

Plan Development, LLC

Re: Stanley and Rebecca Roberts. Applications to develop Tolovana Park Block 1 Lot 13.

August 6, 2020 ADDENDUM: Response to City Planner August 3, 2020 Letter.

City of Cannon Beach Community Development Department

Jeff Adams, City Planner. By email to: adams@ci.cannon-beach.or.us

Karen LaBonte, Public Works Director. By email to: labonte@ci.cannon-beach.or.us

Hi Jeff and Karen,

I appreciate speaking with you about the matters addressed in Jeff's letter of August 3, 2020.

Paragraph 2: Not an Oceanfront Lot.

Document Attached.

In an attached document, I explain that this lot is not an oceanfront lot, because, based on City Code 17.04.315 "Lot" and 17.04.320 "Lot abutting the oceanshore" and ORS 92.014, 92.150, and 92.175, Ocean Avenue is a buildable lot between this lot and the Oregon Coordinate Line. Therefore, it is not required to have an Oceanfront Setback Survey. Development on this lot is required to provide a 15-foot setback from Ocean Avenue, and to build in the footprint recommended and designed by application design professionals.

Paragraph 3: Tree Plan.

Documents Attached.

Tree Plan: Jason Morgan, Civil Engineer, Morgan Civil Engineering, Inc. provides an updated Tree Plan. David Sip, ISA Certified Arborist, Ecologic Tree, LLC, reviewed this document. Permit Applications: A signed ROW Tree Removal Application and a signed Private Property Tree Removal Application are attached.

Paragraph 4: Staging Area Relocated.

Documents Attached.

Attached documents from the Geotechnical Engineers, Civil Engineer and Certified Engineering Geologist, identify that the Staging Area is relocated to the Nenana right-of-way. Development of Tax Lot 1200 is not requested.

Paragraph 4: Street Design

Cannon Beach Municipal Code Title 12 Streets Section 12.34.040.A. states that the Cannon Beach street design code is flexible to permit adaptation to the social and topographic features of particular neighborhoods. Section 12.34.020 "Director", 12.34.050.A. Width, and 12.34.050.E.Modification to Street Design Standards state that the Public Works Director may permit modifications to the street design standards where the Public Works Director determines that they are necessary to address topographic or geologic conditions and minimized to the degree practical. We are working with the Cannon Beach Public Works Director to determine the street design.

Paragraph 4: Street Vacation

ORS Sections 92.150 and 92.175 explain that every subdivision plat grant to the public, including streets, accepted by the body politic is warrantied to be used for that intended purpose. Nenana Avenue was platted in the 1908 Tolovana Park Subdivision to serve as street access to Block 1 Lot 13. Vacating Nenana Avenue would eliminate Nenana Avenue access to this lot from Hemlock Street. The property owner objects to this loss of vehicular access because it would substantially damage the market value of this property.

Thank you sincerely,



Sabrina Pearson
Project Planner
Plan Development, LLC

Plan Development, LLC

Re: Stanley and Rebecca Roberts. Applications to develop Tolovana Park Block 1 Lot 13.

August 6, 2020 ADDENDUM: Response to City Planner August 3, 2020 Letter.

ADDENDUM DOCUMENTS

These documents are submitted as an addition to those previously submitted.

Paragraph 2: Not an Oceanfront Lot.

Documents Attached.

1. Oceanfront Lot Defined. Sabrina Pearson, Plan Development, LLC. August 5, 2020.

Paragraph 3: Tree Plan.

Documents Attached.

2. Tree Plan. Morgan Civil Engineering, Inc. Jason Morgan, PE, CE. August 5, 2020.
3. Right-of-Way Tree Removal Permit: Signed by Stan Roberts. July 16, 2020.
4. Private Property Tree Removal Permit: Signed by Stan Roberts. July 16, 2020.

Paragraph 4: Staging Area Relocated.

Documents Attached.

STAGING AREA PLANS.

This Nenana Avenue Staging Area Plan replaces the Staging Area previously proposed on Tax Lot 1200.

5. Staging Area Plan. Relocated to Nenana Avenue.
 - a. Staging Area Plans.
Earth Engineers, Inc. Troy Hull, PE, GE. August 5, 2020.
 - b. Staging Area Report.
Earth Engineers, Inc. Troy Hull, PE, GE. August 5, 2020.
 - c. Grading Plan Civil Engineering Pages. Updated Pages 1 and 3.
Morgan Civil Engineering, Inc. Jason Morgan, PE, CE. August 5, 2020.
 - d. Grading Plan Civil Engineering Narrative Updated.
Morgan Civil Engineering, Inc. Jason Morgan, PE, CE. August 5, 2020.
 - e. Staging Area Plan Review.
Don Rondema, MS, PE, GE. August 5, 2020.
 - f. Staging Area Plan Review.
R. Warren Krager, CEG. August 6, 2020.

Plan Development LLC

Addendum to address the City Planner August 3, 2020 request for additional information
Application for Building Permit Tolovana Park Block 1 Lot 13 for Stanley and Rebecca Roberts
August 5, 2020

Cannon Beach Oceanfront Lot Defined

Hi Jeff,

I sincerely appreciate talking with you about your August 3, 2020 letter and why we do not consider Tolovana Park Block 1 Lot 13 an oceanfront lot. Please accept this as an addendum to the Stan and Rebecca Roberts Application to answer that question.

Findings:

Cannon Beach Municipal Code Section 17.04.315 "Lot" means a plot, parcel or tract of land." Cannon Beach Municipal Code Section 17.04.320 "Lot abutting the oceanshore" means a lot which abuts the Oregon Coordinate Line or a lot where there is no buildable lot between it and the Oregon Coordinate Line."

Tolovana Park Block 1 Lot 13 is not a 17.04.320 "Lot abutting the oceanshore", because the City owns "Ocean Avenue", a buildable lot between Tolovana Park Block 1 Lot 13 and the Oregon Coordinate Line.

Ocean Avenue, Tolovana Park Subdivision, recorded on May 1, 1908 in Clatsop County Book 3 Page 70, signed by the Clatsop County Surveyor and Commissioners, is a 17.04.315 "lot" owned by the City and located between Tolovana Park Block 1 Lot 13 and the Oregon Coordinate Line.

The City is allowed to build on this 17.04.320 "lot abutting the oceanshore" consistent with Cannon Beach Municipal Code Title 12 Streets, Title 13 Utility Code, and Title 17 Zoning.

Tolovana Park, Block 1 Lot 13, is not oceanfront and is not subject to the Oceanfront Setback, however, it is required to maintain a 15-foot street yard setback from Ocean Avenue and this setback is further increased where determined suitable by design professionals.

Administrative Decision: I anticipate that this determination is a City Planner Administrative Decision, because it follows a clear and objective interpretation of the City of Cannon Beach Municipal Code and can be applied similarly to any other lot where the City owns a "buildable lot" between that lot and the Oregon Coordinate Line.

Thank you sincerely for your time,



Sabrina Pearson
Project Planner
Plan Development, LLC

APPLICABLE CRITERIA

17.04.085 Building.

“Building” means a structure built for the support, shelter or enclosure of persons, animals or property of any kind. (Ord. 86-16 § 1(13); Ord. 86-10 § 1(13))

17.04.315 Lot.

“Lot” means a plot, parcel, or tract of land. (Ord. 86-16 § 1(52); Ord. 86-10 § 1(52))

17.04.320 Lot abutting the oceanshore.

“Lot abutting the oceanshore” means a lot which abuts the Oregon Coordinate Line or a lot where there is no buildable lot between it and the Oregon Coordinate Line. (Ord. 86-16 § 1(53); Ord. 86-10 § 1(53))

OREGON REVISED STATUTES

92.014 Approval of city or county required for specified divisions of land. (1) A person may not create a street or road for the purpose of subdividing or partitioning an area or tract of land without the approval of the city or county having jurisdiction over the area or tract of land to be subdivided or partitioned.

(2) Notwithstanding ORS 92.175, an instrument dedicating land to public use may not be accepted for recording in this state unless the instrument bears the approval of the city or county authorized by law to accept the dedication. [1955 c.756 §3; 1973 c.696 §4; 1991 c.763 §4; 2005 c.399 §2]

92.175 Methods by which certain land may be provided for public purposes. (1) Land for property dedicated for public purposes may be provided to the city or county having jurisdiction over the land by any of the following methods:

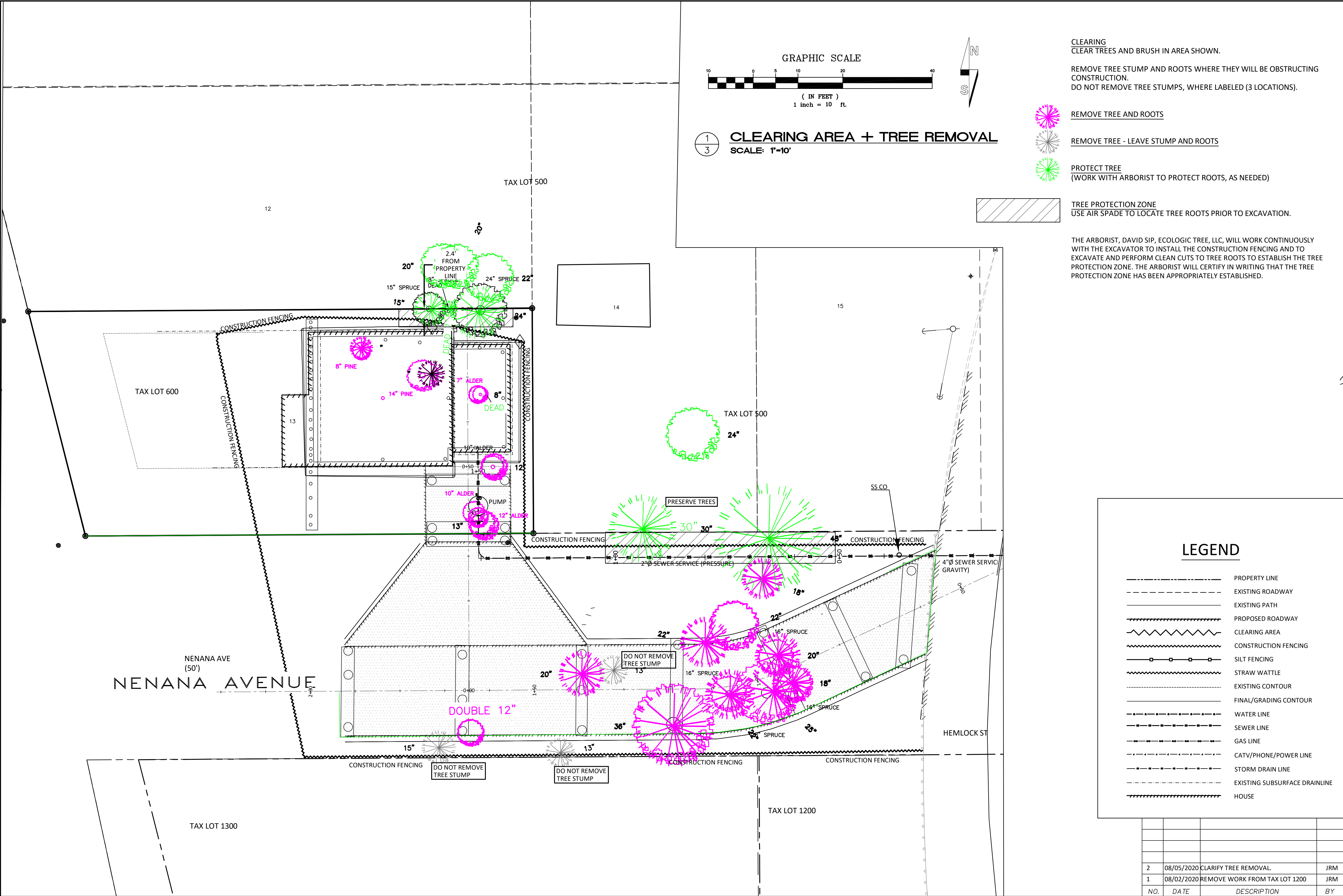
(a) By dedication on the land subdivision plat;

(b) By dedication on the partition plat, provided that the city or county indicates acceptance of the dedication on the face of the plat; or

(c) By a separate dedication or donation document on the form provided by the city or county having jurisdiction over the area of land to be dedicated.

(2) Notwithstanding subsection (1) of this section, utility easements in partition and condominium plats may be granted for public, private and other regulated utility purposes without an acceptance from the governing body having jurisdiction. [1989 c.772 §3; 1997 c.489 §7; 2007 c.652 §4]

V:\19-02-PatDwg\ROBERTS-SITE.dwg, vegetation, Wed Aug 5 09:17:27 2020



CLEARING
CLEAR TREES AND BRUSH IN AREA SHOWN.

REMOVE TREE STUMP AND ROOTS WHERE THEY WILL BE OBSTRUCTING
CONSTRUCTION.
DO NOT REMOVE TREE STUMPS, WHERE LABELED (3 LOCATIONS).

REMOVE TREE AND ROOTS

REMOVE TREE - LEAVE STUMP AND ROOTS

PROTECT TREE
(WORK WITH ARBORIST TO PROTECT ROOTS, AS NEEDED)

TREE PROTECTION ZONE
USE AIR SPADE TO LOCATE TREE ROOTS PRIOR TO EXCAVATION.

THE ARBORIST, DAVID SIP, ECOLOGIC TREE, LLC, WILL WORK CONTINUOUSLY
WITH THE EXCAVATOR TO INSTALL THE CONSTRUCTION FENCING AND TO
EXCAVATE AND PERFORM CLEAN CUTS TO TREE ROOTS TO ESTABLISH THE TREE
PROTECTION ZONE. THE ARBORIST WILL CERTIFY IN WRITING THAT THE TREE
PROTECTION ZONE HAS BEEN APPROPRIATELY ESTABLISHED.

LEGEND

	PROPERTY LINE
	EXISTING ROADWAY
	EXISTING PATH
	PROPOSED ROADWAY
	CLEARING AREA
	CONSTRUCTION FENCING
	SILT FENCING
	STRAW WATTLE
	EXISTING CONTOUR
	FINAL/GRADING CONTOUR
	WATER LINE
	SEWER LINE
	GAS LINE
	CATV/PHONE/POWER LINE
	STORM DRAIN LINE
	EXISTING SUBSURFACE DRAINLINE
	HOUSE

2	08/05/2020	CLARIFY TREE REMOVAL.	JRM
1	08/02/2020	REMOVE WORK FROM TAX LOT 1200	JRM
NO.	DATE	DESCRIPTION	BY



MORGAN CIVIL
ENGINEERING, INC.

• CIVIL ENGINEERING
• INSPECTION
• PLANNING
PO BOX 358
MANZANITA, OR 97130
(503) 801-6016
www.morgancivil.com

JOB NO.
#19-02-PAT
DATE
JULY 8, 2020



STANLEY ROBERTS
TAX LOT 600 - NENANA AVENUE
VEGETATION REMOVAL PLAN

CANNON BEACH/MAP 5N 10W 31

SHEET

C3b
OF TEN

City of Cannon Beach Tree Removal Application

Please fill out this form completely. Please type or print.

Applicant Name: Mike McEwan. Bob McEwan Construction, Inc.

Mailing Address: PO Box 2845, Gearhart, OR 97138

Phone: 503-738-3569

Email: mmcewan3569@gmail.com

Property Owner Name: Stan and Rebecca Roberts

Mailing Address: 925 Lake Street South, Apt. 201, Kirkland, WA 98057

Phone: 425-307-1442

Email: stan.milliman@gmail.com

Property Location: Tolovana Park Block 1 Lot 13

Map/Tax Lot Number: 5N 10W 31AA 600

The city shall issue a tree removal permit if one of the following criteria is met. Please circle the letter of the criteria that applies.

These criteria require a Tree Removal Report from an International Society of Arboriculture (ISA) Certified Arborist:

- A. You are constructing a structure or development approved and allowed by pursuant to Cannon Beach Municipal Code 17.70.030, which involves any form of ground disturbance; including required vehicular and utility access. **SEE ATTACHMENT A – Removing Trees Because of Construction.**
- B. Removal of a tree for the health and vigor of surrounding trees.

These criteria require an ISA Tree Hazard Evaluation Form prepared by an ISA Certified Arborist:

- C. The tree presents a safety hazard, where:
 - 1. The condition or location of the tree presents either a foreseeable danger to public safety, or a foreseeable danger of property damage to an existing structure; and,
 - 2. Such hazard or danger cannot reasonably be alleviated by pruning or treatment of the tree.
- D. The tree was damaged by storm, fire or other injury, which cannot be saved by pruning.

You must submit a tree removal permit with a reason if:

- E. The tree is dead.
- F. Tree removal is necessary to provide solar access to a solar energy system where pruning will not provide adequate solar access:
 - 1. The city may require documentation that a device qualifies for Oregon Department of Energy Solar Tax Credit, or other incentive for installation of solar devices offered by a utility.
 - 2. No tree measuring more than 24 inches in diameter shall be removed for solar access.
- G. Tree removal is for landscaping purposes, subject to the following conditions:
 - 1. The tree cannot exceed 10 inches in diameter.
 - 2. A landscape plan for the affected area must be submitted and approved by the City.
 - 3. The landscape plan must incorporate replacement trees for the trees removed. The replacement trees must be at least six feet in height or have a two-inch caliper; and ,
 - 4. The City shall inspect the property one year after the approval of the permit to insure the landscape plan has been implemented.

If your tree presents an immediate danger of collapse and if such potential collapse represents a clear and present hazard to persons or property, **please contact the Community Development Director (CDD)**. If it is determined by the CDD that there is an immediate danger, then a tree removal permit is not required prior to tree removal. However, within seven days after the tree removal, the tree owner shall make application for an after-the-fact permit. Where a tree presents an immediate danger of collapse, a complete ISA Tree Hazard Evaluation Form prepared by a certified arborist is not required. Where a safety hazard exists, as defined by this subsection, the city may require the tree's removal. If the tree has not been removed after forty-eight hours, the city may remove the tree and charge the costs to the owner.

Attach a site plan showing the location and type of all trees on the property, including the trees to be removed. Indicate the location of replacement trees and the type. SEE ATTACHMENT B – Site Plan. Attach photos of the trees to be removed and mark the trees with ribbon.

Explain how the request meets one or more of the applicable criteria. Include the number and type of trees requested for removal. If appropriate, explain why pruning would not accomplish the same goal as tree removal.

.....

Application fee: \$50.00 for 1-4 trees; \$100 for 5 or more trees

Note: The application fee is a **nonrefundable** fee that is due upon receipt of application, whether the removal request is approved or denied.

Municipal Code Section 17.70.030.I. For tree removal requests of trees located in a street right-of-way, or on property owned by the city, property owners within one hundred feet of the tree(s) requested for removal shall be notified of the proposed action. The notification shall also be posted on the city's website, and on the bulletin board at City Hall, and at the Post Office. In making its decision on such a tree removal request, the city shall consider comments received within ten days of the date of the mailing of the property owner notification. To be considered, comments must address the tree removal criteria of Section 17.70.020. Any person who has commented on the tree removal request shall be notified of the city's decision and may appeal that decision in accordance with subsection H.

Applicant Signature Stanley A Roberts Date: 7/15/20

I understand, as the applicant signature, the cost of the tree removal and cleanup is my full responsibility and I am responsible if an approved tree removal permit is violated in any way. I must comply with all City requirements included with the approval, and I must notify the City 48-hours prior to the removal.

Date: _____ Fee Paid: \$ _____ Receipt Number: _____ Permit #: _____

Date Notice Mailed: _____ Date of 10-day waiting period: _____

Comments Received: Yes ☐ No ☐ Application is: ☐ Approved ☐ Denied

☐ Approved - Tree replacement required per Cannon Beach Municipal Code 17.70.040, Tree Replacement Policy.

☐ Approved with comments:

By: _____ Date: _____

Decisions on the issuance of a tree removal permit may be appealed to the Planning Commission in accordance with Section 17.88.140 a, of the Municipal Code.

ATTACHMENT A

Removing Trees Because of Construction

If you are constructing a structure or development which involves any kind of ground disturbance; including required vehicular or utility access, prior to beginning construction, you must:

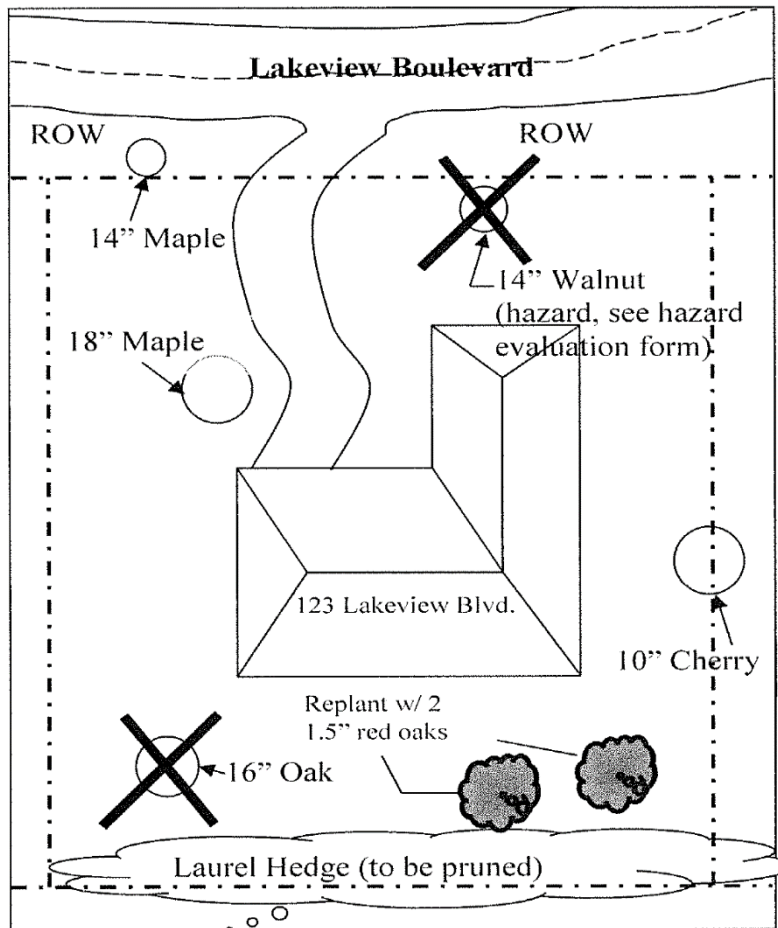
- 1) Contact a certified arborist
- 2) If the certified arborist determines that no trees will be affected by the proposed construction, then the certified arborist should write a letter stating these findings.
NOTE: The City reserves the right to have the City Arborist review all arborist recommendations and make an independent report for Administrative review. All administrative decisions may be appealed.
- 3) If the certified arborist determines that trees will be affected,
 - a. A site plan must be submitted with a Tree Removal permit. The Site Plan should indicate the location of all trees over 6" DBH on the subject property or off-site (in the adjoining right-of-way or on adjacent property) whose root structure might be impacted by excavation associated with the proposed structure, or by soil compaction caused by vehicular traffic or storage of materials.
 - b. Measures must be taken to avoid damaging trees not proposed for removal, both on the subject property and off-site (in the adjoining right-of-way or on adjacent property).
 - c. The area where a tree's root structure might be impacted by excavation, or where soil compaction caused by vehicular traffic or storage of materials might affect a tree's health, shall be known as a Tree Protection Zone (TPZ).
 - d. Prior to construction the TPZ shall be delineated by hi-visibility fencing a minimum of 3.5 feet tall, which shall be retained in place until completion of construction. Vehicular traffic, excavation and storage of materials shall be prohibited within the TPZ.

The city may require the replanting of trees to replace those being removed.

ATTACHMENT B

SITE PLAN EXAMPLE FOR A TREE REMOVAL APPLICATION

A site plan is required as part of your tree removal request. The site plan should be on an 8.5" x 11" size paper, or larger and include the following information.



Items to include on your Site Plan:

- Address of the Tree Removal Site;
- Property lines;
- Public Right of Way, including the name of any streets;
- Existing or proposed structures;
- Creeks, Streams, or any other natural features;
- Location of any existing 6" or larger tree, as measured from breast height (approximately 4' from the ground), with diameter size and type of tree;
- Please indicate by clearly marking those proposed for removal with an "X"

Within 24 Hours of submitting your application, mark the tree(s) with yellow ribbon.

City of Cannon Beach Right-of-Way/Property Owned by the City Tree Removal Application

Please fill out this form completely. Please type or print.

Applicant Name: Stan and Rebecca Roberts

Mailing Address: 925 Lake Street South, Apt. 201, Kirkland, WA 98057

Phone: 206-465-4220

Email: stan.milliman@gmail.com

Abutting Property Owner Name: _____

Mailing Address: _____

Phone: _____

Email: _____

Property Location: Nenana from Hemlock to Ocean Ave. **Map/Tax Lot Number:** 5N 10W 31AA 600

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- F. Tree removal is necessary to provide solar access to a solar energy system where pruning will not provide adequate solar access:
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Attach a site plan showing the location and type of all trees on the property, including the trees to be removed. Indicate the location of replacement trees and the type. SEE ATTACHMENT B – Site Plan. Attach photos of the trees to be removed and mark the trees with ribbon.

Explain how the request meets one or more of the applicable criteria. Include the number and type of trees requested for removal. If appropriate, explain why pruning would not accomplish the same goal as tree removal.

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Applicant Signature Stanley A Roberts Date: 7/15/20

I understand, as the applicant signature, the cost of the tree removal and cleanup is my full responsibility and I am responsible if an approved tree removal permit is violated in any way. I must comply with all City requirements included with the approval, and I must notify the City 48-hours prior to the removal.

Date: _____ Fee Paid: \$ _____ Receipt Number: _____ Permit #: _____

Date Notice Mailed: _____ Date of 10-day waiting period: _____

Comments Received: Yes ☐ No ☐ Application is: ☐ Approved ☐ Denied

☐ Approved - Tree replacement required per Cannon Beach Municipal Code 17.70.040, Tree Replacement Policy.

☐ Approved with comments:

By: _____ Date: _____

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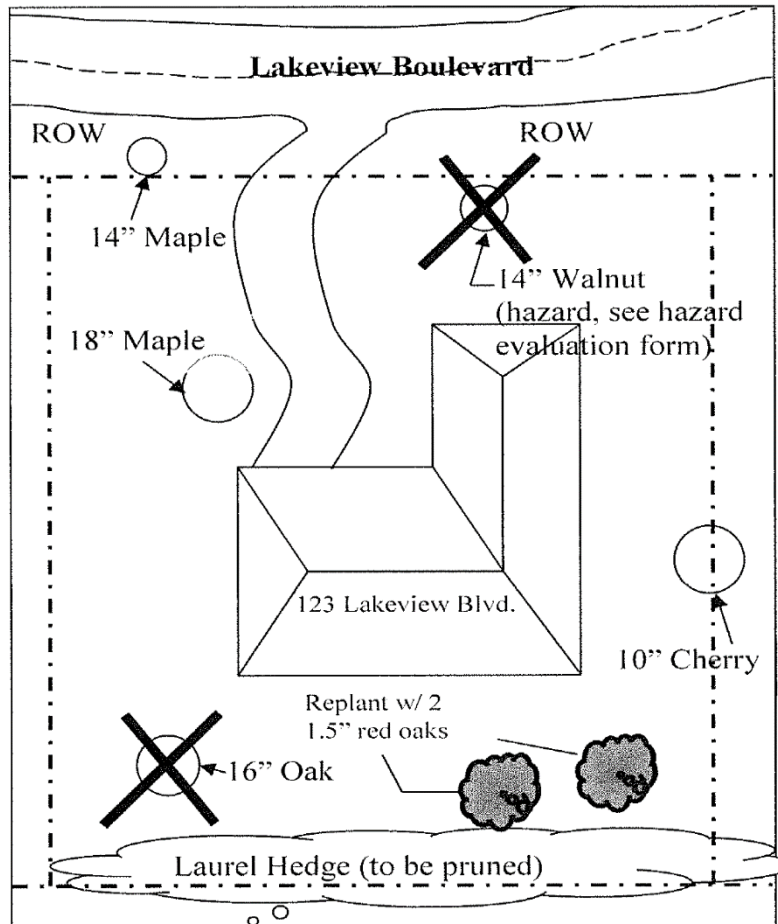
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The city may require the replanting of trees to replace those being removed.

ATTACHMENT B

SITE PLAN EXAMPLE FOR A TREE REMOVAL APPLICATION

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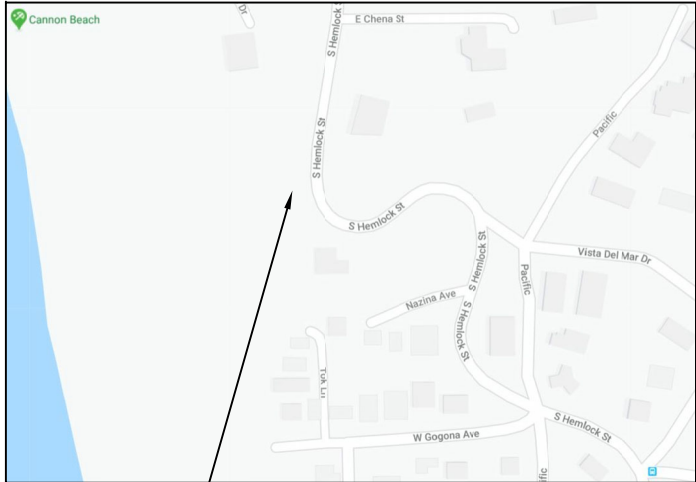
- Address of the Tree Removal Site;
- Property lines;
- Public Right of Way, including the name of any streets;
- Existing or proposed structures;
- Creeks, Streams, or any other natural features;
- Location of any existing 6" or larger tree, as measured from breast height (approximately 4' from the ground), with diameter size and type of tree;
- Please indicate by clearly marking those proposed for removal with an "X"

Within 24 Hours of submitting your application, mark the tree(s) with yellow ribbon.

ROBERTS TEMPORARY STAGING AREA

NENANA AVE, CANNON BEACH, OR

SHEET NUMBER	SHEET TITLE
Z1.0	COVER SHEET AND NOTES
Z2.0	SITE PLAN
Z2.1, Z2.2	PLAN DETAIL, PILE LOCATION DETAIL
Z2.3, Z2.4	SCHEMATIC ISO VIEWS
Z3.0, Z3.1, Z3.2	SECTIONS, SOLDIER PILE TABLE
Z4.0	GABION MESH ATTACHMENT DETAILS
Z5.0, Z5.1	TEMPORARY EROSION CONTROL DETAILS
Z6.0	SITE RESTORATION SEED MIX



PROJECT SITE

GENERAL:

THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING DIMENSIONS AND SITE CONDITIONS, DETERMINING ACTUAL LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THE PLANS AND THOSE UTILITIES OR UNDERGROUND CONSTRUCTIONS NOT SHOWN ON THE PLANS, AND FOR REMOVAL OF ALL ABANDONED UTILITIES, OR OTHER UNDERGROUND OBSTRUCTIONS THAT INTERFERE WITH THE NEW CONSTRUCTION.

THE CONTRACTOR IS RESPONSIBLE FOR THE CONSTRUCTION PROCESS AND THE SAFETY OF THE WORKERS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE CONSTRUCTION SEQUENCE, TEMPORARY HANDRAILS, EXCAVATION ACCESS, AND BARRIERS. IT ALSO INCLUDES LIFTING OF MATERIALS AND CONSTRUCTION EQUIPMENT INTO AND OUT OF THE EXCAVATION, TEMPORARY BRACING OF FORMWORK, TEMPORARY SHORING OF EXCAVATIONS, AND STABILITY OF ALL TEMPORARY CUT SLOPES.

REFERENCE DATA:

- THE EXISTING SITE, TOPOGRAPHICAL, AND UTILITY DATA; AND THE PROPOSED TEMPORARY STAGING AREA LOCATIONS AND DIMENSIONS ARE ALL BASED ON INFORMATION SUPPLIED BY THE GENERAL CONTRACTOR.

BUILDING CODES, DESIGN MANUALS, AND SPECIFICATIONS:

- 2019 OREGON STRUCTURAL SPECIALTY CODE.

DESIGN CALCULATIONS:

THE TEMPORARY STAGING AREA DESIGN CALCULATIONS ARE CONTAINED IN REPORT #20-014-2-R3 PREPARED BY EARTH ENGINEERS, INC. DATED AUGUST 5, 2020.

DRILLED SOLDIER PILES:

THE MINIMUM REQUIRED STRUCTURAL STEEL W-SHAPES FOR THE SOLDIER PILES ARE INDICATED ON THE PLANS. ALTERNATIVE STEEL SECTION ARE EQUAL TO OR GREATER THAN THE CROSS-SECTIONAL AREA AND SECTION MODULUS OF THE CORRESPONDING STEEL SECTION SHOWN ON THE PLANS, AND IS APPROVED BY THE SHORING DESIGNER.

SHAFTS SHALL BE CONSTRUCTED SO THAT THE CENTER AT THE TOP OF THE SHAFT IS WITHIN +/- 6 INCHES OF THE PLAN LOCATION. SHAFTS SHALL BE PLUMB. THE ELEVATION AT THE TOP OF SHAFT SHALL BE WITHIN +/- 6 INCHES FROM THE PLAN LOCATION. DURING CONSTRUCTION FOR THE SHAFTS, THE CONTRACTOR SHALL MAKE FREQUENT CHECKS ON THE PLUMBNESS, ALIGNMENT, AND DIMENSIONS OF THE SHAFTS. ANY DEVIATION EXCEEDING THE ALLOWABLE TOLERANCES SHALL BE CORRECTED IMMEDIATELY, UNLESS THE DEVIATION IS ACCEPTABLE, AT THE DISCRETION OF THE SHORING DESIGNER.

THE STEEL SOLDER PILES SHALL BE PLACED SO THAT THE CENTER OF THE PILE IS WITHIN +/- 6 INCH OF THE PLAN LOCATION AT THE TOP OF THE PILE, AND WITHIN 0.5% OF VERTICAL WITH DEPTH. ANY DEVIATION EXCEEDING THE ALLOWABLE TOLERANCES SHALL BE CORRECTED IMMEDIATELY, UNLESS THE DEVIATION IS ACCEPTABLE, AT THE DISCRETION OF THE SHORING DESIGNER.

SHAFTS SHALL BE EXCAVATED TO THE REQUIRED DEPTH AS SHOWN ON THE PLANS. THE EXCAVATION SHALL BE COMPLETED IN A CONTINUOUS OPERATION USING EQUIPMENT CAPABLE OF EXCAVATING THROUGH THE TYPE OF MATERIAL EXPECTED TO BE ENCOUNTERED.

IF THE SHAFT EXCAVATION IS STOPPED WITH THE APPROVAL OF THE ENGINEER, THE SHAFT SHALL BE SECURED BY INSTALLATION OF A SAFETY COVER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE SAFETY OF THE SHAFT AND SURROUNDING SOIL AND THE STABILITY OF THE SIDE WALLS. A TEMPORARY CASING SHOULD BE USED IF NECESSARY TO ENSURE SUCH SAFETY AND STABILITY.

WHERE CAVING CONDITIONS ARE ENCOUNTERED, FURTHER EXCAVATION WILL NOT BE ALLOWED UNTIL THE CONTRACTOR SELECTS A METHOD TO PREVENT GROUND MOVEMENT. THE CONTRATOR MAY ELECT TO PLACE A TEMPORARY CASING OR USE OTHER METHODS APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL USE APPROPRIATE MEANS (SUCH AS A CLEANOUT BUCKET), TO CLEAN THE BOTTOM OF THE EXCAVATION SUCH THAT NO MORE THAN 2 INCHES OF LOOSE OR DISTURBED MATERIAL IS PRESENT.

WHEN UNEXPECTED OBSTRUCTIONS, WHICH REQUIRE SPECIALEDED EQUIPMENT AND/OR LABOR ARE ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PROMPTLY AND THE OBSTRUCTIONS SHALL BE REMOVED AND THE EXCAVATION CONTINUED IN A MANNER APPROVED BY THE ENGINEER.

TEMPORARY CASINGS FOR THE SHAFTS SHALL BE REMOVED. A MINIMUM 5 FOOT HEAD OF CONCRETE MUST BE MAINTAINED TO BALANCE THE SOIL AND WATER PRESSURE AT THE BOTTOM OF THE CASING DURING REMOVAL. THE CASING SHALL BE SMOOTH.

SHAFT CONCRETE SHALL BE PLACED AS SHOWN ON THE PLANS AND SHALL COMMENCE WITHIN 6 HOURS AFTER COMPLETION OF THE EXCAVATION. SHAFT CONCRETE SHALL BE PLACED IN ONE CONTINUOUS OPERATION TO THE TOP OF THE SHAFT.

AS AN ALTERNATE TO CONVENTIONAL SHAFT CONSTRUCTION USING A KELLY BAR DRIVEN FLIGHT AUGER WITH OR WITHOUT CASING, THE CFA (CONTINUOUS FLIGHT AUGER) METHOD MAY BE USED SO LONG AS THE GROUND CONDITIONS REMAIN AMENABLE TO THIS METHOD WITHOUT THE DEVELOPMENT OF MINING, OR OF CAVING IF THE CFA IS REMOVED AND THE HOLE LEFT OPEN FOR A PERIOD OF TIME PRIOR TO CONCRETING.

LEAN-MIX CONCRETE FOR SOLDIER PILES:

ALL LEAN-MIX CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF AT LEAST 150 PSI. PORTLAND CEMENT SHALL BE TYPE I, II, or III CONFORMING TO ASTM C150/AASHTO M85. CONCRETE CYLINDER TESTS ARE NOT REQUIRED.

SLUMP FOR ALL LEAN-MIX CONCRETE SHALL NOT BE LESS THAN 5 INCHES AND NO GREATER THAN 9 INCHES. ADMIXTURES SHALL CONFORM TO THE REQUIREMENTS OF ASTM C494 / AASHTO M194, SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND SHALL BE APPROVED BY THE ENGINEER. AGGREGATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM C33 / AASHTO M6 FOR FINE AGGREGATES AND AASHTO M80, CLASS B FOR COARSE AGGREGATES.

STEEL SOLDIER PILES:

ASTM A992, 50 KSI, PLAIN.

MESH FACING FOR PILE WALL:

MACCAFERI GALVANIZED DOUBLE TWIST .120" DIA. TYPE 8X10 WIRE MESH BACKED WITH 1/2" X 1" (16) GAUGE FINE OPENING WIRE MESH, OR EQUIVALENT.

GEOFOAM BACKFILL:

EPS15.

CRUSHED GRAVEL:

3/4" MINUS.

DRAIN ROCK:

3/4" TO 1 1/2" CLEAN.

FILTER FABRIC:

AMOCO STYLE 4535 NONWOVEN FILTER FABRIC, OR EQUIVALENT.

SPECIAL INSPECTIONS OF THE TEMPORARY STAGING AREA:

IN ACCORDANCE WITH SECTION 1704 OF OSSC (2019), SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING ITEMS OR PROCESSES: SOLDIER PILE INSTALLATION, MESH FACING, FOAM BLOCK FILL.

SITE RESTORATION:

AT THE CONCLUSION OF THE PROJECT WHEN THE TEMPORARY STAGING AREA IS NO LONGER NEEDED FOR CONSTRUCTION PURPOSES, THE SITE WILL BE RESTORED TO A CONDITION SIMILAR TO THE EXISTING CONDITIONS, AND SIMILAR TO THE ADJACENT, NEARBY LANDSCAPE.

- THE GEOFOAM BACKFILL, CRUSHED GRAVEL, DRAIN ROCK, AND FILTER FABRIC WILL BE REMOVED FROM THE SITE.
- THE SOLDIER PILES WILL BE CUT OFF BELOW THE FINISHED GRADE.
- THE SLOPE WILL BE GRADED BACK TO ITS APPROXIMATE ORIGINAL CONDITION.
- AREAS DISTURBED DURING THE CONSTRUCTION OF THE TEMPORARY STAGING AREA WILL BE HYDROSEEDDED USING THE SEED MIX PER Z6.0.

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360-567-1806



EXPIRES: 6/30 21

CONTRACTOR:



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HILLSBORO, OR 97123
503-649-8111

ROBERTS
TEMPORARY
STAGING AREA
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

COVER SHEET
AND
NOTES

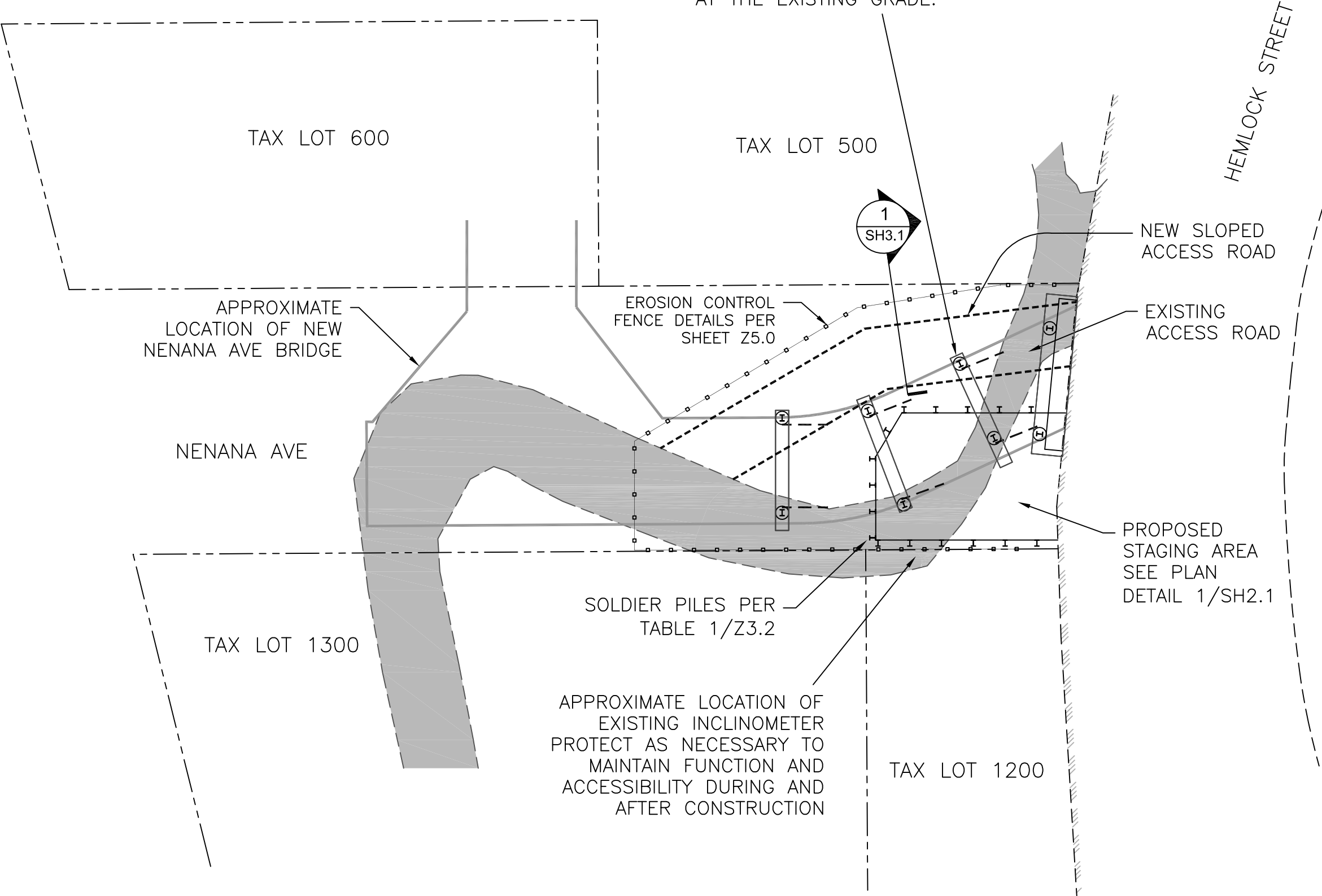
REVISIONS:

DATE: 08/05/20
SCALE: AS SHOWN
DRAWN: SMW
CHECKED BY: JC
JOB NO.:

Z1.0

Ref: A1196301

NENANA AVE BRIDGE BENT 1 THRU BENT 4 LOCATIONS
NOTE: ALL BRIDGE BENTS WILL BE CONSTRUCTED
AT THE EXISTING GRADE.



1 Z2.0 STAGING AREA SITE PLAN
1" = 20'
0 20

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**ROBERTS
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SHEET TITLE:

SITE PLAN

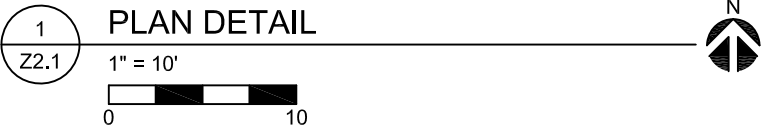
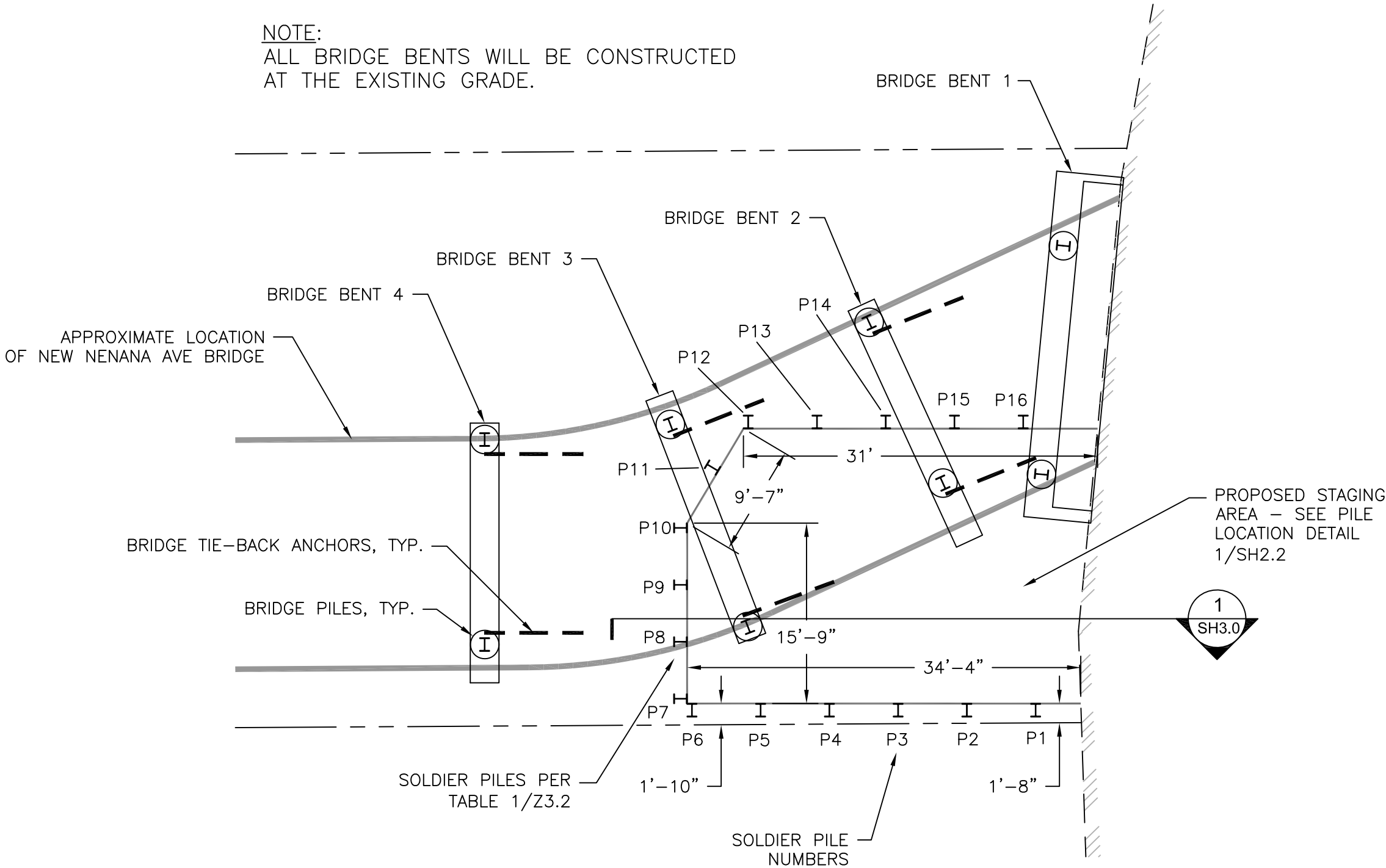
REVISIONS:

DATE: 08/05/20
SCALE: AS SHOWN
DRAWN: SMW
CHECKED BY: JC
JOB NO.:

Z2.0

Ref: A1196302

NOTE:
ALL BRIDGE BENTS WILL BE CONSTRUCTED
AT THE EXISTING GRADE.



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503-649-8111

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STAGING AREA**
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

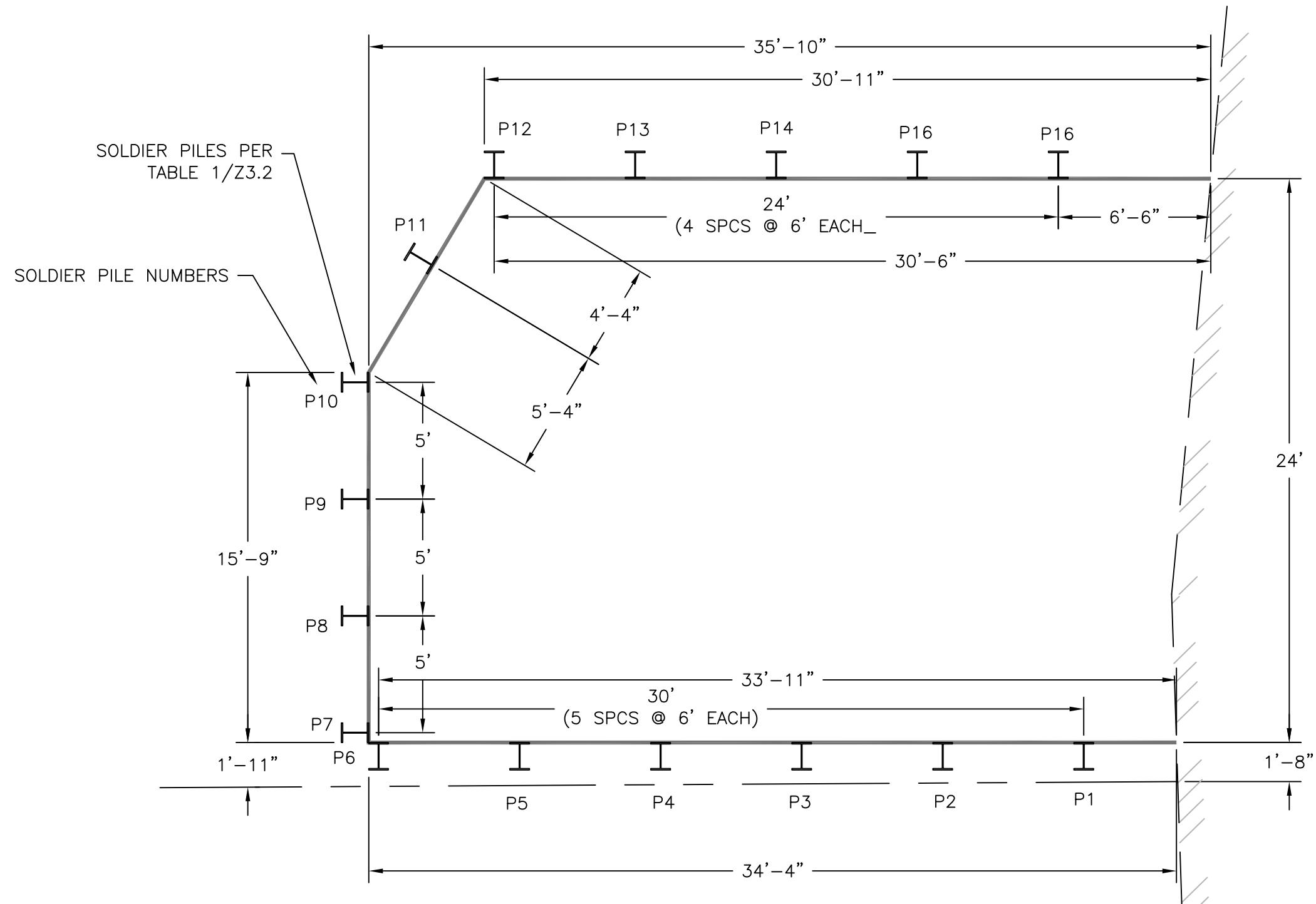
PLAN DETAIL

REVISIONS:

DATE: 08/05/20
SCALE: AS SHOWN
DRAWN: SMW
CHECKED BY: JC
JOB NO.:

Z2.1

Ref: A1196302.1



1
Z2.2

PILE LOCATION DETAIL

1" = 5'

0 5

N

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**ROBERTS
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CANNON BEACH, OR

SHEET TITLE:

PILE LOCATION DETAIL

REVISIONS:

DATE: 08/05/20

SCALE: AS SHOWN

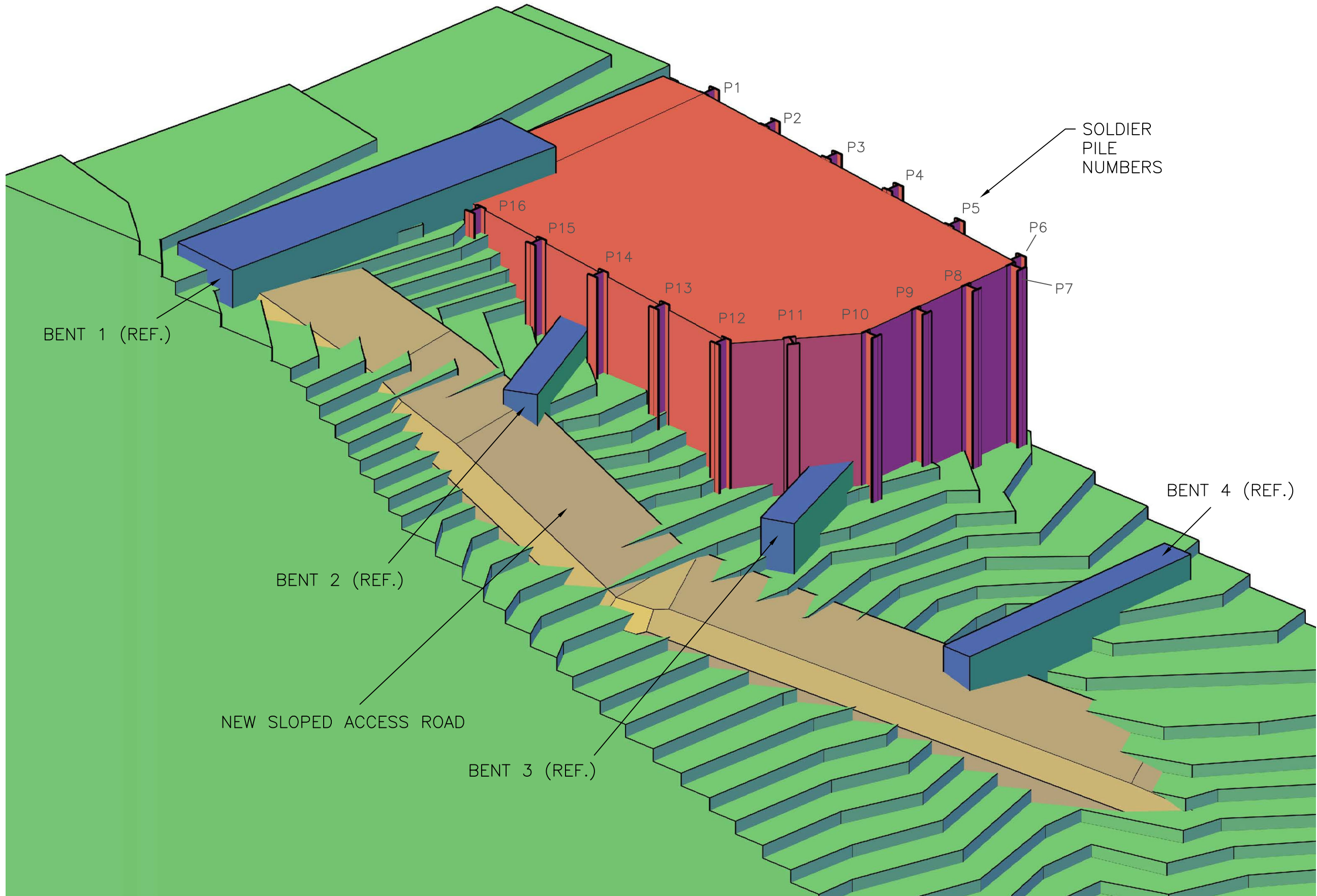
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CHECKED BY: JC

JOB NO.:

Z2.2

Ref: A1196302.2



1
Z2.3

SCHEMATIC ISO VIEW

GEOTECHNICAL ENGINEER:
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CAMAS, WA 98607
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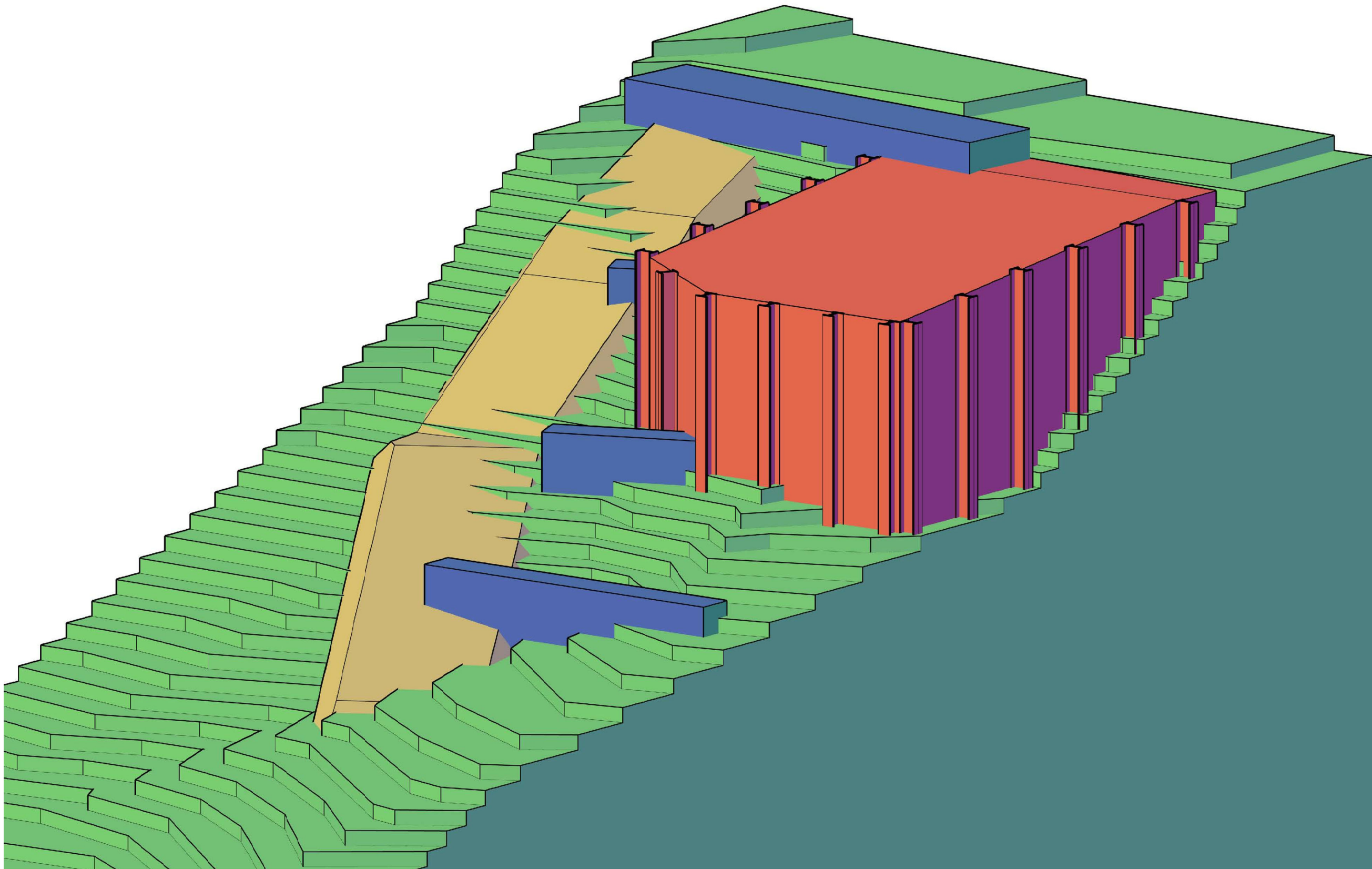
CONTRACTOR:
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**ROBERTS
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STAGING AREA**
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:	
SCHEMATIC ISO VIEW	
REVISIONS:	
DATE:	08/05/20
SCALE:	AS SHOWN
DRAWN:	SMW
CHECKED BY:	JC
JOB NO.:	

Z2.3

Ref: A1196302



1
Z2.4

SCHEMATIC ISO VIEW

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CANNON BEACH, OR

SHEET TITLE:

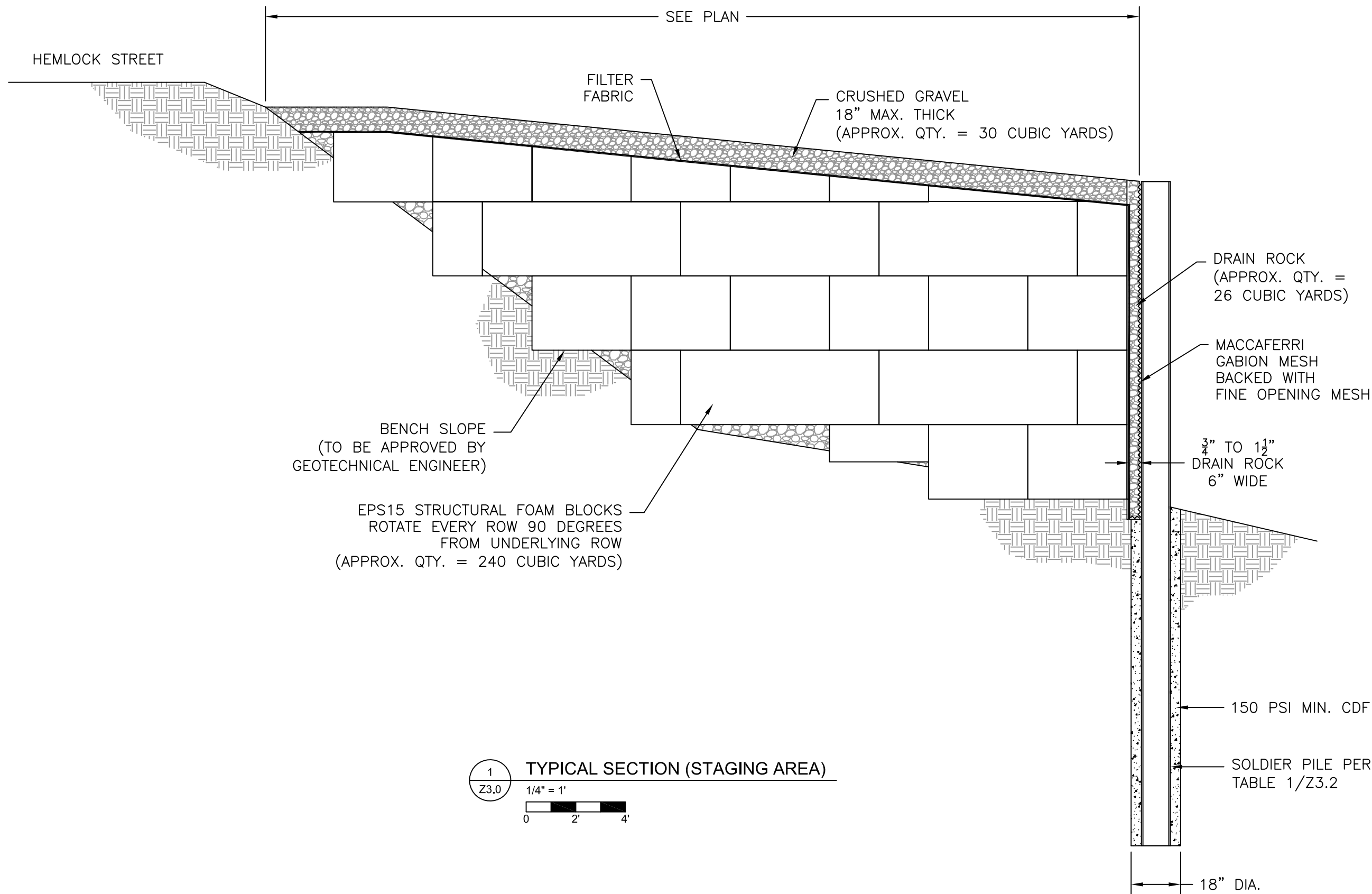
SCHEMATIC ISO VIEW

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DRAWN: SMW
CHECKED BY: JC
JOB NO.:

Z2.4

Ref: A1196302



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SHEET TITLE:

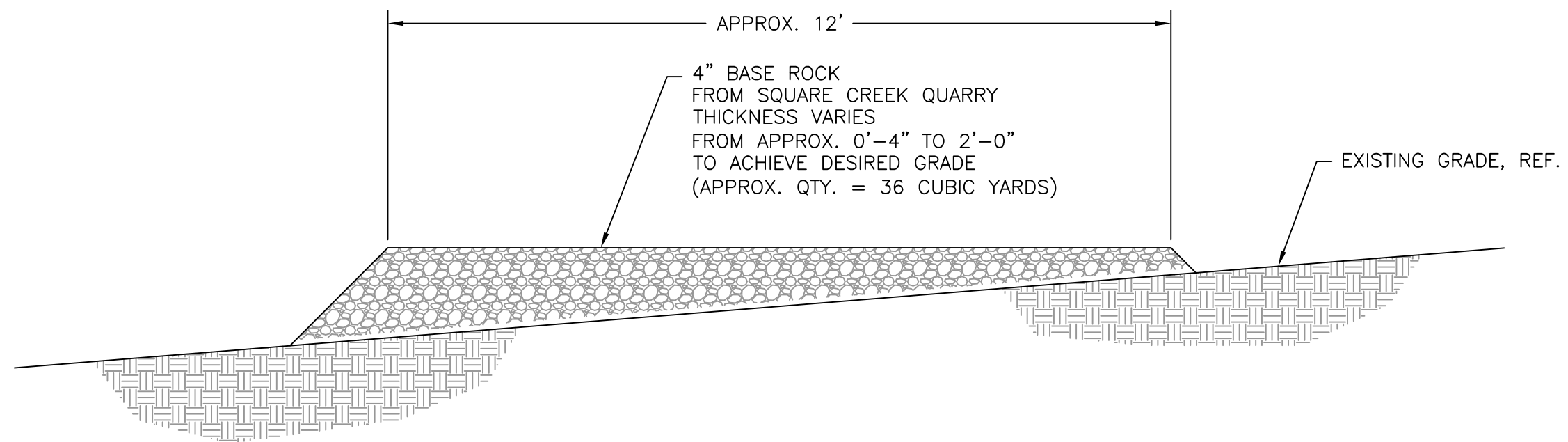
**SECTION
(STAGING AREA)**

REVISIONS:

DATE: 08/05/20
SCALE: AS SHOWN
DRAWN: SMW
CHECKED BY: JC
JOB NO.:

Z3.0

Ref: A1196303



1
Z3.1

TYPICAL SECTION (SLOPED ACCESS ROAD)

1/2" = 1'

0 2' 4'

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ROBERTS
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STAGING AREA
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CANNON BEACH, OR

SHEET TITLE:

SECTION
(SLOPED ACCESS ROAD)

REVISIONS:

DATE:

08/05/20

SCALE:

AS SHOWN

DRAWN:

SMW

CHECKED BY:

JC

JOB NO.:

Z3.1

Ref: A1196303

Pile Number	Exposed Height (feet)	Pile Size	Embedment (feet)	Total Pile Length (feet)
1	5	W12x22	10	15
2	8	W12x26	11	19
3	11	W14x43	13	24
4	14.5	W14x68	14	28.5
5	14.75	W14x68	14	28.75
6	14	W14x68	14	28
7	14	W14x68	14	28
8	14	W14x68	14	28
9	14	W14x68	14	28
10	14	W14x68	14	28
11	12.5	W14X68	14	26.5
12	11.75	W14x43	13	24.75
13	9.5	W14x30	12	21.5
14	8	W12x26	11	19
15	7.5	W12x26	11	18.5
16	2	W12x22	10	12

1

Z3.2

SOLDIER PILE TABLE

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SHEET TITLE:

SOLDIER PILE TABLE

REVISIONS:

DATE:08/05/20

SCALE:AS SHOWN

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CHECKED BY:JC

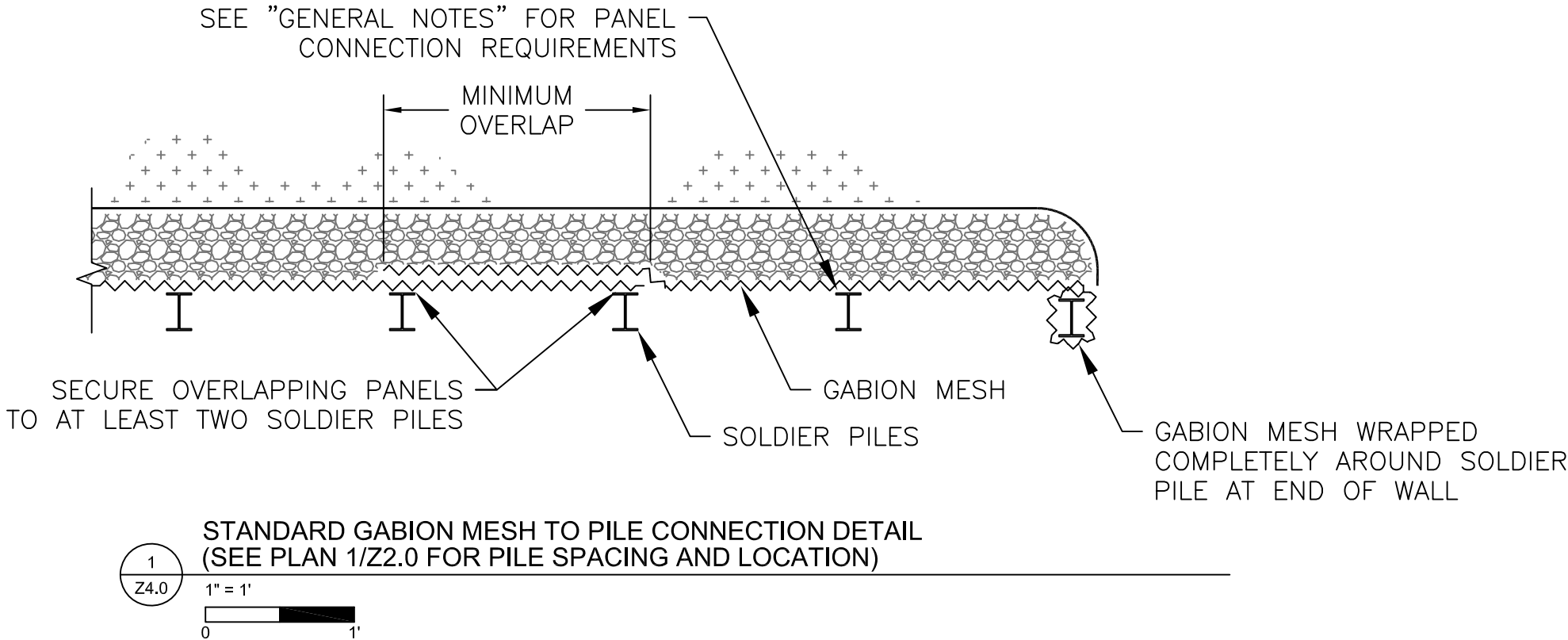
JOB NO.:

Z3.2

Ref: A1196303

GENERAL NOTES:

1. SOLDIER PILES SHALL BE SPACED PER PLAN.
2. GABION MESH SHALL BE MACCAFERI GALVANIZED DOUBLE TWIST .120" DIA. TYPE 8X10 WIRE MESH OR EQUAL. THE DOUBLE-TWIST SHALL BE ALIGNED PERPENDICULAR TO THE SOLDIER PILES AND PARALLEL TO THE GROUND AT THE FACE OF THE WALL.
3. BEGIN AND END EACH GABION MESH PANEL BY SECURING THE PANEL TO THE PILE USING (14) GAUGE TIE WIRE. THE GABION MESH SHALL BE SECURED TO THE SOLDIER PILE AT 12" MAXIMUM SPACING. A MINIMUM OF THREE TIES ARE REQUIRED AT EACH END SOLDIER PILE (SEE SHEET 2).
4. OVERLAP JOINTS SHALL BE CONSTRUCTED BY OVERLAPPING PANELS TO AT LEAST TWO SOLDIER PILES AND SECURING THE OVERLAPPING PANELS TO EACH OTHER USING (14) GAUGE TIE WIRE LACED THROUGH THE MESH OPENINGS, WITH LOOPS PLACED AT THE DOUBLE-TWIST LOCATIONS. ALTERNATELY, THE OVERLAPPING PANELS CAN BE SECURED TO EACH OTHER USING HOG RINGS INSTALLED AT EACH DOUBLE-TWIST LOCATION. THE OVERLAP JOINT SHALL BE SECURED TO AT LEAST TWO SOLDIER PILES WITH (14) GAUGE TIE WIRES AT 12" MAXIMUM SPACING. A MINIMUM OF THREE TIES ARE REQUIRED AT EACH SOLDIER PILE (SEE SHEETS 4 AND 5).
5. GABION MESH SHALL BE SECURED TO ALL INTERMEDIATE SOLDIER PILES USING (14) GAUGE TIE WIRES AT 12" MAXIMUM SPACING. A MINIMUM OF THREE TIES ARE REQUIRED AT EACH SOLDIER PILE (SEE SHEET 3).
6. DO NOT TENSION THE GABION MESH BETWEEN THE SOLDIER PILES WITH A MECHANICAL DEVICE.
7. FINE OPENING MESH, IF USED, SHALL BE (16) GAUGE GALVANIZED WIRE MESH FABRIC, AND SHALL BE PLACED BEHIND THE GABION MESH.



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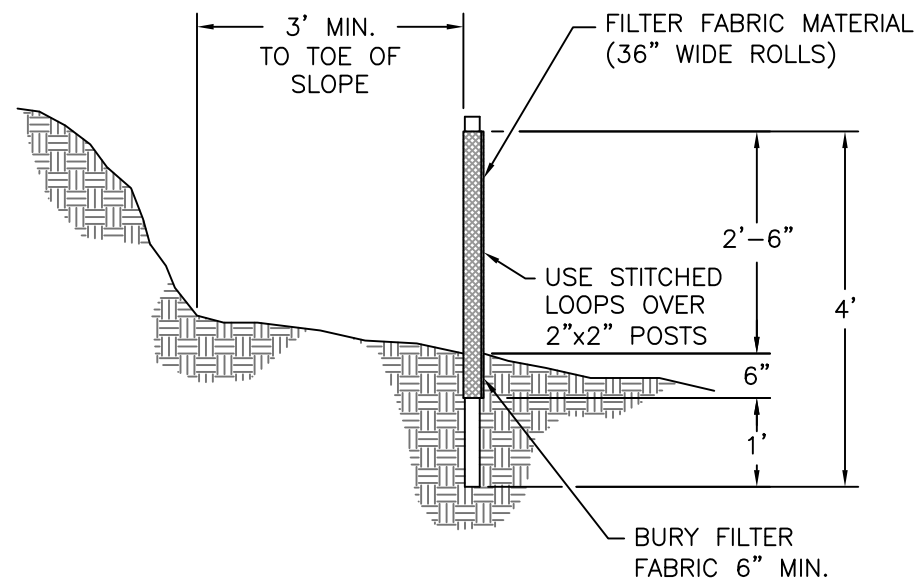
ROBERTS
TEMPORARY
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NENANA AVE,
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SHEET TITLE:
GABION MESH
ATTACHMENT DETAILS

REVISIONS:

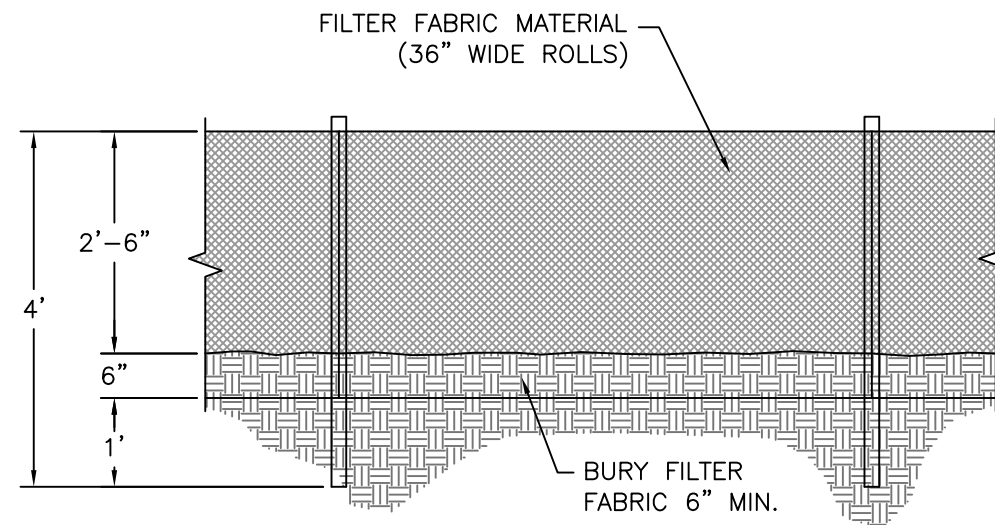
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SCALE: AS SHOWN
DRAWN: SMW
CHECKED BY: JC
JOB NO.:

Z4.0
Ref: A1196304



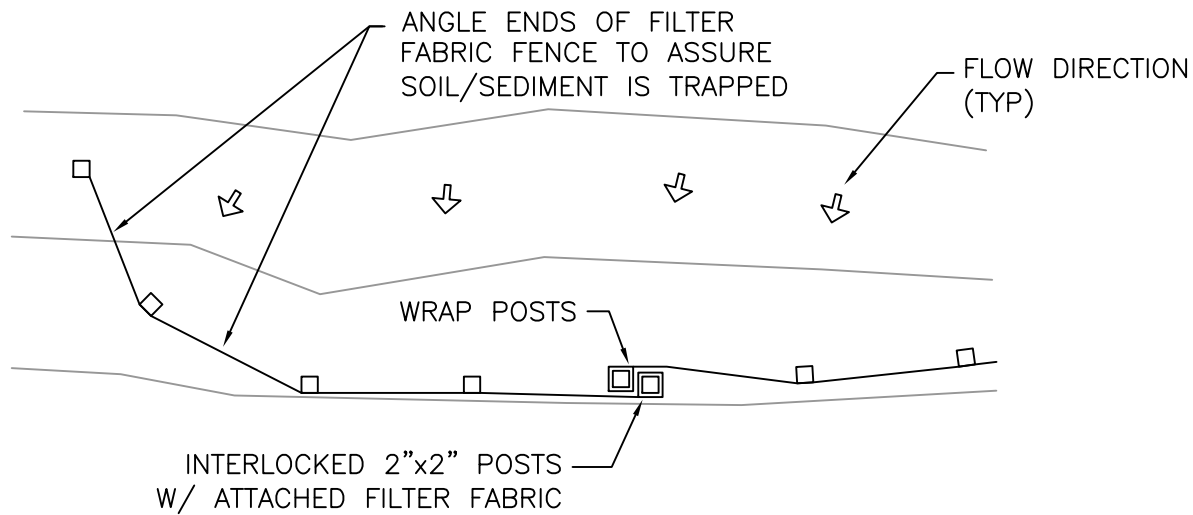
Section View - Silt Fence

N/T Scale



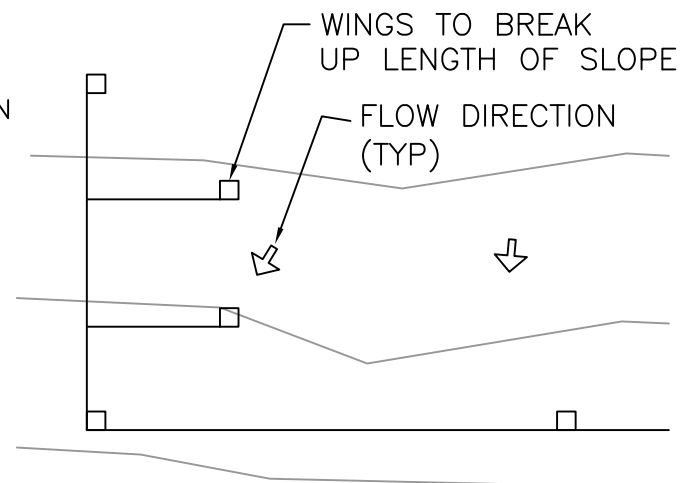
Front View - Silt Fence

N/T Scale



Plan View - Silt Fence

N/T Scale



Plan View - Silt Fence

AT CORNER OR PROPERTY LINE N/T Scale

EROSION CONTROL
CERTIFICATE NUMBER:
2016-005/CESCL

GEOTECHNICAL ENGINEER:



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EXPIRES: 6/30 21

CONTRACTOR:



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**ROBERTS
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STAGING AREA**
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

**TEMPORARY
EROSION CONTROL
DETAILS**

REVISIONS:

DATE: 08/05/20

SCALE: AS SHOWN

DRAWN: SMW

CHECKED BY: JC

JOB NO.:

Z5.0

Ref: A1196305

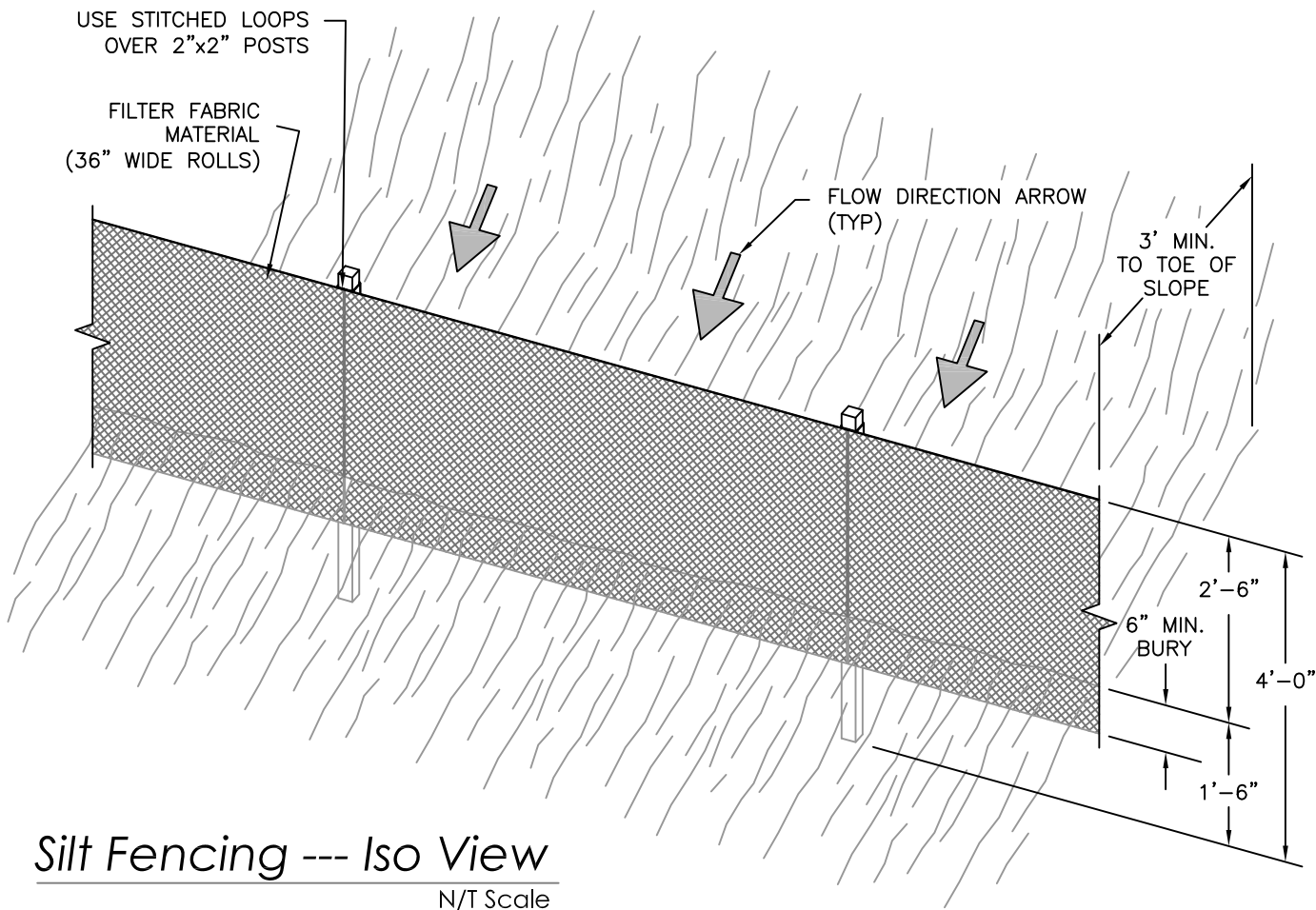
EROSION CONTROL
CERTIFICATE NUMBER:
2016-005/CESCL

STANDARD NOTES FOR EROSION CONTROL

- A. APPROVAL OF THIS EROSION, SEDIMENT AND POLLUTION CONTROL PLAN (ESPCP) DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT DRAINAGE DESIGN.
- B. THE IMPLEMENTATION OF THIS ESPCP AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESPCP FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
- C. THE ESPCP FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.
- D. THE ESPCP FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESPCP FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
- E. THE ESPCP FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
- F. THE ESPCP FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT.
- G. ADDITIONAL MEASURES MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.

STANDARD NOTES FOR SEDIMENT FENCES:

1. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST, OR OVERLAP 2 INCH X 2 INCH POSTS AND ATTACH AS SHOWN ON DETAIL PROVIDED.
2. THE FILTER FABRIC FENCE SHALL BE INSTALLED TO FOLLOW THE CONTOURS WHERE FEASIBLE. THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 24 INCHES.
3. THE FILTER FABRIC SHALL HAVE A MINIMUM VERTICAL BURIAL OF 6 INCHES. ALL EXCAVATED MATERIAL FROM FILTER FABRIC FENCE INSTALLATION, SHALL BE BACKFILLED AND COMPACTED, ALONG THE ENTIRE DISTURBED AREA.
4. STANDARD OR HEAVY DUTY FILTER FABRIC FENCE SHALL HAVE MANUFACTURED STITCHED LOOPS FOR 2 INCH X 2 INCH POST INSTALLATION. STITCHED LOOPS SHALL BE INSTALLED ON THE UP HILL SIDE OF THE SLOPED AREA.
5. FILTER FABRIC FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY PROTECTED AND STABILIZED.
6. FILTER FABRIC FENCES SHALL BE INSPECTED BY APPLICANT/CONTRACTOR IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.



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**ROBERTS
TEMPORARY
STAGING AREA**
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

**TEMPORARY
EROSION CONTROL
DETAILS**

REVISIONS:

DATE: 08/05/20
SCALE: AS SHOWN
DRAWN: SMW
CHECKED BY: JC
JOB NO.:

Z5.1

Ref: A1196305

SUNMARK SEEDS INTERNATIONAL, INC.
PO Box 1210
Fairview OR 97024
503-241-7333
888-214-7333



Grasses	91.50%
Wildflowers	8.50%



Sunmark Coastal Grasslands Mix

Acres: 1
Quantity: 65.42 lbs.

Botanical Name	Common Name	% by Weight	Seeds per lb. of Mix	Seeds per lb.	Actual % by Seed Size	Lbs. Needed	% Requested
<i>Hordeum brachyantherum</i>	Meadow Barley	40.00%	34000	85,000	16.91%	26.17	18%
<i>Bromus carinatus</i>	California Brome	26.00%	28600	110,000	14.22%	17.01	20%
<i>Lupinus albicaulis</i>	Sicklekeel Lupine	20.00%	4500	22,500	2.24%	13.08	2%
<i>Camassia quamash</i>	Small Camas	4.00%	12600	315,000	6.27%	2.62	5%
<i>Festuca idahoensis romeri</i>	Roemer's Fescue	3.90%	19500	500,000	9.70%	2.55	10%
<i>Carex obnupta</i>	Slough Sedge	3.50%	16100	460,000	8.01%	2.29	5%
<i>Deschampsia cespitosa</i>	Tufted Hairgrass	2.00%	50000	2,500,000	24.86%	1.31	25%
<i>Agrostis exarata</i>	Spike Bentgrass	0.50%	19000	3,800,000	9.45%	0.33	10%
<i>Juncus tenuis</i>	Poverty Rush	0.10%	16800	16,800,000	8.35%	0.07	5%
TOTALS:		100.00%	201100		100.00%	65.42	100%

Seeding Rate

1.50 PLS lbs. per 1000 sq. ft.
65.42 PLS lbs. per acre



Coastal Grasslands Mix is designed as a native seed mix for areas west of the Coastal mountain range from northern California to southern BC. These areas are comprised of fine-textured nutrient-rich soils that will support a lush and diverse meadow community. It is an excellent native grass mix encompassing the transitional areas of emerging wetlands, and provides excellent biofiltration in naturally vegetated swales.



SITE RESTORATION SEED MIX

GEOTECHNICAL ENGINEER:
 **Earth Engineers, Inc.**
2411 SE 8TH AVE.
CAMAS, WA 98607
360-567-1806



EXPIRES: 6/30 21

CONTRACTOR:



3045 SE 61st COURT
HILLSBORO, OR 97123
503-649-8111

**ROBERTS
TEMPORARY
STAGING AREA**
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

**SITE RESTORATION
SEED MIX**

REVISIONS:

DATE: 08/05/20
SCALE: AS SHOWN
DRAWN: SMW
CHECKED BY: JC
JOB NO.:

Z6.0

Ref: A1196306



Earth
Engineers,
Inc.

2411 Southeast 8th Avenue • Camas • WA 98607

Phone: 360-567-1806 • Fax: 360-253-8624

www.earth-engineers.com

June 23, 2020

Revised August 5, 2020

Stanley Roberts
925 Lake Street South
Apartment No. 201
Kirkland, Washington 98033

Phone: 206-465-4220
E-mail: stan.milliman@gmail.com

**Subject: Temporary Construction Staging Area Design Recommendations
Proposed Nenana Avenue and Tax Lot 600 Private Driveway Construction
Cannon Beach, Clatsop County, Oregon
EEI Report No. 20-014-2-R4**

Dear Mr. Roberts:

Earth Engineers, Inc. (EEI) is pleased to submit the following geotechnical design for a temporary construction staging area. This report has been revised to include recommendations for staging area exposed heights between 12 and 15 feet.

PROJECT UNDERSTANDING

Our understanding of the staging area construction is based on the information provided by Jorge Castaneda at PLi Systems. Briefly we understand the staging area will be constructed on the slope adjacent to Hemlock Street. The primary purpose of the staging area will be for construction equipment to be able to pull safely off Hemlock Street. We anticipate the largest equipment will be a fully loaded, 10-cubic yard dump truck or an 8 cubic yard concrete truck, which we estimate weigh up to about 50,000 pounds. We also assume that on occasion, materials will be briefly staged there.

Based on the preliminary 3-D model of the staging area from Mr. Castaneda (see Figure 1 below), the staging area will be about 24 feet wide (north to south) by about 34.3 feet long (east to west). The staging area will be up to 15 feet high. Mr. Castaneda indicated they plan to construct the staging area by lowering wide-flange steel piles into predrilled holes and backfilling the holes with concrete. The soldier piles will not be driven into the ground due to concerns related to ground vibration. The staging area facing will consist of wire mesh and the backfill behind the soldier piles will consist of lightweight foam blocks. This is a pretty typical solution PLi has used numerous times in the past for constructing temporary staging areas for heavy construction equipment and materials on steep construction sites where access is limited.

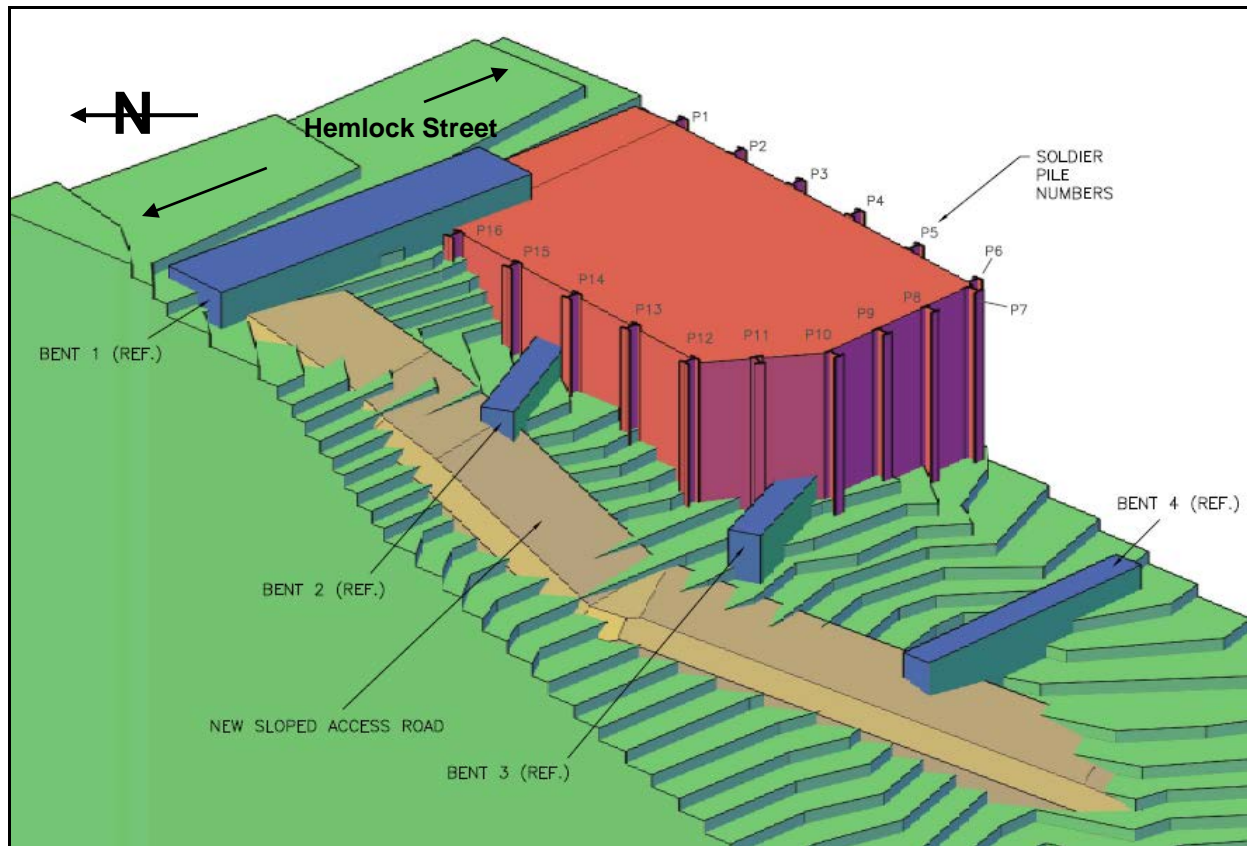


Figure 1: 3-D rendering of PLi's proposed staging area construction, noted in red (base drawing source: Z2.1 by PLi Systems dated 8/5/20).

STAGING AREA RECOMMENDATIONS

To evaluate the requirements for supporting the temporary staging area with soldier piles, we performed our geotechnical engineering analysis using Shoring Suite, Version 8.17a software from CivilTech. The following assumptions were made in our analysis:

- The soldier piles will be spaced no further than 6 feet on center.
- The pile design is based on a minimum static FOS of 1.5 against overturning. We did not evaluate a seismic loading condition as this is a temporary staging area structure. The FOS was applied to the passive earth pressure (i.e. the resisting force).
- An active equivalent fluid pressure of 5 psf/foot of soldier pile exposed height for lightweight foam backfill.
- A passive equivalent fluid pressure of 200 psf/foot of embedment. This value includes a reduction given that the ground is sloping down to the west.
- A surcharge point load of 12,500 pounds, which roughly represents one-quarter of a 50,000 pound redi-mix concrete truck. We assumed the wheel could be as close as 1 foot from the soldier piles.

The output files summarizing our Shoring Suite analysis are provided as an attachment. Based on the above design parameters, we provide the following temporary soldier pile design recommendations.

Table 1: Soldier Pile Recommendations for Temporary Construction Staging Area

Maximum Exposed Pile Height (feet)	Maximum Pile Spacing (feet)	Minimum Pile Size	Minimum Borehole Diam. (inches)	Minimum Pile Embedment (feet)	Total Pile Length (feet)
15	6	W14x68	18	14	29
12	6	W14x43	18	13	25
10	6	W14x30	18	12	22
8	6	W12x26	18	11	19
6	6	W12x22	18	10	16

- The predrilled holes for the piles should be backfilled with lean mix concrete (i.e. CDF) having a minimum compressive strength (f'c) of 150 psi at 28 days. Concrete cylinder testing is not required.
- Corrosion protection will not be needed--the staging area is only temporary. When construction is complete, the staging area construction will be removed. We anticipate the piles will just be cutoff at the ground surface, rather than try to fully remove them.
- The staging area vertical facing between soldier piles will consist of wire mesh to contain the foam block backfill. PLi plans to use Maccaferri galvanized woven wire mesh with openings of 8 by 10 inches (product technical data sheet attached). This mesh has a minimum tensile strength of 3,500 pounds per foot. Given there will be 6 horizontal feet between piles, this equates to a mesh strength of 21,000 pounds between piles, which is more than adequate to support the lightweight foam block backfill and surcharge load.
- The backfill should consist of EPS15 Geofoam (or equivalent). The foam blocks should be placed level by limited excavation of benches. The layers of blocks should be oriented so each row is alternated 90 degrees. The blocks should be placed tightly against each other so they cannot shift. Any minor void spaces between aligned blocks should be filled with free-flowing sand prior to placing the subsequent course. A representative of the Geotechnical Engineer should approve the benching for the lightweight fill and periodically observe the Geofoam placement to ensure that it is proceeding according to the recommendations provided within this report.
- The drilling of the boreholes, installation of the steel piles, backfilling with concrete, placement of wire mesh, and backfilling with foam blocks should all be inspected by EEI. All inspections are continuous, except for the wire mesh and foam blocks.
- There is an active inclinometer casing installed near proposed Pile #12 that has been monitored by Geotech Solutions. This inclinometer needs to be protected from damage during the installation and removal of the temporary staging area. In addition, access to it cannot be blocked while the staging area is in place just in case inclinometer readings need to be taken. This critical issue has been pointed out to Jorge with PLi Systems

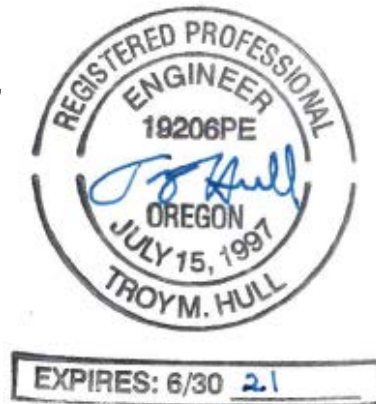
(the contractor who will be constructing the temporary staging area) and this requirement has been included on the construction drawings.

Our temporary staging area design is based on the site access needs described by PLi Systems. If other contractors will need to use this temporary staging area, we should be forwarded information on how they plan to use it and under what kind of loading conditions for our approval prior to use.

With regard to geologic hazards, the proposed staging area construction will generally preserve the natural slope, follow the slope contours, reduce the need for grading and filling, minimize vegetation removal, not significantly alter drainage patterns, and not block stream drainage ways. This will be accomplished by using geofoam blocks as fill, which will easily be removed when the staging area is no longer needed. In addition, by using soldier piles to retain the geofoam blocks, this will limit the area impacted by the temporary staging construction. **Consistent with Cannon Beach Municipal Code 17.50.040.3.b, as designed, the temporary construction staging area will have no significant adverse impact from a geotechnical standpoint on the site or surrounding area.** For our other project geotechnical recommendations as well as our Limitations, refer to our report no 20-014-1-R1 dated June 30, 2020.

If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Respectfully submitted,
Earth Engineers, Inc.



Troy Hull, P.E., G.E.
Principal Geotechnical Engineer

Reviewed by:

A handwritten signature in black ink that reads "Daniel Watkins".

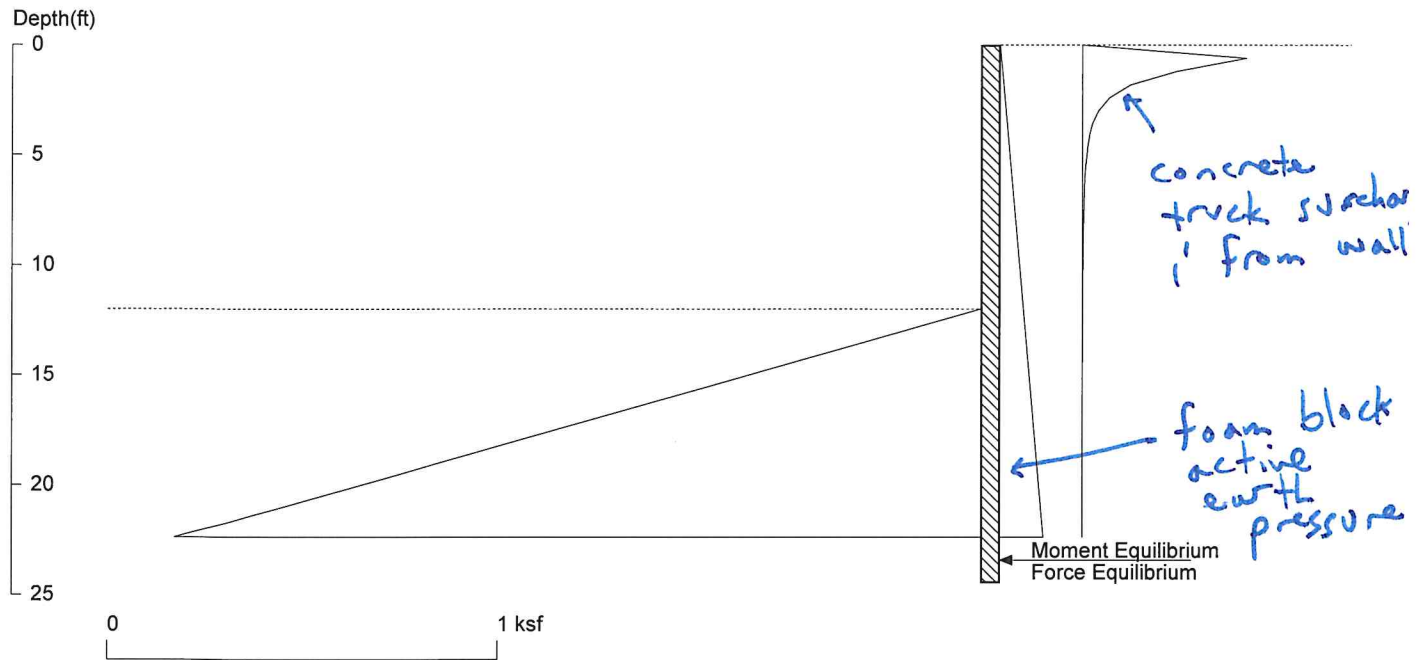
Daniel Watkins, P.E., G.E.
Senior Geotechnical Engineer

Attachment: Temporary Staging Area Calculations (15 pages)
Maccaferri Wire Mesh Technical Data Sheet (2 pages)

Distribution (electronic copy only): Addressee
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Warren Krager (warrenkrager@gmail.com)
Jorge Castaneda, PLi Systems (jorge@plisystems.com)

Roberts Residence - Staging Area Retaining Wall

12' tall, Static Only, Semi-flexible Wall



<ShoringSuite> CIVILTECH SOFTWARE USA www.civiltech.com

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Date: 6/18/2020

File: P:\Projects\2020 Projects\20-014 (Nenana Avenue Construction, Cannon Beach, OR) (AB-TH)\Shoring Suite Stuff\1

Wall Height=12.0

Pile Diameter=1.5

Pile Spacing=6.0

Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=12.46 Min. Pile Length=24.46

MOMENT IN PILE: Max. Moment=63.83 per Pile Spacing=6.0 at Depth=16.56

PILE SELECTION:

Request Min. Section Modulus = 23.2 in³/pile=380.34 cm³/pile, F_y = 50 ksi = 345 MPa, F_b/F_y=0.66

W14X43 has Section Modulus = 62.6 in³/pile=1025.83 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.73(in) based on E (ksi)=29000.00 and I (in⁴)/pile=428.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	25	0.125	.005
*	Sur-	charge		
0.000	0.000	0.600	0.426	0.710149
0.600	0.426	1.200	0.244	-0.302879
1.200	0.244	1.800	0.126	-0.197420
1.800	0.126	2.400	0.069	-0.095531
2.400	0.069	3.000	0.040	-0.047273
3.000	0.040	3.600	0.025	-0.025028
3.600	0.025	4.200	0.017	-0.014191
4.200	0.017	4.800	0.012	-0.008546
4.800	0.012	5.400	0.008	-0.005416
5.400	0.008	6.000	0.006	-0.003583
6.000	0.006	6.600	0.005	-0.002457
6.600	0.005	7.200	0.004	-0.001738
7.200	0.004	7.800	0.003	-0.001262
7.800	0.003	8.400	0.002	-0.000938
8.400	0.002	9.000	0.002	-0.000711
9.000	0.002	9.600	0.002	-0.000548

9.600	0.002	10.200	0.001	-0.000429
10.200	0.001	10.800	0.001	-0.000341
10.800	0.001	11.400	0.001	-0.000274
11.400	0.001	12.000	0.001	-0.000223
12.000	0.001	13.200	0.001	-0.000167
13.200	0.001	14.400	0.000	-0.000117
14.400	0.000	15.600	0.000	-0.000084
15.600	0.000	16.800	0.000	-0.000062
16.800	0.000	18.000	0.000	-0.000046
18.000	0.000	19.200	0.000	-0.000036
19.200	0.000	20.400	0.000	-0.000028
20.400	0.000	21.600	0.000	-0.000022
21.600	0.000	22.800	0.000	-0.000018
22.800	0.000	24.000	0.000	-0.000014
24.000	0.000	26.400	0.000	-0.000011

PASSIVE PRESSURES: Pressures below will be divided by a Factor of Safety =1.5

Z1	P1	Z2	P2	Slope
12	0	40	5.600	0.200

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	6.00
2	12.00	1.50

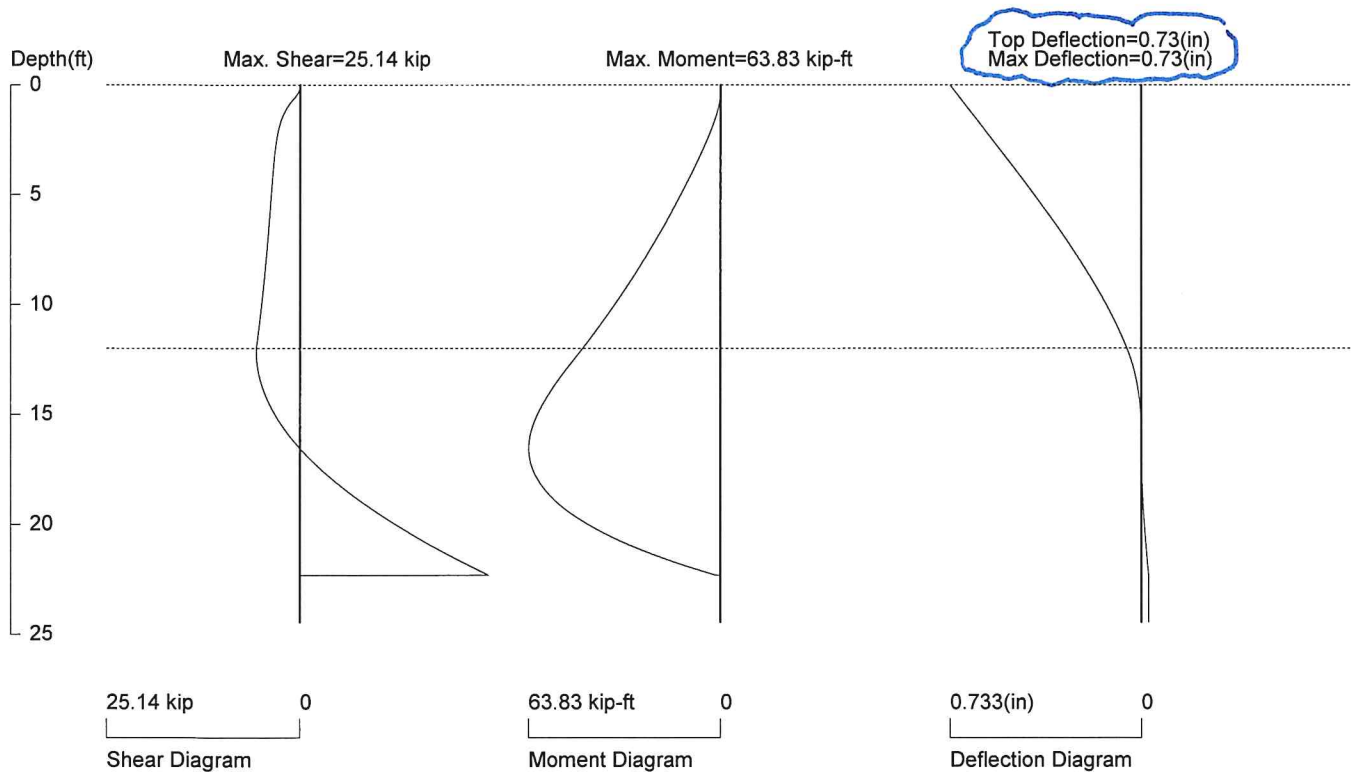
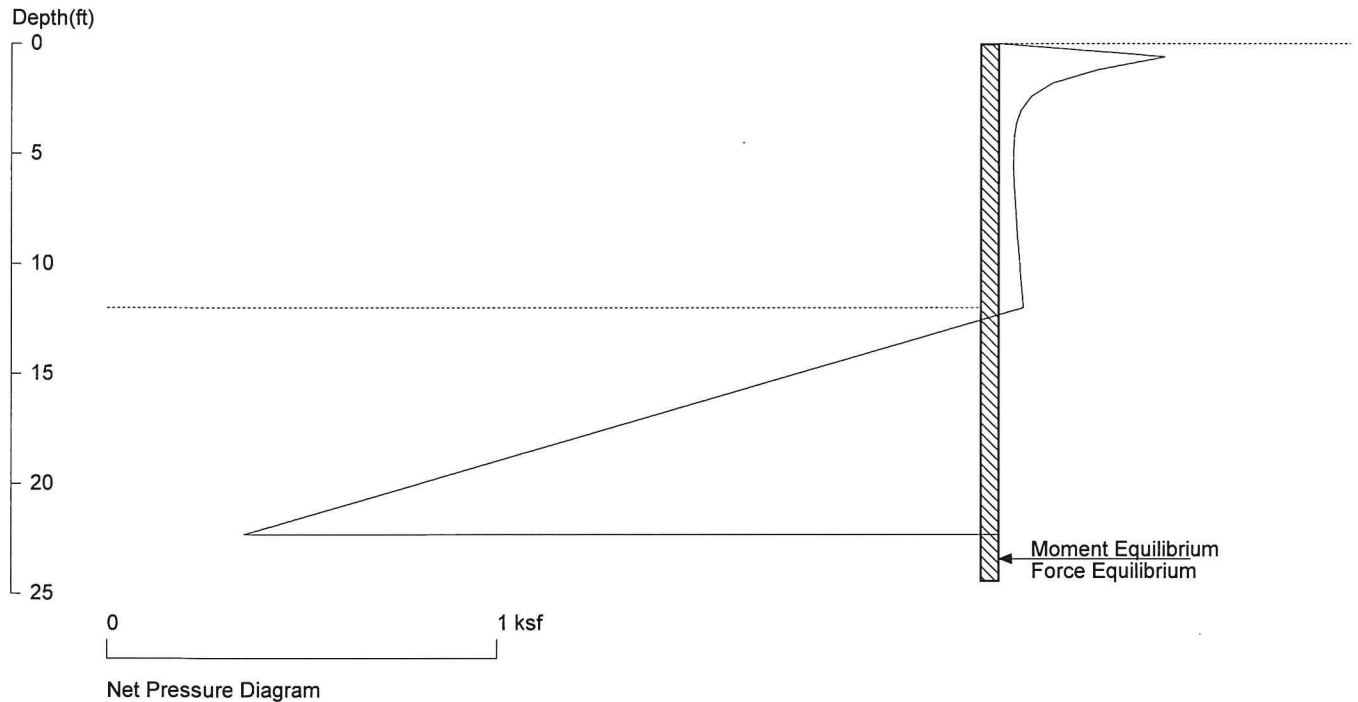
PASSIVE SPACING:

No.	Z depth	Spacing
1	12.00	4.50

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

Roberts Residence - Staging Area Retaining Wall

12' tall, Static Only, Semi-flexible Wall



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

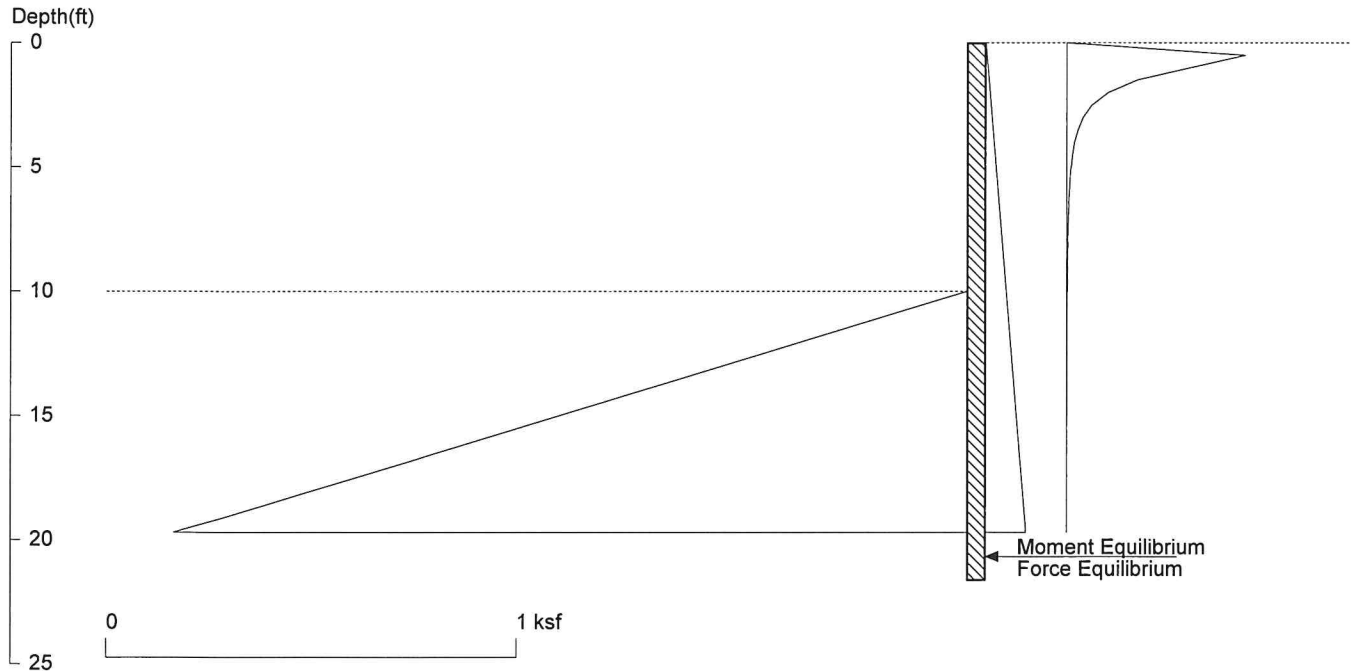
Based on pile spacing: 6.0 foot or meter

User Input Pile, w14x43: E (ksi)=29000.0, I (in⁴)/pile=428.0

ts\2020 Projects\20-014 (Nenana Avenue Construction, Cannon Beach, OR) (AB-TH)\Shoring Suite Stuff\Temporary Access Road\12', Static Only, semi-flex

Roberts Residence - Staging Area Retaining Wall

10' tall, Static Only, Semi-flexible Wall



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Date: 6/18/2020

File: P:\Projects\2020 Projects\20-014 (Nenana Avenue Construction, Cannon Beach, OR) (AB-TH)\Shoring Suite Stuff\

Wall Height=10.0

Pile Diameter=1.5

Pile Spacing=6.0

Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=11.65

Min. Pile Length=21.65

MOMENT IN PILE: Max. Moment=51.59 per Pile Spacing=6.0 at Depth=14.32

PILE SELECTION:

Request Min. Section Modulus = 18.8 in³/pile=307.40 cm³/pile, F_y = 50 ksi = 345 MPa, F_b/F_y=0.66

W14X30 has Section Modulus = 42.0 in³/pile=688.25 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.66(in) based on E (ksi)=29000.00 and I (in⁴)/pile=291.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	25	0.125	.005
*	Sur-	charg		
0.000	0.000	0.500	0.440	0.880190
0.500	0.440	1.000	0.303	-0.27326
1.000	0.303	1.500	0.175	-0.25724
1.500	0.175	2.000	0.102	-0.14566
2.000	0.102	2.500	0.062	-0.07912
2.500	0.062	3.000	0.040	-0.04442
3.000	0.040	3.500	0.027	-0.02617
3.500	0.027	4.000	0.019	-0.01618
4.000	0.019	4.500	0.014	-0.01044
4.500	0.014	5.000	0.010	-0.00700
5.000	0.010	5.500	0.008	-0.00485
5.500	0.008	6.000	0.006	-0.00345
6.000	0.006	6.500	0.005	-0.00252
6.500	0.005	7.000	0.004	-0.00188
7.000	0.004	7.500	0.003	-0.00143
7.500	0.003	8.000	0.003	-0.00111

8.000	0.003	8.500	0.002	-0.00087
8.500	0.002	9.000	0.002	-0.00069
9.000	0.002	9.500	0.002	-0.00055
9.500	0.002	10.00	0.001	-0.00045
10.00	0.001	11.00	0.001	-0.00034
11.00	0.001	12.00	0.001	-0.00023
12.00	0.001	13.00	0.001	-0.00017
13.00	0.001	14.00	0.001	-0.00012
14.00	0.001	15.00	0.000	-0.00009
15.00	0.000	16.00	0.000	-0.00007
16.00	0.000	17.00	0.000	-0.00005
17.00	0.000	18.00	0.000	-0.00004
18.00	0.000	19.00	0.000	-0.00003
19.00	0.000	20.00	0.000	-0.00003
20.00	0.000	22.00	0.000	-0.00002

PASSIVE PRESSURES: Pressures below will be divided by a Factor of Safety =1.5

Z1	P1	Z2	P2	Slope
10	0	40	6.000	0.200

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	6.00
2	10.00	1.50

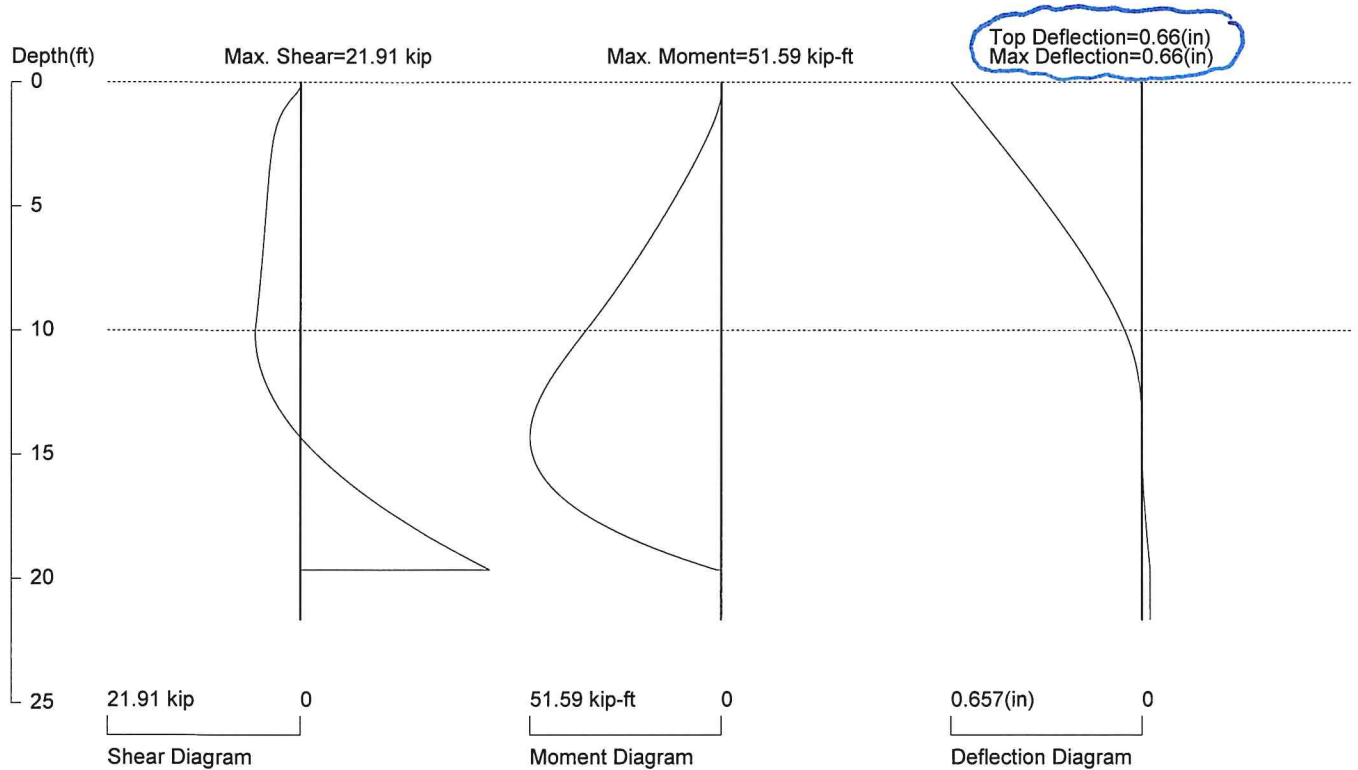
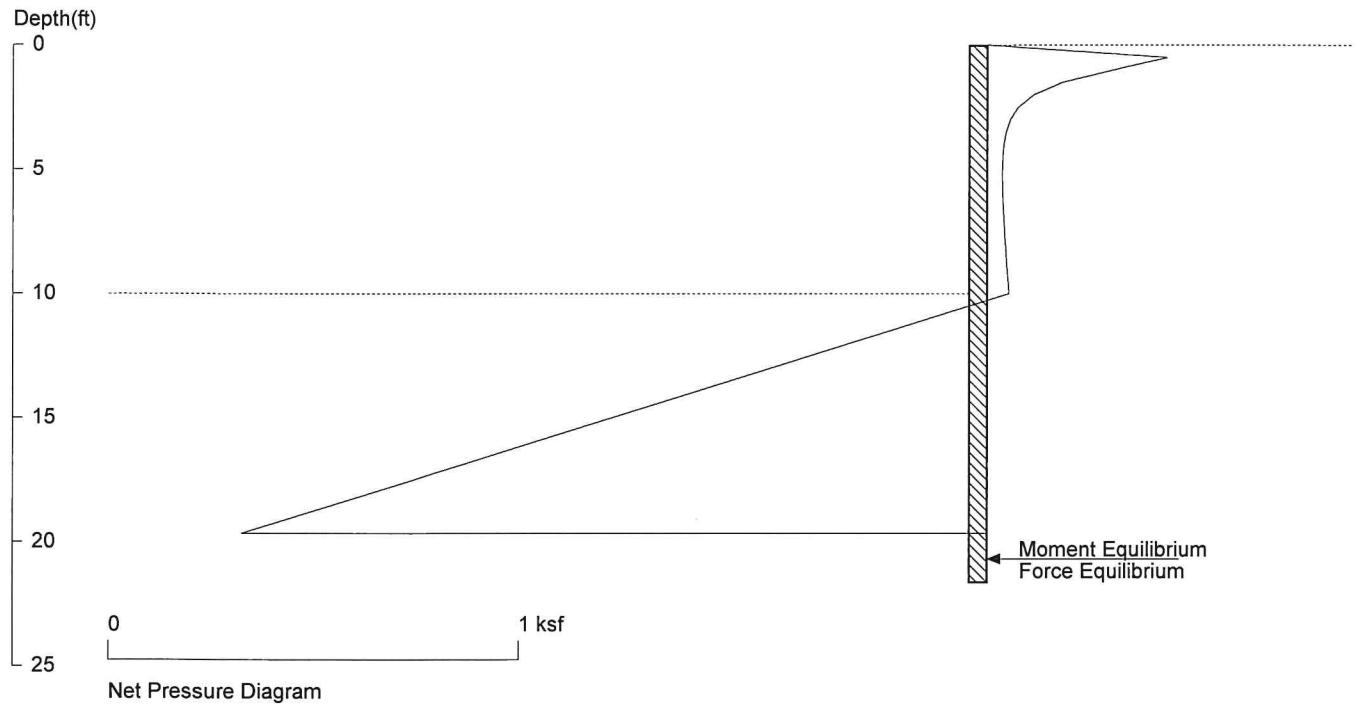
PASSIVE SPACING:

No.	Z depth	Spacing
1	10.00	4.50

UNITS: Width,Spacing,Diameter,Length,and Depth - ft; Force - kip; Moment - kip-ft
Friction,Bearing,and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

Roberts Residence - Staging Area Retaining Wall

10' tall, Static Only, Semi-flexible Wall



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

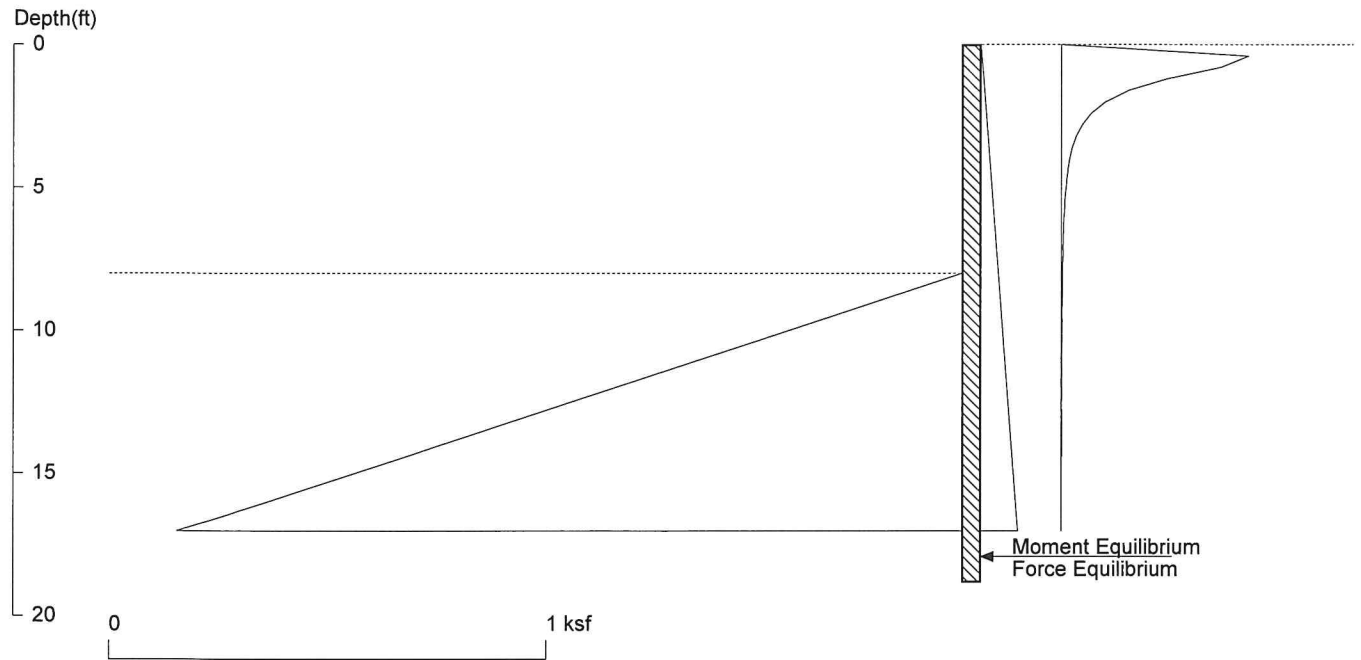
Based on pile spacing: 6.0 foot or meter

User Input Pile, w14x30: E (ksi)=29000.0, I (in4)/pile=291.0

ts\2020 Projects\20-014 (Nenana Avenue Construction, Cannon Beach, OR) (AB-TH)\Shoring Suite Stuff\Temporary Access Road\10', Static Only, semi-flex

Roberts Residence - Staging Area Retaining Wall

8' tall, Static Only, Semi-flexible Wall



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Date: 6/18/2020

File: P:\Projects\2020 Projects\20-014 (Nenana Avenue Construction, Cannon Beach, OR) (AB-TH)\Shoring Suite Stuff\

Wall Height=8.0

Pile Diameter=1.5

Pile Spacing=6.0

Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=10.83 Min. Pile Length=18.83

MOMENT IN PILE: Max. Moment=40.54 per Pile Spacing=6.0 at Depth=12.11

PILE SELECTION:

Request Min. Section Modulus = 14.7 in³/pile=241.58 cm³/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66

W12X26 has Section Modulus = 33.4 in³/pile=547.33 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.52(in) based on E (ksi)=29000.00 and I (in⁴)/pile=204.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	25	0.125	.005
*	Sur-	charge		
0.000	0.000	0.400	0.433	1.082553
0.400	0.433	0.800	0.369	-0.160030
0.800	0.369	1.200	0.244	-0.311619
1.200	0.244	1.600	0.157	-0.219643
1.600	0.157	2.000	0.102	-0.136255
2.000	0.102	2.400	0.069	-0.083529
2.400	0.069	2.800	0.048	-0.052278
2.800	0.048	3.200	0.034	-0.033723
3.200	0.034	3.600	0.025	-0.022452
3.600	0.025	4.000	0.019	-0.015402
4.000	0.019	4.400	0.015	-0.010859
4.400	0.015	4.800	0.012	-0.007845
4.800	0.012	5.200	0.009	-0.005793
5.200	0.009	5.600	0.008	-0.004362
5.600	0.008	6.000	0.006	-0.003342
6.000	0.006	6.400	0.005	-0.002601

6.400	0.005	6.800	0.004	-0.002052
6.800	0.004	7.200	0.004	-0.001640
7.200	0.004	7.600	0.003	-0.001325
7.600	0.003	8.000	0.003	-0.001082
8.000	0.003	8.800	0.002	-0.000817
8.800	0.002	9.600	0.002	-0.000573
9.600	0.002	10.400	0.001	-0.000414
10.400	0.001	11.200	0.001	-0.000306
11.200	0.001	12.000	0.001	-0.000231
12.000	0.001	12.800	0.001	-0.000178
12.800	0.001	13.600	0.001	-0.000139
13.600	0.001	14.400	0.000	-0.000110
14.400	0.000	15.200	0.000	-0.000088
15.200	0.000	16.000	0.000	-0.000072
16.000	0.000	17.600	0.000	-0.000054
17.600	0.000	19.200	0.000	-0.000037

PASSIVE PRESSURES: Pressures below will be divided by a Factor of Safety =1.5

Z1	P1	Z2	P2	Slope
8	0	40	6.400	0.200

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	6.00
2	8.00	1.50

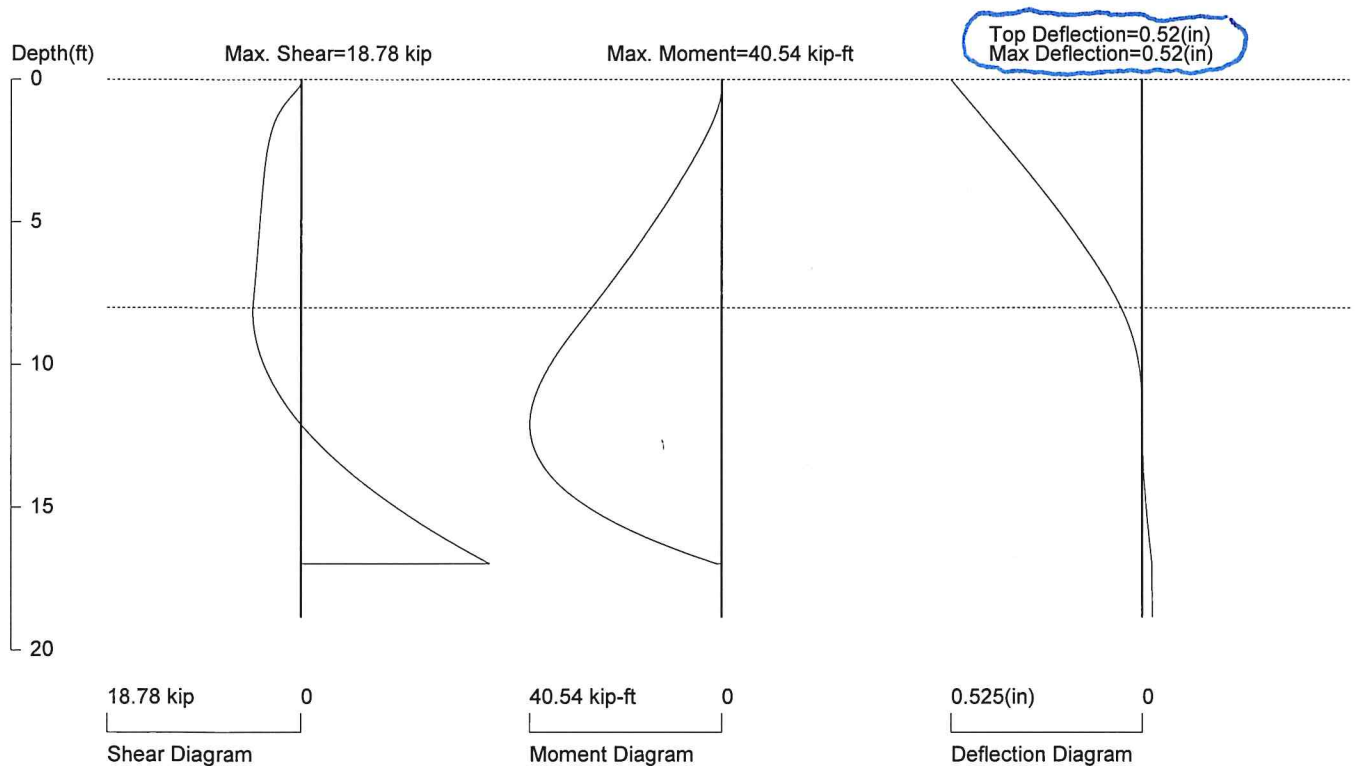
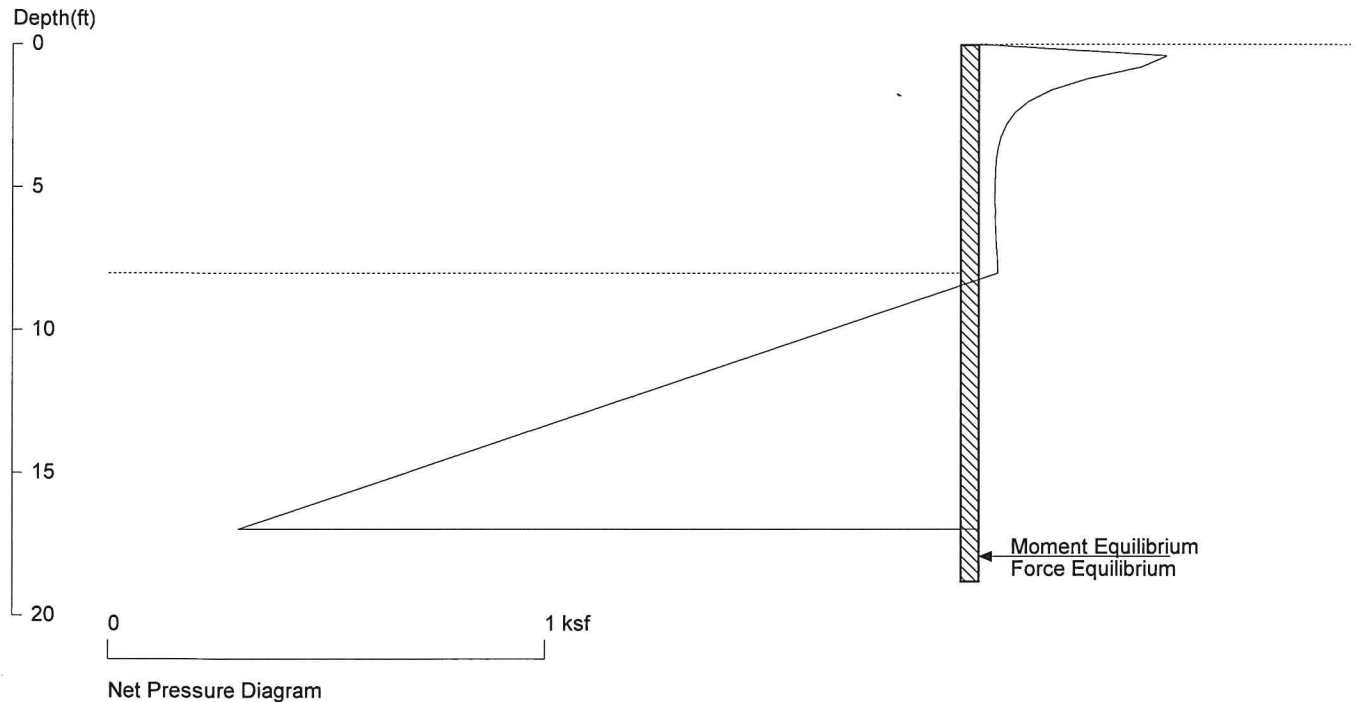
PASSIVE SPACING:

No.	Z depth	Spacing
1	8.00	4.50

UNITS: Width,Spacing,Diameter,Length,and Depth - ft; Force - kip; Moment - kip-ft
Friction,Bearing,and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

Roberts Residence - Staging Area Retaining Wall

8' tall, Static Only, Semi-flexible Wall



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

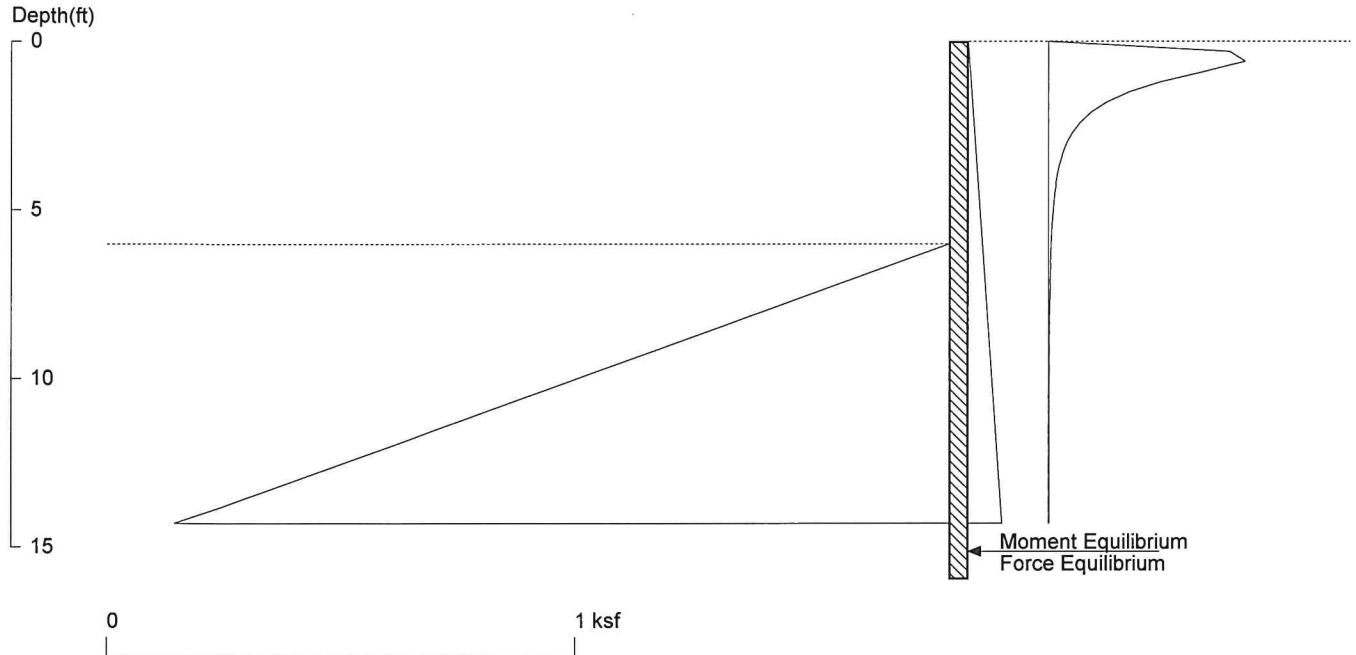
Based on pile spacing: 6.0 foot or meter

User Input Pile, w12x26: E (ksi)=29000.0, I (in⁴)/pile=204.0

:ts\2020 Projects\20-014 (Nenana Avenue Construction, Cannon Beach, OR) (AB-TH)\Shoring Suite Stuff\Temporary Access Road\8', Static Only, semi-flexi

Roberts Residence - Staging Area Retaining Wall

6' tall, Static Only, Semi-flexible Wall



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Date: 6/18/2020

File: P:\Projects\2020 Projects\20-014 (Nenana Avenue Construction, Cannon Beach, OR) (AB-TH)\Shoring Suite Stuff\1

Wall Height=6.0

Pile Diameter=1.5

Pile Spacing=6.0

Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=9.96 Min. Pile Length=15.96

MOMENT IN PILE: Max. Moment=30.30 per Pile Spacing=6.0 at Depth=9.90

PILE SELECTION:

Request Min. Section Modulus = 11.0 in³/pile=180.58 cm³/pile, F_y= 50 ksi = 345 MPa, F_b/F_y=0.66

W12X22 has Section Modulus = 25.4 in³/pile=416.23 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.34(in) based on E (ksi)=29000.00 and I (in⁴)/pile=156.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	25	0.125	.005
*	Sur-	charge		
0.000	0.000	0.300	0.393	1.308370
0.300	0.393	0.600	0.426	0.111927
0.600	0.426	0.900	0.336	-0.300399
0.900	0.336	1.200	0.244	-0.305359
1.200	0.244	1.500	0.175	-0.231750
1.500	0.175	1.800	0.126	-0.163089
1.800	0.126	2.100	0.092	-0.112763
2.100	0.092	2.400	0.069	-0.078300
2.400	0.069	2.700	0.052	-0.055104
2.700	0.052	3.000	0.040	-0.039443
3.000	0.040	3.300	0.032	-0.028742
3.300	0.032	3.600	0.025	-0.021315
3.600	0.025	3.900	0.020	-0.016073
3.900	0.020	4.200	0.017	-0.012310
4.200	0.017	4.500	0.014	-0.009564
4.500	0.014	4.800	0.012	-0.007529

4.800	0.012	5.100	0.010	-0.005999
5.100	0.010	5.400	0.008	-0.004833
5.400	0.008	5.700	0.007	-0.003934
5.700	0.007	6.000	0.006	-0.003232
6.000	0.006	6.600	0.005	-0.002457
6.600	0.005	7.200	0.004	-0.001738
7.200	0.004	7.800	0.003	-0.001262
7.800	0.003	8.400	0.002	-0.000938
8.400	0.002	9.000	0.002	-0.000711
9.000	0.002	9.600	0.002	-0.000548
9.600	0.002	10.200	0.001	-0.000429
10.200	0.001	10.800	0.001	-0.000341
10.800	0.001	11.400	0.001	-0.000274
11.400	0.001	12.000	0.001	-0.000223
12.000	0.001	13.200	0.001	-0.000167
13.200	0.001	14.400	0.000	-0.000117
14.400	0.000	15.600	0.000	-0.000084
15.600	0.000	16.800	0.000	-0.000062

PASSIVE PRESSURES: Pressures below will be divided by a Factor of Safety =1.5

Z1	P1	Z2	P2	Slope
6	0	40	6.800	0.200

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	6.00
2	6.00	1.50

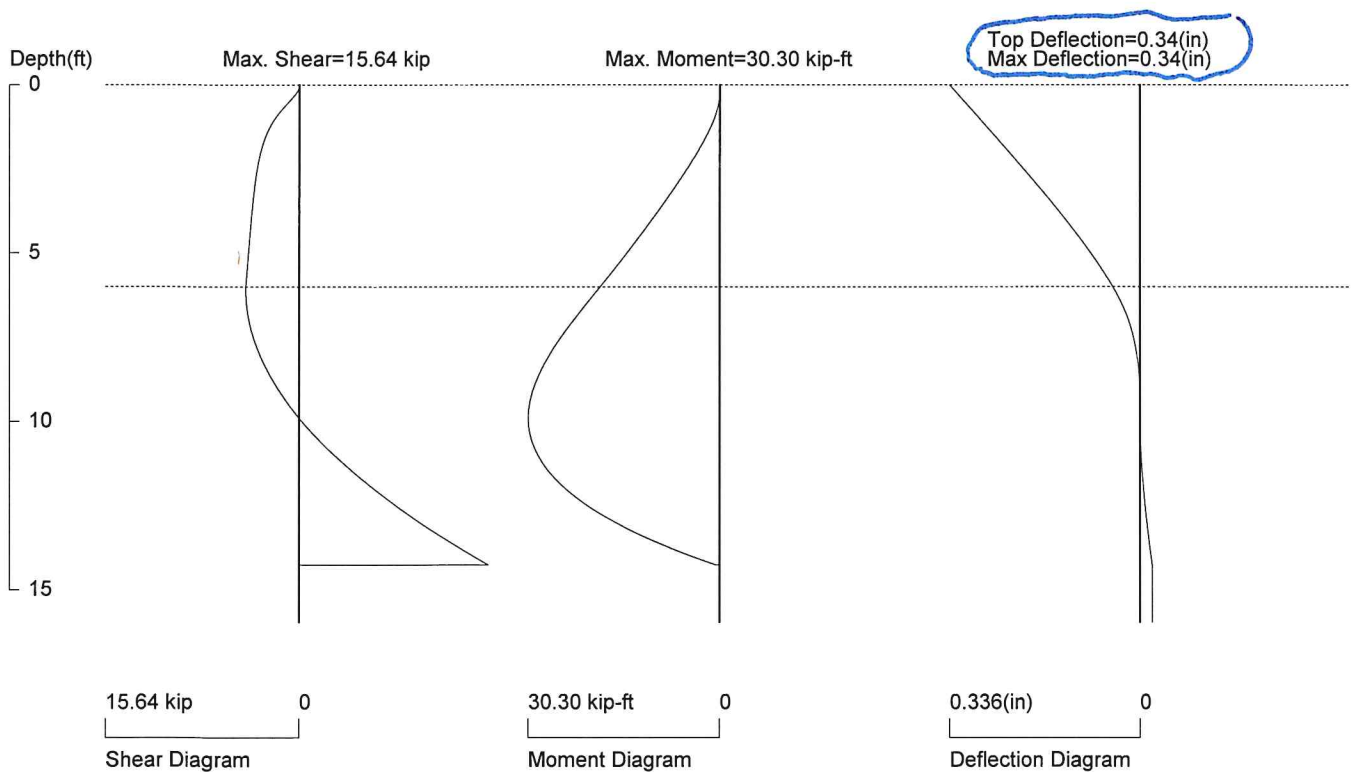
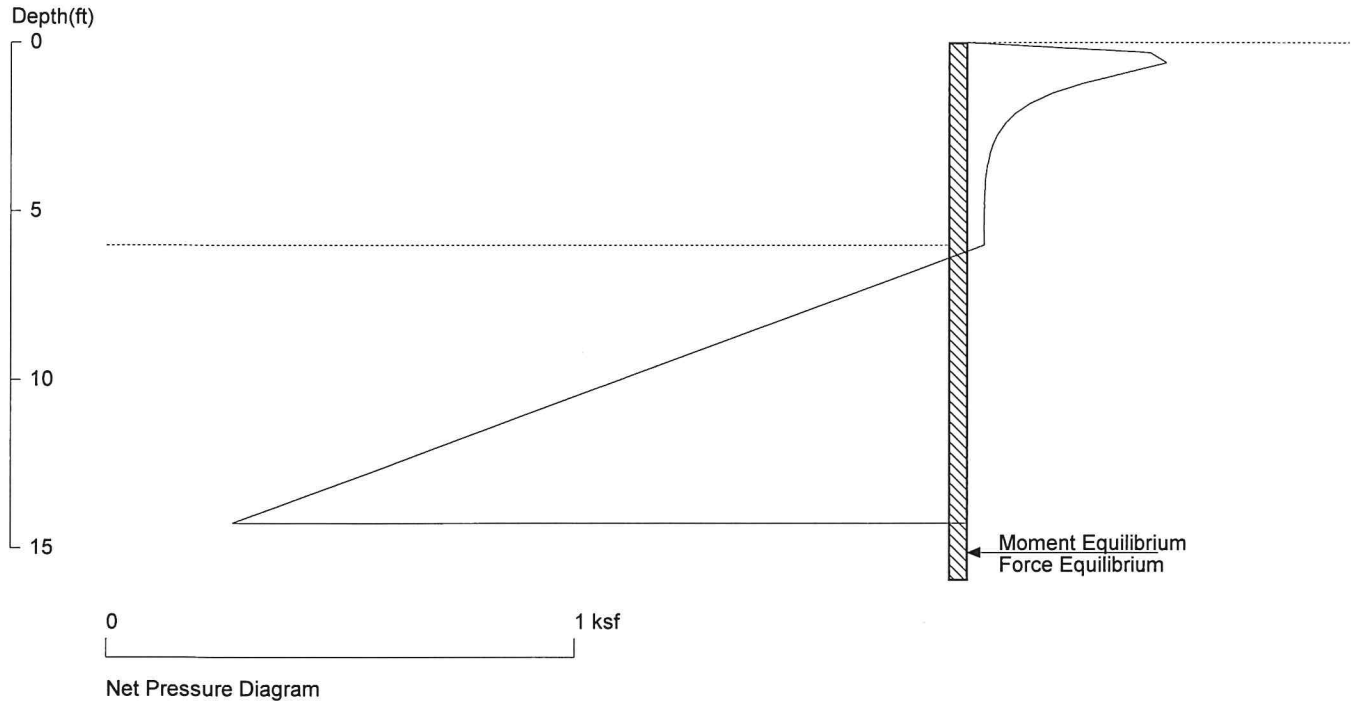
PASSIVE SPACING:

No.	Z depth	Spacing
1	6.00	4.50

UNITS: Width, Spacing, Diameter, Length, and Depth - ft; Force - kip; Moment - kip-ft
Friction, Bearing, and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

Roberts Residence - Staging Area Retaining Wall

6' tall, Static Only, Semi-flexible Wall



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, W12x22: E (ksi)=29000.0, I (in4)/pile=156.0

:ts\2020 Projects\20-014 (Nenana Avenue Construction, Cannon Beach, OR) (AB-TH)\Shoring Suite Stuff\Temporary Access Road\6', Static Only, semi-flexi

15' tall, Static Only, Semi-flexible Wall



<ShoringSuite> CIVILTECH SOFTWARE USA www.civiltech.com

Date: 8/1/2020

File: P:\Projects\2020 Projects\20-014 (Nenana Avenue Construction, Cannon Beach, OR) (AB-TH)\Shoring Suite Stuff\T

Pile Diameter=1.5

Pile Spacing=6.0

Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=13.67 Min. Pile Length=28.67 29'

MOMENT IN PILE: Max. Moment=84.63 per Pile Spacing=6.0 at Depth=19.97

PILE SELECTION:

Request Min. Section Modulus = $30.8 \text{ in}^3/\text{pile} = 504.28 \text{ cm}^3/\text{pile}$, $F_y = 50 \text{ ksi} = 345 \text{ MPa}$, $F_b/F_y = 0.66$

(W14X68) has Section Modulus = 103.0 in³/pile=1687.86 cm³/pile. It is greater than Min. Requirements!

Top Deflection = 0.82(in) based on E (ksi)=29000.00 and I (in⁴)/pile=722.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	30	0.150	.005
*	Sur-	charge		
0.000	0.000	0.750	0.385	0.513438
0.750	0.385	1.500	0.175	-0.280322
1.500	0.175	2.250	0.079	-0.127401
2.250	0.079	3.000	0.040	-0.052078
3.000	0.040	3.750	0.023	-0.023457
3.750	0.023	4.500	0.014	-0.011744
4.500	0.014	5.250	0.009	-0.006428
5.250	0.009	6.000	0.006	-0.003782
6.000	0.006	6.750	0.004	-0.002358
6.750	0.004	7.500	0.003	-0.001542
7.500	0.003	8.250	0.002	-0.001048
8.250	0.002	9.000	0.002	-0.000737
9.000	0.002	9.750	0.002	-0.000532
9.750	0.002	10.500	0.001	-0.000394
10.500	0.001	11.250	0.001	-0.000298
11.250	0.001	12.000	0.001	-0.000229

12.000	0.001	12.750	0.001	-0.000179
12.750	0.001	13.500	0.001	-0.000142
13.500	0.001	14.250	0.000	-0.000114
14.250	0.000	15.000	0.000	-0.000092
15.000	0.000	16.500	0.000	-0.000069
16.500	0.000	18.000	0.000	-0.000048
18.000	0.000	19.500	0.000	-0.000035
19.500	0.000	21.000	0.000	-0.000025
21.000	0.000	22.500	0.000	-0.000019
22.500	0.000	24.000	0.000	-0.000015
24.000	0.000	25.500	0.000	-0.000011
25.500	0.000	27.000	0.000	-0.000009
27.000	0.000	28.500	0.000	-0.000007
28.500	0.000	30.000	0.000	-0.000006

PASSIVE PRESSURES: Pressures below will be divided by a Factor of Safety =1.5

Z1	P1	Z2	P2	Slope
15	0	40	5.000	0.200

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	6.00
2	15.00	1.50

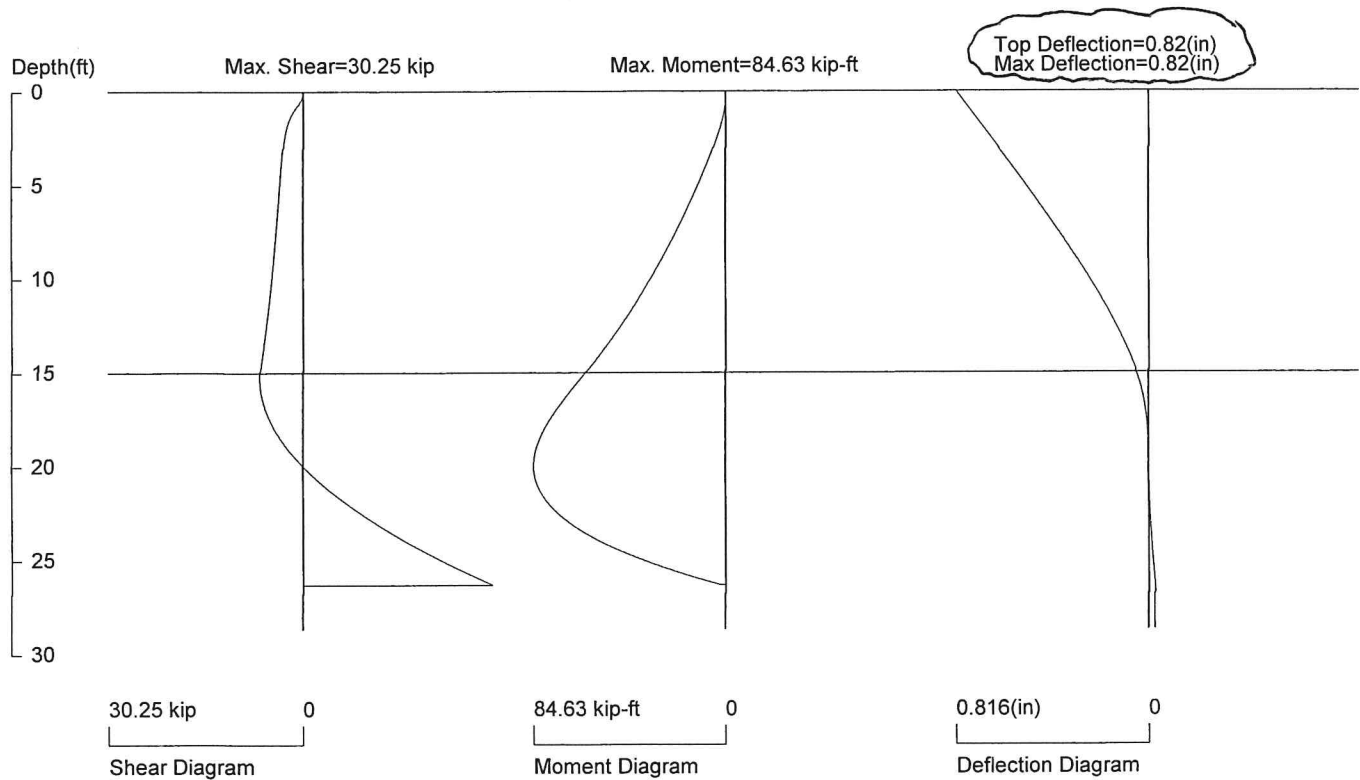
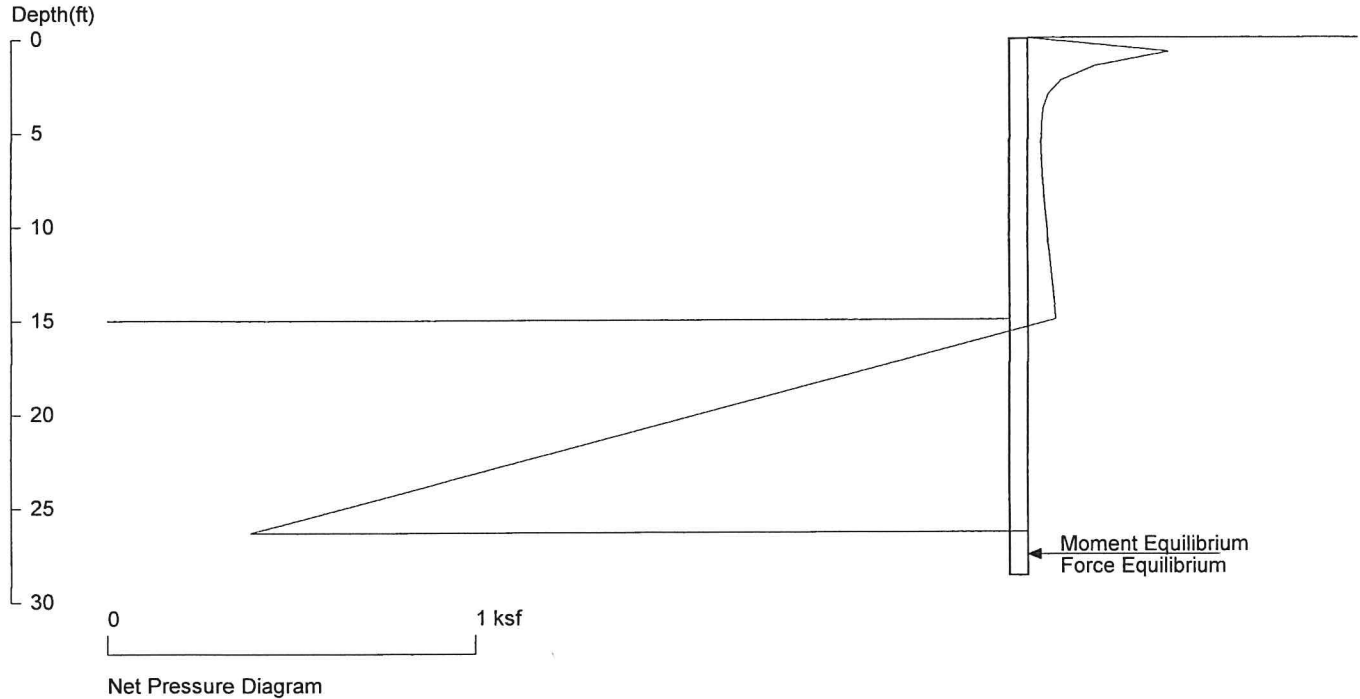
PASSIVE SPACING:

No.	Z depth	Spacing
1	15.00	4.50

UNITS: Width,Spacing,Diameter,Length,and Depth - ft; Force - kip; Moment - kip-ft
Friction,Bearing,and Pressure - ksf; Pres. Slope - kip/ft³; Deflection - in

Roberts Residence - Staging Area Retaining Wall

15' tall, Static Only, Semi-flexible Wall



PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 6.0 foot or meter

User Input Pile, w14x68: E (ksi)=29000.0, I (in4)/pile=722.0

:\20-014 (Nenana Avenue Construction, Cannon Beach, OR) (AB-TH)\Shoring Suite Stuff\Temporary Access Road (CURRENT)\15', Static Only, semi-flexible \

<ShoringSuite> CIVILTECH SOFTWARE USA www.civiltech.com

Licensed to Earth Engineers, Inc.

American Units

ROLLED MESH GALVANIZED

Product Description

Rolled mesh consists of zinc coated double twisted steel woven wire mesh manufactured in accordance with ASTM A975-97. The steel wire used in the manufacture of the mesh is heavily zinc coated soft temper steel. The standard specifications for the wire-mesh are shown in Tables 2, 3, 4.

Rolled Mesh is used for a wide variety of civil applications. It is used in conjunction with other double twisted wire mesh products such as gabions, mattresses, etc. or it is used alone for rockfall applications, repair work, etc. Rolled Mesh is supplied at standard lengths and can be cut to fit on site.

Wire

All tests on wire must be performed prior to manufacturing the mesh. All wire should comply with ASTM A975-97, style 1 coating and galvanized. Wire used for the manufacture of Rolled Mesh and the lacing wire, shall have a maximum tensile strength of 75,000 psi (515 MPa) as per ASTM A641/ A641M-03, soft temper steel.

Woven Wire Mesh Type 8x10 and 6x8

The mesh and wire characteristics shall be in accordance with ASTM A975-97 Table 1, Mesh type 8x10. The nominal mesh opening $D = 3.25$ in. (83 mm) and for type 6x8, $D = 2.5$ in. (64 mm) as per Figure 2.

The minimum mesh properties for strength and flexibility should be in accordance with the following:

- *Mesh Tensile Strength* shall be 3500 lb/ft (51.1 kN/m) for mesh type 8x10 and 2300 lb/ft (33.6 kN/m) for mesh type 6x8 minimum when tested in accordance with ASTM A975-97 section 13.1.1.
- *Punch Test* resistance shall be a minimum of 6000 lb (26.7 kN) for mesh type 8x10 and 4000 lb (17.8 kN) for mesh type 6x8 when tested in compliance with ASTM A975-97 section 13.1.4.

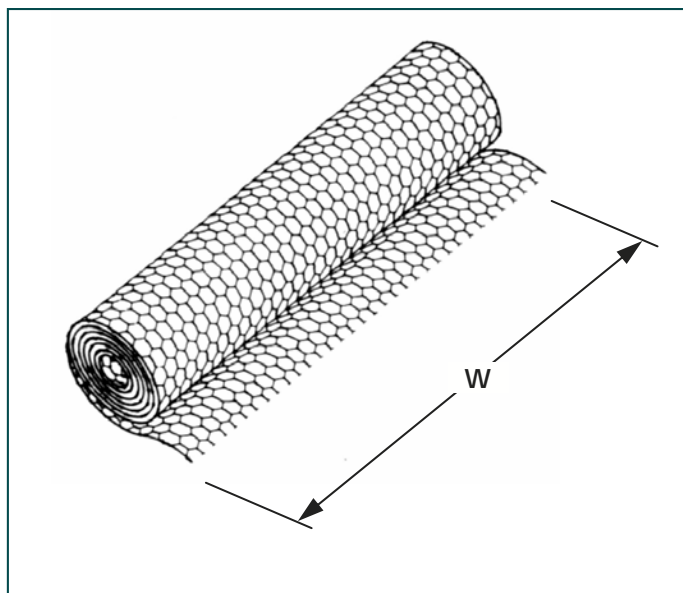


Figure 1

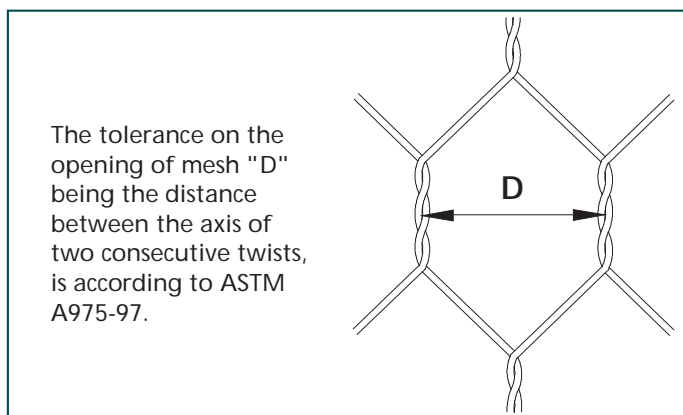


Figure 2



Figure 3 - Example of Rolled Mesh



Figure 4 - Example of Rolled Mesh

Table 1 - Sizes for mesh

L=Length ft (m)	W=Width ft (m)
150	6.0 or 12
(45.7)	(1.83 or 3.66)

All sizes and dimensions are nominal. Tolerances of +/- 1% of the length, and 5% of the width shall be permitted.

Table 2 - Standard mesh-wire

Type	D in. (mm)	Tolerance	Wire Dia in. (mm)
6x8	2.5 (64)	±10%	0.087 (2.2)
8x10	3.25 (83)	±10%	0.120 (3.05)

Lacing Operations

Lacing operations are made by using lacing wire specified in Table 3 and described in Figure 5. Galvanized steel ring fasteners (Figure 6), using the appropriate tools shown in Figure 7 for connection, can be used instead of, or to complement lacing wire.

Galvanized steel rings for galvanized mesh shall be in accordance with ASTM A975-97 section 6.3.

Spacing of the rings shall be in accordance with ASTM A975-97 Table 2, Panel to Panel connection, Pull-Apart Resistance. In any case, ring fasteners spacing shall not exceed 6 in. (150 mm) (Figure 5). Ring diameter: 0.118 in. (3.00 mm).

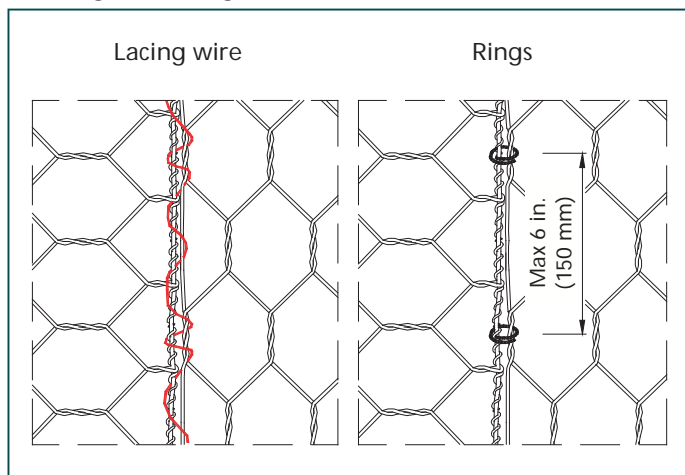


Figure 5

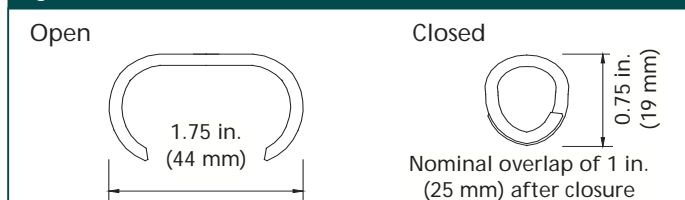


Figure 6

Table 3 - Standard wire diameters

		Lacing Wire	Mesh Wire	Selvedge Wire
6x8	ø in. (mm)	0.087 (2.2)	0.087 (2.2)	0.106 (2.7)
8x10	ø in. (mm)	0.087 (2.2)	0.120 (3.05)	0.153 (3.9)

Table 4 - Wire tolerances and coating

Wire diameter in. (mm)	0.087 (2.20)	0.106 (2.70)	0.120 (3.05)	0.153 (3.90)
Wire tolerance ± ø in. (mm)	0.004 (0.1)	0.004 (0.1)	0.004 (0.1)	0.004 (0.1)
Min qty/zinc oz/ft²/(g/m²)	0.70 (214)	0.80 (244)	0.85 (259)	0.90 (275)

Quantity Request

When requesting a quotation, please specify:

- Number of units,
- size of units (length x width, see Table 1),
- type of mesh,
- type of coating.

EXAMPLE: No. 100 rolled mesh, 150 ft (45.7 mm), Mesh type 8x10, Wire diameter 0.120 in. (3.05 mm), Galvanized.

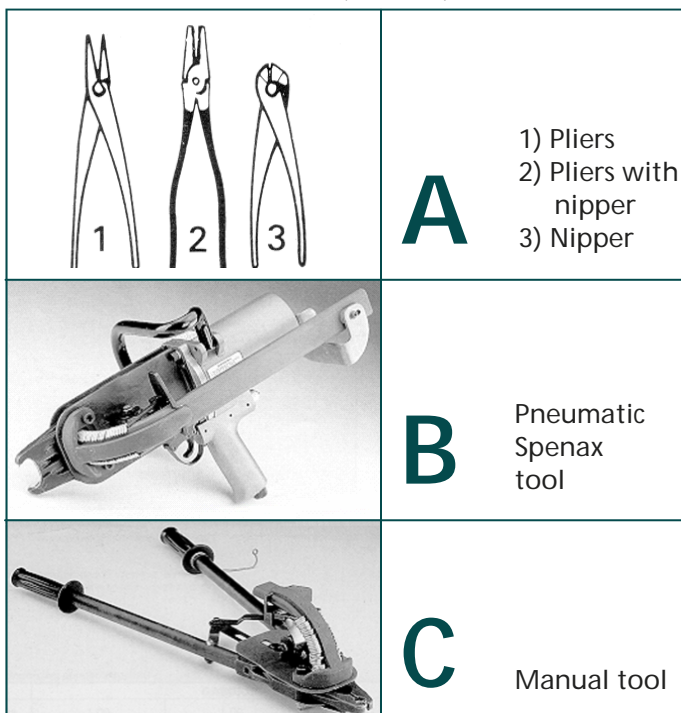


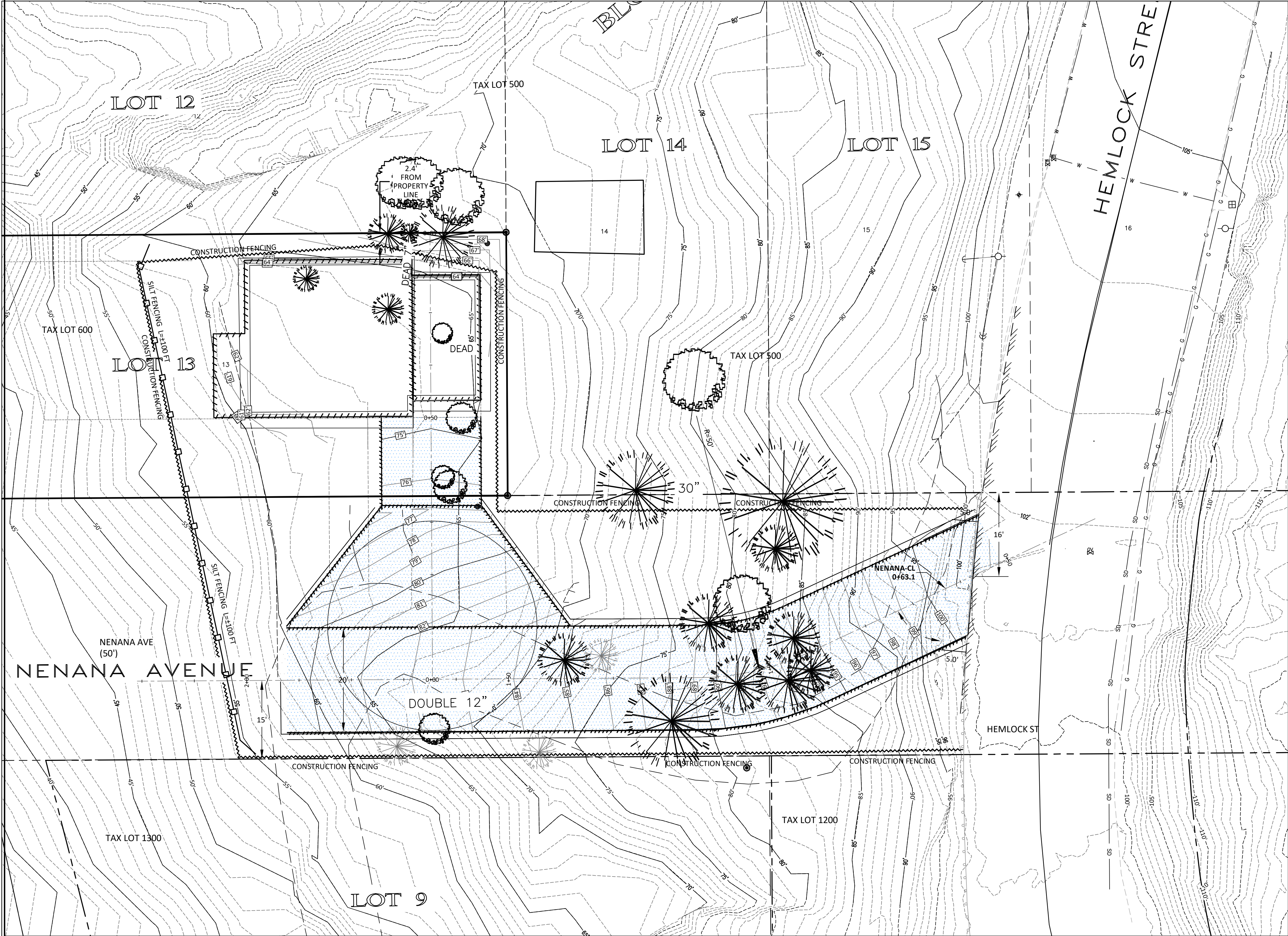
Figure 7

STANLEY ROBERTS
TAX LOT 600, NENANA AVE, CANNON BEACH
SITE PLAN

PART OF A SET OF DEVELOPMENT PLANS THAT INCLUDES ARCHITECTURAL
PLANS BY JAY RASKIN, AIA, AND STRUCTURAL ENGINEERING PLANS BY MILLER
CONSULTING ENGINEERING, INC.

UTILITY LOCATE ONE CALL
(1-800-332-2344) or (8-1-1)

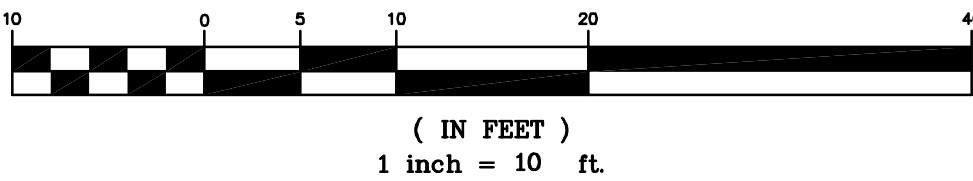
ATTENTION: OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY
THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH
IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN
COPIES OF THE RULES BY CALLING THE CENTER. (NOTE: THE TELEPHONE
NUMBER FOR THE OREGON UTILITY NOTIFICATION CENTER IS (503)
232-1987).



LEGEND

- PROPERTY LINE
- EXISTING ROADWAY
- EXISTING PATH
- PROPOSED ROADWAY
- CLEARING AREA
- CONSTRUCTION FENCING
- SILT FENCING
- STRAW WATTLE
- EXISTING CONTOUR
- FINAL/GRADING CONTOUR
- WATER LINE
- SEWER LINE
- GAS LINE
- CATV/PHONE/POWER LINE
- STORM DRAIN LINE
- EXISTING SUBSURFACE DRAINLINE
- HOUSE

GRAPHIC SCALE



NOTES

TOPOGRAPHIC INFORMATION
FROM S&F LAND SERVICES,
DATED JAN. 22, 2020.

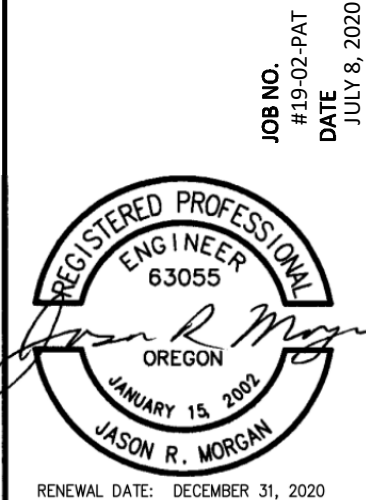
1 SITE LAYOUT
1 SCALE: 1"=10'

NO.	DATE	DESCRIPTION	BY
1	08/02/2020	REMOVE WORK FROM TAX LOT 1200	JRM



MORGAN CIVIL
ENGINEERING, INC.

PO BOX 358
MANZANITA, OR 97130
(503) 801-6016
www.morgancivil.com



STANLEY ROBERTS
TAX LOT 600 - NENANA AVENUE
SITE LAYOUT

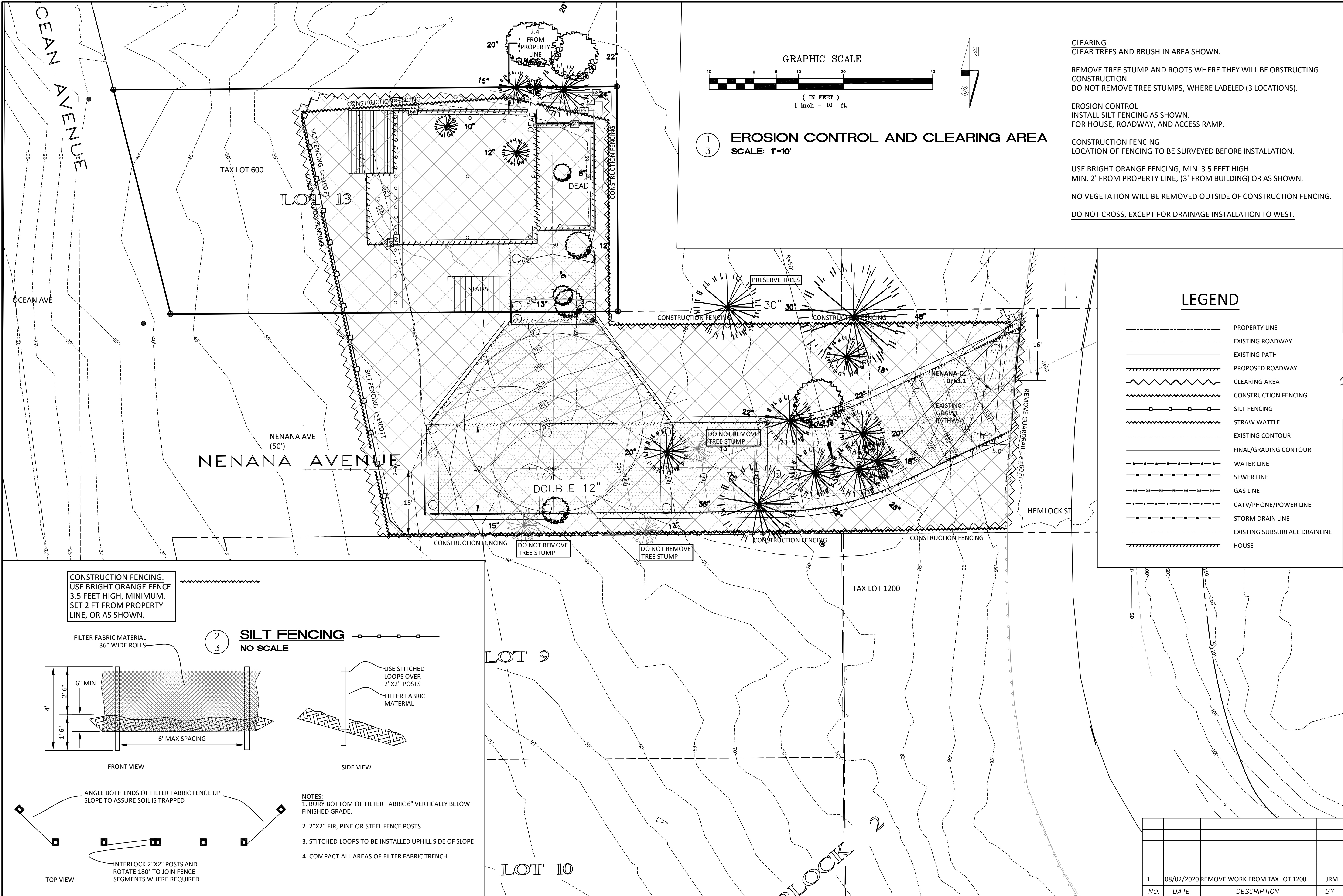
CANNON BEACH/MAP 5N 10W 31

SHEET

C1

OF TEN

V:\19-02-PatDwg\ROBERTS-SITE.dwg, vegetation, Sun Aug 2 11:51:06 2020



CLEARING
CLEAR TREES AND BRUSH IN AREA SHOWN.

REMOVE TREE STUMP AND ROOTS WHERE THEY WILL BE OBSTRUCTING CONSTRUCTION.
DO NOT REMOVE TREE STUMPS, WHERE LABELED (3 LOCATIONS).

EROSION CONTROL
INSTALL SILT FENCING AS SHOWN.
FOR HOUSE, ROADWAY, AND ACCESS RAMP.

CONSTRUCTION FENCING
LOCATION OF FENCING TO BE SURVEYED BEFORE INSTALLATION.

USE BRIGHT ORANGE FENCING, MIN. 3.5 FEET HIGH.
MIN. 2' FROM PROPERTY LINE, (3' FROM BUILDING) OR AS SHOWN.

NO VEGETATION WILL BE REMOVED OUTSIDE OF CONSTRUCTION FENCING.

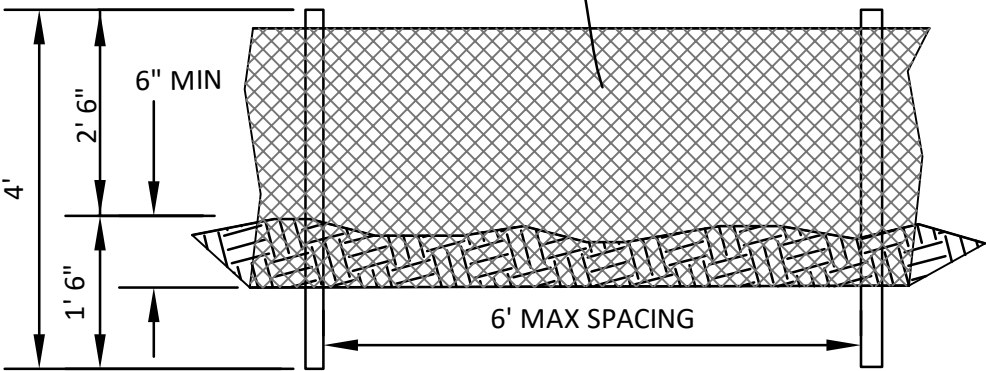
DO NOT CROSS, EXCEPT FOR DRAINAGE INSTALLATION TO WEST.

LEGEND

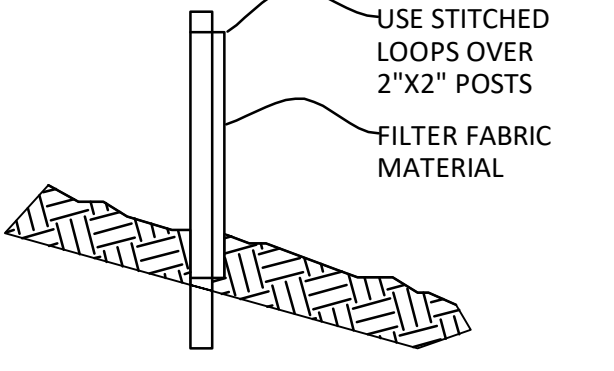
- PROPERTY LINE
- EXISTING ROADWAY
- EXISTING PATH
- PROPOSED ROADWAY
- CLEARING AREA
- CONSTRUCTION FENCING
- SILT FENCING
- STRAW WATTLE
- EXISTING CONTOUR
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- WATER LINE
- SEWER LINE
- GAS LINE
- CATV/PHONE/POWER LINE
- STORM DRAIN LINE
- EXISTING SUBSURFACE DRAINLINE
- HOUSE

CONSTRUCTION FENCING.
USE BRIGHT ORANGE FENCE
3.5 FEET HIGH, MINIMUM.
SET 2 FT FROM PROPERTY
LINE, OR AS SHOWN.

FILTER FABRIC MATERIAL
36" WIDE ROLLS



FRONT VIEW



SIDE VIEW


SILT FENCING
NO SCALE

- NOTES:
- BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
 - 2"x2" FIR, PINE OR STEEL FENCE POSTS.
 - STITCHED LOOPS TO BE INSTALLED UPHILL SIDE OF SLOPE
 - COMPACT ALL AREAS OF FILTER FABRIC TRENCH.

ANGLE BOTH ENDS OF FILTER FABRIC FENCE UP
SLOPE TO ASSURE SOIL IS TRAPPED

TOP VIEW

INTERLOCK 2"x2" POSTS AND
ROTATE 180° TO JOIN FENCE
SEGMENTS WHERE REQUIRED




**MORGAN CIVIL
ENGINEERING, INC.**

PO BOX 358
MANZANITA, OR 97130
(503) 801-6016
www.morgancivil.com

• CIVIL ENGINEERING
• INSPECTION
• PLANNING

JOB NO. #19-02-PAT
DATE JULY 8, 2020



RENEWAL DATE: DECEMBER 31, 2020

STANLEY ROBERTS
TAX LOT 600 - NENANA AVENUE
VEGETATION REMOVAL - EROSION CONTROL

CANNON BEACH/MAP 5N 10W 31

SHEET
C3
OF TEN

1	08/02/2020	REMOVE WORK FROM TAX LOT 1200	JRM
NO.	DATE	DESCRIPTION	BY



MORGAN CIVIL ENGINEERING, INC.

PO Box 358, Manzanita, OR 97130

ph: 503-801-6016

www.morgancivil.com

August 3, 2020

Stanley Roberts

Stan.milliman@gmail.com

**Re: Construction for Tax Lot 600 and Nenana Avenue, City of Cannon Beach, Oregon
Project #19-02-Pat**

Dear Mr. Roberts:

A new single-family dwelling is proposed on Tolovana Park Block 1, Lot 13, Tax Lot 600. Access to the property will be attained from Nenana Avenue, a public right-of-way platted as part of the Tolovana Park Subdivision in 1908. The previous access is shown on the existing conditions site plan; this access served a home constructed in the early 1900s as the home of the architect who designed the adjacent log cabin. The new access will be constructed to meet today's engineering design standards.

HAZARDS

A geologic site investigation report dated 4/10/2019 was prepared by R. Warren Krager, Certified Engineering Geologist, to address Cannon Beach Municipal Code 17.50.040.A.1. In this report, R. Warren Krager, CEG, recommended that the owner retain the services of Don Rondema, Geotechnical Engineer, to provide recommendations for site development and address the criteria of CB Section 17.50. The owner also retained the services of Civil Engineer Jason Morgan, Morgan Civil Engineering, to provide site design, Geotechnical Engineer Troy Hull to provide recommendations for the roadway design, and Eric Watson, Structural Engineer to design the recommended facilities.

To address Cannon Beach Code Section 17.50.040.A.2, engineering reports provide discussion on the feasibility of the proposed development and include findings and conclusions for: the design and location of structures (Don Rondema, PE, GE, Troy Hull, PE, GE, and Eric Watson, PE, SE), the design and location of roads (Troy Hull, PE, GE, Don Rondema, PE, GE, and Eric Watson, PE, SE), the design and location of utilities (Jason Morgan, PE, CE), land grading practices (Jason Morgan, PE, CE), including excavation and filling (Don Rondema, PE, GE, Troy Hull, PE, GE, Eric Watson, PE, SE, and Jason Morgan, PE, CE), stormwater management (Eric Watson, PE, SE, and Jason Morgan, PE, CE), and vegetation removal and replanting (Troy Hull, PE, GE, and Jason Morgan, PE, CE).

*Construction Narrative for
Nenana Avenue, Cannon Beach*

DESIGN PROFESSIONALS

Warren Krager, Certified Engineering Geologist, provided Consultation and Plan Review to address Cannon Beach Code 17.50.040.A.3.B.

Troy Hull, PE, GE, Earth Engineers, Inc. provided Geotechnical Engineering Recommendations for the Public Road Improvement to Nenana Avenue and Geotechnical Engineering for the Staging Area.

Don Rondema, MS, PE, GE, Geotech Solutions, Inc. provided Geotechnical Engineering recommendations for the House Design.

Plan Review Reports are provided by Don Rondema, MS, PE, GE, Troy Hull, PE, GE, and Warren Krager, CEG. These reports recommend that the utility design meets the requirements of Section 17.50.040.3.b. which require: "The geologic investigation report and engineering report to specify engineering and construction methods which will eliminate the hazard or will minimize the hazard to an acceptable level."

Eric Watson, Miller Consulting Engineers, Inc. provided Structural Engineering for the Road, Driveway, and House.

Jay Raskin, Architect, FAIA, provided the Site Plan and the Architectural Plans.

Jason Morgan, PE, Morgan Civil Engineering, Inc., provided Civil Engineering drawings for the Road and Driveway Footprint and Profile, Stormwater Drainage, Utilities, and Grading.

David Sip, ISA Certified Arborist and Risk Assessor, Ecologic Tree, Inc, prepared a report to support the removal of trees to construct the home, vehicular access, and utility access and assure the protection of trees to be retained both on the subject property and off-site.

Jack L. White II, PLS, S&F Land Services, Inc. provided the topographic, boundary and tree survey documentation for this project.

*Construction Narrative for
Nenana Avenue, Cannon Beach*

CONSTRUCTION CONTRACTORS

Rich Elstrom Construction, Inc. will provide the team to build the residence.

PLI Systems, Inc., under owner Manuel Castañeda, will provide oversight over of the right-of-way construction and oversight over the Grading, Excavation, Tree Removal, and Utility Construction.

Under the direction of PLI Systems, Inc., Concrete Structures, Inc. is anticipated to provide concrete services for the road and driveway piers and the house micro-piles.

Bob McEwan Excavating, Inc., under Mike McEwan, is anticipated to provide Grading, Excavation, Utility Construction and Tree Removal services.

INSPECTIONS

Jack L. White, PLS, S&F Land Services, Inc. will survey the locations for all grading and constructed facilities, including the construction fence, staging area, micropiles, piers, house corners, and utilities, to ensure they are placed precisely in the approved locations.

The Design Professionals will provide continuous and intermittent inspections over, and written certification reports for, all facilities.

PERFORMANCE BOND AND SURETY

Nenana Avenue is a Public Right-of-Way. As requested by the City, a Surety Bond will be provided as may be required for public works projects under ORS 279C.380 for contractors constructing public projects that exceed a construction cost of \$100,000. The contractor PLI Systems, Inc. will provide a Construction Bond and Insurance to guarantee the work will be conducted as approved by the City. The property owner will provide a letter of credit from their financial institution to guarantee that the funds necessary to complete this work as approved by the City are available. The construction cost of this project includes inspections by the design professionals and oversight by the City.

STREETS

Traffic Control:

The construction goal is to limit the need for disruption and flagging on Hemlock Street during the project: Staging Area Construction, Utility Construction, and Road Panel Installation. Short-term lane closures will be needed for an extended amount of time, as this project proposes to construct a staging area in the Nenana Avenue right-of-way. This staging area will be removed, and the site returned to a stable condition, at the end of the project.

Construction of the staging area will take five days. Construction of the staging area will require daytime flagging, or the shut-down of Hemlock Street S-Curves, for approximately two days. For staging area construction, the guardrail and posts will be removed for the whole construction area. Chain-link fencing and cones will be installed for traffic safety. A chain and lock across the access will prevent trespass when there is not supervision by an approved contractor.

Inspection of the Staging Area will be provided by Troy Hull, GE, Earth Engineers, Inc.

UTILITIES

Utilities have been designed to meet the requirements of Cannon Beach Municipal Ordinances Title 13 Utility Code.

The utilities to serve the property, water, sewer, gas, power, and telecommunications, will be installed in the Nenana Avenue right-of-way, consistent with the City standards for material, depth, and separation.

The water line will be 2" polyethylene tubing. This will serve the needs of the development including residential fire sprinklers.

The sewer system will include a duplex grinder pump and a pressurized line in the Nenana Avenue right-of-way and a cleanout and gravity line in the Hemlock Street right-of-way to feed the sewer main pipe.

Natural Gas will be installed under the supervision of NW Natural.

Power will be installed under the supervision of Pacific Power.

Telecommunications providing access to telephone, high speed internet, and cable will be installed under the supervision of Charter Spectrum.

*Construction Narrative for
Nenana Avenue, Cannon Beach*

Fire protection service will be served by the installation of a dry standpipe with one end at the intersection of Hemlock Street and Nenana Avenue, and the second at the edge of Nenana Avenue at the property.

Continuous inspection of utility construction will be provided by Jason Morgan, PE, Morgan Civil Engineering, Inc.

GRADING

Site Preparation:

Prior to the start of work, highly visible 3.5-foot tall construction fence will be installed around the entire project area. The purpose of this fence is to ensure that construction activity does not trespass onto areas where vegetation will be retained. These sensitive areas are so designated by the Geotechnical Engineers and Arborist, and consist of the adjacent properties Tax Lot 500, Tax Lot 1200, and Tax Lot 1300. Silt fencing will be installed inside of the construction fence where shown in order to prevent sedimentation of downslope areas.

Prior to placement of the construction fence, Jack L. White, II, S&F Land Services, Inc. will survey and flag the boundaries of the Nenana Avenue right-of-way to assure the construction barrier is placed in the correct area.

The City will be contacted to inspect the prepared right-of-way. Arborist David Sip, and Jason Morgan, Civil Engineer, Morgan Civil Engineering, Inc., and Geotechnical Engineers Don Rondema and Troy Hull will inspect the project site preparation.

Grading:

A Grading Plan has been designed to meet the requirements of CB Code 17.50.040.A.2, and the recommendations of Don Rondema, MS, PE, GE, of Geotech Solutions, Inc. for the house, and Troy Hull, PE, GE, of Earth Engineers, Inc. for the road and driveway.

Jack L. White, II, S&F Land Services, Inc. will survey and flag the location of the project areas before work in each area begins including and not limited to the H-piles for the staging area, the piles for the road and driveway, and the micro-piles for the house, in order to ensure it occurs where approved.

*Construction Narrative for
Nenana Avenue, Cannon Beach*

Vegetation Removal:

Vegetation will be removed from the Nenana Avenue right-of-way project area, driveway site and house site. Tree stumps will remain where they will not interfere with the construction of deck piers, grade beams, or utilities. No vegetation is planned for removal outside of the construction fence.

Vegetation Restoration:

Where vegetation is disturbed during the project, it will be re-established through specific methods at the end of the project. Gravel will be removed, as practical, in the staging area, and the area will be hydroseeded. The construction access pathway underneath the bridge road will be retained for access to at grade utilities and will perform as erosion control.

As the Fire Department determines is necessary for fire access, a 3-foot wide gravel path will be constructed around the house. The remainder of the disturbed area will be landscaped.

Tree Removal and Protection:

A report to address the requirements of Cannon Beach Municipal Code Section 17.70 Tree Removal and Protection and Section 12.36.020.A. Tree Maintenance by the City has been prepared by David Sip, ISA Certified Arborist, Ecologic Tree, Inc.

Where trees are located within the project boundaries, they will be cut down. Tree stumps will be removed only where they interfere with the placement of necessary structures. Where tree stumps can be retained, they will benefit the soil structure and microbiology.

ISA Certified Arborist David Sip will work with the construction team to protect trees outside the project boundaries. According to his report, David will continuously observe the use of an air spade to excavate an excavation boundary trench at the project site. David will perform clean cuts to all encountered tree roots in order to prevent adverse effects to trees in the vicinity that will be retained including trees just outside of the boundaries of the project area.

ISA Certified Arborist David Sip will issue a written certification report when the air spade trench is complete and the clean cuts to tree roots are complete and further excavation can occur without concern of damage to adjacent trees.

*Construction Narrative for
Nenana Avenue, Cannon Beach*

Excavation:

The amount of soil excavation in the right-of-way will be confirmed in the field by Troy Hull, PE, Earth Engineers, Inc. The amount of soil excavation on the private property will be confirmed in the field by Don Rondema, GE, Geotech Solutions, Inc. The area of excavation is designed on the Grading Plan. In general, the amount of excavation will be very limited to retain as much site vegetation and topsoil microbiology as possible to support regrowth of vegetation.

Stormwater Drainage:

Stormwater Drainage collection and discharge has been designed to meet the requirements of CB Code 17.50.040.A.2, and the recommendations of Don Rondema, MS, PE, GE, of Geotech Solutions, Inc. for the house and Troy Hull, PE, GE, of Earth Engineers, Inc. for the road and driveway.

Roadway and Driveway: Water runoff from the roadway and driveway surface will be collected by scuppers and directed to collection pipes that run alongside the piers and then diffused on the slope as shown on the Drainage Plan (7/8/2020; Sheet C6). Water collected at the driveway intersection with the house will be collected and dispersed by diffusion as shown on the Drainage Plan (7/8/2020; Sheet C6).

House: Water runoff from the residential roof will be collected and directed to energy dissipation pads as shown on the Drainage Plan (7/8/2020; Sheet C6). Foundation Drains are shown on the Architectural Plans and the Drainage Plan (See Sheet C6).

Impervious surfaces: Water runoff from impervious surfaces will be collected and directed to collection locations and dispersed with diffusion pipes as shown on the Drainage Plan (7/8/2020; Sheet C6). Foundation Drains are shown on the Architectural Plans and the Drainage Plan (Sheet C6).

Vegetation Removal / Re-vegetation

Cannon Beach Code requires that vegetation removal be kept to a minimum and that the work area of the project is bounded to prevent unnecessary vegetation removal.

Vegetation removal will be kept to a minimum as shown on Sheet C3, 8/2/2020 (Morgan) .

Revegetation will be conducted as soon as earth work is completed. Troy Hull in his staging plan identifies revegetation plan for the staging area. A hydroseed mix has been provided by PLI Systems, Inc.

*Construction Narrative for
Nenana Avenue, Cannon Beach*

Drainage Maintenance Plan

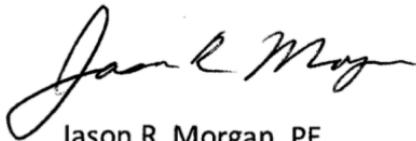
Annually, in July of each year, retain an appropriately qualified Civil Engineer to evaluate the Stormwater collection and disposal system to determine if they are working as needed, whether they need to be repaired, or whether they need to be modified. Check all collection and discharge locations in Nenana Avenue and private property.

Obtain a permit from the City before starting any construction, even for the repair of existing approved facilities. Complete all necessary repairs or modifications before the next wet weather season begins, preferably by September 30th of each year.

Please contact me if you have any questions or more information.

Sincerely,

MORGAN CIVIL ENGINEERING, INC.



Jason R. Morgan, PE
Professional Engineer

Professional Engineer



cc: Project File #19-02-Pat

<V:\19-02-Pat\Reports\Roberts Construction Narrative.docx>

August 5, 2020

robertscannon-18-1-consultte

Stanley and Rebecca Roberts
stan.milliman@gmail.com

Cc:
kevin@objectiveadvisorsllc.com
plandevelopment@msn.com
troy@earth-engineers.com
jorge@plisystems.com

GEOTECHNICAL ENGINEERING CONSULTATION
Roadway Staging Area – Impacts to Stability and Horizontal Drains
Cannon Beach, Oregon

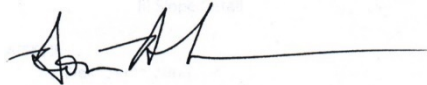
This letter summarizes our review of overall geotechnical stability aspects of the Nenana Avenue roadway improvement staging area. Information provided includes the attached design from PLI received August 5, 2020 and the geotechnical engineering by Earth Engineers. The staging area calls for lightweight EPS15 block fill and associated piles and retention system, and up to 18 inches of protective rock. This loading is suitably light and is not detrimental to slide stability.

In addition, piles are sufficiently shallow and their layout does not conflict with mapped horizontal drain locations. The existing inclinometer casing and standpipe and flush monuments near the outside radius of the existing skid road are to be protected during construction and preserved for access and potential ongoing use.

The staging areas plans conform to the intent of our June 20, 2020 review of roadway design and the Limitations therein.

If you have any questions, please contact us.

Sincerely,



Don Rondema, MS, PE, GE
Principal



Attached: PLI plans, Earth Engineers Letter



Earth
Engineers,
Inc.

2411 Southeast 8th Avenue • Camas • WA 98607

Phone: 360-567-1806 • Fax: 360-253-8624

www.earth-engineers.com

June 23, 2020

Revised August 5, 2020

Stanley Roberts
925 Lake Street South
Apartment No. 201
Kirkland, Washington 98033

Phone: 206-465-4220
E-mail: stan.milliman@gmail.com

**Subject: Temporary Construction Staging Area Design Recommendations
Proposed Nenana Avenue and Tax Lot 600 Private Driveway Construction
Cannon Beach, Clatsop County, Oregon
EEI Report No. 20-014-2-R3**

Dear Mr. Roberts:

Earth Engineers, Inc. (EEI) is pleased to submit the following geotechnical design for a temporary construction staging area. This report has been revised to include recommendations for staging area exposed heights between 12 and 15 feet.

PROJECT UNDERSTANDING

Our understanding of the staging area construction is based on the information provided by Jorge Castaneda at PLi Systems. Briefly we understand the staging area will be constructed on the slope adjacent to Hemlock Street. The primary purpose of the staging area will be for construction equipment to be able to pull safely off Hemlock Street. We anticipate the largest equipment will be a fully loaded, 10-cubic yard dump truck or an 8 cubic yard concrete truck, which we estimate weigh up to about 50,000 pounds. We also assume that on occasion, materials will be briefly staged there.

Based on the preliminary 3-D model of the staging area from Mr. Castaneda (see Figure 1 below), the staging area will be about 24 feet wide (north to south) by about 34.3 feet long (east to west). The staging area will be up to 15 feet high. Mr. Castaneda indicated they plan to construct the staging area by lowering wide-flange steel piles into predrilled holes and backfilling the holes with concrete. The soldier piles will not be driven into the ground due to concerns related to ground vibration. The staging area facing will consist of wire mesh and the backfill behind the soldier piles will consist of lightweight foam blocks. This is a pretty typical solution PLi has used numerous times in the past for constructing temporary staging areas for heavy construction equipment and materials on steep construction sites where access is limited.

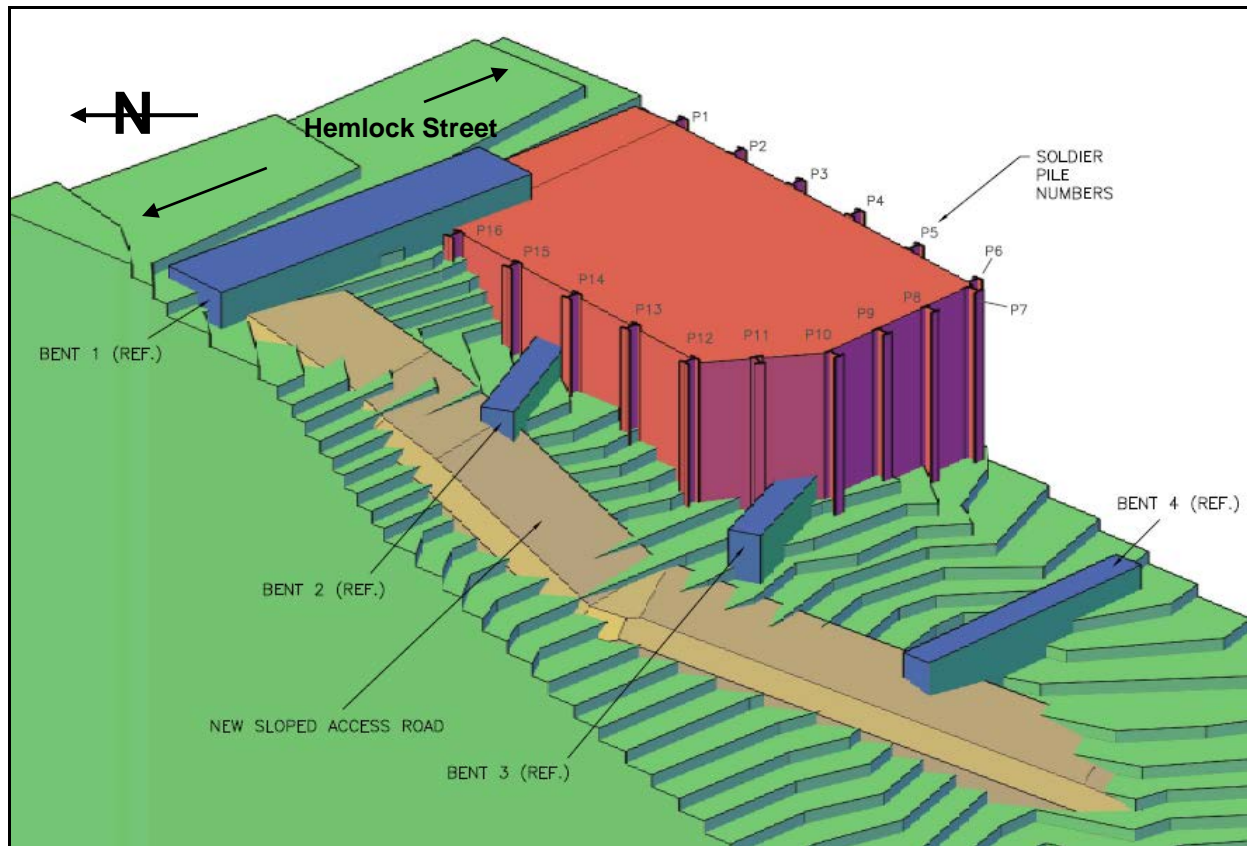


Figure 1: 3-D rendering of PLi's proposed staging area construction, noted in red (base drawing source: Z2.1 by PLi Systems dated 8/5/20).

STAGING AREA RECOMMENDATIONS

To evaluate the requirements for supporting the temporary staging area with soldier piles, we performed our geotechnical engineering analysis using Shoring Suite, Version 8.17a software from CivilTech. The following assumptions were made in our analysis:

- The soldier piles will be spaced no further than 6 feet on center.
- The pile design is based on a minimum static FOS of 1.5 against overturning. We did not evaluate a seismic loading condition as this is a temporary staging area structure. The FOS was applied to the passive earth pressure (i.e. the resisting force).
- An active equivalent fluid pressure of 5 psf/foot of soldier pile exposed height for lightweight foam backfill.
- A passive equivalent fluid pressure of 200 psf/foot of embedment. This value includes a reduction given that the ground is sloping down to the west.
- A surcharge point load of 12,500 pounds, which roughly represents one-quarter of a 50,000 pound redi-mix concrete truck. We assumed the wheel could be as close as 1 foot from the soldier piles.

The output files summarizing our Shoring Suite analysis are provided as an attachment. Based on the above design parameters, we provide the following temporary soldier pile design recommendations.

Table 1: Soldier Pile Recommendations for Temporary Construction Staging Area

Maximum Exposed Pile Height (feet)	Maximum Pile Spacing (feet)	Minimum Pile Size	Minimum Borehole Diam. (inches)	Minimum Pile Embedment (feet)	Total Pile Length (feet)
15	6	W14x68	18	14	29
12	6	W14x43	18	13	25
10	6	W14x30	18	12	22
8	6	W12x26	18	11	19
6	6	W12x22	18	10	16

- The predrilled holes for the piles should be backfilled with lean mix concrete (i.e. CDF) having a minimum compressive strength (f'c) of 150 psi at 28 days. Concrete cylinder testing is not required.
- Corrosion protection will not be needed--the staging area is only temporary. When construction is complete, the staging area construction will be removed. We anticipate the piles will just be cutoff at the ground surface, rather than try to fully remove them.
- The staging area vertical facing between soldier piles will consist of wire mesh to contain the foam block backfill. PLi plans to use Maccaferri galvanized woven wire mesh with openings of 8 by 10 inches (product technical data sheet attached). This mesh has a minimum tensile strength of 3,500 pounds per foot. Given there will be 6 horizontal feet between piles, this equates to a mesh strength of 21,000 pounds between piles, which is more than adequate to support the lightweight foam block backfill and surcharge load.
- The backfill should consist of EPS15 Geofoam (or equivalent). The foam blocks should be placed level by limited excavation of benches. The layers of blocks should be oriented so each row is alternated 90 degrees. The blocks should be placed tightly against each other so they cannot shift. Any minor void spaces between aligned blocks should be filled with free-flowing sand prior to placing the subsequent course. A representative of the Geotechnical Engineer should approve the benching for the lightweight fill and periodically observe the Geofoam placement to ensure that it is proceeding according to the recommendations provided within this report.
- The drilling of the boreholes, installation of the steel piles, backfilling with concrete, placement of wire mesh, and backfilling with foam blocks should all be inspected by EEI. All inspections are continuous, except for the wire mesh and foam blocks.
- There is an active inclinometer casing installed near proposed Pile #12 that has been monitored by Geotech Solutions. This inclinometer needs to be protected from damage during the installation and removal of the temporary staging area. In addition, access to it cannot be blocked while the staging area is in place just in case inclinometer readings need to be taken. This critical issue has been pointed out to Jorge with PLi Systems

(the contractor who will be constructing the temporary staging area) and this requirement has been included on the construction drawings.

Our temporary staging area design is based on the site access needs described by PLi Systems. If other contractors will need to use this temporary staging area, we should be forwarded information on how they plan to use it and under what kind of loading conditions for our approval prior to use.

With regard to geologic hazards, the proposed staging area construction will preserve the natural slope, follow the slope contours, reduce the need for grading and filling, minimize vegetation removal, not alter drainage patterns, and not block stream drainage ways. This will be accomplished by using geofoam blocks as fill, which will easily be removed when the staging area is no longer needed. In addition, by using soldier piles to retain the geofoam blocks, this will limit the area impacted by the construction. **Consistent with Cannon Beach Municipal Code 17.50.040.3.b, as designed, the temporary construction staging area will have no significant adverse impact on the site or surrounding area.** If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Respectfully submitted,
Earth Engineers, Inc.

Reviewed by:



Troy Hull, P.E., G.E.
Principal Geotechnical Engineer

A handwritten signature in dark ink that reads "Daniel Watkins".

Daniel Watkins, P.E., G.E.
Senior Geotechnical Engineer

Attachment: Temporary Staging Area Calculations (15 pages)
Maccaferri Wire Mesh Technical Data Sheet (2 pages)

Distribution (electronic copy only):

Addressee

Kevin Patrick (Kevin@objectiveadvisorsllc.com)

Sabrina Pearson, Plan Development LLC (plandevelopment@msn.com)

Jason Morgan, Morgan Civil Engineering (jason@morgancivil.com)

Eric Watson, Miller Consulting Engineers (eric@millier-se.com)

Rich Elstrom, Rich Elstrom Construction (rec@opusnet.com)

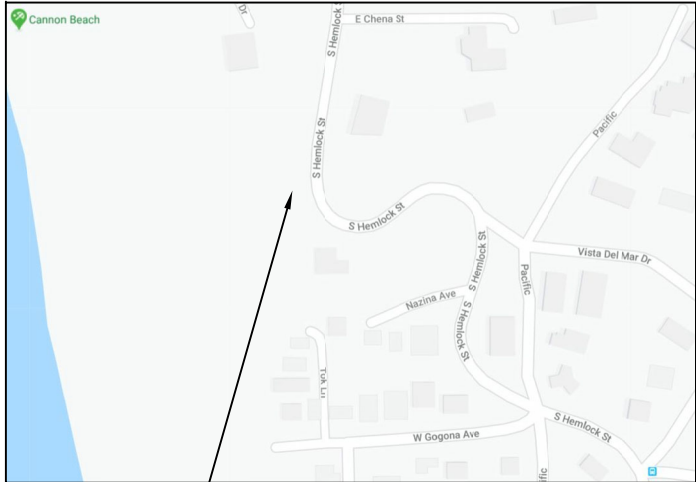
Don Rondema, Geotech Solutions (don@geotechsolutionsinc.com)

Jorge Castaneda, PLi Systems (jorge@plisystems.com)

ROBERTS TEMPORARY STAGING AREA

NENANA AVE, CANNON BEACH, OR

SHEET NUMBER	SHEET TITLE
Z1.0	COVER SHEET AND NOTES
Z2.0	SITE PLAN
Z2.1, Z2.2	PLAN DETAIL, PILE LOCATION DETAIL
Z2.3, Z2.4	SCHEMATIC ISO VIEWS
Z3.0, Z3.1, Z3.2	SECTIONS, SOLDIER PILE TABLE
Z4.0	GABION MESH ATTACHMENT DETAILS
Z5.0, Z5.1	TEMPORARY EROSION CONTROL DETAILS
Z6.0	SITE RESTORATION SEED MIX



PROJECT SITE

GENERAL:

THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING DIMENSIONS AND SITE CONDITIONS, DETERMINING ACTUAL LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THE PLANS AND THOSE UTILITIES OR UNDERGROUND CONSTRUCTIONS NOT SHOWN ON THE PLANS, AND FOR REMOVAL OF ALL ABANDONED UTILITIES, OR OTHER UNDERGROUND OBSTRUCTIONS THAT INTERFERE WITH THE NEW CONSTRUCTION.

THE CONTRACTOR IS RESPONSIBLE FOR THE CONSTRUCTION PROCESS AND THE SAFETY OF THE WORKERS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE CONSTRUCTION SEQUENCE, TEMPORARY HANDRAILS, EXCAVATION ACCESS, AND BARRIERS. IT ALSO INCLUDES LIFTING OF MATERIALS AND CONSTRUCTION EQUIPMENT INTO AND OUT OF THE EXCAVATION, TEMPORARY BRACING OF FORMWORK, TEMPORARY SHORING OF EXCAVATIONS, AND STABILITY OF ALL TEMPORARY CUT SLOPES.

REFERENCE DATA:

- THE EXISTING SITE, TOPOGRAPHICAL, AND UTILITY DATA; AND THE PROPOSED TEMPORARY STAGING AREA LOCATIONS AND DIMENSIONS ARE ALL BASED ON INFORMATION SUPPLIED BY THE GENERAL CONTRACTOR.

BUILDING CODES, DESIGN MANUALS, AND SPECIFICATIONS:

- 2019 OREGON STRUCTURAL SPECIALTY CODE.

DESIGN CALCULATIONS:

THE TEMPORARY STAGING AREA DESIGN CALCULATIONS ARE CONTAINED IN REPORT #20-014-2-R3 PREPARED BY EARTH ENGINEERS, INC. DATED AUGUST 5, 2020.

DRILLED SOLDIER PILES:

THE MINIMUM REQUIRED STRUCTURAL STEEL W-SHAPES FOR THE SOLDIER PILES ARE INDICATED ON THE PLANS. ALTERNATIVE STEEL SECTION ARE EQUAL TO OR GREATER THAN THE CROSS-SECTIONAL AREA AND SECTION MODULUS OF THE CORRESPONDING STEEL SECTION SHOWN ON THE PLANS, AND IS APPROVED BY THE SHORING DESIGNER.

SHAFTS SHALL BE CONSTRUCTED SO THAT THE CENTER AT THE TOP OF THE SHAFT IS WITHIN +/- 6 INCHES OF THE PLAN LOCATION. SHAFTS SHALL BE PLUMB. THE ELEVATION AT THE TOP OF SHAFT SHALL BE WITHIN +/- 6 INCHES FROM THE PLAN LOCATION. DURING CONSTRUCTION FOR THE SHAFTS, THE CONTRACTOR SHALL MAKE FREQUENT CHECKS ON THE PLUMBNESS, ALIGNMENT, AND DIMENSIONS OF THE SHAFTS. ANY DEVIATION EXCEEDING THE ALLOWABLE TOLERANCES SHALL BE CORRECTED IMMEDIATELY, UNLESS THE DEVIATION IS ACCEPTABLE, AT THE DISCRETION OF THE SHORING DESIGNER.

THE STEEL SOLDER PILES SHALL BE PLACED SO THAT THE CENTER OF THE PILE IS WITHIN +/- 6 INCH OF THE PLAN LOCATION AT THE TOP OF THE PILE, AND WITHIN 0.5% OF VERTICAL WITH DEPTH. ANY DEVIATION EXCEEDING THE ALLOWABLE TOLERANCES SHALL BE CORRECTED IMMEDIATELY, UNLESS THE DEVIATION IS ACCEPTABLE, AT THE DISCRETION OF THE SHORING DESIGNER.

SHAFTS SHALL BE EXCAVATED TO THE REQUIRED DEPTH AS SHOWN ON THE PLANS. THE EXCAVATION SHALL BE COMPLETED IN A CONTINUOUS OPERATION USING EQUIPMENT CAPABLE OF EXCAVATING THROUGH THE TYPE OF MATERIAL EXPECTED TO BE ENCOUNTERED.

IF THE SHAFT EXCAVATION IS STOPPED WITH THE APPROVAL OF THE ENGINEER, THE SHAFT SHALL BE SECURED BY INSTALLATION OF A SAFETY COVER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE SAFETY OF THE SHAFT AND SURROUNDING SOIL AND THE STABILITY OF THE SIDE WALLS. A TEMPORARY CASING SHOULD BE USED IF NECESSARY TO ENSURE SUCH SAFETY AND STABILITY.

WHERE CAVING CONDITIONS ARE ENCOUNTERED, FURTHER EXCAVATION WILL NOT BE ALLOWED UNTIL THE CONTRACTOR SELECTS A METHOD TO PREVENT GROUND MOVEMENT. THE CONTRATOR MAY ELECT TO PLACE A TEMPORARY CASING OR USE OTHER METHODS APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL USE APPROPRIATE MEANS (SUCH AS A CLEANOUT BUCKET), TO CLEAN THE BOTTOM OF THE EXCAVATION SUCH THAT NO MORE THAN 2 INCHES OF LOOSE OR DISTURBED MATERIAL IS PRESENT.

WHEN UNEXPECTED OBSTRUCTIONS, WHICH REQUIRE SPECIALEDED EQUIPMENT AND/OR LABOR ARE ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PROMPTLY AND THE OBSTRUCTIONS SHALL BE REMOVED AND THE EXCAVATION CONTINUED IN A MANNER APPROVED BY THE ENGINEER.

TEMPORARY CASINGS FOR THE SHAFTS SHALL BE REMOVED. A MINIMUM 5 FOOT HEAD OF CONCRETE MUST BE MAINTAINED TO BALANCE THE SOIL AND WATER PRESSURE AT THE BOTTOM OF THE CASING DURING REMOVAL. THE CASING SHALL BE SMOOTH.

SHAFT CONCRETE SHALL BE PLACED AS SHOWN ON THE PLANS AND SHALL COMMENCE WITHIN 6 HOURS AFTER COMPLETION OF THE EXCAVATION. SHAFT CONCRETE SHALL BE PLACED IN ONE CONTINUOUS OPERATION TO THE TOP OF THE SHAFT.

AS AN ALTERNATE TO CONVENTIONAL SHAFT CONSTRUCTION USING A KELLY BAR DRIVEN FLIGHT AUGER WITH OR WITHOUT CASING, THE CFA (CONTINUOUS FLIGHT AUGER) METHOD MAY BE USED SO LONG AS THE GROUND CONDITIONS REMAIN AMENABLE TO THIS METHOD WITHOUT THE DEVELOPMENT OF MINING, OR OF CAVING IF THE CFA IS REMOVED AND THE HOLE LEFT OPEN FOR A PERIOD OF TIME PRIOR TO CONCRETING.

LEAN-MIX CONCRETE FOR SOLDIER PILES:

ALL LEAN-MIX CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF AT LEAST 150 PSI. PORTLAND CEMENT SHALL BE TYPE I, II, or III CONFORMING TO ASTM C150/AASHTO M85. CONCRETE CYLINDER TESTS ARE NOT REQUIRED.

SLUMP FOR ALL LEAN-MIX CONCRETE SHALL NOT BE LESS THAN 5 INCHES AND NO GREATER THAN 9 INCHES. ADMIXTURES SHALL CONFORM TO THE REQUIREMENTS OF ASTM C494 / AASHTO M194, SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND SHALL BE APPROVED BY THE ENGINEER. AGGREGATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM C33 / AASHTO M6 FOR FINE AGGREGATES AND AASHTO M80, CLASS B FOR COARSE AGGREGATES.

STEEL SOLDIER PILES:

ASTM A992, 50 KSI, PLAIN.

MESH FACING FOR PILE WALL:

MACCAFERI GALVANIZED DOUBLE TWIST .120" DIA. TYPE 8X10 WIRE MESH BACKED WITH 1/2" X 1" (16) GAUGE FINE OPENING WIRE MESH, OR EQUIVALENT.

GEOFOAM BACKFILL:

EPS15.

CRUSHED GRAVEL:

3/4" MINUS.

DRAIN ROCK:

3/4" TO 1 1/2" CLEAN.

FILTER FABRIC:

AMOCO STYLE 4535 NONWOVEN FILTER FABRIC, OR EQUIVALENT.

SPECIAL INSPECTIONS OF THE TEMPORARY STAGING AREA:

IN ACCORDANCE WITH SECTION 1704 OF OSSC (2019), SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING ITEMS OR PROCESSES: SOLDIER PILE INSTALLATION, MESH FACING, FOAM BLOCK FILL.

SITE RESTORATION:

AT THE CONCLUSION OF THE PROJECT WHEN THE TEMPORARY STAGING AREA IS NO LONGER NEEDED FOR CONSTRUCTION PURPOSES, THE SITE WILL BE RESTORED TO A CONDITION SIMILAR TO THE EXISTING CONDITIONS, AND SIMILAR TO THE ADJACENT, NEARBY LANDSCAPE.

- THE GEOFOAM BACKFILL, CRUSHED GRAVEL, DRAIN ROCK, AND FILTER FABRIC WILL BE REMOVED FROM THE SITE.
- THE SOLDIER PILES WILL BE CUT OFF BELOW THE FINISHED GRADE.
- THE SLOPE WILL BE GRADED BACK TO ITS APPROXIMATE ORIGINAL CONDITION.
- AREAS DISTURBED DURING THE CONSTRUCTION OF THE TEMPORARY STAGING AREA WILL BE HYDROSEEDDED USING THE SEED MIX PER Z6.0.

GEOTECHNICAL ENGINEER:



Earth
Engineers,
Inc.

2411 SE 8TH AVE.
CAMAS, WA 98607
360-567-1806



EXPIRES: 6/30 21

CONTRACTOR:



3045 SE 61st COURT
HILLSBORO, OR 97123
503-649-8111

ROBERTS
TEMPORARY
STAGING AREA
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

COVER SHEET
AND
NOTES

REVISIONS:

DATE: 08/05/20

SCALE: AS SHOWN

DRAWN: SMW

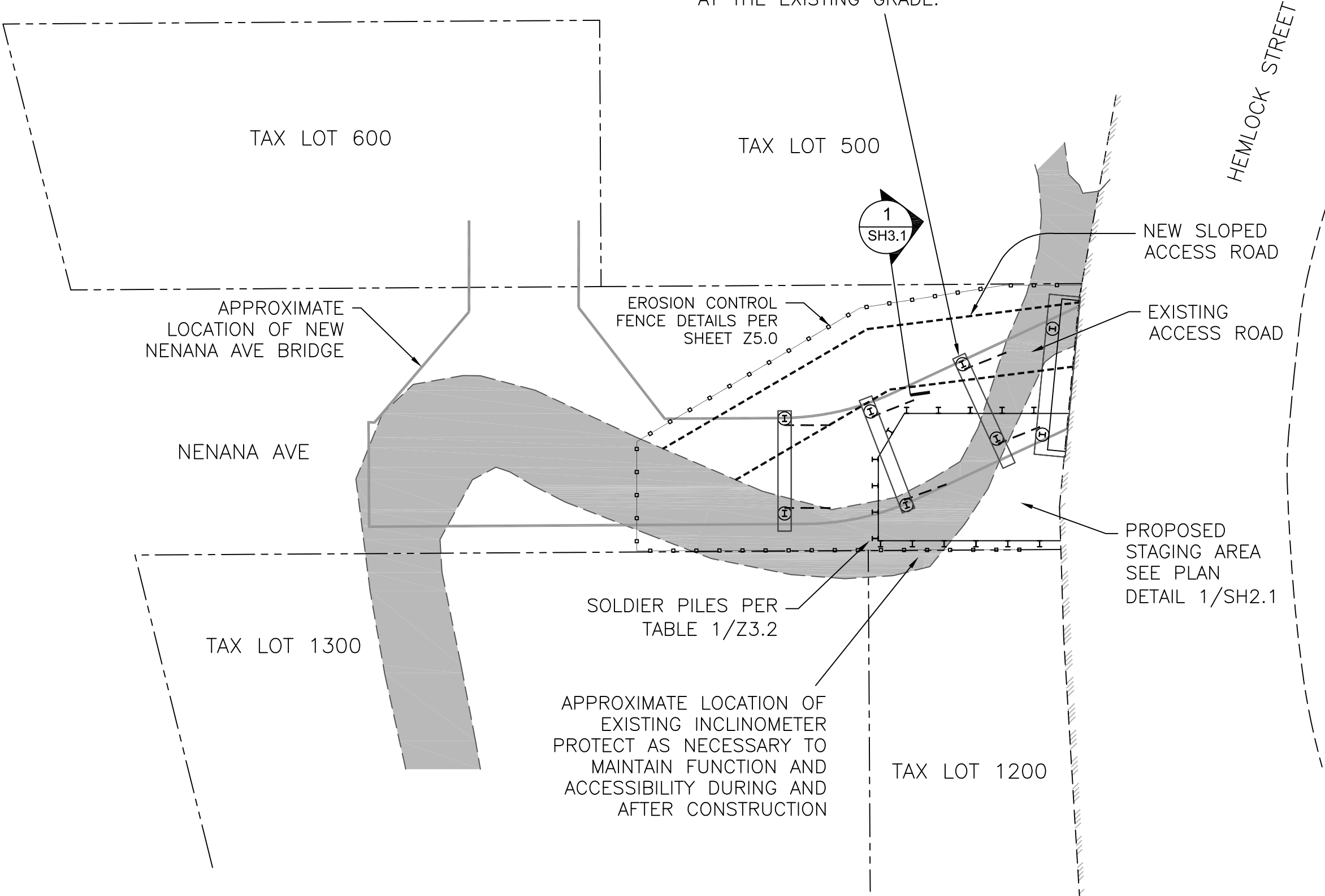
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JOB NO.:

Z1.0

Ref: A1196301

NENANA AVE BRIDGE BENT 1 THRU BENT 4 LOCATIONS
NOTE: ALL BRIDGE BENTS WILL BE CONSTRUCTED
AT THE EXISTING GRADE.



1 Z2.0 STAGING AREA SITE PLAN

1" = 20'

0 20

N

GEOTECHNICAL ENGINEER:

 **Earth Engineers, Inc.**

2411 SE 8TH AVE.
CAMAS, WA 98607
360-567-1806



EXPIRES: 6/30 21

CONTRACTOR:

 **PLI SYSTEMS**

3045 SE 61st COURT
HILLSBORO, OR 97123
503-649-8111

**ROBERTS
TEMPORARY
STAGING AREA**

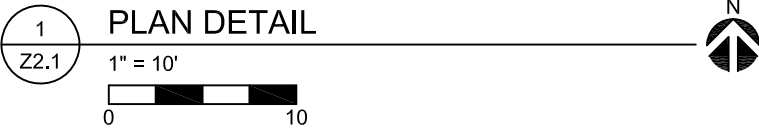
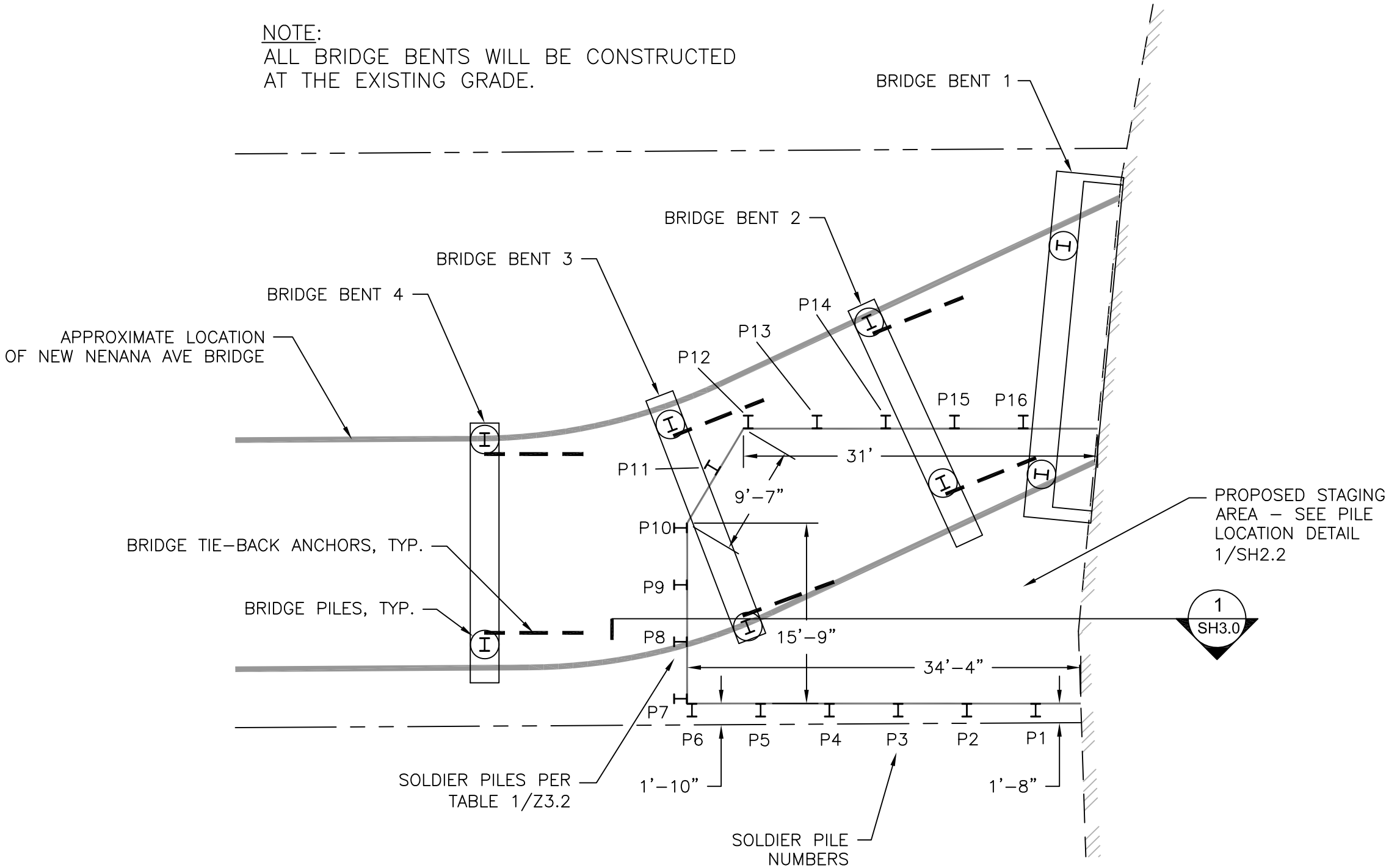
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:	
SITE PLAN	
REVISIONS:	
DATE:	08/05/20
SCALE:	AS SHOWN
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CHECKED BY:	JC
JOB NO.:	

Z2.0

Ref: A1196302

NOTE:
ALL BRIDGE BENTS WILL BE CONSTRUCTED
AT THE EXISTING GRADE.



GEOTECHNICAL ENGINEER:
**Earth
Engineers,
Inc.**
2411 SE 8TH AVE.
CAMAS, WA 98607
360-567-1806



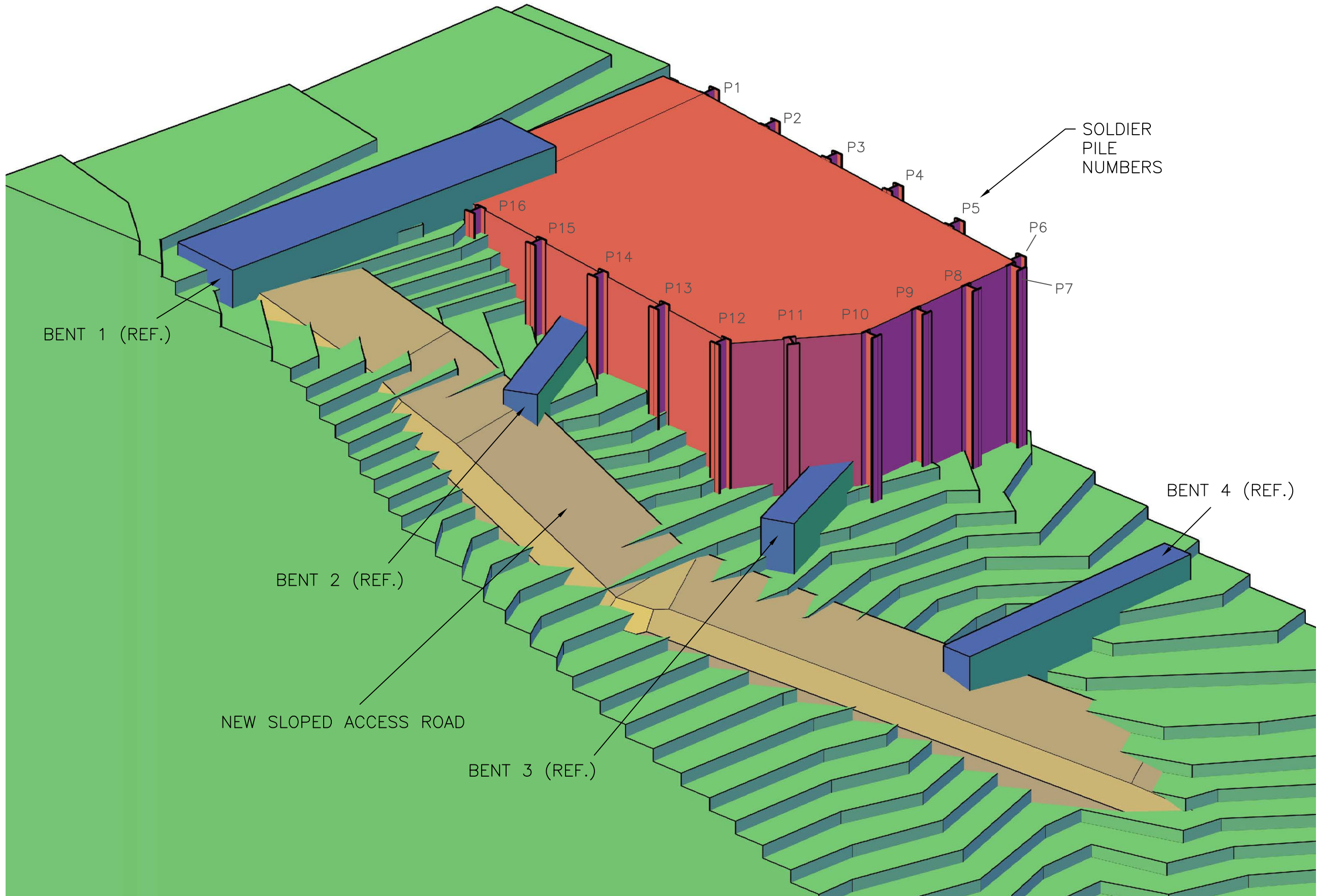
CONTRACTOR:
**PLI SYSTEMS**
3045 SE 61st COURT
HILLSBORO, OR 97123
503-649-8111

**ROBERTS
TEMPORARY
STAGING AREA**
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:
PLAN DETAIL
REVISIONS:
DATE: 08/05/20
SCALE: AS SHOWN
DRAWN: SMW
CHECKED BY: JC
JOB NO.:

Z2.1

Ref: A1196302.1



1
Z2.3

SCHEMATIC ISO VIEW

GEOTECHNICAL ENGINEER:
 **Earth
Engineers,
Inc.**
2411 SE 8TH AVE.
CAMAS, WA 98607
360-567-1806



EXPIRES: 6/30 21

CONTRACTOR:



3045 SE 61st COURT
HILLSBORO, OR 97123
503-649-8111

**ROBERTS
TEMPORARY
STAGING AREA**
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

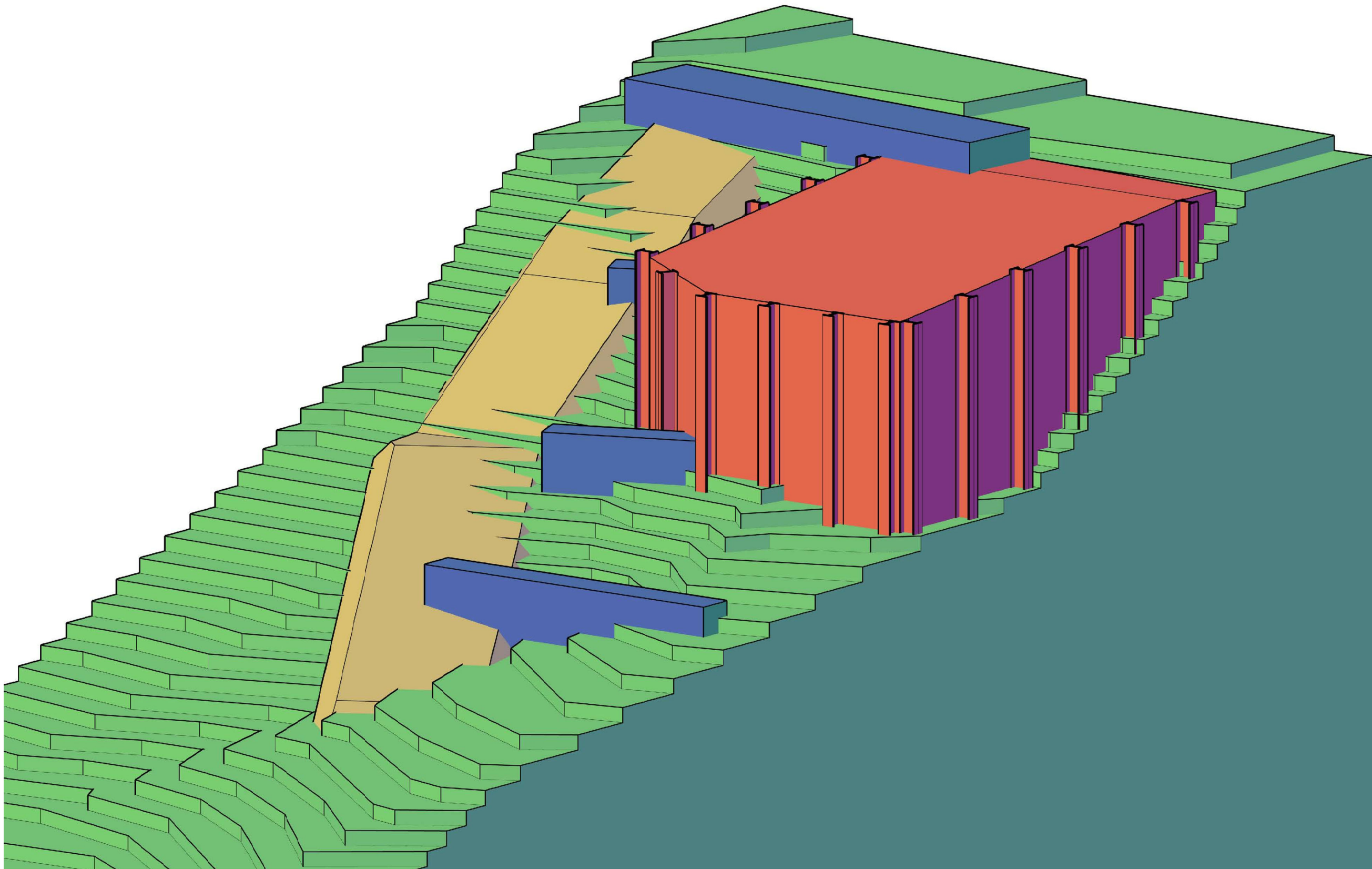
SCHEMATIC ISO VIEW

REVISIONS:

DATE: 08/05/20
SCALE: AS SHOWN
DRAWN: SMW
CHECKED BY: JC
JOB NO.:

Z2.3

Ref: A1196302



SCHEMATIC ISO VIEW

GEOTECHNICAL ENGINEER:
**Earth
Engineers,
Inc.**
2411 SE 8TH AVE.
CAMAS, WA 98607
360-567-1806



EXPIRES: 6/30 21

CONTRACTOR:



3045 SE 61st COURT
HILLSBORO, OR 97123
503-649-8111

**ROBERTS
TEMPORARY
STAGING AREA**
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

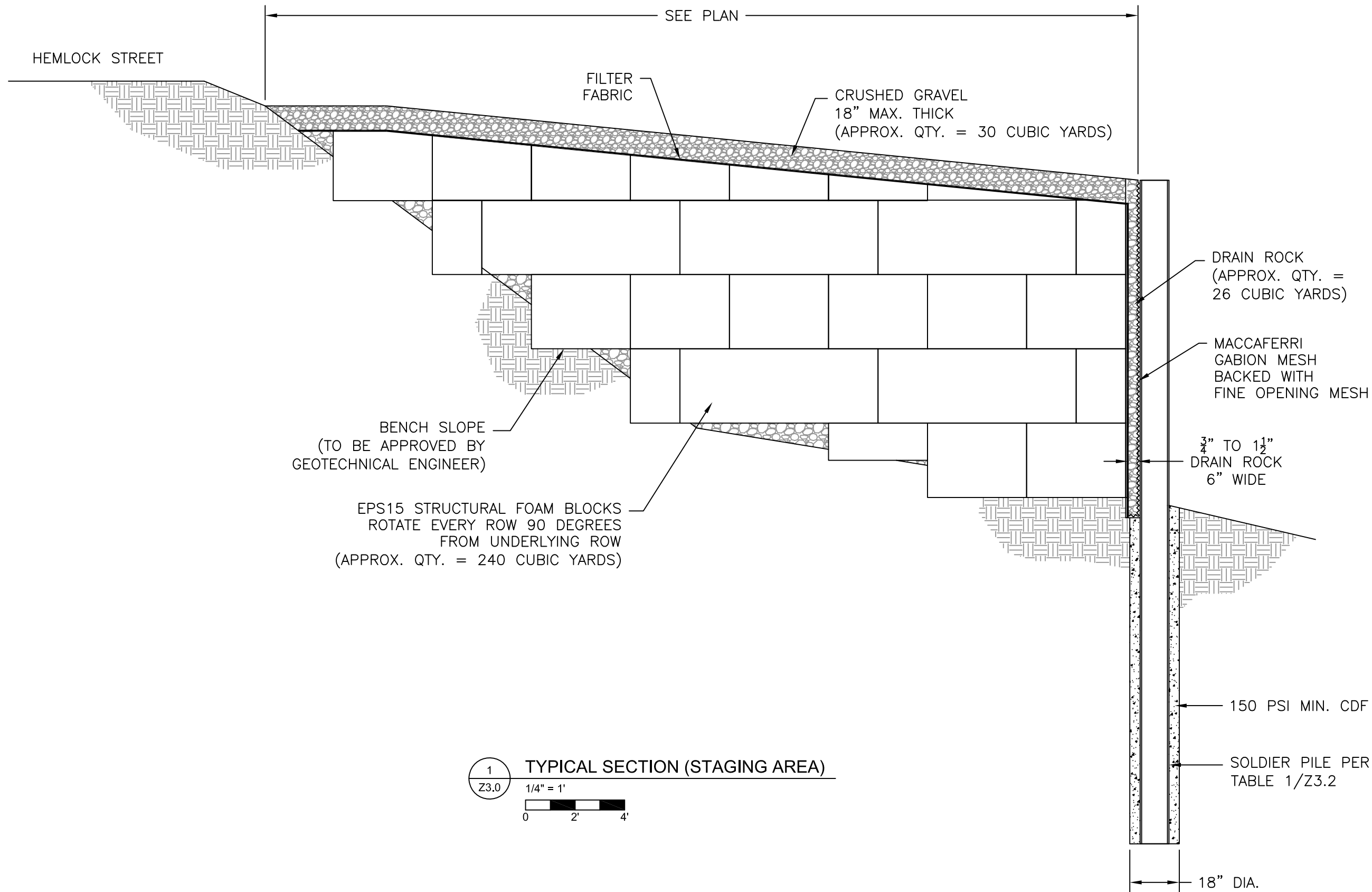
SCHEMATIC ISO VIEW

REVISIONS:

DATE:	08/05/20
SCALE:	AS SHOWN
DRAWN:	SMW
CHECKED BY:	JC
JOB NO.:	

Z2.4

Ref: A1196302



GEOTECHNICAL ENGINEER:



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**ROBERTS
TEMPORARY
STAGING AREA**
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

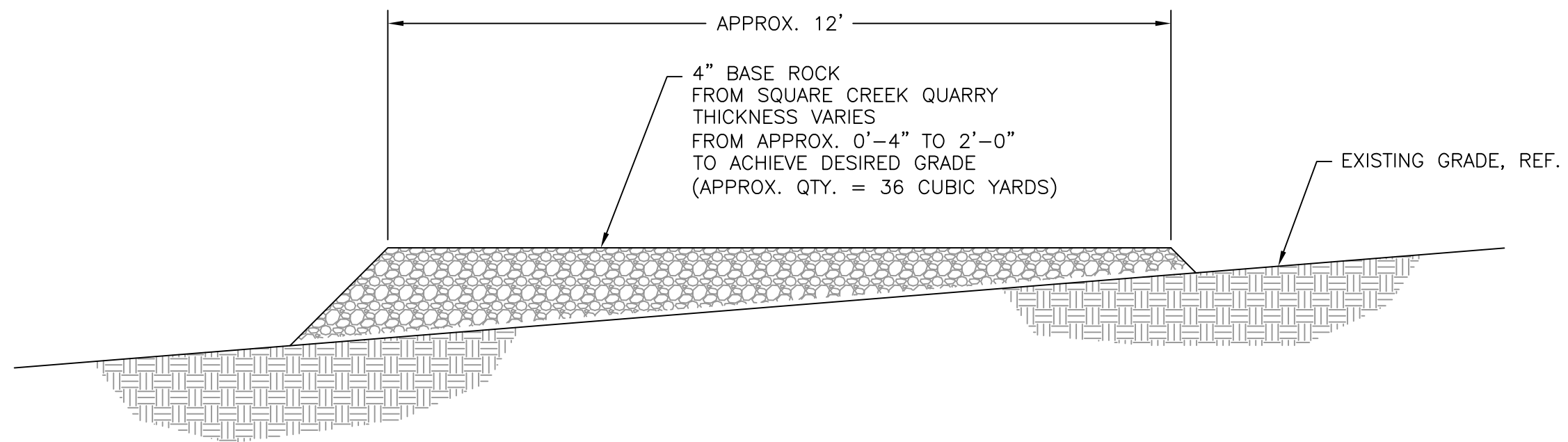
**SECTION
(STAGING AREA)**

REVISIONS:

DATE:	08/05/20
SCALE:	AS SHOWN
DRAWN:	SMW
CHECKED BY:	JC
JOB NO.:	

Z3.0

Ref: A1196303




1
Z3.1

TYPICAL SECTION (SLOPED ACCESS ROAD)

1/2" = 1'


0 2' 4'

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ROBERTS
TEMPORARY
STAGING AREA
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

SECTION
(SLOPED ACCESS ROAD)

REVISIONS:

DATE: 08/05/20
SCALE: AS SHOWN
DRAWN: SMW
CHECKED BY: JC
JOB NO.:

Z3.1

Ref: A1196303

Pile Number	Exposed Height (feet)	Pile Size	Embedment (feet)	Total Pile Length (feet)
1	5	W12x22	10	15
2	8	W12x26	11	19
3	11	W14x43	13	24
4	14.5	W14x68	14	28.5
5	14.75	W14x68	14	28.75
6	14	W14x68	14	28
7	14	W14x68	14	28
8	14	W14x68	14	28
9	14	W14x68	14	28
10	14	W14x68	14	28
11	12.5	W14X68	14	26.5
12	11.75	W14x43	13	24.75
13	9.5	W14x30	12	21.5
14	8	W12x26	11	19
15	7.5	W12x26	11	18.5
16	2	W12x22	10	12

1

Z3.2

SOLDIER PILE TABLE

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ROBERTS
TEMPORARY
STAGING AREA
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

SOLDIER PILE TABLE

REVISIONS:

DATE:08/05/20

SCALE:AS SHOWN

DRAWN:SMW

CHECKED BY:JC

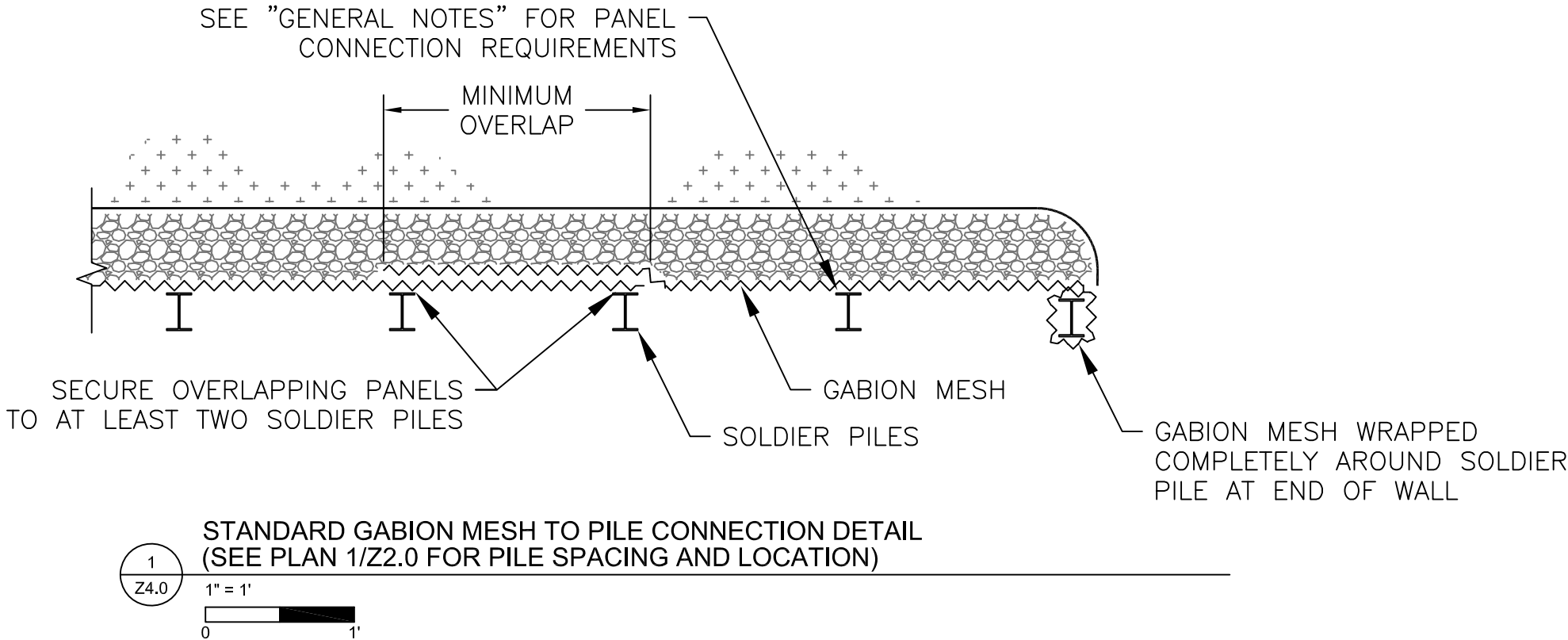
JOB NO.:

Z3.2

Ref: A1196303

GENERAL NOTES:

1. SOLDIER PILES SHALL BE SPACED PER PLAN.
2. GABION MESH SHALL BE MACCAFERI GALVANIZED DOUBLE TWIST .120" DIA. TYPE 8X10 WIRE MESH OR EQUAL. THE DOUBLE-TWIST SHALL BE ALIGNED PERPENDICULAR TO THE SOLDIER PILES AND PARALLEL TO THE GROUND AT THE FACE OF THE WALL.
3. BEGIN AND END EACH GABION MESH PANEL BY SECURING THE PANEL TO THE PILE USING (14) GAUGE TIE WIRE. THE GABION MESH SHALL BE SECURED TO THE SOLDIER PILE AT 12" MAXIMUM SPACING. A MINIMUM OF THREE TIES ARE REQUIRED AT EACH END SOLDIER PILE (SEE SHEET 2).
4. OVERLAP JOINTS SHALL BE CONSTRUCTED BY OVERLAPPING PANELS TO AT LEAST TWO SOLDIER PILES AND SECURING THE OVERLAPPING PANELS TO EACH OTHER USING (14) GAUGE TIE WIRE LACED THROUGH THE MESH OPENINGS, WITH LOOPS PLACED AT THE DOUBLE-TWIST LOCATIONS. ALTERNATELY, THE OVERLAPPING PANELS CAN BE SECURED TO EACH OTHER USING HOG RINGS INSTALLED AT EACH DOUBLE-TWIST LOCATION. THE OVERLAP JOINT SHALL BE SECURED TO AT LEAST TWO SOLDIER PILES WITH (14) GAUGE TIE WIRES AT 12" MAXIMUM SPACING. A MINIMUM OF THREE TIES ARE REQUIRED AT EACH SOLDIER PILE (SEE SHEETS 4 AND 5).
5. GABION MESH SHALL BE SECURED TO ALL INTERMEDIATE SOLDIER PILES USING (14) GAUGE TIE WIRES AT 12" MAXIMUM SPACING. A MINIMUM OF THREE TIES ARE REQUIRED AT EACH SOLDIER PILE (SEE SHEET 3).
6. DO NOT TENSION THE GABION MESH BETWEEN THE SOLDIER PILES WITH A MECHANICAL DEVICE.
7. FINE OPENING MESH, IF USED, SHALL BE (16) GAUGE GALVANIZED WIRE MESH FABRIC, AND SHALL BE PLACED BEHIND THE GABION MESH.



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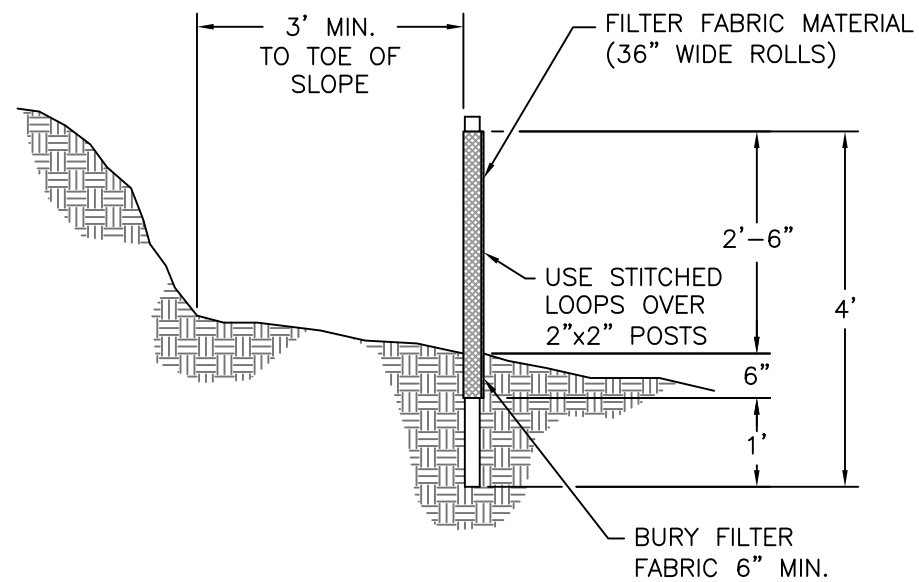
ROBERTS
TEMPORARY
STAGING AREA

NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:	
GABION MESH ATTACHMENT DETAILS	
REVISIONS:	
DATE:	08/05/20
SCALE:	AS SHOWN
DRAWN:	SMW
CHECKED BY:	JC
JOB NO.:	

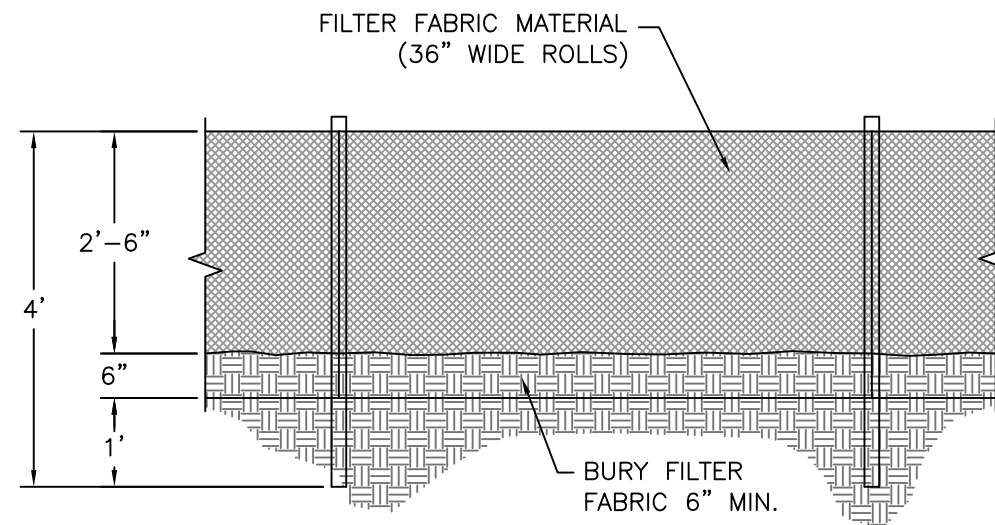
Z4.0

Ref: A1196304



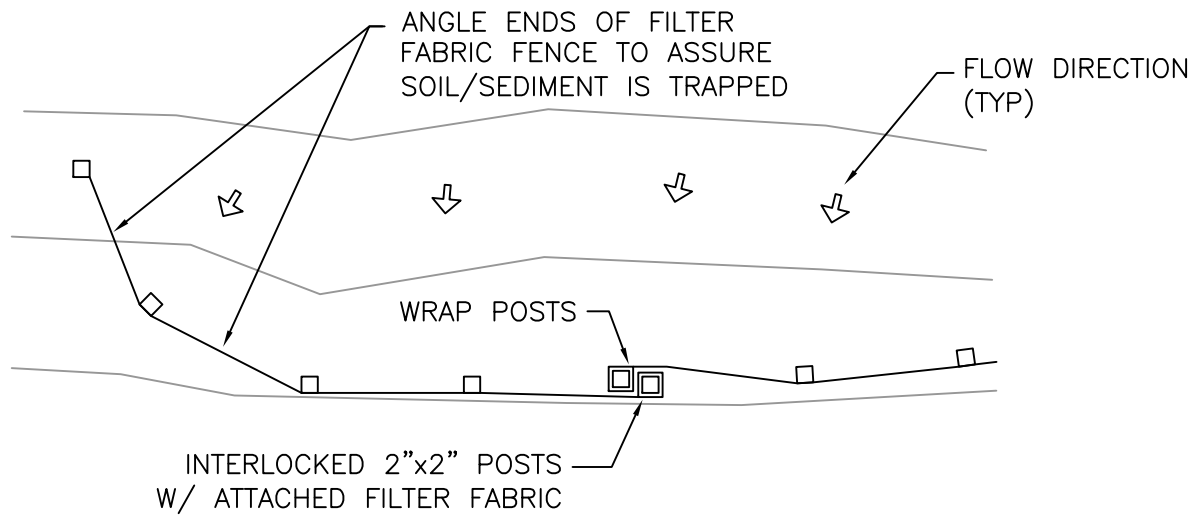
Section View - Silt Fence

N/T Scale



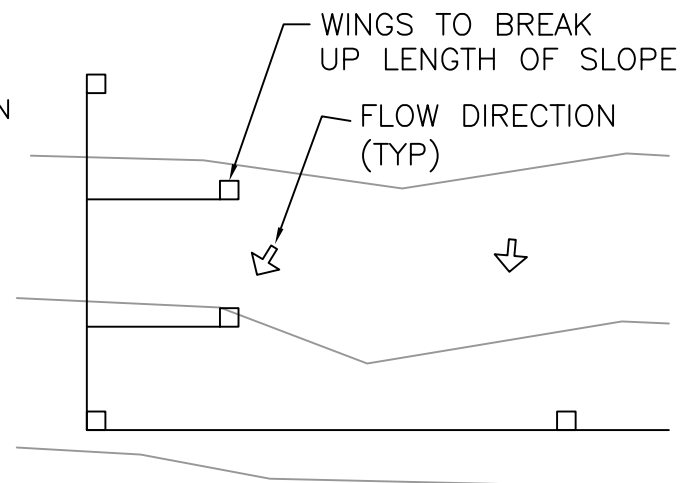
Front View - Silt Fence

N/T Scale



Plan View - Silt Fence

N/T Scale



Plan View - Silt Fence

AT CORNER OR PROPERTY LINE N/T Scale

EROSION CONTROL
CERTIFICATE NUMBER:
2016-005/CESCL

GEOTECHNICAL ENGINEER:



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Engineers,
Inc.**

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CAMAS, WA 98607
360-567-1806



EXPIRES: 6/30 21

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HILLSBORO, OR 97123
503-649-8111

**ROBERTS
TEMPORARY
STAGING AREA**
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

**TEMPORARY
EROSION CONTROL
DETAILS**

REVISIONS:

DATE: 08/05/20

SCALE: AS SHOWN

DRAWN: SMW

CHECKED BY: JC

JOB NO.:

Z5.0

Ref: A1196305

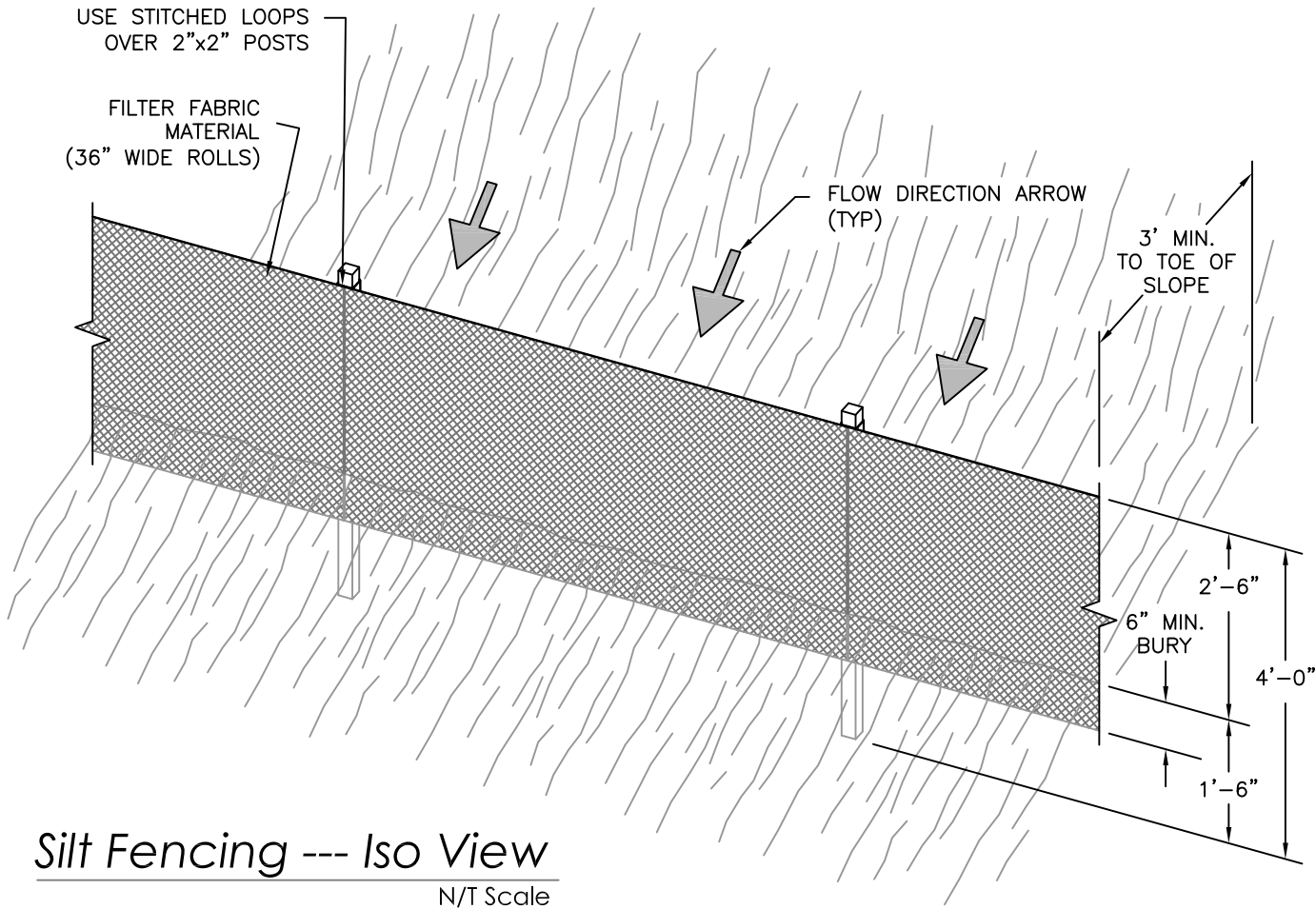
EROSION CONTROL
CERTIFICATE NUMBER:
2016-005/CESCL

STANDARD NOTES FOR EROSION CONTROL

- A. APPROVAL OF THIS EROSION, SEDIMENT AND POLLUTION CONTROL PLAN (ESPCP) DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT DRAINAGE DESIGN.
- B. THE IMPLEMENTATION OF THIS ESPCP AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESPCP FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
- C. THE ESPCP FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.
- D. THE ESPCP FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESPCP FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
- E. THE ESPCP FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
- F. THE ESPCP FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 24 HOURS FOLLOWING A STORM EVENT.
- G. ADDITIONAL MEASURES MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.

STANDARD NOTES FOR SEDIMENT FENCES:

1. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST, OR OVERLAP 2 INCH X 2 INCH POSTS AND ATTACH AS SHOWN ON DETAIL PROVIDED.
2. THE FILTER FABRIC FENCE SHALL BE INSTALLED TO FOLLOW THE CONTOURS WHERE FEASIBLE. THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 24 INCHES.
3. THE FILTER FABRIC SHALL HAVE A MINIMUM VERTICAL BURIAL OF 6 INCHES. ALL EXCAVATED MATERIAL FROM FILTER FABRIC FENCE INSTALLATION, SHALL BE BACKFILLED AND COMPACTED, ALONG THE ENTIRE DISTURBED AREA.
4. STANDARD OR HEAVY DUTY FILTER FABRIC FENCE SHALL HAVE MANUFACTURED STITCHED LOOPS FOR 2 INCH X 2 INCH POST INSTALLATION. STITCHED LOOPS SHALL BE INSTALLED ON THE UP HILL SIDE OF THE SLOPED AREA.
5. FILTER FABRIC FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY PROTECTED AND STABILIZED.
6. FILTER FABRIC FENCES SHALL BE INSPECTED BY APPLICANT/CONTRACTOR IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.



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**ROBERTS
TEMPORARY
STAGING AREA**
NENANA AVE,
CANNON BEACH, OR

SHEET TITLE:

**TEMPORARY
EROSION CONTROL
DETAILS**

REVISIONS:

DATE: 08/05/20
SCALE: AS SHOWN
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Z5.1

Ref: A1196305

SUNMARK SEEDS INTERNATIONAL, INC.
PO Box 1210
Fairview OR 97024
503-241-7333
888-214-7333



Grasses	91.50%
Wildflowers	8.50%



Sunmark Coastal Grasslands Mix

Acres: 1
Quantity: 65.42 lbs.

Botanical Name	Common Name	% by Weight	Seeds per lb. of Mix	Seeds per lb.	Actual % by Seed Size	Lbs. Needed	% Requested
<i>Hordeum brachyantherum</i>	Meadow Barley	40.00%	34000	85,000	16.91%	26.17	18%
<i>Bromus carinatus</i>	California Brome	26.00%	28600	110,000	14.22%	17.01	20%
<i>Lupinus albicaulis</i>	Sicklekeel Lupine	20.00%	4500	22,500	2.24%	13.08	2%
<i>Camassia quamash</i>	Small Camas	4.00%	12600	315,000	6.27%	2.62	5%
<i>Festuca idahoensis romeri</i>	Roemer's Fescue	3.90%	19500	500,000	9.70%	2.55	10%
<i>Carex obnupta</i>	Slough Sedge	3.50%	16100	460,000	8.01%	2.29	5%
<i>Deschampsia cespitosa</i>	Tufted Hairgrass	2.00%	50000	2,500,000	24.86%	1.31	25%
<i>Agrostis exarata</i>	Spike Bentgrass	0.50%	19000	3,800,000	9.45%	0.33	10%
<i>Juncus tenuis</i>	Poverty Rush	0.10%	16800	16,800,000	8.35%	0.07	5%
TOTALS:		100.00%	201100		100.00%	65.42	100%

Seeding Rate

1.50 PLS lbs. per 1000 sq. ft.
65.42 PLS lbs. per acre



Coastal Grasslands Mix is designed as a native seed mix for areas west of the Coastal mountain range from northern California to southern BC. These areas are comprised of fine-textured nutrient-rich soils that will support a lush and diverse meadow community. It is an excellent native grass mix encompassing the transitional areas of emerging wetlands, and provides excellent biofiltration in naturally vegetated swales.



SITE RESTORATION SEED MIX

GEOTECHNICAL ENGINEER:
 **Earth Engineers, Inc.**
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CAMAS, WA 98607
360-567-1806



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CANNON BEACH, OR

SHEET TITLE:

**SITE RESTORATION
SEED MIX**

REVISIONS:

DATE: 08/05/20
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JOB NO.:

Z6.0

Ref: A1196306

**R. Warren Krager, R.G., C.E.G.
Consulting Engineering Geologist
Oregon CEG #E957
Washington LEG #314**

August 4, 2020

Stanley Roberts, Email: stan.milliman@gmail.com

Copied to Sabrina Pearson, Plan Development, LLC, Email: plandevelopment@msn.com

**Re: Engineering Geologic Review of Temporary Construction Access Plans
Nenana Avenue Improvements for Home Construction on Tax Lot 600
Township 5 North, 10 West, Section 31 AA, Cannon Beach, Oregon**

Dear Mr. Roberts and Ms. Pearson,

As you requested, I am pleased to present this engineering geologic review of the proposed temporary staging and construction access plans to develop the proposed public infrastructure in Nenana Avenue to serve the proposed development of Tax Lot 600.

I have reviewed the plan titled Roberts Staging Area, Nenana Avenue, Cannon Beach, Oregon dated August 3, 2020, prepared by Troy Hull, P.E. of Earth Engineers and Jorge Casteneda of PLI. The plans show temporary access road and structure that will be supported on grade and on temporary soldier piles. I have also seen the emails of design team member's discussion of finalizing content and details for the construction access plans after revising planned access to remain within available public right of way.

From my engineering geologic perspective, I feel the plans are acceptable and demonstrate appropriate thought and planning to enable the proposed construction to proceed into fall weather, if necessary. As I note in my email communication, I advocate placing erosion control fence as high on the slope as possible to containing drilling spoils and fluids. If this foundation drilling project extends into wet weather it may be necessary to install and maintain multiple layers of erosion control fence below the area of concentrated soldier pile drilling, see Figure 1. The well graded crushed rock access ramp currently in place behind the Hemlock Street guard rail (see Photo 1), in my opinion, can serve as its own erosion control media if it is protected from over washing fines from up slope drilling operations.

The engineering geologic plan review performed for this proposed deep foundation construction staging has been conducted with that level of care and skill ordinarily exercised by members of the profession currently practicing in this discipline and area under similar budget and time constraints. If you have any questions regarding the information presented in this review letter, please do not hesitate to contact me.

Sincerely,

R. Warren Krager, R.G., C.E.G.
Oregon Licensed Engineering Geologist E-957

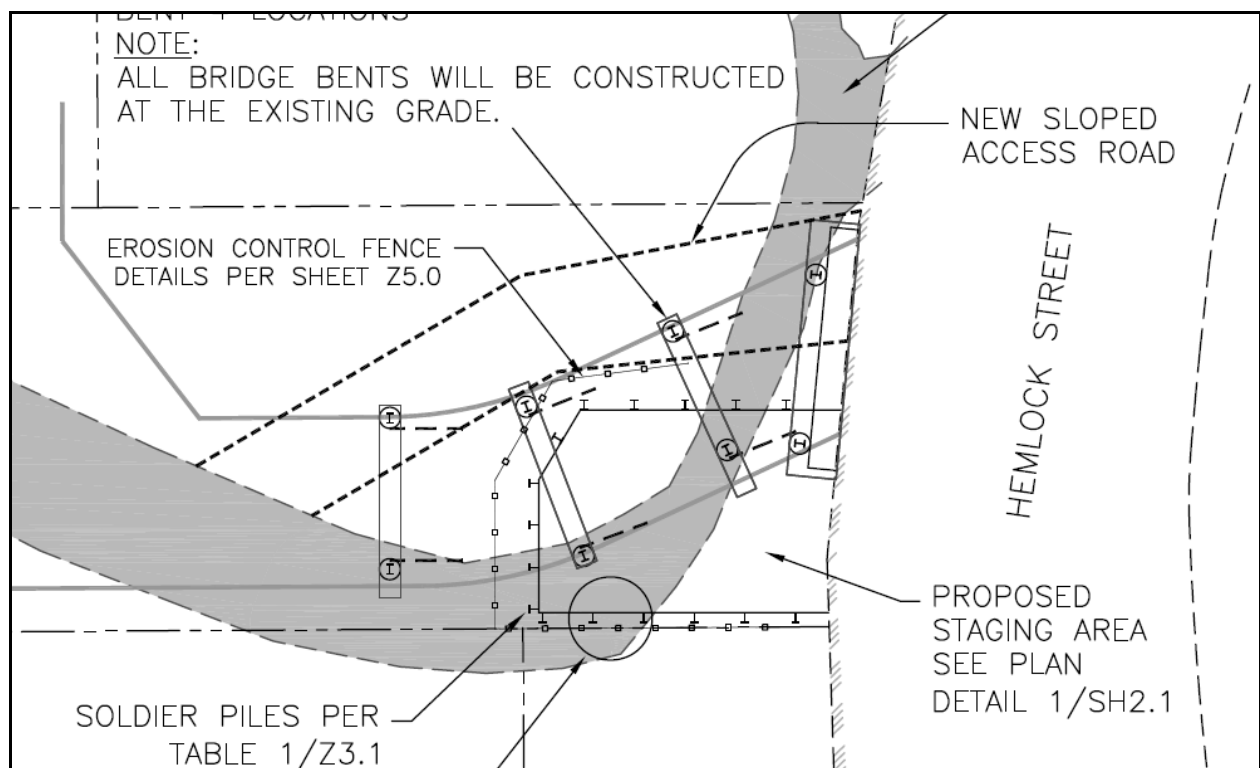


Figure 1 – Portion of Roberts Staging Area, plan sheet Z2.0 showing Erosion Control Fence.



Photo 1 – Photo of well-graded aggregate temporary access ramp in place, provided by PLI.