$ 40,590.00			
			Subtotal	$ 40,590.00			32000
Large Playground							
Play Structures	LS	1	$ 131,775.60	$ 131,775.60	Kompan		
EWF Safety Surfacing	SF	7,841	$ 2.70	$ 21,170.70			

Concrete Edger	LF	422	$ 30.00	$ 12,660.00			
ADA Accessible Ramp	EA	1	$ 800.00	$ 800.00			
Subdrain	LS	1	$ 2,000.00	$ 2,000.00			
			Subtotal	$ 168,406.30			135000
Small Playground							
Play Structure - relocation of existing play equipment	LS	1	$ 20,120.00	$ 20,120.00	Kompan		
EWF Safety Surfacing	SF	2,109	$ 2.70	$ 5,694.30			
Concrete Edger	LF	178	$ 30.00	$ 5,340.00			
ADA Accessible Ramp	EA	1	$ 800.00	$ 800.00			
Subdrain	LS	1	$ 2,000.00	$ 2,000.00			
			Subtotal	$ 33,954.30			75000
Climbing Area							
ID Structures (2 Pieces)	LS	1	$ 99,000.00	$ 99,000.00	IDS		
EWF Safety Surfacing	SF	3,176	$ 2.70	$ 8,575.20			
Concrete Edger	LF	222	$ 30.00	$ 6,660.00			
Subdrain	LF	1	$ 1,500.00	$ 1,500.00			
			Subtotal	$ 115,735.20			60000
Bike Park							
Split rail Fencing	LF	285	$ 30.00	$ 8,550.00			
Dirt	LS	1	$ 5,000.00	$ 5,000.00			
			Subtotal	$ 13,550.00			15000
Slackline Area							
Slackline Posts	EA	4	$ 500.00	$ 2,000.00			10000
4th Avenue Bridge							
Bridge & Abutments	LF	80	$ 2,000.00	$ 160,000.00			
			Subtotal	$ 160,000.00			80000
Landscape							
Soil Prep (Native Seed Only)	SF	468,590	$ -	$ -			
Soil Amendments	CY	2,500	$ 35.00	$ 87,500.00			
Wood Mulch (Shrub Bed)	SF	25,937	$ 1.00	$ 25,937.00			
Bluegrass Sod	SF	196,008	$ 1.25	$ 245,010.00			
Topsoil (sod)	CY	3,630	$ 35.00	$ 127,042.22			
Native Seed (Hydromulch)	SF	468,590	$ 0.17	$ 79,660.30			
Shrubs (5 gallon)	EA	200	$ 50.00	$ 10,000.00			
Evergreen Trees (8'-10' Height B&B)	EA	18	$ 500.00	$ 9,000.00			
Ornamental Trees (2" Caliper B&B)	EA	12	$ 450.00	$ 5,400.00			
Deciduous Trees (2.5" Caliper B&B)	EA	102	$ 525.00	$ 53,550.00			
			Subtotal	$ 643,099.52			
Structures							
Restroom - Custom (1085 SF)	EA	1	$ 596,750.00	$ 596,750.00		BRS	
Shade Structure 1 - Custom (1085SF)	EA	1	$ 238,700.00	$ 238,700.00		BRS	
Shade Structure 2 - Craftsman Gable 30’ X 30’ with square columns and stone wrap	EA	1	$ 50,000.00	$ 50,000.00		ICON	
Shade Structure 3 - Craftsman Gable 20’ X 20’ with square columns	EA	1	$ 25,850.00	$ 25,850.00		ICON	
Shade Structure 4 - Craftsman Gable 15’ X 20’ with square columns	EA	1	$ 18,906.00	$ 18,906.00		ICON	
Community Center / Parks Office Building	EA	1	$ 850,000.00	$ 850,000.00		BRS	
			Subtotal	$ 1,780,206.00			815000
Site Furnishings/Misc.							
Pre-Cast Concrete Picnic Tables	EA	20	$ 1,800.00	$ 36,000.00	Colorado Precast		
Park Grill-Large	EA	4	$ 893.00	$ 3,572.00			
Park Grill-Small	EA	16	$ 550.00	$ 8,800.00			
Decorative Planters (9' Diameter Circle)	EA	5	$ 2,500.00	$ 12,500.00			
Dumpster Enclosures (3-8 yd Dumpsters)	LS	1	$ 10,000.00	$ 10,000.00			
Trash Receptacles	EA	4	$ 2,450.00	$ 9,800.00			
Coal Bins	EA	4	$ 500.00	$ 2,000.00			
Split Rail Fencing	LF	1,193	$ 30.00	$ 35,790.00			
Vehicular Access Gates / Trail Entry Gate	EA	2	$ 1,500.00	$ 3,000.00			
Backstop	EA	1	$ 11,600.00	$ 11,600.00	PW Athletics		
Parking Kiosk	EA	3	$ 18,000.00	$ 54,000.00	Cale		
Wayfinding Kiosk	EA	1	$ 15,000.00	$ 15,000.00			
Standard Grey Concrete Paving	SF	30,124	$ 6.50	$ 195,806.00			
Crusher Fines	SF	66,755	$ 2.50	$ 166,887.50			
Class 6 Gravel Road Base	SF	125,619	$ 3.00	$ 376,857.00			
6"x6"x8' Brown Pressure Treated Timbers	EA	348	$ 185.00	$ 64,380.00	Meadow Park		
Concrete Curb Stop	EA	343	$ 185.00	$ 63,455.00	Meadow Park		
Lyons Sandstone Landscape Boulder	EA	30	$ 350.00	$ 10,500.00			
Lyons Sandstone Boulder Seatwall	LF	630	$ 150.00	$ 94,500.00			
Lyons Sandstone Boulder Retaining Wall	LF	1,015	$ -	$ -	refer to s2o's riverwork		
			Subtotal	$ 1,174,447.50			
Irrigation							
Turf Areas	SF	361,083	$ 0.850	$ 394,428.31			
Native Areas	SF	468,590	$ 0.65	$ 369,173.35			
Shrub Beds	SF	25,937	$ 1.25	$ 37,109.63			
Pump Station	EA	1	$ 55,000.00	$ 55,000.00			
Power Drop	EA	1	$ 8,250.00	$ 8,250.00			
Imaging Study for Well Location	EA	1	$ 5,500.00	$ 5,500.00			
Controller	EA	1	$ 3,500.00	$ 3,500.00			
Drilling for new Well	EA	1	$ 35,200.00	$ 35,200.00			
			Subtotal	$ 908,161.28			210000

Subtotal	$	9,234,985.11	$	7,207,033.69
10% Contingency	$	923,498.51	$	720,703.37

			Modified Cost	Allocated Budget $7,500,000
TOTAL	**$**	**10,158,483.63**	$ 7,927,737.06	

* Modified Costs assumes donated material, removal of skate park, no parks building, removed overflow channels, removed topsoil from native areas, limited irrigation to active park areas

8. Skate Park Presentation
April 28, 2016

Skateparks Designed for your Community

Pillar
Design Studios

TOWN OF LYONS PARKS - FLOOD RECOVERY PLANNING PROCESS

JANUARY 19th, 2016

BOHN PARK
PREFERRED ALTERNATE

SOFT SURFACE LOOP TRAILS
FUTURE SKATE PARK
BOULDERING/ CLIMBING AREA
EXISTING BIKE PARK
ENHANCE/EXPAND BIKE PARK INTEGRATE FEATURES FOR YOUNG CHILDREN
NATIVE GRASS

MOUNTAIN BIKE LOOP TRAILS
RIVERINE AND RIPARIAN ECOLOGICAL RESTORATION
ST. VRAIN REGIONAL TRAIL

SOUTH ST. VRAIN CREEK
HIGHWAY 7 TRAIL CONNECTION
4TH AVENUE PEDESTRIAN BRIDGE/ GATEWAY

POTENTIAL BUYOUT PROPERTY
WHITEWATER FEATURES

ACCESS TO PICTURE ROCK TRAIL

PROPOSED PLANTING BUFFER PLANTING TO INCLUDE:
- APPROX. 12 TREES (MIX OF DECIDUOUS AND EVERGREEN)
- APPROX. 60-75 SHRUBS

OVERFLOW EVENT PARKING

PICNIC SPOTS ALONG RIVER

GRAVEL BED/ BEACH AREA
RIVER RECREATION ACCESS

EXISTING DITCH RELEASE WITH WATER FEATURES AND NATURAL PLAY
EXISTING PLAYGROUND WITH POSSIBLE ENHANCEMENTS
MEMORIAL STONE PICNIC AREA
STEPS DOWN TO RIVER
SAND VOLLEYBALL COURTS
PICNIC SHELTERS WITH RESTROOMS
ADA FISHING ACCESS
RIVER OVERLOOK STEPS DOWN TO RIVER

SAINT VRAIN CREEK

UNINCORPORATED BOULDER COUNTY

PROPOSED PLANTING BUFFER - NORTH BERM 1 PLANTING TO INCLUDE:
- APPROX. 8 TREES (MIX OF DECIDUOUS AND EVERGREEN)
- APPROX. 20-40 SHRUBS

PROPOSED PLANTING BUFFER - NORTH BERM 2 ADDITIONAL PLANTING TO INCLUDE:
- APPROX. 10 TREES (MIX OF DECIDUOUS AND EVERGREEN)
- APPROX. 40-60 SHRUBS

FIELD #1 300' OUTFIELD

FIELD #2 300' OUTFIELD LIGHTED

SPECIAL EVENT AREA/ MULTI- USE FIELD

BATTING CAGE
POSSIBLE CONCESSIONS/ FOOD TRUCK ACCESS

BOHN PARK LIMITS

EXISTING LANDSCAPE WITH PROPOSED PLANTING BUFFER ADDITIONAL PLANTING TO INCLUDE:
- APPROX. 12 TREES (MIX OF DECIDUOUS AND EVERGREEN)
- APPROX. 40-60 SHRUBS

EXISTING MULTI-USE FIELD

SLACKLINE
PICNIC SHELTER
SMALL PLAYGROUND

FUTURE 3RD FIELD OPTION/ NATURAL OPEN AREA

PICNIC SHELTER
EXISTING MULTI-USE COURT
PUBLIC ART ALONG RIVER
TRAIL GATE WITH SPLIT RAIL FENCE
FLOWER PLANTINGS ALONG RIVER
AT GRADE CROSSWALK
TRAIL UNDERPASS

EXISTING DOG PARK
SHADE STRUCTURE

FOOTBALL FIELD

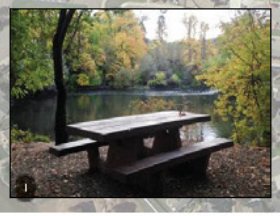
EXISTING RESTROOM
TRAIL GATE
SOFT SURFACE TRAIL
EXISTING DITCH

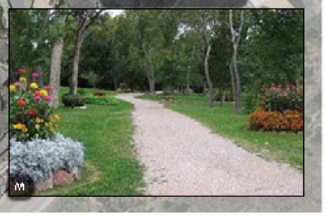
PARK HOST WITH WATER/ SEWER/ ELECTRIC HOOK UP
TENNIS COURTS
GRAVEL PARKING APPROX. 100 SPACES W/ AUTOMATED KIOSK FOR PAID PARKING
PARK ID SIGN
GRAVEL PARKING APPROX. 92 SPACES W/ AUTOMATED KIOSK FOR PAID PARKING
MAINTENANCE ACCESS
TRAILHEAD WITH WAYFINDING KIOSK AND BENCHES

2ND AVENUE

STEPS DOWN TO RIVER
MAYBE BUYOUT PROPERTY
RIPARIAN ECOLOGICAL RESTORATION
2ND AVENUE DOG PARK
OVERFLOW/ EVENT GRAVEL PARKING AREA (APPROX. 150 SPACES) W/ AUTOMATED KIOSK FOR PAID PARKING

500 YR. FLOODPLAIN
100 YR. FLOODPLAIN





Previous Planning Efforts

- Feedback heard to date.
  - General comments - Prioritize the Skate Park
  - Skate Park high priority from the website comments
  - 13/50 comments on survey cards want a skate park

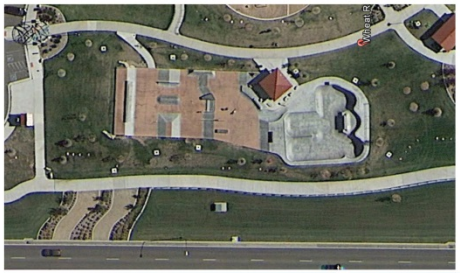
Budgets

- Balance budgets within context of full park development
- Design skate park within requirements of existing Deed restrictions

Precedent Skate Parks

NATHAN LAZARUS SKATE PARK - NEDERLAND, COLORADO
SIZE: 12,340 SF

DISCOVERY SKATE PARK - WHEAT RIDGE, COLORADO
SIZE: 12,000 SF



GUNNISON SKATE PARK - GUNNISON, COLORADO
SIZE: 14,000 SF

TRAIL WINDS SKATE PARK - THORNTON, COLORADO
SIZE: 14,000 SF

Precedent Skate Parks

Broomfield Skate park

- **General Information:** 150 Lamar St. Broomfield, CO 80020. 720 877 8285 – Aaron Stewart- astewart@broomfield.org - 303-464-5510
- **Hours of operation-** 6am- 10 pm
- **Size-** 10,000 - 20,000 sq. ft.
- **Type-** Concrete
- **Average daily attendance-** 26-50
- **Average yearly attendance-** 35,000

Precedent Skate Parks

JAYCEE SKATEPARK
General Information: 2000 Cedar Lane, Greenville, NC 27858 -**Hours of operation-** 9 a.m.- 10 p.m. Daily
Size- 10,000- 20,000 sq ft
Type- Outdoor, wooden
Average daily attendance- 26-50
Average yearly attendance- 3,000
.

Precedent Skate Parks

MARSH CREEK SKATEPARK
General Information: 3016 North New Hope Road, Raleigh, North Carolina **Size-** 10,000 - 20,000 sq. ft.
Type- Concrete
Average daily attendance- 51-100
Average yearly attendance- 5,500
Age of majority of park users- 16-20 years old

Schedules/ Timelines

- Available funds vs Community Preferences

Skatepark Project Information:

Town Website:
https://www.lyonsparksmp.com

Additional Info:
Facebook: Pillar Design Studios
Instagram: pillardesignstudios

Eastwoods Skate Plaza – Syracuse, NY

6,000 Sq.Ft.

Ocean Pines Skatepark – Ocean Pines,. MD

7,000 Sq.Ft.

Montague Skatpeark – Turners Falls, MA

7,200 Sq.Ft.

Roanoke Rapids Skatepark – Roanoke Rapids, NC

8,000 Sq.Ft.

Vicksburg Skatepark – Vicksburg, MS

8,000 Sq.Ft.

Durham Skatepark – Durham, NC

10,000 Sq.Ft.

Montez Skatepark – Monte Vista, CO

12,000 Sq.Ft.

Cherokee Skatepark – Cherokee, NC

13,000 Sq.Ft.

Historic 4th Ward Skatepark – Atlanta, GA

17,000 Sq.Ft.

Warren County Skatepark – Front Royal, VA

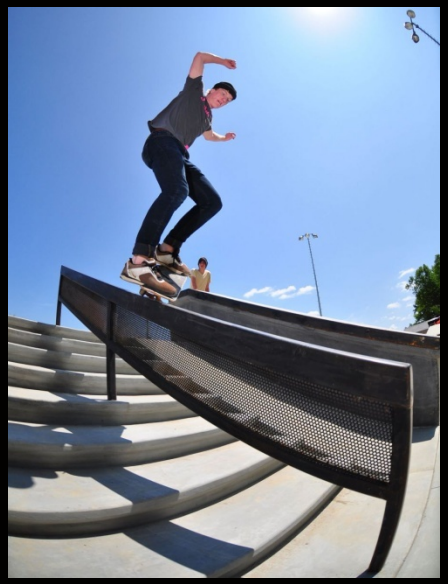
17,000 Sq.Ft.

Falling Creek Skatepark – Bedford, VA

18,000 Sq.Ft.

Bay Creek Skatepark – Loganville, GA

20,000 Sq.Ft.



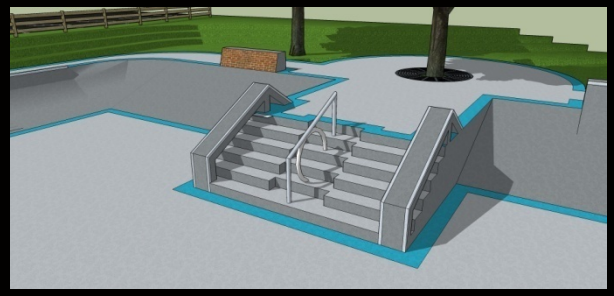
North Side Skatepark – Norfolk, VA

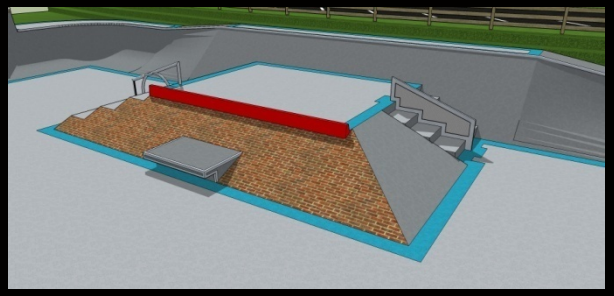
20,000 Sq.Ft.

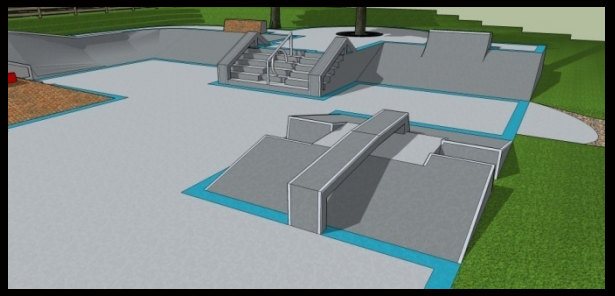
High Valley Skate World – Stockholm, Sweden

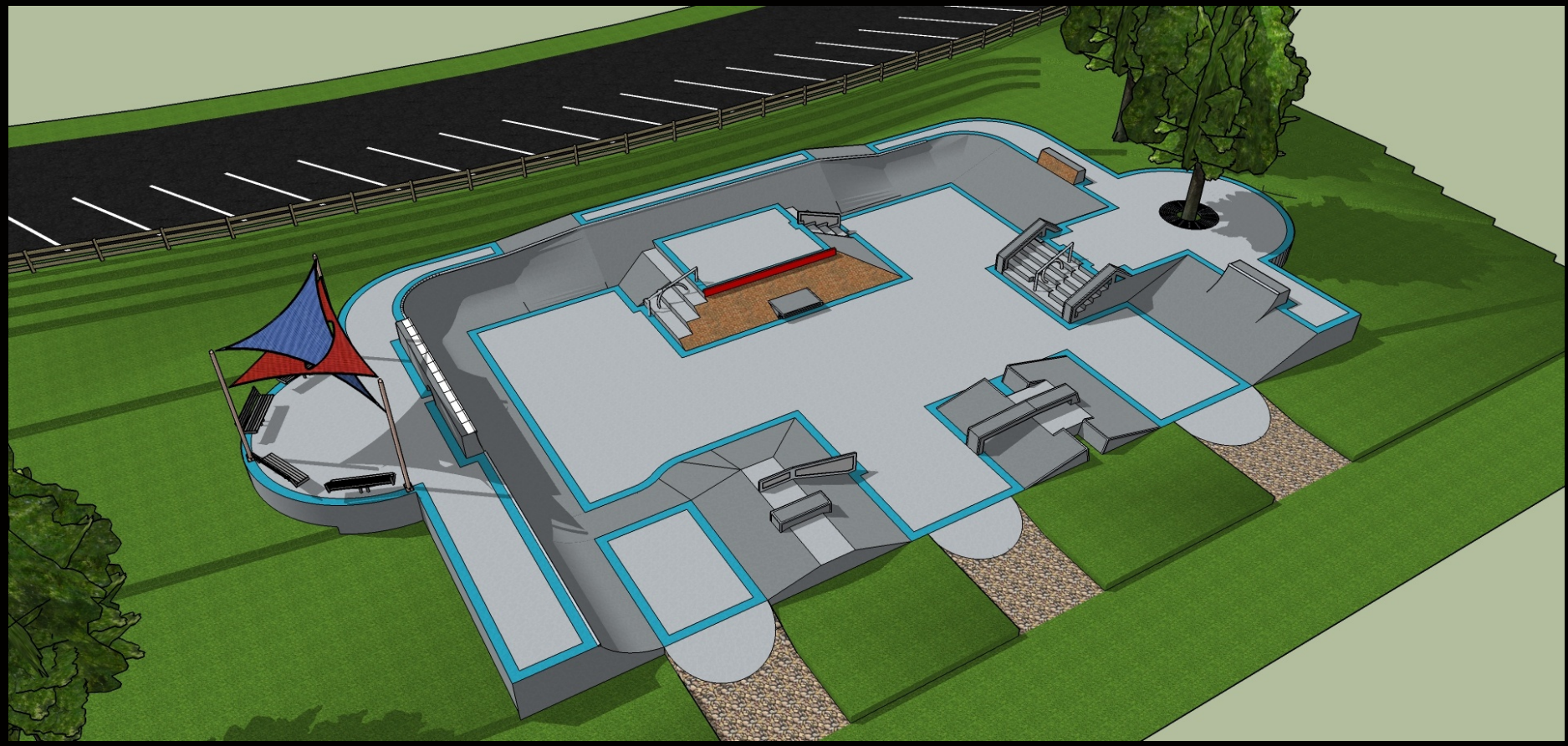
40,000 Sq.Ft.

EXAMPLE DESIGNS









EXAMPLE DESIGNS

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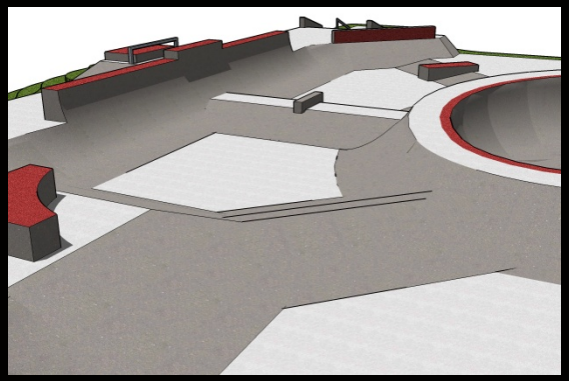

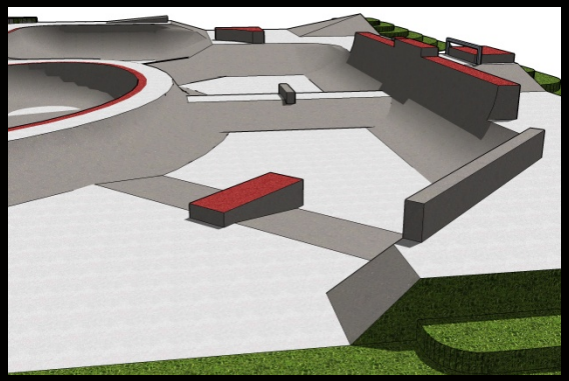

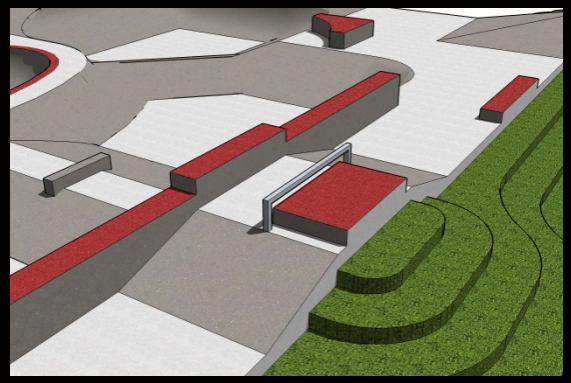

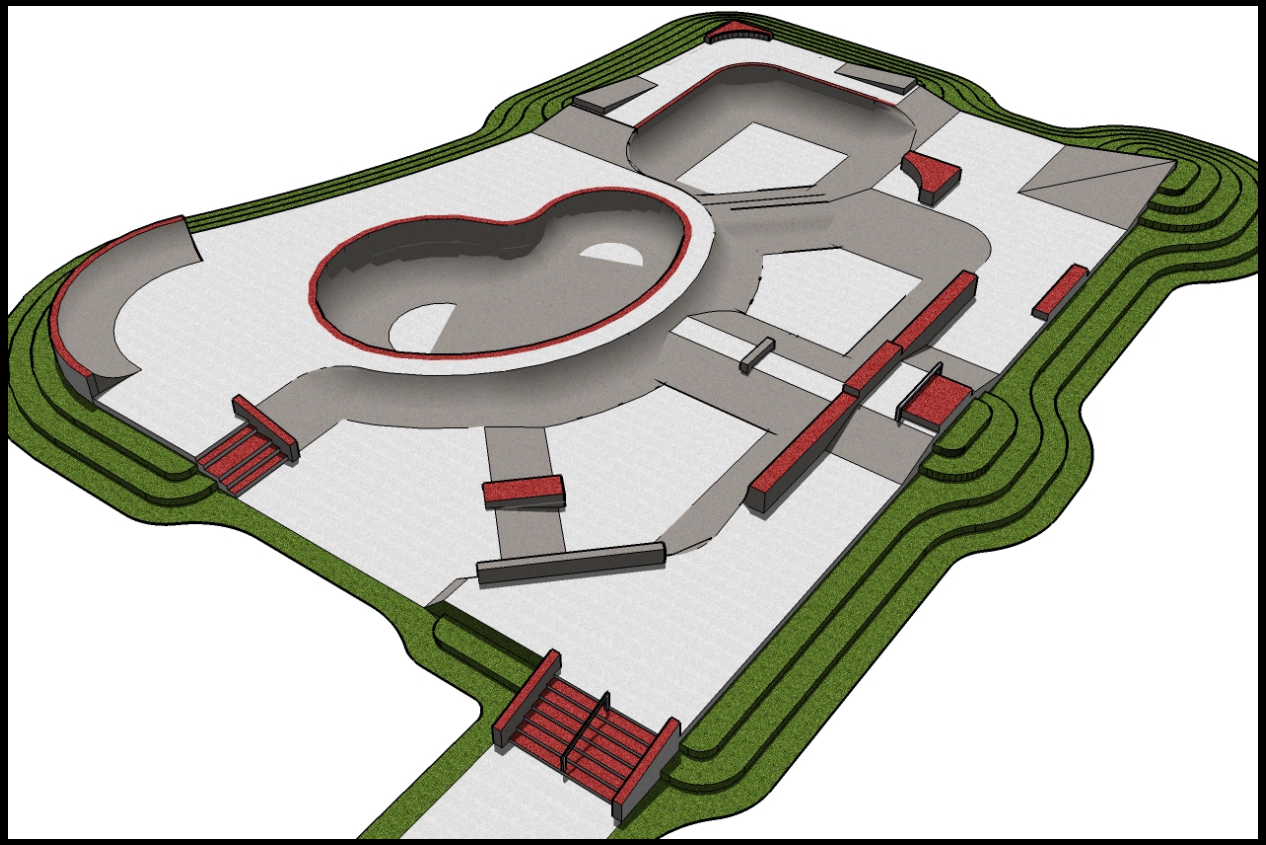

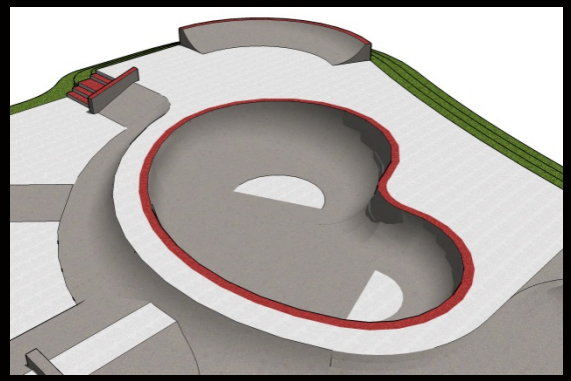

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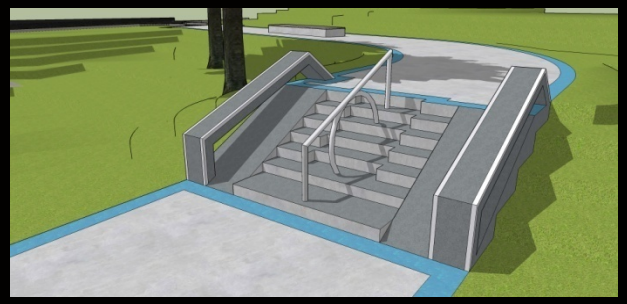

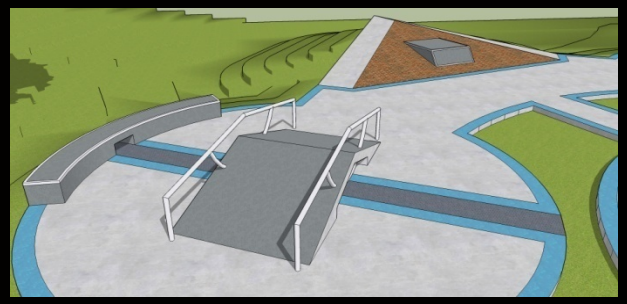

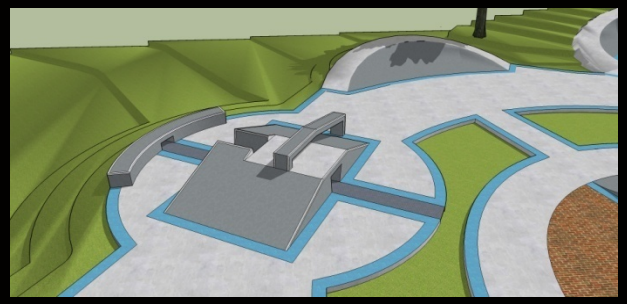

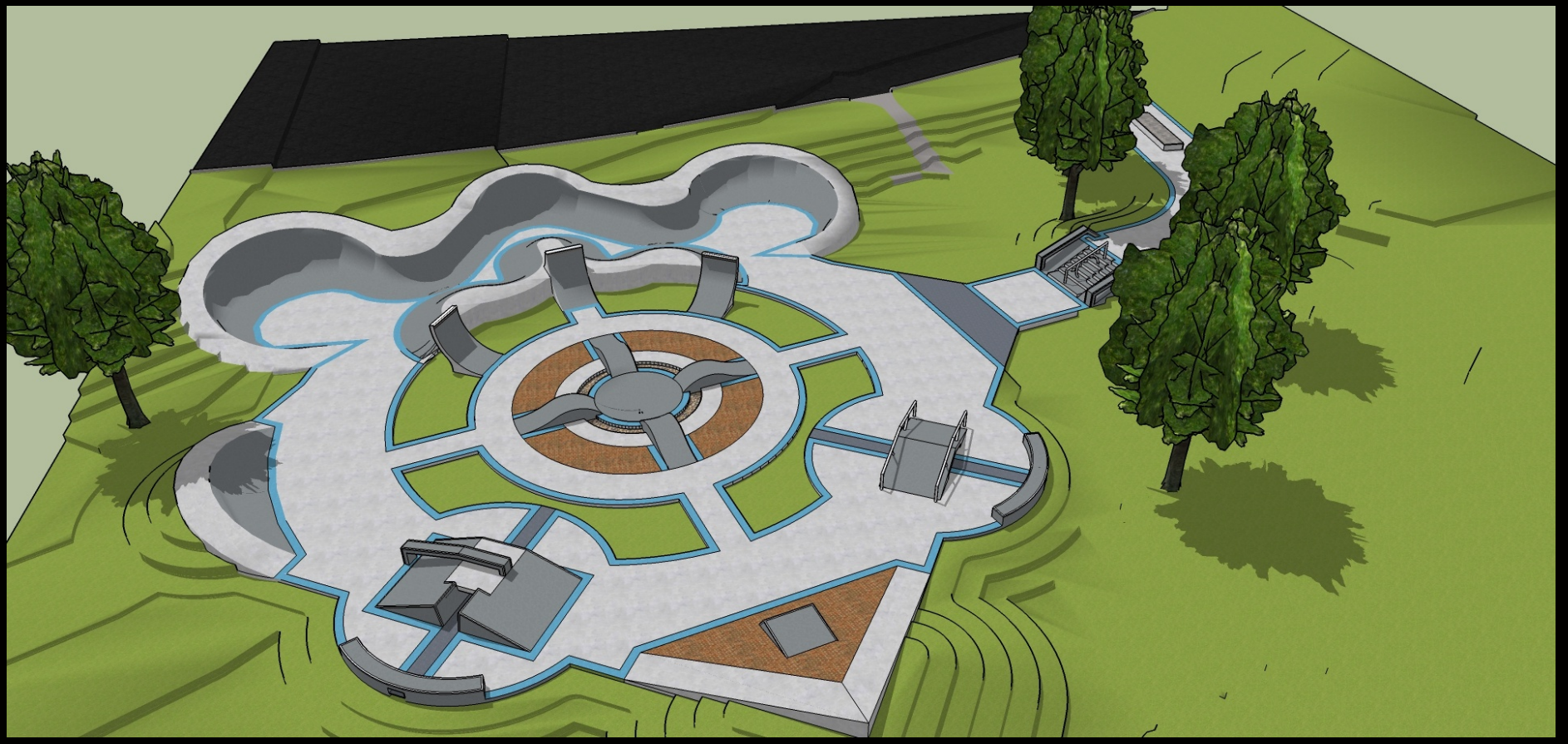

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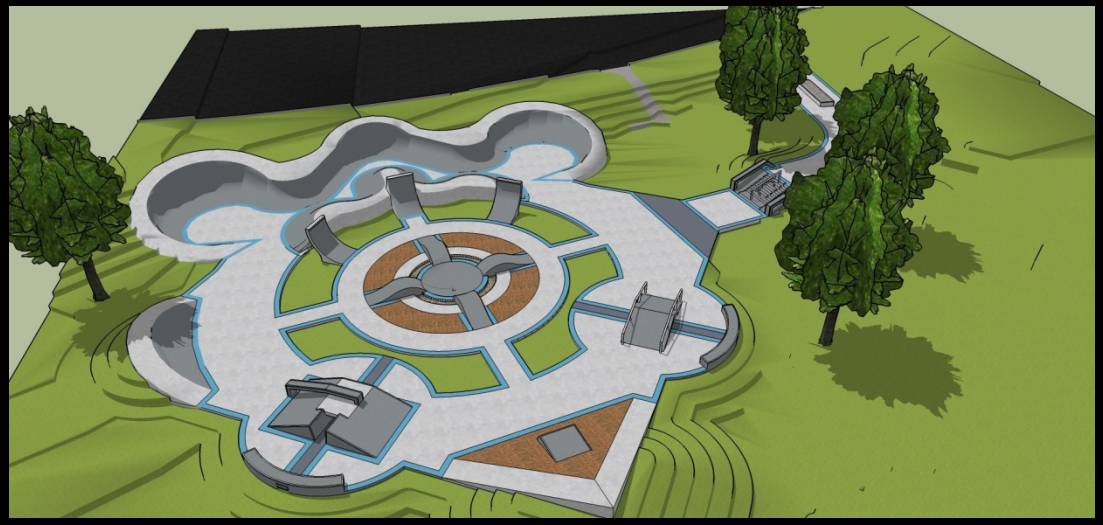
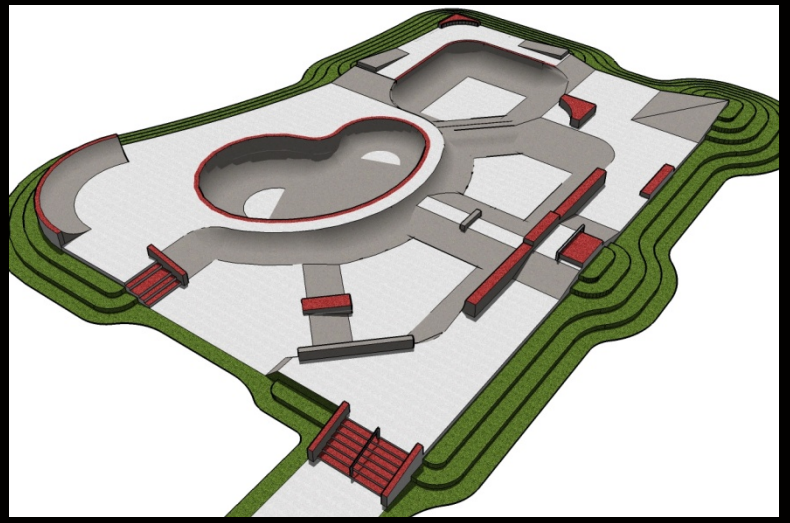
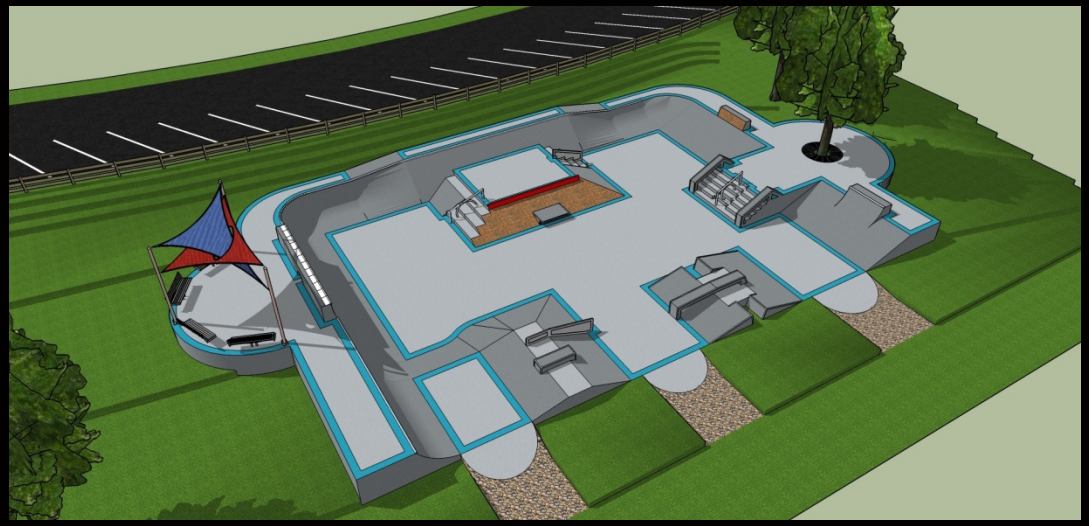
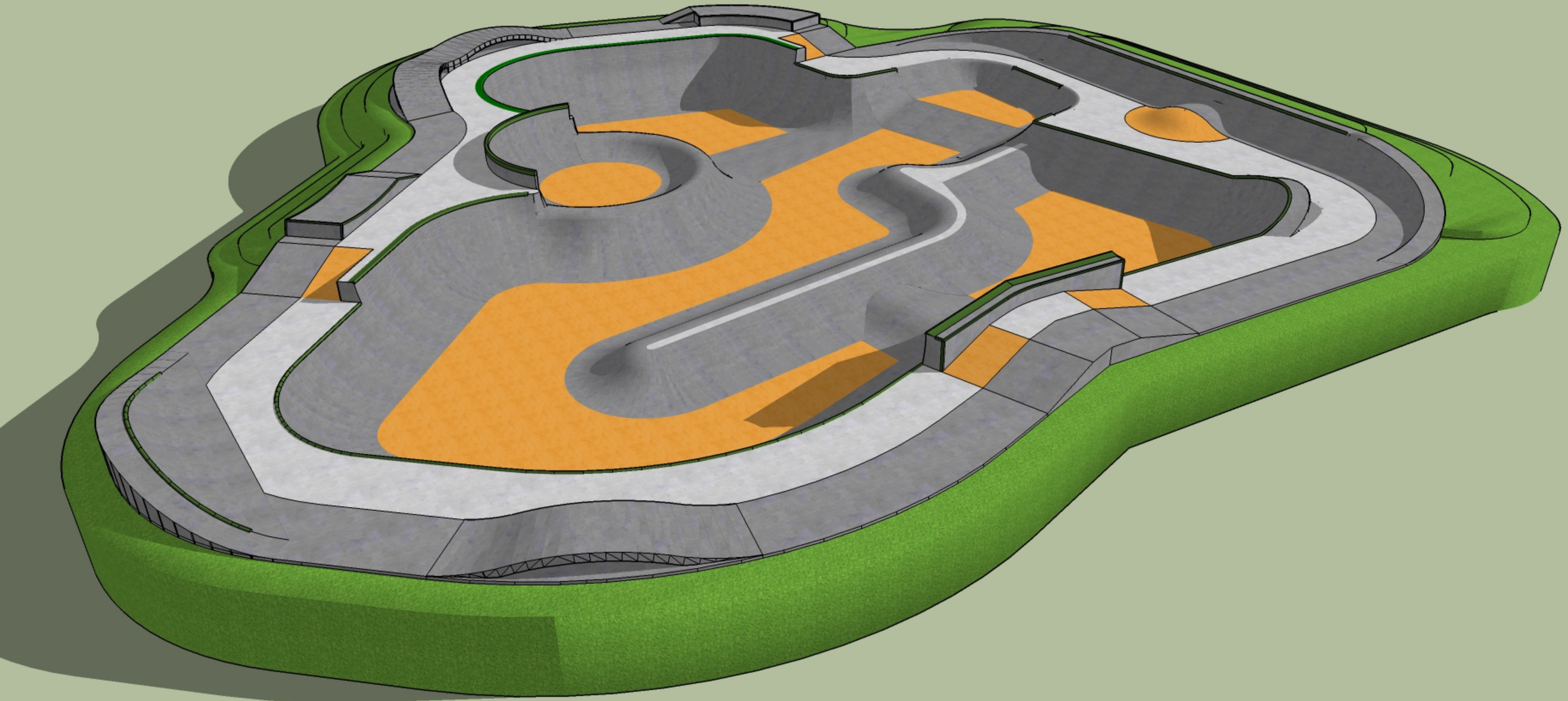
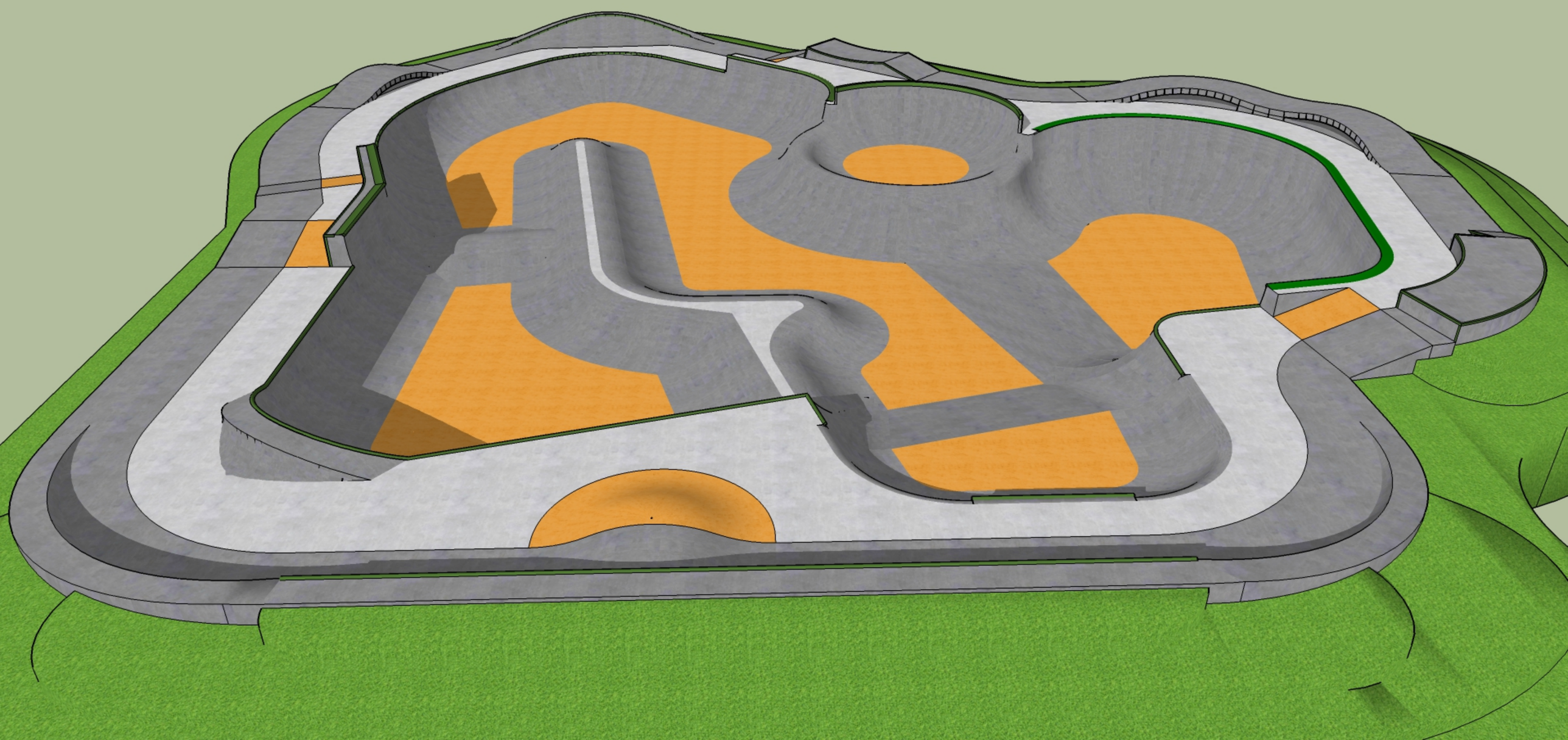


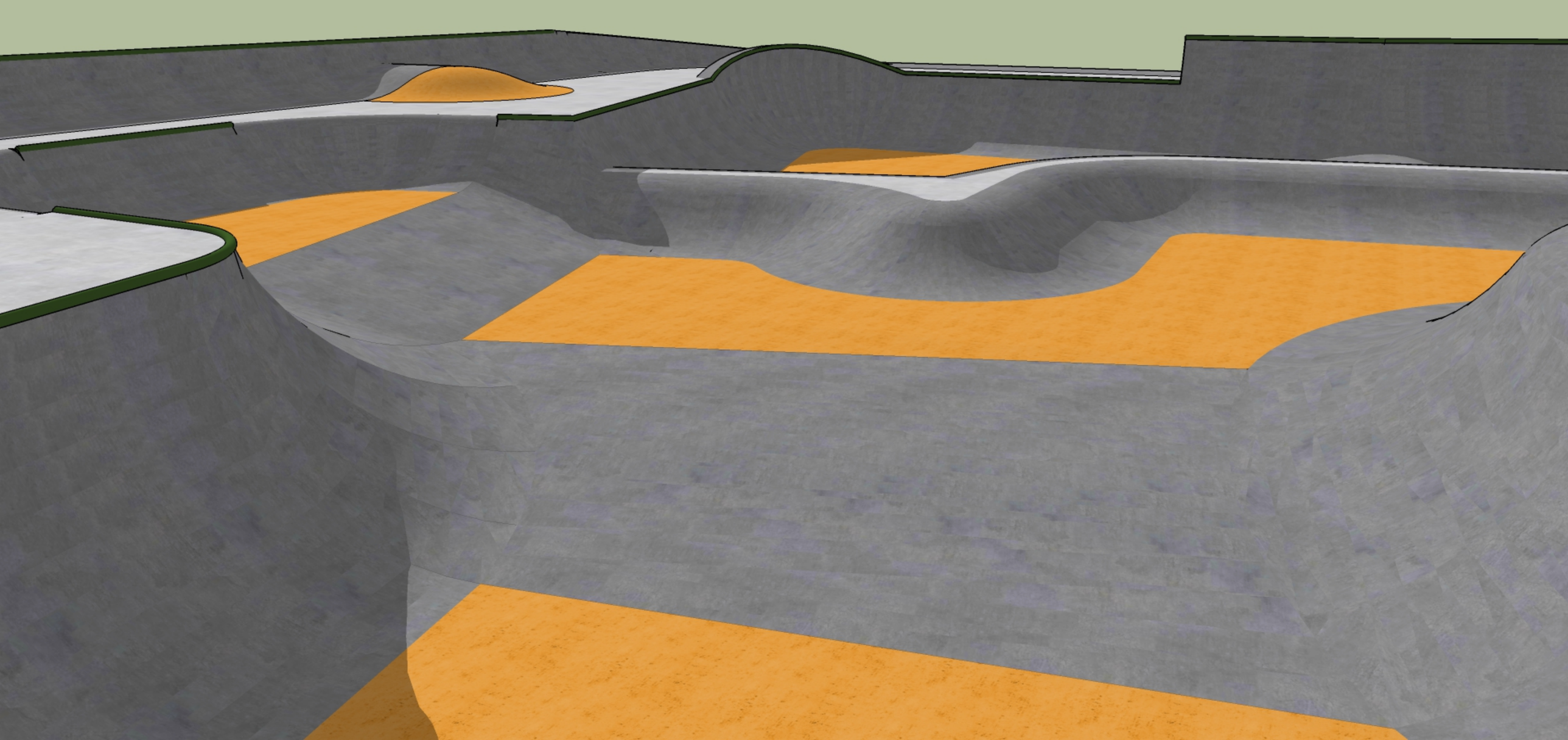


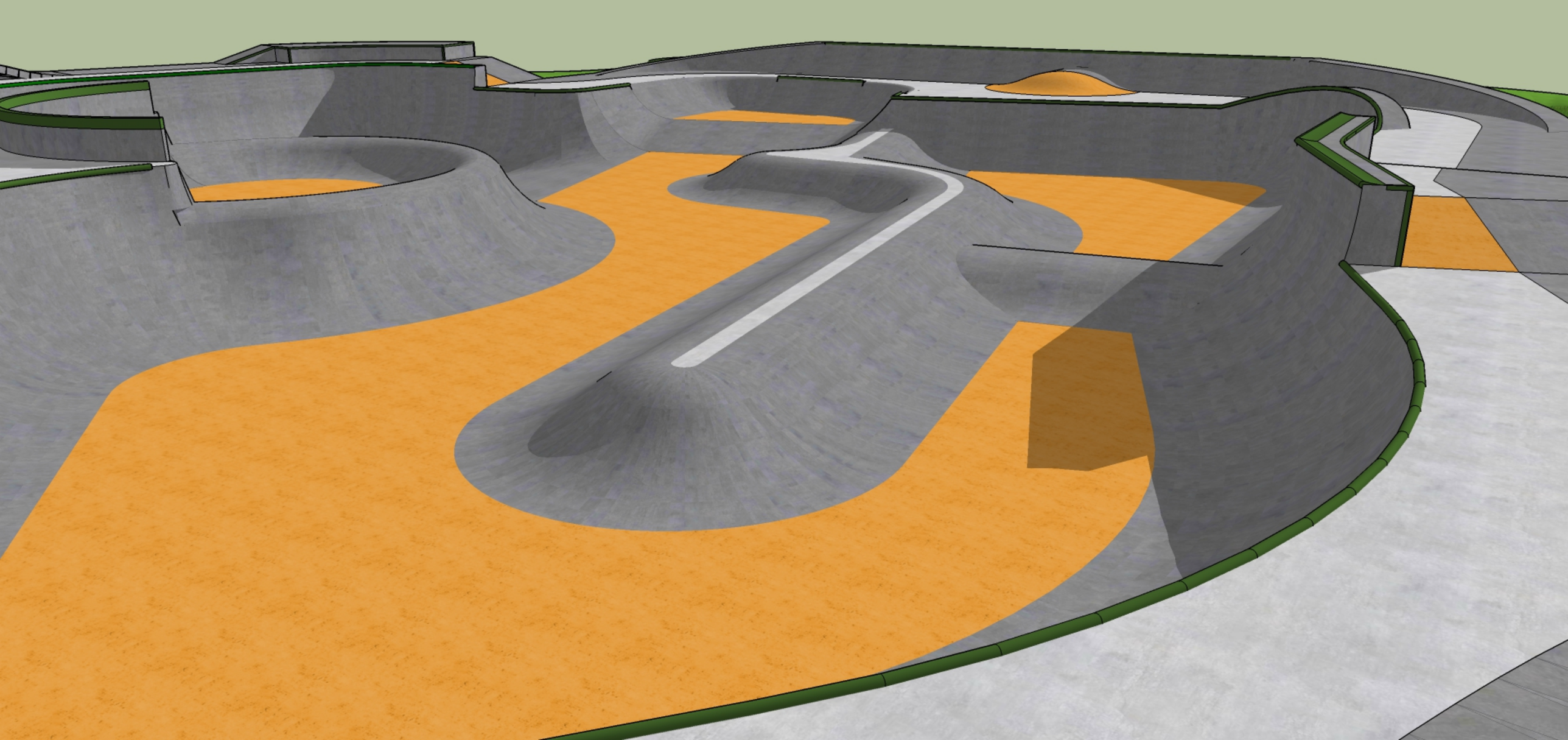


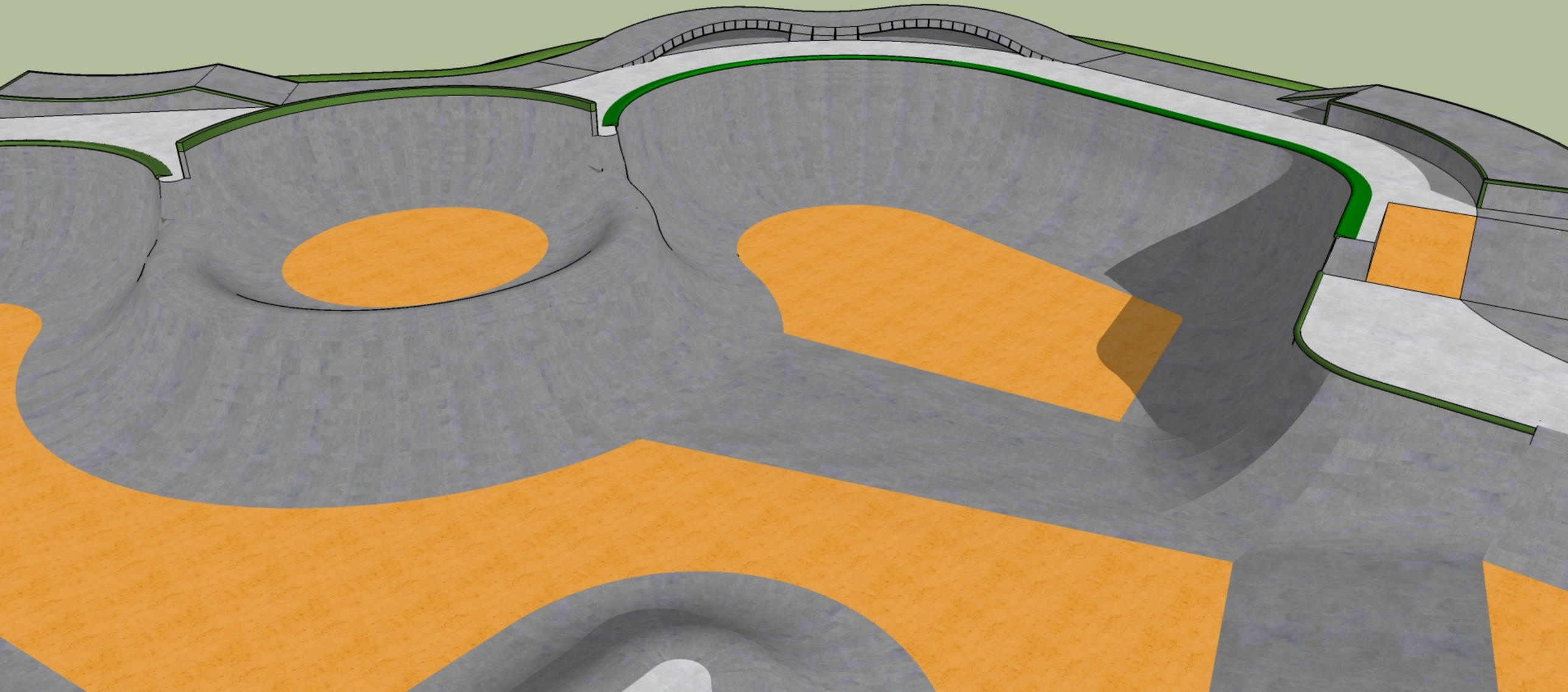
9. Skate Park Concepts Presentation
June 21, 2016

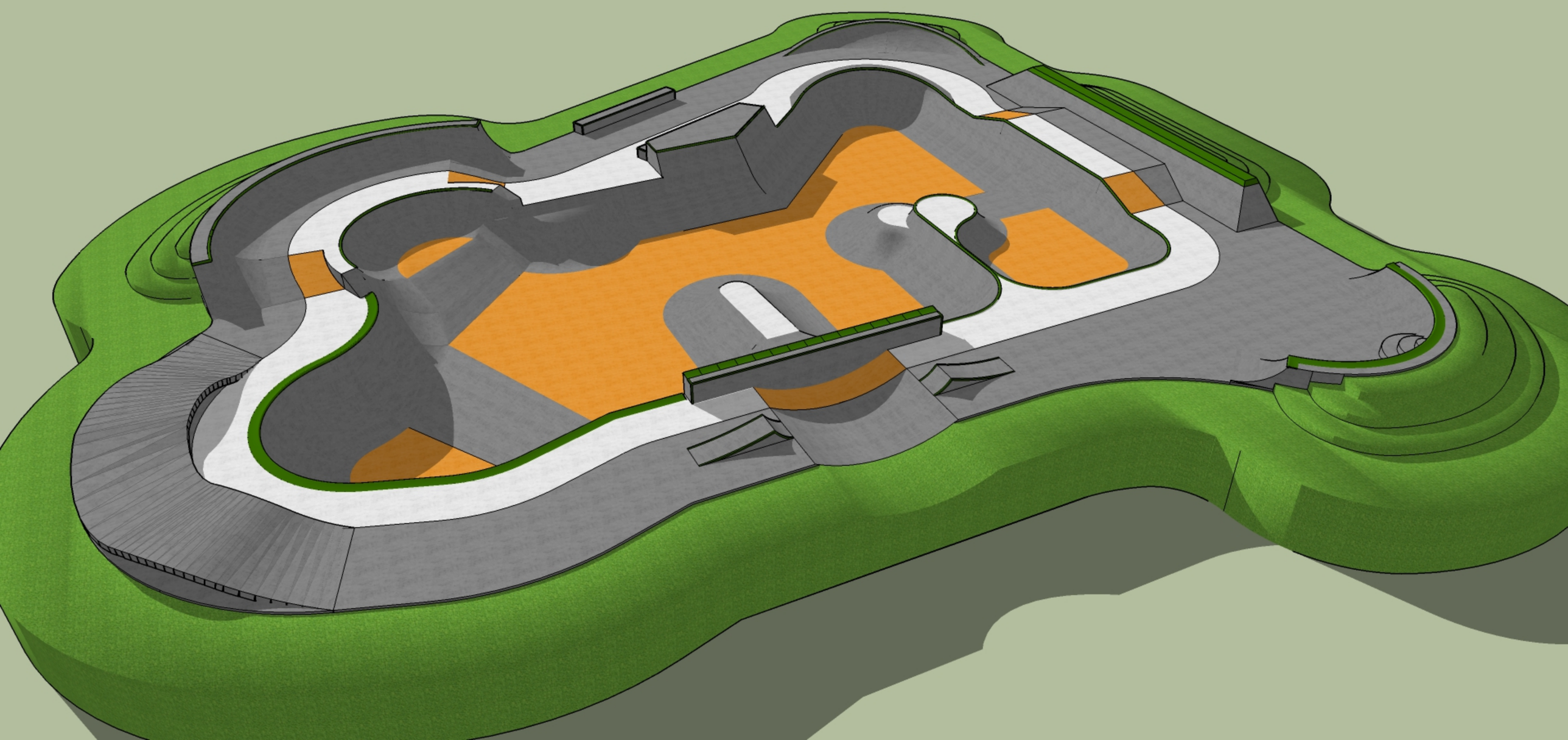


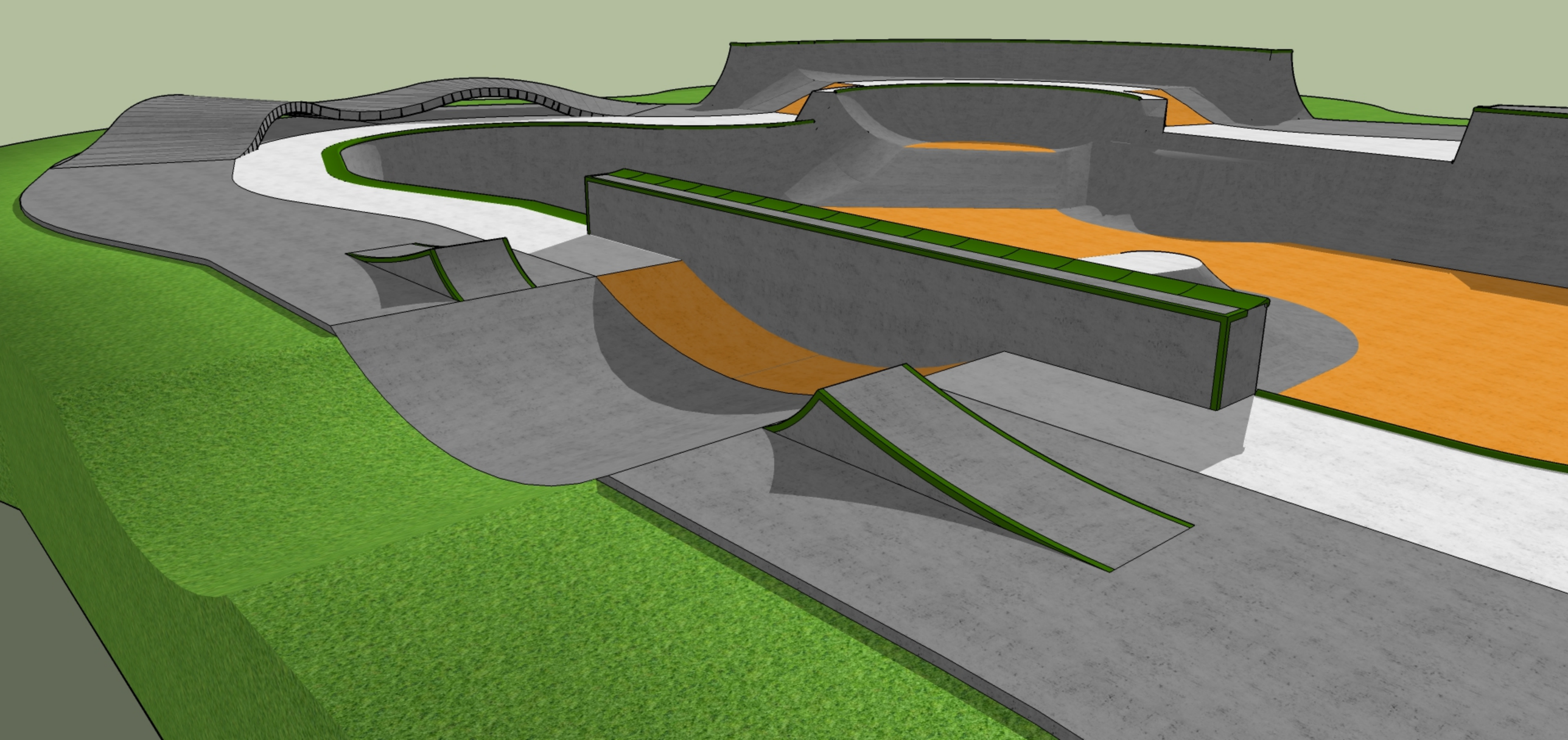


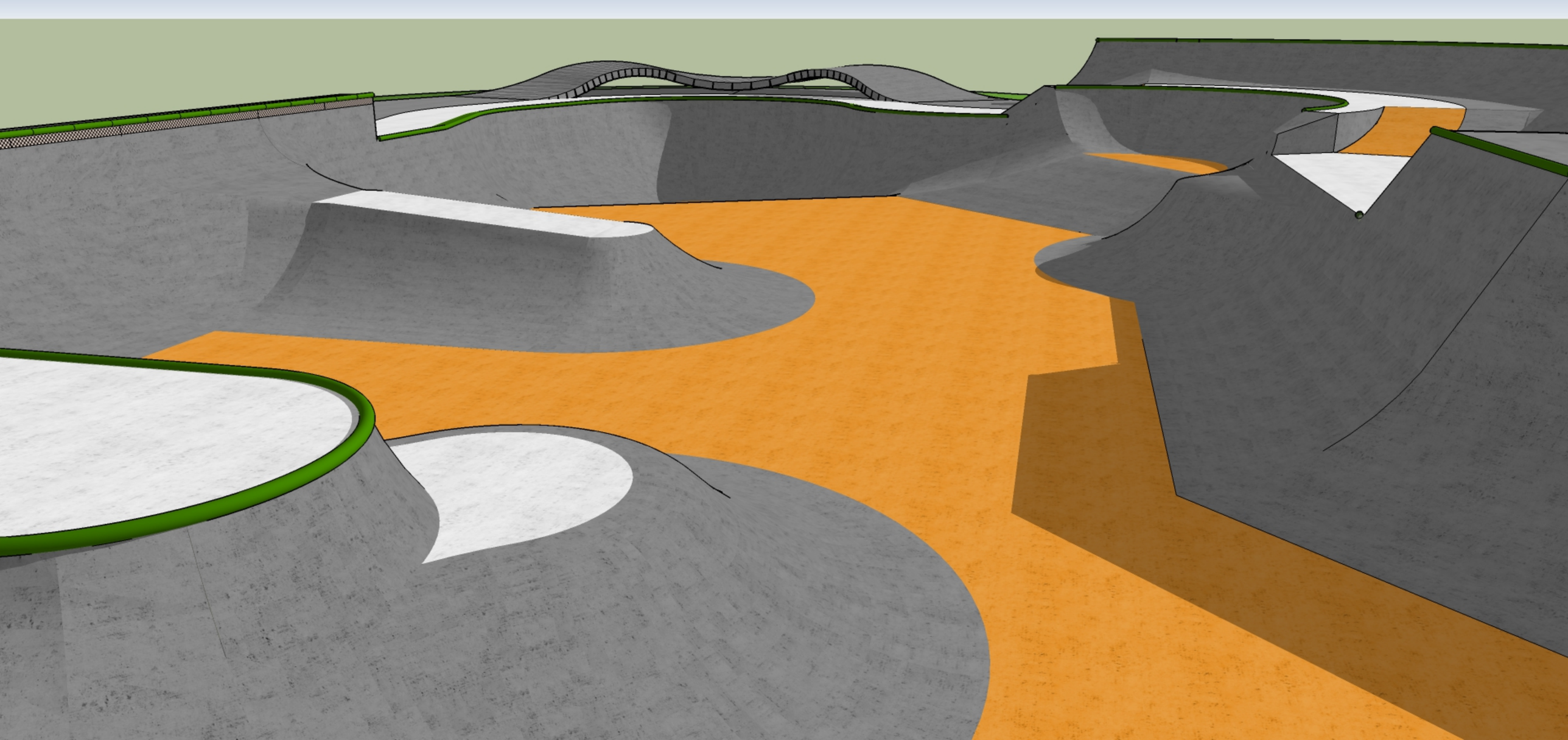


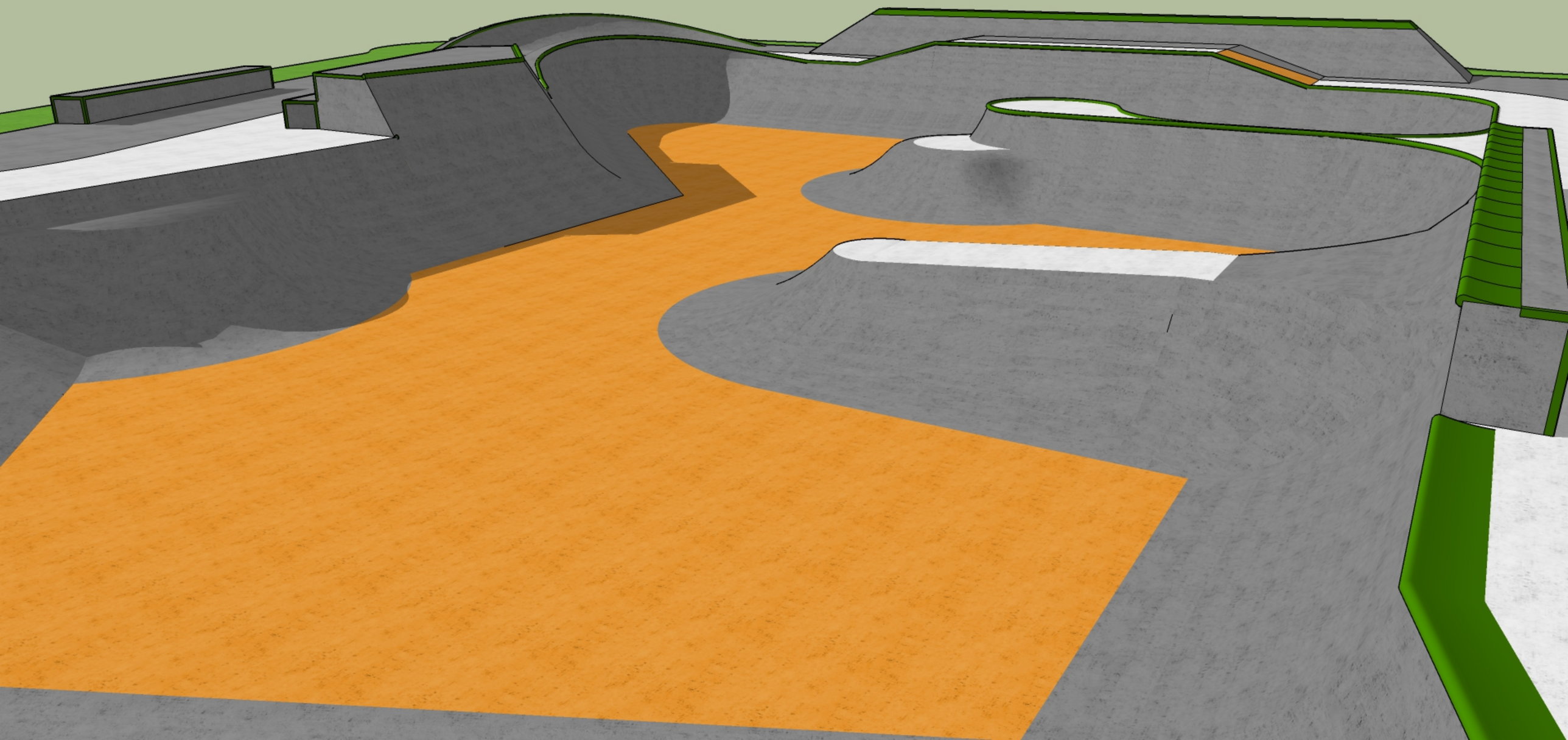


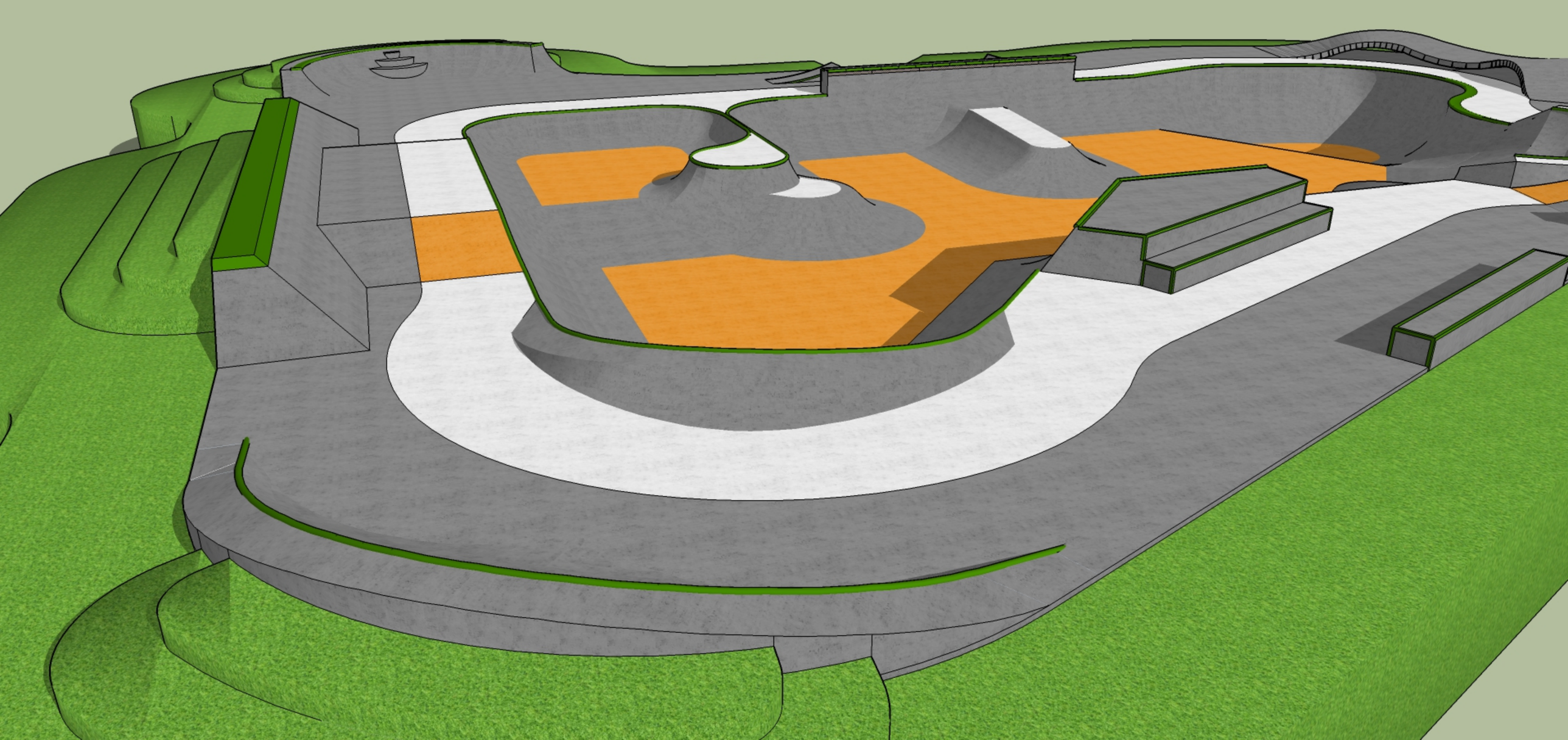












LYONS PARKS & RECREATION

PROPOSED RESTROOM PERSPECTIVE
BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 10, 2016

A-1

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LYONS PARKS & RECREATION

PROPOSED PAVILION PERSPECTIVE
BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 10, 2016

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LYONS PARKS & RECREATION

PROPOSED PAVILION PERSPECTIVE
BOHN PARK 2016 FLOOD RECOVERY PROJECT

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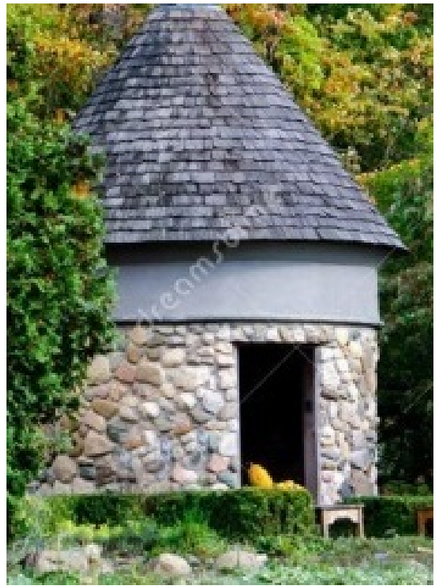

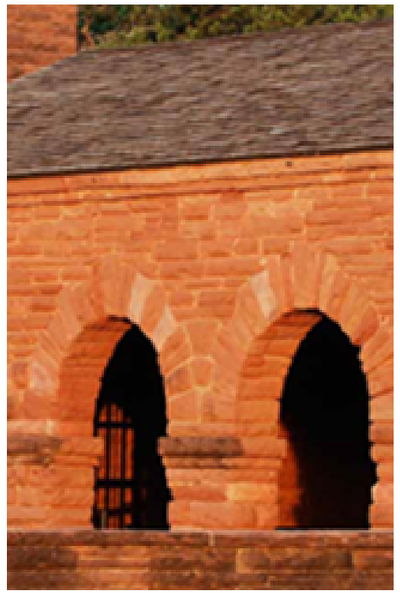

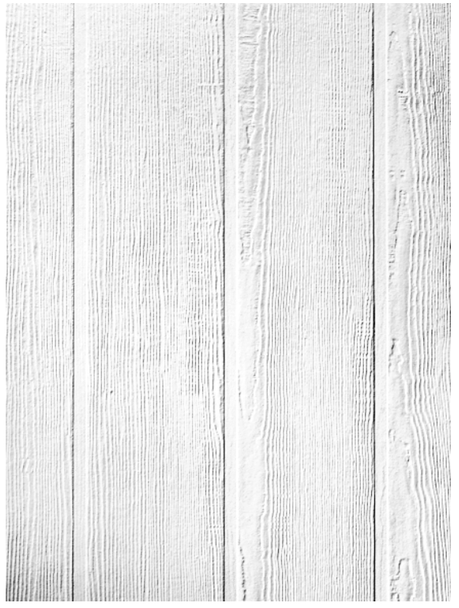

LYONS PARKS & RECREATION

PROPOSED BUILDING MATERIALS
BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 16, 2016

A-4

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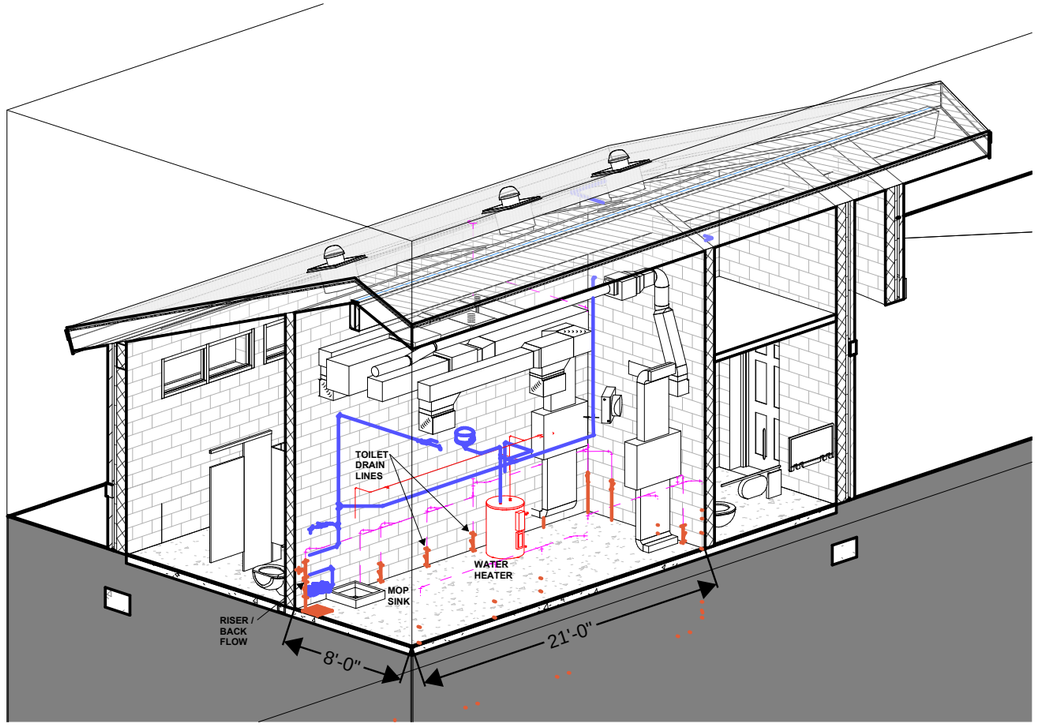
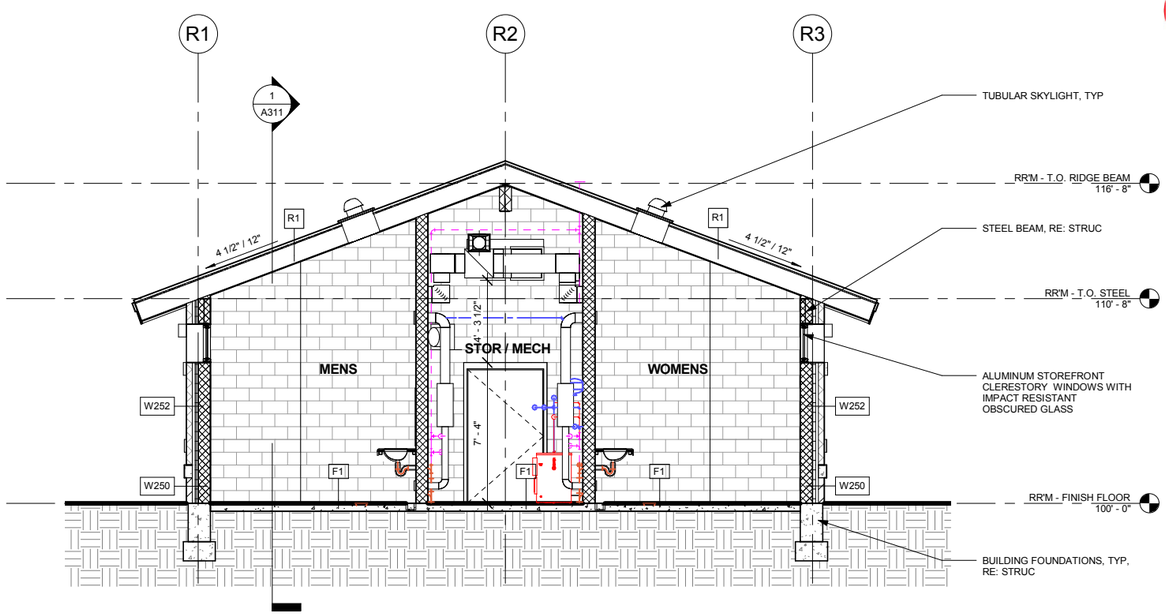
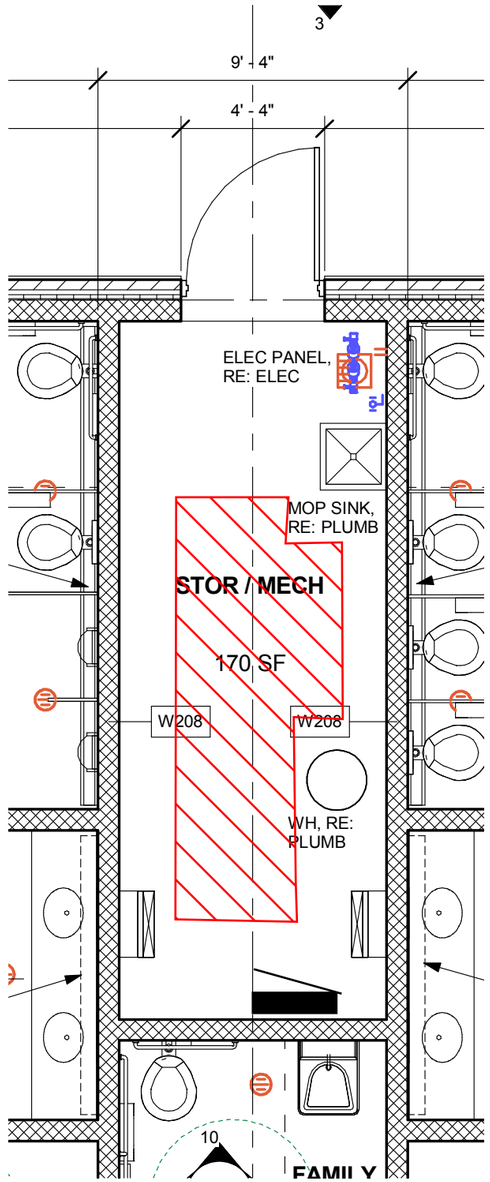




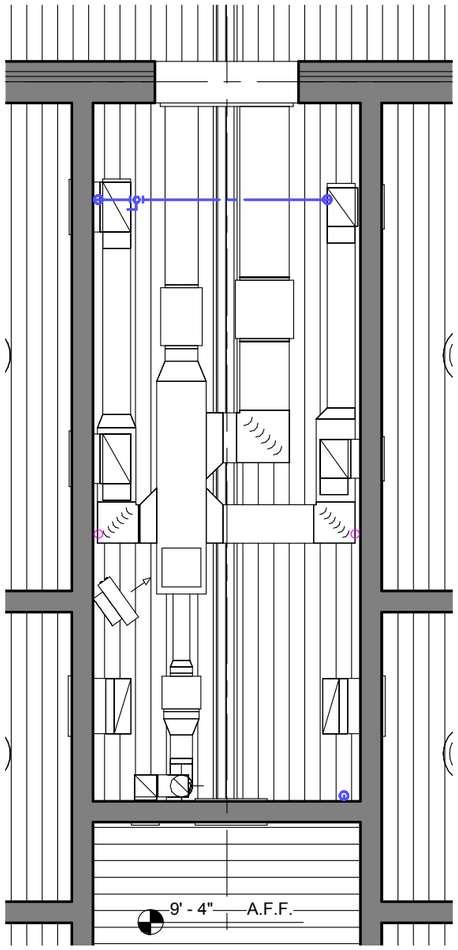
2 A311 RESTROOM BUILDING SECTION 02

1/4" = 1'-0"

0 2' 4' 8'



FLOOR PLAN



RELECTED CEILING PLAN

LYONS PARKS & RECREATION

RESTROOM STORAGE AREA DIAGRAMS

BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 16, 2016

A-5

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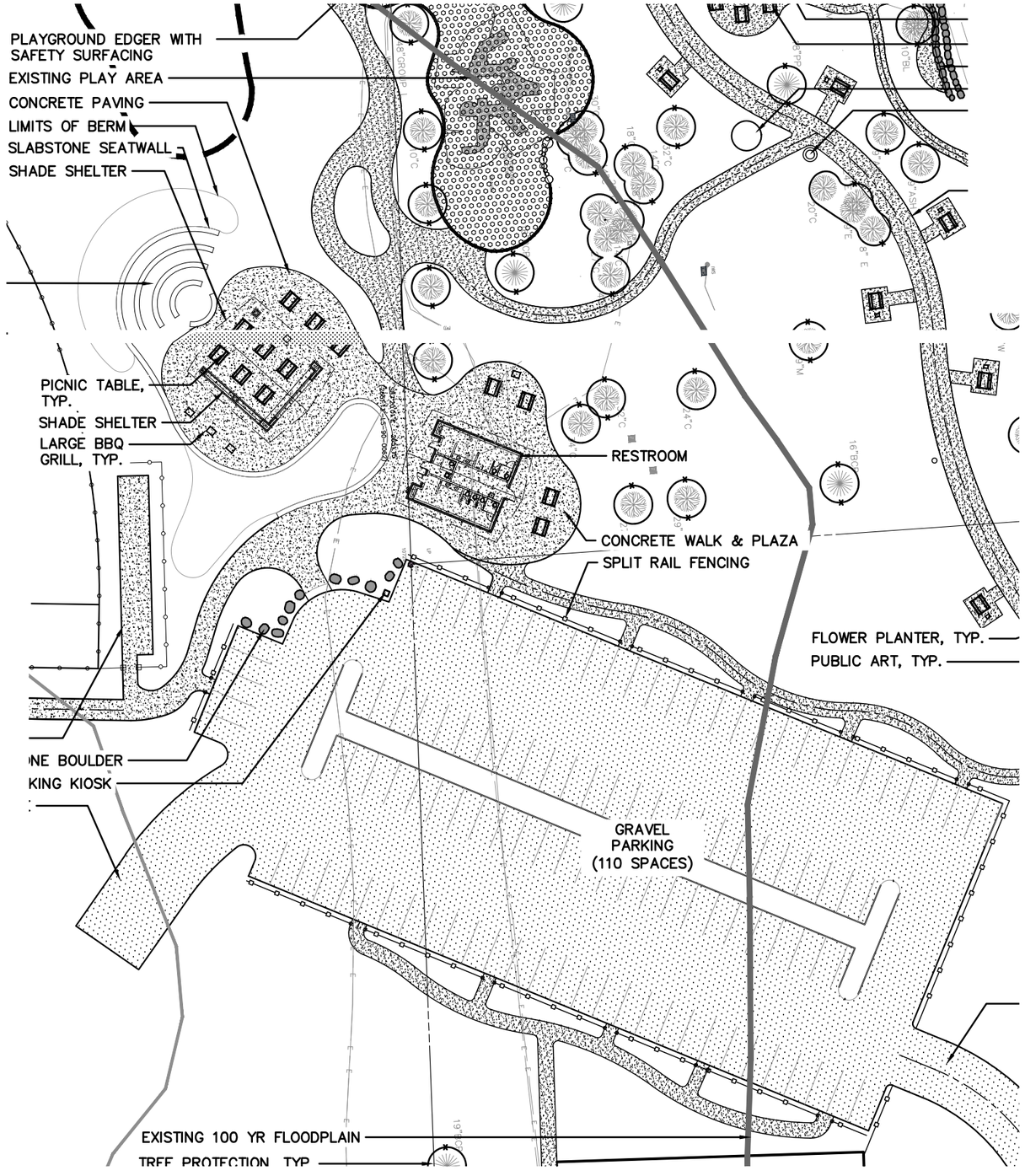

LYONS PARKS & RECREATION

PROPOSED SITE PLAN - RESTROOM & PAVILION
BOHN PARK 2016 FLOOD RECOVERY PROJECT

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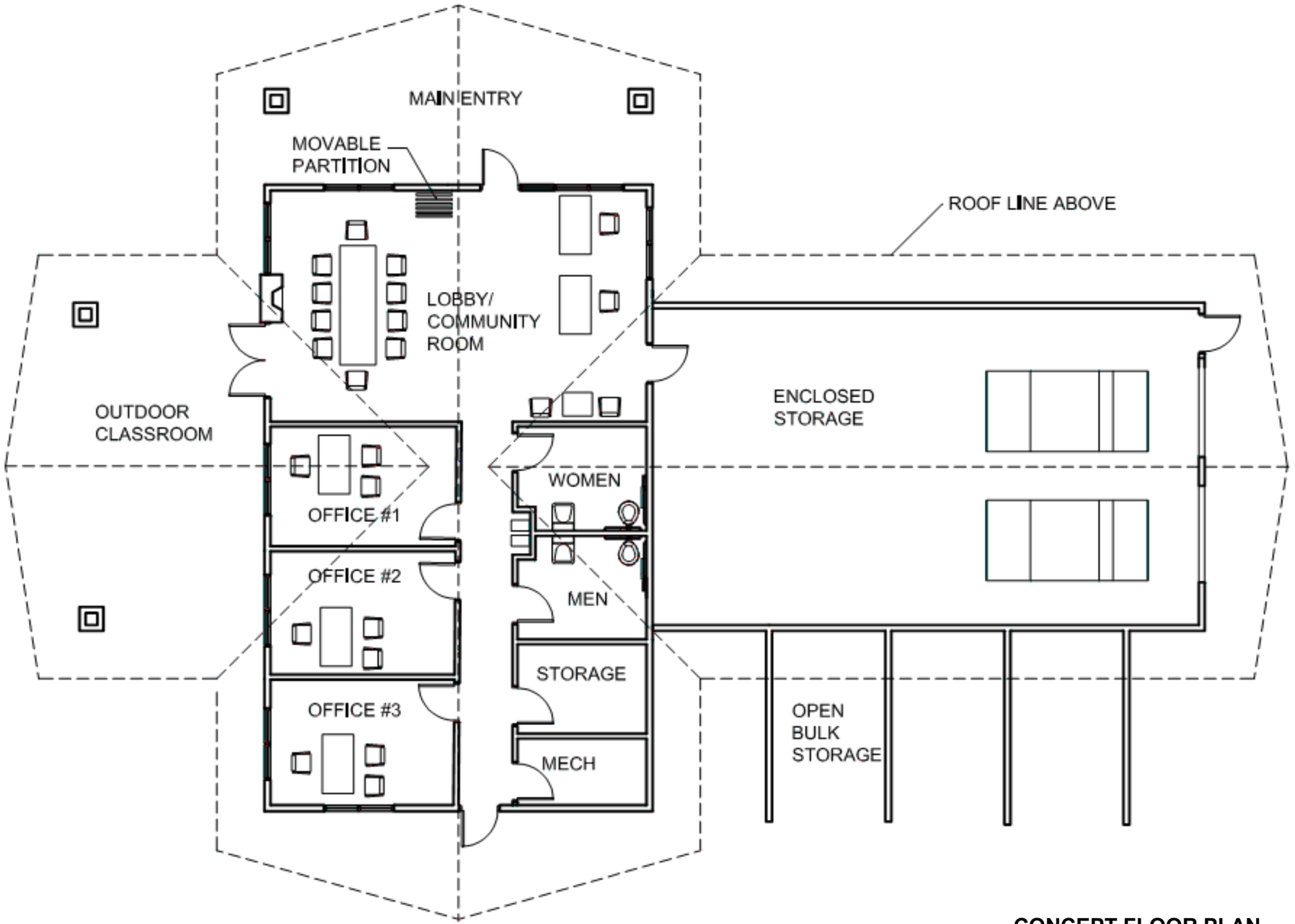

CONCEPT FLOOR PLAN
NOT TO SCALE

BOHN PARK - LYONS, COLORADO

Architectural Program & Preliminary Budget 6/10/2016

COMMUNITY CENTER

Item	Space	Area	Cost/s.f.	Area Cost	Comments
1.0	Mens Room 1 Toilets 1 Urinals 1 Lavatories	100 nsf	$400	$40,000	
1.1	Womens Room 1 Toilets 1 Lavatories	100 nsf	$400	$40,000	
1.2	Community Room Training Space Nature Center Conference Center	250 nsf	$250	$62,500	
1.3	Offices 3 Staff Offices Lobby / reception Office Storage	700 nsf	$250	$175,000	
1.4	Internal Circulation	250 nsf	$250	$62,500	
1.5	Storage Office Supplies Sundries and cleaning equipment	80 nsf	$185	$14,800	
1.6	Garage Storage (50x20') Janitor sink Large Equipment	1250 nsf	$165	$206,250	
1.7	Mechanical/Electrical & Plumbing Chase Systems All electric Year round operations	145 nsf	$185	$26,825	
1.8	Outdoor Nature Space / Porch	400 nsf	$125	$50,000	
	Total Net Area & Cost	**3275 nsf**		**$677,875**	
	Contingency		20.0%	$135,575	
	Total Cost			**$813,450**	

11. S2O Basis of Design Report

DRAFT

Bohn Park

Basis of Design Report

Presented by:

Scott Shipley, P.E.
Nathan Werner, P.E.
S2o Design and Engineering
429 Main Street
Lyons, CO, 80540

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

Introduction

Figure 1. Bohn Park prior to the flood[1]

S2o Design, a river engineering firm, in partnership with DHM Design, were contracted to redesign Bohn Park, an existing Town Park in Lyons Colorado. The Town of Lyons was devastated by the flooding of September 2013 and significant damage was done to Bohn Park.

Prior to the flood Bohn Park had been a multi-use facility with a ball field, events and event parking area, dirt bike park, multi-sport courts, and park land that consisted of picnic areas, a shelter, a playground, and numerous river access points. The river had five drop structures that were installed by a whitewater park designer in the early 90s. The river featured multiple hardened access points that included, long reaches of terraced seating, as well as an ADA accessible fishing pier and numerous social trails. The park director described the social trail network as, "a direct trail from the river from every picnic bench" (Cosgrove, 2016).

The task assigned to the design team, for the river portion of the project, was to design a multi-function tiered river corridor that includes bank armoring, river restoration, flood mitigation, and recreation and that includes five drop structures and numerous river access points to meet these objectives and provide for fishing, park access, and wetland/habitat restoration areas.

[1] Cover photo: Thaddeus Roan, 2008, Bohn Park

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

Existing Conditions:

Pre-flood

Figure 1: The river corridor in Bohn park featured a more natural riverbank on the north side, with extensive armoring on river right (Bruder).

Prior to the flood the river corridor was largely confined with dense vegetation on both banks. The river left bank (north) was undeveloped although armored in places with a riparian zone that varied from thin at the upstream end to more robust as you moved downstream. The park side on river right (south) was defined by intermittent areas of streamside vegetation alternating with extensive armored areas that were created from terraced rock bank structures. There were also five separate rock drop structures that were created by a whitewater park engineer in the early 90's. Figure 1 shows an area of this armoring in the central park that were created adjacent to one of the drop structures. Some of the aforementioned social trails can also be seen in this image.

There was also an existing ditch, the West Ditch, which enters the South St. Vrain at Bohn Park. Prior to the flood the flows from this ditch supported a wetland and (muddy) children's play stream.

The stream was characterized by some slight riffles as well as the aforementioned drop structures. Parks and Wildlife cited this reach as both good habitat as well as good fishing prior to the flood (cite fish passage study). In post-flood interviews representatives from Parks and Wildlife cited the reach as

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

over-wide with antiquated drop structures that do not provide fish habitat as efficiently as new structures (Kondrotieff, 2016). [2]

Flood

During the flood water avulsed the channel in several areas. These include a large volume of water that avulsed upstream of Old South St. Vrain Road and that re-entered the main channel at the upstream end of Bohn Park. A channel avulsion at the 4th Avenue Bohn Park Bridge also fed flows onto the South Bank causing significant erosional damage to the parklands there. All of the five previously existing drops structures were damaged or destroyed.

The river left bank (north) was largely not impacted by the flood. The river right (south) bank was scoured with almost all park structure destroyed or lost up to the high water mark. This included all of the park's picnic areas, the wetlands, the ditch outflow, the ADA fishing area, parking, a ballfield, and numerous other components of the park.

Post Flood

Figure 2: The South Bank of Bohn Park featured many avulsion channels following the flood of 2013

[2] Parks and Wildlife representatives appear to have been unaware that the drop structures were created by a whitewater park designer (Gary Lacy) instead citing work done by a University Professor from CU in this reach. Due to this conversation the actual pedigree of the park is somewhat undefined.

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

The current state of the channel is highly incised with some meander and a very steep bed. Some valuable riparian habitat exists on the north bank but very little remains on the south. The bed is primarily composed of deposited alluvium in the form of sand and cobble with some larger boulders. There are some depositional bars present in the reach. The Town has filled and temporarily armored the evulsed channel areas such that the river has been returned to its post-flood channel throughout the reach.

Perhaps the best news, from a design standpoint, with regards to this reach is the availability of the property that makes up the North Bank throughout the park. This property, the former Stacy Parcel, was attained by the town through the FEMA section 404 buyout process and is now available as parkland to this project.

Morphology

Figure 3. The South St. Vrain upstream of Lyons, CO (Otak, Inc, 2016)

It is hard to describe the morphology of the river in the Bohn Park reach without describing the areas upstream of the park and downstream of the park as well. The following geomorphic description describes the reaches of the South St. Vrain from the mouth of the canyon upstream of Lyons to confluence:

> South St. Vrain - At the mouth of the canyon just upstream of the Andesite Quarry the valley slope significantly flattens, the channel becomes unconfined and the South St Vrain becomes a highly depositional gravel- and cobble-dominated, pool-riffle channel. During the flood, this segment demonstrated a propensity for braiding and lateral

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

meander migration during floods. Alteration of the corridor and response to these depositional features has resulted in channel dredging, straightening, and berming into and through the Town of Lyons where South St. Vrain joins with the North St. Vrain Creek. However, many of these channel alterations were eliminated or substantially altered as a result of the flood.

The pCMZ mapping included a much wider modern valley bottom (MVB) at the mouth of the South St. Vrain Canyon, compared to the canyon reaches upstream, to encompass the large depositional area (also identified as an avulsion hazard zone [AVZ]) which runs through the Town of Lyons, where historical and recent channel braiding is common.

The historic (pre-flood) morphology of South St. Vrain Creek upstream of Bohn Park was a meandering, single-thread channel with alternating pool/riffle sequences and occasional bedrock outcrops. In general, the river flows from the southwest to the northeast, and passed through the more gently sloping sandstone escarpments of the South St. Vrain foothills. The river channel had a wide, relatively flat, floodplain through the majority of this reach. Development within the floodplain included a diversion, irrigated pastures, low density residential construction, roads, bridges, and a rock quarry. The river banks were composed of coarse alluvium, had dense riparian vegetation, and experienced relatively infrequent encroachment from engineered structures. Downstream of Bohn Park to the confluence with North St. Vrain, the pre-flood channel morphology was single-thread with alternating pool/riffle sequences. Development within the floodplain of this reach included low density residential housing, a pedestrian bridge and trail, an industrial storage yard, and a municipal park that contained a tennis court, parking areas, baseball fields, playgrounds, picnic shelters, and restrooms. The river banks were, for the most part, undisturbed, generally composed of coarse alluvium, and had dense riparian vegetation along both banks.

The post-flood channel morphology of the reach upstream of Bohn Park was quasi-braided due to the formation of numerous islands and bars during the flood. Pool/riffle sequences are still present, but their spacing and arrangements appeared to have changed. The sinuosity of the channel remained unchanged but the meander planform had changed distinctly at several locations throughout the sub-reach. Channel avulsions were common, and numerous secondary and tertiary channels were established, sometimes abandoning the primary channel all together. The active channel and floodplain were both considerably wider than before, and many of the dense riparian zones had been completely wiped out. The post-flood channel morphology of the reach downstream of Bohn Park had not shifted significantly but the width-to-depth ratio and pattern of pool/riffle sequences had changed. The most striking impact to this sub-reach occurred in the overbanks, where floodwaters carved numerous side channels and deposited vast amounts of sediment and debris throughout the floodplain.

DRAFT

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

Furthermore, many of the dense riparian zones were impacted or lost, and the river channel had incised due to the extensive deposition along both banks.

Extensive in-channel work was performed following the flood, primarily in an effort to stabilize and repair State Highway 7 (CO-7) and to restore the previous channel form and stability, land use, and infrastructure. This work included in-channel and bank grading activities, installation of bank armoring using blasted angular riprap, filling of eroded banks using native channel materials, and construction of cabled large woody debris structures. However, much of the other infrastructure remained in disrepair.

As the North and South St. Vrain creeks move into the town of Lyons (NSV-03 through NSV-01 and SSV-02 and SSV-01) stream styles become more influenced by human development and encroachment in the floodplain. Here they are partially confined, residential (PCR) and entrenched residential (ER). The channels remain unconfined and, in spite of existing bank revetment work and a larger degree of channel entrenchment, widespread channel avulsion and lateral migration occurred within the footprint of the Town. This was largely due to the same processes discussed above for the alluvial valley reaches upstream of Town. As summarized in Table 3-11, stream evolution trajectories for the reaches on South St. Vrain were defined as either Aggradation and Widening or Degradation (indicated by the balance or CSR tendency). The most downstream reaches on North St. Vrain Creek are projected to move into an Arrested Degradation stage (where additional degradation would be expected, but it is halted by channel armoring/man-made structures). (Otak, Inc, 2016)

The Otak report further discusses stream power in a discussion that echoes some of S2o's concerns about the South St. Vrain in this reach:

South St. Vrain – The South St. Vrain is a steep channel (average bed slope 1.38%) with most cross sections computing critical depth for most flows. For Q2, Q10, Q25, and Q100 channel top widths range from 26.7 feet to 112 feet, velocities range from 1.5 ft/s to 12 ft/s, hydraulic depths range from 1.35 feet to 12 feet, shear stress ranged from 0.5 lb/ft2 to 7.9 lb/ft2. The highest shear stress values occur at Q100 in the upstream end of the reach. At the downstream end of the reach the channel is generally deeper and narrower and the highest shear stresses occur at Q25. (Otak, Inc, 2016)

Stream reaches under this style (PCR) include downstream segments of North and South St. Vrain creeks (NSV-02 and NSV-03; SSV-01 and SSV-02), where the channel has heavily armored banks and/or grade control structures which limit lateral migration and avulsion. These reaches have a trajectory toward aggradation/widening (upstream reaches) and degradation (downstream reaches), where recent channel work in Reach NSV-02 has incorporated grade control features which will stall further degradation, but produce some of the highest stream power values in the project area should be monitored for erosion. Flood mitigation and channel restoration efforts in these reaches

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

should focus on finding opportunities to establish a floodplain bench, reconnect existing floodplain. (Otak, Inc, 2016)

A pre-design discussion of morphology in Bohn Park would be bereft without focusing in on the risk factors associated with this morphology. Figure 4, shown below, illustrates the impacts of the flood to this site:

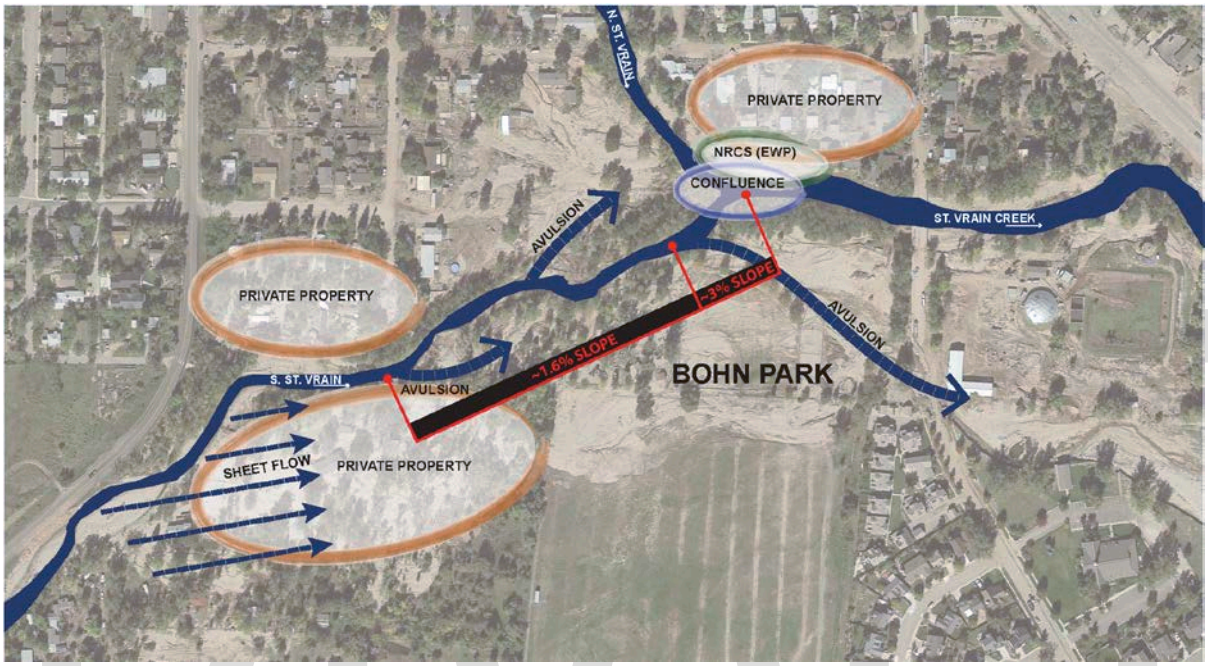

Figure 4: The Bohn Park reach of the South St. Vrain is steep, unstable, and subject to overbank flooding at relatively low flows as seen in the 2013 floods.

S2o has identified several sources of risk to the potential design at this site. These risks include:

- The greatest unknown risk during future flooding events is a repeat of channel avulsion upstream of the project that created sheeting flow into the park across the Martin Property (located on the South bank just upstream of the project). Channel avulsions upstream have multiple risks including the creation of a new primary channel and erosion as the water re-enters the channel through the project site (as seen in the 2013 flood).
- The river is highly confined just upstream of the site and makes a hard turn to the east at the site of the former confluence trailer park. The river is steep and confined in this area with heavy armoring on the North Bank. This deflects high velocity flows into the upstream end of the Bohn Park reach directly at an area of risk for channel avulsion (as seen in 2013 floods).
- Channel avulsion at the downstream end of the park where flood flows breached the channel and flooded into the parking area and across 2nd avenue onto the Church of Latter Day Saints property. Existing conditions modeling suggests that this will occur along the same pathway starting a flows of 2,300 cfs.

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

- Steep channel slopes in the lower portions of the channel are as high as 3% (average of 1.6%). This area is directly upstream of the confluence and leads to several concerns. An NRCS study (NRCS, 2013) identified several homes on the North Bank of the Main Stem, located just downstream of the confluence, that are at risk for flood forces due to the steepness of the South St. Vrain at the confluence, the Otak study (Otak, Inc, 2016) identified extreme slopes and risks of channel degradation in this reach as well.
- S2o has identified another risk factor in this reach. The channel is over-steep in the reach above the confluence (as steep as 3% in some places with an average slope of 1.6%. The steepest areas are just upstream of the confluence. At current there is an oversupply of sediment coming down the South St. Vrain due to the flooding event and restoration efforts upstream. In time the oversupply will wane, the upstream reaches will reach equilibrium, and the river will become sediment starved in this reach. S2o expects that this will cause head cutting to begin at the confluence and work its way upstream as the river attempts to reach equilibrium in this new paradigm. This head cutting presents a risk to project improvements in the reach as they will erode and collapse in the face of this head cut. Design elements, as suggested in the OTAK study, need to act to stabilize the bed levels in this area—likely with excavation, structure, and armoring.

Hydrology and Hydraulics

Hydrology

The Hydrology for the South St. Vrain at Bohn Park (and at the Confluence) comes from multiple sources. The background of these numbers is summarized in the Otak Report (Otak, Inc, 2016)[3] and can be researched there for further information if required. There are three primary sources that are of interest to this design. The first are the regulatory flood flows from the FEAM FIS studies. An update to the FIS was done in 2012 that included updated modeling and mapping for the North St. Vrain and St. Vrain Creeks (Federal Emergency Management Agency, 2012). The South St. Vrain Creek was not included in the 2012 FIS study to update the floodplain information. The previous FIS study on the South St. Vrain was made effective in 1980. Figure 5 shows the effective flow rates for the North St. Vrain and main St. Vrain from the Otak study and

[3] S2o was a co-author of this report.

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

DRAFT

Table 3-1 – FIS effective regulatory discharges for the Project Area

St. Vrain Creek	Discharge (cfs)			
	FIS Effective Q_{10}	FIS Effective Q_{50}	FIS Effective Q_{100}	FIS Effective Q_{500}
St. Vrain Creek at the confluence	2,040	5,570	8,880	20,260
North St. Vrain Creek at the confluence	1,000	2,850	4,310	10,630

Figure 5: Current Regulatory Flows for the ST. Vrain in Lyons (Otak, Inc, 2016)[4]

Figure 6 shows the effective flow rates from the 1980 FIS for the South St. Vrain at the confluence.

St. Vrain Creek	Discharge (cfs)			
	FIS Effective Q_{10}	FIS Effective Q_{50}	FIS Effective Q_{100}	FIS Effective Q_{500}
South St. Vrain Creek at Confluence	1400	3750	5430	11900

Figure 6 Current Regulatory Flows for South St. Vrain Creek at Confluence

The hydrology of the basin was modified immediately post-flood by a second Study (Jacobs Engineering Group Inc, 2014). The new flows were significantly higher than those projected pre-flood and include flows for the South St. Vrain:

Table 3-2 – Peak discharges in the Project Area revised following the 2013 flood (Jacobs, 2014)

St. Vrain Creek	Discharge (cfs)				
	Revised Q_{10}	Revised Q_{25}	Revised Q_{50}	Revised Q_{100}	Revised Q_{500}
St. Vrain Creek at the confluence	2,178	4,786	7,828	11,910	26,222
North St. Vrain Creek at the confluence	1,123	2,502	4,160	6,386	14,329
North St. Vrain Creek above Lyons	1,056	2,299	3,804	5,842	13,100
South St. Vrain Creek above Lyons	1,464	2,890	4,496	6,598	13,435

Figure 7: Higher flood flows were projected by the Jacobs study, conducted immediately post flood. (Otak, Inc, 2016)

The location selected for the South St. Vrain Creek above Lyons in the Otak study was the South SVC at Little Narrows site from the Jacobs study that was located at the upstream boundary of the Otak expanded study. This location is several miles upstream of Bohn Park. The Jacobs study also determined the flow rates of the South St. Vrain Creek at the confluence with the North St. Vrain Creek. Those flow rates were used for the design of Bohn Park and are presented below.

DRAFT

[4] Note that the table numbering is from the original study.

St. Vrain Creek	Discharge (cfs)				
	FIS Revised Q_{10}	FIS Revised Q_{25}	FIS Revised Q_{50}	FIS Revised Q_{100}	FIS Revised Q_{500}
South St. Vrain Creek at Confluence	1605	3168	4933	7234	14748

Figure 8 Flood flows projected for the South St. Vrain Creek at the confluence (Jacobs Engineering Group Inc, 2014)

The OTAK study analyzed the two previous studies and noted that insufficient data was present to adequately describe and predict flows in the South St. Vrain. In order to get more accurate data this study used a scaling factor related to watershed area to predict flows in the basin. This process is described in the Otak Study (Otak, Inc, 2016).

Each set of flows brings advantages to the analysis. Use of the FIS flows is required for floodplain permitting within the reach and therefore suggests that these flows need to be incorporated into the Bohn Park Design. The Jacobs study flows are higher, and include the South St. Vrain and therefore represent not only the best information, but also the highest risk information suggesting that a comprehensive study would include this information. The Otak data appears to provide the best information for higher return period flows and is therefore the most appropriate for calculations requiring base flows and yearly return flows. The Otak study summarizes the most utilitarian flows and their sources in the Table below shown as Figure:

DRAFT

Table 3-6 2-D hydraulic modeling hydrology summary for Construction Reach 2

St. Vrain Creek	Discharge (cfs)					
	Q_2	Q_5	Revised Q_{25}	FIS Effective Q_{50}	FIS Effective Q_{100}	Revised Q_{100}
North St. Vrain Creek	596	931	2,502[b]	2,850[a]	4,310[a]	6,386[b]
South St. Vrain Creek	450	702	2,284	2,720	4,570	5,524
Cumulative flow in mainstem St. Vrain Creek	1,046	1,633	4,786[b]	5,570[a]	8,880[a]	11,910[b]

Notes: [a] source (FEMA, 2012)
[b] source (Jacobs, 2014)

Figure 9: Summary of best flow information for the St. Vrain near Lyons (Otak, Inc, 2016)

Base flows were also calculated and are pertinent to this design. In order to not confuse the priority of flows shown above in Figure 7, this table is concatenated and shown below as Figure 10.

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

Table 3-3 Calculated discharges for the Project Area

St. Vrain Creek	Q_{base}
St. Vrain Creek at the confluence	38
North St. Vrain Creek at the confluence	29
South St. Vrain Creek at the confluence	25

Figure 10: Base flows for the St. Vrain in Lyons.

Existing Hydraulic Conditions

Using the hydrology included above and the combined topographic information obtained from the 2016 Civil Arts Survey and the 2014 LiDAR data, an existing conditions model of the extended Town of Lyons area was developed. This model was used to determine existing conditions and the current location of avulsion points. A graphic of the results is shown in Figure 11.

Figure 11: Overbank flooding occurs at relatively low flows in the Bohn Park reach.

As Figure 11 demonstrates, there are three critical avulsion points at Bohn Park, occurring at flow rates from 2000 cfs to 2500 cfs, or approximately the 10 year flood event. The first avulsion occurs on the western bank above an s-turn in the river, with flood waters spreading out to the immediate west of the confluence of the North and South St Vrain Creeks. The second avulsion occurs on the eastern bank of the South St Vrain prior to the confluence, and flows across Bohn Park, Second Avenue and into the ditch leading to the St Vrain above the McConnell Bridge. The third overflow avulses at 2,500 cfs at the most upstream section of the project's reach, at the site of a sediment berm constructed as emergency flood relief immediately following the 2013 event. There are also several avulsions that occur upstream of the project area, in the Martin Parcel and above the Old South St Vrain Bridge. Although these

avulsions impact on the project area, they are outside the area of influence of the Bohn Park in-stream improvements and were subsequently omitted from Figure 11. Plots of the model's results for the 10 and 25 year event are shown below in Figure 12 and Figure 13.

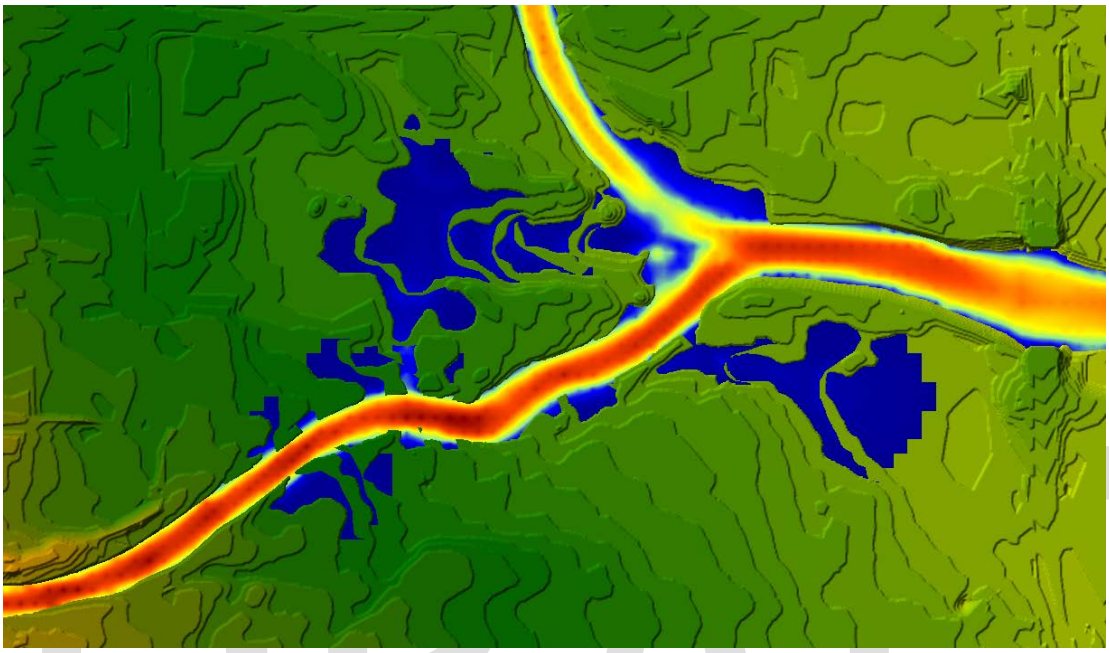

Figure 12: Velocity plot and extent of inundation of the 10 year flood in the existing conditions model

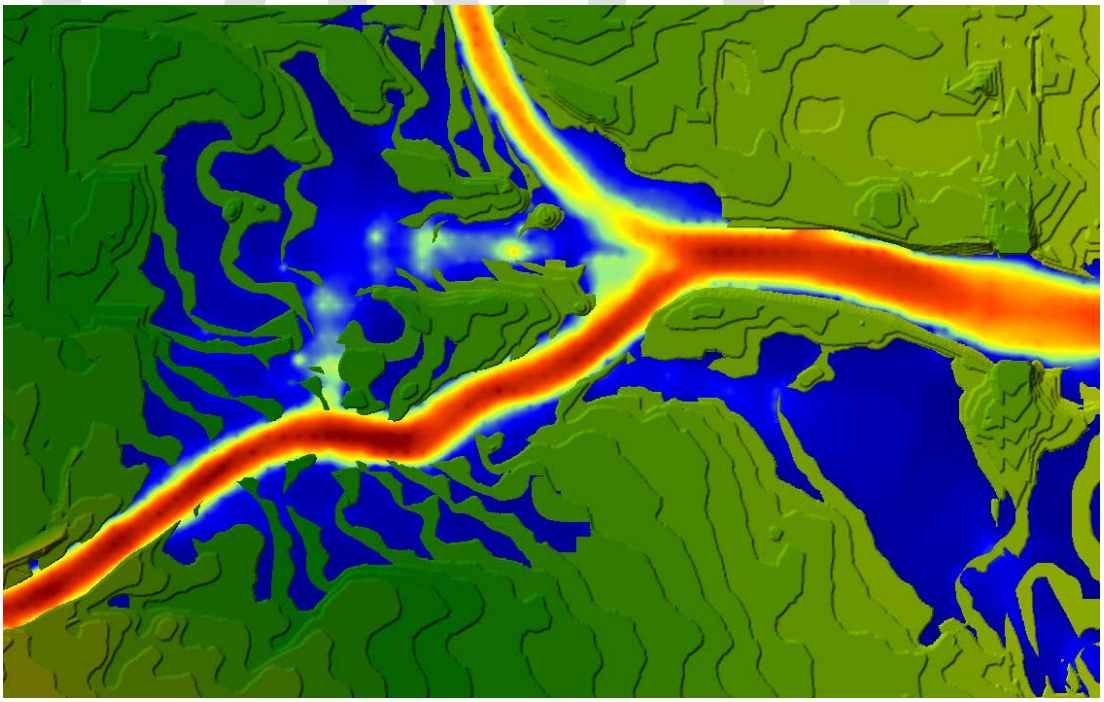

Figure 13: Velocity plot and extent of inundation of the 25 year flood in the existing conditions model

DRAFT

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

The existing conditions model confirmed Otak's analysis that the Bohn Park reach is the highest risk area on the St Vrain in Lyons, with multiple avulsion points and high velocity flows capable of substantial erosion located by several residential properties just downstream of the confluence.

Design Team and Process

Client Objectives:

S2o utilizes a systematic design approach which is founded in the system defined by Pahl and Beitz (Beitz, 1996). This design approach begins with the creation of a clearly defined objective for the design. The source of this objective and input for it was developed by referring to the Request for Proposals (RFP), which encapsulates the Town's objectives for the project, and includes input from the previous planning documents including the LRAP (The People of Lyons, 2014) and the Lyons Parks Flood Recovery Document (DHM Design, 2016).

Bohn Park RFP

The "fundamental goals" for the Bohn Park project include:

> The Town of Lyons recently completed the Lyons Parks Flood Recovery Planning Process (www.lyonsparksmp.com) which included a series of public meetings that assisted in the development of several concept plans for all flood recovery areas related to parks. This process took several months to complete and involved soliciting input and feedback of the public, town staff, Town of Lyons board/commissions and the design team. The Bohn Park Flood Recovery Plan Preferred Alternate map is included with this document along with the Lyons St. Vrain Corridor Trail 6f boundary map.
>
> The Bohn Park Flood Recovery Final Design and Bid Project will address the following fundamental goals outlined in the Lyons Recovery Action Plan and Lyons Parks Flood Recovery Planning Process for ensuring that Bohn Park continues to meet local and regional demands:
>
> 1) Reconstruction of facilities in Bohn Park to address the immediate recreational needs of Lyons, especially active/athletic uses. We will create a place to gather and play as a community again.
>
> 2) Creation of an attraction that will draw visitors to our Town. This is essential to ensure that the Town will remain economically viable and maintain its reputation and brand as a destination for healthy, active, outdoor lifestyles.
>
> 3) Reestablish trail connectivity, both locally and regionally, include loop trails.
>
> 4) Restore and augment river access and river habitat.
>
> 5) Restore/Replace picnic opportunities, including shelters and increase size.

DRAFT

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

6) Re-establish natural areas and consider wetlands.

7) Installation of public art along trails. (Town of Lyons, 2016)

The document further clarifies specific river corridor tasks and scope to include[5]:

1. Providing extensive knowledge, experience and technical competence in dealing with design and construction of community parks, irrigation systems, earthwork, grading, drainage, erosion control, stream channel restoration, whitewater features and related structures.

2. Evaluating/confirming the extent of flood damage in relation to pre-flood conditions as it relates to the Town of Lyons Parks System. Damage to the following features/amenities includes, but is not limited to (concatenated):

- Any irrigation ditches that are located through the park-ditch systems/reconnections
- Retention Pond(s), Water Features
- Siltation, erosion and debris deposits resulting in damage and degradation to the existing stream channel
- Whitewater/River Features
- ADA Fishing Structure/River Overlook
- Siltation, erosion, and debris deposits to entire park area
- Trees, Vegetation and Landscape

3. Reviewing FEMA damage assessment documents provided by the Town giving itemized and detailed cost estimates of pre-flood conditions to better understand the park, its functions and previous uses.

4. Reviewing and understanding recent Lyons Parks Flood Recovery Planning Process public input, preferred alternate plans, and overall process.

5. Incorporating design for fish habitat for the St. Vrain River through Bohn Park which will include the scope of an existing Colorado Parks and Wildlife Fishing is Fun Grant that the Town of Lyons has been awarded (2014 Fishing is Fun Grant-Lyons St. Vrain Aquatic Restoration Project).

8. Consultation with the "Stream Team" currently engaged in the CDBG-DR Stream Restoration Project in Lyons to ensure that design objectives are being met by both groups, projects align, future project impacts can be minimized, and sequencing of projects can be maximized.

DRAFT

[5] Extensive list was concatenated to focus on river related tasks

9. Reviewing and understanding of existing Parks, Open Space and Trails (P.O.S.T.) Master Plan documents-2000 and 2008.

10. Reviewing and understanding Lyons Recovery Action Plan (LRAP) with a focus on the Parks and Recreation Section/Parks and Recreation Recovery Working Group Program Development Guides (PDG's) section, namely the Meadow Park Flood Recovery Project PDG.

11. Reviewing Lyons Ecology Board's Sustainable River Corridor Action Plan.

12. Understanding park design in relation to Town of Lyons Comprehensive Planning Goals 2010.

13. Consulting with the St. Vrain Master Plan Team (Collaborative Decision Resources and Baker and Associates) to understand the current finding of the St. Vrain Master Plan Process as it relates to Bohn Park Design.

14. Working cooperatively with Colorado Parks and Wildlife on design of Whitewater Features to ensure inclusion of fish passage and other necessary environmental and habitat considerations.

15. Contacting and working cooperatively with local ditch companies to ensure reconnection and alignment of ditches through Bohn Park. Explore best case scenarios for fish passage, recreational consideration, and other habitat concerns regarding diversion structures.

16. Facilitating all necessary pre-permit meetings with Colorado Parks and Wildlife, Army Corps, USFWS and any other necessary agencies as appropriate.

24. Providing construction plans/documents and specifications to rebuild all access road and parking areas.

25. Taking responsibility for coordination of submittal reviews and ALL permitting processes including local flood plain permits, Army Corp 404 permits, environmental permitting, and so on. (Town of Lyons, 2016)

Lastly, the RFP specifies, as a deliverable, "Creek Design Plans and Whitewater Feature Designs" (Town of Lyons, 2016).

Of note in the RFP and in meetings with Town Staff and government it has been emphasized that the objectives of the project are largely defined by the LRAP and the Lyons Parks Recovery Plan. S2o consulted both of these documents prior to formulating its design objectives for the reach.

DRAFT

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

Lyons Recovery Action Plan

The Lyons Recovery Action Plan was the defining document of the flood recovery process. The creation of the document included extensive public input through a process that was managed by FEMA and that provided extensive opportunities for public comment and input. The overall process was governed by the defined and board-reaching principles of a) a resident driven process that is inclusive of the community, b) a sustainable process that respects our environment and that creates long-term solutions, and c) a resilient recovery that leaves Lyons better prepared for the next disaster.

The document speaks directly to the needs of both Meadow and Bohn Park, citing the need as, "Ensure that the Town remains economically viable and maintains its reputation and brand as a destination for healthy, active, outdoor lifestyles." (The People of Lyons, 2014). The document specifies the scope of the project as[6]

> Work with professionals to design the following improvements:
>
> - Restore active/athletic uses
> - Use Bohn Park 2008 Master Plan as guide for improvements
> - Consider natural areas/wetlands.

FEMA Versioning Document

The current FEMA versioning documents refers extensively to the avulsion channels and the lost habitat and structures in the river. The document refers specifically to the lost ADA fishing structures as well as, "Location 3-Bohn Park Fishing Structures—reconstruct approximately five damaged fishing structures, and excavates debris from three small fishing ponds." Reference is also made to making accommodations for the ditch that passes through the site. (FEMA, 2014)

The FEMA versioning documents have special implications for the Town which are worth noting. Changes from the versioning document need to be re-versioned and approved prior to construction. The scheduling implications of updating versioning can be expected to require six months for changes to programming elements. In the event of un-approved changes the Town runs the risk of failing a state-audit which would require that all funds under this PW be returned.

Lyons Parks Flood Recovery Master Planning Document

The Lyons Flood Recovery Master Planning Document refers to the Bohn Park river corridor in several places, best summarized as:

> River Corridor Restoration planning strategies for riparian and ecological restoration were reviewed and strategies, recommendations and construction estimates were considered to better understand costs for improvement. River access was enhanced and restored with overlooks, ADA fishing access and ramps leading to the edge of the St Vrain Creek. The St Vrain regional trail was located close to its original alignment with restoration and replacement of the planters and the development of a flood memorial

[6] Again, this list is concatenated to focus on river-specific goals and scope

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

DRAFT

stone picnic area. The regional trail is to be a 10' wide soft surface/ crusher fines trail. Opportunities for public art are to be integrated along the trail section within Bohn Park. Creek beaches are planned at locations where river access is provided. The 4the Avenue pedestrian bridge connection is to be restored. Instream recreation and water features are to be restored to where they were located preflood. (DHM Design, 2016)

The study included an ecological assessment that summarized design objectives in the reach as:

> The analysis and assessment is a tool to provide detailed information for the planning process and the following recommendations were communicated to the design team and the public during the process of drafting and completing the planning process.
>
> - *As St. Vrain Creek restoration work is planned, designed, and completed, ensure the integration with the parks projects associated with the riparian and floodplain areas adjacent to the channel system.*
> - *Identify appropriate areas for restoration within the riparian associated areas of the planning process project. Prioritize those restoration areas that maximize ecological values and habitat values, while still being an important part of the social context of the use of the facilities.*
> - *Provide native vegetation areas and zones that provide important buffering of the riparian corridor with an appropriate vegetated connection. Passive uses such as trails and observation areas are appropriate for these areas.* (DHM Design, 2016)

These three bullet points are perhaps the most valuable to the context of how to design the park within this reach of the river. The objective of the river park is, if distilled to its most base element, to design a place where people can recreate in and near the river. If there is a mutual goal for river restoration and habitat enhancement then design process must identify and enhance areas of ecological importance within the reach while guiding the more malleable of the two—people access—to areas of lesser ecological importance.

Defined Project Objectives

Based on a review of these planning documents S2o's design objectives are tiered, in an expectation that the design process for this park will be a process that layers these priorities upon the landscape

1) Resiliency: Create a resilient river system that plans, to the degree possible, for the next flood. (The People of Lyons, 2014)
2) Sustainability: Create a sustainable river system that is a multi-stage channel that utilizes native plantings and ecologically sound planting decisions to create a vibrant ecosystem that is robust, resilient in the next flood (to the degree possible, and self-sustaining. (The People of Lyons, 2014)
3) Environmental: Create a river design that emphasizes fish habitat, riparian habitat, and connectivity of the river system through a design and planting regime that works with the river's natural morphology. (Town of Lyons, 2016) (DHM Design, 2016)

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

4) Create a river design that provides a balance that allows for the park usage that surrounds this portion of the river included preferential access points to avoid the creation of social trails, and ADA fishing access as described in the Project Worksheet. (FEMA, 2014) (Cosgrove, 2016) (The People of Lyons, 2014) (DHM Design, 2016)
5) Meet the objectives of the LRAP and Parks Masterplan as well as the requirements of the latest versioning of the FEMA project worksheets. An additional corollary to this objective is to also meet the intent and requirements of the CPW Fishing is Fun grant. (The People of Lyons, 2014), (DHM Design, 2016) (FEMA, 2014) (FEMA, 2014) (Town of Lyons, 2016) (Ben Swigle, 2013)[7]

50% Design

As noted above, S2o has envisioned a layered design which is designed sequentially to meet multiple project objectives.

Layer 1: Resiliency: The first tier of the design is to create a backbone upon which a resilient river system can be created. In creating this portion of the design S2o notes that, as shown above in the risk factors section, there are multiple characteristics of the river that make this reach a high risk design. Within this context S2o has tried to create a design that:

- Create overflow channels to intercept sheet flow that passes over the Martin Property
- Stabilizes the river in its pre-flood channel at the upstream end of the reach while allowing for inertial flows to overflow into a designed overflow channel that returns to the river (this includes bank stabilization at the point of channel avulsion).
- Utilizes the northern avulsion channel (across the now Town-owned Stacy property) to divert flows away from valuable Town assets.
- Removes valuable assets away from the river near the Second Avenue Bridge and designs for and accommodates flood flows onto this area with a designed inflow and drain.

This resilient design is shown in Figure 12 below:

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[7] This citation is approximate and describes contributing authors to a grant application

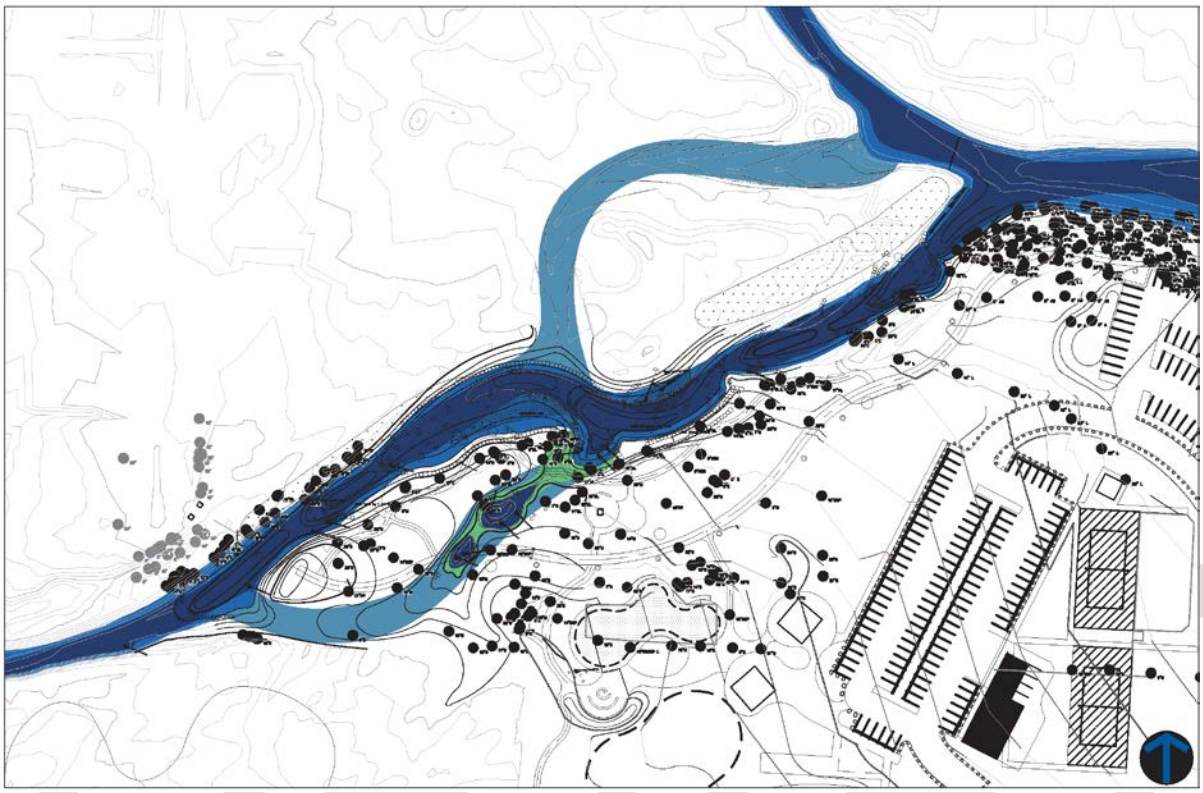

Figure 14: The resilient design removes valuable assets from the flooding area while reducing flood risk in the next flood event through the use of flood overflow channels.

The resilient design also includes drop structures at the upstream end of the reach (Structure 1) and downstream end of the reach (Structure 5) to address risk factors related to vertical stability of the creek. Structure 1 will act to eat up excess energy from the confined reach above the park. Bank armoring (root wads and bio-engineered armoring) will also protect the avulsion channel and act to stabilize and normalize flows into this portion of the park. Structure 5 will include excavation of the channel downstream up to the tailwater of the structure. This will stabilize the river against head-cutting as the river evolves into an equilibrium state in the coming years. (Otak, Inc, 2016)

Layer 2: Sustainability: The river channel itself is largely channeled and confined due to post-flood excavation and temporary armoring work that was designed to prevent interim flood events from further damaging flood property. S2o envisions re-grading the existing river channel in this project such that it is a multi-tiered river with floodplain benching. This re-grading effort will be a targeted one that preserves valuable habitat in areas that S2o has identified, in combination with our project partners at Ecos, as valuable habitat. As such, floodplain benches will be created largely inside the existing plant life boundaries (with some exceptions). The placement of woody debris and rock structure within the channel will also augment and protect existing depositional bars.

Ecos will work with S2o to define a planting plan that utilizes native plantings to stabilize bench areas.

Figure 13, shown below, shows the benched areas and depositional bars that will be created or protected with the proposed design:

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

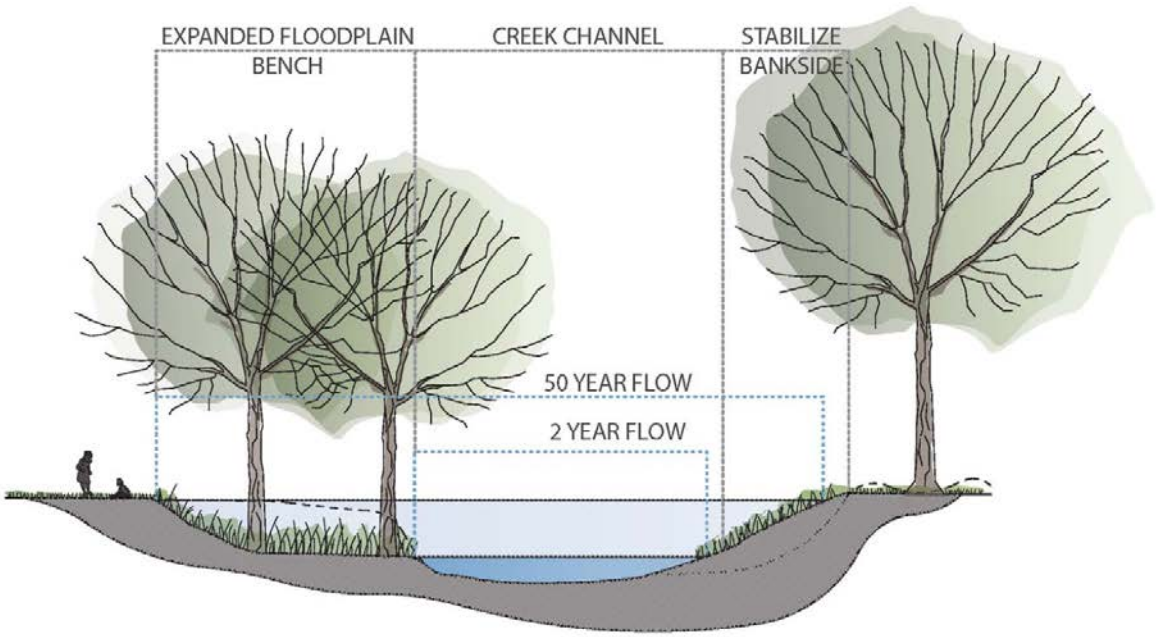

Figure 15: S2o has created a multi-stage channel within the park that will provide a connected floodplain within the Bohn Park area.

Layer 3: Environmental: The Ecos planting plan will also serve the purpose of creating wetlands, riparian habitat, and, to some degree, in-stream habitat. One significant area of new habitat will be the backwater area created at the ditch outfall in the middle of Bohn Park. This wetland area will be created in the lee of the first major bend of the park and will include wetland planting. Water from the West Ditch will mix with river flows at this location. Plantings, structure, and protected access will create a vibrant wetland in this area.

Woody debris will be cabled or buried along the river left (north) bank of the river in the downstream-most portion of the project to protect and enhance valuable habitat in this area downstream of the project. Additionally woody debris will also be used to help stabilize the bank upstream of the proposed 4th Avenue (South) pedestrian bridge.

Noted below are the fish habitat structures and improvements that are made as a part of the Colorado Parks and Wildlife grant for this reach.

Show image of Ecos plating plan layout and woody debris/fish habitat structures.

Layer 4: Parkland: The Park in this area will feature numerous trails along the river left (south) bank, along with picnic areas and recreational amenities. As before the flood, there will be significant numbers of visitors to the park on a daily basis during the spring, summer, and fall. A significant number of these visitors are expected to access the river for fishing, wading, viewing, in-stream recreation, and other reasons. Conversations with Town Staff indicate that there was insufficient access to the river in the previous intonation of the park and that many social trails were trampled into the riverbank so that

DRAFT

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the public could access the river. These social trails had a negative impact on the river and contributed to significant issues with lost vegetation and erosion. S2o has created a design that provides for access at specific points using preferential access points that are armored and attractive. Parkland plantings will serve to dissuade users from accessing the river in other, less desirable locations. Additionally, S2o has located the ditch, associated ponds and play areas in an effort to create both additional wetlands, but also additional *play* areas that are out of the main flow. This accomplishes two goals, it provides a play area separate from the natural habitat of the river (hopefully decreasing traffic and impacts there), and it also creates an environment that is more appropriate for younger park guests to play than a natural river which will sometimes run at higher flows.

Access and trail points are shown in Figure 15 below,

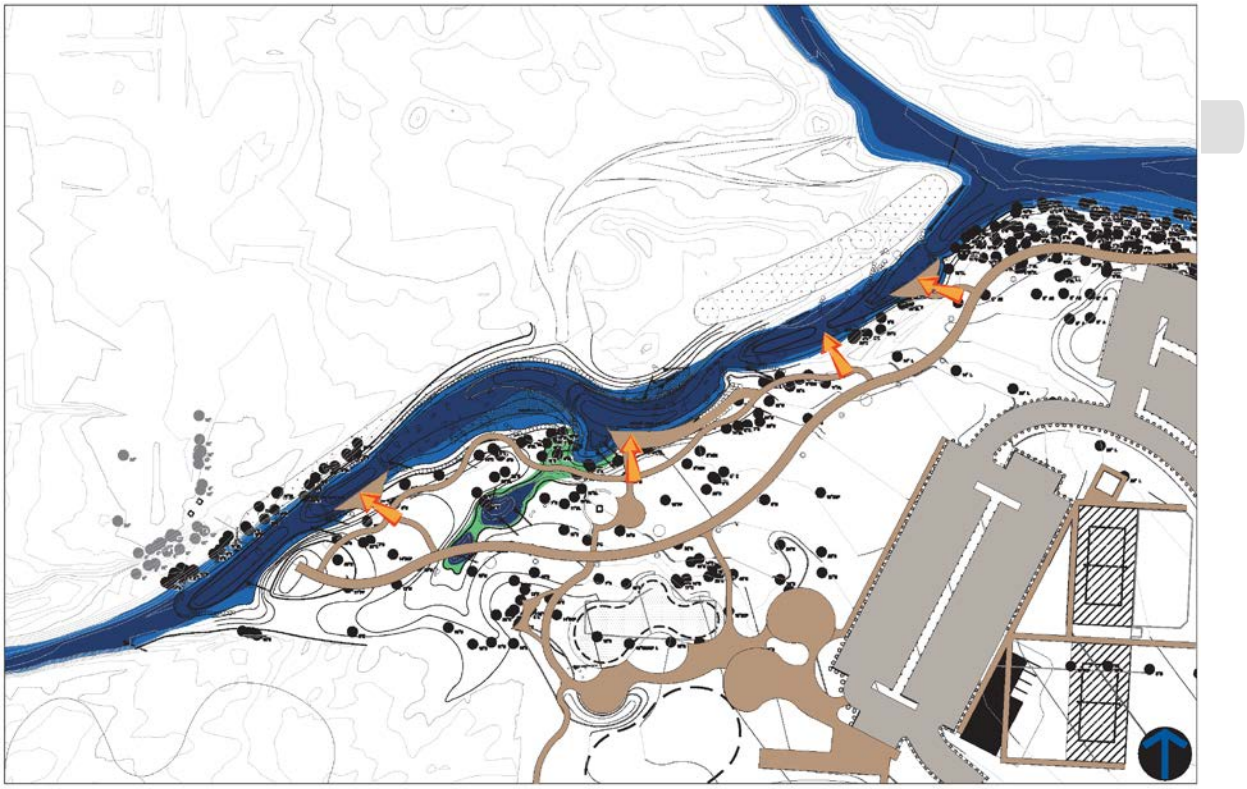

Figure 16: Trails and access points are all located on one side to allow for a continuous riparian zone on river left (the north bank)

Layer 5: Regulatory and Funding Requirements: This project has significant design constraints in terms of funding and regulatory requirements. Amongst these are:

FEMA: The design must include the current "versioning" of the FEMA project workbooks. This is a hard constraint that is controls the bulk of the funding for the project.

Colorado Parks and Wildlife: The relationship between items budgeted through the Colorado Parks and Wildlife Fishing is Fun grant and the rest of the design is fairly rigid. The grant funded designs must be created separately as a layer upon the existing project. This includes separate

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

design time and separate construction budgets. The Fishing is Fun grant budget will only provide for specific fish habitat enhancement structures.

These issues have proven to be the most contentious in the design process thus far. The Versioning and all of the public process documents specifically cite either 5 "fish habitat structures" or 5 "Whitewater Park Structures". These have been approved by both the Town Board and by FEMA representatives. There are some who have suggested that no structures should be included in the design. As a compromise solution S2o has proposed 5 Rosgen-type Double-Step Cross Vane Structures. These types of structures have been shown to provide a benefit for fish habitat and can fit well within the creek corridor's morphology and design intent (D. L. Rosgen). S2o proposed these design structures because our calculations and science suggest that a stabilizing effort is required at the first and fifth structures and that the intermittent structures will meet funding requirements while also providing depositional areas, scour pools, and hardened access points in the reach for recreational usage. Figure 15, shown below, shows the drop structures as well as the Fishing is Fun specific structures:

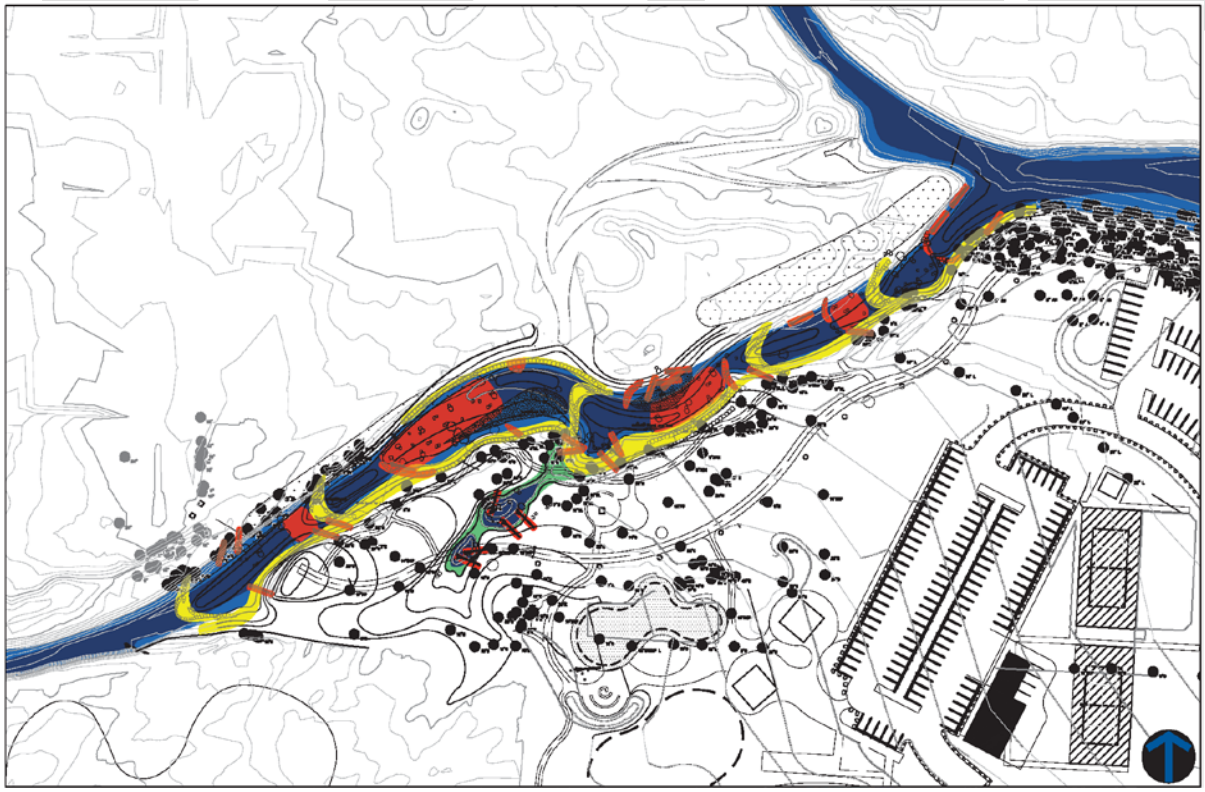

Figure 17: The proposed Double-Step Cross Vanes as well as the various Parks and Wildlife-specific fish habitat structures.

50% Design Results

The Bohn Park Final Design has been done in steps to allow discrete points along the design path for evaluation, review, and comment. The proposed design has also been evaluated using two-dimensional flood modeling to evaluate impacts to the regulatory floodplain as well as velocities, bed shear, and other, associated, metrics within the corridor.

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

Flood Results:

Using the design process detailed in the above sections, a preliminary design of a proposed conditions model was developed. The proposed topography representation of Bohn Park is shown in Figure 17.

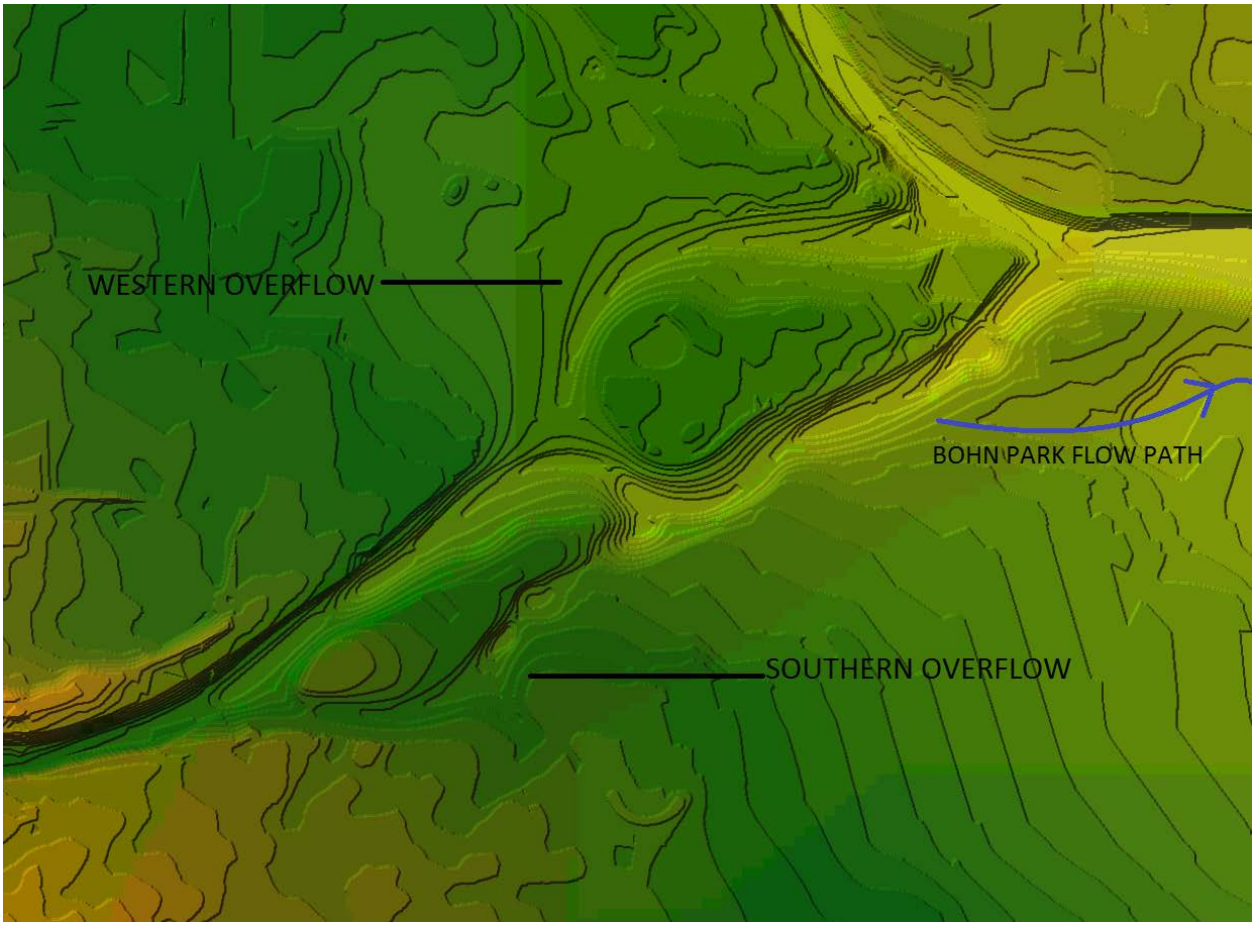

Figure 18: Proposed Conditions model of Bohn Park's river work.

The model was run with base flows increasing to the 100 year event. Following the changes made to the topography, the western overflow was found to activate at the 2 year event, the southern overflow activated at just greater than the 10 year event, and the flow path over Bohn Park not activating until the 25 year event. The project reach at the 10 and 25 year events with the activated overflow channels is shown in Figure 19 and Figure 20.

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

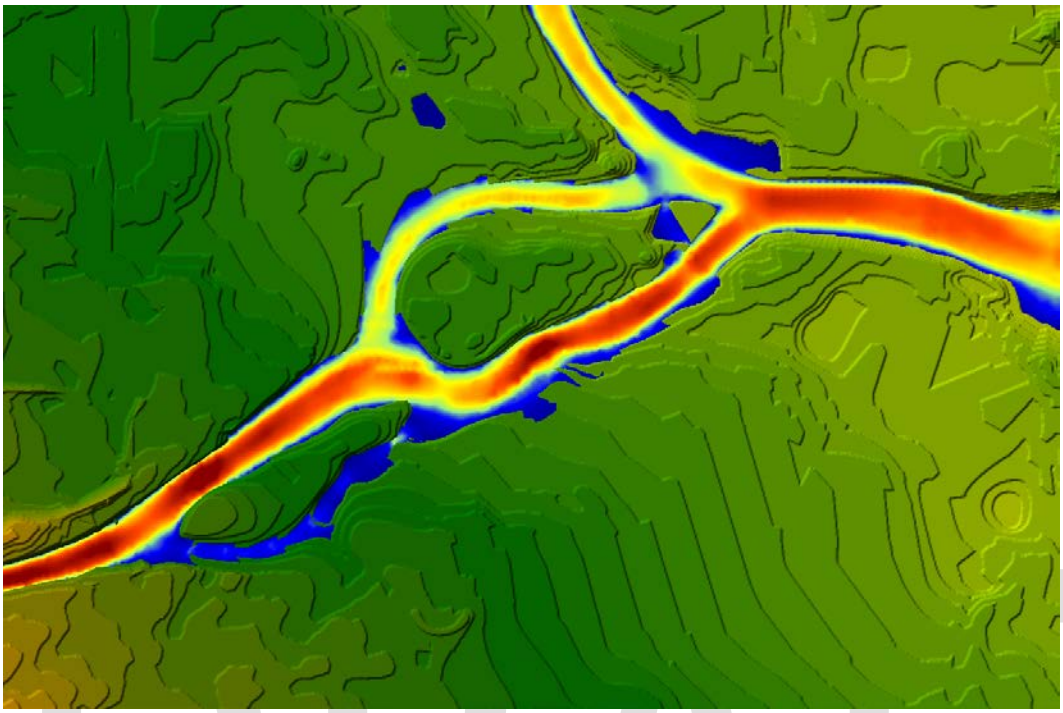

Figure 19: Velocity plot and extent of inundation of Proposed Conditions at the 10 year flood

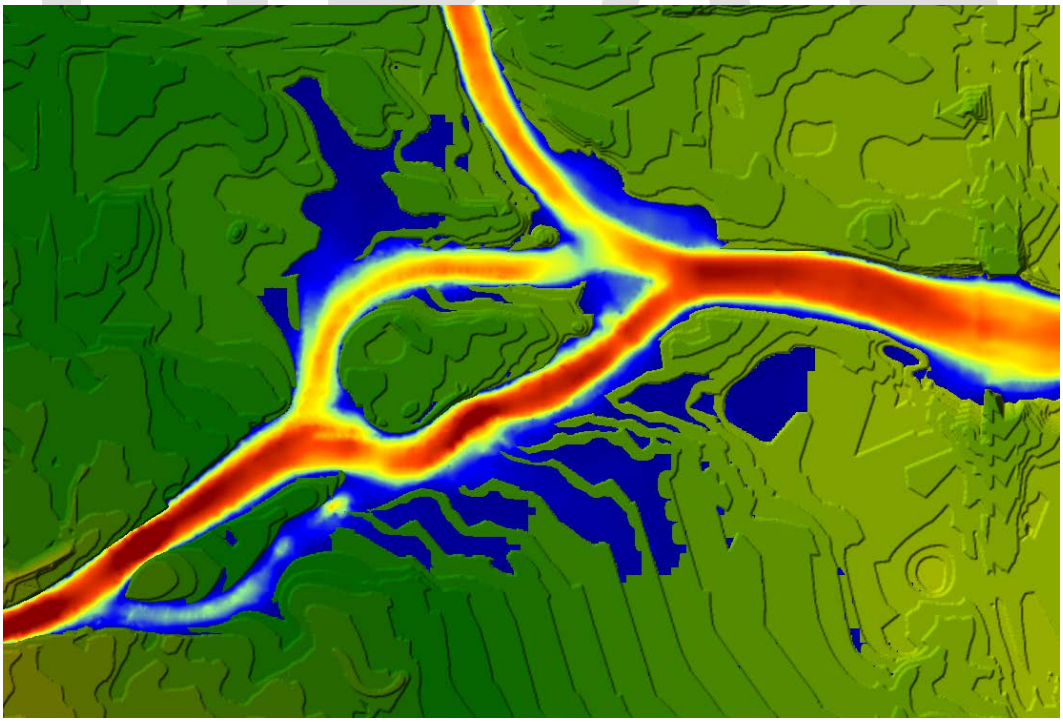

Figure 20: Velocity plot and extent of inundation for Proposed Conditions at the 25 Year Event.

Preliminary design results indicate that both the proposed infrastructure in the park and surrounding residential infrastructure can be protected to a greater extent with the proposed channel geometry.

DRAFT

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

Feedback on 50% Design

Following the completion of the 50% design phase of the project, the design was submitted for review to the Lyons Parks Board, the St Vrain Creek Coalition, Colorado Parks and Wildlife, the Lyons Watershed Board and subsequently the Lyons Board of Trustees. The summarized comments are shown in the following section, with full comments and feedback listed in Appendix A.

Lyons Parks Board

The Parks Board, which is a sub-board to the Town of Lyons Board, evaluated the project in a presentation/discussion in which DHM and S2o presented the design and answered questions. The team then left the meeting while the Board continued further discussion. The Parks Board approved the river corridor design without further comment.

St Vrain Creek Coalition

The St Vrain Creek Coalition reviewed the document and provided the following comments:

- *Collaboration and Communication* – Recommendation for the Bohn Park design team to collaborate with other projects currently underway on the St Vrain Watershed, in particular the projects currently underway by Matrix on South St Vrain Reaches 1 and 2.
- *In Stream Structures* – In-stream structures must be able to manage the change in slope through the project area, while incorporating fish passage into the design and improving on aquatic habitat opportunities in the reach.
- *Recreation* – The SVCC is pleased that Bohn Park focuses on natural play area rather than purely whitewater recreation. Similarly pleased with public access plans for fishing and other in-stream recreation, including a trail access system and an ADA-accessible fishing area.
- *Water Quality* – Following the description of sheet flow over the parking lot and ball fields at high flows, the SVCC would like to suggest that a stormwater water-quality control feature to be added at the point in which water is expected to re-enter the St. Vrain Creek to prevent contaminated runoff from the parking lot from flowing into the main creek.

Colorado Parks and Wildlife

Colorado Parks and wildlife reviewed the document and provided the following comments:

- *In-stream structures* – CPW recommends the removal of four double step cross vane structures, to be replaced by j hooks, log vanes, boulder clusters or similarly non-river spanning stabilization techniques. CPW also recommends accentuating the meander of the river, sediment deposits and lateral scour pools at the s-turn.
- *Public river access* – CPW recommends the removal and/or relocation of access points. In particular to move the access beach from the upper section of the reach to the inside bend of the first s-turn.
- *Bank Stabilization* – CPW does not approve redstone blocks for bank stabilization purposes or for public access.

DRAFT

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

Watershed Board

The Watershed Board's reviewed the documents and provided the following comments:

- *Purpose of park* – The LWB recommended that the in-stream work performed on the South St Vrain be a natural channel design with a focus on fish habitat that allows multiple uses.
- *In-stream structures* – the LWP recommended removal of all five double step cross vanes, and suggested a riffle-pool sequence. Further recommendations were to remove j-hooks, using instead increased amount of woody debris and random boulders as stabilization.

Lyons Board of Trustees

- Following the 50% design presentation and workshop on the 18th July 2016, the Board of Trustees decided to move forward with the changes recommended by the separate review committees.

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Incorporated Changes

Following the input received, the design was altered to incorporate the design recommendations put forward by the multiple committees. The full list of compiled feedback is shown in Appendix A. The comments were all taken into account, with responses to each point raised shown in Appendix B. The design was changed accordingly, and is shown below in Figure 21.

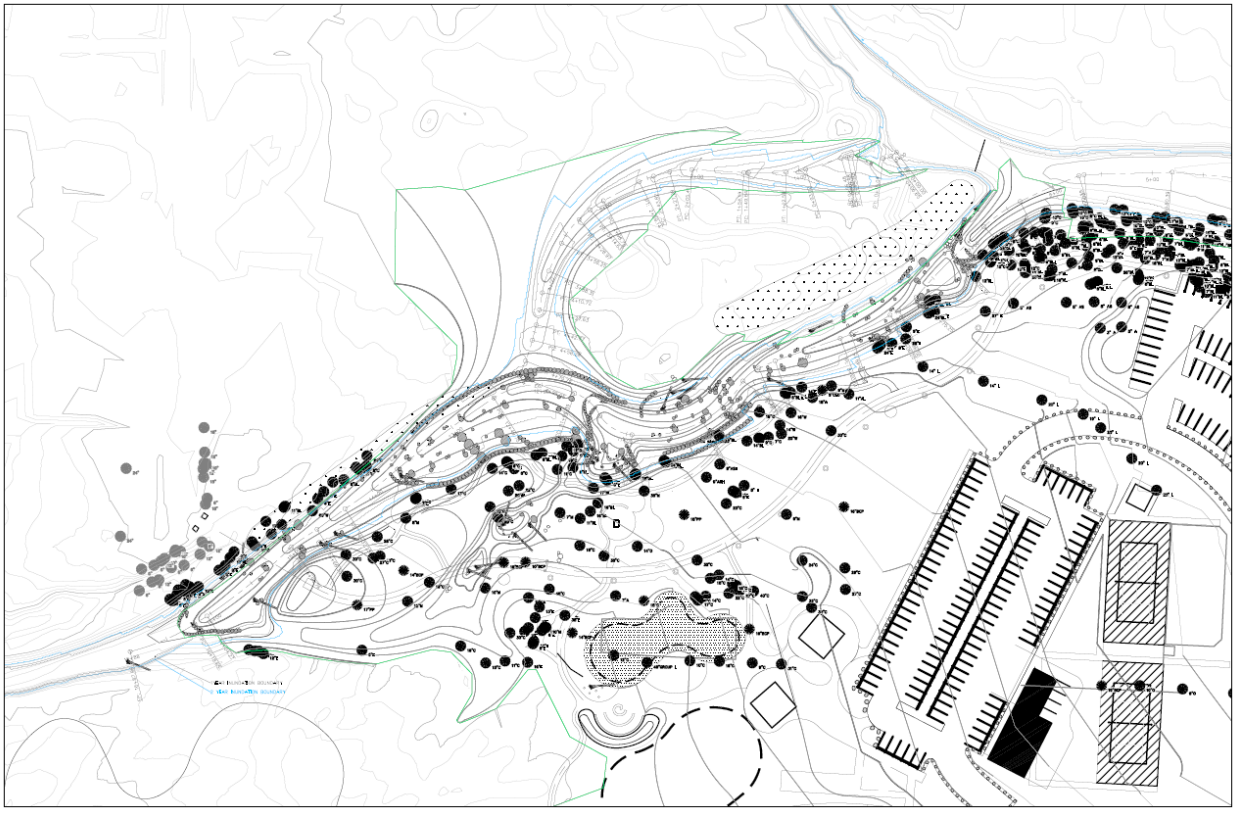

Figure 21: The updated design following the workshop with the Board of Trustees on the 18th of July

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

There were many changes made through design, all of which are detailed in Appendix B and on the drawing. The major changes to design are addressed in the following sections.

In-Stream Stabilization Structures

The project worksheet defined the structures in Bohn Park as 5 fishing structures. The historic fishing structures were channel wide cross vane structures. The proposed structures are double step cross vanes and hardened riffle structures for fish habitat.

Double step cross vanes have been the subject of numerous studies to determine their benefit for the health of the reach and for the health of fish stocks. Boulder cross vanes have proven to be an efficient means of controlling grade, preventing head cut and reducing bank erosion by directing the flow centrally to create a contraction scour pool. Hydraulically, these structures provide energy dissipation, velocity reduction and provide an opportunity for natural sediment sorting.

A study conducted by Colorado Parks and Wildlife found numerous benefits of these structures in relation to fish habitat. In a passage taken from the study:

"*In general, pools associated with un-grouted cross vanes or vortex structures were "leaky" with gaps between boulders (laterally) and also with gaps between the header and footer rocks (vertically). There was still an abrupt drop over the structure, but strong reverse eddies were not readily visible in pools below structures. Hydraulic jumps were also not visibly present.*" (Kondratieff, 2012)

A typical example of a double step cross vane is shown in Figure 22: Plan view of a typical double step cross vane.

DRAFT

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

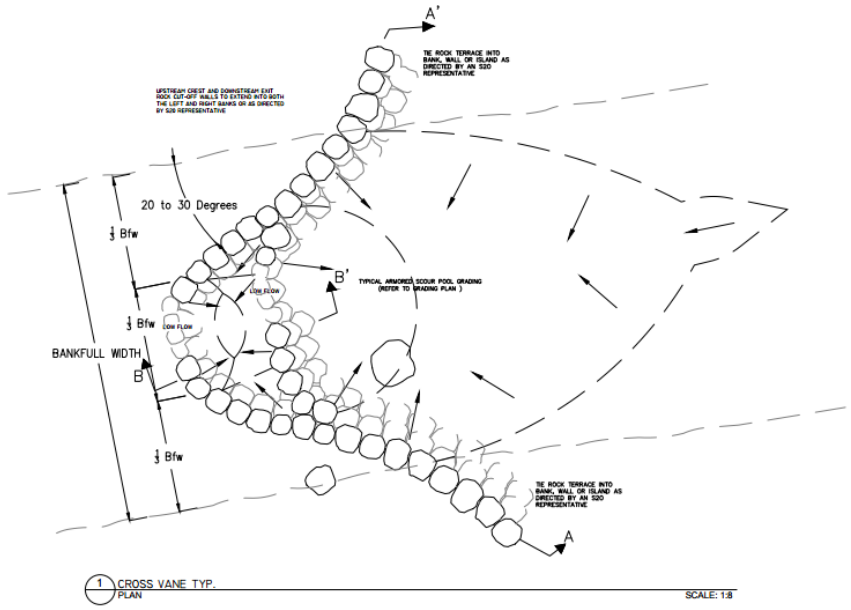

Figure 22: Plan view of a typical double step cross vane.

Following the input from the mentioned committees, in which Colorado Parks and Wildlife and the Lyons Watershed board requested the amount of double step cross vanes to be reduced, the amount of cross vanes was reduced in the reach from five to three, and the two removed cross vanes were replaced with grade controlling hardened riffle crest structures. Though there was substantial input advocating for the complete removal of all cross vanes, three grade control structures were necessary to satisfy the design goals of the park. As has been detailed in earlier sections of this report, this is a very steep reach with grades ranging from 2 – 3%, and once the sediment feed from the upstream reaches reduces, the reach will tend towards instability, with potential for head-cuts permeating up the river from the confluence of the North and South St Vrain Creeks. Similarly, as this reach is at a relatively steep grade, grade control structures address the high velocities and will dissipate the energy of the flow, so as to reduce the velocities and decrease the potential for erosion, scour and flood damage.

However, portions of the reach were redesigned to accommodate the obtained feedback. Following the results of a hydraulic study and examination of the functions this reach needs to serve, it was determined that two of the five cross vanes could be replaced with a hardened riffles.

Each of the specific needs and design purposes of the five grade control structures are detailed below.

Grade Control Structure 1 – Double Step Cross Vane

This is the first structure on the South St Vrain Reach 3, and is at the most upstream section of the reach to reduce the 'congestion' of the reach. Its primary purpose is to reduce the water surface elevations and velocities in the vicinity of the 4th Avenue Pedestrian Bridge which will be reconstructed during this project. By locating a pool under the bridge, lower velocities reduce the need for excessive armoring,

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and reduced water surface elevations are required for compliance with freeboard regulations for bridges spanning bodies of water.

Grade Control Structure 2 – Hardened riffle crest and toe

The second structure was changed into a hardened riffle crest and toe. This will create a stable, yet relatively steep section of the river, which is required to tie in the elevation change while armoring the top and bottom of the riffle will prevent propagation of head cuts. Riffles are an important ecological feature of rivers, where the aerated water can provide ideal spawning locations for fish species.

Grade Control Structure 3 – Double Step Cross Vane

The third grade control structure is located at the point of inflection of the widened S-turn, between the two lateral scour pools and sediment deposits. This structure was required to reduce the elevations, as otherwise there would not have been satisfactory space to install the pools, access points, and habitat areas.

Grade Control Structure 4 – Hardened riffle crest and toe

The fourth grading structure is located below the S-turn, at the site of an existing riffle. By 'formalizing' this riffle with crest and toe armoring, it will be protected from migrating head cuts and will reduce maintenance costs on the town in the future.

Grade Control Structure 5 – Double Step Cross Vane

The final grade control structure is located just prior to the confluence of the North and South St Vrain Creeks. This structure serves two important purposes. Firstly, it is located at the anticipated site of the head cut, by locking this grade drop in place, future stability issues with the river bed can be avoided. Secondly, this structure serves an important role in energy dissipation. By flowing over a defined drop as opposed to a smoother riffle, a reduction in energy and velocity is achieved, which will reduce the erosion risk the South St Vrain poses to the private property on the northern Bank of the St Vrain Creek.

Following the modeling results it is possible to reduce the amount of cross vanes to three instead of five, whilst still meeting the design goals of the park listed above.

DRAFT

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

Widened S-Turn and Creation of Lateral Scour Pools

Following the input from the committees, the S-turn located in the center of the reach was widened to increase the sinuosity of the reach. This alteration is shown in Figure 23.

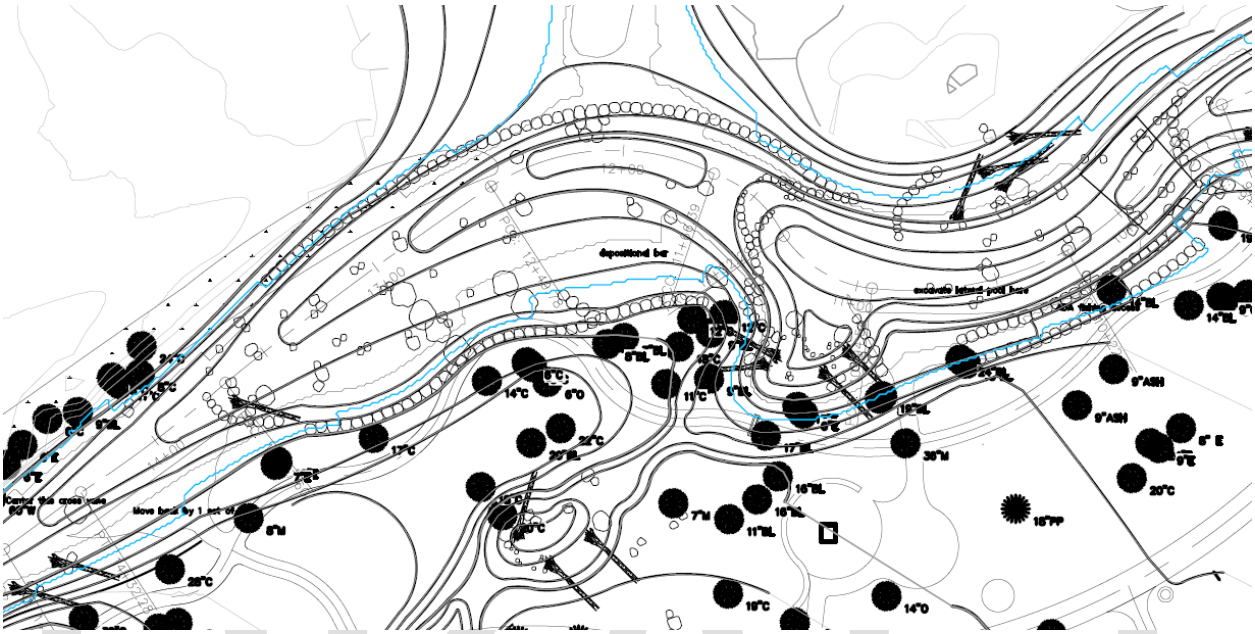

Figure 23: Enlarged view of the expanded banks at the S-turn

As seen in Figure 5, by widening the radius of the two curves of the s-turn, the river's natural meander is encouraged, providing numerous benefits from the standpoints of flood resiliency, streambank stabilization, habitat creation and public park usage.

By increasing the sinuosity of the stream, velocities of the reach are reduced, decreasing the potential for erosion, scour damage and maintenance costs in both base flow rates and in larger flood events. Additionally, reducing the velocity prior to the confluence of the North and South St Vrain Creeks is highly beneficial to protecting the private homes on the north bank of the St Vrain Creek, which has been identified as a high risk area by previous studies of the watershed should the South St Vrain experience flooding but not the North.

From a habitat creation standpoint, the greater radius of the bend encourages lateral scour pools to develop on the outside of the bend, providing valuable aquatic habitat for fish, invertebrates and vegetation.

Additionally, the second bend of the s-turn promotes a scour pool to develop by the site of the ADA-fishing access location, an ideal benefit for one of the key design goals of the park. On the inside portion of the bends, sediment deposits will likely develop, providing a beach access point on the 1st bend leading towards a calm pool. This will be a highly attractive area for park users, which will be encouraged to use this area rather than creating social trails through areas of ecological restoration.

The development of the scour pools has provided additional opportunity to install woody debris as per the recommendation of both the Lyons Watershed Board and Colorado Parks and Wildlife. It also

provides opportunities for public river access points with minimal impact on areas of ecological value, while improving resiliency for flood events through increasing sinuosity and flood capacity of the reach.

Overflow Channels

Using a two dimensional model of the existing topography of the St Vrain watershed as well as historical information on the characteristics of the 2013 flood event, existing flow paths were identified along the project reach (SSV3) as well as the St Vrain Basin as a whole. Existing flow paths are shown in Figure 24.

Figure 24: Overbank flooding occurs at relatively low flows in the Bohn Park reach.

These existing floodways were identified as potential locations for more deliberately augmented overflow channels, so as to protect the existing and proposed infrastructure constricting either side of the river. This protection would lead to a more resilient park during future potential flood events. These existing floodways currently breach at approximately 2000 cfs at the confluence avulsion; 2,300 cfs at the avulsion that flows across northern Bohn Park, 2nd Avenue, and into the ditch north of the Church of the Latter Day Saints; and at 2,500 cfs at the most southern boundary of Bohn Park's project extents. There is an additional sheet flow that breaches further upstream of the Old South St Vrain Bridge, which propagates across the project area at approximately 1,700 cfs. This additional sheet flow breaches in a reach out of the scope of the Bohn Park Project. All of these breaches occur at or within 400 cfs of the 10 year flood event.

Using these existing flow path locations as a guide, two proposed overflow channels were developed to activate at different flow rates to relieve flood pressure on the existing and proposed infrastructure. These overflow channels are shown below in Figure 3.

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

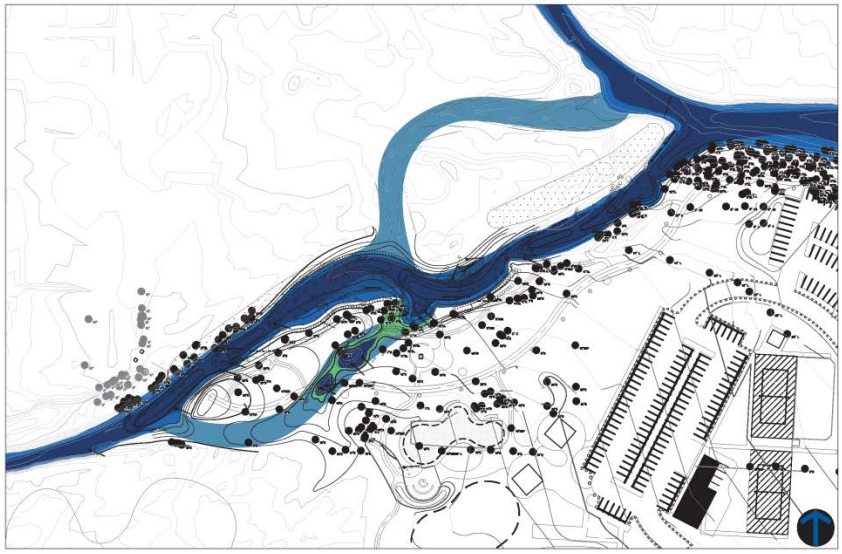

Figure 25: The Resilient design removes valuable assets from the flooding area while reducing flood risk in the next flood event through the use of flood overflow channels.

These overflow channels were designed such that the Northern Overflow activates at the approximate two year flood event, the Southern Overflow activates at the approximate 10 year event, and the remaining Bohn Park Floodway across the proposed carpark activates at the 25 year event, with grading schemes aimed at re-directing breached waters underneath the 2nd Avenue Bridge rather than across 2nd Avenue and potentially cutting off residents as what occurred in the 2013 Flood Event. A plot of the 2D simulation's results is shown below in Figure 4 at the 25 year flood event, at approximately 3,200 cfs.

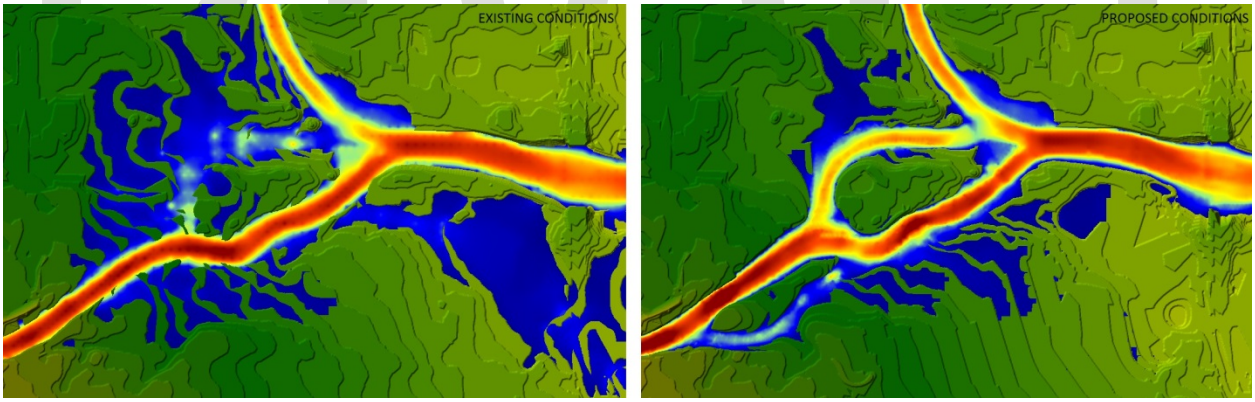

Figure 26: Comparison of the Existing Conditions (left) versus the Proposed Conditions (right) in the 25 year flood event

Preliminary results indicate that the both the proposed infrastructure in the park and surrounding residential infrastructure can be protected to a greater extent with the proposed overflow channels and reduce maintenance costs as well as future flood damage.

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

Future Direction

S2o will continue to work with ecos, DHM and other design team members to achieve the design goals of this reach with particular regards to flood resiliency, habitat creation benefits to park users. The feedback from committees has been compiled; addressed, and where possible, incorporated into the updated 50% design. The Bohn Park design team will continue to work with the boards, committees and members of the community in the upcoming detailed design phase of the project.

If this paragraph is still in place than you are reading a partially completed draft report. This draft is not for circulation nor does it represent definitive conclusions with regards to facts, decisions, design work or any other assertions. Please read this report in this context.

DRAFT

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

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318 McConnell Dr. Lyons, CO, 80540 303.819.3985

APPENDIX A – FEEDBACK

St Vrain Creek Coalition

Saint Vrain Creek Coalition P.O. Box 706 Longmont, CO 80502 303-774-4514
Mr. Scott Shipley S2o Design and Engineering 318 McConnell Drive Lyons, CO 80540
July 12, 2016

Dear Mr. Shipley,

Thank you for including the Saint Vrain Creek Coalition (SVCC) in the public engagement process for the Bohn Park Flood Recovery Final Design and Bid Project. The Saint Vrain Creek Coalition is a locally driven, non-governmental, non-regulatory community-based organization that facilitates stewardship and restoration projects based on scientific analysis to improve watershed health and develop partnerships to plan, fund, and implement those projects. We have a diverse representation of interests on our Board of Directors and Advisory Council and hope that the feedback provided by these representatives and the Coalition as a whole will help further the development of a comprehensive design.
The main suggestions and concerns of which the SVCC has heard thus far include the following topics and themes:

• **Collaboration and Communication** As acknowledged by S2o, collaboration and communication between the stream recovery projects that are taking place both upstream and downstream of the work being designed in Bohn Park is critical, especially in regards to hydrology. The project in Bohn Park includes two overflow channels, one of which may begin upstream of Bohn Park and in a separate, yet to be designed project area. If time allows, it would be helpful to obtain data from the projects that are currently being conducted upstream, including the South Saint Vrain (SSV) 1 & 2 projects, sponsored by Boulder County Parks and Open Space and the SSV 3 project, sponsored by the Town of Lyons.

• **In-Stream Structures** In-stream structures must be able to manage the 2.5% change in slope through the project area, and incorporate fish passage for sport and native fish. Include channel complexity, such as anchored, woody material, and allow for stable over-hanging banks for improved aquatic habitat.

• **Recreation** The Saint Vrain Creek Coalition is pleased to hear that the Bohn Park design focuses on a natural area park, since LaVern M. Johnson Park (Meadow Park) targets whitewater recreation. We are glad to hear that it incorporates a diverse range of public fishing accommodations, including an ADA-accessible fishing area, trail access to the stream, and nature play for youth.

• **Water Quality** During the June 16, 2016 site visit and meeting for SVCC members, hosted by S2o, there was mention of potential sheet flows over a parking lot during high flows. The SVCC would like to suggest that a stormwater water-quality control feature be added at the point in which water is expected to re-enter the St. Vrain to prevent contaminated runoff from the parking lot from flowing into the creek.

Thank you for taking the time to review the Saint Vrain Creek Coalition's initial comments of the South Saint Vrain design plan. We look forward to the opportunity to comment further as the plan progresses. If you have any questions, please feel free to contact me.
Sincerely,
Cecily Mui Watershed Coordinator Saint Vrain Creek Coalition

DRAFT

PO Box 706, Longmont, Colorado 80502|303-774-4514|office@saintvraincreekcoalition.org

Lyons Watershed Board

Lyons Watershed Board Meeting Minutes – June 8, 2016

Present:
Dave Fenity
Larry Quinn- [interested in old S to Bohn park plan and proposed martin addition.]
Sloane Nystrom
RIchard Hoss
Coco Gordon
Jeff Crane
James Rowlinson, S2O.
Joe Kabala
Matt Rooney

Rooney discussed that the LWB has been given the charge by the BoT to provide some feedback to the design team as well as recommendations to the BoT for the Bohn park design. Our goal is to work collaboratively in an effort to be efficient with everyones's workload and timeframes. And we are not sure how best to do that and look to design folks to assist. LWB asked for James to give a summary. Rooney also explained that according to the town rules and guidelines, Scott Shipley had to recuse himself from any discussion, participation, or voting because he financially benefited via S2O.

James gave us a summary:
This section is steep. 1.75% grade per Nate last meeting but James clarified that it is 2.5% grade. Moderate erosion occurring in sections. S2O addressing it with fish passage structures, "Drops" and grade control. Pool-riffle concepts. All 5 drops structures [Called grade control structures per James] are required to replace them as close to possible original location.
Jeff Crane asked if the structures can be closer to grade vs drops. James said drops are to provide fish habitat and dissipate energy. He also said that the drops and J hooks are placed to provide calm water for public entry points. Top drop and lowest drop are for river erosion around bridge and steep drop. One drop is 2ft over course of 12ft distance [which conflicts with previous LWB meeting where drops were stated to be 6-12in.] Random boulders in pools and throughout. lots of woody debris coming. They are working with existing sand bars to have flood bench and low flow meandering design. James stated there will be a lot more wood structures in the design as well as a lot of large boulders in the design.

Major concern stated by James- Most of park will get wet. 2k and 2.5k CFS will flood much of the park, which is 10+yr flood levels. Martin 'overtops' at 1700cfs.

Sloane stated that we are currently at a 30-50% conceptual design stage right now and details are being determined. [Sloane, please confirm this is correct, as my notes were not fully clear to me]

Jeff Crane: Asked what is proposed overall usage/goal. Said this section is, according to CPW, is fish habitat focused and Other board members agreed that was our understanding. And Rooney asked again our goal of restoration- is it fish focused? multifaceted? answer- everyone nodded that it is fish focused but James said multifaceted- recreation, grade control with drop structures, fishing, boating, and tubing. We agreed it is to provide a natural channel design with a focus on fish habitat that allows multiple usages.

Discussion of the drops ensued. Crane asked why have drops at all and why not have them at grade? Rooney commented that the typical drops of 6-12 in do not provide fish habitat in the pools. The current is too fast and

the fish cannot stay stationary to feed without expending too much energy and so deep pools that are downstream of a drop are not conducive to fish habitat. They are not a natural pool flow rate and fish cannot feed there without expending too much energy. If drops are going to be installed that are a 6-12in drop, or more [one is 2ft over 12ft distance] then measures to provide large boulders in the pools and other measures to make the pools habitable to fish. Also making the drop structures differently so there is a 50-100% space between boulders to allow a less focused flow in the pool is a good option for natural river restoration techniques.

In the end LWB: We recommend a natural stream design, which is what it sounds like the goal is for everyone present tonight. Much of what we proposed James said is the current goal and plan. So it appears we all have a very similar vision. We agree that this reach is habitat focused for aquatic wildlife- fish and macro invertebrates.

Our comments are that we currently recommend the following [LWB members please clarify or correct me on anything included here]:

1. A riffle pool design with boulders and have drop structures at grade and not have1- 2ft drops as well as likely no 6" drops and with a low flow meandering channel. The slope of 1.75-2.5degree drop can be managed without having drop structures above grade or drops structures less than 6in. Instead of the large drops and J hooks, large boulders can provide the habitat, energy dissipation, and river flow controls needed. We all agreed larger boulders were to be considered as well as are desired. We did not define the size. Can we do that now. I propose 3-5ft diameter?

2. We propose greater amounts of random wood installed and there are many different techniques that are safe for boaters and tubers but provide a healthy ecosystem for the aquatic biology. For instance, logs can be installed looking similar to a random fallen tree along the bank that face either up or downstream that can be anchored by large boulders and and sit in holes to provide cover. Logs can also be installed to provide the same benefits as rock vanes with one end buried in the bed of the channel and the other end buried in the riverbank while the middle is exposed providing a place for fish to get under and hide. Fish lunkers are constructed wood overhangs that can be built to look quite natural and provide ample cover for fish. These and other wood applications can add complexity to the stream bank and provide many small micro-eddys for additional aquatic habitat. Many of these techniques can be achieved instead of J hooks.

3. Vertical banks on the outside bends of the thalweg can be stabilized with large boulders and provide long shallow point bars on the opposite side of the river. These point bars are places where sand and gravel can deposit and provide low-gradient places for folks to get into the river.

ACTION ITEMS:

1. Sloane will find out the from the grant the definitions of the drop structures that grant explicitly states are needed [the replacement of the 5 drops that were there previously.] She is going to look at the distance or design of the drops as defined in the grant and let us know. She will assess if they can they be over longer distances, ex. 50ft or 100ft or 100yds.

2. Design team please come up with some other drop structures designs- over longer distances, boulders with a 50-100% diameter of boulder spaces in between them, redefine as grade control. 2. Please come up with multiple wood design structures and how they would be incpoporated in the overall design. 3. Please provide some options to replace J hooks- with boulders and wood structures.

3. Currently Dave Cosgrove will present monthly to LWB the design for discussion. Rooney will ask Dave C

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and Scott S if this is frequent enough for them to keep their workflow functional and efficient. Should we communicate more frequently?

Once the LWB has the information from these action items, we can then amend our recommendations as needed.

Thanks all who attended. Please correct any of these notes within 48hrs. I will submit them to the town.

Matt

Colorado Parks and Wildlife

Ben Swigle

South Fork St. Vrain – Bohn Park Stream Restoration Components

A. Boulder Cross Vane appropriate, install with conjunction with over-flow channel.

B. Existing overflow channel, connect to river @2,500 CFS or appropriate flow.

C. Remove channel spanning structure, use smaller structure (log vane/boulder cluster).

D. Remove access point and relocate downstream, grade banks.

E. Remove J-hook F. Install J-hook at this location to direct flow on North Bank.

G. Shape overflow channel such that it's not at a 90 angle (intake).

H. Location of low-slope river access on inside bend.

I. Install large toe wood.

J. Remove channel-spanning vane, use J-hook or log vane.

L. Create lateral scour pool, redstone blocks for stabilization not approved.

M. Replace channel spanning boulder vane with single J-hook to deflect flow to North bank.

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Matthew Kondratieff, Tuesday July 12, 2016

Hi Scott and Nathan,
I think Ben captured almost all the comments we made on the site visit with you guys. I had a few points that I wanted to make in addition to his that I will include here:

1) In the riffle locations (for example, station5328.50-5327.00; 5326.50-5325.50; 5322.50-5321.50; 5319.00-5318.00), I would use a similar concept as you used in Meadow Park between WWP structures (alternating low elevation vanes and low-set boulders).

2) The best quality lateral scour pools for fish habitat are located at locations on outside meander bends at the following stations: 1) upstream of station 5330.99 (if we can get permisssion), 2) at station 5325.00 (north bank especially if we can re-align the channel to create a flatter gradient), 3) at station 5322.50 where a point bar is already naturally forming on the river-left/north bank, and 4) the pool formed at the confluence of the North St Vrain and South St Vrain Creeks (formed by converging flows). I would invest the most effort into these pools and I would say the best locations for installing toe wood are on the outside bends at these locations.

3) Consider adding a layer of embedded large cobble/small round boulders as a grade control feature (or a constructed buried sill) at the entrance to the Q2000 and Q2500 floodways to stabilize the entrance of these floodways and protect against scour at extreme flows...

4) Please update plans to include channel re-alignment somewhere between stations 5325.50 and 5321.50 (outside bend). Show proposed new bank realignment and proposed construction of point bar opposite...

5) Are you still considering a grade control structure at the NF and SF confluence? Consider large boulder features upstream of pool on SF channel?

6) We prefer NOT to cable large wood if possible. We prefer burying or "keying" large wood further back into the banks instead... See my examples (construction) in previous emails.

7) If the Q2500 and Q2000 floodways will not be wet most of time, I recommend using boulders as toe stabilizing techniques and NOT large wood. Wood installed in the dry will rot very quickly. I would recommend saving large wood for the wetted (perennial) channel. The large wood should be located at or below the predicted water surface elevation based on hydrologic modeling for the low flow period/discharge.

8) Based on these comments and our conversation during the site visit, many of the proposed large logs, short vanes, cross vanes, etc. should be reviewed and re-

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evaluated for function. In general, pool enhancement/grade control structures associated with lateral scour pools (along bends) should be long vanes or J-hooks. Pool enhancement/grade control structures located in straight sections of the channel should be cross vanes to form contraction scour pools...

9) Most of bank grading work to establish a lower elevation floodplain bench was located from station 533.99 downstream to 5325.00 or so based on my memory...

I hope we get another chance to review these plans once you have incorporated our revisions... Thanks for allowing us the opportunity to comment. Let me know if you have questions.

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Park & Recreation Commission

Lyons Town Hall, Lyons, CO

Meeting Minutes: June 13th, 2016

Attendance: Mary Chase, Chris Cope, Dave Cosgrove, Fay Marshall, Dave Orback, Jeff Christy, Doug Stahl, Sloane Nystrom, Ian Brighton, Pam Barnes, Veronika Gaia,

LaVern Johnson

BOT Liason: Jim Kerr

Not in Attendance:

Secretary: Chris Cope

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Approved: Previous Minutes (May 9)

Public Participation: *None*

Agenda items for discussion:

1) DHM and S2O-Bohn Park Plan Presentation-50% stage

Mark Wilcox with DHM presenting
Overview of planning process: public meetings, LRAP, other master plan docs
Scope of work
Design goals
50% plan shown. 3 tennis courts, possible park office building
Skatepark options (bowl + street course behind softball fields)
Concrete sidewalk from parking lot to skatepark
Concerns voiced about skatepark location and concrete on west side.
Ian was concerned that the area between the two proposed skate parks could become over-developed and that the trail connection should remain the priority.

Water feature for kids near playground

Location of storage building and that the appearance match Steamboat Mtn. - Ian

Concerns on Ecocycle appearance and traffic between Bohn and Ecocycle – Veronika

Scott Shipley of S2O reviewed stream structures
Goals: flood mitigation, access, riparian feel
Funding sources
Several overflow channels added to guide water
Bank restoration
Rosgen cross-vane drop structures

Next steps in the planning process
Final design in late summer or fall
Phasing and implementation strategies for funding

PRC discussed making a statement to the board in support of the plan.
Continued discussion about concrete on west side

Ian motioned to approve 50% design. Mary second. All in favor.

2) Johnson (Meadow) Park Phase II Update
River restoration is complete
RV park open
Park host is there
RockyGrass opening, then recovery time, then soft opening for town on August 13.
Then closed again for Folks Fest. Then recovery time and grand opening on Labor Day.

3) LOG Recap – postponed because Rebecca went on vacation

4) Good Old Days/River Run 5K

June 25th, Lyons River Run, kayak tank, climbing wall

Summer programming has been very disappointing. Trying to work with Elementary school. Many towns work with schools on day camps.

Dog access at Heil Valley Ranch – Ian
Trail from trailhead to the south 10 acres.
County is already looking the other way, but would be unwilling to officially sanction it. Given this, discussion was dropped.

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Ian showed a lot of interest in developing the north trail into Steamboat Valley

BoT is requesting budget requests come in by August/September for 2017

Fay is working on a walking arbor tour for people to walk around town and see various notable trees.

July 11th won't be very well attended, so motion to meet again in August.

Next PRC meeting: In the Depot, Monday, August 8th @ 6 p.m.

Meeting start time: 6:00 p.m.; Adjourned 8:15 p.m.

Minutes submitted by: Chris Cope

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Appendix B – Response Letters to Committees

St Vrain Creek Coalition

July 22, 2016

Cecily Mui
Watershed Coordinator
St. Vrain Creek Coalition
P.O. Box 706
Longmont, CO, 80502

Ms. Mui-

On behalf of the Town of Lyon and the DHM/S2o Design Team for Bohn Park I would like to thank you and your organization for taking the time to review our 50% plans for Bohn Park. We realize that you have many other projects and priorities in this busy recovery period and appreciate that you made time for our project.

I did want to respond to the input that you gave both non-specifically and specifically. As we are in the design-iteration phase of our project I would like to say, non-specifically, that we hear your concerns and advice and are pursuing a design that meets your intent in both process and in physical reality. We will bring our 90% design set back to the Coalition in order to provide an opportunity for further review and comment.

To specifically address the items brought up:

Collaboration and Communication: We have already reached out to the Matrix team and will work with the selected team on Reach 3 once that project is set in motion. Thank you for the contacts there and the opportunity to meet them in person at your last coalition meeting. We will seek out parallels in our work in order to create watershed-level solutions.

In-stream Structures: Agreed. We are, however, at the suggestion of Parks and Wildlife and the Town of Lyon's Watershed Board, decreasing the slope and character of our drop structures in order to meet the Town's aesthetic desires as well as to improve habitat for fish. We are heading towards a longer reach of the river with more meander and the inclusion of lateral pools. We will endeavor to include the complexity and riparian habitat that are required for a successful project in this river as well.

Recreation: We are in agreement with your goal statement that Bohn Park's focus is more on natural area park rather than the more intensive in-stream uses planned for Meadow, while still providing opportunities for fishing, ADA access, and general access for the public.

Water Quality: In this instance we will include a settling pond for our run-off in the park. However, during flooding events there is not the capacity to store and let-settle the volume of water anticipated. We believe that, on a day-to-day basis clean water will run off this project. During the major storm events we will design to minimize the amount of erosion and sediment that wash off of Bohn Park into the river.

Please let us know if you have any further questions or comments,

Thank you,

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DRAFT

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Colorado Parks and Wildlife

July 22, 2016

Benjamin Swigle
Aquatic Biologist
Platte Basin Area 2- Fort Collins/Boulder
317 West Prospect Street
Longmont, CO, 80502

Ben-

On behalf of the Town of Lyon and the DHM/S2o Design Team for Bohn Park I would like to thank you and your organization for taking the time to review our 50% plans for Bohn Park. We realize that you have many other projects and priorities in this busy recovery period and appreciate that you made time for our project.

I did want to respond to the input that you gave both non-specifically and specifically. As we are in the design-iteration phase of our project I would like to say, non-specifically, that we hear your concerns and advice and are pursuing a design that meets your intent in both process and in physical reality. We will bring our 90% design set back to Parks and Wildlife in order to provide an opportunity for further review and comment.

To specifically address the items brought up (there are many, so I will be brief and I realize I may have missed some of the suggestions. We have comprehensive notes from our site walk.):

Channel Realignment: We will be moving the channel to the North near the North overflow channel providing for lateral pools as the river bends to the south and back to the north again in this reach allowing for depositional benches on the inside of each bend. As discussed, we will likely create the outside toe with rock in these locations for safety reasons. We may attempt to design some wood into the upstream-most portions of these bends.

Overflow channels: We will build a sill and I am consulting with Matt Kondratieff for some novel ideas for this. Alternately we will use rock and cobble as you suggest.

Wood: We will not be cabling woody debris. In cases where needed we will use buried wood with rock reinforcement. Woody debris will be mostly below the water's surface (some is planned in areas where it will degrade over time, but not in reinforced areas.

Floodplain Benches: will be installed in the areas that we discussed.

Riffle locations: Two-three of the five planned drop structures are being transformed to riffle runs. We will use a similar method to Meadow Park, as you suggested, in these reaches for creating riffles.

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We will also consult Ben's graphic as we work through our design changes to ensure that we capture all of the suggestions made to the greatest degree possible within the Park environment. Thank you again for your help with this, we will forward revised plans once they have been prepared.

Please let us know if you have any further questions or comments,

Thank you,

Scott Shipley

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Lyons Watershed Board

July 22, 2016

The Watershed Board
432 5th Avenue
P.O Box 49
Lyons, CO 80540

Members of the Town of Lyons Watershed Board-

On behalf of the Town of Lyon and the DHM/S2o Design Team for Bohn Park I would like to thank you and your organization for taking the time to review our 50% plans for Bohn Park. We realize that you have many other projects and priorities in this busy recovery period and appreciate that you made time for our project.

I did want to respond to the input that you gave both non-specifically and specifically. As we are in the design-iteration phase of our project I would like to say, non-specifically, that we hear your concerns and advice and are pursuing a design that meets your intent in both process and in physical reality. We will bring our 90% design set back to the Watershed Board in order to provide an opportunity for further review and comment.

To specifically address the items brought up:

Drop Structures: We are working in the flood model now to transform some of the structures to a "hybrid design" similar to what you described in your letter. In these reaches you might consider the drop structure to be move of a riffle/run character.

J-hooks, Point Bars, Bendways: We will utilize larger rock as suggested in these structures.

Woody Debris: We are looking for appropriate ways and means to install more woody debris in this reach. There are some new and novel approaches to doing this.

Vertical Banks on The Outside of Bends: This has been included in our updated designs.

Pedestrian Access Points: We are looking at pedestrian access points from a habitat value perspective and designing accordingly.

Thank you again for your help with this, we will forward revised plans once they have been prepared. Please note that further amendments to the design, based on P & W comments, are shown below for informational purposes.

Please let us know if you have any further questions or comments,

Thank you,

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Scott Shipley

Copied from P & W letter:

Channel Realignment: We will be moving the channel to the North near the North overflow channel providing for lateral pools as the river bends to the south and back to the north again in this reach allowing for depositional benches on the inside of each bend. As discussed, we will likely create the outside toe with rock in these locations for safety reasons. We may attempt to design some wood into the upstream-most portions of these bends.

Overflow channels: We will build a sill and I am consulting with Matt Kondratieff for some novel ideas for this. Alternately we will use rock and cobble as you suggest.

Wood: We will not be cabling woody debris. In cases where needed we will use buried wood with rock reinforcement. Woody debris will be mostly below the water's surface (some is planned in areas where it will degrade over time, but not in reinforced areas.

Floodplain Benches: will be installed in the areas that we discussed.

Riffle locations: Two-three of the five planned drop structures are being transformed to riffle runs. We will use a similar method to Meadow Park, as you suggested, in these reaches for creating riffles.

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We will also consult Ben's graphic as we work through our design changes to ensure that we capture all of the suggestions made to the greatest degree possible within the Park environment. Thank you again for your help with this, we will forward revised plans once they have been prepared.

Please let us know if you have any further questions or comments,

Thank you,

Scott Shipley

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Appendix C – Feedback/Response Matrix

Committee	Recommendation	Response	Reasoning
St Vrain Creek Coalition	**Collaboration and Communication** - Recommendation for the Bohn Park Design Team to collaborate with other porjects currently underway on the St Vrain Watershed, in particular the projects run by Matrix on SSV reaches 1 & 2.	S2o reached out to Matrix Design Group to discuss their plans for reaches 1 & 2. They are not yet at a position to say, but will share information when it is available.	It is worth considering the watershed as a whole, rather than just one section dependant on the upstream reaches. A wholistic approach would benefit the all projects on the St Vrain.
	In Stream Structures - Must be able to manage the change in slope through the project area, while incorporating fish passage into the design and improving aquatic habtiat opportunities in the reach.	Fish passage was incorporated into the design of the double cross vane structures, with a 'low flow fish notch' designed into the centre of the vane at the thalwegs grade, allowing for fish passage in low flow situations.	In certain locations of the reach, grade control structures are crucial for managing the river's slope and the geomorphic risks associated with them. EG: headcut, erosion
	Recreation - SVCC is pleased that Bohn Park focuses on natural play area rather than purely whitewater rereation. Similarly pleased with public access plans for fishing and other in-stream recreation, including a trail access system and an ADA accessible fishing area.	No whitewater structures are designed for this reach. Steps were taken to ensure the train access system is prominent, reasonably plentiful and has the capacity for typical visitors.	As a public park, a purpose must be served for the users. Visitors will want to access the river, and if it is not readily provided, they will create un-condoned social trails to create river access, causing harm to restoration areas. By controlling visitors' access points, specific restoration areas will remain undisturbed
Colorado parks and Wildlife	**In stream structures** - First Boulder cross vane appropriate if installed in conjunction with overflow channel. Second Cross vane should be rremoved and replaced with log vane/boulder cluster. Third cross vane replaced with log vane/boulder cluster. Fifth cross vane replaced with J-Hook	First Cross vane retained and installed in conjunction with overflow. Second cross vane removed, replaced with hardened riffle crest and toe. Third cross vane retained. Fourth Cross vane removed, replaced with hardened riffle crest (LWB recommendations). Fifth Cross vane retained.	First cross vane lowers velocity, WSE and energy going into bridge to aid freeboard requirements. Second cross vane can be replaced by riffle crest and toe, providing more natural river appearance. Third cross vane was required to give the change in grade necessary to hold the lateral scour pools developed on both bends of the S-turn. Fourth Cross Vane removed and replaced with hardened riffle crest and toe for more natural stream appearance and habitat creation. Fifth cross vane retained to prevent headcut, and reduce elevation the 2-3 feet required to match elevation in confluence. Also reduces the velocities into the north bank of the St Vrain, reducing erosion potential to private property on the north bank.
	Public Access Points - Remove access points at station 1400, regrade bank, and relocate downstream at inside of widened S-turn	Access point removed and relocated downstream at station 1200, at the inside of the first bend of the widened S-turn	Widened S-turn provides a sediment deposit point bar, which CPW stated as providing little ecological value. The beach would be an attractive and beneficial public access point.
	Relocate Entrance to Overflow channel - Shape overflow channel so it is not at a 90 degree intake angle	Angle of overflow intake retained.	An angle of 90 degrees encourages the overflow to act as more of a wier, with low velocities and erosion potential, reducing maintenance costs. Adjusting the angle to be flush with the main channel would encourage it to form its own channel potentially unpredictably
	Create Lateral Scour Pool - Create scour pool at both bends of the S-Turn	Scour pools created and encouraged through widening the bends	CPW stated that scour pools were of significant ecological importance, especially on the second bend of the S-Turn. They provide substantial aquatic habitat, and the pool at
	Remove stone terracing - CPW does not approve the stone terracing by the river access points	Stone Terracing Retained in lower quantities.	Stone terracing is required for scour protection of the banks in certain locations, and provides an attractive area for park users to gather and easily access the river. It is also a useful for the ADA fishing access point in providing stable ground for the disabled.
Lyons Watershed Board	**Remove double step cross vanes and replace with riffle pool design.**	As with CPW recommendations. First Cross vane retained and installed in conjunction with overflow. Second cross vane removed, replaced with with hardened riffle crest and toe. Third cross vane retained. Fourth Cross vane removed, replaced with hardened riffle crest (LWB recommendations). Fifth Cross vane retained.	First cross vane lowers velocity, WSE and energy going into bridge to aid freeboard requirements. Second cross vane can be replaced by riffle crest and toe, providing more natural river appearance. Third cross vane was required to give the change in grade necessary to hold the lateral scour pools developed on both bends of the S-turn. Fourth Cross Vane removed and replaced with hardened riffle crest and toe for more natural stream appearance and habitat creation. Fifth cross vane retained to prevent headcut, and reduce elevation the 2-3 feet required to match elevation in confluence. Also reduces the velocities into the north bank of the St Vrain, reducing erosion potential to private property on the north bank.
	Increase amount of woody debris. Install in a variety of manners other than only J-hooks. Recommended fish lunkers to provide undercut for cover.	Increased amount of woody debris to be installed. Additional rootwads, cable anchored fish lunkers and fallen trees were added throughout the reach as well as in backwater wetland, and the southern overflow channel's pools.	Woody debris provides ample benefits for aquatic habitat, including cover for fish as encouraging invertibrate activity.
	Use boulders to encourage development of long shallow point bars.	Boulders and J-hooks were added on the inside of the two bends of the S-turn, while the radius of the turn was increased around both bends.	The placement of these boulders will encourage sediment deposits and point bars on the inside of the turns, while simultaneously encouraging the development of lateral scour pools suggested by CPW and providing river access to park users.

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12. BOT Presentation
July 18, 2016

TOWN OF LYONS

PARKS FLOOD RECOVERY PLANNING PROCESS

BOT Work Session July 18, 2016

LYONS COLORADO

DHM DESIGN

S2O

Photograph courtesy of Ed Bruder

Overview of Lyons Parks Flood Recovery Planning Process

- Develop a plan to restore and enhance Bohn Park (Park plan approved 11.15.15)
- Develop a plan to restore and enhance Lyons Valley River Park (McConnell Ponds) and Corridor Trail Areas
- Develop a Comprehensive Trails Plan
- Develop a River Restoration Plan for designated park areas
- Address concepts for new opportunities for potential flood acquisition properties
- Operations and Maintenance Plan/ Financial Analysis

Planning Process

- Work Plan & Schedule
- A draft process and timeline to facilitate the Master Plans' review by the Town Board of Trustee's was prepared with
- dates and milestones as follows:
- • **7/29:** Initial Meeting with Town of Lyons and Project Team
- • **8/5: Public Meeting 1** - Bohn Park Project History & Background, Initial Public comment
- • **8/12:** Environmental Assessment / Floodplain Assessment with Town of Lyons, DHM Design, S2O Design, & Icon
- Engineering
- • **8/12: Public Meeting 2** - Lyons Valley River Park - Project History & Background, Initial Public Comment
- • **8/19: Public Meeting 3** - Trail Planning, Park Connectivity & Rec Opportunities - Project History & Background,
- Initial Public Comment
- • **8/21:** Lyons Parks Operations & Maintenance meeting with Town of Lyons, DHM Design, S2O Design, & Ballard*King
- • **9/3: Public Meeting 4** - Bohn Park Draft Concept - Public Input & Discussion
- • **9/10: Public Meeting 5** - Lyons Valley River Park Draft Concept - Public Input & Discussion
- • **9/14:** Review of final direction for Bohn Park Preferred Alternate with Town of Lyons
- • **9/17: Public Meeting 6** - Bohn Park Plan - Wrap Up
- • **9/18:** Lyons Parks Operation & Maintenance Analysis Meeting with Town of Lyons, DHM Design, S2O Design, &
- Ballard*King
- • **9/28:** Planning Documents revised and reviewed by Carroll Residence
- • **10/2:** Planning Documents revised and reviewed by Carroll Residence
- • **10/8: Public Meeting 7** - Trail Planning, Park Connectivity & Recreation Opportunities Plan - Review
- • **10/15: Public Meeting 8** - Lyons Valley River Park Plan - Wrap Up
- • **10/21:** Lyons Parks Operation & Maintenance Analysis Meeting with Town of Lyons, DHM Design, S2O Design, &
- Ballard*King
- • **10/29: Public Meeting 9** - Lyons Parks Flood Recovery Plan - Presentation of Final Plans
- • **11/16: Board of Trustees Meeting** – Work session to review Plan Updates and Operation and Maintenance Analysis
- • **11/30: Board of Trustees Meeting** – Review Bohn Park Planning Document for approval

Stakeholder Input/ Public Outreach

Public Meetings

Public meetings 1-3
8/5 – Bohn Park-Project History & Background, Initial Public Comment
8/12 – Lyons Valley River Park- Project History & Background, Initial Public Comment
8/19 – Trail Planning, Park Connectivity & Recreation Opportunities-Project History & Background, Initial Public Comment

Public meetings 4-6
9/3 – Bohn Park Draft Concept-Public Input & Discussion
9/10 – Lyons Valley River Park Draft Concept-Public Input & Discussion
9/17 – Bohn Park Plan-Wrap Up

Public meetings 7-9
10/8 – Trail Planning, Park Connectivity & Recreation Opportunities Plan-Review
10/15 – Lyons Valley River Park Plan-Wrap Up
10/29 – Lyons Parks Flood Recovery Plan-Presentation of Final Plans

Stakeholder Input/ Public Outreach
Public Meetings

Bohn Park - What we've heard…

- More trails
- No Roads!/ Reduce roads in park
- Larger Skatepark
- 2 Ballfields only
- Change ballfield orientation/ back to back or point to pint
- More natural features
- More tennis courts
- Soccer
- Water features
- Informal natural play
- 2 playgrounds
- Winter recreation
- Less is more…
- Maintenance
- Public Art

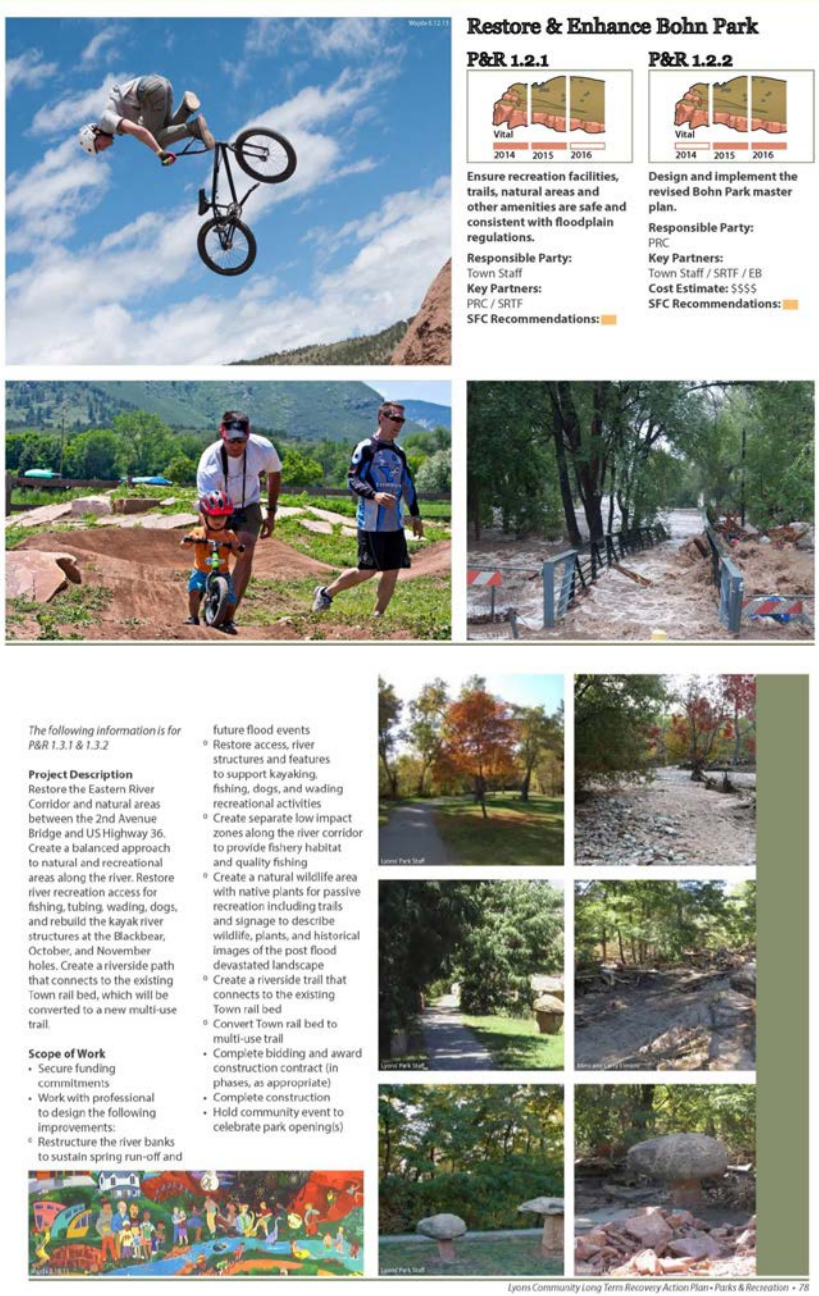
Project Goals

Planning Process
Lyons Recovery Action Plan (LRAP)

- **LRAP GUIDING PRINCIPLES**
  - Resident driven
  - Sustainability
  - Resilience

Planning Process

- Project Goals/ Guiding Principles
  - Parks, Open Space and Trails (P.O.S.T.) Plans of 2000 and 2008,
  - Bohn Park Master Plan 2008
  - Other Lyons strategic master planning documents.
  - Lyons Recovery Action Plan (LRAP)
  - Town Comprehensive Plans/ Goals
  - St. Vrain Watershed Master Plan
  - Town PDG document
  - Lyons Parks Flood Recovery Planning Process
  - SRCAP



Restore & Enhance Bohn Park

P&R 1.2.1

Vital

2014 2015 2016

Ensure recreation facilities, trails, natural areas and other amenities are safe and consistent with floodplain regulations.

Responsible Party: Town Staff

Key Partners: PRC / SRTF

SFC Recommendations:

P&R 1.2.2

Vital

2014 2015 2016

Design and implement the revised Bohn Park master plan.

Responsible Party: PRC

Key Partners: Town Staff / SRTF / EB

Cost Estimate: $$$$

SFC Recommendations:

The following information is for P&R 1.3.1 & 1.3.2

Project Description

Restore the Eastern River Corridor and natural areas between the 2nd Avenue Bridge and US Highway 36. Create a balanced approach to natural and recreational areas along the river. Restore river recreation access for fishing, tubing, wading, dogs, and rebuild the kayak river structures at the Blackbear, October, and November holes. Create a riverside path that connects to the existing Town rail bed, which will be converted to a new multi-use trail.

Scope of Work

- Secure funding commitments
- Work with professional to design the following improvements:
  - Restructure the river banks to sustain spring run-off and future flood events
  - Restore access, river structures and features to support kayaking, fishing, dogs, and wading recreational activities
  - Create separate low impact zones along the river corridor to provide fishery habitat and quality fishing
  - Create a natural wildlife area with native plants for passive recreation including trails and signage to describe wildlife, plants, and historical images of the post flood devastated landscape
  - Create a riverside trail that connects to the existing Town rail bed
  - Convert Town rail bed to multi-use trail
- Complete bidding and award construction contract (in phases, as appropriate)
- Complete construction
- Hold community event to celebrate park opening(s)

Bohn Park 2016 Flood Recovery Project Scope

- The Bohn Park Flood Recovery Final Design and Bid Project will address the following fundamental goals outlined in the Lyons Recovery Action Plan and Lyons Parks Flood Recovery Planning Process for ensuring that Bohn Park continues to meet local and regional demands:

- 1) Reconstruction of facilities in Bohn Park to address the immediate recreational needs of Lyons, especially active/athletic uses. We will create a place to gather and play as a community again.
- 2) Creation of an attraction that will draw visitors to our Town. This is essential to ensure that the Town will remain economically viable and maintain its reputation and brand as a destination for healthy, active, outdoor lifestyles.
- 3) Reestablish trail connectivity, both locally and regionally, include loop trails.
- 4) Restore and augment river access and river habitat.
- 5) Restore/Replace picnic opportunities, including shelters and increase size.
- 6) Re-establish natural areas and consider wetlands.
- 7) Installation of public art along trails.

TOWN OF LYONS PARKS - FLOOD RECOVERY PLANNING PROCESS

OCTOBER 29th, 2015 - PUBLIC MEETING

BOHN PARK
PREFERRED ALTERNATE

SCALE: 1"=100'-0"

LYONS COLORADO | S2O | OHM DESIGN

TOWN OF LYONS, COLORADO
RESOLUTION 2016-36

A RESOLUTION APPROVING AND ADOPTING THE FINAL PLANNING REPORT OF THE TOWN OF LYONS PARKS FLOOD RECOVERY PLANNING PROCESS

WHEREAS, the Town of Lyons (the "Town") suffered substantial damage in the September 2013 flood, and continues the steady recovery from such flood; and

WHEREAS, the Town, with the assistance of DHM Design and S20 Design and Engineering, facilitated completion of the Lyons Parks Flood Recovery Planning Process ("Planning Process") in November 2015; and

WHEREAS, the Planning Process utilized the Lyons Recovery Action Plan and other existing Town planning documents and incorporated information about proposed improvements, amenities, and facilities that were developed and accepted by the public through public meetings and comments gathered on a project web site as well as comment cards provided at each meeting; and

WHEREAS, as a result of the Planning Process, Town staff and consultants have developed a Final Planning Report of the Town of Lyons Parks Flood Recovery Planning Process ("Report"), which contains plans to restore and enhance Bohn Park, Lyons Valley River Park (McConnell Ponds), and Corridor Trail areas; to develop a comprehensive Trails Plan and other plans for designated park areas and other associated public lands; to develop concepts for potential use of properties acquired through the flood buy-out program; and to develop a plan to operate and maintain Town parks, trails, facilities, and amenities consistent with a related financial analysis; and

WHEREAS, the Bohn Park Flood Recovery Plan was approved by the Board of Trustees on November 30, 2015, and is currently in the final stages of design; and

WHEREAS, Town staff and consultants presented the Report to the Board of Trustees to ensure that it is consistent with the Board's vision for the long-term design, use, operation, maintenance, and funding of Town parks, trails, facilities, and amenities; and

WHEREAS, pages 48-53 of the Report, which contains concepts for potential use of properties acquired through the flood buy-out program under the heading, "Acquisition Properties/Recreation Opportunities," are not an integral part of the plans developed from the Planning Process and therefore are not included in this approval; and

WHEREAS, the Board of Trustees desires to approve and adopt the Final Planning Report of the Town of Lyons Parks Flood Recovery Planning Process, excluding the "Acquisition Properties/Recreation Opportunities" section found on pages 48-53 of such Report.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF TRUSTEES OF THE TOWN OF LYONS, THAT:

Section 1. The Board of Trustees hereby formally approves and adopts the Final Planning Report of the Town of Lyons Parks Flood Recovery Planning Process, excluding the "Acquisition Properties/Recreation Opportunities" section found on pages 48-53 of such Report.

Section 2. This resolution shall be effective upon its adoption.

ADOPTED THIS 21st DAY OF MARCH 2016.

TOWN OF LYONS, COLORADO

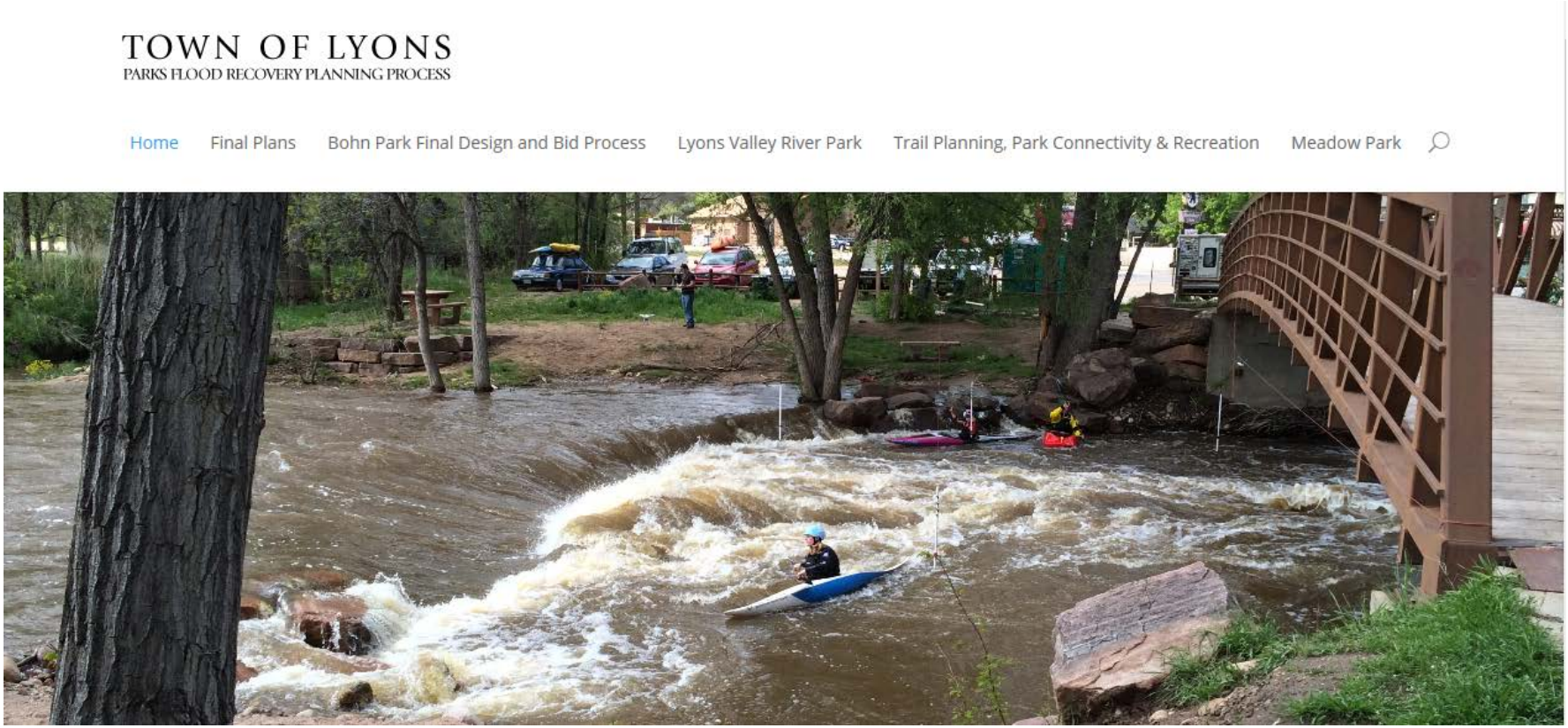
John E. O'Brien, Mayor

ATTEST:

Deb Anthony, Town Clerk

Stakeholder Input/ Public Outreach

PROJECT WEBSITE – WWW.LYONSPARKSMP.COM

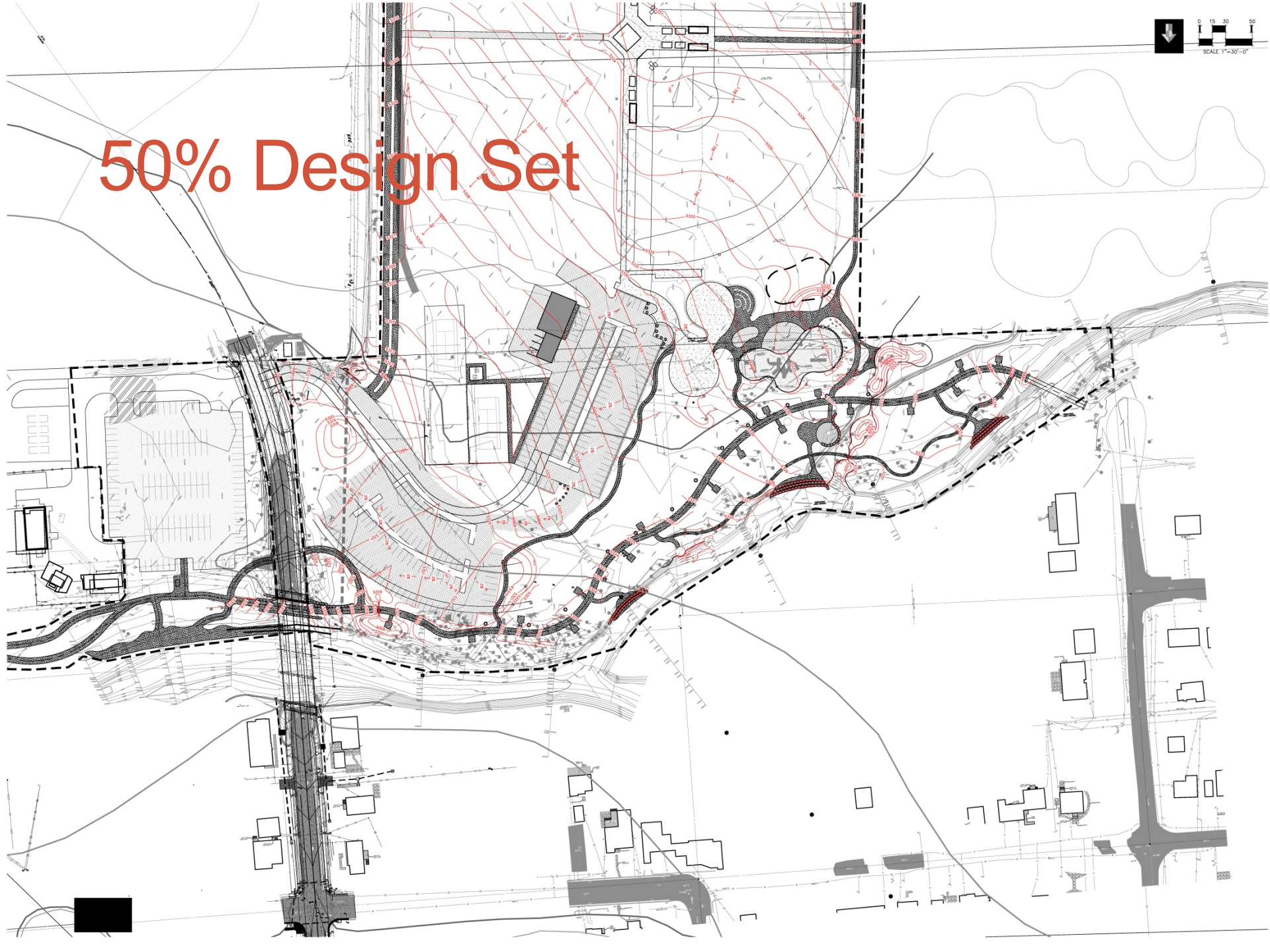


- Feedback opportunities
- - Website updates/ website comments
- - Weekly Updates
- - Open invitation to weekly design team meetings

Summary of Design Goals

Bohn Park Design Goals

- 1) Reconstruction of facilities in Bohn Park to address the immediate recreational needs of Lyons, especially active/athletic uses. We will create a place to gather and play as a community again.
- 2) Creation of an attraction that will draw visitors to our Town. This is essential to ensure that the Town will remain economically viable and maintain its reputation and brand as a destination for healthy, active, outdoor lifestyles.
- 3) Reestablish trail connectivity, both locally and regionally, include loop trails.
- 4) Restore and augment river access and river habitat.
- 5) Restore/Replace picnic opportunities, including shelters and increase size.
- 6) Re-establish natural areas and consider wetlands.
- 7) Installation of public art along trails.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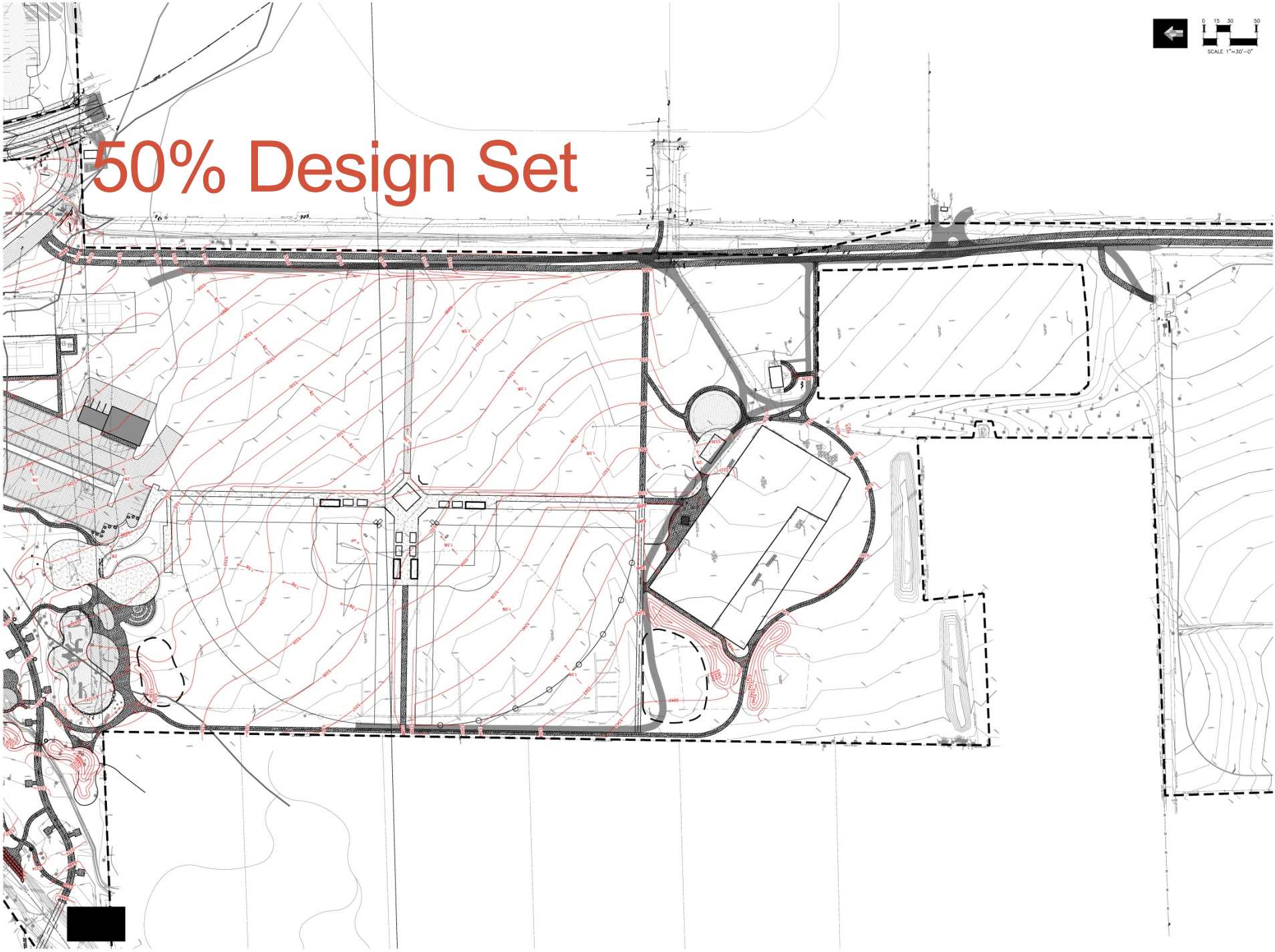
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Stream Basis of Design

Balancing Multiple Objectives

Funding Sources

- FEMA PW20 & PW35
- Town Insurance-CIRSA
- Colorado Water Conservation Board-CWCB
- Community Development Block Grant-CDBG
- Donations and In-Kind Resources
  - Can'D Aid ,Colorado Rockies
- Colorado Parks and Wildlife – Fishing is Fun Grant
- LWCF – State Trails
- Various other sources

*based on reimbursement, prioritization of projects and cash flow impact the ability to complete projects.

Construction Costs…

- FEMA Parks Damage Assessment PW 20
- Whitewater Features Cost - Whitewater Damage Assessment - PW35

Construction Costs…

Bohn Park Flood Recovery Plan

Lyons Parks Flood Recovery Planning Process

Preliminary Cost Estimate

- November 4th, 2015 -

Prepared By: DHM/S2O

ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL
Miscellaneous Demolition / Debris Removal (5%)	LS	1	$292,000.00	$ 292,000.00
Earthwork	LS	1	$100,000.00	$100,000.00
Top Soil	LS	1	$35,000.00	$35,000.00
Crusher Fines	SF	148,034	$2.50	$370,085.00
Post Tension Sport Court	EA	3	$65,000.00	$195,000.00
Flood Memorial	LS	1	$15,000.00	$15,000.00
Gravel Paving (Vehicular Road)	SF	97,269	$4.00	$389,076.00
Concrete Curb Stop	EA	192	$55.00	$10,560.00
Playground Edger	LF	1,376	$15.00	$20,640.00
Concrete / Boulder Retaining Wall	LF	488	$100.00	$48,800.00
Baseball Field	EA	2	$350,000.00	$700,000.00
Baseball Backstop Fencing	EA	1	$5,000.00	$5,000.00
Baseball Field Pole Lighting	LS	1	$175,000.00	$175,000.00
Batting Cage	EA	1	$10,000.00	$10,000.00
Sand Volleyball Courts	EA	2	$10,000.00	$20,000.00
Soil Prep (Native Seed Only)	SF	838,094	$0.12	$100,571.28
Wood Mulch (Shrub Bed)	SF	25,000	$0.80	$20,000.00
Import Top Soil	LS	1	$35,000.00	$35,000.00
Bluegrass Sod w/ Soil Prep	SF	271,506	$0.85	$230,780.10
Native Seed (Hydromulch)	SF	838,094	$0.07	$58,666.58
Shrubs (5 gallon)	EA	600	$50.00	$30,000.00
Evergreen Trees (8'-10' Height B&B)	EA	45	$500.00	$22,500.00
Ornamental Trees (2" Caliper B&B)	EA	3	$450.00	$1,350.00
Deciduous Trees (3" Caliper B&B)	EA	110	$500.00	$55,000.00
Irrigation	LS	1	$150,000.00	$150,000.00
Shade Structure 1 - Prefabricated (150 SF)	EA	1	$20,000.00	$20,000.00
Shade Structure 2 - Prefabricated (800 SF)	EA	1	$ 35,000.00	$35,000.00
Shade Structure 3 - Custom (1,800 SF)	EA	1	$ 180,000.00	$ 180,000.00
Shade Structure 4 - Custom (400 SF)	EA	2	$80,000.00	$160,000.00
Restroom - Custom (900 SF)	EA	1	$500,000.00	$ 500,000.00
Small Playground	LS	1	$ 65,000.00	$ 65,000.00
Large Playground	LS	1	$ 125,000.00	$ 125,000.00
Bike Park Addition	LS	1	$ 15,000.00	$ 15,000.00
Skate Park	LS	1	$300,000.00	$300,000.00
Bouldering Wall	LS	1	$60,000.00	$60,000.00
Slackline Posts	LS	1	$10,000.00	$10,000.00
Picnic Tables	EA	34	$1,500.00	$51,000.00
Benches	EA	10	$1,600.00	$16,000.00
Grill	EA	20	$ 250.00	$5,000.00
Decorative Planters	EA	14	$600.00	$8,400.00
Trash Receptacles	EA	34	$ 1,400.00	$ 47,600.00
Split Rail Fencing	LF	440	$15.00	$6,600.00
Trail Entry Gates (Temporary Overflow Access)	EA	4	$1,500.00	$6,000.00
ADA Fishing Area	LS	1	$32,000.00	$32,000.00
Pump Pit / Well / Pump for Irrigation	LS	1	$ 60,000.00	$ 60,000.00
Park Host Site	LS	1	$48,000.00	$48,000.00
Ecological Restoration	AC	4	$175,000.00	$ 700,000.00
Bohn Park Stream Improvement	LS	1	$ 415,000.00	$ 415,000.00
4th Avenue Bridge (Abutments and Bridge)	LS	1	$80,000.00	$80,000.00

Subtotal	$	6,035,628.96
15% Contingency	$	905,344.34
10% Design & Permitting	$	603,562.90
3% CA Services	$	181,068.87
TOTAL	**$**	**7,725,605.07**

Construction Costs…

- Detailed 50% progress designs
- Meadow Park Construction Bid Results
- Ongoing discussions with contractors and equipment manufacturers
- Construction market
- Increase in active parkland from 7 acres to 35 acres approximate
- 2nd Avenue Trailhead and Parking Lot
- Increase in irrigation

Construction Costs…

Parks Next Steps…

- RFP for Final Design March/ April 2016
- Final Design Bohn Park Summer / Fall 2016
- Phasing and Implementation Strategies based on available funding

- Timelines
  - Bohn Park Construction–Fall 2016 to Summer 2017
  - LVRP – Winter 2017/ Spring 2018 (projected)

Parks Next Steps…

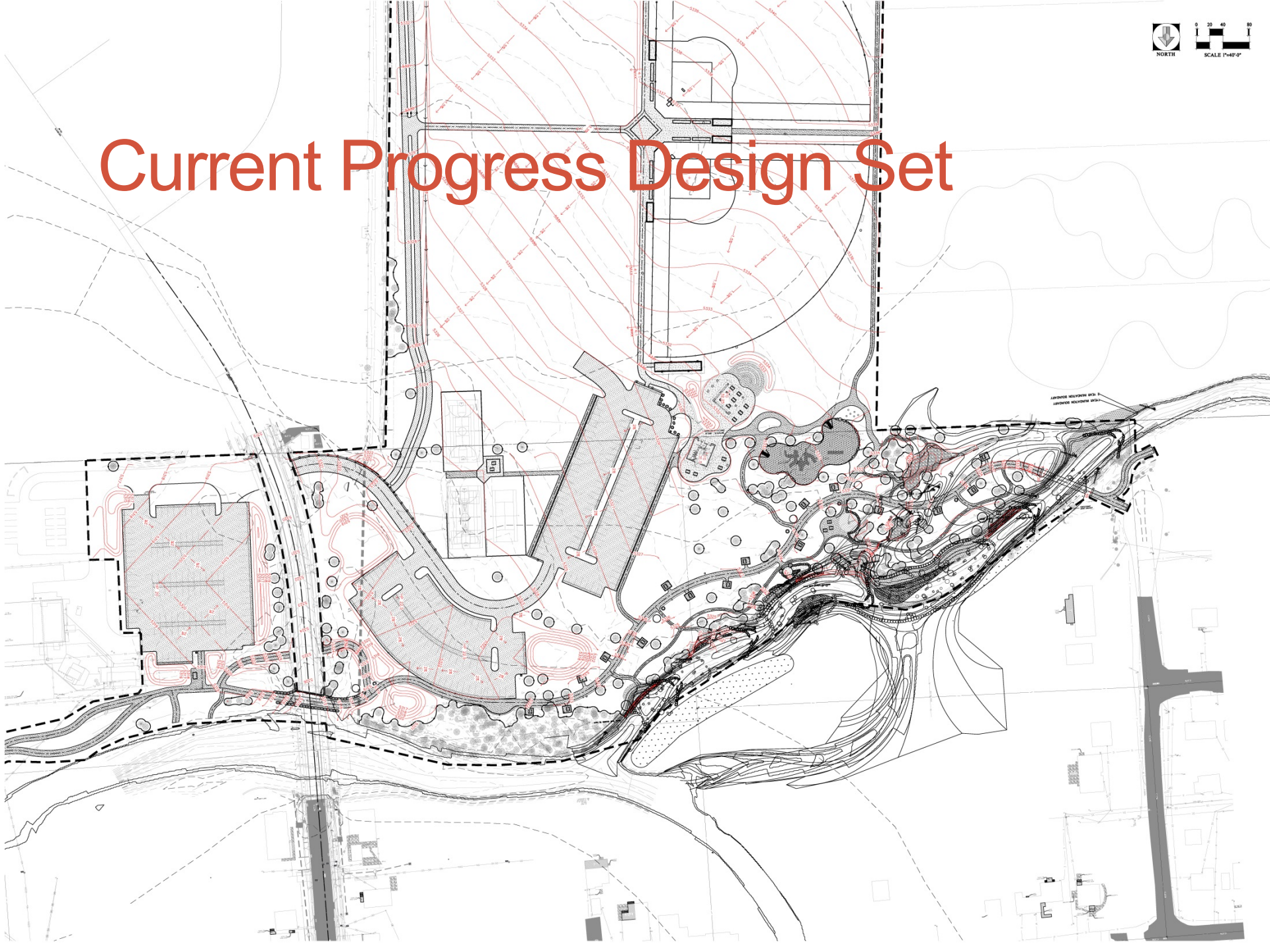
- Project hurdles
  - Floodplain regulation
  - Permitting
  - Funding
  - Cashflow
  - Bidding Process
    - 1 bid package
    - Phasing based on cashflow
    - Multiple Bid Projects

Questions and Answers?

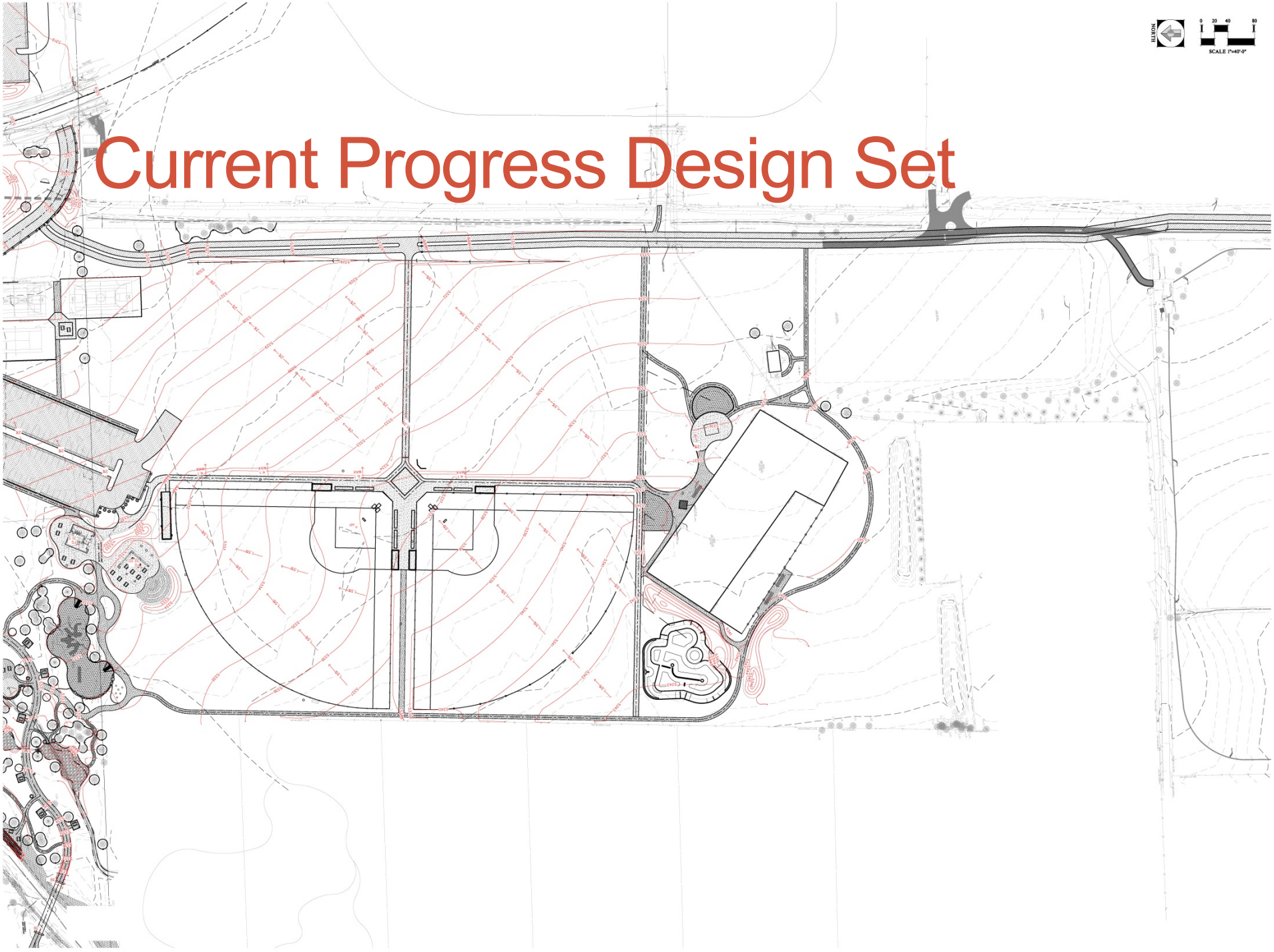
THANK YOU!

WWW.LYONSPARKSMP.COM

Current Progress Design Set



Current Progress Design Set

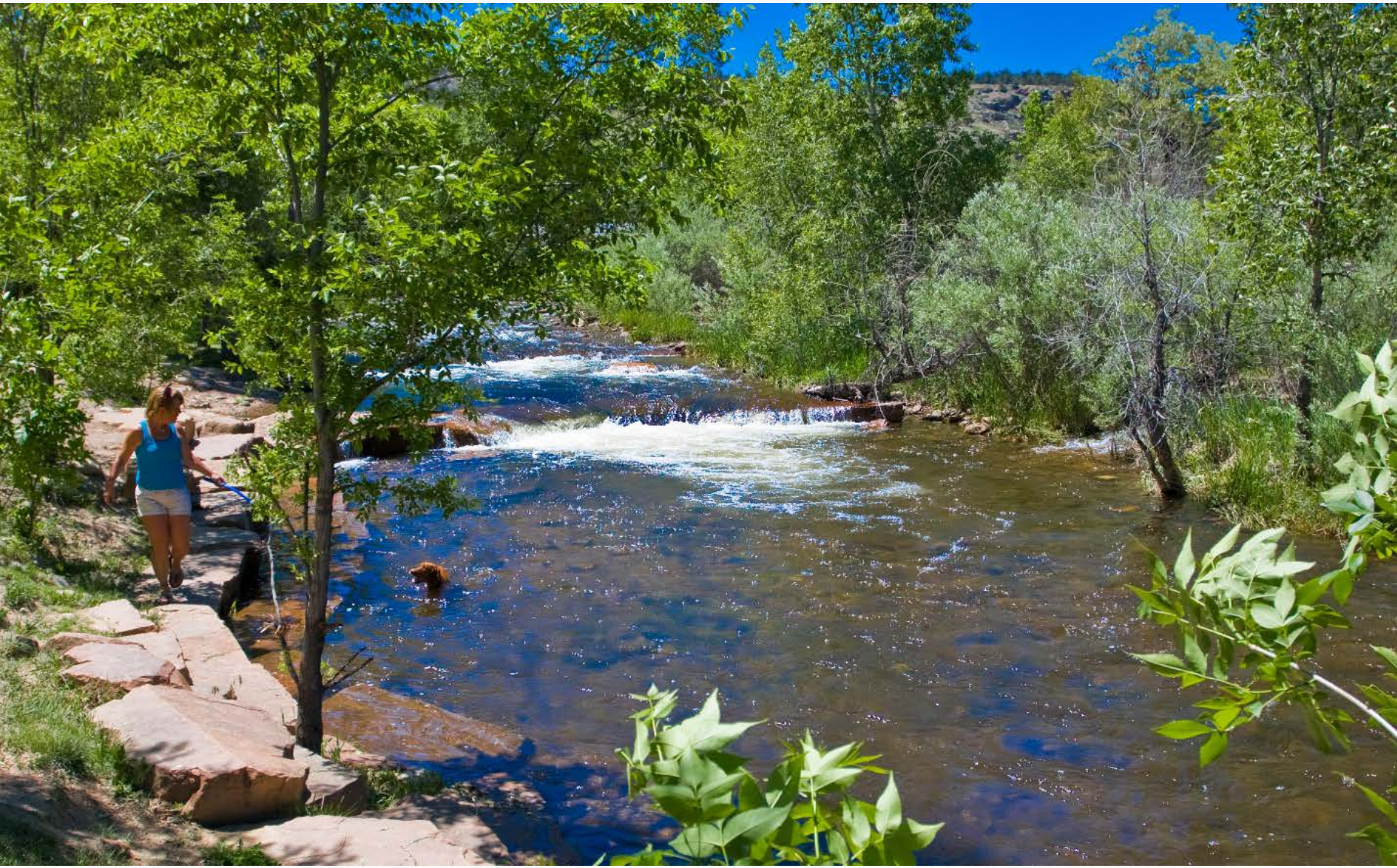


Bohn Park

Basis of Design Report

Presented by:
Scott Shipley, P.E.
Nathan Werner, P.E.
S2o Design and Engineering

Pre-flood



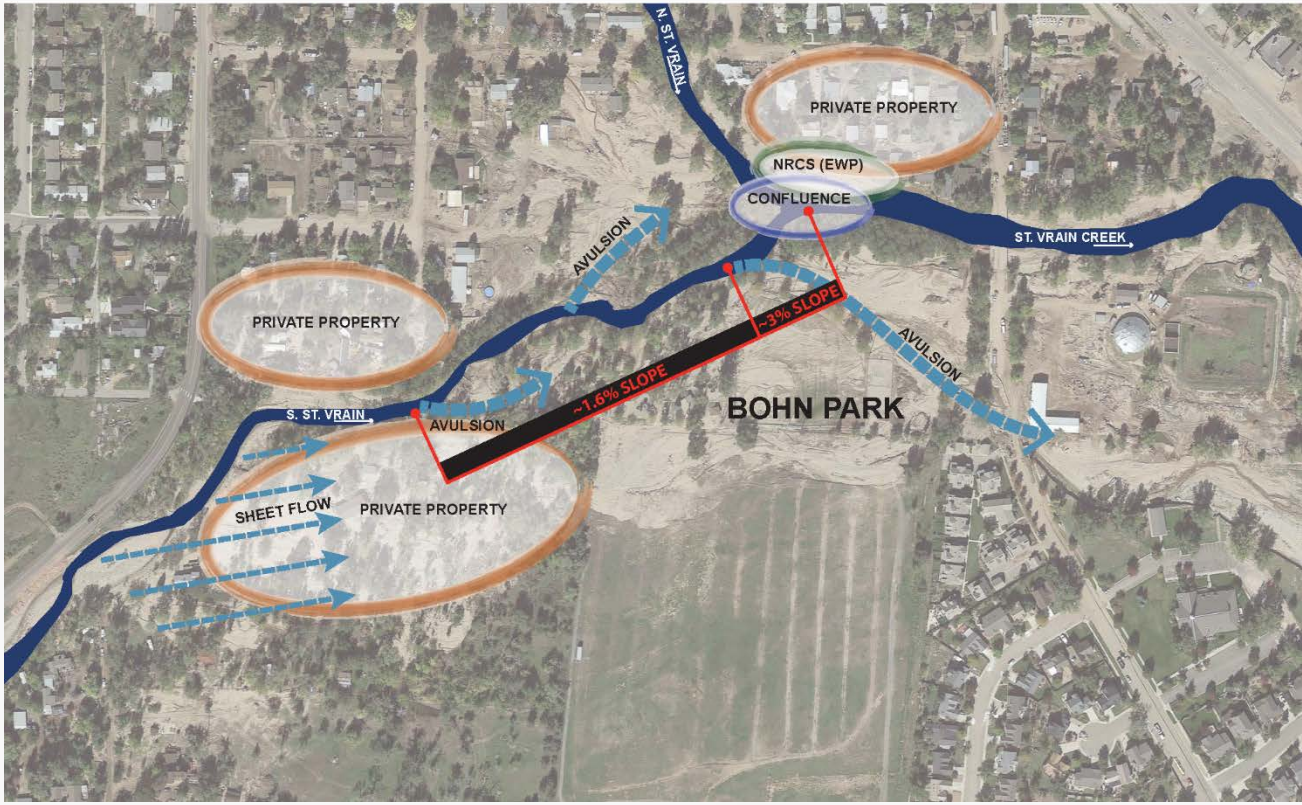
Post Flood

Morphology

Site Analysis: Risks

1. The greatest unknown risk during future flooding events is a **Repeat of Channel Avulsion** at the following locations:
   - Upstream of the project that created sheeting flow into the park across the Martin Property
   - The river is steep and confined with heavy armoring on the North Bank in the area of the former confluence trailer park. This deflects high velocity flows into the upstream end of the Bohn Park reach directly at an area of risk for channel avulsion (as seen in 2013 floods).
   - The downstream end of the park flooded into the parking area and across 2nd avenue onto the Church of Latter Day Saints property. Existing conditions modeling suggests that this will occur along the same pathway starting a flows of 2,300 cfs.

2. **Steep Channel Slopes:**
   - The channel is over-steep in the reach above the confluence (as steep as 3% in some places with an average slope of 1.6%. The steepest areas are just upstream of the confluence.
   - In time the oversupply of sediment coming down the S. St. Vrain will wane, the upstream reaches will reach equilibrium, and the river will become sediment starved in this reach. S2o expects that this will cause head cutting to begin at the confluence and work its way upstream as the river attempts to reach equilibrium in this new paradigm.



Flood Modeling

Table 3-6 2-D hydraulic modeling hydrology summary for Construction Reach 2

St. Vrain Creek	Discharge (cfs)					
	Q_2	Q_5	Revised Q_{25}	FIS Effective Q_{50}	FIS Effective Q_{100}	Revised Q_{100}
North St. Vrain Creek	596	931	2,502[b]	2,850[a]	4,310[a]	6,386[b]
South St. Vrain Creek	450	702	2,284	2,720	4,570	5,524
Cumulative flow in mainstem St. Vrain Creek	1,046	1,633	4,786[b]	5,570[a]	8,880[a]	11,910[b]

Notes: [a] source (FEMA, 2012)
[b] source (Jacobs, 2014)

Table 3-3 Calculated discharges for the Project Area

St. Vrain Creek	Q_{base}
St. Vrain Creek at the confluence	38
North St. Vrain Creek at the confluence	29
South St. Vrain Creek at the confluence	25

References

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D. L. Rosgen, P. (n.d.). *The Cross-Vane, W-Weir and J-Hook Vane Structures…Their Description, Design and Application for Stream Stabilization and River Restoration.* Fort Collins: Wildland Hydrology.

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Jacobs Engineering Group Inc. (2014). *Hydrologic Evaluation of the St. Vrain Watershed - Post September 2013 Flood Event.* Colorado Department of Transportation Region 4 Flood Recovery Office.

Kondrotieff, B. S. (2016, June). Parks and Wildlife Representatives. (S. Shipley, Interviewer)
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Otak, Inc. (2016). *St. Vrain Creek Channel Flood Recovery, Design-Build Services Project Report.* Lyons, CO: Otak.
The People of Lyons, C. (2014). *Lyons Recovery Action Plan.* Lyons, CO: Town of Lyons.

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Public Process Goals

The Bohn Park Flood Recovery Final Design and Bid Project will address the following fundamental goals outlined in the *Lyons Recovery Action Plan* and *Lyons Parks Flood Recovery Planning Process* for ensuring that Bohn Park continues to meet local and regional demands:

1) Reconstruction of facilities in Bohn Park to address the immediate recreational needs of Lyons, especially active/athletic uses. We will create a place to gather and play as a community again.

2) Creation of an attraction that will draw visitors to our Town. This is essential to ensure that the Town will remain economically viable and maintain its reputation and brand as a destination for healthy, active, outdoor lifestyles.

3) Reestablish trail connectivity, both locally and regionally, include loop trails.

4) Restore and augment river access and river habitat.

5) Restore/Replace picnic opportunities, including shelters and increase size.

6) Re-establish natural areas and consider wetlands.

7) Installation of public art along trails. (Town of Lyons, 2016)

Defined Project Objectives

Based on a review of the planning documents S2o's design objectives are tiered, in an expectation that the design process for this park will be a process that layers these priorities upon the landscape:

1. Resiliency: Create a resilient river system that plans, to the degree possible, for the next flood. (The People of Lyons, 2014)

2. Sustainability: Create a sustainable river system that is a multi-stage channel that utilizes native plantings and ecologically sound planting decisions to create a vibrant ecosystem that is robust, resilient in the next flood (to the degree possible, and self-sustaining. (The People of Lyons, 2014)

3. Environmental: Create a river design that emphasizes fish habitat, riparian habitat, and connectivity of the river system through a design and planting regime that works with the river's natural morphology. (Town of Lyons, 2016) (DHM Design, 2016)

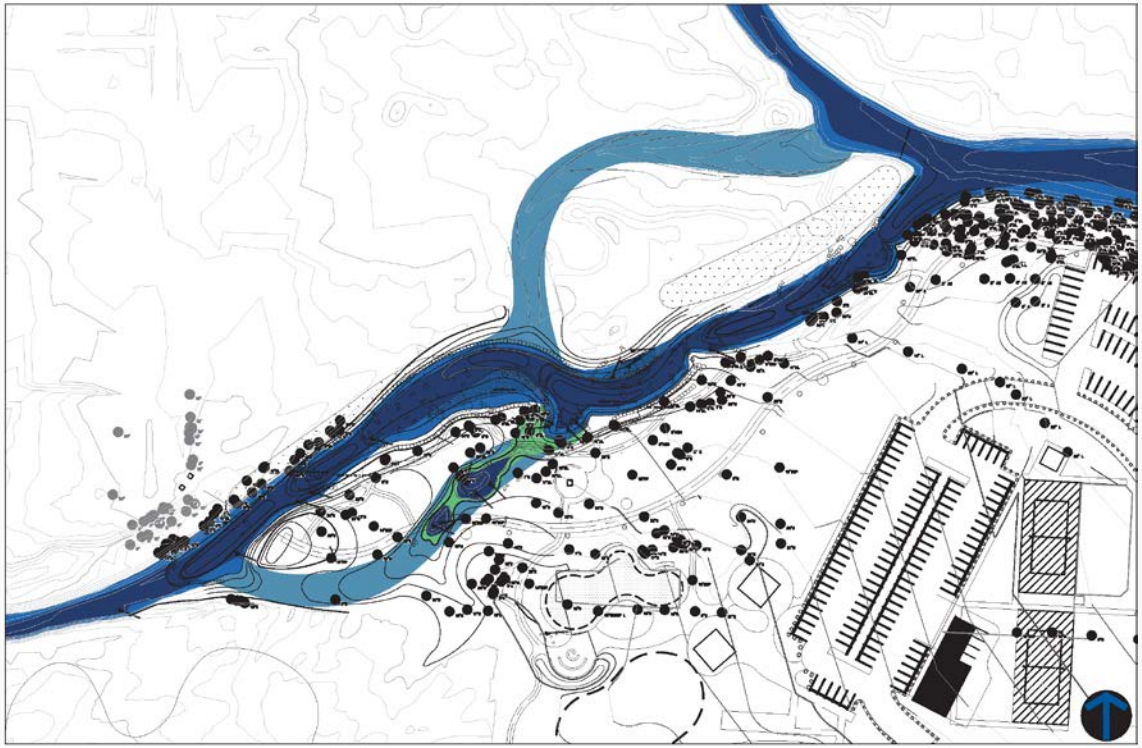
4. Parkland: Create a river design that provides a balance that allows for the park usage that surrounds this portion of the river included preferential access points to avoid the creation of social trails, and ADA fishing access as described in the Project Worksheet. (FEMA, 2014) (Cosgrove, 2016) (The People of Lyons, 2014) (DHM Design, 2016)

5. Regulatory and Funding Requirements: Meet the objectives of the LRAP and Parks Masterplan as well as the requirements of the latest versioning of the FEMA project worksheets. An additional corollary to this objective is to also meet the intent and requirements of the CPW Fishing is Fun grant. (The People of Lyons, 2014), (DHM Design, 2016) (FEMA, 2014) (FEMA, 2014) (Town of Lyons, 2016) (Ben Swigle, 2013)

1. Resiliency

The first tier of the design is to create a backbone upon which a resilient river system can be created. In creating this portion of the design S2o notes that, as shown above in the risk factors section, there are multiple characteristics of the river that make this reach a high risk design. Within this context S2o has tried to create a design that:

- Create overflow channels to intercept sheet flow that passes over the Martin Property
- Stabilizes the river in its pre-flood channel at the upstream end of the reach while allowing for inertial flows to overflow into a designed overflow channel that returns to the river (this includes bank stabilization at the point of channel avulsion).
- Utilizes the northern avulsion channel (across the now Town-owned Stacy property) to divert flows away from valuable Town assets.
- Removes valuable assets away from the river near the Second Avenue Bridge and designs for and accommodates flood flows onto this area with a designed inflow and drain.



2. Sustainability

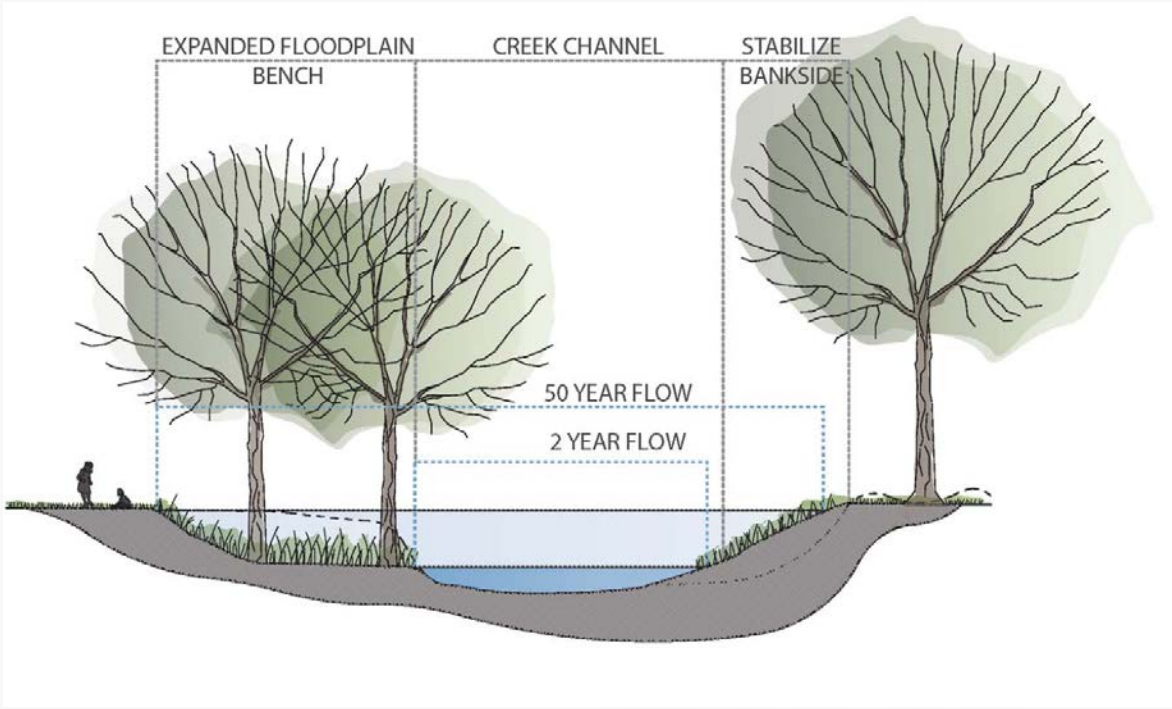
The river channel itself is largely channeled and confined due to post-flood excavation and temporary armoring work that was designed to prevent interim flood events from further damaging flood property.
S2o envisions:

- Re-grading the existing river channel in this project such that it is a multi-tiered river with floodplain benching. This re-grading effort will be a targeted one that preserves valuable habitat in areas that S2o has identified, in combination with our project partners at Ecos, as valuable habitat.

- Floodplain benches will be created largely inside the existing plant life boundaries (with some exceptions).

- The placement of woody debris and rock structure within the channel will also augment and protect existing depositional bars.

Ecos will work with S2o to define a planting plan that utilizes native plantings to stabilize bench areas.



3. Environmental

The Ecos planting plan will also serve the purpose of creating:

- Wetlands
- Riparian habitat,
- In-stream habitat (to some degree)
  - One significant area of new habitat will be the backwater area created at the ditch outfall in the middle of Bohn Park and will include wetland planting.
    - Water from the West Ditch will mix with river flows at this location.
    - Plantings, structure, and protected access will create a vibrant wetland in this area.
- Woody debris:
  - Will be cabled or buried along the river left (north) bank of the river in the downstream-most portion of the project
  - Additionally woody debris will also be used to help stabilize the bank upstream of the proposed 4th Avenue (South) pedestrian bridge.

4. Parkland

The Park in this area will feature

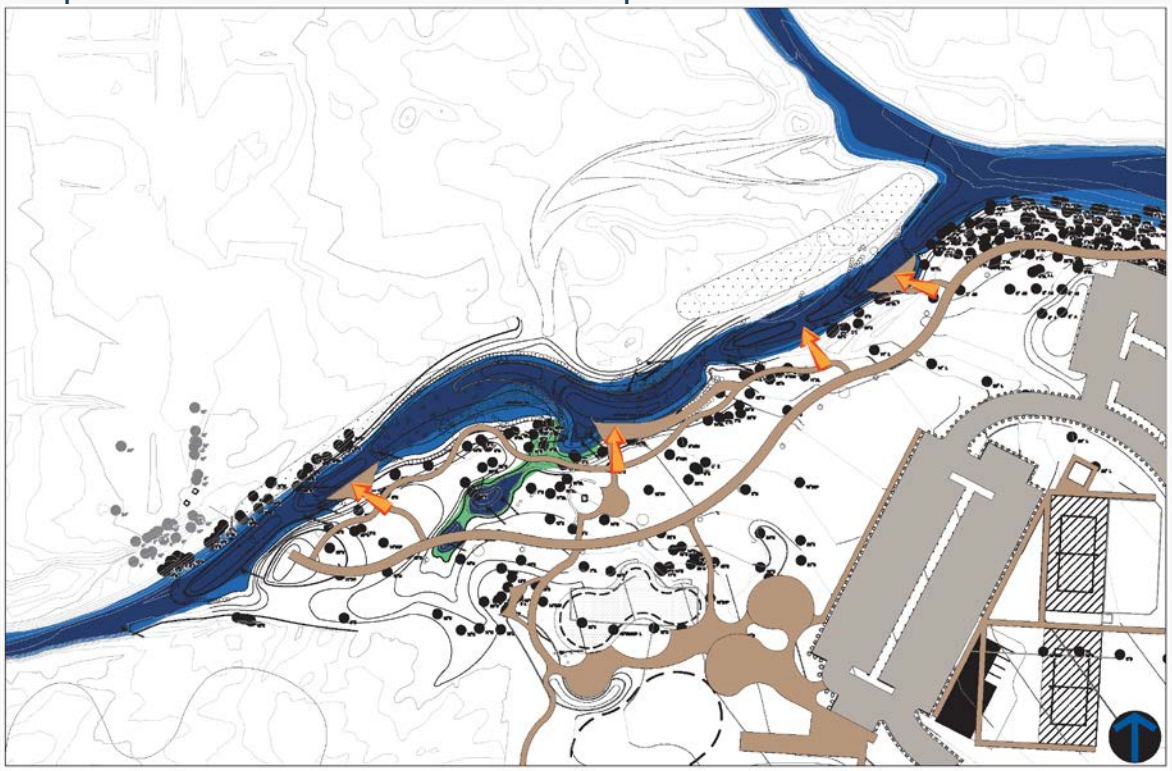
- Numerous trails along the river left (south) bank, along with picnic areas and recreational amenities.
  - As before the floods, the park sees significant visitor numbers on a daily basis during the spring, summer, and fall.
  - Visitors are expected to access the river for fishing, wading, viewing, in-stream recreation, and other reasons.

  - Town Staff indicate that there was insufficient access to the river in the previous intonation of the park and that many social trails were trampled into the riverbank so that the public could access the river.

  - S2o has created a design that provides for access at specific points using preferential access points that are armored and attractive.

  - Parkland plantings will serve to dissuade users from accessing the river in other, less desirable locations.

  - S2o has located the ditch, associated ponds and play areas in an effort to create both additional wetlands, but also additional *play* areas that are out of the main flow.



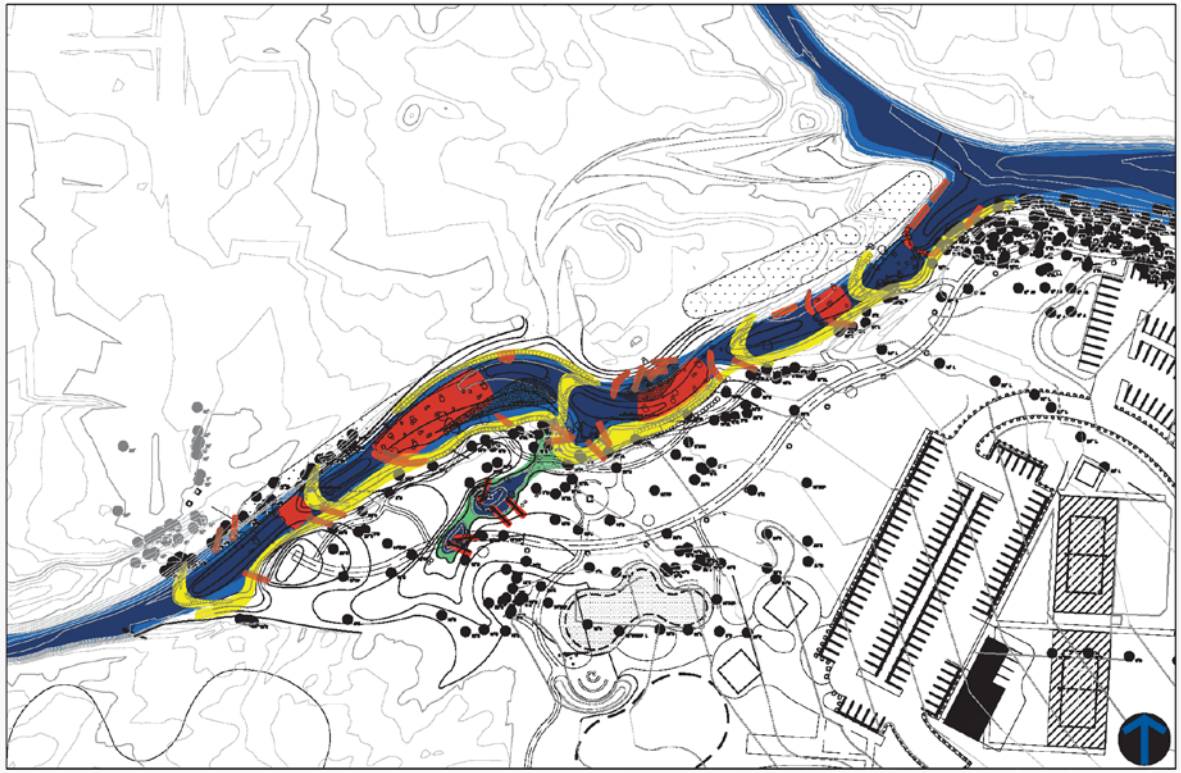
5. Regulatory and Funding Requirements

This project has significant design constraints in terms of funding and regulatory requirements. Amongst these are:

- FEMA: The design must include the current "versioning" of the FEMA project workbooks. This is a hard constraint that is controls the bulk of the funding for the project.

- Colorado Parks and Wildlife: The relationship between items budgeted through the Colorado Parks and Wildlife Fishing is Fun grant and the rest of the design is fairly rigid.

- The grant funded designs must be created separately as a layer upon the existing project. This includes separate design time and separate construction budgets. The Fishing is Fun grant budget will only provide for specific fish habitat enhancement structures.



Design Drawing

Discussion

13. Comments and Responses

July 22, 2016

Benjamin Swigle
Aquatic Biologist
Platte Basin Area 2- Fort Collins/Boulder
317 West Prospect Street
Longmont, CO, 80502

Ben and Matt-

On behalf of the Town of Lyon and the DHM/S2o Design Team for Bohn Park I would like to thank you and your organization for taking the time to review our 50% plans for Bohn Park. We realize that you have many other projects and priorities in this busy recovery period and appreciate that you made time for our project.

I did want to respond to the input that you gave both non-specifically and specifically. As we are in the design-iteration phase of our project I would like to say, non-specifically, that we hear your concerns and advice and are pursuing a design that meets your intent in both process and in physical reality. We will bring our 90% design set back to Parks and Wildlife in order to provide an opportunity for further review and comment.

To specifically address the items brought up (there are many, so I will be brief and I realize I may have missed some of the suggestions. We have comprehensive notes from our site walk.):

Channel Realignment: We will be moving the channel to the North near the North overflow channel providing for lateral pools as the river bends to the south and back to the north again in this reach allowing for depositional benches on the inside of each bend. As discussed, we will likely create the outside toe with rock in these locations for safety reasons. We may attempt to design some wood into the upstream-most portions of these bends.

Overflow channels: We will build a sill and I am consulting with Matt Kondratieff for some novel ideas for this. Alternately we will use rock and cobble as you suggest.

Wood: We will not be cabling woody debris. In cases where needed we will use buried wood with rock reinforcement. Woody debris will be mostly below the water's surface (some is planned in areas where it will degrade over time, but not in reinforced areas.

Floodplain Benches: will be installed in the areas that we discussed.

Riffle locations: Two-three of the five planned drop structures are being transformed to riffle runs. We will use a similar method to Meadow Park, as you suggested, in these reaches for creating riffles.

We will also consult Ben's graphic as we work through our design changes to ensure that we capture all of the suggestions made to the greatest degree possible within the Park environment. Thank you again for your help with this, we will forward revised plans once they have been prepared.

Please let us know if you have any further questions or comments,

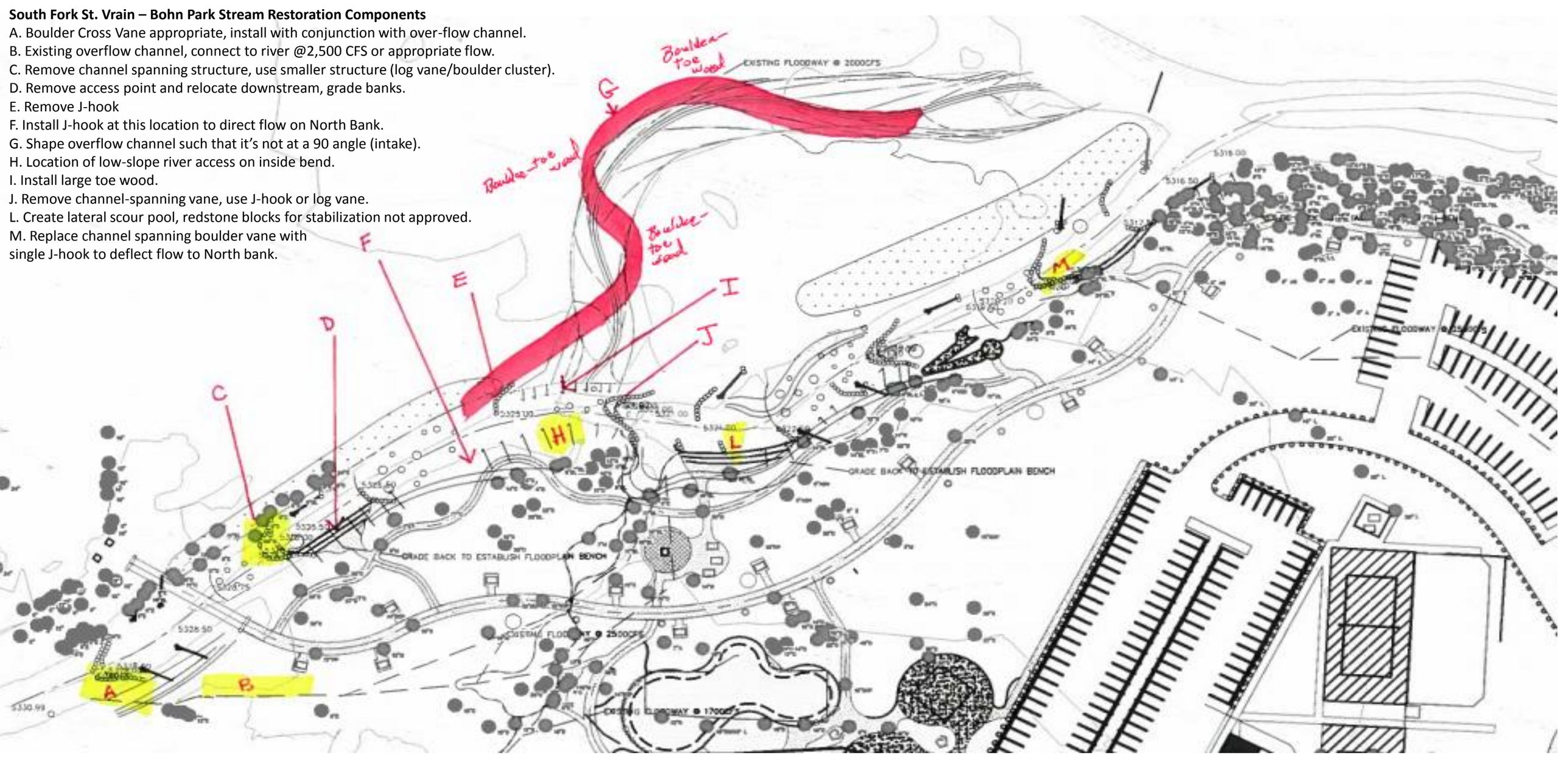
Thank you,

Scott Shipley

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

South Fork St. Vrain – Bohn Park Stream Restoration Components

A. Boulder Cross Vane appropriate, install with conjunction with over-flow channel.
B. Existing overflow channel, connect to river @2,500 CFS or appropriate flow.
C. Remove channel spanning structure, use smaller structure (log vane/boulder cluster).
D. Remove access point and relocate downstream, grade banks.
E. Remove J-hook
F. Install J-hook at this location to direct flow on North Bank.
G. Shape overflow channel such that it's not at a 90 angle (intake).
H. Location of low-slope river access on inside bend.
I. Install large toe wood.
J. Remove channel-spanning vane, use J-hook or log vane.
L. Create lateral scour pool, redstone blocks for stabilization not approved.
M. Replace channel spanning boulder vane with single J-hook to deflect flow to North bank.



Saint Vrain Creek Coalition
P.O. Box 706
Longmont, CO 80502
303-774-4514

Mr. Scott Shipley
S2o Design and Engineering
318 McConnell Drive
Lyons, CO 80540

July 12, 2016

Dear Mr. Shipley,

Thank you for including the Saint Vrain Creek Coalition (SVCC) in the public engagement process for the Bohn Park Flood Recovery Final Design and Bid Project. The Saint Vrain Creek Coalition is a locally driven, non-governmental, non-regulatory community-based organization that facilitates stewardship and restoration projects based on scientific analysis to improve watershed health and develop partnerships to plan, fund, and implement those projects. We have a diverse representation of interests on our Board of Directors and Advisory Council and hope that the feedback provided by these representatives and the Coalition as a whole will help further the development of a comprehensive design.

The main suggestions and concerns of which the SVCC has heard thus far include the following topics and themes:

- **Collaboration and Communication**
  As acknowledged by S2o, collaboration and communication between the stream recovery projects that are taking place both upstream and downstream of the work being designed in Bohn Park is critical, especially in regards to hydrology. The project in Bohn Park includes two overflow channels, one of which may begin upstream of Bohn Park and in a separate, yet to be designed project area. If time allows, it would be helpful to obtain data from the projects that are currently being conducted upstream, including the South Saint Vrain (SSV) 1 & 2 projects, sponsored by Boulder County Parks and Open Space and the SSV 3 project, sponsored by the Town of Lyons.

- **In-Stream Structures**
  In-stream structures must be able to manage the 2.5% change in slope through the project area, and incorporate fish passage for sport and native fish. Include channel complexity, such as anchored, woody material, and allow for stable over-hanging banks for improved aquatic habitat.

- **Recreation**
  The Saint Vrain Creek Coalition is pleased to hear that the Bohn Park design focuses on a natural area park, since LaVern M. Johnson Park (Meadow Park) targets whitewater

recreation. We are glad to hear that it incorporates a diverse range of public fishing accommodations, including an ADA-accessible fishing area, trail access to the stream, and nature play for youth.

- **Water Quality**
  During the June 16, 2016 site visit and meeting for SVCC members, hosted by S2o, there was mention of potential sheet flows over a parking lot during high flows. The SVCC would like to suggest that a stormwater water-quality control feature be added at the point in which water is expected to re-enter the St. Vrain to prevent contaminated runoff from the parking lot from flowing into the creek.

Thank you for taking the time to review the Saint Vrain Creek Coalition's initial comments of the South Saint Vrain design plan. We look forward to the opportunity to comment further as the plan progresses.

If you have any questions, please feel free to contact me.

Sincerely,

Cecily Mui
Watershed Coordinator
Saint Vrain Creek Coalition

July 22, 2016

Cecily Mui
Watershed Coordinator
St. Vrain Creek Coalition
P.O. Box 706
Longmont, CO, 80502

Ms. Mui-

On behalf of the Town of Lyon and the DHM/S2o Design Team for Bohn Park I would like to thank you and your organization for taking the time to review our 50% plans for Bohn Park. We realize that you have many other projects and priorities in this busy recovery period and appreciate that you made time for our project.

I did want to respond to the input that you gave both non-specifically and specifically. As we are in the design-iteration phase of our project I would like to say, non-specifically, that we hear your concerns and advice and are pursuing a design that meets your intent in both process and in physical reality. We will bring our 90% design set back to the Coalition in order to provide an opportunity for further review and comment.

To specifically address the items brought up:

Collaboration and Communication: We have already reached out to the Matrix team and will work with the selected team on Reach 3 once that project is set in motion. Thank you for the contacts there and the opportunity to meet them in person at your last coalition meeting. We will seek out parallels in our work in order to create watershed-level solutions.

In-stream Structures: Agreed. We are, however, at the suggestion of Parks and Wildlife and the Town of Lyon's Watershed Board, decreasing the slope and character of our drop structures in order to meet the Town's aesthetic desires as well as to improve habitat for fish. We are heading towards a longer reach of the river with more meander and the inclusion of lateral pools. We will endeavor to include the complexity and riparian habitat that are required for a successful project in this river as well.

Recreation: We are in agreement with your goal statement that Bohn Park's focus is more on natural area park rather than the more intensive in-stream uses planned for Meadow, while still providing opportunities for fishing, ADA access, and general access for the public.

Water Quality: In this instance we will include a settling pond for our run-off in the park. However, during flooding events there is not the capacity to store and let-settle the volume of water anticipated. We believe that, on a day-to-day basis clean water will run off this project. During the major storm events we will design to minimize the amount of erosion and sediment that wash off of Bohn Park into the river.

Please let us know if you have any further questions or comments,

Thank you,

Scott Shipley

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

July 22, 2016

The Watershed Board
432 5th Avenue
P.O Box 49
Lyons, CO 80540

Members of the Town of Lyons Watershed Board-

On behalf of the Town of Lyon and the DHM/S2o Design Team for Bohn Park I would like to thank you and your organization for taking the time to review our 50% plans for Bohn Park. We realize that you have many other projects and priorities in this busy recovery period and appreciate that you made time for our project.

I did want to respond to the input that you gave both non-specifically and specifically. As we are in the design-iteration phase of our project I would like to say, non-specifically, that we hear your concerns and advice and are pursuing a design that meets your intent in both process and in physical reality. We will bring our 90% design set back to the Watershed Board in order to provide an opportunity for further review and comment.

To specifically address the items brought up:

Drop Structures: We are working in the flood model now to transform some of the structures to a "hybrid design" similar to what you described in your letter. In these reaches you might consider the drop structure to be move of a riffle/run character.

J-hooks, Point Bars, Bendways: We will utilize larger rock as suggested in these structures.

Woody Debris: We are looking for appropriate ways and means to install more woody debris in this reach. There are some new and novel approaches to doing this.

Vertical Banks on The Outside of Bends: This has been included in our updated designs.

Pedestrian Access Points: We are looking at pedestrian access points from a habitat value perspective and designing accordingly.

Thank you again for your help with this, we will forward revised plans once they have been prepared. Please note that further amendments to the design, based on P & W comments, are shown below for informational purposes.

Please let us know if you have any further questions or comments,

Thank you,

Scott Shipley

318 McConnell Dr. Lyons, CO, 80540 303.819.3985

Copied from P & W letter:

> **Channel Realignment:** We will be moving the channel to the North near the North overflow channel providing for lateral pools as the river bends to the south and back to the north again in this reach allowing for depositional benches on the inside of each bend. As discussed, we will likely create the outside toe with rock in these locations for safety reasons. We may attempt to design some wood into the upstream-most portions of these bends.
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Please let us know if you have any further questions or comments,

Thank you,

Scott Shipley

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Pending Approval

Town of Lyons Ecology Advisory Board Meeting Notes

June 15, 2016

Present: Steve Simms, Greg Lowell, Fay Marshall, Kurt Carlson, Garima Fairfax; Mike Harris (Parks & Rec); Coco Gordon (SFC); Mike Karavas (BOT); Brian Baer (prospective new member)

Simms began meeting at 6:35 p.m.

> **Motion:** To approve meeting notes of May; Fairfax made motion; Marshall second; all aye. Meeting notes accepted.

Follow-up and discussion and review of action items:

Myrtle spurge– Lowell said he did not inquire of Boulder County about their "bounty" program; did cover the weed in his monthly article.

Reporting of Violations - Karavas said any suspected violation or non-permitted work can be reported to town staff. Sonya Wyppler in Building Dept. can also be consulted. Karavas said that the town and Boulder County are aware of and are working the issue of Planet Bluegrass work along river in Apple Valley.

Weed Booklets – Simms showed EAB budget report of 2016; shows balance of $3,887.55 of Lyons Community Foundation grant money, which could be used with LCF permission for weed booklets.

> **Motion (Lowell):** That the EAB purchase 100 copies of "Noxious Weeds of Colorado" booklets (plus 10 free booklets) using LCF grant money ($525).
>
> Carlson seconded.
>
> Lowell said booklets can be used at any town event as giveaways where EAB has a presence. Simms said we should mark booklets with EAB sticker.
>
> Motion passed; all aye.
>
> **Action Item**: Simms will consult with LCF on use of grant money for this purpose.

Hickenlooper? – Marshall said she had action item from last meeting on trails and Gov. Hickenlooper; she was unclear on what this meant. Simms said governor has vision of interconnecting trails in the state, among them a trail from Lyons to Estes Park. Intent of AI still unclear.

New Business:

2017 Budget – Marshall said we need to start forming budget ideas for 2017; town budget process underway. Discussion on buying a banner for town events and purchase of Arbor Day tree tags (which

Pending Approval

will cite benefit of individual trees). Marshall will check with printer on cost of these tags. Lowell said he would like to submit budget items for Gardens-in-a-Box again; he will find out 2017 prices.

Community Outreach – Trees – Fairfax said the Your Neighborhood Christmas Tree Farm in Boulder was providing free trees to anyone who is replacing ash trees. Carlson said we might want to consider a similar replacement effort in Lyons; might want to budget replacement trees. Baer volunteered to do inventory of ash trees on town property. Fairfax will put together a notional list of possible replacement trees. Marshall said we should look at matching grant money for this effort. Fairfax said replacement trees should be for public and private land. Marshall will send Baer info on ash trees that has already been mapped for the Arboretum Project.

Northern Water Field Trip – Fairfax and Lowell went on all-day field trip May 25 with Northern Water, exploring their eastern slope resources: canals, reservoirs, power plant. Fairfax said it was informative and urged other members to attend one of the tours.

Main Street Landscaping – Fairfax said she had discussion with fly rod business on Main St., who had some concerns about the fate of the landscaping they had done in front of the shop. Would it be affected by future landscaping plans? Discussion of Main St. landscaping among EAB members revealed no one really knew what was happening on Main St. Harris said Jacque Watson at town hall might have some insight and he will talk to her about it to see what's happening.

Ongoing Projects

a. Ecology Focused Educational Series

Fairfax exploring possible film for October.

b. Arboretum Project

Fairfax said she conducted s senior tour. Brochures now available at the visitors center in Sandstone Park. She also said they were going to expand the Arboretum from 22 to 40 trees by the end of the summer. Lowell said the launch of the project would be a July article; Fairfax to provide info. Marshall said the website needs to be approved for it to be on town website.

c. Monthly Ecology Article

Lowell said latest article was on myrtle spurge; Arboretum to be July article.

d. Review Design Documents

Marshall went through the 50 percent design presentation for Bohn Park. Simms said perhaps the riparian areas could be deeper with fencing until the plants mature.

e. Update and merge tree ordinance

Pending Approval

Harris said town attorney needs to review the language, then BOT would approve (possibly in a July meeting). Discussion followed on whether hazardous tree removal needs to be included; Harris will research.

f. 5th Avenue project

Simms said the Siberian elms on the property will be removed; consensus was that there should be signage alerting residents that the removal will take place and why. Fairfax asked how tree removal affects our Tree City USA status. Marshall read Tree City guidelines; no standard for tree removal and replacement in the regs.

Liaison and Subcommittee Reports

Parks & Rec – Marshall said Meadow Park work behind schedule; currently open for RV camping. Will be a soft opening on August 13 with formal opening on Labor Day weekend.

BOT Report – Karavas reminded EAB on open meeting rule and privacy. Said EAB needs to get on BOT agenda to update board on its work. Budget needs to be in draft form by August. Remarked on work done by Retreed, who planted more than 200 trees in confluence neighborhood, and are interested in coming back for future such projects. Complimented Harris and Matt Manley for their work on the project.

Botanical Gardens – status quo, and plants still left over from plant sale available at Steamboat Foods.

UEB –Gordon said problem of "beer waste" still being worked; maybe composting the waste. Said UEB was proactively working residential solar issue with MEAN.

Watershed Committee – no report.

EDC – no report

PCDC – no report.

SFC – Gordon said SFC is working to improve the zero waste initiative; some issues with improper disposal.

Meeting adjourned at 8:37 p.m.

Respectfully submitted,

Greg Lowell, EAB Recording Secretary

14. Updated Designs

SHEET INDEX MAP

MATCHLINE - SEE SHEET L4.3

MATCHLINE - SEE SHEET L4.2

LEGEND

BOUNDARY AND MARKER SYMBOLS

- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION
- MATCHLINE

UNDERGROUND AND OVERHEAD UTILITIES SYMBOLS

- OE — EXISTING OVERHEAD ELECTRIC
- E — EXISTING ELECTRIC LINE
- T — EXISTING TELEPHONE LINE
- X — EXISTING FENCE LINE
- F — EXISTING FIBER OPTIC LINE
- G — EXISTING GAS LINE
- W — EXISTING WATER LINE
- SS — EXISTING STORM SEWER LINE
- EXISTING MANHOLE

LANDSCAPE AND DRAINAGE SYMBOLS

- COBBLE
- CONCRETE
- CRUSHER FINES
- GRAVEL
- FIBAR PLAY SURFACE
- LYONS SANDSTONE BOULDER
- SLABSTONE SEATWALL
- WATER FEATURE BOUNDARY
- PICNIC TABLE
- PUBLIC ART
- FLOWER PLANTER
- TREE PROTECTION
- EXISTING TREE

LANDSCAPE AND DRAINAGE SYMBOLS

- NATIVE SEED
- BLUEGRASS SOD
- SHRUB AREAS
- PROPOSED DECIDUOUS TREE
- PROPOSED EVERGREEN TREE
- PROPOSED ORNAMENTAL TREE
- EXISTING TREE

DHM DESIGN
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www.dhmdesign.com

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
LANDSCAPE PLANS
SHEET INDEX

SHEET NUMBER:
L4.0
SHEET X OF XX

NOTE: NO LANDSCAPE PLANTINGS ON THIS SHEET

NORTH

0 15 30 60

SCALE 1"=30'-0"

MATCHLINE - SEE SHEET L4.3

MATCHLINE - SEE SHEET L4.2

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REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
LANDSCAPE PLANS

SHEET NUMBER:
L4.1

SHEET X OF XX

MATCHLINE - SEE SHEET L4.1

MATCHLINE - SEE SHEET L4.3

LIMITS OF CONSTRUCTION

EXISTING 100 YEAR FLOODPLAIN

NATIVE SEED

BLUE GRASS SOD

LIMITS OF CONSTRUCTION

DECIDUOUS TREE

EVERGREEN TREE

EXISTING 500 YEAR FLOODPLAIN

ORNAMENTAL TREE

MATCHLINE - SEE SHEET L3.5

MATCHLINE - SEE SHEET L4.4

NORTH

0 15 30 60

SCALE 1"=30'-0"

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DRAWN: GG
CHECKED: MW

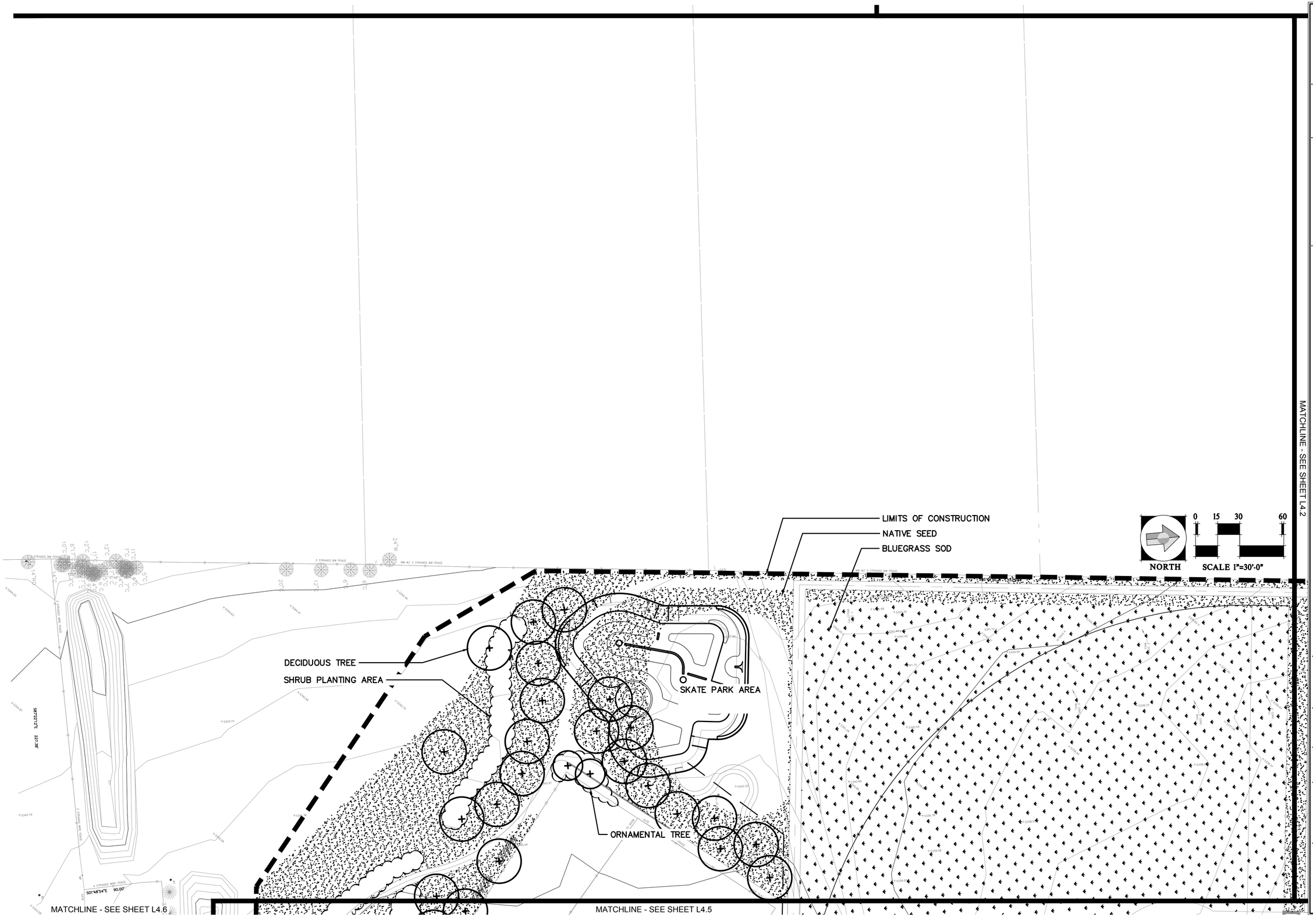
REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LANDSCAPE PLANS

SHEET NUMBER: L4.2

SHEET X OF XX



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JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
LANDSCAPE PLANS

SHEET NUMBER:
L4.3
SHEET X OF XX

MATCHLINE - SEE SHEET L4.2

MATCHLINE - SEE SHEET L4.5

MATCHLINE - SEE SHEET L4.7

EXISTING 500 YEAR FLOODPLAIN

EVERGREEN TREE

DECIDUOUS TREE

BLUEGRASS SOD
NATIVE SEED

EXISTING 100 YEAR FLOODPLAIN

EXISTING FLOODWAY
LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

NORTH

0 15 30 60

SCALE 1"=30'-0"

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DATE: 06/10/16
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DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
LANDSCAPE PLANS

SHEET NUMBER:
L4.4

SHEET X OF XX

MATCHLINE - SEE SHEET L4.3

MATCHLINE - SEE SHEET L4.2

MATCHLINE - SEE SHEET L4.6

MATCHLINE - SEE SHEET L4.4

SHRUB PLANTING AREA

DECIDUOUS TREES

DIRT INFIELD

DIRT INFIELD

EXISTING MULTI –USE SPORTS FIELD TO REMAIN

LIMITS OF CONSTRUCTION

NATIVE SEED

BLUEGRASS SOD

NORTH

0 15 30 60

SCALE 1"=30'-0"

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BOHN PARK

2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

PROJECT NUMBER: 16044.00

DATE: 06/10/16

DESIGNED: MW

DRAWN: GG

CHECKED: MW

REVISIONS: . . . .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LANDSCAPE PLANS

SHEET NUMBER: L4.5

SHEET X OF XX

MATCHLINE - SEE SHEET L4.3

MATCHLINE - SEE SHEET L4.5

EXISTING MULTI –USE SPORTS FIELD TO REMAIN

NATIVE SEED

LIMITS OF CONSTRUCTION

NORTH

SCALE 1"=30'-0"

0 15 30 60

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BOHN PARK

2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

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DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS: . . . .

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LANDSCAPE PLANS

SHEET NUMBER: L4.6

SHEET X OF XX

MATCHLINE - SEE SHEET L3.4

ORNAMENTAL TREE

DECIDUOUS TREE

EVERGREEN TREE

DECIDUOUS TREE

EVERGREEN TREE

NATIVE SEED

ORNAMENTAL TREE

NATIVE SEED

EXISTING FLOODWAY

EXISTING 100 YEAR FLOODPLAIN

EXISTING 500 YEAR FLOODPLAIN

LIMITS OF CONSTRUCTION

NORTH

0 15 30 60

SCALE 1"=30'-0"

MATCHLINE - SEE SHEET L4.8

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2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

PROJECT NUMBER: 16044.00

DATE: 06/10/16

DESIGNED: MW

DRAWN: GG

CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LANDSCAPE PLANS

SHEET NUMBER: L4.7

SHEET X OF XX

EXISTING ROAD STRUCTURES

NORTH

0 30 60 120

SCALE 1"=60'-0"

SHEET INDEX MAP

MATCHLINE - SEE SHEET L2.3

MATCHLINE - SEE SHEET L2.2

LEGEND

BOUNDARY AND MARKER SYMBOLS

- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION
- MATCHLINE

UNDERGROUND AND OVERHEAD UTILITIES SYMBOLS

- OE — EXISTING OVERHEAD ELECTRIC
- E — EXISTING ELECTRIC LINE
- T — EXISTING TELEPHONE LINE
- X — EXISTING FENCE LINE
- F — EXISTING FIBER OPTIC LINE
- G — EXISTING GAS LINE
- W — EXISTING WATER LINE
- SS — EXISTING STORM SEWER LINE
- EXISTING MANHOLE

LANDSCAPE AND DRAINAGE SYMBOLS

- COBBLE
- CONCRETE
- CRUSHER FINES
- GRAVEL
- FIBAR PLAY SURFACE
- LYONS SANDSTONE BOULDER
- SLABSTONE SEATWALL
- WATER FEATURE BOUNDARY
- PICNIC TABLE
- PUBLIC ART
- FLOWER PLANTER
- TREE PROTECTION
- EXISTING TREE

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Lyons, Colorado

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DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

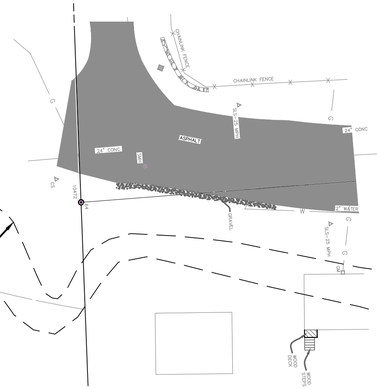
SHEET TITLE: LAYOUT PLANS INDEX SHEET

SHEET NUMBER: L2.0

SHEET X OF XX

EXISTING 100 YEAR FLOODPLAIN

EXISTING 500 YEAR FLOODPLAIN



NORTH

0 15 30 60

SCALE 1"=30'-0"

MATCHLINE - SEE SHEET L2.3

MATCHLINE - SEE SHEET L2.2

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SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.1

SHEET X OF XX

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DESIGNED:	MW
DRAWN:	GG
CHECKED:	MW

REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
LAYOUT PLANS

SHEET NUMBER:
L2.2

SHEET x OF XX

NORTH

0 15 30 60
SCALE 1"=30'-0"

MATCHLINE - SEE SHEET L2.2

REFER TO SKATEPARK PACKAGE FOR DETAILED GRADING AND DRAINAGE

LIMITS OF CONSTRUCTION

REMOVABLE FENCING 1/XX

1/XX CRUSHER FINES TRAIL

1/XX 8' WIDE CONCRETE PATH

NON-REMOVABLE FENCING 1/XX

LYONS SANDSTONE SEATWALL 1/XX

DIRT JUMP SKILLS EXPANSION AREA

SPLIT RAIL FENCING 1/XX

VASQUEZ FIELD (300' OUTFIELD)

EXISTING DIRT JUMP SKILLS AREA

MATCHLINE - SEE SHEET L2.6

MATCHLINE - SEE SHEET L2.5

NORTH

0 15 30 60

SCALE 1"=30'-0"

MATCHLINE - SEE SHEET L2.1

MATCHLINE - SEE SHEET L2.3

MATCHLINE - SEE SHEET L2.5

MATCHLINE - SEE SHEET L2.4

LYONS SANDSTONE RETAINING WALL 1 XX

CRUSHER FINES TRAIL 1 XX

BRIDGE ABUTMENT, RE: STRUCTURAL

80' BRIDGE, RE: STRUCTURAL

BRIDGE ABUTMENT, RE: STRUCTURAL

LYONS SANDSTONE RETAINING WALL 1 XX

CREEK ACCESS POINT

LYONS SANDSTONE RETAINING WALL 1 XX

GRILL, TYP. 1 XX

PICNIC TABLE, TYP. 1 XX

LIMITS OF CONSTRUCTION

TRASH CAN/COAL BIN TYP 1 XX

CONCRETE CHAISE 1 XX

COBBLE WATER FEATURE 1 XX

COBBLE WATER FEATURE 1 XX

CRUSHER FINES TRAIL 1 XX

EXISTING 100 YEAR FLOODPLAIN

CRUSHER FINES TRAIL 1 XX

NON-REMOVABLE FENCING 1 XX

LIMITS OF CONSTRUCTION

ELECTRIC SCOREBOARD 1 XX

NATURAL PLAY AREA

LOG PLAYGROUND EDGE 1 XX

NATURAL PLAY AREA

ECOLOGICAL RESTORATION RE: ECOS PLANS

LYONS SANDSTONE SEATWALL 1 XX

CREEK ACCESS POINT

FLAGSTONE PAVING 1 XX

PICNIC TABLE, TYP. 1 XX

LYONS SANDSTONE RETAINING WALL 1 XX

BASEBALL FIELD LIGHTING

EXISTING 500 YEAR FLOODPLAIN

PLAYGROUND EDGER WITH SAFETY SURFACING 1 XX

EXISTING PLAY AREA

CONCRETE PAVING 1 XX

PUBLIC ART, TYP.

FLOWER PLANTER, TYP. 1 XX

10' WIDE CRUSHER FINES REGIONAL TRAIL 1 XX

LIMITS OF BERM

LYONS SANDSTONE SEATWALL

SHADE SHELTER

BOHN FIELD (300' OUTFIELD)

OUTDOOR CLASSROOM

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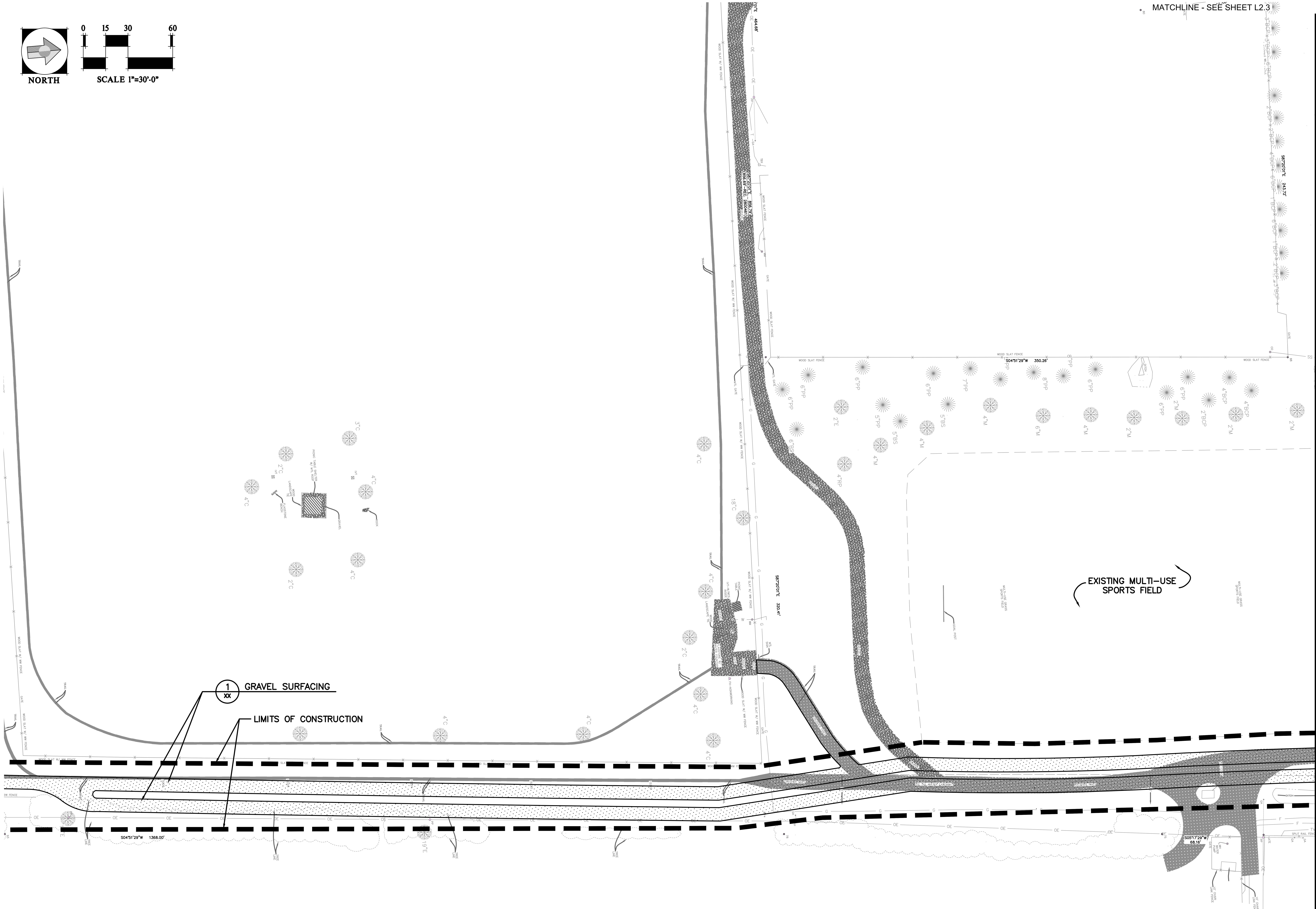
REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.3

SHEET X OF XX



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JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
LAYOUT PLANS

SHEET NUMBER:
L2.4

SHEET X OF XX

MATCHLINE - SEE SHEET L2.3

MATCHLINE - SEE SHEET L1.2

MATCHLINE - SEE SHEET L2.6

MATCHLINE - SEE SHEET L2.4

SPLIT RAIL FENCING (1/XX)

DIRT JUMP SKILLS AREA ADDITION

CRUSHER FINES TRAIL (1/XX)

CLIMBING BOULDER AREA (1/XX)

EXISTING SHELTER

RELOCATE EXISTING WATER FOUNTAIN

EXISTING DIRT JUMP SKILLS AREA

FIBAR SURFACING (1/XX)

VASQUEZ FIELD (300' OUTFIELD)

BOHN FIELD (300' OUTFIELD)

REMOVABLE FENCE (1/XX)

DUGOUT, TYP. (1/XX)

BLEACHERS, TYP. (1/XX)

8' WIDE CONCRETE PATH (1/XX)

SHADE SHELTER (30' x 30') RE: ARCH

LYONS SANDSTONE SEATWALL (1/XX)

SMALL BACKSTOP (1/XX)

10' WIDE GRAVEL SURFACING (1/XX)

SLACKLINE POSTS (4) (1/XX)

CONCRETE PAVING

SHADE SHELTER (16' x 20')

FIBAR SURFACING (1/XX)

TREE PROTECTION, TYP

PLAYGROUND EDGER (1/XX)

EXISTING RESTROOM

EVENT SPACE AREA

CRUSHER FINES SURFACE TO JOIN FLUSH WITH EXISTING CONCRETE PATH

SUBDRAIN (1/XX)

EXISTING MULTI -USE SPORTS FIELD

LIMITS OF CONSTRUCTION

CRUSHER FINES TRAIL (1/XX)

VEHICULAR ACCESS GATE (1/XX)

GRAVEL SURFACING (1/XX)

LIMITS OF CONSTRUCTION

NEIGHBORHOOD ACCESS

NORTH

SCALE 1"=30'-0"

0 15 30 60

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REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.5

SHEET X OF XX

MATCHLINE - SEE SHEET L2.2

MATCHLINE - SEE SHEET L2.5

MATCHLINE - SEE SHEET L2.7

PICNIC TABLE, TYP. 1 XX

SHADE SHELTER RE: ARCH

LARGE BBQ GRILL, TYP.

BATTING CAGE 1 XX

GATE 1 XX

RESTROOM

1 XX CONCRETE PAVING

1 XX SPLIT RAIL FENCING

FLOWER PLANTER TYP. 1 XX

PUBLIC ART, TYP.

10' WIDE CRUSHER FINES REGIONAL TRAIL 1 XX

1 XX LYONS SANDSTONE RETAINING WALL

1 XX ADA FISHING ACCESS WITH SCULPTED CONCRETE JETTY

1 XX GRILL, TYP.

1 XX PICNIC TABLE, TYP.

1 XX LYONS SANDSTONE RETAINING WALL

LYONS SANDSTONE BOULDER 1 XX

AUTOMATED PARKING KIOSK 1 XX

CAMP HOST SITE

NON-REMOVABLE FENCING 1 XX

8' WIDE CONCRETE PATH 1 XX

GRAVEL PARKING (110 SPACES)

1 XX CONCRETE CURB STOP, TYP.

1 XX WOOD PARKING STALL DIVIDER, TYP.

1 XX GRAVEL SURFACING

EXISTING FLOODWAY

1 XX TRASH CAN AND COAL BIN, TYP.

AUTOMATED PARKING KIOSK 1 XX

2 RAIL SPLIT RAIL FENCING 1 XX

CRUSHER FINES TRAIL 1 XX

EXISTING 100 YR FLOODPLAIN

TREE PROTECTION, TYP.

POST-TENSION CONCRETE SPORT COURT 1 XX

(2) PICNIC TABLE, TYP. 1 XX

SHADE SHELTER

ELECTRICAL STAGING; RE: ELECTRICAL PLANS

CONCRETE PAVING 1 XX

EXISTING SPORT COURT TO REMAIN

2 RAIL SPLIT RAIL FENCING 1 XX

LYONS SANDSTONE RETAINING WALL 1 XX

TREE PROTECTION, TYP.

POST-TENSION CONCRETE SPORT COURT 1 XX

EXISTING 500 YEAR FLOODPLAIN

GRAVEL SURFACING 1 XX

LYONS SANDSTONE RETAINING WALL 1 XX

SPLIT RAIL FENCING 1 XX

WOOD PARKING STALL DIVIDER, TYP. 1 XX

GRAVEL PARKING (100 SPACES)

CONCRETE CURB STOP, TYP. 1 XX

1 XX VEHICULAR ACCESS GATE

FLOWER PLANTER, TYP. 1 XX

PUBLIC ART, TYP.

LIMITS OF CONSTRUCTION

LYONS SANDSTONE RETAINING WALL 1 XX

PARK ID SIGN TO BE RELOCATED

LYONS SANDSTONE RETAINING WALL 1 XX

ST. VRAIN CREEK

NORTH

0 15 30 60

SCALE 1"=30'-0"

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DESIGNED: MW
DRAWN: GG
CHECKED: MW

REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.6

SHEET X OF XX

RETAINING WALL XX

MATCHLINE - SEE SHEET L2.4

EXISTING 100 YR FLOODPLAIN

EXISTING FLOODWAY

1 XX GRAVEL SURFACING

1 XX SPLIT RAIL FENCING

2ND AVENUE

1 XX CONCRETE PAVING

2ND AVENUE BRIDGE, ABUTMENTS AND ROAD RE-CONSTRUCTION BY OTHERS, N.I.C.

1 XX LYONS SANDSTONE RETAINING WALL

1 XX 10' WIDE CRUSHER FINES REGIONAL TRAIL

TREE PROTECTION, TYP.

EXISTING 100 YR FLOODPLAIN

ST. VRAIN CREEK

AUTOMATED PARKING KIOSK 1 XX

WAYFINDING KIOSK 1 XX

TREE PROTECTION, TYP.

1 XX GRAVEL SURFACING

1 XX WOOD PARKING STALL DIVIDER, TYP.

1 XX CONCRETE CURB STOP, TYP.

LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

ASPHALT PAVING BY OTHERS (WWTP PLANS)

GRAVEL PARKING, N.I.C. (133 SPACES)

NORTH

0 15 30 60

SCALE 1"=30'-0"

MATCHLINE - SEE SHEET L2.8

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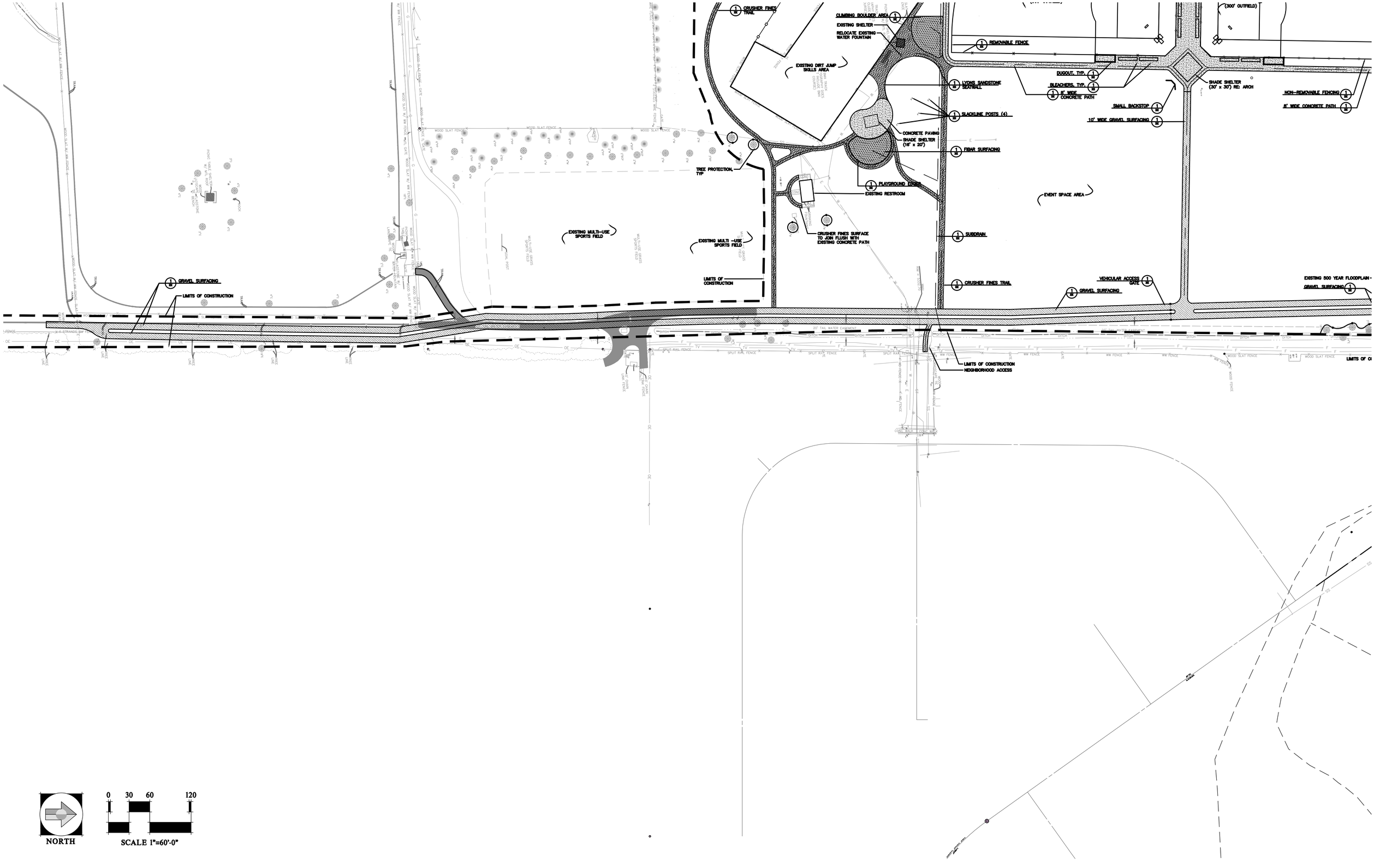
JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: LAYOUT PLANS

SHEET NUMBER: L2.7

SHEET X OF XX



NORTH

0 30 60 120

SCALE 1"=60'-0"

SHEET INDEX MAP

MATCHLINE - SEE SHEET L3.3

MATCHLINE - SEE SHEET L3.2

LEGEND

GRADING SYMBOLS

- 5330 EXISTING CONTOUR
- 5329 MINOR PROPOSED CONTOUR
- 5330 MAJOR PROPOSED CONTOUR

ABBREVIATIONS

TW	–	TOP OF WALL
BW	–	BOTTOM OF WALL (AT FINISHED GRADE)
HP	–	HIGH POINT
LP	–	LOW POINT
PA	–	PLANTING AREA

BOUNDARY AND MARKER SYMBOLS

- EXISTING FLOODWAY
- EXISTING 100 YEAR FLOODPLAIN
- EXISTING 500 YEAR FLOODPLAIN
- LIMITS OF CONSTRUCTION
- MATCHLINE

UNDERGROUND AND OVERHEAD UTILITIES SYMBOLS

- OE EXISTING OVERHEAD ELECTRIC
- E EXISTING ELECTRIC LINE
- T EXISTING TELEPHONE LINE
- X EXISTING FENCE LINE
- F EXISTING FIBER OPTIC LINE
- G EXISTING GAS LINE
- W EXISTING WATER LINE
- SS EXISTING STORM SEWER LINE
- EXISTING MANHOLE

LANDSCAPE AND DRAINAGE SYMBOLS

- COBBLE
- CONCRETE
- CRUSHER FINES
- GRAVEL
- FIBAR PLAY SURFACE
- LYONS SANDSTONE BOULDER
- SLABSTONE SEATWALL
- WATER FEATURE BOUNDARY
- PICNIC TABLE
- PUBLIC ART
- FLOWER PLANTER
- TREE PROTECTION
- EXISTING TREE

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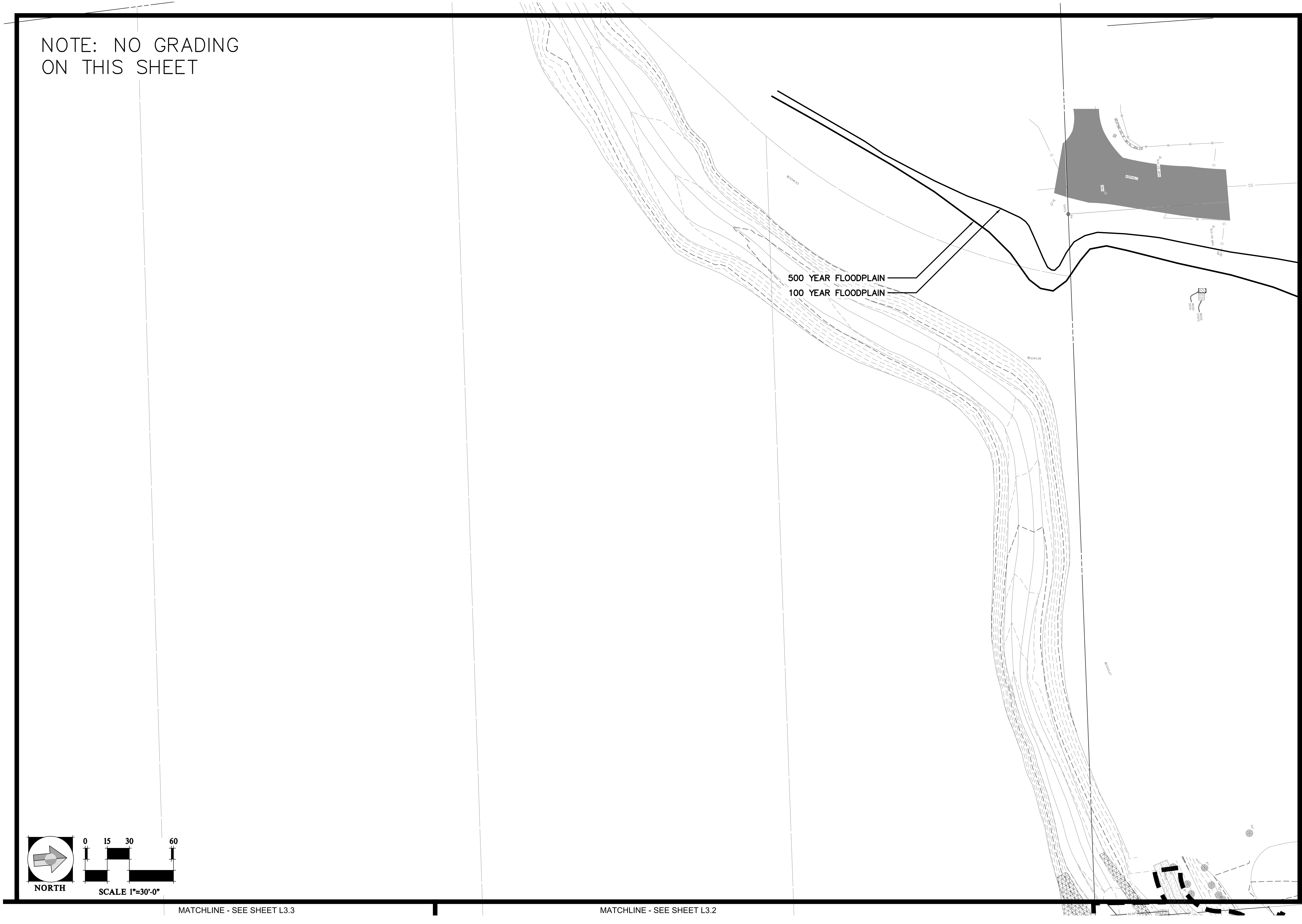
JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS SHEET INDEX

SHEET NUMBER: L3.0

SHEET x OF XX



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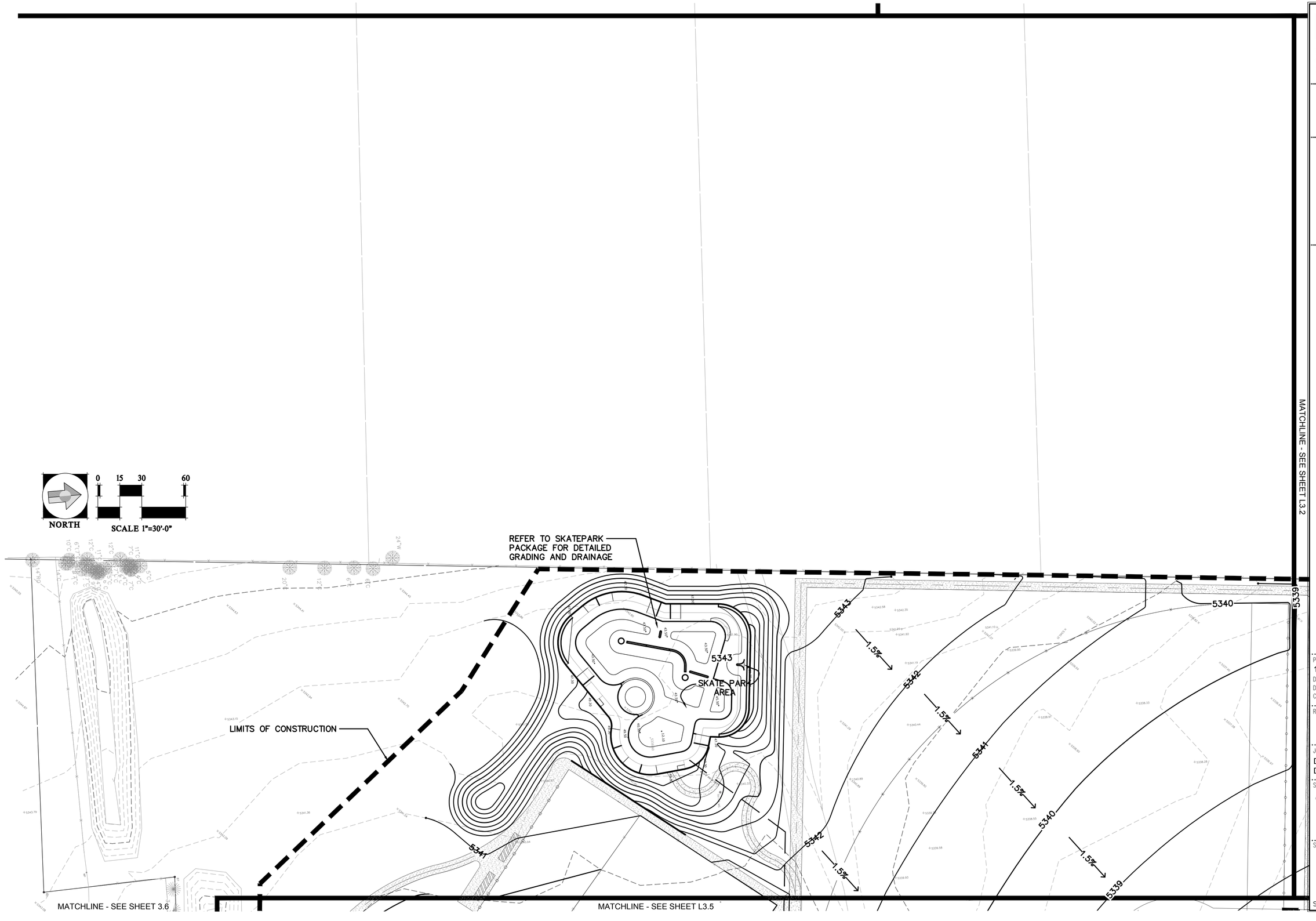
DESIGN DEVELOPMENT

SHEET TITLE:
GRADING PLANS

SHEET NUMBER:
L3.1

SHEET x OF XX



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JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
GRADING PLANS

SHEET NUMBER:
L3.2

SHEET X OF XX

MATCHLINE - SEE SHEET 3.1

MATCHLINE - SEE SHEET L3.3

NORTH

0 15 30 60

SCALE 1"=30'-0"

TREE PROTECTION, TYP.

LIMITS OF CONSTRUCTION

EXISTING 100 YEAR FLOODPLAIN

LIMITS OF CONSTRUCTION

EXISTING 500 YEAR FLOODPLAIN

MATCHLINE - SEE SHEET L3.5

MATCHLINE - SEE SHEET L3.4

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REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.3

SHEET X OF XX

MATCHLINE - SEE SHEET L3.3

MATCHLINE - SEE SHEET L3.5

LIMITS OF CONSTRUCTION

NORTH

SCALE 1"=30'-0"

0 15 30 60

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REVISIONS:

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
GRADING PLANS

SHEET NUMBER:
L3.4

SHEET X OF XX

MATCHLINE - SEE SHEET L3.3

MATCHLINE - SEE SHEET L3.2

MATCHLINE - SEE SHEET L3.6

MATCHLINE - SEE SHEET L3.4

SWALE CENTERLINE AT 1.25%

LIMITS OF CONSTRUCTION

NORTH

SCALE 1"=30'-0"

0 15 30 60

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REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.5

SHEET X OF XX

MATCHLINE - SEE SHEET L3.2

MATCHLINE - SEE SHEET L3.5

MATCHLINE - SEE SHEET L3.7

EXISTING FLOODWAY
LIMITS OF CONSTRUCTION

LIMITS OF CONSTRUCTION

NORTH

SCALE 1"=30'-0"

0 15 30 60

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REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.6

SHEET_X__OF_XX_

MATCHLINE - SEE SHEET L3.4

EXISTING FLOODWAY

ECOLOGICAL RESTORATION BY OTHERS (STREAM DESIGN BUILD TEAM)

LIMITS OF CONSTRUCTION

ASPHALT DRIVE BY OTHERS (WWTP)

NORTH

SCALE 1"=30'-0"

MATCHLINE - SEE SHEET L3.8

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JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.7

SHEET X OF XX

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BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW

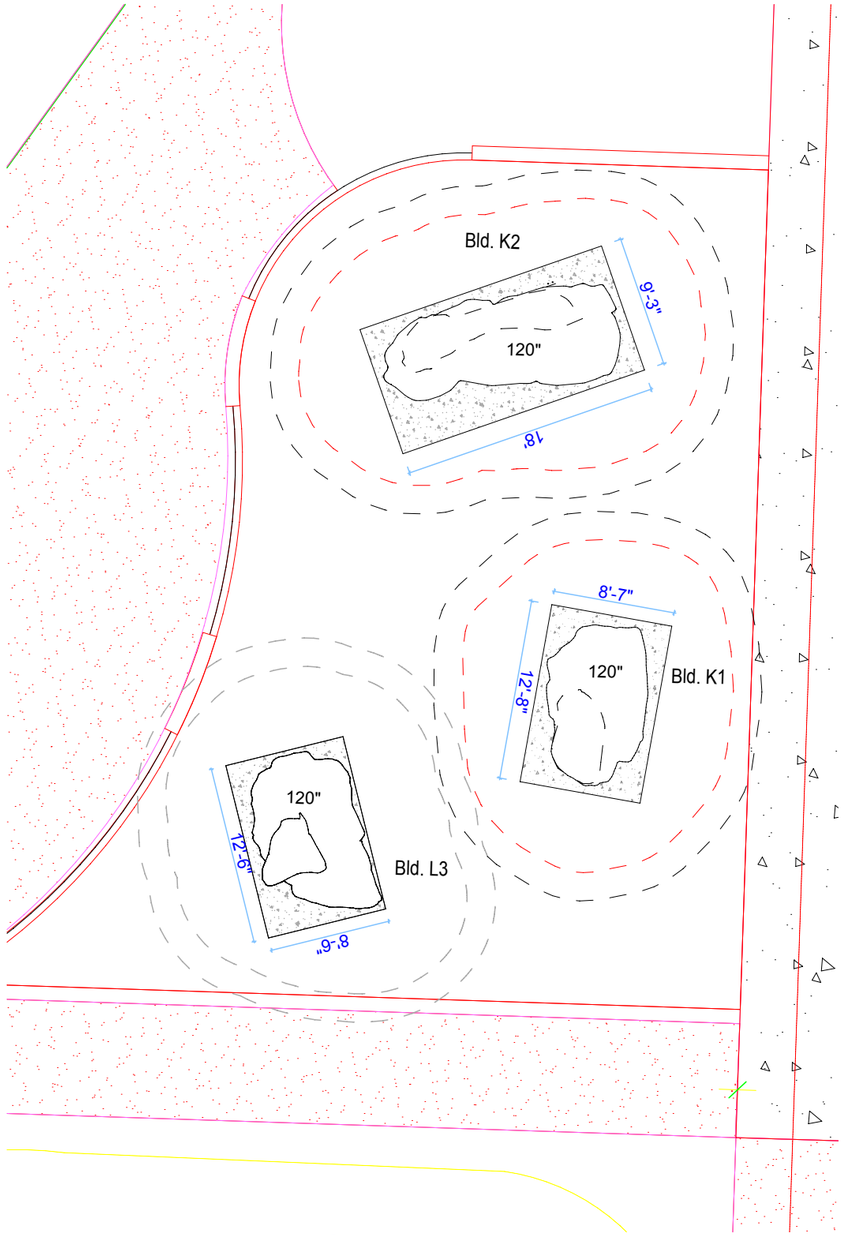
REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.1

SHEET x OF XX



W-02 Option 1 Layout 3/32" = 1'-0"

Design Reference

Design Reference

Design Reference

ID Sculpture
591 South Boulevard
Gunnison, CO 81230
www.IDSculpture.com
970.641.1747

Bohn Park

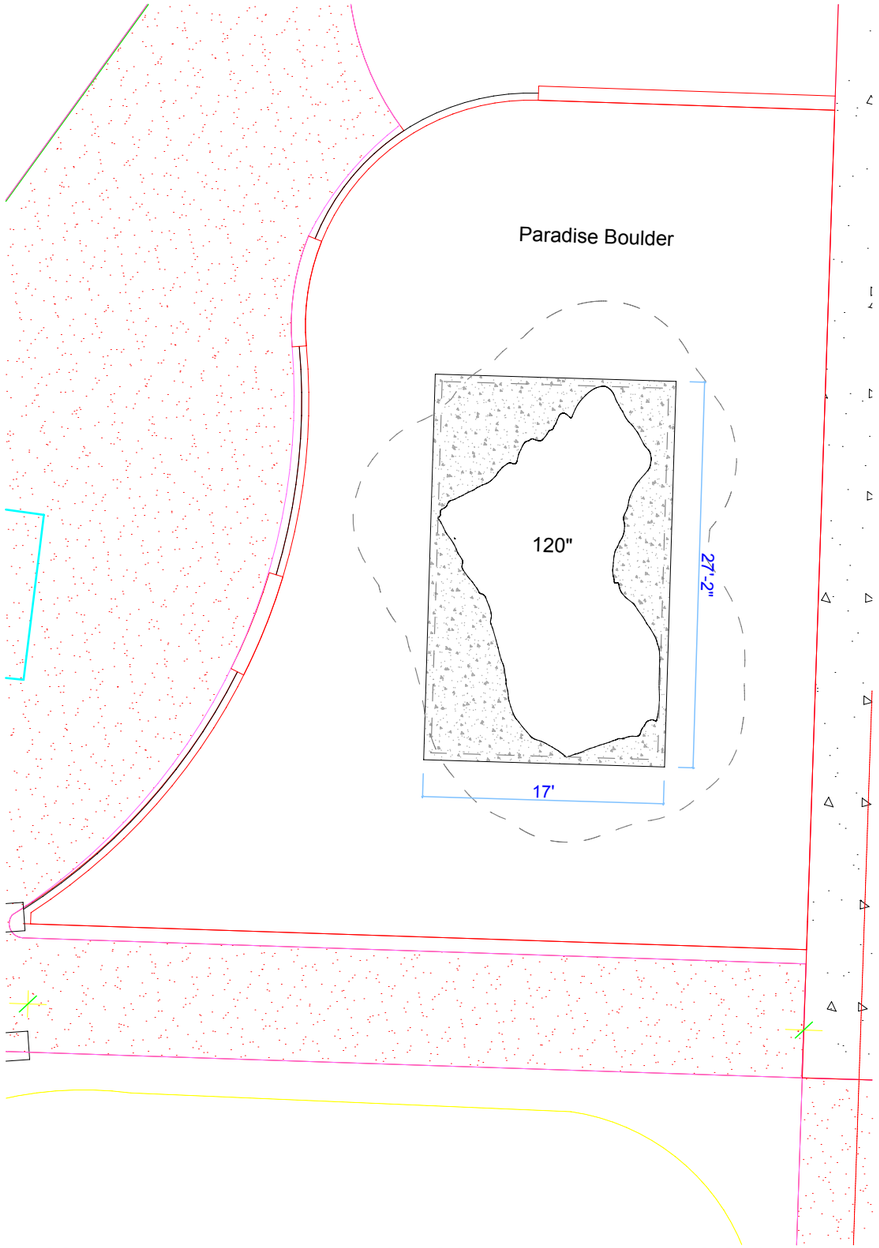
SCHEMATIC DESIGN
NOT FOR CONSTRUCTION

All IDS projects are designed to meet or exceed ASTM 1487-11.
Not all equipment may be appropriate for all children.
Supervision is required.
ASTM compliant safety surfacing is required under and around all play equipment.
The Americans with Disabilities Act (ADA) may require your play area to be accesible, please consult with an ADA professional to ensure compliance.

Date:
5/17/16

Drawing Title:
Option 1

Sheet #:
A.01.1



W-02 Option 2 Layout 3/32" = 1'-0"

Paradise Boulder

Paradise Boulder-Perspective

Design Reference

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Gunnison, CO 81230
www.IDSculpture.com
970.641.1747

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Date:
5/17/16

Drawing Title:
Option 2

Sheet #:
A.01.2

Center this cross vane

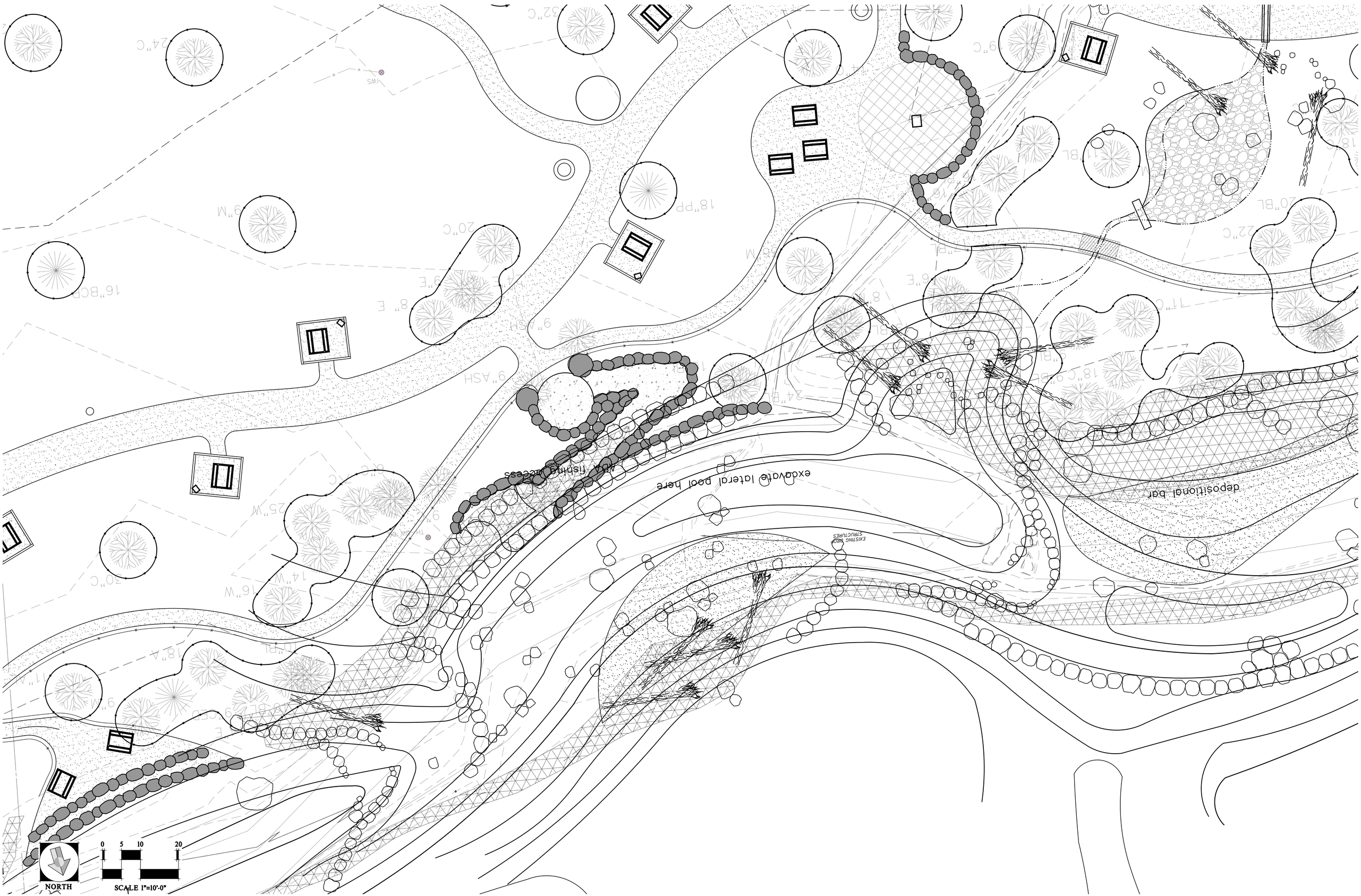
Move back by 1' of steps

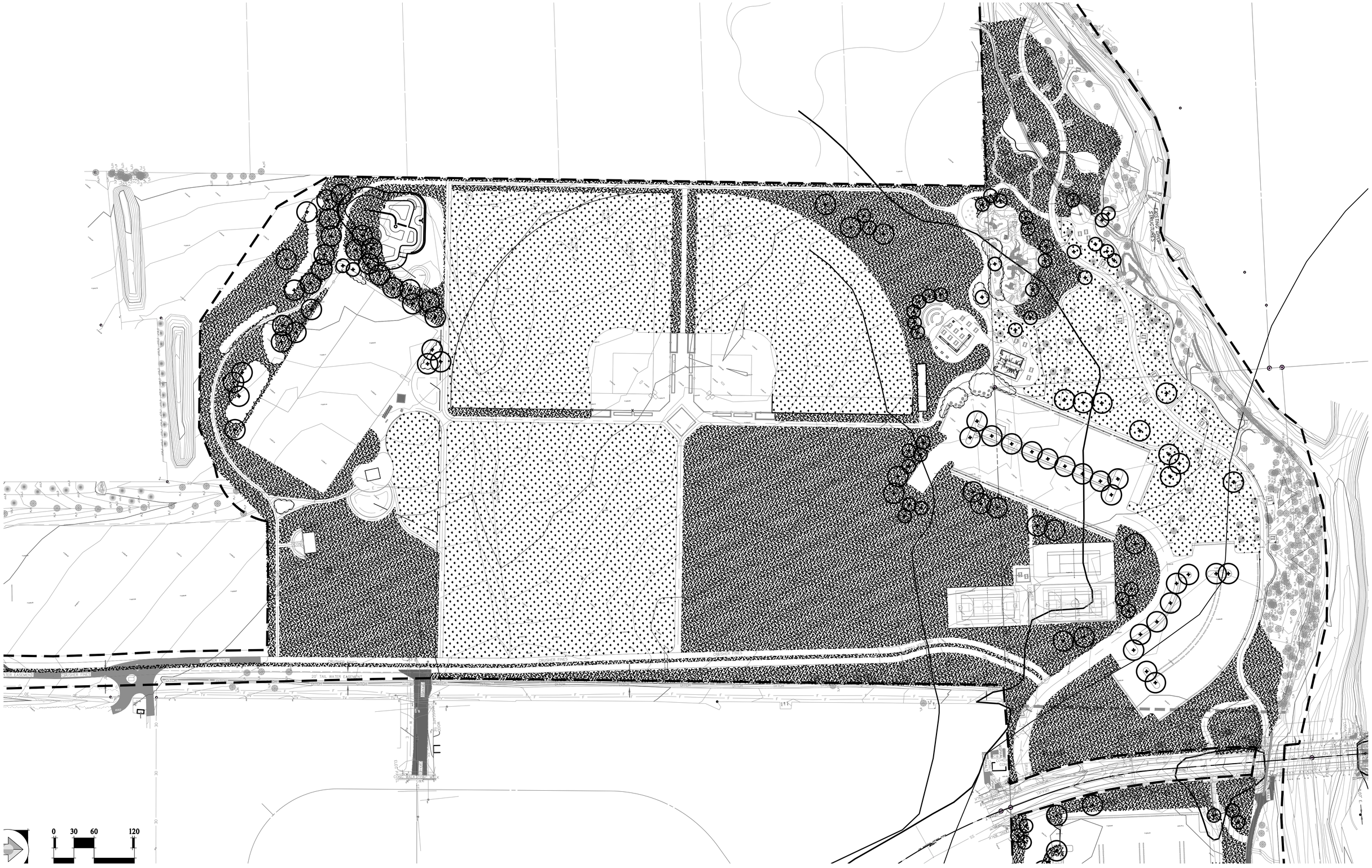
EXISTING DROP STRUCTURES

NORTH

0 5 10 20

SCALE 1"=10'-0"


depositional bar
excavate lateral pool here
EXISTING BARN STRUCTURES
NORTH
0 5 10 20
SCALE 1"=10'-0"


EXISTING TREE
TO BE REMOVED
0
30
60
120

NORTH

SCALE 1"=20'-0"

0 10 20 40

1YEAR INUNDATION BOUNDARY

2 YEAR INUNDATION BOUNDARY

CHANGE REQUESTED: RIVER WIDENED AT S-TURN
REQUESTER: CPW
ACTION TAKEN: RIVER WIDENED AT S-TURN
REASONING: RESILIENCY - PROVIDES EXTRA MEANDER LOWERING VELOCITIES IN THE REACH
HABITAT CREATION - PROVIDES LATERAL SCOUR POOL IDENTIFIED AS VALUABLE HABITAT BY CPW

CHANGE REQUESTED: CROSS VANE REMOVED/REPLACED WITH J-HOOK
REQUESTER: LWB, CPW
ACTION TAKEN: CROSS VANE RETAINED
REASONING: CROSS VANE REQUIRED TO REDUCE ELEVATION AND ARMOR RIVERBED FOR ANTICIPATED HEADCUT
LOWERS ENERGY AND VELOCITY PRIOR TO ENTERING CONFLUENCE TO REDUCE EROSION RISK TO PROPERTIES ON NORTHERN BANK

CHANGE REQUESTED: CROSS VANE REMOVED
REQUESTER: LWB AND CPW
ACTION TAKEN: CROSS VANE REPLACED WITH HARDENED RIFFLE
REASONING: MORE NATURALLY APPEALING REACH, HABITAT CREATION

CHANGE REQUESTED: EXCAVATE LATERAL SCOUR POOL
REQUESTER: CPW
ACTION TAKEN: LATERAL SCOUR POOL EXCAVATED
REASONING: CREATES VALUABLE HABITAT (CPW) AND PROVIDES IDEAL ADA ACCESS POINT

CHANGE REQUESTED: CROSS VANE REMOVED
REQUESTER: LWB AND CPW
ACTION TAKEN: CROSS VANE RETAINED
REASONING: CROSS VANE REQUIRED TO REDUCE ELEVATIONS TO PROVIDE THE TWO LATERAL SCOUR POOLS FOR PUBLIC ACCESS AND HABITAT CREATION

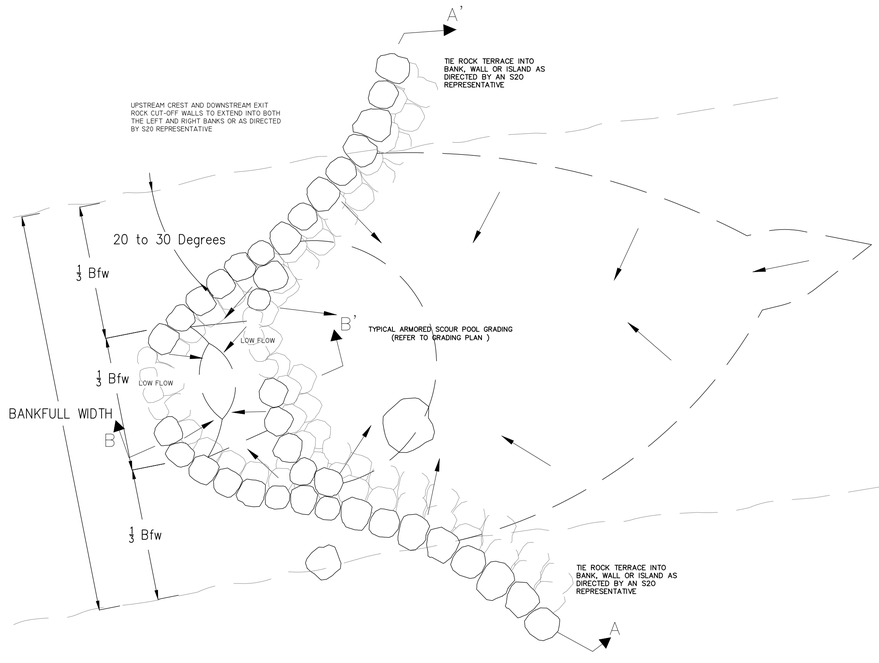
CHANGE REQUESTED: PUBLIC ACCESS RELOCATED TO THIS LOCATION, POINT BAR ENCOURAGED TO DEVELOP
REQUESTER: CPW AND LWB
ACTION TAKEN: PUBLIC ACCESS RELOCATED
REASONING: INSIDE OF WIDENED BEND AN AREA OF LITTLE ECOLOGICAL VALUE (CPW)
MEANDER WILL PROVIDE SEDIMENT DEPOSIT, CREATING A BEACH IDEAL FOR PARKING

CHANGE REQUESTED: ACCESS POINT RELOCATED DOWNSTREAM, BANKS REGRADED AND REVEGETATED
REQUESTER: CPW
ACTION TAKEN: ACCESS POINT RELOCATED DOWNSTREAM, BANKS REGRADED AND REVEGETATED
REASONING: APPROVED RIPARIAN AREA, MORE APPROPRIATE ACCESS POINT DOWNSTREAM

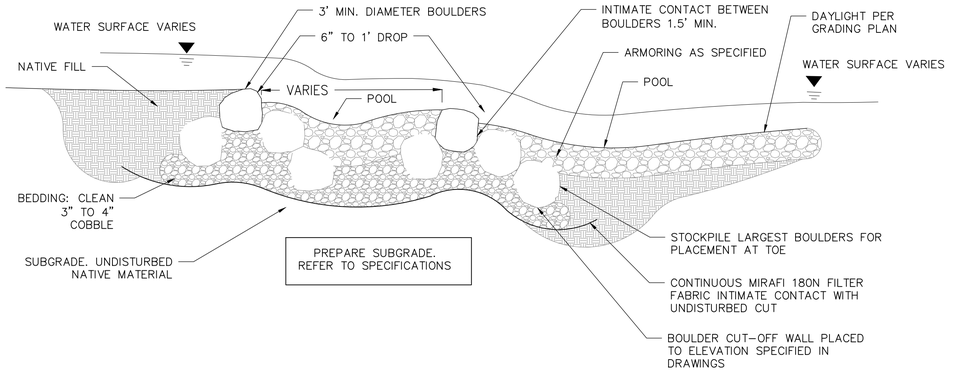
CHANGE REQUESTED: CROSS VANE REMOVED
REQUESTER: LWB
ACTION TAKEN: CROSS VANE REPLACED WITH HARDENED RIFFLE
REASONING: MORE NATURALLY APPEALING REACH, HABITAT CREATION

1 YEAR INUNDATION BOUNDARY
2 YEAR INUNDATION BOUNDARY

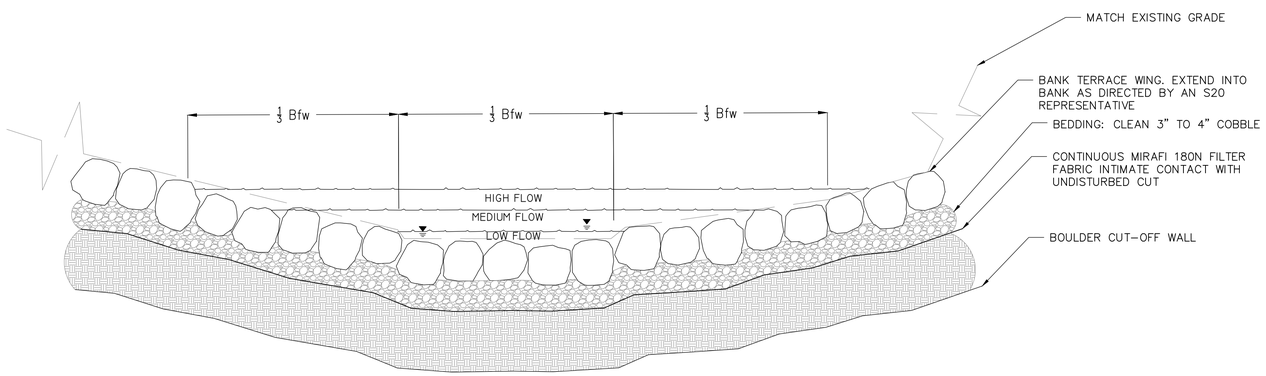
CHANGE REQUESTED: CROSS VANE REMOVED
REQUESTER: CPW AND LWB
ACTION TAKEN: CROSS VANE RETAINED
REASONING: CROSS VANE REDUCES SPEED AND WATER SURFACE ELEVATIONS UNDER BRIDGE TO PASS REGULATIONS
PROVIDES POOL FOR PUBLIC ACCESS
CO-OPERATES WITH OVERFLOW CHANNEL, REDUCING ITS ACTIVATION STAGE TO 10 YR FLOOD



1 CROSS VANE TYP.
PLAN
SCALE: 1:8



B-B' CROSS-VANE TYP.
PROFILE
SCALE: 1:5



A-A CROSS-VANE TYP.
CROSS SECTION
SCALE: 1:5

TYPICAL DETAILS (1)

S2O Design and Engineering

Scott Shipley, P.E.
318 Mcconnell Drive
Lyons CO, 80540,
USA
(303) 819-3985

Client:
TOWN OF LYONS

Project Name:
BOHN PARK RECOVERY PROJECT

Status:
30% DESIGN DRAWINGS

Drawing Name:
TYPICAL DETAILS (1)

Revisions:
--

Drawn By:
JR, NW, CC

Checked By:
Scott Shipley

Date:
7/22/2016

Stamp:

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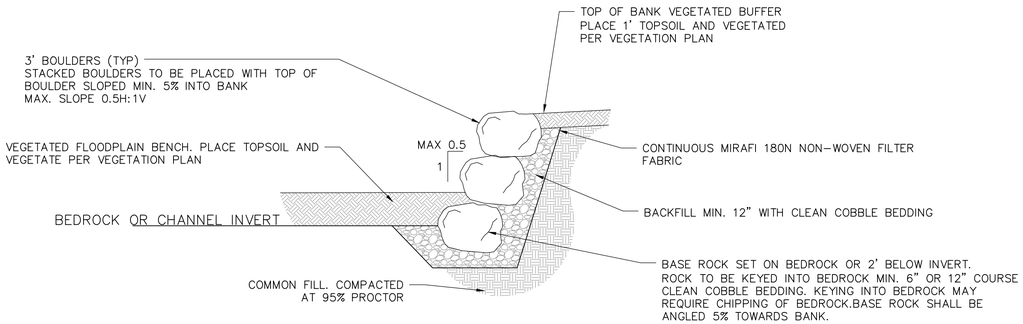
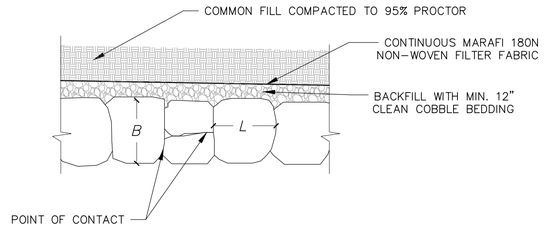
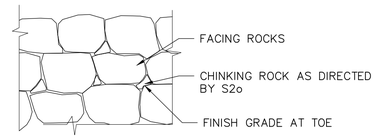


2 BOULDER RETAINING WALL TYP.
SECTION SCALE: 1:5



3 BOULDER RETAINING WALL TYP.
PLAN SCALE: 1:5



4 BOULDER RETAINING WALL TYP.
PROFILE SCALE: 1:5

5 SOIL COVERED RIPRAP TYP.
SECTION SCALE: 1:5

6 SANDSTONE BOULDER STEPPED ACCESS
SECTION SCALE: 1:5

7 SLOPED BANK REVETMENT WITH ARMORED TOE TYP.
SECTION SCALE: 1:5

8 TERRACED ROCK TYP.
SECTION SCALE: 1:5

9 TERRACED ROCK WITH VEGETATION TYP.
SECTION SCALE: 1:5

TYPICAL DETAILS (2)

S2O Design and Engineering
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USA
(303) 819-3985

Client:
TOWN OF LYONS

Project Name:
BOHN PARK RECOVERY PROJECT

Status:
30% DESIGN DRAWINGS

Drawing Name:
TYPICAL DETAILS (2)

Revisions:
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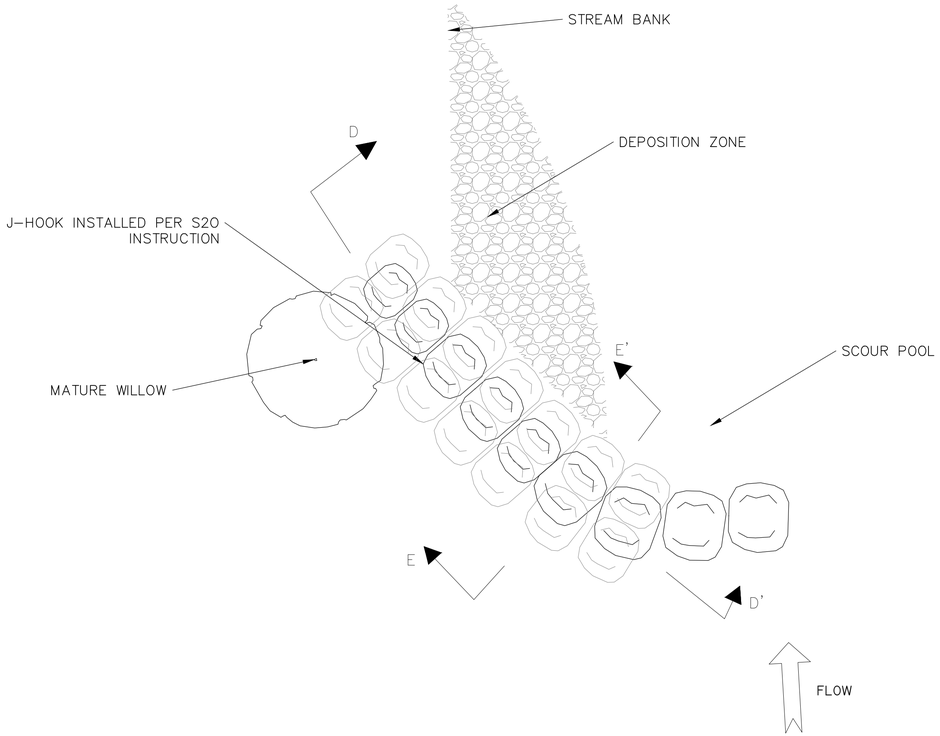
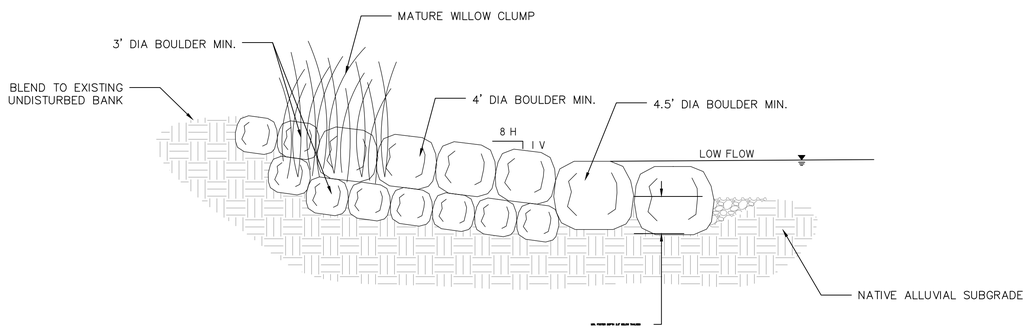


10 J-HOOK TYPICAL PLAN
PLAN NTS



NOTES:
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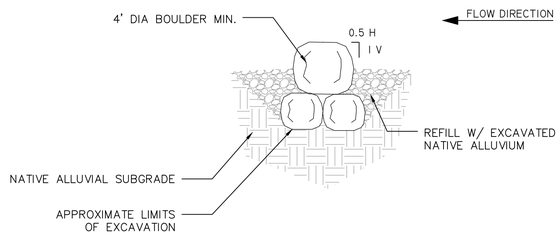
D-D' J-HOOK TYPICAL
SECTION NTS



E-E' J-HOOK TYPICAL
PROFILE NTS

TYPICAL DETAILS (3)

S2O Design and Engineering

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Lyons CO, 80540,
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(303) 819-3985

Client:
TOWN OF LYONS

Project Name:
BOHN PARK RECOVERY PROJECT

Status:
30% DESIGN DRAWINGS

Drawing Name:
TYPICAL DETAILS (3)

Revisions:
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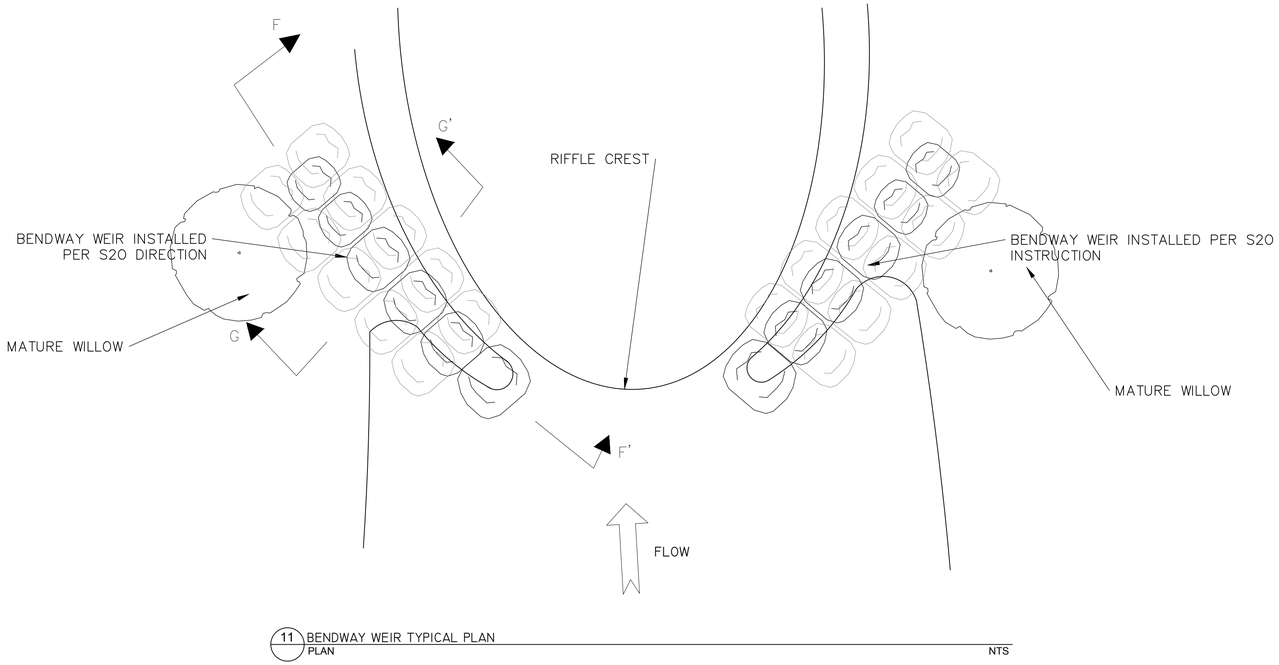
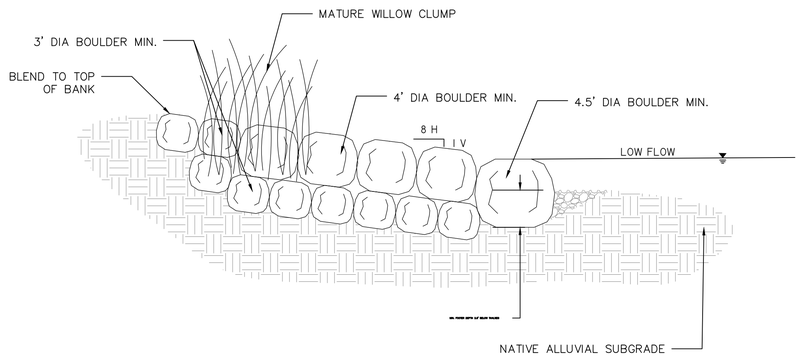
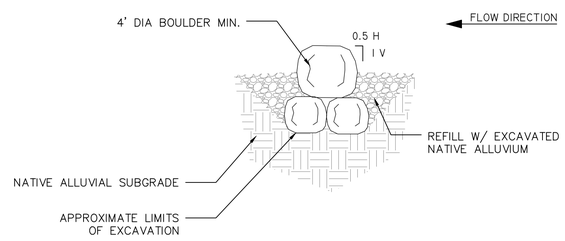


11 BENDWAY WEIR TYPICAL PLAN
PLAN NTS



NOTES:
(1) CONSTRUCT BENDWAY WEIR PER DIRECTION OF ENGINEER.

F-F' BENDWAY WEIR TYPICAL
SECTION NTS



G-G' BENDWAY WEIR TYPICAL
PROFILE NTS

TYPICAL DETAILS (4)

S2O Design and Engineering
Scott Shipley, P.E.
318 Mcconnell Drive
Lyons CO, 80540,
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(303) 819-3985

Client:
TOWN OF LYONS

Project Name:
BOHN PARK RECOVERY PROJECT

Status:
30% DESIGN DRAWINGS

Drawing Name:
TYPICAL DETAILS (4)

Revisions:
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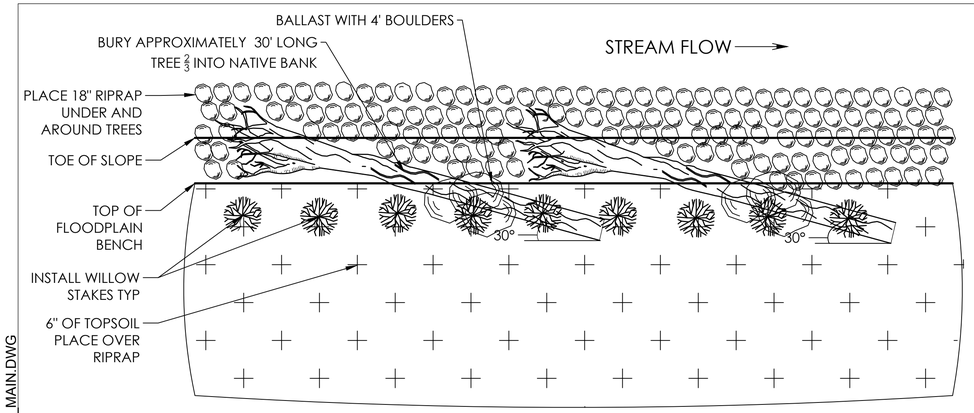
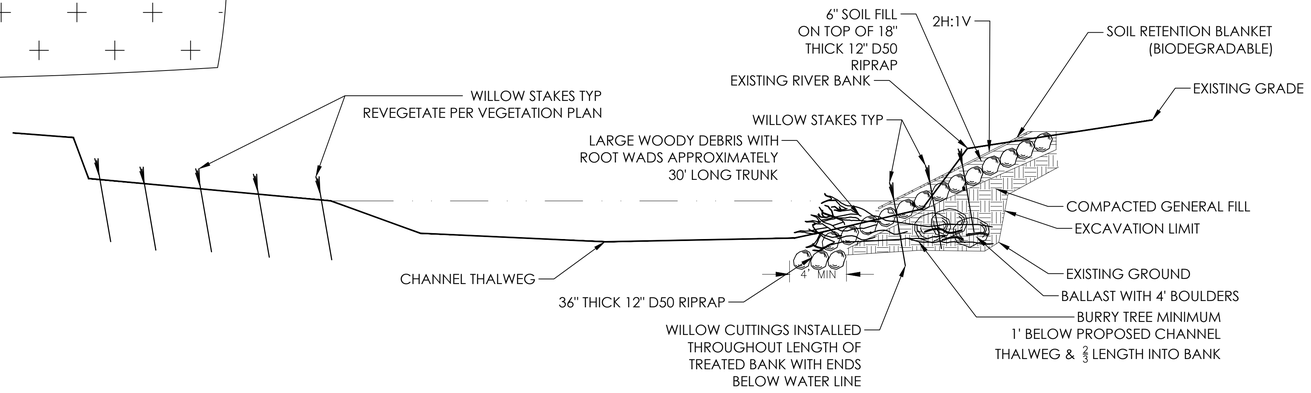
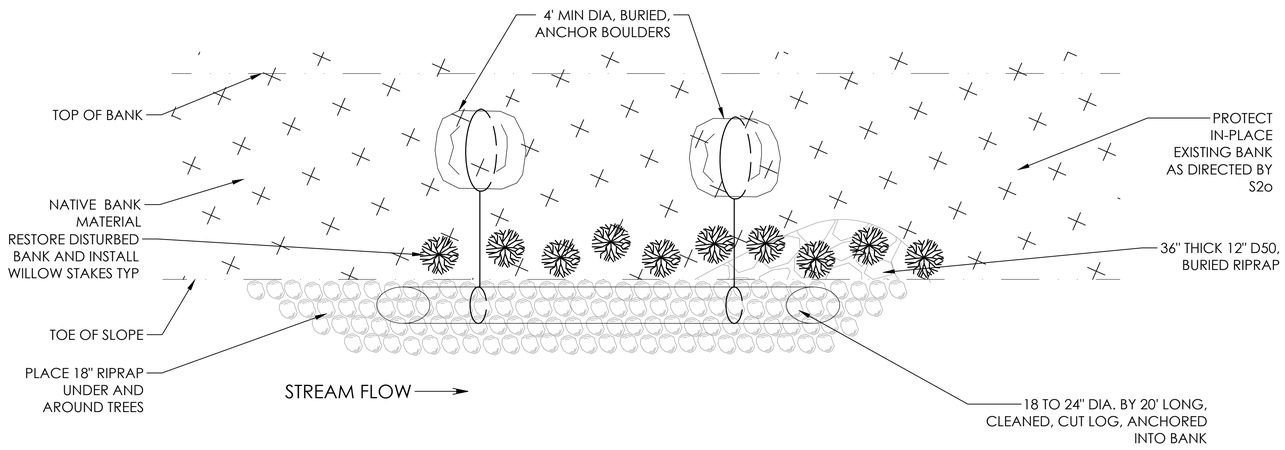


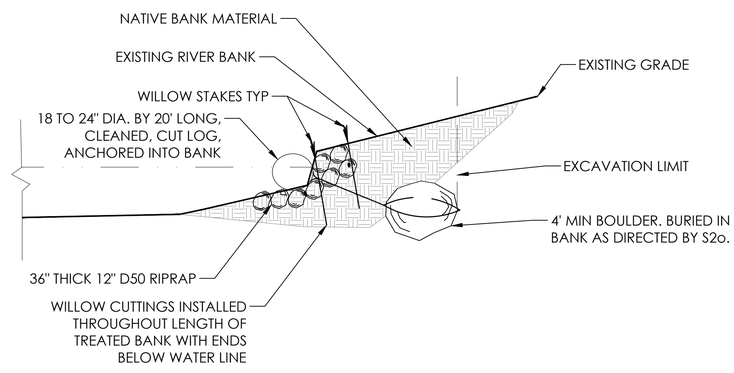
12 ROOTWAD TYPICAL
PLAN NTS



13 ROOTWAD TYPICAL
SECTION NTS



14 CABLED LOG TYPICAL
PLAN NTS



15 CABLED LOG TYPICAL
SECTION NTS

TYPICAL DETAILS (5)

S2O
REINVENTING WHITEWATER

S2O Design and Engineering

Scott Shipley, P.E.
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Lyons CO, 80540,
USA
(303) 819-3985

Client:
TOWN OF LYONS

Project Name:
BOHN PARK RECOVERY PROJECT

Status:
30% DESIGN DRAWINGS

Drawing Name:
TYPICAL DETAILS (5)

Revisions:
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Scott Shipley

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7/22/2016

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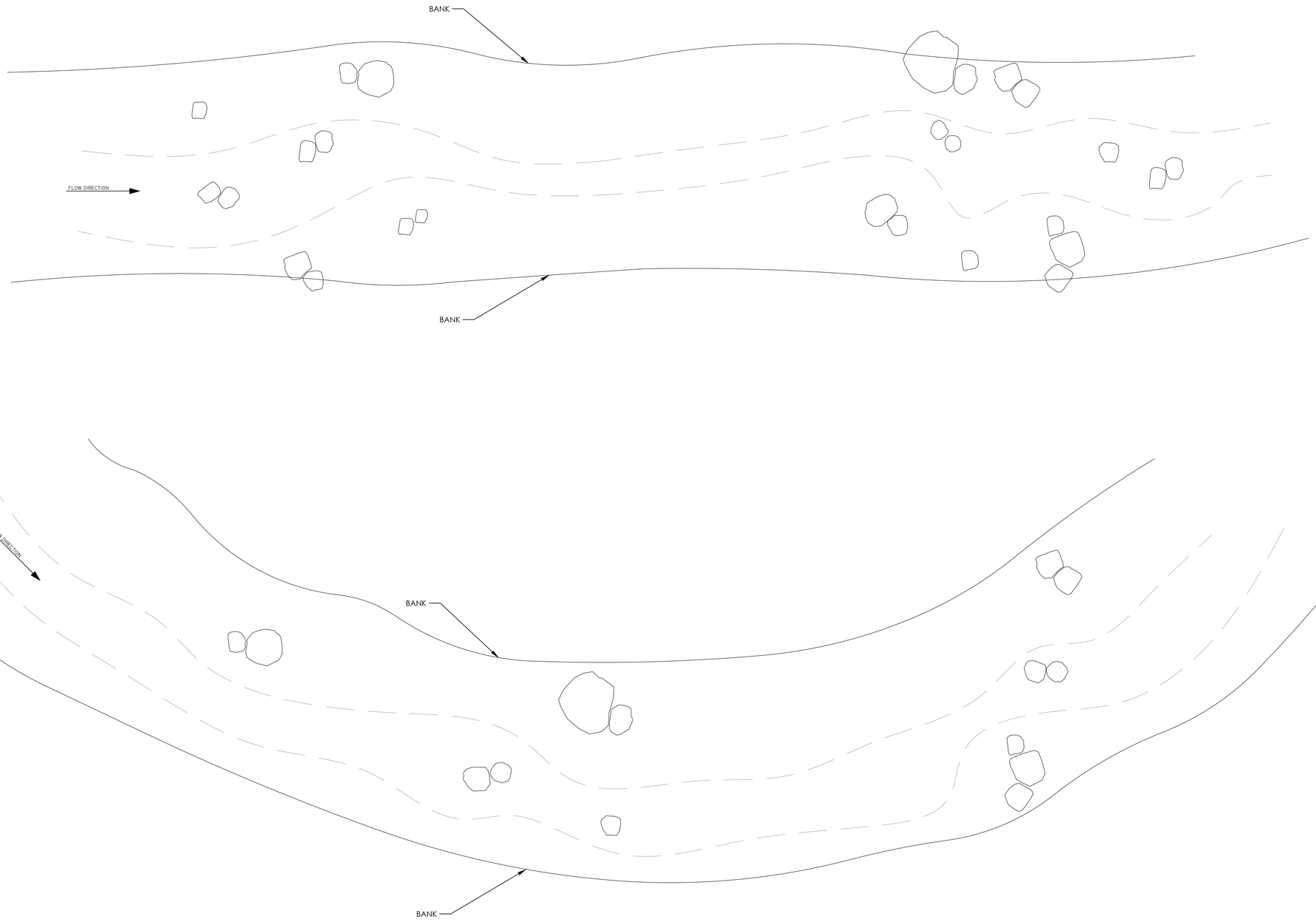

16 BOULDER PLACEMENT TYP.
PLAN

SCALE: 1:8

TYPICAL DETAILS (6)

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Scott Shipley, P.E.
318 Mcconnell Drive
Lyons CO, 80540,
USA
(303) 819-3985

Client:
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Project Name:
BOHN PARK RECOVERY PROJECT

Status:
30% DESIGN DRAWINGS

Drawing Name:
TYPICAL DETAILS (6)

Revisions:
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Drawn By:
JR, NW, CC

Checked By:
Scott Shipley

Date:
7/22/2016

Stamp:

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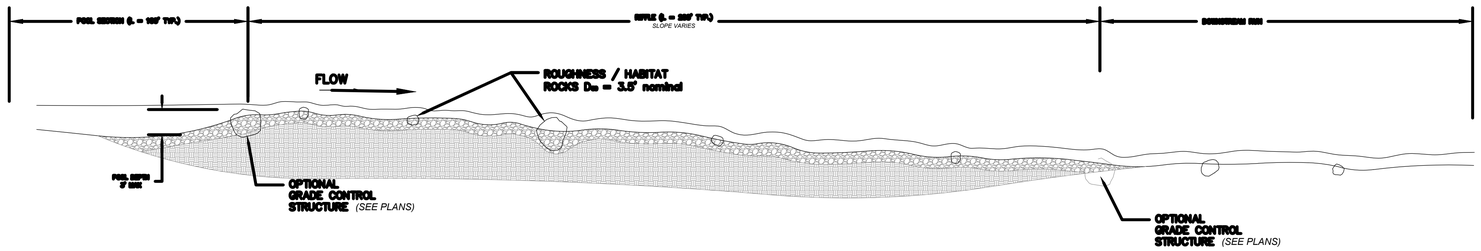
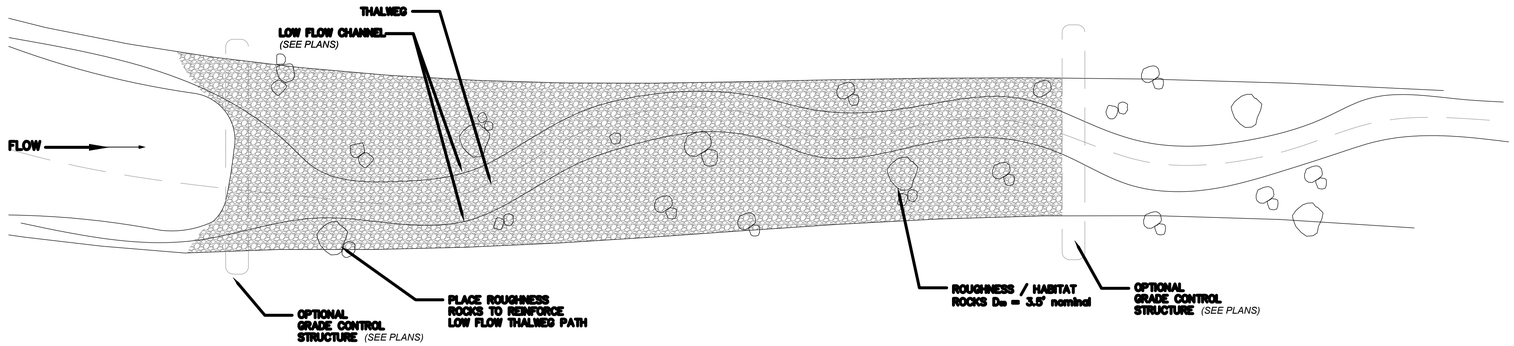
IMPROVED RIFFLE PROFILE



IMPROVED RIFFLE PLAN



TYPICAL DETAILS (7)

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S2O Design and Engineering

Scott Shipley, P.E.
318 Mcconnell Drive
Lyons CO, 80540,
USA
(303) 819-3985

Client:
TOWN OF LYONS

Project Name:
BOHN PARK RECOVERY PROJECT

Status:
30% DESIGN DRAWINGS

Drawing Name:
TYPICAL DETAILS (7)

Revisions:
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Drawn By:
JR, NW, CC

Checked By:
Scott Shipley

Date:
7/22/2016

Stamp:

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Bohn Park Final Design and Bidding Process

BOT Work Session August 1, 2016

LYONS COLORADO

DHM DESIGN

S_2O

Photograph courtesy of Ed Bruder

Bohn Park 2016 Flood Recovery Project Scope

- The Bohn Park Flood Recovery Final Design and Bid Project will address the following fundamental goals outlined in the Lyons Recovery Action Plan and Lyons Parks Flood Recovery Planning Process for ensuring that Bohn Park continues to meet local and regional demands:

- 1) Reconstruction of facilities in Bohn Park to address the immediate recreational needs of Lyons, especially active/athletic uses. We will create a place to gather and play as a community again.
- 2) Creation of an attraction that will draw visitors to our Town. This is essential to ensure that the Town will remain economically viable and maintain its reputation and brand as a destination for healthy, active, outdoor lifestyles.
- 3) Reestablish trail connectivity, both locally and regionally, include loop trails.
- 4) Restore and augment river access and river habitat.
- 5) Restore/Replace picnic opportunities, including shelters and increase size.
- 6) Re-establish natural areas and consider wetlands.
- 7) Installation of public art along trails.

TOWN OF LYONS PARKS - FLOOD RECOVERY PLANNING PROCESS

OCTOBER 29th, 2015 - PUBLIC MEETING

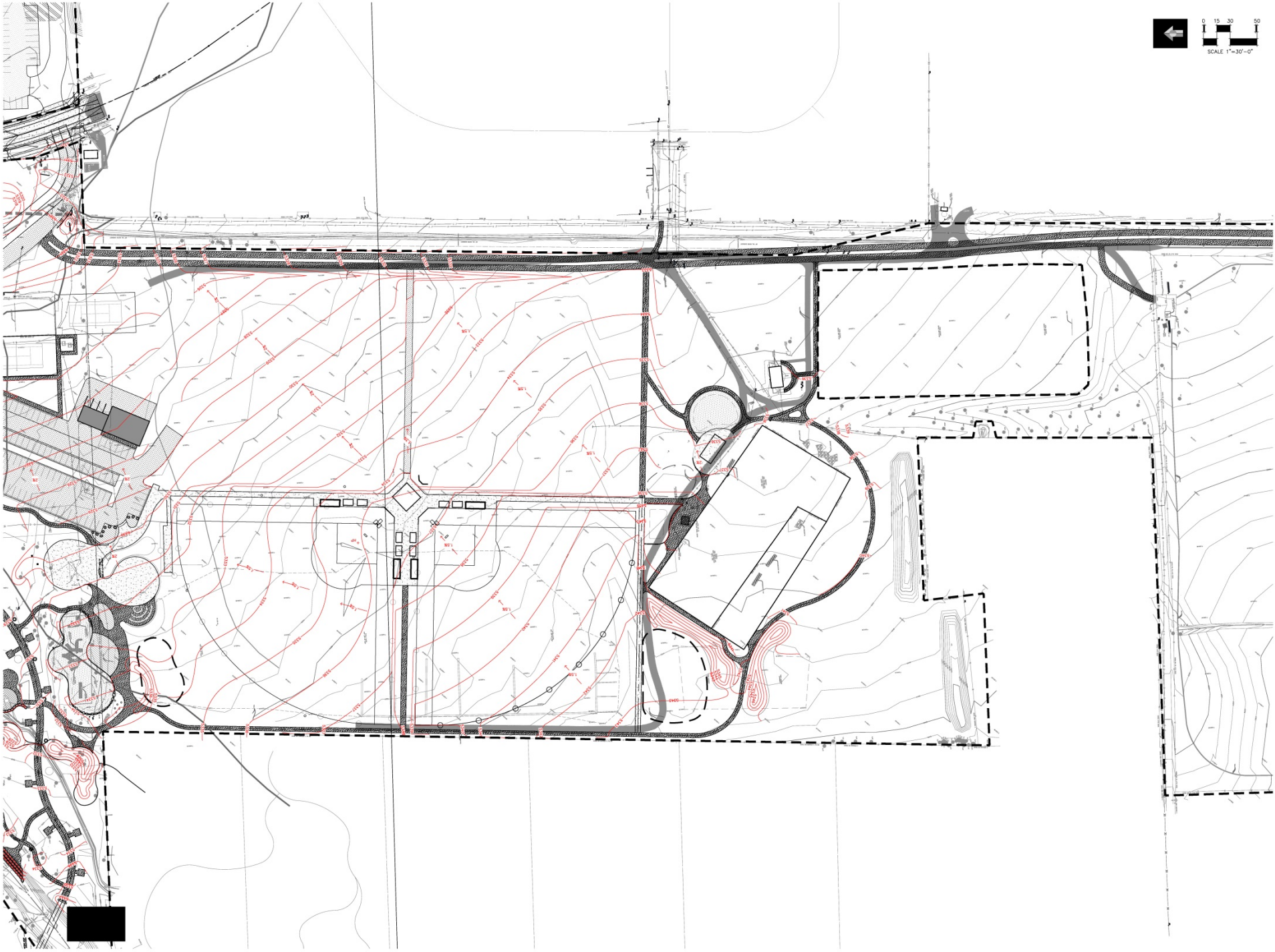
BOHN PARK
PREFERRED ALTERNATE

SCALE: 1"=100'-0"

LYONS COLORADO | S2O | OHM DESIGN

50% Design Set

0 15 30 50
SCALE 1"=30'-0"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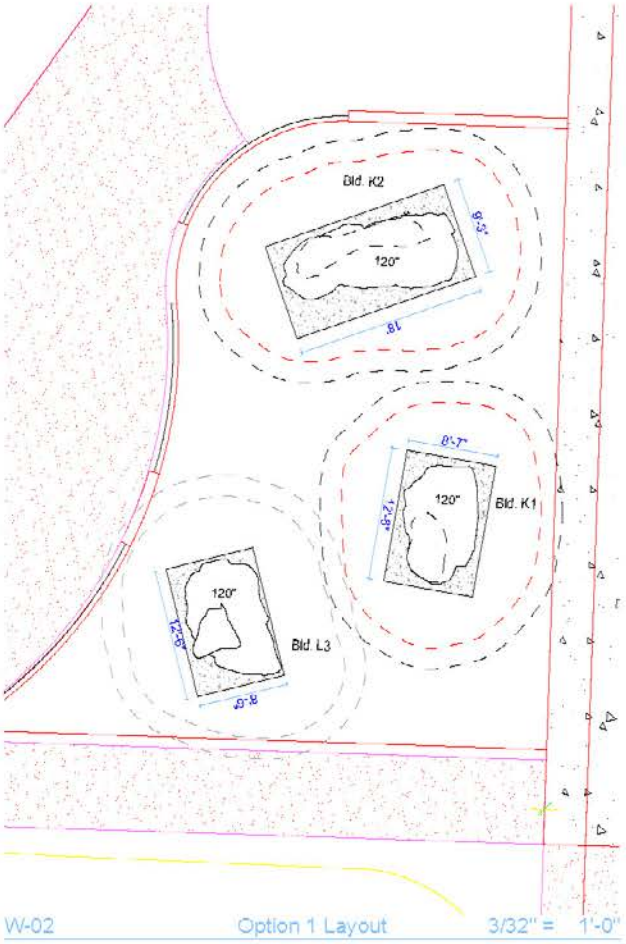
SCALE 1"=30'-0"

50% Design Drawing



W-02 Option 1 Layout 3/32" = 1'-0"

Design Reference

Design Reference

Design Reference

ID Sculpture
591 South Boulevard
Gunnison, CO 81230
www.IDSculpture.com
970.641.1747

Bohn Park

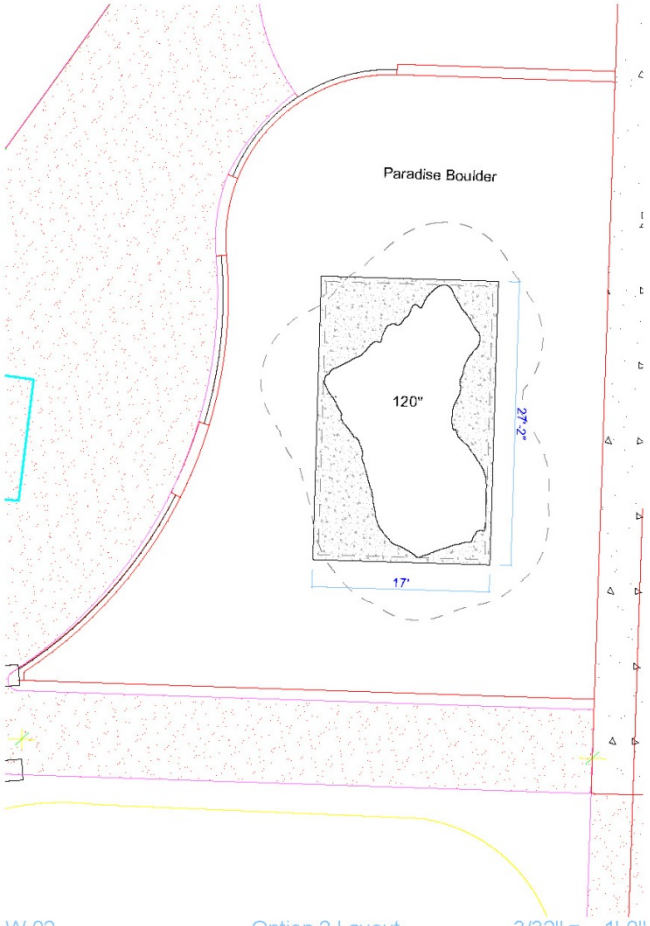
SCHEMATIC DESIGN
NOT FOR CONSTRUCTION

All IDS projects are designed to meet or exceed ASTM 1487-11
Not all equipment may be appropriate for all children.
Supervision is required.
ASTM compliant safety surfacing is required under and around all play equipment.
The Americans with Disabilities Act (ADA) may require your play area to be accesible, please consult with an ADA professional to ensure compliance.

Date:
5/17/16

Drawing Title:
Option 1

Sheet #:
A.01.1



W-02 Option 2 Layout 3/32" = 1'-0"

Paradise Boulder

Paradise Boulder-Perspective

Design Reference

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Gunnison, CO 81230
www.IDSculpture.com
970.641.1747

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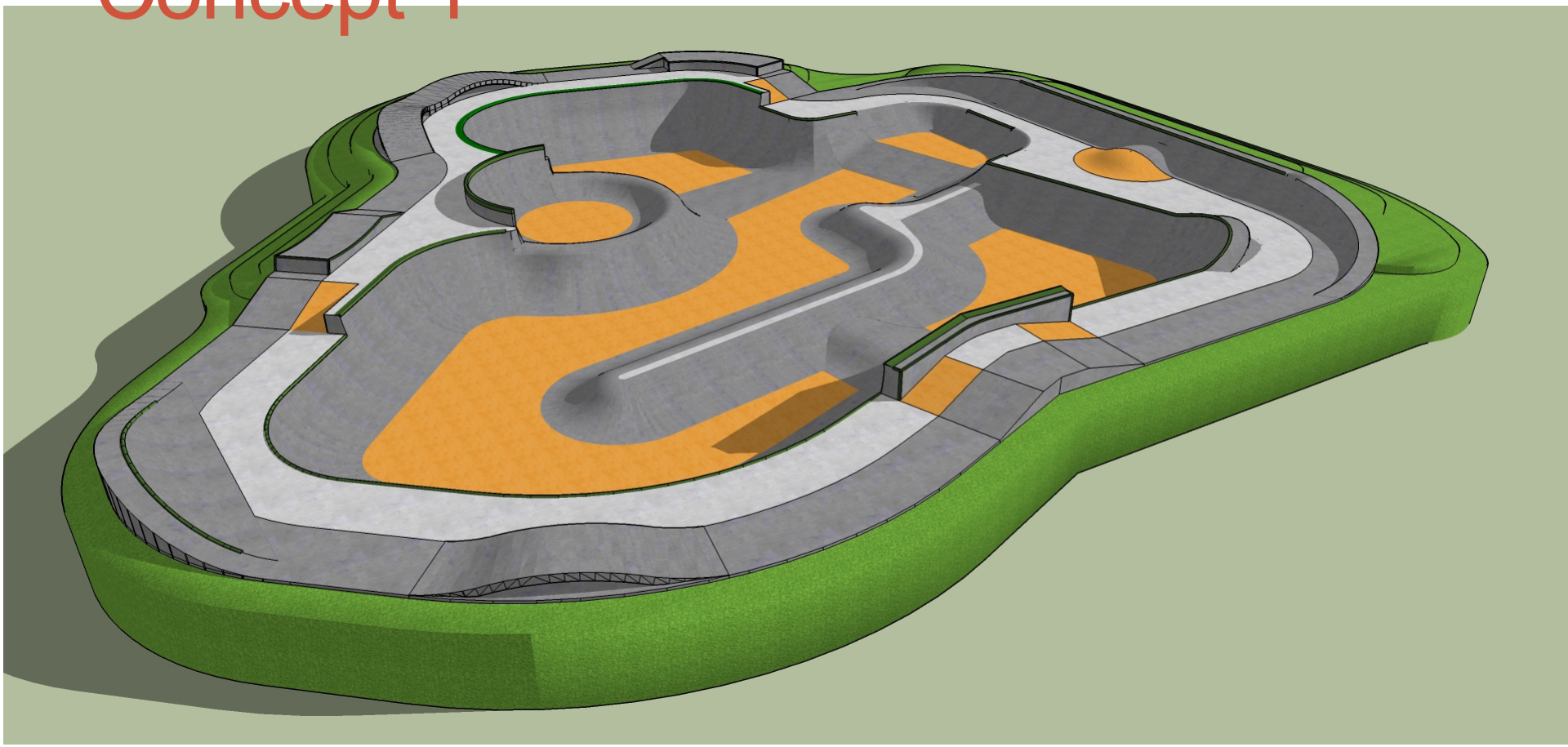
5/17/16

Drawing Title:
Option 2

Sheet #:
A.01.2

Concept 1



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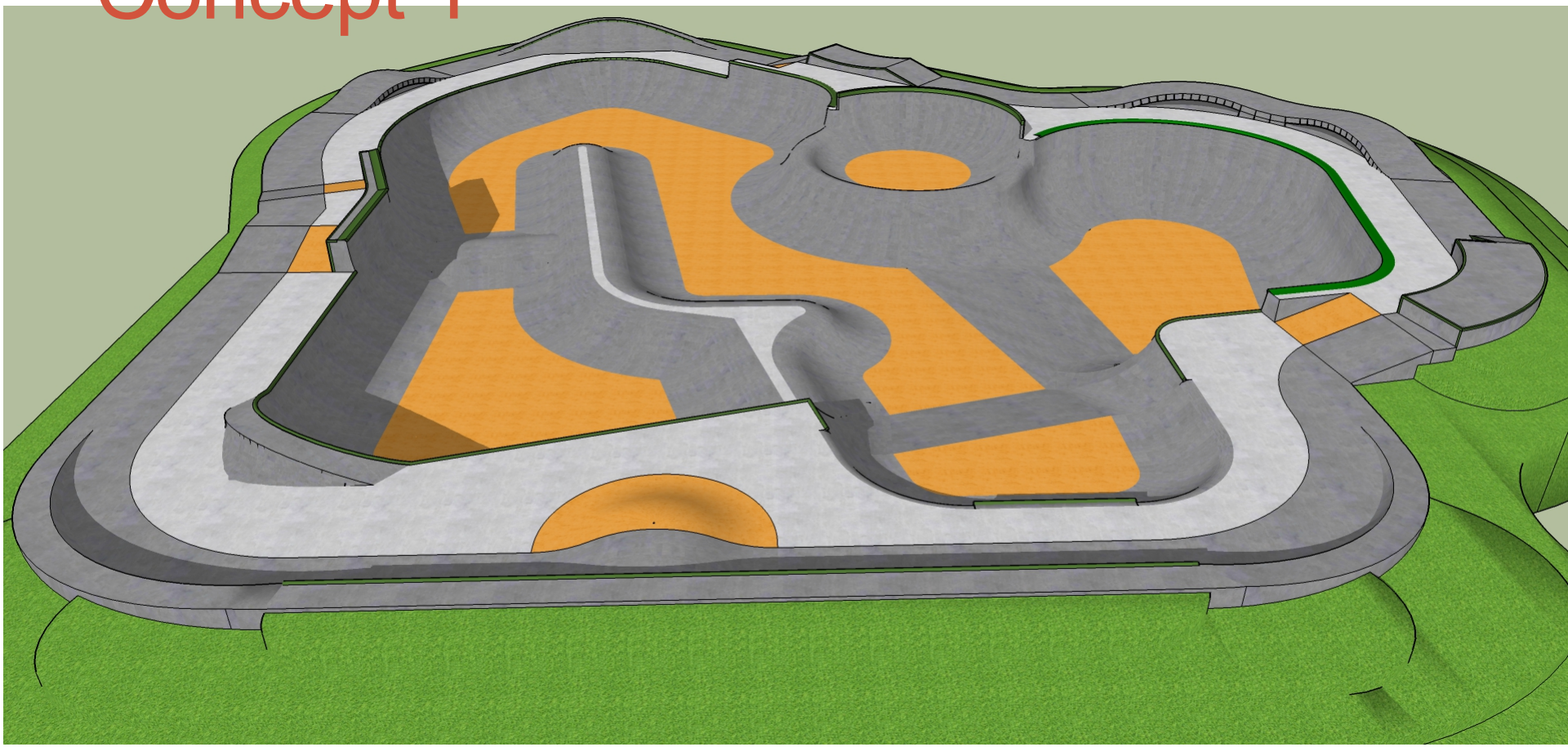

Concept 2

Concept 2

LYONS PARKS & RECREATION

PROPOSED PAVILION PERSPECTIVE
BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 10, 2016

A-2

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LYONS PARKS & RECREATION

PROPOSED RESTROOM PERSPECTIVE
BOHN PARK 2016 FLOOD RECOVERY PROJECT

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JUNE 10, 2016

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LYONS PARKS & RECREATION

PROPOSED PAVILION PERSPECTIVE
BOHN PARK 2016 FLOOD RECOVERY PROJECT

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JUNE 10, 2016

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RCP GENERAL NOTES

1. ALL CEILING ELEVATIONS LISTED AS A.F.F. DIMENSIONS. SEE INTERIOR ELEVATIONS FOR CLARIFICATION IF NECESSARY.

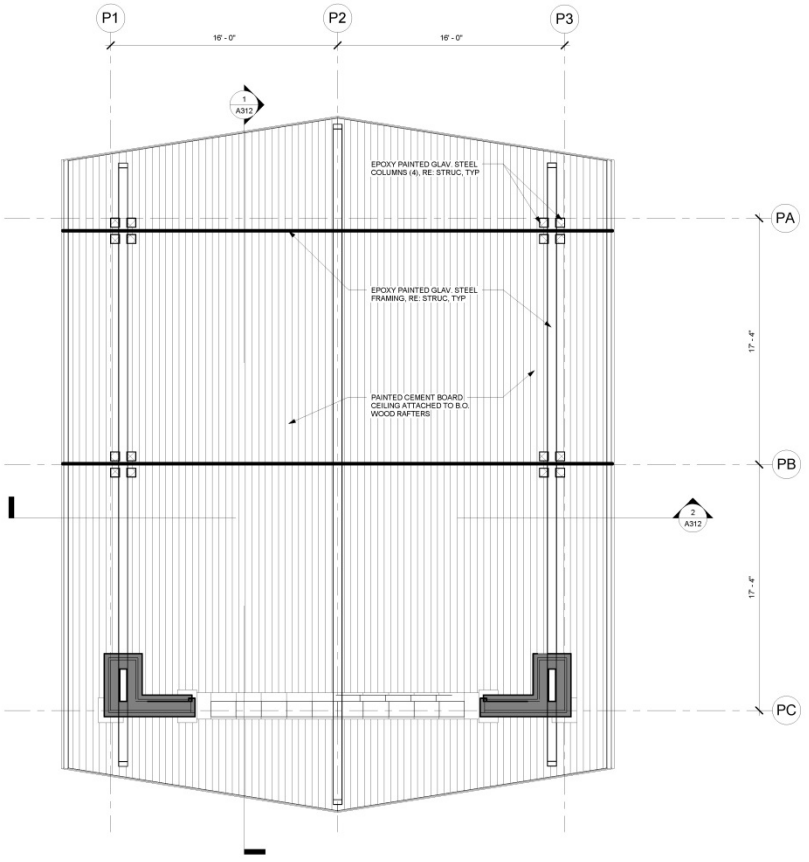
2. ALL WALLS SHALL TERMINATE 6" ABOVE CEILING ELEVATION UNLESS OTHERWISE NOTED.

RCP LEGEND

EPOXY PAINTED CEMENT PANEL BOARD

EXPOSED STRUCTURE

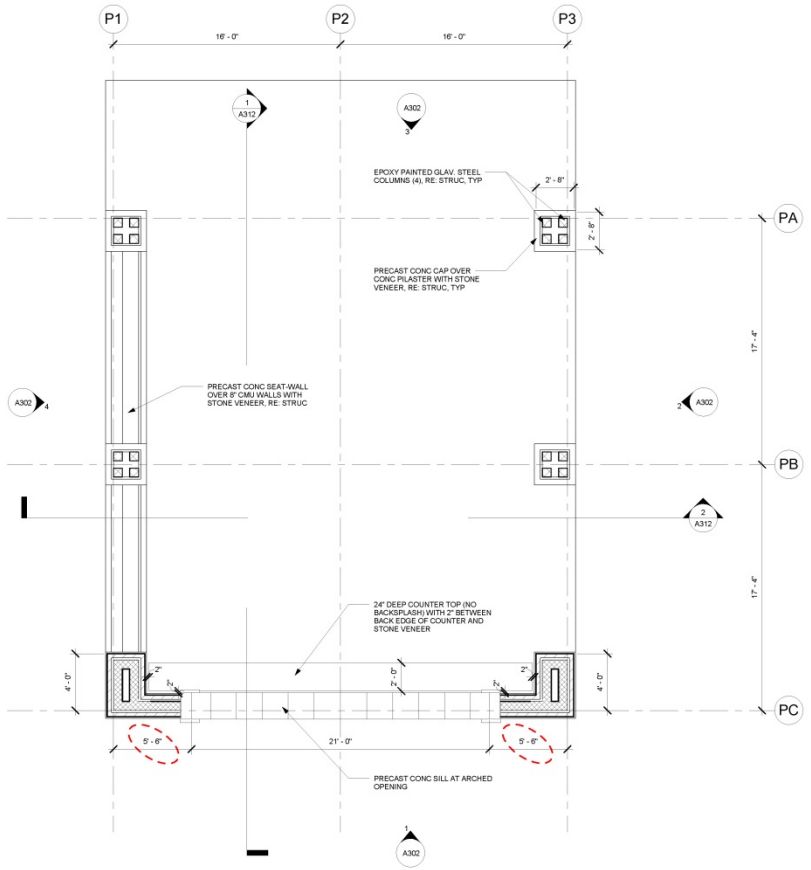
SEE MECHANICAL AND ELECTRICAL LEGENDS FOR ADDITIONAL SYMBOLS



1 A102 PAVILION REFLECTED CEILING PLAN

1/4" = 1'-0"

0 2' 4' 8'



3 A102 PAVILION FLOOR PLAN

1/4" = 1'-0"

0 2' 4' 8'

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Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16

DRAWN: Author
CHECKED: Checker

REVISIONS:
No. Date

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
PAVILION FLOOR PLAN AND RCP

A102

SHEET OF

RCP GENERAL NOTES

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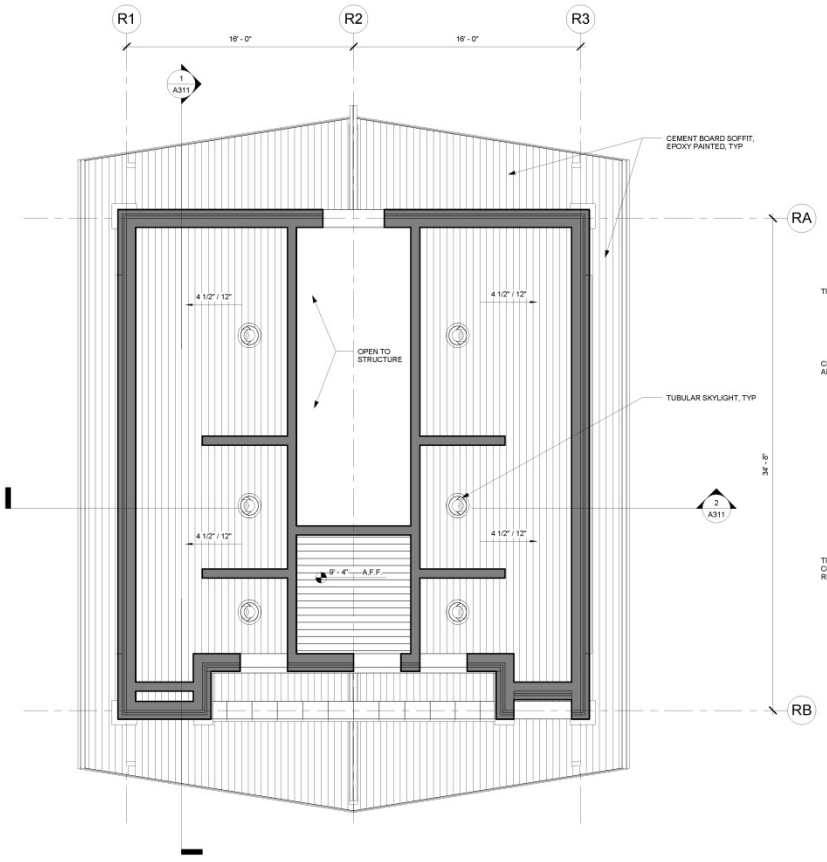
RCP LEGEND

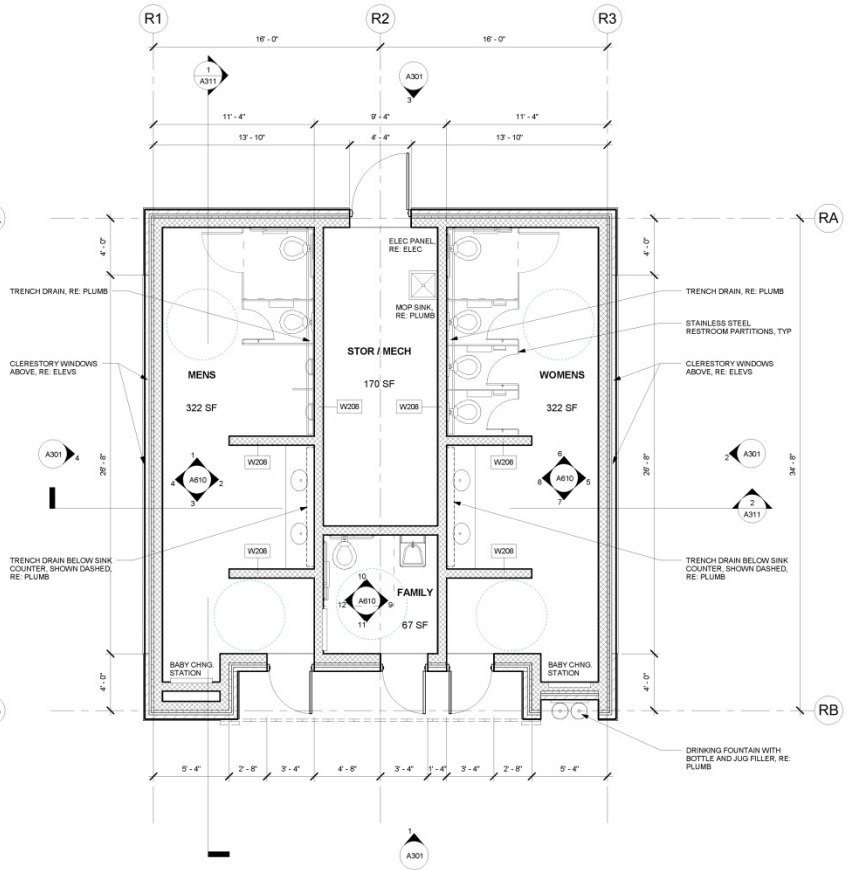
EPOXY PAINTED CEMENT PANEL BOARD

EXPOSED STRUCTURE

SEE MECHANICAL AND ELECTRICAL LEGENDS FOR ADDITIONAL SYMBOLS



2 A101 RESTROOM REFLECTED CEILING PLAN
1/4" = 1'-0"



1 A101 RESTROOM FLOOR PLAN
1/4" = 1'-0"

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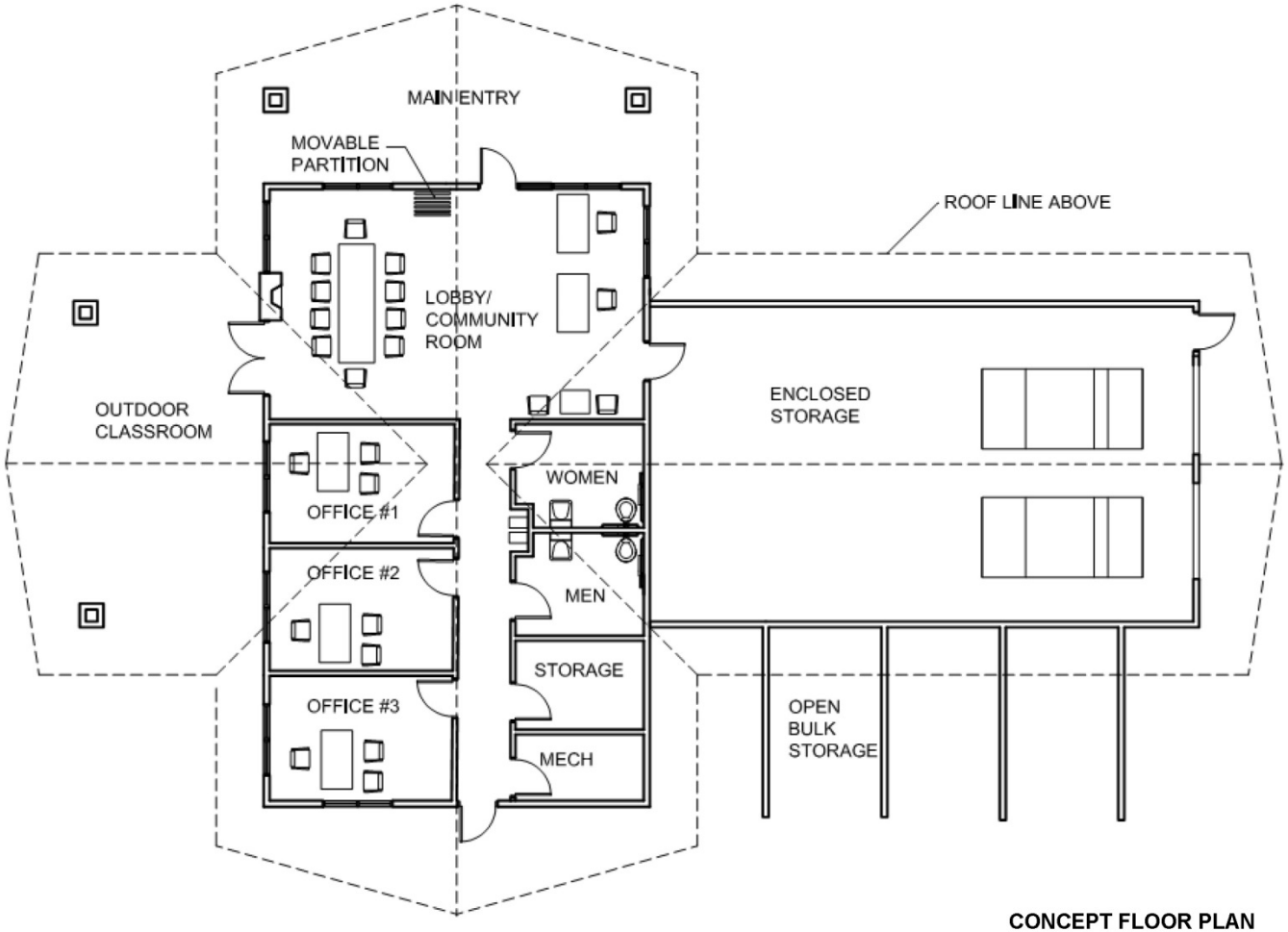
DESIGN DEVELOPMENT

SHEET TITLE:
RESTROOM FLOOR PLAN AND RCP

A101

SHEET OF

COMMUNITY CENTER BUILDING



CONCEPT FLOOR PLAN
NOT TO SCALE

BOHN PARK - LYONS, COLORADO

Architectural Program & Preliminary Budget 6/10/2016

COMMUNITY CENTER

Item	Space	Area	Cost/s.f.	Area Cost	Comments
1.0	Mens Room 1 Toilets 1 Urinals 1 Lavatories	100 nsf	$400	$40,000	
1.1	Womens Room 1 Toilets 1 Lavatories	100 nsf	$400	$40,000	
1.2	Community Room Training Space Nature Center Conference Center	250 nsf	$250	$62,500	
1.3	Offices 3 Staff Offices Lobby / reception Office Storage	700 nsf	$250	$175,000	
1.4	Internal Circulation	250 nsf	$250	$62,500	
1.5	Storage Office Supplies Sundries and cleaning equipment	80 nsf	$185	$14,800	
1.6	Garage Storage (50x20') Janitor sink Large Equipment	1250 nsf	$165	$206,250	
1.7	Mechanical/Electrical & Plumbing Chase Systems All electric Year round operations	145 nsf	$185	$26,825	
1.8	Outdoor Nature Space / Porch	400 nsf	$125	$50,000	
	Total Net Area & Cost	**3275 nsf**		**$677,875**	
	Contingency		20.0%	$135,575	
	Total Cost			**$813,450**	

Boards and Commissions Comments

PRC Notes:

- Concerns voiced about skatepark location and concrete on west side.
- Ian was concerned that the area between the two proposed skate parks could become over-developed and that the trail connection should remain the priority. Plans reflect removal of a concrete sidewalk behind the ballfields to the west and designed for a soft surface trail connection instead.
-
- Water feature for kids near playground
-
- Location of storage building and that the appearance match Steamboat Mtn. – Ian
- If plans for the parks office building move forward we will review architecture character and viewsheds to make sure we meet Ian's requirements.
-
- Concerns on Ecocycle appearance and traffic between Bohn and Ecocycle – Veronika
-
- Scott Shipley of S2O reviewed stream structures
- Goals: flood mitigation, access, riparian feel
- Several overflow channels added to guide water
- Bank restoration
- Rosgen cross-vane drop structures
-
  Next steps in the planning process
- Final design in late summer or fall
- Phasing and implementation strategies for funding
-
  PRC discussed making a statement to the board in support of the plan.
-
- Ian motioned to approve 50% design. Mary second. All in favor.

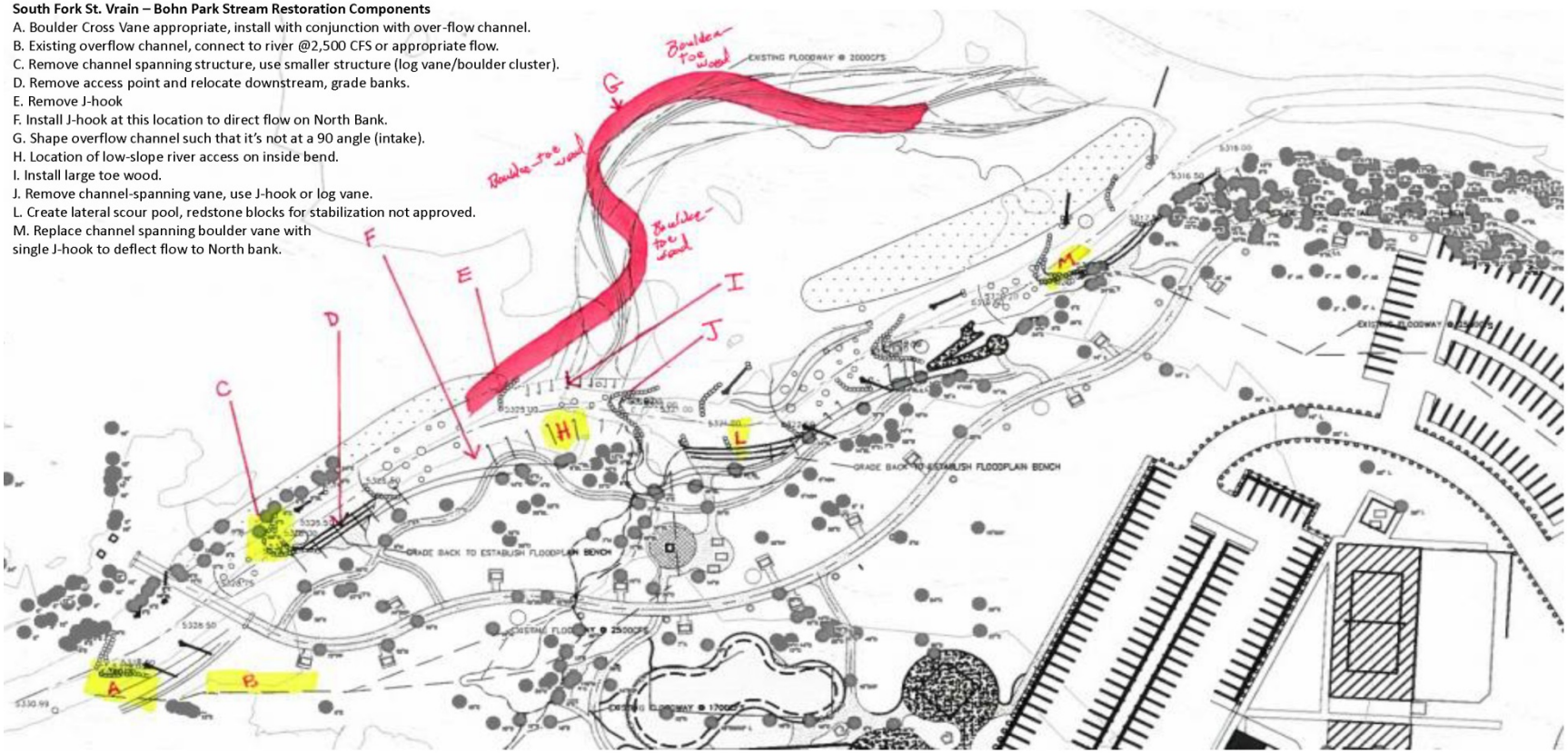
Ecology Board Notes:

- Marshall went through the 50 percent design presentation for Bohn Park. Simms said perhaps the riparian areas could be deeper with fencing until the plants mature. Designs will reflect these comments. A fence will be designed to separate the public from the ecological restoration areas similar to the fence constructed at Meadow Park.

CPW Comments:

South Fork St. Vrain – Bohn Park Stream Restoration Components

A. Boulder Cross Vane appropriate, install with conjunction with over-flow channel.
B. Existing overflow channel, connect to river @2,500 CFS or appropriate flow.
C. Remove channel spanning structure, use smaller structure (log vane/boulder cluster).
D. Remove access point and relocate downstream, grade banks.
E. Remove J-hook
F. Install J-hook at this location to direct flow on North Bank.
G. Shape overflow channel such that it's not at a 90 angle (intake).
H. Location of low-slope river access on inside bend.
I. Install large toe wood.
J. Remove channel-spanning vane, use J-hook or log vane.
L. Create lateral scour pool, redstone blocks for stabilization not approved.
M. Replace channel spanning boulder vane with single J-hook to deflect flow to North bank.



CPW Responses:

- **Channel Realignment:** We will be moving the channel to the North near the North overflow channel providing for lateral pools as the river bends to the south and back to the north again in this reach allowing for depositional benches on the inside of each bend. As discussed, we will likely create the outside toe with rock in these locations for safety reasons. We may attempt to design some wood into the upstream-most portions of these bends.
- **Overflow channels:** We will build a sill and I am consulting with Matt Kondratieff for some novel ideas for this. Alternately we will use rock and cobble as you suggest.
- **Wood:** We will not be cabling woody debris. In cases where needed we will use buried wood with rock reinforcement. Woody debris will be mostly below the water's surface (some is planned in areas where it will degrade over time, but not in reinforced areas.
- **Floodplain Benches:** will be installed in the areas that we discussed.
- **Riffle locations:** Two-three of the five planned drop structures are being transformed to riffle runs. We will use a similar method to Meadow Park, as you suggested, in these reaches for creating riffles.

SVCC Comments:

- 1. Will there be any pedestrian crossings near the confluence? We know there's one planned within the project, but was just wondering if there was consideration of another one or if another one that we don't know about already exists.
- At this time we are not planning one.
- 2. What is the scope of work for the area river left (Stacey property) within the project? Will there be any trails?
- At current no trails are planned at this time. Parks and Wildlife did suggest that fishermen might like to access on this side, but we had assumed that this would be through bushwhacking.
- 3. Is the SSV3 trailer park area being actively used? We are pretty sure it is not, but wanted to confirm.
- It is going to be acquired through the buyout process but has not yet been acquired. We have not been a party to any plans there yet, but obviously have designed our flood-overflow channel to mesh with any potential braided channel options that might be installed upstream on this property.

Watershed Board Comments:

- The overall goal for this reach is to be as **natural looking aesthetic** with a **natural riffle pool design with boulders** and have **minimal to no drop structures [cross veins]**. But also provide safety to the park attendees and neighboring houses/buildings.
- Specific recommendations are as follows:
- 1. Those drop structures [cross veins] needed for safety purposes should be as much at grade as possible- grade above and below the structure. So they function more as a grade control than recreational drop. All cross veins should have very quiet water at the sides with minimal to no flow or back eddy flow to allow for fish habitat. With back eddy flows and currents, the fish have to work hard for their food and a normal 'wild pool' does not have those kinds of water flows. Also, deep in the pools and thought the tail of the pool there should be boulders to allow fish to hide behind. For cross veins, double-steps can be utilized but also cross veins with spaces between the boulders .5-1x of the boulder diameter] should be considered to allow better fish habitat and fish passage. All cross veins should appear as natural looking as possible. Also, please consider having the low flow point through the veins and J hooks be eccentric and not in the center of the channel, providing a more natural flow and aesthetic.

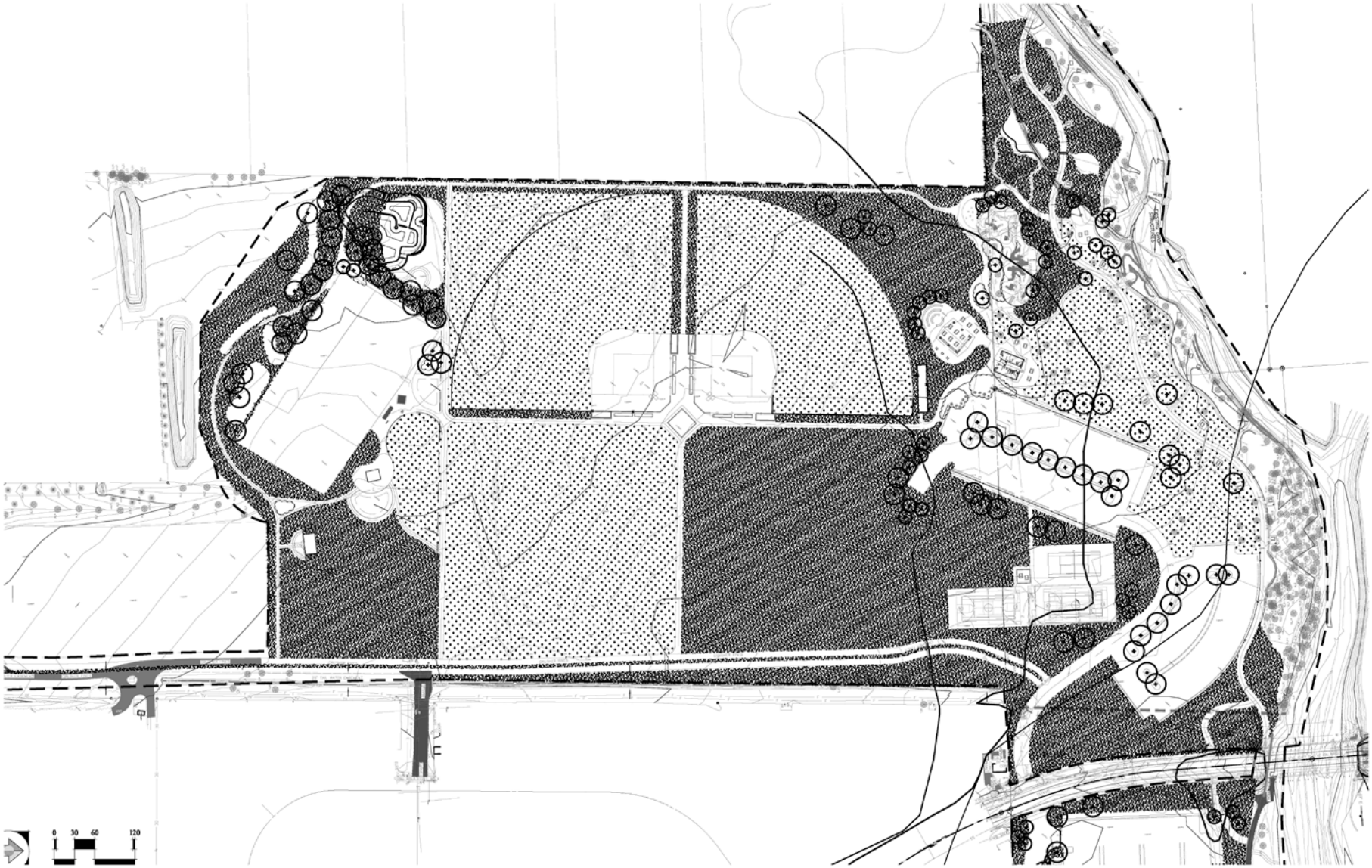
- 2. Any J hooks should appear to be natural looking and not appear artificial. Large boulders [3-5ft diamter]can provide the habitat, energy dissipation, and river flow controls needed. Consideration of 'J hook type structures made out of wood and stone can provide excellent microorganism ecosystems and highly functional.
-

  3. We propose greater amounts of wood installed and there are many different techniques that are safe for boaters and tubers but provide a healthy ecosystem for the aquatic biology [The bugs feed and proliferate on the woody debris and then become food source for the fish.] Logs can be installed looking similar to a random fallen tree along the bank that face either up or downstream that can be anchored by large boulders and and sit in holes to provide cover. Logs can also be installed to provide the same benefits as rock vanes, J hooks, v-weirs with one end buried in the bed of the channel and the other end buried in the riverbank while the middle is exposed providing a place for fish to get under and hide. Fish lunkers are constructed wood overhangs that can be built to look quite natural and provide ample cover for fish. These and other wood applications can add complexity to the stream bank and provide many small micro-eddys for additional aquatic habitat. Many of these techniques can be achieved to maximize the aquatic biology but also designed to be safe for tubers and boaters.

  3. Vertical banks on the outside bends of the thalweg can be stabilized with large boulders and safe woody debris and provide long shallow point bars on the opposite side of the river. These point bars are places where sand and gravel can deposit and provide low-gradient places for folks to get into the river.
- 4. Consideration of lowering the grade upstream to lower the overall drop through this reach should be considered.
- 5. Controlling the water access points is key and they should be designed to be consistent with fish 'habitat protection as well as bank preservation.

- It is the goal of the LWB to work in concert, cohesively with the BoT and under their direction with the town parks and rec as well as any engineers and construction contractors. If there is a way we can do this better please advise us.

Updated 50% Design Set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BOHN PARK

2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

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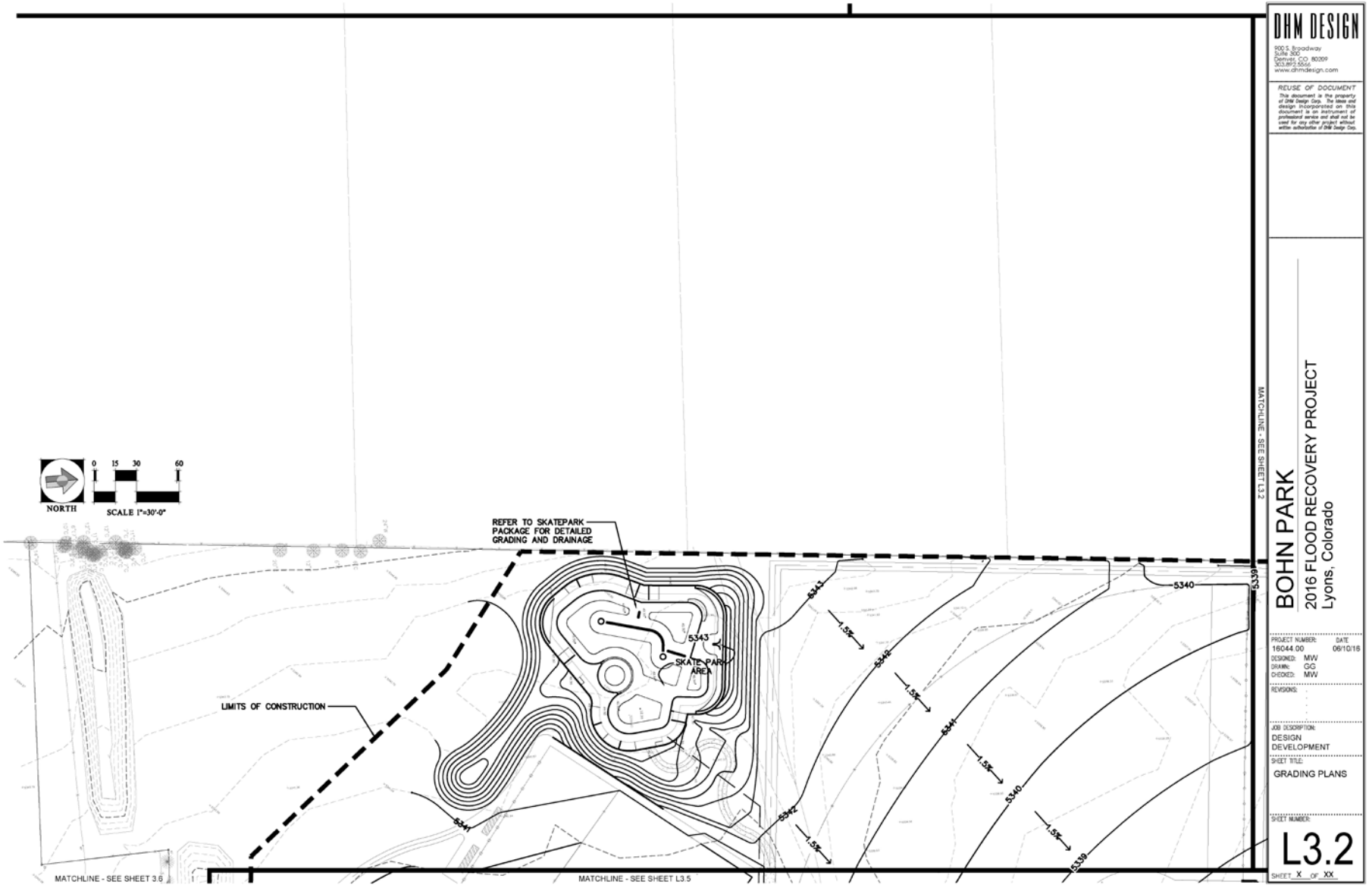
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW
REVISIONS:
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: GRADING PLANS
SHEET NUMBER: L3.1
SHEET x OF XX



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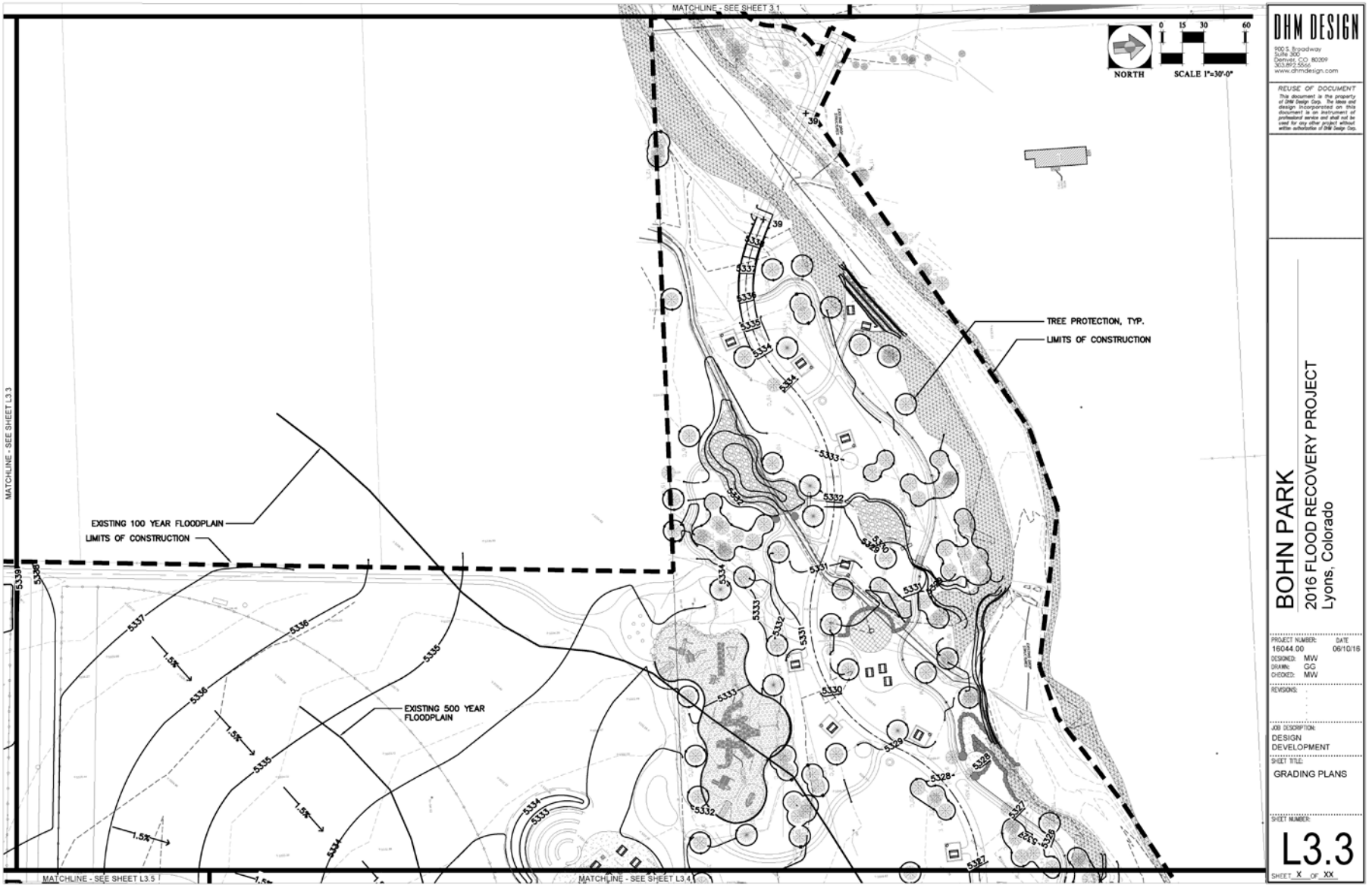
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: GRADING PLANS
SHEET NUMBER: L3.2
SHEET X OF XX



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SHEET TITLE: GRADING PLANS
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SHEET NUMBER: L3.4

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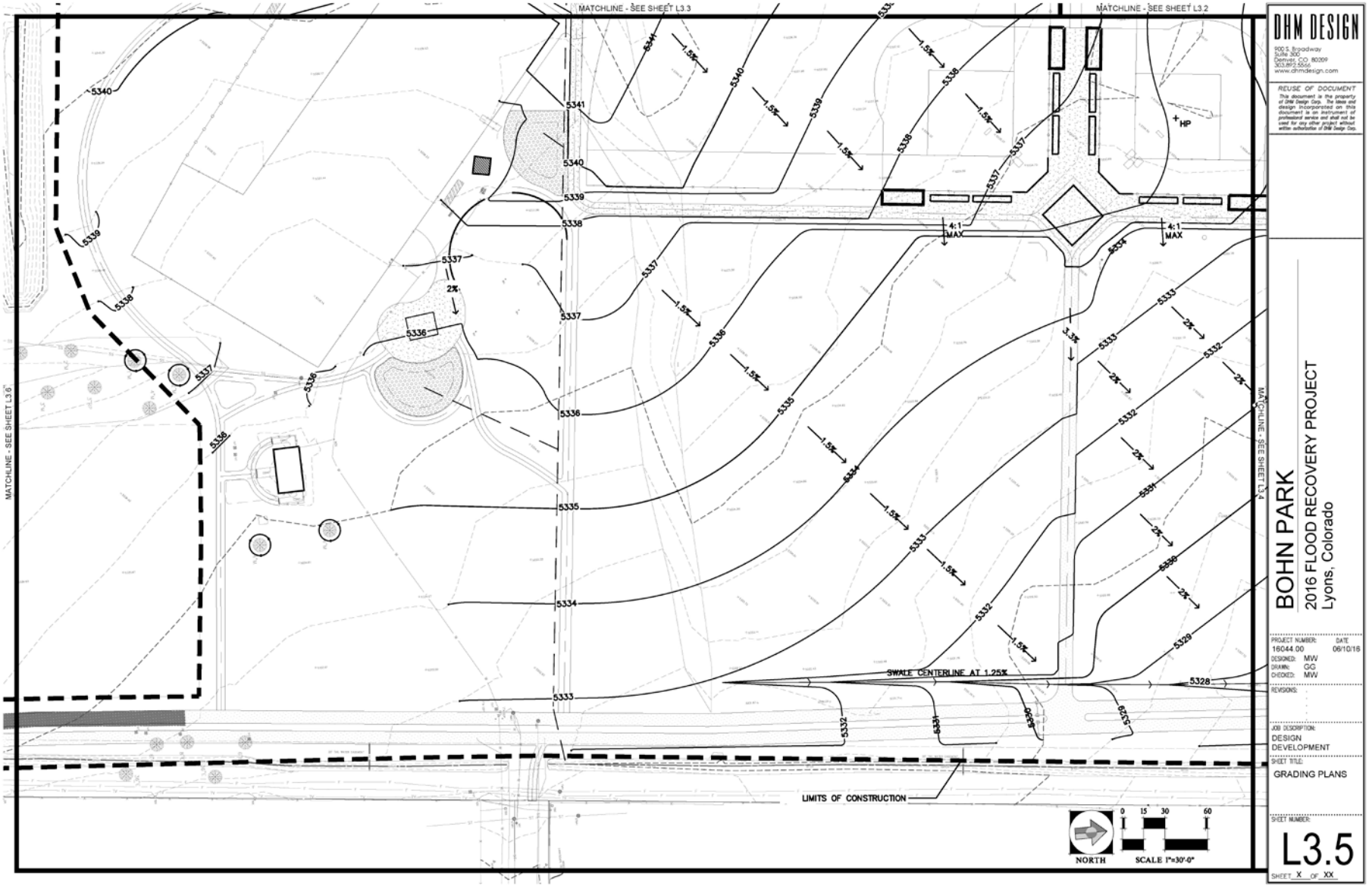

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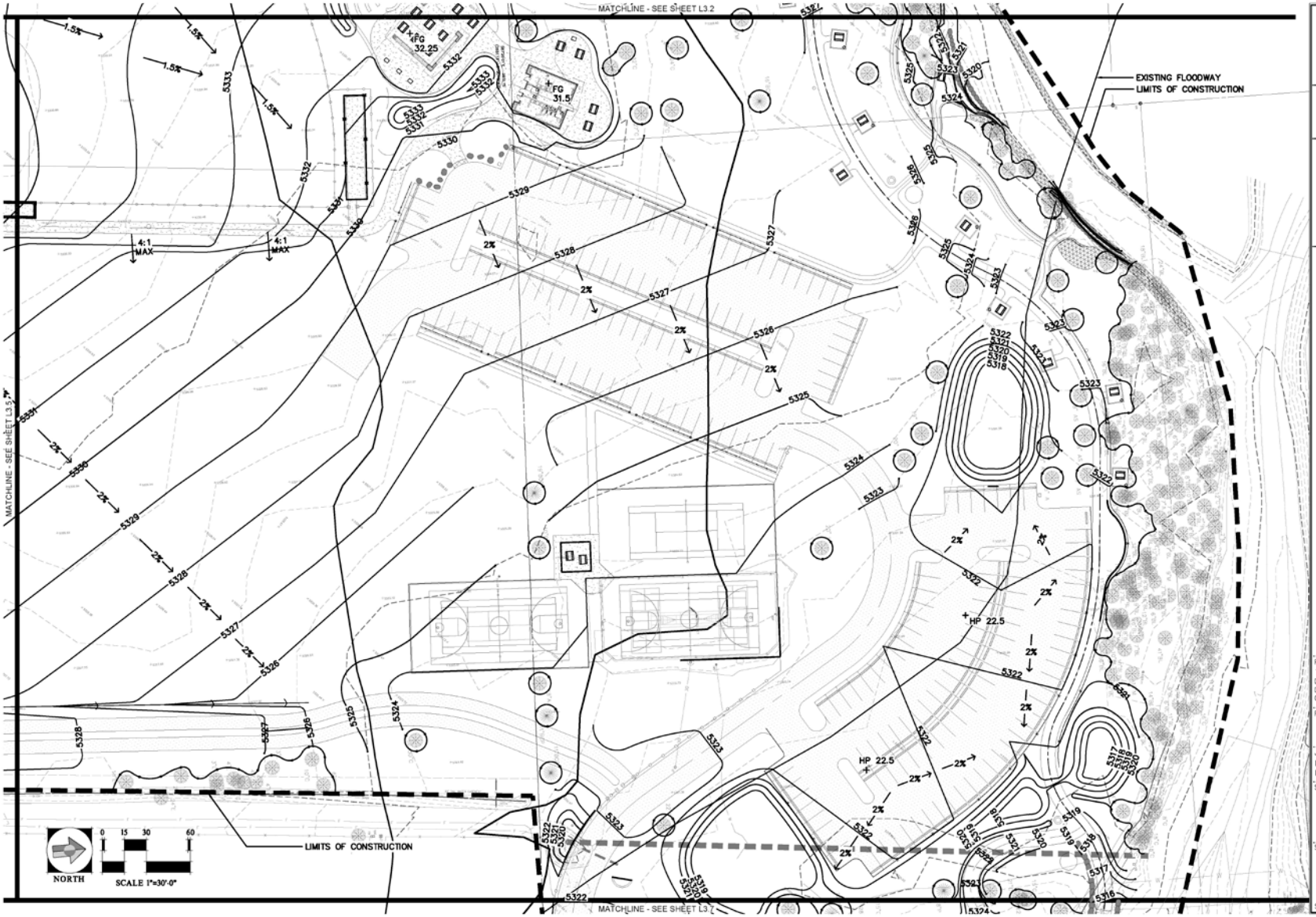

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JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.6

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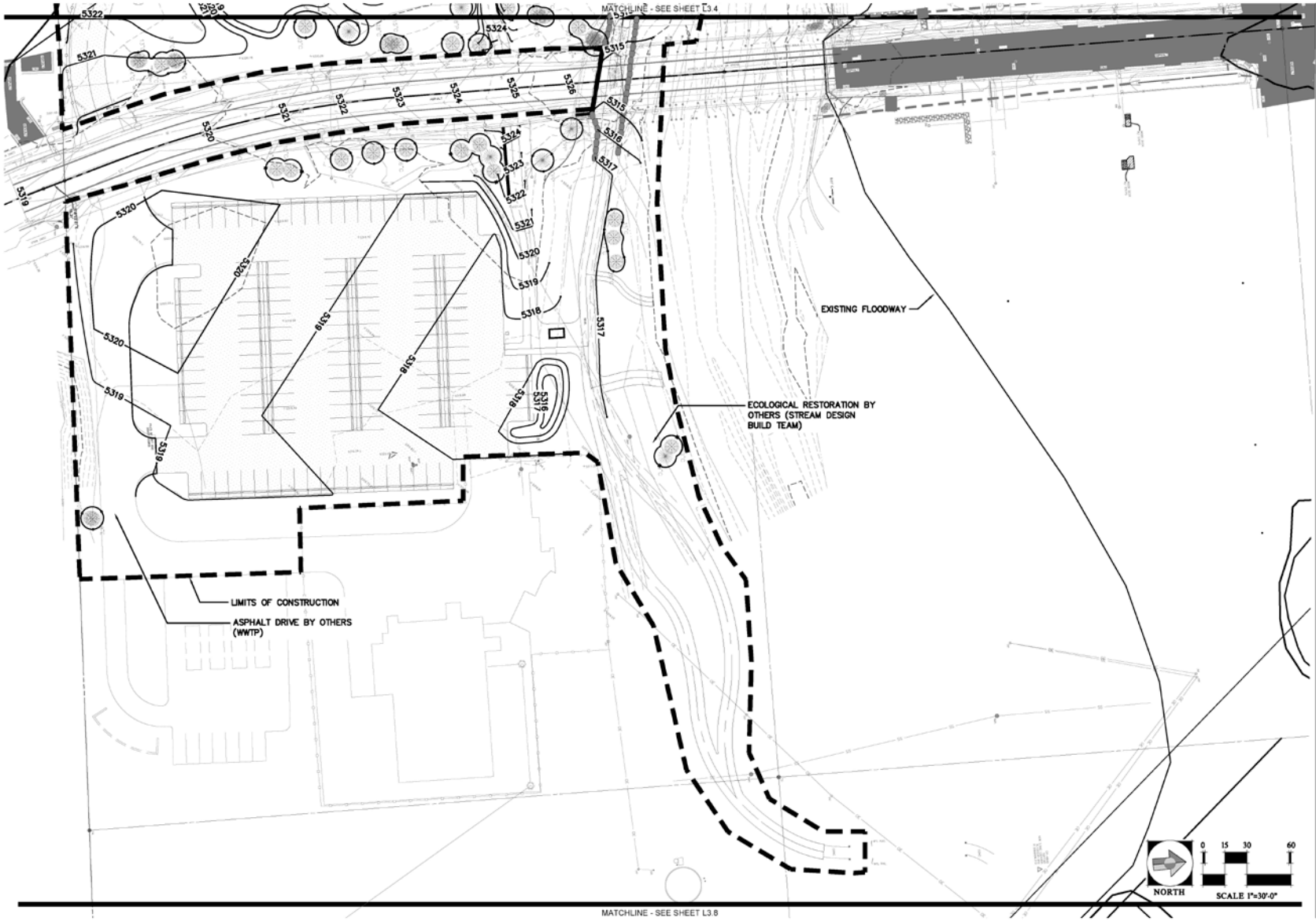

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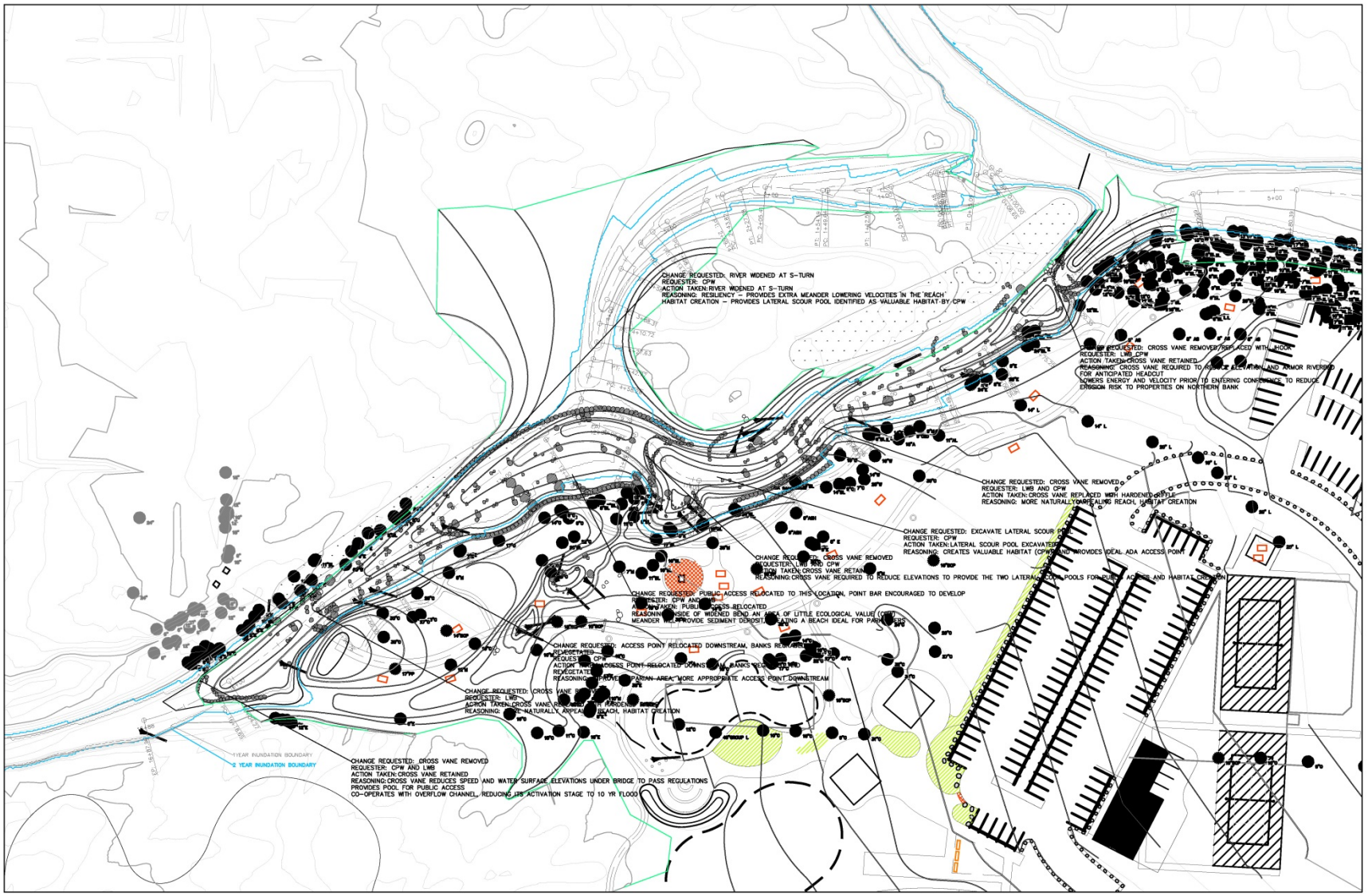
SHEET TITLE: GRADING PLANS
SHEET NUMBER: L3.7
SHEET X OF XX

1 YEAR INUNDATION BOUNDARY
2 YEAR INUNDATION BOUNDARY


CHANGE REQUESTED: RIVER WIDENED AT S-TURN
REQUESTER: CPW
ACTION TAKEN:RIVER WIDENED AT S-TURN
REASONING: RESILIENCY – PROVIDES EXTRA MEANDER LOWERING VELOCITIES IN THE REACH
HABITAT CREATION – PROVIDES LATERAL SCOUR POOL IDENTIFIED AS VALUABLE HABITAT BY CPW
CHANGE REQUESTED: CROSS VANE REMOVED/REPLACED WITH J-HOOK
REQUESTER: LWG, CPW
ACTION TAKEN:CROSS VANE RETAINED
REASONING: CROSS VANE REQUIRED TO ACHIEVE ELEVATION AND ARMOR RIVERBED FOR ANTICIPATED HEADCUT
LOWERS ENERGY AND VELOCITY PRIOR TO ENTERING CONFINANCE TO REDUCE EROSION RISK TO PROPERTIES ON NORTHERN BANK
CHANGE REQUESTED: CROSS VANE REMOVED
REQUESTER: LWG AND CPW
ACTION TAKEN: CROSS VANE REPLACED WITH HARDENED RIFFLE
REASONING: MORE NATURALLY APPEALING REACH, HABITAT CREATION
CHANGE REQUESTED: EXCAVATE LATERAL SCOUR POOL
REQUESTER: CPW
ACTION TAKEN:LATERAL SCOUR POOL EXCAVATED
REASONING: CREATES VALUABLE HABITAT (CPW) AND PROVIDES IDEAL ADA ACCESS POINT
CHANGE REQUESTED: CROSS VANE REMOVED
REQUESTER: LWG AND CPW
ACTION TAKEN: CROSS VANE RETAINED
REASONING: CROSS VANE REQUIRED TO REDUCE ELEVATIONS TO PROVIDE THE TWO LATERAL SCOUR POOLS FOR PUBLIC ACCESS AND HABITAT CREATION
CHANGE REQUESTED: PUBLIC ACCESS RELOCATED TO THIS LOCATION, POINT BAR ENCOURAGED TO DEVELOP
REQUESTER: CPW AND LWG
ACTION TAKEN: PUBLIC ACCESS RELOCATED
REASONING: INSIDE OF WIDENED BEND, AN AREA OF LITTLE ECOLOGICAL VALUE (CPW)
MEANDER WILL PROVIDE SEDIMENT DEPOSITION CREATING A BEACH IDEAL FOR PARK USERS
CHANGE REQUESTED: ACCESS POINT RELOCATED DOWNSTREAM, BANKS REVEGETATED
REQUESTER: CPW
ACTION TAKEN: ACCESS POINT RELOCATED DOWNSTREAM, BANKS REVEGETATED
REASONING: PROVIDES PARK AREA MORE APPROPRIATE ACCESS POINT DOWNSTREAM
CHANGE REQUESTED: CROSS VANE REMOVED
REQUESTER: LWG
ACTION TAKEN: CROSS VANE REMOVED
REASONING: MORE NATURALLY APPEALING BEACH, HABITAT CREATION
1 YEAR INUNDATION BOUNDARY
2 YEAR INUNDATION BOUNDARY
CHANGE REQUESTED: CROSS VANE REMOVED
REQUESTER: CPW AND LWG
ACTION TAKEN:CROSS VANE RETAINED
REASONING:CROSS VANE REDUCES SPEED AND WATER SURFACE ELEVATIONS UNDER BRIDGE TO PASS REGULATIONS
PROVIDES POOL FOR PUBLIC ACCESS
CO-OPERATES WITH OVERFLOW CHANNEL, REDUCING ITS ACTIVATION STAGE TO 10 YR FLOOD

Balancing Multiple Objectives

Funding Sources

- FEMA PW20 & PW35
- Town Insurance-CIRSA
- Colorado Water Conservation Board-CWCB
- Community Development Block Grant-CDBG
- Donations and In-Kind Resources
  - Can'D Aid ,Colorado Rockies
- Colorado Parks and Wildlife – Fishing is Fun Grant
- LWCF – State Trails
- Various other sources

*based on reimbursement, prioritization of projects and cash flow impact the ability to complete projects.

Construction Costs…

- FEMA Parks Damage Assessment PW 20
- Whitewater Features Cost - Whitewater Damage Assessment - PW35

Construction Costs…

Bohn Park Flood Recovery Plan

Lyons Parks Flood Recovery Planning Process

Preliminary Cost Estimate

- November 4th, 2015 -

Prepared By: DHM/S2O

ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL
Miscellaneous Demolition / Debris Removal (5%)	LS	1	$292,000.00	$ 292,000.00
Earthwork	LS	1	$100,000.00	$100,000.00
Top Soil	LS	1	$35,000.00	$35,000.00
Crusher Fines	SF	148,034	$2.50	$370,085.00
Post Tension Sport Court	EA	3	$65,000.00	$195,000.00
Flood Memorial	LS	1	$15,000.00	$15,000.00
Gravel Paving (Vehicular Road)	SF	97,269	$4.00	$389,076.00
Concrete Curb Stop	EA	192	$55.00	$10,560.00
Playground Edger	LF	1,376	$15.00	$20,640.00
Concrete / Boulder Retaining Wall	LF	488	$100.00	$48,800.00
Baseball Field	EA	2	$350,000.00	$700,000.00
Baseball Backstop Fencing	EA	1	$5,000.00	$5,000.00
Baseball Field Pole Lighting	LS	1	$175,000.00	$175,000.00
Batting Cage	EA	1	$10,000.00	$10,000.00
Sand Volleyball Courts	EA	2	$10,000.00	$20,000.00
Soil Prep (Native Seed Only)	SF	838,094	$0.12	$100,571.28
Wood Mulch (Shrub Bed)	SF	25,000	$0.80	$20,000.00
Import Top Soil	LS	1	$35,000.00	$35,000.00
Bluegrass Sod w/ Soil Prep	SF	271,506	$0.85	$230,780.10
Native Seed (Hydromulch)	SF	838,094	$0.07	$58,666.58
Shrubs (5 gallon)	EA	600	$50.00	$30,000.00
Evergreen Trees (8'-10' Height B&B)	EA	45	$500.00	$22,500.00
Ornamental Trees (2" Caliper B&B)	EA	3	$450.00	$1,350.00
Deciduous Trees (3" Caliper B&B)	EA	110	$500.00	$55,000.00
Irrigation	LS	1	$150,000.00	$150,000.00
Shade Structure 1 - Prefabricated (150 SF)	EA	1	$20,000.00	$20,000.00
Shade Structure 2 - Prefabricated (800 SF)	EA	1	$ 35,000.00	$35,000.00
Shade Structure 3 - Custom (1,800 SF)	EA	1	$ 180,000.00	$ 180,000.00
Shade Structure 4 - Custom (400 SF)	EA	2	$80,000.00	$160,000.00
Restroom - Custom (900 SF)	EA	1	$500,000.00	$ 500,000.00
Small Playground	LS	1	$ 65,000.00	$ 65,000.00
Large Playground	LS	1	$ 125,000.00	$ 125,000.00
Bike Park Addition	LS	1	$ 15,000.00	$ 15,000.00
Skate Park	LS	1	$300,000.00	$300,000.00
Bouldering Wall	LS	1	$60,000.00	$60,000.00
Slackline Posts	LS	1	$10,000.00	$10,000.00
Picnic Tables	EA	34	$1,500.00	$51,000.00
Benches	EA	10	$1,600.00	$16,000.00
Grill	EA	20	$ 250.00	$5,000.00
Decorative Planters	EA	14	$600.00	$8,400.00
Trash Receptacles	EA	34	$ 1,400.00	$ 47,600.00
Split Rail Fencing	LF	440	$15.00	$6,600.00
Trail Entry Gates (Temporary Overflow Access)	EA	4	$1,500.00	$6,000.00
ADA Fishing Area	LS	1	$32,000.00	$32,000.00
Pump Pit / Well / Pump for Irrigation	LS	1	$ 60,000.00	$ 60,000.00
Park Host Site	LS	1	$48,000.00	$48,000.00
Ecological Restoration	AC	4	$175,000.00	$ 700,000.00
Bohn Park Stream Improvement	LS	1	$ 415,000.00	$ 415,000.00
4th Avenue Bridge (Abutments and Bridge)	LS	1	$80,000.00	$80,000.00

Subtotal	$	6,035,628.96
15% Contingency	$	905,344.34
10% Design & Permitting	$	603,562.90
3% CA Services	$	181,068.87
TOTAL	**$**	**7,725,605.07**

Construction Costs…

- Detailed 50% progress designs
- Meadow Park Construction Bid Results
- Ongoing discussions with contractors and equipment manufacturers
- Construction market
- Increase in active parkland from 7 acres to 35 acres approximate
- 2nd Avenue Trailhead and Parking Lot
- Increase in irrigation

Construction Costs, Phasing and Cash Flow

Bohn Park

Final Design

50% Design Cost Estimate
- July18, 2016 -

items are currently funded by other sources

Prepared By: DHM DESIGN LANDSCAPE ARCHITECTURE URBAN DESIGN + LAND PLANNING ECOLOGICAL PLANNING

S2O REINVENTING WHITEWATER

BARKER RINKER SEACAT ARCHITECTURE

ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL	Notes	source	Planning estimate
General Conditions / Mobilization (5%)	LS			$ 450,000.00	365000		
Miscellaneous Demolition / Debris Removal	LS	1	$ 25,000.00	$ 25,000.00			
Clearing and Grubbing	AC	26	$ 3,500.00	$ 91,000.00	sum of all areas	26	
Earthwork (Complete In Place)	CY	15,000	$ 15.00	$ 225,000.00	8000 from river		
Earthwork (Import / Fill)	CY	9,000	$ 35.00	$ 315,000.00			
Civil							
			Subtotal	$ 496,073.50			
Electrical						AEDG	
			Subtotal	$ 214,000.00			
River Restoration						S2O	
Area 1: Main channel	LS	1	$ 401,631.00	$ 401,631.00			
Area 2: South Overflow	LS	1	$ 60,278.00	$ 60,278.00	assuming 8000 haul off		
Area 3: Western Overflow	LS	1	$ 105,631.20	$ 105,631.20	may be covered by other funding pending FEMA approval		
Additional Excavator Time	LS	1	$ 8,800.00	$ 8,800.00			
			Subtotal	$ 576,340.20			415000
Ecological Restoration						ECOS	
Ecological Restoration	AC	0.87	$ 161,109.64	$ 140,165.39			700000
Bohn Field (Lighted)							
			Subtotal	$ 557,354.50			525000
Vasquez Field (Non-Lighted)							
			Subtotal	$ 395,357.93			350000
Batting Cage							
			Subtotal	$ 18,369.00			10000
Sports Courts							
			Subtotal	$ 204,722.00			195000
Skate Park							
Skate Park (8000 SF)	LS	1	$ 300,000.00	$ 300,000.00	Pillar		
Skatepark (Additional 4000 SF)	LS	1	$ 150,000.00	$ 150,000.00	Pillar		
			Subtotal	$ 450,000.00			300000

Construction Costs, Phasing and Cash Flow

Stone Picnic Area						
			Subtotal	$ 36,452.50		15000
ADA Fishing Access						
			Subtotal	$ 40,590.00		32000
Large Playground						
			Subtotal	$ 168,406.30		135000
Small Playground						
			Subtotal	$ 33,954.30		75000
Climbing Area						
			Subtotal	$ 115,735.20		60000
Bike Park						
			Subtotal	$ 13,550.00		15000
Slackline Area						
4th Avenue Bridge						
			Subtotal	$ 160,000.00		80000
Landscape						
			Subtotal	$ 643,099.52		
Structures						
Restroom - Custom (1085 SF)	EA	1	$ 596,750.00	$ 596,750.00	BRS	
Shade Structure 1 - Custom (1085SF)	EA	1	$ 238,700.00	$ 238,700.00	BRS	
Shade Structure 2 - Craftsman Gable 30' X 30' with square columns and stone wrap	EA	1	$ 50,000.00	$ 50,000.00	ICON	
Shade Structure 3 - Craftsman Gable 20' X 20' with square columns	EA	1	$ 25,850.00	$ 25,850.00	ICON	
Shade Structure 4 - Craftsman Gable 15' X 20' with square columns	EA	1	$ 18,906.00	$ 18,906.00	ICON	
Community Center / Office Buildings	EA	1	$ 850,000.00	$ 850,000.00	BRS	
			Subtotal	$ 1,780,206.00		815000
Site Furnishings/Misc.						
			Subtotal	$ 1,174,447.50		
Irrigation						
			Subtotal	$ 908,161.28		210000

Subtotal	$ 9,234,985.11	$ 7,207,033.69	
10% Contingency	$ 923,498.51	$ 720,703.37	
		Modified Cost	Allocated Budget $7,500,000
TOTAL	**$ 10,158,483.63**	$ 7,927,737.06	

* Modified Costs assumes donated material, removal of skate park, no parks building, removed overflow channels, removed topsoil from native areas, limited irrigation to active park areas

Parks Next Steps…

- Project hurdles
  - Floodplain regulation
  - Permitting
  - Funding
  - Cash flow
  - Bidding Process
    - 1 bid package
    - Phasing based on cash flow
    - Multiple Bid Projects

Parks Next Steps…

- Final Design Bohn Park Summer / Fall 2016
- Phasing and Implementation Strategies based on available funding and cash flow

- Timelines
  - Bohn Park Construction–Fall 2016 to Summer 2017
  - LVRP – Winter 2017/ Spring 2018 (projected)

Questions and Answers?

THANK YOU!

WWW.LYONSPARKSMP.COM

15. FEMA Scope and Versioning Documents

PA-08-CO-4145-PW-01078(2) P

Applicant Name:	Application Title:
LYONS	LYONS20 - PAAP Consolidation
Period of Performance Start:	Period of Performance End:
09-14-2013	09-14-2017

Subgrant Application - Entire Application

Application Title: LYONS20 - PAAP Consolidation
Application Number: PA-08-CO-4145-PW-01078(2)
Application Type: Subgrant Application (PW)

Preparer Information

Prefix	Mr.
First Name	Brandon
Middle Initial	
Last Name	Krueger
Title	Project Specialist
Agency/Organization Name	DHS FEMA
Address 1	FEMA
Address 2	9200 East Mineral Ave
City	Centennial
State	CO
Zip	80112
Email	Deanna.butterbaugh@state.CO.US
Is the application preparer the Point of Contact?	No

Point of Contact Information

Prefix	Ms.
First Name	Victoria
Middle Initial	
Last Name	Simonsen
Title	Administrator
Agency/Organization	Lyons
Address 1	Post Office Box 49
Address 2	432 5th Ave
City	Lyons
State	CO
ZIP	80540
Phone	303-823-6622
Fax	303-823-8257
Email	vsimonsen@townoflyons.com

Alternate Point of Contact Information

Prefix	Mr.
First Name	Tony
Middle Initial	
Last Name	Cavalier
Title	Finance Director
Agency/Organization	Lyons
Address 1	Post Office Box 49
Address 2	432 5th Ave
City	Lyons
State	CO
ZIP	80540
Phone	303-823-6622
Fax	303-823-8257
Email	tcavalier@townoflyons.com

Project Description

Disaster Number:	4145
Pre-Application Number:	PA-08-CO-4145-RPA-0019
Applicant ID:	013-47070-00
Applicant Name:	LYONS
Subdivision:	
Project Number:	LYONS20

Standard Project Number/Title:	720 - Recreation or Other (Consolidated) Alternative Procedures
Please Indicate the Project Type:	Neither Alternate nor Improved
Application Title:	LYONS20 - PAAP Consolidation
Category:	G.RECREATIONAL OR OTHER
Percentage Work Completed?	0.0 %
As of Date:	05-16-2014

Comments

The applicant must notify the state if there are any changes in the scope of work prior to starting the repairs. Failure to notify the State Division of Emergency Management may jeopardize re

Attachments

User	Date	Document Type	Description	Hard Copy File Reference	File Name
KEVIN HELLAND	06-11-2014		PAAP Acknowledgement Letter		Lyons PAAP Participation Acknowledge

Damage Facilities (Part 1 of 2)

Facility Number	Facility Name	Address	County	City	State	
1	Meadow Park	432 5th Ave	Boulder	Lyons	CO	8
2	Bohn Park	432 5th Ave	Boulder	Lyons	CO	8
3	Lyons Valley River Park	432 5th Ave	Boulder	Lyons	CO	8
4	Corridor Trail	432 5th Ave	Boulder	Lyons	CO	8
5	2nd Ave Dog Park	432 5th Ave	Boulder	Lyons	CO	8
6	St. Vrain/Hwy 7 Trail	432 5th Ave	Boulder	Lyons	CO	8
7	Black Bear Hole (designated Site 9 throughout this PW)	432 5th Ave	Boulder	Lyons	CO	8
8	Park System Bank Revegetation and Stabilization (designated Site 10 throughout this PW)	432 5th Ave	Boulder	Lyons	CO	8
9	Whitewater Features	432 5th Ave	Boulder	Lyons	CO	8
10	Alleys in the Confluence Area	432 5th Ave	Boulder	Lyons	CO	8
11	Park St from US Hwy 36 to 3rd Ave	432 5th Ave	Boulder	Lyons	CO	8
12	LYONS30		Boulder	Lyons	CO	
13	Lyons Wastewater Treatment Plant	198 2nd Ave	Boulder	Lyons	CO	

Comments

Attachments

User	Date	Document Type	Description	Hard Copy File Reference	File Name
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 1a - Parks Damage Assessment final 06.03.14		LYONS20 - Lyons - Attachment 1a - Parks Damage Assess kb)
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 1b - Water Features Detailed Cost Estimate		LYONS20 - Lyons - Attachment 1b - Water Features Detaile
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 1c - Electrical Cost Estimates		LYONS20 - Lyons - Attachment 1c - Electrical Cost E
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 1d - Location 2J - Bohn Park Well Estimate		LYONS20 - Lyons - Attachment 1d - Bohn Park Well Co
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 2 - FEMA validation of applicant's cost estimate		LYONS20 - Lyons - Attachment 2 - FEMA Validation of 05.20.14.pdf(230.79 kb)
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 3 - CEF rev. 06.03.14		LYONS20 - Lyons - Attachment 3 - CEF rev. 6.03.14 LYONS kb)
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 4a - Location Maps with Diagrams		LYONS20 - Lyons - Attachment 4a - Location Maps wit
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 4b - Parks Trails Maps		LYONS20 - lyons - Attachment 4b - Trails Maps - Site
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 4c - Parks Maps		LYONS20 - Lyons - Attachment 4c - Park Ma
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 4d - Trails Map - All trails on one map		LYONS20 - Lyons - Attachment 4d - Trails Map - All trails
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 5a - Photos - Site 2 - Bohn Park		LYONS 20 - Lyons - Attachment 5a - Photo Sheets Bohn
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 5b - Photos - Site 3 - Lyons Valley River Park		LYONS 20 - Lyons - Attachment 5b - Photo Sheet-Lyons V (270.42 kb)
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 5c - Photos - Site 4 - Corridor Trail		LYONS 20 - Lyons - Attachment 5c - Photo Sheet-Corridor
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 5d - Photos - Site 6 - St. Vrain/Hwy 7 Trail		LYONS 20 - Lyons - Attachment 5d - Photo Sheets St. Vrain
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 5e - Photos - Site 7 (9) - Black Bear Hole		LYONS 20 - Lyons - Attachment 5e - Photo Sheet-Black Bea
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 5f - Photos - Site 1 - Meadow Park		LYONS 20 - Lyons - Attachment 5f - Photo Sheet - Meadow
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 6a - Insurance Estimate - Location 1E - Hains Property		LYONS20 - Lyons - Attachment 6a - Hains Insurance
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 6b - Insurance Estimate - Locations 1J & 2G - Meadow Park South & Bohn Shelters		LYONS20 - Lyons - Attachment 6b - Insurance Estimate - South & Bohn Shelters.pdf(263.9
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 6c - Insurance Estimate - Location 2AE-4 - Bohn Park Electric		LYONS20 - Lyons - Attachment 6c - Insurance estimate Boh
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 7 - Historic Shelter Cost Estimate - Location 1I - Meadow Park North Shelter		LYONS20 - Lyons - Attachment 7 - Historic Shelter Building Specialties Inc Meadow Park North Shelter
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 8 - Bohn Park Small Buildings Cost Estimate - Locations 2L & 2N		LYONS20 - Lyons - Attachment 8 - Bohn Park small bldg

ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 9a - ADA Playground Equipment - Locations 1F & 2E - ASTM Reference		LYONS20 - Lyons - Attachment 9a - ADA Playgroun
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 9b - ADA Playground - Locations 1F & 2E - Fall-Attenuating Surfacing		LYONS20 - Lyons - Attachment 9b - ADA - fall-attenuating pl kb)
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 10a - Kayak Course - Location 3D - Gate Equipment Descriptions		LYONS20 - Lyons - Attachment 10a - AGPlus Kayak Gate
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 10b - Kayak Course - Location 3D - Mast Equipment Description		LYONS20 - Lyons - Attachment 10b - Kayak Course Ma
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 11 - Site 5 - Facility Diagram - 2nd Ave Dog Park		LYONS20 - Lyons - Attachment 11 - Site 5 - 2nd Ave Dog
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 12 - Site 8 (10) - Locations of Bank Revegetation and Stabilization		LYONS20 - Lyons - Attachment 12 - Site 10 - Map of Revege (703.45 kb)
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 13 - DAC		LYONS20 - Lyons - Attachment 13 - DAC.p
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 14 - Floodplain Maps		LYONS20 - Lyons - Attachment 14 - Flood Plain M
ROGER AMMONS	06-04-2014	Project Worksheet	Attachment 15 - Location Maps - Town of Lyons General Area		LYONS20 - Lyons - Attachment 15 - Location Ma

Facility Name:	Meadow Park
Address 1:	432 5th Ave
Address 2:	P.O. Box 49
County:	Boulder
City:	Lyons
State:	CO
ZIP:	80540
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	PA-08-CO-4145-PW-01078(0): GPS location is at the east entrance to Meadow Park from 5th Avenue. The applicant requests that this project be included in the Public Assistance Alternative Procedures Pilot Progra formal request will be submitted before June 14, 2014. Note that throughout this project worksheet and in the attached Parks Damage Assessment (Attachment 1a), P respectively. The designations Site 9 and Site 10 are maintained throughout, since all work scope, cost estimat are so numbered. During the incident period severe rainstorms resulted in an estimated 500-year flow rate in the North and South converge in the Town of Lyons to form the Main Stem St. Vrain Creek. Further description of the magnitude of t attachment to the applicant's RPA ("4145 – Lyons – Cause and Effect of Damages 02-04-2014"). The flooding improved property and infrastructure and to the Town's highly-developed parks and recreation areas in and alor The Town owns and operates this extensive system of parks facilities in, along, and adjacent to the North, Soutl within the town limits. This project worksheet covers flood damage to a total of eight parks sites (numbered 1 – 6 and 9 and 10), includ three dispersed park and trails areas (Sites 3, 4, and 6), two small parks sites (Sites 5 and 9 [PW Site 7]), and th of publicly-owned areas of the creek banks in and adjacent to the other seven parks areas (Site 10 [PW Site 8]) Field inspections of each damage location were conducted by teams including representatives of FEMA/FEMA damages to each site and sub-location are documented in Attachment 1a. Some inspected park elements were sub-locations, "no damage" is noted, and no repair or replacement cost is listed in Attachment 1a. The extent o damaged is noted in Attachment 1a, and the applicant's estimate of cost to repair or replace, as required by the validation of the applicant's costs is shown in Attachment 2, and the CEF for total cost to repair to pre-disaster c PA-08-CO-4145-PW-01078(1): ***** Version 1 *****
Damage Description and Dimensions:	PA-08-CO-4145-PW-01078(0): DAMAGE DESCRIPTION AND DIMENSIONS Site 1 - Meadow Park Sub-locations: 1A Baseball Field 1B Multi-use Field 1C Volleyball Court/Ice Rink 1D Horseshoe Pits 1E Hains Property (insured) 1F Playground 1G Tent Camping Area 1H RV Sites 1I North Shelter ("historic") 1J South Shelter ("restroom") 1K - Not used 1L Picnic Areas 1M Trail 1N Parking Lot 1O - Not used 1P Park Host Site 1Q Memorial Benches/Plaques 1R Signage 1S Lyons Ditch 1T - Not used 1U Restoration of Site - Exc. & Fill 1V Irrigation Meadow Park is a 13.9 acre multi-use park (see maps in Attachments 4a and 4b) within the town limits on the n included whitewater structures for kayaking and swimming, baseball field, multi-use field with baseball backstop showers, volleyball court/ice rink, horseshoe pits, equipped playground, picnic areas, tent camp sites with picnic full hookups and picnic tables and grills, hiking trails, and crusher fines-surfaced parking area. The equipped playground area received minor damage to three pieces of equipment, and the pea gravel play su was covered with and contaminated by flood debris.

	An area known as the Hains Property adjoining Meadow Park on the north had been acquired immediately befo incorporated into the park. That 1.47 acre property included a house, two small outbuildings and a portable gar patios, full utilities, well and septic systems, and road. During the flood event, the North St. Vrain Creek at the north end of Meadow Park rechanneled to a new locatio pre-flood channel. The creek remains and will be left in that new post-flood channel, which runs directly through the rest of the park nearly one acre of valuable park land. The pre-flood channel is partially filled with cobble an 15 FT wide x avg 6 FT deep = 2100 CY), and currently handles little or none of the creek's flow, depending on t In addition to the new post-flood channel in which the creek remains, the flood cut two other temporary channels deep and 742 LF x 30 FT wide x avg 3 ft deep = 3523 CY total) across most of the north-south length of the par Hains Property eroded the property to a depth of two to six feet, and totally destroyed all structures on that prop Damage at Site 1 is documented in Attachment 1a for 19 separate sub-locations. The Hains property and all el moderate damage only to the playground and one shelter with restrooms and showers, were destroyed. One st the Works Progress Administration in the 1930's. This historic shelter, which was on the state register (5BL.383 destroyed, except for remnants of the chimney. FEMA EHP has determined that the shelter no longer retains its damage. All utilities (potable water lines; sewer lines; irrigation channel and distribution lines; power distribution lines, gro lighting; and all utility services to shelters and RV sites) were cut, washed out at multiple points, and rendered u Sodded and irrigated recreation and play surfaces on the baseball and multi-use fields, the tent and RV campin concentrated-use areas were either washed away or covered with sand, cobble, and other flood debris. Sodde and approximate debris, sand, and cobble to be removed before reconstruction can begin totaled 29,321 CY. D 8 ft wide, in Meadow Park that were surfaced with crusher fines 6 inches deep totaled 31,680 SF. Auxiliary eler include signs, memorial benches, various plaques, and fences. Dimensions and degree of damage are documented in Attachment 1a, Site 1, Locations 1A – 1V. Attachment 5f shows photos of many of the damage areas before and after the flood. PA-08-CO-4145-PW-01078(1): ***** Version 1 *****
Scope of Work:	PA-08-CO-4145-PW-01078(0): SCOPE OF WORK – Site 1 – Meadow Park Work To Be Completed: Repair/replacement of the whitewater structures for kayaking and swimming is covered in PW LYONS35. Applicant will use force account and contract labor and equipment to repair where possible, or replace where da park facilities in each of the 19 sub-locations in Site 1 to pre-disaster condition. Structures that can be repaired (shelter/restroom and playground, sub-locations 1F and 1J) will be repaired as c cost estimate. The cost to replace destroyed structures was determined from the applicant's insurance Stateme available, and from a contractor's quote (Attachment 7) for rebuild of a non-historic structure to replace the histo Sodded and irrigated play surfaces on the recreational fields, the tent and RV camping areas, picnic areas, and either washed away or covered with sand, cobble, and other flood debris could not be recovered. Applicant will 29,321 CY of debris, sand, and cobble that was deposited throughout Meadow Park. In accord with the experie Recreation Department, and in consultation with landscaping contractors, it has been determined that these cor not be used for two to three years if the sodded areas were simply replanted. Therefore, these athletic fields an re-sodding of 370,126 SF instead of planting. To accommodate replacement of irrigation piping in the rocky cob has been determined that 12 inches (after suitable compaction) of topsoil is required. Irrigation piping will be pla the damaging cobble, and sod installed over the topsoil. Peripheral areas where use is less concentrated do no over imported topsoil, and irrigation systems replaced to pre-disaster condition. The post-flood creek channel will be filled (2100 CY), topsoil added, and seeded. The two erosion channels cut repaired to pre-disaster condition by filling with 3523 CY of material (using available cobble and sand where pos replacement irrigation piping, and either sodding or planting, as appropriate to the use level of the particular are Replacement of the contaminated playground surface area appears by FEMA Disaster Assistance Policy 9525.5 ADA requirement (Attachments 9a and 9b) that either the surface under each piece of equipment or the entire s equipment be upgraded to a fall-attenuating surface. Upgrade of the full surface under and around the equipme appears to be the most practical option. This upgrade is included in the repair of sub-location 1F. OTHER SUPPORTING DOCUMENTATION: Documentation required in support of this SGA not directly attached may be found in the "Attachments and Com RPA, including Payroll and Procurement policies, Insurance Policies, and other documentation. RECORD RETENTION: As described in the 44 CFR 13:43 Applicant must maintain all work related records for applicant closure (final payment). All records relative to this project worksheet are subject to examination and a Comptroller General of the United States. PROCUREMENT OF MATERIALS AND CONTRACTS FOR COMPLETION OF THIS PROJECT: The applican applicable Federal, State or Local Procurement Laws, Rules and Regulations and maintain adequate records to goods and materials and contracted services for projects approved under the FEMA Public Assistance program applicant has advised they have/will follow their normal procurement procedures. PERMITS: The Applicant must obtain all necessary Federal, State and Local Permits prior to the commenceme requirement may jeopardize eligibility and the receipt of federal funds. HAZARD MITIGATION: Hazard mitigation is being proposed for Sites 1,2, and 3. See HMP's to be attached. INSURANCE: The applicant is aware that all projects are subject to an insurance review in accordance with 44 applicable, and insurance determination will be made either as anticipated proceeds or actual proceeds in acco policy that may affect the total amount of the project. WORK IN WATER: Replacement of many of these park facilities requires work in and immediately adjacent to t Mainstem St. Vrain Creeks. The applicant and/or their contractors must obtain and comply with the appropriate including those issued by US Army Corps of Engineers (USACE) under Sec. 404 of the Clean Water Act, and a USACE Denver Regulatory Office at (303) 979-4120 to determine if flood-related activity lies within the Corps GRANT CONDITIONS FOR SINGLE FIXED ESTIMATE SUBGRANT:

	Subgrantee agrees to fund any overrun associated with completion of the approved Scope of Work. GRANT CONDITIONS FOR CONSOLIDATED FIXED ESTIMATE: Additional subgrants can be included in this consolidation during the 12 months following the date of declaration overrun associated with completion of the work. COST ESTIMATE VALIDATION The subgrantee provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable STRATEGIC FUNDS MANAGEMENT The applicant has started construction on the work described in this SA within six months of the anticipated date therefore, are not subject to the requirements of SOP 9570.24 - Strategic Funds Management. DIRECT ADMINISTRATION COSTS: (5/9/14) Pursuant to DAP9525.9 subgrantee is requesting direct administrative costs that are directly chargeable eligible work is related to administration of the PA project only and in accordance with 44 CFR 13.22. These co uniformly as direct costs in all federal awards and other subgrantee activities and are not included in any approv Subgrantee has claimed DAC as summarized by Attachment 9, which shows the estimated total for this project advised to track these costs in order to submit revisions as may be required. PA-08-CO-4145-PW-01078(1): ***** Version 1 ***** This version is in response to a request from the GAR dated 08/26/2014 to consolidate this project with sub-gra Each of these sub-grants will be de-obligated and re-obligated into this sub-grant as one consolidated sub-grant grantee agrees to fund any overrun associated with completion of the work. See attached Site Sheets for additional DDD/SOW that must be included with this Version 1, PAAP Consolidatic After the performance of this sub-grant the applicant may have Excess Funds, the sub-grantee must provide an through the Grantee, within 90 days of completing this sub-grant. The Sub-grantee must submit a proposed SO accordance with the PAAP guidance for Excess Funds.

Hazard Mitigation Proposal	
* Is effective mitigation feasible on this site?	Yes
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	Yes
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	Yes
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate: (maximum 4000 characters)	Hazard Mitigation Proposals will be attached to: 1. Elevate 50 KVA transformers in Meadow Park. 2. Rip rap south side of creek to prevent future breaches.
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	No

GIS Coordinates		
Project Location	Latitude	Lon
East entrance to Meadow Park from 5th Ave	40.22363	-105

Facility Name:	Bohn Park
Address 1:	432 5th Ave
Address 2:	
County:	Boulder
City:	Lyons
State:	CO
ZIP:	80540
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	PA-08-CO-4145-PW-01078(0): GPS location is at east entrance to Bohn Park from 2nd Avenue.
Damage Description and Dimensions:	PA-08-CO-4145-PW-01078(0): DAMAGE DESCRIPTIONS AND DIMENSIONS Site 2 - Bohn Park Location 2A Bohn Field (Baseball) 2B Vasquez Field (Baseball) 2C Batting Cage 2D Multi-use Sport Court 2E Bohn Playground 2F Miller Memorial 2G Restrooms & Shelter (Bohn Shelter) 2H Parking Lot 2I ADA Fishing Area (Handicap) 2J Pump Pit/Well/Pump 2K Park Host Site 2L Tuff Shed (Storage) 2M Score Box 2N Baseball Shed (Storage) 2O Planters 2P Vasquez Memorial 2Q Memorial Benches 2R Dog Park 2S Concession Stand Area 2T Multi-use Field/Soccer 2U Bohn Park Restrooms

	2V Lyons Community Garden 2W Lyons Dirt Jump Bike Park 2X Signage 2Y Irrigation 2Z - Not used 2AA Foot Path Bridge - 4th & Bohn Park 2AB Foot Path Bridge - 4th & Evans 2AC Trail (main trail through park) 2AD Picnic Areas 2AE Bohn Park Service Utilities Bohn Park covers 52 acres on the south side of South St. Vrain Creek and the Main Stem of St. Vrain Creek, st Approximately 15 acres of Bohn Park that lies nearest the creeks were damaged, with the degree of damage de During the flood, the South St. Vrain Creek cut an east-west channel across the park, and the Main Stem of St. very high volume and velocity, damaging most of the more highly-developed areas of the park. Damage at Site 2 is documented in Attachment 1a for 30 separate sub-locations. See also the before and after The damaged sections of this park included two baseball fields and associated batting cage; two storage buildin and tennis; equipped playground; restroom and shelter building; gravel-surfaced parking areas with parking bloc pit, pump, and well; RV site for Park Host with associated utilities; concession stand area; dog park area; variou benches, plaques and planter boxes; the dirt-jump bike park; sodded and irrigated areas throughout the damage crusher fines; picnic areas; and all power, water, sewer, and irrigation utilities servicing the park's buildings and the irrigation system. All utilities (potable water lines, sewer lines, irrigation pump pit and distribution lines, power distribution lines and services to shelters and the Park Host RV site) were cut, washed out at multiple points, and rendered unrepaira The equipped playground area received minor damage to one piece of equipment, and the pea gravel play surfa with flood debris. As at Site 1, sodded and irrigated recreation and play surfaces on the baseball fields and the multi-use field, pic areas were either washed away to a depth of one to five feet or covered with sand, cobble, and other flood debr Both baseball fields and their backstops and fences and batting cage were damaged beyond repair (but the bas undamaged except for loss of underground power lines to them), the multi-use sport court surface was heavily s surfacing was damaged, the bottom two feet of the shelter/restroom building received water damage, the conce damage, the parking lot was entirely destroyed, the ADA fishing area was entirely washed away, two small stora repair by water and mold, and the dirt-jump bike park was damaged by erosion. One foot-path wooden bridge (were destroyed, and another identical bridge was washed off the destroyed abutments, but the bridge was unda surface was not significantly damaged and will not require repair.
Scope of Work:	PA-08-CO-4145-PW-01078(0): SCOPE OF WORK Work to Be Completed – Site 2 – Bohn Park Applicant will use force account and contract labor and equipment to repair where possible, or replace where da park facilities in each of the 30 sub-locations in Site 2 to pre-disaster condition. Structures that can be repaired (shelter/restroom(sub-location 2G), concession stand (sub-location 2S), and equ will be repaired as detailed in Attachment 1a scope and cost estimate. The cost to repair the shelter/restroom w insurance Statement of Loss (Attachment 6). FEMA estimated (Attachment 8) the cost to repair the concession unrepairable storage sheds (sub-locations 2L and 2N). As at Site 1, sodded and irrigated play surfaces on the two baseball fields, the Park Host RV site, picnic areas, a either washed away or covered with sand, cobble, and other flood debris could not be recovered. Applicant will 15,575 CY of debris, sand, and cobble that was deposited throughout Bohn Park. In accord with the experience Department, and in consultation with landscaping contractors, it has been determined that these concentrated-u for two to three years if the sodded areas were simply replanted. Therefore, these areas will require re-sodding the two baseball fields, picnic area, common areas around the parking lot and between principal venues, and he access points. To accommodate replacement of irrigation piping in the rocky cobble underlying these sodded a inches (after suitable compaction) of topsoil is required. Irrigation piping will be placed in this topsoil layer rathe sod installed over the topsoil. Peripheral areas where use is less concentrated do not require sodding and will b irrigation systems will be replaced to pre-disaster condition. Replacement of the contaminated playground surface area appears by FEMA Disaster Assistance Policy 9525. ADA requirement (Attachments 9a and 9b) that either the surface under each piece of equipment or the entire s equipment be upgraded to a fall-attenuating surface. Upgrade of the full surface under and around the equipme appears to be the most practical option. This upgrade is included in the repair of sub-location 2E. The creeks in the Bohn Park area returned to their pre-flood channels when the water receded. Significant banl erosion of these denuded banks is included on Site 10. The erosion channel and the shallow swath cut by the creek across the park will be repaired to pre-disaster con and sand where possible), installing topsoil and replacement irrigation piping, and either sodding or planting, as particular area.

Hazard Mitigation Proposal	
* Is effective mitigation feasible on this site?	Yes
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	Yes
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	Yes
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate: (maximum 4000 characters)	Hazard Mitigation Proposal will be attached to: 1. Elevate 50 KVA transformers in Bohn Park.
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	No

GIS Coordinates		
Project Location	Latitude	Lon
East entrance to Bohn Park from 2nd Avenue	40.21927	-105

Facility Name:	Lyons Valley River Park
Address 1:	432 5th Ave
Address 2:	
County:	Boulder
City:	Lyons
State:	CO
ZIP:	80540
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	PA-08-CO-4145-PW-01078(0): GPS location is at McConnell Ponds west of McConnell Drive Bridge near east end of this elongated section.
Damage Description and Dimensions:	PA-08-CO-4145-PW-01078(0): DAMAGE DESCRIPTION AND DIMENSIONS Site 3 - Lyons Valley River Park Sub-locations: 3A McConnell Ponds 3B Trail 3C Signage 3D Kids Kayak Club Poles 3E Wooden Foot Bridge Lyons Valley River Park includes an elongated trail (2640 LF x 6.7 ft wide) and creek/creekside recreation area Creek, the Main Stem of St. Vrain Creek, and along the McConnell Ponds area. This section of creek containec location 3D) consisting of poles, masts, and gates, with each staggered gate extending partially over the creek t Two recreational ponds known as the McConnell Ponds (sub-location 3A) were located near the east end of this the Kayak Club and by residents and visitors for informal water sports of all types. The ponds formed the nucle separate from the creeks. They also provided wildlife habitat and a fishing area, and served as part of the host Games. The Site 3 park area totals about 4800 LF and varies from 100 to approximately 550 feet wide. During the 500-year flood, the South St. and Main Stem St. Vrain Creeks overflowed their banks at very high vo is documented in Attachment 1a for five separate sub-locations. See also the before and after photos in Attachi All of the Lyons Valley River Park is close to the creeks, and all was destroyed by the flood. The trails were enti the kayak club facility (either fastened to the dense tree cover, or supported on poles anchored in the creek ban An elevated trail running seven feet above ground level that accessed fishing and water recreation in the area b Creek and McConnell Ponds was washed out and scoured 15 feet deep into the bottom of the ponds at two loca west end of the west pond and 206 LF near east end of east pond). These washouts of the trail embankment al ponds, depositing large quantities of sand, cobble and flood debris. A small (15 LF x 8 FT wide) wooden bridge washed away and destroyed. Trail signs in the area were also destroyed.
Scope of Work:	PA-08-CO-4145-PW-01078(0): SCOPE OF WORK Work To Be Completed – Site 3 – Lyons Valley River Park Applicant will use force account and contract labor and equipment to repair each of the damaged elements of th condition. The destroyed kayak course area consisting of poles, masts, and gates which created a staggered-gate course brochures to illustrate the equipment are shown in Attachments 10a and 10b. The applicant has obtained budg based on cost of a recent similar facility, which are included in the Attachment 1a cost estimate (sub-location 3D The McConnell recreation Ponds will be excavated (62,062 CY) to the pre-flood dimensions. As much as possil used in the repair of the 400 LF and 206 LF washouts of the elevated trail embankment. The washed-out emba disaster condition, including a moderate layer of rip rap on the creek-side of the trail embankment. The repaired revegetated for erosion control. The 15 LF x 8 ft wooden bridge will be replaced. See Attachment 1a, Site 3, for detailed scope of repair and estimated cost.

Hazard Mitigation Proposal	
* Is effective mitigation feasible on this site?	Yes
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	Yes
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	Yes
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate: (maximum 4000 characters)	Hazard Mitigation Proposal will be attached to: 1. Strengthen berm walls between creek and McConnell Ponds.
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	No

GIS Coordinates

Project Location	Latitude	Lon
McConnell Ponds west of McConnell Drive Bridge near east end of this elongated section	40.21769	-105

Facility Name:	Corridor Trail
Address 1:	432 5th Ave
Address 2:	

County:	Boulder
City:	Lyons
State:	CO
ZIP:	80540
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	PA-08-CO-4145-PW-01078(0): GPS location is at Trail's east end at the intersection of the trail with McConnell Drive along U.S. Highway 36.
Damage Description and Dimensions:	PA-08-CO-4145-PW-01078(0): DAMAGE DESCRIPTION AND DIMENSIONS Site 4 - Corridor Trail Sub-locations 4A - Not used 4B Stone Features 4C Irrigation 4D - Not used 4E Foot Path Bridge - Hwy 66 4F Stone Trash Cans 4G Trail The Corridor Trail facility included a creekside trail running between the Main Stem of St. Vrain Creek and U.S. Bridge on the west end to a point 275 ft east of the McConnell Drive bridge. See Attachments 4b and 4d. The t trail consisted of 211.2 LF x 8 ft wide of concrete-surfaced trail and 1716 LF x 8 ft wide of designed trail surface During the 500-year flood, the Main Stem of St. Vrain Creek overflowed its banks at very high volume and veloc The entire length of the trail was destroyed, and the abutments of the foot bridge (14 CY of concrete each) were bridge was recovered undamaged. One of the stone trash cans along the trail was washed away. Damage detail at Site 4 is documented in Attachment 1a for five separate sub-locations. See also the before ar
Scope of Work:	PA-08-CO-4145-PW-01078(0): SCOPE OF WORK Work To Be Completed – Site 4 – Corridor Trail Applicant will use force account and contract labor and equipment to replace the 211.2 LF x 8 ft wide concrete t crusher fines trail to pre-disaster condition, and two bridge abutments at 14 CY concrete each. The lost stone t Attachment 1a, Site 4, shows detailed scope of repair and estimated cost.

Hazard Mitigation Proposal	
* Is effective mitigation feasible on this site?	No
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	No
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	No
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate: (maximum 4000 characters)	No cost-effective mitigation has been identified for this trail.
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	No

GIS Coordinates

Project Location	Latitude	Lon
Trail's east end at the intersection of the trail with McConnell Drive along U.S. Highway 36	40.21808	-105

Facility Name:	2nd Ave Dog Park
Address 1:	432 5th Ave
Address 2:	
County:	Boulder
City:	Lyons
State:	CO
ZIP:	80540
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	PA-08-CO-4145-PW-01078(0): GPS location is at the west end of the 2nd Ave Dog Park area, SE corner of 2nd Ave bridge.
Damage Description and Dimensions:	PA-08-CO-4145-PW-01078(0): DAMAGE DESCRIPTIONS AND DIMENSIONS Site 5 - 2nd Ave Dog Park Location 5A Fencing 5B River Feature 5C Signage 5D Retention Wall Under 2nd Ave Bridge 5E Irrigation The 2nd Ave Dog Park facility on the south bank of the Main Stem of St. Vrain Creek immediately east of the 2n

	recreation area for people with dogs to access the creek. The facility included a three-foot high retaining wall at steps/seating, rip rap armoring, a water feature protruding into the creek (design shown in Attachment 11 and m picnic table, 90 LF of post and dowel fence, sodded area with irrigation, sculptures, garbage cans, and signage. During the 500-year flood, the flow velocity in the Main Stem of St. Vrain Creek entirely destroyed all elements c is documented in Attachment 1a for five separate sub-locations.
Scope of Work:	PA-08-CO-4145-PW-01078(0): SCOPE OF WORK Work To Be Completed – Site 5 – 2nd Ave Dog Park Applicant will use force account and contract labor and equipment to replace to pre-disaster condition the 112 C wall, the 182 CY of rip rap armoring, and the 28 LF of sandstone/boulder steps and seating area. The picnic tab piping, sculptures, garbage cans, and signage will be replaced. Attachment 1a, Site 5, shows detailed scope of repair and estimated cost, and Attachment 1b shows materials r

Hazard Mitigation Proposal	
* Is effective mitigation feasible on this site?	No
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	No
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	No
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate: (maximum 4000 characters)	No cost-effective mitigation has been identified for this facility.
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	No

GIS Coordinates		
Project Location	Latitude	Lon
West end of the 2nd Ave Dog Park area, SE corner of 2nd Ave bridge	40.2203	-105

Facility Name:	St. Vrain/Hwy 7 Trail
Address 1:	432 5th Ave
Address 2:	
County:	Boulder
City:	Lyons
State:	CO
ZIP:	80540
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	PA-08-CO-4145-PW-01078(0): GPS location is near the east end of the trail, north side of the 4th Avenue walking bridge over the South St. Vra
Damage Description and Dimensions:	PA-08-CO-4145-PW-01078(0): DAMAGE DESCRIPTION AND DIMENSIONS Site 6 St. Vrain/Hwy 7 Trail Sub-locations: 6A Hard-surface Trail Hwy 7 to Bohn Park 6B Trail Along Hwy 7 Bohn to Old South 6C Signage 6D Fencing The St. Vrain/Hwy 7 trail (Attachments 4a,b,c,d)is approximately 2000 LF long and runs northeast between Hwy the intersection of Hwy 7 and Old St. Vrain Road, turns east to follow the creek, and ends at the bridge to Bohn the north side of South St. Vrain Creek. 500-year flood flows in the South St. Vrain Creek eroded and destroyed 1848 LF of the northern and eastern po x 8 ft wide concrete trail and 1056 LF x 8 ft wide crusher fines-surfaced trail. The flood also washed away and c dowel fence totaling 1392 LF, trash barrels, and signs. Damage detail at Site 6 is documented in Attachment 1a for four separate sub-locations. See also the before ar
Scope of Work:	PA-08-CO-4145-PW-01078(0): SCOPE OF WORK Work To Be Completed – Site 6 – St. Vrain/Hwy 7 Trail Applicant will use force account and contract labor and equipment to replace the 792 LF x 8 ft wide concrete tra fines-surfaced trail and replace 1392 LF of post and dowel fence. They also will replace the lost trash barrels ar Attachment 1a, Site 6, shows detailed scope of repair and estimated cost.

Hazard Mitigation Proposal	
* Is effective mitigation feasible on this site?	No
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	No
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	No

If you answered **Yes** to the above question, the next two questions are required

Please provide the Scope of Work for the estimate: (maximum 4000 characters)	No cost-effective mitigation has been identified for this trail.
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	No

GIS Coordinates

Project Location	Latitude	Lon
Near east end of trail, north side of the 4th Avenue walking bridge over the South St. Vrain Creek	40.21967	-105

Facility Name:	Black Bear Hole (designated Site 9 throughout this PW)
Address 1:	432 5th Ave
Address 2:	
County:	Boulder
City:	Lyons
State:	CO
ZIP:	80540
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	PA-08-CO-4145-PW-01078(0): GPS location is at the north side of the Black Bear walking bridge over the Main Stem of St. Vrain Creek.
Damage Description and Dimensions:	PA-08-CO-4145-PW-01078(0): DAMAGE DESCRIPTION AND DIMENSIONS Site 7 - Black Bear Hole Area (designated Site 9 throughout this PW) Sub-locations: 7A Parking Lot 7B Picnic Area 7C Trail 7D Foot Path Bridge Hwy 66 at Black Bear 7E Signage 7F Irrigation The Black Bear Hole is a focal point and concentrated-use area for views of the area, picnicking, access to recr of St. Vrain Creek, access to two of the most popular “kayak drop” whitewater features immediately upstream ar walking bridge, and provides access to the west end of the Corridor Trail. See Attachments 4a and 4c. The Main Stem of the St. Vrain Creek overflowed its banks and inundated the parking lot, picnic area, trail on bo abutments of the Black Bear foot-path bridge. Though the foot bridge remains in use, both bridge abutments (1 and partially damaged, and will require replacement. Other damage at this site included loss of six-inch deep road base from the 261 ft x 99 ft parking area, 17 LF of area, loss at the picnic area of 12 ft x 12 ft = 144 SF x 6 inch depth of crusher fines base, trash barrels, various for concentrated use. Damage detail at Site 7 (designated Site 9 throughout this PW) is documented in Attachment 1a for six separate and after photos in Attachment 5e.
Scope of Work:	PA-08-CO-4145-PW-01078(0): SCOPE OF WORK Site 7 - Black Bear Hole Area (designated Site 9 throughout this PW) Applicant will use force account and contract labor and equipment to replace two walking bridge abutments at 1 base on parking lot = 261 ft x 99 ft x 6 inch deep (at 2900 LB/CY) = 694 tons, replace 17 LF of post and dowel f crusher fines, and replace 20,000 SF of sod with irrigation on this high-use area. They also will replace the lost Attachment 1a, Site 7 (designated Site 9 throughout this PW), shows detailed scope of repair and estimated cos

Hazard Mitigation Proposal

* Is effective mitigation feasible on this site?	No
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	No
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	No
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate: (maximum 4000 characters)	No cost-effective mitigation has been identified for this facility.
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	No

GIS Coordinates

Project Location	Latitude	Lon
North side of the Black Bear walking bridge over the Main Stem of St. Vrain Creek	40.22072	-105

Facility Name:	Park System Bank Revegetation and Stabilization (designated Site 10 throughout this PW)
Address 1:	432 5th Ave
Address 2:	
County:	Boulder

City:	Lyons
State:	CO
ZIP:	80540
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	PA-08-CO-4145-PW-01078(0): GPS location is on the Black Bear walking bridge over Main Stem of St. Vrain Creek, east of center of site segm repaired are shown in Attachment 12.
Damage Description and Dimensions:	PA-08-CO-4145-PW-01078(0): DAMAGE DESCRIPTON AND DIMENSIONS Site 8 - Park System Bank Revegetation and Stabilization (designated Site 10 throughout this PW) The 500-year flood resulted in major erosion and loss of protective rip rap and stabilizing vegetation on the bank St. Vrain Creek, and Main Stem of St. Vrain Creek within the Town limits of Lyons. In addition, the Creek banks emergency repair areas to the breaches that were covered on LYONS05 (008) and LYONS06 (042) remain to b of 3261 LF of creek banks on Lyons Town property require revegetation and rip rap stabilization to prevent seric breaches at high creek flows that result from rainstorms and from annual runoff during snowmelt in the immedia canyons. The eroded bank sections average approximately 25 feet wide. In addition to bank erosion, protective banks. Attachment 1b shows a typical section of creek bank vegetation and stabilization as it existed pre-flood also shows materials required for an average 100 LF of creek bank. Damage detail at Site 8 (designated Site 10 throughout this PW) is documented in Attachment 1a for sub-locatic photos in Attachment 5.
Scope of Work:	PA-08-CO-4145-PW-01078(0): SCOPE OF WORK Work To Be Completed – Site 8 – Park System Bank Revegetation and Stabilization (designated Site 10 throug Applicant will use force account and contract labor and equipment to replace rip rap and the protective revegeta 3261 LF of heavily damaged creek bank on Town property. Attachment 1a, Site 8 (designated Site 10 throughc repair and estimated cost.

Hazard Mitigation Proposal	
* Is effective mitigation feasible on this site?	No
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	No
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	No
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate: (maximum 4000 characters)	The repairs to pre-disaster condition at Site 8 (10) consist of revegetation and rock/rip banks, and thus could be considered replacing pre-existing mitigation that was washec mitigation has been identified.
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	No

GIS Coordinates

Project Location	Latitude	Lon
On Black Bear walking bridge over Main Stem of St. Vrain Creek, east of center of site segments	40.22063	-105

Facility Name:	Whitewater Features
Address 1:	432 5th Ave
Address 2:	
County:	Boulder
City:	Lyons
State:	CO
ZIP:	80540
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	***** Version 2 ***** Location: GPS location is at applicant's Town Hall at 432 5th Ave, Lyons, CO. at 40.22327, -105.27114. The whitewater features covered in this project worksheet are located along the North, South, and mainstem St. The GPS locations and map locations for each feature are documented in Attachment 1. This project worksheet covers repairs to 20 total recreational structures (15 whitewater features and 5 fishing st South, and mainstem St. Vrain Creeks in the Lyons Town Limits. Location 1 – Meadow Park – nine damaged whitewater features Sub-location 1A = Applicant's Structure P-1 ("Swimming Hole") Sub-location 1B = Applicant's Structure M-1 Sub-location 1C = Applicant's Structure M-2 Sub-location 1D = Applicant's Structure M-3 Sub-location 1E = Applicant's Structure M-4 Sub-location 1F = Applicant's Structure M-5

	Sub-location 1G = Applicant's Structure M-6 Sub-location 1H = Applicant's Structure M-7 Sub-location 1I = Applicant's Structure M-8 Location 2 – North St. Vrain Creek Area – Two damaged whitewater features Sub-location 2A = Applicant's 5th Ave Bridge Structure Sub-location 2B = Applicant's Sewer Line Structure (Park St) Location 3 – Bohn Park Fishing Structures – Five damaged fishing structures Sub-location 3A = Fishing Structure 1 Sub-location 3B = Fishing Structure 2 Sub-location 3C = Fishing Structure 3 Sub-location 3D = Fishing Structure 4 Sub-location 3E = Fishing Structure 5 Location 4 – Black Bear Hole Area – Two damaged whitewater features Sub-location 4A = Black Bear Structure Sub-location 4B = A-Hole Location 5 – October Hole Area – Two damaged whitewater features Sub-location 5A = October Hole Sub-location 5B = November Hole Latitude: 40.22327 Longitude: -105.27114
Damage Description and Dimensions:	***** Version 2 ***** During the incident period severe rainstorms estimated to exceed a 500-year rainfall event resulted in an estima South Branches of St. Vrain Creek which converge in the Town of Lyons to form the mainstem creek. Further d flooding is available in an attachment to the applicant's RPA ("4145 – Lyons – Cause and Effect of Damages 02 extensive damage to improved property and infrastructure and to the Town's highly-developed parks and recrea This project worksheet covers flood damage to 20 recreational structures in the two branches and the mainstem "Whitewater Structures" create drop areas that provide whitewater recreation for kayaking, canoeing, tubing, an "fishing structures" provide fish habitat and spawning areas in low-velocity pools created within the creek. The whitewater structures were built in 2001. The fishing structures were built in 1989 and rebuilt in 1998 after t disaster) in 1994. Pre-flood, each structure was undamaged, fully functional, and in operation. The structures a applicant. All 20 structures were damaged to varying degrees. Each sustained enough damage that in-place repair is not entirely, some partially washed away, and some undermined and damaged structurally, requiring removal and r repaired was caused by the declared disaster. Field inspections of each damage location were conducted by teams including representatives of FEMA, Grante are documented by location in Attachment 1. GPS location for each damage area is shown in Attachment 4a. I teams determined that in-place repair was not possible, and that all 20 structures require full reconstruction. Att damage to the structures. In addition, three small ponds near Fishing Structure 4 (sub-location 3D) were filled with flood debris, cobble, an volume of approximately 53 CY are used to filter irrigation return water from the applicant's adjacent Bohn Park creek, and to provide wildlife habitat. The damage dimensions for each structure are summarized in Attachment 4a – GPS Location, Repair Scope, a damage dimensions were taken by the engineering consultant after flows subsided and sufficient flood debris ha examination. The project specialist has verified a small sample of the damage sites and found that the enginee Structure depths could not be verified. The engineering consultant's determination of average depth is based o structures, and has been accepted by the project specialist. Attachment 2a shows photos during construction and near completion of a typical whitewater feature ("kayak dr Attachment 3a shows plan and elevation drawings and typical construction details for a whitewater structure. At details for the fishing structures as originally built in 1989. The damage quantities (summarized from Attachment 4a) of each of the principal elements of construction of th the 20 structures are: 1. Feature materials washed out or destroyed (mainly large boulders, the principal elements of the features) = 5 2. Terracing rocks (sandstone slabs and native boulders)washed out or destroyed (These provide erosion contr and serve as durable surfaces for access, egress, and seating at one end of each feature and both ends of mar variable width) 3. Pool bottoms filled with cobble, sand, and flood debris = 4625.1 CY 4. Armoring (rip rap) washed out or destroyed (forms the bottom lining of the pools to control the erosive scour a immediately downstream of each whitewater feature) = 21,518.5 CY 5. Grout destroyed (principally for boulders in the main structure, minor amounts for terracing rocks) = 1022.4 C 6. Feature Rocks washed away (approximately 8 FT diameter boulders placed in the creek to create eddys, dive obstacles) = 24 boulders Supporting documentation for this site can be found attached to PW 01053.
Scope of Work:	***** Version 2 ***** SCOPE OF WORK Work To Be Completed: Applicant will use contract labor and equipment to return 20 whitewater recreational facilities to pre-disaster con original design to functionalize previously-inadequate fish passages. The applicant has been informed (Attach Statement on Fish Passages) that adequately-designed fish passages will be required as part of the 404 permit with the Clean Water Act." Although the cost differential between design of the fish passages as included in the original pre-disaster constr not been quantified, it is estimated by the consulting engineer to be zero net increase, since slightly increased la decreased materials cost. Construction of such whitewater and fishing structures in an active waterway typically is required by permit to be the least effect due to sedimentation and least impact to native fish species. In this area, the window for constru October to mid-March, timed for historical low flows. Estimated costs include appropriate added cost for this tim

Recovery and reuse of materials from original construction:
1. For the principal elements of the whitewater features, boulders, rip rap, sandstone slab, etc will be recovered entirely washed away, buried in the creeks and banks, or broken beyond reuse. It is estimated by the consultin remnants of the features and to recover and reuse will approximately balance the reduction in material cost, so cost reduction is taken for recovered materials.
2. For the "feature rocks" (large boulders strategically placed in the creek to augment the main whitewater featu flow diversification), it is estimated that, above and beyond the cost of recovery, 5% are not buried or lost and c unit cost of the feature rocks was reduced by 5% to account for this net saving by recovery.
Materials to be used:
Principal construction material is native boulders and cobble, slabs of native Lyons sandstone, and native rip ra material and transportation cost, and preferred for compatibility with natural surroundings of the parks. Use of t cost for repair.

Scope of work is to repair the following 15 whitewater structures and 5 fishing structures to pre-disaster conditio improvement of fish passages through the structures):

Location 1 – Meadow Park (on North St. Vrain Creek) – reconstruct nine damaged whitewater features per scop
Location 2 – North St. Vrain Creek Area – reconstruct two damaged whitewater features per scope outlined belo
Location 3 – Bohn Park Fishing Structures – reconstruct five damaged fishing structures per scope outlined belo from three small ponds.
Location 4 – Black Bear Hole Area – reconstruct two damaged whitewater features per scope outlined below
Location 5 – October Hole Area – reconstruct two damaged whitewater features per scope outlined below

Total repair scope and quantities for the 20 damaged structures at Locations 1 - 5 (detailed for each structure in Repair Scope, and Cost Estimate) are:
1. Feature Materials: Reconstruct washed-out and damaged whitewater features with boulders and rock = 5563
   a. Dismantle any remnants of features and terracing, and save reusable materials for reconstruction.
   b. Recover for reuse any available dislodged and reusable materials from the original whitewater features.
   c. Reconstruct the cross-channel section of the feature, with ends anchored in creek banks.
2. Terracing Rocks: Reconstruct terracing (at each end of most features, one end on some) for access/egress a in grout total) = 577.1 LF (at avg 3 FT deep, variable width).
3. Pool Bottoms: Over-excavate (remove flood debris and deposited cobble and sand) to re-form the pools dow
4. Armoring: Install and shape rip rap armoring of pool bottoms = 21,518.5 CY.
5. Grout: Grout feature materials (Item 1) as necessary, plus minimal grouting of Terracing Rocks (Item 2) = 102
6. Feature Rocks: Provide and install replacement feature rocks as located pre-disaster = 24 eight-foot diameter reduced 5% to reflect estimated cost-effective net recovery of 5% of these feature rocks.
7. Heavy equipment: Unit prices for repair items include all materials, labor, and equipment required to provide a the reconstruction of the structure. Additional heavy equipment work is required for final adjustment of feature r hydraulic characteristics for each feature (referred to as "tuning" the structure). These extra equipment hours a Scope and Cost Estimate") as "heavy equipment time", indicating that it is in addition to equipment hours includ
8. Install and remove water diversion controls, required during construction of each structure.
9. Excavate flood debris, cobble, and sand totaling 53 CY from three small ponds near Fishing Structure 4 (sub-
10. Revegetation of both banks along the creeks between the whitewater features is covered on LYONS20 – Pa required on this project worksheet.

HYDROLOGY STUDY ON EFFECT OF WHITEWATER FEATURES AND FISHING STRUCTURES:
The original whitewater and fishing structures were installed in compliance with permits issued by USACE, but l issued.

The applicant conducted a one-dimensional hydraulic analysis in May, 2014, to determine the impacts to the 10 elevation of the original installation of the in-creek structures covered by this project worksheet. The results (Att Effects of Whitewater Features) demonstrated that initial installation (and therefore reconstruction to same dime structures in the creeks did not impact the 100-year flood elevations, floodway elevations, or floodway widths or Vrain Creeks.

OTHER SUPPORTING DOCUMENTATION:
Documentation required in support of this SGA not directly attached may be found in the "Attachments and Com RPA, including Payroll and Procurement policies, Insurance Policies, and other documentation.

RECORD RETENTION: As described in the 44 CFR 13:43 Applicant must maintain all work related records for applicant closure (final payment). All records relative to this project worksheet are subject to examination and a Comptroller General of the United States.

PROCUREMENT OF MATERIALS AND CONTRACTS FOR COMPLETION OF THIS PROJECT: The applican applicable Federal, State or Local Procurement Laws, Rules and Regulations and maintain adequate records to goods and materials and contracted services for projects approved under the FEMA Public Assistance program applicant has advised they have/will follow their normal procurement procedures.

PERMITS: The Applicant must obtain all necessary Federal, State and Local Permits prior to the commenceme requirement may jeopardize eligibility and the receipt of federal funds.
The original whitewater and fishing structures were installed in compliance with permits issued by USACE, but l issued. The applicant will obtain both USACE and local permits for reconstruction of the facilities covered by thi

HAZARD MITIGATION:
No mitigation opportunities identified because mitigation not technically feasible on these whitewater features.

INSURANCE: The applicant is aware that all projects are subject to an insurance review in accordance with 44 applicable, and insurance determination will be made either as anticipated proceeds or actual proceeds in acco policy that may affect the total amount of the project.

WORK IN WATER: Replacement of these whitewater features requires work in and immediately adjacent to the Mainstem St. Vrain Creeks. The applicant and/or their contractors must obtain and comply with the appropriate including those issued by US Army Corps of Engineers (USACE) under Sec. 404 of the Clean Water Act, and a USACE Denver Regulatory Office at (303) 979-4120 to determine if flood-related activity lies within the Corps

GRANT CONDITIONS FOR SINGLE SITE FIXED SUBGRANT
Subgrantee agrees to fund any overrun associated with completion of the approved Scope of Work. Subgrantee approved on this PW or request an improved or alternate project from the Grantee prior to the start of the work. be completed must be reviewed by FEMA to ensure program and EHP compliance. Subgrantee
must follow Federal procurement procedures as outlined in 44 CFR, Part 13.36. Subgrantee must provide an ac Grantee that demonstrates that the Scope of Work of the PW or the approved Improved or Alternate Project has associated with completing the Scope of Work. The final accounting must indicate the Subgrantee's intended u with this project.

DIRECT ADMINISTRATION COSTS:
(5/9/14) Pursuant to DAP9525.9 subgrantee is requesting direct administrative costs that are directly chargeable

	eligible work is related to administration of the PA project only and in accordance with 44 CFR 13.22. These co uniformly as direct costs in all federal awards and other subgrantee activities and are not included in any approv Subgrantee has claimed DAC as summarized by Attachment 9, which shows the estimated total for this project advised to track these costs in order to submit revisions as may be required. Strategic Funds Management: The Applicant intends to start construction on the work described in this SA within six months of the anticipated therefor, are not subject to the requirements of SOP 9570.24 – Strategic Funds Management Supporting documentation for this site can be found attached to PW 01053.

Hazard Mitigation Proposal	
* Is effective mitigation feasible on this site?	No
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate: (maximum 4000 characters)	
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	

GIS Coordinates		
Project Location	Latitude	Lon
Whitewater Features	40.22327	-105

Facility Name:	Alleys in the Confluence Area
Address 1:	432 5th Ave
Address 2:	
County:	Boulder
City:	Lyons
State:	CO
ZIP:	80540
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	***** Version 2 ***** Location: GPS location is at applicant's Town Hall at 432 5th Ave, Lyons, CO. at 40.22327, -105.27114. GPS locations for each damage area are documented in Attachment 1 and are included below. Site 1: Alleys in the confluence area Location 1A - Alley south of Park St, west of 2nd Ave Alley at 2nd Ave = 40.22096, -105.26550 Location 1B - Alley south of Evans St, 2nd Ave to 5th Ave Alley at 2nd Ave = 40.22201, -105.26552 Location 1C - Alley south of Park St, East of 4th Ave and 4th Ave to 5th Ave Alley at 4th Ave = 40.22100, -105.27003 Location 1D - Alley south of Prospect St, 4th Ave to 5th Ave Alley at 4th Ave = 40.21994, -105.27006 LATITUDE: 40.22327 LONGITUDE: -105.27114
Damage Description and Dimensions:	***** Version 2 ***** SITE 1 – Alleys in the confluence area During the incident period severe rainstorms resulted in an estimated 500-year flow rate in the North and South converge in the Town of Lyons to form the Main Stem creek. Further description of the magnitude of the floodin applicant's RPA ("4145 – Lyons – Cause and Effect of Damages 02-04-2014"). The flooding caused very exten infrastructure, including low-lying streets and alleys in the areas adjacent to the creeks. Pre-flood, the alleys were surfaced with variable but not accurately known depths of gravel. These streets and alleys are owned and maintained by the applicant. All were in reasonable condition, servicea All damage to be repaired was caused by the declared disaster and/or by unavoidable damage caused by emer during the incident period. Traffic on the graveled, unpaved alleys for local access and during emergency work saturated caused incorporation of sediment and debris into the surface, and severely damaged the surface and the sub-grade. Field inspections of each damage location were conducted by teams including representatives of FEMA/FEMA Results of the field inspections are documented in Attachments 1 and 2a. The damages are further documented by photos in Attachments 2b, 2c, and 2d. Flood damage at each location of Site 1 was: Location 1A - Alley south of Park St, west of 2nd Ave: (alley is a 277 LF segment x 19 FT wide) - 277 LF x 23 ft wide (sediment layer is 4 ft wider than the 19 ft alley) x avg 15 inches deep = 295 CY of sedim was deposited on gravel-surfaced alley (leave at applicant's calculation of 292 CY) - 277 LF x 19 ft wide x avg 4 inch deep = 65 CY alley surface and base damaged to sub-grade Location 1B - Alley south of Evans St, 2nd Ave to 5th Ave (four alley segments measured during field inspectior LF x 12 FT wide, 57.6 LF x 10 FT wide, and 321 LF x 10 FT wide). - 1348.3 LF x weighted avg 13.09 ft wide x avg 2.3 inches deep (including a remaining pile) = 125 CY of sedime surface of alley - 435.6 LF x 17.1 FT wide x avg 4 inch deep + 591.7 LF (not the entire segment) x avg 16 ft wide x avg 4 inch d

	to sub-grade Location 1C - Alley south of Park St, east of 4th Ave, and from 4th Ave to 5th Ave: (two segments; 127 LF x 16 I 16 FT wide from 4th Ave to 5th Ave = total of 585 LF x 16 FT wide) - (no remaining sediment/flood debris to be removed) - 585 LF x 16 ft wide x avg 4 inch deep = 116 CY alley surface damaged to sub-grade Location 1D - Alley south of Prospect St, 4th Ave to 5th Ave: (alley is 454 LF segment x 16 FT wide) - 244 LF x 20 ft wide (sediment layer is shorter, but 4 ft wider than the 16 ft alley) x avg 24 inches deep = 361 remaining that was deposited on gravel-surfaced alley (leave at applicant's calculation of 362 CY) - 454 LF x 16 ft wide x avg 4 inch deep = 90 CY alley surface damaged to sub-grade Supporting documentation for this site can be found attached to PW 01095.
Scope of Work:	---------- ***** Version 2 ***** Work To Be Completed: Site 1, Locations 1A - 1D Applicant will use contract labor and equipment to remove remaining sediment, flood debris, and damaged base gravel as required to bring the surfacing of each alley up to the level required to carry the garbage truck and loc Applicant has provided Town's requirement (Attachment 5) that alleys be "all-weather surfaced", but adequate s requirement. Applicant does not have and cannot cost-effectively produce the sub-surface borings and traffic counts normally course requirements for a specific street or alley. In comparison with requirements for other gravel-surfaced streets, specifically township roads in South Dakota, or more frequent than loaded garbage trucks in Lyons, the project specialist has agreed with the applicant's req that these alleys require a base course of six inches of base gravel and a surface course of two inches of surfac Applicant also has provided the Town's specification (see Attachments 6 and 7 – Lyons Design and Standards - that minimum width of alleys is governed by that for driveways serving two or more dwelling units, minimum wid repairs in this project worksheet are to repair each alley to 16 FT wide, or the pre-flood width, whichever is grea this project worksheet includes: - removal of remaining sediment and flood debris (as shown for each specific location on Attachment 3) - excavation of an average of four inches of surface and base that were damaged by incorporation of sediment a and emergency access during the incident period - scarification and recompaction of the sub-grade - repair of remaining soft spots (estimated by inspection of portions of three of the alleys to average 10% of the s - replacement of six inches of base gravel (at applicant's average of 1.6 tons/CY) - replacement of two inches of surface gravel (at applicant's average of 1.4 tons/CY) Location 1A - Alley south of Park St west of 2nd Ave: (Rebuild to pre-flood width of 19 FT) - Remove and export sediment and flood debris = 292 CY - Excavate damaged surface to sub-grade = 65 CY - Scarify and compact sub-grade = 277 LF x 19 FT wide = 585 SY - Repair remaining soft spots in sub-grade = estimated 10% of 585 SY = 58.5 SY - Supply and install 6 inch deep base gravel = (277 LF x 19 FT wide x 6 inch)(1/27)(1.6 tons/CY) = 156 tons - Supply and install 2 inch deep surface gravel = (277 LF x 19 FT wide x 2 inch)(1/27)(1.4 tons/CY) = 45.5 ton Location 1B – Alley south of Evans St, from 2nd Ave to 5th Ave (four alley segments) These four segments total 1348.3 LF at weighted average 13.09 FT pre-flood width. Alleys are to be rebuilt per and alleys to pre-flood width or 16 FT wide, whichever is greater. Therefore, rebuild segments will be: 435.6 LF wide. - Remove and export sediment and flood debris = 125 CY - Excavate damaged surface to sub-grade = 209 CY - Scarify and compact sub-grade = (435.6 LF x 17.1 FT wide + 912.7 LF x 16 FT)/9 = 2450 SY (use applicant' - Repair remaining soft spots in sub-grade = estimated 10% of 2451 SY = 245.1 SY - Supply and install 6 inch deep base gravel = ((435.6 LF x 17.1 FT wide + 912.7 LF x 16 FT wide) x 6 inch)(1/ applicant's total; rounds to 652 tons) - Supply and install 2 inch deep surface gravel = ((435.6 LF x 17.1 FT wide + 912.7 LF x 16 FT wide) x 2 inch) applicant's total; rounds to 190 tons) Location 1C - Alley south of Park St, east of 4th Ave, and from 4th Ave to 5th Ave: (two segments; 127 LF x 16 I 16 FT wide from 4th Ave to 5th Ave = 585 LF x 16 FT wide) - Excavate damaged surface to sub-grade = 116 CY - Scarify and compact sub-grade = 585 LF x 16 FT wide = 1040 SY - Repair remaining soft spots in sub-grade = estimated 10% of 1040 SY = 104 SY - Supply and install 6 inch deep base gravel = (585 LF x 16 FT wide x 6 inch)(1/27)(1.6 tons/CY) = 277 tons - Supply and install 2 inch deep surface gravel = (585 LF x 16 FT wide x 2 inch)(1/27)(1.4 tons/CY) = 81 tons Location 1D - Alley south of Prospect St, 4th Ave to 5th Ave: (alley is 454 LF segment x 16 FT wide) - Remove and export sediment and flood debris = 361 CY (use applicant's calculation; rounds to 362 CY) - Excavate damaged surface to sub-grade = 90 CY - Scarify and compact sub-grade = 454 LF x 16 FT wide = 807 SY - Repair remaining soft spots in sub-grade = estimated 10% of 807 SY = 80.7 SY - Supply and install 6 inch deep base gravel = (454 LF x 16 FT wide x 6 inch)(1/27)(1.6 tons/CY) = 215 tons - Supply and install 2 inch deep surface gravel = (454 LF x 16 FT wide x 2 inch)(1/27)(1.4 tons/CY) = 63 tons OTHER SUPPORTING DOCUMENTATION: Documentation required in support of this SGA not directly attached may be found in the "Attachments and Com RPA, including Payroll and Procurement policies, Insurance Policies, and other documentation. RECORD RETENTION: As described in the 44 CFR 13:43 Applicant must maintain all work related records for applicant closure (final payment). All records relative to this project worksheet are subject to examination and a Comptroller General of the United States. PROCUREMENT OF MATERIALS AND CONTRACTS FOR COMPLETION OF THIS PROJECT: The applican applicable Federal, State or Local Procurement Laws, Rules and Regulations and maintain adequate records to goods and materials and contracted services for projects approved under the FEMA Public Assistance program applicant has advised they have/will follow their normal procurement procedures.

	PERMITS: The Applicant must obtain all necessary Federal, State and Local Permits prior to the commenceme requirement may jeopardize eligibility and the receipt of federal funds. HAZARD MITIGATION: No cost-effective mitigation identified for these alleys and streets. INSURANCE: The applicant is aware that all projects are subject to an insurance review in accordance with 44 applicable, and insurance determination will be made either as anticipated proceeds or actual proceeds in acco policy that may affect the total amount of the project. GRANT CONDITIONS FOR SINGLE FIXED ESTIMATE SUBGRANT: Subgrantee agrees to fund any overrun associated with completion of the approved Scope of Work. GRANT CONDITIONS FOR CONSOLIDATED FIXED ESTIMATE: Additional subgrants can be included in this consolidation during the 12 months following the date of declaration overrun associated with completion of the work. COST ESTIMATE VALIDATION The subgrantee provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable DIRECT ADMINISTRATION COSTS: (5/17/14) Pursuant to DAP9525.9 subgrantee is requesting direct administrative costs that are directly chargeab eligible work is related to administration of the PA project only and in accordance with 44 CFR 13.22. These co uniformly as direct costs in all federal awards and other subgrantee activities and are not included in any approv Subgrantee has claimed DAC as summarized in Attachment 12, which shows the estimated total for this project advised to track these costs in order to submit revisions as may be required. Supporting documentation for this site can be found attached to PW 01095.

Hazard Mitigation Proposal	
* Is effective mitigation feasible on this site?	No
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate: (maximum 4000 characters)	
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	

GIS Coordinates

Project Location	Latitude	Lon
Alleys in the Confluence Area	40.22327	-105

Facility Name:	Park St from US Hwy 36 to 3rd Ave
Address 1:	432 5th Ave
Address 2:	
County:	Boulder
City:	Lyons
State:	CO
ZIP:	80540
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	***** Version 2 ***** Location: GPS location is at applicant's Town Hall at 432 5th Ave, Lyons, CO. at 40.22327, -105.27114. GPS locations for each damage area are documented in Attachment 1 and below. Site 2: Park St, US Hwy 36 to 3rd Ave Location 2A - Park St (east), US Hwy 36 to 2nd Ave East end of segment near Park St and Hwy 36 = 40.22146, -105.26429 Location 2B - Park St (west), 2nd Ave to 3rd Ave West end of segment near Park St and 3rd Ave = 40.22153, -105.26750 LATITUDE: 40.22151 LONGITUDE: -105.26545
Damage Description and Dimensions:	***** Version 2 ***** The south portions (roughly half) of Park St from U.S. Hwy 36 to 3rd Ave were under construction by a contract replacement of sanitary sewer and storm sewer when the flood occurred. FEMA Legal has determined (Attachr street that remained open to traffic (the north 20 FT width of the east segment and the north 14 FT width of the occurred are eligible for FEMA reimbursement. Location 2A – Park St (Applicant's "Sub Area A") from U.S. Hwy 36 to 2nd Ave Street segment is 384 LF x 38 FT wide. However, as noted above only the north 20 FT wide of street was in se included: - Sub-grade eroded (and temporarily filled as emergency repair on LYONS09 (00041)) = 46 LF x 20 FT wide - Road base eroded or damaged beyond repair = 384 LF x 20 Ft wide x 6 inch deep = 142 CY - Asphalt paving eroded or damaged beyond repair = 384 LF x 20 FT wide x 3 inch deep = 71 CY

	Location 2B – Park St (Applicant's "Sub Area B") from 2nd Ave to 3rd Ave Street segment is 522.6 LF x 30 FT wide. However, as noted above only the north 14 FT wide of street was in s included: - Sub-grade eroded)and temporarily filled as emergency repair on LYONS09 (00041)) = 32 LF x 14 FT wide x - Road base eroded or damaged beyond repair = 522.6 LF x 14 Ft wide x 6 inch deep = 135 CY - Asphalt paving eroded or damaged beyond repair = 522.6 LF x 214 FT wide x 3 inch deep = 68 CY Supporting documentation for this site can be found attached to PW 01095.
Scope of Work:	***** Version 2 ***** Work to Be Completed Applicant will use contract labor and equipment to repair the eligible north-side segments to pre-disaster conditi locations. Location 2A – Park St (Applicant's "Sub Area A") from U.S. Hwy 36 to 2nd Ave (eligible north section = 384 LF x - Remove temporary fill that replaced eroded sub-grade in one section = 17 CY - Remove remaining damaged asphalt paving, avg 20% of road surface = (0.2 x 384 LF x 20 FT wide)/9 = 17 - Remove damaged base and temporary fill, avg 9 inch thick = 384 LF x 20 FT wide x avg 9 inch deep = 213 C - Scarify and compact sub-base = (384 LF x 20 FT wide)/9 = 853 SY - Stabilize remaining soft spots (determined by spot check to be approximately 10% of road surface) = 85.3 S - Supply and install road base gravel, 6 inch thick = (384 LF x 20 FT wide x 6 inch thick)x(1/27)x1.6 tone/CY = - Supply and install asphalt paving, 3 inch thick = (384 LF x 20 FT wide x 3 inch thick)x(143 lb/CF)(1/2000) = 1 Location 2B – Park St (Applicant's "Sub Area B") from 2nd Ave to 3rd Ave (eligible north section = 522.6 LF x 14 - Remove temporary fill that replaced eroded sub-grade in one section = 8 CY - Remove remaining damaged asphalt paving, avg 20% of road surface = (0.2 x 522.6 LF x 14 FT wide)/9 = 1 - Remove damaged base and temporary fill, avg 9 inch thick = 522.6 LF x 14 FT wide x avg 9 inch deep = 203 - Scarify and compact sub-base = (522.6 LF x 14 FT wide)/9 = 813 SY - Stabilize remaining soft spots (determined by spot check to be approximately 10% of road surface) = 81.3 S - Supply and install road base gravel, 6 inch thick = (522.6 LF x 14 FT wide x 6 inch thick)x(1/27)x1.6 tone/CY - Supply and install asphalt paving, 3 inch thick = (522.6 LF x 14 FT wide x 3 inch thick)x(143 lb/CF)(1/2000) = Supporting documentation for this site can be found attached to PW 01095.

Hazard Mitigation Proposal	
* Is effective mitigation feasible on this site?	No
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate: (maximum 4000 characters)	
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	

GIS Coordinates

Project Location	Latitude	Lon
Park St from US Hwy 36 to 3rd Ave	40.22327	-105

Facility Name:	LYONS30
Address 1:	
Address 2:	
County:	Boulder
City:	Lyons
State:	CO
ZIP:	
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	***** Version 2 ***** Location: includes roadways generally located in or immediately adjacent to the confluence area of the North an in the attached location maps; GPS locations are identified in Attachment 4a and in Exhibits 4b through 4g. Sev Location 1- Park St - 4th Ave to 5th Ave & to Creek Exhibit 2a. GPS: Park St at 4th Ave = 40.22151, -105.26995 Location 2 - Evans St west of 5th Ave_Exhibit 4a GPS: Evans St at 5th Ave (east end of segment) = 40.22252, -105.27171 Location 3 - Evans St 4th Ave to 5th Ave_Exhibit 4b GPS: Center of segment = 40.22254, -105.27083 Location 4 - Evans St at 4th Ave_Exhibit 4c GPS: Intersection of Evans St and 4th Ave = 40.22274, -105.26987 Location 5 - 4th Ave_Exhibit 6 GPS: Center of segment = 40.22127, -105.26996 Location 6 - 3rd Ave from Evans St to Alley and 3rd Ave from Alley to Park St_Exhibits 7 & 2c GPS: Center of segment = 40.22201, -105.26748 Location 7 - Prospect St 4th Ave to 5th Ave_Exhibit 11

	GPS: Center of segment = 40.22048, -105.27088 LATITUDE: 40.22321 LONGITUDE: -105.27119
Damage Description and Dimensions:	***** Version 2 ***** During the incident period severe rainstorms resulted in an estimated 500-year flow rate in the North and South converge in the Town of Lyons. The flooding caused extensive damage to improved property and to the Town's streets in the confluence area. This project worksheet covers flood damage to the seven identified segments of the applicant's streets. These s maintained by the applicant, and are not on the Federal Aid System. The street elements listed were damaged and/or as an unavoidable result of emergency access and installation of temporary emergency repairs and eme The results of field inspections conducted by teams including representatives of FEMA/FEMA Corps, Grantee, a attachment 4a. The detailed sketches, damage dimensions and related photographic documentation are provid Location 1 - Park St 4th Ave to 5th Ave & to Creek_Exhibit 2a: Item 1: 431.6 LF x 24 feet wide x 3 inch thick = 1151 SY plus end flares at match to cross street = 1200 SY of as to 5th Ave was damaged by floodwater flow and by emergency protective measures work. (Base course not da Item 2: 446.6 LF x avg 22 ft wide x 3 inch thick = 176 tons asphaltic concrete paving from 4th Ave to creek was Item 3: 446.6 LF x avg 22 feet wide x 6 inch thick = 265 tons aggregate base course from 4th Ave to Creek was Item 4: Varying depths of earthen sub-base that was washed out or damaged was replaced as a temporary repa EPM Temp Measures_ Water, Sewer, and Roads_Residential), and quantity could not be determined accurately CY to be added or removed for permanent repair to pre-disaster grade. Item 5: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built dra Location 2 - Evans St West of 5th Ave_Exhibit 4a: Item 1: 197.9 LF x 24 feet wide x 3 inch thick = 85 tons asphaltic concrete paving was washed out. Item 2: 197.9 LF x 24 feet wide x 6 inch thick = 128 tons aggregate base course was washed out or damaged. Item 3: Varying depths of earthen sub-base that was washed out or damaged was replaced as a temporary repa EPM Temp Measures_ Water, Sewer, and Roads_Residential), and quantity could not be determined accurately be added or removed for permanent repair to pre-disaster grade. Item 4: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built dra Location 3 - Evans St from 4th Ave to 5th Ave_Exhibit 4b: Item 1: 440 LF x 24 feet wide x 3 inch thick = 189 tons asphaltic concrete paving was washed out or damaged. Item 2: 440 LF x 24 feet wide x 6 inch thick = 285 tons aggregate base course was washed out or damaged. Item 3: Varying depths of earthen sub-base that was washed out or damaged was replaced as a temporary repa EPM Temp Measures_ Water, Sewer, and Roads_Residential), and quantity could not be determined accurately be added or removed for permanent repair to pre-disaster grade. Item 4: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built dra Location 4 - Evans St at 4th Ave_Exhibit 4c: Item 1: 328 LF x avg 28 feet wide x 3 inch thick = 164 tons asphaltic concrete paving was washed out or damag Item 2: 328 LF x 28 feet wide x 6 inch thick = 248 tons aggregate base course was washed out or damaged. Item 3: Reinforced concrete retaining wall 65 LF x 10 ft high x 8 inch thick = 650 SF supporting street at edge of segment was undermined and damaged beyond repair. Item 4: Reinforced concrete retaining wall 120 LF x 10 ft high x 8 inch thick = 1200 SF supporting street at edge was washed out. Item 5: 300 LF of guardrail Type 3, including two Type 3B end anchorages, was washed out and damaged beyo Item 6: 28 LF of 18 inch diameter RCP storm drain was washed out and damaged beyond repair. Item 7: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built dra Location 5 - 4th Ave_Exhibit 6: Item 1: 1061 LF x avg 28 feet wide x 3 inch thick = 531 tons asphaltic concrete paving was washed out or dama Item 2: 1061 LF x avg 28 feet wide x 6 inch thick = 802 tons aggregate base course was washed out or damage Item 3: Varying depths of earthen sub-base that was washed out or damaged was replaced as a temporary repa EPM Temp Measures_ Water, Sewer, and Roads_Residential), and quantity could not be determined accurately be added or removed for permanent repair to pre-disaster grade. Item 4: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built dra Location 6 - 3rd Ave (north segment, Exhibit 7) Evans St to Alley and 3rd Ave (south segment, Exhibit 2c) Alley Item 1: (north segment) 220 LF x 29 feet wide x 3 inch thick = 114 tons asphaltic concrete paving was washed o Item 2: (north segment) 220 LF x 29 feet wide x 6 inch thick = 172 tons aggregate base course was washed out Item 3: (south segment) 153 LF x 26 feet wide x 3 inch thick = 71 tons asphaltic concrete paving was washed ou Item 4: (south segment) 153 LF x 26 feet wide x 6 inch thick = 108 tons aggregate base course was washed out Item 5: (south segment) Varying depths of earthen sub-base that was washed out or damaged was replaced as Ref # LYONS09 EPM Temp Measures_ Water, Sewer, and Roads_Residential), and quantity could not be dete Est = 210 CY to be added or removed for permanent repair to pre-disaster grade. Item 6: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built dra Location 7 - Prospect St 4th Ave to 5th Ave_Exhibit 11 Item 1: 456 LF x 32 feet wide x 3 inch thick = 261 tons asphaltic concrete paving was washed out or damaged. Item 2: 456 LF x 32 feet wide x 6 inch thick = 394 tons aggregate base course was washed out or damaged. Item 3: Varying depths of earthen sub-base that was washed out or damaged was replaced as a temporary repa EPM Temp Measures_ Water, Sewer, and Roads_Residential), and quantity could not be determined accurately be added or removed for permanent repair to pre-disaster grade. Item 4: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built dra Supporting documentation for this site can be found attached to PW 01101.
Scope of Work:	***** Version 2 ***** WORK TO BE COMPLETED: Applicant will use contract labor and equipment to repair street damage at each of these seven locations to pre- for repair vs. replacement is not triggered, and for repair plus upgrade to the applicant's applicable Codes and S triggered. For streets on which repair vs. replacement is over 50% and the street will be replaced entirely, the applicant int Town's Codes and Standards for streets. These Codes and Standards are appropriate to the application, reasonable, and have been uniformly applied si for significant street repair. See Attachments 9a - 9c and Attachment 10 for the Town of Lyons' Codes and Star

documentation that the Codes and Standards were formally adopted, implemented, and always enforced. Typic
Standards is shown in Figure 3-8(a) in Attachment 10.

For locations at which cost of repair vs. replacement is over 50%, additions of applicant's Codes and Standards
1. Add a combination concrete curb and gutter full length, both sides, of streets at Locations 2,3,5,6,7 = 4845 LF
thick concrete "Hollywood Curb" shown in Attachment 10).
2. Increase width of streets to minimum required by code = 34 FT wide flowline to flowline = addition of approxin
3. Add storm drains and connections to the drains where required.
4. Add concrete pans at alley entrances.

See Attachment 11 for calculations to evaluate for applicability of the 50% rule. Where 50% rule is not triggered
condition, as shown for the particular location in Attachment 5a. Where the 50% rule is triggered, repair will be
to applicant's Codes and Standards, as shown for the particular location in Attachment 5b.

Attachment 5c is the source of the detailed calculation of tons of asphalt, base, and length of curbs and gutters
upgrades to codes and standards. Those calculations include extra base aggregate, asphalt, and curb and gutt
cross streets; reduction of asphalt width to account for the 37 inch wide curb/gutter combination; reduction of as
cross-street pans are used, etc. These adjustments are shown in Attachment 5c.

Location 1 (West 431.6 LF), Park St from 4th Ave to 5th Ave:
The lesser damage on this segment can be repaired by milling 2 inches of asphalt surface and overlaying with a
Item 1: Mill and overlay 431.6 LF x 24 feet wide x 2 inch thick = 1151 SY plus end flares to match cross street =
asphaltic concrete

Location 1 (East 446.6 LF), Park St from 4th Ave to Creek:
As shown in Attachment 11, 100% of asphalt and base were damaged, so will be repaired plus upgraded to cod
Attachment 5b.
Item 2: Replace asphaltic concrete paving and widen to 34 FT = 272 tons as calculated in Attachment 5c
Item 3: Replace aggregate base course and widen to 34 FT = 488 tons
Item 4: Export/import onsite material to return sub-base to pre-disaster grade = 200 CY
Item 5: Replace signage and striping per as-built drawings

Location 2, Evans St west of 5th Ave:
All base and asphalt surfacing and avg 6 ft depth of sub-base were lost (sub-base lost was replaced on LYONS
760 CY sub-base remains to be replaced with acceptable-quality material).
Damage was 100% of both base and asphalt, so will be repaired plus upgraded to codes and standards, as sho
Item 1: Replace asphaltic concrete and widen to 34 FT = 130 tons, as calculated in Attachment 5c
Item 2: Replace aggregate base course and widen to 34 Ft = 234 tons
Item 3: Add curbs and gutters both sides = 459 LF
Item 4: Export/import onsite material to return sub-base to pre-disaster grade = 760 CY
Item 5: Replace signage and striping per as-built drawings

Location 3, Evans St 4th Ave to 5th Ave
As shown in Attachment 11, 100% of asphalt and base were damaged, so will be repaired plus upgraded to cod
Attachment 5b.
Item 1: Replace asphaltic concrete and widen to 34 FT = 240 tons
Item 2: Replace aggregate base course and widen to 34 FT = 434 tons
Item 3: Add curbs and gutters both sides = 897 LF
Item 4: Export/import onsite material to return sub-base to pre-disaster grade = 740 CY
Item 5: Replace signage and striping per as-built drawings

Location 4, Evans St at 4th Ave:
As shown in Attachment 11, 100% of asphalt and an estimated 20% of base were damaged by the flood. The c
and base represents 86.1% of replacement cost, so the 50% rule is triggered, and 100% replacement is eligible
However, Location 4 width is constrained by adjacent retaining wall on creek side and by private property on the
or add curbs and gutters at this location. Will be repaired to pre-disaster condition as shown in Attachment 5a.
Item 1: Replace asphaltic concrete to pre-disaster width of 28 Ft = 164 tons
Item 2: Replace aggregate base course to pre-disaster width of 28 FT = 248 tons
Item 3: Remove and replace damaged retaining wall = 650 SF x 8 inch thick
Item 4: Replace destroyed retaining wall = 1200 SF x 8 inch thick
Item 5: Replace damaged and lost guardrail Type 3 with end anchorages = 300 LF
Item 6: Replace damaged 18 inch diameter RCP storm drain = 28 LF
Item 7: Replace signage and striping per as-built drawings

Location 5, 4th Ave:
As shown in Attachment 11, 615 LF x 28 Ft wide of 1061 LF x 28 FT wide = 58.0% of asphalt and base were da
triggered and 100% repair is eligible. Will be repaired plus upgraded to codes and standards, as shown in Attac
Item 1: Replace asphaltic concrete and widen to 34 FT = 521 tons
Item 2: Replace aggregate base course and widen to 34 FT = 944 tons
Item 3: Add curbs and gutters both sides = 2056 LF
Item 4: Add four six-inch thick concrete pans at alley entrances = 624 SF
Item 5: Add one six-inch thick concrete cross-street drainage pan = 120 SF
Item 6: Export/import onsite material to return sub-base to pre-disaster grade = 460 CY
Item 7: Replace signage and striping per as-built drawings

Location 6, 3rd Ave from Park St to Evans St:
As shown in Attachment 11, 100% of asphalt and an estimated 20% of base were damaged by the flood. Calcu
these total 88.3% of the cost of the damaged elements, so the 50% rule is triggered and 100% repair is eligible.
codes and standards, as shown in Attachment 5b.
Item 1: Replace asphaltic concrete and widen to 34 FT = 130 tons
Item 2: Replace aggregate base course and widen to 34 FT = 235 tons
Item 3: Add curbs and gutters both sides = 487 LF
Item 4: Add two six-inch thick concrete pans at alley entrances = 312 SF
Item 5: Export/import onsite material to return sub-base to pre-disaster grade = 210 CY
Item 6: Replace signage and striping per as-built drawings

Location 7, Prospect St from 4th Ave to 5th Ave
As shown in Attachment 11, 100% of asphalt and an estimated 20% of base were damaged by the flood. Calcu
these total 88.4% of the cost of the damaged elements, so the 50% rule is triggered and 100% repair is eligible.
codes and standards, as shown in Attachment 5b.
Item 1: Replace asphaltic concrete and widen to 34 FT = 249 tons
Item 2: Replace aggregate base course and widen to 34 FT = 455 tons
Item 3: Add curbs and gutters both sides = 946 LF
Item 4: Export/import onsite material to return sub-base to pre-disaster grade = 240 CY
Item 5: Replace signage and striping per as-built drawings

Associated requirements for return to pre-disaster condition or addition of Codes and Standards are shown for e
estimate (Attachment 5a, Scope and Cost Estimate for Repair to Pre-Disaster Condition or Attachment 5b, Scop
Codes and Standards). Costs are based on applicant's historical unit pricing, and have been validated by FEMA

personnel have verified scope quantities.
The associated requirements include:
1. Demolition of existing asphalt where damaged sections remain
2. Installation of asphaltic concrete patching at intersections and joints with pre-existing pavement
3. Grading to re-establish street-side ditches and drainage destroyed by flood
4. Temporary seeding and mulching during construction
5. Permanent seeding required for permanent erosion control

Total cost to repair Locations 1 West and 4 to pre-disaster condition and repair plus upgrade to Codes and Stan summarized in Attachment 12 = $1,157,902.02.

ADDITIONAL COST TO UPGRADE TO CODES AND STANDARDS:
- Cost to repair all locations only to pre-disaster condition (Attachment 5a) = $758,015.00
- Cost to repair plus addition of Codes and Standards (Attachment 12) = $1,157,902.02
- Additional cost for Codes and Standards = $399,887.02

FEMA has validated the cost estimates provided by the applicant as noted in the CEF in Attachment 6 and in At

SCOPE NOTES:
OTHER SUPPORTING DOCUMENTATION: Documentation required in support of this SGA not directly attach and Comments" section of the sub grantee's RPA, including Payroll and Procurement policies, Insurance Policie

RECORD RETENTION: As described in the 44 CFR 13:43 Applicant must maintain all work related records for applicant closure (final payment). All records relative to this project worksheet are subject to examination and a Comptroller General of the United States.

PROCUREMENT OF MATERIALS AND CONTRACTS FOR COMPLETION OF THIS PROJECT: The applican applicable Federal, State or Local Procurement Laws, Rules and Regulations and maintain adequate records to goods and materials and contracted services for projects approved under the FEMA Public Assistance program applicant has advised they have/will follow their normal procurement procedures.

PERMITS: The Applicant must obtain all necessary Federal, State and Local Permits prior to the commenceme requirement may jeopardize eligibility and the receipt of federal funds.

WORK IN WATER: Replacement of the retaining wall at Location 4 will require work immediately adjacent to or applicant and/or their contractors must obtain and comply with the appropriate federal, state and local permits, i Corps of Engineers (USACE) under Sec. 404 of the Clean Water Act, and are responsible for contacting the US (303) 979-4120 to determine if flood-related activity lies within the Corps' regulatory jurisdiction.

INSURANCE: The applicant is aware that all projects are subject to an insurance review in accordance with 44 applicable, and insurance determination will be made either as anticipated proceeds or actual proceeds in accor policy that may affect the total amount of the project.

GRANT CONDITIONS FOR SINGLE FIXED ESTIMATE SUBGRANT: Subgrantee agrees to fund any cost ove the approved Scope of Work.

GRANT CONDITIONS FOR CONSOLIDATED FIXED ESTIMATE: Additional subgrants can be included in this following the date of declaration. Subgrantee agrees to fund any overruns associated with the completion of the

COST ESTIMATE VALIDATION
The Subgrantee provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable f

DIRECT ADMINISTRATION COSTS:
Pursuant to DAP9525.9 subgrantee is requesting direct administrative costs that are directly chargeable to this s work is related to administration of the PA project only and in accordance with 44 CFR 13.22. These costs are t direct costs in all federal awards and other subgrantee activities and are not included in any approved indirect c

Subgrantee has claimed DAC as summarized in Attachment 7, which shows the estimated total for this project v advised to track these costs in order to submit revisions as may be required.

STRATEGIC FUNDS MANAGEMENT:
The applicant intends to begin work within 180 days of the approval of this project. Therefore, SFM will not be a

Supporting documentation for this site can be found attached to PW 01101.

Hazard Mitigation Proposal	
* Is effective mitigation feasible on this site?	No
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate: (maximum 4000 characters)	
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	

GIS Coordinates		
Project Location	Latitude	Lon
Roadways in Confluence Area	40.22321	-105

Facility Name:	Lyons Wastewater Treatment Plant
Address 1:	198 2nd Ave
Address 2:	
County:	Boulder
City:	Lyons
State:	CO
ZIP:	
Was this site previously damaged?	No
Percentage Work Completed?	0.00 %
Location:	

	****** Version 2 ****** Location Lyons Wastewater treatment plant is located at 198 2nd Avenue on the south side of the St Vrain Cree Plant GPS: Lat 40.22005, Long -105.26443 LATITUDE: 40.22005 LONGITUDE: -105.26443
Damage Description and Dimensions:	****** Version 2 ****** During the incident period severe rainstorms estimated to exceed a 500-year rainfall event resulted in a near 50 Branches of St. Vrain Creek which converge in the Town of Lyons to form the mainstem creek. Further descripti available in an attachment to the applicant's RPA ("4145 - Lyons - Cause and Effect of Damages 02-04-2014"). damage to the Town's Waste Water Treatment Plant located on the South side of the St Vrain Creek east of Se taken out of service until emergency repairs under LYONS11 could be accomplished to restore basic service. T by debris that caused the creek to flow around the south end of the bridge and do excessive erosion to the plant plant site. Major components of the plant were submerged for an extended period of time and could not be repa system, A/C system , influent pumps (2 - 6 inch 180 gpm electric influent pumps) and bar screen in the headwo = 3.7 CY) for an emergency generator was washed away, the UV treatment building (20ft x 14ft = 294 SF) and e repair, the 8 inch x 175ft long outfall pipe was washed out along with a RC headwall (12ft x 8ft x 1ft = 3.5 CY) ar drying bed perimeter wall (228ft long x 1.5ft tall x 1ft wide = 12.6 CY) and skid strips (640 SF) were washed out, internal chain link swing gates), 1006 LF of 6ft chain link fencing and a vehicle gate (6ft tall x 22ft wide) with an a exterior pole mounted electric lighting and underground wiring were damaged, erosion occurred to the plant yar 5417 CY), embankment and roadway (384ft long x 20ft wide x 4.5 inches deep = 117 CY), and asphalt paved d inches deep = 141 tons) was damaged. The Clarifier, Dewatering Facility and Rotary Drum and Thickener Build permanent repair. Supporting documentation for this site can be found attached to PW 01094.
Scope of Work:	****** Version 2 ****** Work To Be Completed: The Applicant will employ contract services to restore the Wastewater Treatment Plant to its original Design, Fu damaged ventilation system, A/C unit, 2-6 inch 180 gpm electric influent pumps and a self-contained barscreen 20 ft x 6 inch concrete emergency generator pad, replace 20 ft x 14 ft (294 SF) UV building and UV equipment, line, replace 12 ft x 8 ft x 1 ft RC headwall and clean and adjust 48 inch RC manhole , replace concrete perimet strips -640 SF at drying bed, replace 1006 lf of 6 ft chain link fencing, 3-6 ft gates and one 6 ft x 22 ft vehicle gate with power operator and control station, replace one exterior pole mounted electric light and underground wiring, clea replace eroded soil in area approximately 650 ft x 50 ft x avg 4.5 ft (5417 cy), replace lost road fill 384 ft x 20 ft x 18 ft x 8 inch asphalt driveway (141 tons) and other miscellaneous items of work as shown on the attached estir See attached PW15 Master Cost Estimated Worksheet for estimated cost breakdown. SCOPE NOTES: 1. RECORD RETENTION: Complete records and cost documents for all approved work must be maintained for project was completed or from the date final payment was received, whichever is later. Applicant is responsible associated with this project. 2. SUPPORTING DOCUMENTATION: 20% or more of the documentation to support this project has been revi Project Specialist for eligibility and correctness. 3. PROCUREMENT: The applicant is required to adhere to local, State and Federal Government Procurement r adequate records to support the basis for all purchasing of goods and materials and contracting services for pro Assistance program, as stated in 44 CFR 13.36. The applicant has advised they have/will follow their normal pro 4. PERMITS: The PA Project Specialist has advised the Applicant that it is their responsibility to obtain all applic prior to any construction or debris disposal activity referenced on this project. Applicant has also been advised t maintaining these documents may jeopardize funding. 5. INSURANCE: The applicant is aware that all projects are subject to an insurance review as stated in 44 C.F.F applicable an insurance determination will be made either as anticipated proceeds or actual proceeds in accorda policy that may affect the total amount of the project. 6. DIRECT ADMINISTRATIVE COSTS: The sub-grantee is requesting Direct Administrative Costs (DAC) that is project. Associated eligible work is related administration of the PA project only and in accordance with 44 CFR consistently and uniformly as direct costs in all federal awards and other sub-grantee activities and are not included in any approved indirect c estimated for Work to be Completed at 40 hours at an average rate of $27.78/hr including fringe for a total of $1 7. HAZARD MITIGATION MEASURES: This project is intended to be include in the PAAP program. No cost eff have been identified. 8. Grant Conditions for Single Fixed Estimate Subgrant: Subgrantee agrees to fund any cost overruns associat Scope of Work. 9. Grant Conditions for Consolidated Fixed Estimate: Additional subgrants can be included in this consolidation date of declaration. Subgrantee agrees to fund any overruns associated with the completion of the work. 10. Cost Estimate Validation: The Subgrantee provided the estimate for this PW. FEMA validated the estimate work to be performed. 11. Engineering services were estimated at 3%. Supporting documentation for this site can be found attached to PW 01094.

Hazard Mitigation Proposal	
* Is effective mitigation feasible on this site?	No
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on this site?	
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate: (maximum 4000 characters)	
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	

GIS Coordinates		
Project Location	Latitude	Lon
Lyons Wastewater Treatment Plant	40.22005	-105

Special Considerations

1. Does the damaged facility or item of work have insurance coverage and/or is it an insurable risk (e.g., buildings, equipment, vehicles, etc)?

If you would like to make any comments, please enter them below.

(maximum 4000 characters)
Insurance policy is attached to the sub grantee's RPA and will be reviewed by the insurance specialist. Sub grantee contact information as follows: Deb Anthony, MMC Town Clerk, Town of L
Email: Deb Anthony <DAnthony@townoflyons.com>

2. Is the damaged facility located within a floodplain or coastal high hazard area and/or does it have an impact on a floodplain or wetland?

If you would like to make any comments, please enter them below.

(maximum 4000 characters)
Firm Panel # 08013C0232J, see attached Flood Plain Maps. PERMITS: The Applicant must obtain all necessary Federal, State and Local Permits prior to the commencement of work. Noncc
jeopardize eligibility and the receipt of federal funds.

3. Is the damaged facility or item of work located within or adjacent to a Coastal Barrier Resource System Unit or an Otherwise Protected Area?
4. Will the proposed facility repairs/reconstruction change the pre-disaster conditions (e.g., footprint, material, location, capacity, use of function)?
5. Does the applicant have a hazard mitigation proposal or would the applicant like technical assistance for a hazard mitigation proposal?

If you would like to make any comments, please enter them below.

(maximum 4000 characters)
See attached HMP to elevate three 50 KVA transformers.

6. Is the damaged facility on the National Register of Historic Places or the state historic listing? Is it older than 50 years? Are there more, similar buildings near the site?

If you would like to make any comments, please enter them below.

(maximum 4000 characters)
One destroyed structure was an historic shelter built by the Works Progress Administration in the 1930's. This historic shelter, which was on the state register (5BL.383 Meadow Park Shelter remnants of the chimney. FEMA EHP has determined that the shelter no longer retains its historic character due to the extent of damage.

7. Are there any pristine or undisturbed areas on, or near, the project site? Are there large tracts of forestland?
8. Are there any hazardous materials at or adjacent to the damaged facility and/or item of work?
9. Are there any other environmental or controversial issues associated with the damaged facility and/or item of work?

If you would like to make any comments, please enter them below.

(maximum 4000 characters)
Question 9: Per regional guidance, EHP review is required.

Attachments

User	Date	Document Type	Description	Hard Copy File Reference	File Name
ROGER AMMONS	07-03-2014	Project Worksheet	Signed 90-91		LYONS20 - Lyons - Signed 90-9

For Category C, D, E, F, and G Projects only

Is effective mitigation feasible on this project?	Yes
If you answered **Yes** to the above question, the next question is required	
Will mitigation be performed on any sites in this project?	Yes
If you answered **Yes** to the above question, the next question is required	
Do you wish to attach a Hazard Mitigation Proposal?	Yes
If you answered **Yes** to the above question, the next two questions are required	
Please provide the Scope of Work for the estimate:	See attached HMPs for details on mitigation for sites 1, 2, and 3.
Would you like to add the Hazard Mitigation Proposal as a cost line item to the project cost?	Yes

Hazard Mitigation Proposal - 0909

#	Code	Material and/or Description	Unit Quantity	Unit of Measure	Unit Price	Subgrant Budget Class	Type	
*** Version 0 ***								
1	9999	HMP Site 1	1	LS	$ 286,178.61			
2	9999	HMP Site 2	1	LS	$ 5,574.00			
3	9999	HMP Site 3	1	LS	$ 44,072.40			
								T

Comments

Attachments

User	Date	Document Type	Description	Hard Copy File Reference	File Name

ROGER AMMONS	06-05-2014	Mitigation Proposal	Attachment 18 - HMP Sites 1 & 2 - Raise Transformers		LYONS20 - Lyons - Attachment 18 - HMP Sites 1 & 2 kb)
JON MCCAFFERTY	06-09-2014	Miscellaneous	Lyons20-Lyons-Attachment 16-HMP Site 2 Meadow Park		LYONS20 - lyons -Attachment 16 Meadow Pa
JON MCCAFFERTY	06-09-2014	Mitigation Proposal	LYONS20-Lyons- Attachment 17-HMP-Site 3- Mconnell Ponds		LYONS20 - Lyons - Attachment 17 - HMP Site 3 - Trail.pdf(16.94 kb)

Cost Estimate

Is this Project Worksheet for	Cost Estimate Format
	PA Alternative Procedures

(Preferred) Repair

Sequence	Code	Material and/or Description	Unit Quantity	Unit of Measure	Unit Price	Subgrant Budget Class	Type
		***** Version 0 *****					
		Work To Be Completed					
1	9201	PAAP Fixed Estimate (no value, tracking purposes only)	1	OTH	$ 0.00	OTHER	Work To Be Completed
2	9000	CEF Cost Estimate (See Attached Spreadsheet)	1	LS	$ 14,372,770.00	CONSTRUCTION	Work To Be Completed
		Direct Subgrantee Admin Cost					
3	9901	Direct Administrative Costs (Subgrantee)	1	LS	$ 11,462.04	INDIRECT CHARGES	Direct Subgrantee Admin Cost
		***** Version 1 *****					
		Other					
4	9999	Site 1: Fixed Estimate Amendment	1	LS	$ 0.00		Other
5	9202	PAAP Consolidated Fixed Estimate (no value, tracking purposes only)	1	LS	$ 0.00	OTHER	Other
6	9999	Site 2: Fixed Estimate PW 1053	1	LS	$ 0.00		Other
7	9999	Eligible Cost for PW 1053	1	LS	$ 4,584,184.95		Other
8	9202	PAAP Consolidated Fixed Estimate (no value, tracking purposes only)	1	LS	$ 0.00	OTHER	Other
9	9999	Site 3: Fixed Estimate PW 1095	1	LS	$ 0.00		Other
10	9999	Eligible Costs for PW 1095	1	LS	$ 374,875.23		Other
11	9202	PAAP Consolidated Fixed Estimate (no value, tracking purposes only)	1	LS	$ 0.00	OTHER	Other
12	9999	Site 4: Fixed Estimate PW 1101	1	LS	$ 0.00		Other
13	9999	Eligible Costs for PW 1101	1	LS	$ 1,402,777.90		Other
14	9202	PAAP Consolidated Fixed Estimate (no value, tracking purposes only)	1	LS	$ 0.00	OTHER	Other
15	9999	Site 5: Fixed Cost Estimate	1	LS	$ 0.00		Other
16	9999	Eligible Costs for PW 1094	1	LS	$ 699,030.20		Other
17	9202	PAAP Consolidated Fixed Estimate (no value, tracking purposes only)	1	LS	$ 0.00	OTHER	Other
							Tota

Insurance Adjustments (Deductibles, Proceeds and Settlements) - 5900/5901

Sequence	Code	Material and/or Description	Unit Quantity	Unit of Measure	Unit Price	Subgrant Budget Class	Type
		***** Version 0 *****					
1	5901	Deduct Anticipated Insurance Proceeds	1	LS	$ -283,574.33		
							T

Hazard Mitigation Proposal - 0909

Sequence	Code	Material and/or Description	Unit Quantity	Unit of Measure	Unit Price	Subgrant Budget Class	Type
		***** Version 0 *****					
1	9999	HMP Site 1	1	LS	$ 286,178.61		
2	9999	HMP Site 2	1	LS	$ 5,574.00		
3	9999	HMP Site 3	1	LS	$ 44,072.40		
							T

Total Cost Estimate: (Preferred Estimate Type + Insurance Adjustments + Hazard Mitigation Proposal)	**$ 21,497,**

Comments

Attachments

Existing Insurance Information

Insurance Type	Policy No.	Bldg/Property Amount	Content Amount	Insurance Amount	D
Flood	PR01-2013	$ 10,000,000.00	$ 10,000,000.00	$ 10,000,000.00	

Required Insurance Information

Insurance Type	Policy No.	Bldg/Property Amount	Content Amount	Insurance Amount	De A
Flood	Bohn Restroom Shelte	$ 6,332.50	$ 0.00	$ 6,332.50	
Flood	Bohn Concession	$ 34,724.45	$ 0.00	$ 34,724.45	
Flood	Meadow Shelter	$ 163,000.00	$ 0.00	$ 163,000.00	

Insurance Adjustments (Deductibles, Proceeds and Settlements) - 5900/5901

#	Code	Material and/or Description	Unit Quantity	Unit of Measure	Unit Price	Subgrant Budget Class	Type
			*** Version 0 ***				
1	5901	Deduct Anticipated Insurance Proceeds	1	LS	$ -283,574.33		

Comments

Insurance policy is attached to the subgrantee's RPA and will be reviewed by the insurance specialist. Subgrantee contact information as follows: Deb Anthony, MMC Town Clerk, Town of Ly
Email: Deb Anthony <DAnthony@townoflyons.com>

Attachments

User	Date	Document Type	Description	Hard Copy File Reference	File I
KENNETH JOHNSON	06-06-2014	Insurance Analysis Data Sheet	Insurance Reduction Worksheet		PW 1078 Insurance R

Comments and Attachments

Name of Section	Comment	Attachment
Preparer Information	As described in 44 CFR Section 13.42, applicant must maintain all work-related records for a period of three (3) years from applicant closure (final payment). All records relative to this project worksheet are subject to examination and audit by the State, FEMA, and the Comptroller General of the United States and must reflect work related to disaster specific costs.	
Contact Information		LYONS20 Signed PAAP Fixed Cost Letter.pdf (06-19-2014)
Project Description	The applicant must notify the state if there are any changes in the scope of work prior to starting the repairs. Failure to notify the State Division of Emergency Management may jeopardize receipt of federal funds.	Lyons PAAP Participation Acknowledgement.pdf (06-11-2014)
Damage Facilities		LYONS20 - Lyons - Attachment 1a - Parks Damage Assessment final 06.03.14.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 1b - Water Features Detailed Cost Estimate.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 1c - Electrical Cost Estimates.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 1d - Bohn Park Well Cost Estimate.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 2 - FEMA Validation of Applicant's Cost Estimate 05.20.14.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 3 - CEF rev. 6.03.14 LYONS20 Parks 05.22.14.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 4a - Location Maps with Diagrams.pdf (06-04-2014)
		LYONS20 - lyons - Attachment 4b - Trails Maps - Sites 1,2,3,4,6.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 4c - Park Maps.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 4d - Trails Map - All trails on one map.pdf (06-04-2014)
		LYONS 20 - Lyons - Attachment 5a - Photo Sheets Bohn Park (Site # 2).pdf (06-04-2014)
		LYONS 20 - Lyons - Attachment 5b - Photo Sheet-Lyons Valley River Park (Site # 3).pdf (06-04-2014)
		LYONS 20 - Lyons - Attachment 5c - Photo Sheet-Corridor Trail (Site # 4).pdf (06-04-2014)
		LYONS 20 - Lyons - Attachment 5d - Photo Sheets St. Vrain HWY 7 (Site # 6).pdf (06-04-2014)
		LYONS 20 - Lyons - Attachment 5e - Photo Sheet-Black Bear Hole (Site # 9).pdf (06-04-2014)
		LYONS 20 - Lyons - Attachment 5f - Photo Sheet - Meadow Park (Site # 1)sm.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 6a - Hains Insurance Estimate.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 6b - Insurance Estimate - Locations 1J & 2G - Meadow South & Bohn Shelters.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 6c - Insurance estimate Bohn Park electric.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 7 - Historic Shelter Building Cost Estimate - Restoration Specialties Inc Meadow Park North Shelter.
		LYONS20 - Lyons - Attachment 8 - Bohn Park small bldgs cost estimate.pdf (06-04-2014)

		Comments and Attachments
		LYONS20 - Lyons - Attachment 9a - ADA Playground - ASTM.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 9b - ADA - fall-attenuating playground surfacing.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 10a - AGPlus Kayak Gate System Catalog.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 10b - Kayak Course Mast System.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 11 - Site 5 - 2nd Ave Dog Park Design.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 12 - Site 10 - Map of Revegetation & Stabilization Areas.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 13 - DAC.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 14 - Flood Plain Maps.pdf (06-04-2014)
		LYONS20 - Lyons - Attachment 15 - Location Maps.pdf (06-04-2014)
Special Considerations		LYONS20 - Lyons - Signed 90-91.pdf (07-03-2014)
		LYONS20 - Lyons - Attachment 18 - HMP Sites 1 & 2 - Raise Transformers.pdf (06-05-2014)
Mitigation		LYONS20 - lyons -Attachment 16 Meadow Park HMP.pdf (06-09-2014)
		LYONS20 - Lyons - Attachment 17 - HMP Site 3 - McConnell Ponds Elevated Trail.pdf (06-09-2014)
Insurance Information	Insurance policy is attached to the subgrantee's RPA and will be reviewed by the insurance specialist. Subgrantee contact information as follows: Deb Anthony, MMC Town Clerk, Town of Lyons. Phone 303-823-6622 x13. Email: Deb Anthony <DAnthony@townoflyons.com>	PW 1078 Insurance Reduction.xlsx (06-06-2014)
Form 90-91		PW 1078 - Entire Application.pdf (07-30-2014)
		PW 01078(1) - PAAP Consolidation.docx (10-03-2014)
		LYONS_Combine PAAp PWs letter to Kevin Klein 8-26-14.pdf (10-03-2014)
		PW 1053 2014_06_05_10_39_05_Lyons35_Signed_Fixed_Cost_Letter.pdf (10-08-2014)
		PW 1053 LYONS_PW (10-08-2014)
		PW 1053 LYONS35_-_Lyons_-_Attachment_1_-_Map_Location_of_Each_Structure_(with_GPS).pdf (10-08-2014)
		PW 1053 LYONS35_-_Lyons_-_Attachment_2a_-_Photos_During_Construction_of_Similar_Structures.pdf (10-08-2014)
		PW 1053 LYONS35_-_Lyons_-_Attachment_2b_-_Typical_Flood_Damage_Photos.pdf (10-08-2014)
		PW 1053 LYONS35_-_Lyons_-_Attachment_3a_-_Design_of_a_Typical_Whitewater_Feature.pdf (10-08-2014)
		PW 1053 LYONS35_-_Lyons_-_Attachment_3b_-_Design_of_Fishing_Structures.pdf (10-08-2014)
		PW 1053 LYONS35_-_Lyons_-_Attachment_4a_-_GPS_Locations,_Scope,_and_Cost_Estimates.pdf (10-08-2014)
		PW 1053 LYONS35_-_Lyons_-_Attachment_4b_-_Recent_Historical_Bid_Costs_for_Similar_Work.pdf (10-08-2014)
		PW 1053 LYONS35_-_Lyons_-_Attachment_5_-_CEF_-_5.14.14.pdf (10-08-2014)
		PW 1053 LYONS35_-_Lyons_-_Attachment_6a_-_Hydrologic_Study_(Part_1)_of_Effects_of_Whitewater_Structures.pdf (10-08-20
		PW 1053 LYONS35_-_Lyons_-_Attachment_6b_-_Hydrologic_Study_(Part_2)_of_Effects_of_Whitewater_Structures.pdf (10-08-20
		PW 1053 LYONS35_-_Lyons_-_Attachment_7_-_Colorado_Parks (10-08-2014)
		PW 1053 LYONS35_-_Lyons_-_Attachment_8_-_HMP_Sheet_-_Signed_-_No_Mitigation.pdf (10-08-2014)
		PW 1053 LYONS35_-_Lyons_-_Attachment_9_-_DAC.pdf (10-08-2014)
		PW 1053 LYONS35_-_Lyons_Signed_90-91.pdf (10-08-2014)
		LYONS_01094_Signed_PAAP_letters_.pdf (10-08-2014)
		PW 1094_Master_Cost_File_Restore.pdf (10-08-2014)
		PW_1094_-_Entire_Application.pdf (10-08-2014)
		PW1094_Cost_Restore_Backup.pdf (10-08-2014)
		PW1094 Lyons_CEF_Validation.xlsx (10-08-2014)
		PW1094 Lyons_PW (10-08-2014)
		PW1094 Lyons_WWTP_--_Photo_Tour_9-14-13.docx (10-08-2014)
		PW1094 LYONS_WWTP_Site_Plan.docx (10-08-2014)
		PW1094 LYONS15.xlsx (10-08-2014)
		PW1094 LYONS15_CEF.xls (10-08-2014)
		PW1094 LYONS15_FIRM.docx (10-08-2014)

Comments and Attachments

PW1094 LYONS15-AC_Unit_Quote.pdf (10-08-2014)

PW1094 LYONS15-Barscreen_Quote.pdf (10-08-2014)

PW1094 LYONS15-DVH_Assoc_Statement_of_Loss.pdf (10-08-2014)

PW1094 LYONS15-Flood_Plain_Fill_Permit.pdf (10-08-2014)

PW1094 LYONS15-HMP.pdf (10-08-2014)

PW1094 LYONS15-Influent_Pumps_Quote.pdf (10-08-2014)

PW1094 LYONS15-Plant_and_Process_Description.pdf (10-08-2014)

PW1094 LYONS15-UV_Building_Quote.pdf (10-08-2014)

PW1094 LYONS15-UV_Equipment_Quote.pdf (10-08-2014)

PW1094 Lyonsinfrared.pdf (10-08-2014)

LYONS_01095_Signed_PAAP_letters_.pdf (10-08-2014)

PW 1095 Lyons_PW (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_1_-_Field_Inspection_Notes.pdf (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_2a_-_Applicant's_exhibits_for_repair_sections.pdf (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_2b_-_Location_1B_-_Photo_-_Alley_South_of_Evans_St.pdf (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_2c_-_Location_1C_-_Photo_-_Alley_South_of_Park_St_-_4th_Ave_to_5th_Ave.pdf (1

PW 1095 LYONS36_-_Lyons_-_Attachment_2d_-_Location_1D_-_Photo_-_Alley_South_of_Prospect_St.pdf (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_3_-_Applicant's_Scope (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_4_-_Location_of_Each_Alley (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_5_-_All-weather_Requirement_Applying_to_Alleys.pdf (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_6_-_Lyons_Design (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_7_-_Lyons_Design (10-08-2014)

PW 1095
LYONS36_-_Lyons_-_Attachment_8_-_Site_2_-_Park_St_-_FEMA_Legal_Determination_on_Eligibility_of_Street_Partially_Under_(
(10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_9_-_CEF.pdf (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_10_-_Lyons_Area_Location_Map.pdf (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_11_-_Floodplain_Map.pdf (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_12_-_DAC.pdf (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_13_-_HMP_sheet_-_No_Mitigation.pdf (10-08-2014)

PW 1095 LYONS36_-_Lyons_-_Attachment_14_-_Park_St_(Site_2)_Contract_Work_in_Progress_When_Flood_Occurred.pdf (10-(

PW 1095 LYONS36_-_Lyons_-_Signed_90-91.pdf (10-08-2014)

PW_1095_-_Entire_Application.pdf (10-08-2014)

LYONS_01101_Signed_PAAP_letters_.pdf (10-09-2014)

PW 1101 Lyons_PW (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_1_-_Location_Maps.pdf (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_2_-_Floodplain_Map.pdf (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_3_-_Map_-_Locations_1,2,3,5,6,7.pdf (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_4a_-_Damage_Description_-_Field_Notes.pdf (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_4b_-_Location_1_-_Park_St_4th_to_5th (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_4c_-_Locations_2 (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_4d_-_Location_4_-_Evans_at_4th_Ave_Exhibit4c.pdf (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_4e_-_Location_5_-_4th_Ave_Exhibit_6.pdf (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_4f_-_Location_6_-_3rd_Ave.pdf (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_4g_-_Location_7_-_Prospect_St_4th_to_5th_Exhibit_11.pdf (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_5a_-_Applicant's_Scope (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_5b_-_Applicant's_Scope (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_5c_-_Applicant (10-09-2014)

PW 1101 LYONS30_-_Lyons_-_Attachment_6_-_CEF_Rev_4_LYONS30_Form_(2).pdf (10-09-2014)

Comments and Attachments

PW 1101 LYONS30 - Lyons - Attachment 7- DAC.pdf (10-09-2014)

PW 1101 LYONS30 - Lyons - Attachment 8 - HMP - No Mitigation.pdf (10-09-2014)

PW 1101 LYONS30 - Lyons - Attachment 9a - Applicant's Statement on Codes and Standards for Town Streets.pdf (10-09

PW 1101 LYONS30 - Lyons - Attachment 9b - Lyons Municipal Code.pdf (10-09-2014)

PW 1101 LYONS30 - Lyons - Attachment 9c - Lyons Design and Construction Standards 547-title-10-subdivision-regulations

PW 1101 LYONS30 - Lyons - Attachment 10 - Design Details for Codes and Standards.pdf (10-09-2014)

PW 1101 LYONS30 - Lyons - Attachment 12 - Costs by Location 6.16.14 for CEF Update.pdf (10-09-2014)

PW 1101 LYONS30 - Lyons - Attachment 13 - Unit Prices Validation.pdf (10-09-2014)

PW 1101 - Entire Application.pdf (10-09-2014)

PW 1101 LYONS30 - Lyons - Attachment 11 - % Calculations Repair vs. Replace - Eligibility for Codes & Stds.pdf (10-09

Lyons PW 01101 DE-OB VERSION.docx (10-09-2014)

PW-01078(1) Entire Application.pdf (11-07-2014)

TE - Log Item 15-314-4145 - PW 1078.pdf (03-20-2015)

PW 01078(2) - PAAP Site Sheets BK.DOCX (10-19-2015)

AMEND - Log Item 15-1009-4145 - PW 1078.pdf (11-19-2015)

Meadow Park Phase II Plans 1 of 11.pdf (11-19-2015)

Meadow Park Phase II Plans 2 of 11.pdf (11-19-2015)

Meadow Park Phase II Plans 3 of 11.pdf (11-19-2015)

Meadow Park Phase II Plans 4 of 11.pdf (11-19-2015)

Meadow Park Phase II Plans 5 of 11.pdf (11-19-2015)

Meadow Park Phase II Plans 6 of 11.pdf (11-19-2015)

Meadow Park Phase II Plans 7 of 11.pdf (11-19-2015)

Meadow Park Phase II Plans 8 of 11.pdf (11-19-2015)

Meadow Park Phase II Plans 9 of 11.pdf (11-19-2015)

Meadow Park Phase II Plans 10 of 11.pdf (11-19-2015)

Meadow Park Phase II Plans 11 of 11.pdf (11-19-2015)

05232014_lyons_mitigationreport_ponds_mr-102490-31362.pdf (11-19-2015)

PW1078---LYONS20-Bid-Documents-and-Contracts-101048-10799.pdf (11-19-2015)

PW1078---LYONS20-Project-1-Meadow-Park-Phase-II-Lyons-Mitigation-Report-5-22-14-98893-23915.pdf (11-19-2015)

Application Level

PW1078---LYONS20-Project-1-Meadow-Park-Phase-II-Mitigation-Memo---10-5-2015-98894-37831.pdf (11-19-2015)

PW1078---LYONS20-Project-1-Meadow-Park-Phase-I-Plans-98879-77029.pdf (11-19-2015)

PW1078---LYONS20-Project-3-CONSTRUCTION-Plans---1-of-3-100732-52702_Part1.pdf (11-19-2015)

PW1078---LYONS20-Project-3-CONSTRUCTION-Plans---1-of-3-100732-52702_Part2.pdf (11-19-2015)

PW1078---LYONS20-Project-3-CONSTRUCTION-Plans---1-of-3-100732-52702_Part3.pdf (11-19-2015)

PW1078---LYONS20-Project-3-CONSTRUCTION-Plans---1-of-3-100732-52702_Part4.pdf (11-19-2015)

PW1078---LYONS20-Project-3-CONSTRUCTION-Plans---2-of-3-100733-82098_Part1.pdf (11-19-2015)

PW1078---LYONS20-Project-3-CONSTRUCTION-Plans---2-of-3-100733-82098_Part2.pdf (11-19-2015)

PW1078---LYONS20-Project-3-CONSTRUCTION-Plans---2-of-3-100733-82098_Part3.pdf (11-19-2015)

PW1078---LYONS20-Project-3-CONSTRUCTION-Plans---3-of-3-100734-21751_Part1.pdf (11-19-2015)

PW1078---LYONS20-Project-3-CONSTRUCTION-Plans---3-of-3-100734-21751_Part2.pdf (11-19-2015)

PW1078---LYONS20-Project-3-MANUAL-1-of-3-101049-44882.pdf (11-19-2015)

PW1078---LYONS20-Project-3-MANUAL-2-of-3-100737-26484_Part1.pdf (11-19-2015)

PW1078---LYONS20-Project-3-MANUAL-2-of-3-100737-26484_Part2.pdf (11-19-2015)

PW1078---LYONS20-Project-3-MANUAL-3-of-3-100738-89146_Part1.pdf (11-19-2015)

PW1078---LYONS20-Project-3-MANUAL-3-of-3-100738-89146_Part2.pdf (11-19-2015)

AMEND - Log Item 15-1150-4145 - PW 1078.pdf (12-04-2015)

Bundle Reference # (Amendment #)	Date Awarded
PA-08-CO-4145-State-0090(89)	11-06-2014

Subgrant Application - FEMA Form 90-91

Note: The Effective Cost Share for this application is 75%

FEDERAL EMERGENCY MANAGEMENT AGENCY
PROJECT WORKSHEET

DISASTER					PROJECT NO.	PA ID NO.	DATE
FEMA	4145	-	DR	-CO	LYONS20	013-47070-00	10-06-2015

APPLICANT: LYONS

WORK COMPLETE AS OF:
05-16-2014 : 0 %

Site 1 of 13

DAMAGED FACILITY:

Meadow Park

COUNTY: Boulder

LOCATION:

PA-08-CO-4145-PW-01078(0):
GPS location is at the east entrance to Meadow Park from 5th Avenue.

The applicant requests that this project be included in the Public Assistance Alternative Procedures Pilot Program for Permanent Work (PAAP). The formal request will be submitted before June 14, 2014.
Note that throughout this project worksheet and in the attached Parks Damage Assessment (Attachment 1a), PW Sites 7 and 8 are Sites 9 and 10, respectively. The designations Site 9 and Site 10 are maintained throughout, since all wo
scope, cost estimates and field inspection documentation are so numbered.
During the incident period severe rainstorms resulted in an estimated 500-year flow rate in the North and South Branches of St. Vrain Creek which converge in the Town of Lyons to form the Main Stem St. Vrain Creek. Further description
of the magnitude of the flooding is available in an attachment to the applicant's RPA ("4145 – Lyons – Cause and Effect of Damages 02-04-2014"). The flooding caused very extensive damage to improved property and infrastructure and
the Town's highly-developed parks and recreation areas in and along the creeks.
The Town owns and operates this extensive system of parks facilities in, along, and adjacent to the North, South, and Main Stem St. Vrain Creeks within the town limits.
This project worksheet covers flood damage to a total of eight parks sites (numbered 1 – 6 and 9 and 10), including two major parks (Sites 1 and 2), three dispersed park and trails areas (Sites 3, 4, and 6), two small parks sites (Sites 5 an
9 [PW Site 7]), and the revegetation and bank stabilization of publicly-owned areas of the creek banks in and adjacent to the other seven parks areas (Site 10 [PW Site 8]).
Field inspections of each damage location were conducted by teams including representatives of FEMA/FEMA Corps, Grantee, and Subgrantee. The damages to each site and sub-location are documented in Attachment 1a. Some
inspected park elements were found to have no damage. For those sub-locations, "no damage" is noted, and no repair or replacement cost is listed in Attachment 1a. The extent of damage to each element that was damaged is noted in
Attachment 1a, and the applicant's estimate of cost to repair or replace, as required by the extent of damage, is shown. FEMA's validation of the applicant's costs is shown in Attachment 2, and the CEF for total cost to repair to pre-disast
condition is shown in Attachment 3.
PA-08-CO-4145-PW-01078(1):
***** Version 1 *****

Current Version:

DAMAGE DESCRIPTION AND DIMENSIONS:

PA-08-CO-4145-PW-01078(0):
DAMAGE DESCRIPTION AND DIMENSIONS

Site 1 - Meadow Park Sub-locations:
1A Baseball Field
1B Multi-use Field
1C Volleyball Court/Ice Rink
1D Horseshoe Pits
1E Hains Property (insured)
1F Playground
1G Tent Camping Area
1H RV Sites
1I North Shelter ("historic")
1J South Shelter ("restroom")
1K - Not used
1L Picnic Areas
1M Trail
1N Parking Lot
1O - Not used
1P Park Host Site
1Q Memorial Benches/Plaques
1R Signage
1S Lyons Ditch
1T - Not used
1U Restoration of Site - Exc. & Fill
1V Irrigation

Meadow Park is a 13.9 acre multi-use park (see maps in Attachments 4a and 4b) within the town limits on the north side of North St. Vrain Creek that included whitewater structures for kayaking and swimming, baseball field, multi-use fiel
restrooms with showers, volleyball court/ice rink, horseshoe pits, equipped playground, picnic areas, tent camp sites with picnic tables and grills, RV camp sites with full hookups and picnic tables and grills, hiking trails, and crusher fines-s
The equipped playground area received minor damage to three pieces of equipment, and the pea gravel play surface was partially washed away and was covered with and contaminated by flood debris.

An area known as the Hains Property adjoining Meadow Park on the north had been acquired immediately before the flood, and was being incorporated into the park. That 1.47 acre property included a house, two small outbuildings and
surfaced patios, full utilities, well and septic systems, and road.

During the flood event, the North St. Vrain Creek at the north end of Meadow Park rechanneled to a new location approximately 140 feet south of the pre-flood channel. The creek remains and will be left in that new post-flood channel, wh
and cuts off from the rest of the park nearly one acre of valuable park land. The pre-flood channel is partially filled with cobble and other flood debris (total of 630 LF x 15 FT wide x avg 6 FT deep = 2100 CY), and currently handles little or
flow in the creek.
In addition to the new post-flood channel in which the creek remains, the flood cut two other temporary channels (315 LF x 15 FT wide x avg 6 FT deep and 742 LF x 30 FT wide x avg 3 ft deep = 3523 CY total) across most of the north-sc
through the Hains Property eroded the property to a depth of two to six feet, and totally destroyed all structures on that property.

Damage at Site 1 is documented in Attachment 1a for 19 separate sub-locations. The Hains property and all elements of Meadow Park, except for moderate damage only to the playground and one shelter with restrooms and showers, we
shelter built by the Works Progress Administration in the 1930's. This historic shelter, which was on the state register (5BL.383 Meadow Park Shelter House) was destroyed, except for remnants of the chimney. FEMA EHP has determine
character due to the extent of damage.

All utilities (potable water lines; sewer lines; irrigation channel and distribution lines; power distribution lines, ground-level transformers and park lighting; and all utility services to shelters and RV sites) were cut, washed out at multiple poin

Sodded and irrigated recreation and play surfaces on the baseball and multi-use fields, the tent and RV camping areas, picnic areas, and other concentrated-use areas were either washed away or covered with sand, cobble, and other flo
370,126 SF, and approximate debris, sand, and cobble to be removed before reconstruction can begin totaled 29,321 CY. Destroyed walking trails, typically 6 ft to 8 ft wide, in Meadow Park that were surfaced with crusher fines 6 inches
damaged or washed away include signs, memorial benches, various plaques, and fences.
Dimensions and degree of damage are documented in Attachment 1a, Site 1, Locations 1A – 1V.
Attachment 5f shows photos of many of the damage areas before and after the flood.
PA-08-CO-4145-PW-01078(1):
***** Version 1 *****

Current Version:

SCOPE OF WORK:

PA-08-CO-4145-PW-01078(0):
SCOPE OF WORK – Site 1 – Meadow Park
Work To Be Completed:

Repair/replacement of the whitewater structures for kayaking and swimming is covered in PW LYONS35.

Applicant will use force account and contract labor and equipment to repair where possible, or replace where damage is too extensive for repair, the park facilities in each of the 19 sub-locations in Site 1 to pre-disaster condition.

Structures that can be repaired (shelter/restroom and playground, sub-locations 1F and 1J) will be repaired as detailed in Attachment 1 scope and cost estimate. The cost to replace destroyed structures was determined from the applican
6) where available, and from a contractor's quote (Attachment 7) for rebuild of a non-historic structure to replace the historic shelter (sub-location1I).

Sodded and irrigated play surfaces on the recreational fields, the tent and RV camping areas, picnic areas, and other heavy-use areas that were either washed away or covered with sand, cobble, and other flood debris could not be recov
approximately 29,321 CY of debris, sand, and cobble that was deposited throughout Meadow Park. In accord with the experience of the Town's Parks and Recreation Department, and in consultation with landscaping contractors, it has b
areas of the park could not be used for two to three years if the sodded areas were simply replanted. Therefore, these athletic fields and concentrated-use areas will require re-sodding of 370,126 SF instead of planting. To accommodate
cobble underlying these sodded areas, it has been determined that 12 inches (after suitable compaction) of topsoil is required. Irrigation piping will be placed in this topsoil layer rather than in the damaging cobble, and sod installed over th
concentrated do not require sodding and will be replanted over imported topsoil, and irrigation systems replaced to pre-disaster condition.

The post-flood creek channel will be filled (2100 CY), topsoil added, and seeded. The two erosion channels cut by the creek across the park will be repaired to pre-disaster condition by filling with 3523 CY of material (using available cobb
and replacement irrigation piping, and either sodding or planting, as appropriate to the use level of the particular area.

Replacement of the contaminated playground surface area appears by FEMA Disaster Assistance Policy 9525.5 on ADA Requirements to trigger an ADA requirement (Attachments 9a and 9b) that either the surface under each piece of e the equipment be upgraded to a fall-attenuating surface. Upgrade of the full surface under and around the equipment is requested by the applicant and appears to be the most practical option. This upgrade is included in the repair of sub

OTHER SUPPORTING DOCUMENTATION:
Documentation required in support of this SGA not directly attached may be found in the "Attachments and Comments" section of the sub grantee's RPA, including Payroll and Procurement policies, Insurance Policies, and other documen

RECORD RETENTION: As described in the 44 CFR 13:43 Applicant must maintain all work related records for a period of three (3) years from the applicant closure (final payment). All records relative to this project worksheet are subjec and the Comptroller General of the United States.

PROCUREMENT OF MATERIALS AND CONTRACTS FOR COMPLETION OF THIS PROJECT: The applicant is required to adhere to the applicable Federal, State or Local Procurement Laws, Rules and Regulations and maintain adeq purchasing of goods and materials and contracted services for projects approved under the FEMA Public Assistance program as stated in the 44 CFR 13:36. The applicant has advised they have/will follow their normal procurement proce

PERMITS: The Applicant must obtain all necessary Federal, State and Local Permits prior to the commencement of work. Noncompliance with this requirement may jeopardize eligibility and the receipt of federal funds.

HAZARD MITIGATION:
Hazard mitigation is being proposed for Sites 1,2, and 3.
See HMP's to be attached.

INSURANCE: The applicant is aware that all projects are subject to an insurance review in accordance with 44 CFR Section 206.252 and 253, if applicable, and insurance determination will be made either as anticipated proceeds or actu insurance policy that may affect the total amount of the project.

WORK IN WATER: Replacement of many of these park facilities requires work in and immediately adjacent to the waters of the North, South, and Mainstem St. Vrain Creeks. The applicant and/or their contractors must obtain and compl permits, including those issued by US Army Corps of Engineers (USACE) under Sec. 404 of the Clean Water Act, and are responsible for contacting the USACE Denver Regulatory Office at (303) 979-4120 to determine if flood-related jurisdiction.

GRANT CONDITIONS FOR SINGLE FIXED ESTIMATE SUBGRANT:
Subgrantee agrees to fund any overrun associated with completion of the approved Scope of Work.

GRANT CONDITIONS FOR CONSOLIDATED FIXED ESTIMATE:
Additional subgrants can be included in this consolidation during the 12 months following the date of declaration. Subgrantee agrees to fund any overrun associated with completion of the work.

COST ESTIMATE VALIDATION
The subgrantee provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable for the work to be performed.

STRATEGIC FUNDS MANAGEMENT
The applicant has started construction on the work described in this SA within six months of the anticipated date of funds obligation. The funds, therefore, are not subject to the requirements of SOP 9570.24 - Strategic Funds Managemer

DIRECT ADMINISTRATION COSTS:
(5/9/14) Pursuant to DAP9525.9 subgrantee is requesting direct administrative costs that are directly chargeable to this specific project. Associated eligible work is related to administration of the PA project only and in accordance with 44 consistently and uniformly as direct costs in all federal awards and other subgrantee activities and are not included in any approved indirect cost rates.
Subgrantee has claimed DAC as summarized by Attachment 9, which shows the estimated total for this project worksheet. Subgrantee has been advised to track these costs in order to submit revisions as may be required.
PA-08-CO-4145-PW-01078(1):
***** Version 1 *****

This version is in response to a request from the GAR dated 08/26/2014 to consolidate this project with sub-grants 01053, 01095, 01101 and 01094. Each of these sub-grants will be de-obligated and re-obligated into this sub-grant as one sheets. The Sub-grantee agrees to fund any overrun associated with completion of the work.

See attached Site Sheets for additional DDD/SOW that must be included with this Version 1, PAAP Consolidation.

After the performance of this sub-grant the applicant may have Excess Funds, the sub-grantee must provide an accounting of actual costs to FEMA, through the Grantee, within 90 days of completing this sub-grant. The Sub-grantee must that is in accordance with the PAAP guidance for Excess Funds.

Current Version:

Site 2 of 13

DAMAGED FACILITY:	COUNTY: Boulder
Bohn Park	

LOCATION:

PA-08-CO-4145-PW-01078(0):
GPS location is at east entrance to Bohn Park from 2nd Avenue.
PA-08-CO-4145-PW-01078(1):

Current Version:

DAMAGE DESCRIPTION AND DIMENSIONS:

PA-08-CO-4145-PW-01078(0):
DAMAGE DESCRIPTIONS AND DIMENSIONS
Site 2 - Bohn Park Location
2A Bohn Field (Baseball)
2B Vasquez Field (Baseball)
2C Batting Cage
2D Multi-use Sport Court
2E Bohn Playground
2F Miller Memorial
2G Restrooms & Shelter (Bohn Shelter)
2H Parking Lot
2I ADA Fishing Area (Handicap)
2J Pump Pit/Well/Pump
2K Park Host Site
2L Tuff Shed (Storage)
2M Score Box
2N Baseball Shed (Storage)
2O Planters
2P Vasquez Memorial
2Q Memorial Benches
2R Dog Park
2S Concession Stand Area
2T Multi-use Field/Soccer
2U Bohn Park Restrooms
2V Lyons Community Garden
2W Lyons Dirt Jump Bike Park
2X Signage
2Y Irrigation
2Z - Not used
2AA Foot Path Bridge - 4th & Bohn Park
2AB Foot Path Bridge - 4th & Evans
2AC Trail (main trail through park)
2AD Picnic Areas
2AE Bohn Park Service Utilities

Bohn Park covers 52 acres on the south side of South St. Vrain Creek and the Main Stem of St. Vrain Creek, stretching to higher ground to the south. Approximately 15 acres of Bohn Park that lies nearest the creeks were damaged, with elevations.
During the flood, the South St. Vrain Creek cut an east-west channel across the park, and the Main Stem of St. Vrain Creek overflowed its banks at very high volume and velocity, damaging most of the more highly-developed areas of the

Damage at Site 2 is documented in Attachment 1a for 30 separate sub-locations. See also the before and after photos in Attachment 5a.
The damaged sections of this park included two baseball fields and associated batting cage; two storage buildings; multi-use sport court for basketball and tennis; equipped playground; restroom and shelter building; gravel-surfaced parkir irrigation pump pit, pump, and well; RV site for Park Host with associated utilities; concession stand area; dog park area; various fences and access paths, memorial benches, plaques and planter boxes; the dirt-jump bike park; sodded an designed trails surfaced with crusher fines; picnic areas; and all power, water, sewer, and irrigation utilities servicing the park's buildings and shelter, the baseball field lights, and the irrigation system.

All utilities (potable water lines, sewer lines, irrigation pump pit and distribution lines, power distribution lines and ground-level transformers, and utility services to shelters and the Park Host RV site) were cut, washed out at multiple points,

The equipped playground area received minor damage to one piece of equipment, and the pea gravel play surface was covered and contaminated with flood debris.
As at Site 1, sodded and irrigated recreation and play surfaces on the baseball fields and the multi-use field, picnic areas, and other concentrated-use areas were either washed away to a depth of one to five feet or covered with sand, cob

Both baseball fields and their backstops and fences and batting cage were damaged beyond repair (but the baseball lights on the upper field were undamaged except for loss of underground power lines to them), the multi-use sport court playground surfacing was damaged, the bottom two feet of the shelter/restroom building received water damage, the concession stand door received water damage, the parking lot was entirely destroyed, the ADA fishing area was entirely damaged beyond repair by water and mold, and the dirt-jump bike park was damaged by erosion. One foot-path wooden bridge (70 LF x 8.7 ft wide) and its abutments were destroyed, and another identical bridge was washed off the des undamaged. The multi-use/soccer field surface was not significantly damaged and will not require repair.

PA-08-CO-4145-PW-01078(1):

Current Version:

SCOPE OF WORK:

PA-08-CO-4145-PW-01078(0):
SCOPE OF WORK
Work to Be Completed – Site 2 – Bohn Park

Applicant will use force account and contract labor and equipment to repair where possible, or replace where damage is too extensive for repair, the park facilities in each of the 30 sub-locations in Site 2 to pre-disaster condition.

Structures that can be repaired (shelter/restroom(sub-location 2G), concession stand (sub-location 2S), and equipped playground (sub-location 2E)) will be repaired as detailed in Attachment 1a scope and cost estimate. The cost to repai applicant's insurance Statement of Loss (Attachment 6). FEMA estimated (Attachment 8) the cost to repair the concession stand and the cost to replace two unrepairable storage sheds (sub-locations 2L and 2N).

As at Site 1, sodded and irrigated play surfaces on the two baseball fields, the Park Host RV site, picnic areas, and other heavy-use areas that were either washed away or covered with sand, cobble, and other flood debris could not be re approximately 15,575 CY of debris, sand, and cobble that was deposited throughout Bohn Park. In accord with the experience of the Town's Parks and Recreation Department, and in consultation with landscaping contractors, it has beer of the park could not be used for two to three years if the sodded areas were simply replanted. Therefore, these areas will require re-sodding instead of planting of 198,387 SF at the two baseball fields, picnic area, common areas around and heavy-use areas at trails and creek-access points. To accommodate replacement of irrigation piping in the rocky cobble underlying these sodded areas, it has been determined that 12 inches (after suitable compaction) of topsoil is re topsoil layer rather than in the damaging cobble, and sod installed over the topsoil. Peripheral areas where use is less concentrated do not require sodding and will be replanted over imported topsoil, and irrigation systems will be replace

Replacement of the contaminated playground surface area appears by FEMA Disaster Assistance Policy 9525.5 on ADA Requirements to trigger an ADA requirement (Attachments 9a and 9b) that either the surface under each piece of e the equipment be upgraded to a fall-attenuating surface. Upgrade of the full surface under and around the equipment is requested by the applicant and appears to be the most practical option. This upgrade is included in the repair of sub

The creeks in the Bohn Park area returned to their pre-flood channels when the water receded. Significant bank stabilization required to minimize erosion of these denuded banks is included on Site 10.
The erosion channel and the shallow swath cut by the creek across the park will be repaired to pre-disaster condition by filling (using available cobble and sand where possible), installing topsoil and replacement irrigation piping, and eithe level of the particular area.
PA-08-CO-4145-PW-01078(1):

Current Version:

Site 3 of 13

DAMAGED FACILITY:

Lyons Valley River Park

COUNTY: Boulder

LOCATION:

PA-08-CO-4145-PW-01078(0):
GPS location is at McConnell Ponds west of McConnell Drive Bridge near east end of this elongated section.
PA-08-CO-4145-PW-01078(1):

Current Version:

DAMAGE DESCRIPTION AND DIMENSIONS:

PA-08-CO-4145-PW-01078(0):
DAMAGE DESCRIPTION AND DIMENSIONS

Site 3 - Lyons Valley River Park
Sub-locations:
3A McConnell Ponds
3B Trail
3C Signage
3D Kids Kayak Club Poles
3E Wooden Foot Bridge

Lyons Valley River Park includes an elongated trail (2640 LF x 6.7 ft wide) and creek/creekside recreation area in and along the South St. Vrain Creek, the Main Stem of St. Vrain Creek, and along the McConnell Ponds area. This section (sub-location 3D) consisting of poles, masts, and gates, with each staggered gate extending partially over the creek to create a course.

Two recreational ponds known as the McConnell Ponds (sub-location 3A) were located near the east end of this park area. The ponds were used by the Kayak Club and by residents and visitors for informal water sports of all types. The community park separate from the creeks. They also provided wildlife habitat and a fishing area, and served as part of the host area for the annual Lyons Outdoor Games. The Site 3 park area totals about 4800 LF and varies from 100 to

During the 500-year flood, the South St. and Main Stem St. Vrain Creeks overflowed their banks at very high volume and velocity. Damage at Site 3 is documented in Attachment 1a for five separate sub-locations. See also the before an All of the Lyons Valley River Park is close to the creeks, and all was destroyed by the flood. The trails were entirely washed away, and all elements of the kayak club facility (either fastened to the dense tree cover, or supported on poles a away.

An elevated trail running seven feet above ground level that accessed fishing and water recreation in the area between the Main Stem of St. Vrain Creek and McConnell Ponds was washed out and scoured 15 feet deep into the bottom of LF near west end of the west pond and 206 LF near east end of east pond). These washouts of the trail embankment allowed floodwaters to flow through the ponds, depositing large quantities of sand, cobble and flood debris. A small (1 of the east pond was washed away and destroyed. Trail signs in the area were also destroyed.
PA-08-CO-4145-PW-01078(1):

Current Version:

SCOPE OF WORK:

PA-08-CO-4145-PW-01078(0):
SCOPE OF WORK
Work To Be Completed – Site 3 – Lyons Valley River Park

Applicant will use force account and contract labor and equipment to repair each of the damaged elements of this park section to pre-disaster condition.

The destroyed kayak course area consisting of poles, masts, and gates which created a staggered-gate course will be replaced in kind. Equipment brochures to illustrate the equipment are shown in Attachments 10a and 10b. The applic manufacturer based on cost of a recent similar facility, which are included in the Attachment 1a cost estimate (sub-location 3D) and are validated in Attachment 2.

The McConnell recreation Ponds will be excavated (62,062 CY) to the pre-flood dimensions. As much as possible of the excavated material will be used in the repair of the 400 LF and 206 LF washouts of the elevated trail embankment. rebuilt to pre-disaster condition, including a moderate layer of rip rap on the creek-side of the trail embankment. The repaired embankment areas will be revegetated for erosion control. The 15 LF x 8 ft wooden bridge will be replaced. See Attachment 1a, Site 3, for detailed scope of repair and estimated cost.
PA-08-CO-4145-PW-01078(1):

Current Version:

Site 4 of 13

DAMAGED FACILITY:

Corridor Trail

COUNTY: Boulder

LOCATION:

PA-08-CO-4145-PW-01078(0):
GPS location is at Trail's east end at the intersection of the trail with McConnell Drive along U.S. Highway 36.
PA-08-CO-4145-PW-01078(1):

Current Version:

DAMAGE DESCRIPTION AND DIMENSIONS:

PA-08-CO-4145-PW-01078(0):
DAMAGE DESCRIPTION AND DIMENSIONS

Site 4 - Corridor Trail
Sub-locations
4A - Not used
4B Stone Features
4C Irrigation
4D - Not used
4E Foot Path Bridge - Hwy 66
4F Stone Trash Cans
4G Trail

The Corridor Trail facility included a creekside trail running between the Main Stem of St. Vrain Creek and U.S. Highway 36 from the Black Bear Bridge on the west end to a point 275 ft east of the McConnell Drive bridge. See Attachment bridge. The trail consisted of 211.2 LF x 8 ft wide of concrete-surfaced trail and 1716 LF x 8 ft wide of designed trail surfaced with crusher fines.
During the 500-year flood, the Main Stem of St. Vrain Creek overflowed its banks at very high volume and velocity.
The entire length of the trail was destroyed, and the abutments of the foot bridge (14 CY of concrete each) were undermined and destroyed, but the bridge was recovered undamaged. One of the stone trash cans along the trail was wash Damage detail at Site 4 is documented in Attachment 1a for five separate sub-locations. See also the before and after photos in Attachment 5c.
PA-08-CO-4145-PW-01078(1):

Current Version:

SCOPE OF WORK:

PA-08-CO-4145-PW-01078(0):
SCOPE OF WORK
Work To Be Completed – Site 4 – Corridor Trail

Applicant will use force account and contract labor and equipment to replace the 211.2 LF x 8 ft wide concrete trail section, the 1716 LF x 8 ft wide crusher fines trail to pre-disaster condition, and two bridge abutments at 14 CY concrete e
Attachment 1a, Site 4, shows detailed scope of repair and estimated cost.
PA-08-CO-4145-PW-01078(1):

Current Version:

Site 5 of 13

DAMAGED FACILITY:

2nd Ave Dog Park

COUNTY: Boulder

LOCATION:

PA-08-CO-4145-PW-01078(0):
GPS location is at the west end of the 2nd Ave Dog Park area, SE corner of 2nd Ave bridge.
PA-08-CO-4145-PW-01078(1):

Current Version:

DAMAGE DESCRIPTION AND DIMENSIONS:

PA-08-CO-4145-PW-01078(0):
DAMAGE DESCRIPTIONS AND DIMENSIONS

Site 5 - 2nd Ave Dog Park Location
5A Fencing
5B River Feature
5C Signage
5D Retention Wall Under 2nd Ave Bridge
5E Irrigation

The 2nd Ave Dog Park facility on the south bank of the Main Stem of St. Vrain Creek immediately east of the 2nd Ave bridge provided a water-based recreation area for people with dogs to access the creek. The facility included a three-fo
sandstone slab steps/seating, rip rap armoring, a water feature protruding into the creek (design shown in Attachment 11 and materials detail in Attachment 1b), picnic table, 90 LF of post and dowel fence, sodded area with irrigation, sculp

During the 500-year flood, the flow velocity in the Main Stem of St. Vrain Creek entirely destroyed all elements of this facility. Damage detail at Site 5 is documented in Attachment 1a for five separate sub-locations.
PA-08-CO-4145-PW-01078(1):

Current Version:

SCOPE OF WORK:

PA-08-CO-4145-PW-01078(0):
SCOPE OF WORK
Work To Be Completed – Site 5 – 2nd Ave Dog Park

Applicant will use force account and contract labor and equipment to replace to pre-disaster condition the 112 CY of rock/sandstone-slab retaining wall, the 182 CY of rip rap armoring, and the 28 LF of sandstone/boulder steps and seating
irrigation piping, sculptures, garbage cans, and signage will be replaced.
Attachment 1a, Site 5, shows detailed scope of repair and estimated cost, and Attachment 1b shows materials required.
PA-08-CO-4145-PW-01078(1):

Current Version:

Site 6 of 13

DAMAGED FACILITY:

St. Vrain/Hwy 7 Trail

COUNTY: Boulder

LOCATION:

PA-08-CO-4145-PW-01078(0):
GPS location is near the east end of the trail, north side of the 4th Avenue walking bridge over the South St. Vrain Creek.
PA-08-CO-4145-PW-01078(1):

Current Version:

DAMAGE DESCRIPTION AND DIMENSIONS:

PA-08-CO-4145-PW-01078(0):
DAMAGE DESCRIPTION AND DIMENSIONS
Site 6 St. Vrain/Hwy 7 Trail
Sub-locations:
6A Hard-surface Trail Hwy 7 to Bohn Park
6B Trail Along Hwy 7 Bohn to Old South
6C Signage
6D Fencing

The St. Vrain/Hwy 7 trail (Attachments 4a,b,c,d)is approximately 2000 LF long and runs northeast between Hwy 7 and the South St. Vrain Creek from the intersection of Hwy 7 and Old St. Vrain Road, turns east to follow the creek, and en
of 4th Ave on the north side of South St. Vrain Creek.
500-year flood flows in the South St. Vrain Creek eroded and destroyed 1848 LF of the northern and eastern portions of the trail, consisting of 792 LF x 8 ft wide concrete trail and 1056 LF x 8 ft wide crusher fines-surfaced trail. The flood
of post and dowel fence totaling 1392 LF, trash barrels, and signs.
Damage detail at Site 6 is documented in Attachment 1a for four separate sub-locations. See also the before and after photos in Attachment 5d.
PA-08-CO-4145-PW-01078(1):

Current Version:

SCOPE OF WORK:

PA-08-CO-4145-PW-01078(0):
SCOPE OF WORK
Work To Be Completed – Site 6 – St. Vrain/Hwy 7 Trail

Applicant will use force account and contract labor and equipment to replace the 792 LF x 8 ft wide concrete trail and the 1056 LF x 8 ft wide crusher fines-surfaced trail and replace 1392 LF of post and dowel fence. They also will replace
Attachment 1a, Site 6, shows detailed scope of repair and estimated cost.
PA-08-CO-4145-PW-01078(1):

Current Version:

Site 7 of 13

DAMAGED FACILITY:

Black Bear Hole (designated Site 9 throughout this PW)

COUNTY: Boulder

LOCATION:

PA-08-CO-4145-PW-01078(0):
GPS location is at the north side of the Black Bear walking bridge over the Main Stem of St. Vrain Creek.
PA-08-CO-4145-PW-01078(1):

Current Version:

DAMAGE DESCRIPTION AND DIMENSIONS:

PA-08-CO-4145-PW-01078(0):
DAMAGE DESCRIPTION AND DIMENSIONS
Site 7 - Black Bear Hole Area
(designated Site 9 throughout this PW)
Sub-locations:
7A Parking Lot

7B Picnic Area
7C Trail
7D Foot Path Bridge Hwy 66 at Black Bear
7E Signage
7F Irrigation

The Black Bear Hole is a focal point and concentrated-use area for views of the area, picnicking, access to recreation on both sides of the Main Stem of St. Vrain Creek, access to two of the most popular “kayak drop” whitewater features i
Black Bear walking bridge, and provides access to the west end of the Corridor Trail. See Attachments 4a and 4c.

The Main Stem of the St. Vrain Creek overflowed its banks and inundated the parking lot, picnic area, trail on both sides of the bridge, and the abutments of the Black Bear foot-path bridge. Though the foot bridge remains in use, both bric
undermined and partially damaged, and will require replacement.
Other damage at this site included loss of six-inch deep road base from the 261 ft x 99 ft parking area, 17 LF of post and dowel fence at the parking area, loss at the picnic area of 12 ft x 12 ft = 144 SF x 6 inch depth of crusher fines base
with irrigation for concentrated use.
Damage detail at Site 7 (designated Site 9 throughout this PW) is documented in Attachment 1a for six separate sub-locations. See also the before and after photos in Attachment 5e.
PA-08-CO-4145-PW-01078(1):

Current Version:

SCOPE OF WORK:

PA-08-CO-4145-PW-01078(0):
SCOPE OF WORK
Site 7 - Black Bear Hole Area
(designated Site 9 throughout this PW)

Applicant will use force account and contract labor and equipment to replace two walking bridge abutments at 14 CY concrete each, replace road base on parking lot = 261 ft x 99 ft x 6 inch deep (at 2900 LB/CY) = 694 tons, replace 17 LF
inch depth crusher fines, and replace 20,000 SF of sod with irrigation on this high-use area. They also will replace the lost trash barrels and signs.
Attachment 1a, Site 7 (designated Site 9 throughout this PW), shows detailed scope of repair and estimated cost.
PA-08-CO-4145-PW-01078(1):

Current Version:

Site 8 of 13

DAMAGED FACILITY:

Park System Bank Revegetation and Stabilization (designated Site 10 throughout this PW)

COUNTY: Boulder

LOCATION:

PA-08-CO-4145-PW-01078(0):
GPS location is on the Black Bear walking bridge over Main Stem of St. Vrain Creek, east of center of site segment. Site damage locations to be repaired are shown in Attachment 12.
PA-08-CO-4145-PW-01078(1):

Current Version:

DAMAGE DESCRIPTION AND DIMENSIONS:

PA-08-CO-4145-PW-01078(0):
DAMAGE DESCRIPTON AND DIMENSIONS
Site 8 - Park System Bank Revegetation and Stabilization (designated Site 10 throughout this PW)

The 500-year flood resulted in major erosion and loss of protective rip rap and stabilizing vegetation on the banks of the South St. Vrain Creek, North St. Vrain Creek, and Main Stem of St. Vrain Creek within the Town limits of Lyons. In a
several places, and emergency repair areas to the breaches that were covered on LYONS05 (008) and LYONS06 (042) remain to be stabilized and revegetated. A total of 3261 LF of creek banks on Lyons Town property require revegeta
erosion and potential bank breaches at high creek flows that result from rainstorms and from annual runoff during snowmelt in the immediately-upstream mountains and canyons. The eroded bank sections average approximately 25 feet
rap was lost from these creek banks. Attachment 1b shows a typical section of creek bank vegetation and stabilization as it existed pre-flood and as it will be rebuilt. Attachment 1b also shows materials required for an average 100 LF of
Damage detail at Site 8 (designated Site 10 throughout this PW) is documented in Attachment 1a for sub-location. See also the before and after photos in Attachment 5.
PA-08-CO-4145-PW-01078(1):

Current Version:

SCOPE OF WORK:

PA-08-CO-4145-PW-01078(0):
SCOPE OF WORK
Work To Be Completed – Site 8 – Park System Bank Revegetation and Stabilization (designated Site 10 throughout this PW)

Applicant will use force account and contract labor and equipment to replace rip rap and the protective revegetation as shown in Attachment 1b on 3261 LF of heavily damaged creek bank on Town property. Attachment 1a, Site 8 (design
detailed scope of repair and estimated cost.
PA-08-CO-4145-PW-01078(1):

Current Version:

Site 9 of 13

DAMAGED FACILITY:

Whitewater Features

COUNTY: Boulder

LOCATION:

Current Version:
***** Version 2 *****

Location: GPS location is at applicant's Town Hall at 432 5th Ave, Lyons, CO. at 40.22327, -105.27114.

The whitewater features covered in this project worksheet are located along the North, South, and mainstem St. Vrain Creeks in the Town of Lyons.

The GPS locations and map locations for each feature are documented in Attachment 1.

This project worksheet covers repairs to 20 total recreational structures (15 whitewater features and 5 fishing structures) at five locations on the North, South, and mainstem St. Vrain Creeks in the Lyons Town Limits.

Location 1 – Meadow Park – nine damaged whitewater features
Sub-location 1A = Applicant’s Structure P-1 ("Swimming Hole")
Sub-location 1B = Applicant’s Structure M-1
Sub-location 1C = Applicant’s Structure M-2
Sub-location 1D = Applicant’s Structure M-3
Sub-location 1E = Applicant’s Structure M-4
Sub-location 1F = Applicant’s Structure M-5
Sub-location 1G = Applicant’s Structure M-6
Sub-location 1H = Applicant’s Structure M-7
Sub-location 1I = Applicant’s Structure M-8

Location 2 – North St. Vrain Creek Area – Two damaged whitewater features
Sub-location 2A = Applicant’s 5th Ave Bridge Structure
Sub-location 2B = Applicant’s Sewer Line Structure (Park St)

Location 3 – Bohn Park Fishing Structures – Five damaged fishing structures
Sub-location 3A = Fishing Structure 1
Sub-location 3B = Fishing Structure 2
Sub-location 3C = Fishing Structure 3
Sub-location 3D = Fishing Structure 4
Sub-location 3E = Fishing Structure 5

Location 4 – Black Bear Hole Area – Two damaged whitewater features
Sub-location 4A = Black Bear Structure
Sub-location 4B = A-Hole

Location 5 – October Hole Area – Two damaged whitewater features
Sub-location 5A = October Hole
Sub-location 5B = November Hole
Latitude: 40.22327 Longitude: -105.27114

DAMAGE DESCRIPTION AND DIMENSIONS:

Current Version:
***** Version 2 *****

During the incident period severe rainstorms estimated to exceed a 500-year rainfall event resulted in an estimated 500-year flow rate in the North and South Branches of St. Vrain Creek which converge in the Town of Lyons to form the m
magnitude of the flooding is available in an attachment to the applicant's RPA ("4145 – Lyons – Cause and Effect of Damages 02-04-2014"). The flooding caused very extensive damage to improved property and infrastructure and to the
areas in and along the creeks.

This project worksheet covers flood damage to 20 recreational structures in the two branches and the mainstem of the Creek. The 15 engineered "Whitewater Structures" create drop areas that provide whitewater recreation for kayaking,
The five "fishing structures" provide fish habitat and spawning areas in low-velocity pools created within the creek.

The whitewater structures were built in 2001. The fishing structures were built in 1989 and rebuilt in 1998 after flood damage (not on a declared disaster) in 1994. Pre-flood, each structure was undamaged, fully functional, and in operatio
the applicant.

All 20 structures were damaged to varying degrees. Each sustained enough damage that in-place repair is not possible. Some were washed away entirely, some partially washed away, and some undermined and damaged structurally, r
damage to be repaired was caused by the declared disaster.

Field inspections of each damage location were conducted by teams including representatives of FEMA, Grantee, and Subgrantee. Damage areas are documented by location in Attachment 1. GPS location for each damage area is shov
inspection teams determined that in-place repair was not possible, and that all 20 structures require full reconstruction. Attachment 2b shows typical flood damage to the structures.

In addition, three small ponds near Fishing Structure 4 (sub-location 3D) were filled with flood debris, cobble, and sand. These ponds with a total volume of approximately 53 CY are used to filter irrigation return water from the applicant's
to the creek, and to provide wildlife habitat.

The damage dimensions for each structure are summarized in Attachment 4a – GPS Location, Repair Scope, and Cost Estimate. These detailed damage dimensions were taken by the engineering consultant after flows subsided and suf
an in-depth examination. The project specialist has verified a small sample of the damage sites and found that the engineer's dimensions appear to be accurate. Structure depths could not be verified. The engineering consultant's deterr
design practice for such structures, and has been accepted by the project specialist.
Attachment 2a shows photos during construction and near completion of a typical whitewater feature ("kayak drop").
Attachment 3a shows plan and elevation drawings and typical construction details for a whitewater structure. Attachment 3b shows construction details for the fishing structures as originally built in 1989.

The damage quantities (summarized from Attachment 4a) of each of the principal elements of construction of these whitewater features, totaled over the 20 structures are:
1. Feature materials washed out or destroyed (mainly large boulders, the principal elements of the features) = 5563.6 CY
2. Terracing rocks (sandstone slabs and native boulders)washed out or destroyed (These provide erosion control where features meet creek bank, and serve as durable surfaces for access, egress, and seating at one end of each feature
FT deep, variable width)
3. Pool bottoms filled with cobble, sand, and flood debris = 4625.1 CY
4. Armoring (rip rap) washed out or destroyed (forms the bottom lining of the pools to control the erosive scour and maintain channel integrity immediately downstream of each whitewater feature) = 21,518.5 CY
5. Grout destroyed (principally for boulders in the main structure, minor amounts for terracing rocks) = 1022.4 CY
6. Feature Rocks washed away (approximately 8 FT diameter boulders placed in the creek to create eddys, diversify the flow characteristics, and add obstacles) = 24 boulders

Supporting documentation for this site can be found attached to PW 01053.

SCOPE OF WORK:

Current Version:
***** Version 2 *****

SCOPE OF WORK
Work To Be Completed:

Applicant will use contract labor and equipment to return 20 whitewater recreational facilities to pre-disaster condition, plus minor modifications to the original design to functionalize previously-inadequate fish passages. The applicant ha
Parks and Wildlife Statement on Fish Passages) that adequately-designed fish passages will be required as part of the 404 permitting process by USACE in compliance with the Clean Water Act."

Although the cost differential between design of the fish passages as included in the original pre-disaster construction and the current standard has not been quantified, it is estimated by the consulting engineer to be zero net increase, sin
slightly decreased materials cost.

Construction of such whitewater and fishing structures in an active waterway typically is required by permit to be in the low-flow season when there is the least effect due to sedimentation and least impact to native fish species. In this area
from mid-October to mid-March, timed for historical low flows. Estimated costs include appropriate added cost for this time constraint.

Recovery and reuse of materials from original construction:
1. For the principal elements of the whitewater features, boulders, rip rap, sandstone slab, etc will be recovered and reused where they were not entirely washed away, buried in the creeks and banks, or broken beyond reuse. It is estimat
dismantle remnants of the features and to recover and reuse will approximately balance the reduction in material cost, so no demolition cost is included, and no cost reduction is taken for recovered materials.
2. For the "feature rocks" (large boulders strategically placed in the creek to augment the main whitewater features by creating eddys, obstacles, and flow diversification), it is estimated that, above and beyond the cost of recovery, 5% are
effectively. The unit cost of the feature rocks was reduced by 5% to account for this net saving by recovery.
Materials to be used:
Principal construction material is native boulders and cobble, slabs of native Lyons sandstone, and native rip rap, all available locally at minimum material and transportation cost, and preferred for compatibility with natural surroundings of
minimum cost for repair.

Scope of work is to repair the following 15 whitewater structures and 5 fishing structures to pre-disaster condition (with minimal modification for improvement of fish passages through the structures):

Location 1 – Meadow Park (on North St. Vrain Creek) – reconstruct nine damaged whitewater features per scope outlined below
Location 2 – North St. Vrain Creek Area – reconstruct two damaged whitewater features per scope outlined below
Location 3 – Bohn Park Fishing Structures – reconstruct five damaged fishing structures per scope outlined below, and excavate debris totaling 53 CY from three small ponds.
Location 4 – Black Bear Hole Area – reconstruct two damaged whitewater features per scope outlined below
Location 5 – October Hole Area – reconstruct two damaged whitewater features per scope outlined below

Total repair scope and quantities for the 20 damaged structures at Locations 1 - 5 (detailed for each structure in Attachment 4a (GPS Locations, Repair Scope, and Cost Estimate) are:
1. Feature Materials: Reconstruct washed-out and damaged whitewater features with boulders and rock = 5563.6 CY.
   a. Dismantle any remnants of features and terracing, and save reusable materials for reconstruction.
   b. Recover for reuse any available dislodged and reusable materials from the original whitewater features.
   c. Reconstruct the cross-channel section of the feature, with ends anchored in creek banks.
2. Terracing Rocks: Reconstruct terracing (at each end of most features, one end on some) for access/egress and seating (minimal grout is included in grout total) = 577.1 LF (at avg 3 FT deep, variable width).
3. Pool Bottoms: Over-excavate (remove flood debris and deposited cobble and sand) to re-form the pools downstream of the features = 4625.1 CY.
4. Armoring: Install and shape rip rap armoring of pool bottoms = 21,518.5 CY.
5. Grout: Grout feature materials (Item 1) as necessary, plus minimal grouting of Terracing Rocks (Item 2) = 1022.4 CY.
6. Feature Rocks: Provide and install replacement feature rocks as located pre-disaster = 24 eight-foot diameter boulders. Unit price has been reduced 5% to reflect estimated cost-effective net recovery of 5% of these feature rocks.
7. Heavy equipment: Unit prices for repair items include all materials, labor, and equipment required to provide and install each element and complete the reconstruction of the structure. Additional heavy equipment work is required for fina
required hydraulic characteristics for each feature (referred to as "tuning" the structure). These extra equipment hours are shown in attachment 4a ("Repair Scope and Cost Estimate") as "heavy equipment time", indicating that it is in addi
costs.
8. Install and remove water diversion controls, required during construction of each structure.
9. Excavate flood debris, cobble, and sand totaling 53 CY from three small ponds near Fishing Structure 4 (sub-location 3D).
10. Revegetation of both banks along the creeks between the whitewater features is covered on LYONS20 – Parks and Recreation. No more required on this project worksheet.

HYDROLOGY STUDY ON EFFECT OF WHITEWATER FEATURES AND FISHING STRUCTURES:
The original whitewater and fishing structures were installed in compliance with permits issued by USACE, but local floodplain permits were not issued.

The applicant conducted a one-dimensional hydraulic analysis in May, 2014, to determine the impacts to the 100-year discharge water surface elevation of the original installation of the in-creek structures covered by this project workshee
of Effects of Whitewater Features) demonstrated that initial installation (and therefore reconstruction to same dimensions in same footprint) of these structures in the creeks did not impact the 100-year flood elevations, floodway elevations
Mainstem St. Vrain Creeks.

OTHER SUPPORTING DOCUMENTATION:
Documentation required in support of this SGA not directly attached may be found in the "Attachments and Comments" section of the sub grantee's RPA, including Payroll and Procurement policies, Insurance Policies, and other documen

RECORD RETENTION: As described in the 44 CFR 13:43 Applicant must maintain all work related records for a period of three (3) years from the applicant closure (final payment). All records relative to this project worksheet are subject
and the Comptroller General of the United States.

PROCUREMENT OF MATERIALS AND CONTRACTS FOR COMPLETION OF THIS PROJECT: The applicant is required to adhere to the applicable Federal, State or Local Procurement Laws, Rules and Regulations and maintain adeq
purchasing of goods and materials and contracted services for projects approved under the FEMA Public Assistance program as stated in the 44 CFR 13:36. The applicant has advised they have/will follow their normal procurement proce

PERMITS: The Applicant must obtain all necessary Federal, State and Local Permits prior to the commencement of work. Noncompliance with this requirement may jeopardize eligibility and the receipt of federal funds.
The original whitewater and fishing structures were installed in compliance with permits issued by USACE, but local floodplain permits were not issued. The applicant will obtain both USACE and local permits for reconstruction of the facili

HAZARD MITIGATION:
No mitigation opportunities identified because mitigation not technically feasible on these whitewater features.

INSURANCE: The applicant is aware that all projects are subject to an insurance review in accordance with 44 CFR Section 206.252 and 253, if applicable, and insurance determination will be made either as anticipated proceeds or actu
insurance policy that may affect the total amount of the project.

WORK IN WATER: Replacement of these whitewater features requires work in and immediately adjacent to the waters of the North, South, and Mainstem St. Vrain Creeks. The applicant and/or their contractors must obtain and comply v
permits, including those issued by US Army Corps of Engineers (USACE) under Sec. 404 of the Clean Water Act, and are responsible for contacting the USACE Denver Regulatory Office at (303) 979-4120 to determine if flood-related
jurisdiction.

GRANT CONDITIONS FOR SINGLE SITE FIXED SUBGRANT

Subgrantee agrees to fund any overrun associated with completion of the approved Scope of Work. Subgrantee must complete Scope of Work as approved on this PW or request an improved or alternate project from the Grantee prior to
of Work to be completed must be reviewed by FEMA to ensure program and EHP compliance. Subgrantee
must follow Federal procurement procedures as outlined in 44 CFR, Part 13.36. Subgrantee must provide an accounting of final actual costs to the Grantee that demonstrates that the Scope of Work of the PW or the approved Improved o
actual costs associated with completing the Scope of Work. The final accounting must indicate the Subgrantee's intended use of any excess funds associated with this project.

DIRECT ADMINISTRATION COSTS:
(5/9/14) Pursuant to DAP9525.9 subgrantee is requesting direct administrative costs that are directly chargeable to this specific project. Associated eligible work is related to administration of the PA project only and in accordance with 44
consistently and uniformly as direct costs in all federal awards and other subgrantee activities and are not included in any approved indirect cost rates.
Subgrantee has claimed DAC as summarized by Attachment 9, which shows the estimated total for this project worksheet. Subgrantee has been advised to track these costs in order to submit revisions as may be required.

Strategic Funds Management:
The Applicant intends to start construction on the work described in this SA within six months of the anticipated date of funds obligation. The funds, therefor, are not subject to the requirements of SOP 9570.24 – Strategic Funds Manager

Supporting documentation for this site can be found attached to PW 01053.

Site 10 of 13

DAMAGED FACILITY:

Alleys in the Confluence Area

COUNTY: Boulder

LOCATION:

Current Version:
***** Version 2 *****

Location: GPS location is at applicant's Town Hall at 432 5th Ave, Lyons, CO. at 40.22327, -105.27114.
GPS locations for each damage area are documented in Attachment 1 and are included below.

Site 1: Alleys in the confluence area
Location 1A - Alley south of Park St, west of 2nd Ave
Alley at 2nd Ave = 40.22096, -105.26550
Location 1B - Alley south of Evans St, 2nd Ave to 5th Ave
Alley at 2nd Ave = 40.22201, -105.26552
Location 1C - Alley south of Park St, East of 4th Ave and 4th Ave to 5th Ave
Alley at 4th Ave = 40.22100, -105.27003
Location 1D - Alley south of Prospect St, 4th Ave to 5th Ave
Alley at 4th Ave = 40.21994, -105.27006

LATITUDE: 40.22327 LONGITUDE: -105.27114

DAMAGE DESCRIPTION AND DIMENSIONS:

Current Version:
***** Version 2 *****

SITE 1 – Alleys in the confluence area

During the incident period severe rainstorms resulted in an estimated 500-year flow rate in the North and South Branches of St. Vrain Creek which converge in the Town of Lyons to form the Main Stem creek. Further description of the ma
attachment to the applicant's RPA ("4145 – Lyons – Cause and Effect of Damages 02-04-2014"). The flooding caused very extensive damage to improved property and infrastructure, including low-lying streets and alleys in the areas adja

Pre-flood, the alleys were surfaced with variable but not accurately known depths of gravel.

These streets and alleys are owned and maintained by the applicant. All were in reasonable condition, serviceable, and in service before the flood. All damage to be repaired was caused by the declared disaster and/or by unavoidable da
emergency access during the incident period. Traffic on the graveled, unpaved alleys for local access and during emergency work in the Town while the roadways were saturated caused incorporation of sediment and debris into the surfa
road-base of the alleys down to the sub-grade.

Field inspections of each damage location were conducted by teams including representatives of FEMA/FEMA Corps, Grantee, and Subgrantee. Results of the field inspections are documented in Attachments 1 and 2a.
The damages are further documented by photos in Attachments 2b, 2c, and 2d.
Flood damage at each location of Site 1 was:

Location 1A - Alley south of Park St, west of 2nd Ave: (alley is a 277 LF segment x 19 FT wide)
- 277 LF x 23 ft wide (sediment layer is 4 ft wider than the 19 ft alley) x avg 15 inches deep = 295 CY of sediment and flood debris remaining that was deposited on gravel-surfaced alley (leave at applicant's calculation of 292 CY)
- 277 LF x 19 ft wide x avg 4 inch deep = 65 CY alley surface and base damaged to sub-grade

Location 1B - Alley south of Evans St, 2nd Ave to 5th Ave (four alley segments measured during field inspections at 435.6 LF x 17.1 FT wide, 534.1 LF x 12 FT wide, 57.6 LF x 10 FT wide, and 321 LF x 10 FT wide).
- 1348.3 LF x weighted avg 13.09 ft wide x avg 2.3 inches deep (including a remaining pile) = 125 CY of sediment and flood debris remaining on surface of alley
- 435.6 LF x 17.1 FT wide x avg 4 inch deep + 591.7 LF (not the entire segment) x avg 16 ft wide x avg 4 inch deep = 209 CY alley surface damaged to sub-grade

Location 1C - Alley south of Park St, east of 4th Ave, and from 4th Ave to 5th Ave: (two segments; 127 LF x 16 FT wide east of 4th Ave, and 458 LF x 16 FT wide from 4th Ave to 5th Ave = total of 585 LF x 16 FT wide)
- (no remaining sediment/flood debris to be removed)
- 585 LF x 16 ft wide x avg 4 inch deep = 116 CY alley surface damaged to sub-grade

Location 1D - Alley south of Prospect St, 4th Ave to 5th Ave: (alley is 454 LF segment x 16 FT wide)
- 244 LF x 20 ft wide (sediment layer is shorter, but 4 ft wider than the 16 ft alley) x avg 24 inches deep = 361 CY of sediment and flood debris remaining that was deposited on gravel-surfaced alley (leave at applicant's calculation of 362
- 454 LF x 16 ft wide x avg 4 inch deep = 90 CY alley surface damaged to sub-grade

Supporting documentation for this site can be found attached to PW 01095.

SCOPE OF WORK:

Current Version:
***** Version 2 *****

Work To Be Completed:

Site 1, Locations 1A - 1D

Applicant will use contract labor and equipment to remove remaining sediment, flood debris, and damaged base, and to add base and surface-course gravel as required to bring the surfacing of each alley up to the level required to carry th
Applicant has provided Town's requirement (Attachment 5) that alleys be "all-weather surfaced", but adequate surfacing is not detailed in the requirement.

Applicant does not have and cannot cost-effectively produce the sub-surface borings and traffic counts normally used to determine base and surface course requirements for a specific street or alley.

In comparison with requirements for other gravel-surfaced streets, specifically township roads in South Dakota, that handle traffic not greatly heavier or more frequent than loaded garbage trucks in Lyons, the project specialist has agreed
disaster condition that these alleys require a base course of six inches of base gravel and a surface course of two inches of surface gravel.

Applicant also has provided the Town's specification (see Attachments 6 and 7 – Lyons Design and Standards – Title 10 – Subdivision Regulations) that minimum width of alleys is governed by that for driveways serving two or more dwell
16 FT. Alley repairs in this project worksheet are to repair each alley to 16 FT wide, or the pre-flood width, whichever is greater. Accordingly, each alley repair on this project worksheet includes:
- removal of remaining sediment and flood debris (as shown for each specific location on Attachment 3)
- excavation of an average of four inches of surface and base that were damaged by incorporation of sediment and flood debris by emergency work and emergency access during the incident period
- scarification and recompaction of the sub-grade
- repair of remaining soft spots (estimated by inspection of portions of three of the alleys to average 10% of the surface area of each damaged alley)
- replacement of six inches of base gravel (at applicant's average of 1.6 tons/CY)
- replacement of two inches of surface gravel (at applicant's average of 1.4 tons/CY)

Location 1A - Alley south of Park St west of 2nd Ave:
(Rebuild to pre-flood width of 19 FT)
- Remove and export sediment and flood debris = 292 CY
- Excavate damaged surface to sub-grade = 65 CY
- Scarify and compact sub-grade = 277 LF x 19 FT wide = 585 SY
- Repair remaining soft spots in sub-grade = estimated 10% of 585 SY = 58.5 SY
- Supply and install 6 inch deep base gravel = (277 LF x 19 FT wide x 6 inch)(1/27)(1.6 tons/CY) = 156 tons
- Supply and install 2 inch deep surface gravel = (277 LF x 19 FT wide x 2 inch)(1/27)(1.4 tons/CY) = 45.5 tons

Location 1B – Alley south of Evans St, from 2nd Ave to 5th Ave (four alley segments)
These four segments total 1348.3 LF at weighted average 13.09 FT pre-flood width. Alleys are to be rebuilt per applicant's specifications for streets and alleys to pre-flood width or 16 FT wide, whichever is greater. Therefore, rebuild segr
912.7 LF x 16 FT wide.
- Remove and export sediment and flood debris = 125 CY
- Excavate damaged surface to sub-grade = 209 CY
- Scarify and compact sub-grade = (435.6 LF x 17.1 FT wide + 912.7 LF x 16 FT)/9 = 2450 SY (use applicant's total; rounds to 2451 SY)
- Repair remaining soft spots in sub-grade = estimated 10% of 2451 SY = 245.1 SY
- Supply and install 6 inch deep base gravel = ((435.6 LF x 17.1 FT wide + 912.7 LF x 16 FT wide) x 6 inch)(1/27)(1.6 tons/CY) = 653 tons (use applicant's total; rounds to 652 tons)

- Supply and install 2 inch deep surface gravel = ((435.6 LF x 17.1 FT wide + 912.7 LF x 16 FT wide) x 2 inch)(1/27)(1.4 tons/CY) = 191 tons (use applicant's total; rounds to 190 tons)

Location 1C - Alley south of Park St, east of 4th Ave, and from 4th Ave to 5th Ave: (two segments; 127 LF x 16 Ft wide east of 4th Ave, and 458 LF x 16 FT wide from 4th Ave to 5th Ave = 585 LF x 16 FT wide)
- Excavate damaged surface to sub-grade = 116 CY
- Scarify and compact sub-grade = 585 LF x 16 FT wide = 1040 SY
- Repair remaining soft spots in sub-grade = estimated 10% of 1040 SY = 104 SY
- Supply and install 6 inch deep base gravel = (585 LF x 16 FT wide x 6 inch)(1/27)(1.6 tons/CY) = 277 tons
- Supply and install 2 inch deep surface gravel = (585 LF x 16 FT wide x 2 inch)(1/27)(1.4 tons/CY) = 81 tons

Location 1D - Alley south of Prospect St, 4th Ave to 5th Ave: (alley is 454 LF segment x 16 FT wide)
- Remove and export sediment and flood debris = 361 CY (use applicant's calculation; rounds to 362 CY)
- Excavate damaged surface to sub-grade = 90 CY
- Scarify and compact sub-grade = 454 LF x 16 FT wide = 807 SY
- Repair remaining soft spots in sub-grade = estimated 10% of 807 SY = 80.7 SY
- Supply and install 6 inch deep base gravel = (454 LF x 16 FT wide x 6 inch)(1/27)(1.6 tons/CY) = 215 tons
- Supply and install 2 inch deep surface gravel = (454 LF x 16 FT wide x 2 inch)(1/27)(1.4 tons/CY) = 63 tons

OTHER SUPPORTING DOCUMENTATION:
Documentation required in support of this SGA not directly attached may be found in the "Attachments and Comments" section of the sub grantee's RPA, including Payroll and Procurement policies, Insurance Policies, and other documen

RECORD RETENTION: As described in the 44 CFR 13:43 Applicant must maintain all work related records for a period of three (3) years from the applicant closure (final payment). All records relative to this project worksheet are subjec and the Comptroller General of the United States.

PROCUREMENT OF MATERIALS AND CONTRACTS FOR COMPLETION OF THIS PROJECT: The applicant is required to adhere to the applicable Federal, State or Local Procurement Laws, Rules and Regulations and maintain adeq purchasing of goods and materials and contracted services for projects approved under the FEMA Public Assistance program as stated in the 44 CFR 13:36. The applicant has advised they have/will follow their normal procurement proce

PERMITS: The Applicant must obtain all necessary Federal, State and Local Permits prior to the commencement of work. Noncompliance with this requirement may jeopardize eligibility and the receipt of federal funds.

HAZARD MITIGATION: No cost-effective mitigation identified for these alleys and streets.

INSURANCE: The applicant is aware that all projects are subject to an insurance review in accordance with 44 CFR Section 206.252 and 253, if applicable, and insurance determination will be made either as anticipated proceeds or actu insurance policy that may affect the total amount of the project.

GRANT CONDITIONS FOR SINGLE FIXED ESTIMATE SUBGRANT:
Subgrantee agrees to fund any overrun associated with completion of the approved Scope of Work.

GRANT CONDITIONS FOR CONSOLIDATED FIXED ESTIMATE:
Additional subgrants can be included in this consolidation during the 12 months following the date of declaration. Subgrantee agrees to fund any overrun associated with completion of the work.

COST ESTIMATE VALIDATION
The subgrantee provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable for the work to be performed.

DIRECT ADMINISTRATION COSTS:
(5/17/14) Pursuant to DAP9525.9 subgrantee is requesting direct administrative costs that are directly chargeable to this specific project. Associated eligible work is related to administration of the PA project only and in accordance with 4 consistently and uniformly as direct costs in all federal awards and other subgrantee activities and are not included in any approved indirect cost rates.
Subgrantee has claimed DAC as summarized in Attachment 12, which shows the estimated total for this project worksheet. Subgrantee has been advised to track these costs in order to submit revisions as may be required.

Supporting documentation for this site can be found attached to PW 01095.

Site 11 of 13

DAMAGED FACILITY:

Park St from US Hwy 36 to 3rd Ave

COUNTY: Boulder

LOCATION:

Current Version:
***** Version 2 *****

Location: GPS location is at applicant's Town Hall at 432 5th Ave, Lyons, CO. at 40.22327, -105.27114.

GPS locations for each damage area are documented in Attachment 1 and below.

Site 2: Park St, US Hwy 36 to 3rd Ave

Location 2A - Park St (east), US Hwy 36 to 2nd Ave
East end of segment near Park St and Hwy 36 = 40.22146, -105.26429

Location 2B - Park St (west), 2nd Ave to 3rd Ave
West end of segment near Park St and 3rd Ave = 40.22153, -105.26750

LATITUDE: 40.22151 LONGITUDE: -105.26545

DAMAGE DESCRIPTION AND DIMENSIONS:

Current Version:
***** Version 2 *****

The south portions (roughly half) of Park St from U.S. Hwy 36 to 3rd Ave were under construction by a contractor (see contract in Attachment 14) for replacement of sanitary sewer and storm sewer when the flood occurred. FEMA Legal h portions of the street that remained open to traffic (the north 20 FT width of the east segment and the north 14 FT width of the west segment) when the flood occurred are eligible for FEMA reimbursement.

Location 2A – Park St (Applicant's "Sub Area A") from U.S. Hwy 36 to 2nd Ave

Street segment is 384 LF x 38 FT wide. However, as noted above only the north 20 FT wide of street was in service and is eligible. Flood damage included:
- Sub-grade eroded (and temporarily filled as emergency repair on LYONS09 (00041)) = 46 LF x 20 FT wide x avg 6 inch deep = 17 CY
- Road base eroded or damaged beyond repair = 384 LF x 20 Ft wide x 6 inch deep = 142 CY
- Asphalt paving eroded or damaged beyond repair = 384 LF x 20 FT wide x 3 inch deep = 71 CY

Location 2B – Park St (Applicant's "Sub Area B") from 2nd Ave to 3rd Ave
Street segment is 522.6 LF x 30 FT wide. However, as noted above only the north 14 FT wide of street was in service and is eligible. Flood damage included:
- Sub-grade eroded)and temporarily filled as emergency repair on LYONS09 (00041)) = 32 LF x 14 FT wide x avg 6 inch deep = 8 CY
- Road base eroded or damaged beyond repair = 522.6 LF x 14 Ft wide x 6 inch deep = 135 CY
- Asphalt paving eroded or damaged beyond repair = 522.6 LF x 214 FT wide x 3 inch deep = 68 CY

Supporting documentation for this site can be found attached to PW 01095.

SCOPE OF WORK:

Current Version:
***** Version 2 *****

Work to Be Completed

Applicant will use contract labor and equipment to repair the eligible north-side segments to pre-disaster condition by the following work at the two locations.

Location 2A – Park St (Applicant's "Sub Area A") from U.S. Hwy 36 to 2nd Ave (eligible north section = 384 LF x 20 FT wide)
- Remove temporary fill that replaced eroded sub-grade in one section = 17 CY
- Remove remaining damaged asphalt paving, avg 20% of road surface = (0.2 x 384 LF x 20 FT wide)/9 = 171 SY
- Remove damaged base and temporary fill, avg 9 inch thick = 384 LF x 20 FT wide x avg 9 inch deep = 213 CY
- Scarify and compact sub-base = (384 LF x 20 FT wide)/9 = 853 SY
- Stabilize remaining soft spots (determined by spot check to be approximately 10% of road surface) = 85.3 SY
- Supply and install road base gravel, 6 inch thick = (384 LF x 20 FT wide x 6 inch thick)x(1/27)x1.6 tone/CY = 228 tons
- Supply and install asphalt paving, 3 inch thick = (384 LF x 20 FT wide x 3 inch thick)x(143 lb/CF)(1/2000) = 137 tons

Location 2B – Park St (Applicant's "Sub Area B") from 2nd Ave to 3rd Ave (eligible north section = 522.6 LF x 14 FT wide)
- Remove temporary fill that replaced eroded sub-grade in one section = 8 CY
- Remove remaining damaged asphalt paving, avg 20% of road surface = (0.2 x 522.6 LF x 14 FT wide)/9 = 163 SY
- Remove damaged base and temporary fill, avg 9 inch thick = 522.6 LF x 14 FT wide x avg 9 inch deep = 203 CY
- Scarify and compact sub-base = (522.6 LF x 14 FT wide)/9 = 813 SY
- Stabilize remaining soft spots (determined by spot check to be approximately 10% of road surface) = 81.3 SY
- Supply and install road base gravel, 6 inch thick = (522.6 LF x 14 FT wide x 6 inch thick)x(1/27)x1.6 tone/CY = 217 tons

- Supply and install asphalt paving, 3 inch thick = (522.6 LF x 14 FT wide x 3 inch thick)x(143 lb/CF)(1/2000) = 131 tons

Supporting documentation for this site can be found attached to PW 01095.

Site 12 of 13

DAMAGED FACILITY:

LYONS30

COUNTY: Boulder

LOCATION:

Current Version:
***** Version 2 *****

Location: includes roadways generally located in or immediately adjacent to the confluence area of the North and South St Vrain Creeks as identified in the attached location maps; GPS locations are identified in Attachment 4a and in Exhibits 4b through 4g. Seven damage locations are:

Location 1- Park St - 4th Ave to 5th Ave & to Creek Exhibit 2a.
GPS: Park St at 4th Ave = 40.22151, -105.26995

Location 2 - Evans St west of 5th Ave_Exhibit 4a
GPS: Evans St at 5th Ave (east end of segment) = 40.22252, -105.27171

Location 3 - Evans St 4th Ave to 5th Ave_Exhibit 4b
GPS: Center of segment = 40.22254, -105.27083

Location 4 - Evans St at 4th Ave_Exhibit 4c
GPS: Intersection of Evans St and 4th Ave = 40.22274, -105.26987

Location 5 - 4th Ave_Exhibit 6
GPS: Center of segment = 40.22127, -105.26996

Location 6 - 3rd Ave from Evans St to Alley and 3rd Ave from Alley to Park St_Exhibits 7 & 2c
GPS: Center of segment = 40.22201, -105.26748

Location 7 - Prospect St 4th Ave to 5th Ave_Exhibit 11
GPS: Center of segment = 40.22048, -105.27088
LATITUDE: 40.22321 LONGITUDE: -105.27119

DAMAGE DESCRIPTION AND DIMENSIONS:

Current Version:
***** Version 2 *****

During the incident period severe rainstorms resulted in an estimated 500-year flow rate in the North and South Branches of St. Vrain Creek which converge in the Town of Lyons. The flooding caused extensive damage to improved prope particular streets in the confluence area.

This project worksheet covers flood damage to the seven identified segments of the applicant's streets. These street segments are owned and maintained by the applicant, and are not on the Federal Aid System. The street elements liste flooding and/or as an unavoidable result of emergency access and installation of temporary emergency repairs and emergency protective measures.

The results of field inspections conducted by teams including representatives of FEMA/FEMA Corps, Grantee, and Sub Grantee are documented in attachment 4a. The detailed sketches, damage dimensions and related photographic doc through 4g.

Location 1 - Park St 4th Ave to 5th Ave & to Creek_Exhibit 2a:
Item 1: 431.6 LF x 24 feet wide x 3 inch thick = 1151 SY plus end flares at match to cross street = 1200 SY of asphaltic concrete paving from 4th Ave to 5th Ave was damaged by floodwater flow and by emergency protective measures wo
Item 2: 446.6 LF x avg 22 ft wide x 3 inch thick = 176 tons asphaltic concrete paving from 4th Ave to creek was washed out.
Item 3: 446.6 LF x avg 22 feet wide x 6 inch thick = 265 tons aggregate base course from 4th Ave to Creek was washed out.
Item 4: Varying depths of earthen sub-base that was washed out or damaged was replaced as a temporary repair (on separate PW Ref # LYONS09 EPM Temp Measures_ Water, Sewer, and Roads_Residential), and quantity could not b Estimate = 200 CY to be added or removed for permanent repair to pre-disaster grade.
Item 5: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built drawings.

Location 2 - Evans St West of 5th Ave_Exhibit 4a:
Item 1: 197.9 LF x 24 feet wide x 3 inch thick = 85 tons asphaltic concrete paving was washed out.
Item 2: 197.9 LF x 24 feet wide x 6 inch thick = 128 tons aggregate base course was washed out or damaged.
Item 3: Varying depths of earthen sub-base that was washed out or damaged was replaced as a temporary repair (on separate PW Ref # LYONS09 EPM Temp Measures_ Water, Sewer, and Roads_Residential), and quantity could not b = 760 CY to be added or removed for permanent repair to pre-disaster grade.
Item 4: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built drawings.

Location 3 - Evans St from 4th Ave to 5th Ave_Exhibit 4b:
Item 1: 440 LF x 24 feet wide x 3 inch thick = 189 tons asphaltic concrete paving was washed out or damaged.
Item 2: 440 LF x 24 feet wide x 6 inch thick = 285 tons aggregate base course was washed out or damaged.
Item 3: Varying depths of earthen sub-base that was washed out or damaged was replaced as a temporary repair (on separate PW Ref # LYONS09 EPM Temp Measures_ Water, Sewer, and Roads_Residential), and quantity could not b = 740 CY to be added or removed for permanent repair to pre-disaster grade.
Item 4: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built drawings.

Location 4 - Evans St at 4th Ave_Exhibit 4c:
Item 1: 328 LF x avg 28 feet wide x 3 inch thick = 164 tons asphaltic concrete paving was washed out or damaged.
Item 2: 328 LF x 28 feet wide x 6 inch thick = 248 tons aggregate base course was washed out or damaged.
Item 3: Reinforced concrete retaining wall 65 LF x 10 ft high x 8 inch thick = 650 SF supporting street at edge of creek at southeast corner of this segment was undermined and damaged beyond repair.
Item 4: Reinforced concrete retaining wall 120 LF x 10 ft high x 8 inch thick = 1200 SF supporting street at edge of creek at south end of this segment was washed out.
Item 5: 300 LF of guardrail Type 3, including two Type 3B end anchorages, was washed out and damaged beyond repair.
Item 6: 28 LF of 18 inch diameter RCP storm drain was washed out and damaged beyond repair.
Item 7: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built drawings.

Location 5 - 4th Ave_Exhibit 6:
Item 1: 1061 LF x avg 28 feet wide x 3 inch thick = 531 tons asphaltic concrete paving was washed out or damaged.
Item 2: 1061 LF x avg 28 feet wide x 6 inch thick = 802 tons aggregate base course was washed out or damaged.
Item 3: Varying depths of earthen sub-base that was washed out or damaged was replaced as a temporary repair (on separate PW Ref # LYONS09 EPM Temp Measures_ Water, Sewer, and Roads_Residential), and quantity could not b = 460 CY to be added or removed for permanent repair to pre-disaster grade.
Item 4: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built drawings.

Location 6 - 3rd Ave (north segment, Exhibit 7) Evans St to Alley and 3rd Ave (south segment, Exhibit 2c) Alley to Park St:
Item 1: (north segment) 220 LF x 29 feet wide x 3 inch thick = 114 tons asphaltic concrete paving was washed out or damaged.
Item 2: (north segment) 220 LF x 29 feet wide x 6 inch thick = 172 tons aggregate base course was washed out or damaged.
Item 3: (south segment) 153 LF x 26 feet wide x 3 inch thick = 71 tons asphaltic concrete paving was washed out or damaged.
Item 4: (south segment) 153 LF x 26 feet wide x 6 inch thick = 108 tons aggregate base course was washed out or damaged.
Item 5: (south segment) Varying depths of earthen sub-base that was washed out or damaged was replaced as a temporary repair (on separate PW Ref # LYONS09 EPM Temp Measures_ Water, Sewer, and Roads_Residential), and qua field inspection. Est = 210 CY to be added or removed for permanent repair to pre-disaster grade.
Item 6: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built drawings.

Location 7 - Prospect St 4th Ave to 5th Ave_Exhibit 11
Item 1: 456 LF x 32 feet wide x 3 inch thick = 261 tons asphaltic concrete paving was washed out or damaged.
Item 2: 456 LF x 32 feet wide x 6 inch thick = 394 tons aggregate base course was washed out or damaged.
Item 3: Varying depths of earthen sub-base that was washed out or damaged was replaced as a temporary repair (on separate PW Ref # LYONS09 EPM Temp Measures_ Water, Sewer, and Roads_Residential), and quantity could not b = 240 CY to be added or removed for permanent repair to pre-disaster grade.
Item 4: Undetermined signage and striping were lost or damaged; replacement to be determined by as-built drawings.

Supporting documentation for this site can be found attached to PW 01101.

SCOPE OF WORK:

Current Version:
***** Version 2 *****

WORK TO BE COMPLETED:

Applicant will use contract labor and equipment to repair street damage at each of these seven locations to pre-disaster condition when the 50% rule for repair vs. replacement is not triggered, and for repair plus upgrade to the applicant's rule is triggered.

For streets on which repair vs. replacement is over 50% and the street will be replaced entirely, the applicant intends to upgrade to comply with the Town's Codes and Standards for streets.

These Codes and Standards are appropriate to the application, reasonable, and have been uniformly applied since adoption in 1986 on jobs initiated for significant street repair. See Attachments 9a - 9c and Attachment 10 for the Town o

and for documentation that the Codes and Standards were formally adopted, implemented, and always enforced. Typical street cross-section to meet the Standards is shown in Figure 3-8(a) in Attachment 10.

For locations at which cost of repair vs. replacement is over 50%, additions of applicant's Codes and Standards is triggered and includes:
1. Add a combination concrete curb and gutter full length, both sides, of streets at Locations 2,3,5,6,7 = 4845 LF of curb and gutter (uses the six-inch thick concrete "Hollywood Curb" shown in Attachment 10).
2. Increase width of streets to minimum required by code = 34 FT wide flowline to flowline = addition of approximately 1699 SY of streets surface.
3. Add storm drains and connections to the drains where required.
4. Add concrete pans at alley entrances.

See Attachment 11 for calculations to evaluate for applicability of the 50% rule. Where 50% rule is not triggered, repair will be to pre-disaster condition, as shown for the particular location in Attachment 5a. Where the 50% rule is triggere upgrade to applicant's Codes and Standards, as shown for the particular location in Attachment 5b.

Attachment 5c is the source of the detailed calculation of tons of asphalt, base, and length of curbs and gutters required for locations that include upgrades to codes and standards. Those calculations include extra base aggregate, asphal match cross streets; reduction of asphalt width to account for the 37 inch wide curb/gutter combination; reduction of asphalt paving where alley pans or cross-street pans are used, etc. These adjustments are shown in Attachment 5c.

Location 1 (West 431.6 LF), Park St from 4th Ave to 5th Ave:
The lesser damage on this segment can be repaired by milling 2 inches of asphalt surface and overlaying with asphalt:
Item 1: Mill and overlay 431.6 LF x 24 feet wide x 2 inch thick = 1151 SY plus end flares to match cross street = 1200 SY mill and overlay with asphaltic concrete

Location 1 (East 446.6 LF), Park St from 4th Ave to Creek:
As shown in Attachment 11, 100% of asphalt and base were damaged, so will be repaired plus upgraded to codes and standards as shown in Attachment 5b.
Item 2: Replace asphaltic concrete paving and widen to 34 FT = 272 tons as calculated in Attachment 5c
Item 3: Replace aggregate base course and widen to 34 FT = 488 tons
Item 4: Export/import onsite material to return sub-base to pre-disaster grade = 200 CY
Item 5: Replace signage and striping per as-built drawings

Location 2, Evans St west of 5th Ave:
All base and asphalt surfacing and avg 6 ft depth of sub-base were lost (sub-base lost was replaced on LYONS09 (00041) emergency repairs PW); 760 CY sub-base remains to be replaced with acceptable-quality material).
Damage was 100% of both base and asphalt, so will be repaired plus upgraded to codes and standards, as shown in Attachment 5b.
Item 1: Replace asphaltic concrete and widen to 34 FT = 130 tons, as calculated in Attachment 5c
Item 2: Replace aggregate base course and widen to 34 Ft = 234 tons
Item 3: Add curbs and gutters both sides = 459 LF
Item 4: Export/import onsite material to return sub-base to pre-disaster grade = 760 CY
Item 5: Replace signage and striping per as-built drawings

Location 3, Evans St 4th Ave to 5th Ave
As shown in Attachment 11, 100% of asphalt and base were damaged, so will be repaired plus upgraded to codes and standards, as shown in Attachment 5b.
Item 1: Replace asphaltic concrete and widen to 34 FT = 240 tons
Item 2: Replace aggregate base course and widen to 34 FT = 434 tons
Item 3: Add curbs and gutters both sides = 897 LF
Item 4: Export/import onsite material to return sub-base to pre-disaster grade = 740 CY
Item 5: Replace signage and striping per as-built drawings

Location 4, Evans St at 4th Ave:
As shown in Attachment 11, 100% of asphalt and an estimated 20% of base were damaged by the flood. The calculation shows that repair of asphalt and base represents 86.1% of replacement cost, so the 50% rule is triggered, and 100
However, Location 4 width is constrained by adjacent retaining wall on creek side and by private property on the other side, so applicant will not widen or add curbs and gutters at this location. Will be repaired to pre-disaster condition as s
Item 1: Replace asphaltic concrete to pre-disaster width of 28 Ft = 164 tons
Item 2: Replace aggregate base course to pre-disaster width of 28 FT = 248 tons
Item 3: Remove and replace damaged retaining wall = 650 SF x 8 inch thick
Item 4: Replace destroyed retaining wall = 1200 SF x 8 inch thick
Item 5: Replace damaged and lost guardrail Type 3 with end anchorages = 300 LF
Item 6: Replace damaged 18 inch diameter RCP storm drain = 28 LF
Item 7: Replace signage and striping per as-built drawings

Location 5, 4th Ave:
As shown in Attachment 11, 615 LF x 28 Ft wide of 1061 LF x 28 FT wide = 58.0% of asphalt and base were damaged by the flood, so the 50% rule is triggered and 100% repair is eligible. Will be repaired plus upgraded to codes and sta
Item 1: Replace asphaltic concrete and widen to 34 FT = 521 tons
Item 2: Replace aggregate base course and widen to 34 FT = 944 tons
Item 3: Add curbs and gutters both sides = 2056 LF
Item 4: Add four six-inch thick concrete pans at alley entrances = 624 SF
Item 5: Add one six-inch thick concrete cross-street drainage pan = 120 SF
Item 6: Export/import onsite material to return sub-base to pre-disaster grade = 460 CY
Item 7: Replace signage and striping per as-built drawings

Location 6, 3rd Ave from Park St to Evans St:
As shown in Attachment 11, 100% of asphalt and an estimated 20% of base were damaged by the flood. Calculation in Attachment 11 shows that these total 88.3% of the cost of the damaged elements, so the 50% rule is triggered and 1
upgraded to codes and standards, as shown in Attachment 5b.
Item 1: Replace asphaltic concrete and widen to 34 FT = 130 tons
Item 2: Replace aggregate base course and widen to 34 FT = 235 tons
Item 3: Add curbs and gutters both sides = 487 LF
Item 4: Add two six-inch thick concrete pans at alley entrances = 312 SF
Item 5: Export/import onsite material to return sub-base to pre-disaster grade = 210 CY
Item 6: Replace signage and striping per as-built drawings

Location 7, Prospect St from 4th Ave to 5th Ave
As shown in Attachment 11, 100% of asphalt and an estimated 20% of base were damaged by the flood. Calculation in Attachment 11 shows that these total 88.4% of the cost of the damaged elements, so the 50% rule is triggered and 1
upgraded to codes and standards, as shown in Attachment 5b.
Item 1: Replace asphaltic concrete and widen to 34 FT = 249 tons
Item 2: Replace aggregate base course and widen to 34 FT = 455 tons
Item 3: Add curbs and gutters both sides = 946 LF
Item 4: Export/import onsite material to return sub-base to pre-disaster grade = 240 CY
Item 5: Replace signage and striping per as-built drawings

Associated requirements for return to pre-disaster condition or addition of Codes and Standards are shown for each location in applicant's cost estimate (Attachment 5a, Scope and Cost Estimate for Repair to Pre-Disaster Condition or Att
Plus Codes and Standards). Costs are based on applicant's historical unit pricing, and have been validated by FEMA. Project Specialist or other FEMA personnel have verified scope quantities.
The associated requirements include:
1. Demolition of existing asphalt where damaged sections remain
2. Installation of asphaltic concrete patching at intersections and joints with pre-existing pavement
3. Grading to re-establish street-side ditches and drainage destroyed by flood
4. Temporary seeding and mulching during construction
5. Permanent seeding required for permanent erosion control

Total cost to repair Locations 1 West and 4 to pre-disaster condition and repair plus upgrade to Codes and Standards at Locations 1 East,2,3,5,6 as summarized in Attachment 12 = $1,157,902.02.

ADDITIONAL COST TO UPGRADE TO CODES AND STANDARDS:
- Cost to repair all locations only to pre-disaster condition (Attachment 5a) = $758,015.00
- Cost to repair plus addition of Codes and Standards (Attachment 12) = $1,157,902.02
- Additional cost for Codes and Standards = $399,887.02

FEMA has validated the cost estimates provided by the applicant as noted in the CEF in Attachment 6 and in Attachment 13.

SCOPE NOTES:
OTHER SUPPORTING DOCUMENTATION: Documentation required in support of this SGA not directly attached may be found in the “Attachments and Comments” section of the sub grantee's RPA, including Payroll and Procurement pc
documentation.

RECORD RETENTION: As described in the 44 CFR 13:43 Applicant must maintain all work related records for a period of three (3) years from the applicant closure (final payment). All records relative to this project worksheet are subject
and the Comptroller General of the United States.

PROCUREMENT OF MATERIALS AND CONTRACTS FOR COMPLETION OF THIS PROJECT: The applicant is required to adhere to the applicable Federal, State or Local Procurement Laws, Rules and Regulations and maintain adeq
purchasing of goods and materials and contracted services for projects approved under the FEMA Public Assistance program as stated in the 44 CFR 13:36. The applicant has advised they have/will follow their normal procurement proce

PERMITS: The Applicant must obtain all necessary Federal, State and Local Permits prior to the commencement of work. Noncompliance with this requirement may jeopardize eligibility and the receipt of federal funds.

WORK IN WATER: Replacement of the retaining wall at Location 4 will require work immediately adjacent to or in North St. Vrain Creek. The applicant and/or their contractors must obtain and comply with the appropriate federal, state ar
Army Corps of Engineers (USACE) under Sec. 404 of the Clean Water Act, and are responsible for contacting the USACE Denver Regulatory Office at (303) 979-4120 to determine if flood-related activity lies within the Corps' regulator

INSURANCE: The applicant is aware that all projects are subject to an insurance review in accordance with 44 CFR Section 206.252 and 253, if applicable, and insurance determination will be made either as anticipated proceeds or actu
insurance policy that may affect the total amount of the project.

GRANT CONDITIONS FOR SINGLE FIXED ESTIMATE SUBGRANT: Subgrantee agrees to fund any cost overruns associated with completion of the approved Scope of Work.

GRANT CONDITIONS FOR CONSOLIDATED FIXED ESTIMATE: Additional subgrants can be included in this consolidation during the 12 months following the date of declaration. Subgrantee agrees to fund any overruns associated with

COST ESTIMATE VALIDATION

The Subgrantee provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable for the work to be performed.

DIRECT ADMINISTRATION COSTS:
Pursuant to DAP9525.9 subgrantee is requesting direct administrative costs that are directly chargeable to this specific project. Associated eligible work is related to administration of the PA project only and in accordance with 44 CFR 13. uniformly as direct costs in all federal awards and other subgrantee activities and are not included in any approved indirect cost rates.

Subgrantee has claimed DAC as summarized in Attachment 7, which shows the estimated total for this project worksheet. Subgrantee has been advised to track these costs in order to submit revisions as may be required.

STRATEGIC FUNDS MANAGEMENT:
The applicant intends to begin work within 180 days of the approval of this project. Therefore, SFM will not be applicable.

Supporting documentation for this site can be found attached to PW 01101.

Site 13 of 13

DAMAGED FACILITY:

Lyons Wastewater Treatment Plant

COUNTY: Boulder

LOCATION:

Current Version:
****** Version 2 ******

Location Lyons Wastewater treatment plant is located at 198 2nd Avenue on the south side of the St Vrain Creek in Lyons, CO.
Plant GPS: Lat 40.22005, Long -105.26443

LATITUDE: 40.22005 LONGITUDE: -105.26443

DAMAGE DESCRIPTION AND DIMENSIONS:

Current Version:
****** Version 2 ******

During the incident period severe rainstorms estimated to exceed a 500-year rainfall event resulted in a near 500-year flow rate in the North and South Branches of St. Vrain Creek which converge in the Town of Lyons to form the mainste the flooding is available in an attachment to the applicant's RPA ("4145 - Lyons - Cause and Effect of Damages 02-04-2014"). The flooding caused very extensive damage to the Town's Waste Water Treatment Plant located on the South Avenue causing the plant to be taken out of service until emergency repairs under LYONS11 could be accomplished to restore basic service. The 2nd Avenue Bridge was obstructed by debris that caused the creek to flow around the sout the plant grounds and the south side of the plant site. Major components of the plant were submerged for an extended period of time and could not be repaired. Damages included the ventilation system, A/C system , influent pumps (2 - 6 screen in the headworks, a concrete pad (10ft x 20ft x 6 inch = 3.7 CY) for an emergency generator was washed away, the UV treatment building (20ft x 14ft = 294 SF) and equipment were damaged beyond repair, the 8 inch x 175ft long headwall (12ft x 8ft x 1ft = 3.5 CY) and manhole (48 inch), the sludge drying bed perimeter wall (228ft long x 1.5ft tall x 1ft wide = 12.6 CY) and skid strips (640 SF) were washed out, site fencing, personnel gates (3- 6ft internal chain link s and a vehicle gate (6ft tall x 22ft wide) with an access control system were damaged, exterior pole mounted electric lighting and underground wiring were damaged, erosion occurred to the plant yard (650ft long x 50ft wide x 4.5ft deep = long x 20ft wide x 4.5 inches deep = 117 CY), and asphalt paved driveway (175ft long x 18ft wide x 8 inches deep = 141 tons) was damaged. The Clarifier, Dewatering Facility and Rotary Drum and Thickener Building did not incur damage

Supporting documentation for this site can be found attached to PW 01094.

SCOPE OF WORK:

Current Version:
****** Version 2 ******

Work To Be Completed:

The Applicant will employ contract services to restore the Wastewater Treatment Plant to its original Design, Function and Capacity by replacing the damaged ventilation system, A/C unit, 2-6 inch 180 gpm electric influent pumps and a se replace 10 ft x 20 ft x 6 inch concrete emergency generator pad, replace 20 ft x 14 ft (294 SF) UV building and UV equipment, replace 175 ft of 8 inch PVC outfall line, replace 12 ft x 8 ft x 1 ft RC headwall and clean and adjust 48 inch RC LF and bed concrete skid strips -640 SF at
drying bed, replace 1006 lf of 6 ft chain link fencing, 3-6 ft gates and one 6 ft x 22 ft vehicle gate with
power operator and control station, replace one exterior pole mounted electric light and underground wiring, clean sediment from site-1400 cy and replace eroded soil in area approximately 650 ft x 50 ft x avg 4.5 ft (5417 cy), replace lost r replace 175 ft x 18 ft x 8 inch asphalt driveway (141 tons) and other miscellaneous items of work as shown on the attached estimate required to repair the site.

See attached PW15 Master Cost Estimated Worksheet for estimated cost breakdown.

SCOPE NOTES:

1. RECORD RETENTION: Complete records and cost documents for all approved work must be maintained for at least 3 years from the date the last project was completed or from the date final payment was received, whichever is later. documentation associated with this project.

2. SUPPORTING DOCUMENTATION: 20% or more of the documentation to support this project has been reviewed and verified by the Applicant and Project Specialist for eligibility and correctness.

3. PROCUREMENT: The applicant is required to adhere to local, State and Federal Government Procurement rules and regulations and maintain adequate records to support the basis for all purchasing of goods and materials and contra Public Assistance program, as stated in 44 CFR 13.36. The applicant has advised they have/will follow their normal procurement procedures.

4. PERMITS: The PA Project Specialist has advised the Applicant that it is their responsibility to obtain all applicable local, state and federal permits prior to any construction or debris disposal activity referenced on this project. Applicant h and maintaining these documents may jeopardize funding.

5. INSURANCE: The applicant is aware that all projects are subject to an insurance review as stated in 44 C.F.R. Sections 206.252 and 206.253.If applicable an insurance determination will be made either as anticipated proceeds or actu insurance policy that may affect the total amount of the project.

6. DIRECT ADMINISTRATIVE COSTS: The sub-grantee is requesting Direct Administrative Costs (DAC) that is directly chargeable to this specific project. Associated eligible work is related administration of the PA project only and in acc treated consistently and uniformly as
direct costs in all federal awards and other sub-grantee activities and are not included in any approved indirect cost rates. These costs have been estimated for Work to be Completed at 40 hours at an average rate of $27.78/hr including f

7. HAZARD MITIGATION MEASURES: This project is intended to be include in the PAAP program. No cost effective practical mitigation measures have been identified.

8. Grant Conditions for Single Fixed Estimate Subgrant: Subgrantee agrees to fund any cost overruns associated with completion of the approved Scope of Work.

9. Grant Conditions for Consolidated Fixed Estimate: Additional subgrants can be included in this consolidation during the 12 months following the date of declaration. Subgrantee agrees to fund any overruns associated with the completi

10. Cost Estimate Validation: The Subgrantee provided the estimate for this PW. FEMA validated the estimate and found it to be reasonable for the work to be performed.

11. Engineering services were estimated at 3%.

Supporting documentation for this site can be found attached to PW 01094.

Does the Scope of Work change the pre-disaster conditions at the site? ☐ Yes ☑ No	Special Considerations included? ☑ Yes ☐ No
Hazard Mitigation proposal included? ☑ Yes ☐ No	Is there insurance coverage on this facility? ☑ Yes ☐ No

PROJECT COST

ITEM	CODE	NARRATIVE	QUANTITY/UNIT
		*** Version 0 ***	
		Work To Be Completed	
1	9201	PAAP Fixed Estimate (no value, tracking purposes only)	1/OTH
2	9000	CEF Cost Estimate (See Attached Spreadsheet)	1/LS
		Direct Subgrantee Admin Cost	
3	9901	Direct Administrative Costs (Subgrantee)	1/LS
		*** Version 1 ***	
		Other	
4	9999	Site 1: Fixed Estimate Amendment	1/LS

5	9202	PAAP Consolidated Fixed Estimate (no value, tracking purposes only)	1/LS
6	9999	Site 2: Fixed Estimate PW 1053	1/LS
7	9999	Eligible Cost for PW 1053	1/LS
8	9202	PAAP Consolidated Fixed Estimate (no value, tracking purposes only)	1/LS
9	9999	Site 3: Fixed Estimate PW 1095	1/LS
10	9999	Eligible Costs for PW 1095	1/LS
11	9202	PAAP Consolidated Fixed Estimate (no value, tracking purposes only)	1/LS
12	9999	Site 4: Fixed Estimate PW 1101	1/LS
13	9999	Eligible Costs for PW 1101	1/LS
14	9202	PAAP Consolidated Fixed Estimate (no value, tracking purposes only)	1/LS
15	9999	Site 5: Fixed Cost Estimate	1/LS
16	9999	Eligible Costs for PW 1094	1/LS
17	9202	PAAP Consolidated Fixed Estimate (no value, tracking purposes only)	1/LS
18	0000	Insurance Adjustments - 5900/5901	0/LS
		*** Version 0 ***	
19	5901	Deduct Anticipated Insurance Proceeds	1/LS
20	0909	Hazard Mitigation Proposal	1/LS

PREPARED BY Brandon Krueger	TITLE Project Specialist
APPLICANT REP. Victoria Simonsen	TITLE Administrator

LYONS : PA-08-CO-4145-PW-01078

Conditions Information

Review Name	Condition Type	Condition Name	Description
Final Review	Other (EHP)	Clean Water Act (CWA)	The applicant is responsible for verifying and compliance with all permit requirements, including permit conditions, pre-construction notifi requirements and regional conditions as provided by the US Army Corps of Engineers (USACE). The applicant is responsible for implem monitoring, and maintaining all Best Management Practices (BMP's) and Pre-Construction Notification (PCN) conditions of applicable Na Permits (NWP). This is to include any requirements per the Colorado Department of Public Health and Environment 401 Water Quality Certification for Clean Water Act permits.
Final Review	Other (EHP)	Standard Condition #3	If ground disturbing activities occur during construction, applicant will monitor ground disturbance and if any potential archeological resou discovered, will immediately cease construction in that area and notify the State and FEMA.
Final Review	Other (EHP)	Standard Condition #2	This review does not address all federal, state and local requirements. Acceptance of federal funding requires recipient to comply with al state and local laws. Failure to obtain all appropriate federal, state and local environmental permits and clearances may jeopardize feder funding.
Final Review	Other (EHP)	Standard Condition #1	Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other Laws and Executive Orders.
Final Review	Other (EHP)	National Historic Preservation Act (NHPA)	Gravel/borrow materials for work to be completed must be obtained from one of the following pre-approved sources: (SHPO approved so Licensed Pit, commercial source, contractor or county Stockpiles).
Final Review	Other (EHP)	Executive Order 11988 - Floodplains	The proposed Lyons Recreational Whitewater Park should be constructed in accordance with applicable floodplain development require and in accordance with applicable regulations. In accordance with CO NFIP regulations, the applicant must obtain a CLOMR and a flood development permit from Boulder County and submit these documents to the CO State NFIP Coordinators office prior to initiating constr The applicant must also obtain and submit a LOMR to the State NFIP Coordinator upon completion of the project. A U.S. Army Corps of Engineers (USACE) Section 404 Permit must be obtained prior to beginning construction associated with the project. Compliance with a stipulations stated in the USACE Section 404 permit is required for this project. The applicant must present all compliance documentatio FEMA prior to final project closeout.
Final Review	Other (EHP)	Executive Order 11988 - Floodplains	Applicant is responsible for coordinating with the local floodplain manager. All required permits should be maintained as part of the perm record.
Final Review	Other (EHP)	State Hazardous Materials and Solid Waste Laws	Debris must be appropriately separated and disposed of in an approved disposal site or landfill. Asphalt must be recycled as a blended b material or appropriately separated and disposed of in an approved disposal site or landfill in accordance with the CDPHE authorized wa management regulations. For any "Asbestos Containing Material", lead-based paint and/or other hazardous materials found during reme repair activities, the Applicant must comply with all Federal, State, and local abatement and disposal requirements. Applicants are respo ensuring contracted removal of hazardous debris also follows these guidelines.
Final Review	Other (EHP)	Endangered Species Act (ESA)	Conditions associated with the USFWS Programmatic Consultation: a. Design the project to avoid and minimize permanent and tempora impacts to riparian and adjacent upland habitats. b. Avoid or minimize the amount of concrete, riprap, bridge footings, and other "hard," impermeable engineering features within the stream channel and riparian or adjacent upland habitats. If riprap is used, bury the riprap th with native riparian vegetation where technically feasible. c. Where technically feasible, use bioengineering techniques to stabilize strear when stabilization of natural banks is needed. d. Minimize the number and footprint of access routes, staging areas, and work areas. e. I access routes, staging areas, and work areas within previously disturbed or modified non-habitat areas. f. Install limits of work fencing (e orange barrier netting or silt fencing), signage, or other visible markers to delineate access routes and the project area from habitats. Us fencing to enforce no-entry zones. g. Hold a preconstruction briefing for onsite personnel to explain the limits of work and other conserva measures. h. Follow regional stormwater guidelines and design best management practices (BMPs) to control contamination, erosion, a sedimentation, such as silt fences, silt basins, gravel bags, and other controls needed to stabilize soils in denuded or graded areas, durir after construction. i. Locate utilities along existing road corridors, and if possible, within the roadway or road shoulder. i. Bury overhead u whenever possible. ii. Directionally bore utilities and pipes underneath habitats whenever possible. j. Develop and implement a habitat re plan that addresses site preparation, planting techniques, control of non-native weeds, and use of native seed mixtures (see Appendix B Contact USFWS immediately by telephone at (303) 236–4773 if a Preble's is found alive, dead, injured, or hibernating within the project Contact the Service if any other listed species are found within the project area. l. To the maximum extent practicable, limit disturbing (e. crushing, trampling) or removing (e.g., cutting, clearing) all vegetation, such as willows, trees, shrubs, and grasses within riparian and ad upland habitats. i. Restrict the temporary or permanent removal of vegetation to the footprint of the project area. ii. Minimize the use of h machinery and use smaller equipment when possible. iii. Soil compaction: Temporarily line access routes with geotextiles or other mater especially in wet, unstable soils to protect roots and the seed bank. m. Locate, store, stage, operate, and refuel equipment outside of ripa adjacent upland habitats. n. During the Preble's active season (May 1 through November 1), work only during daylight hours to avoid dis Preble's nocturnal activities. o. Promptly remove waste to minimize site disturbance and avoid attracting predators. p. Use BMPs to limit construction-related disturbance, such as soil compaction, erosion, and sedimentation, and to prevent the spread of invasive weeds; i. S compaction: Establish one access route for workers, vehicles, and machinery, preferably along a previously disturbed surface or route. ii compaction: Temporarily line access routes with geotextiles or other materials, especially in wet, unstable soils. iii. Weed control: Wash a inspect vehicles and equipment before entering or leaving the project area so that they are free of noxious weed seeds and plant parts. i control: Use only weed free certified materials, including gravel, sand, top soil, seed, and mulch. q. Upon project completion, revegetate disturbed areas with native shrubs, trees, and grasses. Use only weed free material and native seed mixtures recommended by USFWS Identify conservation measures that were implemented to avoid and minimize potential impacts.

LYONS : PA-08-CO-4145-PW-01078			
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Final Review	Other (EHP)	Endangered Species Act (ESA)	The Town of Lyons will minimize impacts to Preble's Meadow Jumping Mouse, Ute ladies'-tresses, and Colorado butterfly plant by imple the following Conservation Measures during the design and construction of park system repairs and enhancements: 1. The Town or its c representative will contact the Service immediately by telephone at (303) 236–4773 if a Preble's is found alive, dead, injured, or hibernat the project area. They will also contact the Service if any other listed species are found within the project area. 2. The projects will be de avoid and minimize the permanent and temporary impacts to riparian and adjacent upland habitats when possible. a. The amount of con riprap, bridge footings, and other "hard," impermeable engineering features within the stream channel and riparian or adjacent upland ha be minimized and only used as necessary to protect structures. b. When appropriate, bioengineering techniques will be utilized to stabiliz banks. c. The number and footprint of access routes, staging areas, and work areas will be minimized. d. Access routes, staging areas, a areas will be located within previously disturbed or modified non-habitat areas. 3. Limits of work fencing (e.g., orange barrier netting or si fencing), signage, or other visible markers will be installed to delineate access routes and the project area from habitats. 4. Temporary m will be implemented to support construction activities to control the possibility of contamination such as remote vehicle maintenance and removal catchments for concrete wastes, stabilizing staging areas for construction, tracking pads to keep soils and sediment from leavin on vehicle tires, and other appropriate means to reduce the impacts of the construction. 5. Local and Regional stormwater guidelines an best management practices (BMPs) will be used to control contamination, erosion, and sedimentation, such as silt fences, silt basins, gra straw wattles, vegetation reinforcement mats and other controls needed to stabilize soils in denuded or graded areas, during and after construction. 6. To the maximum extent practicable, Lyons will limit disturbing (e.g., crushing, trampling) or removing (e.g., cutting, cleari vegetation, such as willows, trees, shrubs, and grasses within riparian and adjacent upland habitats. Lyons will re-use any native materia as rock or tree stumps and incorporate those into the project design to the extent practicable. a. Restrict the temporary or permanent rer vegetation to the footprint of the project area and protect any remaining vegetation within the general work area as feasible. b. Minimize heavy machinery and use smaller equipment when possible. c. Soil compaction: Temporarily line access routes with geotextiles or other materials, especially in wet, unstable soils to protect roots and the seed bank. 7. Weed control: a. Wash and inspect vehicles and equipn before entering or leaving the project area so that they are free of noxious weed seeds and plant parts. b. Use only weed free certified m including gravel, sand, top soil, seed, and mulch. 8. Revegetate all disturbed areas with native shrubs, trees, and/or grasses.
Final Review	Other (EHP)	Endangered Species Act (ESA)	Vegetation removal along the St. Vrain will be minimized during construction activities. Construction activities along the creek will be rest daytime hours only. The number of ingress and egress routes to the creek will be minimized and the routes will be clearly marked. When ingress/egress routes and material staging areas will be placed in previously disturbed areas devoid of vegetation. Best Management Pr for erosion, sedimentation, and noxious weed control will be utilized to minimize impacts to water quality during construction. All rip-rap u bank stabilization will be buried with topsoil above the ordinary high water mark and revegetated with a mix of native grasses and shrubs areas temporarily disturbed by construction activities will be revegetated.
Final Review	Other (EHP)	Clean Water Act (CWA)	The applicant is responsible for verifying and compliance with all permit requirements, including permit conditions, pre-construction notifi requirements and regional conditions as provided by the US Army Corps of Engineers (USACE). The applicant is responsible for implem monitoring, and maintaining all Best Management Practices (BMP's) and Pre-Construction Notification (PCN) conditions of applicable Na Permits (NWP). This is to include any requirements per the Colorado Department of Public Health and Environment 401 Water Quality Certification for Clean Water Act permits.
Final Review	Other (EHP)	Bald and Golden Eagle Protection Act (BGEPA)	Compliance with the Bald and Golden Eagle Act is required. PRIOR to initiating work, the Applicant must call Colorado Parks and Wildlif Conservation Coordinator (Dave Klute at 303-291-7320) and Sandy Vana Miller at the U.S. Fish and Wildlife Service (303-236-4773) receive guidance.
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EHP Review	Other (EHP)	State Hazardous Materials and Solid Waste Laws	Debris must be appropriately separated and disposed of in an approved disposal site or landfill. Asphalt must be recycled as a blended b material or appropriately separated and disposed of in an approved disposal site or landfill in accordance with the CDPHE authorized wa management regulations. For any “Asbestos Containing Material”, lead-based paint and/or other hazardous materials found during reme repair activities, the Applicant must comply with all Federal, State, and local abatement and disposal requirements. Applicants are respo ensuring contracted removal of hazardous debris also follows these guidelines.
EHP Review	Other (EHP)	Endangered Species Act (ESA)	Conditions associated with the USFWS Programmatic Consultation: a. Design the project to avoid and minimize permanent and tempora impacts to riparian and adjacent upland habitats. b. Avoid or minimize the amount of concrete, riprap, bridge footings, and other “hard,” impermeable engineering features within the stream channel and riparian or adjacent upland habitats. If riprap is used, bury the riprap th with native riparian vegetation where technically feasible. c. Where technically feasible, use bioengineering techniques to stabilize strear when stabilization of natural banks is needed. d. Minimize the number and footprint of access routes, staging areas, and work areas. e. L access routes, staging areas, and work areas within previously disturbed or modified non-habitat areas. f. Install limits of work fencing (e orange barrier netting or silt fencing), signage, or other visible markers to delineate access routes and the project area from habitats. Us fencing to enforce no-entry zones. g. Hold a preconstruction briefing for onsite personnel to explain the limits of work and other conserva measures. h. Follow regional stormwater guidelines and design best management practices (BMPs) to control contamination, erosion, a sedimentation, such as silt fences, silt basins, gravel bags, and other controls needed to stabilize soils in denuded or graded areas, durir after construction. i. Locate utilities along existing road corridors, and if possible, within the roadway or road shoulder. i. Bury overhead u whenever possible. ii. Directionally bore utilities and pipes underneath habitats whenever possible. j. Develop and implement a habitat re plan that addresses site preparation, planting techniques, control of non-native weeds, and use of native seed mixtures (see Appendix B Contact USFWS immediately by telephone at (303) 236–4773 if a Preble’s is found alive, dead, injured, or hibernating within the project Contact the Service if any other listed species are found within the project area. l. To the maximum extent practicable, limit disturbing (e. crushing, trampling) or removing (e.g., cutting, clearing) all vegetation, such as willows, trees, shrubs, and grasses within riparian and ad upland habitats. i. Restrict the temporary or permanent removal of vegetation to the footprint of the project area. ii. Minimize the use of h machinery and use smaller equipment when possible. iii. Soil compaction: Temporarily line access routes with geotextiles or other mater especially in wet, unstable soils to protect roots and the seed bank. m. Locate, store, stage, operate, and refuel equipment outside of ripa adjacent upland habitats. n. During the Preble’s active season (May 1 through November 1), work only during daylight hours to avoid dis Preble’s nocturnal activities. o. Promptly remove waste to minimize site disturbance and avoid attracting predators. p. Use BMPs to limit construction-related disturbance, such as soil compaction, erosion, and sedimentation, and to prevent the spread of invasive weeds; i. S compaction: Establish one access route for workers, vehicles, and machinery, preferably along a previously disturbed surface or route. ii compaction: Temporarily line access routes with geotextiles or other materials, especially in wet, unstable soils. iii. Weed control: Wash a inspect vehicles and equipment before entering or leaving the project area so that they are free of noxious weed seeds and plant parts. i control: Use only weed free certified materials, including gravel, sand, top soil, seed, and mulch. q. Upon project completion, revegetate disturbed areas with native shrubs, trees, and grasses. Use only weed free material and native seed mixtures recommended by USFWS Identify conservation measures that were implemented to avoid and minimize potential impacts.
EHP Review	Other (EHP)	Endangered Species Act (ESA)	The Town of Lyons will minimize impacts to Preble’s Meadow Jumping Mouse, Ute ladies’-tresses, and Colorado butterfly plant by imple the following Conservation Measures during the design and construction of park system repairs and enhancements: 1. The Town or its c representative will contact the Service immediately by telephone at (303) 236–4773 if a Preble’s is found alive, dead, injured, or hibernat the project area. They will also contact the Service if any other listed species are found within the project area. 2. The projects will be de avoid and minimize the permanent and temporary impacts to riparian and adjacent upland habitats when possible. a. The amount of con riprap, bridge footings, and other “hard,” impermeable engineering features within the stream channel and riparian or adjacent upland ha be minimized and only used as necessary to protect structures. b. When appropriate, bioengineering techniques will be utilized to stabiliz banks. c. The number and footprint of access routes, staging areas, and work areas will be minimized. d. Access routes, staging areas, a areas will be located within previously disturbed or modified non-habitat areas. 3. Limits of work fencing (e.g., orange barrier netting or si fencing), signage, or other visible markers will be installed to delineate access routes and the project area from habitats. 4. Temporary m will be implemented to support construction activities to control the possibility of contamination such as remote vehicle maintenance and removal catchments for concrete wastes, stabilizing staging areas for construction, tracking pads to keep soils and sediment from leavin on vehicle tires, and other appropriate means to reduce the impacts of the construction. 5. Local and Regional stormwater guidelines an best management practices (BMPs) will be used to control contamination, erosion, and sedimentation, such as silt fences, silt basins, gra straw wattles, vegetation reinforcement mats and other controls needed to stabilize soils in denuded or graded areas, during and after construction. 6. To the maximum extent practicable, Lyons will limit disturbing (e.g., crushing, trampling) or removing (e.g., cutting, cleari vegetation, such as willows, trees, shrubs, and grasses within riparian and adjacent upland habitats. Lyons will re-use any native materia as rock or tree stumps and incorporate those into the project design to the extent practicable. a. Restrict the temporary or permanent rem vegetation to the footprint of the project area and protect any remaining vegetation within the general work area as feasible. b. Minimize heavy machinery and use smaller equipment when possible. c. Soil compaction: Temporarily line access routes with geotextiles or other materials, especially in wet, unstable soils to protect roots and the seed bank. 7. Weed control: a. Wash and inspect vehicles and equipm before entering or leaving the project area so that they are free of noxious weed seeds and plant parts. b. Use only weed free certified m including gravel, sand, top soil, seed, and mulch. 8. Revegetate all disturbed areas with native shrubs, trees, and/or grasses.
EHP Review	Other (EHP)	Endangered Species Act (ESA)	Vegetation removal along the St. Vrain will be minimized during construction activities. Construction activities along the creek will be rest daytime hours only. The number of ingress and egress routes to the creek will be minimized and the routes will be clearly marked. When ingress/egress routes and material staging areas will be placed in previously disturbed areas devoid of vegetation. Best Management Pr for erosion, sedimentation, and noxious weed control will be utilized to minimize impacts to water quality during construction. All rip-rap u bank stabilization will be buried with topsoil above the ordinary high water mark and revegetated with a mix of native grasses and shrubs areas temporarily disturbed by construction activities will be revegetated.
EHP Review	Other (EHP)	Clean Water Act (CWA)	The applicant is responsible for verifying and compliance with all permit requirements, including permit conditions, pre-construction notifi requirements and regional conditions as provided by the US Army Corps of Engineers (USACE). The applicant is responsible for implem monitoring, and maintaining all Best Management Practices (BMP’s) and Pre-Construction Notification (PCN) conditions of applicable Na Permits (NWP). This is to include any requirements per the Colorado Department of Public Health and Environment 401 Water Quality Certification for Clean Water Act permits.
Insurance Review	Conditions (Grant Specific)	Insurance Requirement	Approval of this PW funding will be contingent upon the purchasing and/or maintaining building insurance in the amount of $204,056.95 contents insurance in the amount of $0.00 for the life of the facility, for the perils that caused the damage, regardless of where the damag located within the facility, at replacement cost value. The applicant must provide the Governor’s Authorized Representative (GAR) with a the Declaration Sheet containing the policy number and address of the insured property. The above requirement is assigned to: Bohn Pa Restroom and Shelter House = $6,332.50 Meadow Park Shelter House = $163,000.00 Bohn Park Concession Stand = $34,724.45

Internal Comments				
No.	Queue	User	Date/Time	Rev
31	Final Review	GUSS GWENDOLYN	12-16-2015 07:16 PM GMT	Final Reviewer finds eligi funding of this project wc performed all required pr required special consider permits to address EHP (cost documentation for th project. Task Force Lead Cleared for OLA Review.
30	OLA Review	BROMLEY-WENGER STACY	11-30-2015 04:40 PM GMT	Less than $1 million. OL
29	Final Review	DARABARIS JOHN	11-24-2015 05:50 PM GMT	Final Reviewer finds eligi funding of this project wc performed all required pr required special consider permits to address EHP (cost documentation for th

Internal Comments				
No.	Queue	User	Date/Time	Rev
				project. Task Force Lea Cleared for OLA Review.
28	EHP Review	ROSS PORTIA	11-05-2015 03:27 PM GMT	Cat G, 0% complete. To applicant will use force a repairs to town parks as replace shelters, restroo debris, place topsoil, and fields, replace irrigation p and two erosion channel area. The replacement c upgraded to fall-attenuati current codes and standa shelters, restrooms, conc pre-disaster condition, re baseball fields, RV site, a piping. The replacement upgraded to fall-attenuati current codes and standa kayak course with poles, McConnell recreation po excavated material to rep place a layer of rip rap o the embankment, and re Applicant will replace sec repair two concrete bridg to return the site to pre-d replace a rock slab retair steps and seating area, p sodded area, irrigation pi signage to return the site Applicant will replace sec replace post and dowel f the site to pre-disaster co two concrete bridge abut replace post and dowel f sod with irrigation piping site to pre-disaster condi rap and re-vegetate cree embankments to pre-disa Applicant proposes to ele Transformers above the they are re-installed. Site topsoil, and bio-engineer creek bank to prevent fut proposes to add addition embankment to protect th waters. - cwalz123 - 06/ *****Version 1 - This PW 1095, and 1101. Scope c applicant will use force a repairs to town parks as replace shelters, restroo debris, place topsoil, and fields, replace irrigation p and two erosion channel area. The replacement o upgraded to fall-attenuati current codes and standa shelters, restrooms, conc pre-disaster condition, re baseball fields, RV site, a piping. The replacement of playg to fall-attenuating surface and standards. Site 3, Ap poles, masts, and gates, ponds to pre-flood dimen repair an elevated trail en
27	Mitigation Review	MALCOLM GEORGE	11-04-2015 04:57 PM GMT	11/4/2015 - ***Version 2*
26	Mitigation Review	MALCOLM GEORGE	11-04-2015 03:48 PM GMT	10/6/14 This PW versior (including this PW): 0105 The mitigation comments unchanged. No mitigatic 01095. Mitigation was ac good construction practic Mitigation was accomplis sites for a total of $335,8 on PW 01101 through Co $357,712.97. The total r consolidated PW is $1,9: practices and codes and base scopes of work. Th hazard mitigation propos funding is subject to the p expressed through the P Procedures (PAAP) guid The hazard mitigation pr 406 Specialist
25	Insurance Review	JOHNSON KENNETH	11-03-2015 05:25 PM GMT	VERSION 2 – The dama documented for this PW insurance policy coverag or the insurance requirer

Internal Comments				
No.	Queue	User	Date/Time	Rev
24	Insurance Review	JOHNSON KENNETH	11-03-2015 04:25 PM GMT	VERSION 1 – The consc PW 1078 will not alter th comments, the insurance requirement. However, If vehicles, buildings, or co and maintained in an am funding. See 44 CFR 206
23	Initial Review	FULTON JANICE	11-02-2015 11:17 PM GMT	11/2/15 - initial review ag prepared to correct PW l consolidation of all PWs is no change to funding v
22	Initial Review	SCHNEIDER STEFANIE	10-19-2015 08:21 PM GMT	10-06-2014:Completed I work appears eligible. PV have all been consolidate project.
21	Initial Review	SCHNEIDER STEFANIE	10-19-2015 04:18 PM GMT	10-06-2014:Completed I work appears eligible. PV have all been consolidate project.
20	Amendment Review	THOMPSON JAMIE	04-09-2015 04:15 PM GMT	Grantee Time Extension
19	OLA Review	JOHNSON STEPHANIE	11-05-2014 02:52 PM GMT	DHS embargo until 11/5/
18	Final Review	SCHNEIDER STEFANIE	10-10-2014 06:51 PM GMT	Final Reviewer finds eligi funding of this project wc performed all required pr required special consider permits to address EHP cost documentation for th project. Task Force Lea Cleared for OLA Review.
17	Grantee Review	LAWSON LESTER	10-08-2014 11:56 AM GMT	Scope of work states tha for participation in the PA Work, however no ackno 10/8/14 - This is a conso All information, documen HMP. CEF, DAC must fo that is being consolidatec enter all information in th identified per line item fro and HMP are only identif inclusive of #01101, #01(
16	Grantee Review	LAWSON LESTER	10-07-2014 06:15 PM GMT	Scope of work states tha for participation in the PA Work, however no ackno
15	EHP Review	PATTERSON MOLLY	10-07-2014 05:40 PM GMT	Cat G, 0% complete. To applicant will use force a repairs to town parks as replace shelters, restroor debris, place topsoil, and fields, replace irrigation p and two erosion channel area. The replacement c upgraded to fall-attenuati current codes and standa shelters, restrooms, conc pre-disaster condition, re baseball fields, RV site, a piping. The replacement upgraded to fall-attenuati current codes and standa kayak course with poles, McConnell recreation po excavated material to rep place a layer of rip rap or the embankment, and re Applicant will replace sec repair two concrete bridg to return the site to pre-d replace a rock slab retair steps and seating area, p sodded area, irrigation pi signage to return the site Applicant will replace sec replace post and dowel fi the site to pre-disaster co two concrete bridge abut replace post and dowel fi sod with irrigation piping site to pre-disaster condi rap and re-vegetate cree embankments to pre-disa Applicant proposes to ele Transformers above the they are re-installed. Site topsoil, and bio-engineer creek bank to prevent fut proposes to add addition embankment to protect th waters. - cwalz123 - 06/ *****Version 1 - This PW 1095, and 1101. Scope c applicant will use force a

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				repairs to town parks as replace shelters, restroo debris, place topsoil, and fields, replace irrigation p and two erosion channel area. The replacement o upgraded to fall-attenuati current codes and standa shelters, restrooms, conc pre-disaster condition, re baseball fields, RV site, a piping. The replacement of playg to fall-attenuating surface and standards. Site 3, Ap poles, masts, and gates, ponds to pre-flood dimen repair an elevated trail e
14	Mitigation Review	MALONE JACK	10-06-2014 03:51 PM GMT	10/6/14 This PW versior (including this PW): 0105 The mitigation comments unchanged. No mitigatic 01095. Mitigation was a good construction practic Mitigation was accomplis sites for a total of $335,8 on PW 01101 through Co $357,712.97. The total r consolidated PW is $1,9 practices and codes and base scopes of work. Th hazard mitigation propos funding is subject to the p expressed through the P Procedures (PAAP) guid The hazard mitigation pr 406 Specialist
13	Mitigation Review	MALONE JACK	10-06-2014 03:19 PM GMT	The hazard mitigation pr 406 Specialist
12	Insurance Review	JOHNSON KENNETH	10-06-2014 02:46 PM GMT	VERSION 1 – The consc PW 1078 will not alter th comments, the insurance requirement. However, If vehicles, buildings, or co and maintained in an am funding. See 44 CFR 206
11	Cost Estimate Format Review	LEACH ERNEST	10-06-2014 02:29 PM GMT	10/06/2-2014 Erny Leach
10	Insurance Review	JOHNSON KENNETH	10-06-2014 02:23 PM GMT	A review of the documen Town of Lyons is insured Colorado Intergovernmer Number PR 01-2013. This policy provides cove damage to Property of th obligated to insure and li excluded. Review of the some of the parks and st parks are provided cover The Insurance Reductior (See Attached Insurance
9	Initial Review	TREZONA SCOTT	10-06-2014 01:34 PM GMT	10-06-2014:Completed I work appears eligible. PV have all been consolidate project.
8	Award Review	SYSTEM	06-27-2014 06:44 PM GMT	ACCEPTED
7	OLA Review	JOHNSON STEPHANIE	06-27-2014 12:06 PM GMT	DHS embargo until 6/27/
6	Final Review	SCHNEIDER STEFANIE	06-11-2014 08:59 PM GMT	Final Reviewer finds eligi funding of this project wc performed all required pr required special consider permits to address EHP cost documentation for th project. Task Force Lead Cleared for OLA Review
5	Grantee Review	PATEL KAJAL	06-11-2014 12:20 AM GMT	Scope of work states tha for participation in the PA Work, however no ackno
4	EHP Review	PATTERSON MOLLY	06-10-2014 08:01 PM GMT	Cat G, 0% complete. To applicant will use force a repairs to town parks as replace shelters, restroo debris, place topsoil, and fields, replace irrigation p and two erosion channel area. The replacement c upgraded to fall-attenuati current codes and standa shelters, restrooms, conc pre-disaster condition, re baseball fields, RV site, a

Internal Comments				
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				piping. The replacement upgraded to fall-attenuati current codes and standa kayak course with poles, McConnell recreation poi excavated material to rep place a layer of rip rap or the embankment, and rep Applicant will replace sec repair two concrete bridg to return the site to pre-d replace a rock slab retair steps and seating area, p sodded area, irrigation pi signage to return the site Applicant will replace sec replace post and dowel fe the site to pre-disaster co two concrete bridge abut replace post and dowel fe sod with irrigation piping site to pre-disaster condi rap and re-vegetate cree embankments to pre-disa Applicant proposes to ele Transformers above the they are re-installed. Site topsoil, and bio-engineer creek bank to prevent fut proposes to add addition embankment to protect th waters. - cwalz123 - 06/ A bald or golden eagle ne the project area. - cwalz1 Project activities have the United States or wetland excavation and/or modifi 18:25:37 GMT Project site work is in ma (d) (4), project has been completed. See attached completed on 11/10/13 w published at the close of 18:30:34 GMT The entire community wil project. - cwalz123 - 06/1 Action is addressed unde Consultation between FE 24, 2013. The consultatio intended to minimize imp Meadow Jumping Mouse Butterfly Bush, and Desig the ESA. - cwalz123 - 06 Work involves removal, s debris. (Includes culverts
3	Initial Review (EHP Rework)	MCCAFFERTY JON	06-10-2014 12:54 PM GMT	9June2014- HMPs for si PACL
2	Insurance Review	JOHNSON KENNETH	06-06-2014 07:33 PM GMT	A review of the documen Town of Lyons is insured Colorado Intergovernmer Number PR 01-2013. This policy provides cove damage to Property of th obligated to insure and lis excluded. Review of the some of the parks and st parks are provided cover The Insurance Reductior (See Attached Insurance
1	Mitigation Review	PETITT MARK	06-06-2014 05:10 PM GMT	The hazard mitigation pr 406 Specialist

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TOWN OF LYONS
PW 1078 – PAAP
VERSION REQUEST 1
NOVEMBER 4, 2015

Project 1 – Parks and Trails

Includes Meadow, Bohn, Lyons Valley River Park, Corridor Trail, 2nd Ave Dog Park, St. Vrain/Hwy 7 Trail, Black Bear Hole, and Park System Bank Re-vegetation and Stabilization

The applicant intends to use PAAP funding for the development of engineering and design plans for the repair, restoration, and replacement of the disaster related flood damage to the parks and trails. Additionally, the applicant will use force account and contract labor and equipment to restore, replace or enhance park grounds, facilities and amenities.

Types of repair/replacement work may include:
Debris removal and clean up.

Rebuild a non-historic structure to replace a destroyed historic shelter, possibly utilizing some salvageable elements of the original historic shelter.

Re-Sod and irrigate play surfaces and park areas, recreational fields, the tent and RV camping areas, picnic areas, and other heavy use areas that were either washed away or covered with sand, cobble, and other flood debris and could not be recovered.

Repair the two erosion channels cut by the creek across Meadow Park to pre-disaster condition or better by filling with approximately 3523 CY of material (using available cobble and sand where possible), installing topsoil and replacement irrigation piping, re-sod or re-vegetate as appropriate to the use level of the particular area.

Repair the erosion channel and the shallow swath cut by the creek across Bohn Park to pre-disaster condition, by filling with compacted material (using available cobble and sand where possible), installing topsoil and replacement irrigation piping, and re-sod or re-vegetate as appropriate to the use level of the particular area.

Return the primary flow channel of the creeks in the Bohn Park area to their pre-flood channels and provide bank stabilization and stabilize upland areas to minimize erosion and avulsion of the creek.

Remove & replace the contaminated playground surface area defined by FEMA Disaster Assistance Policy 9525.5 on ADA Requirements to trigger an ADA requirement that either the surface under each piece of equipment or the entire surface under and around the equipment be upgraded to a fall attenuating surface.

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The applicant intends to upgrade the full surface under and around the equipment. The McConnell recreation Pond(s) may be excavated to the pre-flood dimensions but is dependent on final park design. As much as possible, the excavated material will be used in the repair of the washouts of the trail and public area embankment(s). The washed out embankment areas may or may not be rebuilt to pre-disaster condition, which may include but is not limited to a layer of rip rap on the creek side of the trail embankment. The repaired embankment areas may be re-vegetated for erosion control. The wooden pedestrian bridge may be replaced.

Repair/Replacement Work may include the following park structures and amenities as needed.

Baseball/Softball Field(s)
Multi-Use Field(s)
Volleyball Court(s)
Ice Rink
Horseshoe Pits
Fire Pits
Hains Property Restoration
Playground(s)
Tent Camping Areas
RV Sites
Shelters
Restrooms
Shelter House CIRSA Code 22500015 Site Code 09-02 (aka North Shelter)
Restroom Building CIRSA Code 22500021 Site Code 09-01 (aka South Shelter)
Picnic Area(s) & amenities
Trails/trail heads/trail underpasses
Parking Lots/Paid Parking Systems
Park Host Sites
Repair/replace benches, plaques, and signage (including memorials)
Gates
Lyons Ditch/Head gate/Diversion and other associated ditches
Batting Cage
Multi Use Sport Court(s)
ADA Fishing Area/River Overlook
Pump repair with electric/Pump House
Storage building(s)
Baseball/Softball Score box
Planter(s)/Flower Beds & Associated Landscaping/Irrigation
Community garden/Botanical/Sculpture gardens
Signs
Irrigation System(s)
Utilities
Dog Park
Concession Stand(s)

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Multi Use Field/Soccer
Lyons Dirt Jump Bike Park
Mountain Bike Facilities
Ponds
Kayak equipment
Foot Bridges repair/replacements
Stone Features
Stone Trash Cans/Trash Cans
Fencing
River Features
River Drop Structures/Retaining walls
Retention wall under 2nd Ave Bridge
Park fill, grade, and Irrigation
Vegetation and Rock replacement/Landscape improvements
Skate Park
Slack line Facilities
Outdoor Classroom/Interpretive Facilities
Climbing/Bouldering Wall
Tennis Courts
Retention Ponds and wetlands
Zero Depth Spray Features or Natural Water Features
Splash pads

Final design has not been completed and may include additional items not listed above. As final design and plans and specifications are finished they will be submitted to FEMA for review.

Repair Cost: $14,372,770.00

HAZARD MITIGATION PROPOSAL

HMP 1 - Meadow Park Breach and Floodplain
1) Excavation of deposited material
2) Place rip-rap armoring
3) Place topsoil
4) Fine grade topsoil
5) Install bio-engineered vegetation on stream bank to assist in stabilization of bank
6) Place coconut matting to stabilize bio-engineered areas
7) Design Engineering & Construction Management
The net estimated cost of this mitigation = $286,178.92 or 24.6% and is cost effective and technically feasible.
This is to identify mitigation and to correct mathematical errors on a previous version.

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HMP 2 – Bohn & Meadow Parks
The Applicant wishes to mitigate the damaged Electrical Transformers by elevating above the BFE when they are re-installed. The applicant may add additional transformers as needed.

PERMITS: The PA Project Specialist has advised the Applicant that it is their responsibility to obtain all applicable local, state and federal permits prior to any construction or debris disposal activity referenced on this project. Applicant has also been advised that the lack of obtaining and maintaining these documents may jeopardize funding.

HMP 3 – Lyons Valley River Park
Once the design of this park is complete, the type of mitigation that will be needed will be defined and the applicant will send a detailed mitigation plan for review and approval.

PERMITS: The PA Project Specialist has advised the Applicant that it is their responsibility to obtain all applicable local, state and federal permits prior to any construction or debris disposal activity referenced on this project. Applicant has also been advised that the lack of obtaining and maintaining these documents may jeopardize funding.

Vegetation removal along the St. Vrain will be minimized during construction activities. Construction activities along the creek will be restricted to daytime hours only. The number of ingress and egress routes to the creek will be minimized and the routes will be clearly marked. When possible, ingress/egress routes and material staging areas will be placed in previously disturbed areas devoid of vegetation. Best Management Practices for erosion, sedimentation, and noxious weed control will be utilized to minimize impacts to water quality during construction. All rip-rap used for bank stabilization will be buried with topsoil above the ordinary high water mark and re-vegetated with a mix of native grasses and shrubs. All areas temporarily disturbed by construction activities will be re-vegetated.

Mitigation designs will be submitted for review by FEMA when complete and prior to starting mitigation work.

Total Mitigation: $335,825.01
Total Cost for Project: $14,708,595.01

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Project 2 – Whitewater Features (PW1053)
Applicant will use contract labor and equipment to restore, replace as necessary, +/- fifteen (15) whitewater recreational facilities and +/- five (5) fishing structures, and make minor modifications to the original design to functionalize previously-inadequate fish passages. The applicant has been informed that adequately-designed fish passages will be required as part of the 404 permitting process by USACE in compliance with the Clean Water Act.

Construction of such whitewater and fishing structures in an active waterway typically is required by permit to be in the low-flow season when there is the least effect due to sedimentation and least impact to native fish species. In this area, the window for construction is approximately from mid-October to mid-March, timed for historical low flows. Estimated costs include appropriate added cost for this time constraint.

Recovery and reuse of materials from original construction:

1. For the principal elements of the whitewater features, where possible, boulders, rip rap, sandstone slab, etc will be recovered and reused where they were not entirely washed away, buried in the creeks and banks, or broken beyond reuse. It is estimated by the consulting engineer that the cost to dismantle remnants of the features and to recover and reuse will approximately balance the reduction in material cost, so no demolition cost is included, and no cost reduction is taken for recovered materials for the PW estimate.

2. For the "feature rocks" (large boulders strategically placed in the creek to augment the main whitewater features by creating eddys, obstacles, and flow diversification), it is estimated that, above and beyond the cost of recovery, 5% are not buried or lost and can be recovered cost-effectively. The unit cost of the feature rocks was reduced by 5% to account for this net saving by recovery.

Materials to be used:
Principal construction material is native boulders and cobble, slabs of native Lyons sandstone, and native rip rap, all available locally at minimum material and transportation cost, and preferred for compatibility with natural surroundings of the parks. Use of these local materials yields minimum cost for repair.
Scope of work is to restore, replace or enhance as necessary the following +/- 15 whitewater structures and +/-5 fishing structures including but not limited to the following locations:
Location 1 – Meadow Park (on North St. Vrain Creek) – reconstruct approximately nine damaged whitewater features
Location 2 – North St. Vrain Creek Area – reconstruct approximately two damaged whitewater features
Location 3 – Bohn Park Fishing Structures – reconstruct approximately five damaged fishing structures, and excavates debris from three small ponds.

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Location 4 – Black Bear Hole Area – reconstruct approximately two damaged whitewater features
Location 5 – October Hole Area – reconstruct approximately two damaged whitewater features

HYDROLOGY STUDY ON EFFECT OF WHITEWATER FEATURES AND FISHING STRUCTURES:

The original whitewater and fishing structures were installed in compliance with permits issued by USACE, but local floodplain permits were not issued.
The applicant conducted a one-dimensional hydraulic analysis in May, 2014, to determine the impacts to the 100-year discharge water surface elevation of the original installation of the in-creek structures covered by this project worksheet.
The results (PW1078 –Attachments -Hydraulic Study - Effects of Whitewater Structures.pdf & PW1078 - Attachment - Hydraulic Study - Effects of Whitewater Structures.pdf) demonstrated that initial installation (and therefore reconstruction to same dimensions in same footprint) of these structures in the creeks did not impact the 100-year flood elevations, floodway elevations, or floodway widths on the South, North, and Main stem St. Vrain Creeks.
Final design has not been completed and may include additional items not listed above. As final design and plans and specifications are finished they will be submitted to FEMA for review.

Total Cost for Project: $4,584,184.95

DOUBLE GATEWAY
TO THE ROCKIES

TELEPHONE
303.823.6622

FACSIMILE
303.823.8257

432 5TH AVENUE • P.O. BOX 49
LYONS • COLORADO 80540

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Project 3 - Roads, Alleys and Park St. (PW1095)
Applicant will use force account and/or contract labor and equipment to remove sediment, flood debris, and damaged base, and then add base and surface-course gravel or hard surface paving as required to bring the surfacing of each alley up to the level required to carry the typical vehicle loading, such as garbage trucks, and other local traffic it serves.

Applicant has provided sufficient information that roads and alleys, when reconstructed, will be updated to current codes and standards of the Town as presented in the Capital Improvement Plan adopted by the Board of Trustees, and has further demonstrated that the Town has uniformly applied this policy to any roadway or alley replacement project budgeted by the Town and of any developers building subdivisions.
Accordingly, each alley repair and Park Street repair on this project worksheet may include:

- Removal of remaining sediment and flood debris
- Excavation of surface and base that were damaged by incorporation of sediment and flood debris by emergency work and emergency access during the incident period
- Scarification and re-compaction of the sub-grade
- Repair of remaining soft spots
- Replacement of base gravel, surface gravel, or pavement
- Curb and gutter as required
- Demolition of existing asphalt where damaged sections remain
- Installation of asphaltic concrete patching at intersections and joints with pre-existing pavement
- Grading to re-establish street-side ditches and drainage destroyed by flood
- Temporary seeding and mulching during construction

Final design has been completed and may include additional items not listed above. Design and plans and specifications are finished and will be submitted to FEMA for review.

Total Cost for Project: $374,875.23

DOUBLE GATEWAY
TO THE ROCKIES

TELEPHONE
303.823.6622

FACSIMILE
303.823.8257

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LYONS • COLORADO 80540

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Project 4 – Roads in Confluence Area (PW1101)

Applicant will use force account and/or contract labor and equipment to repair street damage at each of these seven locations to pre-disaster condition plus upgrade to the applicant's applicable Codes and Standards.
For streets on which repair vs. replacement is over 50% and the street will be replaced entirely, the applicant intends to upgrade to comply with the Town's Codes and Standards for streets.
These Codes and Standards are appropriate to the application, reasonable, and have been uniformly applied since adoption in 1986 on jobs initiated for significant street repair. See original 90-91 for PW 1101 and associated attachments.
The scope of work includes those elements necessary to complete a roadway and appurtenances according to Town of Lyons Codes and Standards.

Repairs and replacement may include:
1. Add curb and gutter
2. Set width of streets to minimum required by code by width and topographical conditions
3. Storm drains and connections to the drains where required.
4. Add concrete pans at alley entrances
5. Repair/reset sandstone sidewalks in the confluence area as needed

The associated requirements include:
1. Demolition of existing asphalt where damaged sections remain
2. Installation of asphaltic concrete patching at intersections and joints with pre-existing pavement
3. Grading to re-establish street-side ditches and drainage destroyed by flood
4. Temporary seeding and mulching during construction
5. Permanent seeding required for permanent erosion control
6. Replace aging water system infrastructure that is under replacement roadways including water mains, fire hydrants and service line reconnections.

Final design has been completed and may include additional items not listed above. Design and plans and specifications are finished and will be submitted to FEMA for review.

Total Cost for Project: $1,402,777.90

DOUBLE GATEWAY
TO THE ROCKIES

TELEPHONE
303.823.6622

FACSIMILE
303.823.8257

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Project 5 – Waste Water Treatment Plant (PW1094)

The Applicant will utilize force account labor and/or contract services and equipment to restore the Wastewater Treatment Plant to function and capacity. The restoration to function and capacity may include the following items as they are related to the FEMA public assistance program and mitigation:

- replacing the damaged ventilation system, A/C unit,
- remove and replace influent pumps and a bar screen unit in the headworks,
- remove and replace concrete emergency generator pad or bring in an alternate independent secondary electrical feed source,
- remove UV Building and UV equipment,
- replace and reconfigure the outfall line, pipe and manholes,
- replace and clean headwall and manholes,
- replace concrete perimeter wall or provide an alternate means for accommodating waste treatment product
- remove drying bed and replace with alternate means for treating product if not found to be applicable
- remove and replace chain link fencing with security fencing that may or may not be chain link fence or may be some other alternate security enclosure
- remove and replace, or remove and relocate gates and vehicle gate with power operator and control station,
- replace one exterior pole mounted electric light and underground wiring, may be relocated on this site
- clean sediment, replace eroded soil and replace lost road fill
- replace asphalt driveway with similar or better pavements
- other miscellaneous items of work as shown on the attached estimate may be required to repair the site including clean up and debris removal.

Final design has not been completed and may include additional items not listed above. As final design and plans and specifications are finished they will be submitted to FEMA for review.

Total Cost for Project: $699,030.20

DOUBLE GATEWAY
TO THE ROCKIES

TELEPHONE
303.823.6622

FACSIMILE
303.823.8257

432 5TH AVENUE • P.O. BOX 49
LYONS • COLORADO 80540

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Summary

Total of 5 Projects with Mitigation & DAC: $21,769,463.29
PAAP Total: $21,497,351.00

The funding difference is covered by FEMA's estimated insurance proceeds of $283,574.33 and other funding sources.

Work using the HMP funding portion of the PAAP funds will be utilized and based on the approved HMPs from Version 0 of this PW.

Per Public Assistance Alternative Procedures Pilot Program Guide for Permanent Work (Version 2):

PART III. GRANTS MANAGEMENT REQUIREMENTS,

A. Grants Management Activities –

The Sub-grantee will submit to the Grantee a final report of project costs. This report will not be used for reconciliation of the fixed grant to actual costs, as would normally be required in the standard program. The final report should include the following components:

- Actual work completed with fixed-grant funds
- Mitigation measures achieved, if applicable
- Compliance with EHP conditions
- Compliance with current codes and standards
- Total actual costs to complete the project
- Compliance with Federal procurement procedures
- Actual insurance proceeds received by Sub-grantee

PART II. PERMANENT WORK ALTERNATIVE PROCEDURES,

D. Use of Excess Funds –

When the Sub-grantee has completed a fixed sub-grant for less than the estimate they must certify final costs within 90 days of project completion through the Grantee for final reconciliation by FEMA.

Any funds from under runs from the above projects will be used to cover over runs of the above projects. Additional funding from under runs will be evaluated for other eligible work.

Victoria Simonsen
Town Administrator
Town of Lyons

DOUBLE GATEWAY
TO THE ROCKIES

TELEPHONE
303.823.6622

FACSIMILE
303.823.8257

432 5TH AVENUE • P.O. BOX 49
LYONS • COLORADO 80540

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Bohn Park Final Design and Bidding Process

BOT Work Session August 1, 2016

LYONS COLORADO

DHM DESIGN

S2O

Photograph courtesy of Ed Bruder

Bohn Park 2016 Flood Recovery Project Scope

- The Bohn Park Flood Recovery Final Design and Bid Project will address the following fundamental goals outlined in the Lyons Recovery Action Plan and Lyons Parks Flood Recovery Planning Process for ensuring that Bohn Park continues to meet local and regional demands:

- 1) Reconstruction of facilities in Bohn Park to address the immediate recreational needs of Lyons, especially active/athletic uses. We will create a place to gather and play as a community again.
- 2) Creation of an attraction that will draw visitors to our Town. This is essential to ensure that the Town will remain economically viable and maintain its reputation and brand as a destination for healthy, active, outdoor lifestyles.
- 3) Reestablish trail connectivity, both locally and regionally, include loop trails.
- 4) Restore and augment river access and river habitat.
- 5) Restore/Replace picnic opportunities, including shelters and increase size.
- 6) Re-establish natural areas and consider wetlands.
- 7) Installation of public art along trails.

TOWN OF LYONS PARKS - FLOOD RECOVERY PLANNING PROCESS

OCTOBER 29th, 2015 - PUBLIC MEETING

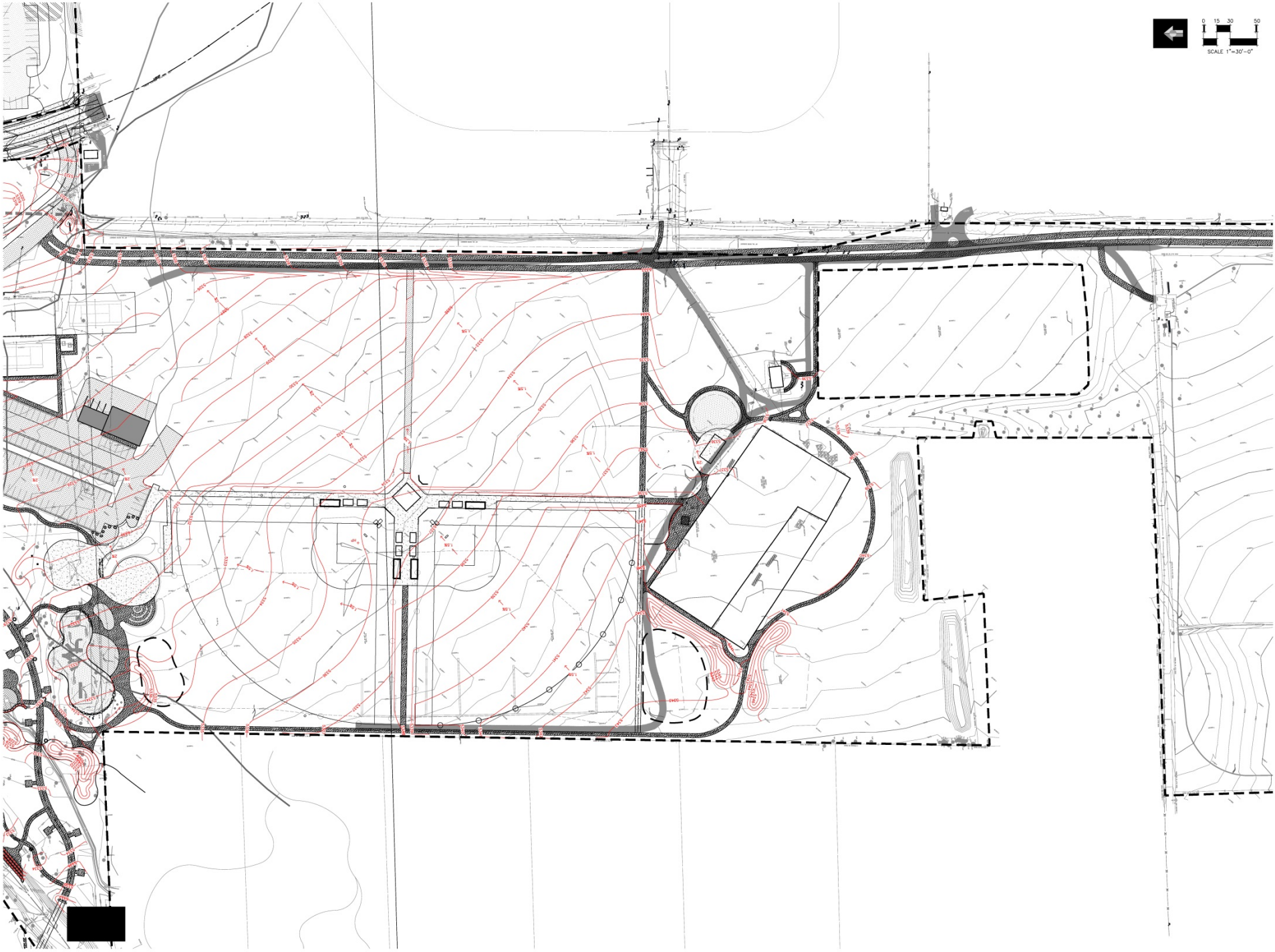
BOHN PARK
PREFERRED ALTERNATE

SCALE: 1"=100'-0"

LYONS COLORADO | S2O | OHM DESIGN

50% Design Set

0 15 30 50
SCALE 1"=30'-0"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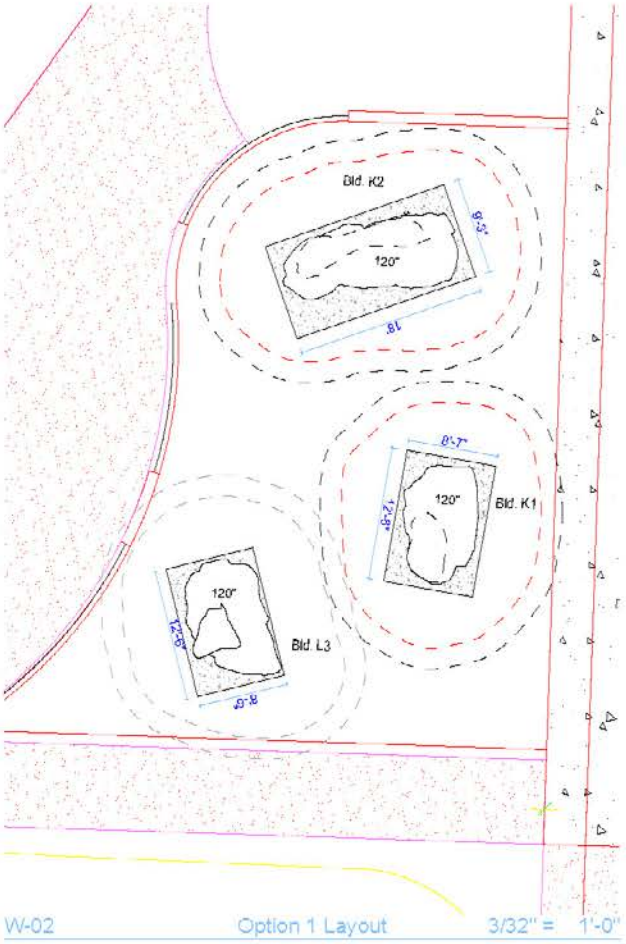
SCALE 1"=30'-0"

50% Design Drawing



W-02 Option 1 Layout 3/32" = 1'-0"

Design Reference

Design Reference

Design Reference

ID Sculpture
591 South Boulevard
Gunnison, CO 81230
www.IDSculpture.com
970.641.1747

Bohn Park

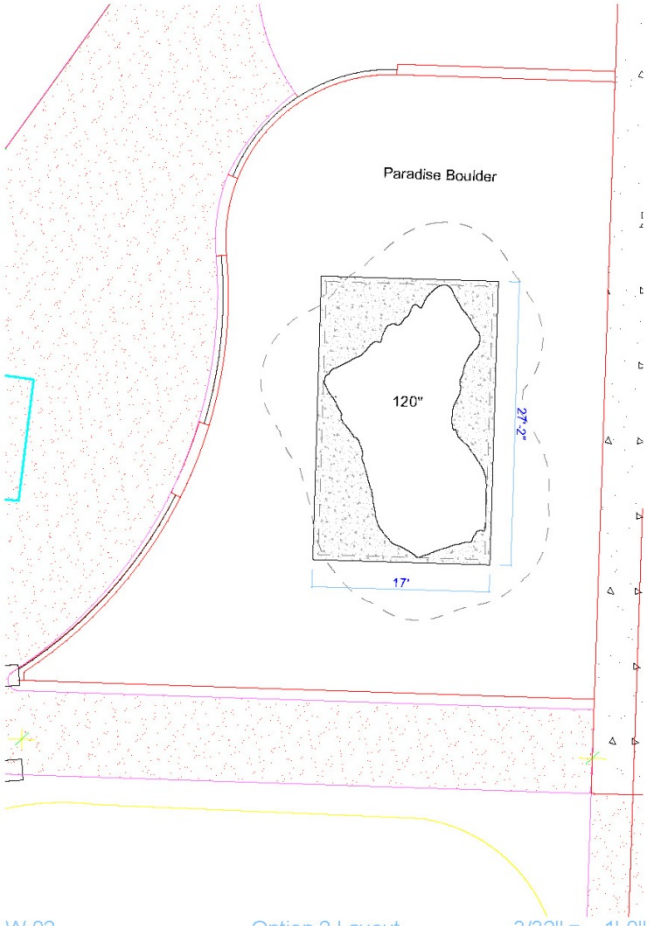
SCHEMATIC DESIGN
NOT FOR CONSTRUCTION

All IDS projects are designed to meet or exceed ASTM 1487-11
Not all equipment may be appropriate for all children.
Supervision is required.
ASTM compliant safety surfacing is required under and around all play equipment.
The Americans with Disabilities Act (ADA) may require your play area to be accesible, please consult with an ADA professional to ensure compliance.

Date:
5/17/16

Drawing Title:
Option 1

Sheet #:
A.01.1



W-02 Option 2 Layout 3/32" = 1'-0"

Paradise Boulder

Paradise Boulder-Perspective

Design Reference

ID Sculpture
591 South Boulevard
Gunnison, CO 81230
www.IDSculpture.com
970.641.1747

Bohn Park

SCHEMATIC DESIGN
NOT FOR CONSTRUCTION

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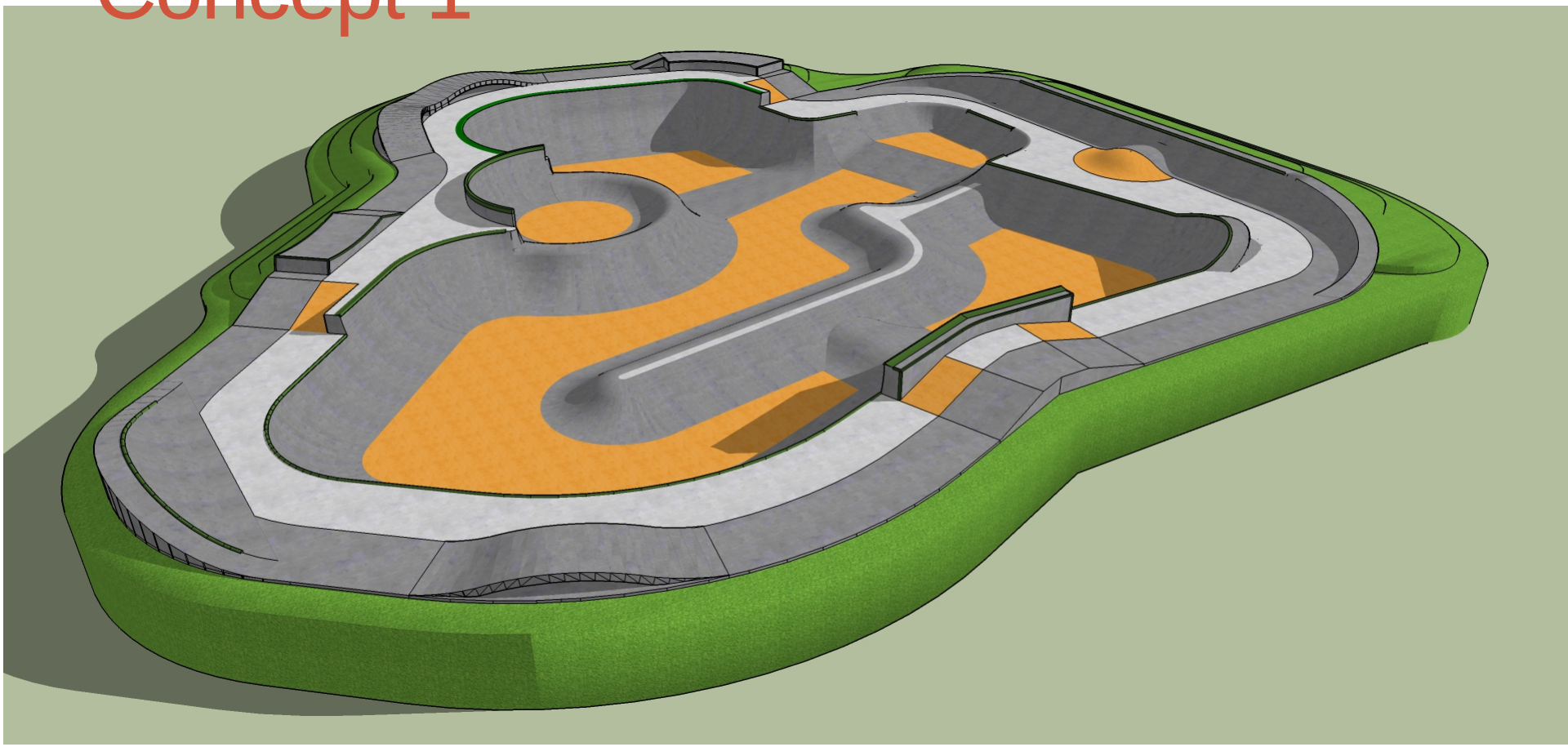
Not all equipment may be appropriate for all children.
Supervision is required.
ASTM compliant safety surfacing is required under and around all play equipment.
The Americans with Disabilities Act (ADA) may require your play area to be accesible, please consult with an ADA professional to ensure compliance.

Date:
5/17/16

Drawing Title:
Option 2

Sheet #:
A.01.2

Concept 1



Concept 1

Concept 2

Concept 2

LYONS PARKS & RECREATION

PROPOSED PAVILION PERSPECTIVE
BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 10, 2016

A-2

© Barker Rinker Seacat Architecture

LYONS PARKS & RECREATION

PROPOSED RESTROOM PERSPECTIVE
BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 10, 2016

A-1

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LYONS PARKS & RECREATION

PROPOSED PAVILION PERSPECTIVE
BOHN PARK 2016 FLOOD RECOVERY PROJECT

DHM | BARKER RINKER SEACAT ARCHITECTURE

JUNE 10, 2016

A-3

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RCP GENERAL NOTES

1. ALL CEILING ELEVATIONS LISTED AS A.F.F. DIMENSIONS. SEE INTERIOR ELEVATIONS FOR CLARIFICATION IF NECESSARY.

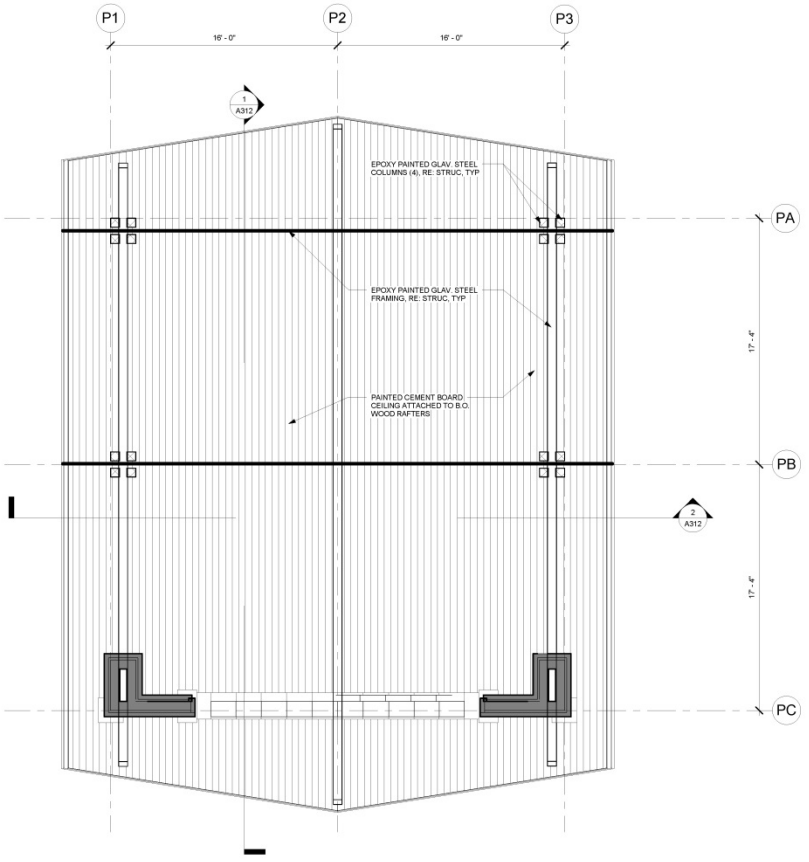
2. ALL WALLS SHALL TERMINATE 6" ABOVE CEILING ELEVATION UNLESS OTHERWISE NOTED.

RCP LEGEND

EPOXY PAINTED CEMENT PANEL BOARD

EXPOSED STRUCTURE

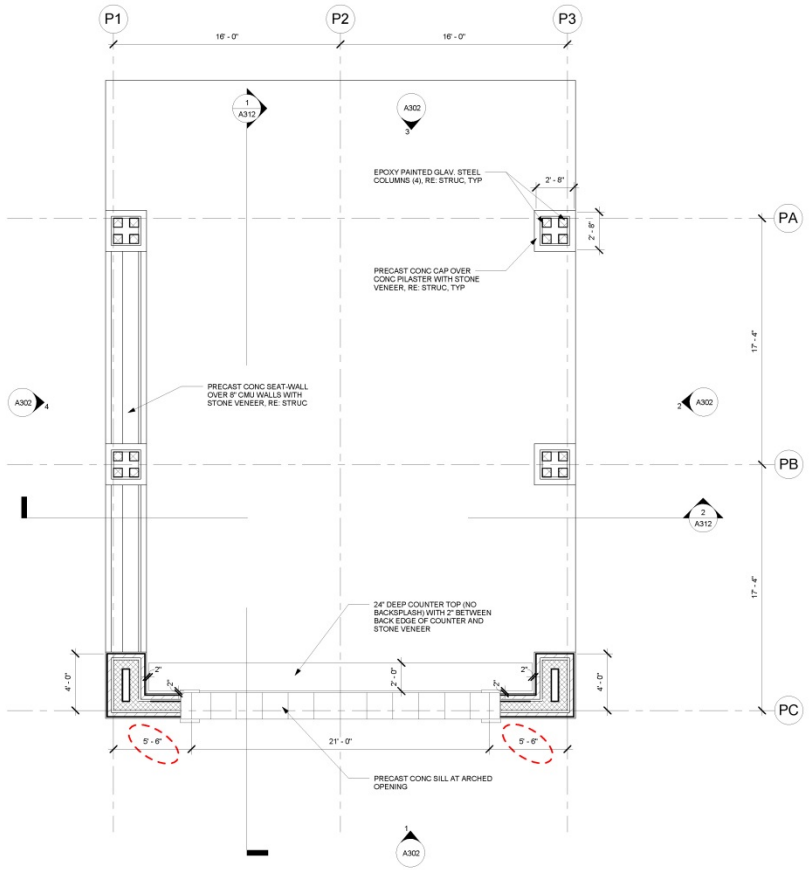
SEE MECHANICAL AND ELECTRICAL LEGENDS FOR ADDITIONAL SYMBOLS



1 A102 PAVILION REFLECTED CEILING PLAN

1/4" = 1'-0"

0 2' 4' 8'



3 A102 PAVILION FLOOR PLAN

1/4" = 1'-0"

0 2' 4' 8'

BARKER RINKER SEACAT ARCHITECTURE

DHM DESIGN
900 S. Broadway
Suite 300
Denver, CO 80209
303.892.5566
www.dhmdesign.com

BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16

DRAWN: Author
CHECKED: Checker

REVISIONS:
No. Date

JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
PAVILION FLOOR PLAN AND RCP

A102

SHEET OF

RCP GENERAL NOTES

1. ALL CEILING ELEVATIONS LISTED AS A.F.F. DIMENSIONS. SEE INTERIOR ELEVATIONS FOR CLARIFICATION IF NECESSARY.

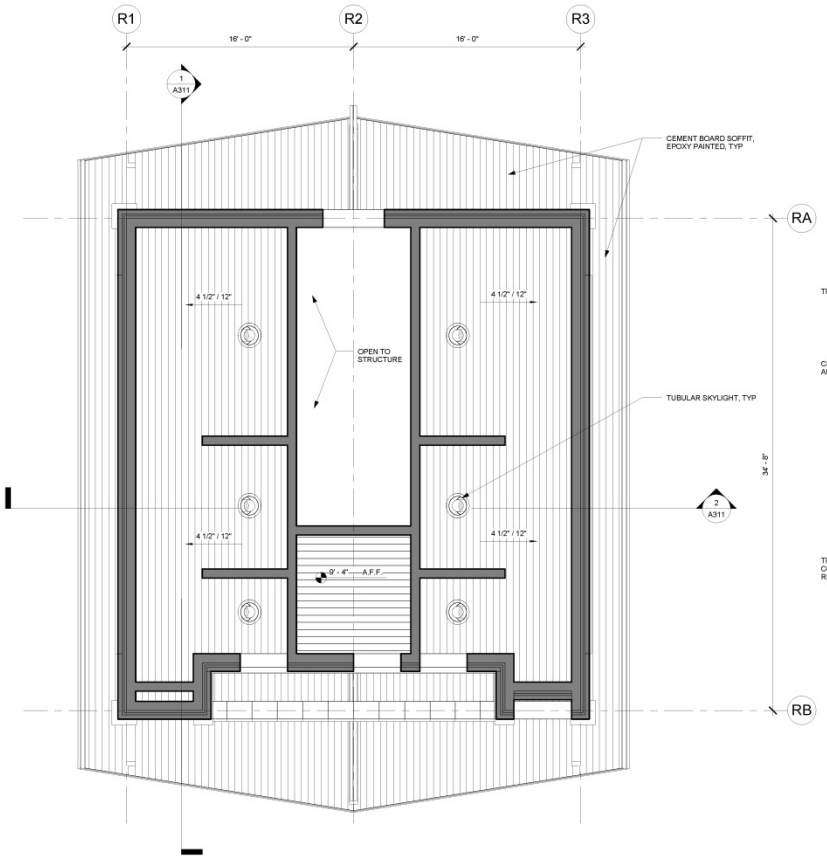
2. ALL WALLS SHALL TERMINATE 6" ABOVE CEILING ELEVATION UNLESS OTHERWISE NOTED.

RCP LEGEND

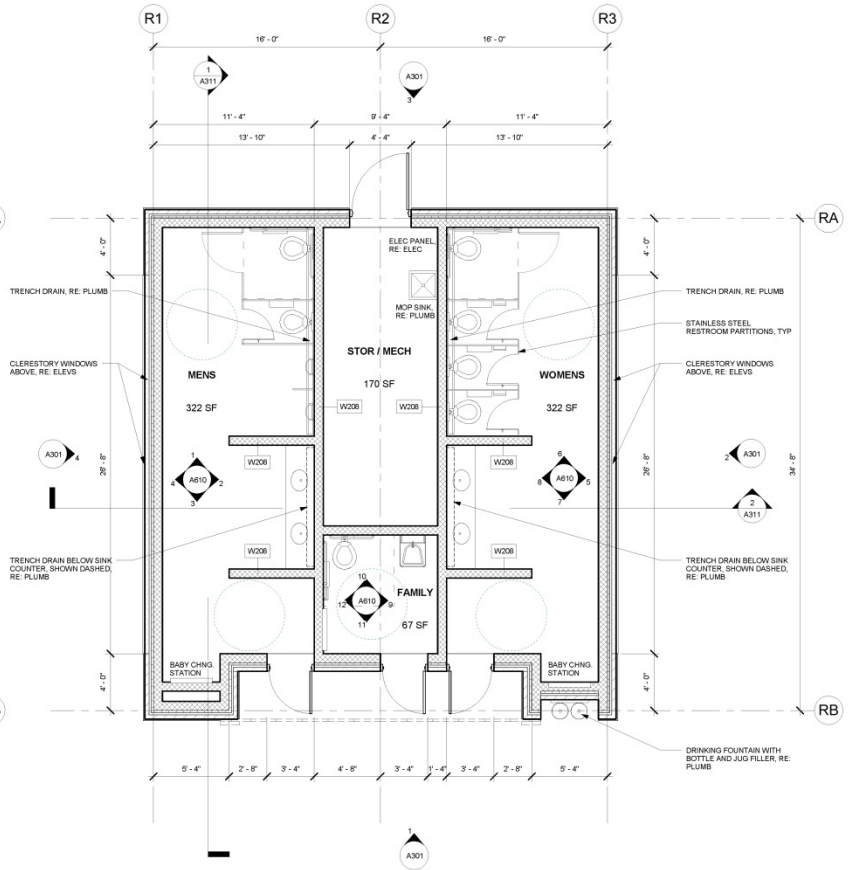
EPOXY PAINTED CEMENT PANEL BOARD

EXPOSED STRUCTURE

SEE MECHANICAL AND ELECTRICAL LEGENDS FOR ADDITIONAL SYMBOLS



2 A101 RESTROOM REFLECTED CEILING PLAN
1/4" = 1'-0"



1 A101 RESTROOM FLOOR PLAN
1/4" = 1'-0"

BARKER RINKER SEACAT ARCHITECTURE

DHM DESIGN
900 S. Broadway
Suite 300
Denver, CO 80209
303.892.5566
www.dhmdesign.com

BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16

DRAWN: Author
CHECKED: Checker

REVISIONS:
No. Date:

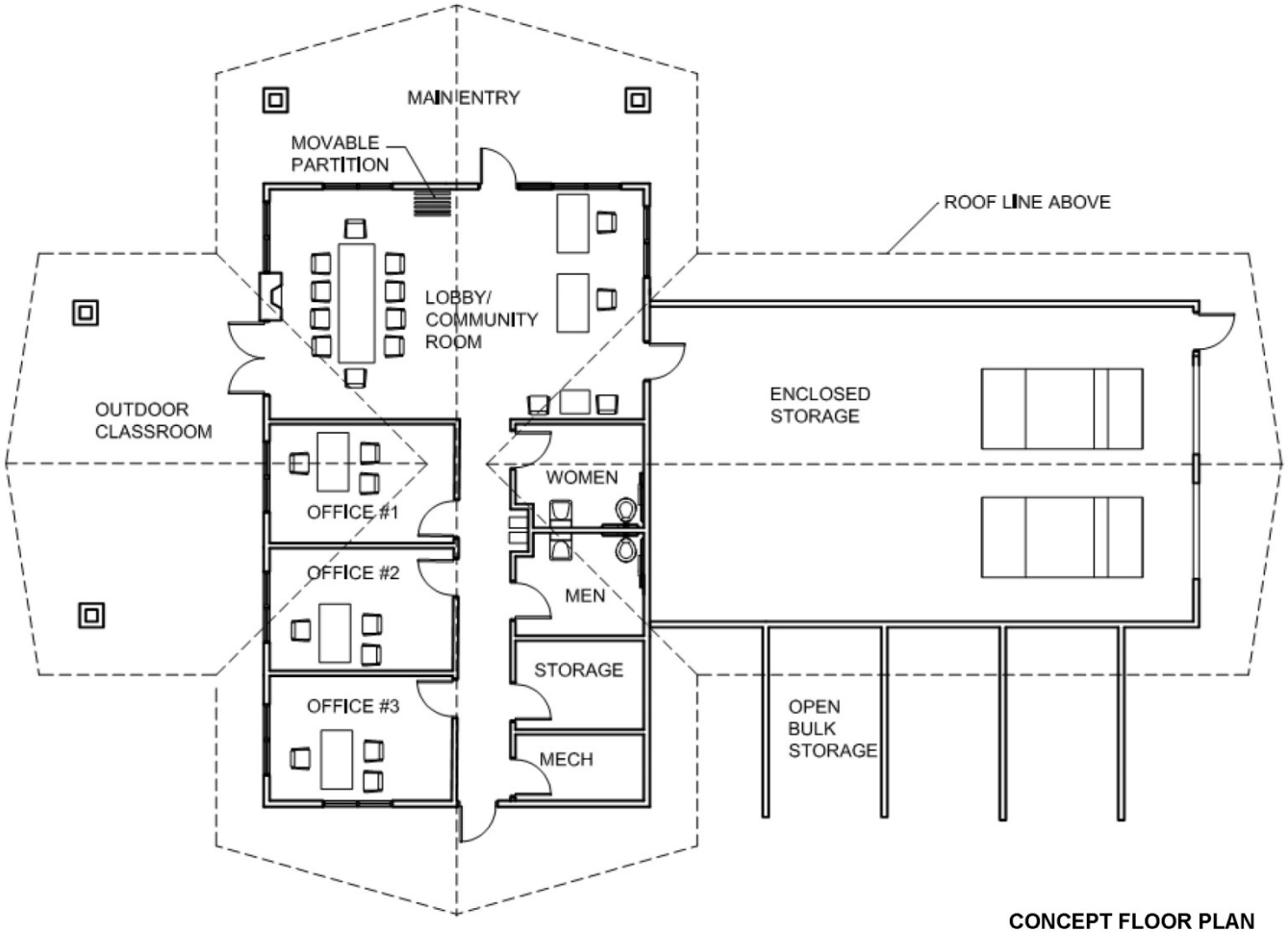
JOB DESCRIPTION:
DESIGN DEVELOPMENT

SHEET TITLE:
RESTROOM FLOOR PLAN AND RCP

A101

SHEET OF

COMMUNITY CENTER BUILDING



CONCEPT FLOOR PLAN
NOT TO SCALE

BOHN PARK - LYONS, COLORADO

Architectural Program & Preliminary Budget 6/10/2016

COMMUNITY CENTER

Item	Space	Area	Cost/s.f.	Area Cost	Comments
1.0	Mens Room 1 Toilets 1 Urinals 1 Lavatories	100 nsf	$400	$40,000	
1.1	Womens Room 1 Toilets 1 Lavatories	100 nsf	$400	$40,000	
1.2	Community Room Training Space Nature Center Conference Center	250 nsf	$250	$62,500	
1.3	Offices 3 Staff Offices Lobby / reception Office Storage	700 nsf	$250	$175,000	
1.4	Internal Circulation	250 nsf	$250	$62,500	
1.5	Storage Office Supplies Sundries and cleaning equipment	80 nsf	$185	$14,800	
1.6	Garage Storage (50x20') Janitor sink Large Equipment	1250 nsf	$165	$206,250	
1.7	Mechanical/Electrical & Plumbing Chase Systems All electric Year round operations	145 nsf	$185	$26,825	
1.8	Outdoor Nature Space / Porch	400 nsf	$125	$50,000	
	Total Net Area & Cost	**3275 nsf**		**$677,875**	
	Contingency		20.0%	$135,575	
	Total Cost			**$813,450**	

Boards and Commissions Comments

PRC Notes:

- Concerns voiced about skatepark location and concrete on west side.
- Ian was concerned that the area between the two proposed skate parks could become over-developed and that the trail connection should remain the priority. Plans reflect removal of a concrete sidewalk behind the ballfields to the west and designed for a soft surface trail connection instead.
-
- Water feature for kids near playground
-
- Location of storage building and that the appearance match Steamboat Mtn. – Ian
- If plans for the parks office building move forward we will review architecture character and viewsheds to make sure we meet Ian's requirements.
-
- Concerns on Ecocycle appearance and traffic between Bohn and Ecocycle – Veronika
-
- Scott Shipley of S2O reviewed stream structures
- Goals: flood mitigation, access, riparian feel
- Several overflow channels added to guide water
- Bank restoration
- Rosgen cross-vane drop structures
-
  Next steps in the planning process
- Final design in late summer or fall
- Phasing and implementation strategies for funding
-
  PRC discussed making a statement to the board in support of the plan.
-
- Ian motioned to approve 50% design. Mary second. All in favor.

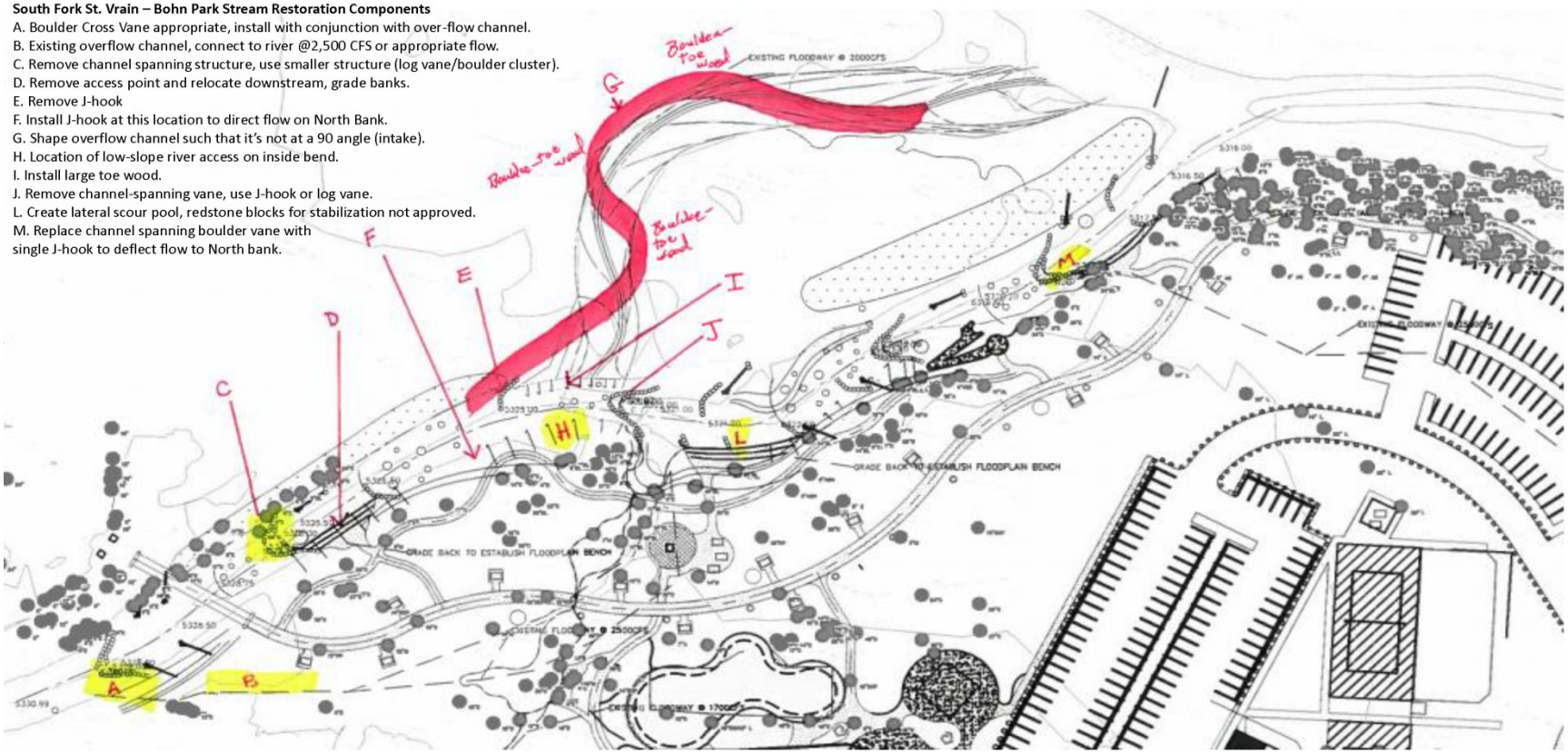
Ecology Board Notes:

- Marshall went through the 50 percent design presentation for Bohn Park. Simms said perhaps the riparian areas could be deeper with fencing until the plants mature. Designs will reflect these comments. A fence will be designed to separate the public from the ecological restoration areas similar to the fence constructed at Meadow Park.

CPW Comments:

South Fork St. Vrain – Bohn Park Stream Restoration Components

A. Boulder Cross Vane appropriate, install with conjunction with over-flow channel.
B. Existing overflow channel, connect to river @2,500 CFS or appropriate flow.
C. Remove channel spanning structure, use smaller structure (log vane/boulder cluster).
D. Remove access point and relocate downstream, grade banks.
E. Remove J-hook
F. Install J-hook at this location to direct flow on North Bank.
G. Shape overflow channel such that it's not at a 90 angle (intake).
H. Location of low-slope river access on inside bend.
I. Install large toe wood.
J. Remove channel-spanning vane, use J-hook or log vane.
L. Create lateral scour pool, redstone blocks for stabilization not approved.
M. Replace channel spanning boulder vane with single J-hook to deflect flow to North bank.



CPW Responses:

- **Channel Realignment:** We will be moving the channel to the North near the North overflow channel providing for lateral pools as the river bends to the south and back to the north again in this reach allowing for depositional benches on the inside of each bend. As discussed, we will likely create the outside toe with rock in these locations for safety reasons. We may attempt to design some wood into the upstream-most portions of these bends.
- **Overflow channels:** We will build a sill and I am consulting with Matt Kondratieff for some novel ideas for this. Alternately we will use rock and cobble as you suggest.
- **Wood:** We will not be cabling woody debris. In cases where needed we will use buried wood with rock reinforcement. Woody debris will be mostly below the water's surface (some is planned in areas where it will degrade over time, but not in reinforced areas.
- **Floodplain Benches:** will be installed in the areas that we discussed.
- **Riffle locations:** Two-three of the five planned drop structures are being transformed to riffle runs. We will use a similar method to Meadow Park, as you suggested, in these reaches for creating riffles.

SVCC Comments:

- 1. Will there be any pedestrian crossings near the confluence? We know there's one planned within the project, but was just wondering if there was consideration of another one or if another one that we don't know about already exists.
- At this time we are not planning one.
- 2. What is the scope of work for the area river left (Stacey property) within the project? Will there be any trails?
- At current no trails are planned at this time. Parks and Wildlife did suggest that fishermen might like to access on this side, but we had assumed that this would be through bushwhacking.
- 3. Is the SSV3 trailer park area being actively used? We are pretty sure it is not, but wanted to confirm.
- It is going to be acquired through the buyout process but has not yet been acquired. We have not been a party to any plans there yet, but obviously have designed our flood-overflow channel to mesh with any potential braided channel options that might be installed upstream on this property.

Watershed Board Comments:

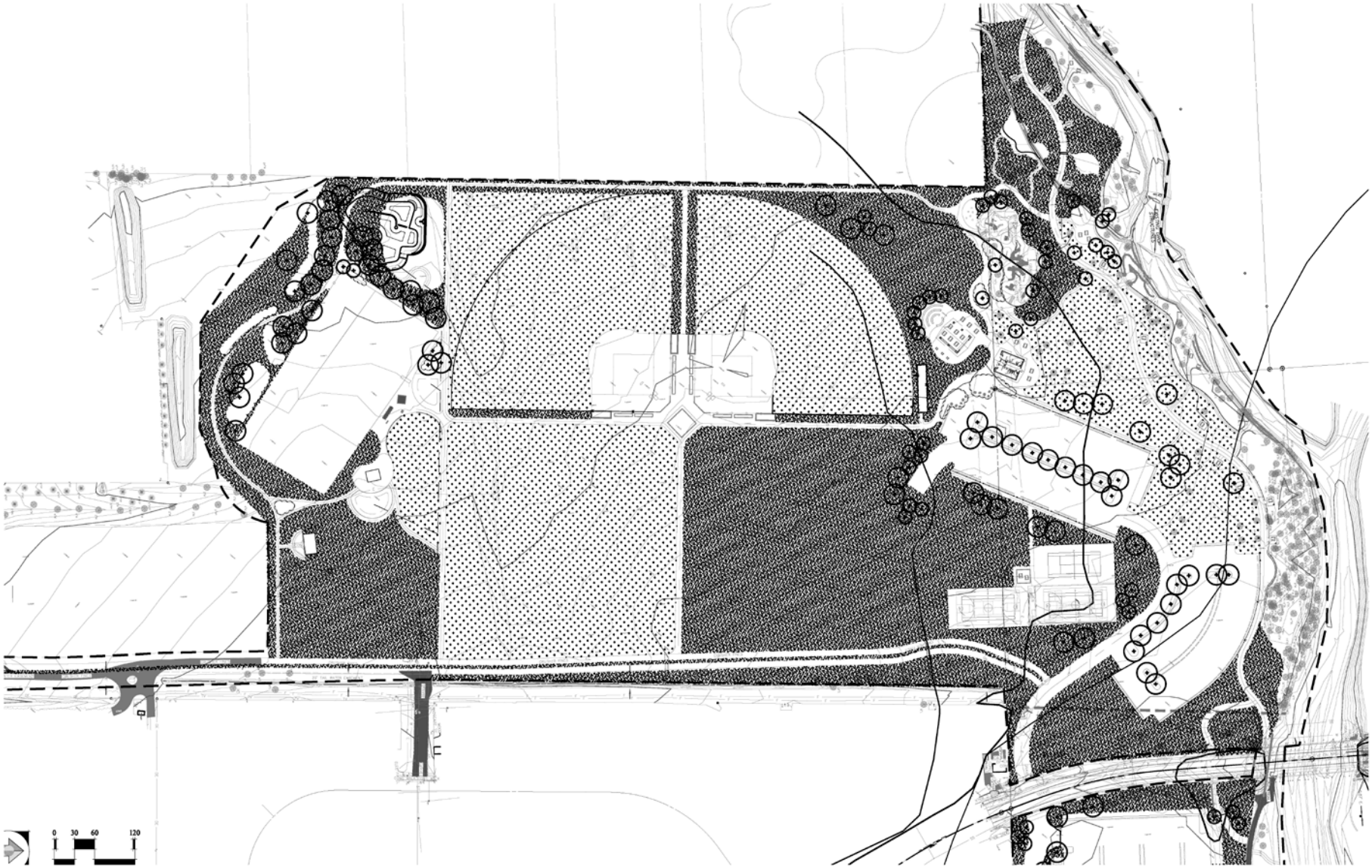
- The overall goal for this reach is to be as **natural looking aesthetic** with a **natural riffle pool design with boulders** and have **minimal to no drop structures [cross veins]**. But also provide safety to the park attendees and neighboring houses/buildings.
- Specific recommendations are as follows:
- 1. Those drop structures [cross veins] needed for safety purposes should be as much at grade as possible- grade above and below the structure. So they function more as a grade control than recreational drop. All cross veins should have very quiet water at the sides with minimal to no flow or back eddy flow to allow for fish habitat. With back eddy flows and currents, the fish have to work hard for their food and a normal 'wild pool' does not have those kinds of water flows. Also, deep in the pools and thought the tail of the pool there should be boulders to allow fish to hide behind. For cross veins, double-steps can be utilized but also cross veins with spaces between the boulders .5-1x of the boulder diameter] should be considered to allow better fish habitat and fish passage. All cross veins should appear as natural looking as possible. Also, please consider having the low flow point through the veins and J hooks be eccentric and not in the center of the channel, providing a more natural flow and aesthetic.

- 2. Any J hooks should appear to be natural looking and not appear artificial. Large boulders [3-5ft diamter]can provide the habitat, energy dissipation, and river flow controls needed. Consideration of 'J hook type structures made out of wood and stone can provide excellent microorganism ecosystems and highly functional.
- 3. We propose greater amounts of wood installed and there are many different techniques that are safe for boaters and tubers but provide a healthy ecosystem for the aquatic biology [The bugs feed and proliferate on the woody debris and then become food source for the fish.] Logs can be installed looking similar to a random fallen tree along the bank that face either up or downstream that can be anchored by large boulders and and sit in holes to provide cover. Logs can also be installed to provide the same benefits as rock vanes, J hooks, v-weirs with one end buried in the bed of the channel and the other end buried in the riverbank while the middle is exposed providing a place for fish to get under and hide. Fish lunkers are constructed wood overhangs that can be built to look quite natural and provide ample cover for fish. These and other wood applications can add complexity to the stream bank and provide many small micro-eddys for additional aquatic habitat. Many of these techniques can be achieved to maximize the aquatic biology but also designed to be safe for tubers and boaters.

  3. Vertical banks on the outside bends of the thalweg can be stabilized with large boulders and safe woody debris and provide long shallow point bars on the opposite side of the river. These point bars are places where sand and gravel can deposit and provide low-gradient places for folks to get into the river.
- 4. Consideration of lowering the grade upstream to lower the overall drop through this reach should be considered.
- 5. Controlling the water access points is key and they should be designed to be consistent with fish 'habitat protection as well as bank preservation.

- It is the goal of the LWB to work in concert, cohesively with the BoT and under their direction with the town parks and rec as well as any engineers and construction contractors. If there is a way we can do this better please advise us.

Updated 50% Design Set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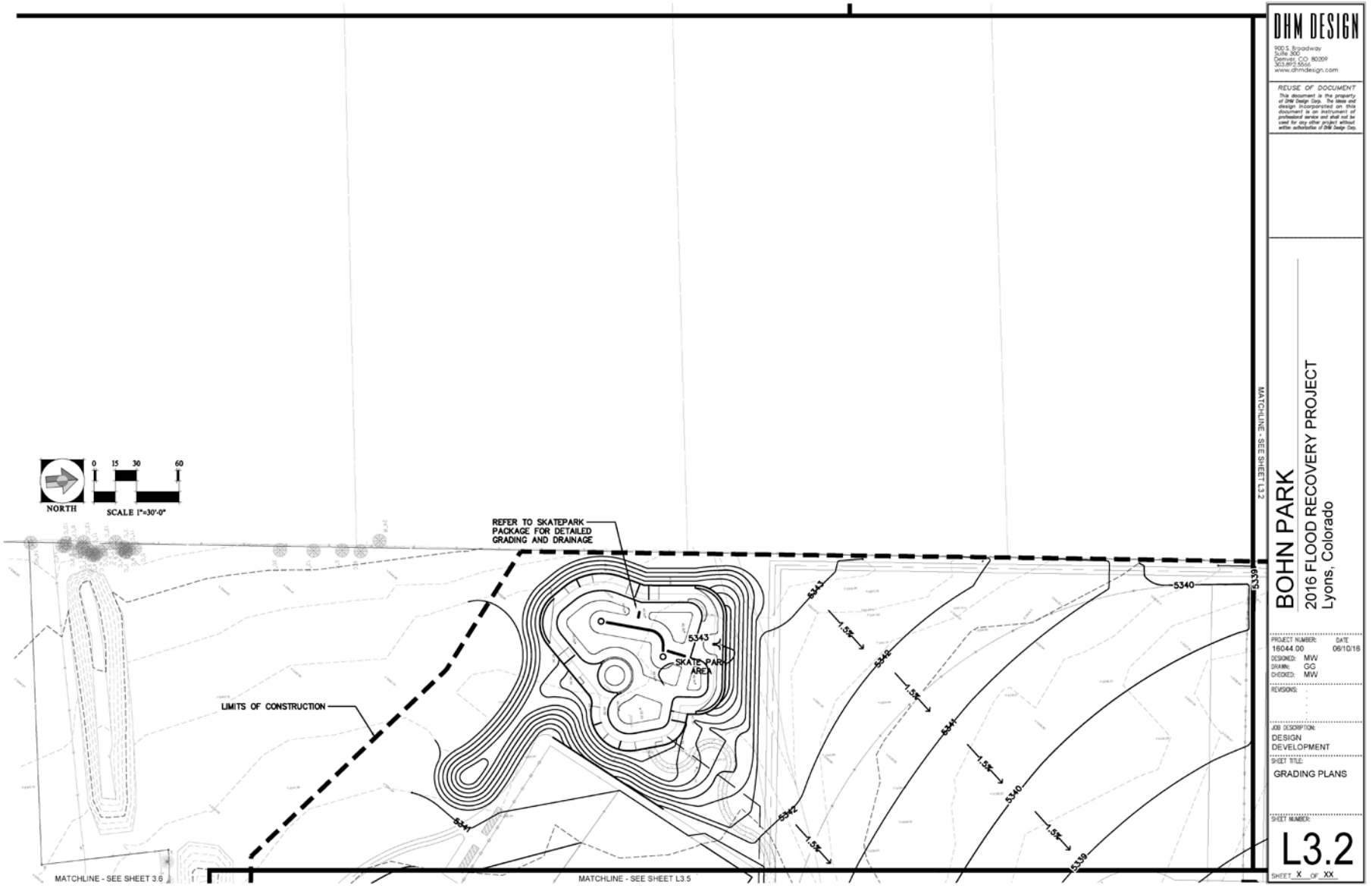
BOHN PARK

2016 FLOOD RECOVERY PROJECT

Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW
REVISIONS:
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: GRADING PLANS
SHEET NUMBER: L3.1
SHEET x OF XX



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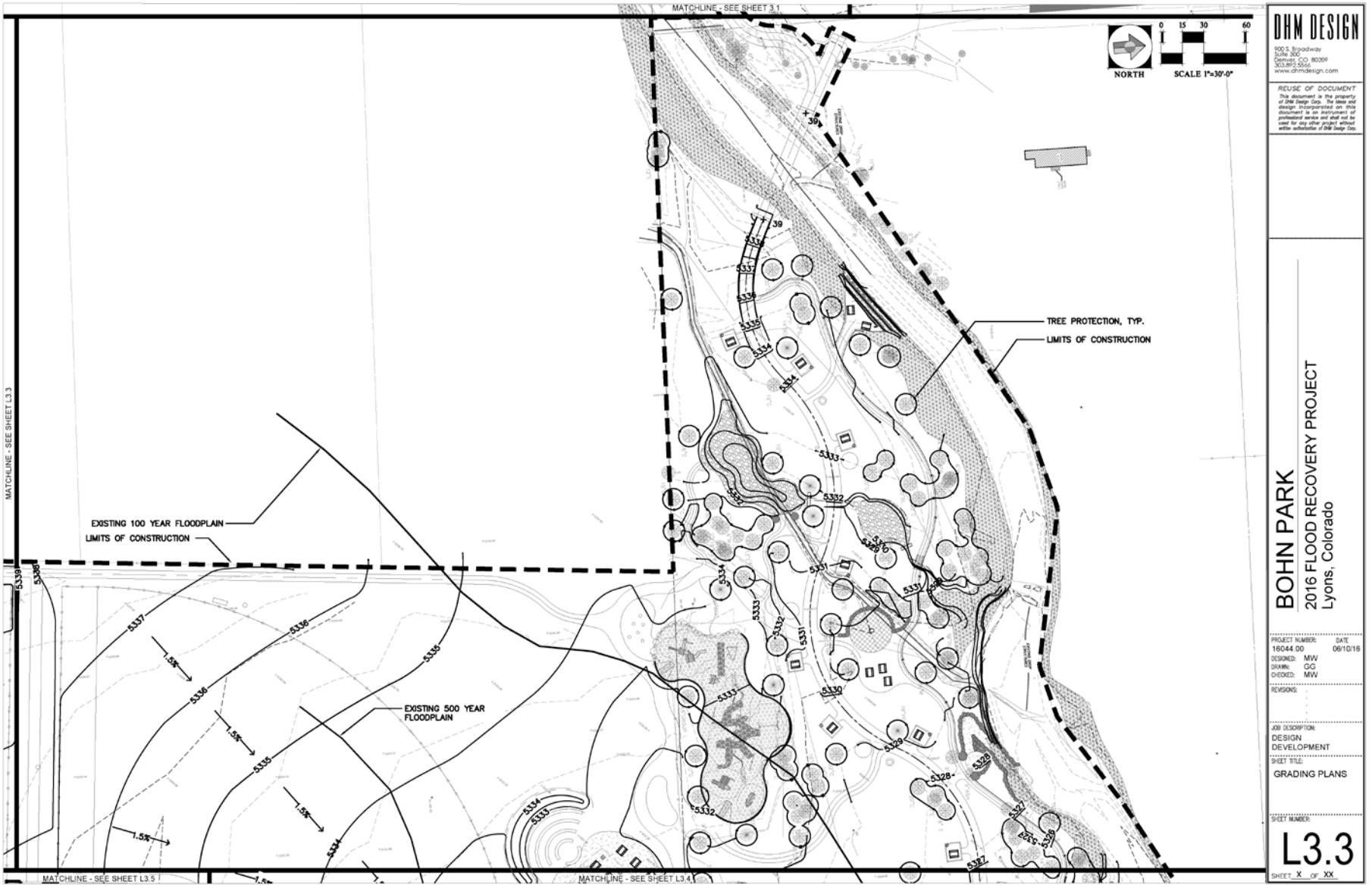
BOHN PARK
2016 FLOOD RECOVERY PROJECT
Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW
REVISIONS:
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: GRADING PLANS
SHEET NUMBER: L3.2
SHEET X OF XX



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Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW
REVISIONS:
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: GRADING PLANS
SHEET NUMBER: L3.3
SHEET X OF XX

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PROJECT NUMBER: 16044.00
DATE: 06/10/16
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DRAWN: GG
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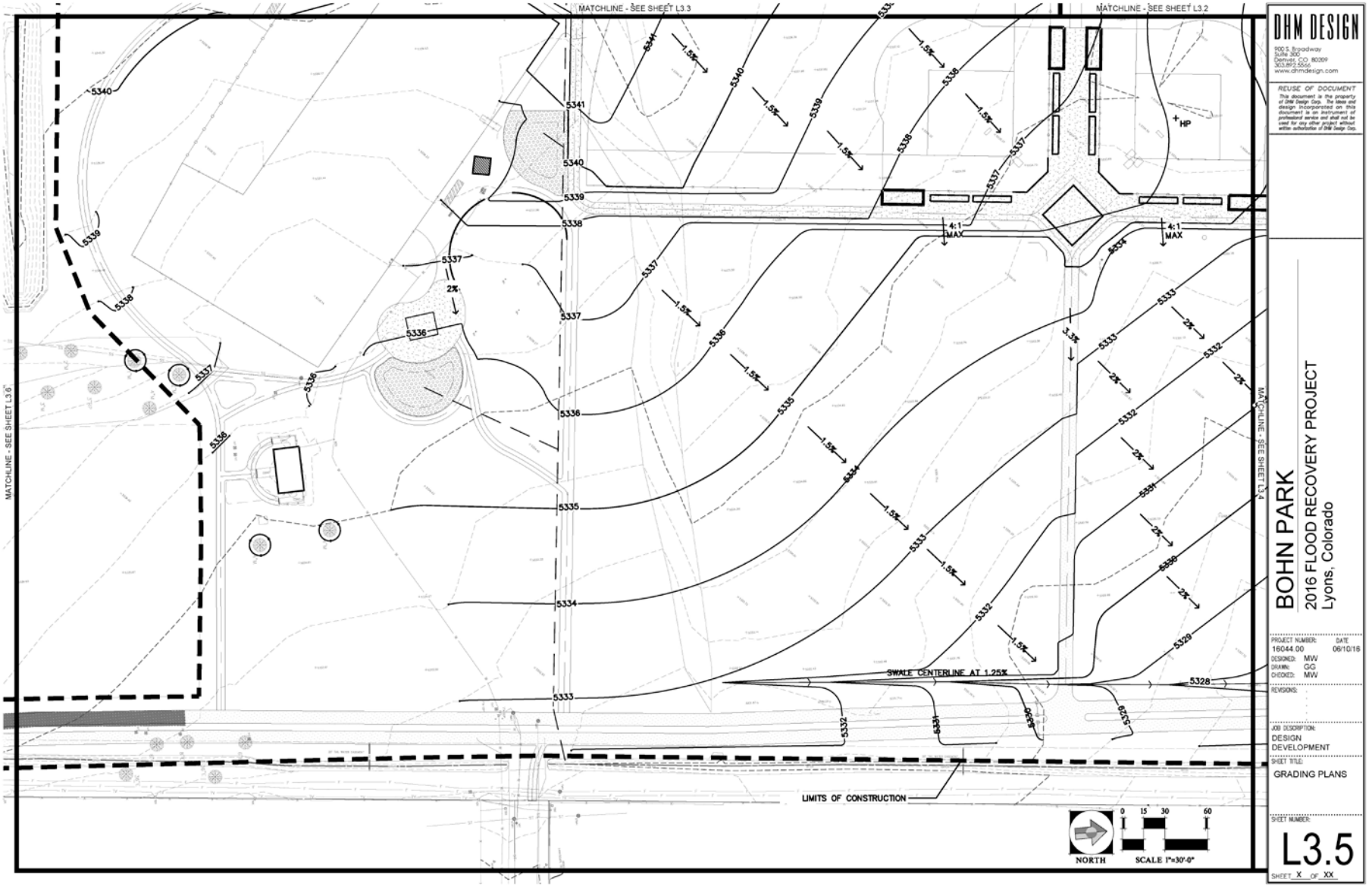
REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.4

SHEET X OF XX



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Lyons, Colorado

PROJECT NUMBER: 16044.00
DATE: 06/10/16
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DRAWN: GG
CHECKED: MW

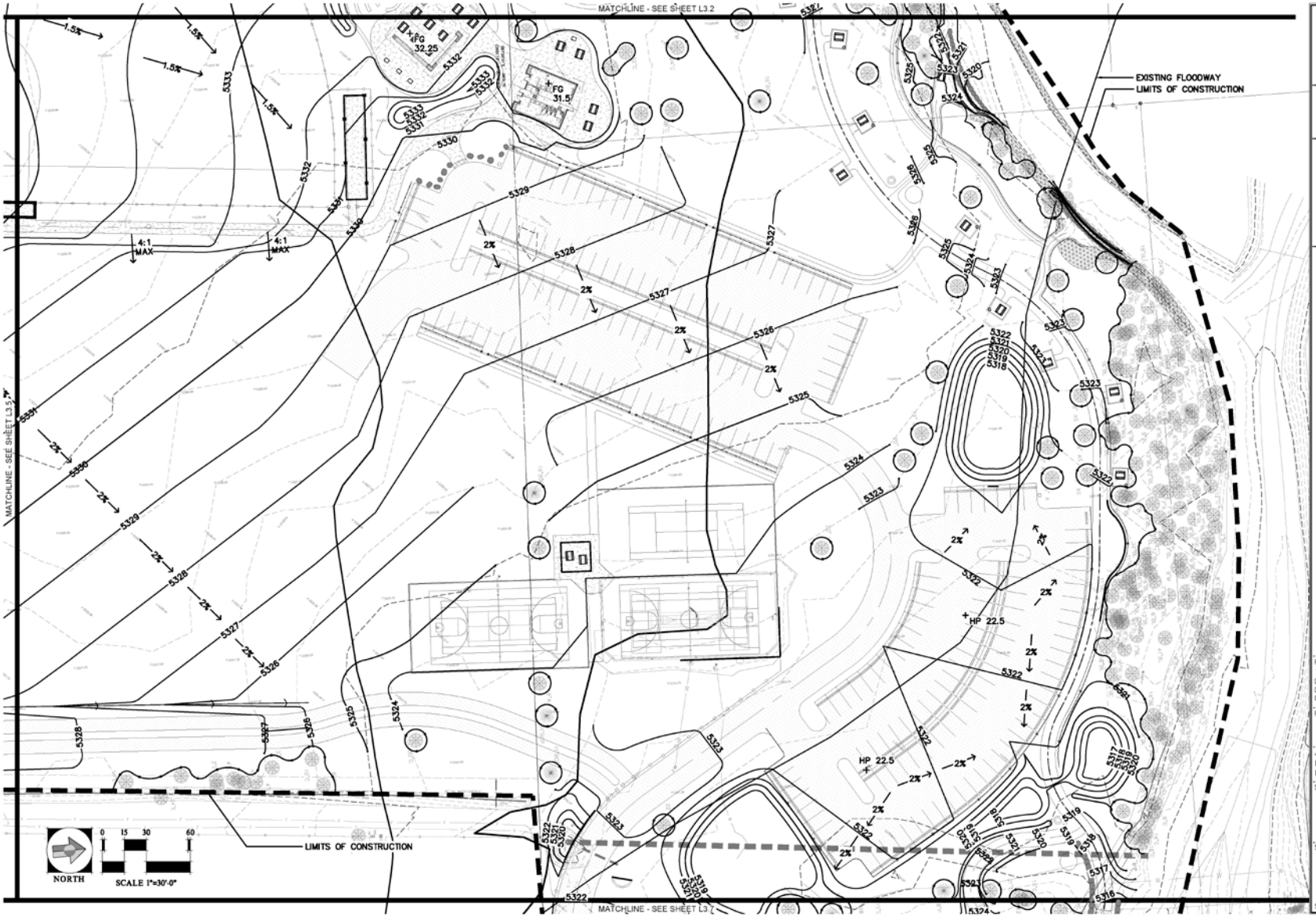
REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.5

SHEET X OF XX



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Lyons, Colorado

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DATE: 06/10/16
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DRAWN: GG
CHECKED: MW

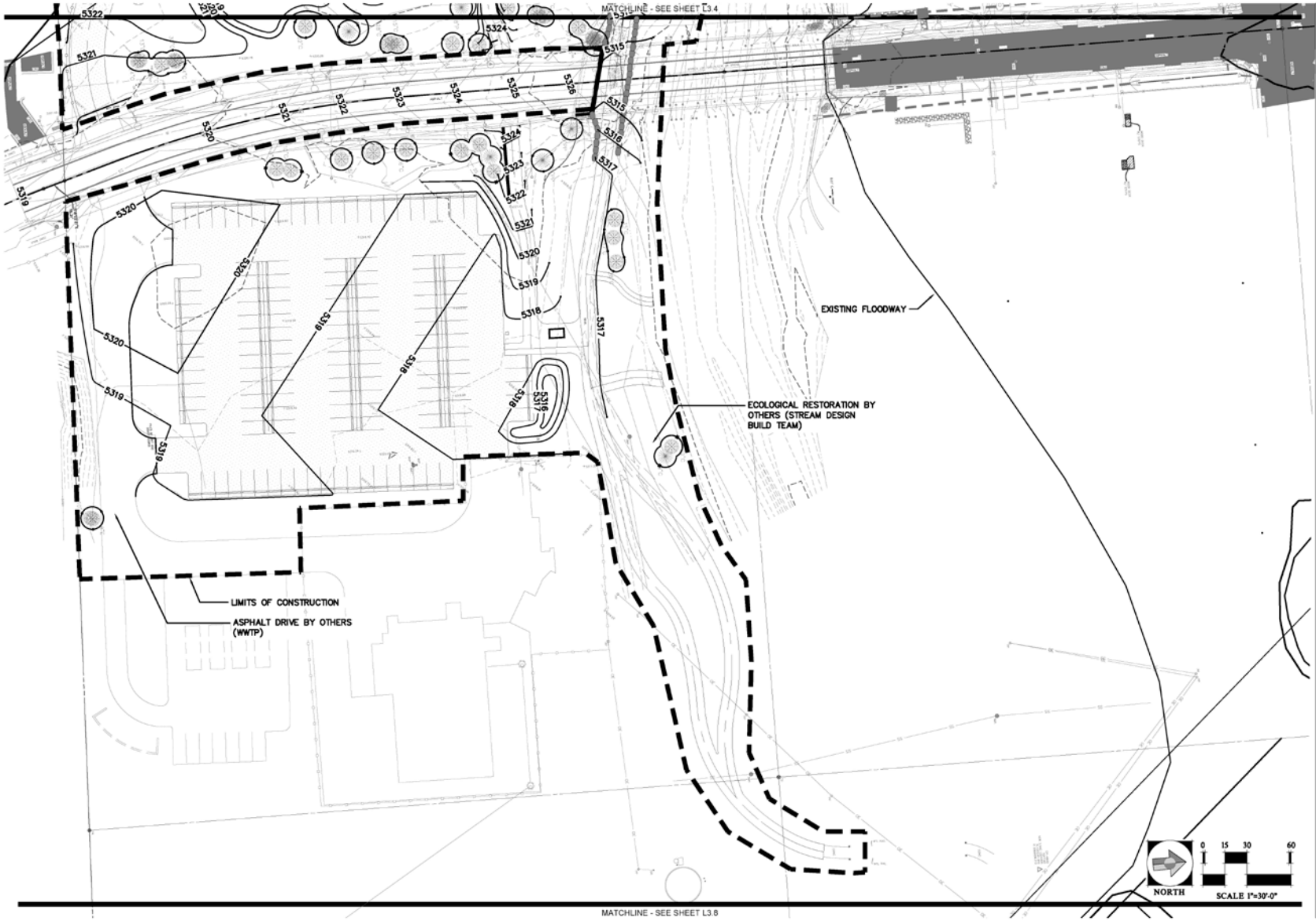
REVISIONS:

JOB DESCRIPTION: DESIGN DEVELOPMENT

SHEET TITLE: GRADING PLANS

SHEET NUMBER: L3.6

SHEET X OF XX



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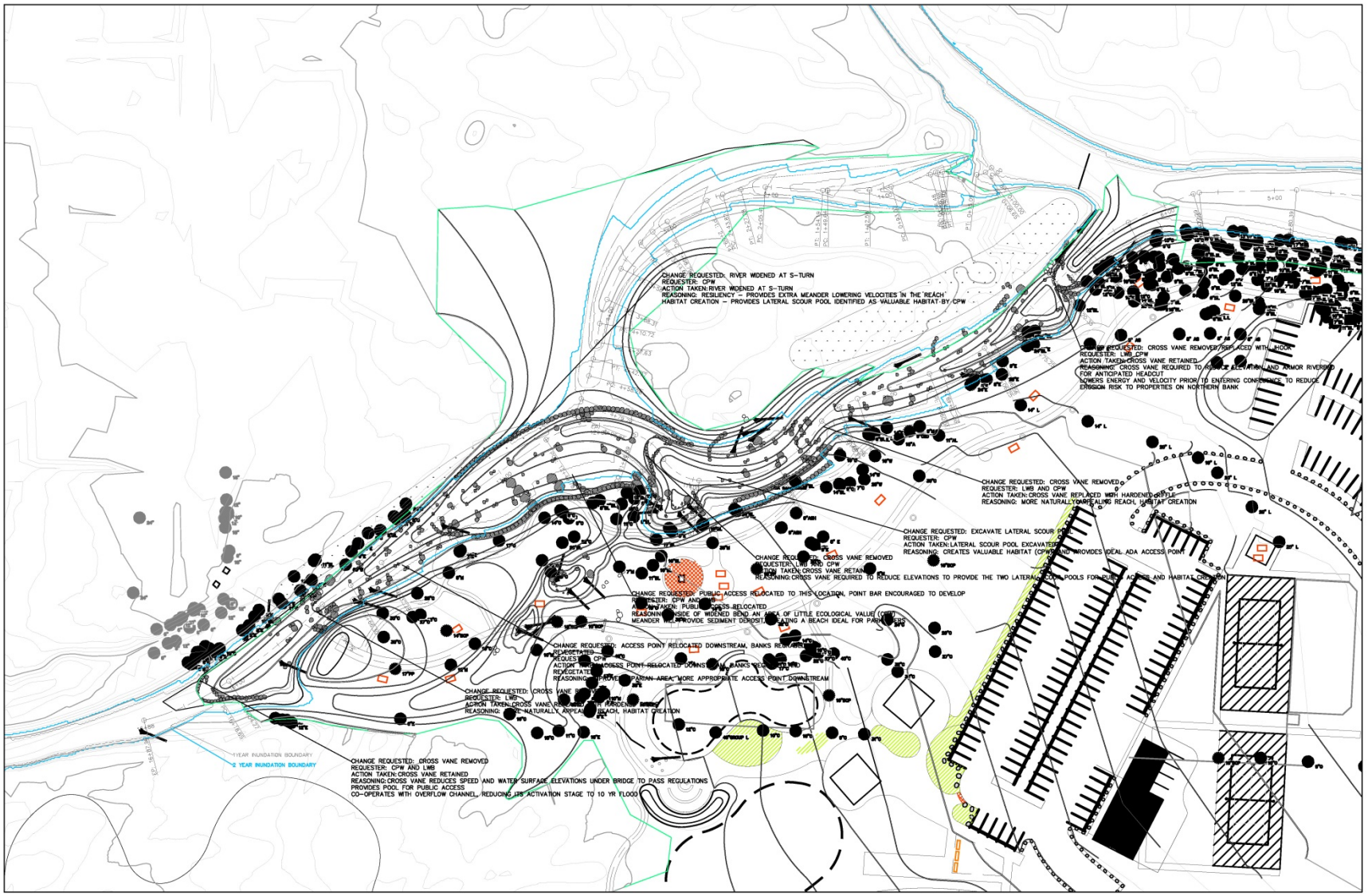
DATE: 06/10/16
DESIGNED: MW
DRAWN: GG
CHECKED: MW
REVISIONS:
JOB DESCRIPTION: DESIGN DEVELOPMENT
SHEET TITLE: GRADING PLANS
SHEET NUMBER: L3.7
SHEET X OF XX

1 YEAR INUNDATION BOUNDARY
2 YEAR INUNDATION BOUNDARY


CHANGE REQUESTED: RIVER WIDENED AT S-TURN
REQUESTER: CPW
ACTION TAKEN:RIVER WIDENED AT S-TURN
REASONING: RESILIENCY – PROVIDES EXTRA MEANDER LOWERING VELOCITIES IN THE REACH
HABITAT CREATION – PROVIDES LATERAL SCOUR POOL IDENTIFIED AS VALUABLE HABITAT BY CPW
CHANGE REQUESTED: CROSS VANE REMOVED/REPLACED WITH J-HOOK
REQUESTER: LWG, CPW
ACTION TAKEN:CROSS VANE RETAINED
REASONING: CROSS VANE REQUIRED TO ACHIEVE ELEVATION AND ARMOR RIVERBED FOR ANTICIPATED HEADCUT
LOWERS ENERGY AND VELOCITY PRIOR TO ENTERING CONFINANCE TO REDUCE EROSION RISK TO PROPERTIES ON NORTHERN BANK
CHANGE REQUESTED: CROSS VANE REMOVED
REQUESTER: LWG AND CPW
ACTION TAKEN: CROSS VANE REPLACED WITH HARDENED RIFFLE
REASONING: MORE NATURALLY APPEALING REACH, HABITAT CREATION
CHANGE REQUESTED: EXCAVATE LATERAL SCOUR POOL
REQUESTER: CPW
ACTION TAKEN:LATERAL SCOUR POOL EXCAVATED
REASONING: CREATES VALUABLE HABITAT (CPW) AND PROVIDES IDEAL ADA ACCESS POINT
CHANGE REQUESTED: CROSS VANE REMOVED
REQUESTER: LWG AND CPW
ACTION TAKEN: CROSS VANE RETAINED
REASONING: CROSS VANE REQUIRED TO REDUCE ELEVATIONS TO PROVIDE THE TWO LATERAL SCOUR POOLS FOR PUBLIC ACCESS AND HABITAT CREATION
CHANGE REQUESTED: PUBLIC ACCESS RELOCATED TO THIS LOCATION, POINT BAR ENCOURAGED TO DEVELOP
REQUESTER: CPW AND LWG
ACTION TAKEN: PUBLIC ACCESS RELOCATED
REASONING: INSIDE OF WIDENED BEND, AN AREA OF LITTLE ECOLOGICAL VALUE (CPW)
MEANDER WILL PROVIDE SEDIMENT DEPOSITION CREATING A BEACH IDEAL FOR PARK USERS
CHANGE REQUESTED: ACCESS POINT RELOCATED DOWNSTREAM, BANKS REVEGETATED
REQUESTER: CPW
ACTION TAKEN: ACCESS POINT RELOCATED DOWNSTREAM, BANKS REVEGETATED
REASONING: PROVIDES PARK AREA MORE APPROPRIATE ACCESS POINT DOWNSTREAM
CHANGE REQUESTED: CROSS VANE REMOVED
REQUESTER: LWG
ACTION TAKEN: CROSS VANE REMOVED
REASONING: MORE NATURALLY APPEALING BEACH, HABITAT CREATION
1 YEAR INUNDATION BOUNDARY
2 YEAR INUNDATION BOUNDARY
CHANGE REQUESTED: CROSS VANE REMOVED
REQUESTER: CPW AND LWG
ACTION TAKEN:CROSS VANE RETAINED
REASONING:CROSS VANE REDUCES SPEED AND WATER SURFACE ELEVATIONS UNDER BRIDGE TO PASS REGULATIONS
PROVIDES POOL FOR PUBLIC ACCESS
CO-OPERATES WITH OVERFLOW CHANNEL, REDUCING ITS ACTIVATION STAGE TO 10 YR FLOOD

Balancing Multiple Objectives

Funding Sources

- FEMA PW20 & PW35
- Town Insurance-CIRSA
- Colorado Water Conservation Board-CWCB
- Community Development Block Grant-CDBG
- Donations and In-Kind Resources
  - Can'D Aid ,Colorado Rockies
- Colorado Parks and Wildlife – Fishing is Fun Grant
- LWCF – State Trails
- Various other sources

*based on reimbursement, prioritization of projects and cash flow impact the ability to complete projects.

Construction Costs…

- FEMA Parks Damage Assessment PW 20
- Whitewater Features Cost - Whitewater Damage Assessment - PW35

Construction Costs…

Bohn Park Flood Recovery Plan

Lyons Parks Flood Recovery Planning Process

Preliminary Cost Estimate

- November 4th, 2015 -

Prepared By: DHM/S2O

ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL
Miscellaneous Demolition / Debris Removal (5%)	LS	1	$292,000.00	$ 292,000.00
Earthwork	LS	1	$100,000.00	$100,000.00
Top Soil	LS	1	$35,000.00	$35,000.00
Crusher Fines	SF	148,034	$2.50	$370,085.00
Post Tension Sport Court	EA	3	$65,000.00	$195,000.00
Flood Memorial	LS	1	$15,000.00	$15,000.00
Gravel Paving (Vehicular Road)	SF	97,269	$4.00	$389,076.00
Concrete Curb Stop	EA	192	$55.00	$10,560.00
Playground Edger	LF	1,376	$15.00	$20,640.00
Concrete / Boulder Retaining Wall	LF	488	$100.00	$48,800.00
Baseball Field	EA	2	$350,000.00	$700,000.00
Baseball Backstop Fencing	EA	1	$5,000.00	$5,000.00
Baseball Field Pole Lighting	LS	1	$175,000.00	$175,000.00
Batting Cage	EA	1	$10,000.00	$10,000.00
Sand Volleyball Courts	EA	2	$10,000.00	$20,000.00
Soil Prep (Native Seed Only)	SF	838,094	$0.12	$100,571.28
Wood Mulch (Shrub Bed)	SF	25,000	$0.80	$20,000.00
Import Top Soil	LS	1	$35,000.00	$35,000.00
Bluegrass Sod w/ Soil Prep	SF	271,506	$0.85	$230,780.10
Native Seed (Hydromulch)	SF	838,094	$0.07	$58,666.58
Shrubs (5 gallon)	EA	600	$50.00	$30,000.00
Evergreen Trees (8'-10' Height B&B)	EA	45	$500.00	$22,500.00
Ornamental Trees (2" Caliper B&B)	EA	3	$450.00	$1,350.00
Deciduous Trees (3" Caliper B&B)	EA	110	$500.00	$55,000.00
Irrigation	LS	1	$150,000.00	$150,000.00
Shade Structure 1 - Prefabricated (150 SF)	EA	1	$20,000.00	$20,000.00
Shade Structure 2 - Prefabricated (800 SF)	EA	1	$ 35,000.00	$35,000.00
Shade Structure 3 - Custom (1,800 SF)	EA	1	$ 180,000.00	$ 180,000.00
Shade Structure 4 - Custom (400 SF)	EA	2	$80,000.00	$160,000.00
Restroom - Custom (900 SF)	EA	1	$500,000.00	$ 500,000.00
Small Playground	LS	1	$ 65,000.00	$ 65,000.00
Large Playground	LS	1	$ 125,000.00	$ 125,000.00
Bike Park Addition	LS	1	$ 15,000.00	$ 15,000.00
Skate Park	LS	1	$300,000.00	$300,000.00
Bouldering Wall	LS	1	$60,000.00	$60,000.00
Slackline Posts	LS	1	$10,000.00	$10,000.00
Picnic Tables	EA	34	$1,500.00	$51,000.00
Benches	EA	10	$1,600.00	$16,000.00
Grill	EA	20	$ 250.00	$5,000.00
Decorative Planters	EA	14	$600.00	$8,400.00
Trash Receptacles	EA	34	$ 1,400.00	$ 47,600.00
Split Rail Fencing	LF	440	$15.00	$6,600.00
Trail Entry Gates (Temporary Overflow Access)	EA	4	$1,500.00	$6,000.00
ADA Fishing Area	LS	1	$32,000.00	$32,000.00
Pump Pit / Well / Pump for Irrigation	LS	1	$ 60,000.00	$ 60,000.00
Park Host Site	LS	1	$48,000.00	$48,000.00
Ecological Restoration	AC	4	$175,000.00	$ 700,000.00
Bohn Park Stream Improvement	LS	1	$ 415,000.00	$ 415,000.00
4th Avenue Bridge (Abutments and Bridge)	LS	1	$80,000.00	$80,000.00

Subtotal	$	6,035,628.96
15% Contingency	$	905,344.34
10% Design & Permitting	$	603,562.90
3% CA Services	$	181,068.87
TOTAL	**$**	**7,725,605.07**

Construction Costs…

- Detailed 50% progress designs
- Meadow Park Construction Bid Results
- Ongoing discussions with contractors and equipment manufacturers
- Construction market
- Increase in active parkland from 7 acres to 35 acres approximate
- 2nd Avenue Trailhead and Parking Lot
- Increase in irrigation

Construction Costs, Phasing and Cash Flow

Bohn Park

Final Design

50% Design Cost Estimate
- July18, 2016 -

items are currently funded by other sources

Prepared By: DHM DESIGN LANDSCAPE ARCHITECTURE URBAN DESIGN + LAND PLANNING ECOLOGICAL PLANNING

S2O REINVENTING WHITEWATER

BARKER RINKER SEACAT ARCHITECTURE

ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL	Notes	source	Planning estimate
General Conditions / Mobilization (5%)	LS			$ 450,000.00	365000		
Miscellaneous Demolition / Debris Removal	LS	1	$ 25,000.00	$ 25,000.00			
Clearing and Grubbing	AC	26	$ 3,500.00	$ 91,000.00	sum of all areas	26	
Earthwork (Complete In Place)	CY	15,000	$ 15.00	$ 225,000.00	8000 from river		
Earthwork (Import / Fill)	CY	9,000	$ 35.00	$ 315,000.00			
Civil							
			Subtotal	$ 496,073.50			
Electrical						AEDG	
			Subtotal	$ 214,000.00			
River Restoration						S2O	
Area 1: Main channel	LS	1	$ 401,631.00	$ 401,631.00			
Area 2: South Overflow	LS	1	$ 60,278.00	$ 60,278.00	assuming 8000 haul off		
Area 3: Western Overflow	LS	1	$ 105,631.20	$ 105,631.20	may be covered by other funding pending FEMA approval		
Additional Excavator Time	LS	1	$ 8,800.00	$ 8,800.00			
			Subtotal	$ 576,340.20			415000
Ecological Restoration						ECOS	
Ecological Restoration	AC	0.87	$ 161,109.64	$ 140,165.39			700000
Bohn Field (Lighted)							
			Subtotal	$ 557,354.50			525000
Vasquez Field (Non-Lighted)							
			Subtotal	$ 395,357.93			350000
Batting Cage							
			Subtotal	$ 18,369.00			10000
Sports Courts							
			Subtotal	$ 204,722.00			195000
Skate Park							
Skate Park (8000 SF)	LS	1	$ 300,000.00	$ 300,000.00	Pillar		
Skatepark (Additional 4000 SF)	LS	1	$ 150,000.00	$ 150,000.00	Pillar		
			Subtotal	$ 450,000.00			300000

Construction Costs, Phasing and Cash Flow

Stone Picnic Area							
			Subtotal	$ 36,452.50			15000
ADA Fishing Access							
			Subtotal	$ 40,590.00			32000
Large Playground							
			Subtotal	$ 168,406.30			135000
Small Playground							
			Subtotal	$ 33,954.30			75000
Climbing Area							
			Subtotal	$ 115,735.20			60000
Bike Park							
			Subtotal	$ 13,550.00			15000
Slackline Area							
4th Avenue Bridge							
			Subtotal	$ 160,000.00			80000
Landscape							
			Subtotal	$ 643,099.52			
Structures							
Restroom - Custom (1085 SF)	EA	1	$ 596,750.00	$ 596,750.00		BRS	
Shade Structure 1 - Custom (1085SF)	EA	1	$ 238,700.00	$ 238,700.00		BRS	
Shade Structure 2 - Craftsman Gable 30' X 30' with square columns and stone wrap	EA	1	$ 50,000.00	$ 50,000.00		ICON	
Shade Structure 3 - Craftsman Gable 20' X 20' with square columns	EA	1	$ 25,850.00	$ 25,850.00		ICON	
Shade Structure 4 - Craftsman Gable 15' X 20' with square columns	EA	1	$ 18,906.00	$ 18,906.00		ICON	
Community Center / Office Buildings	EA	1	$ 850,000.00	$ 850,000.00		BRS	
			Subtotal	$ 1,780,206.00			815000
Site Furnishings/Misc.							
			Subtotal	$ 1,174,447.50			
Irrigation							
			Subtotal	$ 908,161.28			210000

Subtotal	$ 9,234,985.11	$ 7,207,033.69		
10% Contingency	$ 923,498.51	$ 720,703.37		
		Modified Cost	Allocated Budget	$7,500,000
TOTAL	**$ 10,158,483.63**	$ 7,927,737.06		

* Modified Costs assumes donated material, removal of skate park, no parks building, removed overflow channels, removed topsoil from native areas, limited irrigation to active park areas

Parks Next Steps…

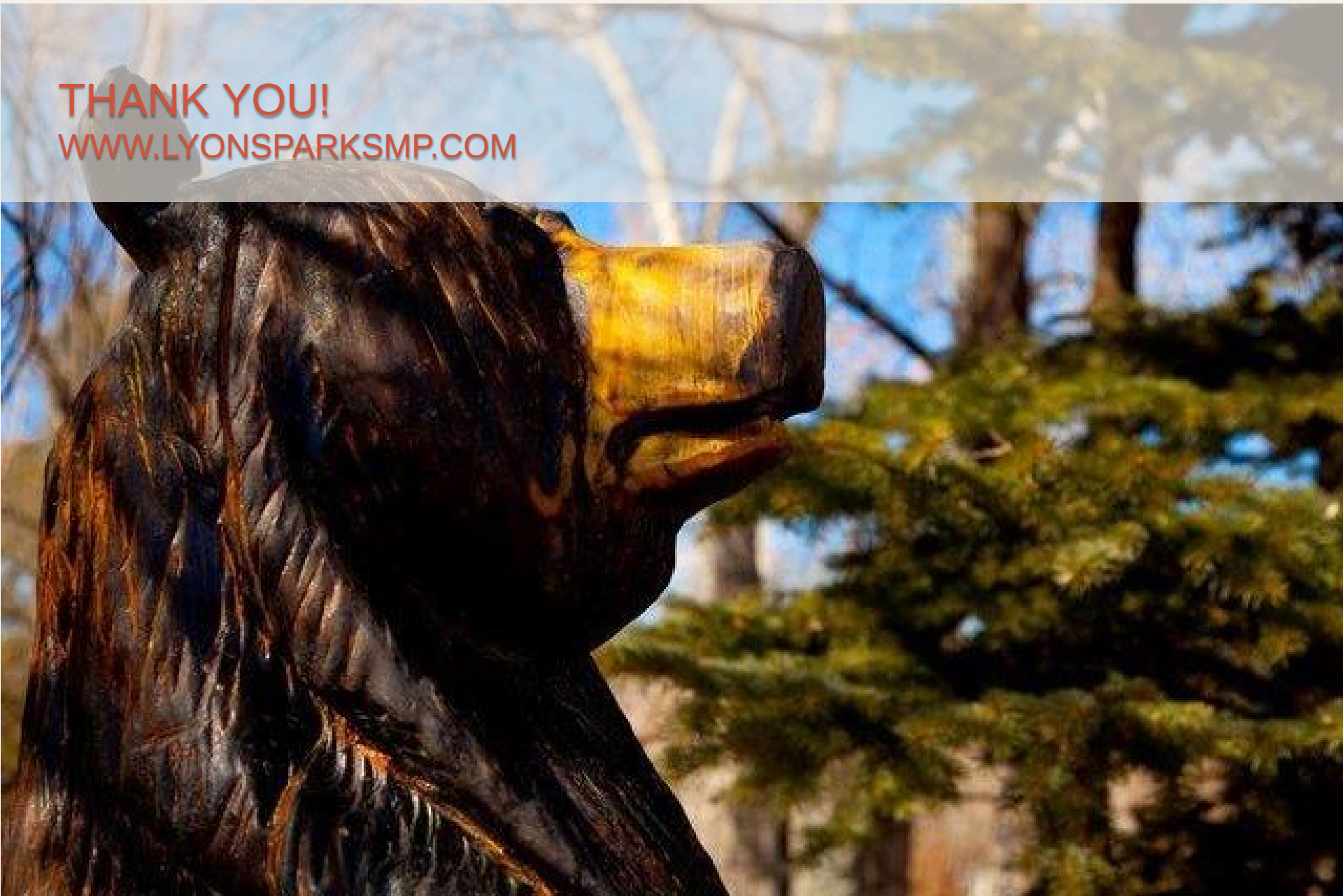
- Project hurdles
  - Floodplain regulation
  - Permitting
  - Funding
  - Cash flow
  - Bidding Process
    - 1 bid package
    - Phasing based on cash flow
    - Multiple Bid Projects

Parks Next Steps…

- Final Design Bohn Park Summer / Fall 2016
- Phasing and Implementation Strategies based on available funding and cash flow

- Timelines
  - Bohn Park Construction–Fall 2016 to Summer 2017
  - LVRP – Winter 2017/ Spring 2018 (projected)

Questions and Answers?

THANK YOU!

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