



# TOWN OF JACKSON PLANNING & BUILDING DEPARTMENT

## TRANSMITTAL MEMO

**Town of Jackson**

- Public Works/Engineering
- Building
- Title Company
- Town Attorney
- Police

**Joint Town/County**

- Parks and Recreation
- Pathways
- Housing Department

**Teton County**

- Planning Division

- Engineer
- Surveyor- *Nelson*
- Assessor
- Clerk and Recorder
- Road and Levee

**State of Wyoming**

- Teton Conservation
- WYDOT
- TC School District #1
- Game and Fish
- DEQ

**Federal Agencies**

- Army Corp of Engineers

**Utility Providers**

- Qwest
- Lower Valley Energy
- Bresnan Communications

**Special Districts**

- START
- Jackson Hole Fire/EMS
- Irrigation Company

Date: July 20, 2021	<b>REQUESTS:</b>  The applicant is submitting a request for a Grading Pre-Application for the property located at 235 & 255 Veronica Ln., legally known as LOT 3 and 6, STOCKHOUSE-PATTERSON ADDITION, PIDN: 22-41-16-32-4-29-003 & 22-41-16-32-4-29-006 For questions, please call Brian Lenz at 307-733-0440 x1410, or email to the address shown to the left. Thank you.
Item #: P21-189	
Planner: Tyler Valentine	
Phone: 733-0440 ext. 1305	
Fax: 734-3563	
Email: <a href="mailto:tvalentine@jacksonwy.gov">tvalentine@jacksonwy.gov</a>	
Owner: Crewsen West, LLC 3035 Centre Oak Way Germantown, TN 38138	
Applicant: Rob Pitts PO Box 4128 Jackson, WY 83001	
Please respond by: <b>July 27, 2021 (with Comments)</b>	

**Owner:**

Crewsen West, LLC  
3035 Centre Oak Way  
Germantown, TN 38138

**Applicant:**

Rob Pitts  
PO Box 4128  
Jackson, WY 83001

**RESPONSE:** For Departments not using Trak-it, please send responses via email to:  
[btlenz@jacksonwy.gov](mailto:btlenz@jacksonwy.gov)



**PRE-APPLICATION CONFERENCE REQUEST (PAP)**  
Planning & Building Department

150 E Pearl Ave. | ph: (307) 733-0440 fax:  
P.O. Box 1687 | [www.townofjackson.com](http://www.townofjackson.com)  
Jackson, WY 83001

*For Office Use Only*

Fees Paid \_\_\_\_\_

Time & Date Received \_\_\_\_\_

Application # \_\_\_\_\_

*Please note: Applications received after 3 PM will be processed the next business day.*

**APPLICABILITY.** This application should be used when applying for a **Pre-application Conference**. The purpose of the pre-application conference is to identify the standards and procedures of these LDRs that would apply to a potential application prior to preparation of the final proposal and to identify the submittal requirements for the application.

For additional information go to [www.townofjackson.com/204/Pre-Application](http://www.townofjackson.com/204/Pre-Application)

**PROJECT.**

Name/Description: Veronica Lane Apartments

Physical Address: 235 & 255 Veronica Lane, Jackson, WY 83001

Lot, Subdivision: Lots 3 & 6, Stockhouse-Patterson Addition

PIDN: 22-41-16-32-4-29-003, -006

**PROPERTY OWNER.**

Name:	Crewsen West, LLC	Phone:	(901) 277-5263
Mailing Address:	3035 Centre Oak Way, Germantown, TN	ZIP:	38138
E-mail:	jason@crewsdevelopment.com		

**APPLICANT/AGENT.**

Name, Agency:	Rob Pitts	Phone:	(901) 283-8856
Mailing Address:	PO Box 4128, Jackson, WY	ZIP:	83001
E-mail:	Rob@pittswestinvestments.com		

**DESIGNATED PRIMARY CONTACT.**

Property Owner  Applicant/Agent

**ENVIRONMENTAL PROFESSIONAL.** For EA pre-application conferences, a qualified environmental consultant is required to attend the pre-application conference. Please see Subsection 8.2.2.C, Professional Preparation, of the Land Development Regulations, for more information on this requirement. Please provide contact information for the Environmental Consultant if different from Agent.

Name, Agency: \_\_\_\_\_ Phone: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_ ZIP: \_\_\_\_\_  
E-mail: \_\_\_\_\_

**TYPES OF PRE-APPLICATION NEEDED.** Check all that apply; see Section 8.1.2 of the LDRs for a description of review process types.

- Physical Development Permit
- Use Permit
- Development Option or Subdivision Permit
- Interpretations of the LDRs
- Amendments to the LDRs
- Relief from the LDRs
- Environmental Analysis

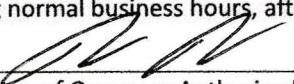
**This pre-application conference is:**  
 Required  
 Optional  
 For an Environmental Analysis  
 For grading

**SUBMITTAL REQUIREMENTS.** Please ensure all submittal requirements are included. The Planning Department will not hold or process incomplete applications. Provide **one electronic copy** (via email to [planning@jacksonwy.gov](mailto:planning@jacksonwy.gov)) of the submittal packet.

Have you attached the following?

- Application Fee.** Go to [www.townofjackson.com/204/Pre-Application.com](http://www.townofjackson.com/204/Pre-Application.com) for the fees.
- Notarized Letter of Authorization.** A notarized letter of consent from the landowner is required if the applicant is not the owner, or if an agent is applying on behalf of the landowner. Please see the Letter of Authorization template at <http://www.townofjackson.com/DocumentCenter/View/845/LetterOfAuthorization-PDF>.
- Narrative Project Description.** Please attach a short narrative description of the project that addresses:
  - Existing property conditions (buildings, uses, natural resources, etc)
  - Character and magnitude of proposed physical development or use
  - Intended development options or subdivision proposal (if applicable)
  - Proposed amendments to the LDRs (if applicable)
- Conceptual Site Plan.** For pre-application conferences for physical development, use or development option permits, a conceptual site plan is required. For pre-application conferences for interpretations of the LDRs, amendments to the LDRs, or relief from the LDRs, a site plan may or may not be necessary. Contact the Planning Department for assistance. If required, please attach a conceptual site plan that depicts:
  - Property boundaries
  - Existing and proposed physical development and the location of any uses not requiring physical development
  - Proposed parcel or lot lines (if applicable)
  - Locations of any natural resources, access, utilities, etc that may be discussed during the pre-application conference
- Grading Information (REQUIRED ONLY FOR GRADING PRE-APPS).** Please include a site survey with topography at 2-foot contour intervals and indicate any areas with slopes greater than 25% (or 30% if in the NC Zoning District), as well as proposed finished grade. If any areas of steep slopes are man-made, please identify these areas on the site plan.
- Other Pertinent Information.** Attach any additional information that may help Staff in preparing for the pre-app or identifying possible key issues.

Under penalty of perjury, I hereby certify that I have read this application and state that, to the best of my knowledge, all information submitted in this request is true and correct. I agree to comply with all county and state laws relating to the subject matter of this application, and hereby authorize representatives of Teton County to enter upon the above-mentioned property during normal business hours, after making a reasonable effort to contact the owner/applicant prior to entering.

  
Signature of Owner or Authorized Applicant/Agent

Rob Pitts

Name Printed

7/15/2021

Date

Manager

Title

## LETTER OF AUTHORIZATION

Crewsen West, LLC \_\_\_\_\_, "Owner" whose address is: \_\_\_\_\_

3035 Centre Oak Way Germantown, TN 38138

(NAME OF ALL INDIVIDUALS OR ENTITY OWNING THE PROPERTY)

Crewsen West, LLC \_\_\_\_\_, as the owner of property  
more specifically legally described as: 255 & 235 Veronica Lane Jackson, WY 83001

(If too lengthy, attach description)

HEREBY AUTHORIZES Rob Pitts \_\_\_\_\_ as agent to represent and act for Owner in making application for and receiving and accepting on Owners behalf, any permits or other action by the Town of Jackson, or the Town of Jackson Planning, Building, Engineering and/or Environmental Health Departments relating to the modification, development, planning or replatting, improvement, use or occupancy of land in the Town of Jackson. Owner agrees that Owner is or shall be deemed conclusively to be fully aware of and to have authorized and/or made any and all representations or promises contained in said application or any Owner information in support thereof, and shall be deemed to be aware of and to have authorized any subsequent revisions, corrections or modifications to such materials. Owner acknowledges and agrees that Owner shall be bound and shall abide by the written terms or conditions of issuance of any such named representative, whether actually delivered to Owner or not. Owner agrees that no modification, development, platting or replatting, improvement, occupancy or use of any structure or land involved in the application shall take place until approved by the appropriate official of the Town of Jackson, in accordance with applicable codes and regulations. Owner agrees to pay any fines and be liable for any other penalties arising out of the failure to comply with the terms of any permit or arising out of any violation of the applicable laws, codes or regulations applicable to the action sought to be permitted by the application authorized herein.

Under penalty of perjury, the undersigned swears that the foregoing is true and, if signing on behalf of a corporation, partnership, limited liability company or other entity, the undersigned swears that this authorization is given with the appropriate approval of such entity, if required.

OWNER:

Jason Crews \_\_\_\_\_  
(SIGNATURE) (SIGNATURE OF CO-OWNER)

Title: Manager

(if signed by officer, partner or member of corporation, LLC (secretary or corporate owner) partnership or other non-individual Owner)

STATE OF TN \_\_\_\_\_

)

COUNTY OF Shelby \_\_\_\_\_

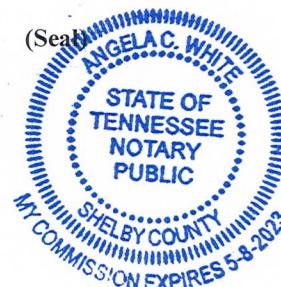
)  
SS.

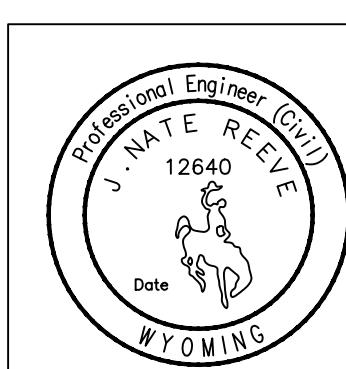
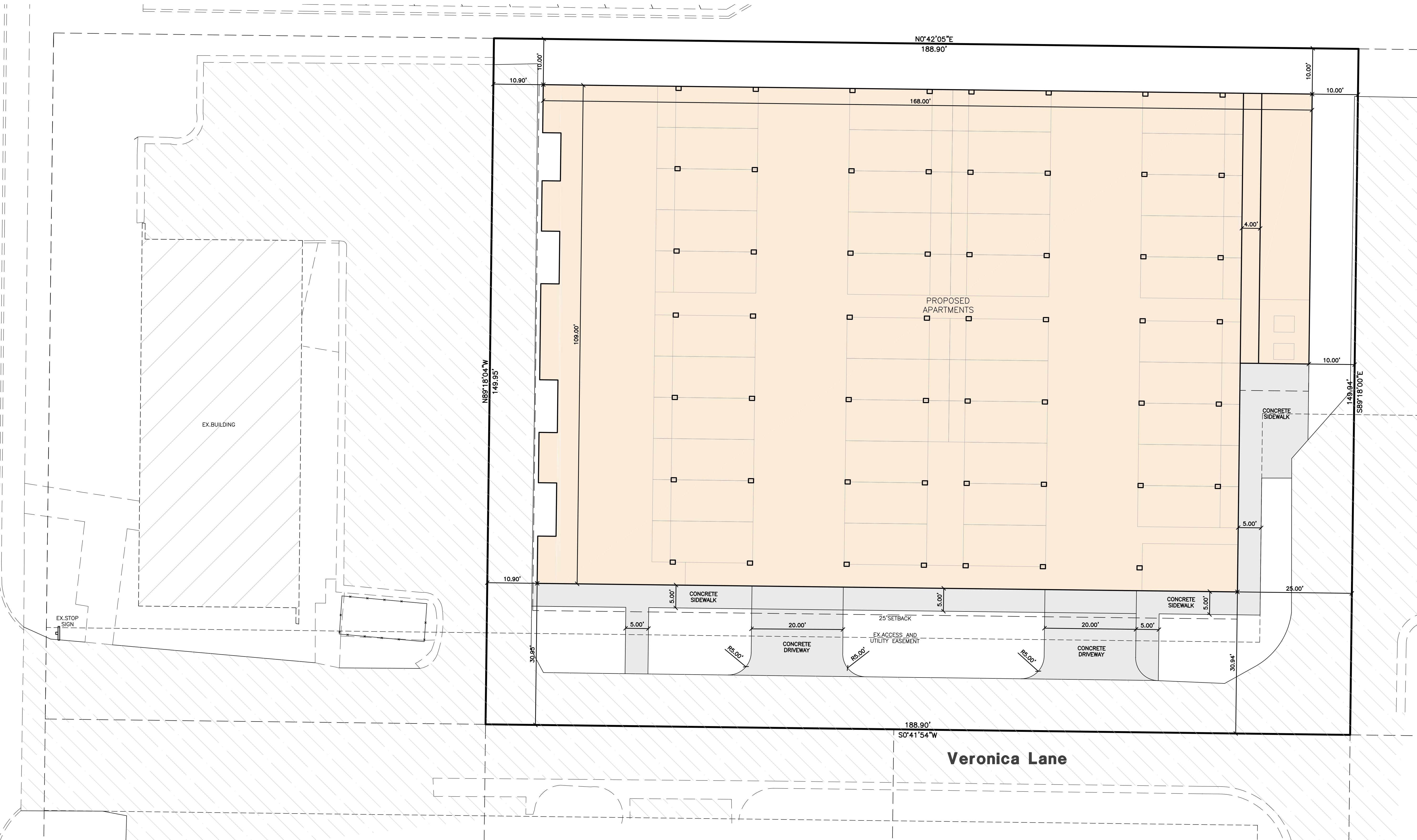
The foregoing instrument was acknowledged before me by Jason Crews this 19 day of July, 2021.

WITNESS my hand and official seal.

Angela C. White \_\_\_\_\_  
(Notary Public)

My commission expires:





# 235 & 255 Veronica Lane JACKSON, TETON COUNTY, WYOMING

Reeve & Associates, Inc. - Solutions You Can Build On ■

DATE	DESCRIPTION
	REVISIONS

<b>Project Info.</b>	
Engineer:	J. NATE REEVE, P.E.
Drafter:	J. MEYERS
Begin Date:	MAY 2021
Name:	APARTMENTS VERONICA LANE
Number:	7609-02



A scale drawing of a decorative garden feature. The feature is symmetrical, with a central vertical column and two curved arms extending from it. A north arrow is located at the top left, pointing upwards. Below the drawing is a scale bar with markings at 10, 0, 10, 20, and 30. The text "Scale: 1" = 10'" is centered below the scale bar.



November 27, 2017

Dennis Egge  
State of Wyoming - State Construction Department  
Construction Management Division  
Cheyenne, WY 82002  
Via email: dennis.egge@wyo.gov

**RE: GEOTECHNICAL REPORT - REVISION 1, CENTRAL WYOMING COLLEGE – JACKSON  
CAMPUS, 235 AND 255 VERONICA LANE, JACKSON, WYOMING  
PROJECT NO: 17067**

Dear Mr. Egge,

We are pleased to present this revised report of our Geotechnical Site Investigation for the proposed new construction located at 235 and 255 Veronica Lane in Teton County, Wyoming. The report describes site conditions and presents conclusions and recommendations to support the design and construction of foundation elements.

Please note: this represents a revision of the report issued on November 20, 2017. We recommend notifying anyone who received a copy of the previous report and discarding all existing copies to avoid confusion. Of note, after conversations with the architect and structural engineer, we improved the project description (Section 2.0) and recommendations pertaining to bearing capacity (Section 5.2).

In summary, the site appears to be underlain by stony alluvium of the Cache Creek drainage, considered to be an adequate bearing layer for construction. Alluvial deposits are notoriously variable, but conditions observed during the subsurface exploration appear consistent across the proposed project area. Jorgensen should observe subgrade conditions for any foundation elements prior to placement of fill or foundation elements, especially if pockets or lenses of loose sand, fine-grained soils, or undocumented fills are observed. Two standpipes were installed on the property in order to monitor peak groundwater levels during the spring of 2018. Due to concerns with high seasonal groundwater, a basement is not recommended.



**JORGENSEN**  
GEOTECHNICAL, LLC

PO Box 9550 · 1315 HWY 89 S., Suite 201  
Jackson, WY 83002  
PH: 307.733.5150  
[www.jorgeng.com](http://www.jorgeng.com)

If you have any questions about this report, or if we may provide other services to you, please do not hesitate to contact us. As the project progresses, we will be available to answer questions.

Respectfully submitted,

**JORGENSEN GEOTECHNICAL**

Lauren Jones

Colter H. Lane, P.E.

# Geotechnical Investigation Report - Revision 1

## Central Wyoming College – Jackson Campus

### 235 and 255 Veronica Lane



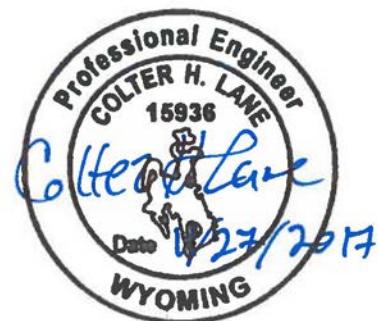
Prepared for:

Dennis Egge  
State of Wyoming - State Construction Department  
Construction Management Division  
Cheyenne, WY 82002

Prepared by:



PO Box 9550  
Jackson, WY 83002



November 27, 2017

## **TABLE OF CONTENTS**

<b>1.0</b>	<b>INTRODUCTION.....</b>	<b>1</b>
<b>2.0</b>	<b>PROPOSED CONSTRUCTION .....</b>	<b>1</b>
<b>3.0</b>	<b>INVESTIGATION PROCEDURE .....</b>	<b>1</b>
3.1	FIELD INVESTIGATION .....	1
3.2	LABORATORY ANALYSIS.....	1
3.3	REPORT PREPARATION.....	1
<b>4.0</b>	<b>SITE CONDITIONS .....</b>	<b>4</b>
4.1	SITE DESCRIPTION .....	4
4.2	GEOLOGY .....	4
4.3	SOILS.....	4
4.4	GROUNDWATER .....	5
4.5	EARTHQUAKES AND SEISMICITY.....	5
4.6	GEOLIC HAZARDS AND LIQUEFACTION.....	6
<b>5.0</b>	<b>ENGINEERING ANALYSES.....</b>	<b>6</b>
5.1	SETTLEMENT .....	6
5.2	BEARING CAPACITY .....	6
5.3	LATERAL LOADS ON FOUNDATION WALLS .....	7
5.3.1	<i>Active Pressures</i> .....	7
5.3.2	<i>At-Rest Pressures</i> .....	8
5.3.3	<i>Passive Pressures</i> .....	8
5.4	SOIL FRICTION.....	8
<b>6.0</b>	<b>RECOMMENDATIONS.....</b>	<b>8</b>
6.1	FOUNDATIONS .....	8
6.2	SITE PREPARATION .....	9
6.3	EXCAVATION AND CUT SLOPE STABILITY .....	9
6.4	FINAL BACKFILLING AND GRADING .....	9
6.5	INTERIOR SLABS-ON-GRADE.....	10
6.6	EXTERIOR SLABS-ON-GRADE .....	11
6.7	CRAWLSPACE, VENTILATION, AND RADON .....	11
6.8	REINFORCING, UTILITIES TESTING, AND CONCRETE CONSIDERATIONS.....	11
6.9	OBSERVATION DURING CONSTRUCTION .....	11
<b>7.0</b>	<b>LIMITATIONS.....</b>	<b>12</b>
<b>8.0</b>	<b>REFERENCES.....</b>	<b>12</b>

## **LIST OF FIGURES**

Figure 1: Site Location and Geologic Map .....	2
Figure 2: Test Pit Location Map .....	3

## **LIST OF TABLES**

Table 5-1: Lateral Pressure Parameters for Native Stony Alluvium or Stony “Pit-Run” Fill .....	7
Table 6-1: Compaction Parameters for Stony Fill .....	10

## **LIST OF APPENDICES**

Appendix A: Test Pit Logs

Appendix B: USGS Seismic Design Summary and Detailed Reports

## **1.0 INTRODUCTION**

At the request of Mr. Dennis Egge, Jorgensen Geotechnical (JG) conducted a Geotechnical Site Investigation at 235 and 255 Veronica Lane in Jackson, Wyoming (Figure 1). The purposes were to observe soil and groundwater conditions, evaluate soil engineering properties, and to provide recommendations to support design and construction the proposed Jackson Outreach Center of Central Wyoming College. The scope of services included excavating and logging two exploratory test pits, performing engineering analyses, and furnishing this report.

## **2.0 PROPOSED CONSTRUCTION**

Concept plans from the Level II Study report indicate two possible site layouts. It is our understanding that Option 2 of the report is preferred, which comprises a two story structure situated in the eastern portion of the project site. Parking is proposed west of the structure and a detached, above ground mechanical building is proposed along the northern boundary of the site. Floor area will be 15,940 ft<sup>2</sup> between the two levels with 1,400 ft<sup>2</sup> for a mechanical mezzanine. According to the architect, the structure will be comprised of a steel frame with a composite concrete deck. We have assumed a spread footing foundation system for analyses.

## **3.0 INVESTIGATION PROCEDURE**

### **3.1 Field Investigation**

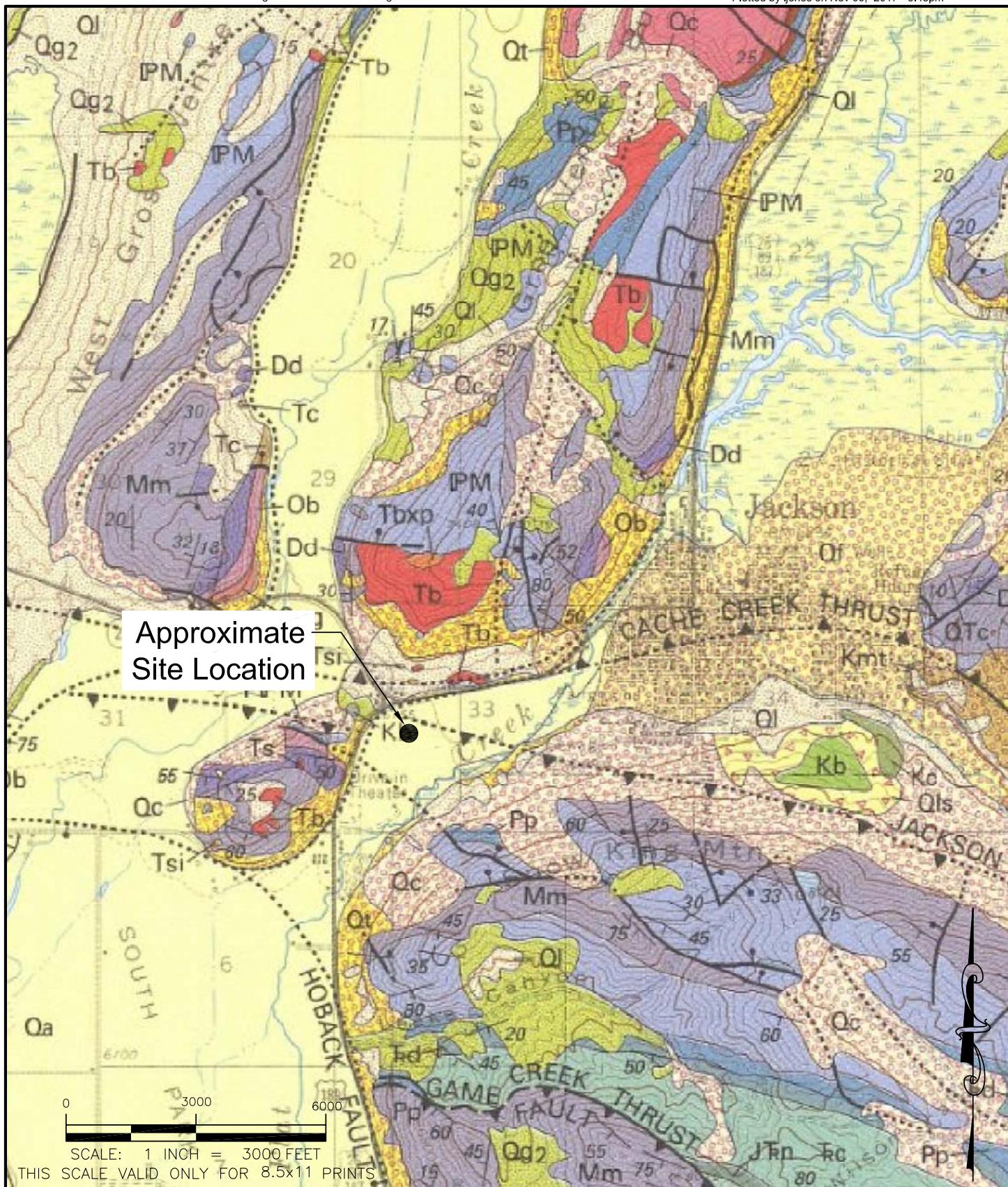
The field investigation was conducted on November 6, 2017. Two test pits were excavated to depths of 7 feet below the ground surface (bgs) in JG-1 and 10 feet bgs in JG-2. Soil type, thickness, consistency, and relative moisture content were observed and documented by JG. Site conditions may vary and actual soil conditions may differ from those represented in the exploration logs. Approximate test pit locations are shown on Figure 2 and detailed test pit logs are presented graphically in Appendix A.

### **3.2 Laboratory Analysis**

The stony nature of the site soils precludes laboratory testing due to the size of a properly representative sample. Soil engineering behavior has been estimated using field observations of soil type and consistency.

### **3.3 Report Preparation**

The report describes the geological site conditions and includes a site location and geologic map and descriptive test pit logs. The report provides engineering analyses and recommendations for construction of new foundation elements.



From Love et al, 1992, Geologic Map of the Grand Teton National Park, Teton County, Wyoming Map I-2031

Map symbols: Qa - Alluvium  
Qf - Alluvial Fan

Kb - Sandstone  
Qc - Colluvium

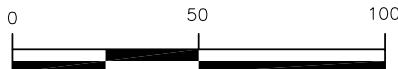
DRAFTED BY:	LJ
REVIEWED BY:	CHL
PROJECT NUMBER	17067

SHEET TITLE:  
Figure 1  
Site Location and  
Geologic Map

PROJECT TITLE:  
Geotechnical Site Investigation  
CWC - Veronica Lane  
Jackson, Wyoming



**JORGENSEN**  
Geotechnical, LLC  
307-733-5150 [www.jorgeng.com](http://www.jorgeng.com)



SCALE: 1 INCH = 50 FEET  
THIS SCALE VALID ONLY FOR 8.5x11 PRINTS

**NOTES:**

AERIAL IMAGERY FROM TETON COUNTY GIS.  
DATED JUNE 8, 2017.

TEST PIT LOCATIONS ARE APPROXIMATE, BUT WERE  
SURVEYED BY JORGENSEN NOV 6, 2017, FOR MORE  
ACCURATE MAPPING DURING DESIGN.

DRAFTED BY:	LJ
REVIEWED BY:	CHL
PROJECT NUMBER	17067

SHEET TITLE:  
**Figure 2**  
Test Pit Location Map

PROJECT TITLE:  
Geotechnical Site Investigation  
CWC - Veronica Lane  
Jackson, Wyoming



**JORGENSEN**  
Geotechnical, LLC  
307-733-5150 [www.jorgeng.com](http://www.jorgeng.com)

## 4.0 SITE CONDITIONS

### 4.1 Site Description

235 and 255 Veronica Lane are located in western Jackson, WY, approximately 1,000 feet northwest of Flat Creek. The site is relatively flat at an approximate elevation of 6,150 feet above mean sea level (Figure 2). Each lot is approximately 0.3 acres and the ground is currently covered by tall grasses.

The project area is currently undeveloped and, according to historic aerial photography, has mainly served as parking or storage. Construction of the structure at 275 Veronica Lane to the north appears to have occurred in 2007 and the fill observed in test pit JG-1 (see Section 4.3) may have been left on site at that time.

### 4.2 Geology

The project site is found on the geologic map of Grand Teton National Park by J.D. Love, et al, published in 1992 (Figure 1). The map shows the location of surface deposits, bedrock units, and geologic structures (i.e., faults and folds). According to the map, the project site is covered by Quaternary age alluvial deposits which consist of gravel, sand, and limited channel fillings of silt and clay. Bedrock is assumed to be very deep. Soil types observed during the site investigation are consistent with mapped geology.

Numerous Quaternary age (relatively young and potentially active) faults have been mapped in the Jackson area (Case, 1997), most notably the Teton fault system along the east side of the Teton Range, approximately 5 miles west of the project site. The inferred (buried) traces of the Cache Creek and Jackson thrust faults are located very near the site (dotted lines on Figure 1), crossing the town of Jackson on a generally east-west trend. These faults are considered to be relatively old and inactive and do not affect the project.

### 4.3 Soils

The site is generally underlain by sandy gravel and cobble alluvium of the Cache Creek alluvial floodplain. All test pits encountered about two feet of sandy silt topsoil underlain by stony alluvium. The topsoil was logged as moist, dark brown, medium stiff, sandy silt. The alluvium was described in the field as slightly moist to moist, tan and light grey with rusty blotches, medium dense, primarily consisting of 70-75% gravel and cobble to 15-inches in diameter with a clayey silt and sand matrix. Detailed test pit logs are attached in Appendix A.

A few pieces of trash were encountered in JG-1 to a depth of about 4-ft indicating an undocumented fill. As described above, this fill may be associated with construction of the structure to the north and is not anticipated to extend very far south. In the event fills are identified in the foundation excavation, they should be removed from below foundation elements.

Similar soils were encountered in test pits excavated north and south of the proposed buildings and are likely consistent across the project area. However, lenses of loose sand and fine-grained material are common in alluvial deposits and JG should observe subgrade conditions prior to placement of fill or foundation elements, especially if pockets or lenses of loose sand, fine-grained soils, or undocumented fills are observed.

#### **4.4 Groundwater**

Groundwater was encountered at about 6.5 and 8-ft bgs in JG-1 and JG-2, respectively, during the investigation on November 6, 2017. Soil conditions were observed to be slightly moist to moist, with moisture content increasing with depth. Groundwater monitoring standpipes were installed in both test pits: MW-1 at 7-ft bgs and MW-2 at 10-ft bgs (see Figure 2).

The investigation occurred after what is considered the peak seasonal groundwater level in this area. Therefore, it is recommended that groundwater levels are monitored during the spring 2018 runoff season. Soils with rust staining (i.e., “gleyed soils”) were observed in both pits within about 3-4 feet of the ground surface. Gleyed soils occur in anoxic environments and may indicate levels of sustained high groundwater. Due to the possibility of seasonally high groundwater levels, a basement is not recommended and any mechanical equipment placed in crawlspace areas should be moisture insensitive.

#### **4.5 Earthquakes and Seismicity**

Jackson Hole is located within the Intermountain Seismic Belt, a zone of seismicity that extends from southern Utah through eastern Idaho, western Montana, and western Wyoming (Smith and Arabasz, 1991). The Teton fault along the eastern margin of the Teton Range, approximately 5 miles to the west of the site, is considered an important structural element of the Intermountain Seismic Belt. Predicted recurrence intervals for maximum credible earthquakes have passed for most of the fault systems capable of generating magnitude 7.5 events in western Wyoming (Case, 1997), implying the risk of major earthquakes is relatively high.

Ground motion accelerations should be derived for the project site in accordance with the general procedure defined in the International Building Code (IBC). The IBC references ASCE 7-10 to determine the ground motion accelerations. Based on subsurface soils and our experience in the area, the site is classified as a Site Class D (“Stiff Soil”). For your convenience, USGS Seismic Design Maps Summary and Detailed Reports were produced assuming a risk category of I/II/III (assumed) and are attached in Appendix B. These reports present design ground motion for structural design.

The site is in an area of moderate seismic activity. The current peak horizontal acceleration (PGA) with 10% probability of exceedance in 50-years is approximately 0.19g, according to the USGS National Seismic Hazard Maps (2014). This has been applied in this report for analysis of seismic lateral loading on retaining walls, see Section 5.3.

The provisions of the IBC are intended to provide uniform levels of performance for structures, depending on their occupancy and use and the risk inherent to their failure. The approach adopted in the IBC is intended to provide a uniform margin of safety against collapse at the *design* ground motion. The *design* earthquake ground motion is selected at a ground shaking level that is 2/3 of the *maximum considered earthquake* (MCE) ground motion, which has a likelihood of exceedance of 2 percent in 50 years (a return period of about 2,500 years). The owner should be aware that the IBC is not intended to prevent damage or loss of function during a major earthquake; it is intended to reduce the risk of loss of life. Structural design should follow the level of risk tolerable to the owner.

#### **4.6 Geologic Hazards and Liquefaction**

The owner should be aware that in the event of a large magnitude earthquake (i.e., approximately 7.5), strong ground shaking or liquefaction could potentially cause damage to structures (Smith, et al, 1993). The owners may wish to consider the option of carrying earthquake insurance in addition to homeowner's insurance.

Loose, saturated sands and silty sands, and in some cases, silts and gravels, may liquefy when exposed to seismic shaking. Evaluation of the deep subsurface conditions and assessment of the liquefaction potential at this site are beyond the scope of this investigation. However, the gravel and cobbles encountered in the test pits appear too stony and dense to liquefy in a seismic event. Since the site is in a relatively flat area, if liquefiable material is present at greater depths, seismically-induced liquefaction could cause differential settlement but is unlikely to cause "lateral spreading", which is a major slope movement that is a common source of catastrophic failure during earthquakes.

### **5.0 ENGINEERING ANALYSES**

#### **5.1 Settlement**

Significant consolidation of the stony alluvial deposits (i.e., greater than 1-inch of total settlement) was observed in the test pits below the topsoil and undocumented fills. Thus, foundation elements should be placed directly on native sandy gravel and cobble. Recommendations regarding site preparation may be found in Section 6.2. If encountered, topsoil, fill, and any fine-grained soils should be removed below all footings. Lenses of loose sand or fine-grained material may occur in the stony material; if encountered during construction, they should be removed and replaced with structural fill or native stony alluvium.

#### **5.2 Bearing Capacity**

Bearing capacity of soil refers to its ability to resist shear failure under load. Soil parameters (i.e., inputs to the bearing capacity equation) were derived based on visual classification of the soil. The allowable bearing capacity for the gravel and cobble alluvium was estimated using Terzaghi's bearing capacity equation for 2-ft continuous (i.e., strip) footings and 6.25'x6.25' square footings (Bowles, 1996).

Allowable bearing capacity is calculated to be:

- 2-ft Continuous = 6,500 psf
- 6.25'x6.25' Square = 8,400 psf

Soil bearing capacity is dependent not only on its strength, but also the geometry of the foundation elements. The calculations assume the bottom of footing elevation is buried 3-ft below final grade. If existing conditions are found to differ from these assumptions or if new footings will have different dimensions, please contact us for a reevaluation of the allowable bearing capacity.

### 5.3 Lateral Loads on Foundation Walls

Lateral pressures were calculated using methods suggested by Bowles (1996). Lateral pressures were calculated for at-rest, active, and passive conditions and presented in Table 5-1.

**Table 5-1: Lateral Pressure Parameters for Native Stony Alluvium or Stony “Pit-Run” Fill**

Condition	Coefficient of Earth Pressures	$\gamma K$ (equivalent fluid pressure)
<b>Static Conditions</b>		
Level Backfill	$K_o = 0.43$ $K_a = 0.27$ $K_p = 3.69$	58 pcf 37 pcf 498 pcf
<b>Earthquake Conditions</b>		
Level Backfill	$K_{ae} = 0.33$ $K_{pe} = 3.49$	44 pcf 472 pcf

Values in the table assume a level ground surface adjacent to retaining structures. We have assumed site derived “pit-run” material (sandy gravel and cobble) will be used as exterior backfill, which has an estimated internal friction angle of 35° and a unit weight of 135 pcf.

#### 5.3.1 Active Pressures

For lateral pressure design of retaining walls, which are allowed to deflect and develop an active soil wedge, the calculated equivalent fluid pressure ( $\gamma K_a$ ) is 37 pcf (pounds per cubic foot). This pressure distribution would be equivalent to a force of approximately  $18.5H^2$  pounds per horizontal foot of wall acting at one-third the wall height (H) above the base.

Lateral pressures on retaining walls from earthquakes were estimated using the Mononobe-Okabe equations (Bowles, 1996; Duncan et al, 1990). Because the maximum acceleration occurs only briefly during an earthquake, it is common practice when designing dams and other earth structures to reduce the design acceleration to  $\frac{1}{2}$  of the maximum design acceleration (Hynes-Griffin and Franklin, 1984). Thus, we have calculated seismic lateral pressures using a horizontal acceleration  $k_h$  of 0.1g (1/2 of  $k_h$  max) per the USGS (2014).

Research has indicated that lateral pressures due to earthquakes are non-hydrostatic in distribution, and the resultant acts above the lower third-point of the wall (Bakeer, et al, 1990). Accordingly, active soil pressures must be divided into two components that act at different wall heights. The static force acts at the lower third-point, as discussed above. The resultant force from seismic lateral pressures is applied at 60% of the wall height above the base with a magnitude equal to the difference between seismic and static active pressures; i.e.,  $(\gamma K_{ae} - \gamma K_a)H^2$  or  $3.5H^2$  pounds per horizontal foot of wall applied.

### **5.3.2 At-Rest Pressures**

For lateral pressure design of basement walls, which are restrained and not allowed to deflect, the calculated at rest earth pressure ( $\gamma K_o$ ) is 58 pcf. Design control of such walls shall be whichever generates the higher resultant force: at-rest pressures or active seismic pressures.

### **5.3.3 Passive Pressures**

For passive pressure design, the earth pressure coefficient ( $\gamma K_p$ ) is about 498 pcf, assuming a horizontal ground surface adjacent to the wall and reduced to 472 pcf for seismic conditions. Passive pressure design should neglect loose fill and soil located within the frost zone.

## **5.4 Soil Friction**

Terzaghi et al, (1996) suggest use of the internal strength of the soil for the friction angle along a concrete base in granular soils, with a maximum value of 30°. Accordingly, a friction value of 0.58, which is the tangent of 30°, is suggested if foundation elements are founded on native stony alluvium or compacted, granular structural fill. The friction value may be combined with the passive pressure to resist horizontal loads.

## **6.0 RECOMMENDATIONS**

### **6.1 Foundations**

In our opinion, the existing native stony alluvium, consisting of sandy gravel and cobble, is anticipated to provide adequate support for the proposed foundation loads. We strongly recommend that the building foundation systems be placed entirely on native stony material or approved structural fill consisting of imported “pit-run” or re-compact stony site soil. Topsoil, fill, and any fine-grained flood plain deposits should be removed and building foundations should be placed entirely on native stony alluvium or approved structural fill.

All footings should be placed below the frost line, including exterior footings for awnings and porches. The building code for Teton County requires that footings be placed at a minimum depth of 34 inches from finished grade, with a minimum foundation exposure of 6 inches above finished grade.

Minor cracks in the foundation walls, floor slabs, and sheetrock are normal and should not be a cause for concern. A structural engineer should review the plans to check that adequate lateral restraint is provided to foundation walls by the floor joists.

Local codes regarding foundation ventilation and radon mitigation should be followed. The contractor shall be ultimately responsible for following local building regulations and codes.

## **6.2 Site Preparation**

Prior to placement of structural fill, the site should be cleared and stripped of topsoil and organic debris. No brush, roots, frozen material, or other deleterious or unsuitable materials shall be incorporated in the foundation subgrade or structural fill. All exposed subgrade surfaces should be free of mounds and depressions which could prevent uniform compaction. If unexpected fills or obstructions are encountered during site clearing or excavation, such features should be removed and the excavation thoroughly cleaned prior to backfill placement and/or construction.

If sand or fine-grained soils are observed in the foundation excavation, they should be removed and replaced with an approved structural fill, such as pit-run or native stony alluvium. The foundations should bear directly on the stony gravel and cobble alluvium or approved structural fill placed in direct contact with the stony alluvium.

During excavation for the foundation footings, removal of large cobbles may disturb and loosen the surrounding material. All disturbed areas should be compacted with a smooth-drum vibratory roller, in vibratory mode with a *minimum* of three passes, prior to placement of structural fill and/or footing construction. The actual number of passes should be determined by observing whether the surface is yielding after each pass. If the surface appears to be yielding, the number of passes should be increased until a non-yielding condition is observed.

All excavations and foundation subgrades should be observed by a representative of JG prior to fill or concrete placement, especially if questionable materials are exposed. Notice shall be provided at a minimum of 24 hours before the requested observation.

## **6.3 Excavation and Cut Slope Stability**

OSHA regulations (29CFR1926) appear to classify the alluvial material at the site as Type C soil. For planning and design purposes, simple cut slopes should be no steeper than 1.5H:1V. The contractor shall be responsible for adherence to OSHA and other safety regulations by observing soil and groundwater conditions at the time of construction.

## **6.4 Final Backfilling and Grading**

Properly compacted backfill and site drainage are important. Table 6-1 provides a method specification for compaction of stony material. If structural fill is used to achieve final grades, the fill may consist of select granular site material or imported pit run fill placed in horizontal lifts no greater than 12 inches loose thickness, as indicated by Table 6-1. Larger cobbles (> 4" diameter) should not be used as structural backfill, except as specified in Table 6-1.

Stony fill will compact into a dense, strong, well-drained structural fill, and tight moisture control is usually not required. Table 6-1 presents a *minimum* number of passes for each

compactor type. The actual number of passes should be determined by observing compaction after each pass to determine if the surface is non-yielding. If the fill surface appears to be yielding, the number of passes should be increased until a non-yielding condition is observed. Once the final number of passes is determined, the method may be continued for the rest of the project as long as fill properties, groundwater levels, and subgrade soil conditions remain the same. It is important to establish a method specification as early in the construction as possible and apply it consistently for the entirety of the building pad construction. Jorgensen is available to observe lift thickness, number of passes, and equipment used to verify a non-yielding state is achieved.

**Table 6-1: Compaction Parameters for Stony Fill**

Compactor Type	Lift Thickness	Maximum Particle Size	Minimum Number of Passes
5-ton vibratory	12 inches	9-inch*	3
1.5-ton vibratory	9 inches	6-inch	5
Hand-held	4 inches	4-inch	5

\* Occasional clasts to 12-inch are permitted, if encountered, but should not be nested.

Exterior backfills should be placed as early as possible. However, do not over-compact exterior backfills against “green” foundation walls.

Utility trenches should also be backfilled in lifts and lightly compacted. The stony soils will require a vibrating smooth-drum roller or vibratory plate (i.e., hoe-pack or “jumping jack”) for compaction.

## **6.5 Interior Slabs-on-Grade**

Interior slabs should be at least 4 inches thick, and any slabs bearing vehicles should be at least 6 inches thick, or as approved by a Structural Engineer. Minor floor cracking of slab-on-grade construction is difficult, if not impossible, to prevent. Such cracking is normal and should be expected to occur with time. Buildings are almost never free of cracks, and cracking is caused by many factors other than soil movement, such as concrete shrinkage or curling, or daily and seasonal variability in temperature and humidity.

An impermeable layer (usually plastic) is suggested beneath interior slabs, underlain by 4 inches of clean drain gravel that will act as a capillary break to reduce dampness. Three articles from the American Concrete Institute (ACI) that discuss these options are listed in the References (Holland and Walker, 1998; Suprenant and Malisch, 1998 & 1999). We are able to offer additional guidance if requested.

Two options are available to reduce the tendency for the concrete to crack or curl as it dries:

1. A blotter layer may be placed under the slab. In the past, loose sand has been used for this purpose, but is no longer recommended. A cover of 4 inches of trimmable,

compactible, granular material may be placed over the impermeable layer to receive the concrete slab. This material usually consists of “crusher run material”, which varies in size from about 1.5-inch down to rock dust. Alternatively, 3 inches of compacted, fine-graded material such as crusher fines or manufactured sand may be used.

2. The blotter layer may be eliminated if the concrete is reinforced properly. The referenced article entitled “Controlling Curling and Cracking in Floors to Receive Coverings” provides a discussion of proper floor slab reinforcement. If the contractor needs additional guidance on reinforcement, a Structural Engineer should provide it.

#### **6.6 Exterior Slabs-on-Grade**

Exterior slabs such as driveways, patios, and sidewalks can move in response to changes in temperature, soil moisture, or subgrade freezing. Any fine-grained topsoil is potentially compressible and susceptible to frost heave. Any exterior flat work placed on these soils may perform poorly. Performance of exterior slabs at this site may be improved by compacting the surface of the native stony alluvium and seating the slab on at least 6 inches of road mix gravel (e.g., WYDOT Grading H).

Exterior slabs should be at least 4 inches thick, 6 inches if supporting vehicles, or as approved by the Structural Engineer. Exterior slabs should not be tied to foundation walls. Any movement of exterior slabs may be transmitted to the foundation walls, resulting in damage. Posts for patios or other exterior columns should not bear on exterior slabs. If the slabs settle or rise, the movement can be transmitted to the post, resulting in damage to the structure. Expansion joints are recommended in all concrete flatwork.

#### **6.7 Crawlspace, Ventilation, and Radon**

Evaluation of radon was beyond the scope of work; local codes should be followed and specialty contractors employed, if necessary. The building contractor is ultimately responsible for following local building codes. Crawlspace ventilation to reduce moisture and potential accumulation of radon gas is required by code. Placing a Class 1 vapor retarder in the crawlspace may reduce ventilation opening area requirements. Care should be taken while installing such a vapor retarder to avoid water overtopping and thus compromising the system. A capillary break layer (see Section 6.5) may be necessary to accommodate a radon vent pipe.

#### **6.8 Reinforcing, Utilities Testing, and Concrete Considerations**

Footings, slabs, and foundation walls should be reinforced to resist differential movement. Consultation with a Structural Engineer to specify adequate reinforcement is suggested. Water and sewer lines should be pressure tested before backfilling. Exterior concrete should contain 5% to 7% entrained air.

#### **6.9 Observation during Construction**

A representative of JG should observe construction of any foundation or drainage elements recommended in this report. Site grading, leak-proof testing, and soil compaction shall be

observed by a representative Jorgensen. Recommendations in this report are contingent upon our involvement. If any unexpected soils or conditions are revealed during construction, this office should be notified immediately to survey the conditions and make necessary modifications.

## 7.0 LIMITATIONS

This report has been prepared based on a limited amount of data. Actual site conditions may vary. The report is for single use and under no circumstances are the figures and text to be used separately. These services have been performed in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty is made or implied.

## 8.0 REFERENCES

American Concrete Institute, 1997, Guide for Concrete Floor and Slab Construction: ACI 302.1R-96.

ASCE, 2010, Minimum Design Loads for Buildings and Other Structures: ASCE/SEI Standard 7-10.

Bakeer, R.M., S.K. Bhatia, and I. Ishibashi, 1990, Dynamic Earth Pressure with Various Gravity Wall Movements *in* Design and Performance of Earth Retaining Structures (P.C. Lambe and L.A. Hansen, ed.): ASCE Geotechnical Special Publication 25, p. 887-899.

Bowles, J.E., 1996, Foundation Analysis and Design, 5th Ed.: McGraw-Hill.

Case, J.C., 1997, Earthquakes and Active Faults in Wyoming; Wyoming State Geological Survey, Preliminary Hazards Report 97-2.

Gilbert, J.D., Ostena, D., and Wood, C., 1983, Seismotectonic study of Jackson Lake Dam and Reservoir: U.S. Bureau of Reclamation Seismotectonic Report 83-8, Minidoka Project, Idaho-Wyoming, 123P.

Holland, J.A., and W. Walker, 1998, Controlling Curling and Cracking in Floors to Receive Coverings: Concrete Construction, Publication Number C980603.

Hynes-Griffin, M.E., and Franklin, A.G., 1984, Rationalizing the Seismic Coefficient Method: U.S. Army Corps of Engineers, Waterways Experiment Station, Miscellaneous Paper GL-84-13.

International Building Code, 2015.

Love, J.D., Reed, J.C., and Christiansen, A.C., 1992, Geologic Map of Grand Teton National Park, Teton County, Wyoming: Geologic Investigation Series Map I-2031, Scale 1:62,500.

Love, J.D. and Reed, J.C., 2000, Geologic Map of the Teton Village Quadrangle, Teton County, Wyoming: USGS LMS-2, Scale 1:24,000.

Machette, M.N., K.L. Pierce, J.P. McCalpin, K.M. Haller, and R.L. Dart, 2001, Map and Data for Quaternary Faults and Folds in Wyoming: USGS OFR 01-461.

O'Connell, D.R.H., Wood, C.K., Ostena, D.A., Block, L.V., and LaForge, R.C., 2003, Final Report, Ground Motion Evaluation for Jackson Lake Dam, Minidoka Project, Wyoming: U.S. Bureau of Reclamation Report 2003-2.

Petersen, M.D., Moschetti, M.P., Powers, P.M., Mueller, C.S., Haller, K.M., Frankel, A.D., Zeng, Yuehua, Rezaeian, Sanaz, Harmsen, S.C., Boyd, O.S., Field, Ned, Chen, Rui, Rukstales, K.S., Luco, Nico, Wheeler, R.L., Williams, R.A., and Olsen, A.H., 2014, Documentation for the 2014 update of the United States national seismic hazard maps: U.S. Geological Survey Open-File Report 2014-1091.

Smith, R.B. and Arabasz, W.J., 1991, Seismicity of the Intermountain Seismic Belt, in Slemmons, D.B., Engdahl, E.R., Zoback, M.L., and Blackwell, D.D., editors, Neotectonics of North America: Geological Society of America, Decade Map Volume 1, p. 185-228.

Smith, R.B., Byrd, J.O.D., and Susong, D.D., 1993, The Teton Fault, Wyoming: Seismotectonics, Quaternary History, and Earthquake Hazards, in Snee, Q.W., Steidtmann, J.R., and Roberts, S.M., editors, Geology of Wyoming; Geological Survey of Wyoming Memoir No. 5, p. 628-667.

Suprenant, B.A., and W.R. Malisch, 1998, Where to Place the Vapor Retarder: Concrete Construction, Publication Number C980427.

Suprenant, B.A., and W.R. Malisch, 1999, Don't Use Loose Sand under Concrete Slabs: Concrete Construction, Publication Number C99C0223.

U.S. Geological Survey National Seismic Hazard Mapping Project, 2014.

Whitman, R.V., 1990, Seismic Design and Behavior of Gravity Retaining Walls in Design and Performance of Earth Retaining Structures (P.C. Lambe and L.A. Hansen ed): ASCE Geotechnical Special Publication 25, p. 817-842.

## **APPENDIX A**

### **Test Pit Logs**



Jorgensen Geotechnical  
Jackson, WY 83002  
Telephone: 307-733-5150  
Fax: 307-733-5187

# TEST HOLE LOG

PAGE 1 OF 1

PROJECT NAME: CWC - Veronica Lane								DATE: 11/6/2017							
PROJECT LOCATION: Jackson, Wyoming								HOLE NO.: JG-1/MW-1							
TEST HOLE LOCATION: See site map															
ELEVATION G.S. (ft.):			TOTAL DEPTH (ft.): 7			GROUNDWATER LEVEL (ft.): 6.5			MEASURED FROM: Ground surface						
DRILL TYPE: JD 310SJ			HAMMER:			DRILL CO: Fish Creek Excavation			DRILLER: Bill		LOGGED BY: Ij				
DEPTH (ft.)	GRAPHICAL LOG	SAMPLE	S.P.T. (N) BLOWS/6 IN.	(N1)60 BLOWS/FT.	RECOVERY (%)	UNCONFINED STRENGTH (TSF)	CLASSIFICATION	DESCRIPTION			MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMITS (%)	PLASTICITY INDEX (%)	WELL COMPLETION
								COMMENTS:							
1								0.0-2.2ft Sandy SILT: Moist, dark brown, soft to medium stiff, massive, roots down to 2-ft [TOPSOIL]							
2								2.2-4.0ft Sandy GRAVEL/COBBLE: Slightly moist to moist, tan and light grey with rusty blotches, medium dense, stratified, 70-75% subangular to subrounded gravel/cobble up to 15-in diameter, clayey silty sand matrix, some scattered pieces of trash within upper 4-ft [ALLUVIUM/FILL]							
3								4.0-7.0ft Sandy GRAVEL/COBBLE: Slightly moist to wet, tan and light grey with rusty blotches, medium dense, stratified, 70-75% subangular to subrounded gravel/cobble up to 15-in diameter, clayey silty sand matrix [ALLUVIUM]							
4								Notes: Groundwater encountered at 6.5-ft. Pitwalls caving at 7-ft. Stopped at request. 4-in perforated standpipe installed to 7.0-ft. Stick up of 3.0-ft. Backfilled with spoils.							
5															
6															
7															
8															
9															
10															



PROJECT NAME: CWC - Veronica Lane							DATE: 11/6/2017						
PROJECT LOCATION: Jackson, Wyoming							HOLE NO.: JG-2/MW-2						
TEST HOLE LOCATION: See site map													
ELEVATION G.S. (ft.):			TOTAL DEPTH (ft.): 10		GROUNDWATER LEVEL (ft.): 8			MEASURED FROM: Ground surface					
DRILL TYPE: JD 310SJ			HAMMER:			DRILL CO: Fish Creek Excavation	DRILLER: Bill		LOGGED BY: IJ				
DEPTH (ft.)	GRAPHICAL LOG	SAMPLE	S.P.T. (N) BLOWS/6 IN.	(N1)60 BLOWS/FT.	RECOVERY (%)	UNCONFINED STRENGTH (TSF)	CLASSIFICATION	DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	LIQUID LIMITS (%)	PLASTICITY INDEX (%)	WELL COMPLETION
1								0.0-1.9ft Sandy SILT: Moist, dark brown, soft to medium stiff, massive, roots down to 2-ft [TOPSOIL]					
2								1.9-10.0ft Sandy GRAVEL/COBBLE: Slightly moist to wet, tan and light grey with rusty blotches, dense, stratified, 70-75% subangular to subrounded gravel/cobble up to 15-in diameter, clayey silty sand matrix, rusty patches starting at 4-ft [ALLUVIUM]					
3								Notes: Groundwater encountered at 8.0-ft. Stopped at request. 4-in perforated standpipe installed to 10.0-ft. Stick up of 1.7-ft. Backfilled with spoils.					
4													
5													
6													
7													
8													
9													
10													

**APPENDIX B**

**USGS Seismic Design**

**Summary and Detailed Reports**

# USGS Design Maps Summary Report

## User-Specified Input

**Report Title** CWC - Veronica Lane

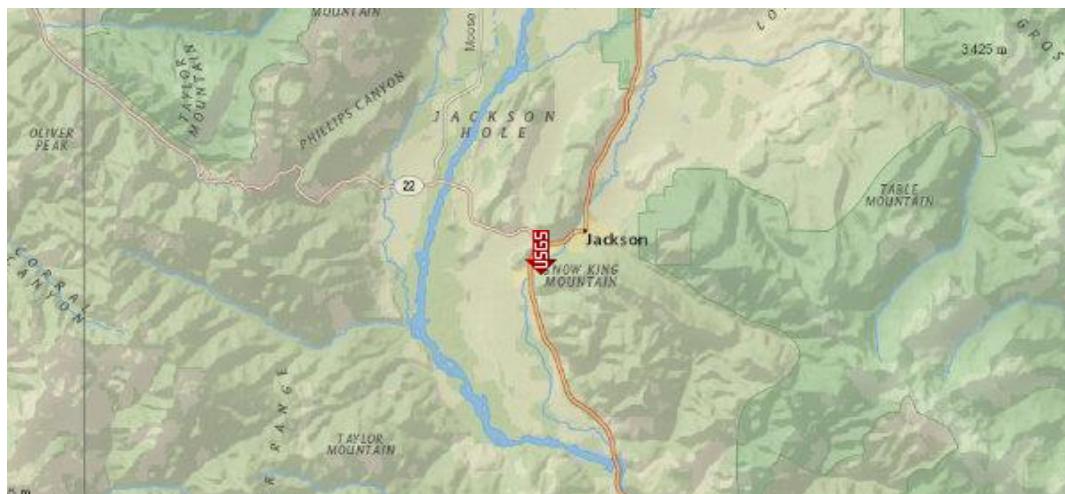
Tue November 7, 2017 16:37:40 UTC

**Building Code Reference Document** ASCE 7-10 Standard  
(which utilizes USGS hazard data available in 2008)

**Site Coordinates** 43.4709°N, 110.788°W

**Site Soil Classification** Site Class D – "Stiff Soil"

**Risk Category** I/II/III



## USGS-Provided Output

$$S_s = 1.185 \text{ g}$$

$$S_{ms} = 1.216 \text{ g}$$

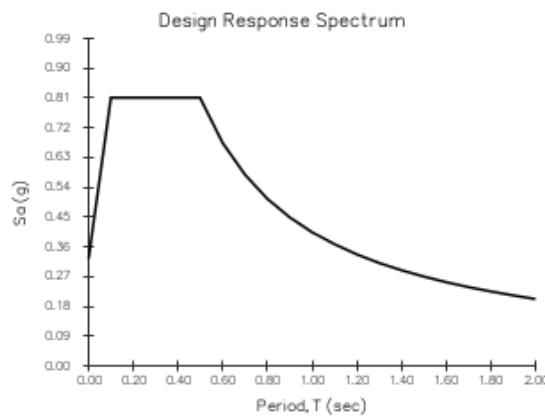
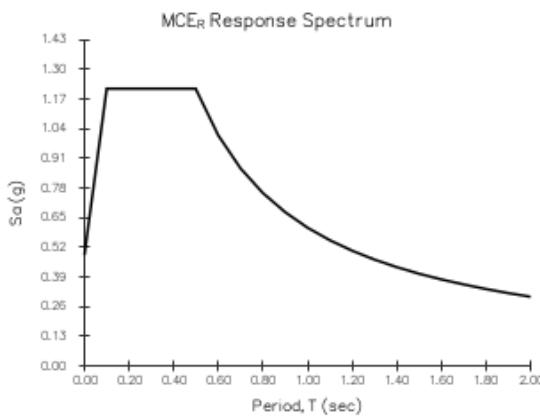
$$S_{ds} = 0.811 \text{ g}$$

$$S_1 = 0.362 \text{ g}$$

$$S_{m1} = 0.606 \text{ g}$$

$$S_{d1} = 0.404 \text{ g}$$

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.



For PGA<sub>M</sub>, T<sub>L</sub>, C<sub>RS</sub>, and C<sub>RI</sub> values, please [view the detailed report](#).

Although this information is a product of the U.S. Geological Survey, we provide no warranty, expressed or implied, as to the accuracy of the data contained therein. This tool is not a substitute for technical subject-matter knowledge.



# Design Maps Detailed Report

ASCE 7-10 Standard (43.4709°N, 110.788°W)

Site Class D – “Stiff Soil”, Risk Category I/II/III

## Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain  $S_s$ ) and 1.3 (to obtain  $S_1$ ). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From [Figure 22-1](#) <sup>[1]</sup>

$$S_s = 1.185 \text{ g}$$

From [Figure 22-2](#) <sup>[2]</sup>

$$S_1 = 0.362 \text{ g}$$

## Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3-1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
Any profile with more than 10 ft of soil having the characteristics:			
<ul style="list-style-type: none"> <li>• Plasticity index <math>PI &gt; 20</math>,</li> <li>• Moisture content <math>w \geq 40\%</math>, and</li> <li>• Undrained shear strength <math>\bar{s}_u &lt; 500 \text{ psf}</math></li> </ul>			
F. Soils requiring site response analysis in accordance with Section 21.1		See Section 20.3.1	

For SI: 1ft/s = 0.3048 m/s 1lb/ft<sup>2</sup> = 0.0479 kN/m<sup>2</sup>

### Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE<sub>R</sub>) Spectral Response Acceleration Parameters

Table 11.4-1: Site Coefficient  $F_a$ 

Site Class	Mapped MCE <sub>R</sub> Spectral Response Acceleration Parameter at Short Period				
	$S_s \leq 0.25$	$S_s = 0.50$	$S_s = 0.75$	$S_s = 1.00$	$S_s \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of  $S_s$

**For Site Class = D and  $S_s = 1.185$  g,  $F_a = 1.026$**

Table 11.4-2: Site Coefficient  $F_v$ 

Site Class	Mapped MCE <sub>R</sub> Spectral Response Acceleration Parameter at 1-s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of  $S_1$

**For Site Class = D and  $S_1 = 0.362$  g,  $F_v = 1.677$**

**Equation (11.4-1):**

$$S_{MS} = F_a S_S = 1.026 \times 1.185 = 1.216 \text{ g}$$

**Equation (11.4-2):**

$$S_{M1} = F_v S_1 = 1.677 \times 0.362 = 0.606 \text{ g}$$

#### Section 11.4.4 — Design Spectral Acceleration Parameters

**Equation (11.4-3):**

$$S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 1.216 = 0.811 \text{ g}$$

**Equation (11.4-4):**

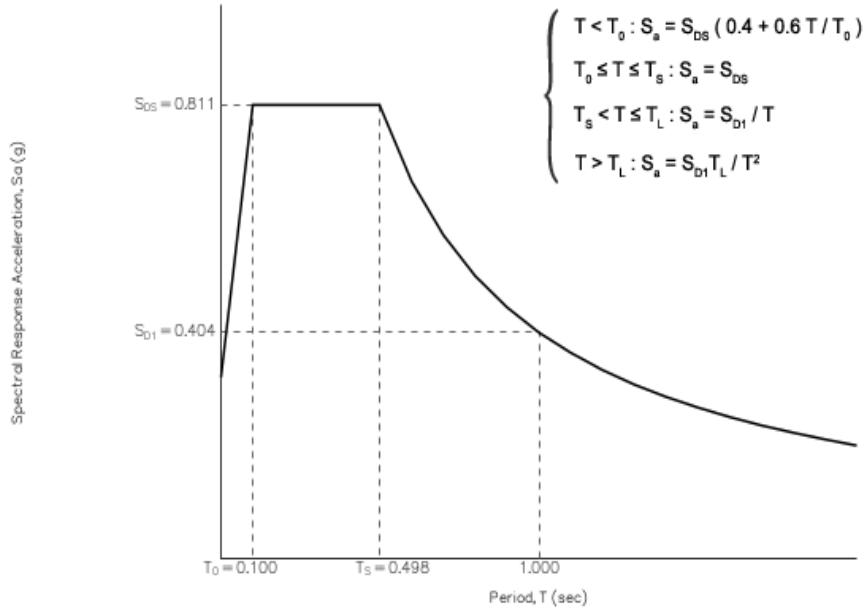
$$S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 0.606 = 0.404 \text{ g}$$

#### Section 11.4.5 — Design Response Spectrum

From [Figure 22-12](#) [3]

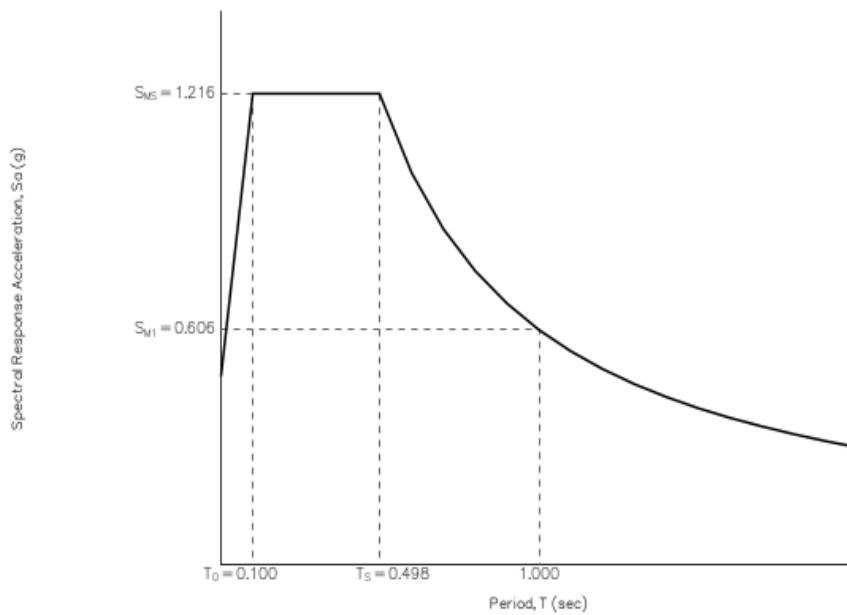
$$T_L = 8 \text{ seconds}$$

Figure 11.4-1: Design Response Spectrum



### Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE<sub>R</sub>) Response Spectrum

The MCE<sub>R</sub> Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From [Figure 22-7](#) <sup>[4]</sup>

PGA = 0.455

**Equation (11.8-1):**

$$PGA_M = F_{PGA} PGA = 1.045 \times 0.455 = 0.475 \text{ g}$$

Table 11.8-1: Site Coefficient  $F_{PGA}$

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.455 g,  $F_{PGA} = 1.045$

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From [Figure 22-17](#) <sup>[5]</sup>

$C_{RS} = 0.885$

From [Figure 22-18](#) <sup>[6]</sup>

$C_{R1} = 0.877$

## Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF $S_{ds}$	RISK CATEGORY		
	I or II	III	IV
$S_{ds} < 0.167g$	A	A	A
$0.167g \leq S_{ds} < 0.33g$	B	B	C
$0.33g \leq S_{ds} < 0.50g$	C	C	D
$0.50g \leq S_{ds}$	D	D	D

For Risk Category = I and  $S_{ds} = 0.811 g$ , Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF $S_{d1}$	RISK CATEGORY		
	I or II	III	IV
$S_{d1} < 0.067g$	A	A	A
$0.067g \leq S_{d1} < 0.133g$	B	B	C
$0.133g \leq S_{d1} < 0.20g$	C	C	D
$0.20g \leq S_{d1}$	D	D	D

For Risk Category = I and  $S_{d1} = 0.404 g$ , Seismic Design Category = D

Note: When  $S_1$  is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = D

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

## References

1. Figure 22-1: [https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010\\_ASCE-7\\_Figure\\_22-1.pdf](https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf)
2. Figure 22-2: [https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010\\_ASCE-7\\_Figure\\_22-2.pdf](https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf)
3. Figure 22-12: [https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010\\_ASCE-7\\_Figure\\_22-12.pdf](https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf)
4. Figure 22-7: [https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010\\_ASCE-7\\_Figure\\_22-7.pdf](https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf)
5. Figure 22-17: [https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010\\_ASCE-7\\_Figure\\_22-17.pdf](https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf)
6. Figure 22-18: [https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010\\_ASCE-7\\_Figure\\_22-18.pdf](https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf)



## Storm Runoff Calculations

253 Veronica Lane Apartments

7609-02

6/28/2021 JFL

The following runoff calculations are based on the Intensity-Duration-Frequency Curve Data presented in the Stormwater Management Standards section of the Town of Jackson Land Development Regulations. Calculations have been completed for the 10-yr storm event. Storm water runoff has been set to full retention due to no city connection.

The calculations are as follows:

### The Undeveloped Site, 10-yr Event:

#### Drainage Area:

Total Area =	0.65 acre or	28,325 ft <sup>2</sup>
Runoff Coefficients		
Landscape Area	28,325	C = 0.2
Weighted Runoff Coefficient		C = 0.20

#### Time of Concentration:

Lenth of flow path	L =	240.00	ft
Surface Slope	S =	0.57%	
Runoff Coefficient	C =	0.20	
FAA Time of Concentration	t =	1.8*(1.1-C)*(L^0.5)*(S^0.33)	

t = 5 Minutes

#### Peak Run-off:

Runoff Coefficient	C =	0.20	
Rainfall Intensity	i =	1.80	IN./HR.
Acreage	A =	0.65	ACRES
Flow	Q =	0.23	cfs

### The Developed Site, 10-yr Event:

#### Drainage Area:

Total Area =	0.65 acre or	28,325 ft <sup>2</sup>
Runoff Coefficients		
22% Paved Area	6,267	C = 0.9
66% Roof	18,664	C = 0.9
12% Landscaped Area	3,393	C = 0.2
Weighted Runoff Coefficient		C = 0.82

#### Volume of Run-off for 10-year Storm Event:

C =	0.82					
I =	See Below in/hr					
A =	28324.84 ft <sup>2</sup>					
Q(out) =	0.00 ft <sup>3</sup> /s	(Full Retention)				
time	time	i	Q	Vol. in	Vol. out	Difference
(min)	(sec)	(in./hr.)	(cfs)	(cf)	(cf)	(cf)
0	0	0.00	0.00	0	0	0
5	300	1.80	0.96	289	0	289
10	600	1.42	0.76	456	0	456
15	900	1.19	0.64	573	0	573
20	1200	1.05	0.56	674	0	674
30	1800	0.83	0.44	799	0	799
40	2400	0.67	0.36	860	0	860
50	3000	0.57	0.31	915	0	915
60	3600	0.51	0.27	982	0	982
70	4200	0.47	0.25	1056	0	1056
80	4800	0.43	0.23	1104	0	1104
90	5400	0.40	0.21	1156	0	1156
100	6000	0.37	0.20	1188	0	1188
110	6600	0.35	0.19	1236	0	1236
120	7200	0.33	0.18	1271	0	1271

#### SUMMARY:

The required 10-yr storage volume is 1,271 cubic feet



## Storm Runoff Calculations

253 Veronica Lane Apartments

7609-02

6/28/2021 JFL

The following runoff calculations are based on the Intensity-Duration-Frequency Curve Data presented in the Stormwater Management Standards section of the Town of Jackson Land Development Regulations. Calculations have been completed for the 100-yr storm event. Storm water runoff has been set to full retention due to no city connection.

The calculations are as follows:

### The Undeveloped Site, 100-yr Event:

#### Drainage Area:

Total Area =	0.65 acre or	28,325 ft <sup>2</sup>
Runoff Coefficients		
Landscaped Area	28,325	C = 0.2
Weighted Runoff Coefficient		C = 0.20

#### Time of Concentration:

Lenth of flow path	L =	240.00	ft
Surface Slope	S =	0.57%	
Runoff Coefficient	C =	0.20	
FAA Time of Concentration	t =	1.8*(1.1-C)*(L^0.5)*(S^0.33)	

$$t = 5 \text{ Minutes}$$

#### Peak Run-off:

Runoff Coefficient	C =	0.20
Rainfall Intensity	i =	3.00 IN./HR.
Acreage	A =	0.65 ACRES
Flow	Q =	0.39 cfs

### The Developed Site, 100-yr Event:

#### Drainage Area:

Total Area =	0.65 acre or	28,325 ft <sup>2</sup>
Runoff Coefficients		
22% Paved Area	6,267	C = 0.9
66% Roof	18,664	C = 0.9
12% Landscaped Area	3,393	C = 0.2
Weighted Runoff Coefficient		C = 0.82

#### Volume of Run-off for 100-year Storm Event:

C =	0.82	(Full Retention)			Vol. in (cf)	Vol. out (cf)	Difference (cf)
I =	See Below in/hr	time (min)	time (sec)	i (in./hr.)	Q (cfs)		
	A = 28324.84 ft <sup>2</sup>						
Q(out) =	0.00 ft <sup>3</sup> /s						
0	0	0	0	0.00	0.00	0	0
5	300	300	0	3.00	1.61	482	482
10	600	600	0	2.33	1.25	748	748
15	900	900	0	1.90	1.02	915	915
20	1200	1200	0	1.65	0.88	1060	1060
30	1800	1800	0	1.30	0.70	1252	1252
40	2400	2400	0	1.08	0.58	1387	1387
50	3000	3000	0	0.95	0.51	1525	1525
60	3600	3600	0	0.82	0.44	1580	1580
70	4200	4200	0	0.74	0.40	1663	1663
80	4800	4800	0	0.65	0.35	1670	1670
90	5400	5400	0	0.61	0.33	1763	1763
100	6000	6000	0	0.56	0.30	1798	1798
110	6600	6600	0	0.52	0.28	1837	1837
120	7200	7200	0	0.48	0.26	1849	1849

#### SUMMARY:

The required 100-yr storage volume is **1,849 cubic feet**



**General Notes:**

- ALL CONSTRUCTION MUST STRICTLY FOLLOW THE STANDARDS AND SPECIFICATIONS SET FORTH BY GOVERNING UTILITY MUNICIPALITY, GOVERNING CITY OR COUNTY (IF UN-INCORPORATED), INDIVIDUAL PRODUCT MANUFACTURERS, AMERICAN PUBLIC WORKS ASSOCIATION (APWA), AND THE DESIGN ENGINEER. THE ORDER LISTED ABOVE IS ARRANGED BY SENIORITY. IF A CONSTRUCTION PRACTICE IS NOT SPECIFIED BY ANY OF THE LISTED SOURCES, CONTRACTOR MUST CONTACT DESIGN ENGINEER FOR DIRECTION.
- CONTRACTOR TO STRICTLY FOLLOW GEOTECHNICAL RECOMMENDATIONS FOR THIS PROJECT. ALL GRADING INCLUDING BUT NOT LIMITED TO CUT, FILL, COMPACTION, ASPHALT SECTION, SUBBASE, TRENCH EXCAVATION/BACKFILL, SITE GRUBBING, RETAINING WALLS AND FOOTINGS MUST BE COORDINATED DIRECTLY WITH THE PROJECT GEOTECHNICAL ENGINEER.
- TRAFFIC CONTROL, STRIPING & SIGNAGE TO CONFORM TO CURRENT GOVERNING AGENCIES TRANSPORTATION ENGINEER'S MANUAL AND MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
- ANY AREA OUTSIDE THE LIMIT OF WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO OWNER.
- CONSULT ALL OF THE DRAWINGS AND SPECIFICATIONS FOR COORDINATION REQUIREMENTS BEFORE COMMENCING CONSTRUCTION.
- AT ALL LOCATIONS WHERE EXISTING PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING PAVEMENT SHALL BE SAWCUT TO A CLEAN, SMOOTH EDGE.
- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE MOST RECENT, ADOPTED EDITION OF ADA ACCESSIBILITY GUIDELINES.
- FROM THE STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED THOROUGHLY REVIEWED PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.
- CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND NOTIFYING ENGINEER OR INSPECTING AUTHORITY 48 HOURS IN ADVANCE OF COVERING UP ANY PHASE OF CONSTRUCTION REQUIRING OBSERVATION.
- ANY WORK IN THE PUBLIC RIGHT-OF-WAY WILL REQUIRE PERMITS FROM THE APPROPRIATE CITY, COUNTY OR STATE AGENCY CONCERNED WITH THE WORK, INCLUDING OBTAINING REQUIRED INSPECTIONS.
- ALL DIMENSIONS, GRADES & UTILITY LOCATIONS SHOWN ON THE PLANS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES.
- CONTRACTOR MUST VERIFY ALL EXISTING CONDITIONS BEFORE BIDDING AND BRING UP ANY QUESTIONS BEFOREHAND.
- SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH BY THE GEOTECHNICAL ENGINEER.
- CALCULATIONS FOR GRADE SHALL BE GRADED AS SPECIFIED ON GRADING PLANS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FLAGGING, CAUTION SIGNS, LIGHTS, BARRICADES, FLAGMEN, AND ALL OTHER DEVICES NECESSARY FOR PUBLIC SAFETY.
- CONTRACTOR SHALL, AT THE TIME OF BIDDING AND THROUGHOUT THE PERIOD OF THE CONTRACT, BE LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED AND SHALL BE BONDABLE FOR AN AMOUNT EQUAL TO OR GREATER THAN THE AMOUNT BID AND TO DO THE TYPE OF WORK CONTEMPLATED IN THE PLANS AND SPECIFICATIONS. CONTRACTOR SHALL BE SKILLED AND REGULARLY ENGAGED IN THE GENERAL CLASS AND TYPE OF WORK CALLED FOR IN THE PLANS AND SPECIFICATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING THE BID, PREPARING THE BID TO BIDDING TO SATISFY SPECIFIED PERSONAL EXAMINATION OR BY SUCH OTHER MEANS AS HE MAY PREFER OF THE LOCATIONS OF THE PROPOSED WORK AND OF THE ACTUAL CONDITIONS OF AND AT THE SITE OF WORK. IF, DURING THE COURSE OF HIS EXAMINATION, A BIDDER FINDS FACTS OR CONDITIONS WHICH APPEAR TO HIM TO BE IN CONFLICT WITH THE LETTER OR SPIRIT OF THE PROJECT PLANS AND SPECIFICATIONS, HE SHALL CONTACT THE ENGINEER FOR ADDITIONAL INFORMATION AND EXPLANATION BEFORE SUBMITTING HIS BID. SUBMISSION OF A BID BY THE CONTRACTOR SHALL CONSTITUTE ACKNOWLEDGMENT THAT, AWARDED THE CONTRACT, HE HAS RELIED AND IS RELYING ON HIS OWN EXAMINATION OF (1) THE SITE OF THE WORK, (2) ACCESS TO THE SITE, AND (3) ALL OTHER DATA AND MATTERS REQUISE TO THE CONTRACT. CONTRACTOR SHALL NOT RELY ON HIS KNOWLEDGE OF THE PLANS AND SPECIFICATIONS AND THE WORK AT THE SITE OF THE WORK TO BE CONSTRUCTED UNDER THIS CONTRACT. THE INFORMATION PROVIDED BY THE ENGINEER IS NOT INTENDED TO BE A SUBSTITUTE FOR, OR A SUPPLEMENT TO, THE INDEPENDENT INVESTIGATION OF SITE CONDITIONS AS DEEMED NECESSARY OR DESIRABLE BY THE CONTRACTOR. CONTRACTOR SHALL ACKNOWLEDGE THAT HE HAS NOT RELIED SOLELY UPON OWNER- OR ENGINEER-FURNISHED INFORMATION REGARDING SITE CONDITIONS IN PREPARING AND SUBMITTING HIS BID.
- CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL WATER, POWER, SANITARY FACILITIES AND TELEPHONE SERVICES AS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT.
- CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OWNER, ENGINEER, AND/OR GOVERNING AGENCIES.
- CONTRACTOR SHALL EXERCISE DUE CAUTION AND SHALL CAREFULLY PRESERVE BENCH MARKS, CONTROL POINTS, REFERENCE POINTS AND ALL SURVEY STAKES, AND SHALL BEAR ALL EXPENSES FOR REPLACEMENT AND/OR ERRORS CAUSED BY THEIR UNNECESSARY LOSS OR DISTURBANCE.
- CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOBSITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER, ENGINEER, AND GOVERNING AGENCIES FROM ALL LIABILITIES, CLAIMS, ALLEGATIONS, CONCERNING WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY SCHEDULING INSPECTION AND TESTING OF ALL FACILITIES CONSTRUCTED UNDER THIS CONTRACT. ALL TESTING SHALL CONFORM TO THE REGULATORY AGENCY'S STANDARD SPECIFICATIONS. ALL TESTING AND INSPECTION SHALL BE PAID FOR BY THE OWNER; ALL RE-TESTING AND/OR RE-INSPECTION SHALL BE PAID FOR BY THE CONTRACTOR.
- IF EXISTING IMPROVEMENTS NEED TO BE DISTURBED AND/OR REMOVED FOR THE PROPER PLACEMENT OF IMPROVEMENTS TO BE CONSTRUCTED BY THESE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING IMPROVEMENTS FROM DAMAGE AND OF PAYING FOR THE COST OF REPAIRING EXISTING IMPROVEMENTS SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEMS REQUIRING REMOVAL AND/OR REPLACEMENT. THERE WILL BE NO EXTRA COST DUE TO THE CONTRACTOR FOR REPLACING OR REPAIRING EXISTING IMPROVEMENTS.
- WHENEVER EXISTING FACILITIES ARE REMOVED, DAMAGED, BROKEN, OR CUT IN THE INSTALLATION OF THE WORK COVERED BY THESE PLANS OR SPECIFICATIONS, SAID FACILITIES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE WITH MATERIALS EQUAL TO OR BETTER THAN THE MATERIALS USED IN THE ORIGINAL EXISTING FACILITIES. THE FINISHED PRODUCT SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER, THE ENGINEER, AND THE RESPECTIVE REGULATORY AGENCY.
- CONTRACTOR SHALL MOUNTAIN A NEATLY MARKED SET OF FINAL LOCATION AND LAYOUT RECORD DRAWINGS AND AS-BUILT RECORD DRAWINGS SHOWING THE FINAL LOCATION AND LAYOUT OF ALL STORM DRAIN, SANITARY, AND OTHER UTILITY LINES. REFLECTIVE CHAIN ORDERS, ACCOMMODATIONS, AND ADJUSTMENTS TO ANY IMPROVEMENTS CONSTRUCTED, WHERE NECESSARY. SUPPLEMENTAL DRAWINGS SHALL BE PREPARED AND SUBMITTED BY THE CONTRACTOR, PRIOR TO ACCEPTANCE OF THE PROJECT. THE CONTRACTOR SHALL DELIVER TO THE ENGINEER ONE SET OF NEATLY MARKED AS-BUILT RECORD DRAWINGS SHOWING THE INFORMATION REQUIRED ABOVE. AS-BUILT RECORD DRAWINGS SHALL BE REVIEWED AND THE COMPLETE AS-BUILT RECORD DRAWING SET SHALL BE CURRENT WITH ALL CHANGES AND DEVIATIONS. REDLINE A PRECONDITION TO THE FINAL PROGRESS PAYMENT APPROVAL AND/OR FINAL ACCEPTANCE.
- WHERE THE PLANS OR SPECIFICATIONS DESCRIBE PORTIONS OF THE WORK IN GENERAL TERMS BUT NOT IN COMPLETE DETAIL, IT IS UNDERSTOOD THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THAT ONLY MATERIALS AND WORKMANSHIP OF THE HIGHEST QUALITY ARE TO BE USED.
- CONTRACTOR SHALL BE SKILLED AND REGULARLY ENGAGED IN THE GENERAL CLASS AND TYPE OF WORK CALLED FOR IN THE PROJECT PLANS AND SPECIFICATIONS. THEREFORE, THE OWNER IS RELYING UPON THE EXPERIENCE AND EXPERTISE OF THE CONTRACTOR. PRICES PROVIDED WITHIN THE CONTRACT DOCUMENTS SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY AND PROPER FOR THE WORK CONTEMPLATED AND THAT THE WORK BE COMPLETED IN ACCORDANCE WITH THE TRUE INTENT AND PURPOSE OF THESE PLANS AND SPECIFICATIONS. CONTRACTOR SHALL NOT RELY ON OWNER'S EXPERTISE. CONTRACTOR SHALL HAVE SPECIAL SKILLS IN THE NATURE, EXTENT AND INHERENT CONDITIONS OF THE WORK TO BE PERFORMED. CONTRACTOR SHALL ALSO ACKNOWLEDGE THAT THERE ARE CERTAIN PEAKUL AND INHERENT CONDITIONS EXISTENT IN THE CONSTRUCTION OF THE PARTICULAR FACILITIES WHICH MAY CREATE, DURING THE CONSTRUCTION PROGRAM, UNUSUAL OR UNSAFE CONDITIONS HAZARDOUS TO PERSONS, PROPERTY AND THE ENVIRONMENT. CONTRACTOR SHALL BE AWARE OF SUCH PEAKUL RISKS AND HAVE THE SKILL AND EXPERIENCE FORESEE AND TO ADOPT PROTECTIVE MEASURES TO ADEQUATELY AND SAFELY PERFORM THE CONSTRUCTION WORK WITH RESPECT TO SUCH HAZARDOUS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL STRIPING AND/OR PAINTING MARKINGS NECESSARY TO TIE EXISTING STRIPING INTO FUTURE STRIPING METHOD OF REMOVAL SHALL BE BY GRINDING OR SANDBLASTING.
- CONTRACTOR SHALL PROVIDE ALL SHORING, BRACING, SLOPING OR OTHER PROVISIONS NECESSARY TO PROTECT WORKMEN FOR ALL AREAS TO BE EXCAVATED TO A DEPTH OF 4 FEET OR MORE. FOR EXCAVATIONS 4 FEET OR MORE IN DEPTH, THE CONTRACTOR SHALL COMPLY WITH LOCAL, STATE AND NATIONAL SAFETY CODES, ORDINANCES, OR REQUIREMENTS FOR EXCAVATION AND TRENCHES.
- ALL EXISTING GATES AND FENCES TO REMAIN UNLESS OTHERWISE NOTED ON PLANS. PROTECT ALL GATES AND FENCES FROM DAMAGE.

**Utility Notes:**

- CONTRACTOR SHALL COORDINATE LOCATION OF NEW "DRY UTILITIES" WITH THE APPROPRIATE UTILITY COMPANY, INCLUDING BUT NOT LIMITED TO: TELEPHONE SERVICE, GAS SERVICE, CABLE, POWER, INTERNET.
- EXISTING UTILITIES HAVE BEEN SHOWN ON THE PLANS USING A COMBINATION OF ON-SITE SURVEYS (BY OTHERS). PRIOR TO COMMENCING ANY WORK, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE EACH UTILITY COMPANY LOCATE IN THE FIELD, THEIR MAIN AND SERVICE LINES 48 HOURS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK. THE CONTRACTOR SHALL RECORD THE BLUE STAKES ORDER NUMBER AND FURNISH ORDER NUMBER TO OWNER AND ENGINEER PRIOR TO ANY EXCAVATION. IT WILL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO DIRECTLY CONTACT ANY OTHER UTILITY COMPANIES THAT ARE NOT MEMBERS OF BLUE STAKES. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROTECT ALL EXISTING UTILITIES SO THAT NO DAMAGE RESULTS TO THEM DURING THE PERFORMANCE OF THIS CONTRACT. ANY REPAIRS NECESSARY TO DAMAGED UTILITIES SHALL BE PAID FOR BY THE CONTRACTOR. THE CONTRACTOR SHALL BE REQUIRED TO COOPERATE WITH OTHER CONTRACTORS AND UTILITY COMPANIES IN COORDINATING NEW STRUCTURES AND SERVICES FOR THE PROJECT.
- CONTRACTOR SHALL NOT JACKET UTILITIES TO DETERMINE CONFLICTS EXCEPT PRIOR TO BEGINNING ANY EXCAVATION. NOTIFY ENGINEER OF ANY CONFLICTS. CONTRACTOR SHALL VERIFY LOCATION AND INVERTS OF EXISTING UTILITIES TO WHICH NEW UTILITIES WILL BE CONNECTED. PRIOR TO COMMENCING ANY EXCAVATION WORK THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN ACCORDANCE WITH THE REQUIRED PROCEDURES.
- CARE SHOULD BE TAKEN IN ALL EXCAVATIONS DUE TO POSSIBLE EXISTENCE OF UNRECORDED UTILITY LINES. EXCAVATION REQUIRED WITHIN PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITIES OR OTHER CONSTRUCTION DURING CONSTRUCTION OPERATIONS. HIS USE.
- ALL VALVES AND MANHOLE COVERS SHALL BE RAISED OR LOWERED TO THE FINISHED GRADE.
- CONTRACTOR SHALL CUT PIPES OFF FLUSH WITH THE INSIDE WALL OF THE BOX OR MANHOLE.
- CONTRACTOR SHALL GROUT AT CONNECTION OF PIPE TO BOX WITH NON-SHRINKING GROUT, INCLUDING PIPE VOIDS LEFT BY CUTTING PROCESS, TO A SMOOTH FINISH.
- CONTRACTOR SHALL GROUT WITH NON-SHRINK GROUT BETWEEN GRADE RINGS AND BETWEEN BOTTOM OF INLET LID FRAME AND TOP CONCRETE BOX.
- SILT AND DEBRIS IS TO BE CLEANED OUT OF ALL STORM DRAIN BOXES. CATCH BASINS ARE TO BE MAINTAINED IN A CLEANED CONDITION AS NEEDED UNTIL AFTER THE FINAL BOND RELEASE INSPECTION.
- CONTRACTOR SHALL CLEAN ASPHALT, TAR OR OTHER ADHESIVES OFF OF ALL MANHOLE LIDS AND INLET GRATES TO ALLOW ACCESS.
- EACH TRENCH SHALL BE EXCAVATED SO THAT THE PIPE CAN BE LAID TO THE ALIGNMENT AND GRADE AS REQUIRED. THE TRENCH WALL SHALL BE SO BRACED THAT THE WORKMEN MAY WORK SAFELY AND EFFICIENTLY. ALL TRENCHES SHALL BE DRAINED SO THE PIPE LAYING MAY TAKE PLACE IN DE-WATERED CONDITIONS.
- Maintain a minimum 18" vertical separation distance between all utility crossings.
- CONTRACTOR SHALL START INSTALLATION AT LOW POINT OF ALL NEW GRAVITY UTILITY LINES.
- ALL BOLTED FITTINGS MUST BE GREASED AND WRAPPED.
- UNLESS SPECIFICALLY NOTED OTHERWISE, MAINTAIN AT LEAST 2 FEET OF COVER OVER ALL STORM DRAIN LINES AT ALL TIMES (INCLUDING DURING CONSTRUCTION).
- ALL WATER LINES SHALL BE INSTALLED A MINIMUM OF 60" BELOW FINISHED GRADE.
- ALL SEWER LINES AND STORM DRAIN LINES SHALL HAVE A MINIMUM SEPARATION OF 10 FEET, PIPE EDGE TO PIPE EDGE, FROM THE WATER LINES. THE TOP FOR CONCRETE SHALL NOT BE MAINTAINED. THE SEWER LINE AND WATER LINE SHALL BE LAY IN SEPARATE TRENCHES AND THE BOTTOM OF THE WATER LINE SHALL BE AT LEAST 18" ABOVE THE TOP OF THE SEWER LINE.
- CONTRACTOR SHALL INSTALL THRUST BLOCKING AT ALL WATERLINE ANGLE POINTS AND TEES.
- ALL UNDERGROUND UTILITIES SHALL BE IN PLACE PRIOR TO INSTALLATION OF CURB, GUTTER, SIDEWALK AND STREET PAVING.
- CONTRACTOR SHALL INSTALL MAGNETIC LOCATING TAPE CONTINUOUSLY OVER ALL NONMETALLIC PIPE.
- THRUST BLOCKS & RESTRAINED JOINTS WITH MEGA-LUG ADAPTERS REQUIRED ON ALL BENDS AND FITTINGS USING BLUE BOLTS. PROTECT ALL BOLTS FROM BEING ENCASED IN CONCRETE. INSTALL PER MANUFACTURER RECOMMENDATIONS.

**Notice to Contractor:**

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON RECORDS OF THE VARIOUS UTILITY COMPANIES AND/OR MUNICIPALITIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS.

THE CONTRACTOR AGREES THAT THEY SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER AND THE ENGINEERS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT.

NOTE:  
1. SAWCUT EXISTING ASPHALT INSIDE FROM OUTER EDGE FOR TACK SEAL OF NEW ASPHALT  
2. CONTRACTOR TO VERIFY 2% MIN. AND 5% MAX SLOPE FROM EDGE OF ASPHALT TO LIP OF GUTTER

**Survey Control Note:**

THE CONTRACTOR OR SURVEYOR SHALL BE RESPONSIBLE FOR FOLLOWING THE NATIONAL SOCIETY OF PROFESSIONAL SURVEYORS (NSPS) MODEL STANDARDS FOR ANY SURVEYING OR CONSTRUCTION LAYOUT TO BE COMPLETED USING REEVE & ASSOCIATES, INC. SURVEY DATA OR CONSTRUCTION IMPROVEMENT PLANS. PRIOR TO PROCEEDING WITH CONSTRUCTION STAKING, THE SURVEYOR SHALL BE RESPONSIBLE FOR VERIFYING HORIZONTAL CONTROL FROM THE SURVEY MONUMENTS AND FOR VERIFYING ANY ADDITIONAL CONTROL POINTS SHOWN ON AN ALTA SURVEY, IMPROVEMENT PLAN, OR ANY ELECTRONIC DATA PROVIDED. THE SURVEYOR SHALL ALSO USE THE BENCHMARKS AS SHOWN ON THE PLAN, AND VERIFY THEM AGAINST NO LESS THAN FIVE (5) EXISTING HARD IMPROVEMENT ELEVATIONS INCLUDED ON THESE PLANS OR ON ELECTRONIC DATA PROVIDED. IF ANY DISCREPANCIES ARE ENCOUNTERED, THE SURVEYOR SHALL IMMEDIATELY NOTIFY REEVE & ASSOCIATES, INC. AND RESOLVE THE DISCREPANCIES BEFORE PROCEEDING WITH ANY CONSTRUCTION STAKING.

**Erosion Control General Notes:**

THE CONTRACTOR TO USE BEST MANAGEMENT PRACTICES FOR PROVIDING EROSION CONTROL FOR CONSTRUCTION OF THIS PROJECT. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO GOVERNING AGENCIES ORDINANCES AND ALL WORK SHALL BE SUBJECT TO INSPECTION BY THE COUNCILS. ALSO, INSPECTORS WILL HAVE THE RIGHT TO CHANGE THE FACILITIES AS NEEDED.

CONTRACTOR SHALL KEEP THE SITE WATERED TO CONTROL DUST. CONTRACTOR TO LOCATE A NEARBY HYDRANT FOR USE AND TO INSTALL TEMPORARY METER. CONSTRUCTION WATER COST TO BE INCLUDED IN BID.

WHEN GRADING OPERATIONS ARE COMPLETED AND THE DISTURBED GROUND IS LEFT OPEN FOR 4 DAYS OR MORE, THE AREA SHALL BE FURROWED PARALLEL TO THE CONTOURS.

THE CONTRACTOR SHALL MODIFY EROSION CONTROL MEASURES TO ACCOMMODATE PROJECT PLANNING.

ALL ACCESS TO PROPERTY WILL BE FROM PUBLIC RIGHT-OF-WAYS. THE CONTRACTOR IS REQUIRED BY STATE AND FEDERAL REGULATIONS TO PREPARE A STORM WATER POLLUTION PREVENTION PLAN AND FILE A "NOTICE OF INTENT" WITH THE GOVERNING AGENCIES.

**Maintenance:**

ALL BEST MANAGEMENT PRACTICES (BMP'S) SHOWN ON THIS PLAN MUST BE MAINTAINED AT ALL TIMES UNTIL PROJECT CLOSE-OUT.

THE CONTRACTOR'S RESPONSIBILITY SHALL INCLUDE MAKING BI-WEEKLY CHECKS ON ALL EROSION CONTROL MEASURES TO DETERMINE IF REPAIR OR SEDIMENT REMOVAL IS NECESSARY. CHECKS SHALL BE DOCUMENTED AND COPIES OF THE INSPECTIONS KEPT ON SITE.

SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH RAINFALL. THEY MUST BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF BARRIER.

SEDIMENT TRACKED ONTO PAVED ROADS MUST BE CLEANED UP AS SOON AS PRACTICAL, BUT IN NO CASE LATER THAN THE END OF THE NORMAL WORK DAY. THE CLEAN UP WILL INCLUDE SWEEPING OF THE TRACKED MATERIAL, PICKING IT UP, AND DEPOSITING IT TO A CONTAINED AREA.

**Exposed Slopes:**

ANY EXPOSED SLOPE THAT WILL REMAIN UNTOUCHED FOR LONGER THAN 14 DAYS MUST BE STABILIZED BY ONE OR MORE OF THE FOLLOWING METHODS:

- SPRAYING DISTURBED AREAS WITH A TACKIFIER VIA HYDROSEED
- TRACKING STRAW PERPENDICULAR TO SLOPES
- INSTALLING A LIGHT-WEIGHT, TEMPORARY EROSION CONTROL BLANKET

CONTRACTOR SHALL GROUT WITH NON-SHRINK GROUT BETWEEN GRADE RINGS AND BETWEEN BOTTOM OF INLET LID FRAME AND TOP CONCRETE BOX.

SILT AND DEBRIS IS TO BE CLEANED OUT OF ALL STORM DRAIN BOXES. CATCH BASINS ARE TO BE MAINTAINED IN A CLEANED CONDITION AS NEEDED UNTIL AFTER THE FINAL BOND RELEASE INSPECTION.

CONTRACTOR SHALL CLEAN ASPHALT, TAR OR OTHER ADHESIVES OFF OF ALL MANHOLE LIDS AND INLET GRATES TO ALLOW ACCESS.

EACH TRENCH SHALL BE EXCAVATED SO THAT THE PIPE CAN BE LAID TO THE ALIGNMENT AND GRADE AS REQUIRED. THE TRENCH WALL SHALL BE SO BRACED THAT THE WORKMEN MAY WORK SAFELY AND EFFICIENTLY. ALL TRENCHES SHALL BE DRAINED SO THE PIPE LAYING MAY TAKE PLACE IN DE-WATERED CONDITIONS.

Maintain a minimum 18" vertical separation distance between all utility crossings.

CONTRACTOR SHALL START INSTALLATION AT LOW POINT OF ALL NEW GRAVITY UTILITY LINES.

ALL BOLTED FITTINGS MUST BE GREASED AND WRAPPED.

UNLESS SPECIFICALLY NOTED OTHERWISE, MAINTAIN AT LEAST 2 FEET OF COVER OVER ALL STORM DRAIN LINES AT ALL TIMES (INCLUDING DURING CONSTRUCTION).

ALL WATER LINES SHALL BE INSTALLED A MINIMUM OF 60" BELOW FINISHED GRADE.

ALL SEWER LINES AND STORM DRAIN LINES SHALL HAVE A MINIMUM SEPARATION OF 10 FEET, PIPE EDGE TO PIPE EDGE, FROM THE WATER LINES. THE TOP FOR CONCRETE SHALL NOT BE MAINTAINED. THE SEWER LINE AND WATER LINE SHALL BE LAY IN SEPARATE TRENCHES AND THE BOTTOM OF THE WATER LINE SHALL BE AT LEAST 18" ABOVE THE TOP OF THE SEWER LINE.

CONTRACTOR SHALL INSTALL THRUST BLOCKING AT ALL WATERLINE ANGLE POINTS AND TEES.

ALL UNDERGROUND UTILITIES SHALL BE IN PLACE PRIOR TO INSTALLATION OF CURB, GUTTER, SIDEWALK AND STREET PAVING.

CONTRACTOR SHALL INSTALL MAGNETIC LOCATING TAPE CONTINUOUSLY OVER ALL NONMETALLIC PIPE.

THRUST BLOCKS & RESTRAINED JOINTS WITH MEGA-LUG ADAPTERS REQUIRED ON ALL BENDS AND FITTINGS USING BLUE BOLTS. PROTECT ALL BOLTS FROM BEING ENCASED IN CONCRETE. INSTALL PER MANUFACTURER RECOMMENDATIONS.

**Legend**

■ = PROPOSED SECONDARY WATER LATERAL	■ = PROPOSED WATER METER	PP = POWER/UTILITY POLE
■ = PROPOSED LAND DRAIN LATERAL	■ = EXISTING WATER METER	P.U.E. = PUBLIC UTILITY EASEMENT
■ = PROPOSED WATER LATERAL	■ = PROPOSED CATCH BASIN	RCP = REINFORCED CONCRETE PIPE
■ = PROPOSED SEWER LATERAL	■ = EXISTING CATCH BASIN	RIM = RIM OF MANHOLE
■ = PROPOSED CULINARY WATER LINE	■ = DRAINAGE SWALE	R.O.W. = RIGHT-OF-WAY
■ = EXISTING CULINARY WATER LINE	■ = PLUG W/ 2" BLOW-OFF	SD = STORM DRAIN
■ = PROPOSED SECONDARY WATER LINE	■ = PLUG & BLOCK	SS = SANITARY SEWER
■ = EXISTING SECONDARY WATER LINE	■ = STREET LIGHT	TBC = TOP BACK OF CURB
■ = PROPOSED SANITARY SEWER LINE	■ = SIGN	TOA = TOP OF ASPHALT
■ = EXISTING SANITARY SEWER LINE	■ = BUILDING	TOC = TOP OF CONCRETE
■ = PROPOSED STORM DRAIN LINE	■ = CURB & GUTTER	TOFF = TOP OF FINISHED FLOOR
■ = EXISTING STORM DRAIN LINE	■ = CATCH BASIN	TOI = TOP OF PUMP ISLAND
■ = PROPOSED LAND DRAIN LINE	■ = CUBIC FEET	TSW = TOP OF SIDEWALK</td

# Maple Way

This technical cross-section diagram illustrates a complex structure, likely a bridge or overpass, with the following key features and labels:

- EX.BUILDING:** A label indicating a building structure within the cross-section.
- EX.STOP SIGN:** A label indicating a stop sign located on the left side of the structure.
- EX.W:** Labels indicating a series of horizontal elements, each marked with a blue dashed line and a small blue diamond symbol.
- EX.SS:** Labels indicating a series of horizontal elements, each marked with a green dashed line and a small green diamond symbol.
- EX.W:** Labels indicating a series of horizontal elements, each marked with a blue dashed line and a small blue diamond symbol.
- EX.SS:** Labels indicating a series of horizontal elements, each marked with a green dashed line and a small green diamond symbol.
- EX.W:** Labels indicating a series of horizontal elements, each marked with a blue dashed line and a small blue diamond symbol.
- EX.W:** Labels indicating a series of horizontal elements, each marked with a blue dashed line and a small blue diamond symbol.
- EX.W:** Labels indicating a series of horizontal elements, each marked with a blue dashed line and a small blue diamond symbol.
- EX.W:** Labels indicating a series of horizontal elements, each marked with a blue dashed line and a small blue diamond symbol.
- EX.W:** Labels indicating a series of horizontal elements, each marked with a blue dashed line and a small blue diamond symbol.
- EX.SSMH (48.70) RIM (41.25) INV:** A label pointing to a green circle at the bottom left, which highlights a specific area. This label also includes the text 'EX.SSMH (48.70) RIM (41.25) INV'.
- 6148:** A label indicating a horizontal distance of 6148 units.
- 6149:** A label indicating a horizontal distance of 6149 units.
- 6149:** A label indicating a horizontal distance of 6149 units.
- 48.12:** A label indicating a vertical distance of 48.12 units.
- 48.29:** A label indicating a vertical distance of 48.29 units.
- 48.40:** A label indicating a vertical distance of 48.40 units.
- 49.20:** A label indicating a vertical distance of 49.20 units.
- 49.28:** A label indicating a vertical distance of 49.28 units.
- 49.40:** A label indicating a vertical distance of 49.40 units.
- (48.49) ER:** A label indicating a vertical distance of 48.49 units.
- (48.61) ER:** A label indicating a vertical distance of 48.61 units.

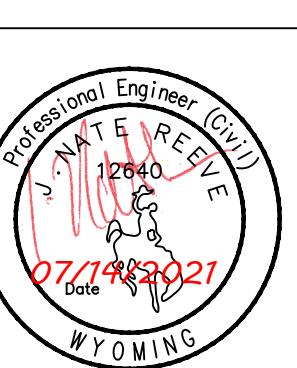
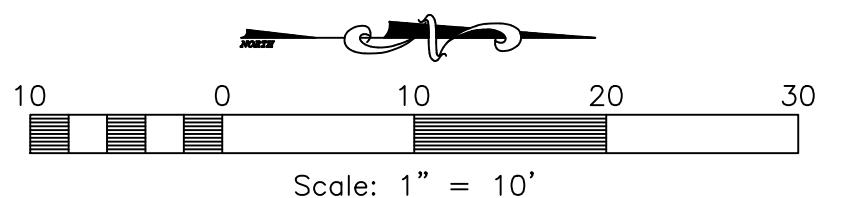
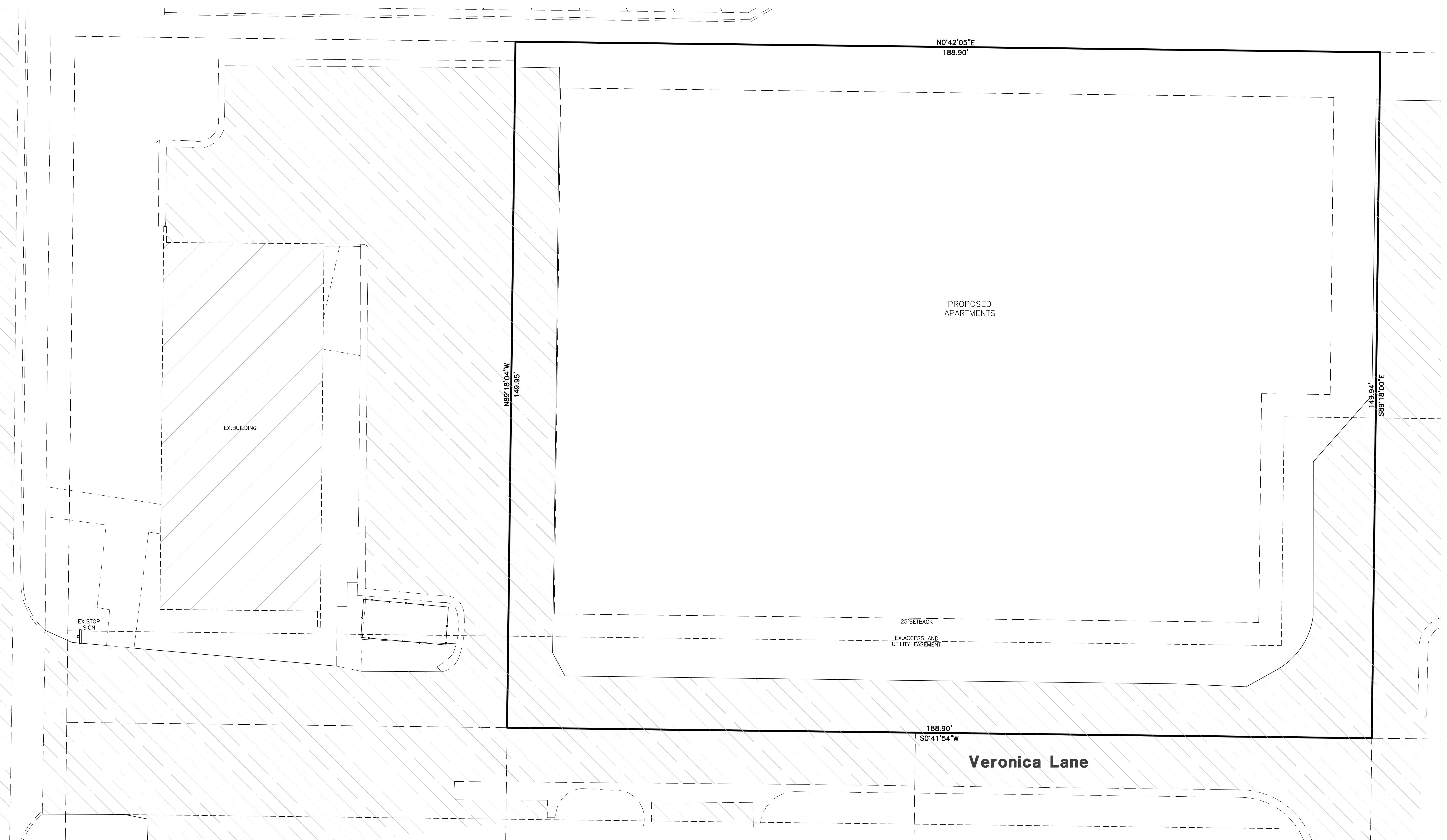
A scale bar diagram for the 1930s 100 ft. scale map. It features a horizontal line with tick marks and labels. The left side has labels '10', '0', and '10'. The right side has labels '20' and '30'. Between the '0' and '10' marks on the left, there are three vertical hatching patterns: the first is a single horizontal line, the second is two horizontal lines, and the third is three horizontal lines. Between the '10' and '20' marks on the right, there are five vertical hatching patterns: the first is a single horizontal line, the second is two horizontal lines, the third is three horizontal lines, the fourth is four horizontal lines, and the fifth is five horizontal lines. Above the scale bar is a decorative flourish with the word 'NOZZLE' written above it. Below the scale bar is the text 'Scale: 1" = 10'.



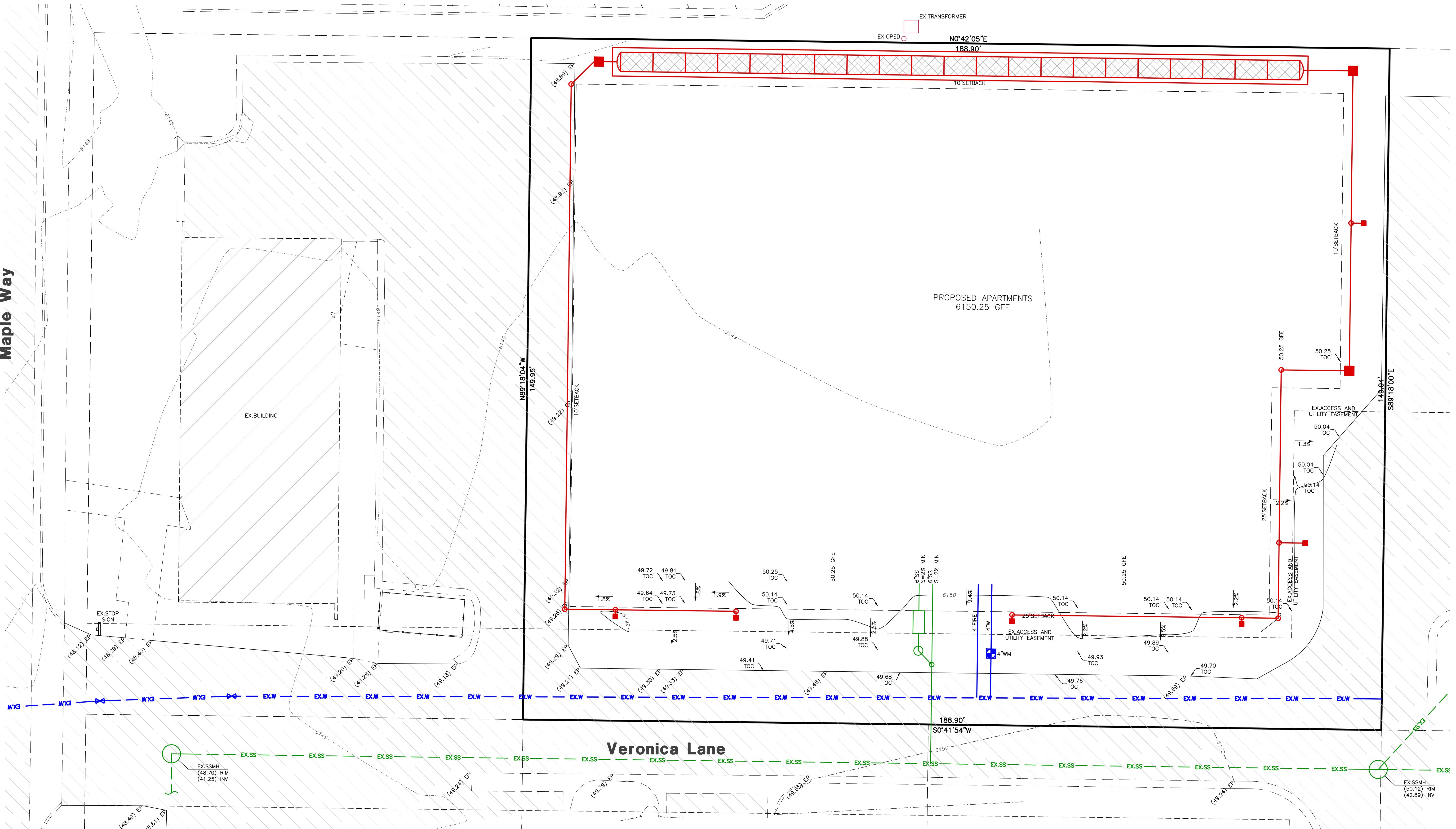
**Now what's below.  
Call before you dig.**

Object Info.  
Engineer: NATE REEVE, P.E.  
Fitter: J. MEYERS  
In Date: MAY 2021  
Name: APARTMENTS  
VERONICA LANE  
Number: 7609-02

# 3



# Maple Way



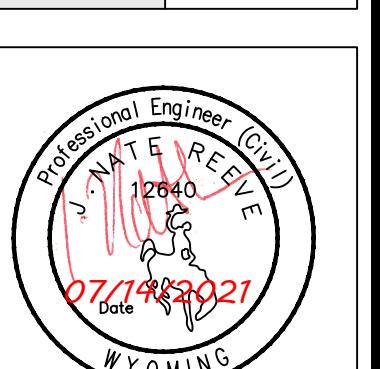
THESE PLANS AND SPECIFICATIONS ARE THE PROPERTY OF REEVE & ASSOCIATES, INC., 5160 SOUTH 1500 WEST, RIVERDALE, UTAH 84405, AND SHALL NOT BE PHOTOCOPIED, RE-DRAWN, OR USED ON ANY PROJECT OTHER THAN THE PROJECT SPECIFICALLY DESIGNED FOR, WITHOUT THEIR WRITTEN PERMISSION. THE OWNERS AND ENGINEERS OF REEVE & ASSOCIATES, INC. DISCLAIM ANY LIABILITY FOR ANY CHANGES OR MODIFICATIONS MADE TO THESE PLANS OR THE DESIGN THEREON WITHOUT THEIR CONSENT.



REVISIONS	<u>DATE</u>	<u>DESCRIPTION</u>

# 235 & 255 Veronica Lane Apartments JACKSON, TETON COUNTY, WYOMING

# APRIL 25, 1935 & JACKSON,



## Project Info.

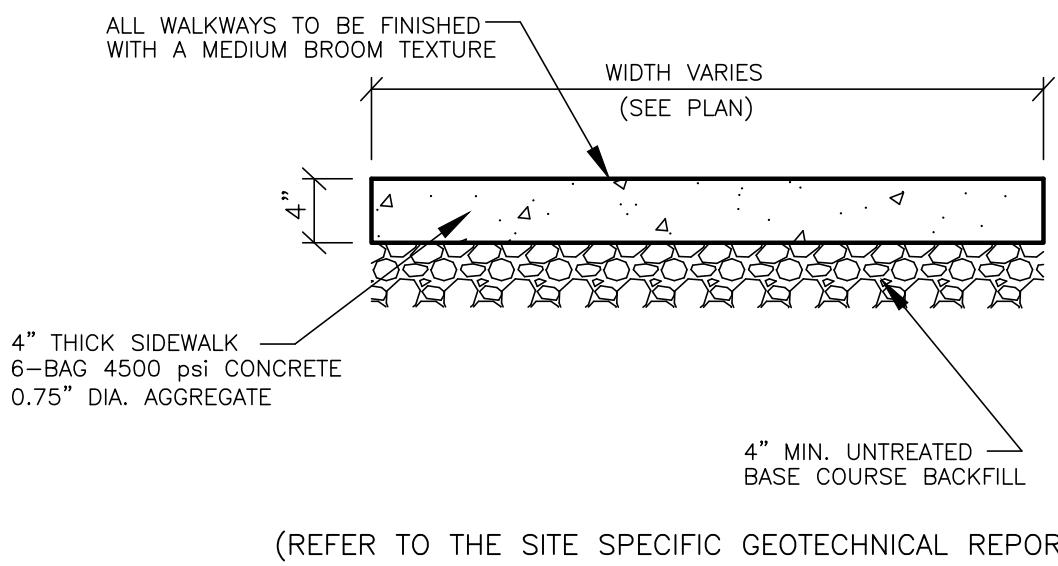
ngineer:  
J. NATE REEVE, P.E.  
rafter:  
J. MEYERS  
egin Date:  
MAY 2021

ame: **APARTMENTS**  
**VERONICA LANE**

---

umber: **7609-02**

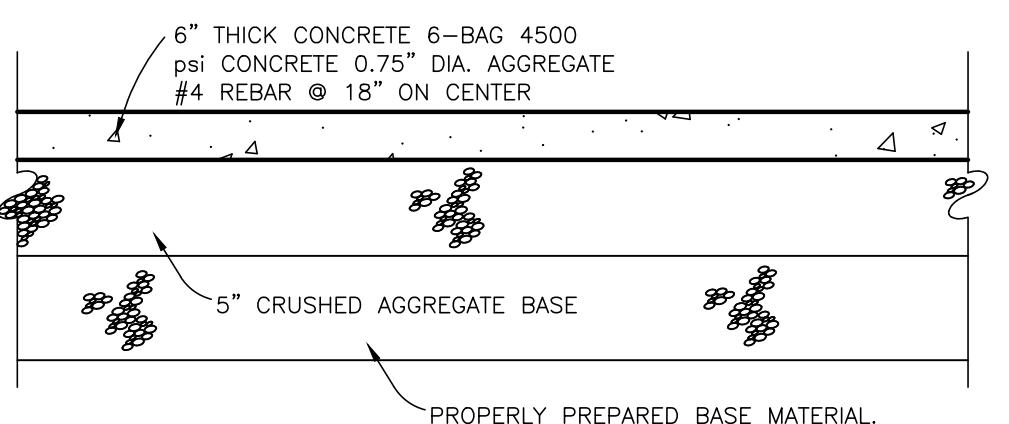




(REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT;  
GEOTECHNICAL REPORT TO GOVERN & CONTROL.)

### Concrete Walkway

SCALE: NONE



(REFER TO THE SITE SPECIFIC GEOTECHNICAL REPORT;  
GEOTECHNICAL REPORT TO GOVERN & CONTROL.)

### Typical On-Site Concrete Paving

SCALE: NONE

**StormTech®** **ZDS**

### STORMTECH SC-740 CHAMBER

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private, commercial and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.

**STORMTECH SC-740 CHAMBER**  
(not to scale)

**Nominal Chamber Specifications**

**Size (L x W x H)**  
85.4" x 51" x 30"  
2,170 mm x 1,295 mm x 762 mm

**Chamber Storage**  
45.9 ft<sup>3</sup> (1.30 m<sup>3</sup>)

**Min. Installed Storage\***  
74.9 ft<sup>3</sup> (2.12 m<sup>3</sup>)

**Weight**  
74.0 lbs (33.6 kg)

**Shipping**  
30 chambers/pallet  
60 end caps/pallet  
12 pallets/truck

\*Assume 6" (150 mm) stone above, below and between chambers and 40% stone porosity.

**EMBEDMENT STONE SHALL BE A CLEAN, CRUSHED AND ANGULAR STONE WITH AN ASHTO M21 DESIGNATION BETWEEN #3 AND #57. CHAMBERS SHALL BE SUPPORTED BY THE EMBEDMENT STONE. CHAMBERS SHALL NOT BE SUPPORTED BY POLYETHYLENE (PE) CHAMBERS OR ASHTO M22 POLYPROPYLENE (PP) CHAMBERS. ASHTO M21 AND M22 DESIGNATIONS ARE NOT ALLOWED IN THE STATE OF WYOMING. GEOTEXTILE SHALL BE PROVIDED AROUND THE CHAMBERS. GEOTEXTILE SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2277 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CHAMBERS FOR USE AS A GROUNDWATER COLLECTION CHAMBER". PAVING LAYER (DESIGNED BY SITE DESIGN ENGINEER)**

**PERIMETER STONE**  
(NOT INCLUDED IN CHAMBER PRICE)

**EXCAVATION WALL**  
(NOT INCLUDED IN CHAMBER PRICE)

**12" (300 mm) MIN**

**80-740**

**END CAP**

**SITE DESIGN ENGINEER IS RESPONSIBLE FOR THE ENSURING THE REQUIRED BEARING CAPACITY OF SURROUND SOILS**

**12" (300 mm) MIN**

**6" (150 mm) MIN**

**5" (125 mm) TYP**

**12" (300 mm) TYP**

**GRANULAR WELL-GRANDED SOLID AGGREGATE MIXTURES - 90% FINES, COMPACT IN 6" (150 mm) LAY LIFTS TO 95% PROCTOR DENSITY. DENSITY OF 95% PROCTOR DENSITY IS REQUIRED FOR ALL LAY LIFTS. CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2277 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CHAMBERS FOR USE AS A GROUNDWATER COLLECTION CHAMBER". PAVING LAYER (DESIGNED BY SITE DESIGN ENGINEER)**

**1"**

**18" (450 mm) MIN - 24" (600 mm) MAX**

**30"**

**12" (300 mm) TYP**

**DEPTH OF STONE TO BE DETERMINED BY SITE DESIGN ENGINEER 6" (150 mm) MIN**

\*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).



### Storm Runoff Calculations

253 Veronica Lane

7609-02

5/3/2021 JFL

The following runoff calculations are based on the Intensity-Duration-Frequency Curve Data presented in the Stormwater Management Standards section of the Town of Jackson Land Development Regulations. Calculations have been completed for the 100-yr storm event. Storm water runoff has been set to full retention due to no city connection.

The calculations are as follows:

#### Drainage Area:

Total Area =	0.65 acre or	28,325 ft <sup>2</sup>
Runoff Coefficients		
22% Paved Area	6,267	C = 0.9
66% Roof	18,664	C = 0.9
12% Landscaped Area	3,393	C = 0.2
Weighted Runoff Coefficient		C = 0.82

#### Volume of Run-off for 100-year Storm Event:

C =	0.82					
I =	See Below in/hr					
A =	28324.84 ft <sup>2</sup>					
Q(out) =	0.00 ft <sup>3</sup> /s (Full Retention)					
time	time	i	Q	Vol. in	Vol. out	Difference
(min)	(sec)	(in./hr.)	(cfs)	(cf)	(cf)	(cf)
0	0	0.00	0.00	0	0	0
5	300	3.00	1.61	482	0	482
10	600	2.33	1.25	748	0	748
15	900	1.90	1.02	915	0	915
20	1200	1.65	0.88	1060	0	1060
30	1800	1.30	0.70	1252	0	1252
40	2400	1.08	0.58	1387	0	1387
50	3000	0.95	0.51	1525	0	1525
60	3600	0.82	0.44	1580	0	1580
70	4200	0.74	0.40	1663	0	1663
80	4800	0.65	0.35	1670	0	1670
90	5400	0.61	0.33	1763	0	1763
100	6000	0.56	0.30	1798	0	1798
110	6600	0.52	0.28	1837	0	1837
120	7200	0.48	0.26	1849	0	1849

#### SUMMARY:

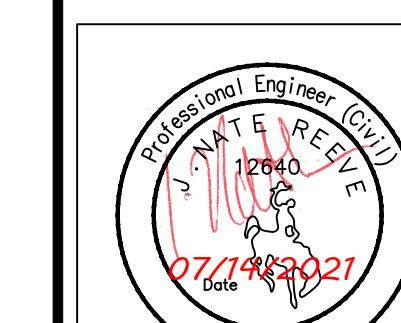
The required 100-yr storage volume is

1,849 cubic feet

### 235 & 255 Veronica Lane

JACKSON, TETON COUNTY, WYOMING

### Civil Details



#### Project Info.

Engineer: J. NATE REEVE, P.E.

Drafter: J. MEYERS

Begin Date: MAY 2021

Name: APARTMENTS

VERONICA LANE

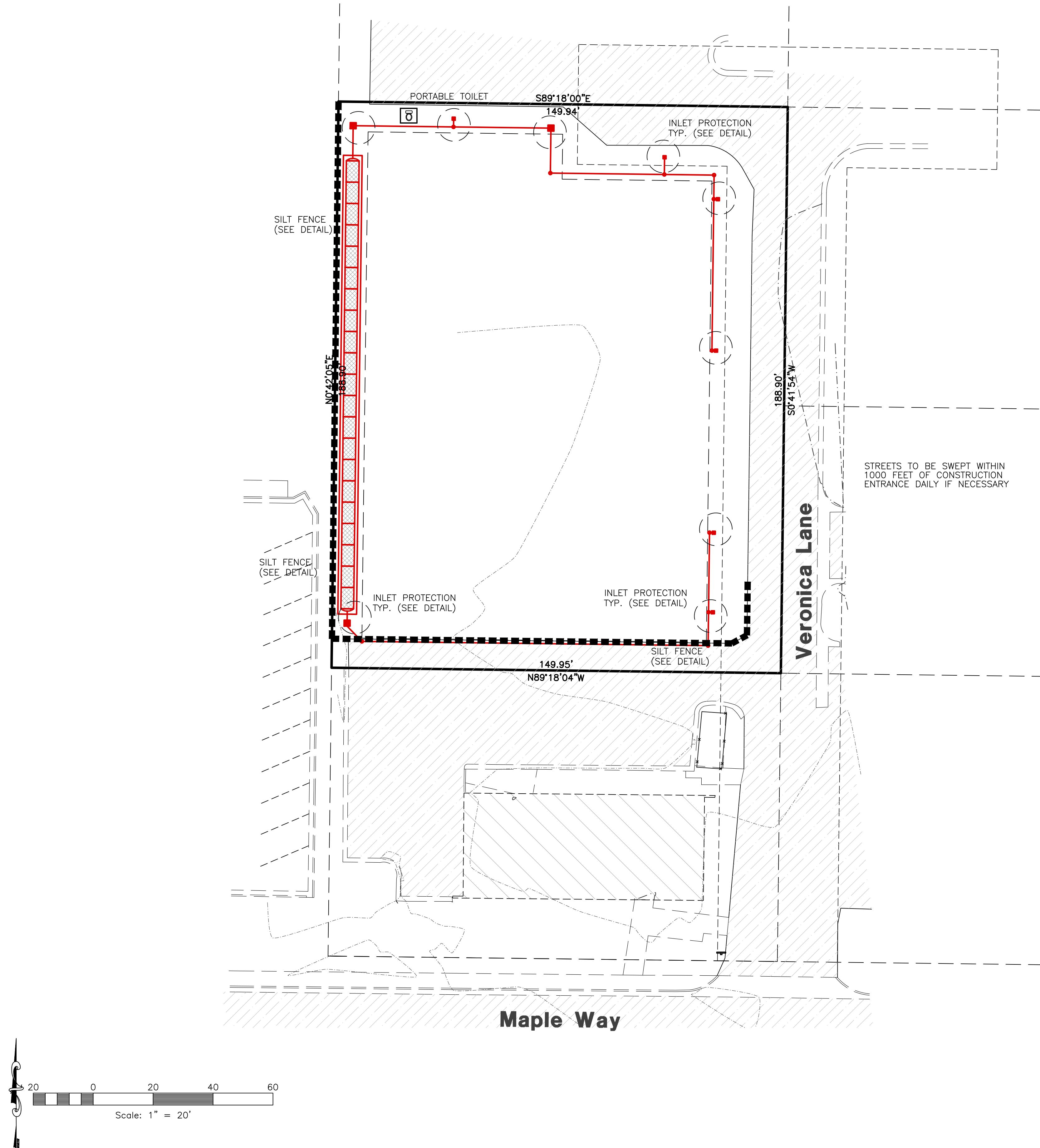
Number: 7609-02

# Apartments

## 235 & 255 Veronica Lane

### Storm Water Pollution Prevention Plan Exhibit

JACKSON, TETON COUNTY, WY  
MAY 2021

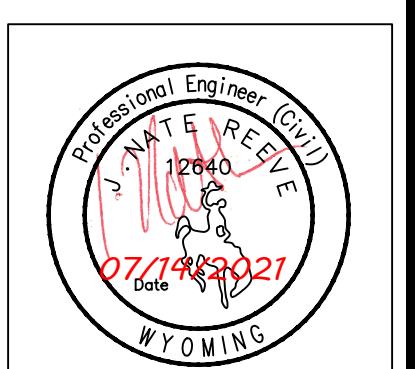


REVISIONS	DESCRIPTION
DATE	
DESCRIPTION	
REVISIONS	

### Apartments 235 & 255 Veronica Lane

#### JACKSON, TETON COUNTY, WYOMING

#### Storm Water Pollution Prevention Plan Exhibit



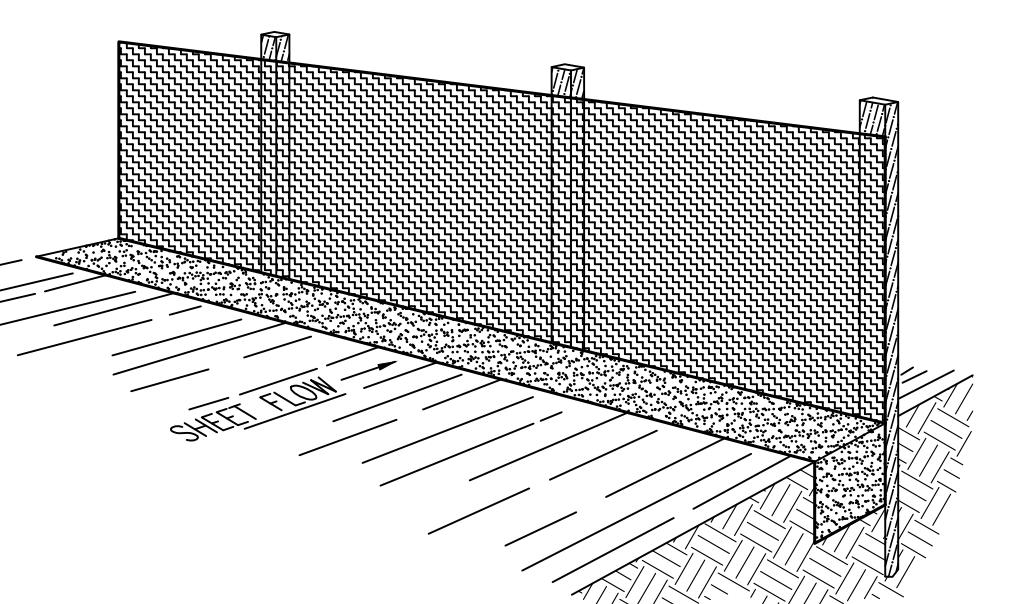
Project Info.
Engineer: J. NATE REEVE, P.E.
Drafter: J. MEYERS
Begin Date: MAY 2021
Name: APARTMENTS VERONICA LANE
Number: 7609-02

**Notes:**

1. Describe all BMP's to protect storm water inlets:  
All storm water inlets to be protected by straw wattle barriers, or gravel bags (see detail).
2. Describe BMP's to eliminate/reduce contamination of storm water from:  
  - a. Equipment / building / concrete wash areas:  
To be performed in designated areas only and surrounded with silt fence barriers.
  - b. Soil contaminated by soil amendments:  
If any contaminants are found or generated, contact environmental engineer and contacts listed.
  - c. Areas of contaminated soil:  
If any contaminants are found or generated, contact environmental engineer and contacts listed.
  - d. Fueling area:  
To be performed in designated areas only and surrounded with silt fence.
  - e. Vehicle maintenance areas:  
To be performed in designated areas only and surrounded with silt fence.
  - f. Vehicle parking areas:  
To be performed in designated areas only and surrounded with silt fence.
  - g. Equipment storage areas:  
To be performed in designated areas only and surrounded with silt fence.
  - h. Materials storage areas:  
To be performed in designated areas only and surrounded with silt fence.
  - i. Waste containment areas:  
To be performed in designated areas only and surrounded with silt fence.
  - j. Service areas:  
To be performed in designated areas only and surrounded with silt fence.
3. BMP's for wind erosion:  
Stockpiles and site as needed to be watered regularly to eliminate / control wind erosion
4. Construction Vehicles and Equipment:  
  - a. Maintenance:  
    - Maintain all construction equipment to prevent oil or other fluid leaks.
    - Keep vehicles and equipment clean, prevent excessive build-up of oil and grease.
    - Regularly inspect on-site vehicles and equipment for leaks, and repair immediately.
    - Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment on-site.
    - Segregate and recycle wastes, such as greases, oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic, and transmission fluids.
  - b. Fueling:  
    - If fueling must occur on-site, use designated areas away from drainage.
    - Locate on-site fuel storage tanks within a bermed area designed to hold the tank volume.
    - Cover retention area with an impervious material and install in a manner to ensure that any spills will be contained in the retention area. To catch spills or leaks when removing or changing fluids.
    - Use drip pans for any oil or fluid changes.
  - c. Washing:  
    - Use as little water as possible to avoid installing erosion and sediment controls for the wash area.
    - If washing must occur on-site, use designated, bermed wash areas to prevent waste water discharge into storm water, creeks, rivers, and other water bodies.
    - Use phosphate-free, biodegradable soaps.
    - Do not permit steam cleaning on-site.
5. Spill Prevention and Control:  
  - a. Minor Spills:  
Minor spills are those which are likely to be controlled by on-site personnel. After contacting local emergency response agencies, the following actions should occur upon discovery of a minor spill:  
    - Contain the spread of the spill.
    - If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (i.e. absorbent materials, cat litter, and / or rags).
    - If the spill occurs in dirt areas, immediately contain the spill by constructing an earth dike. Dig up and properly dispose of contaminated soil.
    - If the spill occurs during rain, cover the impacted area to avoid runoff.
    - Record all steps taken to report and contain spill.
  - b. Major Spills:  
On-site personnel should not attempt to control major spills until the appropriate and qualified emergency response staff have arrived at the site. For spills of federal reportable quantities, also notify the National Response Center at (800) 424-8802. A written report should be sent to all notified authorities. Failure to report major spills can result in significant fines and penalties.
6. Post Roadway / Utility Construction:  
  - a. Maintain good housekeeping practices.
  - b. Enclose or cover building material storage areas.
  - c. Properly store materials such as paints and solvents.
  - d. Store dry and wet materials under cover, away from drainage areas.
  - e. Avoid mixing excess amounts of fresh concrete or cement on-site.
  - f. Perform washout of concrete trucks offsite or in designated areas only.
  - g. Do not wash out concrete trucks into storm drains, open ditches, streets or streams.
  - h. Do not place material or debris into streams, gutters or catch basins that stop or reduce the flow of runoff water.
  - i. All public streets and storm drain facilities shall be maintained free of building materials, mud and debris caused by grading or construction operations. Roads will be swept within 1000' of construction entrance daily, if necessary.
  - j. Install straw wattle around all inlets contained within the development and all others that receive runoff from the development.
7. Erosion Control Plan Notes:  
  - a. The contractor will designate an emergency contact that can be reached 24 hours a day 7 days a week.
  - b. A stand-by crew for emergency work shall be available at all times during potential rain or snow runoff events. Necessary materials shall be available on site and stockpiled at convenient locations to facilitate rapid construction of emergency devices when rain or runoff is eminent.
  - c. Erosion control devices shown on the plans and approved for the project may not be removed without approval of the engineer of record. If devices are removed, no work may continue that have the potential of erosion without consulting the engineer of record. If deemed necessary erosion control should be reestablished before this work begins.
  - d. Graded areas adjacent to fill slopes located at the site perimeter must drain away from the top of the slope at the conclusion of each working day. this should be confirmed by survey or other means acceptable to the engineer of record.
  - e. All silt and debris shall be removed from all devices within 24 hours after each rain or runoff event.
  - f. Except as otherwise approved by the inspector, all removable protective devices shown shall be in place at the end of each working day and through weekends until removal of the system is approved.
  - g. All loose soil and debris, which may create a potential hazard to offsite property, shall be removed from the site as directed by the engineer of record of the governing agency.
  - h. The placement of additional devices to reduce erosion damage within the site is left to the discretion of the engineer of record.
  - i. Detaining basins may not be removed or made inoperable without the approval of the engineer of record and the governing agency.
  - j. Erosion control devices will be modified as need as the project progresses and plans of these changes submitted for approval by the engineer of record and the governing agency.
8. Conduct a minimum of one inspection of the erosion and sediment controls every two weeks. Maintain documentation on site.  
  - a. Part III.D.4 of general permit UTR00000 identifies the minimum inspection requirements.
  - b. Part II.D.4.C identifies the minimum inspection report requirements.
  - c. Failure to complete and/or document storm water inspections is a violation of part III.D.4 of Utah General Permit UTR 300000.

50'x20' CONSTRUCTION ENTRANCE  
W/ 8" CLEAN 2"-4" Ø GRAVEL BASE  
OVER WOVEN GEOTECNICAL FABRIC

### Cross Section 50' x 20' Construction Entrance



### Perspective View

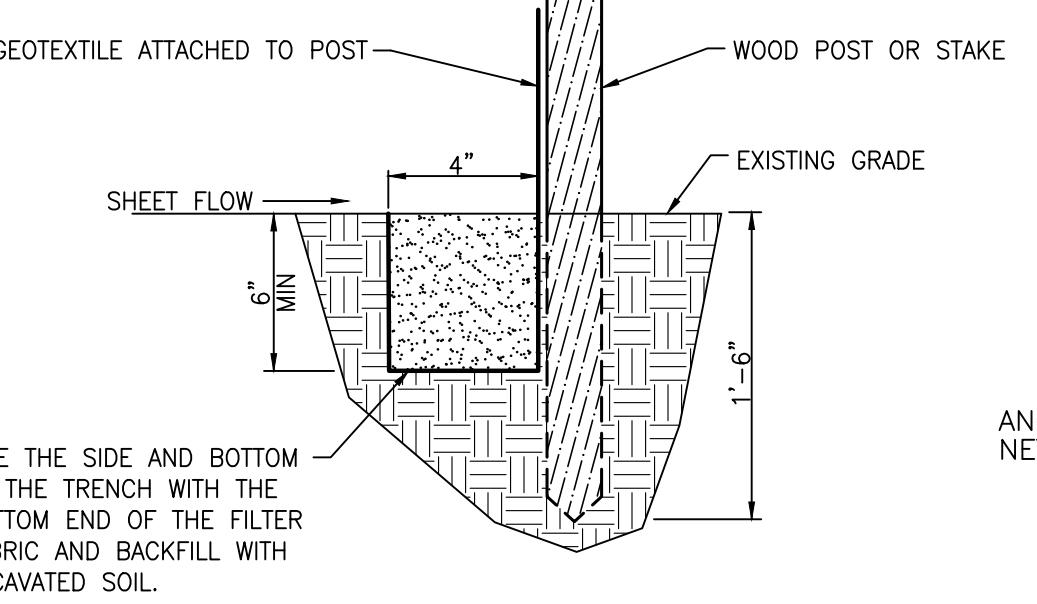
Figure 2

**INSTALLATION**  
The silt fence should be installed prior to major soil disturbances in the drainage area. The fence should be placed across the slope along a line of uniform elevation wherever flow of sediment is anticipated. Table 1 shows generally-recommended maximum slope lengths (slope spacing between fences) at various site grades for most silt fence applications.

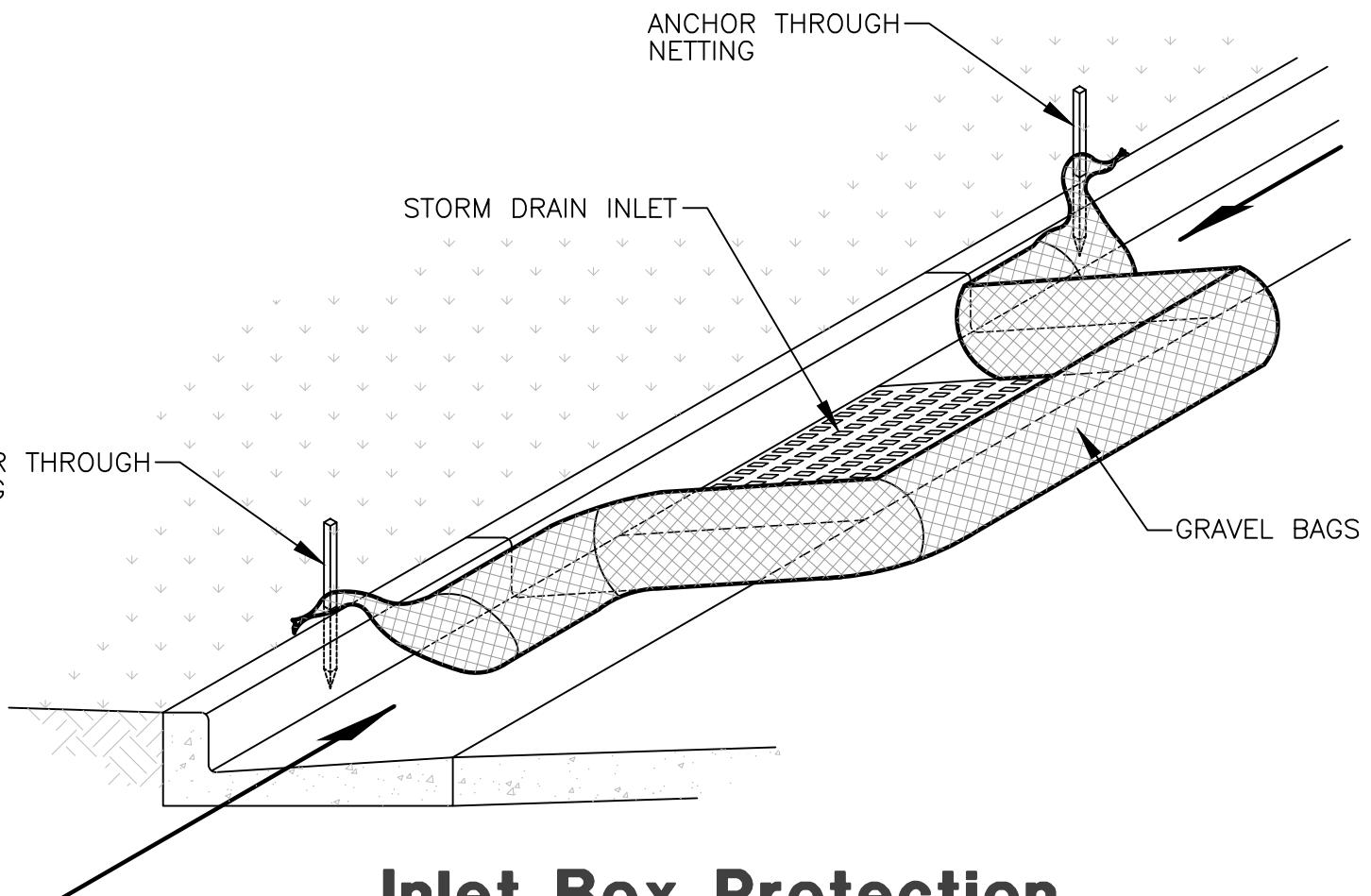
Recommended Maximum Slope Lengths for Silt Fence (Richardson & Middlebrooks, 1991)	
Slope Steepness (%)	Max. Slope Length m (ft)
<2%	30.5m (100ft)
2-5%	22.9m (75ft)
5-10%	15.2m (50ft)
10-20%	7.6m (25ft)
>20%	4.5m (15ft)

**PREFABRICATED SILT FENCE ROLLS**  
\*Excavate a minimum 15.2cm x 15.2cm (6"x6") trench at the desired location.  
\*Unroll the silt fence, positioning the post against the downstream wall of the trench.  
\*Adjacent rolls of silt fence should be joined by nesting the end post of one fence into the other. Before nesting the end posts, rotate each post until the geotextile is wrapped completely around the post, then abut the end posts to create a tight seal as shown in Figure 1.  
\*Drive the posts into the ground until the required fence height and/or anchorage depth is obtained.  
\*Bury the loose geotextile at the bottom of the fence in the upstream trench and backfill with natural soil, tamping the backfill to provide good compaction and anchorage. Figure 2 illustrates a typical silt fence installation and anchor trench placement.

**FIELD ASSEMBLY:**  
\*Excavate a minimum 15.2cm x 15.2cm (6"x6") trench at the desired location.  
\*Drive wooden posts, or steel posts with fastening projections, against the downstream wall of the trench. Maximum post spacing should be 2.4-3.0m (8-10ft). Post spacing



### Section



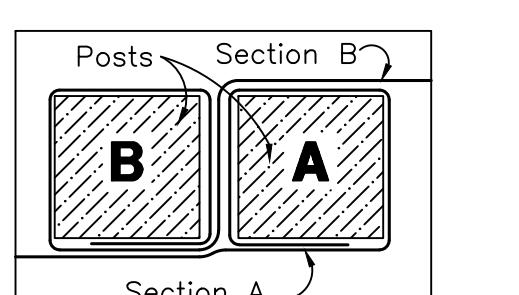
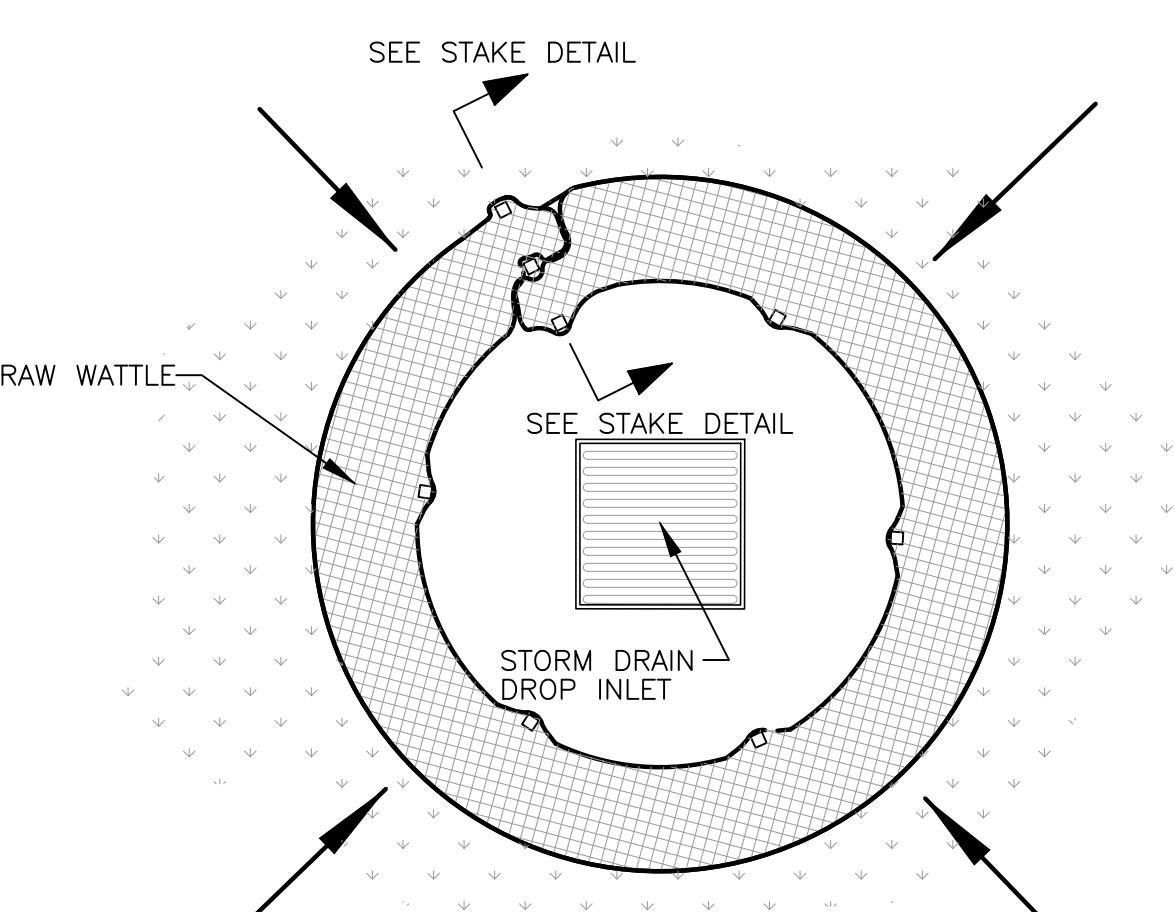
### Inlet Box Protection

should generally be less than three (3) times the height of the fence.  
\*If a steel or plastic mesh is required to reinforce the geotextile, it should have a minimum mesh opening of 15.2cm (6").  
\*Fasten the mesh to the upslope side of the fence using heavy duty wire staples, tie wires or hog strings. Extend the mesh into the bottom of the trench.  
\*The geotextile shall then be staked or wired to the posts. An extra 20-50cm (8-20") of geotextile shall extend into the trench.

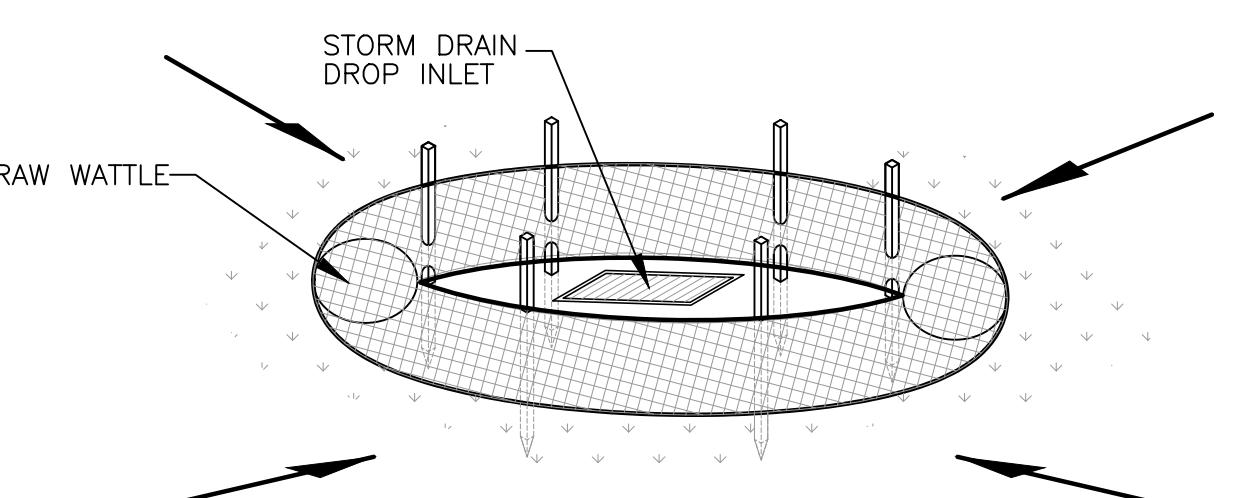
**INSPECTION**  
\*Inspect the silt fence daily during periods of rainfall, immediately after significant rainfall event and weekly during periods of no rainfall. Make any repairs immediately.

\*When sediment deposits behind the silt fence are one-third of the fence height, remove and properly dispose of the silt accumulations. Avoid damage to the fabric during cleanout.

**REMOVAL**  
\*Silt fence should not be removed until construction ceases and the upslope area has been properly stabilized and/or vegetated.

Figure 1:  
Top View of  
Roll-to-Roll Connection

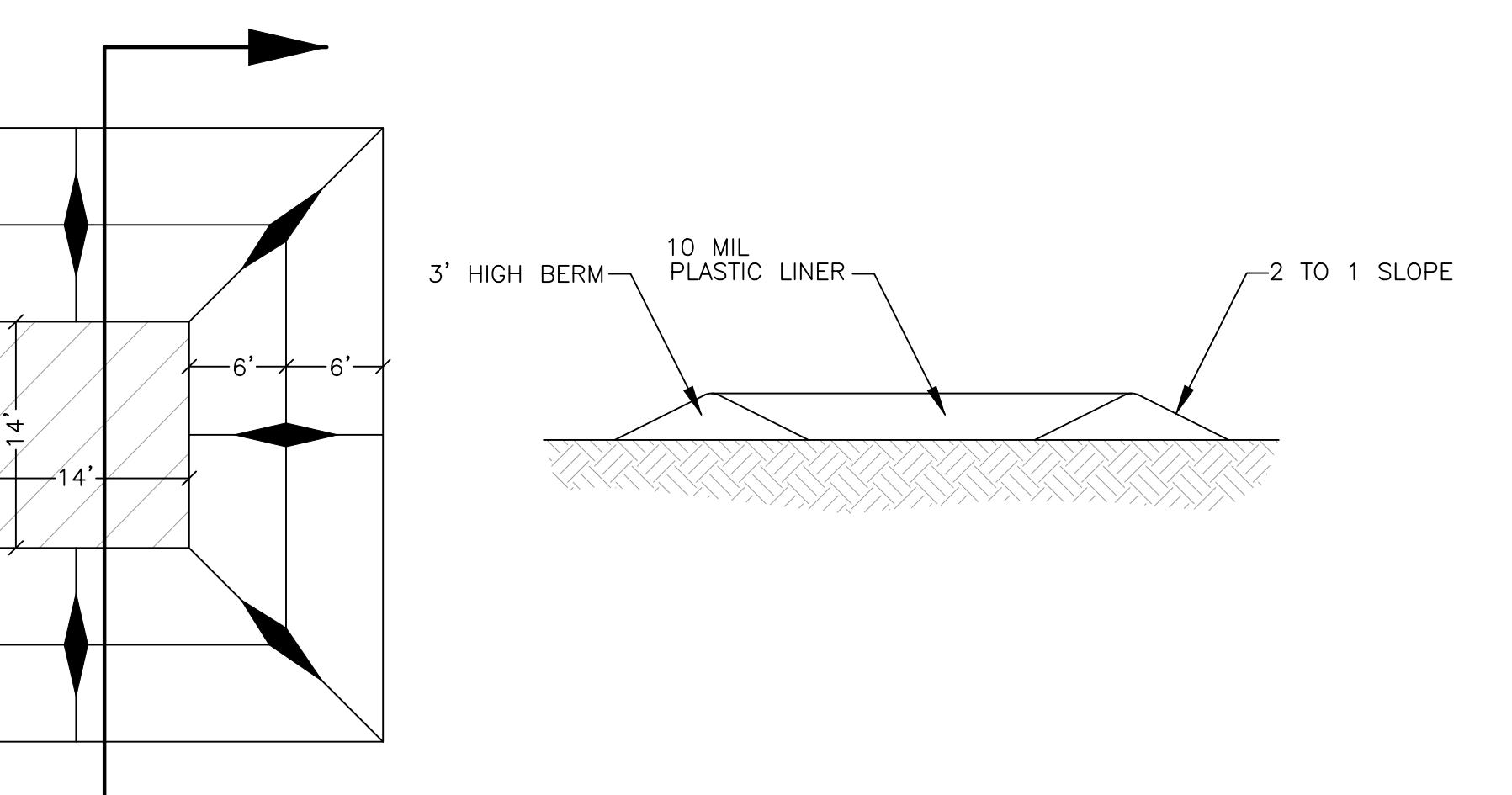
### Plan View



### Drop Inlet Protection

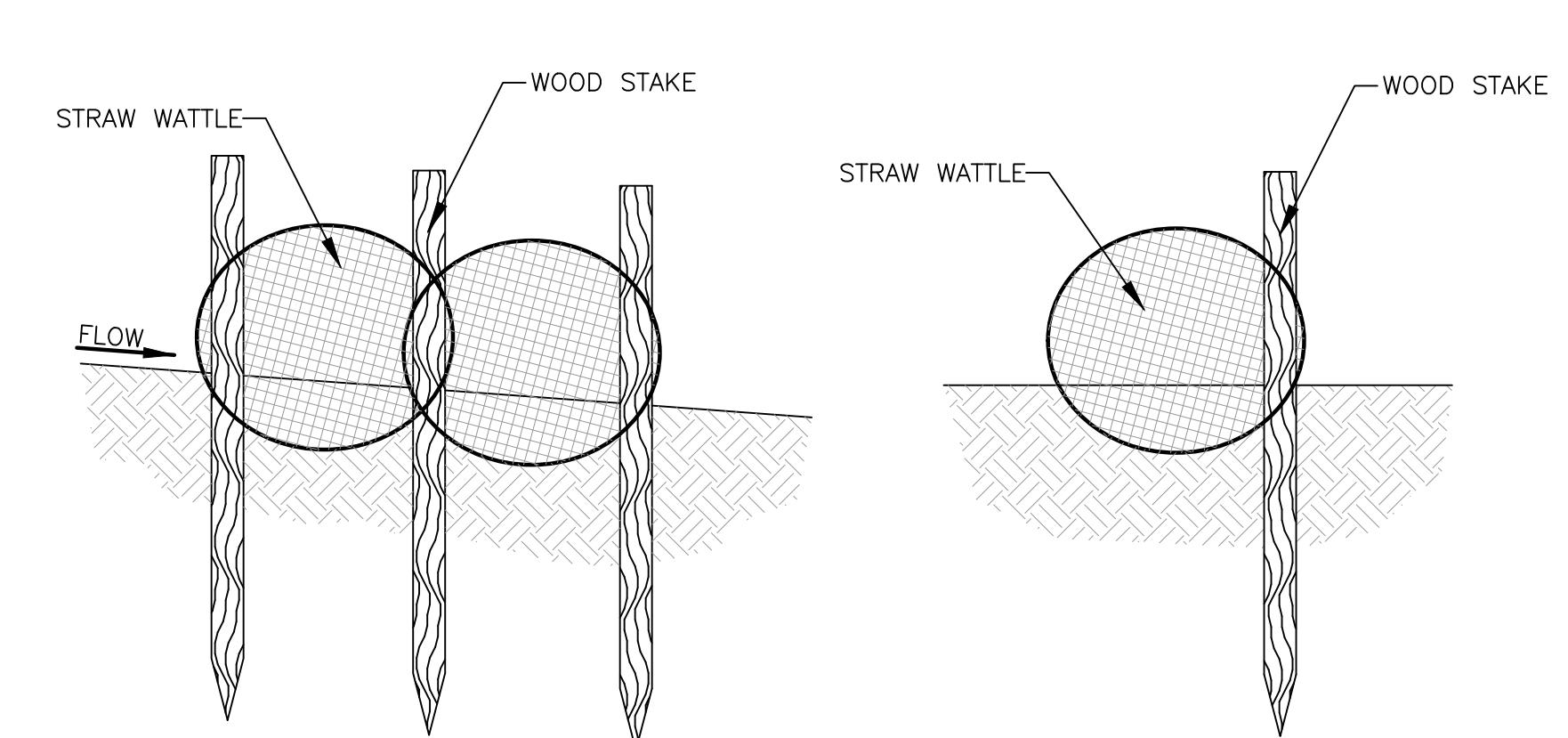
### Silt Fence Detail

SCALE: NONE



Concrete Washout Area  
w/ 10 mil Plastic Liner

SCALE: NONE



### Stake Detail

Reeve & Associates, Inc.  
LAND PLANNERS • CIVIL ENGINEERS • LANDSCAPE ARCHITECTS  
TELE: (801) 621-3100 [www.reeve-associates.com](http://www.reeve-associates.com)

TRAFFIC ENGINEERS • STRUCTURAL ENGINEERS • LANDSCAPE ARCHITECTS  
TELE: (801) 621-3100 [www.reeve-associates.com](http://www.reeve-associates.com)

Reeve & Associates, Inc. - Solutions You Can Build On  
235 & 255 Veronica Lane  
JACKSON, TETON COUNTY, WYOMING

Project Info.  
Engineer: J. NATE REEVE, P.E.  
Drafter: J. MEYERS  
Begin Date: MAY 2021  
Name: APARTMENTS  
VERONICA LANE  
Number: 7609-02

8

11 Total Sheets

## PLANT TABLE

Quantity	Symbol	Scientific Name	Common Name	Size
1	1	Acer ginnala 'Flame'	Flame Amur Maple	10 gal. Multi-Stem
4	2	Celtis occidentalis 'Prairie Sentinel'	Prairie Sentinel Hackberry	3" Caliper
8	3	Malus x 'Jefspire'	Purple Spire Crabapple	10 gal.
3	4	Picea pungens 'Fastigiata'	Columnar Colorado Spruce	8' Height
8	5	Thuja occidentalis 'Emerald Green'	Emerald Green Arborvitae	4' Height
5	6	Ulmus parvifolia 'Everclear'	Everclear Elm	3" cal.

Quantity	Symbol	Scientific Name	Common Name	Size
15	1	Cornus alba 'Sibirica'	Red Twig Dogwood	6' Height
11	2	Pinus mugo 'Slowmound'	Slowmound Mugo Pine	5 gal.
26	3	Potentilla fruticosa 'Gold Drop'	Gold Drop Cinquefoil	5 gal.
3	4	Ribes Alpinum 'Green Mound'	Green Mound Alpine Currant	5 gal.

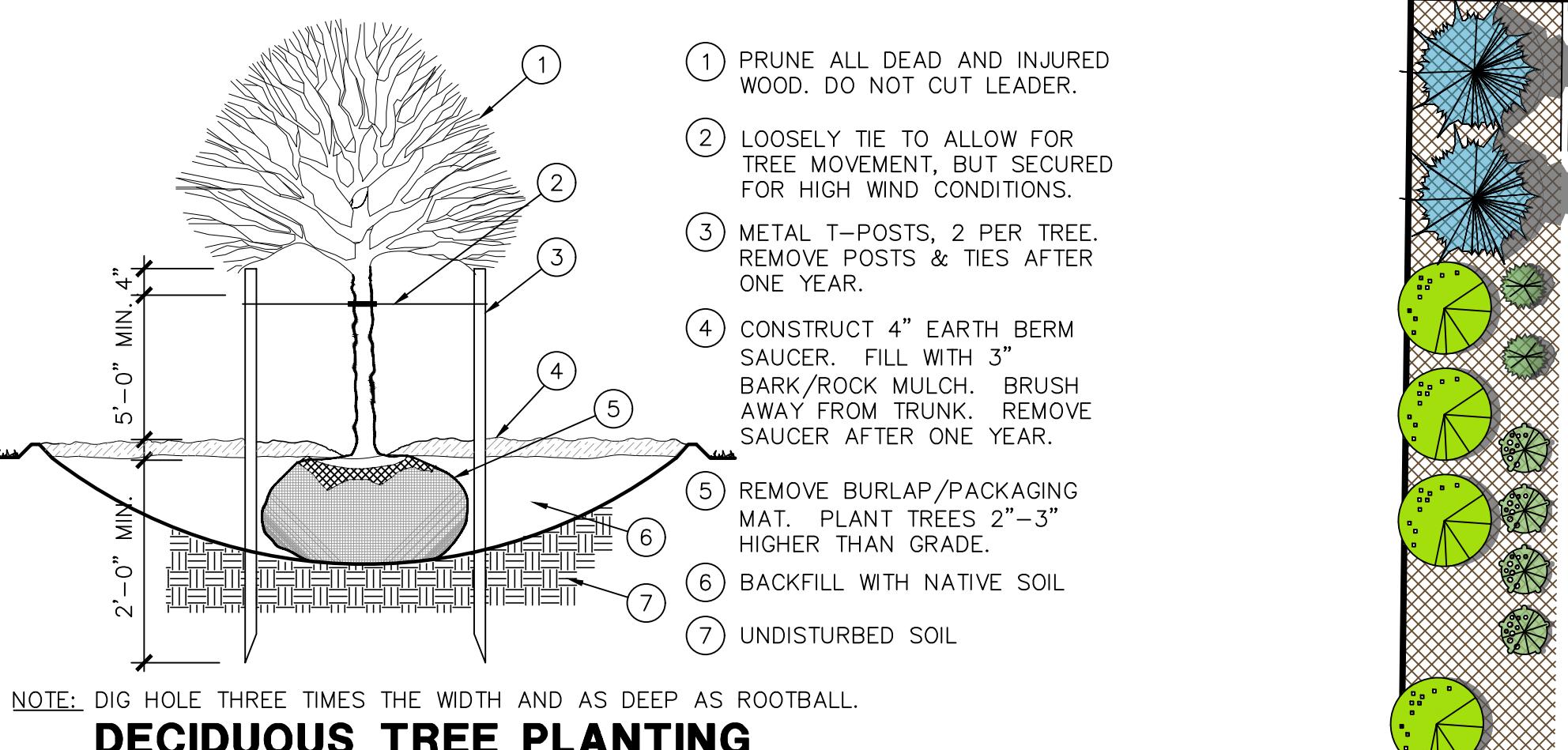
Quantity	Symbol	Scientific Name	Common Name	Size
8	1	Aster oblongifolius 'October Skies'	October Skies Aster	1 gal.
10	2	Bergenia cordifolia 'Rose'	Rose Bergenia	1 gal.
18	3	Hemerocallis 'Stella de Oro'	Stella de Oro Daylily	1 gal.
8	4	Coreopsis verticillata 'Zagreb'	Zagreb Whorled Tickseed	1 gal.
10	5	Lavandula angustifolia 'Munstead'	Munstead Lavender	1 gal.

Quantity	Symbol	Scientific Name	Common Name	Size
34	1	Lysimachia nummularia 'Aurea'	Golden Creeping Jenny	Flats
26	2	Sedum rupestre 'Plum Dazzled'	Plum Dazzled Stonecrop	Flats

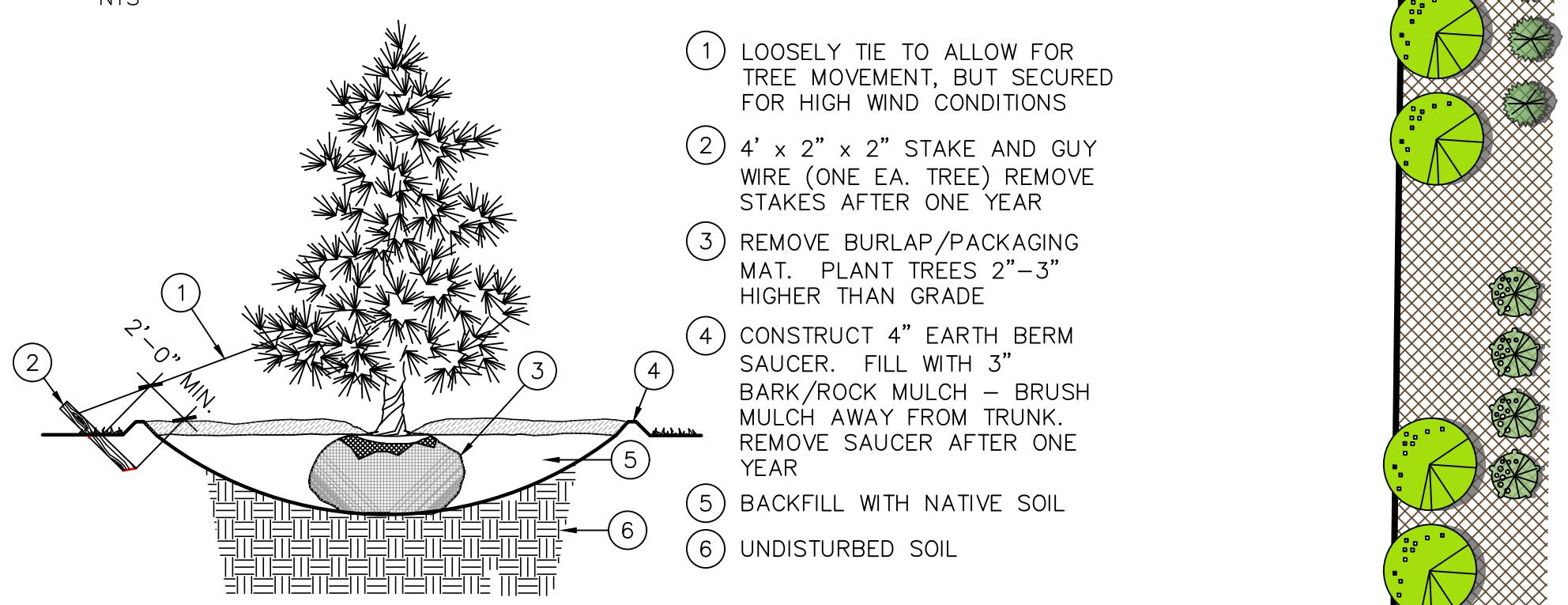
  

Symbol	Description	Size/Type
1	Turf Grass - Sod	Sod
2	Kentucky Bluegrass Mix - 3 Species Minimum	
3	Wood Mulch - Medium Chunk	1" Diameter
	Place mulch over 5 ounce Professional weed barrier cloth in all planting beds.	3" Depth
	Contractor to provide samples to owner for approval prior to delivery.	
4	Potting Soil -	Full Depth Of
	Place in all Raised Planters and Containers. Ensure there are unobstructed	Container
	drainage holes.	
5	River Cobble - Rounded, Gray in color, washed cobble.	1" Diameter
	Contractor to provide samples to owner for approval prior to delivery.	3" Depth
6	Concrete Pavers - Stamp-Tech - Slate Design - Natural Color - 20"x20"x2"	
	Paver. Placed on Tile-Tech Adjustable Pedestals.	



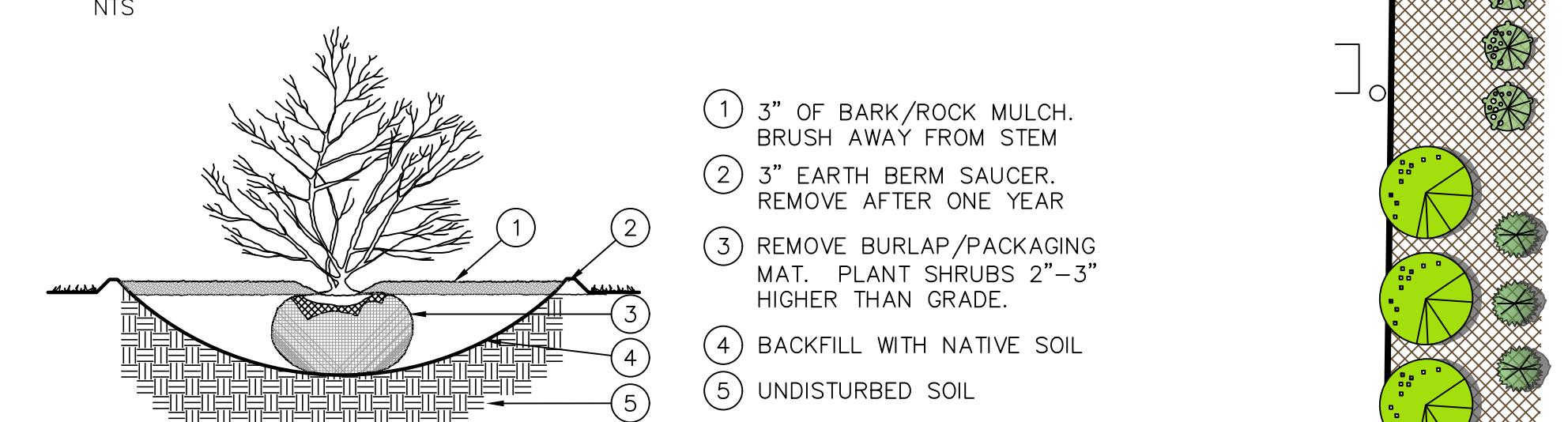
## DECIDUOUS TREE PLANTING

NTS



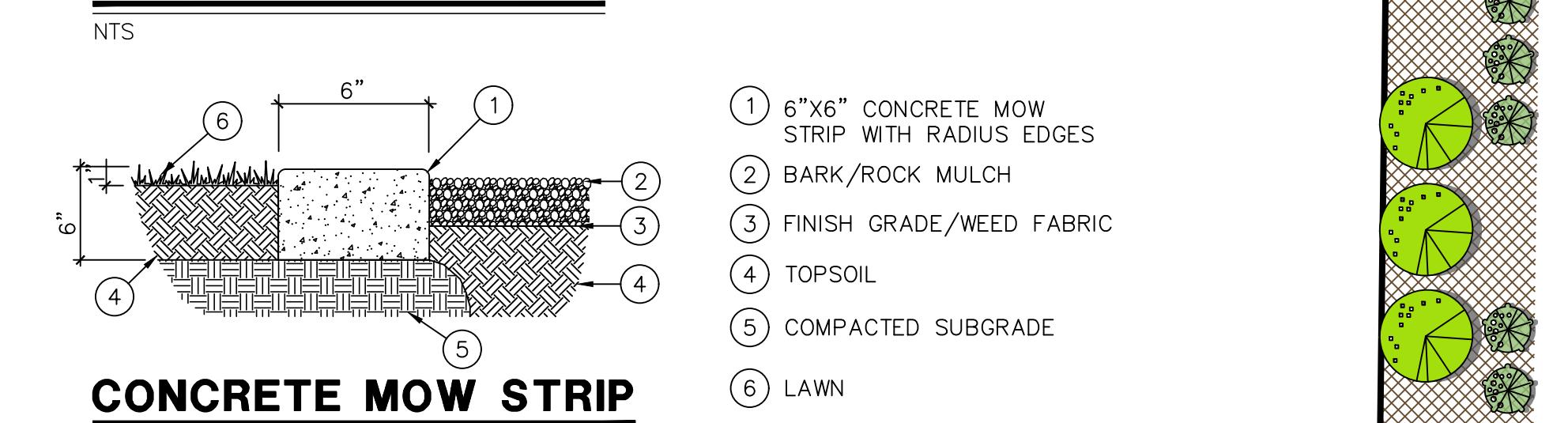
## CONIFEROUS TREE PLANTING

NTS



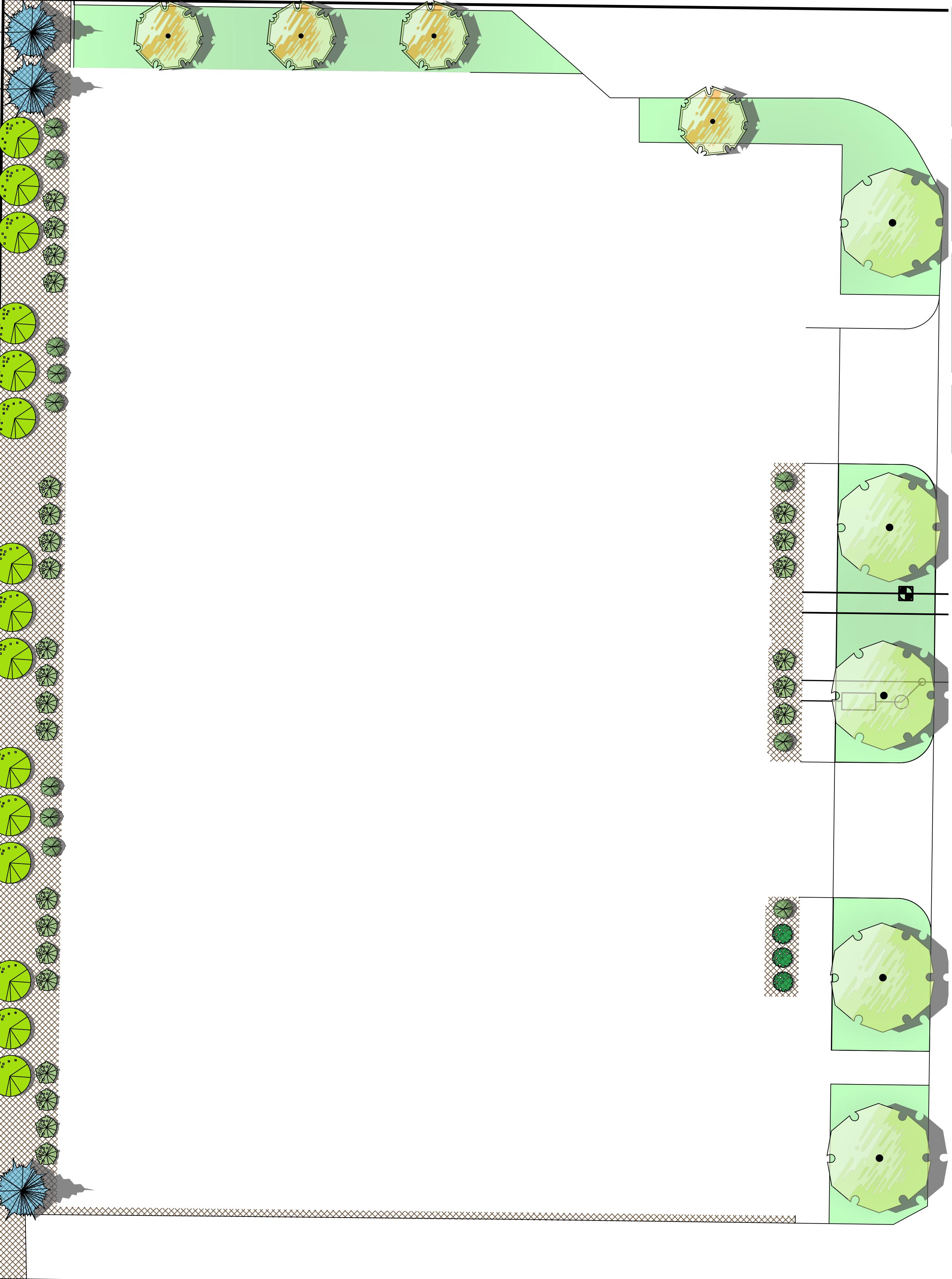
## SHRUB PLANTING

NTS



## CONCRETE MOW STRIP

NTS



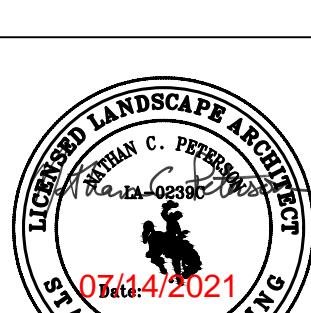
Landscape Calculations:  
 Required...10%.....2,833 s.f.  
 Provided...2%.....3,393 s.f.

Landscape Units:  
 Required...1/1,000 s.f.....3 Units  
 Provided...2-Option A, 1-Option C...3 Units

Unit Descriptions:  
 A  
 2....1 3" caliper canopy tree  
 12....6 6'-8' large shrubs or multi-stem trees  
 8....4 #5 container shrubs  
 B  
 2 3" caliper canopy trees  
 2 6'-8' large shrubs or multi-stem trees  
 3 8' high evergreen trees  
 C  
 (preferred for yearround screening)  
 3....3 6'-8' large shrub or multi-stem trees  
 3....3 8' high evergreen trees  
 2....2 #5 container shrubs

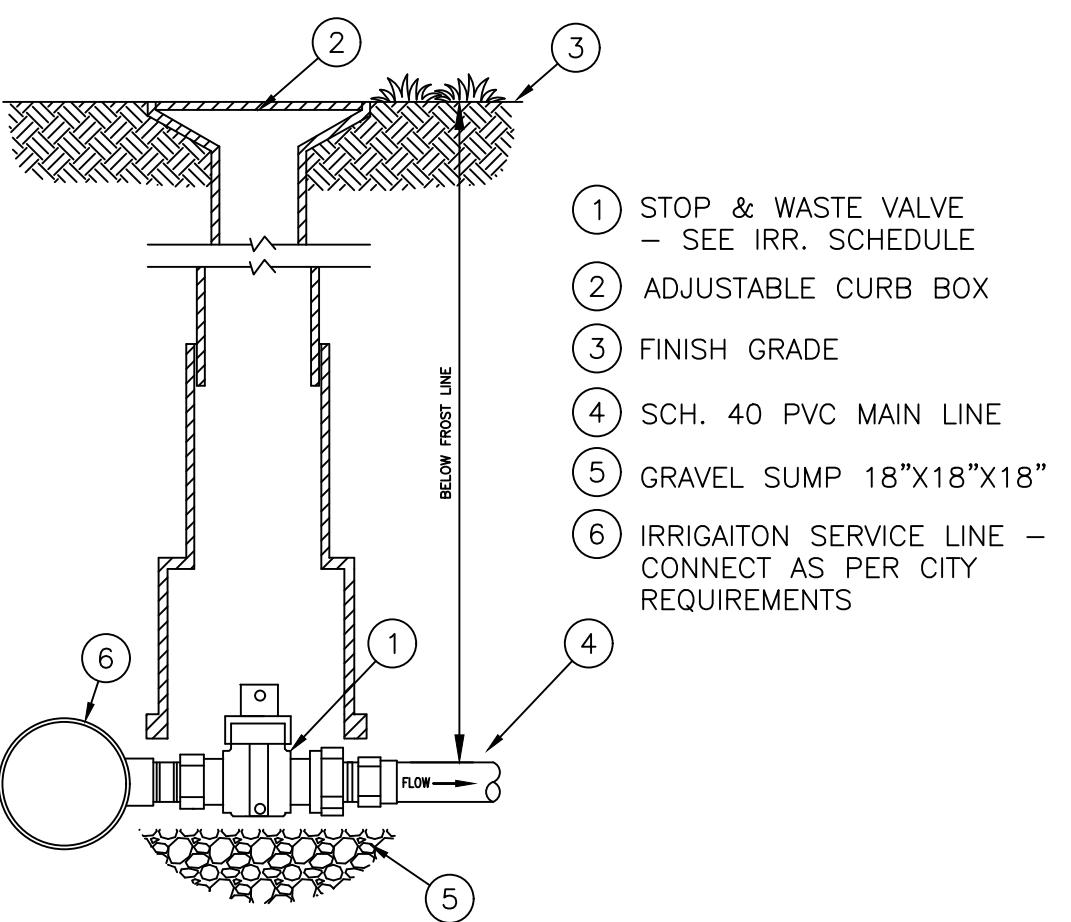
REVISIONS	DESCRIPTION
DATE	

Landscape Plan	
235 & 255 Veronica Lane	JACKSON, TETON COUNTY, WYOMING



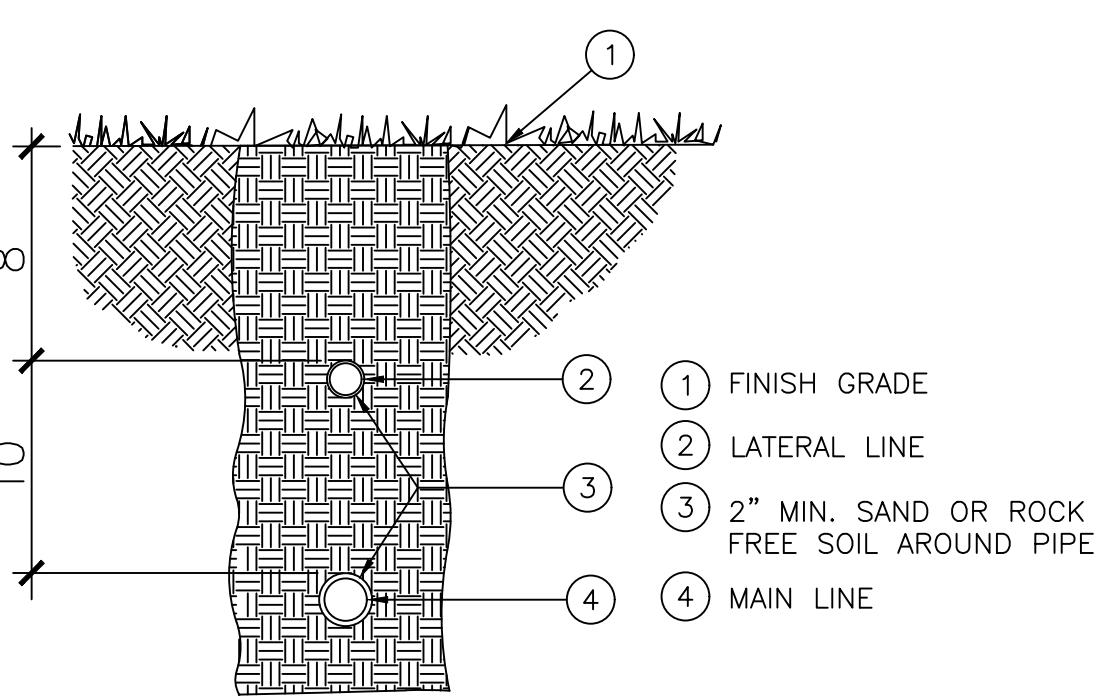
Project Info.
Engineer: JEREMY A. DRAPER, P.E.
Drafter: N. PETERSON
Begin Date: MAY 2021
Name: APARTMENTS VERONICA LANE
Number: 7609-02





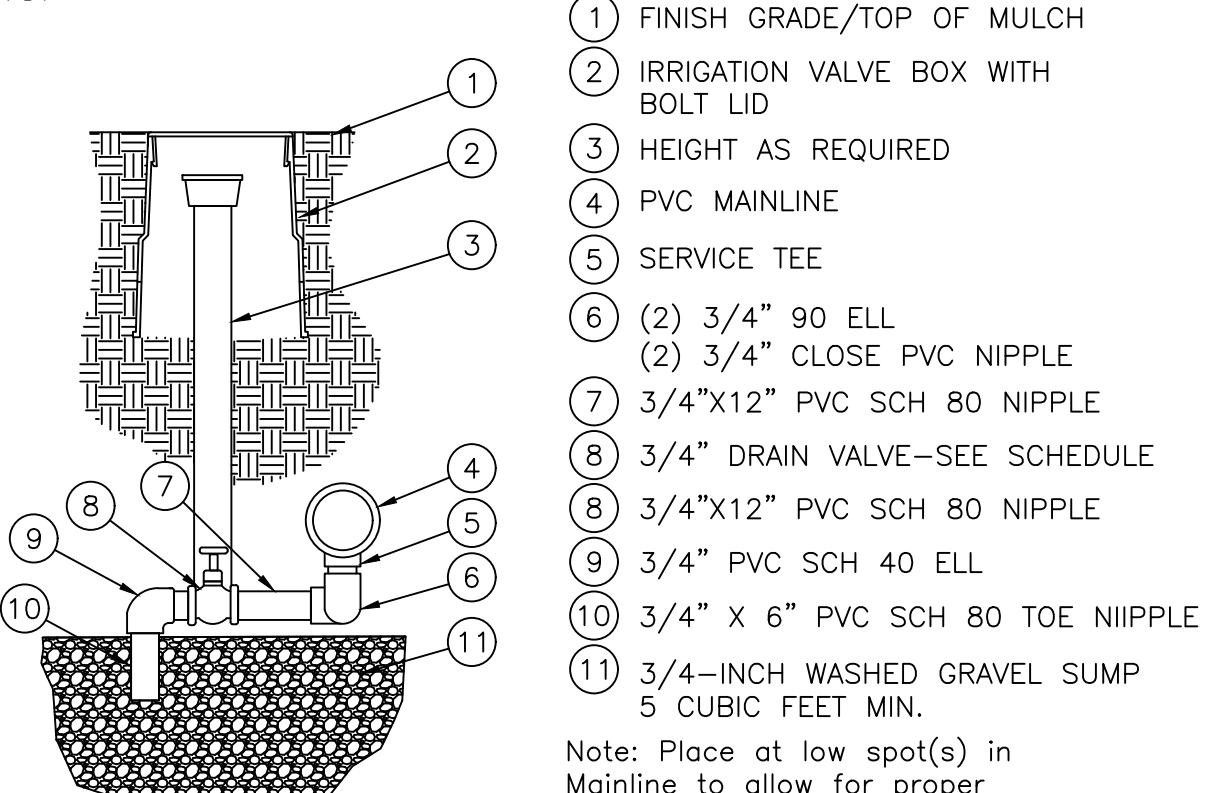
STOP &amp; WASTE ASSEMBLY

N.T.S.



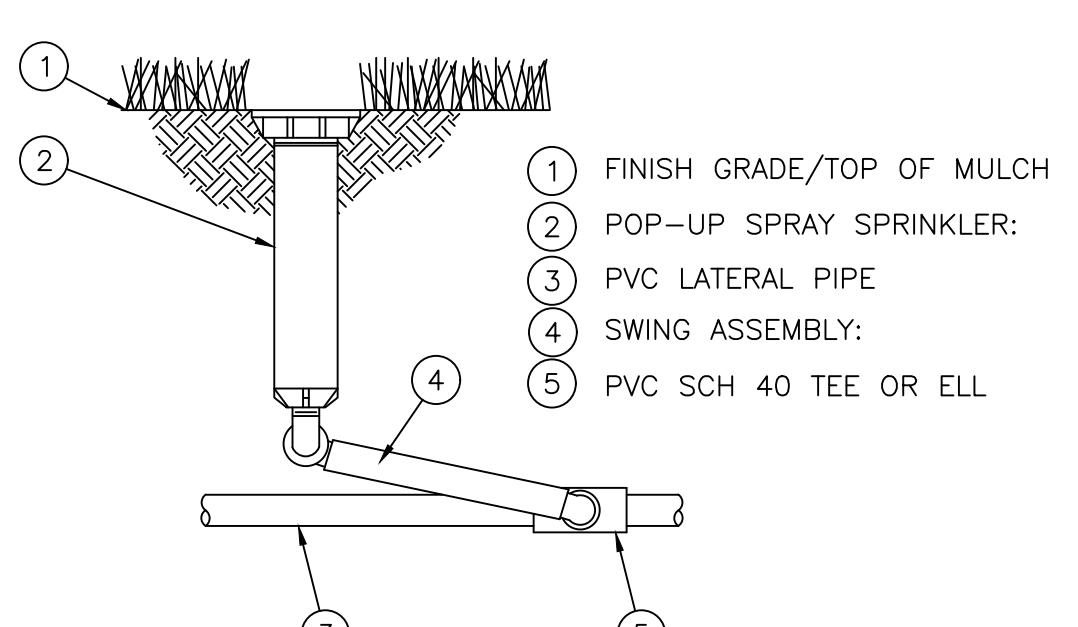
TRENCH SECTION

N.T.S.



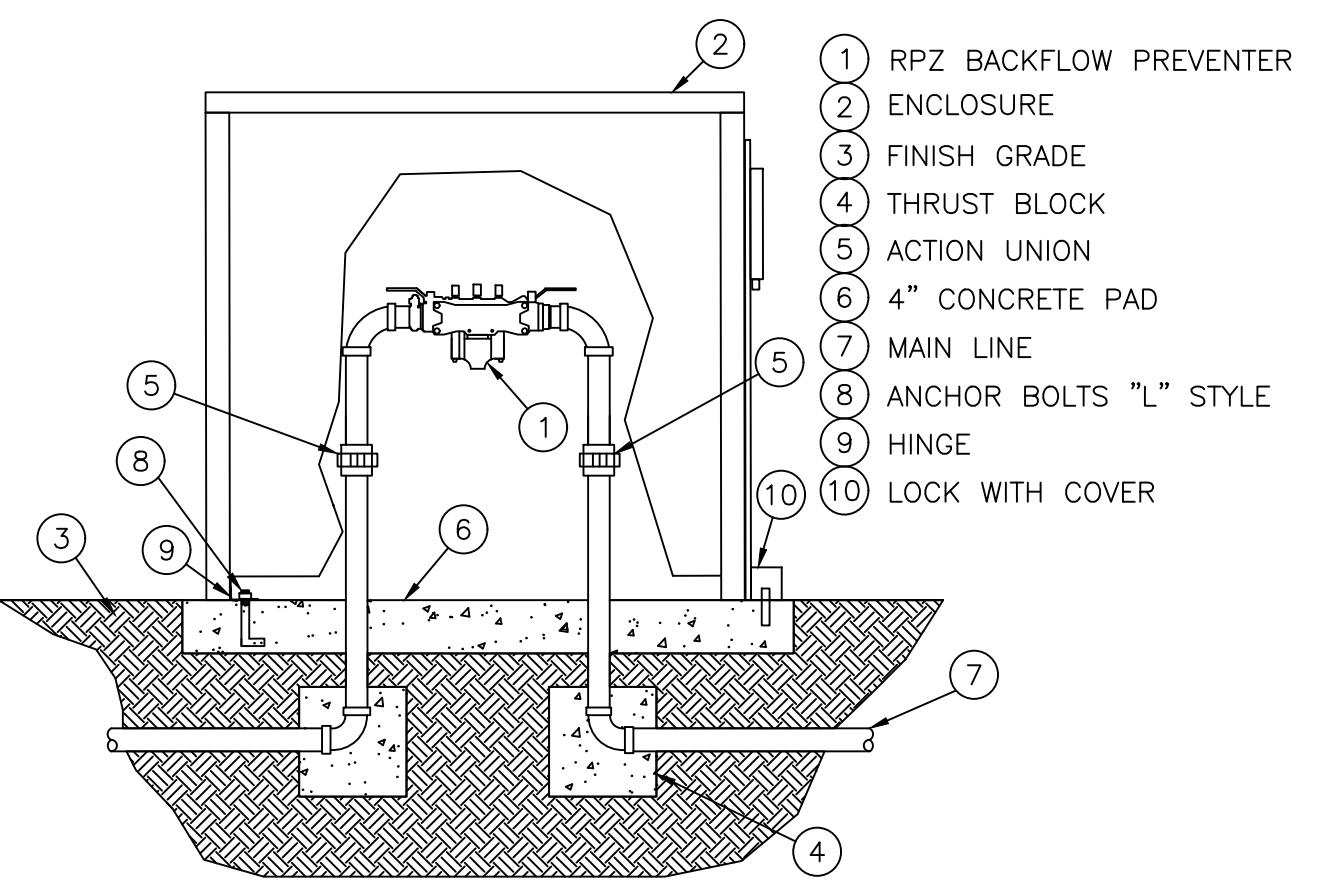
MANUAL DRAIN VALVE

N.T.S.



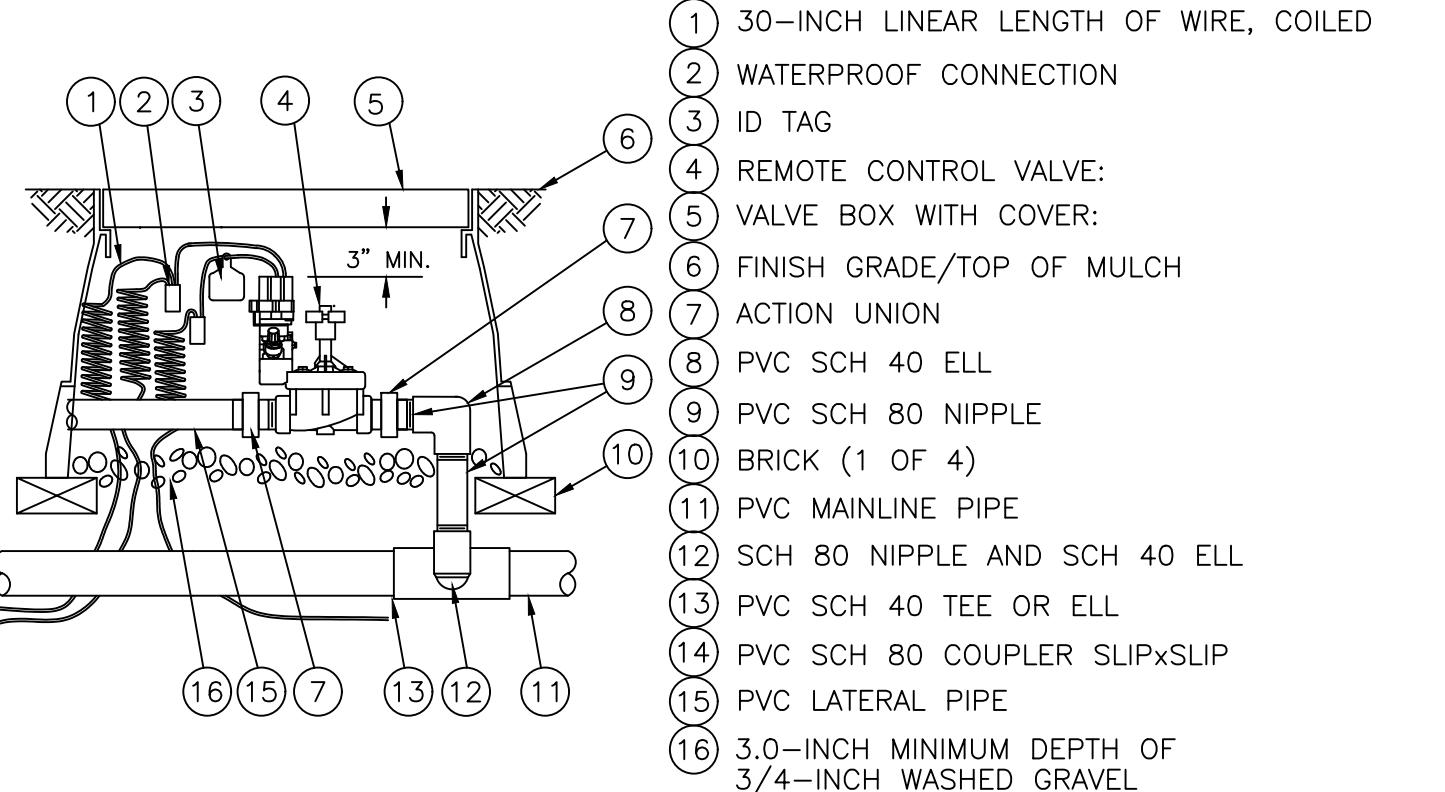
POP-UP SPRAY HEAD

N.T.S.



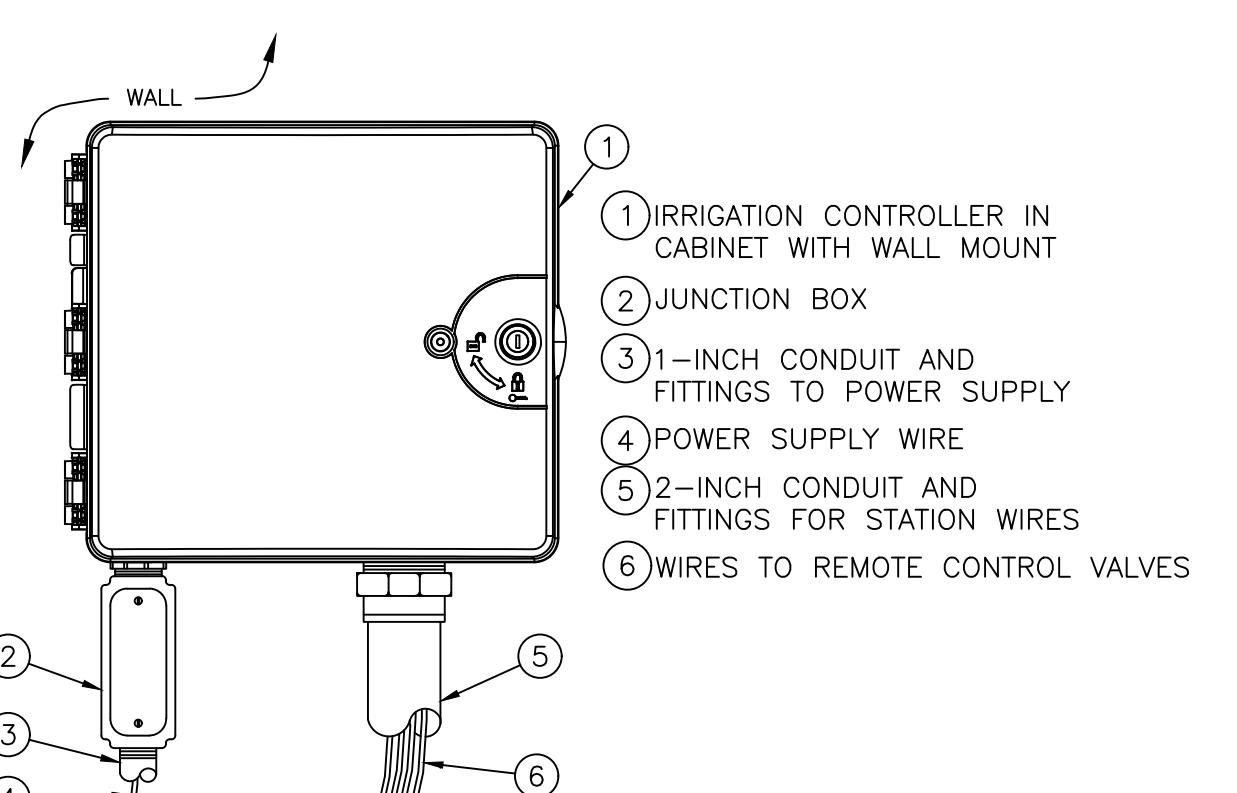
BACKFLOW PREVENTER

N.T.S.



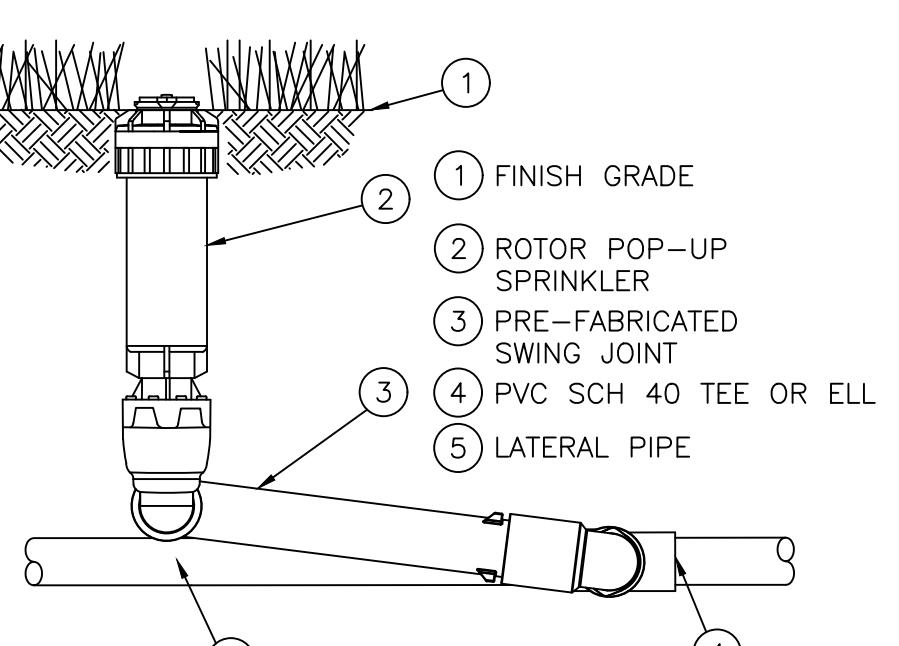
REMOTE CONTROL VALVE

N.T.S.



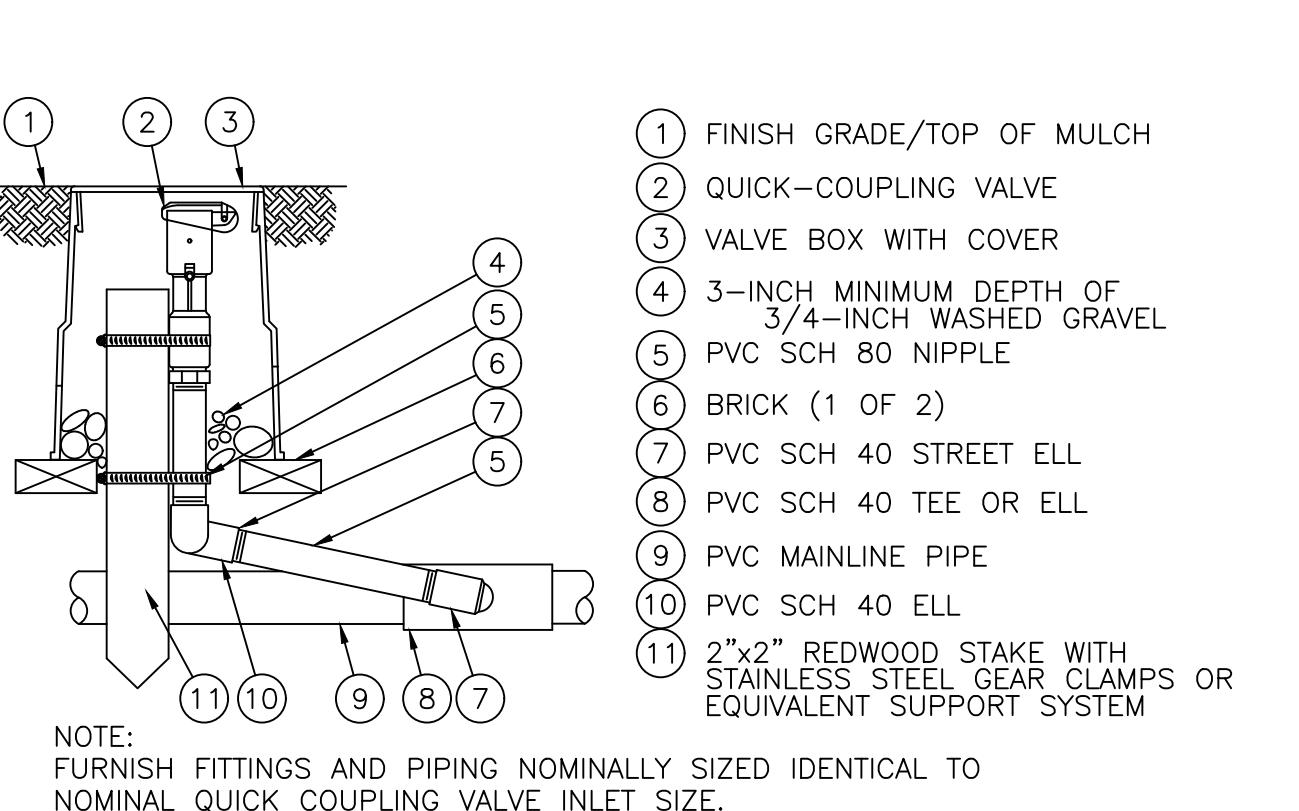
IRRIGATION CONTROLLER

N.T.S.



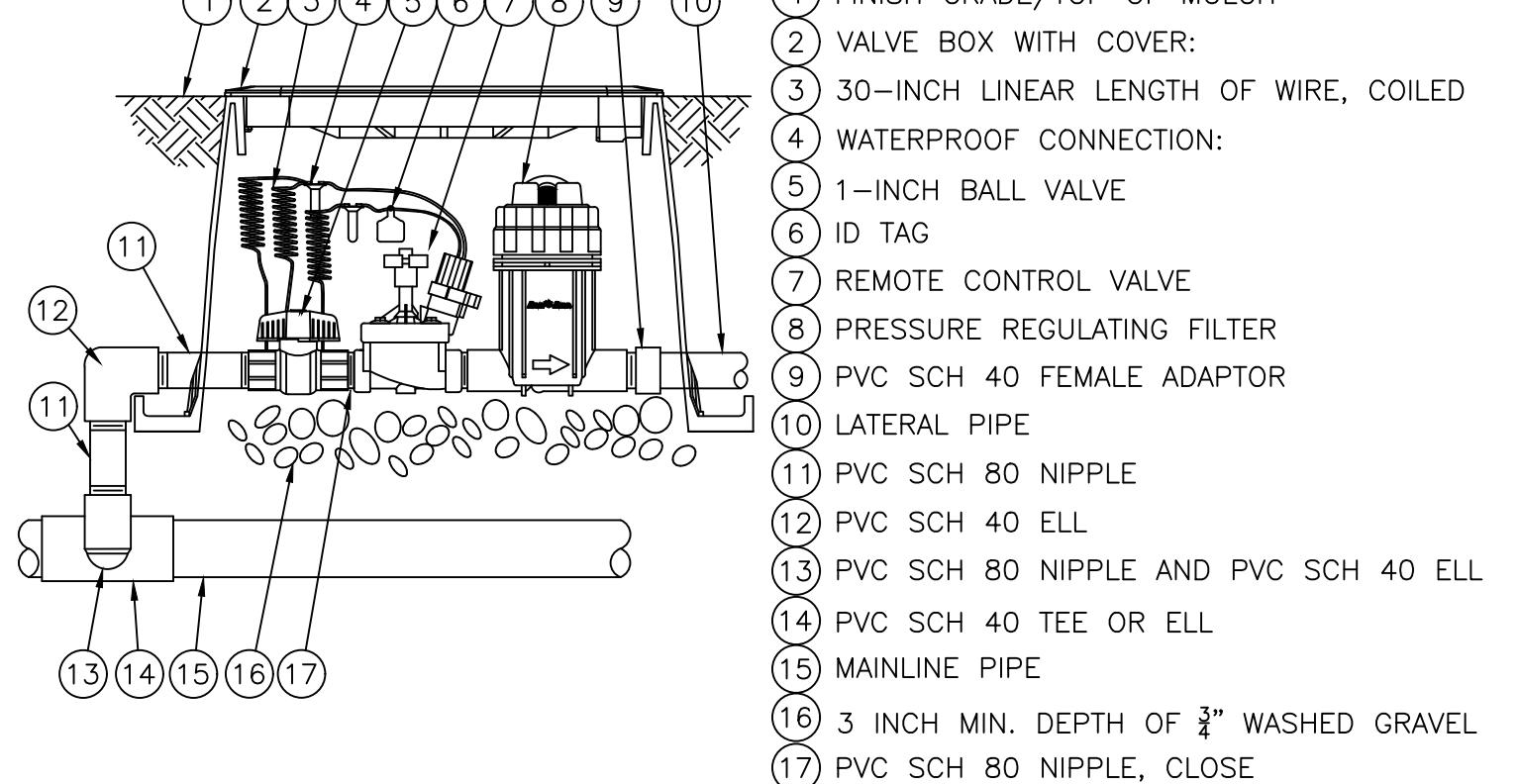
ROTOR POP-UP HEAD

N.T.S.



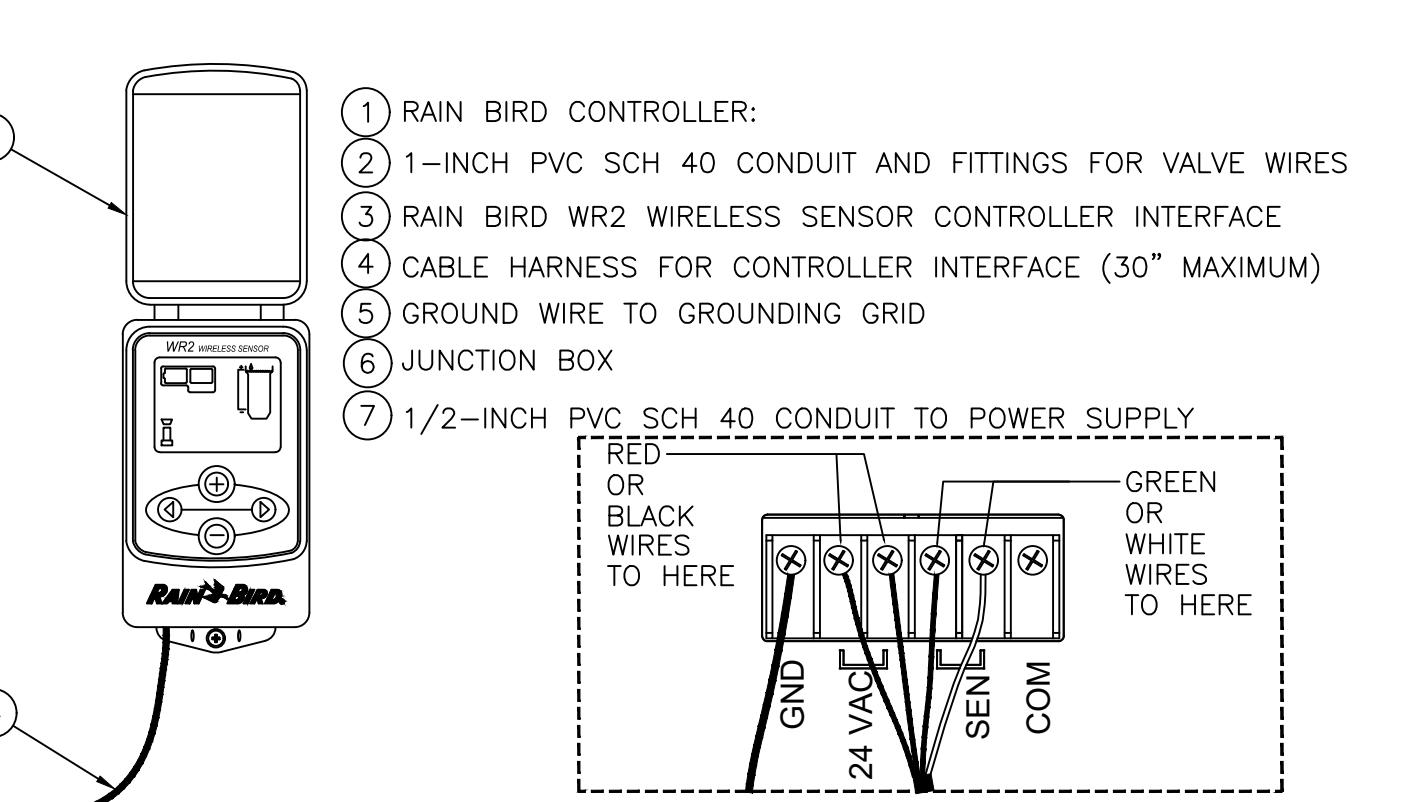
QUICK COUPLING VALVE

N.T.S.



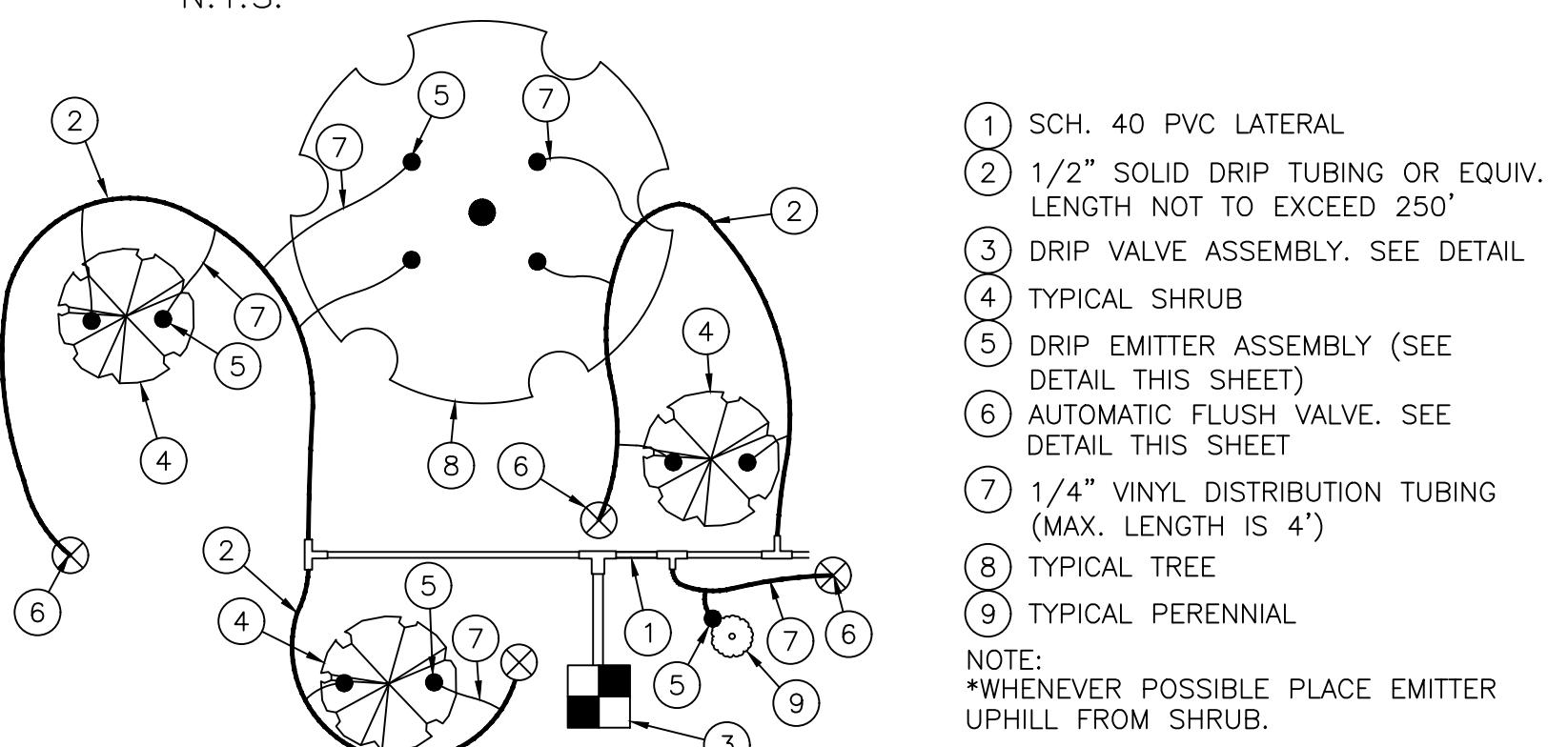
REMOTE CONTROL DRIP VALVE

N.T.S.



WIRELESS RAIN SENSOR

N.T.S.



DRIP ZONE LAYOUT

N.T.S.

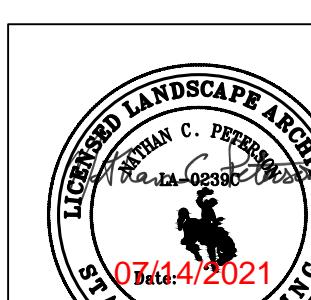
## IRRIGATION NOTES

- This irrigation plan is diagrammatic and equipment locations are approximate. Equipment and piping may be shown outside landscape areas for graphic purposes only.
- Place sleeves where piping crosses under paved areas prior to being paved. Sleeves shall be twice the diameter of the largest irrigation line to be sleeved.
- The intention of the Contracting Officer's rep and consultant is to have constructed, under the construction contract, a complete project ready for use. The general contractor and his sub-contractors should view these documents accordingly. Any apparent question, incomplete area, areas of discrepancy or contradiction in these documents should be brought to the attention of the Contracting Officer's rep prior to bidding. By submitting a bid on this project, the bidder certifies that he has fully informed himself of the requirements of the construction drawings, as they relate to his work, and has read and understands the notes and specifications. Also, that any questions, incomplete areas, discrepancies or contradictions have been brought to the attention of the Contracting Officer's rep and that they have been resolved.
- Willful installation of this work when it is obvious there exists job/site conditions or discrepancies on the plans that are detrimental to the project and that should be brought to the attention of the Contracting Officer's rep will be back-charged to the installer. The installer assumes full responsibility to correct the work at his own expense if he fails to give the required notification for resolution.
- Existing landscape outside the limits of disturbance shall be protected and repaired, if damaged, at no additional cost to the owner.
- Refer to irrigation schedule and details for more information.
- Hand trenching only shall occur within the drip line of existing trees. Machine trenching is strictly prohibited.
- Consult with General Contractor, in conjunction with the design team, before cutting through tree roots 2" or larger.
- Spray, rotor and rotary heads are intended to provide head to head coverage with minimal over-spray onto non-irrigated areas.
- Quantities provided are for convenience only. The contractor is required to verify quantities and adjust bid and construction accordingly. If major discrepancies exist, notify Contracting Officer's rep immediately.
- Water pressure shall be verified on site by landscape contractor.
- See Irrigation schedule for lateral line sizing, typical for all irrigated areas.

## Apartments 235 &amp; 255 Veronica Lane

JACKSON, TETON COUNTY, WYOMING

## Irrigation Details



**Project Info.**  
 Engineer: JEREMY A. DRAPER, P.E.  
 Drafter: N. PETERSON  
 Begin Date: MAY 2021  
 Name: APARTMENTS  
 VERONICA LANE  
 Number: 7609-02

11 Total Sheets