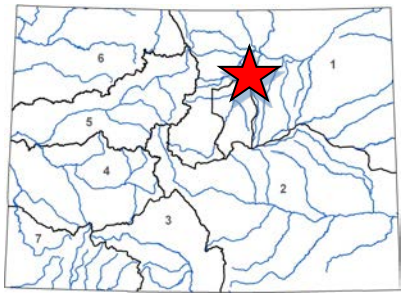
COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Water Plan Grant Application

BFCC - Stormwater Infrastructure

Bohn Farm Cohousing Community, LLC

May 2019 Board Meeting



LOCATION	
County/Counties:	*Boulder*
Drainage Basin:	*South Platte*

DETAILS	
Total Project Cost:	$1,471,224
Water Plan Grant Request:	$735,612
Recommended amount:	$0
Other CWCB Funding:	$
Other Funding Amount:	$
Applicant Match:	$735,612
Project Type(s): Study, Construction, Other	
Project Category(Categories): Conservation and Land Use	
Measurable Result: 2 acre feet non-consumptive	

Current stormwater management strategies involve capturing and treating the water quality capture volume and control. Low Impact Development (LID) provides an alternative water source for non-consumptive use, improves water quality of water bodies, restores natural hydrologic processes in the urban environment, fostering groundwater recharge, and provides opportunities for aesthetic design.

The Bohn Farm development will integrate those policies and techniques to promote the use of LID in order to help guide stormwater management in a direction that is cohesive with the goals in the Colorado Water Plan. By partnering with the City of Longmont, this project will provide educational opportunities to showcase stormwater practices, and offer O&M Manuals to support similar projects of scale across the state. The funding will be applied to coordination, stamped drawings and permitting, costs construction, research, and educational programs and other opportunities.

Consumption of six acres of irrigation will be greatly reduced from the City of Longmont and will benefit the St. Vrain watershed.

Colorado Water Conservation Board (CWCB)

Water Plan Grant Application

Instructions

To receive funding for a Water Plan Grant, applicant must demonstrate how the project, activity, or process (collectively referred to as "project") funded by the CWCB will help meet the measurable objectives and critical actions in the Water Plan. Grant guidelines are available on the CWCB website.

If you have questions, please contact CWCB at (303) 866-3441 or email the following staff to assist you with applications in the following areas:

- **Water Storage Projects:** Anna.Mauss@state.co.us
- **Conservation, Land Use Planning:** Kevin.Reidy@state.co.us
- **Engagement & Innovation Activities:** Ben.Wade@state.co.us
- **Agricultural Projects:** Alexander Funk@state.co.us
- **Environmental & Recreation Projects:** Chris.Sturm@state.co.us

FINAL SUBMISSION: Submit all application materials in one email to waterplan.grants@state.co.us in the original file formats [Application (word); Statement of Work (word); Budget/Schedule (excel)]. Please do not combine documents. In the subject line, please include the funding category and name of the project.

Water Project Summary

Name of Applicant	Bohn Farm Cohousing Community, LLC (BFCC)
Name of Water Project	BFCC – Stormwater Infrastructure
CWP Grant Request Amount	$ 735,611.50
Other Funding Sources	N/A
Applicant Funding Contribution	$ 735,611.50
Total Project Cost	$1,471,223.00

Applicant & Grantee Information

Name of Grantee(s): Bohn Farm Cohousing Community, LLC
Mailing Address: 1313 Spruce Street Longmont CO 80501
Organization Contact: Peter Spaulding
Position/Title: Owner | Designer

Email: peter@ccdc.biz
FEIN: 81-1984636
Phone: 720.466.0962
Grant Management Contact: Avery Ellis
Position/Title: Consultant
Email: AveryEcological@gmail.com
Phone: 908-692-7878
Name of Applicant: N/A (if different than grantee)
Mailing Address: N/A
Position/Title: N/A
Email: N/A
Phone: N/A

Description of Grantee/Applicant
Provide a brief description of the grantee's organization (100 words or less)
Colorado Cohousing Development Company's develops sustainable neighborhood communities that are economically, environmentally, and socially successful. In terms of quality of life and well-being, these communities make real and positive differences to those who reside in cohousing. We value integrity, trust, and teamwork; we seek to promote value through cooperation and support; and we encourage the development and use of innovative systems and processes that last over time. **Bohn Farm Cohousing Community** development is located on six acres, consists of 40 residential units, 6 commercial units, 8000 square feet of amenities and is integrating a Community Supported Agriculture (CSA) business plan.

Type of Eligible Entity (check one)	
	Public (Government): Municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities. Federal agencies are eligible, but only if they can make a compelling case for why a local partner cannot be the grant recipient.
	Public (Districts): Authorities, Title 32/special districts (conservancy, conservation, and irrigation districts), and water activity enterprises.
x	**Private Incorporated:** Mutual ditch companies, homeowners associations, corporations.
	Private Individuals, Partnerships, and Sole Proprietors: Private parties may be eligible for funding.
	Non-governmental organizations (NGO): Organization that is not part of the government and is non-profit in nature.

	Covered Entity: As defined in Section 37-60-126 Colorado Revised Statutes.

Type of Water Project (check all that apply)	
x	Study
x	Construction
	Identified Projects and Processes (IPP)
x	Other

Category of Water Project (check the primary category that applies and include relevant tasks)	
	Water Storage - Projects that facilitate the development of additional storage, artificial aquifer recharge, and dredging existing reservoirs to restore the reservoirs' full decreed capacity and Multi-beneficial projects and those projects identified in basin implementation plans to address the water supply and demand gap.. Applicable Exhibit A Task(s):
x	Conservation and Land Use Planning - Activities and projects that implement long-term strategies for conservation, land use, and drought planning. Applicable Exhibit A Task(s): Approximately 71% of our budget is going to support conservation, land use, and drought planning efforts on these projects: Coordination, Engineering and Permitting. Construction for: Task A: 01 - Bioretention, Task A: 02 - Check Dams, Task A: 03 - Contour Earthwork Basins, Task A: 04 - Permeable Pavers, Task A: 05 - Rain Gardens | Hugelkultur, Task A: 06 - Green Roof, Task A: 07 - Terraced Agriculture, Task A: 08 - Greywater Irrigation The development and maintenance of the O&M Manual and Educational Programs.
x	Engagement & Innovation - Activities and projects that support water education, outreach, and innovation efforts. Please fill out the Supplemental Application on the website. Applicable Exhibit A Task(s): Approximately 5% of our budget is going to support the education, engagement, and innovation efforts on these projects: Coordination, Engineering and Permitting. Construction for: Task A: 01 - Bioretention, Task A: 02 - Check Dams, Task A: 03 - Contour Earthwork Basins, Task A: 04 - Permeable Pavers, Task A: 05 - Rain Gardens | Hugelkultur, Task A: 06 - Green Roof, Task A: 07 - Terraced Agriculture, Task A: 08 - Greywater Irrigation The development and maintenance of the O&M Manual and Educational Programs.
x	Agricultural - Projects that provide technical assistance and **improve agricultural efficiency.** Applicable Exhibit A Task(s): Approximately 24% of our budget is going to improve agricultural efficiency on these projects: Coordination, Engineering and Permitting. Construction for: Task A: 03 - Contour Earthworks, Task A: 05 - Rain Gardens, Task A: 07 - Terraced Agriculture
	Environmental & Recreation - Projects that **promote watershed health, environmental health, and recreation.** Applicable Exhibit A Task(s):

	Other	Explain:

Location of Water Project	
Please provide the general county and coordinates of the proposed project below in **decimal degrees**. The Applicant shall also provide, in Exhibit C, a site map if applicable.	
County/Counties	Boulder County
Latitude	40.164832,
Longitude	-105.116164

Water Project Overview
Please provide a summary of the proposed water project (200 words or less). Include a description of the project and what the CWP Grant funding will be used for specifically (e.g., studies, permitting process, construction). Provide a description of the water supply source to be utilized or the water body affected by the project, where applicable. Include details such as acres under irrigation, types of crops irrigated, number of residential and commercial taps, length of ditch improvements, length of pipe installed, and area of habitat improvements, where applicable. If this project addresses multiple purposes or spans multiple basins, please explain. The Applicant shall also provide, in Exhibit A, a detailed Statement of Work, Budget, Other Funding Sources/Amounts and Schedule.
The Colorado Water Plan promotes sustainable water resources across Colorado. Even in a semi-arid region stormwater can pollute local water bodies and alter natural hydrology. Current stormwater management strategies involve capturing and treating the water quality capture volume and control. Low Impact Development (LID) provides an alternative water source for non-consumptive use, improves water quality of water bodies, restores natural hydrologic processes in the urban environment, fostering groundwater recharge, and provides opportunities for aesthetic design. Municipalities are still hesitant to adopt LID policies. Our development will integrate those policies and techniques to promote the use of LID in order to help guide stormwater management in a direction that is cohesive with the goals in the Colorado Water Plan. By partnering with the City of Longmont, this project will provide educational opportunities to showcase stormwater practices, and offer O&M Manuals to support similar projects of scale across the state. The funding will be applied to coordination, stamped drawings and permitting, costs construction, research, and educational programs and other opportunities. Consumption of six acres of irrigation will be greatly reduced from the City of Longmont and will benefit the St. Vrain watershed. Pending is a letter of support from the South Platte River Basin Roundtable.

Measurable Results	
To catalog measurable results achieved with the CWP Grant funds, please provide any of the following values as applicable:	
N/A	New Storage Created (acre-feet)

2 acre feet conserved per year non-consumptive	New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Non-consumptive	
Enhanced through watershed recharge	Existing Storage Preserved or Enhanced (acre-feet)	
N/A	Length of Stream Restored or Protected (linear feet)	
$25,000 annual savings from city irrigation water	Efficiency Savings (indicate acre-feet/year OR dollars/year)	
6 acres	Area of Restored or Preserved Habitat (acres)	
N/A	Quantity of Water Shared through Alternative Transfer Mechanisms	
100-200 BFCC Members, Neighborhood, Developer, related contractors, Onsite Educational Initiatives	Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning	
10k-100k Longmont Residents	Number of Coloradans Impacted by Engagement Activity	
	Other	Explain:

Water Project Justification

Provide a description of how this water project supports the goals of Colorado's Water Plan, the most recent Statewide Water Supply Initiative, and the applicable Roundtable Basin Implementation Plan and Education Action Plan. The Applicant is required to reference specific needs, goals, themes, or Identified Projects and Processes (IPPs), including citations (e.g. document, chapters, sections, or page numbers).

The proposed water project shall be evaluated based upon how well the proposal conforms to Colorado's Water Plan Framework for State of Colorado Support for a Water Project (CWP, Section 9.4, pp. 9-43 to 9-44;)

Low Impact Development (LID) is a method of deploying stormwater management strategies that accomplish numerous goals set out by the Colorado Water Plan. LID is able to provide alternative water sources for non-consumptive use, improve water quality of stormwater that is discharged to local water bodies, restore natural hydrologic processes in the urban environment, promote groundwater recharge, as well as provide several aesthetic and other benefits to communities. Municipalities across the state can look into Bohn Farm Cohousing Community (BFCC) stormwater case study to overcome barriers that would impede the adoption of evidenced based LID strategies. The results from this project will further build support for the Colorado Water Plan and all the related stakeholders.

Agricultural Projects:
This development will bring experienced agricultural partners together to collaborate and insure that the implementation of the various water efficiency techniques will cultivate soil health and productivity and protect water quality and quantity.

CWP Page 6-97 "Implementation of soil health practices, such as low tillage, mulching, and cover crops (a crop planted to protect the soil), have improved the water-holding capacity of the soil and have reduced soil surface evaporation in many locations. These practices can reduce non-beneficial consumptive losses as well as make more available for crop"

We will create programs that include the planning and installation of water structures specifically designed to meet the need of Bohn Farm Cohousing Community's six acre site, while reducing the amount of consumed irrigation

water for our agricultural products.

CWP Page 6-93 “on-farm practices that reduce the amount of beneficially consumed irrigation water during the production of an agricultural commodity”
“conservation practices include changes in crop type and soil health improvements that reduce evaporative loss.“

These installations will demonstrate innovative farming and conservation practices, which utilize ecosystem services to achieve production goals, while educating local farmers and developers on overcoming barriers to adoption of these practices.

CWP Page 8-16 “incentives should be developed to assist basins in implementing, where appropriate, agricultural efficiency and conservation practices, supporting the ecosystem services agriculture can provide, and changing crop types to lower water-use crops.”
“Future Agricultural Uses: New, irrigated agricultural lands...should be designed to either use best practices with regard to agricultural conservation and efficiency, or be measurably and explicitly multipurpose by meeting identified nonconsumptive needs.”

Conservation & Land Use:
BFCC need for irrigation water will be greatly reduced through the cost-effective water efficiency measures of LID stormwater management.

CWP Page 3-14 “The South Platte Basin is leading the state in M&I water-use efficiency. Efficient use of the basin’s resources through water reuse and conservation is a critical step toward meeting future water needs.”

CWP Page 7-32 “determine whether stormwater is a viable additional source of supply to address consumptive needs.”

BFCC design will promote water efficiency planning that can influence future development projects throughout Colorado, while advancing drought mitigation and integrated land use planning.

CWP Page 6-73 “work with the appropriate agencies to adapt regulations to allow for graywater, green infrastructure, on-site water recycling and other aspects of green developments.”

CWP Page 7-26 “increased urbanization and associated stormwater runoff...can affect water quality.”

CWP Page 7-29 “Stormwater best management practices, including retention and detention, can improve the quality and quantity of the supply, and water management practices could incorporate these practices.”

All of these strategies prepare BFCC and the City of Longmont for the impacts of climate change, by providing a resilient, food producing landscape that will support social engagement, public education, preserved green spaces, and economic development near the cities main street.

WP Page 7-29 “Green infrastructure is taking place at a national level and Colorado is exploring application of this concept. The focus of the green infrastructure concept is to weave natural processes into the built environment, which can provide stormwater management, flood mitigation, air quality management, and riparian zone restoration.”

CWP Page 7-31 “explore ways in which entities can use green infrastructure to address Colorado’s consumptive and nonconsumptive gaps. For example, green infrastructure in the arid West can go beyond stormwater management activities and low-impact development methods by including landscape-scale land-use planning that identifies where activities should occur in order to meet dynamic goals, including protecting and restoring water quality.”

CWP Page 8-16 “Colorado’s Water Plan, BIPs, and stakeholder groups across the state should identify, secure

funding for, and implement projects that help recover imperiled species and enhance ecological resiliency" "Colorado's Water Plan recommends actions that improve Colorado's environment, which will ultimately help Colorado achieve environmental resiliency."

Engagement & Innovation:
The collaborative nature of the Bohn farm cohousing community has already engaged diverse stakeholders across the front range community for support. The site designs exemplify best practices in buildings, infrastructure, stormwater management, and social engagement, that are supported by research and data by professors CSU and other institutions. Our partnership with CSU One Water Solutions Institute will support the development of a comprehensive O&M manual to be shared with stakeholders across the state. Through design and installation, we will offer education on a range of sustainability topics, with a strong focus on water conservation, efficiency, and innovation. This project will serve as a pilot project to help demonstrate and quantify the co-benefits of LID practices and will be a road map for municipalities across the state for how to successfully use LID to bring stormwater management into accordance with the Colorado Water Plan.

CWP Page 4-11 "The South Platte, Arkansas and Rio Grande Basins all recognize that they must plan for a decrease in water supplies because of the effects of climate change,"

CWP Page 6-12 "social values, is a measure of statewide public sentiment; it may trend toward a more "green" orientation or it may shift toward greater "resource utilization." "Green" values will likely favor more dense, low-impact urban development, greater reliance on water reuse and energy efficiency, greater protection of environmental and recreational resources, and preservation of local agriculture and open space. Values associated with more intensive resource utilization will gravitate toward full use of existing natural sources"

CWP Page 6-75 " graywater reuse should be an important component of new construction"

CWP Page 6-82 "allow for graywater piping within structures."

CWP Page 6-26 the South Platte Basin Goals "Distribute and encourage adoption of "best management practices" as "guidelines" (not standards) for M&I water suppliers to consider in their "provider-controlled" programs recognizing the substantial differences in climates, cultures, and economic conditions throughout the South Platte River Basin."

Related Studies

Please provide a list of any related studies, including if the water project is complementary to or assists in the implementation of other CWCB programs.

This project came to light through the "Investigation of Barriers to Policy for Low Impact Development" grant completed by the CSU Stormwater Center.

Previous CWCB Grants, Loans or Other Funding

List all previous or current CWCB grants (including WSRF) awarded to both the Applicant and Grantee. Include: 1) Applicant name; 2) Water activity name; 3) Approving RT(s); 4) CWCB board meeting date; 5) Contract number or purchase order; 6) Percentage of other CWCB funding for your overall project.

N/A

Taxpayer Bill of Rights

The Taxpayer Bill of Rights (TABOR) may limit the amount of grant money an entity can receive. Please describe any relevant TABOR issues that may affect your application.
N/A

Submittal Checklist	
X	I acknowledge the Grantee will be able to contract with CWCB using the Standard Contract.
Exhibit A	
X	Statement of Work(1)
X	**Budget & Schedule(1)**
X	**Engineer's statement of probable cost (projects over $100,000)**
X	Letters of Matching and/or Pending 3rd Party Commitments
Exhibit C - FROM PETER	
X	Map (if applicable)(1)
X	**Photos/Drawings/Reports**
20190218	**Letters of Support (Optional) - FROM BASIN ROUNDTABLE**
X	Certificate of Insurance (General, Auto, & Workers' Comp.) (2)
X	Certificate of Good Standing with Colorado Secretary of State(2)
X	**W-9(2)**
	Independent Contractor Form(2) (If applicant is individual, not company/organization)
Engagement & Innovation Grant Applicants ONLY	
X	**Engagement & Innovation Supplemental Application(1)**
	(1) Required with application. (2) Required for contracting. While optional at the time of this application, submission can expedite contracting upon CWCB Board approval.

Colorado Water Conservation Board (CWCB)
Water Plan Grant - Exhibit A

Statement Of Work	
Date:	**20190131**
Name of Grantee:	**Peter Spaulding**
Name of Water Project:	**Bohn Farm Cohousing Community (BFCC)**: Stormwater Strategies
Funding Source:	**Community Members:** Grant Funds

Water Project Overview:

The Colorado Water Plan promotes sustainable water resources across Colorado. Even in a semi-arid region, stormwater can pollute local water bodies and alter natural hydrology. Current stormwater management strategies involve capturing and treating the water quality capture volume and control and release of varying levels of design storms.

Low Impact Development (LID) is a technique that provides an alternative water source for non-consumptive use, improves water quality of water bodies, restores natural hydrologic processes in the urban environment, promotes groundwater recharge, and provides several aesthetic and other benefits to communities. Adopting policies that promote the use of LID can lead stormwater management in a direction that is cohesive with the goals in the Colorado Water Plan. Despite the many benefits of LID, many municipalities are still hesitant to adopt LID policies.

Bohn Farm Cohousing Community (BFCC) aims to showcase eight LID specific techniques in an urban development project that is legally defined as an Home Owners Association (HOA). By partnering with various construction related trades and with the City of Longmont, this project will provide a wonderful example of stormwater practices along with educational opportunities. BFCC's partners will support the research of the LID strategies, create Operation and Maintenance (O&M) Manuals and assist with audits and ongoing educational venues for public awareness. The distribution of funds will be applied to the strategies that are listed in this proposal; Coordination, Engineering and Permitting, Task A: 01 - Bioretention, Task A: 02 - Check Dams, Task A: 03 - Contour Earthwork Basins, Task A: 04 - Permeable Pavers, Task A: 05 - Rain Gardens | Hugelkultur, Task A: 06 - Green Roof, Task A: 07 - Terraced Agriculture, Task A: 08 - Greywater Irrigation, and the development and maintenance of O&M Manuals and Educational Programs.

BFCC is a 46 unit mixed use development that consists of 40 residences, 6 live/work units and 8,000 square feet of amenities, all designed specifically to support a **Farm-to-Table** and **Artist community**. Our site has a 37 foot elevation change from the south of the property up to Spruce Ave on the north side of the property. When you look at the attached map you get an understanding why we are so interested in LID systems. BFCC is creating a self-regulated community that allows the buyer to have as much privacy and community as they want. Currently, 22 of the 40 residences are spoken for, and we are 5% into the architectural Design Development phase and responding to the first round of comments from the City of Longmont Planning Department.

Cohousing is a grassroots financial model, where the buyers, in partnership with Colorado Cohousing Development Company (CCDC), purchase the land, fund the development process, assist with the site and unit designs, help with the selection of trades working on the project, assist in writing the HOA declarations and bylaws and much more. Developers who tackle cohousing choose to do so because it fills a very specific need for community created around shared interests and values.

Project Objectives:

BFCC will create a project that is in alignment with the Colorado Water Plan - one that fosters LID through the smart management of developed stormwater strategies and infrastructure.

Our design team will develop the appropriate architectural, structural, and civil engineering documents for the eight agenda items listed and defined in Task A of this proposal. We will work with the City of Longmont to obtain the necessary permits required to complete the LID strategies envisioned for this project. BFCC will contract and collaborate with the necessary trades to properly install each of the eight designs that are integral for a successful Farm-to-Table and Artist community.

BFCC willshowcase Best Management Practices for stormwater LID Strategies in:

- Coordination and Design
- Engineering and Permitting
- Streetside Bioretention and Decentralized Detention, Check Dams, Contour Earthwork Basins, Permeable Pavers, Rain Gardens, Green Roofing, Terraced Agriculture Installation, Graywater Installation & Irrigation.
- Development and Maintenance of O&M Manuals and Educational Opportunities

Other objectives include offering a pilot project for Greywater irrigation, educational opportunities for local residents, municipalities, architects, urban planners and developers, and development of an O&M manual for shared-auditing purposes that ensures the long-term success of this and future projects. We will create efficient yet robust reporting mechanisms, to help refine future systems, processes and costs.

Coordination & Design

Description of Task:

During construction, CCDC design team will assist in the coordination of filing all the pertinent documents related to this grant. We will create two member accounts for CWCB's team on the login page of our website so that our reports, manuals, audits, stamped drawings schedules and budgets will be available in a customized folder structure for CWCB to access online.
Post construction, we will maintain all digital files and continue building on BFCC's educational programs.

Method/Procedure:

Our Collaborative Partnerships:

- ➢ Colorado Cohousing Development Company
- ➢ Bohn Farm Cohousing Community: Design & Construction and CSA Teams, and Peter Spaulding
- ➢ White Construction Group: Chris Spyke
- ➢ JVA Engineering: Sharon Procopio
- ➢ F9 Productions: Alex Gore
- ➢ Dig Studio: Laurel Raines
- ➢ Avery Ecological Design: Avery Ellis
- ➢ Padden Permaculture: Patrick Padden
- ➢ CSU One Water: Tyler Dell
- ➢ City of Longmont Planning Department: Judah Gaioni

Deliverable:

Completed detailed schematic designs will be presented to the CWCB at the completion of this task along with a budget and associated invoices. This will include an approved city permit for these projects by end of year 2019.

Engineering & Permitting

Description of Task:

CCDC will develop Engineering Documents that represent our desired goals for LID stormwater management. In collaboration with its design team, CSU One Water Solutions Institute, Avery Ecological Design, the City of Longmont (Water Quality requirements), and local experts in the field, these documents will be utilized for local permitting and project installation.

Method/Procedure:

Our Collaborative Partnerships:

Colorado Cohousing Development Company

- Bohn Farm Cohousing Community: Design & Construction and CSA Teams, and Peter Spaulding
- White Construction Group: Chris Spyke
- JVA Engineering: Sharon Procopio
- F9 Productions: Alex Gore
- Dig Studio: Laurel Raines
- Avery Ecological Design: Avery Ellis
- Padden Permaculture: Patrick Padden
- CSU One Water: Tyler Dell
- City of Longmont Planning Department: Judah Gaioni

Please refer to the detailed tasks below and attached concept design which will be referenced when creating the detailed schematics for permitting.

Deliverable:

Completed detailed schematic designs will be presented to the CWCB at the completion of this Task along with a budget and associated invoices. This will include an approved city permit for these projects by end of Spring 2020.

Task A
01 - Bioretention Design

Description of Task:

Bioretention systems are used to remove a wide range of pollutants, such as suspended solids, nutrients, metals, hydrocarbons, and bacteria from stormwater runoff. They can also be used to reduce peak runoff rates and increase stormwater infiltration when designed as a multi-stage, multi-function facility.

The basic design parameters for bioretention systems are its storage volume, the thickness, character, and permeability rate of its planting soil bed, and either the hydraulic capacity of its underdrain or the permeability of its subsoil (whichever is applicable). The system must have sufficient storage volume above the surface of the bed to contain the design storm runoff volume without overflow.
Our basins will utilize engineered soils, artistic downspouts to detain stormwater flows, possible bioretention systems that may be designed with underdrains where needed, possible supplemental pretreatments to the bioretention system, and our designs will meet the City's code requirements.

Method/Procedure:

These bioretention basins will be designed and stamped by our engineering team at JVA, permitted by the City of Longmont Planning Department and involve other associated watershed groups.
Our design is to be continuously re-evaluated from design to implementation by utilizing the following practices:

- Build on the definition and purpose of our detention systems through documentation in order to provide value added and evidenced-based education for the public.
- Provide audits of the project on an annual or semi-annual basis
- Develop and make public a maintenance manual
- Generate a list of Recommendations and Considerations.

Budget:
For this component of the grant proposal we anticipate the following:

- 95% Conservation & Land Use Planning
- 5% Engagement & Innovation

Task A
02 - Check Dams

Description of Task:

Check Dams are small barriers constructed with rocks, gravel bags, sandbags, fiber rolls or reusable products placed across a construction swale or drainage ditch. These will reduce the velocity of flowing water allowing for sediment to settle and reduce the potential for soil erosion. These areas will support long-term strategies for conservation, land use, and drought planning.

Method/Procedure:

These Check Dams will be designed and stamped by our engineering team at JVA, permitted by the City of Longmont Planning Department and involve other associated watershed groups.

Best management practices will be implemented for the inspection and maintenance of check dams which are essential to their effectiveness.

- Inspect prior to and after inclement weather events and during two week intervals
- Replace missing rocks, bags or bales
- Mitigate sentiment accumulation (reincorporate the sediment back into the site)
- Develop and make public a maintenance manual
- Generate a list of Recommendations and Considerations prior to check dam removal if they are no longer needed over time.

Budget:
For this component of the grant proposal we anticipate the following:

- 95% Conservation & Land Use Planning
- 5% Engagement & Innovation

Task A
03 - Contour Earthwork Basins

Description of Task:

While accommodating the community's aesthetic needs, ultimately the design of our Earthworks is to have an effective layout for the longevity of the community's health and its mission statement of creating a farm to table community. Our Contour Earthwork basins will detain stormwater so that it is conveyed to another zone prior to sinking into the soil allowing for the flow of water to infiltrate into approved agricultural areas, and to consider supplemental pretreatments in our Earthworks design to meet the City's code requirements. The defined areas will support perennial and annual agricultural crops, provide drought resilience and bring water conservation into the landscape. The design supports Food Forest Farming, which is a practice that is geared towards low-maintenance, sustainable, agro farming that supplements the efficient production and harvesting of produce. BFCC is incorporating fruit and nut trees, herbs, perennial vegetables and annuals: approximately 60% of cultivated space will consists of Food Forest and the other 40% annuals. This is a food production strategy for the Community Supported Agriculture (CSA) business model the community is integrating into the Home Owners Association (HOA). Every member in the HOA is required to participate in the CSA as stipulated in the HOA declaration and bylaws.

Method/Procedure:

These contour earthwork basins will be designed and stamped by our engineering team at JVA, permitted by the City of Longmont Planning Department and involve other associated watershed groups.

In order to engineer the earthwork for our development plan the design team has integrated LID slopes, grading, drainage and land features for the following reasons:

- Maintenance & Inspection
- Provide a Detailed Impact Study on the Subsurface Soils Report
- Analyze and Document Drainage and Erosion of the Overall Earthwork Design
- Provide an Annual Report on the Health of the CSA
- Develop an Educational Package on the Integration and Benefits of a CSA Regulated by the HOA.

Budget:
For this component of the grant proposal we anticipate the following:

- 70% Agricultural Project
- 25% Conservation & Land Use Planning
- 5% Engagement & Innovation

Task A
04 - Permeable Pavers

Description of Task:

Permeable pavers mimic the natural process that occurs on the ground's surface, consequently reducing runoff and returning water to underground aquifers. It also traps suspended solids and pollutants, keeping them from polluting the water stream. Pervious concrete has many applications, most commonly:

- residential roads and driveways
- sidewalks
- parking lots
- patios

The permeable paver designs for the residences that have driveways along the southern border of the private drive will help to mitigate the water flow across our site.

Method/Procedure:

The permeable paver driveways will be designed and stamped by our architect and the engineering team at JVA, be permitted by the City of Longmont Planning Department, and involve other associated watershed groups.

Permeable Pavers comprise of engineered soils and proper drainage controls to detain stormwater flows. These permeable areas will be designed and stamped by our engineering team at JVA and permitted by the City of Longmont Planning Department and other associated watershed groups.
For these area of installation we will set up an impact study to monitor the stormwater and rainfall.

Budget:
For this component of the grant proposal we anticipate the following:

- 95% Conservation & Land Use Planning
- 5% Engagement & Innovation

Task A
05 - Rain Gardens | Hugelkultur

Description of Task:

Rain gardens are depressed areas of landscape with perennial flowers and native vegetation that soak up rainwater. They are strategically located to capture runoff from impervious surfaces, such as roofs and streets. Rain gardens fill with a few inches of water after a storm and then water filters into the ground, rather than running off to a storm drain. The Rain Gardens we develop will consist of engineered soils and some artistic downspouts to mitigate decentralized stormwater flows.

Hugelkultur farming practices will also be utilized for repurposed material onsite, like timber, wood fencing, concrete and other organic debris that can be reused. These are dug raised beds with a difference: they hold moisture, build fertility, maximise surface volume and are great spaces for growing fruit, vegetables and herbs. Like the rain gardens, these areas will support perennial agricultural crops and provide drought resilience and water conservation in the landscape. They'll be designed by our CSA consultant and permaculture team, and built by contract.

Method/Procedure:

The rain gardens will be designed and stamped by our architect and the engineering team at JVA, permitted by the City of Longmont Planning Department, and involve other associated watershed groups.

Budget:
For this component of the grant proposal we anticipate the following:

- 70% Conservation & Land Use Planning
- 25% Agricultural Project
- 5% Engagement & Innovation

Task A
06 - Green Roofs

Description of Task:

We are installing a blend of extensive and intensive green roofs that will utilize roofing assemblies and engineered planter beds to manage decentralized stormwater flows. Green roofs can be partly or fully covered by waterproof roofing membrane that supports a growing medium with planted vegetation. These areas will support agricultural crops, provide drought resiliency, and promote water conservation in the landscape.

Method/Procedure:

The green roof will be designed and stamped by our architects and structural engineers, permitted by the City of Longmont Planning Department, and involve other associated watershed groups.

Budget:

For this component of the grant proposal we anticipate the following:

- 70% Conservation & Land Use Planning
- 25% Agricultural Project
- 5% Engagement & Innovation

Task A
07 - Terraced Agriculture Installation

Description of Task:

Due to the elevation grade of our development there are zones on the southern portion of the property that will be terraced for agricultural purposes by retaining walls where they are needed. Walls will consist of engineered soils and proper drainage to mitigate the decentralized stormwater flows. These areas will support perennial agricultural crops and provide drought resilience and water conservation in the landscape.

Method/Procedure:

The retaining walls will be designed and stamped by our engineering team at JVA and permitted by the City of Longmont Planning Department and other associated watershed groups.

Budget:
For this component of the grant proposal we anticipate the following:

- 70% Agricultural Project
- 25% Conservation & Land Use Planning
- 5% Engagement & Innovation

Task A
08 - Graywater Irrigation Infrastructure

Description of Task:

For the condo building, comprising of 24 residences and 6 commercial units, designing and implementing an effective commercial graywater system that utilizes a high-tech filtration system from Greyter Water Systems to meet the NSF water quality requirements. This would be a terrific opportunity to document the effectiveness of these systems at this scale: 30 units. The Greyter Water System utilizes a smart sensor to determine when irrigation is appropriate and this system will comply with CO regulation 86. This form of water conservation will support non-edible crops onsite, thus providing further drought resiliency and water conservation.

Method/Procedure:

The graywater irrigation infrastructure will be designed and stamped by our engineering team at JVA and permitted by the City of Longmont Planning Department and other associated watershed groups.

Budget:
For this component of the grant proposal we anticipate the following:

- 95% Conservation & Land Use Planning
- 5% Engagement & Innovation

Task B **O&M Manual**
Description of Task:
The research and development of comprehensive O&M Manuals will be completed by CCDC's design development team and their subcontractors.
Method/Procedure:
Through collaborative partnerships with: ➢ Tyler Dell of CSU One Water ➢ Judah Gaioni of City of Longmont ➢ BFCC's Community Development Team ➢ CCDC's Management Team ➢ F9 Productions: Alex Gore ➢ Dig Studio: Laurel Raines ➢ Avery Ecological Design ➢ Padden Permaculture We will utilize the permitted design documents along with photo documentation of the installation to create an O&M manual that supports future stormwater projects across the state. We will digitally catalog all the operations and maintenance instructions along with the manufacturer's literature, as built drawings, and other legal and pertinent information. The digital catalog folder structure will replicate the structure we are laying out in this application. We are a paperless company and will report everything digitally and on the cloud for easy and efficient access. Our HOA, BFCC, has an administration access page; we will create two user accounts for your access to all research, educational and reporting documents that will be required for this grant.
Deliverable:
An Accessible and Digitally O&M Manual in PDF format, to be completed by end of year 2021.

Task C **Education**
Description of Task:
To create, build, sustain and promote educational programs that tie our project to the greater community; residential, business and educational.

Method/Procedure:

Our cohousing community will promote and create partnerships with the greater community to offer educational opportunities that benefit all ages. The success of our Farm to Table community, BFCC, Is dependent on the design for our LID.

The success of our LID will be showcased to regional engineers, designers, students in all levels of education, and to the greater community. We hope to show the public the available opportunities for water conservation and landscape design through presentations, tours and outreach programs.

Our goal will be to reach out to the local Elementary, Middle, and High School representatives to create threads of educational opportunity that promotes and cultivates farming practices and outdoor art. The intention is to ensure that the educational opportunities showcase and support the agenda of the Colorado Water Plan, LID's and to engage the many diverse stakeholders in order to cultivate a growing awareness of the benefits of water and land conservation. Depending on the resources available, some of these classes and workshops will be offered at no charge.

BFCC: is also filming the Cohousing Development process. This process will be a part of the film. When completed we will be releasing the film for educational purposes.

To achieve this goal we'll access the following existing collaborating partners:

- CSU One Water: Tyler Dell
- City of Longmont: Judah Gaioni of
- BFCC: Community Development Team
- CCDC: Management Team
- F9 Productions: Alex Gore
- Dig Studio: Laurel Raines
- Avery Ecological Design: Avery Ellis
- Padden Permaculture: Patrick Padden
- Boulder Permaculture: TBD
- People & Pollinators Network: TBD
- Sustainable Resilient Longmont: TBD

Deliverable:

As this project evolves we will set up an annual project schedule for educational programs and events, events that will be documented and shared with CWCB. The creation of our CSA is meant to be a revenue stream to the community, so that over time the community can reinvest into its infrastructure. A successful CSA will be based on its design, and we believe that the LID strategies we integrating into our development will help our CSA come into fruition and succeed. This documentation will come in the form of cataloged photographs, registration lists for educational programs, digital literature of our findings and presentations.

Budget and Schedule

This Statement of Work shall be accompanied by a combined Budget and Schedule that reflects the Tasks identified in the Statement of Work and shall be submitted to CWCB in excel format.

Reporting Requirements

Progress Reports: The applicant shall provide the CWCB a progress report every 6 months, beginning from the date of issuance of a purchase order, or the execution of a contract. The progress report shall describe the status of the tasks identified in the statement of work, including a description of any major issues that have occurred and any corrective action taken to address these issues.

Final Report: At completion of the project, the applicant shall provide the CWCB a Final Report on the applicant's letterhead that:

- Summarizes the project and how the project was completed
- Describes any obstacles encountered, and how these obstacles were overcome
- Confirms that all matching commitments have been fulfilled
- Includes photographs, summaries of meetings and engineering reports/designs

The CWCB will pay out the last 10% of the budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.

Payment

Payment will be made based on actual expenditures and must include invoices for all work completed. The request for payment must include a description of the work accomplished by task, an estimate of the percent completion for individual tasks and the entire Project in relation to the percentage of budget spent, identification of any major issues, and proposed or implemented corrective actions.

Costs incurred prior to the effective date of this contract are not reimbursable. The last 10% of the entire grant will be paid out upon receipt of the final deliverable. All products, data and information developed as a result of this contract must be provided to CWCB ~~in hard copy and~~ electronic format as part of the project documentation.

Performance Metrics

Performance Metrics for this contract shall include the following:

(a) Performance standards and evaluation: Grantee will produce detailed deliverables for each task as specified. Grantee shall maintain receipts for all project expenses and documentation of the minimum in-kind contributions (if applicable) per the budget in Exhibit B. Per Water Plan Grant Guidelines, the CWCB will pay out the last 10% of the budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.

(b) Accountability: Per Water Plan Grant Guidelines full documentation of project progress must be submitted with each invoice for reimbursement. Grantee must confirm that all grant conditions have been complied with on each invoice. In addition, per Water Plan Grant Guidelines, Progress Reports must be submitted at least once every 6 months. A Final Report must be submitted and approved before final project payment.

(c) Monitoring Requirements: Grantee is responsible for ongoing monitoring of project progress per Exhibit A. Progress shall be detailed in each invoice and in each Progress Report, as detailed above. Additional inspections or field consultations will be arranged as may be necessary.

(d) Noncompliance Resolution: Payment will be withheld if grantee is not current on all grant conditions. Flagrant disregard for grant conditions will result in a stop work order and cancellation of the Grant Agreement.

ENGAGEMENT & INNOVATION GRANT FUND SUPPLEMENTAL APPLICATION

Introduction & Purpose

Colorado's Water Plan calls for an outreach, education, public engagement, and innovation grant fund in Chapter 9.5.

The overall goal of the Engagement & Innovation Grant Fund is to enhance Colorado's water communication, outreach, education, and public engagement efforts; advance Colorado's water supply planning process; and support a statewide water innovation ecosystem.

The grant fund aims to engage the public to promote well-informed community discourse regarding balanced water solutions statewide. The grant fund aims to support water innovation in Colorado. The grant fund prioritizes measuring and evaluating the success of programs, projects, and initiatives. The grant fund prioritizes efforts designed using research, data, and best practices. The grant fund prioritizes a commitment to collaboration and community engagement. The grant fund will support local and statewide efforts.

The grant fund is divided into two tracks: engagement and innovation. The Engagement Track supports education, outreach, communication, and public participation efforts related to water. The Innovation Track supports efforts that advance the water innovation ecosystem in Colorado.

Application Questions

*The grant fund request is referred to as "project" in this application.

Overview (answer for both tracks)
In a few sentences, what is the overall goal of this project? How does it achieve the stated purpose of this grant fund (above)?
Colorado Cohousing Development Company (CCDC) intends to complete an urban stormwater project utilizing Low Impact Development (LID) systems and strategies for their development at Bohn Farm Cohousing Community (BFCC). BFCC will promote the innovation of LID as a viable and pragmatic solution for developers. The success of this development can be used to bring the Colorado Water Plan goals to the stormwater sector by showcasing how we are deploying our evidenced-based strategies. We welcome the opportunity to showcase our developments, typically between 20 to 50 residential HOA units, to the building community so that they understand the developments scale of economy. Offering research and educational opportunities to further promote green infrastructure across the state is a perspective shared by the entire cohousing community.
Who is/are the target audience(s)? How will you reach them? How will you involve the community?
BFCC, located in the City of Longmont (CoL) old-town district and is one of CoL largest infill projects. The principles behind the development is to show City and Urban Planners that there are housing types out there that celebrate green technologies, deploy LID systems and strategies, and work towards building successful communities. The City of Longmont is already engaged through their engineering department; they are eager to showcase more of the CoL's green infrastructure. The community will be further engaged in the years following the completion of the proposals within the grant, through educational opportunities. We are putting everything on the Cloud, online, because it is the easiest way to share resources. Those resources will be excel spreadsheets, photos, presentations, and the like. Homeowners who reside in cohousing appreciate the value of shared knowledge and resources. Since this is a farm to table community we are hiring and housing a farm intern who will be manage the Community. Our community has several teams one being the CSA which is currently developing and completing the CSA business plan for the HOA, as a shared resources. Those resources will be reinvested back into the community for

maintenance and reinvestment to ensure the success of the CSA. Community members will be participating in the success of this farm to table concept through management and labor. One of the goals for the CSA business plan is to offer excess CSA shares to the greater community. When associate members, the greater community, come to our site to pick up their shares they'll witness its success and that exposure will lead to greater discussions across the board. Avery Ecological Design and Padden Permaculture offers an annual permaculture course and since they will be contracted to integrated the LID systems and strategies at BFCC we'd be a great candidate to showcase our product to those students.

We will also be working with leaders in our community and across the nation to use our housing model type, cohousing, and our educational material will showcase the BMP for the BFCC development which includes LID systems and strategies. CCDC has already been recognized for its efforts by newspapers and magazines. Editors from magazines related to the building sector, architecture, urban planning, farming and those that are considered green magazines will all want to learn more about the success of this development.

Because the other half of our community are artist, we plan on hosting site visits by local schools so that children can participate in outdoor sculpture or painting competitions that can be mounted at the base of a produce row on the farm. In this way, many parents and their children, artist, and others that come to our site will learn about its operation which would include LID systems and strategies.

BFCC will also comprise of 6 commercial units, these are planned to be small business who will also attract clientele who'll naturally inquire about BFCC because it will be a first of it kind in Longmont CO, the state, and the nation. Yes, there are roughly 165 cohousing developments across the nation, however we are the first to intentionally integrate a business model into the HOA. More cohousing developers are catching onto this concept, a concept CCDC has been advertising since 2013. Having mixed use and a business plan tied to the HOA generates a lot more foot traffic to the site during business hours.

Describe how the project is collaborative or engages a diverse group of stakeholders. Who are the partners in the project? Do you have other funding partners or sources?

This project is collaborative by its very nature of the cohousing development process. The homeowners for our development go through the entire process a regular homeowner does when they purchase land and build; the only difference is that they pool their resources and knowledge in order to create a beautiful sense of place that creates a lot of ownership for each buyer. BFCC is a multicultural and multigenerational development project in Longmont that will include 40 residences, 6 commercial units, a 0.85 acre park and 2 acres of agricultural production for the CSA business. Each member of this community is a stakeholder and a high percentage have helped to purchase the land and fund the development process; they have assisted the developer in the selection of architect and interior design firms, worked with the architect on site and unit designs, helped to create the HOA bylaws and declaration, help to organize all of the workshops which are training modules so the community learns to be self regulated and how to govern itself with the right decision making and conflict resolution processes and more. Aside from the collaborative design team and the members of BFCC; we have engaged with the City of Longmont for permits and approvals and CSU has offered to provide research on water related issues.

BFCC will have 46 unit buyers who will celebrate our project and its success. Colorado Cohousing Development Company along with their design team, BFCC, White Construction Group, JVA Engineering, F9 Productions, Dig Studios, and Avery Ecological Design all see and are embracing new design concepts and strategies that offer developers opportunities to build structures with a much smaller carbon footprint, that are engineered towards energy neutrality (passive solar design) and LID systems and strategies.

We will be seeking a commercial loan within the next several months to drive the project forward. Once the development is complete the developer will turn over the HOA to BFCC who'll then manage it.

Describe how you plan to measure and evaluate the success and impact of the project?

Success of the project will be measured by subsequent years of consistent monitoring, research, reinvestment, and education for the public. Over a period of time, 3 to 5 years, we'll be able to evaluate the site for any necessary upgrades or improvements; all of which will be documented.

For CCDC, BFCC is a new iteration of the cohousing business model so we'll want to understand how pre-planning has helped our product to succeed, to witness and document the various impacts (negative or positive) the systems and strategies we deployed have on the project and to build a robust, online, cloud-based library to pass on related information. We have already successfully completed the build-out of the online component.

What research, evidence, and data support your project?
A report that was conducted in 2009 about general barriers to LID Practices and a subsequent survey was undertaken in 2018 by CSU Stormwater Center. From the past study it was seen that engagement can help promote innovation of the field and pilot projects create the precedent for overcoming barriers to these practices.
Describe potential short- and long-term challenges with this project.
Short-term challenges will be in creating the required engineering documents in time to receive an approved permit from the City of Longmont. Long-term challenges will be presented through construction, and into the monitoring and maintenance phase, where system success is ultimately measured.

Please fill out the applicable questions for either the Engagement Track or Innovation Track, unless your project contains elements in both tracks. If a question does not relate to your project, just leave it blank. Please answer each question that relates to your project. Please reference the relevant documents and use chapters and page numbers (Colorado's Water Plan, Basin Implementation Plan, PEPO Education Action Plan, etc.).

Engagement Track
Describe how the project achieves the education, outreach, and public engagement measurable objective set forth in Colorado's Water Plan to "significantly improve the level of public awareness and engagement regarding water issues statewide by 2020, as determined by water awareness surveys."
By engaging the City of Longmont planning department, we have identified a partnership that offers sustained educational opportunities for a broad range of sustainability topics. Water conservation and efficiency will play a central theme throughout this development by designing LID systems and strategies that are interwoven throughout the site with the intention of benefiting the CSA business model. In a collaborated effort, BFCC will offer to host workshops, classes, and professional training sessions regarding water strategies to improve the public's awareness and engagement. There will be many excellent opportunities for teaching demonstrations and learning objectives.
Describe how the project achieves the other measurable objectives and critical goals and actions laid out in Colorado's Water Plan around the supply and demand gap; conservation; land use; agriculture; storage; watershed health, environment, and recreation; funding; and additional.
LID's are critical toward allowing stormwater to contribute in ways that adhere to the goals and actions of the Colorado Water Plan. LID promotes the use of native vegetation and utilizes stormwater for irrigation in order to dramatically reduce the water needed for irrigation of the landscaped area. LID promotes responsible land use and development, and has a multipurpose functionality that allows for a decreased amount of land to perform a wide range of benefits. These systems and strategies promotes healthy watersheds and micro-environments by restoring natural hydrology of the watershed. The benefits of LID are in-line with the Colorado Water Plan critical goals. By engaging the City of Longmont and Boulder County with permitting this project, we are actively overcoming old barriers by ensuring that municipalities are informed of the benefits BFCC is integrating into their site. This precedent will encourage large scale adoption of LID practices, due to the size and scale of BFCC, that can contribute to the goals of the Colorado Water Plan.
Describe how the project achieves the education, outreach, and public engagement goals set forth in the applicable Basin Implementation Plan(s).

South Platte Basin Implementation Plan S.5.9 *"A critical component in advancing the South Platte Basin Implementation Plan and Colorado's Water Plan will be a strategic focus on communication and education with stakeholders including water users, political leaders, and leaders of major businesses and industries throughout the state…"*

The BFCC Project will showcase the potential for stormwater infrastructure and drought-resilient agriculture in a suburban environment. This will have a strong influence in diverse business sectors including housing development projects and agricultural innovation. It will also influence local water users in Longmont through education and engagement as passers-by utilize the new bike bath and integrated city park. This will help in, *"Improving public understanding about the goals, needs, and plans of the state and the South Platte basin"* by showcasing, *"energetic conservation measures and more integrated land use and water supply planning"*

Our partnership with the City of Longmont supports the following recommendation. "Design and implement an intensive education, participation and outreach program designed to generate a lasting baseline of public awareness and support."

Describe how the project achieves the basin roundtable's PEPO Education Action Plans.

Our partnership with the City of Longmont and faculty at the CSU One Water Solutions Institute supports the following recommendation at the bottom of page S-15. "Design and implement an intensive education, participation and outreach program designed to generate a lasting baseline of public awareness and support."

Innovation Track

Describe how the project enhances water innovation efforts and supports a water innovation ecosystem in Colorado.

As the City of Longmont and Boulder County engage in the permitting process for these LID strategies, we are actively overcoming the barriers to adoption. Through this engagement activity, innovation to stormwater management policies will lead to numerous benefits achieved by LID implementation.

In many cases, conventional LID systems and strategies misses the mark when it comes to effectively utilizing vegetation. In this project rain gardens and hugelkultur, as with other infrastructure designed to treat and infiltrate stormwater, will cultivate the full use of perennial polyculture plantings. The plants that make up these groups are chosen because they have a beneficial relationships to one another, they have varying root depths to allow for optimal infiltration (and water quality improvement), and they accelerate the succession of the system toward a more mature, dynamic, and ultimately resilient ecosystem. The plants in these guilds are designed to enhance soil fertility over time. Conventional LID infrastructure is often planted with too narrow an array of plants. This project will be an excellent asset to the stormwater research community for its diverse plant selection and biological significance.

Innovation comes when we see solutions. If we were to continue to perceive stormwater as primarily a threat that we must mitigate, then innovation will continue to stumble into the future. We must view stormwater as a precious resource and treat it as such in our developments. Stormwater is not a problem, it is the solution to growing resilient landscapes in drought-threatened Colorado.

Describe how the project engages/leverages Colorado's innovation community to help solve our state's water challenges.

As a collaborative team, representing leaders in innovative green technology, we hope to showcase the best of stormwater practices among other water conserving activities in this project. Our team includes; Colorado State University One Water Solutions Institute, City of Longmont Engineers, Colorado Cohousing Development Community, and Permaculture Design experts to showcase the best current technologies to be promoted through the BFCC Development Project.

Describe how the project helps advance or develop a solution to a water need identified through TAP-IN and other water innovation challenges. What is the problem/need/challenge?
N/A
Describe how this project impacts current or emerging trends; technologies; clusters, sectors, or groups in water innovation.
Several Colorado municipalities are adopting policies and promoting the use of Low Impact Development for stormwater management. However, others still have barriers that can be overcome with the precedents set forth by projects. These pioneering efforts in LID practice do not often see an integrated project that showcases multiple solutions. BFCC offers a unique opportunity to test municipal adoption, while setting a precedent for integrated ecological solutions, and providing decades of education and research. The current trend in Northern Colorado is that our educated community is not impressed by the wasteful water practices employed by many new developments and HOAs. People don't want to be wasting water and money on unnecessary turf. Xeriscape incentive programs around the state have seen wonderful results and a water wise native landscapes are admired by many. It is natural that the xeriscape trend can merge with the LID trend to create a new paradigm of aesthetically beautiful, functional landscaping that contributes to storm water quality and mitigation while improving the soil quality, plant health, and regional ecosystem health.

Colorado Water Conservation Board

Water Plan Grant - Detailed Budget Estimate
Fair and Reasonable Estimate

Date: 20190201
Name of Applicant: Colorado Cohousing Development Company, LLC
Name of Water Project: Bohn Farm Community Cohousing Stormwater Infrastructure
Name of Applicant's General Contractor: White Construction Group (http://whitecg.com/) Assisted the applicant in producing estimates for this document.

Coordination

Statement of Work

	Item	Hourly Rate	# Hours	Sub-total	Item Cost	Item Quantity	Sub-total	Total	CWCB Funds	Matching Funds
Focus Groups										
	Participant Stipend			$-	$75.00	20	$1,500.00	$1,500.00		
	Catering (4)			$-	$15.00	40	$600.00	$600.00		
	Feedback Survey			$-	$0.50	1000	$500.00	$500.00		
	Staff Time	$65.00	10	$650.00			$0.00	$650.00		
Develop Exhibit										
	Exhibit Designer	$50.00	100	$5,000.00			$0.00	$5,000.00		
	Staff Time	$65.00	30	$1,950.00			$0.00	$1,950.00		
	Film Production (filming, editing, production)			$-	$7,500.00	1	$7,500.00	$7,500.00		
TOTAL:								**$17,700.00**	50%	50%

Engineering & Permitting

Statement of Work

	Water Consultants				Subcontracts								
	Senior Principal Engineer	**Senior Water Resources Engineer/ Consultant**	**Water Resources Engineer**	**Geologist/ Water Resources Analyst**	**Geotechnical**	**Environmental and Cultural Resources**	**Water Rights and other Legal**	**Technical editing and proofing**	**Report Word Processing and Graphic Design**	**Subtotal**	**CWCB Funds**	**Matching Funds**
	$190	$160	$130	$100	Lump sum	Lump Sum		Lump Sum	Lump Sum			
Project Initiation / Stakeholder identification	12	32		16	**$9,000**					**$9,000**	$9,000	
Water Rights Evaluation	24	24	80	30	**$21,800**			$12,000		**$21,800**	$33,800	
Geotechnical and Eng Eval	24			36	**$8,160**		$27,000			**$8,160**	$35,160	
Environ Analysis & Cultural Res Inventory	8	8		12	**$4,000**			$12,000		**$4,000**	$16,000	
Landowner & Flood Mitigation		32		40	**$9,120**					**$9,120**	$9,120	
Funding Opportunities	4	24		8	**$5,400**					**$5,400**	$5,400	
Cooperative Partnership & Stakeholder Involvement	16	60			**$12,640**					**$12,640**	$12,640	
Project Management	20	30		24	**$11,000**					**$11,000**	$11,000	
Report, Conclusions, & Recommendations	40	54	16	40	**$22,320**			$3,000	$1,500	$4,000 **$8,500**	$30,820	
TOTAL:										**$162,940**	50%	50%

Construction

Task A: 01 - Bioretention Design

	Laborers									
Project Notes:	**Developer - CCDC**	**General Contractor & Landscape Architect**	**Management- Avery & Patrick**	**Laborers - working for A&P**	**Specialty Trades**	**BFCC Member Involvement**	**Earthwork: Heavy Machinary (sf)**		**CWCB Funds**	**Matching Funds**
Cost per contractor	$165	$175	$75	$25	$150	$25	$18			
Hours	15	20				50	100	$9,025		
Subcontractor Hours			60	160	20			$11,500		
Subcontractor Labor Administration Fee @ 5%	$124	$175	$225	$200	$150	$63	$90	$1,026		
Other Direct Costs								$0		
Subtotal								**$21,551**		

	Materials							
	Machines - Skid loader per day	**Concrete: per cubic yard, liner, piping, fill**	**Masonry Pavers: tonne**	**3/4"granite: tonne**	**Drainage (Corex in sock): 100' roll**	**Per Trees/Plants**	**Fabric per yard & soil**	

Cost per unit	$500	$45	$300	$65	$75	$350	$10			
Units Required		6,000	25		40	20	600	$293,500		
Time Required	20							$10,000		
Subcontractor Materials										
Administration Fee @ 5%	$500	0	0	0	0	0	0	$500		
Other Direct Costs										
Subtotal								**$304,000**		
TOTAL								**$325,551**	50%	50%

Task A: 02 - Check Dams				**Laborers**						
Project Notes:	**Developer - CCDC**	**General Contractor - White**	**Management- Avery & Patrick**	**Laborers - working for A&P**	**Specialty Trades**	**BFCC Member Involvement**			**CWCB Funds**	**Matching Funds**
Cost per contractor	$165	$175	$75	$20	$100	$25				
Hours	10	10	100	100		20		$13,400		
Subcontractor Hours					100			$10,000		
Subcontractor Labor										
Administration Fee @ 5%	$83	$88	$375	$100	$0	$25		$670		
Other Direct Costs										
Subtotal								**$24,070**		
				Materials						
	Machines - Skid loader or Mini-x	**Mulch/Compost**	**Irrigation**	**Rocks**	**Planting**	**Misc Materials**				
Cost per unit	$500	$50	$75	$50	$90	$10				
Units Required		50	3	300	50	40		$18,125		
Time Required	10							$5,000		
Subcontractor Materials										
Administration Fee @ 5%	$250	$125	$11	$750	$225	$20		$1,381		
Other Direct Costs										
Subtotal								**$24,506**		
TOTAL								**$48,576**	50%	50%

Task A: 03 - Contour Retention				**Laborers**						
Project Notes:	**Developer - CCDC**	**General Contractor - White**	**Management- Avery & Patrick**	**Laborers - working for A&P**	**Specialty Trades**	**BFCC Member Involvement**			**CWCB Funds**	**Matching Funds**
Cost per contractor	$165	$175	$75	$20	$100	$25				
Hours	10	40	200	250		100		$31,150		
Subcontractor Hours					50			$5,000		
Subcontractor Labor										
Administration Fee @ 5%	$83	$350	$750	$250	$250	$125		$1,808		
Other Direct Costs										
Subtotal								**$37,958**		
				Materials						
Time Required = 1 day per 100 square ft	**Machines - Skid loader or Mini-x: Per Day**	**Mulch/Compost: per yard**	**Irrigation**	**Planting**	**Fabric per yard & soil**					
Cost per unit	$500	$50	$75	$60	$10					
Units Required		50	100	205	600			$28,300		
Time Required	5							$2,500		
Subcontractor Materials										
Administration Fee @ 5%	$125	$125	$375	$615	$300			$1,540		
Other Direct Costs										
Subtotal								**$32,340**		
TOTAL								**$70,298**	50%	50%

Task A: 04 - Permeable Pavers				**Laborers**						
Project Notes:	**Developer - CCDC**	**General Contractor - White**	**Management- Avery & Patrick**	**Laborers - working for A&P**	**Specialty Trades**	**BFCC Member Involvement**			**CWCB Funds**	**Matching Funds**
Cost per contractor	$165	$175	$75	$20	$100	$25				
Hours	10	100	280	280		100		$48,250		
Subcontractor Hours					48			$4,800		
Subcontractor Labor										
Administration Fee @ 5%	$83	$875	$1,050	$280	$240	$125		$2,653		
Other Direct Costs										
Subtotal								**$55,703**		
				Materials						

	Machines - Skid loader or Mini-x: per day	Concrete: cubic yard	Masonry Pavers	Breeze	Drainage - Corex in sock: per 100' roll	3/4"granite: tonne	Misc Materials			
Cost per unit	$500	$50	$80	$40	$100	$40	$15			
Units Required		960	30	60	14	60	75	$56,325		
Time Required	14							$7,000		
Subcontractor Materials										
Administration Fee @ 5%	$350	$2,400	$120	$120	$70	$120	$56	$3,236		
Other Direct Costs (delivery)			$220	$440		$440		$1,100		
Subtotal								**$67,661**		
TOTAL								**$123,364**	50%	50%

Task A: 05 - Raingardens				**Laborers**						
Project Notes:	**DevDeveloper - CCDC**	**General Contractor - White**	**Management- Avery & Patrick**	**Laborers - working for A&P**	**Specialty Trades**	**BFCC Member Involvement**			**CWCB Funds**	**Matching Funds**
Cost per contractor	$165	$175	$75	$20	$100	$25				
Hours	10	30	400			100		$37,750		
Subcontractor Hours				400	100			$18,000		
Subcontractor Labor										
Administration Fee @ 5%	$83	$263	$1,500	$400	$500	$125		$2,870		
Other Direct Costs										
Subtotal								**$58,620**		

				Materials						
	Machines - Skid loader per day	**Concrete: per cubic yard, liner, piping, fill**	**Masonry Pavers: tonne**	**Mulch/Compost**	**Drainage (Corex in sock): 100' roll**	**Per Trees/Plants**	**Fabric per yard & soil**			
Cost per unit	$500	$45	$300	$65	$75	$350	$10			
Units Required				250	135	40	1,000	$50,375		
Time Required	25							$12,500		
Subcontractor Materials										
Administration Fee @ 5%	$625	$0	$0	$813	$506	$700	$500	$3,144		
Other Direct Costs										
Subtotal								**$66,019**		
TOTAL								**$124,639**	50%	50%

Task A: 06 - Green Roof				**Laborers**						
Project Notes: Average of Extensive and Intensive systems	**Developer - CCDC**	**General Contractor - White**	**Management- Avery & Patrick**	**Laborers**	**Specialty Trades**	**BFCC Member Involvement**			**CWCB Funds**	**Matching Funds**
Cost per contractor	$165	$175	$75	$75	$100	$25				
Hours	5	10	100			150		$13,825		
Subcontractor Hours				500	50			$42,500		
Subcontractor Labor										
Administration Fee @ 5%	$41	$88	$375	$1,875	$250	$188		$2,816		
Other Direct Costs										
Subtotal								**$59,141**		

				Materials						
	Concrete: per CY	**Plumbing & Waterproof: per sf**	**Soil: per CY**	**River Rock: per CY**	**Irrigation: Project**	**Planting per veg flat**	**Fabric per yard**			
Cost per unit	$450	$20	$80	$50	$15	$25	$10			
Units Required	60	500	250	150	$20	40	200	$67,800		
Time Required										
Subcontractor Materials										
Administration Fee @ 5%	$1,350	$500	$1,000	$375	$15	$50	$100	$3,390		
Other Direct Costs										
Subtotal								**$71,190**		
TOTAL								**$130,331**	50%	50%

Task A: 07 - Terraced Agriculture				**Laborers**						
Project Notes:	**Developer - CCDC**	**General Contractor - White**	**Management- Avery & Patrick**	**Laborers - working for A&P**	**Specialty Trades**	**BFCC Member Involvement**			**CWCB Funds**	**Matching Funds**
Cost per contractor	$165	$175	$75	$20	$100	$25				
Hours	5	10	80	80		100		$12,675		
Subcontractor Hours					80			$8,000		

Subcontractor Labor								
Administration Fee @ 5%	$41	$88	$300	$80	$400	$125	$1,034	
Other Direct Costs								
Subtotal							**$21,709**	
			Materials					
	Machines - Skid loader per day	**Mulch/Compost**	**Irrigation: Project**	**Rocks**	**Per Trees/Plants**	**Fabric per yard & soil**	**Misc Materials**	
Cost per unit	$500	$50	$75	$50	$65	$10		
Units Required		40	100	1,500	160	200	$86,500	
Time Required	10						$5,000	
Subcontractor Materials								
Administration Fee @ 5%	$250	$100	$375	$3,750	$520	$100	$5,095	
Other Direct Costs: delivery		$440		$960			$1,400	
Subtotal							**$97,995**	
TOTAL							**$119,704**	50% 50%

Task A: 08 - Graywater				**Laborers**					
Project Notes:	**Developer - CCDC**	**General Contractor - White**	**Management- Avery & Patrick**	**Laborers - working for A&P**	**Specialty Trades**	**BFCC Member Involvement**		**CWCB Funds**	**Matching Funds**
Cost per contractor	$165	$175	$75	$20	$100	25			
Hours	5	10	100	100		5	$12,200		
Subcontractor Hours					200		$20,000		
Subcontractor Labor									
Administration Fee @ 5%	$41	$88	$375	$100	$1,000	$6	$1,610		
Other Direct Costs									
Subtotal							**$33,810**		
				Materials					
	Greyter Unit	**Plumbing**	**Irrigation**	**Misc Materials**					
Cost per unit	$15,000	$10,000	$1,250	$125					
Units Required	1	1	1	1			$26,375		
Time Required									
Subcontractor Materials									
Administration Fee @ 5%	$750	$500	$63	$6			$1,319		
Other Direct Costs									
Subtotal							**$27,694**		
TOTAL							**$64,433**	50%	50%
Overall Contingency 20%							$237,507		
Overall Total							**$1,425,042**	50%	50%

Task B: O&M Manual

Task 1 - Develop O & M Manual for each project	**Developer - CCDC**	**General Contractor - White**	**Project Management- Avery & Patrick**	**CSU One Water Solutions Researchers**		**CWCB Funds**	**Matching Funds**
cost per contractor	$165	$125	$75	$150	Subtotal		
Project A1: Bioretention	5	5	10	10	$3,700		
Project A2: Check Dams	2	2	10	10	$2,830		
Project A3: Contour Retention	2	2	10	10	$2,830		
Project A4: Permeable Pavers	5	5	10	10	$3,700		
Project A5: Raingarden	2	2	10	10	$2,830		
Project A6: Green Roof	5	5	10	10	$3,700		
Project A7: Terrace Agriculture	2	2	10	10	$2,830		
Project A8: Graywater	5	5	10	10	$3,700		
		Total O&M Manual Budget			**$26,120**	50%	50%

Task C: Innovation, Education, & Outreach

Task 1 - Education	Boulder PDC	Sustainable resilient longmont	People and Pollinators Action Network	Cohousing Developers		**CWCB Funds**	**Matching Funds**
cost per contractor	$100	$50	$50	$165			
Teaching Sustainability	10	3	5	**5**	$2,225		
farming	10	3	5	**10**	$3,050		

water	10	3	1	**5**	$2,025			
energy	10	3	1	**5**	$2,025			
shelter	10	3	1	**5**	$2,025			
community	5	3	1	**10**	$2,350			
technology	10	3	1	**5**	$2,025			
Total					**$15,725**	50%	50%	

Other Direct Costs

Item:	**Copies & Printing (Black & White)**	**Copies & Printing (Color)**	**Materials and Final Report Production**	**Lodging and Meals**	**Travel Expenses (Airfare and Car Rental)**	**Mileage**	**Total**	**CWCB Funds**	**Matching Funds**
Units:	**No.**	**No.**	**Lump Sum**	**Per Diem**	**Lump Sum**	**Miles**			
Unit Cost:	**$0.10**	**$0.50**		**$100.00**		**$0.54**			
Project Initiation	400	100		4		400	$0		
Water Rights Evaluation	40	30		2		550	$0		
Geotechnical and Engineering Evaluation	60	40		2		550	$0		
Environmental Analysis and Cultural Resources Inventory									
Landowner and Flood Mitigation				4		400			
Funding Opportunities						300			
Cooperative Partnership and Stakeholder Involvement		60		4		800	$0		
Project Management	60					550	$0		
Report, Conclusions and Recommendations	150	60	$1,900	4		600	$0		
Total Units:	710	290	1,900	20		4,150			
Total Cost:	$71	$145	$1,900	$0	$0	$2,220	**$4,336**	50%	50%

Total Overall Grant Costs (Includes all Categories):	**$1,471,223**	50%	50%

NOTES:

***When the application has been approved by the Board, and this budget document is being submitted for PO or contract processing, the "Name of Applicant" field MUST be changed to "Name of GRANTEE" and remove the DATE field.**

Ensure that pagination is included and correct, i.e., Page 1 of 2, Page 2 of 2, etc.

Exhibit C

EXHIBIT A

IMPROVEMENT SURVEY PLAT

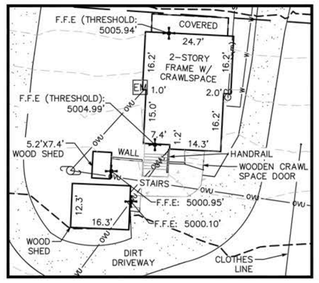
A PARCEL OF LAND LOCATED IN THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 2 NORTH, RANGE 69 WEST OF THE 6TH P.M., CITY OF LONGMONT, COUNTY OF BOULDER, STATE OF COLORADO

SHEET 1 OF 1

Vicinity Map

SCALE: 1" = 500'

Detail 'A' SCALE: 1" =20'



Legend

- FOUND ALIQUOT MONUMENT AS DESCRIBED
- FOUND MONUMENT AS DESCRIBED
- SET 18" #5 REBAR WITH 1 1/2" ALUMINUM CAP "FLATIRONS SURV 16406"
- CALCULATED POSITION (NOT FOUND OR SET)
- (AM) AS MEASURED AT TIME OF SURVEY
- (C) CALCULATED FROM RECORD AND AS MEASURED INFORMATION
- (TC) AS PER DESCRIPTION IN TITLE COMMITMENT (SEE NOTE 1)
- (D) AS PER ORDINANCE NO. O-2008-84, REC. NO. 2969406 (SEE NOTE 16)
- (D1) AS PER DECREE QUIETING TITLE, REC. NO. 2975601 (SEE NOTE 16)
- CONCRETE
- GRAVEL
- FENCE
- SIGN
- SHRUB/BUSH
- X"/X' CONIFEROUS TREE (TRUNK DIAMETER/DRIP LINE RADIUS)
- X"/X' DECIDUOUS TREE (TRUNK DIAMETER/DRIP LINE RADIUS)
- W WATER LINE
- WV WATER VALVE
- SS SANITARY SEWER LINE
- SS(m) SANITARY SEWER LINE SCALED FROM MAPS
- S SANITARY SEWER MANHOLE
- CLEANOUT
- ST STORM DRAINAGE LINE
- ST(m) STORM DRAINAGE LINE SCALED FROM MAPS
- ST STORM DRAINAGE MANHOLE
- E ELECTRICAL LINE
- ELECTRICAL TRANSFORMER
- EM ELECTRICAL METER
- ER ELECTRICAL RISER
- OHU OVERHEAD UTILITY LINE
- UTILITY POLE
- GUY WIRE
- TR TELEPHONE RISER
- G GAS LINE
- GM GAS METER
- FINISHED FLOOR ELEVATION
- MB MAILBOX

GRAPHIC SCALE

40 0 20 40 80

(IN FEET)

1 inch = 40 ft.

Depositing Certificate

SUBMITTED TO BOULDER COUNTY LAND USE FOR RECORDING ON THIS _____ DAY OF _____, 20__.

Parcel Description

(PROVIDED BY THE FIDELITY NATIONAL TITLE COMPANY)

A PARCEL OF LAND SITUATED IN THE EAST HALF OF THE SOUTHEAST QUARTER OF SECTION 4, TOWNSHIP 2 NORTH, RANGE 69 WEST OF THE 6TH P.M., BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF LOT 13, DOLLHOUSE ACRES; THENCE S00°49'00"W ALONG THE WEST SIDE OF LOTS 13 THRU 21, DOLLHOUSE ACRES, 520.20 FEET TO THE NORTHEAST CORNER OF LOT 33, OF SAID DOLLHOUSE ACRES; THENCE N78°48'10"W ALONG THE NORTH SIDE OF LOTS 33, 34, 45, AND 46, DOLLHOUSE ACRES, 512.53 FEET TO THE NORTHWEST CORNER OF LOT 46, DOLLHOUSE ACRES; THENCE N00°06'47"W, ALONG THE THE EAST RIGHT-OF-WAY LINE OF THE PLATTED ALLEY EAST OF BLOCK 2, KENT AND DAVIS ADDITION, 467.64 FEET TO A POINT ON THE SOUTH RIGHT-OF-WAY OF SPRUCE AVENUE; THENCE ALONG SAID SOUTH RIGHT-OF-WAY OF SPRUCE AVENUE THE FOLLOWING THREE COURSES; S87°56'29"E A DISTANCE OF 280.84; THENCE ALONG A CURVE TO THE RIGHT WITH A RADIUS OF 1166.50 FEET A CHORD OF S85°40'12"E A CHORD DISTANCE OF 92.45 FEET; THENCE S83°23'56"E A DISTANCE OF 139.38 FEET; THENCE S00°49'00"W, ALONG THE PROJECTION OF THE WEST LINE OF DOLLHOUSE ACRES A DISTANCE OF 13.93 FEET TO THE NORTHWEST CORNER OF LOT 13, DOLLHOUSE ACRES AND THE POINT OF BEGINNING, CITY OF LONGMONT, COUNTY OF BOULDER, STATE OF COLORADO.

Boundary Closure Report

COURSE:	S00°49'00"W	LENGTH:	520.20'
COURSE:	N78°48'10"W	LENGTH:	512.53'
COURSE:	N00°06'47"W	LENGTH:	467.64'
COURSE:	S87°56'29"E	LENGTH:	280.84'
LENGTH:	92.47'	RADIUS:	1166.50'
DELTA:	04°32'32"	CHORD:	92.45'
CHORD BEARING:			S85°40'12"E
COURSE:	S83°23'56"E	LENGTH:	139.39'
COURSE:	S00°49'00"W	LENGTH:	13.93'
PERIMETER:			2027.00'
AREA:			256,553 SQ. FT.
ERROR CLOSURE:			0.00
COURSE:			S55°05'38"E
ERROR NORTH:			-0.002
EAST:			0.003
PRECISION 1:			2027000000.00

Notes

1. FIDELITY NATIONAL TITLE COMPANY COMMITMENT NUMBER 515-F0507839-170-TV0, DATED FEBRUARY 18, 2015 AT 7:00 A.M., WAS ENTIRELY RELIED UPON FOR RECORDED INFORMATION REGARDING RIGHTS-OF-WAY, EASEMENTS AND ENCUMBRANCES IN THE PREPARATION OF THIS SURVEY. THE PROPERTY SHOWN AND DESCRIBED HEREON IS ALL OF THE PROPERTY DESCRIBED IN SAID TITLE COMMITMENT.
2. ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
3. THIS IMPROVEMENT SURVEY PLAT WAS PREPARED FOR THE EXCLUSIVE USE OF COLORADO COHOUSING DEVELOPMENT COMPANY & FIDELITY NATIONAL TITLE COMPANY, NAMED IN THE STATEMENT HEREON. SAID STATEMENT DOES NOT EXTEND TO ANY UNNAMED PERSON WITHOUT AN EXPRESS STATEMENT BY THE SURVEYOR NAMING SAID PERSON.
4. THIS SURVEY IS VALID ONLY IF PRINT HAS SEAL AND SIGNATURE OF SURVEYOR.
5. BASIS OF BEARINGS: A BEARING OF N78°48'10"W ALONG THE SOUTH LINE OF SUBJECT PARCEL AS DESCRIBED IN QUIT CLAIM DEED, AS RECORDED IN BOULDER COUNTY AT REC NO. 3413304, BETWEEN A FOUND 1" YELLOW PLASTIC CAP, MARKED "PATTERSON, PLS 26971" AT THE SOUTHEAST CORNER AND A FOUND 1" YELLOW PLASTIC CAP, MARKED "PATTERSON, PLS 26971" AT THE SOUTHWEST CORNER AS SHOWN HEREON. ALL BEARINGS SHOWN HEREON ARE RELATIVE THERETO.
6. THE LOCATIONS FOR UNDERGROUND UTILITIES ARE BASED UPON VISIBLE SURFACE EVIDENCE AND MAP PROVIDED BY PRIVATE UTILITY LOCATE COMPANY. LOCATIONS OF UNDERGROUND UTILITIES AND/OR STRUCTURES MAY VARY FROM LOCATIONS SHOWN HEREON. ADDITIONAL BURIED UTILITIES AND/OR STRUCTURES MAY BE ENCOUNTERED. NO EXCAVATIONS WERE MADE DURING THE PROCESS OF THIS SURVEY TO LOCATE BURIED UTILITIES AND/OR STRUCTURES. ALL UNDERGROUND UTILITIES SHOULD BE FIELD LOCATED BY THE APPROPRIATE UTILITY COMPANY PRIOR TO ANY CONSTRUCTION OR EXCAVATION ON OR ADJACENT TO THE SUBJECT PROPERTY.
7. ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT AND/OR BOUNDARY MONUMENT OR ACCESSORY, COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE C.R.S. SEC 18-4-508. WHOEVER WILLFULLY DESTROYS, DEFACES, CHANGES, OR REMOVES TO ANOTHER PLACE ANY SECTION CORNER, QUARTER-SECTION CORNER, OR MEANDER POST, ON ANY GOVERNMENT LINE OF SURVEY, OR WILLFULLY CUTS DOWN ANY WITNESS TREE OR ANY TREE BLAZED TO MARK THE LINE OF A GOVERNMENT SURVEY, OR WILLFULLY DEFACES, CHANGES, OR REMOVES ANY MONUMENT OR BENCH MARK OF ANY GOVERNMENT SURVEY, SHALL BE FINED UNDER THIS TITLE OR IMPRISONED NOT MORE THAN SIX MONTHS, OR BOTH. 18 U.S.C. § 1858.
8. THE DISTANCE MEASUREMENTS SHOWN HEREON ARE U.S. SURVEY FOOT.
9. THE CONTOURS REPRESENTED HEREON WERE INTERPOLATED BY AUTOCAD CIVIL 3D (DIGITAL TERRAIN MODELING) SOFTWARE BETWEEN ACTUAL MEASURED SPOT ELEVATIONS. DEPENDING ON THE DISTANCE FROM A MEASURED SPOT ELEVATION AND LOCAL VARIATIONS IN TOPOGRAPHY, THE CONTOUR SHOWN MAY NOT BE AN EXACT REPRESENTATION OF THE SITE TOPOGRAPHY. THE PURPOSE OF THIS TOPOGRAPHIC MAP IS FOR SITE EVALUATION AND TO SHOW SURFACE DRAINAGE FEATURES. ADDITIONAL TOPOGRAPHIC OBSERVATIONS MAY BE NECESSARY IN SPECIFIC AREAS OF DESIGN. TOPOGRAPHY SHOWN HEREON COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.
10. BENCHMARK INFORMATION: A GPS DERIVED ELEVATION WAS ESTABLISHED AT AN ONSITE BENCHMARK AT THE NORTHWEST CORNER, BEING A 1" YELLOW PLASTIC CAP, MARKED "PATTERSON, PLS 26971" WITH AN ELEVATION OF 5008.12 FEET. A CHECK SHOT, 0.1'±, WAS TAKEN ON CITY OF LONGMONT POINT 28, BEING A 2" BRASS CAP, CITY OF LONGMONT, 28 LOCATED 0.1 MILES FROM SITE, WITH A PUBLISHED ELEVATION OF 5034.38 FEET (NAVD88). NO DIFFERENTIAL LEVELING WAS PERFORMED TO ESTABLISH THIS ELEVATION.
11. SUBSURFACE BUILDINGS, IMPROVEMENTS OR STRUCTURES ARE NOT NECESSARILY SHOWN. BUILDINGS AND OTHER IMPROVEMENTS OR STRUCTURES ON ADJACENT PROPERTIES THAT ARE MORE THAN FIVE (5) FEET FROM ANY OF THE PROPERTY LINES OF THE SUBJECT PROPERTY ARE NOT NECESSARILY SHOWN.
12. FLOOD INFORMATION: FLOOD INFORMATION: THE SUBJECT PROPERTY IS LOCATED IN ZONE X (UNSHADED), AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP; COMMUNITY-PANEL NO. 08013C-0286 J, DATED DECEMBER 12, 2012. FLOOD INFORMATION IS SUBJECT TO CHANGE.
13. DATES OF FIELDWORK: APRIL 9, 2015.
14. THE FOLLOWING DOCUMENTS ARE MENTIONED IN THE ABOVE REFERENCED TITLE COMMITMENT AND APPEAR TO AFFECT THE SUBJECT PROPERTY BUT CANNOT BE SHOWN GRAPHICALLY. THE FOLLOWING LIST CONTAINS THE TITLE COMMITMENT EXCEPTION NUMBER, DATE RECORDED, RECEPTION NUMBER AND/OR BOOK AND PAGE.

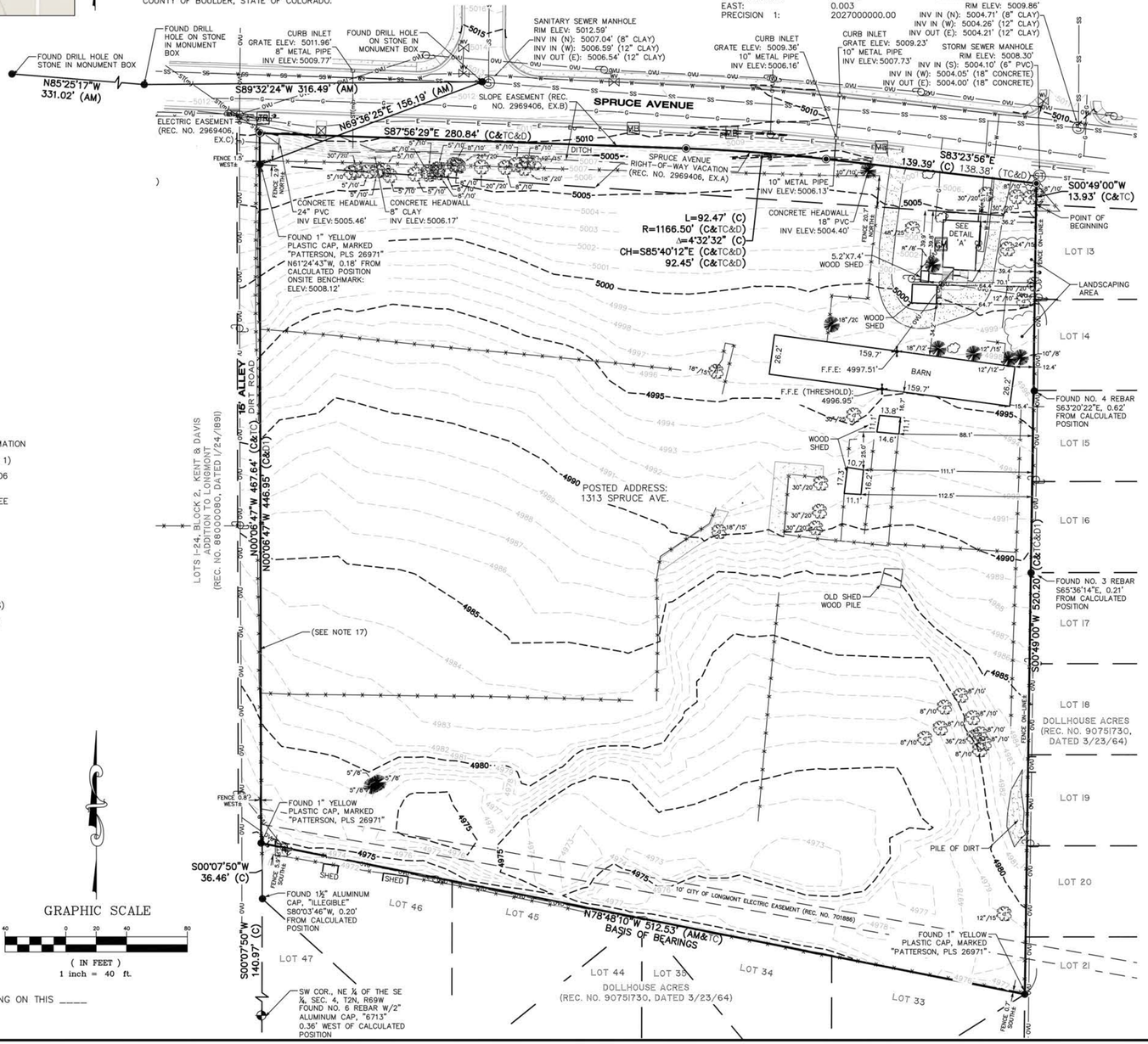
#9	SEP. 22, 1873	BK. V, PG. 394	RIGHT OF WAY FOR DITCH (BLANKET)
#11	JAN. 31, 2006	REC. NO. 2753656	ANNEXATION
#12	JAN. 31, 2006	REC. NO. 2753657	AGREEMENT FURTHERANCE OF ANNEXATION FOR BOHN FARM
#13	JAN. 31, 2006	REC. NO. 2753658	ORDINANCE O-2005-13 FOR BOHN FARM ANNEXATION

15. OWNERSHIP INFORMATION IS PER COUNTY OF BOULDER WEBSITE AS RESEARCHED ON APRIL 23, 2015 AND IS SUBJECT TO CHANGE.
16. THE BOUNDARY SHOWN HERE IS DESCRIBED USING A ALTA/ACSM LAND SURVEY PLAT PRODUCED BY ANDREW J. PATTERSON ON JUNE 12, 2009 AND DOCUMENTS SHOWN ON SURVEY. THE NORTH LINE IS DEFINED BY LEGAL DESCRIPTION IN TITLE COMMITMENT NO. 515-F0507839-170-TV0, DATED FEBRUARY 18, 2015 BY FIDELITY NATIONAL TITLE COMPANY. THE WEST, SOUTH AND EAST LINES ARE DEFINED BY A JUDGES DECREE QUIETING TITLE AT RECEPTION NO. 2975601, DATED JANUARY 28, 2009.
17. FENCE ARE NOT COINCIDENT WITH PROPERTY LINES AS SHOWN HEREON.

Surveyor's Statement

I, JOHN B. GUYTON, A LAND SURVEYOR LICENSED IN THE STATE OF COLORADO, HEREBY STATE FOR AND ON BEHALF OF FLATIRONS, INC., TO COLORADO COHOUSING DEVELOPMENT COMPANY & FIDELITY NATIONAL TITLE COMPANY, THAT A SURVEY OF THE ABOVE DESCRIBED PREMISES WAS CONDUCTED BY ME OR UNDER MY RESPONSIBLE CHARGE ON APRIL 9, 2015; THAT SAID SURVEY AND THE ATTACHED PRINT HEREON WERE MADE IN SUBSTANTIAL ACCORDANCE WITH C.R.S. 38-51-102 (9) "IMPROVEMENT SURVEY PLAT".

JOHN B. GUYTON COLORADO P.L.S. #16406
CHAIRMAN & CEO, FLATIRONS, INC.



REVISION	DATE
1 -REVISED PER CLIENTS REQUEST	4/29/15 ED
2	
3	
4	
5	
6	
7	
8	
9	

IMPROVEMENT SURVEY PLAT
PREPARED FOR
COLORADO COHOUSING DEVELOPMENT COMPANY
&
Others (See Note 3)

Flatirons, Inc.
Surveying, Engineering & Geomatics
www.Flatironsinc.com
655 FOURTH AVE. LONGMONT, CO 80501 PH: (303) 776-1733 FAX: (303) 776-4355
3825 IRIS AVE. STE 395 BOULDER, CO 80301 PH: (303) 443-7001 FAX: (303) 443-9830
3660 DOWNING ST UNIT E DENVER, CO 80205 PH: (303) 936-6997

COLORADO LICENSED
JOHN B. GUYTON
16406
PROFESSIONAL LAND SURVEYOR
4/29/15
SEAL

JOB NUMBER:	15-65,300
DATE:	04-21-2015
DRAWN BY:	E. DAVIS
CHECKED BY:	JZG/WW/TC

SHEET 1 OF 1

Bohn Farm Cohousing Community: CWCB Water Plan Grant

1 Bioretention

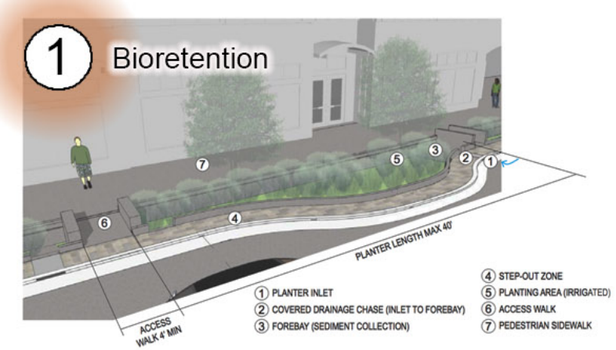


FIGURE 16. Bumpout Stormwater Planter Isometric Diagram (Source: Stream Design. 2015.)

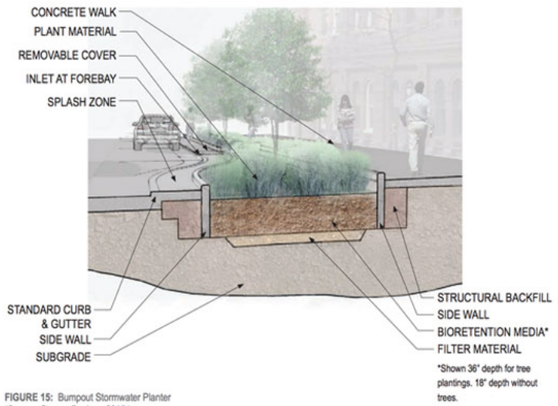
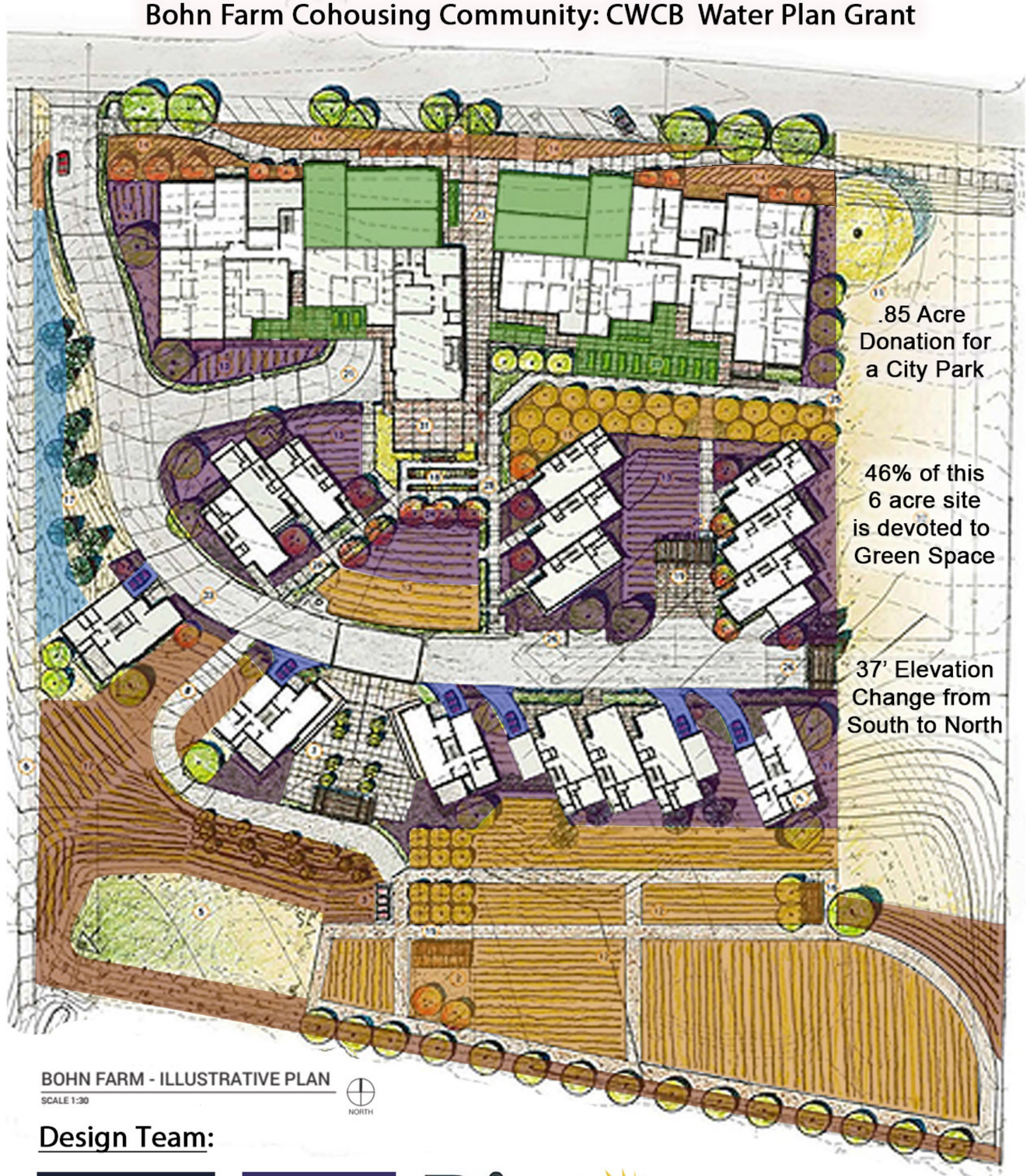


FIGURE 15: Bumpout Stormwater Planter (Source: Stream Design. 2015.)

2 Check Dams

3 Countour Retention



Design Team:

COHOUSING Development Company
COHSULTING ENGINEERS
Dig Studio
AVERY ECOLOGICAL DESIGN
F9 PRODUCTIONS INC.
PADDEN PERMACULTURE

4 Permeable Pavers

5 Rain Gardens & Hugelkultur

6 Green Roofing

7 Terraced Agriculture

ABBREVIATIONS

AASHTO	AMERICAN ASSOC. OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ABAN	ABANDON
AC	ASPHALTIC CONCRETE PAVING
ADDL	ADDITIONAL
ADDM	ADDENDUM
ADJ	ADJUSTABLE
AL	ALUMINUM
ALT	ALTERNATE
AMT	AMOUNT
APPROX	APPROXIMATE
ARCH	ARCHITECT(URAL)
ARV	AIR RELIEF VALVE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ASPH	ASPHALT
ASSY	ASSEMBLY
ASYM	ASYMMETRICAL
AUTO	AUTOMATIC
AVG	AVERAGE
AWWA	AMERICAN WATER WORKS ASSOC.
BC	BACK OF CURB
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BLK	BLOCK
BM	BENCH MARK
BMP	BEST MANAGEMENT PRACTICE
BS	BACKSIGHT
BOS	BOTTOM OF STEP
BOT	BOTTOM
BSMT	BASEMENT
BVCE	BEGIN VERTICAL CURVE ELEVATION
BVCS	BEGIN VERTICAL CURVE STATION
BW	BOTTOM OF WALL
CB	CATCH BASIN
CCW	COUNTER CLOCKWISE
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION
CIP	CAST IRON PIPE
CJ	CONSTRUCTION JOINT
CL	CENTER LINE OR CHAIN LINK
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS(ATION)
COR	CORNER
CR	CONCENTRIC REDUCER
CTR	CENTER
CY	CUBIC YARDS
DEMO	DEMOLITION
DIA	DIAMETER
DIAG	DIAGONAL
DIP	DUCTILE IRON PIPE
DOM	DOMESTIC
DN	DOWN
DR	DRAIN
DWG	DRAWING
DWL	DOWEL
E	EAST
EA	EACH
ECC	ECCENTRIC
EJ	EXPANSION JT
EL	ELEVATION
ELB	ELBOW
ELEC	ELECTRICAL
ENGR	ENGINEER
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ESMT	EASEMENT
EST	ESTIMATE
EVCE	END VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EW	EACH WAY
EXP JT	EXPANSION JOINT
EXIST	EXISTING
FND	FOUNDATION
FES	FLARED END SECTION
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FN	FENCE
FOC	FACE OF CONCRETE
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FEET
FTG	FOOTING OR FITTING
G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GCO	GRADE CLEANOUT
GIP	GALVANIZED IRON PIPE
GND	GROUND
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
GR	GRATE
GRTG	GRATING
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
H	HIGH
HB	HOSE BIB
HE	HORIZONTAL ELLIPTICAL
HDWL	HEADWALL
HNDRL	HAND RAIL
HORIZ	HORIZONTAL
HP	HIGH POINT
HR	HOUR
HVAC	HEATING, VENTILATION, AIR CONDITIONING
HWY	HIGHWAY
HWL	HIGH WATER LINE
HYD	HYDRANT
INCL	INCLUDED
ID	INSIDE DIAMETER
IN	INLET
INSUL	INSULATION
INV	INVERT
IRR	IRRIGATION
JTS	JOINTS
KO	KNOCKOUT
KPL	KICK PLATE
KWY	KEYWAY
L	LEFT OR LITER
LSCAPE	LANDSCAPE(ING)
LF	LINEAR FOOT
LP	LOW POINT
LT	LIGHT
LWL	LOW WATER LEVEL
MAINT	MAINTENANCE
MAN	MANUAL
MATL	MATERIAL
MAX	MAXIMUM
ME	MATCH EXISTING
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
N	NORTH
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPP	OPPOSITE
OPT	OPTIONAL
PC	POINT OF CURVATURE
PCO	PRESSURE CLEAN OUT
PCR	POINT OF CURVE RETURN
PI	POINT OF INTERSECTION
PVI	POINT OF VERTICAL INTERSECTION
PL	PROPERTY LINE
PE	POLYETHYLENE
PREFAB	PREFABRICATED
PRELIM	PRELIMINARY
PREP	PREPARATION
PROP	PROPOSED
PRV	PRESSURE REDUCING VALVE OR PRESSURE RELIEF VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE OR POINT OF VERTICAL CURVATURE
PVMT	PAVEMENT
QTY	QUANTITY
R	RIGHT
RAD	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RE	REFERENCE
RECT	RECTANGULAR
REINF	REINFORCE (D) (ING) (MENT)
REQD	REQUIRED
REQD	REQUIRED
ROW	RIGHT OF WAY
SAN	SANITARY
SD	STORM DRAIN
SECT	SECTION
SPD	STANDARD PROCTOR DENSITY
SPEC	SPECIFICATION
SQ	SQUARE
SQ IN	SQUARE INCH
SQ FT	SQUARE FOOT
SQ YD	SQUARE YARD
SS	SANITARY SEWER
SST	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
SWMP	STORMWATER MANAGEMENT PLAN
SYM	SYMMETRICAL
TB	THRUST BLOCK
TBC	TOP BACK OF CURB
TBM	TEMPORARY BENCH MARK
TEMP	TEMPORARY
THK	THICK
TOB	TOP OF BANK
TOC	TOP OF CONCRETE OR TOP OF CURB
TOS	TOP OF STEP
TOT	TOTAL
TW	TOP OF WALL
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UGE	UNDERGROUND ELECTRIC
UTIL	UTILITY
VERT	VERTICAL
VC	POINT OF VERTICAL CURVATURE
VCP	VITRIFIED CLAY PIPE
W	WIDE OR WIDTH
W/	WITH
W/O	WITHOUT
WQCE	WATER QUALITY CONTROL ELEVATION
WSE	WATER SURFACE ELEVATION
WW	WASTEWATER
X SECT	CROSS SECTION
YH	YARD HYDRANT

DESIGN LEGEND

- BENCHMARK
- MANHOLE
- AREA DRAIN
- COMBINATION INLET
- TYPE R INLET
- TYPE 13 FIELD INLET
- FLARED END SECTION W/ RIPRAP
- TEE W/ THRUST BLOCK
- BEND W/ THRUST BLOCK
- END CAP W/ THRUST BLOCK
- GATE VALVE
- REDUCER/INCREASER
- WATER METER
- FIRE HYDRANT
- SD — STORM DRAIN – 12" AND SMALLER
- STORM DRAIN – LARGER THAN 12"
- RD — ROOF DRAIN
- TD — TRENCH DRAIN
- UD — UNDERDRAIN
- SS — SANITARY SEWER
- FM — FORCE MAIN
- W — WATER
- NPW — NON POTABLE WATER
- PW — POTABLE WATER
- IRR — IRRIGATION
- CATV — CABLE TV
- D — DRAIN
- E — ELECTRIC
- UE — UNDERGROUND ELECTRIC
- OE — OVERHEAD ELECTRIC
- T — TELEPHONE
- FO — FIBER OPTIC
- FD — FLOOR DRAIN
- FDN — FOUNDATION DRAIN
- FUEL — FUEL
- G — GAS
- PVC — PVC PIPE (MISC)

- FENCE
- FLOW LINE OF DITCH OR WASH
- 5.0% — SLOPE ARROW
- +03.54 — PROPOSED SPOT ELEVATION
- +03.3 — EXIST SPOT ELEVATION
- 5220 — EXIST INDEX CONTOUR
- 5221 — EXIST INTERMEDIATE CONTOUR
- 20 — PROPOSED INDEX CONTOUR
- 21 — PROPOSED INTERMEDIATE CONTOUR
- CURB AND GUTTER
- SPILL/CATCH CURB TRANSITION
- SIGN W/ POST
- CURB RAMP
- SIDEWALK CHASE
- SIDEWALK
- CONCRETE PAVING
- HEAVY DUTY ASPHALT PAVING
- LIGHT DUTY ASPHALT PAVING
- POROUS PAVERS
- GRAVEL DRIVE
- PROPOSED BUILDING
- BUILDING ACCESS
- RETAINING WALL
- BOULDER/ROCK WALL
- LIMITS OF SAWCUT
- LIMITS OF WORK
- EASEMENT LINE
- PROPERTY LINE / ROW
- MATCHLINE

DETAIL TITLE

DETAIL TITLE
SCALE

1 / –

- DETAIL NUMBER IDENTIFICATION
- SHEET WHERE THE SECTION OR ELEVATION IS CUT OR CALLED OUT – INDICATES SAME DRAWING

A / –

- SECTION NUMBER IDENTIFICATION
- SHEET WHERE THE SECTION IS – INDICATES SAME DRAWING

SECTION CALLOUT

1 / C1.0

- DETAIL NUMBER IDENTIFICATION
- SHEET WHERE THE DETAIL IS DRAWN – INDICATES SAME DRAWING

DETAIL MARKER

- REVISION CLOUD
- REVISION NUMBER

SURVEY LEGEND

- WATER LINE
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- SANITARY SEWER LINE
- SANITARY SEWER MANHOLE
- STORM DRAINAGE LINE
- STORM DRAINAGE MANHOLE
- CURB INLET
- UNDERGROUND ELECTRICAL LINE
- OVERHEAD ELECTRICAL LINE
- ELECTRICAL POLE
- GUY WIRE
- ELECTRICAL TRANSFORMER
- ELECTRICAL RISER
- ELECTRIC VAULT
- LIGHT POLE
- DECORATIVE LIGHT
- FIBEROPTIC LINE
- TELEPHONE LINE
- TELEPHONE RISER
- GAS LINE
- INDICATION OF ACCESS
- BUILDING

NOTE: SHADED ITEMS REPRESENT EXIST FEATURES

- MAILBOX
- FOUND 3/4" BRASS TAG "LS 23500" AS 1' WITNESS CORNER
- SET TEMPORARY BENCHMARK AS DESCRIBED
- SET 18" #5 REBAR WITH 1 1/2" ALUMINUM CAP "FLATIRONS SURV 16406"
- SET 3/4" BRASS TAG "FSI 16406"
- TEST CP
- UTILITY LOCATED FROM MAP
- AS MEASURED AT TIME OF SURVEY
- CALCULATED FROM RECORD AND AS MEASURED INFORMATION
- AS PER THE PLAT OF FOREST PARK SUBDIVISION REC. NO. 1887132 DATED DECEMBER 29, 1998
- CONCRETE
- EDGE OF ASPHALT
- GRAVEL
- FENCE
- GUARDRAIL
- BOLLARD
- SIGN
- CONIFEROUS TREE (TRUNK DIAMETER/DRIP LINE RADIUS)
- DECIDUOUS TREE (TRUNK DIAMETER/DRIP LINE RADIUS)
- BOULDER

Know what's **below.** **Call** before you dig.

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN CONFORMANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF THE **<NAME OF CITY>, <NAME OF UTILITY DISTRICTS>,** COLORADO DEPARTMENT OF TRANSPORTATION, **<JURISDICTIONAL>** FIRE PROTECTION REQUIREMENTS, AND APPLICABLE STATE AND LOCAL STANDARDS AND SPECIFICATIONS. THE CONTRACTOR SHALL HAVE IN POSSESSION AT THE JOB SITE AT ALL TIMES ONE (1) SIGNED COPY OF APPROVED PLANS, STANDARDS AND SPECIFICATIONS. CONTRACTOR SHALL CONSTRUCT AND MAINTAIN EMERGENCY ACCESS ROUTES TO THE SITE AND STRUCTURE AT ALL TIMES PER THE APPLICABLE **<JURISDICTIONAL>** FIRE PROTECTION DISTRICT REQUIREMENTS. THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FOR ANY VARIANCE TO THE ABOVE DOCUMENTS. NOTIFY ENGINEER OF ANY CONFLICTING STANDARDS OR SPECIFICATIONS. IN THE EVENT OF ANY CONFLICTING STANDARD OR SPECIFICATION, THE MORE STRINGENT OR HIGHER QUALITY STANDARD, DETAIL OR SPECIFICATION SHALL APPLY.
2. THE CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL APPLICABLE CODES, LICENSES, STANDARD SPECIFICATIONS, PERMITS, BONDS, ETC., WHICH ARE NECESSARY TO PERFORM THE PROPOSED WORK, INCLUDING, BUT NOT LIMITED TO A LOCAL AND STATE GROUNDWATER DISCHARGE AND COLORADO DEPARTMENT OF HEALTH AND ENVIRONMENT (CDPHE) STORMWATER DISCHARGE PERMIT ASSOCIATED WITH CONSTRUCTION ACTIVITY.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE REQUIRED PARTY **<(OWNER, OWNER'S REPRESENTATIVE, MUNICIPAL/DISTRICT INSPECTOR, GEOTECHNICAL ENGINEER, ENGINEER AND/OR UTILITY OWNER)>** AT LEAST 48 HOURS PRIOR TO START OF ANY CONSTRUCTION. PRIOR TO BACKFILLING, AND AS REQUIRED BY JURISDICTIONAL AUTHORITY AND/OR PROJECT SPECIFICATIONS. THE CONTRACTOR SHALL CONTINUE WITH NOTIFICATIONS THROUGHOUT THE PROJECT AS REQUIRED BY THE STANDARDS AND SPECIFICATIONS.
4. THE LOCATIONS OF EXISTING UTILITIES ARE SHOWN IN THE APPROXIMATE LOCATION BASED ON INFORMATION BY OTHERS. NOT ALL UTILITIES MAY BE SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT SIZE, LOCATION AND TYPE OF ALL EXISTING UTILITIES WHETHER SHOWN OR NOT BEFORE COMMENCING WORK. THE ENGINEER AND/OR OWNER ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS SHOWN ON PLANS. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR ANY AND ALL DAMAGES AND COSTS WHICH MIGHT OCCUR BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES. THE CONTRACTOR SHALL NOTIFY ALL PUBLIC AND PRIVATE UTILITY COMPANIES AND DETERMINE THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO PROCEEDING WITH GRADING AND CONSTRUCTION. ALL WORK PERFORMED IN THE AREA OF UTILITIES SHALL BE PERFORMED AND INSPECTED ACCORDING TO THE REQUIREMENTS OF THE UTILITY OWNER. LIKEWISE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND MAPPING ANY EXISTING UTILITY (INCLUDING DEPTH) WHICH MAY CONFLICT WITH THE PROPOSED CONSTRUCTION, AND FOR RELOCATING ENCOUNTERED UTILITIES AS DIRECTED BY THE ENGINEER. CONTRACTOR SHALL CONTACT AND RECEIVE APPROVAL FROM **<MUNICIPALITY/UTILITY OWNER AND ENGINEER>** BEFORE RELOCATING ANY ENCOUNTERED UTILITIES. CONTRACTOR RESPONSIBLE FOR SERVICE CONNECTIONS, AND RELOCATING AND RECONNECTING AFFECTED UTILITIES AS COORDINATED WITH UTILITY OWNER AND/OR ENGINEER, INCLUDING NON-MUNICIPAL UTILITIES (TELEPHONE, GAS, CABLE, ETC., WHICH SHALL BE COORDINATED WITH THE UTILITY OWNER). THE CONTRACTOR SHALL IMMEDIATELY CONTACT ENGINEER UPON DISCOVERY OF A UTILITY DISCREPANCY OR CONFLICT. AT LEAST 48 HOURS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE UTILITY NOTIFICATION CENTER OF COLORADO (1-800-922-1987, WWW.UNCC.ORG).
5. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL PREPARE A TRAFFIC CONTROL PLAN FOR OWNER AND/OR CITY APPROVAL AND PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FENCING, FLAGMEN OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR AGREES TO COMPLY WITH THE PROVISIONS OF THE TRAFFIC CONTROL PLAN AND THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," PART VI, FOR CONSTRUCTION SIGNAGE AND TRAFFIC CONTROL. ALL TEMPORARY AND PERMANENT TRAFFIC SIGNS SHALL COMPLY TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) WITH REGARD TO SIGN SHAPE, COLOR, SIZE, LETTERING, ETC. UNLESS OTHERWISE SPECIFIED. IF APPLICABLE, PART NUMBERS ON SIGNAGE DETAILS REFER TO MUTCD SIGN NUMBERS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY GROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT. GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS NOR EROSION ON ABUTTING PROPERTIES IN ORDER TO CONSTRUCT THE IMPROVEMENTS SHOWN ON THESE PLANS. GROUNDWATER TO BE PUMPED SHALL BE TESTED, PERMITTED, AND PUMPED PER THE STATE OF COLORADO AND LOCAL GROUNDWATER DISCHARGING PERMIT REQUIREMENTS.
7. RIM AND GRATE ELEVATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY AND ARE NOT TO BE TAKEN AS FINAL ELEVATIONS. THE CONTRACTOR SHALL ADJUST RIMS AND OTHER IMPROVEMENTS TO MATCH FINAL PAVEMENT AND FINISHED GRADE ELEVATIONS.
8. THE EXISTING AND PROPOSED ELEVATIONS OF FLATWORK, SIDEWALKS, CURBS, PAVING, ETC. AS SHOWN HEREON ARE BASED ON EXTRAPOLATION OF FIELD SURVEY DATA AND EXISTING CONDITIONS. AT CRITICAL AREAS **<IDENTIFY CRITICAL AREAS>** AND SITE FEATURES, CONTRACTOR SHALL HAVE FORMWORK INSPECTED AND APPROVED BY OWNER, OWNER'S REPRESENTATIVE, OR ENGINEER PRIOR TO PLACING CONCRETE. MINOR ADJUSTMENTS, AS APPROVED, TO PROPOSED GRADES, INVERTS, ETC. MAY BE REQUIRED TO PREVENT PONDING OR SLOPE NOT IN CONFORMANCE WITH MUNICIPAL STANDARDS. ALL FLATWORK MUST PREVENT PONDING AND PROVIDE POSITIVE DRAINAGE AWAY FROM EXISTING AND PROPOSED BUILDINGS, WALLS, ROOF DRAIN OUTFALLS, ACROSS DRIVES AND WALKS, ETC., TOWARDS THE PROPOSED INTENDED DRAINAGE FEATURES AND CONVEYANCES.
9. FINAL LIMITS OF REQUIRED ASPHALT SAWCUTTING AND PATCHING MAY VARY FROM LIMITS SHOWN ON PLANS. CONTRACTOR TO PROVIDE SAWCUT AND PATCH WORK TO ACHIEVE POSITIVE DRAINAGE AND A SMOOTH TRANSITION TO EXISTING ASPHALT WITHIN SLOPES ACCEPTABLE TO THE ENGINEER AND WITHIN MUNICIPAL STANDARDS. CONTRACTOR SHALL PROVIDE ADDITIONAL SAWCUTTING AND PATCHING AT UTILITY WORK, CONNECTION POINTS TO EXISTING PAVEMENT AND FEATURES, ETC. THAT MAY NOT BE DELINEATED ON PLANS.
10. ANY EXISTING MONITORING WELLS, CLEANOUTS, VALVE BOXES, ETC. TO BE PROTECTED AND TO REMAIN IN SERVICE. IF FEATURES EXIST, EXTEND OR LOWER TO FINAL SURFACE WITH LIKE KIND CAP WITH STANDARD CAST ACCESS LID WITH SAME MARKINGS. IN LANDSCAPED AREAS PROVIDE A CONCRETE COLLAR (18"x18"x6" THICK) AT ALL EXISTING AND PROPOSED MONITORING WELLS, CLEANOUTS, VALVE BOXES, ETC.
11. OWNER TO APPROVE ALL PRIVATE CONCRETE FINISHING, JOINT PATTERNS AND COLORING REQUIREMENTS PRIOR TO CONSTRUCTION. SUBMIT JOINT LAYOUT PLAN TO OWNER FOR APPROVAL PRIOR TO CONSTRUCTION.
12. PIPE LENGTHS AND HORIZONTAL CONTROL POINTS SHOWN ARE FROM CENTER OF STRUCTURES, END OF FLARED END SECTIONS, ETC. SEE STRUCTURE DETAILS FOR EXACT HORIZONTAL CONTROL LOCATION. CONTRACTOR IS RESPONSIBLE FOR ADJUSTING ACTUAL PIPE LENGTHS TO ACCOUNT FOR STRUCTURES AND LENGTH OF FLARED END SECTIONS.
13. ALL SURPLUS MATERIALS, TOOLS, AND TEMPORARY STRUCTURES, FURNISHED BY THE CONTRACTOR, SHALL BE REMOVED FROM THE PROJECT SITE BY THE CONTRACTOR. ALL DEBRIS AND RUBBISH CAUSED BY THE OPERATIONS OF THE CONTRACTOR SHALL BE REMOVED, AND THE AREA OCCUPIED DURING CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ITS ORIGINAL CONDITION, WITHIN 48 HOURS OF PROJECT COMPLETION, UNLESS OTHERWISE DIRECTED BY THE MUNICIPALITY OR OWNER'S REPRESENTATIVE.
14. THE CONTRACTOR IS REQUIRED TO PROVIDE AND MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE LOCAL JURISDICTION, THE STATE OF COLORADO, URBAN DRAINAGE AND FLOOD CONTROL DISTRICT "URBAN STORM DRAINAGE CRITERIA MANUAL VOLUME 3", THE M-STANDARD PLANS OF THE COLORADO DEPARTMENT OF TRANSPORTATION, AND THE APPROVED EROSION CONTROL PLAN. JURISDICTIONAL AUTHORITY MAY REQUIRE THE CONTRACTOR TO PROVIDE ADDITIONAL EROSION CONTROL MEASURES AT THE CONTRACTOR'S EXPENSE DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE PLANS DO NOT FUNCTION AS INTENDED. THE CONTRACTOR IS RESPONSIBLE FOR PROHIBITING SILT AND DEBRIS LADEN RUNOFF FROM LEAVING THE SITE, AND FOR KEEPING ALL PUBLIC AREAS FREE OF MUD AND DEBRIS. THE CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING FINAL GRADES AND FOR REMOVING ACCUMULATED SEDIMENTATION FROM ALL AREAS INCLUDING SWALES AND DETENTION/WATER QUALITY AREAS. CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROL MEASURES AND REPAIR AREAS AS REQUIRED AFTER VEGETATION IS ESTABLISHED AND ACCEPTED BY OWNER AND MUNICIPALITY.
15. ADA COMPLIANCE: THE CROSS-SLOPE OF ALL WALKS MUST BE LESS THAN 48:1 (2.0%) PERPENDICULAR TO DIRECTION OF TRAVEL. RUNNING SLOPE OF ACCESSIBLE WALKS MUST BE NOT STEEPER THAN 1:20 (5.0%) IN DIRECTION OF TRAVEL. MAXIMUM GRADE OF ACCESSIBLE CURB RAMPS AND RAMPS IS 1:12 (8.3%). CURB RAMPS SHALL PROVIDE A LANDING AT THE TOP AND RAMP RUNS PROVIDE LANDINGS AT THE BOTTOM AND TOP OF EACH RAMP RUN AT A SLOPE NOT TO EXCEED 1:48. RAMPS RUNS EXCEEDING SIX INCHES SHALL INCLUDE HANDRAILS. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SHALL NOT EXCEED 1:48 IN ALL DIRECTIONS. CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO PLACEMENT OF FLATWORK OF SITE CONDITIONS OR DISCREPANCIES WHICH PREVENT TYPICAL REQUIRED GRADES FROM BEING ACHIEVED. ALL RAMPS, STAIRS, EDGE PROTECTION, AND RAILINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT ADA STANDARDS. ACCESSIBLE CURB RAMPS SHALL CONFORM TO THE CDOT M-STANDARDS (SEE DETAIL M-608-1, ETC). ACCESSIBLE FEATURE WITHIN THE PUBLIC RIGHTS-OF-WAY SHALL BE CONSTRUCTED TO CONFORM TO THE LOCAL AUTHORITY HAVING JURISDICTION REQUIREMENTS.
16. PROTECT ALL TREES AND VEGETATION. PLACE CONSTRUCTION FENCING AT DRIP LINE OF TREES AND PLANTS NEAR THE WORK ZONE. DEEP WATER TREES WEEKLY. HAND EXCAVATION REQUIRED AT ROOT ZONES WHERE PROPOSED PAVING OR UTILITY WORK IS WITHIN DRIPLINE OF TREES.
17. **<DELETE IF NOT NEEDED>** LOCATIONS OF CLEANOUTS, LIGHTS, SIGNAGE, JUNCTION BOXES, AND OTHER SIGNIFICANT SITE FEATURES TO BE STAKED FOR ENGINEER AND OR OWNER APPROVAL PRIOR TO WORK. CLEANOUTS, JUNCTION BOXES, AND ADJACENT GRADES TO BE RAISED ONE-HALF INCH AT ASPHALT/CONCRETE (OR 1" AT LANDSCAPING) TO PROVIDE POSITIVE DRAINAGE AWAY FROM FEATURES.
18. BENCHMARK INFORMATION: TOPOGRAPHIC INFORMATION WAS PROVIDED BY _____ **<EX: FLATIRONS SURVEYING, INC. OR OTHERS>** SEE _____ **<TYPE NAME OF SURVEY AS SHOWN ON SURVEY, EX: "IMPROVEMENT SURVEY PLAT" or "TOPOGRAPHIC SURVEY FOR...">** DATED _____. **<TYPE SURVEY'S BM TEXT HERE OR USE THIS EXAMPLE>** PROJECT BENCHMARK ELEVATION: 5_____ AT _____ **<PROVIDE DESCRIPTION PER SURVEY, EX: AT CP-10 or TOP OF BOLT AT FIRE HYDRANT NEAR 1ST AND MAIN, OR CITY OF BOULDER BM#XYZ, OR OF CONTROL POINTS SHOWN ON PLANS....>** _____ **<LOCAL, MUNICIPAL, ETC.>** DATUM PER SURVEY. COORDINATE AND VERIFY ALL VERTICAL AND HORIZONTAL DATA SHOWN IN SURVEY AND REPORT ANY IRREGULARITIES OR DISCREPANCIES TO ENGINEER PRIOR TO CONSTRUCTION.
19. HORIZONTAL CONTROL INFORMATION: HORIZONTAL CONTROL COORDINATES **<ARE BASED ON THE REFERENCED SURVEY AND>** ARE PROVIDED BY THE **<FOLLOWING>** POINTS AS SHOWN ON THE PLANS:
    <EX: CP-___ N_____.___ E_____.___ ELEV_____.___
    CP-___ N_____.___ E_____.___ ELEV_____.___
    CP-___ N_____.___ E_____.___ ELEV_____.___
    <USE DESCRIPTION IF NO CP OR CP NUMBER IS GIVEN>
    BASIS OF BEARINGS: SEE PLANS. **<OR DESCRIBE HERE>**
20. **<DELETE IF AS-BUILTS NOT REQUIRED>**THE CONTRACTOR SHALL FURNISH THE ENGINEER OF RECORD A COMPLETE SET OF CONSTRUCTION RECORD DRAWINGS ("AS-BUILTS"), FOR THE CONSTRUCTED IMPROVEMENTS. THE PLANS SHALL SHOW SUFFICIENT DIMENSION TIES TO PERMANENT SURFACE FEATURES FOR ALL BURIED FACILITIES TO ALLOW FOR FUTURE LOCATING. THE PLANS SHALL SHOW FINAL PAVEMENT, FLOW LINE ELEVATIONS, CONTOURS AT POND/DRAINAGE FEATURES (AS SURVEYED AND CERTIFIED BY A COLORADO P.L.S.), MANHOLE, PIPE, AND INLET LOCATIONS, INVERTS, GRATE ELEVATIONS, SIZES OF ALL UTILITIES, AND ANY VARIATIONS FROM THE APPROVED PLAN. ENGINEER WILL PRODUCE FINAL RECORD DRAWINGS.
21. **<FOR CITY OF BOULDER ONLY OR IF TAP SIZES ARE NOT KNOWN AND SUBJECT TO CHANGE, OR IF NEEDED FOR BIDDING ONLY. NOT FOR CONSTRUCTION PLANS>** BASED ON THE CURRENT PROPOSED BUILDING PLAN, IT IS ANTICIPATED THAT THE PROJECT WILL BE SERVED BY A __" **<EX: 1">** DOMESTIC WATER SERVICE, A __" **<EX: 3">** IRRIGATION SERVICE LINE, A __" **<EX: 6">** FIRE SERVICE LINE, AND A __" **<EX: 4">** SANITARY SERVICE. **NOTE: IF TAP SIZES NOT KNOWN, DELETE FIRST SENTENCE.** OWNER AND CONTRACTOR TO VERIFY FINAL TAP SIZES, BASED ON FINAL FIXTURE COUNTS, AT THE TIME OF BUILDING PERMIT APPLICATION AND ADJUST TAP SIZES, SERVICE LINES AND FITTINGS, AND TAP FEES ACCORDINGLY.

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BOHN FARM COHOUSING COMMUNITY

1313 Spruce Avenue
Longmont, CO

RESIDENTIAL PLANNED UNIT DEVELOPMENT

PRELIMINARY NOT FOR CONSTRUCTION

#	DESCRIPTION

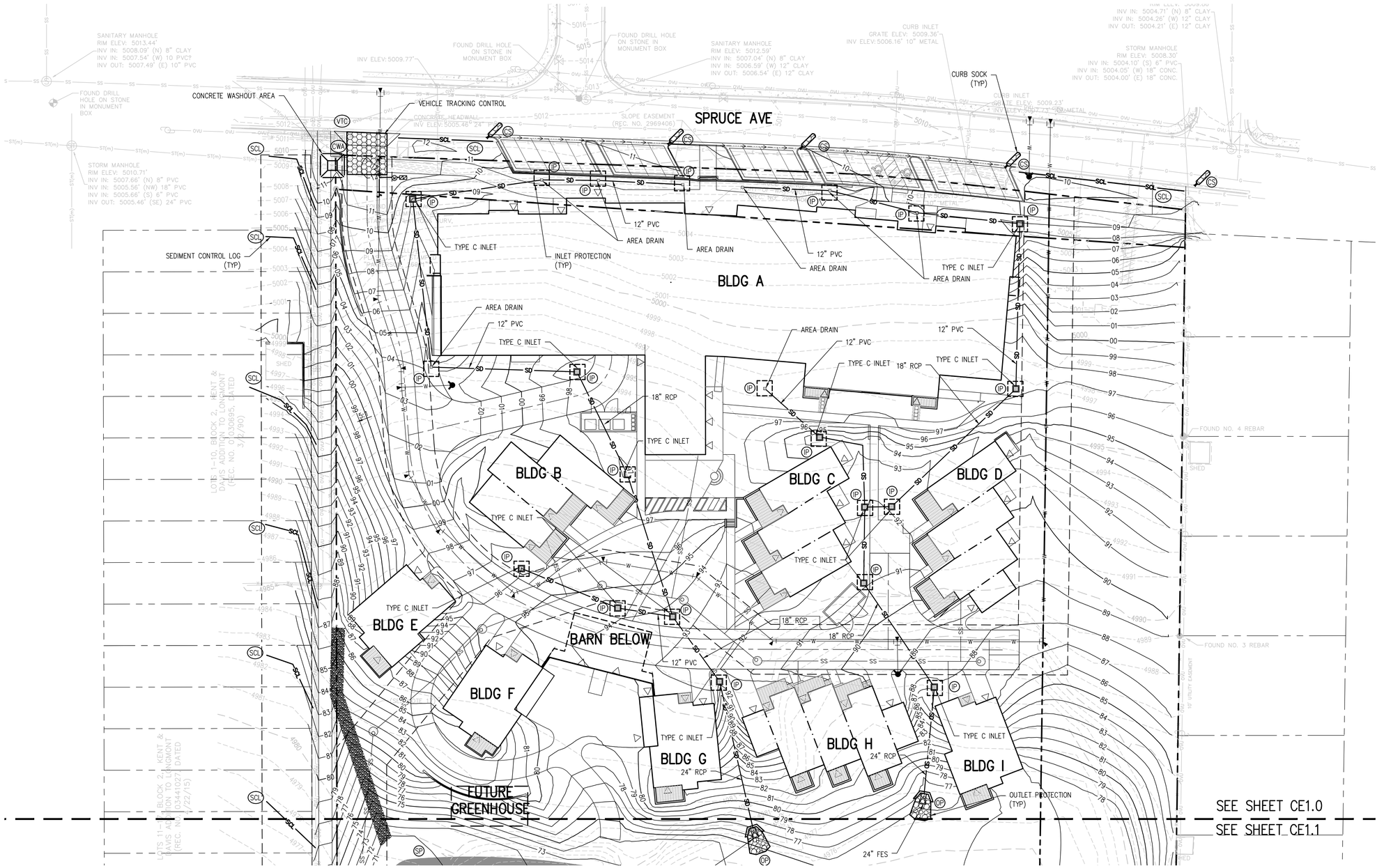
07/19/18

PUD Submittal

SHEET NUMBER

C0.1

LEGEND, NOTES, AND ABBREVIATIONS



EROSION CONTROL LEGEND

- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- LIMITS OF WORK
- IP — INLET PROTECTION
- OP — OUTLET PROTECTION
- VTC — VEHICLE TRACKING CONTROL
- SB — STRAW BALE EROSION BARRIER
- SF — SILT FENCE
- CF — CONSTRUCTION FENCE
- TSD — TEMPORARY SLOPE DRAIN
- DD — DIVERSION DITCH
- SCL — SEDIMENT CONTROL LOG
- CS — CURB SOCK
- RCD — ROCK CHECK DAM
- ROOF DRAIN DOWNSPOUT
- CWA — CONCRETE WASHOUT AREA
- SP — TEMPORARY SEDIMENTATION POND
- ECB — EROSION CONTROL BLANKET
- CSM — CHANNEL STABILIZATION MATTING
- SR — SURFACE ROUGHENING

30 0 30 60
SCALE IN FEET

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BOHN FARM COHOUSING COMMUNITY

1313 Spruce Avenue
Longmont, CO

RESIDENTIAL PLANNED UNIT DEVELOPMENT

PRELIMINARY NOT FOR CONSTRUCTION

#	DESCRIPTION

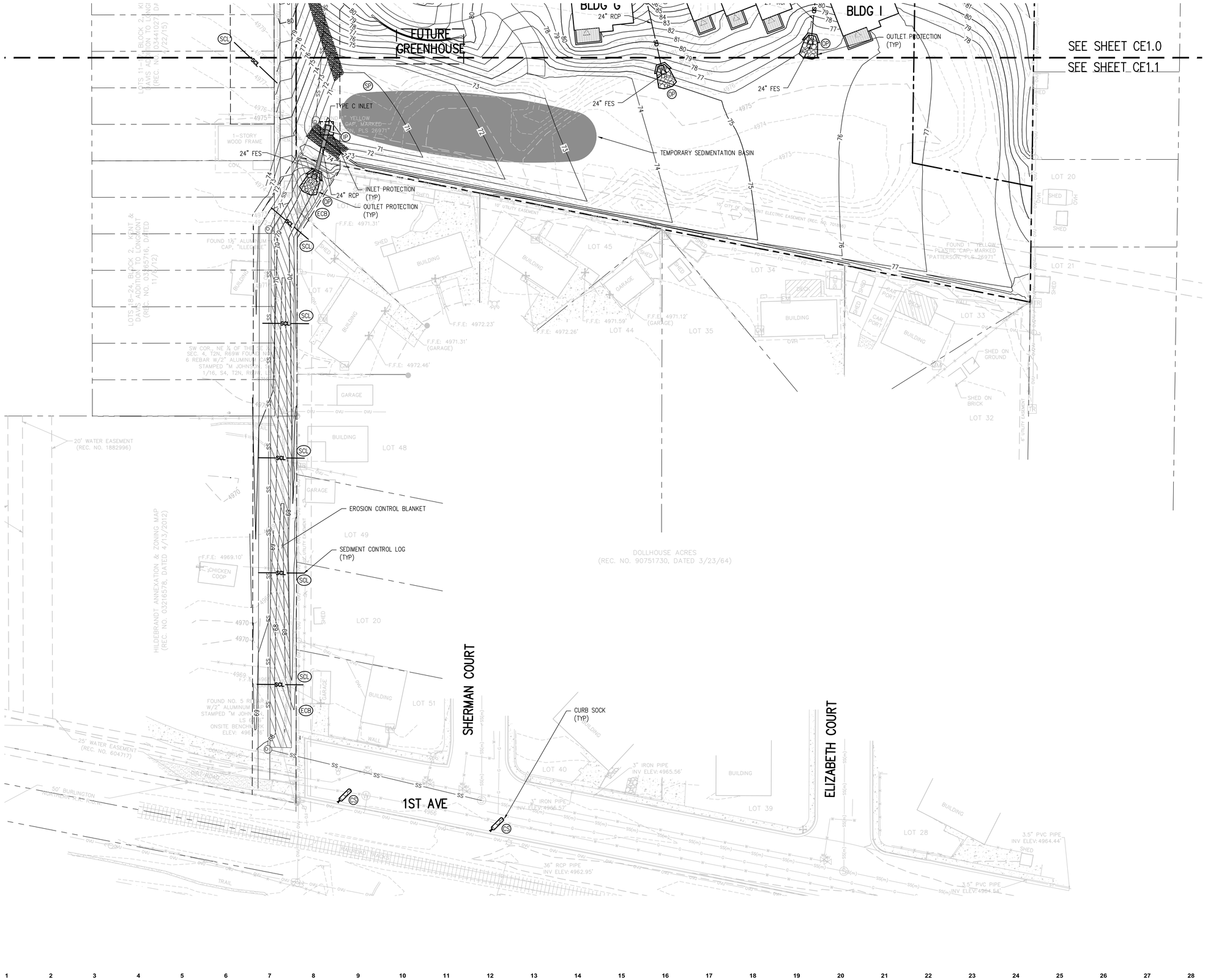
07/19/18

PUD Submittal

SHEET NUMBER

CE1.0

EROSION CONTROL PLAN NORTH



EROSION CONTROL LEGEND

- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- LIMITS OF WORK
- (IP) INLET PROTECTION
- (OP) OUTLET PROTECTION
- (VTC) VEHICLE TRACKING CONTROL
- (SB) STRAW BALE EROSION BARRIER
- (SF) SILT FENCE
- (CF) CONSTRUCTION FENCE
- (TSD) TEMPORARY SLOPE DRAIN
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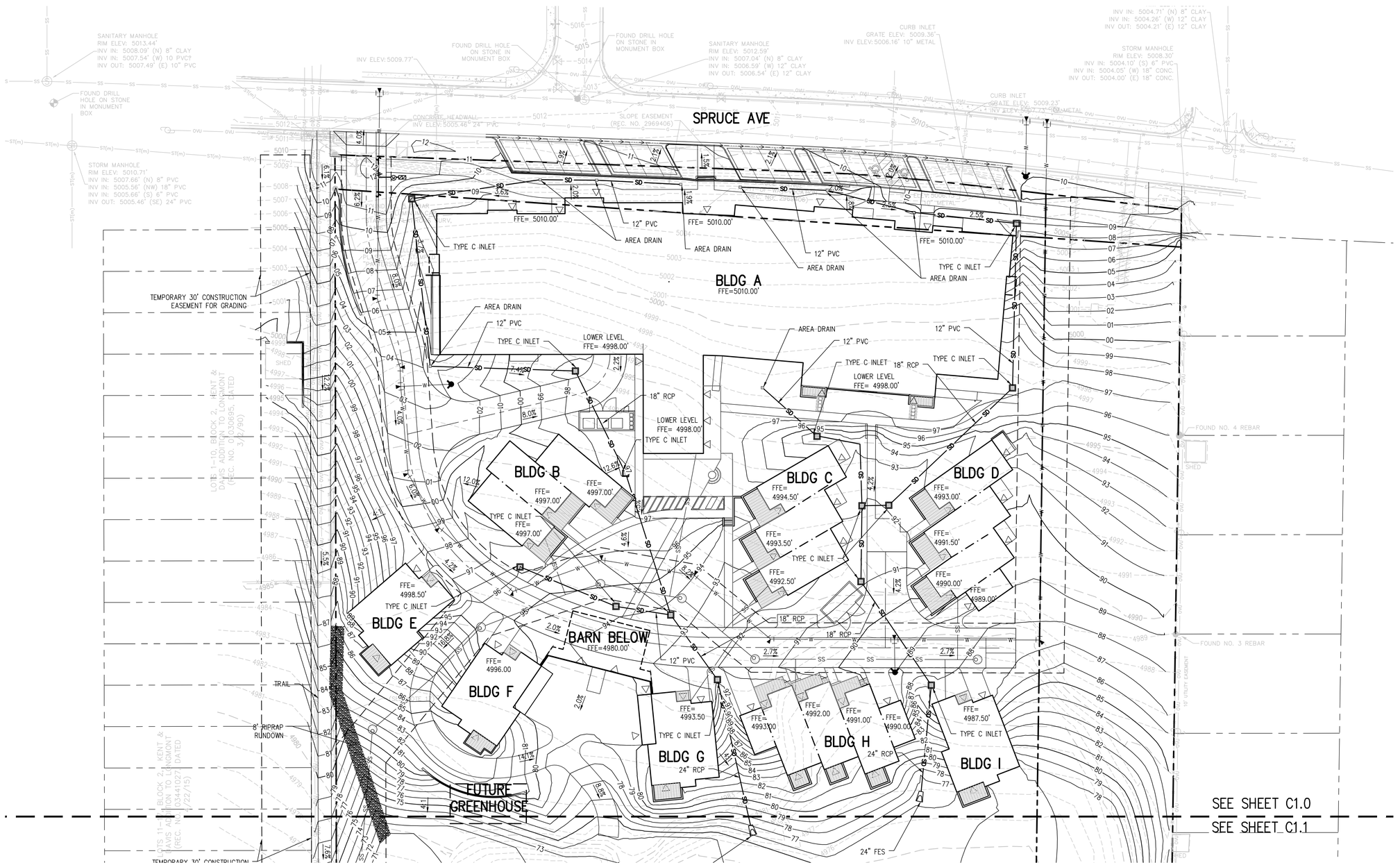

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GRADING AND DRAINAGE PLAN NORTH

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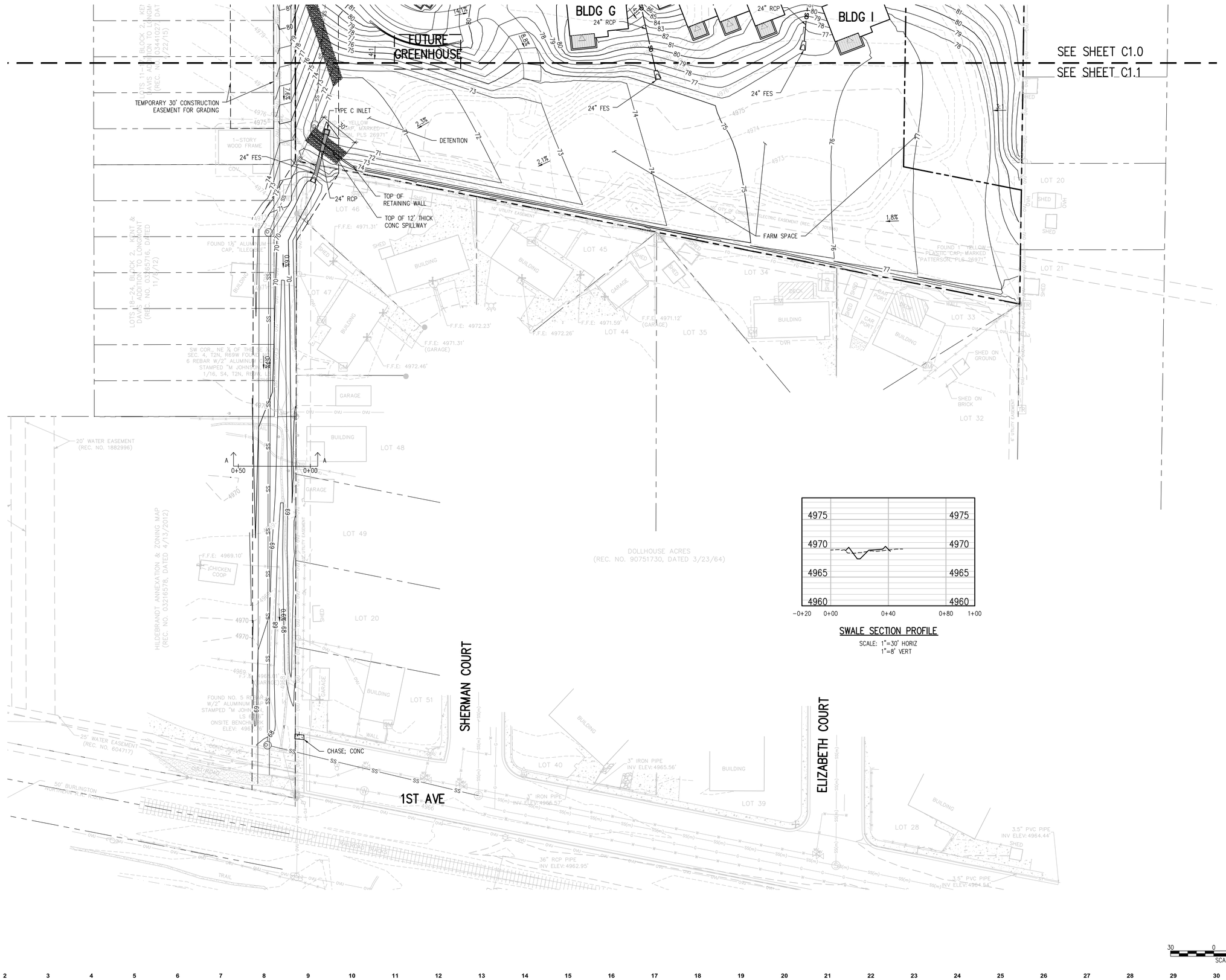
SCALE IN FEET



SWALE SECTION PROFILE

SCALE: 1"=30' HORIZ
1"=8' VERT

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SCALE IN FEET

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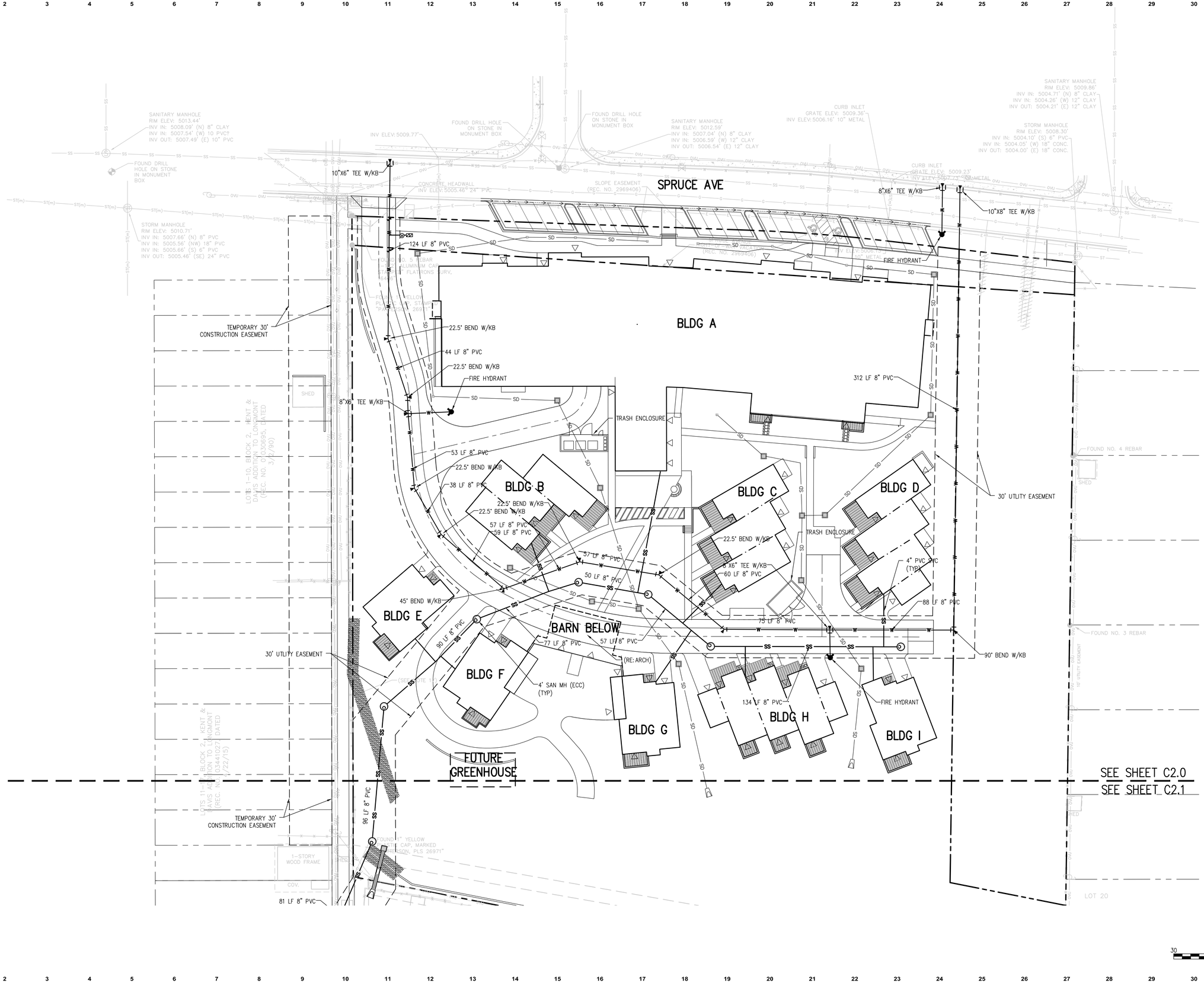

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C2.0

UTILITY PLAN NORTH

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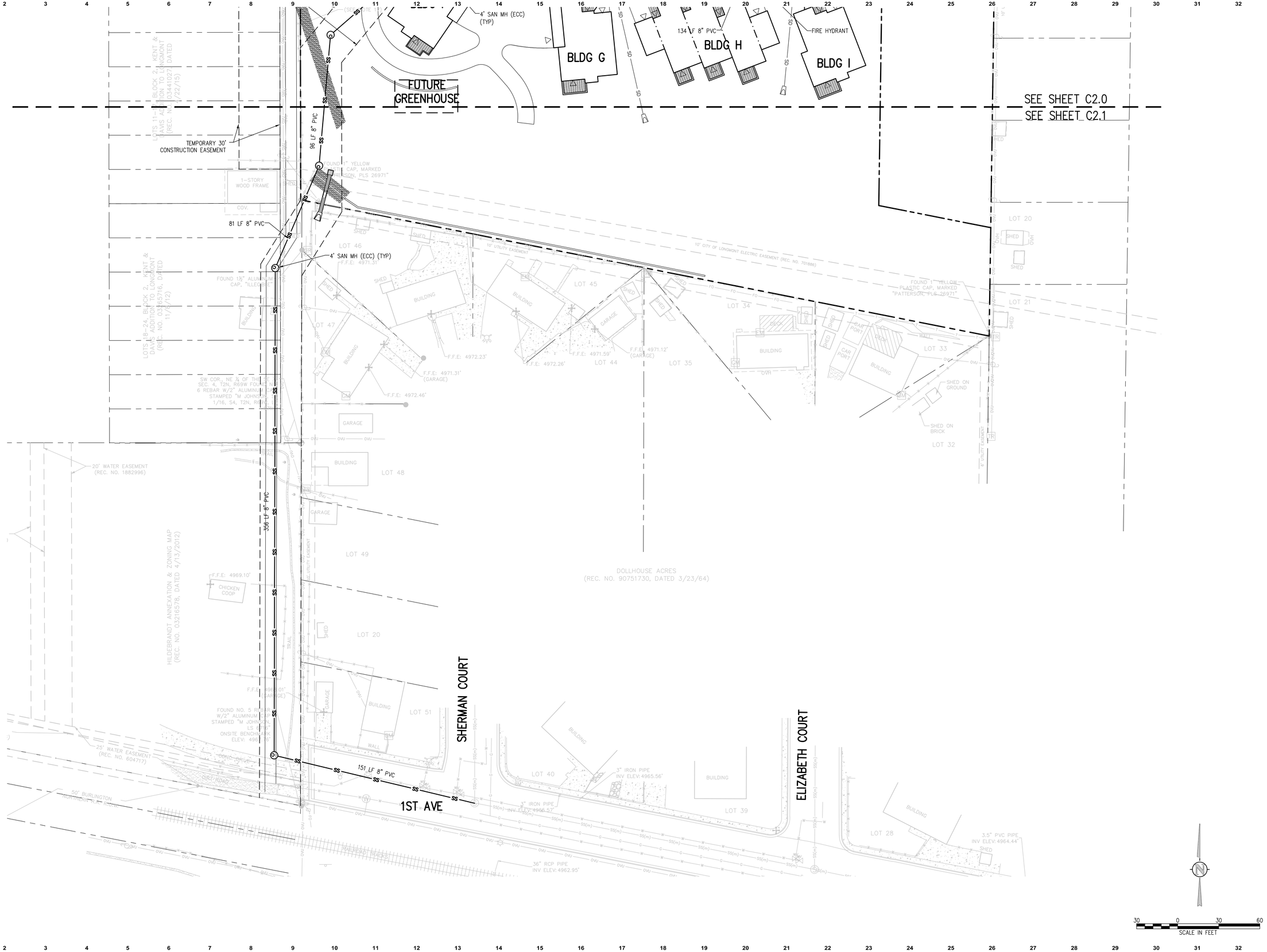

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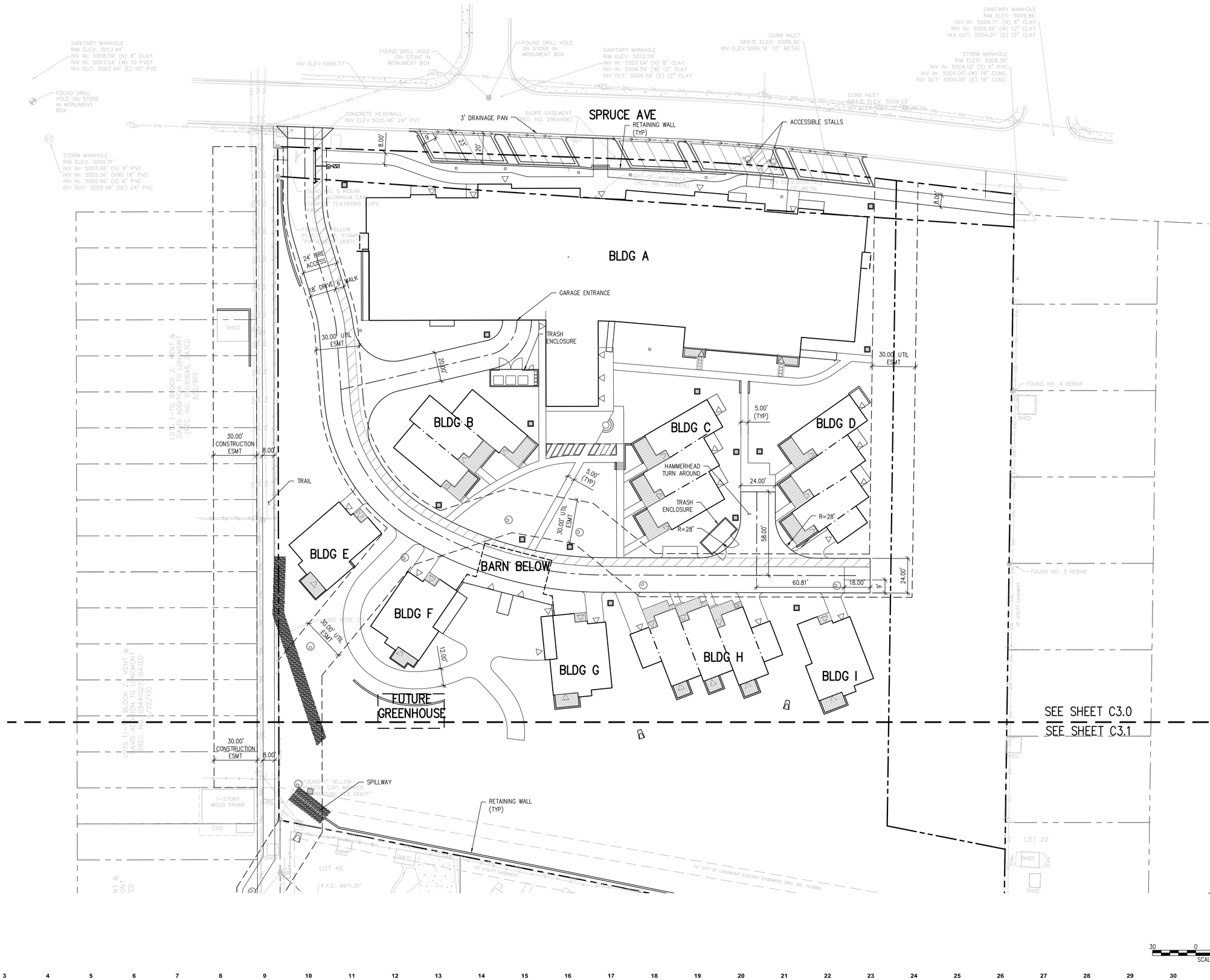

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C3.0

HORIZONTAL CONTROL PLAN NORTH

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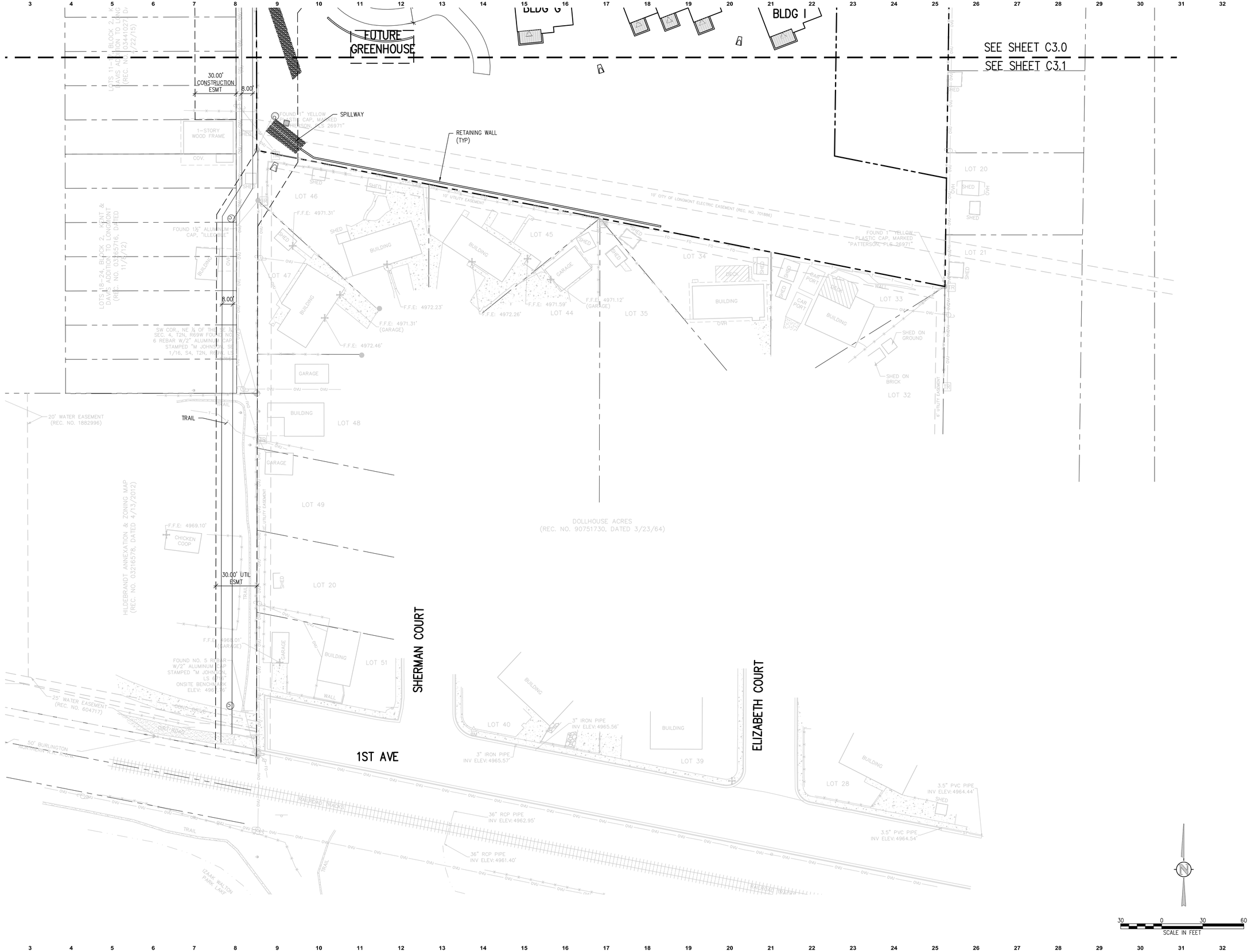

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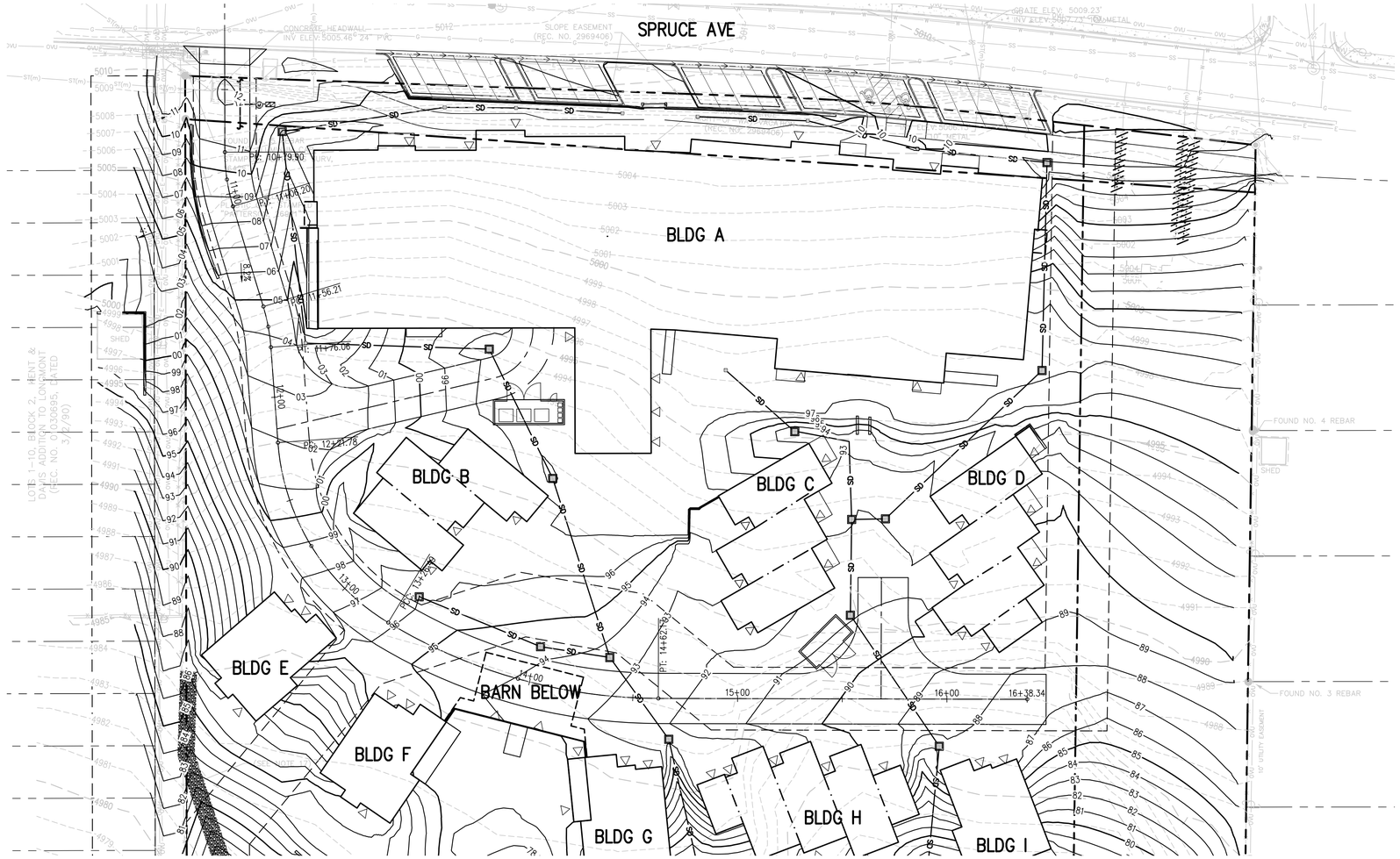
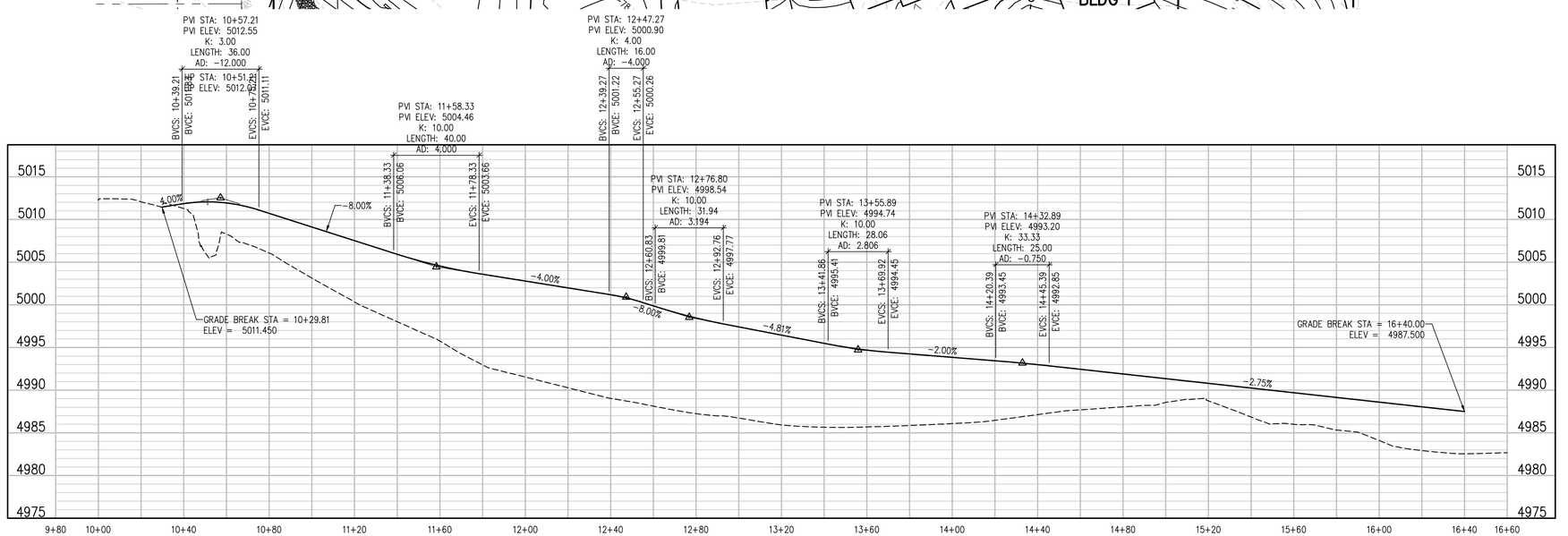
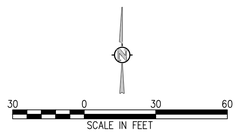




ROAD PROFILE

SCALE: 1"=30' HORIZ
1"=8' VERT



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SHEET NUMBER

C4.0

ROAD PLAN AND PROFILE

Architecture
Structural
Geotechnical

RMG

ROCKY MOUNTAIN GROUP

Materials Testing
Forensic
Civil/Planning

PRELIMINARY SUBSURFACE SOIL INVESTIGATION

Bohn Farm Cohousing Community
1313 Spruce Av
Longmont, Colorado

PREPARED FOR:

Colorado Cohousing Development Co.
P.O. Box 304
Longmont, CO 80502

JOB NO. 158854

July 20, 2017

Cordially,
RMG – Rocky Mountain Group

Lauren McIver, EIT
Geotechnical Staff Engineer

Thomas M. Cope, P.E.
Sr. Geotechnical Project Manager

COLORADO REGISTERED
THOMAS M. COPE
7/21/17
24995
PROFESSIONAL ENGINEER

TABLE OF CONTENTS

PROJECT DESCRIPTION AND SCOPE

Project Location

The project lies in Section 4, Township 2 North, Range 69 West of Boulder County, Colorado. The site is generally located to the west central portion of the City of Longmont, Colorado. The site is located south of Spruce Avenue, west of Grant Street. The approximate location of the site is shown in the Site Vicinity Map on Figure 1.

Project Description

The proposed development is to consist of the development of a parcel of semi developed property for commercial and residential use. The area of the proposed development is approximately 5.89 acres. Based on conversations with the client, it is our understanding that the proposed development will consist of parking structures, shopping and multifamily residential units.

Scope of Work

RMG was retained to assess the soil conditions and develop preliminary geotechnical engineering recommendations to support the proposed commercial and residential land development. Our scope of services consisted of a field investigation, laboratory testing, engineering analysis, and report preparation.

This report presents preliminary geotechnical engineering recommendations for the proposed Bohn Farm Cohousing Development. The report presents the reduction of subsurface conditions, preliminary type foundations and preliminary utility and pavement recommendations. **This report does not constitute final construction recommendations for the proposed development. A site specific subsurface soil investigation should be performed at each proposed building prior to construction.**

The following is excluded from the scope of this report including but not limited to geologic, natural and environmental hazards such as landslides, unstable slopes, seismicity, snow avalanches, water flooding, corrosive soils, erosion, radon, wild fire protection, hazardous waste and natural resources.

Existing Site Conditions

At the time of our field exploration the site was partially developed property. The original Bohn Farm single family residence is located in the northeast corner of the property. A barn and several sheds are located to the south of the existing residence. Fences separate the house, barn, sheds and corral. It is our understanding that the farmhouse will be relocated off-site, the barn will be refurbished and all remaining site infrastructure (sheds and fencing) will be removed prior to the construction of the Bohn Farm Cohousing Development. Currently, power and water are installed to the residence. Utilities are not installed elsewhere on the property. An overhead powerline is parallel to the western property line. A review of aerial photographs and observations of site surface conditions indicate little to no development or

activity has occurred at the site. Historic aerial photographs indicate the site was previously used for agriculture and farming. At the time of our field exploration, the vegetation consisted of tall (2ft to 4ft tall) strands of grasses with trees located across the property. A gravel driveway to the existing residence is present at the site. Additional paved roadways have not been installed. The topography of the site generally sloped moderately down from the north to the south.

FIELD INVESTIGATION AND LABORATORY TESTING

The information included in this report has been compiled from field reconnaissance, maps of the site, exploratory soil borings and soil laboratory testing. Geophysical investigations were not considered necessary for characterization of the site geology. Monitoring programs, which typically include instrumentation and/or observations for changes in groundwater, surface water flows, slope stability, subsidence, and similar conditions, are not known to exist and were not considered applicable for the scope of this report.

Subsurface Investigation

The subsurface conditions on this portion of the site were investigated by drilling 8 exploratory test borings for the proposed development. The approximate locations of the test borings are presented in the Test Boring Location Plan on Figure 2.

The test borings were advanced with a power-driven, continuous-flight auger drill rig to depths of about 20 to 50 feet below the existing ground surface (bgs) for the investigation. Samples were obtained in general accordance with ASTM D-3550 utilizing a 2½-inch OD modified California sampler. The Test Boring Logs are presented in Figures 3 through 6. An Explanation of Test Boring Logs is presented in Figure 7.

Laboratory Testing

The moisture content for the recovered samples was obtained in the laboratory. Grain-size analysis, Atterberg Limits and swell/consolidation tests were performed on selected samples for purposes of classification and to develop pertinent engineering properties. A Summary of Laboratory Test Results is presented in Figure 8. Soil Classification and Atterberg Test Results are presented in Figures 9 and 10. Swell/Consolidation Test Results are presented in Figures 11 through 13.

GEOLOGY AND SUBSURFACE CONDITIONS

Geologic Setting

The project site is located approximately 12 miles east of the southern Rocky Mountains, within the Colorado Piedmont section of the Great Plains Physiographic Province. The City of Longmont and surrounding area are located within a large north-south trending structural basin called the Denver Basin which consists of an asymmetric syncline of Paleozoic, Mesozoic, and Cenozoic sedimentary rock layers. The Denver Basin formed during the Laramide Orogeny

that uplifted the Rocky Mountains during the late Cretaceous and early Tertiary (Trimble, 1980). The surficial geology of the site is mapped by Trimble and Machette (1979) as Holocene-age alluvial deposits. The underlying formational bedrock unit is mapped as the upper unit of the Pierre Shale which consists of mudstone (interbedded claystone and siltstone) and shale. The mudstone and shale contain partially altered montmorillonitic clay. These clays expand when wet. Volumetric change of expansive soil may cause excessive cracking and heaving of structures with shallow foundations, concrete slabs-on-grade, or pavements supported on these materials. A review of a Colorado Geological Survey map delineating areas based on their relative potential for swelling in the Denver area by Hart (1973-4) indicates soil and bedrock materials in the project vicinity have high swell potential. Construction on soils known to be potentially expansive may have a significant impact to the project.

Soil and Bedrock Profile

The subsurface materials encountered in the test borings were classified using the Unified Soils Classification System (USCS). The surface materials in all test borings consisted of approximately 3 inches of dark brown sandy clay topsoil.

Native soils were encountered beneath the topsoil in each of our borings and extended to depths ranging between approximately 2 feet and 11 feet bgs. Native soils generally consisted of light brown, stiff to very stiff lean clay with sand. Weathered bedrock consisting of mottled orange, gray and tan stiff to very stiff, sandy clay was encountered above competent bedrock in B7. Competent bedrock mapped as the Pierre Shale was encountered in all 8 building borings beneath the native soils.

Additional descriptions and the interpreted distribution (approximate depths) of the subsurface materials are presented on the Test Boring Logs. The classifications shown on the logs are based upon the engineer's classification of the samples at the depths indicated. Stratification lines shown on the logs represent the approximate boundaries between material types and the actual transitions may be gradual and vary with location.

Groundwater

Groundwater was only observed in B2 at the time of drilling. When checked following the completion of drilling, static groundwater levels were measured in all 8 borings. Static groundwater was encountered at depths ranging between 7 and 18.5 feet bgs. Groundwater was encountered at 7 feet bgs in B8. Variations in groundwater and subsurface moisture conditions may occur due to variations in rainfall and other factors not readily apparent at this time. Development of the property and adjacent properties may also affect groundwater levels.

CONCLUSIONS

The following discussion is based on the subsurface conditions encountered in the test borings and on the project characteristics previously described. If conditions are different from those described in this report or the project characteristics change, RMG should be retained to review our recommendations and adjust them, if necessary. The results of this investigation indicate that the

site is suitable for the proposed project provided the recommendations presented herein are implemented.

As previously discussed the site is underlain primarily by sandy, silty clay that exhibits low expansive characteristics. The samples tested generally exhibited swells ranging between approximately 1.5% when wetted against surcharge pressures of 1,000 pounds per square foot.

The interbedded claystone and siltstone bedrock sample tested generally exhibited swells less than 4%. One sample, B2 at 49 feet, exhibited moderate to high swell potential and swelled approximately 7.2% when wetted against surcharge pressures of 1,000 pounds per square foot.

Preliminary recommendations based on the field investigation and laboratory testing, are presented below. It must be understood that these recommendations should be verified with a final subsurface soils investigation once over lot grading has occurred.

SITE DEVELOPMENT AND EARTHWORK

Site Preparation

Prior to construction the ground surface in proposed structure and improvement areas should be stripped of existing vegetation, debris, topsoil, undocumented fill, soft, loose, or disturbed native soils, and other deleterious material. Soil with organic materials generated during clearing operations should be removed from the project site for disposal or placed in areas that will not be supporting structures including sidewalks and streets. Soft, loose, or yielding subgrade should be removed to a depth that exposes firm subgrade and replaced with structural fill. In areas to receive structural fill, the exposed subgrade should be scarified, moisture conditioned, and compacted per the recommendations set forth in the Structural Fill section of this report.

Excavations

The on-site surface and near surface soils may generally be excavated with heavy-duty earthmoving or excavation equipment in good operating condition. Excavations into the Pierre Shale bedrock will have variable excavation rates and the use of more aggressive excavation techniques, such as single-shank rippers or other rock breaking equipment, may be needed to achieve proposed site grades, specifically where the very hard sandstone was encountered. During wet weather, earthen berms, swales, or other methods should be used where necessary to route water away from excavations. Water that accumulates in excavations should be promptly pumped out or otherwise removed and the area allowed to dry before resuming construction.

Overexcavation and Replacement

The sandy, silty clay was determined to have low swell potential and is suitable for direct bearing of shallow foundations, concrete slabs, and pavement in their present condition.

The interbedded claystone and siltstone bedrock displays low to moderate swell potential and is not suitable for direct bearing of shallow foundations, concrete slabs and pavement in their present condition.

There are a few methods that may be chosen to decrease the impact from swelling soils:

A) Some of the expansive soils can be removed and replaced with granular structural fill or replaced with the on-sites moisture conditioned. Based on the swells encounted at the shallower depths we anticipate granular soil replacement in the range of 2 to 4 feet and 3 to 6 feet depth if moisture conditioning of the existing soils is chosen.

B) Foundation and slab supported on a lifted foundation system such as "Terra Firma". The foundation walls would be cast on a post tension slab raised above the ground on a screw lift mechanism supported on piers.

C) The foundation system supported by piers and a structural floor attached to the walls above the heaving soils.

Structural or moisture-conditioned fill should be observed and tested during placement as indicated in the following section, to ensure proper compaction.

Structural Fill

Areas to receive compacted granular structural fill should have topsoil, organic material, or debris removed. The upper 6 inches of the exposed surface soils should be scarified and moisture conditioned to facilitate compaction and compacted to a minimum of 95 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-698) or to a minimum of 92 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D-1557) prior to placing structural fill.

Structural fill placed on slopes should be benched into the slope. Maximum bench heights should not exceed 4 feet, and bench widths should be wide enough to accommodate compaction equipment.

Structural fill shall consist of granular, non-expansive material. It should be placed in loose lifts not exceeding 8 to 12 inches, moisture conditioned to facilitate compaction (usually within 2 percent of the optimum moisture content) and compacted to a minimum of 95 percent of the maximum dry density as determined by the Standard Proctor test, ASTM D-698. The materials should be compacted by mechanical means.

Materials used for structural fill should be approved by RMG prior to use. Structural fill should not be placed on frozen subgrade or allowed to freeze during moisture conditioning and placement.

To verify the condition of the compacted soils, density tests should be performed during placement. The first density tests should be conducted when 24 inches of fill have been placed.

Moisture Conditioned On-Site Material

Areas to receive moisture-conditioned structural fill should have topsoil, organic material, or debris removed. The upper 6 inches of the exposed surface soils should be scarified and moisture conditioned to facilitate compaction and compacted to a minimum of 95 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-698) or to a minimum of 92 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D-1557) prior to placing structural fill.

Moisture-conditioned structural fill placed on slopes should be benched into the slope. Maximum bench heights should not exceed 4 feet, and bench widths should be wide enough to accommodate compaction equipment.

Moisture conditioned structural fill shall consist of a moisture-conditioned, on-site cohesive fill material. The fill material shall be moisture conditioned and replaced as follows:

- Fill shall be free of deleterious material and shall not contain rocks or cobbles greater than 6 inches in diameter.

- Claystone fill shall be thoroughly "pulverized" and shall not contain claystone chunks greater than 1 1/2 inches in diameter.

- When claystone is to be incorporated, the fill materials shall be processed in a stockpile **(processing these materials in the excavations will not be permitted)**. These stockpiled fill materials shall be moisture-conditioned to a minimum of 1 percent to 4 percent above optimum moisture content (as determined by the Standard Proctor test, ASTM D-698), with an average of not less than 1 1/2 percent above optimum moisture content. These materials, once moisture conditioned and thoroughly mixed, should rest in the stockpile a minimum of 24 hours to ensure proper distribution of the moisture through the material. After resting, the materials should be re-wet and re-mixed to replace the surficial moisture lost to evaporation during the resting period.

- Fill materials not containing claystone do not require processing in a stockpile, but shall be moisture-conditioned to a minimum of 1 percent to 4 percent above optimum moisture content (as determined by the Standard Proctor test, ASTM D-698), with an average of not less than 1 1/2 percent above optimum moisture content.

- The moisture-conditioned materials should be placed in maximum 6" compacted lifts. These materials should be compacted to a minimum of 95 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-698). Material not meeting the above requirements shall be reprocessed.

Materials used for moisture-conditioned structural fill should be approved by RMG prior to use. Moisture-conditioned structural fill should not be placed on frozen subgrade or allowed to freeze during moisture conditioning and placement.

Earthwork operations should be observed and compaction of engineered fill and backfill materials should be tested by the project's geotechnical consultant. Early testing is recommended to demonstrate that placement and compaction methods are achieving the required compaction for the entire depth of fill. Without a strict quality assurance program, the fill may not be of sufficient quality to achieved required performance.

Utility Construction

The contractor should provide adequate mechanical compaction in the utility trench backfills. The contractor should take particular care in the lower portions of excavations and around manholes, valve risers and other vertical pipeline elements where settlements are commonly observed. Our experience indicates that significant settlement of backfill can occur in utility trenches, particularly when trenches are deep, when backfill materials are placed in thick lifts with insufficient compaction, and when water can access and infiltrate the trench backfill materials. Consideration should be given to use of "flowable fill," (e.g. a controlled low strength mix (CLSM), or a similar material) in lieu of compacted soil backfill in areas with low tolerances for surface settlements, in deep excavations, and areas with difficult access.

Soils in utility excavations may encounter "Type B" and "Type C" soil according to OSHA regulations. Trench backfill should be compacted to City and/or County specifications and it is recommended that a representative of RMG provide full-time observation and compaction testing.

Granular pipe bedding materials can function as conduits for re-distribution of natural and applied waters in the subsurface. Development of site grading plans should consider the subsurface transfer of water in utility trenches and the pipe bedding in areas where the utility service trenches enter structures. Cut-off walls in utility trenches or other water-stopping measures may be implemented to reduce the rates and volumes of water transmitted along utility alignments toward structures, where wetting of the underlying soils increases the potential for soil movements, material degradation, or structural distress.

PRELIMINARY FOUNDATION OPTIONS

The foundation options below are based on the preliminary subsurface soil findings documented in this report. The recommendations for each individual building will depend on the subsurface investigation for that specific location to be conducted at a later time. RMG should be retained for each individual site for further soil exploration and will then provide specific foundation recommendations for the proposed development.

Anticipated Foundation Systems

Shallow Foundation Systems

A voided spread footing foundation system may be utilized at this site provided foundation components maintain the minimum separation requirement for foundation components to top of bedrock or bear on the minimum required depth of compacted granular structural fill or moisture conditioned on-site material. A maximum allowable bearing pressure of

approximately 2,000 to 4,000 psf and a minimum dead load pressure of approximately 500 to 1,000 psf may be used for planning purposes. A 4-inch void material should be installed in areas where the minimum dead load cannot be attained. Foundation components must be below all organic material and should extend 30 inches or more below the lowest exterior finished grade for frost protection. The foundation design should be prepared by a qualified Colorado Registered Professional Engineer using the recommendations presented in this report. This foundation system should be designed to span a minimum of 10 feet under the design loads.

Drilled Pier Foundation Systems

Due to the moderate expansion potential of the on-site bedrock, a shallow foundation system may not be expected to perform adequately if it were supported directly on the native soils. Drilled piers may be considered in lieu of a 4 to 6 foot overexcavation. Drilled piers bearing in Pierre Shale could be designed for allowable end bearing pressures in the range of 15,000 to 25,000 psf with allowable skin friction in the range of 1,500 to 2,500 psf. The piers must be constructed a minimum of 15 feet into competent bedrock. If piers are the desired option a lot specific soils report will provide final design criteria.

Open Excavation Observations

During construction, foundation excavations should be observed by RMG prior to placing structural fill, forms or concrete to verify the foundation bearing conditions for each structure.

INTERIOR FLOOR SYSTEMS

Interior Floor Slabs

Vertical slab movement may be reduced to one to two inches slabs bearing on 2 to 4 feet of compacted granular structural fill or 4 to 6 feet of moisture conditioned on-site material compared to the on-site soil/bedrock. In some cases, vertical movement may exceed this range. If movement and associated damage to floors and finishes cannot be tolerated, a structural floor system should be used.

Floor slabs should be separated from structural components to allow for vertical movement. Control and construction joints should be placed in accordance with the latest guidelines and standards published by the American Concrete Institute (ACI) and applicable local Building Code requirements.

Recommendations for exterior concrete slabs, such as patios, driveways, and sidewalks, are not included in this report.

Interior Partitions

Interior non-bearing partitions and attached furnishings (e.g., cabinets, shower stalls, etc.) on concrete slabs should be constructed with a void so that they do not transmit floor slab movement to the roof or overlying floor. A void of at least 1-1/2 inches is recommended

beneath non-bearing partitions. The void may require reconstruction over the life of the structure to re-establish the void due to vertical slab movement.

Interior non-bearing partitions and other attached finishes do not require isolation from floor slabs that comprise a stiffened slab-on-grade foundation system.

Foundation Wall Backfill

Backfill should be placed in loose lifts not exceeding 8 to 12 inches, moisture conditioned to facilitate compaction (usually within 2 percent of the optimum moisture content) and compacted to 90 percent of the maximum dry density as determined by the standard Proctor test, ASTM D-698 on exterior sides of walls in landscaped areas. In areas where backfill supports pavement and concrete flatwork, the materials should be moisture conditioned to -1 percent to +3 percent of optimum moisture content compacted to 95 percent of the maximum dry density.

Fill placed on slopes should be benched into the slope. Maximum bench heights should not exceed 4 feet, and bench widths should be wide enough to accommodate compaction equipment.

The backfill should not be placed on frozen subgrade or allowed to freeze during moisture conditioning and placement. Backfill should be compacted by mechanical means, and foundation walls should be braced during backfilling and compaction.

LATERAL EARTH PRESSURES

For on-site moisture conditioned backfill materials, the estimated range will likely be equivalent fluid pressures of 50 to 70 pcf. The lateral pressure applies to level, drained backfill conditions. These values assume the backfill will not become saturated during the life of the structure, therefore positive surface drainage must be maintained. It is also assumed that compaction within approximately 5 feet of the walls will be accomplished with relatively light compaction equipment. Equivalent Fluid Pressures for sloping/undrained conditions should be determined on an individual basis.

SURFACE DRAINAGE

The ground surface should be sloped from the building with a minimum gradient of 10 percent for the first 10 feet. This is equivalent to 12 inches of fall across this 10-foot zone. If a 10-foot zone is not possible on the upslope side of the structure, then a well-defined swale should be created a minimum 5 feet from the foundation and sloped parallel with the wall with a minimum slope of 2 percent to intercept the surface water and transport it around and away from the structure. Roof drains should extend across backfill zones and landscaped areas to a region that is graded to direct flow away from the structure. The property owners should maintain the surface grading and drainage recommended in this report to help prevent water from being directed toward and/or ponding near the foundations.

Landscaping should be selected to reduce irrigation requirements. Plants used close to foundation walls should be limited to those with low moisture requirements and irrigated grass should not be located within 5 feet of the foundation. To help control weed growth, geotextiles should be used below landscaped areas adjacent to foundations. Impervious plastic membranes are not recommended.

Irrigation devices should not be placed within 5 feet of the foundation. Irrigation should be limited to the amount sufficient to maintain vegetation. Application of more water will increase the likelihood of slab and foundation movements.

The recommendations listed in this report are intended to address normal surface drainage conditions, assuming the presence of groundcover (established vegetation, paved surfaces, and/or structures) throughout the regions upslope from this structure. However, groundcover may not be present due to a variety of factors (ongoing construction/development, wildfires, etc.). During periods when groundcover is not present in the "upslope" regions, higher than normal surface drainage conditions may occur, resulting in perched water tables, excess runoff, flash floods, etc. In these cases, the surface drainage recommendations presented herein (even if properly maintained) may not mitigate all groundwater problems or moisture intrusion into the structure. We recommend that the site plan be prepared with consideration of increased runoff during periods when groundcover is not present on the upslope areas.

CONCRETE

Type I/II cement is recommended for concrete in contact with the subsurface materials. Calcium chloride should be used with caution for soils with high sulfate contents. The concrete should not be placed on frozen ground. If placed during periods of cold temperatures, the concrete should be kept from freezing. This may require covering the concrete with insulated blankets and heating. Concrete work should be completed in accordance with the latest applicable guidelines and standards published by ACI.

PRELIMINARY PAVEMENT RECOMMENDATIONS

Preliminary pavement recommendations by RMG are based off the general guidelines set forth by the City of Longmont Public Improvement Design Standards and Construction Specifications (1993) The majority the on-site soils consisted of lean clay which classifies as A-6 and A-7 per the American Association of State Highway and Transportation Officials (AASHTO).

Asphalt pavement shall consist of a bituminous plant mix composed of a mixture of high quality aggregate and bituminous material, which meets the requirements of a job-mix formula established by a qualified engineer. The geotechnical engineer should be retained to review the proposed pavement mix designs, grading, and lift thicknesses prior to construction. The aggregate base material placed under the composite asphalt pavements should meet the criteria of CDOT Class 5 or 6 aggregate base course. Aggregate base should be compacted to a minimum of 95 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-1557).

Rigid pavement shall consist of Type II, Class B, Portland Cement Concrete with a minimum Modulus of Rupture of 4,000 psi after 28 consecutive days. The geotechnical engineer should be retained to review the proposed pavement mix designs, grading, and lift thicknesses prior to construction. On-site sandy lean clay material should be compacted to a minimum of 95 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-1557) prior to placement of the rigid concrete.

To reduce the swell potential, it is recommended that the subgrade soils below the pavement be overexcavated and replaced as moisture conditioned structural fill in accordance with the recommendations set forth in previous sections. The soils should be moisture treated to a depths ranging between 2 to 3 feet below the bottom of the pavement section and extend curb-to-curb or to the back-of-walk if attached to the curb or monolithic. Lifts should be a maximum of 8-inches prior to compacting.

Immediately prior to paving, the pavement subgrade should be proof rolled with a heavily loaded, pneumatic tired vehicle, and checked for moisture content. Areas that exhibit excessive deflection (as evaluated by the geotechnical engineer) during proof rolling should be excavated and replaced and/or stabilized.

A final soil investigation and pavement recommendations will need to be performed after over lot grading has been completed and utilities have been installed in the areas of the roadways. Based on the information above, preliminary pavement recommendations are as follows:

Table 1: Preliminary Pavement Recommendations

Pavement Type	Pavement Material	Compacted Base	Pavement Thickness (in)	Base Course Thickness (in)
Flexible	Hot bituminous plant mix	ABC Class 5 or 6	3 – 5	5 – 8
Rigid	Portland Cement Concrete, Minimum strength 4,000psi	On-site lean clay material compacted to min. 95% standard proctor (ASTM D698)	5 – 7	0

CLOSING

This report has been prepared for the exclusive purpose of providing preliminary geotechnical engineering information and recommendations for development described in this report. RMG should be retained to review the final construction documents prior to construction to verify our findings, conclusions and recommendations have been appropriately implemented.

This report has been prepared for the exclusive use by **Colorado Cohousing Development, LLC** for application as an aid in the design and construction of the proposed development in accordance with generally accepted geotechnical engineering practices. The analyses and recommendations in

this report are based in part upon data obtained from a limited number of test borings, site observations and the information presented in referenced reports. The nature and extent of variations may not become evident until construction. If variations then become evident, RMG should be retained to review the recommendations presented in this report considering the varied condition, and either verify or modify them in writing.

Our professional services were performed using that degree of care and skill ordinarily exercised, under similar circumstances, by geotechnical engineers practicing in this or similar localities. RMG does not warrant the work of regulatory agencies or other third parties supplying information which may have been used during the preparation of this report. No warranty, express or implied is made by the preparation of this report. Third parties reviewing this report should draw their own conclusions regarding site conditions and specific construction techniques to be used on this project.

The scope of services for this project does not include, either specifically or by implication, environmental assessment of the site or identification of contaminated or hazardous materials or conditions. Development of recommendations for the mitigation of environmentally related conditions, including but not limited to biological or toxicological issues, are beyond the scope of this report. If the Client desires investigation into the potential for such contamination or conditions, other studies should be undertaken.

If we can be of further assistance in discussing the contents of this report or analysis of the proposed development, from a geotechnical engineering point-of-view, please feel free to contact us.

FIGURES

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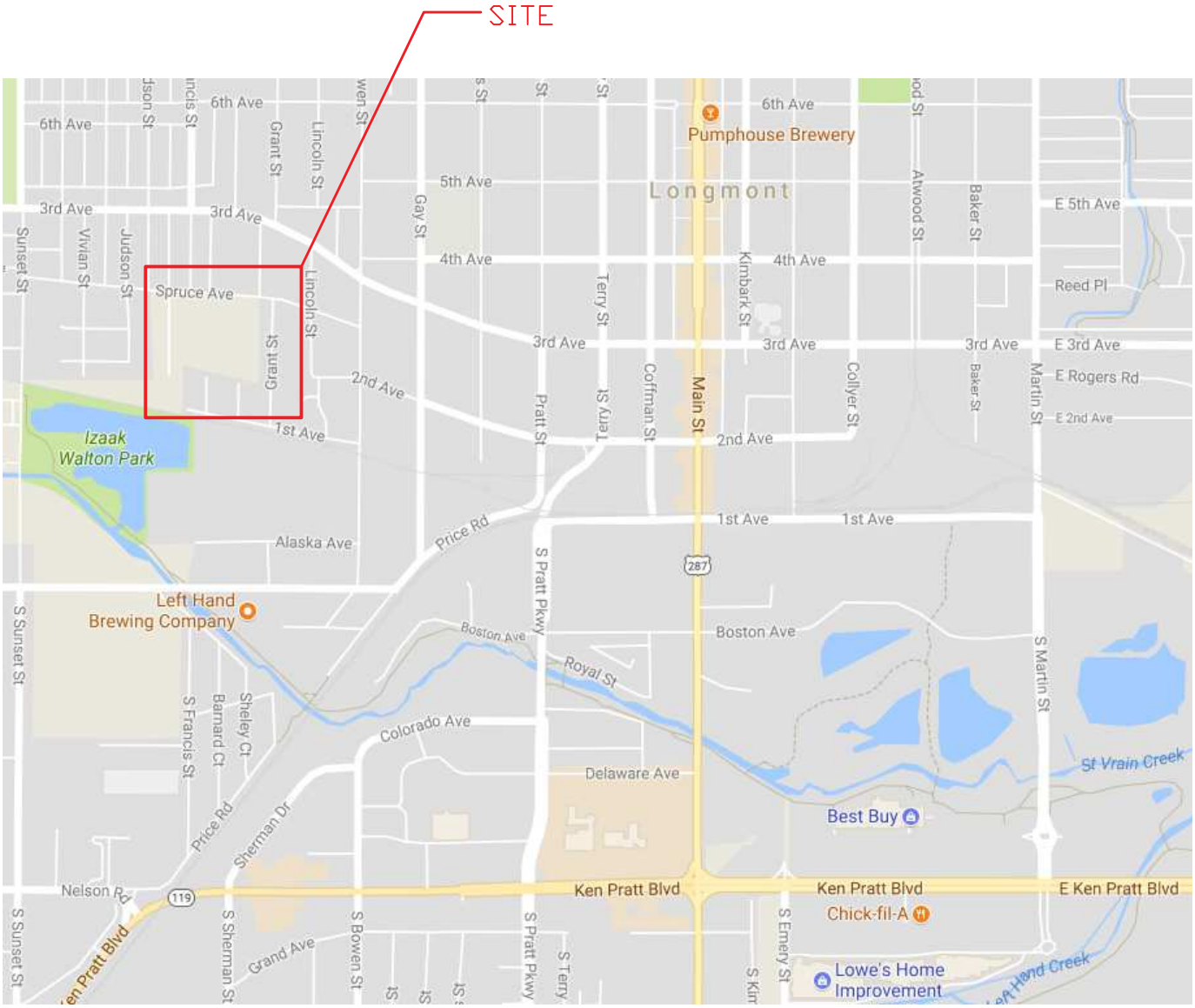

VICINITY MAP

1313 SPRUCE AVENUE

LONGMONT, COLORADO

CLIENT :
COLORADO COHOUSING DEVELOPMENT
P.O. BOX 304
LONGMONT, CO. 80502

RMG PROJECT #158854

DATE: 7/7/17

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1601 37th STREET
EVANS, CO. 80620
PHONE: (970) 330-1071
FAX: (970) 330-1252

BORE LOCATION PLAN

1313 SPRUCE AVENUE

LONGMONT, COLORADO

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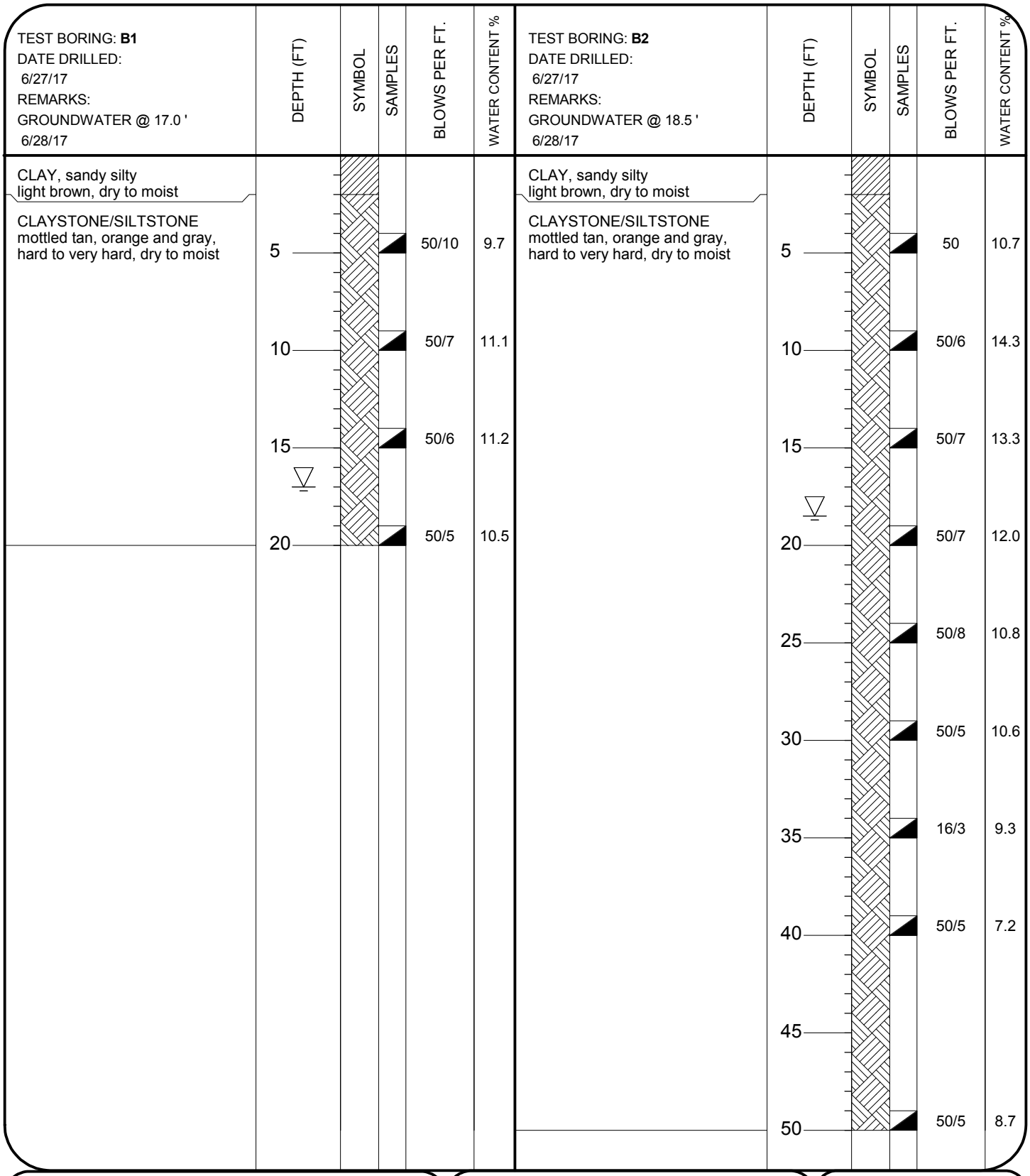

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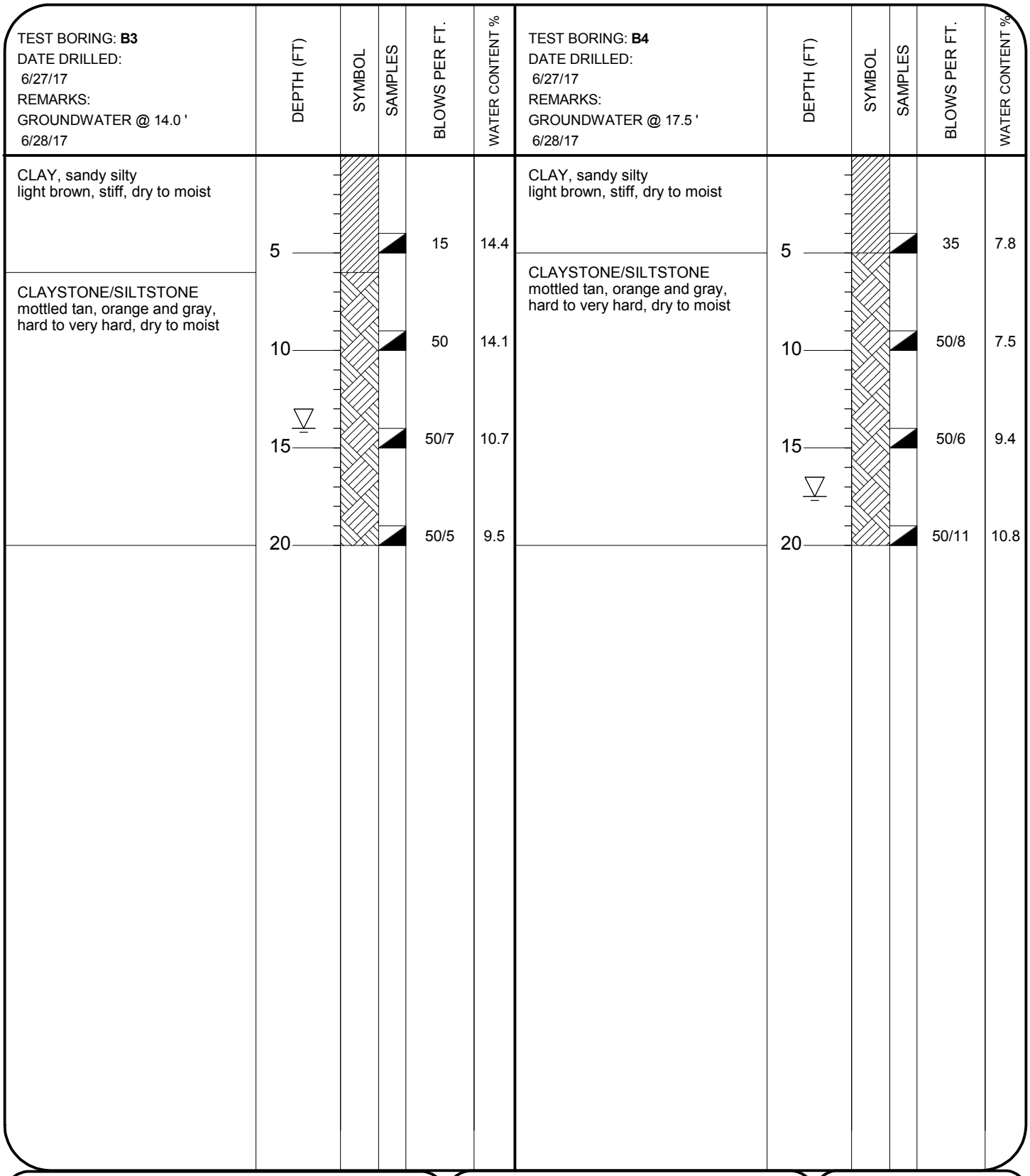
TEST BORING LOGS

JOB No. 158854

FIGURE No. 3

DATE 7/17/17



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TEST BORING LOGS

JOB No. 158854

FIGURE No. 4

DATE 7/17/17

TEST BORING: **B5**
DATE DRILLED:
6/27/17
REMARKS:
GROUNDWATER @ 17.0 '
6/28/17

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
5			36	11.6
10			50/8	11.8
15			50/5	11.8
20			50/5	10.9

CLAY, sandy silty
light brown, stiff, dry to moist

CLAYSTONE/SILTSTONE
mottled tan, orange and gray,
hard to very hard, dry to moist

TEST BORING: **B6**
DATE DRILLED:
6/27/17
REMARKS:
GROUNDWATER @ 16.5 '
6/28/17

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
5			22	4.2
10			26	7.7
15			50/11	12.2
20			50/8	11.1

CLAY, sandy silty
light brown, stiff, dry to moist

CLAYSTONE/SILTSTONE
mottled tan, orange and gray,
hard to very hard, dry to moist

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TEST BORING LOGS

JOB No. 158854

FIGURE No. 5

DATE 7/17/17

TEST BORING: **B7** DATE DRILLED: 6/27/17 REMARKS: GROUNDWATER @ 17.0 ' 6/28/17	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
CLAY, sandy silty light brown, stiff, dry to moist	5			31	5.0
	10			17	7.4
CLAYSTONE/SILTSTONE mottled tan, orange and gray, hard to very hard, dry to moist	15			50/9	16.7
	20			43/6	12.1

TEST BORING: **B8** DATE DRILLED: 6/27/17 REMARKS: GROUNDWATER @ 7.0 ' 6/28/17	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
CLAY, sandy silty light brown, stiff, dry to moist	5			19	12.1
CLAYSTONE/SILTSTONE mottled tan, orange and gray, hard to very hard, dry to moist	10			44	15.9
	15			50/8	13.7
	20			50/6	12.1

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TEST BORING LOGS

JOB No. 158854

FIGURE No. 6

DATE 7/17/17

SOILS DESCRIPTION


INTERBEDDED SANDSTONE AND SHALE/CLAYSTONE


LOW PLASTICITY CLAY

UNLESS NOTED OTHERWISE, ALL LABORATORY
TESTS PRESENTED HEREIN WERE PERFORMED BY:
RMG - ROCKY MOUNTAIN GROUP
1601 37TH ST.
EVANS, COLORADO

SYMBOLS AND NOTES


XX — STANDARD PENETRATION TEST - MADE BY DRIVING A SPLIT-BARREL SAMPLER INTO THE SOIL BY DROPPING A 140 LB. HAMMER 30", IN GENERAL ACCORDANCE WITH ASTM D-1586. NUMBER INDICATES NUMBER OF HAMMER BLOWS PER FOOT (UNLESS OTHERWISE INDICATED).


XX — UNDISTURBED CALIFORNIA SAMPLE - MADE BY DRIVING A RING-LINED SAMPLER INTO THE SOIL BY DROPPING A 140 LB. HAMMER 30", IN GENERAL ACCORDANCE WITH ASTM D-3550. NUMBER INDICATES NUMBER OF HAMMER BLOWS PER FOOT (UNLESS OTHERWISE INDICATED).


FREE WATER TABLE


DEPTH AT WHICH BORING CAVED


BULK — DISTURBED BULK SAMPLE


AUG — AUGER "CUTTINGS"

4.5 — WATER CONTENT (%)

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EXPLANATION OF TEST BORING LOGS

JOB No. 158854

FIGURE No. 7

DATE 7/17/17

Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	% Swell/ Collapse	Load (psf)
B1	4.0	9.7	123.9	40	19	0.0	94.8		
B1	9.0	11.1	124.2						
B1	14.0	11.2	116.8						
B1	19.0	10.5	117.5						
B2	4.0	10.7	125.6	42	25	0.0	92.9	3.7	1000
B2	9.0	14.3	118.9						
B2	14.0	13.3	121.1						
B2	19.0	12.0	123.8						
B2	24.0	10.8	124.6						
B2	29.0	10.6	108.8						
B2	34.0	9.3	114.1						
B2	39.0	7.2	122.9						
B2	49.0	8.7	122.0	73	55	0.0	93.0	7.2	1000
B3	4.0	14.4	110.9						
B3	9.0	14.1	122.8	44	26		91.3	3.0	1000
B3	14.0	10.7	123.0						
B3	19.0	9.5	123.4						
B4	4.0	7.8	116.2	31	15	0.0	71.0		
B4	9.0	7.5	126.9						
B4	14.0	9.4	122.9						
B4	19.0	10.8	121.0						
B5	4.0	11.6	116.3	36	19	0.0	73.0	1.5	1000
B5	9.0	11.8	122.7						
B5	14.0	11.8	118.3						
B5	19.0	10.9	121.0						
B6	4.0	4.2	106.0						
B6	9.0	7.7	118.0						
B6	14.0	12.2	120.8						
B6	19.0	11.1	118.4						
B7	4.0	5.0	118.3						
B7	9.0	7.4	107.1						
B7	14.0	16.7	117.8	47	24	0.0	74.7	1.9	1000
B7	19.0	12.1	123.9						
B8	4.0	12.1	118.7						

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 158854
FIGURE No. 8

DATE 7/17/17

Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	% Swell/ Collapse	Load (psf)
B8	9.0	15.9	116.8	42	22	0.0	91.3	3.2	1000
B8	14.0	13.7	119.8						
B8	19.0	12.1	118.6						

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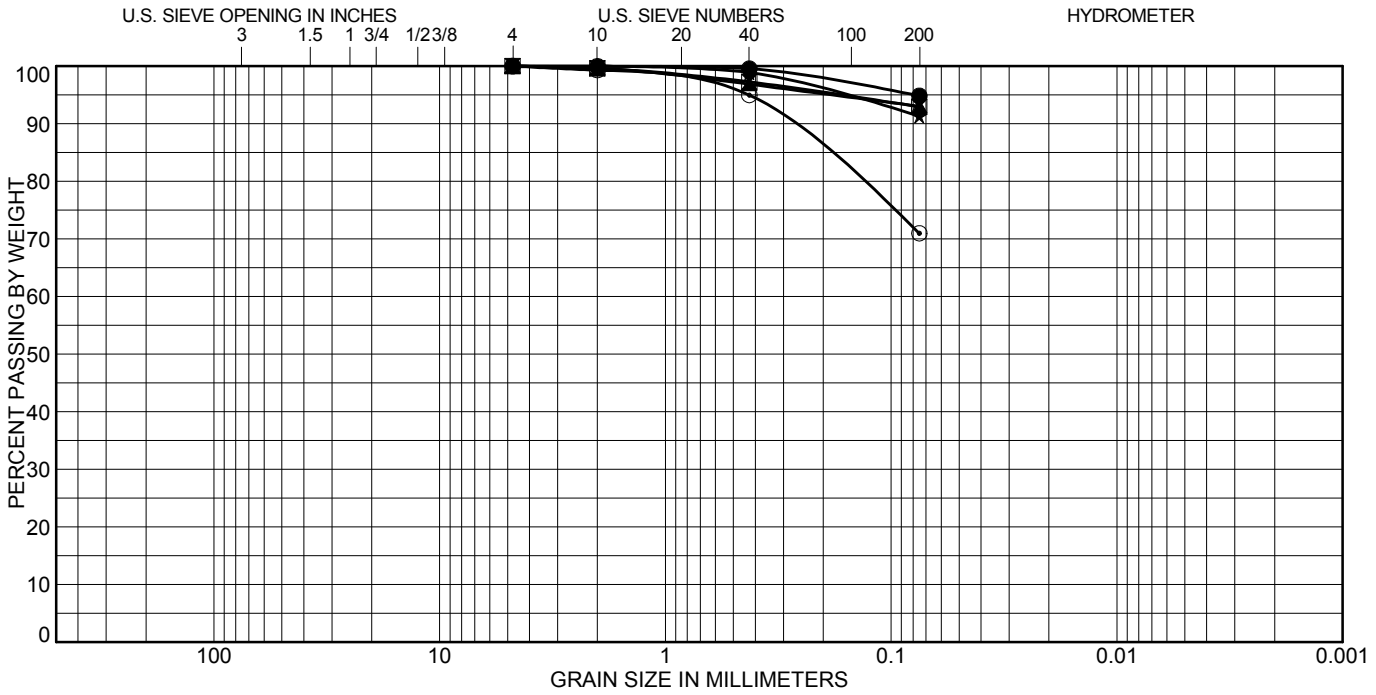
SUMMARY OF LABORATORY TEST RESULTS

JOB No. 158854
FIGURE No. 8
PAGE 2 OF 2
DATE 7/17/17



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Test Boring		Depth (ft)	Classification	LL	PL	PI
●	**B1**	**4.0**	**LEAN CLAY(CL)**	**40**	**21**	**19**
⧓	**B2**	**4.0**	**LEAN CLAY(CL)**	**42**	**17**	**25**
▲	**B2**	**49.0**	**FAT CLAY(CH)**	**73**	**18**	**55**
★	**B3**	**9.0**	**LEAN CLAY(CL)**	**44**	**18**	**26**
⊙	**B4**	**4.0**	**LEAN CLAY with SAND(CL)**	**31**	**16**	**15**

Test Boring		Depth (ft)	%Gravel	%Sand	%Silt	%Clay
●	**B1**	**4.0**	**0.0**	**5.2**	**94.8**	
⧓	**B2**	**4.0**	**0.0**	**7.1**	**92.9**	
▲	**B2**	**49.0**	**0.0**	**7.0**	**93.0**	
★	**B3**	**9.0**	**0.0**	**8.7**	**91.3**	
⊙	**B4**	**4.0**	**0.0**	**29.0**	**71.0**	

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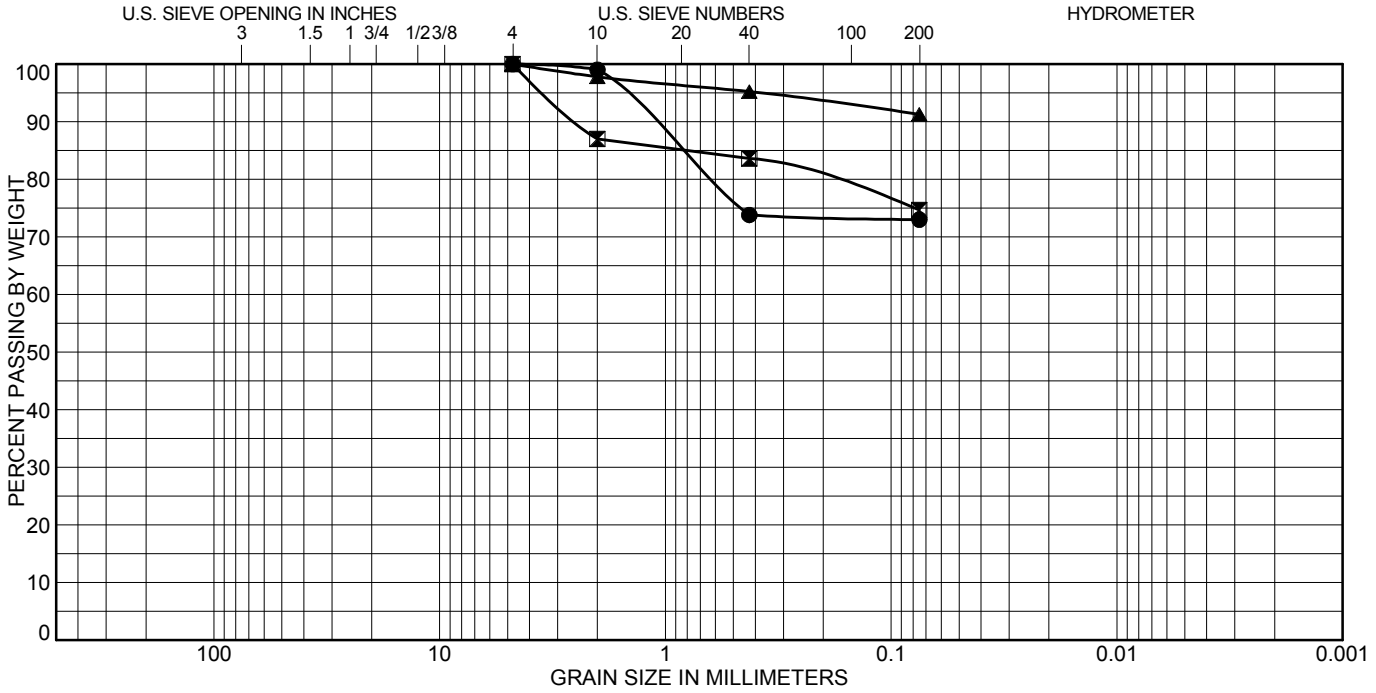
SOIL CLASSIFICATION DATA

JOB No. 158854

FIGURE No. 9

DATE 7/17/17



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Test Boring	Depth (ft)	Classification	LL	PL	PI
●	**B5**	**4.0**	**LEAN CLAY with SAND(CL)**	**36**	**17**	**19**
⧓	**B7**	**14.0**	**LEAN CLAY with SAND(CL)**	**47**	**23**	**24**
▲	**B8**	**9.0**	**LEAN CLAY(CL)**	**42**	**20**	**22**

	Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
●	**B5**	**4.0**	**0.0**	**27.0**	**73.0**	
⧓	**B7**	**14.0**	**0.0**	**25.3**	**74.7**	
▲	**B8**	**9.0**	**0.0**	**8.7**	**91.3**	

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SOIL CLASSIFICATION DATA

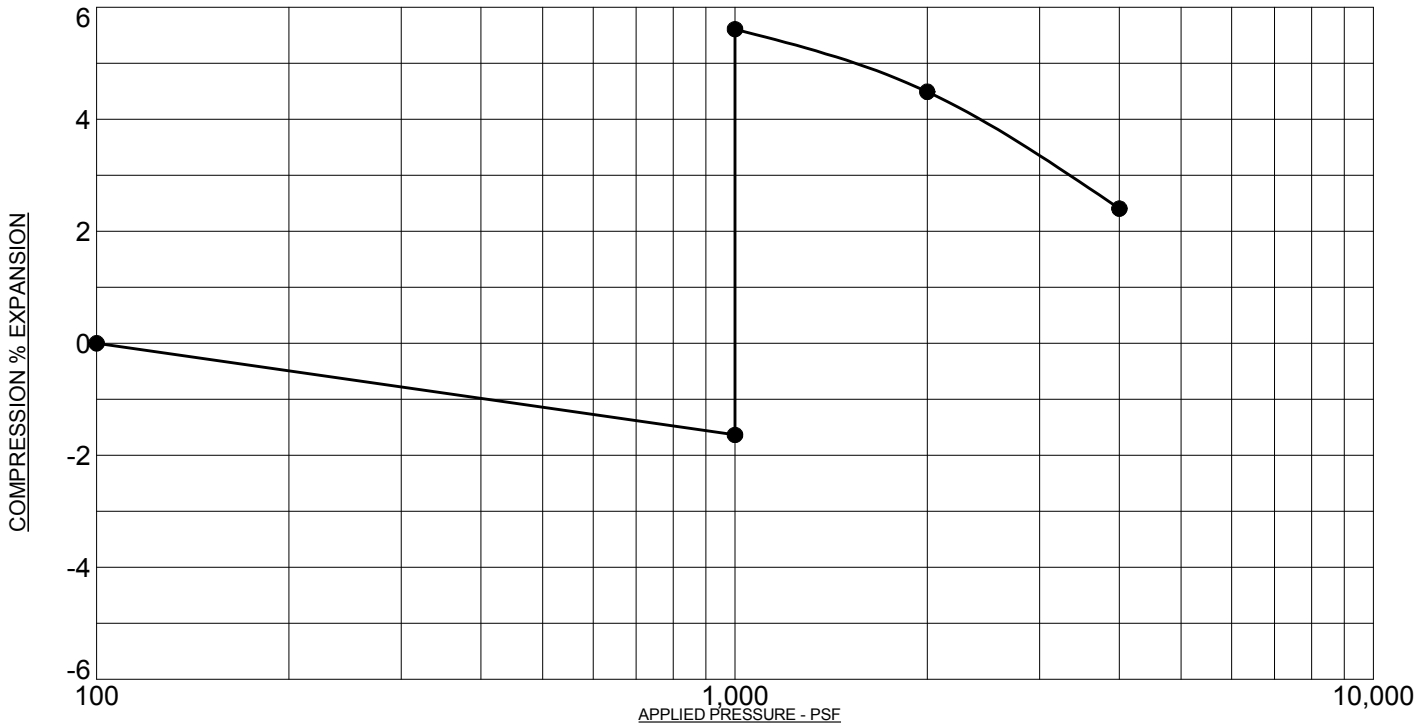
JOB No. 158854

FIGURE No. 10

DATE 7/17/17

PROJECT: **Bohn Farm Cohousing Community 1313 Spruce Av**
SAMPLE DESCRIPTION: **Claystone/Siltstone**
NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF

SAMPLE LOCATION: **B2 @ 4 FT**
NATURAL DRY UNIT WEIGHT: **123.0 PCF**
NATURAL MOISTURE CONTENT: **11.3%**
PERCENT SWELL/COMPRESSION: **3.7**



PROJECT: **Bohn Farm Cohousing Community 1313 Spruce Av**
SAMPLE DESCRIPTION: **Claystone/Siltstone**
NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF

SAMPLE LOCATION: **B2 @ 49 FT**
NATURAL DRY UNIT WEIGHT: **123.8 PCF**
NATURAL MOISTURE CONTENT: **10.1%**
PERCENT SWELL/COMPRESSION: **7.2**

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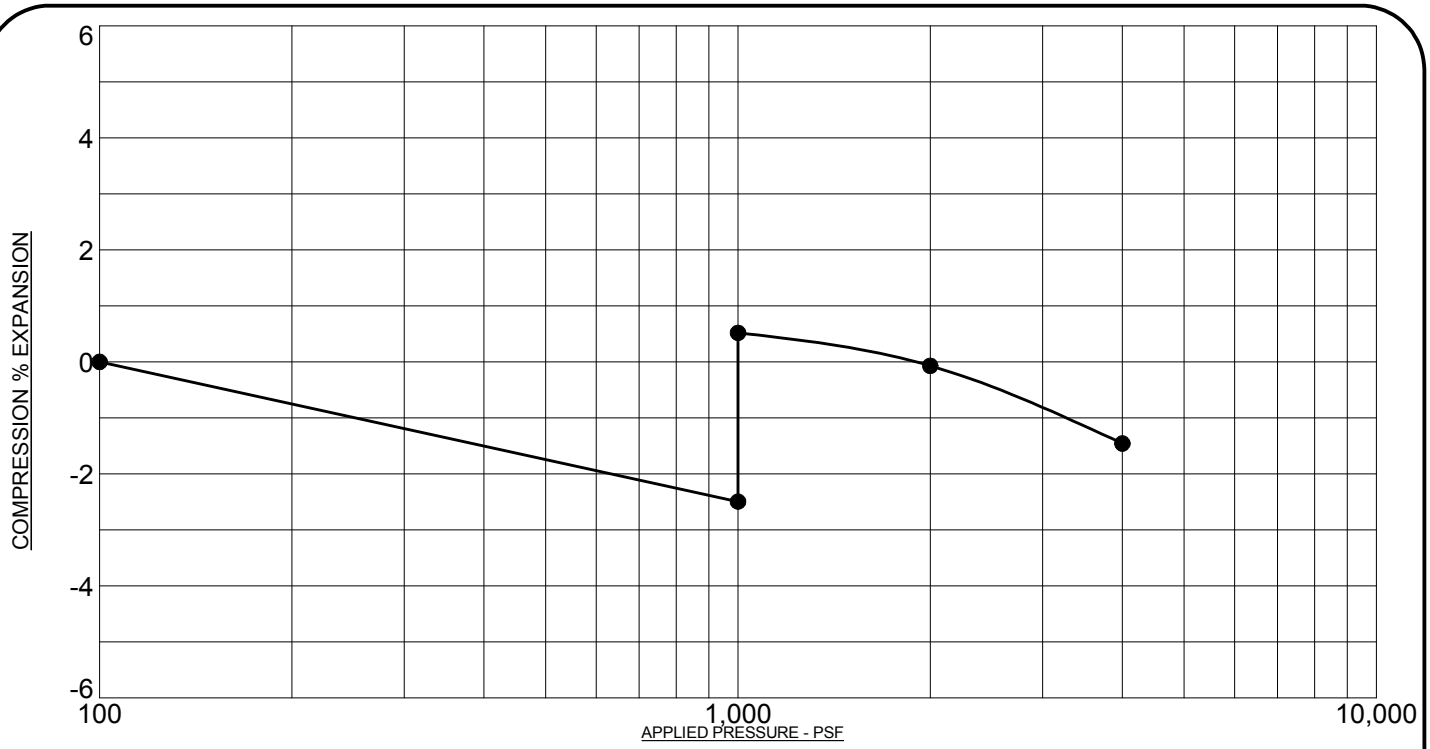
SWELL/CONSOLIDATION TEST RESULTS

JOB No. 158854

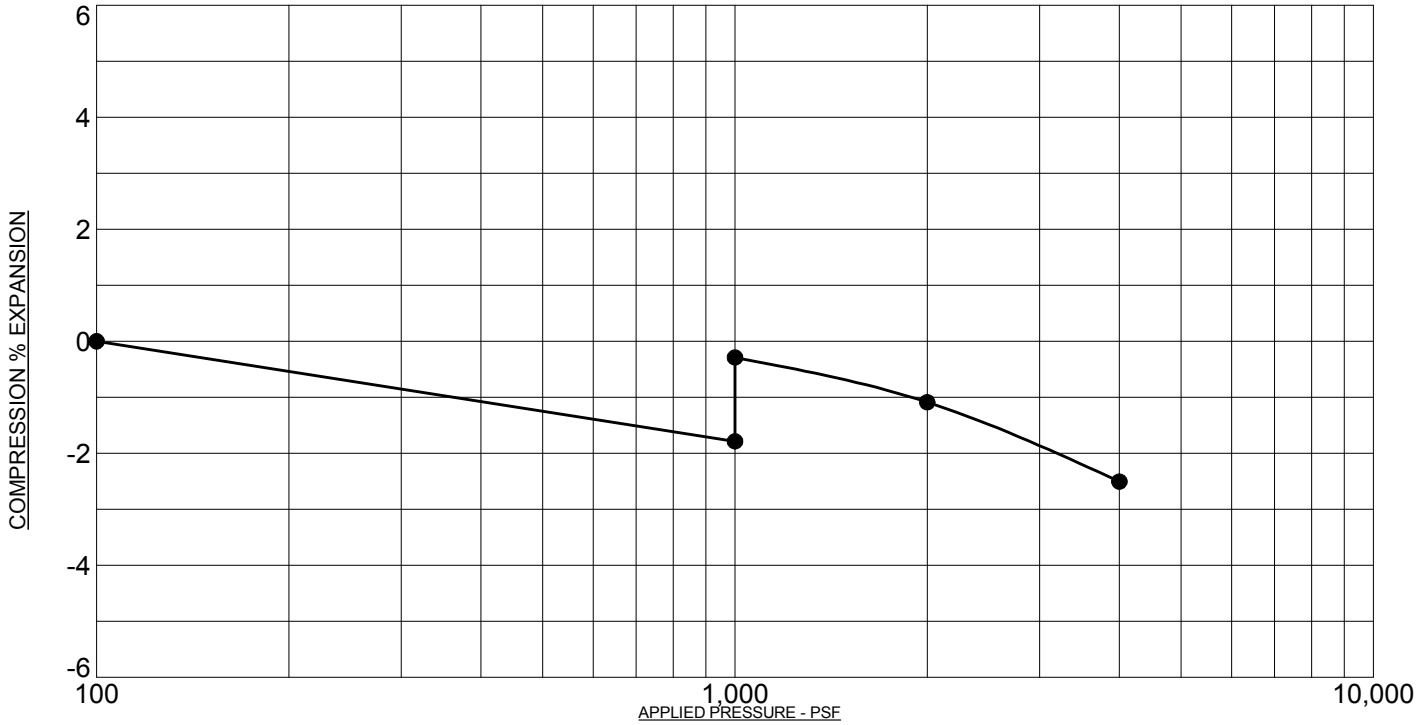
FIGURE No. 11

DATE 7/17/17



PROJECT: **Bohn Farm Cohousing Community 1313 Spruce Av**
SAMPLE DESCRIPTION: **Claystone/Siltstone**
NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF

SAMPLE LOCATION: **B3 @ 9 FT**
NATURAL DRY UNIT WEIGHT: **122.6 PCF**
NATURAL MOISTURE CONTENT: **12.3%**
PERCENT SWELL/COMPRESSION: **3.0**



PROJECT: **Bohn Farm Cohousing Community 1313 Spruce Av**
SAMPLE DESCRIPTION: **lean Clay**
NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF

SAMPLE LOCATION: **B5 @ 4 FT**
NATURAL DRY UNIT WEIGHT: **118.6 PCF**
NATURAL MOISTURE CONTENT: **11.1%**
PERCENT SWELL/COMPRESSION: **1.5**

ROCKY MOUNTAIN GROUP

ARCHITECTS RMG ENGINEERS

Architectural
Structural
Forensics

Geotechnical
Materials Testing
Civil, Planning

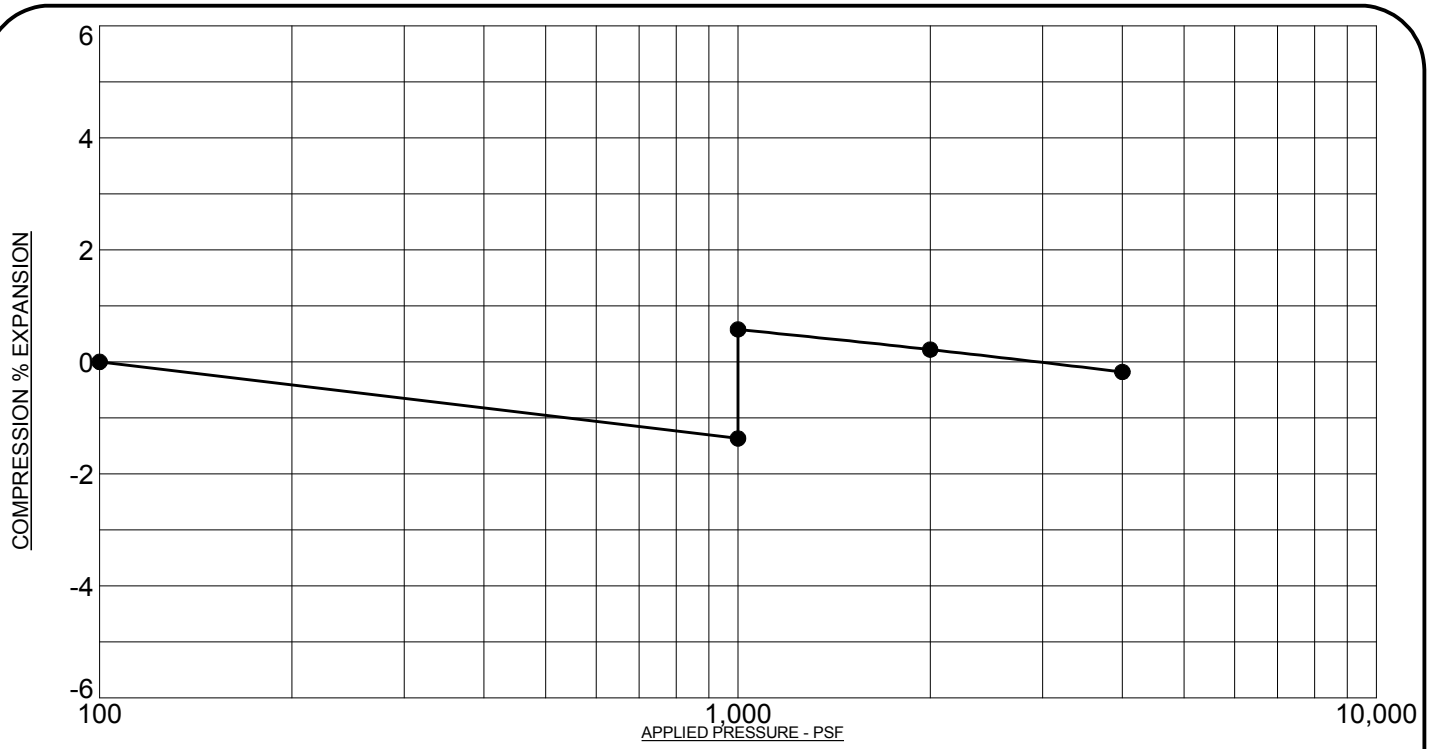
Colorado Springs: (Corporate Office)
2910 Austin Bluffs Parkway
Colorado Spings, CO 80918
(719) 548-0600
SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

SWELL/CONSOLIDATION TEST RESULTS

JOB No. 158854

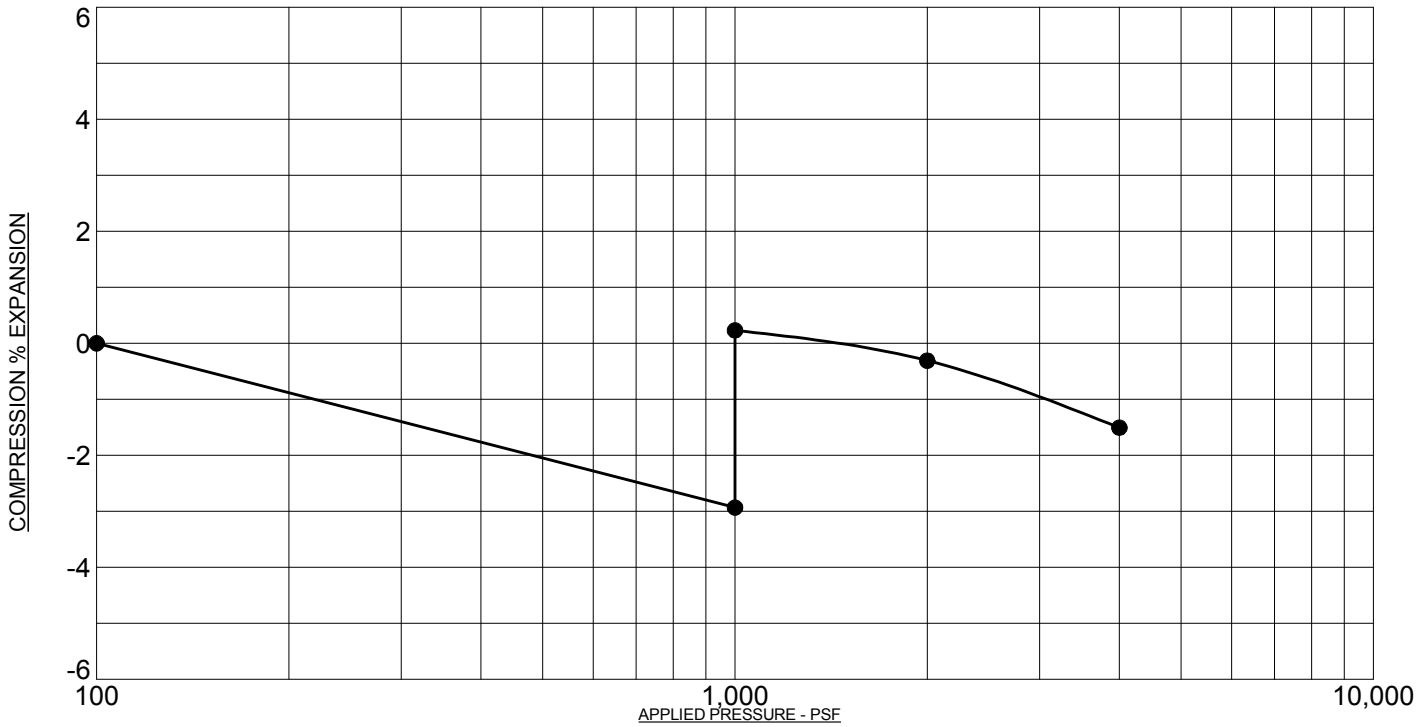
FIGURE No. 12

DATE 7/17/17



PROJECT: **Bohn Farm Cohousing Community 1313 Spruce Av**
SAMPLE DESCRIPTION: **Claystone/Siltstone**
NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF

SAMPLE LOCATION: **B7 @ 14 FT**
NATURAL DRY UNIT WEIGHT: **120.4 PCF**
NATURAL MOISTURE CONTENT: **14.7%**
PERCENT SWELL/COMPRESSION: **1.9**



PROJECT: **Bohn Farm Cohousing Community 1313 Spruce Av**
SAMPLE DESCRIPTION: **Claystone/Siltstone**
NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF

SAMPLE LOCATION: **B8 @ 9 FT**
NATURAL DRY UNIT WEIGHT: **117.6 PCF**
NATURAL MOISTURE CONTENT: **15.6%**
PERCENT SWELL/COMPRESSION: **3.2**

ROCKY MOUNTAIN GROUP

Architectural
Structural
Forensics

ARCHITECTS
RMG
ENGINEERS

Geotechnical
Materials Testing
Civil, Planning

Colorado Springs: (Corporate Office)
2910 Austin Bluffs Parkway
Colorado Spings, CO 80918
(719) 548-0600
SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

SWELL/CONSOLIDATION TEST RESULTS

JOB No. 158854

FIGURE No. 13

DATE 7/17/17

BOHN FARM
COHOUSING COMMUNITY

Peter Spaulding
Colorado Cohousing Development Company, LLC
Bohn Farm Cohousing Community, LLC
1313 Spruce Ave, Longmont CO 80501
720.466.0962 | peter@ccdc.biz

Letter of Support for the CWCB Water Plan Grant Application
RE: Low Impact Development (LID) Systems & Strategies

To whom it may concern,

On behalf of Colorado Cohousing Development Company (CCDC) and the Bohn Farm Cohousing Community (BFCC) Steering Team we are excited to integrate Low Impact Development (LID) systems and strategies into our overall site design and to support the CWCB Water Plan Grant with matching funds.

Cohousing is a unique housing model where the homeowners participate with the developer in the purchase of property, site design and development, the entitlement process, through construction to closing and moving into their new residence. This organic six acre farm to table cohousing community consists of 40 residences and 6 live work units. The BFCC community members have a very high level of participation because they all volunteer to self-manage and regulate their own Home Owners Association (HOA). In cohousing this level of collaboration allows for the community members to have oversight during the preplanning and development processes. When the community works together they benefit from their decision making process which is integral for the community members to learn to manage their HOA. Many of the decision that we are working towards are based on sustainable practices, which is why we are a farm to table community. To be a successful farm to table community, BFCC will have to be good stewards of the land which is why we believe our community will be able to fulfill the educational and auditing requests within the grant.

It is our hope that BFCC will become an example for other developers and cohousing communities across the nation on how to integrate sustainable practices and LID systems and strategies. Water quality is a significant issue for us and in Colorado land management and water conservation are integral for farming practices.

Our design and development team for CCDC is very excited to have the opportunity to work with CWCB on water quality issues for the BFCC development. Our interests are in alignment with CWCB and we hope to develop efficient and effective LID solutions that benefit all the stakeholders related to this development.

Sincerely,

Peter Spaulding
Colorado Cohousing Development Company, LLC
Owner | Designer

F9 PRODUCTIONS INC.
ARCHITECTURE | CONSTRUCTION | DEVELOPMENT

703 3rd Avenue Suite 101
Longmont, CO 80501

p: 507.358.3124
f: 303.658.9846
e: akgl@f9productions.com

Greetings,

My name is Alex Gore and I am a founder the architecture firm F9 Productions Inc. in Longmont Colorado. I wish to convey my support for the Bohn Farm Cohousing Community's pursuit to obtain a grant for low impact development systems and strategies.

Our firm of eight has worked on projects ranging from small additions to large block size developments over the last 10 years. We have found that for a project to be successful it is absolutely essential that the architecture is connected to the landscape. More often than not this connection is an afterthought. Landscape architects are asked to design around a building rather than with it. The landscaping becomes mere decoration and plantings are choosing for their easiness to maintain rather then what they can do or what they can produce.

This grant, along with the leadership from the Bohn Farm Cohousing Community, will help create a landscape that is not only an integrated part of the site, but it will become a piece of the rejuvenating fabric of the community and the whole city. Instead of being a sterile and neutral the site, this project will become productive and beneficial. It will be a place of activity, full of life and pride.

I am excited to be a part of such a comprehensive and forward-looking project. I believe this grant will only help in educating the whole team. Furthermore, it will create a knowledge base and valuable experience that will transfer to other projects. Hopefully becoming a seed that produces much fruit.

Alex Gore

Principal F9 Productions

JVA, Incorporated
1319 Spruce Street
Boulder, CO 80302
303.444.1951
info@jvajva.com

www.jvajva.com

January 29, 2019

Mr. Peter Spaulding, Owner
Bohn Farm Cohousing Community, LLC
PO Box 304
Longmont, CO 80502

RE: Bohn Farm Cohousing Community – CWCB Water Plan Grant Application
Letter of Support
JVA Job No. 2779c

Dear Peter:

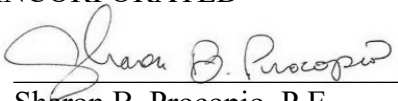
Our JVA Civil Engineering team is pleased to hear you are pursuing a Colorado Water Conservation Board (CWCB) Water Plan Grant. One of our goals is to seamlessly blend water quality elements into the design of your overall project. The added support from the CWCB grant would allow the project to serve as a model for future developments, as well as to provide an opportunity to educate and exchange information in the industry related to Low Impact Development (LID) design strategies.

JVA has a current staff size that consists of 110 engineers, designers, and administrative staff. We excel in handling a variety of engineering projects including civil site development, utility infrastructure, water, wastewater, stormwater, floodplain management, and structural engineering. We have extensive experience developing strategies to manage both stormwater and the surrounding land resources to both protect the environment and provide long-term use of these resources for flood protection, development, transportation, recreation, farming or other purposes. Water quality enhancement and innovative, sustainable stormwater management features, including LID, are an integral part of the JVA design approach.

Our team at JVA realizes that civil engineering is about more than basic design plans or conventional design – it is about seeing unique situations and tailoring thoughtful, environmentally responsible design solutions. All JVA projects incorporate a level of sustainability that benefits the users and community, while minimizing impacts and maximizing sustainable opportunities. This grant would certainly enhance the ability of the Bohn Farm Cohousing Community project to achieve these goals.

We look forward to continuing to collaborate with you to develop creative and effective LID solutions for the Bohn Farm Cohousing Community as part of your design team.

Sincerely,
JVA, INCORPORATED

By: 

Sharon B. Procopio, P.E.
Project Manager

Colorado Water Conservation Board
The Water Plan Grant
1313 Sherman Street
Denver, CO 80203
January 30, 2019

To Whom It May Concern,

Dig Studio has been involved in the Bohn Farm Cohousing Community site design and Landscape Architecture. As part of this processs we have been working with Avery Ecological Design who is developing ideas for the development that support Low Impact Development strategies. This effort has been interesting and educational to members of the team and promises to bring exciting alternative water efficiency, water quality and ecological horticulture systems to the development.

Dig Studio is a Landscape Architecture firm located in Denver and Phoenix AZ. We have 28 employess between both offices and work on a varity of project types mostly within our regions. Avery Ecological Design's idea and leadership on the ecological front for the project has been educational and inspiring to us and will inform our work in the future.

Laurel Raines
Senior Principal/ PLA, ASLA

DigStudio

laurel@digstudio.com
www.digstudio.com
720.328.1986 ext.101

it's humanature.

1/30/19

RE: BFCC LID Grant

To whom it may concern:

Boulder Permaculture is excited to see a sustainable development project that exemplifies best practices within the city of Longmont. The Bohn Farm Cohousing Community represents an innovative approach to housing, food production, energy, waste systems, and community building that we strongly support. Boulder Permaculture is an educational non-profit that offers sustainable design classes in Boulder county and across Colorado. Our board of directors is comprised of 6 members and we maintain a network of educators who offer the best in sustainable design in almost every public and private sector. We have offered a yearly Permaculture Design course at various sites across Boulder county since 2015. Our Permaculture in Practice workshop series explores deeper topics and utilizes existing projects to showcase the best in sustainable design. Our Childrens program offers sustainable education for children ages 7-12 and 13-18, because it is our youth that are so important for the future of our planet!

Boulder Permaculture is a proud supporter of the smart water practices being showcased at Bohn Farm Cohousing Community. We believe this will be an invaluable asset to the community for education and promoting Low-Impact Development. We are excited about the opportunity to utilize this space for future educational opportunities. We believe that sustainable practices will continue to grow in popularity and become an ever more present focus of building design and construction.

At Boulder Permaculture, our goal is to offer the best in sustainability education. We are always building long-term relationships with projects that change communities, and people, for the better. We look forward to the opportunity to partner with BFCC and the Colorado Water Conservation Board sharing the benefits of a sustainable and low impact development long into the future!

Sincerely,

The Boulder Permaculture Board of Directors
Avery Ellis, Tara Rae Kent, Marco Lam, Kate Miller, Patrick Padden, Barb Meuser
BoulderPDC@gmail.com

2/1/2019
Patrick Padden
970-999-4306
ppadden@emnet.org
Padden Permaculture LLC
PaddenPermaculture.com

Letter of Support for the Bohn Farm Cohousing Community Project

To Whom It May Concern:

My name is Patrick Padden. I am a sustainable landscape designer, contractor and educator. My company, Padden Permacultre LLC designs and installs landscapes in Northern Colorado with an emphasis on sustainability, ecological restoration, water quality and resource conservation. I specialize in xeriscape installations, rain gardens, and have recently been innovating solutions that integrate low impact development (LID) best management practices (BMP's) with residential landscapes. I am also a practicing permaculturist and permaculture educator with a passion for training others to create ecologically harmonious systems that provide food, manage water responsibly, and build a sense of community.

I am thrilled to see a development project that is pushing the envelope regarding conscious design. BFCC is integrating innovative storm water management practices directly into their landscape, while simultaneously addressing the other needs of the community such as food, energy, and creating a true sense of place. Developers have such an incredible impact on the face of our planet, and it is important that the patterns and practices they employ have a net positive impact on the community and ecology. I can confidently say that Peter's endeavors are pushing the paradigm of development in a significantly positive direction.

I whole heartedly support the Bohn Farm Cohousing Community Project both as a professional and as a citizen of Northern Colorado.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 01/31/2019

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Kathy Werner, AINS	
Moody Insurance Agency, Inc. 8055 East Tufts Avenue Suite 1000 Denver CO 80237	PHONE (A/C, No, Ext): (303) 824-6600	FAX (A/C, No): (303) 370-0118
	E-MAIL ADDRESS: kathy.werner@moodyins.com	

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Evanston Insurance Co	35378
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
Bohn Farm Cohousing Community
1313 Spruce Ave
Longmont CO 80501

COVERAGES **CERTIFICATE NUMBER:** 18-19 Master **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	[X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [X] POLICY [ ] PRO-JECT [ ] LOC [ ] OTHER:			2DB6415	09/20/2018	09/20/2019	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG [ ]	$ 1,000,000 $ 100,000 $ 5,000 $ Excluded $ 2,000,000 $ Excluded $
	AUTOMOBILE LIABILITY [ ] ANY AUTO [ ] OWNED AUTOS ONLY [ ] SCHEDULED AUTOS [ ] HIRED AUTOS ONLY [ ] NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) [ ]	$ $ $ $ $
	[ ] UMBRELLA LIAB [ ] OCCUR [ ] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [ ] RETENTION $						EACH OCCURRENCE AGGREGATE [ ]	$ $ $
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? [ ] N / A (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						[ ] PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ $ $
A	Property			2DB6415	09/20/2018	09/20/2019	Building Limit Business Personal Prop. Per Occ. Deductible	$150,000 $10,000 $1,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

For Information Only

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

OFFICE OF THE SECRETARY OF STATE
OF THE STATE OF COLORADO

CERTIFICATE OF FACT OF GOOD STANDING

I, Jena Griswold, as the Secretary of State of the State of Colorado, hereby certify that, according to the records of this office,

Colorado Cohousing Development Company, LLC

is a

Limited Liability Company

formed or registered on 06/03/2013 under the law of Colorado, has complied with all applicable requirements of this office, and is in good standing with this office. This entity has been assigned entity identification number 20131334037 .

This certificate reflects facts established or disclosed by documents delivered to this office on paper through 01/18/2019 that have been posted, and by documents delivered to this office electronically through 01/22/2019 @ 15:06:05 .

I have affixed hereto the Great Seal of the State of Colorado and duly generated, executed, and issued this official certificate at Denver, Colorado on 01/22/2019 @ 15:06:05 in accordance with applicable law. This certificate is assigned Confirmation Number 11343786 .

Jena Griswold

Secretary of State of the State of Colorado

**********End of Certificate**********

Notice: A certificate issued electronically from the Colorado Secretary of State's Web site is fully and immediately valid and effective. However, as an option, the issuance and validity of a certificate obtained electronically may be established by visiting the Validate a Certificate page of the Secretary of State's Web site, http://www.sos.state.co.us/biz/CertificateSearchCriteria.do entering the certificate's confirmation number displayed on the certificate, and following the instructions displayed. Confirming the issuance of a certificate is merely optional and is not necessary to the valid and effective issuance of a certificate. For more information, visit our Web site, http://www.sos.state.co.us/ click "Businesses, trademarks, trade names" and select "Frequently Asked Questions."

OFFICE OF THE SECRETARY OF STATE
OF THE STATE OF COLORADO

CERTIFICATE OF FACT OF GOOD STANDING

I, Jena Griswold, as the Secretary of State of the State of Colorado, hereby certify that, according to the records of this office,

Bohn Farm Cohousing Community LLC

is a

Limited Liability Company

formed or registered on 09/26/2013 under the law of Colorado, has complied with all applicable requirements of this office, and is in good standing with this office. This entity has been assigned entity identification number 20131560253 .

This certificate reflects facts established or disclosed by documents delivered to this office on paper through 01/18/2019 that have been posted, and by documents delivered to this office electronically through 01/22/2019 @ 15:04:33 .

I have affixed hereto the Great Seal of the State of Colorado and duly generated, executed, and issued this official certificate at Denver, Colorado on 01/22/2019 @ 15:04:33 in accordance with applicable law. This certificate is assigned Confirmation Number 11343782 .

Jena Griswold

Secretary of State of the State of Colorado

**********End of Certificate**********

Notice: A certificate issued electronically from the Colorado Secretary of State's Web site is fully and immediately valid and effective. However, as an option, the issuance and validity of a certificate obtained electronically may be established by visiting the Validate a Certificate page of the Secretary of State's Web site, http://www.sos.state.co.us/biz/CertificateSearchCriteria.do entering the certificate's confirmation number displayed on the certificate, and following the instructions displayed. Confirming the issuance of a certificate is merely optional and is not necessary to the valid and effective issuance of a certificate. For more information, visit our Web site, http://www.sos.state.co.us/ click "Businesses, trademarks, trade names" and select "Frequently Asked Questions."

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

► **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

Give Form to the requester. Do not send to the IRS.

Print or type. See **Specific Instructions** on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

Colorado Cohousing Development Company LLC

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☑ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ► _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ►

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

1313 Spruce Street

Requester's name and address (optional)

6 City, state, and ZIP code

Longmont, CO 80501

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN,* later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

8	1	–	1	9	8	4	6	3	6

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here | **Signature of U.S. person ►** DocuSigned by: Scott Allen E791EDEB32214F2... | **Date ►** 1/31/2019

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

Give Form to the requester. Do not send to the IRS.

Print or type. See **Specific Instructions** on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

Bohn Farm Partnership LLC

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☑ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

1313 Spruce Street

Requester's name and address (optional)

6 City, state, and ZIP code

Longmont, CO 80501

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN,* later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–				

or

Employer identification number

8	1	–	3	3	4	7	9	6	6

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here | **Signature of U.S. person ▶** DocuSigned by: Scott Allen E791EDEB32214F2... | **Date ▶** 1/31/2019

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

AVERY ECOLOGICAL DESIGN

Contract Proposal for Permaculture Design Services - Bohn Farm Cohousing Community

Date: October 17, 2017

Re: Bohn Farm Cohousing Community

1313 Spruce Ave

Longmont, CO 80501

Client: Peter Spaulding

Colorado Cohousing Development Corporation

P.O. Box 304 Longmont, CO 80502

(720) 466-0962

peter@ccdc.biz

From: Avery Ellis

Avery Ecological Design

12912 Hillcrest Drive

Longmont, CO 80504

908-692-7878

AveryEcological@gmail.com

Permaculture Institute of North America

PINA

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1. Project Description The permaculture project scope consists of the following:
    1.1 Stormwater Management, Retention, & Storage Consulting
    1.2 Greywater re-use and Irrigation Design
    1.3 Farm and Orchard Consultation and Design

2 Scope of Services:

As a professional permaculture designer, Avery Ecological Design offers diverse services in landscape design and integration with the built environment. For this project, we will provide in depth permaculture consultation in the Schematic Design & Design Development phases, leading to project implementation. Throughout the Design phase, our hourly consulting and design rate of $95 per hour prevails. Meetings & phone conference will be billed at the hourly rate. Our scope of design services will include:

2.1 Schematic Design & Consultation

Project #1: Stormwater management, retention, and storage – We will collaborate with the site engineer & landscape architect on designs for utilizing onsite stormwater, while ensuring water quality and mitigating the risk of flooding. Decentralized basins and rain gardens will provide resilience for the overall health of the land, and ensure beautiful gardens are passively irrigated throughout the year. This includes the exploration of rainwater storage tanks and approaches to acquiring permits for these systems.

Projected 10 hours - Price $1000

Project #2: Farm & Orchard Conceptual Design – As the Permaculture Designer on this Project, Avery Ecological Design is committed to facilitating an integrated farm and orchard design in collaboration with the design team and community members goals. Our network of local farmers, landscapers, arborists, and greenhouse growers offer cumulative decades of experience. In this phase of the project, we will offer that depth of experience in creating a comprehensive farm plan for the site. These plans may include, but are not limited to; rotational methods for planting annual crops, strategies for integrating animals in the system, perennial planting and maintenance plans, greenhouse growing ideas & designs, tools & storage needs, and compost systems.

Projected 42 hours - Price $4000

Project #3: Automated freshwater irrigation system – We will collaborate with the landscape architect to design an efficient irrigation system for the entire property, which complies with local requirements. The system will ensure that plants can get established and will be used in areas where greywater & rainwater cannot support the plants.

Projected 21 hours - Price $2000

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2.2 Design Development

Project #4: Greywater re-use – Develop a comprehensive Greywater Design that meets the ecological goals of the community and complies with the framework of Colorado Regulation 86 to ensure compliance with current and future building code. This optional mechanical system will enhance the ecological footprint of each building and reduce the overall utilities cost for water on site. We will collaborate with the architect, landscape architect, Greyter Water Systems llc, construction crew, and project plumbers to ensure that each system is properly designed. We will ensure that the final architectural schematics include the proper placement of stub-outs, diversion valves, storage tanks, and labels, required by code. We will work with the local jurisdiction to obtain a permit for these systems when available. We will work directly with the project plumbers to ensure the plumbing is properly installed. And we will work with the landscape architect to ensure a proper greywater irrigation design.

Project contingent upon schematic design

Total Projected Fee = $7000

We require a 20% retainer of $1400 to begin design work on these projects. This contract shall include work scope beginning on October 15th 2017. With this initial retainer, we are available to coordinate with any members of the design team, Monday-Friday from 8am-5pm. We are also available to attend any necessary project coordination meetings during the pre-construction phase billed at the hourly rate. Any work that is needed on weekends or holidays shall be requested with a minimum of 2-weeks notice.

3 Assumptions and Exclusions:

The Scope described above is the total scope of work. Any additional work/scope will be considered additional services to be performed on a time-and-materials basis. Assumptions and exclusions include, as listed below:

3.1 Client will provide architectural and mechanical drawings for our use.
3.2 Other Opportunities for Contribution as listed in section 4.1 & 4.2 are excluded without a new contract.
3.3 We will explore a contract renewal if the work/scope goes beyond the projected project fee.

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4 Other Opportunities for Contribution

4.1 Implementation & Project Management Skills:
- 4.1.1 Site Grading
- 4.1.2 Soil Building & Amendments
- 4.1.3 Masonry & Retaining Walls
- 4.1.4 Irrigation Installation
- 4.1.5 Planting
- 4.1.6 General Construction
  - 4.1.6.1 Framing
  - 4.1.6.2 Plumbing
  - 4.1.6.3 Electrical
  - 4.1.6.4 Greenhouses
  - 4.1.6.5 Natural Building

4.2 Education and Maintenance Skills:
- 4.2.1 Permaculture Skills Workshops
- 4.2.2 Permaculture Action Day Facilitation
- 4.2.3 Farm Worker Training & Crop Planning
- 4.2.4 Seed Starting & Plant Propagation
- 4.2.5 Tree Care & Perennial Maintenance
- 4.2.6 Methods for Preparing Food & Preserving the Harvest
- 4.2.7 Raingarden Maintenance
- 4.2.8 Greywater System Maintenance
- 4.2.9 Irrigation System Maintenance

5 Additional Billable Items:

Our office will bill, as an extra to this contract, any items not included in this contract as listed below. All additional billable items will be billed based on the amount of time and material required at our hourly rate. Examples of additionally billable items are as follows but not limited to:

5.1 Architectural/Owner Changes
5.2 Construction Repairs
5.3 Changes during Construction, which are not the fault of Avery Ecological Design
5.4 Printing & Delivery of large format plans
5.5 Code Updates/Changes

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6 Materials: Client shall be responsible for the costs of all materials and supplies related to or arising out of the project, including transportation and storage expenses. All materials procured will be billed to client account +15%.

7 Invoicing & Payment Schedule:

A 20% retainer of $1387 is required to start services on this project. Avery Ecological Design will progress bill for all work performed at the end of each month or project phase completion. All invoices are due within 30 days after receipt.

7.1 Disputed Items: Any disputed items on an invoice must be brought to Avery Ecological Design attention in writing within 30 days of the invoice date. All undisputed items on an invoice are to be paid within 30 days. All items not disputed within 30 days are to be paid in full.

7.2 Failure to Pay: Any legal fees that result from failure to pay for services will be charged to the clients account that are not the fault of Avery Ecological Design. If unable to collect payment for services, Avery Ecological Design reserves the right to send unpaid accounts to a collection service. All fees, legal and otherwise, associated with and the result of such collections will be the responsibility of the client.

7.3 Interest on Outstanding Balances: All invoices not paid within 30 days of invoice dates are considered past due. All past due amounts over 60 days of invoice date will be subject to monthly finance charges of 1.5% monthly late fee (18%APR).

8 Insurance:

Avery Ecological Design carries the following insurance coverage & claim limits.

Insurance Type	Claim Limits
Professional Error & Omission	TBD
Commercial General Liability	1 Mil

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9 Terms & Conditions

9.1 Fees: The fees stated in this proposal are estimates. Client understands that actual fees will vary depending on the complexity of the design and exact services required to complete the Project and may exceed the estimate. Any addition to or alteration of the above services will be billed at the hourly rates set forth above and may result in actual fees exceeding the estimates stated.

9.2 Limitation of Liability: In recognition of the relative risks and benefits of the project to both the Client and the Design Professional, the risks have been allocated such that the Client agrees, to the fullest extent permitted by law, to limit the liability of Avery Ecological Design and subconsultant's to the Client and to all construction contractors and subcontractors on the project for any and all claims, losses, costs, damages of any nature whatsoever and claim expenses from any cause or causes, so that the total aggregate liability of the Design Professional and subconsultant's shall not exceed the Design Professional's total fee for services rendered on this project. Such claims and clauses include, but are not limited to, negligence, professional errors or omissions, strict liability and breach of contractor warranty.

9.3 Design Files: Avery Ecological Design retains all rights to the Project design, images, and plans, and hereby grants Client a perpetual license to use same as needed to install the Project at above address. Client hereby grants Avery Ecological Design the right to photograph and video the Project, at any time during installation and thereafter, and agrees that Avery Ecological Design is the exclusive owner thereof and has the right to use all such images for marketing and other purposes, at their discretion. The results of a subcontractor's use of these Design files is not implied or warranted to match or meet the original design performed by our team.

AVERY ECOLOGICAL DESIGN

10 Execution:

This proposal is to be signed and returned as a notice to proceed. A copy of this contract and proposal are to be included as an addendum or exhibit in any contract provided to Avery Ecological Design for signature.

DocuSigned by:
Avery Ellis
9C27181B74BE40F...

10/18/2017

Avery Ellis — Date

DocuSigned by:
Peter Spaulding
295EE3CF927645E...

10/18/2017

Signature — Print Name/Title — Date

Bohn Farm Cohousing Community

General Manager: Peter Spaulding