Contractor's Bid Package

FOR

Rattlesnake Gulch/Lovers Lane Road Crossing Project:

Construction of Bridge Crossings

May 15, 2023

Prepared By:

Yakama Nation Fisheries - Klickitat Field Office
P.O. Box 215
Klickitat, WA 98628
Phone: 509-369-3565
FAX: 509-830-8005
E-mail: dlindley@ykfp.org

Critical Dates:

Pre-Bid Site Walk-through	May 22, 2023 – 1:00 pm
Question Submission Deadline:	May 30, 2023 – 5:00 pm
Bid Submission Deadline:	June 16, 2023 – 12:00 pm
Tentative Award Selection:	June 20, 2023
Project Initiation (est):	July 24, 2023
Project Completion (est):	September 30, 2023

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ADVERTISEMENT FOR BIDS

NOTICE IS HEREBY GIVEN that email bid proposals will be received by:
Yakima Klickitat Fisheries Project
David Lindley, dlindley@ykfp.org
Email Subject: Rattlesnake Gulch/Lovers Lane Road X-ing

UNTIL:

12:00 P.M. Pacific Daylight Time on June 16, 2023

No proposals will be accepted after the above-stated time. Immediately following the above stated time, all firms who submit a proposal will receive email verification, and a summary of bid results.

I - GENERAL DESCRIPTION

The **YAKAMA NATION**, **OWNER**, is soliciting bids for construction activities associated with replacement of two undersized culverts with two prefabricated bridges from Pacific Bridge and Construction. The project is intended to reconstruct the Lovers Lane Road crossings of Rattlesnake Gulch Creek to alleviate chronic maintenance issues, allow upstream migration of all fish species and age classes, and facilitate the longitudinal movement of wood and sediment across a range of streamflow conditions.

The Lovers Lane Road crossings of Rattlesnake Gulch Creek are located approximately 300 feet upstream of the confluence with Swale Creek (45.812754, -121.087998). The creek enters Swale Creek at river mile 0.5. Swale Creek is an important tributary to the Klickitat River in Klickitat County. A 2019 assessment of Swale Creek tributaries gave Rattlesnake Gulch Creek the highest ranking for sediment and water contributions to Swale Creek. This project will improve fish passage by removing a small concrete dam and the replacement of two road culverts with bridges. Each of the current road culverts partially block passage to the east and west forks of the creek. The project will open a total of 3.5 miles of habitat to Mid-Columbia Steelhead. The project will also remove a berm and embedded railroad ties adjacent to the stream, add large and small wood, and install riparian plants.

The West Fork existing crossing is composed of two four-foot diameter concrete culverts. The East Fork existing crossing is composed of one four-foot diameter corrugated metal culvert. There are no upstream wing walls at the inlets and both culverts have outfalls.

II - PROJECT BACKGROUND

The Recovery Plan for the Klickitat River Population of the Mid-Columbia Steelhead DPS (NMFS Northwest Region 2009) identifies streamflow, degraded habitat, and altered sediment routing as major factors on Swale Creek. Work is located on Rattlesnake Gulch Creek, a tributary that drains 3,389 acres. Rattlesnake Gulch Cr. provides habitat for O. mykiss (Yakama Nation, unpublished data, 2015 and 2021). Downstream of the project area there are no other fish passage barriers on

Rattlesnake Gulch Creek or downstream on Swale Creek to the Klickitat River. Unlike some other tributaries, Rattlesnake Gulch is unobstructed by the Klickitat Trail, which crosses the stream on a railroad trestle. While not perfect, the trestle provides reasonable connectivity under the trail. WA State Parks plans to replace the trestle soon with a larger span bridge.

The project area begins approx. 300 ft. from the confluence with Swale Creek. Wolf Water Resources (2019) found that Rattlesnake Gulch has the highest water contribution potential and largest sediment contribution potential of 18 tributaries studied in Swale Canyon. Yakama Nation biologists walked both forks of Rattlesnake Gulch in 2021 and confirmed that there are no vertical steps in gradient profile that would prohibit upstream fish movement for 3.19 miles on the East Fork and 0.3 miles on the West Fork. The aquatic habitat observed was consistent with small tributary streams in this region, with steeper gradient reaches in confined sections interspersed with flatter, wider valley reaches. The maximum gradient observed was approx. 10%. The riparian corridors consist of primarily willow and deciduous shrubs with conifer and oaks present on the adjacent hillslopes. The channels are primarily single threads but in wider valley segments, there are split channels and floodplain surfaces that activate during higher flows. Pools are primarily formed by local scour around boulders and bedrock outcroppings. Small diameter wood was observed in the channel having been deposited via fluvial transport.

Project Goals

The goal is to implement a project to provide fish passage and improve habitat for ESA-listed Mid-Columbia Steelhead in Rattlesnake Gulch Creek. The desired future condition of lower Rattlesnake Gulch Creek is fully restored fish passage, restored floodplain connectivity and function, improved riparian cover, and improved in-channel and floodplain habitat.

Project Objectives

- Improve access to habitat by replacing a blocking culvert on East Fork Rattlesnake Gulch with a single span steel bridge, restoring access to 3.19 miles of habitat.

- Improve access to habitat by replacing a blocking culvert on West Fork Rattlesnake Gulch with a single span steel bridge, restoring access to 0.3 miles of habitat.

- Improve access to habitat by removal of a small concrete dam. The approx. 3 ft. tall dam is located less than a quarter mile above the stream's confluence with Swale Creek.

- Improve floodplain function and water quality by removing a 125 ft. long berm and embedded railroad ties on the right bank of the stream near the concrete dam.

- Improve instream and floodplain function, and increase cover, diversity, and food sources for O. mykiss that summer in small pools by adding approx. 15 pieces of large wood to the stream in the vicinity of the other work.

- Improve cover and stream shading by adding at least 100 native trees and shrubs to disturbed or poorly vegetated areas.

III - CONTRACT OVERVIEW

To achieve a road crossing that solves chronic maintenance problems and provides passage for wood, sediment, peak flows, and fish, two bridges will be installed: 25’ x 15’ and 19’ x 15’ with abutment/footing system and wingwalls (Fig. 1).

Figure 1. Example of type of bridge to be installed.

The contractor will mobilize identified equipment (Section VII) to the site, unload and stockpile the bridges, abutments and wingwalls delivered to the site by manufacturer, prepare site, remove existing culverts, prepare bridge locations, regrade channel approaches, place bridges and structural backfill, and apply top course to bridge approaches. **Excavator(s) or crane must have lift capacity to lift blocks, abutments and/or bridge planks (see bridge planset).**

The contract will consist of three main components:

1. **Remove existing undersized culverts at two stream crossings** under Lovers Lane and replace with a 25’ long bridge by 15’ wide bridge on 11.25’ tall abutment with 15.0’ long wing walls on inlet side and 12.5’ long wingwalls on outlet side and a 19’ long bridge by 15’ wide bridge on 8’9” tall abutment with 15.0’ long wing walls on inlet side and 12.5’ long wingwalls on outlet side. Minor modifications to the streambed and banks will be made to align the channel appropriately.
2. **Regrade channel alignment upstream** of bridge crossing on the West Fork and reduce channelization by regrading left bank push-up berm.
3. **Regrade main channel downstream of road crossing and construct riffle** to alleviate grade break formed by removal of small low head dam. Regrade right streambank to remove berm and remove artificial human elements (railroad ties, non-native plants), enhance existing pools by adding logs with rootwads to provide cover habitat and scour for maintenance.

Additional contract items include: the mobilization of equipment, unloading of bridge and abutments, site preparation, delivery of bridge backfill material, and loading, hauling and placement of road top course (source TBD by contractor) and removal of ~100 railroad ties.

Additional information can be found in Appendix A & B – Map, photos and specifications.

Awarding of the contract shall be based on a combination of price, equipment specified, project proposal and **CONTRACTOR** experience and background. The **OWNER** shall have the **SOLE** discretion and responsibility for choosing the responsive and responsible **CONTRACTOR.**

IV - CONTRACTORS' RESPONSIBILITIES

The **CONTRACTOR** shall be responsible for performing their work in a timely, professional manner, shall abide by all applicable tribal, state, county and federal rules that govern this project, and shall implement all required permit conditions, see Appendix F. The **CONTRACTOR** shall provide survey control for the project, the **OWNER** will stakeout the project, but the CONTRACTOR will need to survey structure locations and elevations.

The **CONTRACTOR** is **solely responsible** for maintaining safe working conditions near his/her equipment and for the safe operation of his/her equipment. If at any time the **CONTRACTOR** or his/her operators determine that instructions given by the **OWNER** would create a potentially unsafe working condition or would jeopardize the equipment, the **OWNER** shall be **immediately** notified of the problem. The **OWNER** will then work with the **CONTRACTOR** to find an acceptable alternative method to complete the required task.

The **CONTRACTOR** shall assume full financial and legal responsibility for any damage caused by their machinery and/or crews including but not limited to the following:

1- Any equipment becoming stuck due to unstable ground or operator error.
2- Any equipment that is damaged due to unstable ground or operator error.
3- Any environmental damage due to hydraulic, lubricant or coolant leaks.
4- Any damage outside the project area to culverts, bridges, paved roads or other property caused during operations.

Payment
Payment shall be considered full compensation for all equipment, labor, tools, materials, and incidentals necessary to complete this work as specified. Payment will be made in accordance with Section XII.

V - CONSTRUCTION OVERSIGHT

The **OWNER or OWNER'S REPRESENTATIVE** shall be available during all construction activities to provide the **CONTRACTOR** with information as required to carry out the **CONTRACT**. The **CONTRACTOR** shall provide survey control for the project, the **OWNER**

will stakeout the project, but the CONTRACTOR will need to survey structure locations and elevations.

Except as noted in SECTION VI - ACCESS, the **OWNER** shall have full authority to direct **ALL** work. The **OWNER** must pre-approve any deviation from specifications or instructions.

VI – SPECIFICATIONS

The **CONTRACTOR** shall propose the major pieces of equipment that are required to complete the work specified. Work could be accomplished via some combination of front-end loader, excavator (s), dump trucks and crane. The **CONTRACTOR** is responsible for assessing all other equipment needs and supplying such equipment.

The **CONTRACTOR** is responsible for providing operators experienced in the handling and placement of bridge structures, wood installations, detailed grading, all labor, fuel and lubricants needed for the job.

See EXHIBIT A & B for additional detail.

Industrial Fire Precaution Level (IFPL)

Work shall be conducted in accordance with the current IFPL level. The IFPL of this project is Zone 609W. Current IFPL level shall be determined by calling 1-800-527-3305 and/or visiting the following website: https://www.dnr.wa.gov/ifpl

Contractor shall provide a filled fire suppression water trailer and hand tools for extinguishing any construction related ignitions.

VII - ACCESS

Prior to initiating work the **CONTRACTOR** and the **OWNER** shall review all access routes within the project site. Once the **CONTRACTOR** approves the access routes, he/she shall thereafter be **SOLELY** responsible for material delivery, access route preparation and restoration of the access routes. See Section IV – **CONTRACTORS' RESPONSIBILITY** for further requirements.

VIII - CONSTRUCTION SCHEDULE

The work shall be initiated within a week of the contract being in place and the **OWNER** issues a notice to proceed. It is anticipated that work will begin no later than August 1, 2023 and be completed by September 30, 2023.

The **CONTRACTOR** has two weeks from the date when the notice to proceed is received to mobilize and commence work.

IX - INSURANCE

EACH CONTRACTOR shall maintain insurance coverage at their cost from insurers and shall furnish certificates of insurance or self-insurance approved by the **OWNER**, giving evidence of such coverage to the **OWNER**, which satisfies the requirements as set forth in **APPENDIX D.**

X - BID SCHEDULE & SELECTION

SELECTION PROCESS

YKFP will award the Project contract to the responsible bidder whose bid, conforming with all the material terms and conditions of the invitation for bids, is the lowest in price. Provided that if there are multiple responsive low bids from responsible bidders, YKFP will give preference to and select the low bid received from:

(1) A 100% Yakama owned business; or if there are no such bidders, then

(2) A certified Indian owned business that is at least 51% Indian-owned; or if there are no such bidders, then

(3) A non-Indian owned business.

Contract award shall be made to the qualified bidder (See conditions above) based on the lowest **responsive** and responsible bid for the **BID SCHEDULE.**

BIDDERS who wish to discuss the site in greater detail can contact YKFP staff (David Lindley (509-830-8005, dlindley@ykfp.org). Relevant information discussed will be shared with all perspective BIDDERS.

Bids shall be considered **NON-RESPONSIVE** if they fail to provide satisfactory completeness of information requested in the Bid Schedule (Section XIII).

I. Qualified Contractor Bids on the Bid Schedule shall be received in hand no later than 12:00 P.M. Pacific Daylight Time on June 16, 2023. Bids may be emailed to **dlindley@ykfp.org** with the subject line **Rattlesnake Gulch/Lovers Lane Road X-ing.**

II. Immediately following the above stated time, all firms who submit a proposal will receive email verification, and a summary of bid results.

III. Bid awards for the Bid Schedule shall be made no later than June 20, 2023.

PROSPECTIVE CONTRACTOR INQUIRIES

Prospective Contractors may request clarification concerning information contained in this **CONTRACTORS BID PACKAGE** by submitting a written statement or question to the **OWNER** via **E-mail (dlindley@ykfp.org) no later than 12:00 P.M. Pacific Daylight Time, May 30, 2023.** The statement/question shall be answered in writing by the **OWNER no later than 1:00 P.M. Pacific Daylight Time, June 4, 2023.** The **OWNER'S** response shall become an **ADDENDA** to this **BID PACKAGE** and also shall be sent **by E-mail** to all contractors of record that have requested a copy of this **CONTRACTOR'S BID PACKAGE.**

(Note: Prospective Contractors must provide their E-mail addresses to receive subsequent responses. Failure to receive any such ADDENDA(S) shall not relieve such Bidder of fulfilling the modifications contained therein). The Bidder shall be responsible to ascertain prior to submittal of a Bid Proposal that all addenda issued have been received, and are acknowledged on the Bid Schedule.

XI - ADDITIONAL CONDITIONS

In addition to all of the requirements stated herein, and the conditions contained in appendices, **EACH PROPOSED BID** shall also be governed by the additional conditions listed in **APPENDIX E**.

Davis Bacon wage provisions and the Tribal Employment Rights Ordinance apply to this contract.

XII - PAYMENT

Compensation for services shall be provided by the **OWNER** to the **CONTRACTOR** based on a combination of **LUMP-SUM and TIME** basis as specified in Section XIII.

Each day's work hours for each machine and labor crew shall be tallied at the end of **EACH** work day and submitted to the **OWNER'S REPRESENTATIVE** or **OWNER** for verification before the next work day commences. Bills may be submitted for payment bi-weekly or monthly. Payment processing shall be initiated once the **OWNER'S REPRESENTATIVE** or **OWNER** has verified that such work has occurred.

Bills may be submitted for payment once the **OWNER** has verified completion. Invoice for work completed in September 2023 shall be submitted to the **OWNER** no later than **9/30/2023** to facilitate YN fiscal year-end reporting.

Ten percent (10%) of the amount billed shall be retained until a **FINAL RELEASE** has been signed by the **CONTRACTOR** and delivered to the **OWNER** and all reclamation/restoration has been completed as outlined above.

XIII - BID SCHEDULE

REFERENCES – list references of individuals with whom you've contracted to perform comparable work in the past

1) Name:_____
   Organization:_____
   Phone Number:_____
   Nature of work:_____
   _____

2) Name:_____
   Organization:_____
   Phone Number:_____
   Nature of work:_____
   _____

MACHINERY – list proposed machinery and equipment to be used:

Machine #1
List the make & model _____

Machine #2
List the make & model _____

Machine #3
List the make & model _____

Machine #4
List the make & model _____

PROPOSAL - briefly describe project approach:

_____

_____

_____

_____

_____

_____

_____

_____

Pay Item	Activity	Measure	Unit	Total
Mobilization & Demobilization	Mobilization and demobilization of all necessary equipment	LS	1	
Temporary Erosion Control and BMPs	TESC, SPCC Plan and Implementation Deploy BMPS to control surfacewater as needed and prepare and follow Spill Prevention Plan.	LS	1	
Demolition	Removal and disposal of two undersized culverts and small concrete/rock dam	LS	1	
Clearing and Grubbing	Clear constuction access, prep construction site, unload and stockpiile bridge and clear within earthwork footprint of channel construction and stockpile areas.	LS	1	
Bridge and Stream X-ing Channel Earthwork	**Structure and channel excavation includes grading the channel to the lines, grades and cross-sections shown in plans.**			
Unclassified Excavation	Unclassified Excavation	LS	1	
Deliver Two Modular Concrete Bridges	Unload and stockpile bridges at project site	LS	1	
Install Two Modular Concrete Bridges	Install pre-fabricatated Bridge, Abutment and Wingwall System	LS	1	
Abutment Backfill	Structural Backfill for Abutments	CY	400	
Road Regrade and Resurfacing	Top course for road approaches. Repair road to pre-project condition	LS	1	
Roughened Channel and Habitat Logs	Placement of habitat wood and regrading of banks and channel as directed.	Hourly	20	
Removal of Railroad ties	Remove and properly dispose of railroad ties (~100) currently used for bank stabilization	LS	1	
Optional Bid Items				
Boulders	Source and deliver boulders (25-40") for instream grade control; constucted riffle.	EA	90	
Logs with Rootwads	Source and deliver logs with rootwad - 12" DBH minimum and 20' long	EA	8	
Excavation of Unsutiable Materials	Removal of excavated materials that resist compaction and must be removed to allow compaction of overlying materials	CY	20	
Rock Excavation	Rock materials encountered that require hydraulic hammer for removal.	CY	20	
Miscellaneous Construction	Allows for additional time and materials compensation.	Hourly	20	
TOTAL				

The **OWNER** has the option to accept the **CONTRACTOR'S** bid for optional items or to complete those items via separate means.

All prices bid herein shall remain in effect through 10/31/2023.
CONTRACTOR shall be required to comply with the requirements as stated in the attached **CONTRACTOR'S BID PACKAGE**.

CONTRACTOR:_____

ADDRESS: _____

_____

LICENSE NUMBER: _____

BY:_____ _____
(Signature and Title) DATE:

Phone No. _____ FAX No. _____ E-mail _____

APPENDIX A

MAPS/PHOTOS

Figure 2. Lovers Lane Road Crossing Location Map.

Figure 3. Photos of existing conditions of road crossings over the west (left) and east (right) tributaries.

APPENDIX B

SPECIFICATIONS

TEMPORARY FACILITIES AND CONTROLS (MOBILIZATION & DEMOBILIZATION)

1. Description

This item shall consist of preparation work and operations performed by the Contractor in accordance with the provisions of Section 1-09.7 of the Standard Specifications. Mobilization shall also include Demobilization in accordance with the pay schedule identified herein. All costs for acquiring, preparing, and cleaning up the staging areas for the project shall be considered part of this item.

A. The work covered by this section consists of the construction facilities and temporary controls, including mobilization and demobilization, as specified, as shown on the Drawings, or as otherwise directed by the Owner's Representative. Work includes traffic control and erosion control items not specifically addressed under other pay items.

B. Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the site; for the establishment of all offices, and other facilities necessary for work on the project; and for all other work and operations which must be performed, or costs incurred prior to beginning work, on the various items on the project site.

C. Demobilization shall consist of work and operations necessary to disband all mobilized items and cleanup the site. The removal of all temporary crossings, ramps, access ways, roads, signs, and fencing; dewatering facilities; and temporary facilities or works, and the restoration of surfaces to an equal or better than existing condition shall also be included as part of demobilization.

2. Contractors Equipment

A. Security. Contractor shall, always, be responsible for security of their equipment. Owner shall not be responsible for missing or damaged equipment, tools, or personal belongings.

B. Construction Power and Communication Facilities. Contractor shall be responsible for providing sufficient electrical power and communication facilities to construct the work.

C. Storage Facilities.

1. Provide storage facilities for the protection of materials and supplies from weather and shall keep the facilities clean and in proper order at all times. Provide a storage area for lubricants, oils, and hazardous materials with sufficient means to contain spills. Facilities, handling, and any required cleanup will comply with all current local, state, and federal standards. Petroleum products stored on the site shall be secured from vandalism.

D. Sanitary Facilities. Maintain adequate toilet facilities at or near the work site.

E. Solid Waste Handling. Provide sufficient solid waste handling facilities to maintain site in a clean, orderly condition.

F. Water. Contractor shall provide all water necessary for construction and

maintenance as specified.

3. Mobilization and Demobilization

A. General. Perform mobilization and demobilization activities in accordance with the Drawings, and as specified.

4. Staging Areas

A. General. Staging areas at the project site are provided for the Contractor's use. By making this area available to the Contractor, the Owner's Representative, and any other person or agency connected with the properties shall in no way be responsible or liable for any activity of the Contractor, subcontractors, or any individual or organization connected with the project.

B. Alternative Staging Areas. Alternative sites must be acceptable to Owner, and the Contractor must make all arrangements for their use at the Contractor's expense, and in accordance with all local, State and Federal regulations.

C. Additional Storage Areas. Should the Contractor require space in addition to that available on- site, the Contractor shall make arrangements for storage of materials and equipment in locations off the construction site and shall provide the Owner's Representative a copy of the letter of authorization for storage from the Owner.

5. Hazardous Materials Control Spill and Prevention Plan

A. General. Before starting work on the project, the Contractor shall submit for acceptance by the Owner's Representative a Hazardous Materials Controls and Spill Prevention Plan. The Plan shall include provisions for preventing hazardous materials from contaminating soil or entering water courses and shall establish a Spill Prevention and Countermeasure Plan. The Contractor shall use Bio-fuels in all heavy equipment used in proximity to streams.

B. Facilities. Provide staging and storage areas for equipment, as required to contain contaminants away from water courses. Provide a contained, locked storage facility for fuels, lubricants, construction chemicals and other hazardous materials and supplies stored at site. If concrete work is proposed, provide a lined pit for concrete washdown, located where spills or overflow cannot enter nearby watercourses or storm drains. The pit shall be located a minimum of 75 feet from any flowing watercourse.

C. Equipment Maintenance. Clean and maintain equipment to prevent any leakage of fuel and lubricants. Establish a designated equipment refueling area. All fueling and maintenance of vehicles and other equipment and staging area shall occur at least 150 feet from any riparian habitat or water body.

D. Spills Countermeasures. Isolate work areas during in-water construction activities by using oil containment booms. Maintain a supply of oil booms, sorbent pads and other supplies to contain and clean spills. Contain and cleanup any hazardous material spills immediately and notify Owner's Representative.

6. Construction Site Housekeeping

A. Remove rubbish, trash, and debris from site on a regular basis. Transport and dispose of all rubbish and debris in accordance with all local regulations. Maintain staging area in an orderly manner. Cleanup and dispose of all concrete debris and washings when concrete work is complete.

7. Protection of Existing Improvements

A. Existing facilities, utilities, and property shall be protected from damage resulting from the Contractor's operations. Roadways and other improved surfaces shall be protected from damage by vehicles with tracks or lugs. Any damage resulting from the Contractor's operations shall be repaired by the Contractor to the condition which existed prior to the damage, and to the satisfaction of the Owner's Representative, at no additional cost to the Owner.

8. Restoration of Structures and Surfaces

A. Structures, Equipment, and Pipework. The Contractor shall remove such existing structures, equipment, and pipework as may be necessary for the performance of the work, and shall rebuild, or replace, the items thus removed in as good a condition as found. Contractor shall repair any existing structures that were damaged because of the Work.

B. Roadways used by the Contractor for hauling materials, equipment, supplies, etc., shall be cleaned and repaired if the condition of the roadway is damaged, or otherwise affected, due to the Contractor's operations.

9. Storage of Materials and Equipment

A. Materials and equipment shall be stored to ensure the preservation of their quality and fitness for the work. Stores of equipment and materials shall be located to facilitate inspection. The Contractor shall be responsible for all damages that occur in connection with the care and protection of all materials and equipment, supplied by the Contractor, until completion and final acceptance of the Work by the Owner.

10. Measurement

A. Work under this section will be measured for payment on a lump sum basis.

11. Payment

A. The contract lump sum price for Construction Facilities and Temporary Controls, also known as Mobilization and Demobilization, will include full compensation for the furnishing of all labor, materials, tools, equipment, administrative costs, and incidentals for mobilization; demobilization; and temporary facilities and controls.

B. Payment will be made under:

Pay Item	Pay Unit
Mobilization & Demobilization	Lump Sum (LS)

TEMPORARY EROSION CONTROL AND BMPS

1. Description

A. This work shall consist of temporary erosion control and water or air quality control measures, devices, and BMPs that may be shown on the Drawings, and as specified in the Contract Documents, Project Permit(s), Washington State Department of Transportation (WSDOT) Standard Specifications, these Technical Specifications, or as directed by the Owner's Representative during the life of the contract. Temporary erosion control measures and other BMPs will also be required at staging/storage areas utilized during project construction. Said work is intended to provide prevention, control, and abatement of water and air pollution within the limits of the project and to minimize damage to the work, adjacent properties, streams, or other bodies of water.

B. Installation and maintenance of temporary erosion control measures, devices and BMPs shall conform to the requirements as shown on the Drawings stated within this section, and Yakama Nation requirements.

C. Work covered under this section consists of furnishing all labor, tools materials, equipment and incidentals required to perform Seeding and Mulching, as specified, as shown on the Drawings, or as directed by the Owner's Representative.

2. References

A. WSDOT Standard Specifications for Road, Bridge, and Municipal Construction, current edition.

B. Washington Administrative Code (WAC), current edition.

3. General

A. Install temporary soil stabilization materials for water pollution control in all disturbed work areas that are considered inactive (i.e. excess of 14 days) or before forecast storm events. Should any temporary erosion control of this nature be required elsewhere as directed by the Owner's Representative and/or regulatory agencies, install them within 48 hours of notification. Where applicable and upon acceptance of the Owner's Representative, furnish and apply/install temporary mulch, temporary hydraulic mulch, temporary erosion control blankets, or temporary covers in conformance with the Standard Specifications and these Technical Specifications. Materials and construction methods shall comply with the Standard Specifications and these Technical Specifications.

B. Perform surface preparation and debris removal, determined by the Owner's Representative, prior to seeding the areas disturbed by construction activities, as specified herein or as directed by the Owner's Representative.

4. Maintenance

A. Maintain all temporary erosion control measures, devices, and BMPs placed in the work for the duration of the project. Maintenance includes all Manufacturer recommendations, and includes but is not limited to the following:

1. Immediately repair upon discovery damage to any temporary erosion control devices and/or BMPs during the course of the project at the Contractor's expense.
2. Inspect temporary erosion control devices and BMPs routinely, immediately after each rainfall event, and at least daily during prolonged rainfall events. Make required repairs immediately.
3. Inspect construction limit and tree protection fencing daily and repair, secure, and replace as necessary to maintain and preserve its intended purpose.
4. Routinely inspect all signage as required for the project and repair or replace upon discovery of damage, vandalism, and/or missing parts.
5. Should the filter fence fabric decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, replace fabric promptly.
6. Should a sediment log decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, replace sediment log promptly.
7. Replace single or group of gravel bag(s) when the bag material is ruptured or when the yarn has failed, allowing the bag contents to spill out.
8. Routinely inspect stakes and/or rope used to secure a sediment log in place and repair as necessary if found to be loose or ineffective.
9. Repair or replace damaged temporary gravel bag berm (or other measures which require gravel bags per the Project Drawings, Project Permits, these Technical Specifications and the Standard Specifications) on the same day when the damage occurs or is discovered.
10. Remove sediment deposits and other debris when they reach approximately one-half the height of the sediment barrier (or as recommended by the Manufacturer) and dispose of in a manner acceptable to the Owner's Representative, and in conformance with the Standard Specifications.
11. Maintain temporary gravel bag berm (or other measures which require gravel bags per the Project Drawings, Project Permits, these Technical Specifications and the Standard Specifications to provide a sediment holding capacity of approximately one-third the height of the gravel bag berm above the ground. When sediment exceeds this height or when directed by the Owner's Representative, remove and dispose of sediment in a manner acceptable to the Owner's Representative, and in conformance with the Standard Specifications.
12. Remove and dispose of sediment deposits remaining in place after the temporary erosion control measure and/or BMPs is no longer required in a manner acceptable to the Owner's Representative, and in conformance with the Standard Specifications

5. Measurement

A. Temporary Erosion Control and BMPs will be measured on lump sum basis.

6. Payment

A. The lump sum contract price for Temporary Erosion Control and BMPs will include full compensation for the furnishing of all labor, materials, tools, equipment, administrative costs, and incidentals for temporary erosion control measures, devices, and BMPs, provisions and requirements as stated in the Erosion Control Plan, stockpile management, sweeping, and maintenance of all such water pollution control measures that may be shown on the Project Drawings, and as specified in the Contract Documents, Project Permit(s), Standard Specifications, these Technical Specifications, and as directed by the Owner's Representative, and no additional compensation shall be allowed therefore.

   A. Payment will be made under:

Pay Item	Pay Unit
Temporary Erosion Control and BMPs	Lump Sum (LS)

Demolition

1. Description

The work includes removing and disposal of two existing culvert crossings with multiple culverts and an existing concrete dam structure approximately 2-feet in height.

2. General

A. Before beginning any work, carefully inspect the work and examine the Drawings and Specifications to determine the extent of the work to be performed. In the company of the Owner's Representative, visit the site and verify the extent of the demolition and other work to be performed.

B. Contact all appropriate utilities and agencies to coordinate and verify all abandonments and relocations.

C. Use of explosives will not be permitted.

D. Materials projecting above-ground shall be cut off at a minimum of one foot below finished grade. Backfill and compact all holes caused by removal of materials. Areas of site not detailed on the Drawings shall be filled and graded to drain, generally matching existing conditions.

E. Rock removed from the site may be re-used if it meets the materials specifications of the work item for which it is proposed.

3. Protection of Existing Work

A. Take all necessary precautions to ensure against damage to existing work to remain in place, or to be salvaged. Any damage to such work shall be repaired or replaced as directed by the Owner's Representative.

B. Construct and maintain shoring, bracing, and supports, as required. Ensure that structural elements are not overloaded and increase structural supports, or add new supports, as may be required as a result of any cutting, removal, or demolition work performed.

4. Demolition

A. General. Extent of removal of existing facilities shall be as shown on the Drawings. Materials not identified as being salvaged by Owner shall be removed and disposed. The work includes removing and disposal of two existing culvert crossings with multiple culverts and an existing concrete dam structure approximately 2-feet in height.

B. Hazardous Materials. Comply with all local rules, regulations, ordinances, and statues for handling and disposal of hazardous materials encountered.

C. Demolition. Demolish all specified structures in accordance with all local regulations. Completely remove footings, foundation, and above-ground construction as shown on the Drawings. Demolition includes all culverts and other similar permanent improvements specified on the Drawings.

5. Debris Removal

A. Remove all trash, rubble and debris generated by demolition activities from the site at the conclusion of construction.

6. Disposition of Materials

A. Salvaged Materials. Salvage of materials for reuse by the Owner shall include removal of the material, equipment, etc., from its present location and transporting, bundling, protecting, cleaning, and storing it in a designated location on the work site, as approved by the Owner's Representative. Items which are specified to be reused, and are damaged during removal or storage, shall be repaired to the Owner's Representative's satisfaction or replaced with new matching materials, at no cost to the Owner.

B. Wasted Materials. Title to all debris to be wasted and demolished materials is vested to the Contractor upon receipt of the Notice-to-Proceed. Contractor shall assume responsibility for any loss or damage to such property after the Notice-to-Proceed. Condition of such material is not guaranteed, and the Contractor shall assume all liability for reuse of any such material.

C. Disposal. All materials removed under this section which are not salvaged by the facility owner for reuse or otherwise recycled, shall be disposed of off-site at appropriate disposal areas approved in advance by the Owner. The material shall be removed from the job site before completion of the contract. Material shall not be sold on the site. All loading, hauling, dumping, and disposal fees are the responsibility of the Contractor.

D. Hauling. Debris shall be removed and transported by approved haul routes in a manner as to prevent spillage on streets or adjacent areas.

7. Measurement

A. Demolition work will be measured for payment on a lump sum basis.

8. Payment

A. Demolition will be paid for at the lump sum contract price, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the demolition, salvage, disposal, and reuse of materials, as specified.

B. Payment will be made under:

Pay Item	Pay Unit
Demolition	Lump Sum (LS)

CLEARING AND GRUBBING

1. Description

A. The work covered by this section consists of furnishing all labor, equipment, and materials necessary to perform the clearing and grubbing, the removal or disposal of all cleared and grubbed materials, and the filling of all grubbing holes, as specified, as shown on the Drawings, or as directed by the Owner's Representative.

B. This item also includes clearing and grubbing within the earthwork footprint for bridge and channel construction; unloading the bridge; and preparing temporary vehicular bypass fords. Temporary vehicular fords will be installed to maintain uninterrupted residential and fire suppression access.

2. Clearing

A. General. All work shall comply with Section 2-01, Clearing, Grubbing, and Roadside Clearance of the Standard Specifications.

B. All trees, stumps, down timber, snags, brush, vegetation, old piling, stone, concrete rubble, abandoned structures, and similar debris shall be cleared within the limits of the

construction extents, unless otherwise shown on the Drawings or directed by the Owner's Representative.

C. In areas where grubbing is not required, the clearing operations shall consist of the complete removal of all obstructions above the ground surface.

D. Trees. Where trees are approved by the Owner's Representative for removal, trees shall be felled in such a manner as to avoid damage to trees left standing, to the existing structures and installations, as well as with due regard for the safety of employees and others. Stumps shall be removed to minimum depth of 4 feet, or to a point where remaining roots are less than 1.5 inches in diameter, whichever depth is greater. Trees located beyond the limits for clearing and grubbing that are not marked for removal, shall be protected from damage, as indicated on the Drawings and as specified.

E. Vegetation. Vegetation to be removed shall consist of all heavy growth of brush and woody vegetation, unless shown otherwise on the Drawings or directed by the Owner's Representative.

F. Debris Removal. Abandoned foundations, rip rap, drainage materials, debris, and other unsuitable material and any other debris designated for removal on the Drawings shall be removed and disposed of in accordance with this section. Buried unsuitable debris encountered during excavations shall be removed and disposed of in accordance with Section 312316, Stripping and Excavation.

3. Grubbing

A. General. Grubbing shall consist of the removal of all stumps, roots, buried logs, old piling, old paving, concrete, abandoned utilities, timbers, fencing, and other objectionable matter encountered.

B. Limits. Except as noted on the Drawings, the entire area within the limits of the footprint of proposed culvert replacement shall be thoroughly grubbed.

C. Filling of Holes. All holes caused by grubbing operations, except in borrow areas, shall be excavated with 3 to 1 (horizontal to vertical) side slopes in conformance with Section 312316, Stripping and Excavation. The excavation shall then be backfilled with compacted embankment material in conformance with Section 312323, Owner's Representativeed Fill.

4. Disposal of Debris

A. Cleared and Grubbed Materials. Except as hereinafter specified or otherwise indicated on the Drawings, all logs, brush, strippings, concrete, asphalt, timbers, slash, and other non-organic debris which are the products of the clearing and grubbing operations shall be disposed of. Remove any or all of the products of clearing and grubbing operations from the site and dispose of the material at other locations or through other sources arranged for, by, and at the expense of the Contractor, in accordance with applicable laws and ordinances.

B. Clean woody plant material products of the clearing and grubbing operations not designated for salvage may be disposed of on site at the location shown on the Drawings, or as specified by the Owner's Representative, subject to approval of the Owner.

5. Measurement

A. Clearing and Grubbing will be measured as a lump sum pay item.

6. Payment

A. Clearing and Grubbing will be paid for at the lump sum contract price, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the clearing and grubbing operation as specified, including disposal or salvage of materials, and restoration of ground surfaces.

B. Removal and disposal of buried debris, not encountered during grubbing operations, will be paid for in accordance with Section 312316, Excavation.

C. Payment will be made under:

Pay Item	Pay Unit
Clearing and Grubbing	Lump Sum (LS)

BRIDGE AND CHANNEL EARTHWORK

1. Description

A. The work covered by this section consists of furnishing all labor, equipment, materials, and performing all operations necessary to complete Stripping and Excavation, as specified, as shown on the lines, grades, and cross-sections of the Drawings, or as directed by the Owner's Representative and in accordance with Section 2-03 of the Standard Specifications. Work includes, but is not limited to the following:

1. Stripping for removal of vegetation and surface organics within the limits of disturbance as necessary for planned work.
2. Excavation for removal of unsuitable material.
3. Control of shallow groundwater encountered during excavation.
4. Channel excavation.
5. Bridge placement excavation
6. Other miscellaneous excavation incidental to the construction of the improvements.

B. Over-excavation for placement of Rock Slope Protection (RSP) and bridge components is not included within this section but is considered incidental to the work for which it is required.

2. Materials

A. Primary channel features will be constructed of native soil and alluvium derived through excavation within the limits of disturbance. Addition material will be necessary to complete placement of bridges, and proposed channel grading as follows:

B. Imported, crushed ¾" – minus gravel to be placed beneath footings and on road approaches to bridge span.

C. Imported 25"- 40" diameter boulders for roughened channel material in stream bed transported to project site. Boulders shall have a minimum density of 165 pounds per cubic foot. Boulders shall be free of cracks and fractures. Boulders that fracture before final placement shall not be allowed.

D. Imported, Crushed ¾"-Minus Gravel Imported, crushed ¾"-minus gravel shall be placed as shown on the drawings and compacted to 95 percent maximum density.

E. Large wood shall be 20 ft length, 12" minimum diameter logs with rootwads. Large wood shall be free from rot or decay that affects their structural stability.

F. Local existing stream gravel, cobble, and boulders, and existing road fill.

G. Well drained, granular rock material excavated from existing road shall be stockpiled separately and salvaged for Abutment Backfill.

3. Construction Requirements

A. The work includes:

- Load and haul materials to and from stockpile areas.
- Excavating bridge installation areas.
- Grading channel beds and banks using in-situ materials.
- Install boulders as shown on the drawings.
- Place salvaged streambed material as shown on the drawings.
- Wash in fine sediments into interstitial spaces within boulders and salvaged streambed material.
- Care should be taken when handling large wood to minimize damage such as abrasion, splitting, crushing and shearing to the tree trunk and roots. Broken trunks or heavily damaged rootwads will not be considered for payment. Place logs with root wads as shown on the drawings.
- Backfill abutment walls as shown on the drawings using salvaged free draining granular material, compacted to 95% relative compaction.
- Placing uncompacted salvaged streambed materials along front face of abutment walls for support while backfilling and compacting behind abutment walls.

4. QUALITY ASSURANCE

A. Comply with all applicable permits and regulations.

B. Contractor shall provide necessary construction staking and references points, as required to meet the specified tolerances for the work.

5. GENERAL

A. The Contractor shall protect existing utilities in performing any excavation work.

B. The Contractor shall comply with all permit conditions in performing any excavation work.

C. Contractor shall perform an independent earthwork estimate for the purpose of preparing bid prices for earthwork. Quantities indicated on the Drawings are approximate estimates provided only for permitting purposes and are not suitable for bidding purposes.

D. The bid price shall include costs for any necessary export and proper disposal of excess or unsuitable earth materials off-site, at locations to be arranged and paid for by the Contractor.

6. STRIPPING

A. Stripping. Strip surfaces of excavations and fill foundations of heavy growth of crops, grass, weeds, and other vegetation as specified in Clearing and Grubbing. Greater depths of stripping may be necessary in selected areas to remove vegetation, as determined by the Owner's Representative.

B. Unless otherwise specified, the stripped materials shall be disposed of off-site, at locations to be arranged between the Contractor and the Owner's Representative.

7. EXCAVATION

A. General. Excavations shall extend into firm, undisturbed native soils. Excavation shall consist of removal of material for embankment foundation preparation, mass excavation and finish grading of the channel and slope improvements, and other miscellaneous excavations to the lines and grades shown on the Drawings, or as directed by the Owner's Representative. In the event that organic materials, yielding sub-grade (pumping) or other deleterious materials are encountered during foundation excavations, they shall be removed as directed by the Owner's Representative.

B. Control of Water. Water control shall be performed in accordance with project permit conditions and Dewatering as specified. When water is encountered, either ground water or surface runoff, the Contractor shall furnish, install, maintain, and operate all necessary machinery and equipment required to keep the excavation reasonably free from water, as approved by the Owner's Representative, until the placement of concrete or backfill material has been completed, inspected, and approved, and all danger of flotation and other damage is removed. Water pumped from the excavation shall be disposed of in such manner as will not cause injury to public or private property, or constitute a nuisance or menace to the public, and the disposal method shall be subject to the approval of the Owner's Representative. Water shall be controlled until work is complete.

Excess Excavation. Care shall be exercised by the Contractor not to excavate below the grades shown on the Drawings, except as specified herein, and as directed by the

Owner's Representative. All excavations in excess of the grades shown on the Drawings which are not directed by the Owner's Representative shall be backfilled with compacted embankment at the Contractor's expense, per Section 312323, Owner's Representativeed Fill.

C. Temporary Excavations. With exposure and drying, on-site soils may experience progressive sloughing if excavated near vertical and left un-shored during construction. Owner's Representative suggests that the soils on-site should be considered Type C when applying OSHA regulations.

D. Tolerances. The excavation tolerance shall typically be +0.1 feet to -0.2 feet from the grades shown on the Drawings, except within the low flow channel, where excavation tolerance shall be +0.1 feet to -0.1 feet from the elevations shown on the Drawings.

8. Unclassified Excavation

A. Unclassified Excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature, which is not otherwise classified and paid for under Excavation of Unsuitables or Rock Excavation described below. Unclassified Excavation includes excavation required to reach finished grade. Over-excavation for the placement of materials (e.g. Salvaged Streambed Material, Channel Excavation, Footings, and Abutments) or the removal of unsuitables, as described below under Excavation of Unsuitables, is not included in Unclassified Excavation.

9. Excavation of Unsuitables

A. Excavation of Unsuitables. Areas of unsuitable in-place soils, as determined by the Owner's Representative, may also be encountered. Material shall not be classified as unsuitable solely based on moisture content. Material within the limits of Excavation, as described above under Unclassified Excavation, or within the limits of over-excavation for the placement of materials (e.g. Salvaged Streambed Material, Channel Excavation, Footings, and Abutments) shall not be classified as unsuitable. The Contractor shall anticipate having to over-excavate areas of unsuitables as directed by the Owner's Representative, dispose of these materials, and replace them as shown on the drawings. The actual locations of these excavations will be determined in the field by the Owner's Representative. The side slopes of the excavations shall be no steeper than 1 to 1 (horizontal to vertical). The over-excavations shall be backfilled with free draining salvaged materials and compacted to 95% maximum density.

B. Disposition of Unsuitable Materials. The excavated materials that are considered unsuitable based solely on moisture content shall be processed as necessary to meet specification requirements for suitability and used as embankment material. Materials which are unsuitable based on organic content will be ordered wasted and shall be disposed of off-site at a location agreed upon by the Owner's Representative.

10. Rock Excavation

Rock Excavation. Rock excavation consists of the removal of hard igneous, metamorphic, and/or sedimentary rock in solid beds or masses in original or stratified position which can be removed only by continuous drilling, blasting or the use of pneumatic tools, and all boulders of 5 cubic yards in volume or larger. Material which can be loosened with a pick, frozen materials, soft laminated shale and hardpan, which for convenience or economy is loosened by drilling, blasting, wedging or the use of pneumatic tools, removal of concrete pavement and retaining walls, shall not be classified as rock excavation. When rock is encountered within the limits of the excavation, immediately notify the Owner's Representative, and do not proceed further until instructions are received and measurements made for the purpose of establishing the volume of rock excavation. Contractor shall note that blasting is not approved for this project. The need for specialized rock excavating equipment should be anticipated if rock is encountered. Blasting shall not be allowed.

11. Measurement

A. Stripping. Stripping will not be separately measured for payment.

B. Unclassified Excavation. Unclassified Excavation will be a lump sum pay item. The quantity of Unclassified excavation has been determined to be 1300 CY, based on the neat-line quantity Dimensions shown on the Drawings. This does not take into account the loose volume of the excavated material.

C. Excavation - Unsuitable Materials. Excavation - Unsuitable Materials is an optional bid item for materials that are designated by the Owner's Representative as unsuitable for reuse. This will be measured by the cubic yard of material excavated from the stripped foundation dimensions shown on the Drawings and replaced with Owner's Representativeed Fill. Measurement will be by the cubic yard, if this optional bid item is implemented.

D. Rock Excavation. Rock Excavation is an optional bid items for rock surfaces that are designated by the Owner's Representative as meeting the specifications for Rock Excavation. This will be measured by the cubic yard of rock excavation, based on the calculated neat-line quantity from surveyed cross sections before and after the excavation, if this optional bid item is implemented.

E. Imported, Crushed ¾"-Minus Gravel. Imported, Crushed ¾"-Minus Gravel will be measured by the cubic yard based on the Dimensions shown on the Drawings. This is a neat-line quantity and does not take into account the loose volume of the excavated material. Where the dimensions of any portion of the work are revised by the Owner's Representative, or a portion of the work is eliminated, the change will be measured by the cubic yard.

F. Imported Boulders. Imported Boulders will be measured on a per each basis, as installed.

G. Miscellaneous Construction. Miscellaneous construction is an optional bid item for other site work to be performed by the Contractor at the direction of the Owner's Representative. This will be measured for payment by the hour of time, if this optional bid item is implemented. The Contractor's staff and equipment are used for work at the site that is not included in the Drawings or Technical Specifications.

12. Payment

A. Stripping. No separate payment will be made for stripping. All costs in connection with this work will be considered incidental to the contract price per cubic yard for Excavation.

B. Unclassified Excavation, will be paid for at the contract unit price per lump sum, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals, and doing all work necessary to complete Unclassified Excavation, as specified, including mass excavation and finish grading of channel banks and floodplains, to the lines and grades shown on the Drawings.

C. Excavation - Unsuitable Materials, measured as specified above, will be paid for at the contract unit price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals, and doing all work necessary to complete the excavation as specified, including dewatering, all handling of materials, and disposal of unsuitable materials, if this optional bid item is implemented.

D. Rock Excavation, measured as specified above, will be paid for at the contract unit price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals, and doing all work necessary to complete the Rock Excavation as specified, including dewatering, all handling of materials, and disposal of unsuitable materials, if this optional bid item is implemented.

E. Miscellaneous Construction, measured as specified above, will be paid for at the contract unit price per hour, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the Miscellaneous Construction of work not in the Drawings or Technical Specifications as directed by the Owner's Representative, if this optional bid item is implemented.

F. No separate payment will be made for other miscellaneous grading incidental to the work. All costs in connection with this work will be considered incidental to the cost of construction of associated improvement.

G. Payment will be made under:

Pay Item	Pay Unit
Unclassified Excavation	Cubic Yard (CY)
Excavation – Unsuitable Materials	Cubic Yard (CY-O)
Rock Excavation	Cubic Yard (CY-O)

INSTALL PRECAST CONCRETE BRIDGE

1. Description

A. The Work covered by this section consists of moving and installing of a precast concrete bridge, abutments, and wingwalls, complete, in place, 21' long x 15' wide, as specified in the Plans, and as directed by the Owner's Representative. The precast concrete bridge, precast concrete abutment blocks, connecting steel and hardware shall be supplied by the Owner.

B. Coordinate delivery of the bridge materials with the supplier. The bridge material supplier is Pacific Bridge and Construction of Sandy, Oregon.

Pacific Bridge and
Construction 40800 SE
Coalman Road Sandy,
OR 97055 503-668-4798

C. Verify road condition requirements with the bridge material supplier and make any necessary road improvements to get materials as close to the project site as possible. The Contractor shall arrange and pay for any necessary hauling of bridge materials from the bridge supplier drop-off location to the project site.

2. Submittals

A. Submit to the Owner's Representative, for review, the following:

1. Geotextile material used in the backfill behind the abutments and wingwalls.

3. Product Handling

B. General. Comply with the notes on the Drawings and Bridge Manufacturer's Installation Guidelines.

4. Quality Assurance

C. Inspection and Acceptance. Owner will inspect and accept bridge.

5. Products

1.2 Materials

A. General. Comply with the material specifications listed on the Drawings.

6. Execution

A. Comply with the notes and details on the Drawings.

7. Construction Requirements

The Contractor shall prepare the subgrade for the abutment footings in accordance with the information shown on the manufacturer's instructions. If water is present within the excavation, the Contractor shall dewater the excavation before placing the bedding material. Bedding shall be compacted to a minimum of 95% of maximum density per modified Proctor (ASTM D1557).

Contractor shall install bridges in accordance with the manufacturer's instructions. Installation requirements include lifting and accurately placing sections in the location shown on the drawings.

Bridge pieces which do not meet required tolerances or are damaged during installation are subject to rejection.

8. Measurement

A. Deliver Two Modular Concrete Bridges will be measured for payment on a lump sum basis that include installation of two bridges and their footings and abutments as shown on the drawings.

B. Install Two Modular Concrete Bridges complete with abutments will be measured for payment on a lump sum basis.

C. Owner's Representativeed Fill, geotextiles, grout, and other materials supplied and installed by the Contractor for the Precast Bridge construction and backfill will not be independently measured for payment.

9. Payment

A. Deliver Two Modular Concrete Bridges will be paid for on a lump sum contract price, which price will be considered payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to deliver two modular concrete bridge components to the staging area from where the Bridge Suppler delivers the materials. This will include making any road improvements to facilitate delivery.

B. Install Two Modular Concrete Bridges will be paid for at the lump sum contract price, which price will be considered payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to furnish and complete installation of the two Precast Concrete Bridges, and installation of Fabricated Concrete Bridge including abutments, wing walls, as specified, as shown on the Drawings, or as directed by the Owner's Representative.

Payment will be made under:

Pay Item	Pay Unit
Deliver Two Modular Concrete Bridges	Lump Sum (LS)
Install Two Modular Concrete Bridges	Lump Sum (LS)

ROAD REGRADE AND SURFACING

10. Description

This Work consists of loading, hauling, and placing Borrow as needed to fill roadways, or grading and hauling excess road material to meet proposed grade as shown in the Plans.

This work also consists of loading, hauling, and placing crushed surfacing on roadway where shown in the Plans and conforming to Section 4-04 and 9-30.9(3) of the Standard Specifications. Crushed surfacing top course shall also be used as "compacted crushed rock base" below the bridge footings, compacted and installed per the dimension in the bridge plans.

11. Materials

A suggested nearby Borrow source is provided by the Owner.

12. Construction

Where shown in the plans, install borrow to fill, or haul away cut and regrade road. Compact fill in 6" lifts.

Crushed Surfacing shall be shaped and compacted to 95% relative compaction. The compacted Crushed Surfacing depth should be greater than 0.5 feet.

13. Measurement

Road Regrade shall be measured as a lump sum item and shall be full compensation for all costs incurred for excavating, loading, hauling, placing, grading, and compaction of the material.

14. Payment

Payment shall be lump sum. Water used in placing and compacting surfacing materials on the roadway will be incidental to this item.

Road Crossings and Habitat Improvement 90% Design Planset

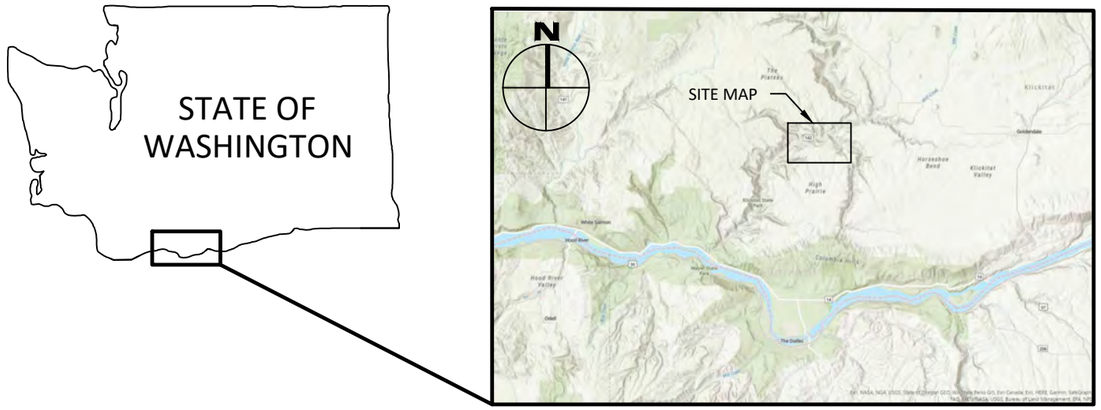
SWALE CREEK TRIBUTARIES

ROAD CROSSINGS AND HABITAT IMPROVEMENT

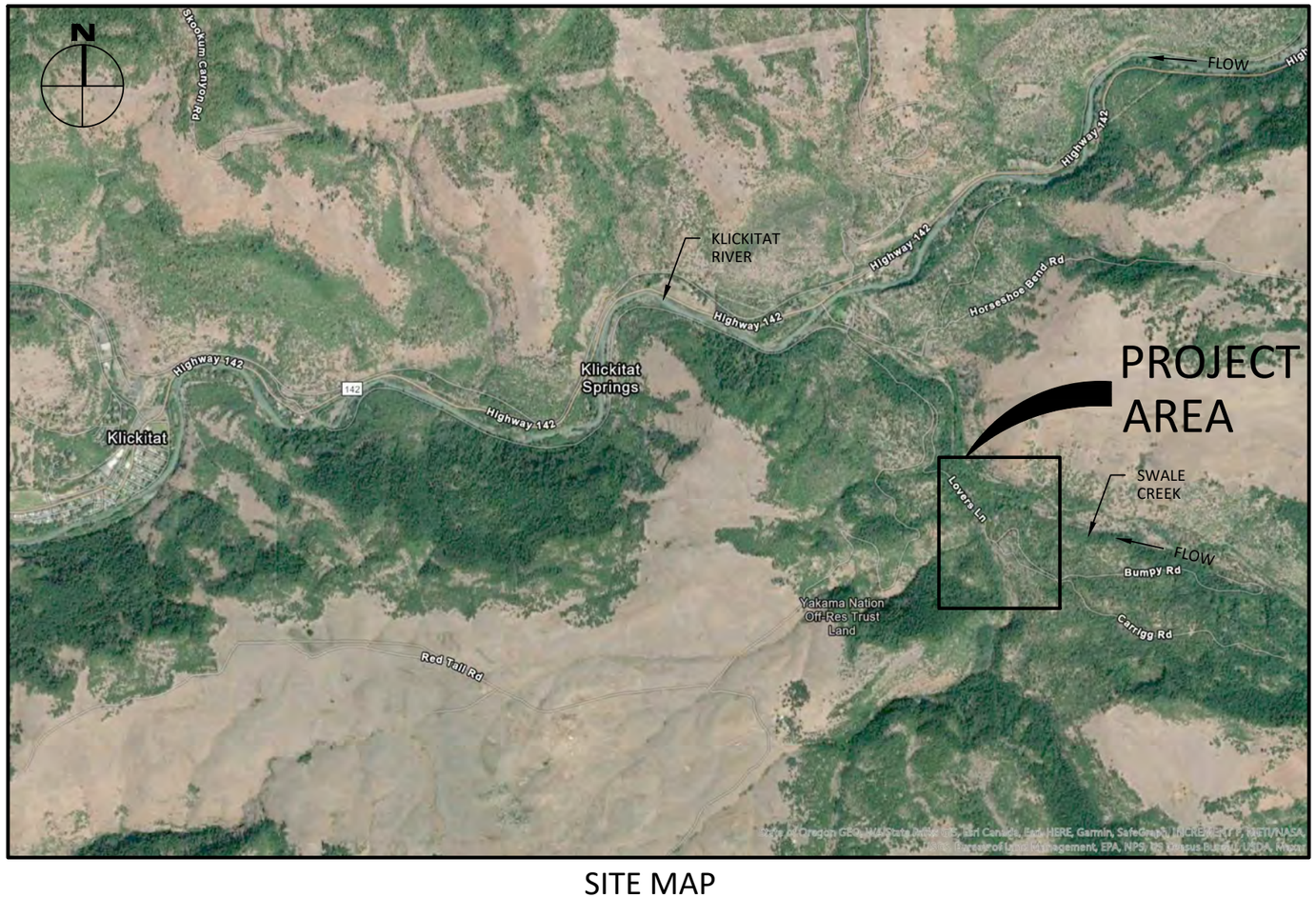
90% DESIGN

KLICKITAT COUNTY, WASHINGTON

March 3, 2023



VICINITY MAP
NOT TO SCALE

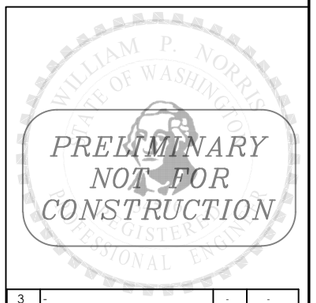


SITE MAP
NOT TO SCALE

SHEET INDEX

LOCATION

KLICKITAT COUNTY, WASHINGTON
LAT: N 45°48'44.51"
LONG: W 121° 5'15.48"
SECTION: Section 20, T4N R14E
WATER BODY: RATTLE SNAKE GULCH
TRIBUTARY: SWALE CREEK



REV:	DESCRIPTION:	BY:	DATE:
3	-	-	-
2	-	-	-
1	-	-	-

STATUS: 90% Design

PARR excellence
173 N Main Ave,
White Salmon, WA 98672 www.moreredds.com

CLIENT:
YAKAMA NATION FISHERIES PROGRAM
SOUTHERN TERRITORIES HABITAT PROJECT
PO BOX 215, KLICKITAT COUNTY, WA 98628

SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
COVER SHEET, LOCATION, AND SHEET INDEX

SCALE:	DATE:	DRAWN:	CHECKED:
	3/2/23	RP	BN

PROJ. NO:	DRAWING NO:	Total Sheets:
-	1	18

GENERAL NOTES

WORK PERFORMED UNDER THIS CONTRACT SHALL CONFORM TO BPA HIP HANDBOOK VERSION 5.2 AND LOCAL REGULATORY REQUIREMENTS UNLESS OTHERWISE INDICATED. IN THE EVENT OF A DISCREPANCY BETWEEN SPECIFICATIONS OR REGULATORY STANDARDS, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.

THE CONTRACTOR SHALL ATTEND A MANDATORY PRE-BID SITE MEETING.

THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH OWNER AND OWNER'S REPRESENTATIVE PRIOR TO BEGINNING CONSTRUCTION.

ALL WORK SHALL CONFORM TO THE CURRENT EDITIONS OF STANDARD PLANS AND SPECIFICATIONS OF THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT), AND LOCAL STANDARDS UNLESS INDICATED OTHERWISE BY THE CONTRACT DOCUMENTS. IN CASE OF A CONFLICT BETWEEN THE REGULATORY STANDARDS OR SPECIFICATIONS, THE MORE STRINGENT WILL PREVAIL.

IN THE EVENT OF A CONFLICT BETWEEN NOTES, REGULATORY REQUIREMENTS, OR OTHER CONTRACT DOCUMENTATION THE CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE ENGINEER.

THE CONTRACTOR SHALL REMOVE DEBRIS AND LITTER FROM WORK AREAS AND SHALL STOCKPILE, PLACE OR DISPOSE OF MATERIALS, AS SPECIFIED.

EXISTING DATA

SURVEY DATA OF CHANNEL AND INFRASTRUCTURE COLLECTED OCTOBER 2021. LIDAR TOPOGRAPHIC DATA PROVIDED BY OTHERS.

SOILS

LEGALL-ROCK OUTCROP-RUBBLE LAND COMPLEX, 30 TO 65 PERCENT SLOPES, PER USDA SOIL SURVEY MAP

FISH RESCUE

FISH RESCUE ACTIVITIES SHALL BE SUPERVISED BY A QUALIFIED FISHERIES BIOLOGIST EXPERIENCES WITH THE COLLECTION AND HANDLING OF SALMONIDS AND LAMPREY FROM CONSTRUCTION SITES.

IF FISH ARE CONCENTRATED IN POOLS DURING DIVERSION OR DEWATERING, THEY SHALL BE COLLECTED BY SEINE AND/OR DIP NETS, PLACED IN CLEAN TRANSFER CONTAINERS WITH ADEQUATE VOLUME AND TEMPERATURE OF WATER AND RELEASED WITHIN 10 MINUTES OF CAPTURE.

UTILITIES

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR HAVING UTILITIES LOCATED PRIOR TO CONSTRUCTION ACTIVITIES.

THE CONTRACTOR SHALL CALL (800-424-5555) FOR UTILITY LOCATE PRIOR TO CONSTRUCTION

THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE AFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES.

THE CONTRACTOR SHALL PROVIDE EQUIPMENT OR LABOR TO AID THE AFFECTED UTILITY SERVICE IN REPAIRING DAMAGED OR DESTROYED UTILITIES AT NO ADDITIONAL COST.

CULTURAL RESOURCES

ANY CULTURAL RESOURCES AND/OR ARTIFACTS EXHUMED OR OTHERWISE ENCOUNTERED SHALL NOTIFY YAKAMA NATION PROJECT MANAGER, DAVID LINDLEY, DESIGN ENGINEER AND BPA ARCHAEOLOGIST. CONSTRUCTION ACTIVITIES THAT UNCOVERED CULTURAL RESOURCES AND/OR ARTIFACTS SHALL IMMEDIATELY CEASE UNTIL A RESOURCE INVENTORY IS COMPLETED.

TREE SALVAGE

EXISTING TREES AND SHRUBS TO BE REMOVED FOR ACCESS WILL BE MARKED FOR REMOVAL. TREES WITHIN THE CLEARING LIMITS SHALL BE WHOLE TREES REMOVED WITHOUT CUTTING AND WITH ROOTS INTACT. TREES AND SHRUBS REMOVED MAY BE CLASSIFIED AS SALVAGED TREES OR SLASH DEPENDING ON SPECIFIED CRITERIA AND PLACED WITHIN LARGE WOOD STRUCTURES. SOME SLASH AND/OR SALVAGED TREES MAY BE PLACED OVER DISTRUBED AREAS DEPENDING ON QUANTITIES AVAILABLE.

REMOVED VEGETATION SHALL BE INCORPORATED INTO LOG STRUCTURES AT NO ADDITIONAL COST. VEGETATION LARGER THAN 12 IN. DIAMETER AND 15 FT. LENGTH SHALL BE USED AS STRUCTURAL ELEMENTS. SMALLER MATERIAL SHALL BE USED AS SLASH.

SELECT TREES REMOVED WITHIN CLEARING LIMITS SHALL BE REMOVED WHOLE WITH ROOT WAD AND USED IN RESTORATION CONSTRUCTION. TREES WILL BE FLAGGED FOLLOWING STAKING AND PRIOR TO CONSTRUCTION.

EXISTING TREES AND SHRUBS TO REMAIN

ALL EXISTING TREES AND SHRUBS THAT ARE NOT MARKED FOR REMOVAL SHALL REMAIN UNDISTURBED. THE CONTRACTOR SHALL NOT DEBARK OR DAMAGE EXISTING TREES AND SHALL STAY OUTSIDE OF THE DRIPLINE OF EXISTING TREES AND SHRUBS TO REMAIN.

CONSTRUCTION ACCESS

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING TRAFFIC CONTROL, ACCESS PERMITS AND/OR PROVIDING TRAFFIC CONTROL INCLUDING SIGNAGE AND FLAGGERS. SIGNAGE MUST ADEQUATELY WARN DRIVERS THAT ROADS ARE UNDER CONSTRUCTION AND BRIDGES ARE OUT. DETOUR SIGNS SHALL NOTIFY DRIVERS OF TEMPORARY TRAFFIC ROUTES.

ALL PERSONNEL, EQUIPMENT, AND MATERIALS SHALL REMAIN WITHIN THE DESIGNATED LIMITS OF DISTURBANCE.

CONSTRUCTION STAKING

OWNER'S REPRESENTATIVE WILL PROVIDE STAKING OF PROJECT LIMITS, GRADE STAKES, AND ELEVATION CONTROL POINTS. SOME FIELD ADJUSTMENTS TO THE LINES AND GRADES ARE TO BE EXPECTED.

CONTRACTOR SHALL MEET WITH THE OWNER AND OWNER'S REPRESENTATIVE TO DEFINE AND MARK LIMITS OF DISTURBANCE PRIOR TO MOBILIZATION OF EQUIPMENT OR MATERIALS ONTO THE SITE.

THE CONTRACTOR SHALL REPLACE DAMAGED OR DESTROYED CONSTRUCTION STAKES AT NO ADDITIONAL COST.

CONSTRUCTION MATERIALS

ESTIMATED MATERIAL VOLUMES ARE APPROXIMATE IN-PLACE QUANTITY AND NOT FACTORED FOR EXPANSION OR REDUCTION OF EXCAVATED MATERIAL OR COMPACTION OF PLACED MATERIAL.

LOCATION, ALIGNMENT, AND ELEVATION OF LOGS AND LOGS WITH ROOT WADS ARE SUBJECT TO ADJUSTMENT BASED ON FIELD CONDITIONS, AND MATERIAL SIZE.

ANY EXCESS MATERIAL SHALL BE STOCKPILED NEATLY IN AN APPROVED LOCATION OF THE STOCKPILE AND STAGING AREA. AT COMPLETION OF WORK, THE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

EROSION AND SEDIMENT CONTROL

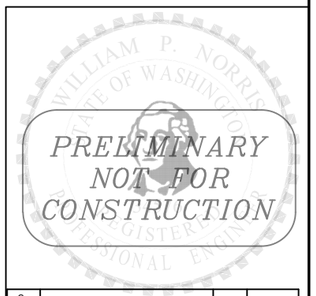
THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING TESC TO COMPLY WITH ALL APPLICABLE EROSION CONTROL REGULATIONS AT THEIR OWN EXPENSE.

ANY TESC PLAN PROVIDED IN THESE CONTRACT DOCUMENTS IS FOR INFORMATIONAL PURPOSES ONLY. RECOMMENDATIONS FOR TESC PLANNING INCLUDE:

1. TESC BMP'S IN THESE CONTRACT DOCUMENTS ARE THE MINIMUM REQUIREMENTS ANTICIPATED FOR SITE CONDITIONS. TESC BMP'S SHALL BE UPGRADED TO RESPOND TO STORM EVENTS AT NO ADDITIONAL COST TO COMPLY WITH APPLICABLE REGULATIONS.
2. THE CONTRACTOR SHALL MONITOR WEATHER FORECASTS AND UPGRADE FACILITIES PRIOR TO STORM EVENTS, AS NECESSARY.
3. CONSTRUCTION AND IMPLEMENTATION OF THE CONTRACTOR'S TESC PLAN AND MAINTENANCE, UPGRADING, AND REPLACEMENT TESC BMP'S IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL CONSTRUCTION IS COMPLETE, WORK IS APPROVED, AND VEGETATION IS ESTABLISHED.
4. FUNCTION OF TESC BMP'S SHALL BE INSPECTED DAILY AND MAINTAINED BY THE CONTRACTOR TO CONFORM TO APPLICABLE EROSION CONTROL REGULATIONS.
5. STORMWATER RUNOFF FROM OFF SITE SHALL BE HANDLED DIFFERENTLY THAN ON SITE SOURCES. GENERALLY, STORMWATER RUNOFF FROM OFF SITE SOURCES SHOULD BE DIVERTED AROUND DISTURBED AREAS.
6. DESIGN, CONSTRUCT AND PHASE CUT AND FILL SLOPES TO MINIMIZE EROSION. REDUCE RUNOFF VELOCITIES ON DISTURBED SLOPES BY PROVIDING TEMPORARY BARRIERS AND SEDIMENT TRAPPING.
7. STABILIZED CONSTRUCTION ENTRANCES AND ADDITIONAL BMP'S MAY BE REQUIRED AND MAINTAINED AS NECESSARY FOR THE DURATION OF THE PROJECT.
8. FOR MONTHS OF MAY THROUGH SEPTEMBER ALL EXPOSED SOILS SHALL BE PROTECTED FROM EROSION BY MULCHING, PLASTIC SHEETING, HYDROSEED COVERING, OR OTHER MEASURES WITHIN THREE DAYS OF GRADING. FOR THE MONTHS OF OCTOBER THROUGH APRIL, ALL EXPOSED SOILS SHALL BE STABILIZED BEFORE WORK SHUT DOWN, HOLIDAYS OR WEEKENDS, IF NECESSARY BASED ON WEATHER FORECASTS. STOCKPILED SOILS SHALL BE PROTECTED WITH PLASTIC SHEETING OR STABILIZED WITH SEDIMENT TRAPPING BMP'S.
9. TESC BMP'S ON INACTIVE SITES SHALL BE INSPECTED ON A MONTHLY, MIN., BASIS AND WITHIN 24 HOURS OF A STORM EVENT.
10. TESC MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION, WHEN TEMPORARY MEASURES ARE NO LONGER EFFECTIVE. TRAPPED SEDIMENT SHALL BE REMOVED FROM THE SITE OR BLENDED INTO FINISHED GRADING AS LONG AS IT DOES NOT AFFECT PLANT ESTABLISHMENT. DISTURBED AREAS RESULTING FROM CUT AND FILL SHALL BE PERMANENTLY STABILIZED.
11. CONTRACTOR SHALL PRODUCE WEEKLY TESC REPORTS SUMMARIZING INSPECTIONS, PERSONNEL WHO CONDUCTED THE INSPECTION, OBSERVATIONS RELATED TO IMPLEMENTATION OF THE CONTRACTOR'S TESC PLAN, AND ACTIONS TAKEN RESULTING FROM INSPECTIONS. THE WEEKLY REPORTS SHALL BE RETAINED ON SITE BY THE CONTRACTOR. THE REPORTS SHALL INCLUDE WHEN GRADING ACTIVITIES COMMENCE AND CEASE, DATES OF RAINFALL EXCEEDING 2 HOURS DURATION OR MORE THAN 0.5 IN. PER 24 HOURS, WHEN SPECIFIC STABILIZATION MEASURES COMMENCE AND CEASE. TESC REPORTS SHALL BE MADE AVAILABLE TO THE ENGINEER ON REQUEST FOR REVIEW AND APPROVAL PRIOR TO APPLICATION FOR PAYMENT.

CONSTRUCTION DEWATERING

THE CONTRACTOR SHALL AVOID RELEASE OF TURBID WATER DURING CONSTRUCTION DEWATERING. EXCAVATION OF DEWATERING SUMPS BEYOND THE LIMITS SHOWN SHALL BE PERFORMED AT NO ADDITIONAL COST. TURBID WATER MAY BE PUMPED TO UPLAND DISCHARGE AREAS AND ALLOWED TO SHEET FLOW THROUGH VEGETATION BEFORE INFILTRATING. IF RUNOFF IS OCCURRING WITHOUT INFILTRATION, THE CONTRACTOR SHALL CEASE PUMPING TURBID WATER AND ESTABLISH OTHER MEANS TO AVOID SURFACE WATER TURBIDITY AND/OR CONTAMINATION AT NO ADDITIONAL COST. OTHER MEANS MAY INCLUDE FILTRATION BAG, SEDIMENT RETENTION AREA OR ADDITIONAL INFILTRATION AREAS.



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CLIENT:
YAKAMA NATION FISHERIES PROGRAM
SOUTHERN TERRITORIES HABITAT PROJECT
PO BOX 215, KLICKITAT COUNTY, WA 98628

SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE: GENERAL NOTES

SCALE:	DATE:	DRAWN:	CHECKED:
	3/2/23	##	##

PROJ. NO:	DRAWING NO:	Total Sheets:
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HIP GENERAL CONSERVATION MEASURES

THESE MEASURES WILL BE IMPLEMENTED ON ALL PROJECTS COVERED UNDER THE HIP.

TIMING OF IN-WATER WORK

FORMAL RECOMMENDATIONS PUBLISHED BY STATE AGENCIES SUCH AS THE OREGON DEPARTMENT OF FISH AND WILDLIFE (ODFW), WASHINGTON DEPARTMENT OF FISH AND WILDLIFE (WDFW), IDAHO DEPARTMENT OF FISH AND GAME (IDFG), AND MONTANA FISH WILDLIFE AND PARKS (MFWP), OR INFORMAL RECOMMENDATIONS FROM THE APPROPRIATE STATE FISHERY BIOLOGIST IN REGARD TO THE TIMING OF IN-WATER WORK, WILL BE FOLLOWED.

1. BULL TROUT - IN BULL TROUT SPAWNING AND REARING AREAS, EGGS, ALEVIN, AND FRY ARE PRESENT NEARLY YEAR ROUND. IN BULL TROUT HABITATS DESIGNATED AS FORAGING, MIGRATION, AND OVERWINTERING (FMO) HABITATS, JUVENILE AND ADULT BULL TROUT MAY BE PRESENT SEASONALLY. SOME PROJECT LOCATIONS MAY NOT HAVE DESIGNATED IN-WATER WORK WINDOWS FOR BULL TROUT, OR IF THEY DO, THEY MAY DIFFER FROM THE IN-WATER WORK WINDOWS FOR SALMON AND STEELHEAD. IF THIS IS THE CASE, THE PROJECT SPONSOR WILL CONTACT THE APPROPRIATE USFWS FIELD OFFICE TO ENSURE THAT ALL REASONABLE IMPLEMENTATION MEASURES ARE CONSIDERED AND AN APPROPRIATE IN-WATER WORK WINDOW IS USED TO MINIMIZE PROJECT EFFECTS.
2. LAMPREY - TO MINIMIZE DISTURBANCE TO MIGRANT ADULTS, THE PROJECT SPONSOR AND/OR THEIR CONTRACTORS WILL AVOID WORKING INSTREAM OR RIVER CHANNELS THAT CONTAIN PACIFIC LAMPREY FROM MARCH 1 TO JULY 1 IN LOW- TO MID-ELEVATION REACHES (<5,000 FEET). IN HIGH-ELEVATION REACHES (>5,000 FEET), THE PROJECT SPONSOR WILL AVOID WORKING INSTREAM OR RIVER CHANNELS FROM MARCH 1 TO AUGUST 1. IF EITHER TIMEFRAME IS INCOMPATIBLE WITH OTHER OBJECTIVES, THE AREA WILL BE SURVEYED FOR NESTS AND LAMPREY PRESENCE, AND AVOIDED IF POSSIBLE. IF LAMPREYS ARE KNOWN TO EXIST, THE PROJECT SPONSOR WILL UTILIZE BEST MANAGEMENT PRACTICES (BMPS) FOR DEWATERING AND SALVAGE AS OUTLINED IN USFWS 20101, OR MOST RECENT GUIDANCE. SALVAGE SHOULD INCLUDE SALVAGE OF LARVAL LAMPREY FROM SEDIMENTS. (SEE SECTION “CONSERVATION MEASURES FOR SALVAGE OF NATIVE FISH, LAMPREY, AND MUSSELS”).

CONTAMINANTS

THE PROJECT SPONSOR WILL COMPLETE A SITE ASSESSMENT WITH THE FOLLOWING ELEMENTS TO IDENTIFY THE TYPE, QUANTITY, AND EXTENT OF ANY POTENTIAL CONTAMINATION FOR ANY ACTION THAT INVOLVES EXCAVATION OF MORE THAN 20 CUBIC YARDS OF MATERIAL:

1) A REVIEW OF AVAILABLE RECORDS, SUCH AS FORMER SITE USE, BUILDING PLANS, AND RECORDS OF ANY PRIOR CONTAMINATION EVENTS;
2) A SITE VISIT TO INSPECT THE AREAS USED FOR VARIOUS INDUSTRIAL PROCESSES AND THE CONDITION OF THE PROPERTY;
3) INTERVIEWS WITH KNOWLEDGEABLE PEOPLE, SUCH AS SITE OWNERS, OPERATORS, AND OCCUPANTS, NEIGHBORS, OR LOCAL GOVERNMENT OFFICIALS; AND
4) A SUMMARY, STORED WITH THE PROJECT FILE THAT INCLUDES AN ASSESSMENT OF THE LIKELIHOOD THAT CONTAMINANTS ARE PRESENT AT THE SITE, BASED ON ITEMS 4(A) THROUGH 4(C).

SITE LAYOUT AND FLAGGING

1) PRIOR TO CONSTRUCTION, THE PROJECT AREA WILL BE CLEARLY FLAGGED TO IDENTIFY THE FOLLOWING:
2) SENSITIVE RESOURCE AREAS, SUCH AS AREAS BELOW ORDINARY HIGH WATER (OHW), SPAWNING AREAS, SPRINGS, AND WETLANDS;
3) EQUIPMENT ENTRY AND EXIT POINTS;
4) ROAD AND STREAM CROSSING ALIGNMENTS;
5) STAGING, STORAGE, AND STOCKPILE AREAS; AND
6) NO-HERBICIDE-APPLICATION AREAS AND BUFFERS.

TEMPORARY ACCESS ROADS AND PATHS

1) EXISTING ACCESS ROADS AND PATHS WILL BE PREFERENTIALLY USED WHENEVER POSSIBLE, AND THE NUMBER AND LENGTH OF TEMPORARY ACCESS ROADS AND PATHS THROUGH RIPARIAN AREAS AND FLOODPLAINS WILL BE MINIMIZED TO LESSEN SOIL DISTURBANCE, SOIL COMPACTION, AND IMPACTS TO VEGETATION.
2) VEHICLE USE AND HUMAN ACTIVITIES, INCLUDING WALKING IN AREAS OCCUPIED BY TERRESTRIAL ESA- LISTED SPECIES, WILL BE MINIMIZED.
3) TEMPORARY ACCESS ROADS AND PATHS WILL NOT BE BUILT ON SLOPES WHERE GRADE, SOIL, OR OTHER FEATURES SUGGEST A LIKELIHOOD OF EXCESSIVE EROSION OR FAILURE. IF SLOPES ARE STEEPER THAN 30%, THE ROAD WILL BE DESIGNED BY A CIVIL ENGINEER WITH EXPERIENCE IN STEEP ROAD DESIGN.
4) THE REMOVAL OF RIPARIAN VEGETATION DURING CONSTRUCTION OF TEMPORARY ACCESS ROADS WILL BE MINIMIZED. WHEN TEMPORARY VEGETATION REMOVAL IS REQUIRED, VEGETATION WILL BE CUT AT GROUND LEVEL (NOT GRUBBED).
5) AT PROJECT COMPLETION, ALL TEMPORARY ACCESS ROADS AND PATHS WILL BE DECOMPACTED AND RESHAPED TO MATCH THE ORIGINAL CONTOUR; AND THE SOIL WILL BE STABILIZED AND REVEGETATED.
6) HELICOPTER FLIGHT PATTERNS WILL BE ESTABLISHED IN ADVANCE, AND LOCATED TO AVOID TERRESTRIAL ESA- LISTED SPECIES, INCLUDING THEIR OCCUPIED HABITAT AND APPROPRIATE BUFFERS, DURING SENSITIVE LIFE STAGES (I.E. NESTING AND CRITICAL BREEDING PERIODS). SEE SPECIES-SPECIFIC CONSERVATION MEASURES FOR EACH LISTED SPECIES THAT MAY OCCUR WITHIN THE PROJECT AREA FOR MORE INFORMATION.

TEMPORARY STREAM CROSSINGS

1) EXISTING STREAM CROSSINGS, FORDS, OR BEDROCK WILL BE USED WHENEVER POSSIBLE.
2) IF AN EXISTING STREAM CROSSING IS NOT ACCESSIBLE, TEMPORARY CROSSINGS WILL BE INSTALLED. TREATED WOOD SHALL NOT BE USED ON TEMPORARY BRIDGE CROSSINGS OR IN LOCATIONS IN CONTACT WITH OR OVER WATER.
3) FOR PROJECTS THAT REQUIRE EQUIPMENT AND VEHICLES TO CROSS IN THE WET:
   a) THE LOCATION AND NUMBER OF ALL WET CROSSINGS MUST BE APPROVED BY BPA AND CLEARLY INDICATED ON DESIGN DRAWINGS.
   b) VEHICLES AND MACHINERY WILL CROSS STREAMS AT RIGHT ANGLES TO THE MAIN CHANNEL WHEREVER POSSIBLE.
   c) NO STREAM CROSSINGS WILL OCCUR 300 FEET UPSTREAM OR 100-FEET DOWNSTREAM OF AN EXISTING REDD OR SPAWNING FISH.
   d) AFTER PROJECT COMPLETION, TEMPORARY STREAM CROSSINGS WILL BE OBLITERATED, AND THE BANKS RESTORED.

STAGING, STORAGE, AND STOCKPILE AREAS

1) STAGING AREAS (USED FOR CONSTRUCTION EQUIPMENT STORAGE, VEHICLE STORAGE, FUELING, SERVICING, AND HAZARDOUS MATERIAL STORAGE) WILL BE 150 FEET OR MORE FROM ANY NATURAL WATERBODY OR WETLAND, OR ON AN ADJACENT ESTABLISHED ROAD AREA IN A LOCATION AND MANNER THAT WILL PRECLUDE EROSION INTO, OR CONTAMINATION OF, THE STREAM OR FLOODPLAIN.
2) NATURAL MATERIALS USED FOR IMPLEMENTATION OF AQUATIC RESTORATION, SUCH AS LARGE WOOD, GRAVEL, AND BOULDERS, MAY BE STAGED WITHIN 150 FEET IF CLEARLY INDICATED IN PLANS. RECOMMEND REFERRING TO AREA AS “NATURAL MATERIAL STOCKPILE AREA” WITH A NOTE THAT STATES VEHICLE STORAGE, EQUIPMENT STORAGE, HAZARDOUS MATERIALS, FUELING, AND SERVICING NOT PERMITTED IN THIS AREA.
3) ANY LARGE WOOD, TOPSOIL, AND NATIVE CHANNEL MATERIAL DISPLACED BY CONSTRUCTION WILL BE STOCKPILED FOR USE DURING SITE RESTORATION AT A SPECIFICALLY IDENTIFIED AND FLAGGED AREA.
4) ANY MATERIAL NOT USED IN RESTORATION, AND NOT NATIVE TO THE FLOODPLAIN, WILL BE REMOVED TO A LOCATION OUTSIDE OF THE 100-YEAR FLOODPLAIN FOR DISPOSAL.

EQUIPMENT

MECHANIZED EQUIPMENT AND VEHICLES WILL BE SELECTED, OPERATED, AND MAINTAINED IN A MANNER THAT MINIMIZES ADVERSE EFFECTS ON THE ENVIRONMENT (E.G., MINIMALLY-SIZED, LOW PRESSURE TIRES; MINIMAL HARD-TURN PATHS FOR TRACKED VEHICLES; TEMPORARY MATS OR PLATES WITHIN WET AREAS OR ON SENSITIVE SOILS). ALL VEHICLES AND OTHER MECHANIZED EQUIPMENT WILL BE:

1) STORED, FUELED, AND MAINTAINED IN A VEHICLE STAGING AREA LOCATED 150 FEET OR MORE FROM ANY NATURAL WATER BODY OR WETLAND, OR ON AN ADJACENT, ESTABLISHED ROAD AREA;
2) REFUELED IN A VEHICLE STAGING AREA LOCATED 150 FEET OR MORE FROM A NATURAL WATERBODY OR WETLAND, OR IN AN ISOLATED HARD ZONE, SUCH AS A PAVED PARKING LOT OR ADJACENT, ESTABLISHED ROAD (THIS MEASURE APPLIES ONLY TO GAS OR DIESEL-POWERED EQUIPMENT WITH TANKS LARGER THAN 5 GALLONS);
3) BIODEGRADABLE LUBRICANTS AND FLUIDS2 SHALL BE USED ON EQUIPMENT OPERATING IN THE STREAM CHANNEL AND LIVE WATER.
4) INSPECTED DAILY FOR FLUID LEAKS BEFORE LEAVING THE VEHICLE STAGING AREA FOR OPERATION WITHIN 150 FEET OF ANY NATURAL WATER BODY OR WETLAND; AND
5) THOROUGHLY CLEANED BEFORE OPERATION BELOW ORDINARY HIGH WATER (OHW), AND AS OFTEN AS NECESSARY DURING OPERATION, TO REMAIN FREE OF GREASE.

EROSION CONTROL

EROSION CONTROL BEST MANAGEMENT PRACTICES (BMPS) WILL BE PREPARED AND CARRIED OUT, COMMENSURATE WITH THE SCOPE OF THE ACTION THAT MAY INCLUDE THE FOLLOWING:

1) TEMPORARY EROSION CONTROL BMPS.
   a. TEMPORARY EROSION CONTROL BMPS SHALL BE IN PLACE BEFORE ANY SIGNIFICANT ALTERATION OF THE ACTION SITE, AND SHALL BE APPROPRIATELY INSTALLED DOWNSLOPE OF PROJECT ACTIVITY WITHIN THE RIPARIAN BUFFER AREA UNTIL SITE REHABILITATION IS COMPLETE.
   b. IF THERE IS A POTENTIAL FOR ERODED SEDIMENT TO ENTER THE STREAM, SEDIMENT BARRIERS WILL BE INSTALLED AND MAINTAINED FOR THE DURATION OF PROJECT IMPLEMENTATION.
   c. TEMPORARY EROSION CONTROL MEASURES MAY INCLUDE SEDGE MATS, FIBER WATTLES, SILT FENCES, JUTE MATTING, WOOD FIBER MULCH WITH SOIL BINDER, OR GEOTEXTILES AND GEOSYNTHETIC FABRIC. BIODEGRADABLE NETTING MAY BE USED SO THAT THEY CAN DECOMPOSE ON SITE.
   d. SOIL STABILIZATION UTILIZING WOOD FIBER MULCH AND TACKIFIER (HYDRO-APPLIED) MAY BE USED TO REDUCE EROSION OF BARE SOIL IF THE MATERIALS ARE NOXIOUS-WEED-FREE AND NONTOXIC TO AQUATIC AND TERRESTRIAL ANIMALS, SOIL MICROORGANISMS, AND VEGETATION.
   e. SEDIMENT WILL BE REMOVED FROM EROSION CONTROL BMP ONCE IT HAS REACHED 1/3 OF THE EXPOSED HEIGHT OF THE BMP.
   f. ONCE THE SITE IS STABILIZED FOLLOWING CONSTRUCTION, TEMPORARY EROSION CONTROL BMPS WILL BE REMOVED.
2) EMERGENCY EROSION CONTROL BMPS. THE FOLLOWING MATERIALS FOR EMERGENCY EROSION CONTROL WILL BE AVAILABLE AT THE WORK SITE:
   a. A SUPPLY OF SEDIMENT CONTROL MATERIALS; AND
   b. AN OIL-ABSORBING FLOATING BOOM WHENEVER SURFACE WATER IS PRESENT.

WILLIAM P. NORRIS — STATE OF WASHINGTON — PRELIMINARY NOT FOR CONSTRUCTION — REGISTERED PROFESSIONAL ENGINEER

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White Salmon, WA 98672 www.moreredds.com

CLIENT:
YAKAMA NATION FISHERIES PROGRAM
SOUTHERN TERRITORIES HABITAT PROJECT
PO BOX 215, KLICKITAT COUNTY, WA 98628

SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE: HIP GENERAL CONSERVATION MEASURES

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DUST ABATEMENT

THE PROJECT SPONSOR WILL DETERMINE THE APPROPRIATE DUST CONTROL MEASURES BY CONSIDERING SOIL TYPE, EQUIPMENT USAGE, PREVAILING WIND DIRECTION, AND THE EFFECTS CAUSED BY OTHER EROSION AND SEDIMENT CONTROL MEASURES. IN ADDITION, THE FOLLOWING CRITERIA WILL BE FOLLOWED:

1) WORK WILL BE SEQUENCED AND SCHEDULED TO REDUCE EXPOSED BARE SOIL SUBJECT TO WIND EROSION.

2) DUST-ABATEMENT ADDITIVES AND STABILIZATION CHEMICALS (TYPICALLY MAGNESIUM CHLORIDE, CALCIUM CHLORIDE SALTS, OR LIGNIN SULFONATE) WILL NOT BE APPLIED WITHIN 25 FEET OF A NATURAL WATERBODY OR WETLAND AND WILL BE APPLIED SO AS TO MINIMIZE THE LIKELIHOOD THAT THEY WILL ENTER STREAMS. APPLICATIONS OF LIGNIN SULFONATE WILL BE LIMITED TO A MAXIMUM RATE OF 0.5 GALLONS PER SQUARE YARD OF ROAD SURFACE, ASSUMING A 50:50 (LIGNIN SULFONATE TO WATER) SOLUTION.

3) APPLICATION OF DUST ABATEMENT CHEMICALS WILL BE AVOIDED DURING OR JUST BEFORE WET WEATHER AND AT STREAM CROSSINGS OR OTHER AREAS THAT COULD RESULT IN UNFILTERED DELIVERY OF THE DUST ABATEMENT CHEMICALS TO A WATERBODY (TYPICALLY THESE WOULD BE AREAS WITHIN 25 FEET OF A NATURAL WATERBODY OR WETLAND; DISTANCES MAY BE GREATER WHERE VEGETATION IS SPARSE OR SLOPES ARE STEEP).

4) SPILL CONTAINMENT EQUIPMENT WILL BE AVAILABLE DURING APPLICATION OF DUST ABATEMENT CHEMICALS.

PETROLEUM-BASED PRODUCTS WILL NOT BE USED FOR DUST ABATEMENT.

SPILL PREVENTION, CONTROL, AND COUNTER MEASURES

THE FOLLOWING MEASURES WILL BE USED TO PREVENT ACCIDENTAL SPILLS OF FUEL, LUBRICANTS, HYDRAULIC FLUID3, OR OTHER CONTAMINANTS INTO THE RIPARIAN ZONE OR DIRECTLY INTO THE WATER:

1) A DESCRIPTION OF HAZARDOUS MATERIALS THAT WILL BE USED, INCLUDING INVENTORY, STORAGE, AND HANDLING PROCEDURES, WILL BE AVAILABLE ON-SITE.

2) WRITTEN PROCEDURES FOR NOTIFYING ENVIRONMENTAL RESPONSE AGENCIES WILL BE POSTED AT THE WORK SITE.

3) SPILL CONTAINMENT KITS (INCLUDING INSTRUCTIONS FOR CLEANUP AND DISPOSAL) ADEQUATE FOR THE TYPES AND QUANTITY OF HAZARDOUS MATERIALS USED AT THE SITE WILL BE AVAILABLE AT THE WORK SITE.

4) WORKERS WILL BE TRAINED IN SPILL CONTAINMENT PROCEDURES AND WILL BE INFORMED OF THE LOCATION OF SPILL CONTAINMENT KITS.

5) ANY WASTE LIQUIDS GENERATED AT THE STAGING AREAS WILL BE TEMPORARILY STORED UNDER AN IMPERVIOUS COVER, SUCH AS A TARPAULIN, UNTIL THEY CAN BE PROPERLY TRANSPORTED TO, AND DISPOSED OF, AT A FACILITY THAT IS APPROVED FOR RECEIPT OF HAZARDOUS MATERIALS.

6) PUMPS USED ADJACENT TO WATER SHALL USE SPILL CONTAINMENT SYSTEMS.

INVASIVE SPECIES CONTROL

THE FOLLOWING MEASURES WILL BE FOLLOWED TO AVOID INTRODUCTION OF INVASIVE PLANTS AND NOXIOUS WEEDS INTO PROJECT AREAS:

1) PRIOR TO ENTERING THE SITE, ALL VEHICLES AND EQUIPMENT WILL BE POWER-WASHED, ALLOWED TO DRY FULLY, AND INSPECTED TO MAKE SURE NO PLANTS, SOIL, OR OTHER ORGANIC MATERIAL ADHERES TO THE SURFACE.

2) WATERCRAFT, WADERS, BOOTS, AND ANY OTHER GEAR TO BE USED IN OR NEAR WATER WILL BE INSPECTED FOR AQUATIC INVASIVE SPECIES. WADING BOOTS WITH FELT SOLES ARE NOT TO BE USED DUE TO THEIR PROPENSITY FOR AIDING IN THE TRANSFER OF INVASIVE SPECIES UNLESS DECONTAMINATION PROCEDURES ARE USED.

WORK AREA ISOLATION & FISH SALVAGE

ANY WORK AREA REQUIRING EXCAVATION OR MOBILIZATION OF SEDIMENT WITHIN THE WETTED CHANNEL WILL BE ISOLATED FROM THE ACTIVE STREAM WHENEVER ESA-LISTED FISH ARE REASONABLY CERTAIN TO BE PRESENT, OR IF THE WORK AREA IS LESS THAN 300-FEET UPSTREAM FROM KNOWN ESA-LISTED FISH SPAWNING HABITATS. IF THE WORK AREA ISOLATION PRACTICES WOULD CAUSE GREATER IMPACTS THAN IT WOULD PREVENT, IS LOCATED IN DEEP OR SWIFTLY FLOWING WATER, OR IF FISH CAN BE EFFECTIVELY EXCLUDED BY NETS OR SCREENS, THEN A VARIANCE TO NOT ISOLATE THE WORK AREA MAY BE PURSUED.

WHEN WORK AREA ISOLATION IS REQUIRED, THE CONTRACTOR SHALL INSTALL ISOLATION ELEMENTS, DEWATER PUMPING OF THE ISOLATION AREA, AND, WHEN FISH ARE PRESENT, A FISH SCREEN THAT MEETS NMFS'S FISH SCREEN CRITERIA (NMFS 20114, OR MOST CURRENT). WIDER MESH SCREENS MAY BE USED AFTER ALL FISH HAVE BEEN REMOVED FROM THE ISOLATED AREA. WORK AREA ISOLATION AND FISH CAPTURE ACTIVITIES TAKE PLACE DURING PERIODS OF THE COOLEST AIR AND WATER TEMPERATURES POSSIBLE, NORMALLY EARLY IN THE MORNING VERSUS LATE IN THE DAY, AND DURING CONDITIONS APPROPRIATE TO MINIMIZE STRESS TO FISH SPECIES PRESENT.

A FISH BIOLOGIST WILL DETERMINE HOW TO REMOVE ESA-LISTED FISH, WITH LEAST HARM TO THE FISH, BEFORE IN-WATER WORK BEGINS. THIS WILL INVOLVE EITHER PASSIVE MOVEMENT OF FISH OUT OF THE PROJECT REACH THROUGH SLOW DEWATERING, OR ACTIVELY REMOVING THE FISH FROM THE PROJECT REACH. SHOULD ACTIVE REMOVAL BE WARRANTED, A FISH BIOLOGIST WILL CLEAR THE AREA OF FISH BEFORE THE SITE IS DEWATERED USING ONE OR MORE OF A VARIETY OF METHODS INCLUDING SEINING, DIPPING, OR ELECTROFISHING, DEPENDING ON SPECIFIC SITE CONDITIONS. IN AREAS OCCUPIED BY LARVAL LAMPREY, TO THE EXTENT POSSIBLE, SALVAGE USING GUIDANCE SET FORTH IN USFWS 2010 OR MOST RECENT GUIDANCE.

DEPENDENT UPON SITE CONDITIONS, A FISH BIOLOGIST WILL CONDUCT OR SUPERVISE THE FOLLOWING:

1) SLOWLY REDUCE WATER FROM THE WORK AREA TO ALLOW SOME FISH TO LEAVE THE WORK AREA VOLITIONALLY;
   a. IF DEWATERED AREA CONTAINS LARGE FINE/ SANDY SEDIMENT DEPOSITS, LARVAL LAMPREY COULD BE PRESENT, AND POTENTIALLY IN LARGE NUMBERS. IF SO, CONSIDER ELECTROFISHING USING LAMPREY ELECTROFISHING SETTINGS (WHICH DO NOT AFFECT BONY FISH) PRIOR TO OR DURING DRAWDOWN. SEE SECTION FURTHER DOWN ON LAMPREY CONSERVATION MEASURES AND ELECTROFISHING GUIDELINES.

2) INSTALL BLOCK NETS;
   a. BLOCK NETS WILL BE INSTALLED AT UPSTREAM AND DOWNSTREAM LOCATIONS AND MAINTAINED IN A SECURED POSITION TO EXCLUDE FISH FROM ENTERING THE PROJECT AREA.
   b. BLOCK NETS WILL BE SECURED TO THE STREAM CHANNEL BED AND BANKS UNTIL FISH CAPTURE AND TRANSPORT ACTIVITIES ARE COMPLETE. BLOCK NETS MAY BE LEFT IN PLACE FOR THE DURATION OF THE PROJECT TO EXCLUDE FISH.
   c. IF BLOCK NETS REMAIN IN PLACE MORE THAN ONE DAY, THE NETS WILL BE MONITORED AT LEAST DAILY TO ENSURE THEY ARE SECURED TO THE BANKS AND FREE OF ORGANIC ACCUMULATION. IF THE PROJECT IS WITHIN BULL TROUT SPAWNING AND REARING HABITAT, THE BLOCK NETS MUST BE CHECKED EVERY 4 HOURS FOR FISH IMPINGEMENT ON THE NET. LESS FREQUENT INTERVALS MUST BE APPROVED THROUGH A VARIANCE REQUEST.
   d. NETS WILL BE MONITORED HOURLY ANYTIME THERE IS INSTREAM DISTURBANCE.

3) CAPTURE FISH THROUGH SEINING, AND RELOCATE TO STREAMS;
   a. WHILE DEWATERING, ANY REMAINING FISH WILL BE COLLECTED BY HAND OR DIP NETS.
   b. SEINES WITH A MESH SIZE TO ENSURE CAPTURE OF THE RESIDING ESA-LISTED FISH WILL BE USED.
   c. MINNOW TRAPS MAY BE LEFT IN PLACE OVERNIGHT AND USED IN CONJUNCTION WITH SEINING.

4) ELECTROFISH TO CAPTURE AND RELOCATE FISH NOT CAUGHT DURING SEINING, NMFS ELECTROFISHING GUIDELINES SHALL BE USED. THIS STEP IS TO BE USED AS A LAST RESORT; AFTER ALL PASSIVE TECHNIQUES HAVE BEEN EXHAUSTED.

5) CONTINUE TO SLOWLY DEWATER THE STREAM REACH;

6) COLLECT ANY REMAINING FISH IN COLD-WATER BUCKETS AND RELOCATE TO THE STREAM;
   a. LIMIT THE TIME FISH WOULD BE IN A TRANSPORT BUCKET , AND RELEASE THEM AS QUICKLY AS POSSIBLE;
   b. THE NUMBER OF FISH WITHIN A BUCKET WILL BE LIMITED, AND FISH WILL BE OF RELATIVELY COMPARABLE SIZE TO MINIMIZE PREDATION;
   c. AERATORS FOR BUCKETS WILL BE USED, OR THE BUCKET'S WATER WILL BE FREQUENTLY CHANGED WITH COLD, CLEAR, WATER AT 15 MINUTE, OR MORE-FREQUENT, INTERVALS.
   d. BUCKETS WILL BE KEPT IN SHADED AREAS; OR IF IN EXPOSED AREAS, COVERED BY A CANOPY.
   e. DEAD FISH WILL NOT BE STORED IN TRANSPORT BUCKETS BUT WILL BE LEFT ON THE STREAMBANK TO AVOID MORTALITY COUNTING ERRORS.

7) IF ELECTROFISHING, REFER TO HIP HANDBOOK, GENERAL CONSERVATION MEASURES, FOR SPECIES-SPECIFIC, NMFS's ELECTROFISHING GUIDELINES AND REQUIREMENTS.

DEWATERING

DEWATERING, WHEN NECESSARY, WILL BE CONDUCTED OVER A SUFFICIENT PERIOD OF TIME TO ALLOW SPECIES TO NATURALLY MIGRATE OUT OF THE WORK AREA AND WILL BE LIMITED TO THE SHORTEST LINEAR EXTENT PRACTICABLE.

1) DIVERSION AROUND THE CONSTRUCTION SITE MAY BE ACCOMPLISHED WITH A COFFERDAM AND A BY-PASS CULVERT OR PIPE, OR A LINED, NON-ERODIBLE DIVERSION DITCH. WHERE GRAVITY FEED IS NOT POSSIBLE, A PUMP MAY BE USED, BUT MUST BE OPERATED IN SUCH A WAY AS TO AVOID REPETITIVE DEWATERING AND REWATERING OF THE SITE. IMPOUNDMENT BEHIND THE COFFERDAM MUST OCCUR SLOWLY THROUGH THE TRANSITION, WHILE CONSTANT FLOW IS DELIVERED TO THE DOWNSTREAM REACHES.

2) ALL PUMPS WILL HAVE FISH SCREENS TO AVOID JUVENILE FISH IMPINGEMENT OR ENTRAINMENT, AND WILL BE OPERATED IN ACCORDANCE WITH NMFS'S CURRENT FISH SCREEN CRITERIA (NMFS 2011, OR MOST RECENT VERSION). IF THE PUMPING RATE EXCEEDS 3 CUBIC FEET PER SECOND (CFS), A NMFS ENGINEERING REVIEW WILL BE NECESSARY. IF THE SCREEN IS IN AN ISOLATED AREA WITH NO FISH (SALMONIDS OR LARVAL LAMPREY), A LARGER MESH SCREEN MAY BE USED.

3) DISSIPATION OF FLOW ENERGY AT THE BYPASS OUTFLOW WILL BE PROVIDED TO PREVENT DAMAGE TO RIPARIAN VEGETATION AND/OR STREAM CHANNEL.

4) SEEPAGE WATER WILL BE PUMPED TO A TEMPORARY STORAGE AND TREATMENT SITE OR INTO UPLAND AREAS TO ALLOW WATER TO PERCOLATE THROUGH SOIL OR TO FILTER THROUGH VEGETATION PRIOR TO REENTERING THE STREAM CHANNEL.

5) IN AREAS OCCUPIED BY LARVAL LAMPREY, TO THE EXTENT POSSIBLE, SALVAGE USING GUIDANCE DESCRIBED IN ABOVE SECTION “CONSERVATION MEASURES FOR SALVAGE OF NATIVE FISH, LAMPREY AND MUSSELS” (WHICH IS BASED ON USFWS 2010) OR MOST RECENT GUIDANCE.

6) IN AREAS OCCUPIED BY NATIVE FRESHWATER MUSSELS, TO THE EXTENT POSSIBLE, SALVAGE USING GUIDANCE DEVELOPED BY THE XERCES SOCIETY (BLEVINS ET AL. 2018, 2019).

FISH PASSAGE

FISH PASSAGE WILL BE PROVIDED FOR ANY ADULT OR JUVENILE FISH LIKELY TO BE PRESENT IN THE PROJECT AREA DURING CONSTRUCTION, UNLESS PASSAGE DID NOT EXIST BEFORE CONSTRUCTION, OR THE STREAM IS NATURALLY IMPASSABLE AT THE TIME OF CONSTRUCTION. IF THE PROVISION OF TEMPORARY FISH PASSAGE DURING CONSTRUCTION WILL INCREASE NEGATIVE EFFECTS ON ESA-LISTED SPECIES OR THEIR HABITAT, A VARIANCE CAN BE REQUESTED FROM THE NMFS BRANCH CHIEF AND THE USFWS FIELD OFFICE SUPERVISOR. PERTINENT INFORMATION, SUCH AS THE SPECIES AFFECTED, LENGTH OF STREAM REACH AFFECTED, PROPOSED TIME FOR THE PASSAGE BARRIER, AND ALTERNATIVES CONSIDERED WILL BE INCLUDED IN THE VARIANCE REQUEST.

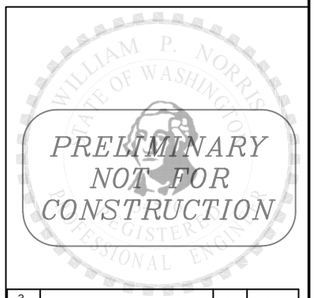
CONSTRUCTION AND DISCHARGE WATER

1) SURFACE WATER MAY BE DIVERTED TO MEET CONSTRUCTION NEEDS, BUT ONLY IF DEVELOPED SOURCES ARE UNAVAILABLE OR INADEQUATE.

2) DIVERSIONS WILL NOT EXCEED 10% OF THE AVAILABLE FLOW.

3) ALL CONSTRUCTION DISCHARGE WATER WILL BE COLLECTED AND TREATED USING THE BEST AVAILABLE TECHNOLOGY SUITABLE FOR SITE CONDITIONS.

4) TREATMENTS TO REMOVE DEBRIS, NUTRIENTS, SEDIMENT, PETROLEUM HYDROCARBONS, METALS AND OTHER POLLUTANTS LIKELY TO BE PRESENT WILL BE PROVIDED.



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YAKAMA NATION FISHERIES PROGRAM
SOUTHERN TERRITORIES HABITAT PROJECT
PO BOX 215, KLICKITAT COUNTY, WA 98628

SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
HIP GENERAL CONSERVATION MEASURES

SCALE:	DATE:	DRAWN:	CHECKED:
	3/2/23	##	##

PROJ. NO:	DRAWING NO:	Total Sheets:
-	4	18

MINIMIZE TIME AND EXTENT OF DISTURBANCE

EARTHWORK (INCLUDING DRILLING, EXCAVATION, DREDGING, FILLING AND COMPACTING) IN WHICH MECHANIZED EQUIPMENT IS USED IN STREAM CHANNELS, RIPARIAN AREAS, AND WETLANDS WILL BE COMPLETED AS QUICKLY AS POSSIBLE. MECHANIZED EQUIPMENT WILL BE USED IN STREAMS ONLY WHEN PROJECT SPECIALISTS BELIEVE THAT SUCH ACTIONS ARE THE ONLY REASONABLE ALTERNATIVE FOR IMPLEMENTATION, OR WOULD RESULT IN LESS SEDIMENT IN THE STREAM CHANNEL OR DAMAGE (SHORT- OR LONG-TERM) TO THE OVERALL AQUATIC AND RIPARIAN ECOSYSTEM RELATIVE TO OTHER ALTERNATIVES. TO THE EXTENT FEASIBLE, MECHANIZED EQUIPMENT WILL WORK FROM THE TOP OF THE BANK, UNLESS WORK FROM ANOTHER LOCATION WOULD RESULT IN LESS HABITAT DISTURBANCE.

CESSATION OF WORK

PROJECT OPERATIONS WILL CEASE UNDER THE FOLLOWING CONDITIONS:

1) HIGH FLOW CONDITIONS THAT MAY RESULT IN INUNDATION OF THE PROJECT AREA, EXCEPT FOR EFFORTS TO AVOID OR MINIMIZE RESOURCE DAMAGE

2) WHEN ALLOWABLE WATER QUALITY IMPACTS, AS DEFINED BY THE STATE CWA SECTION 401 WATER QUALITY CERTIFICATION OR HIP TURBIDITY MONITORING PROTOCOL, HAVE BEEN EXCEEDED

SITE RESTORATION

WHEN CONSTRUCTION IS COMPLETE:

1) ALL STREAMBANKS, SOILS, AND VEGETATION WILL BE CLEANED UP AND RESTORED AS NECESSARY USING STOCKPILED LARGE WOOD, TOPSOIL, AND NATIVE CHANNEL MATERIAL.

2) ALL PROJECT-RELATED WASTE WILL BE REMOVED.

3) ALL TEMPORARY ACCESS ROADS, CROSSINGS, AND STAGING AREAS WILL BE DECOMPACTED AND RE-CONTOURED. WHEN NECESSARY FOR REVEGETATION AND INFILTRATION OF WATER, COMPACTED AREAS OF SOIL WILL BE LOOSENED.

4) ALL DISTURBED AREAS WILL BE REHABILITATED IN A MANNER THAT RESULTS IN SIMILAR OR IMPROVED CONDITIONS RELATIVE TO PRE-PROJECT CONDITIONS. THIS WILL BE ACHIEVED THROUGH REDISTRIBUTION OF STOCKPILED MATERIALS, SEEDING, AND/OR PLANTING WITH LOCAL NATIVE SEED MIXES OR PLANTS.

REVEGETATION

LONG-TERM SOIL STABILIZATION OF DISTURBED SITES WILL BE ACCOMPLISHED WITH REESTABLISHMENT OF NATIVE VEGETATION USING THE FOLLOWING CRITERIA:

1) PLANTING AND SEEDING WILL OCCUR PRIOR TO OR AT THE BEGINNING OF THE FIRST GROWING SEASON AFTER CONSTRUCTION.

2) USE A MIX OF SPECIES, APPROPRIATE TO THE SITE THAT WILL ACHIEVE ESTABLISHMENT, SHADE, AND EROSION CONTROL OBJECTIVES. THESE WOULD, PREFERABLY BE FORB, GRASS, SHRUB, OR TREE SPECIES NATIVE TO THE PROJECT AREA OR REGION.

3) VEGETATION, SUCH AS WILLOW, SEDGE AND RUSH MATS, WILL BE SALVAGED FROM DISTURBED OR ABANDONED FLOODPLAINS, STREAM CHANNELS, OR WETLANDS, AND REPLANTED AT THE SITE IN APPROPRIATE LOCATIONS.

4) INVASIVE SPECIES WILL NOT BE USED.

5) SHORT-TERM STABILIZATION MEASURES MAY INCLUDE THE USE OF NON-NATIVE STERILE SEED MIX (WHEN NATIVE SEEDS ARE NOT AVAILABLE), WEED-FREE CERTIFIED STRAW, JUTE MATTING, AND OTHER SIMILAR TECHNIQUES.

6) SURFACE FERTILIZER WILL NOT BE APPLIED WITHIN 50 FEET OF ANY STREAM CHANNEL, WATERBODY, OR WETLAND.

7) FENCING WILL BE INSTALLED AS NECESSARY TO PREVENT ACCESS TO REVEGETATED SITES BY LIVESTOCK OR UNAUTHORIZED PERSONS.

8) RE-ESTABLISHMENT OF VEGETATION IN DISTURBED AREAS WILL ACHIEVE AT LEAST 70% OF PRE-PROJECT CONDITIONS WITHIN 3 YEARS.

9) INVASIVE PLANTS WILL BE REMOVED OR CONTROLLED UNTIL NATIVE PLANT SPECIES ARE WELL-ESTABLISHED (TYPICALLY 3 YEARS POST-CONSTRUCTION).

ABBREVIATIONS

APPROX	APPROXIMATE	DIA	DIAMETER	HIP	HABITAT IMPROVEMENT PROGRAM	MAX	MAXIMUM		AND SEDIMENT CONTROL
BMP	BEST MANAGEMENT PRACTICES	DBH	DIAMETER BREAST HEIGHT	HORIZ	HORIZONTAL	MIN	MINIMUM	TBD	TO BE DETERMINED
BPA	BONNEVILLE POWER ADMINISTRATION	EA	EACH	IN	INCHES	OHW	ORDINARY HIGH WATER	TYP	TYPICAL
CY	CUBIC YARDS	ELEV	ELEVATION	INV	INVERT	%	PERCENT	VERT	VERTICAL
		FT	FEET	LWM	LARGE WOODY MATERIAL	RM	RIVER MILE	WSE	WATER SURFACE ELEVATION
						STA	STATION		
						TESC	TEMPORARY EROSION	YR	YEAR

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SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE: HIP GENERAL CONSERVATION MEASURES

SCALE:	DATE:	DRAWN:	CHECKED:
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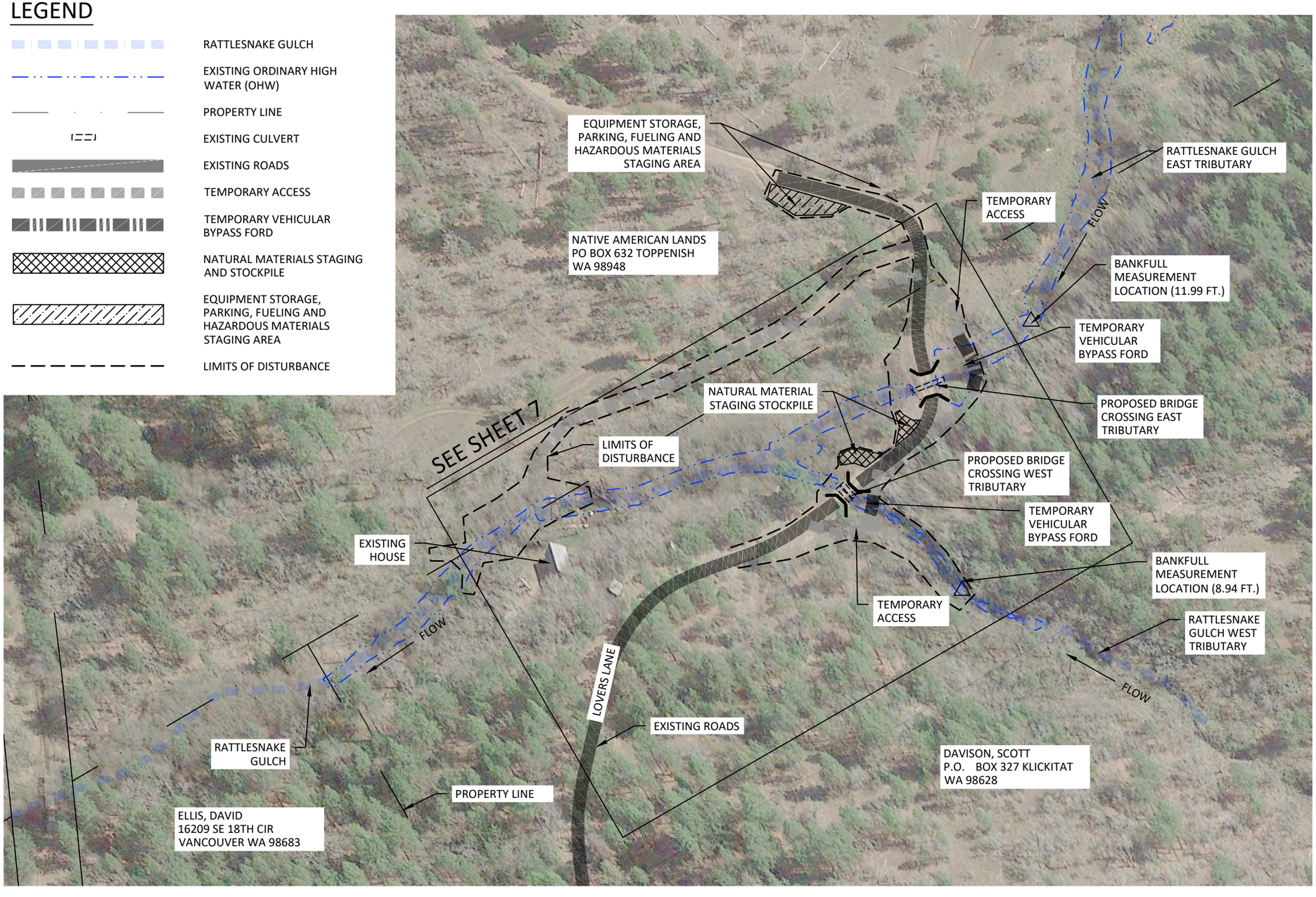
LEGEND

- RATTLESNAKE GULCH
- EXISTING ORDINARY HIGH WATER (OHW)
- PROPERTY LINE
- EXISTING CULVERT
- EXISTING ROADS
- TEMPORARY ACCESS
- TEMPORARY VEHICULAR BYPASS FORD
- NATURAL MATERIALS STAGING AND STOCKPILE
- EQUIPMENT STORAGE, PARKING, FUELING AND HAZARDOUS MATERIALS STAGING AREA
- LIMITS OF DISTURBANCE



N

0 100 200 Feet

NOTE:
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SITE PLAN - EXISTING CONDITIONS

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SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE: SITE MAP - EXISTING CONDITIONS, ACCESS, AND STAGING

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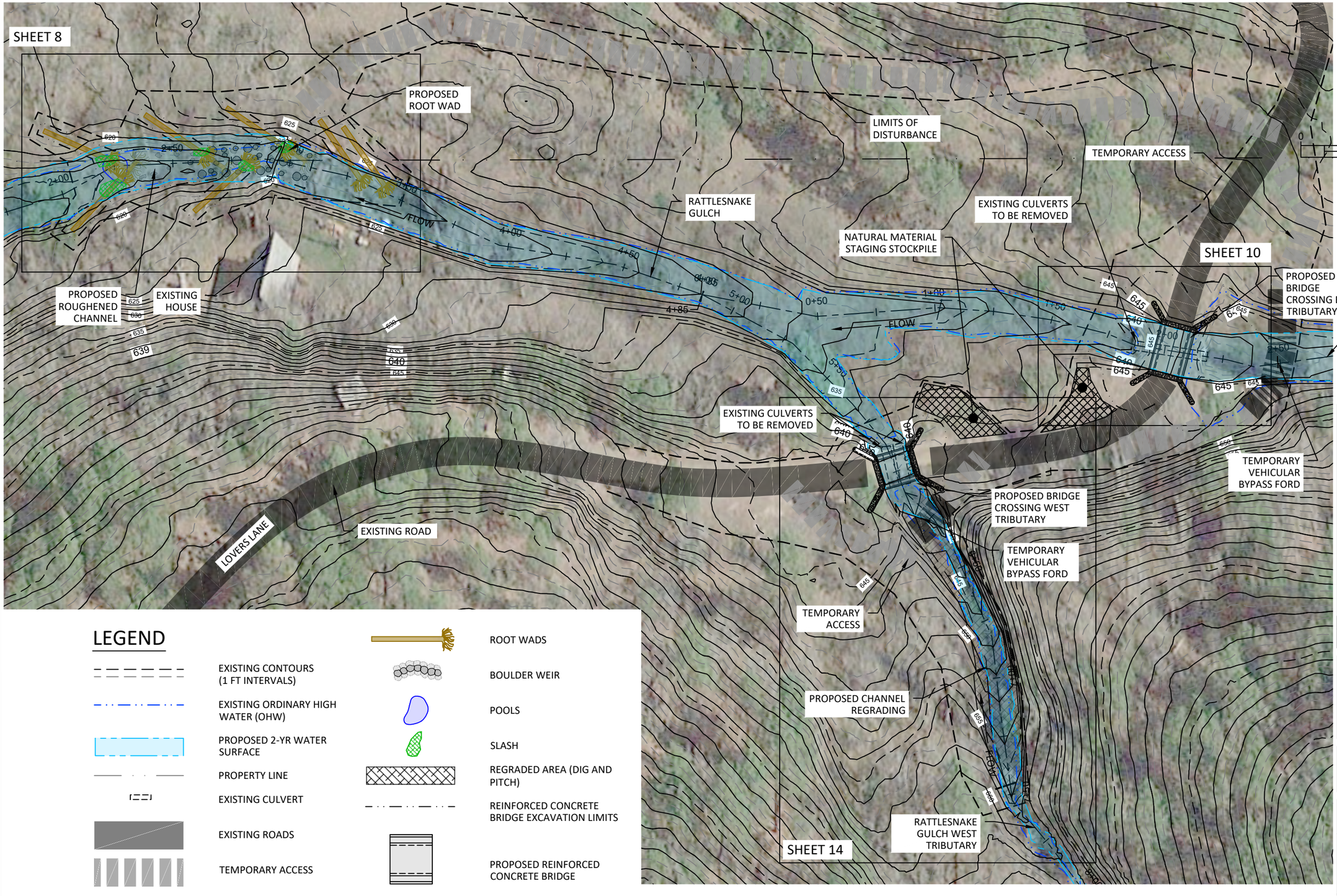

NOTE:
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LEGEND

- EXISTING CONTOURS (1 FT INTERVALS)
- EXISTING ORDINARY HIGH WATER (OHW)
- PROPOSED 2-YR WATER SURFACE
- PROPERTY LINE
- EXISTING CULVERT
- EXISTING ROADS
- TEMPORARY ACCESS
- STAGING AND STOCKPILE
- LIMITS OF DISTURBANCE
- ROOT WADS
- BOULDER WEIR
- POOLS
- SLASH
- REGRADED AREA (DIG AND PITCH)
- REINFORCED CONCRETE BRIDGE EXCAVATION LIMITS
- PROPOSED REINFORCED CONCRETE BRIDGE
- TEMPORARY VEHICULAR BYPASS FORD

SITE PLAN - PROPOSED CONDITIONS

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ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE: SITE MAP - PROPOSED CONDITIONS

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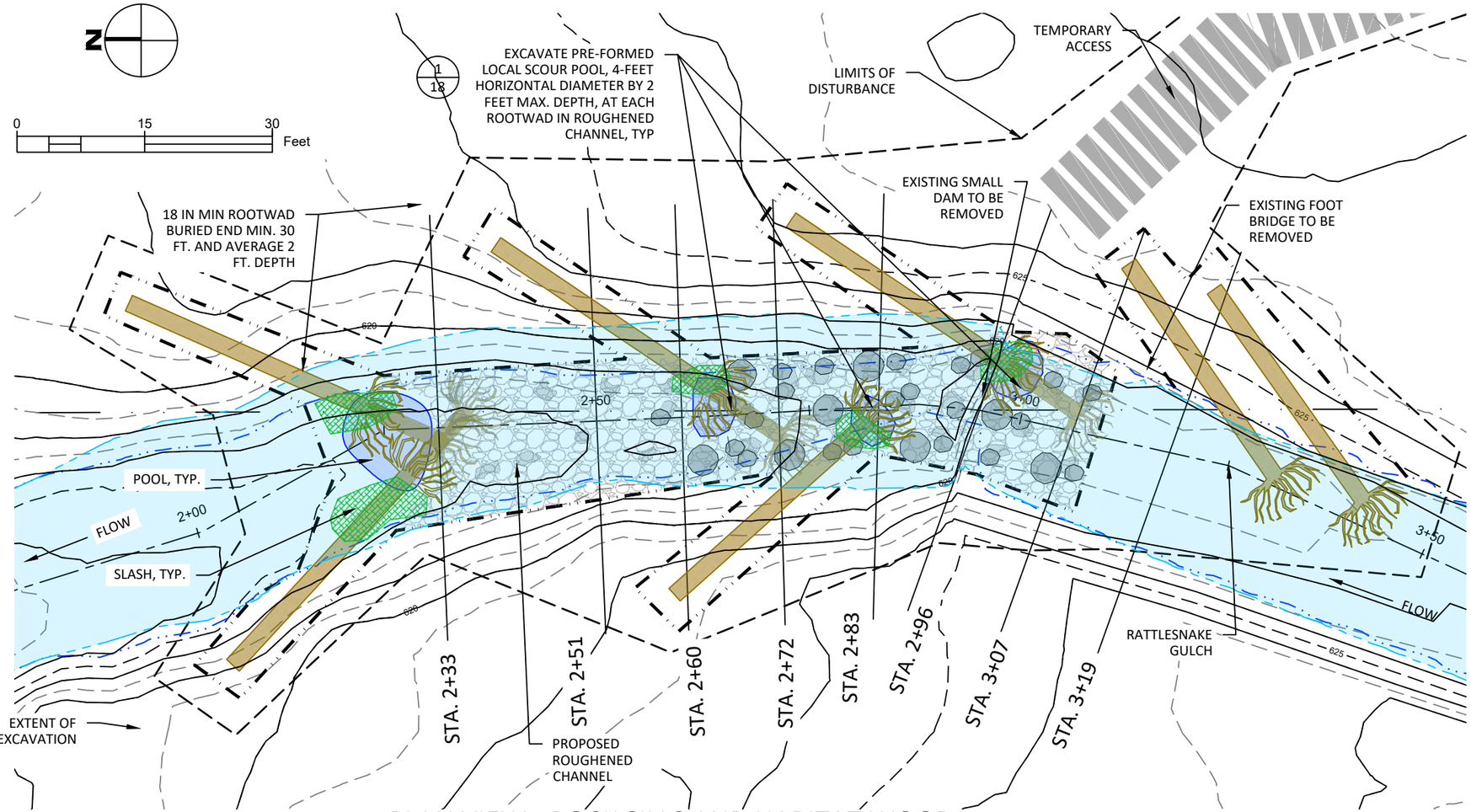
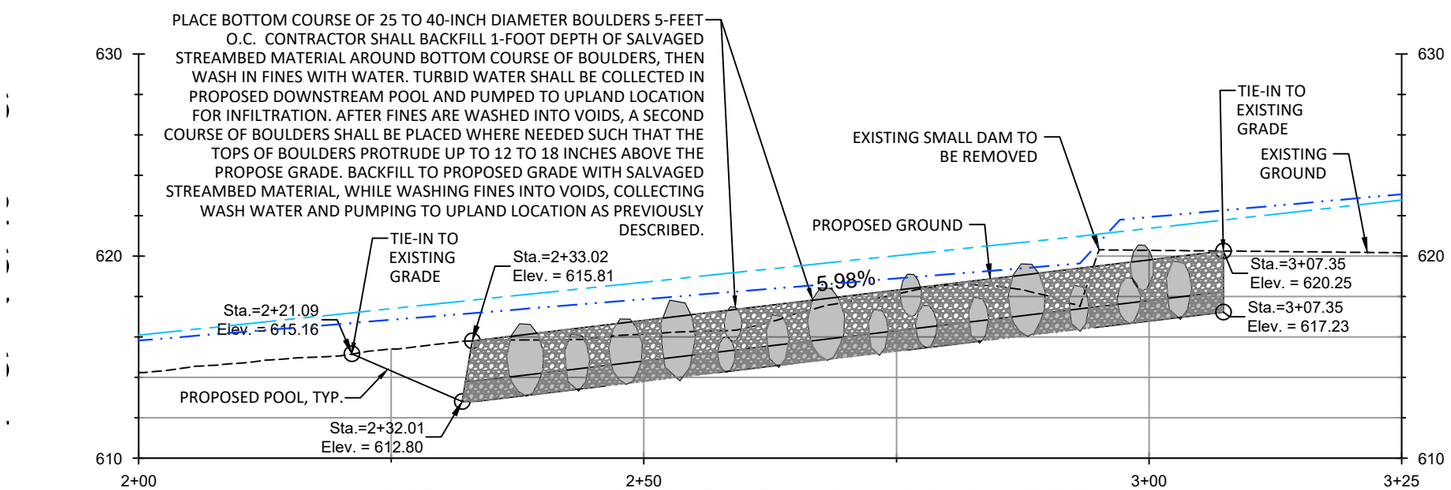


PLAN VIEW - ROCK SILLS AND HABITAT WOOD



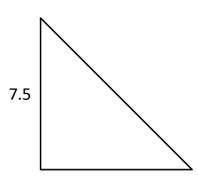
PROFILE VIEW - ROCK SILLS AND HABITAT WOOD

LEGEND

- EXISTING CONTOURS (1 FOOT INTERVAL)
- EXISTING ORDINARY HIGH WATER (OHW)
- PROPOSED 2-YR WATER SURFACE
- EXISTING ROADS
- TEMPORARY ACCESS
- LIMITS OF DISTURBANCE
- EXTENT OF EXCAVATION
- ROOT WADS
- PROPOSED ROUGHENED CHANNEL
- BOULDERS
- POOLS
- SLASH

LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- EXISTING ORDINARY HIGH WATER (OHW)
- PROPOSED 2YR WATER SURFACE
- BOULDER WEIR



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SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE: PLAN & PROFILE - DOWNSTREAM ROCK SILL

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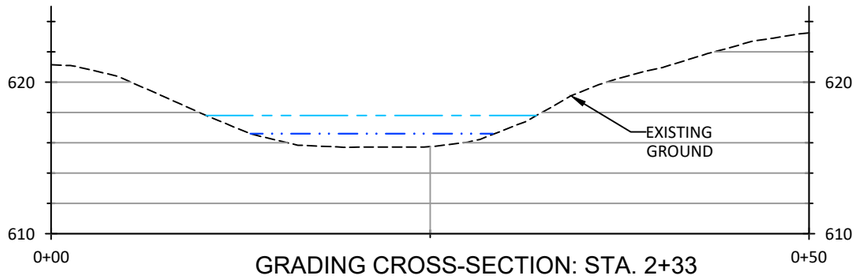

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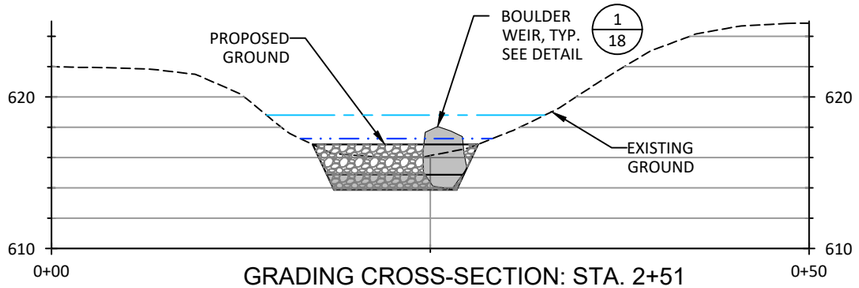

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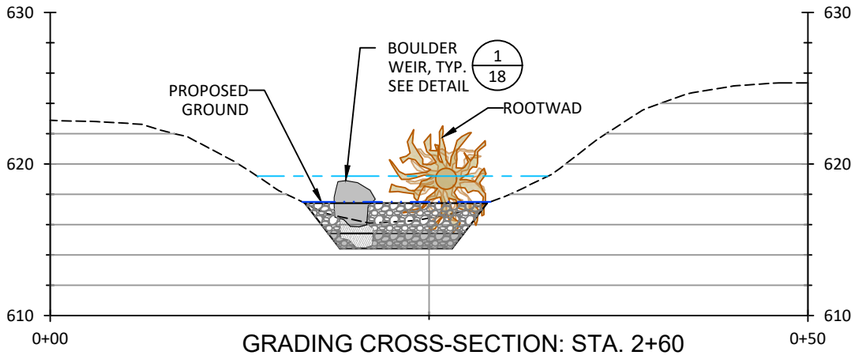

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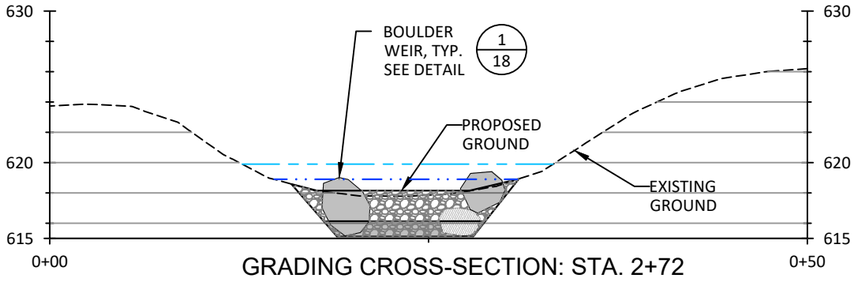

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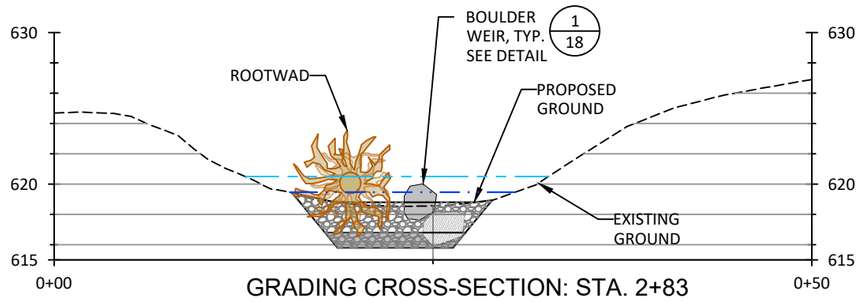

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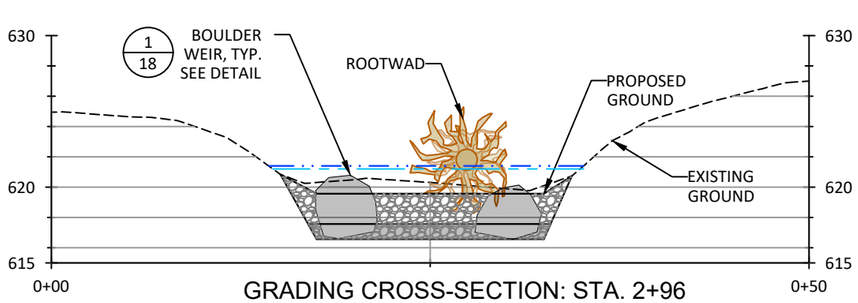

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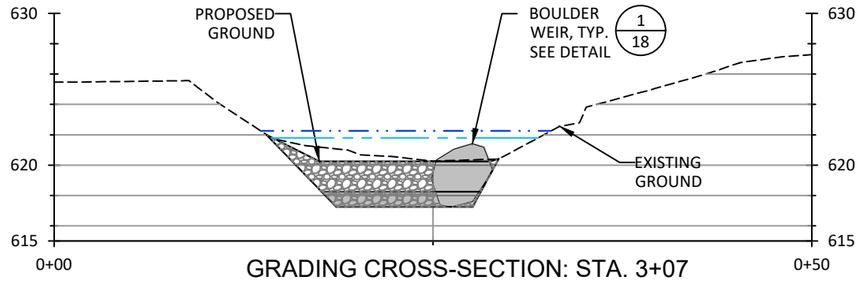

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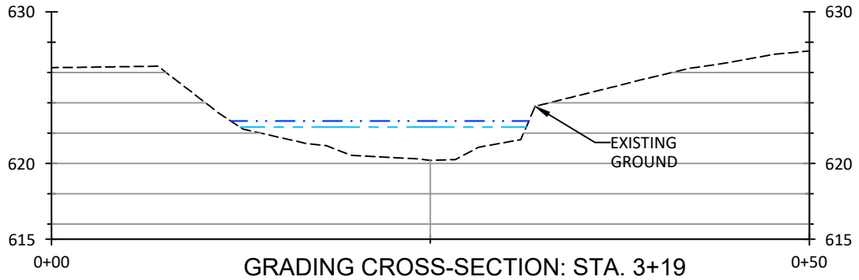
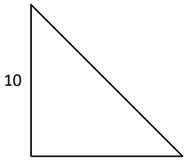


GRADING CROSS-SECTION: STA. 3+19

NOTE:
PLACE BOTTOM COURSE OF 25 TO 40-INCH DIAMETER BOULDERS 5-FEET O.C. CONTRACTOR SHALL BACKFILL 1-FOOT DEPTH OF SALVAGED STREAMBED MATERIAL AROUND BOTTOM COURSE OF BOULDERS, THEN WASH IN FINES WITH WATER. TURBID WATER SHALL BE COLLECTED IN PROPOSED DOWNSTREAM POOL AND PUMPED TO UPLAND LOCATION FOR INFILTRATION. AFTER FINES ARE WASHED INTO VOIDS, A SECOND COURSE OF BOULDERS SHALL BE PLACED WHERE NEEDED SUCH THAT THE TOPS OF BOULDERS PROTRUDE UP TO 12 TO 18 INCHES ABOVE THE PROPOSE GRADE. BACKFILL TO PROPOSED GRADE WITH SALVAGED STREAMBED MATERIAL, WHILE WASHING FINES INTO VOIDS, COLLECTING WASH WATER AND PUMPING TO UPLAND LOCATION AS PREVIOUSLY DESCRIBED.

LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- EXISTING ORDINARY HIGH WATER (OHW)
- PROPOSED 2YR WATER SURFACE
- PROPOSED ROOTWAD
- PROPOSED BOULDER WEIRS



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SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE:
CROSS-SECTION -
DOWNSTREAM ROCK SILL

SCALE:	DATE:	DRAWN:	CHECKED:
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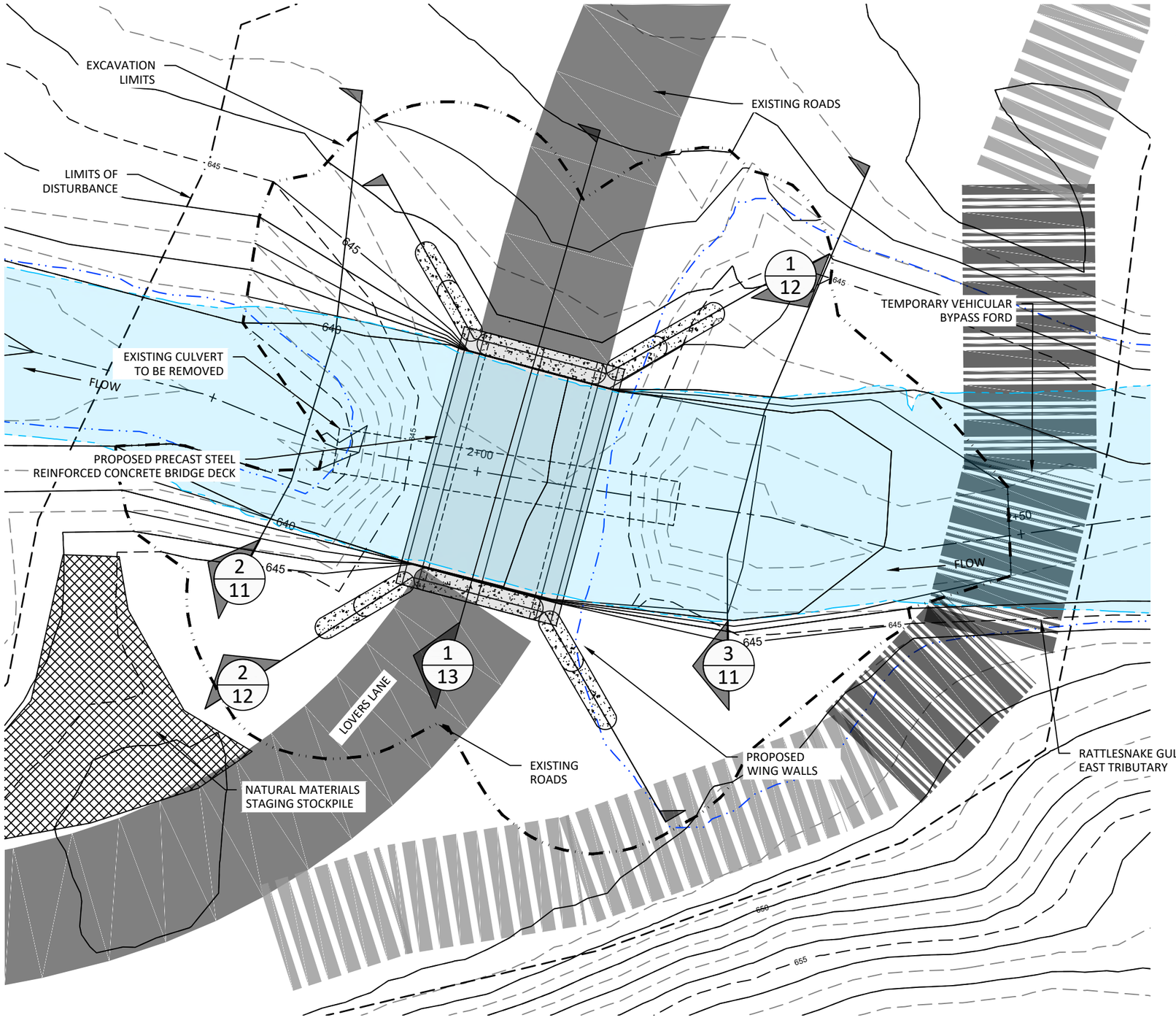

PLAN VIEW - EAST TRIBUTARY BRIDGE CROSSING

LEGEND

- RATTLESNAKE GULCH
- EXISTING CONTOURS (1 FOOT INTERVAL)
- PROPOSED CONTOURS (1 FOOT INTERVAL)
- EXISTING ORDINARY HIGH WATER (OHW)
- PPROPOSED 2YR WATER SURFACE
- ROPERTY LINE
- EXISTING CULVERT
- EXISTING ROADS
- PROPOSED 2YR INUNDATION
- REGRADE CHANNEL BED (DIG & PITCH)
- LIMITS OF DISTURBANCE
- REINFORCED CONCRETE BRIDGE EXCAVATION LIMITS
- PROPOSED REINFORCED CONCRETE BRIDGE
- TEMPORARY VEHICULAR BYPASS FORD
- TEMPORARY ACCESS ROAD

N

0 10 20 Feet

WILLIAM P. NORRIS STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER

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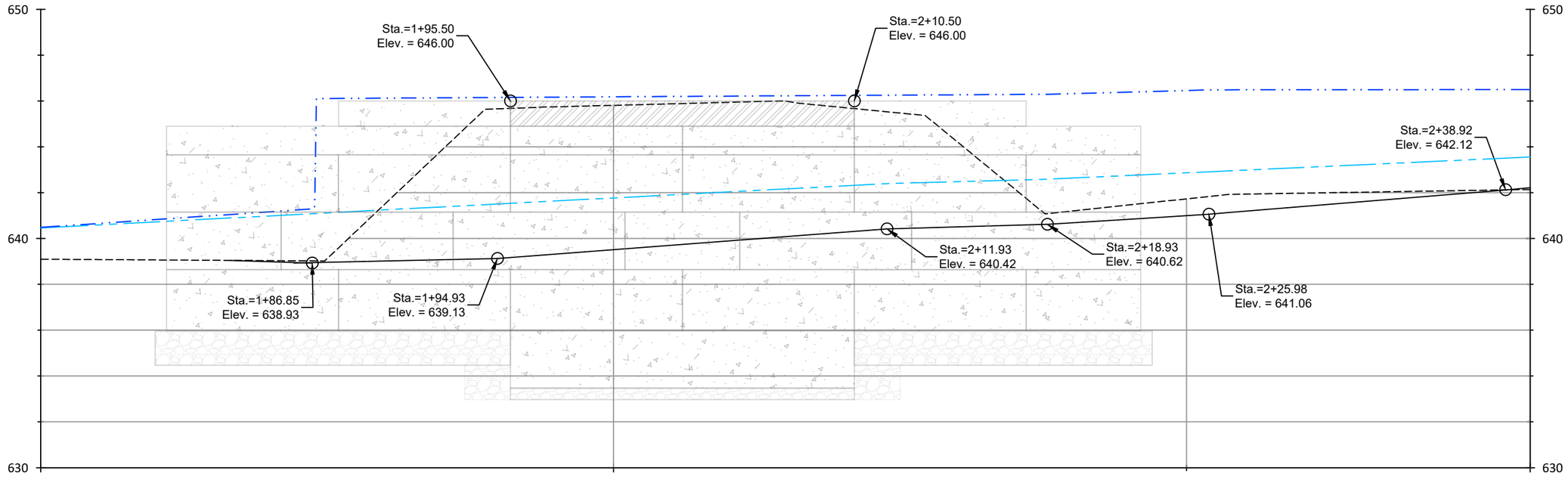
SOUTHERN TERRITORIES HABITAT PROJECT
PO BOX 215, KLICKITAT COUNTY, WA 98628

SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

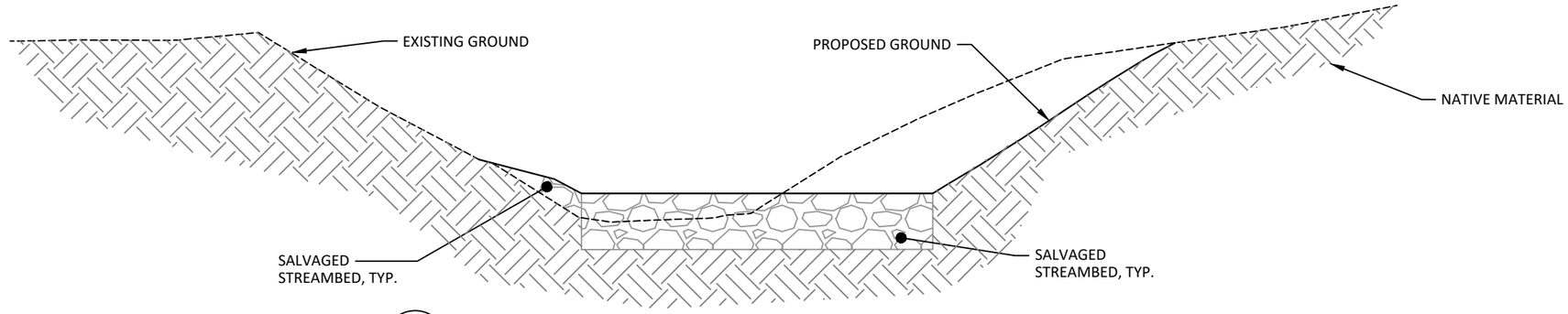
TITLE: PLAN & PROFILE - EAST TRIBUTARY BRIDGE CROSSING

SCALE:	DATE:	DRAWN:	CHECKED:
	3/2/23	##	##

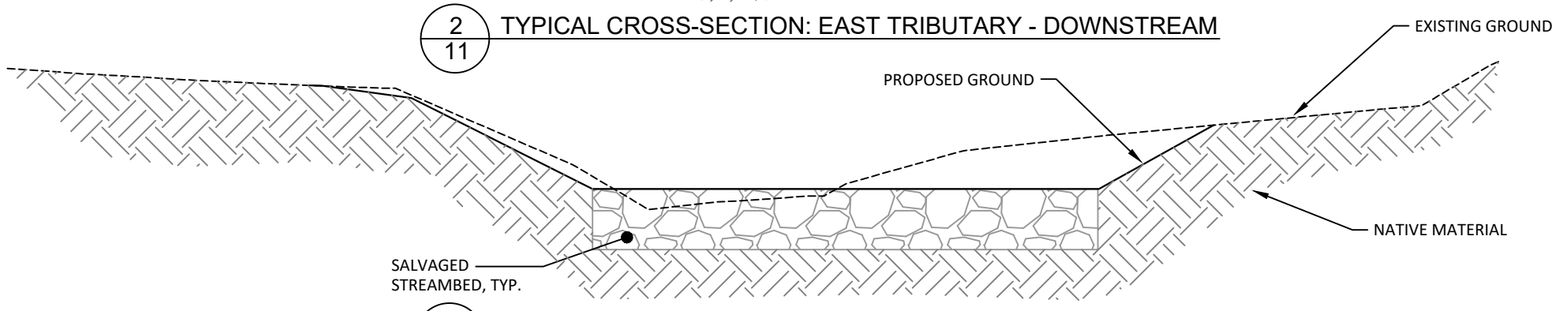
PROJ. NO:	DRAWING NO:	Total Sheets:
-	10	18



1/11 TYPICAL CROSS-SECTION: EAST TRIBUTARY - PROFILE



2/11 TYPICAL CROSS-SECTION: EAST TRIBUTARY - DOWNSTREAM



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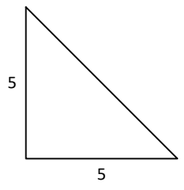
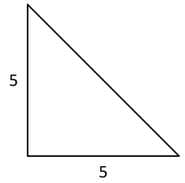


NOTE:
ALL CROSS-SECTIONS ARE ORIENTED LOOKING DOWNSTREAM FROM LEFT TO RIGHT.

LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- EXISTING ORDINARY HIGH WATER (OHW)
- PROPOSED 2YR WATER SURFACE



REV:	DESCRIPTION:	BY:	DATE:
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SITE: SWALE CREEK TRIBUTARIES
ROAD CROSSINGS AND HABITAT IMPROVEMENT

TITLE: CROSS-SECTIONS - EAST TRIBUTARY BRIDGE CROSSING

SCALE:	DATE:	DRAWN:	CHECKED:
	3/2/23	##	##

PROJ. NO:	DRAWING NO:	Total Sheets:
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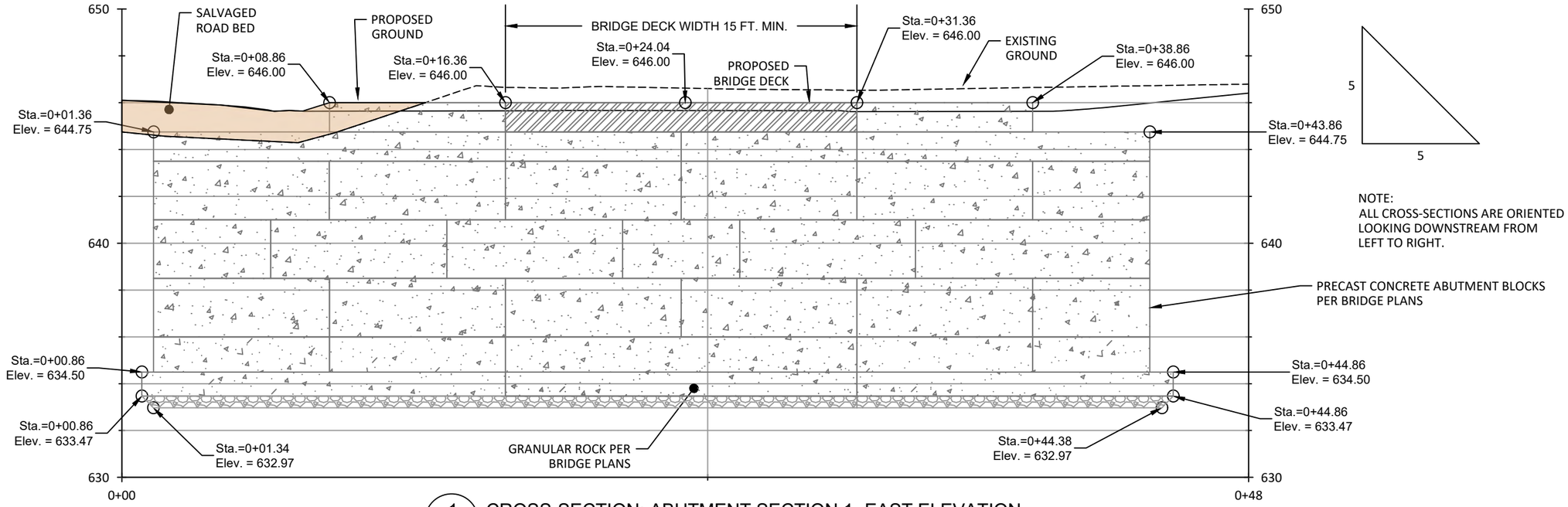
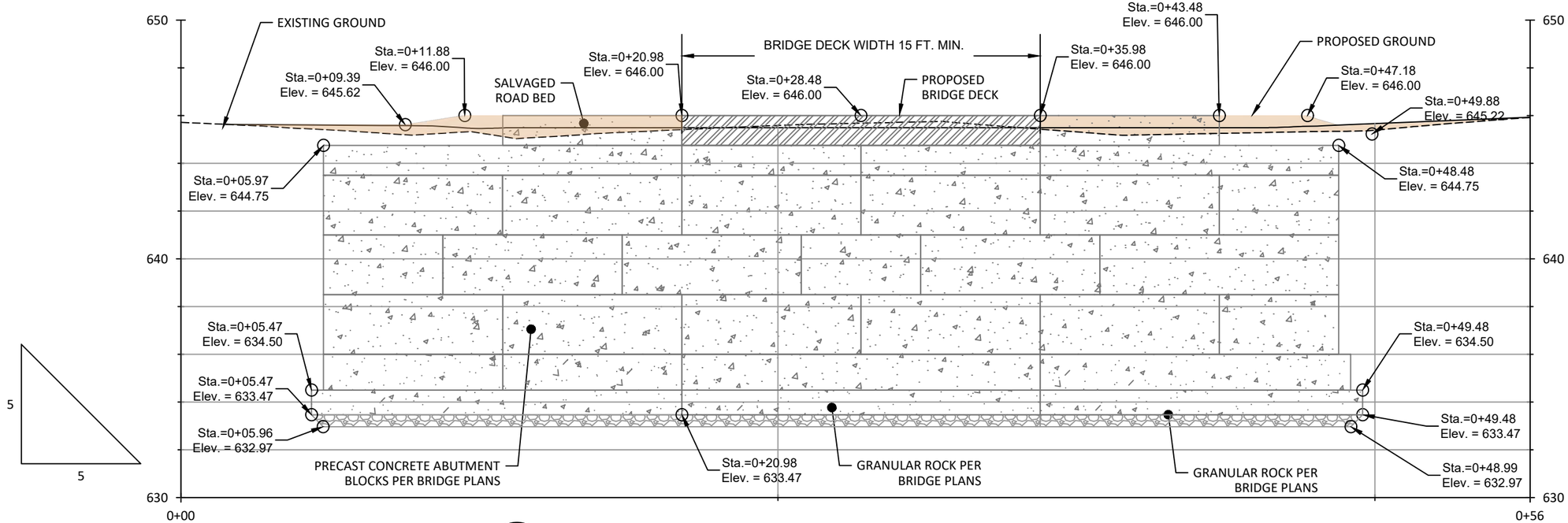


1/12 CROSS-SECTION: ABUTMENT SECTION 1- EAST ELEVATION



2/12 CROSS-SECTION: ABUTMENT SECTION 1- EAST ELEVATION

PRELIMINARY NOT FOR CONSTRUCTION

REV:	DESCRIPTION:	BY:	DATE:
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TITLE: ABUTMENT SECTIONS - EAST TRIBUTARY

SCALE:	DATE:	DRAWN:	CHECKED:
	3/2/23	##	##
PROJ. NO:	DRAWING NO:		Total Sheets:
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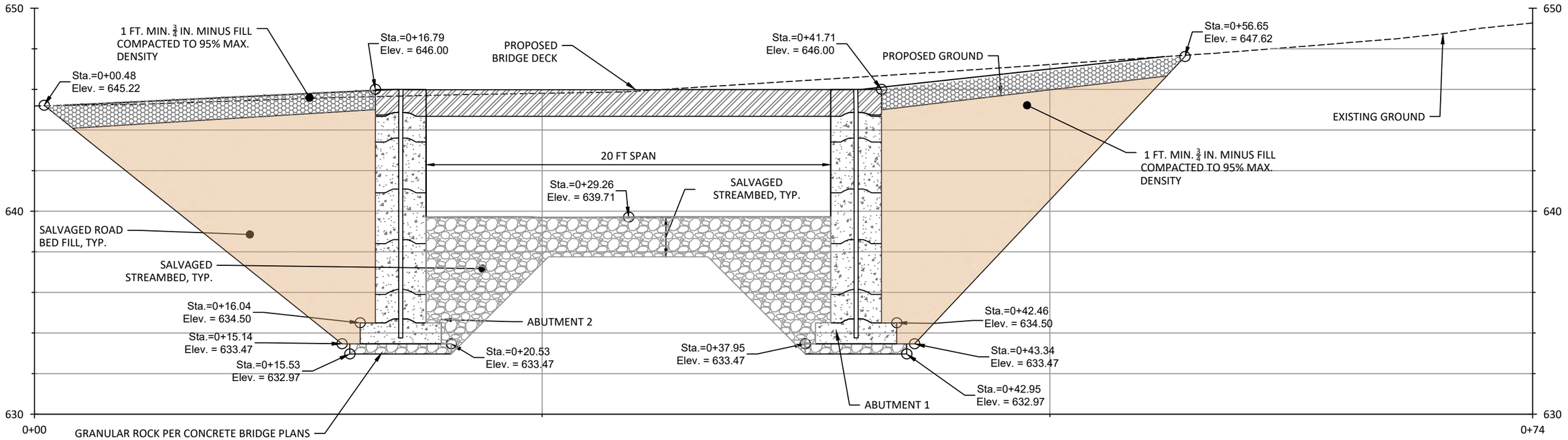
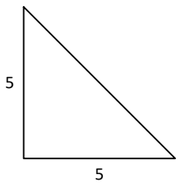


1/13 CROSS-SECTION: EAST TRIBUTARY ROAD CROSSING



NOTE:
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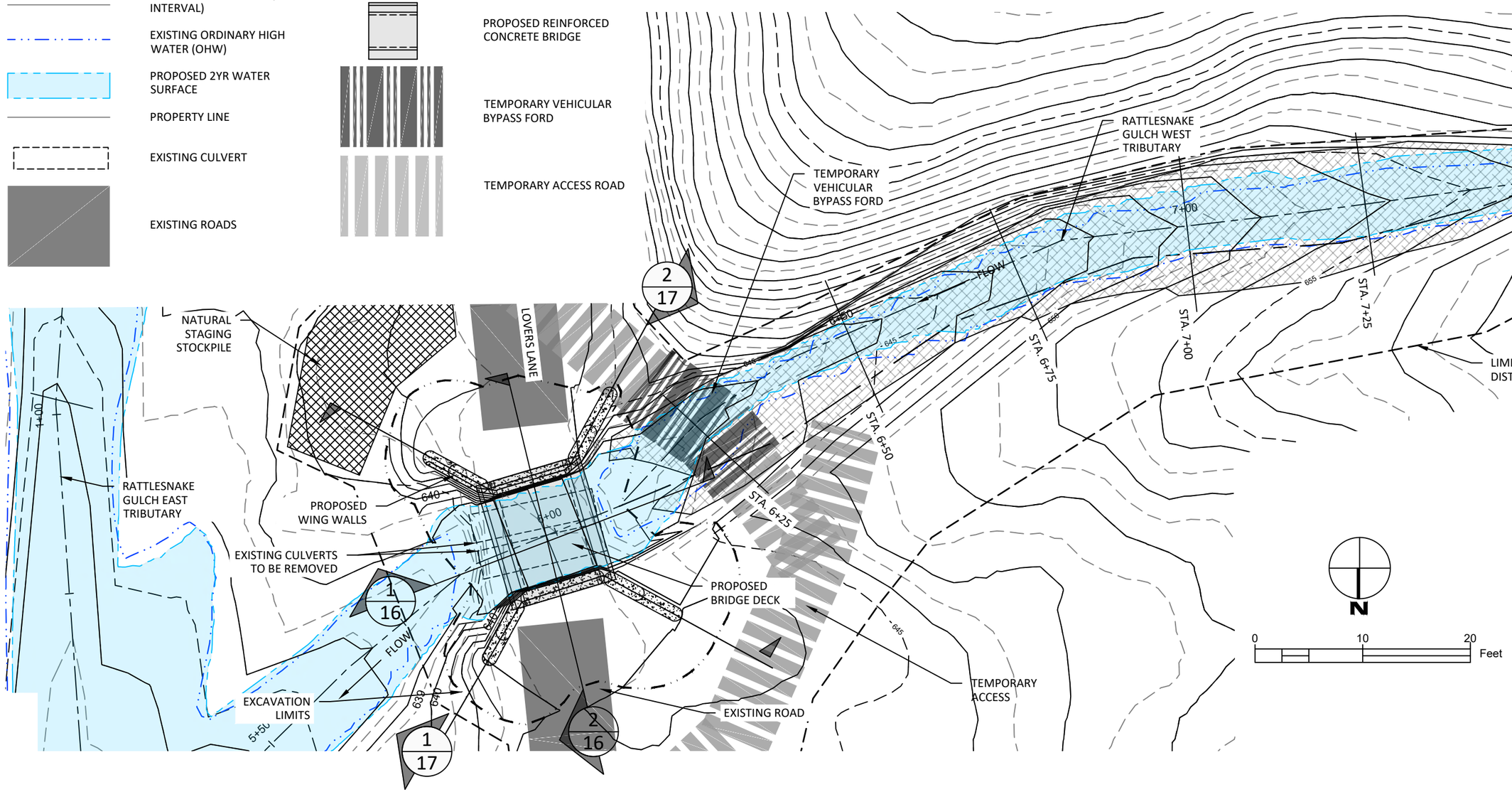
TITLE: CROSS-SECTIONS - EAST TRIBUTARY BRIDGE CROSSING

SCALE:	DATE:	DRAWN:	CHECKED:
	3/2/23	##	##

PROJ. NO:	DRAWING NO:	Total Sheets:
-	13	18

LEGEND

- RATTLESNAKE GULCH
- EXISTING CONTOURS (1 FOOT INTERVAL)
- PROPOSED CONTOURS (1 FOOT INTERVAL)
- EXISTING ORDINARY HIGH WATER (OHW)
- PROPOSED 2YR WATER SURFACE
- PROPERTY LINE
- EXISTING CULVERT
- EXISTING ROADS
- REGRADE CHANNEL BED (DIG & PITCH)
- LIMITS OF DISTURBANCE
- REINFORCED CONCRETE BRIDGE EXCAVATION LIMITS
- PROPOSED REINFORCED CONCRETE BRIDGE
- TEMPORARY VEHICULAR BYPASS FORD
- TEMPORARY ACCESS ROAD



PLAN VIEW - WEST TRIBUTARY BRIDGE CROSSING

PRELIMINARY NOT FOR CONSTRUCTION

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TITLE: PLAN & PROFILE - WEST TRIBUTARY BRIDGE CROSSING

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	3/2/23	##	##

PROJ. NO:	DRAWING NO:	Total Sheets:
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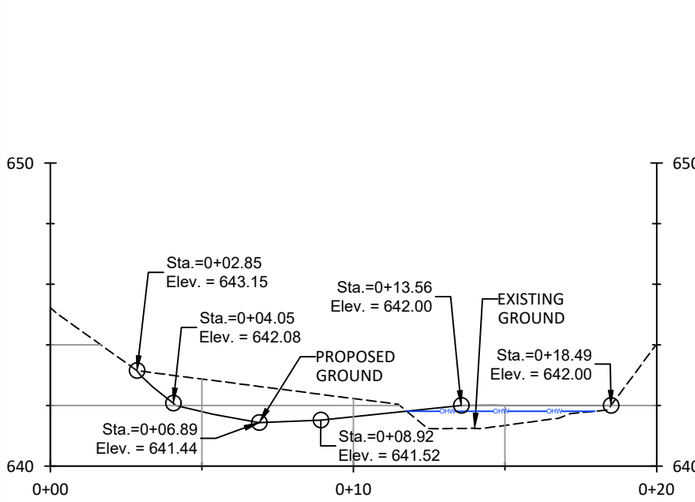
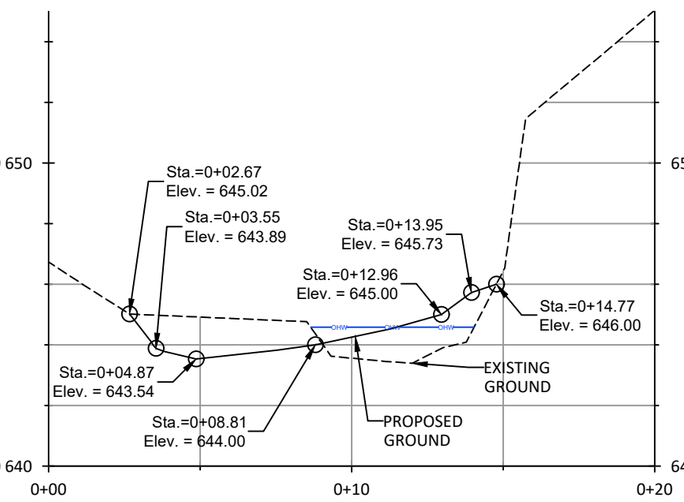
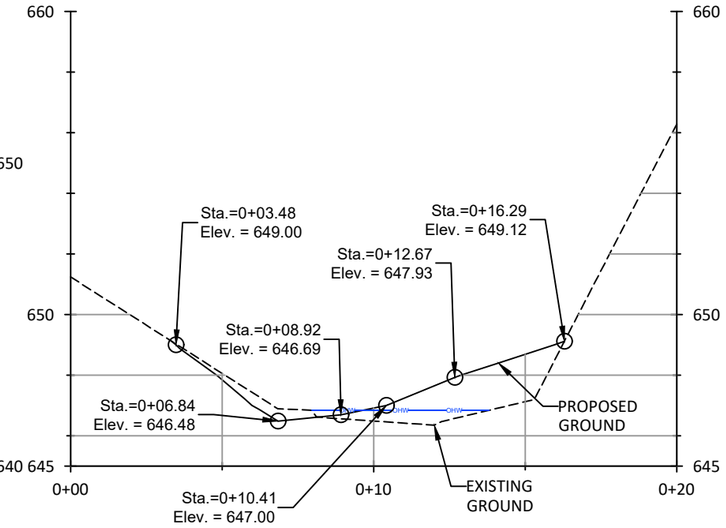


1/14 GRADING CROSS-SECTION: STA. 6+25



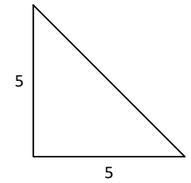
2/14 GRADING CROSS-SECTION: STA. 6+50



3/14 GRADING CROSS-SECTION: STA. 6+75

LEGEND

- EXISTING GROUND
- PROPOSED GROUND
- EXISTING ORDINARY HIGH WATER (OHW)



NOTE:
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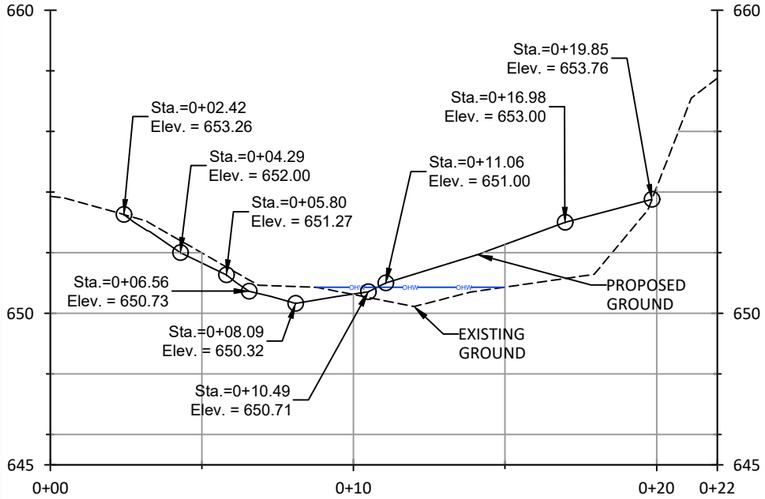
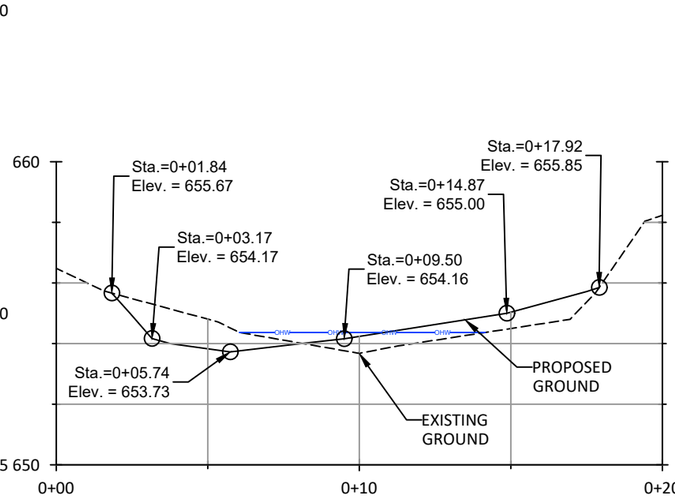
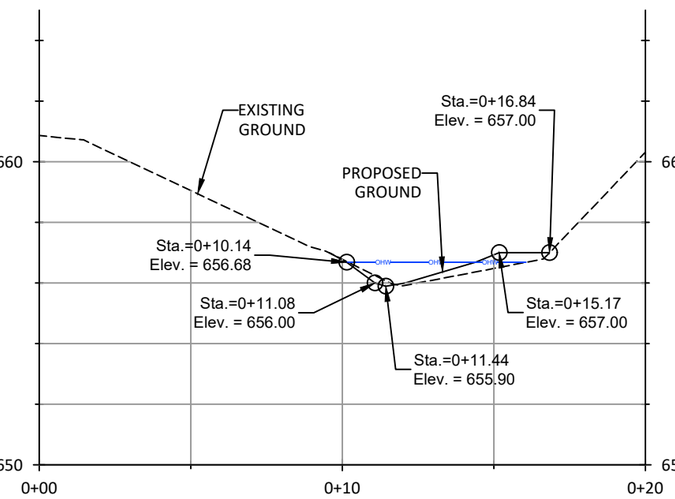


4/14 GRADING CROSS-SECTION: STA. 7+00



5/14 GRADING CROSS-SECTION: STA. 7+25



6/14 GRADING CROSS-SECTION: STA. 7+50

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SITE: SWALE CREEK TRIBUTARIES
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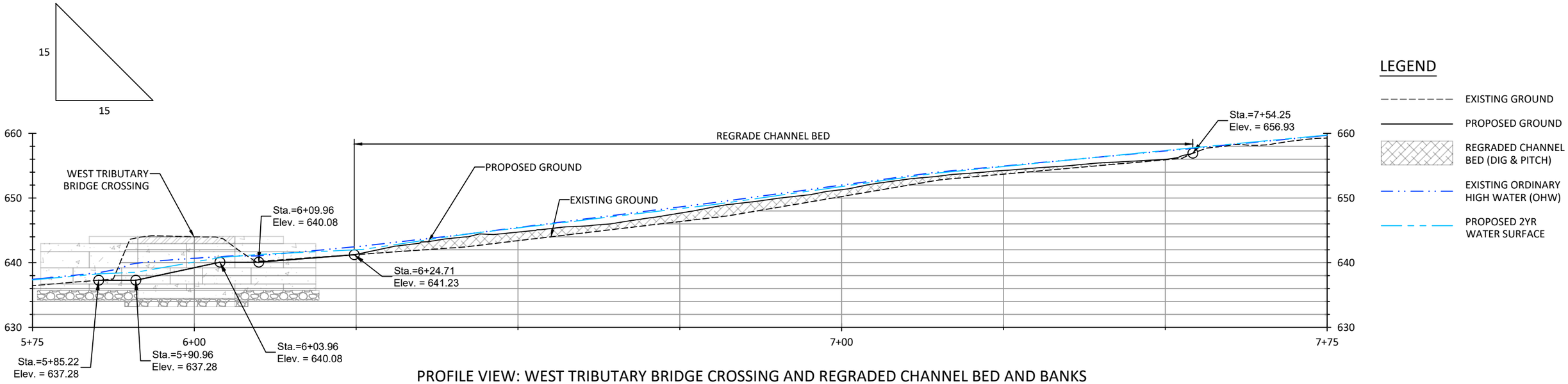
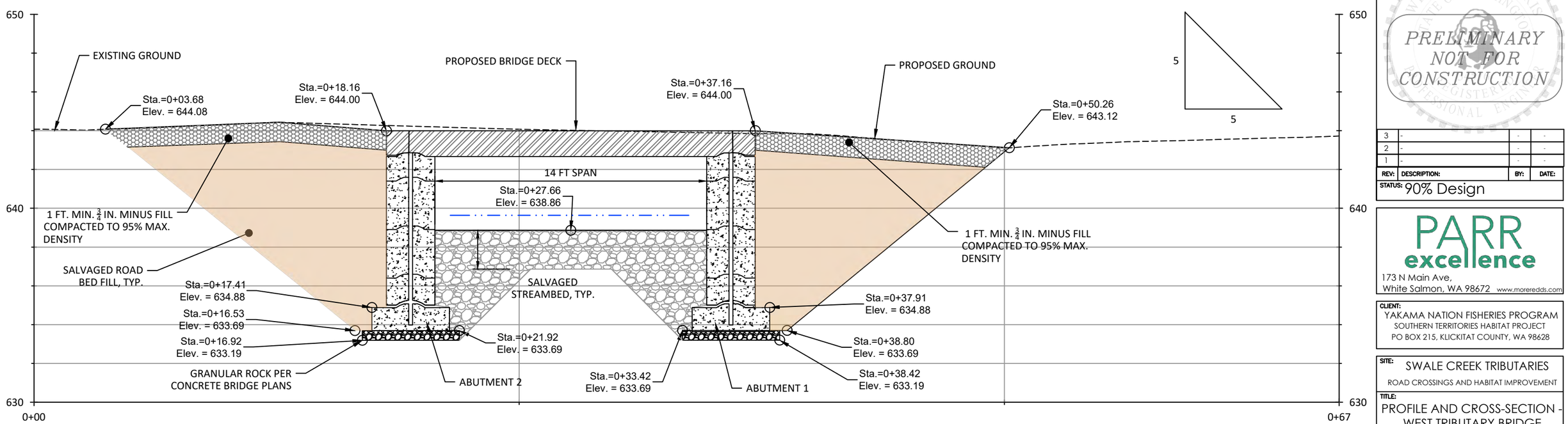
TITLE: CROSS-SECTIONS - WEST TRIBUTARY BRIDGE CROSSING

SCALE:	DATE:	DRAWN:	CHECKED:
	3/2/23	##	##

PROJ. NO:	DRAWING NO:	Total Sheets:
-	15	18



PROFILE VIEW: WEST TRIBUTARY BRIDGE CROSSING AND REGRADED CHANNEL BED AND BANKS



NOTE:
ALL CROSS-SECTIONS ARE ORIENTED LOOKING DOWNSTREAM FROM LEFT TO RIGHT.

2/16 CROSS-SECTION: WEST TRIBUTARY ROAD CROSSING

PRELIMINARY NOT FOR CONSTRUCTION

REV:	DESCRIPTION:	BY:	DATE:
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TITLE: PROFILE AND CROSS-SECTION - WEST TRIBUTARY BRIDGE CROSSING

SCALE:	DATE:	DRAWN:	CHECKED:
	3/2/23	##	##

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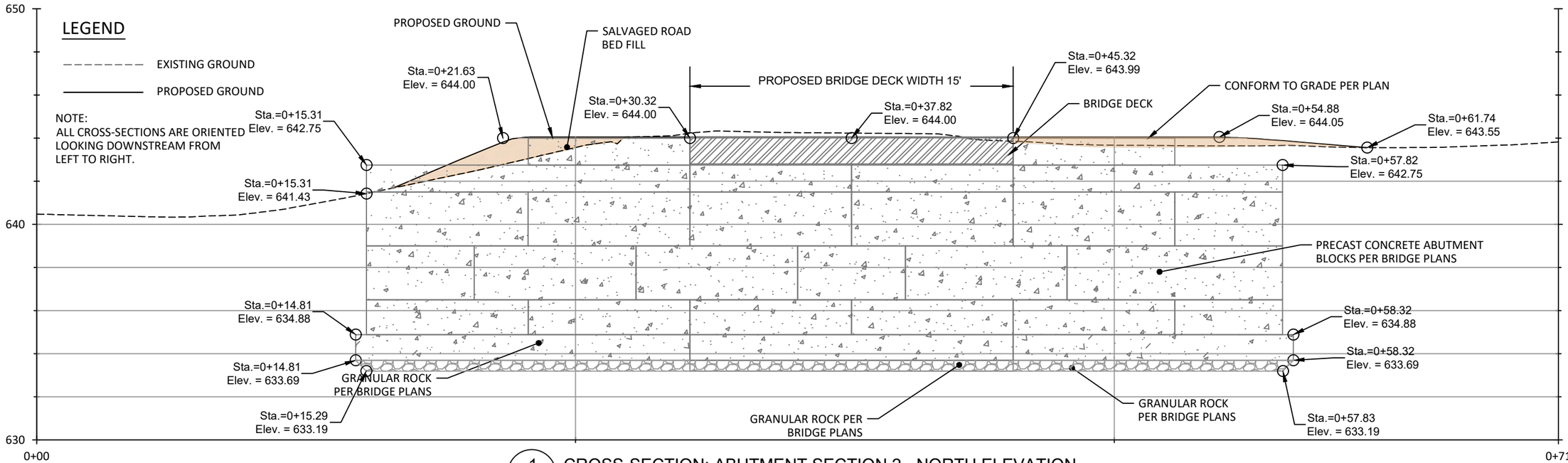
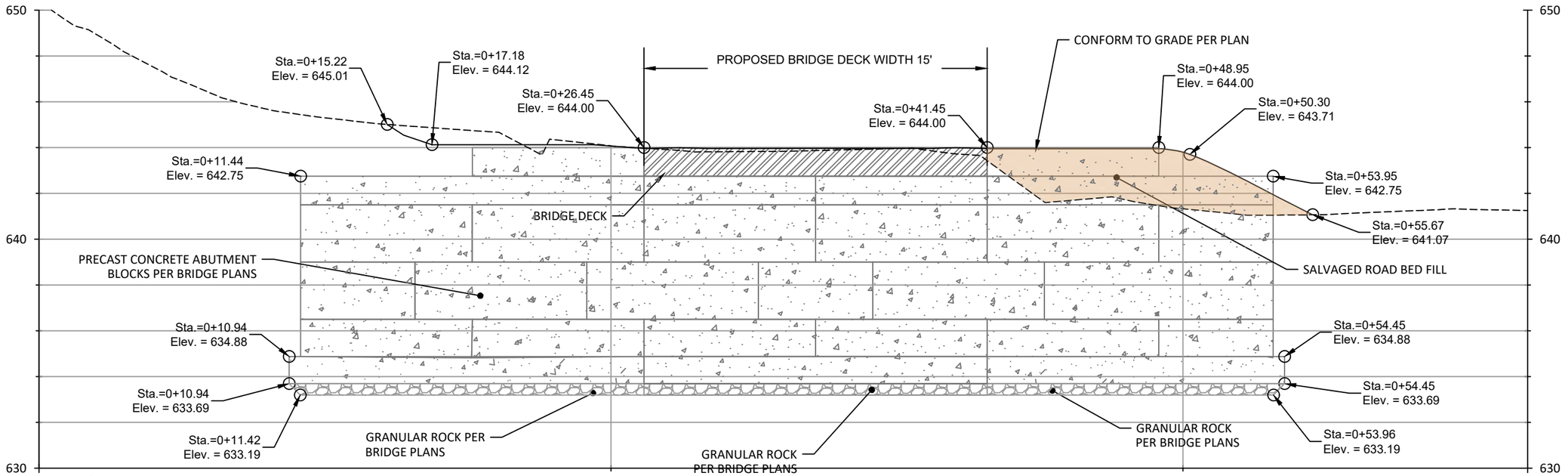


1/17 CROSS-SECTION: ABUTMENT SECTION 2 - NORTH ELEVATION



2/17 CROSS-SECTION: ABUTMENT SECTION 1 - SOUTH ELEVATION

PRELIMINARY NOT FOR CONSTRUCTION

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TITLE: ABUTMENT SECTIONS - WEST TRIBUTARY

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PROJ. NO:	DRAWING NO:	Total Sheets:
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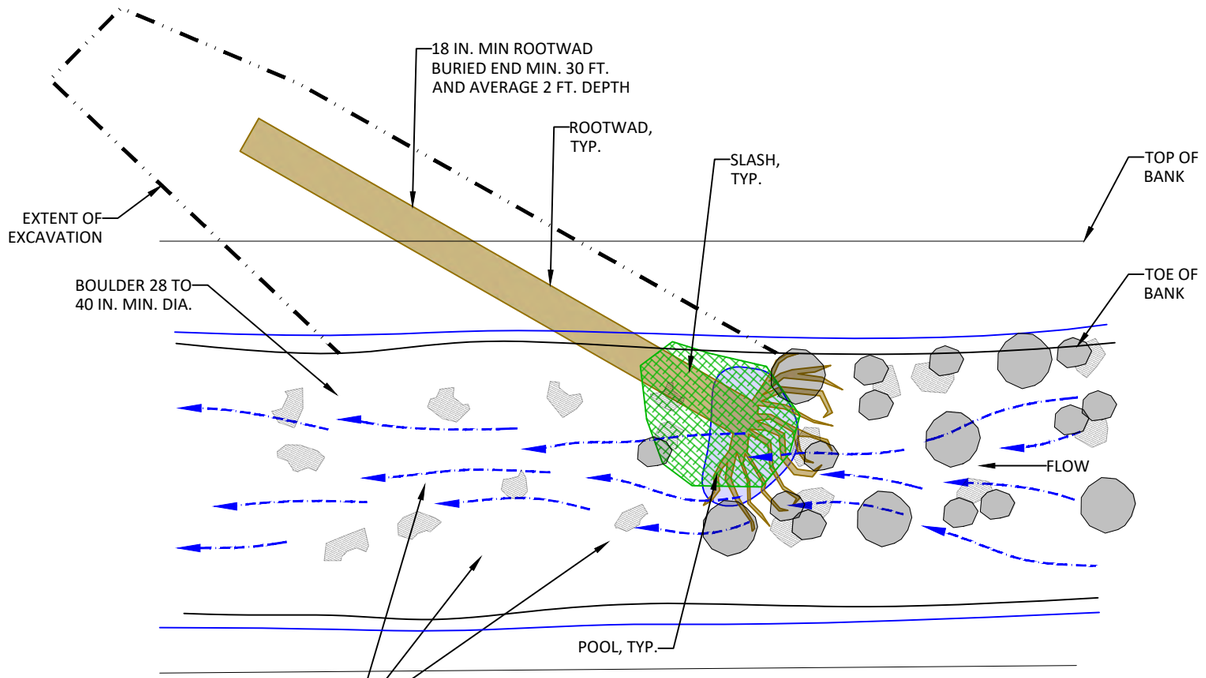

PLACE BOTTOM COURSE OF 25 TO 40-INCH DIAMETER BOULDERS 5-FEET O.C. CONTRACTOR SHALL BACKFILL 1-FOOT DEPTH OF SALVAGED STREAMBED MATERIAL AROUND BOTTOM COURSE OF BOULDERS, THEN WASH IN FINES WITH WATER. TURBID WATER SHALL BE COLLECTED IN PROPOSED DOWNSTREAM POOL AND PUMPED TO UPLAND LOCATION FOR INFILTRATION. AFTER FINES ARE WASHED INTO VOIDS, A SECOND COURSE OF BOULDERS SHALL BE PLACED WHERE NEEDED SUCH THAT THE TOPS OF BOULDERS PROTRUDE UP TO 12 TO 18 INCHES ABOVE THE PROPOSE GRADE. BACKFILL TO PROPOSED GRADE WITH SALVAGED STREAMBED MATERIAL, WHILE WASHING FINES INTO VOIDS, COLLECTING WASH WATER AND PUMPING TO UPLAND LOCATION AS PREVIOUSLY DESCRIBED.

PLAN VIEW

1/18 TYPICAL DETAIL: POOL ASSOCIATED WITH ROUGHEND CHANNEL

NOT TO SCALE

REV:	DESCRIPTION:	BY:	DATE:
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TITLE: TYPICAL DETAILS - BOULDER WEIR

SCALE:	DATE:	DRAWN:	CHECKED:
	3/3/23	##	##

PROJ. NO:	DRAWING NO:	Total Sheets:
-	18	18

Pacific Bridge and Construction – Structural Bridge Design

23'-0" LONG BY 15'-0" WIDE PRECAST CONCRETE BRIDGE
SWALE CREEK BRIDGE (EAST)
KLICKITAT COUNTY, WASHINGTON

05/01/2023

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
01	*Title Sheet / Drawing Index*
02	*General Notes #1*
03	*General Notes #2*
04	*Bridge Layout Plan*
05	*Longitudinal Section Thru Bridge*
06	*Abutment Elevation*
07	*Longitudinal Section Of Planks*
08	*Wingwall GRS Details*
09	*Miscellaneous Deck Plank Details*
10	*Deck Plank Sections*
11	*"Standard" Abutment Block Details*
12	*"Mono" Abutment Block Details*
13	*Plank And Block Details #1*
14	*Plank And Block Details #2*
15	*Footing Details*
16	*Guardrail Anchor Details*

Plans Prepared For:

Pacific Bridge and Construction, Inc.
40800 SE Coalman Road
P.O. Box 1711
Sandy, Oregon, 97055

To Contact:	Phone:	Email:
Gene Copher	(503) 789-5362	Gene@PacBridgeInc.com
Steven Copher	(971) 563-9401	Steven@PacBridgeInc.com

JOSHUA K. GOODALL
STATE OF WASHINGTON
51303
REGISTERED
PROFESSIONAL ENGINEER

RENEWS: 01-05-2025

FINAL ELECTRONIC DOCUMENT
AVAILABLE UPON REQUEST

DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - EAST

DESIGNER: JOSH GOODALL REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA CHECKER: CARLY DIEHL

TITLE SHEET/DRAWING INDEX SHEET NO. 01

THIS IS THE FILENAME LOCATION ################################ DD-MMM-YYYY HH:MM USERNAME

Bridge Structure General Notes

GENERAL NOTES

1. These plans contain information proprietary to Pacific Bridge and Construction, Inc. and is being furnished for the use of the Yakama Nation Fisheries Program only in connection with this project and the information contained herein may not be reused at other locations unless specifically authorized by Pacific Bridge and Construction, Inc. and David Evans and Associates, Inc.

DESIGN CRITERIA AND LOADINGS

1. Bridge structure designed to comply with the American Association of State Highway Officials Design Provisions - - AASHTO LRFD Bridge Design Specifications, Ninth Edition, 2020

2. Bridge structure design dead loads
--The weight of all permanent bridge structure components plus the following:
Future ACWS of 3" thickness weighing 35 psf.

3. Live load distribution factors:
Exterior girder shear = 0.63
Exterior girder moment = 0.33
Interior girder shear = 0.49
Interior girder moment = 0.29

4. Vehicular live load - - AASHTO "HL-93"definition.
Service and Strength I limit states:
HL-93: design truck

5. Soil pressure loadings on abutments
A. Abutment wall backfill soil design parameters
1) Failure State.....At Rest.
2) Density.....125 pcf.
3) Coefficient of internal friction.....31 deg.

6. Seismic design is performed in accordance with 6th edition of the "AASHTO Guide Specifications for LRFD Seismic Bridge Design".
A. 1000 Year return period ("No Collapse" Criteria)
1) Peak ground acceleration coefficient, PGA = 0.196
2) Site coefficient for site class D: (fpga) = 1.408

7. Guardrails and/or handrails:
A. System designed to comply with Crash - Test Level 1 Criteria (static loads only). Barrier system has not been formally crash tested.
B. Loading and geometry criteria comply with AASHTO Table A13.2-1 and associated requirements.

GRS WINGWALL SYSTEM

1. GRS walls are designed per the design and construction guidelines for Geosynthetic Reinforced Soil Abutments and Integrated Bridge Systems, publication No. FHWA-HRT-17-080, June 2018.

2. Provide GRS Fabric MirafiHPS70, US4800/30, or WINFAB 570HP. If approved by the engineer, another equivalent fabric may be used.

SOILS, FOUNDATIONS, AND BACKFILLS

1. Because the bridge owner has not provided the bridge Engineer Of Record with a professionally qualified, site-specific, geotechnical report, the engineer has designed the bridge structure to be supported on soils having adequate strength and consolidation properties to properly perform under the assumed footing bearing pressures as stipulated in the bridge structural general notes. In addition, the bridge has been designed to be compatible with other on-site and imported soil properties identified in the general notes. The owner understands and agrees that the bridge Engineer Of Record accepts no responsibility and/or liability for injury, death, or property damage, due in whole or in part, because the foundation design for this bridge structure is based on assumed, unconfirmed soil properties, including stream scour.

SOILS, FOUNDATIONS, AND BACKFILLS (CONTINUED)

2. This project has been designed assuming an allowable bearing capacity of 4000 psf. Confirm assumed bearing capacity can be achieved prior to construction.

3. Remove existing fill or soil down to 6" below footing units. Excavate a minimum width of 5'-0" extending at least 6" beyond front and back faces of footing units.

4. Where excavation of fill and/or silt extends below bottom elevation of abutment blocks, provide imported angular crushed rock base per the design plans.

5. Compact imported base material to at least 95% relative compaction.

6. Provide a non-woven, needle-punched soil filter fabric of minimum 4 ounce per square yard weight between backfill soil and back face of abutment walls.
A. Lap all joints, horizontal and vertical, a minimum of 6 inches.
B. Install as shown on drawings.

7. Use only free-draining granular material as backfill behind abutment walls. Compact material placed behind walls to 95% relative compaction using only light or hand-operated compaction equipment.

8. To prevent unbalanced lateral loading of abutment walls, install backfill against back face of abutment walls no more than 5'0" above elevation of soil placed against front face until after abutment wall vertical reinforcement has been grouted and only after bridge deck plank units have been dowel-anchored-grouted to top of abutment walls at each end.

STEEL PLATES, PIPES, TUBES, ROLLED SHAPES, BOLTS, PINS, AND WELDS

1. Plate.....ASTM A36.

2. Pipe.....ASTM A53/Grade B or ASTM A501.

3. Rolled Shapes.....ASTM A992.

4. Structural Bolts.....F3125 Grade A325.

5. Weld in conformance with AWS D1.1 by properly certified welders using E70 Electrodes and AWS Prequalified Procedures.

6. Do not weld members after they have been galvanized.

7. Hot-dip galvanize all steel components that are not protected against atmospheric corrosion by a minimum of 1" of concrete cover.
A. Provide a minimum zinc coating of 2.3 ounces per square foot per ASTM A123 or ASTM A385.
B. Treat field drilled holes, field welds, and abrasions with one coat of Pittsburgh "Waterspar" or "Speedhide" galvanizing primer and two coats of "Ironhide" metal protective paint.

8. Paint all steel not encased in concrete and too large to be hot-dip galvanized.
A. Shop-apply (3) paint coatings each 2.0 mil minimum dry thickness.
1st Coat - Rust-O-Crylic "5769 Rust Inhibiting Red Primer".
2nd Coat - Rust-O-Crylic "5791 White Primer".
3rd Coat - Rust-O-Crylic "5700 System Top Coat" (Color per owner).
B. After completing all field welding and bolting, field-apply the above painting system onto all steel surfaces field-welded, scratched, chipped, or otherwise unprotected against atmospheric corrosion.

CONCRETE

1. General
A. Provide concrete complying with ACI 301.
B. Use normal weight (145 pcf +/- 5 pcf) concrete.
C. Air entrainment volume.....5% +/- 1%.
D. Provide concrete having a minimum cement content of 6 sacks per cubic yard.
E. Cast concrete using a maximum water/cement ratio of 5 ½ gals per sack of cement.
F. Do not use any concrete unit having cracks over 1/16" wide.
G. Fabricate block "lugs" and "recesses" and plank "recesses" such that the dimensions detailed for them on the drawings are achieved to a tolerance of +/- 1/16".

CONCRETE (CONTINUED)

2. Precast bridge deck planks
A. Prestressed concrete planks
1) Interior plank
Minimum strength at 28 days.....f'c = 5000 psi.
Strength at removal from form.....fcremove = 4000 psi.
2) Exterior plank
Minimum strength at 28 days.....f'c = 4500 psi.
Strength at removal from form.....fcremove = 3500 psi.
B. Use aggregates no larger than 1" and no smaller than ¾".
C. Fabricate plank units to the following dimensional tolerances:
1) Length..... +/- ½".
2) Width..... +/- ½".
3) Thickness..... +/- ¼".
4) Twist, as measured by "lift" of corner, where the other (3) corners define a horizontal plane: +/- ¼".
D. Supply plank units having the following surface finishes:
1) Bottom, sides, and ends....."As-Cast in Steel Forms".
2) Top surface.....transverse "rake" finish.
(1/4" by ¼" deep groves spaced at ½" on center)
E. Provide plank and panel units having no "honeycomb" voids and no corner or edge chips larger than 1" in any direction.

3. Precast abutment block units
A. Minimum strength at 28 days.....f'c = 3000 psi.
B. Minimum strength at removal from form.....fcremove = 2000 psi.
C. Use aggregates no larger than 3" and no smaller than ¾".
D. Fabricate units to the following dimensional tolerances:
1) Overall width, length, and thickness..... +/- 1/8".
2) Squareness on all (6) sides, as measured by comparing lengths of face diagonal distances.....+/- 1/8".
E. Supply units having "As-Cast in Steel Forms" finish.
F. Provide units having no "honeycomb" voids and no corner or edge chips larger than 2" in any direction.

4. Mortars and grouts
A. Provide non-corrosive non-shrink cementitious grout by The Euclid Chemical Company an RPM Company. Grout should be in pourable consistency when placed in longitudinal joints between bridge deck planks.
1) Provide pre-molded compressible back rods along bottom and at ends of joints to retain dry pack.
2) Fill longitudinal joints flush with top surface of planks.
B. Provide non-corrosive non-shrink cementitious grout by The Euclid Chemical Company an RPM Company. Grout should be in fluid consistency when placed between top of top abutment block units and underside of precast deck plank units.
1) Provide wood setting blocks, pre-molded compressible backer rods, and/or expandable, closed-cell, expandable foam around perimeter of top abutment block(s) to retain grout.
2) Fill vertical cylindrical voids
a) Around abutment to deck anchor dowel pins.
b) Around abutment block vertical reinforcing steel.
3) Vibrate grout, as required, to assure that all voids spaces are completely filled.

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

RENEWS: 01-05-2025

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S. Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - EAST

DESIGNER: JOSH GOODALL | REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA | CHECKER: CARLY DIEHL

GENERAL NOTES #1

SHEET NO. 02

Bridge Structure General Notes

CONCRETE REINFORCING STEEL

1. Provide deformed steel bars complying with ASTM A615, Grade 60.

2. Provide all bars full length.
   A. Do not lap-splice any bar.
   B. Do not weld-splice any bar.

3. Shop-fabricate all bars required to be bent.
   A. Cold-bend all bars.
   B. Do not apply heat to any bar or "tack weld" any bar.

4. Provide minimum concrete cover for reinforcing bars as follows:
   A. At bottom and sides of precast bridge planks.....1" +/- ¼".
   B. At ends of precast bridge planks.....2" +/- ¼".
   C. At top surface of precast bridge planks.....1 ½" +/- ¼".
   D. At all surfaces of reinforced abutment blocks.....1 ½" +/- ¼".

5. Position bars as shown on the drawings to the following tolerances:
   A. Bar location as measured perpendicular to bar length.....+/- ¼".
   B. Bar location as measured parallel to bar length.....+/- ½".
   C. Longitudinal location of bends and ends of bars.....+/- ½".

SPECIAL INSPECTIONS AND TESTING

1. All concrete is placed under "casting plant" conditions in reusable steel forms. No concrete is cast on-site.

   A. Provide periodic inspection of concrete reinforcement each day concrete is cast.

   B. Perform standard field tests on plastic concrete each day concrete is cast, and mold a minimum of 3 standard cylinders for testing at 28 days.

   C. Inspection/testing reports are available from Pacific Bridge and Construction, Inc.

HORIZONTAL TRANSVERSE RODS FOR PRECAST BRIDGE PLANKS

1. Provide transverse tie rods for precast bridge planks at elevations and spacing as shown on the drawings.

2. Use ¾" Grade 75 all-thread rebar.

3. Galvanize transverse rods, steel bearing plates, and heavy hex nuts to provide a minimum zinc coating thickness of 2.3 oz./sq ft.

4. Bring nuts on each end of all rods to fully "snug" condition, then tighten each nut $1\frac{1}{2}$ turns.

5. After nuts have been properly tightened, install lock nut at each end of rod. Rod shall extend ½" beyond lock nut.

6. Do not tighten nuts at ends of rods until grout in all longitudinal joints has cured to a minimum compressive strength of 5000 psi.

INSTALLATION NOTES

1. General
   A. These drawings and bridge structure general notes indicate finished constructed structure.
   B. Except as specifically indicated as "required" installation procedures, sequences, means, and methods are the sole responsibility of the installation contractor.
   C. Plans, sections, details, and bridge structure general notes provided by David Evans and Associates, Inc. pertain only to the bridge structure.
   D. These installation notes may not be all-inclusive. Installation contractor shall perform all work required to produce a properly constructed bridge structure.

INSTALLATION NOTES (CONTINUED)

2. Prepare site for installation of bridge
   A. Construct temporary dams and other required stream diversions.
   B. Provide acceptable required dewater and sediment controls.
   C. Install pumps, pipes, and other required apparatus.
   D. Install "required" signage and close road to traffic.
   E. Remove existing culvert, bridge structure, and abandoned debris.
   F. Excavate for placement of abutment footing units.
   G. Obtain acceptance of foundation bearing subsurface by geotech.
   H. Stability and safety of all temporary excavations and structures are the sole responsibility of the installation contractor.

3. Install abutments
   A. Place abutment footing units level and at proper elevation(s).
   B. Where necessary, provide grout plug in bottom of grout holes at footing vertical voids "required" to contain vertical rebar.
   C. Provide 8" to 10" diameter annular grout retainage rings on top of each abutment around vertical voids to be reinforced using a well-bonding insulating spray foam (to retain grout when abutment vertical rebar is grouted later).
   D. Stack abutment units plumb onto center of footings.
      1) Place fill on front and back sides of abutments.

4. Place precast concrete bridge plank units
   A. Place continuous wood bearing strips along top front edge or top back edge of top abutment units.
   B. Note that it is "required" that deck plank units be lifted at points located only at their ends.
   C. Use only proper lifting techniques such as spreader bars, etc.
   D. Set precast deck planks.
   E. Install premolded compressible backing rod full length at bottom and vertically at each end of all longitudinal grout joints.
   F. Thread PVC sleeves thru transverse tie rod voids.
   G. Fully grout all longitudinal joints full depth and full length.
   H. Allow longitudinal joint grout in all joints to cure a "Required" minimum of 4 hours.

5. Install premolded compressible backer rods continuous along (3) edges of top abutment blocks (under deck planks).

6. Install rebar dowels and/or verticals at each end of planks down into pre-formed and/or field-drilled holes in abutment block units.

7. Install vertical rebar through deck planks to bottom of footing units.

8. Fully grout (under pressure if required) voids around vertical rebar and simultaneously fill voids under deck planks at top of abutments. Allow grout to cure a minimum of 4 hours.

9. Install and fully tighten transverse tie rods as "required".

10. Remove 4" (minimum) lengths of backer rods under ends of planks at 2'0" (Maximum) intervals to confirm grout void has been filled. Confirmin that at least 80% of the length of the grout edge has full contact along both the top and bottom joint surfaces.

CONCRETE PRESTRESSING STRAND

1. Provide uncoated 7-wire, Grade 270, low-relaxation prestress strand conforming to ASTM A416, including current supplements of ½" diameter and cross-sectional area 0.151 sq in.

2. Do not use any portion of strand having scratches, gouges, nicks, or any other abrasion, or any portion of strand previously gripped by jacking chucks.

3. Run strand straight between jacking chucks - Do not harp strands.

4. Jack each ½" diameter strand to a force of 31,000 lbs. (75% of breaking strength).

5. Confirm jacking force by measuring stretch of strand as it is jacked.
   A. Strain at initial jacking force = 0.00711 in/in.
   B. Example: For a distance of 64'-4" between jacking chucks and a computed shortening of the self-stressing forms of ¼", the stressing jack will move 5 ¾" relative to the bulkhead.

6. Recommended jacking sequence:
   A. Apply initial jacking force of 5000 lbs. to each strand to seat jacking chucks (will stretch strand $\frac{7}{8}$").
   B. Starting with center strands, sequentially stress each strand.
   C. After stressing all strands, confirm that the required 31,000 lb. force has been achieved in each strand. (Center strands may require additional jacking.)
   D. After concrete has attained its required release strength, de-tension strands in reverse order of stressing the strands.

7. Prior to moving prestressed concrete unit from manufacturing plant provide corrosion protection by thoroughly coating ends of strands with a self-adhesive, asphalt-based, corrosion preventive mastic (Henry "HE209 - Elastomeric" and "104 Asphalt Primer", if required).

SHIPPING & HANDLING

1. Precast bridge planks shall only be picked by lifting loops at the ends of the plank. Contractor shall use equipment such that the attachment to the lifting loops remain vertical or no more than 20° from vertical.

2. Inspect lifting loops for damage prior to picking up planks. If damage has occurred to lifting loops do not proceed without engineer's approval.

3. During shipping or storage of the planks place wood blocking under the plank directly under the lifting loops at each end of the plank.

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

RENEWS: 01-05-2025
FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

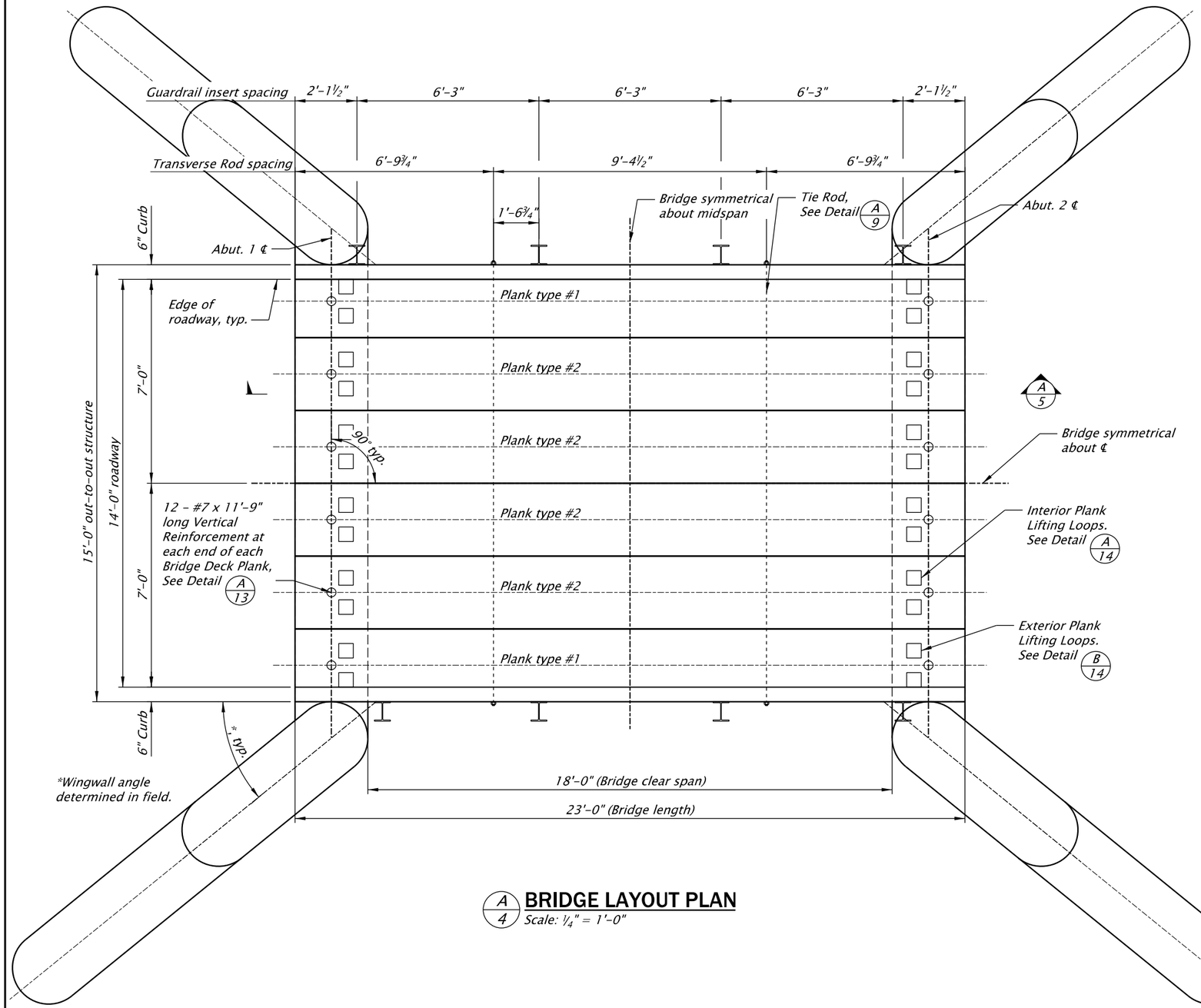
DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - EAST

DESIGNER: JOSH GOODALL | REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA | CHECKER: CARLY DIEHL

GENERAL NOTES #2

SHEET NO. 03



A/4 **BRIDGE LAYOUT PLAN**
Scale: ¼" = 1'-0"

N

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

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5121 Skyline Village Loop S, Suite 200
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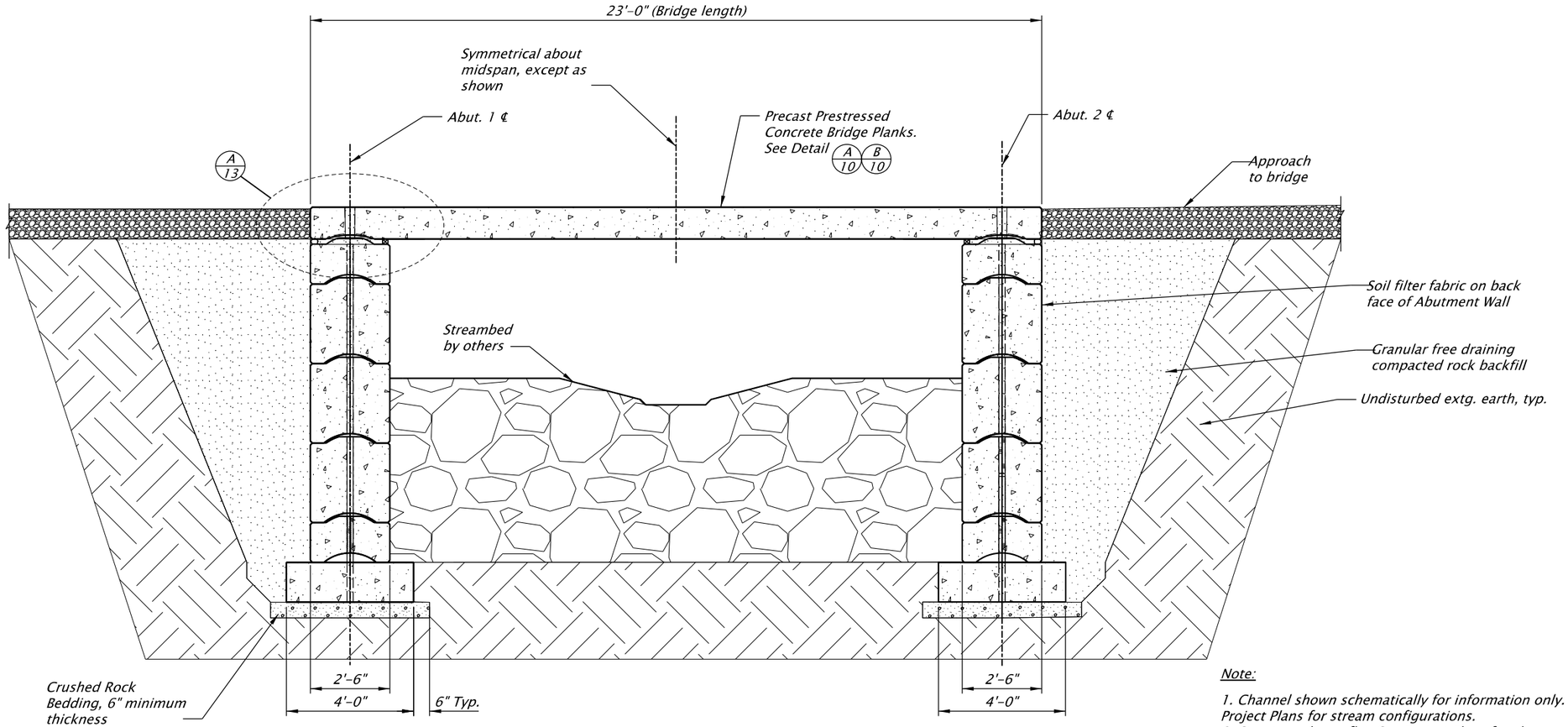
DESIGNER: JOSH GOODALL | REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA | CHECKER: CARLY DIEHL

BRIDGE LAYOUT PLAN

SHEET NO. 04



Note:

1. Channel shown schematically for information only. See Project Plans for stream configurations.
2. Structure shown flat. See Project Plans for slope.

A/5 LONGITUDINAL SECTION THROUGH BRIDGE

Scale: 3/8" = 1'-0"

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

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5121 Skyline Village Loop S, Suite 200
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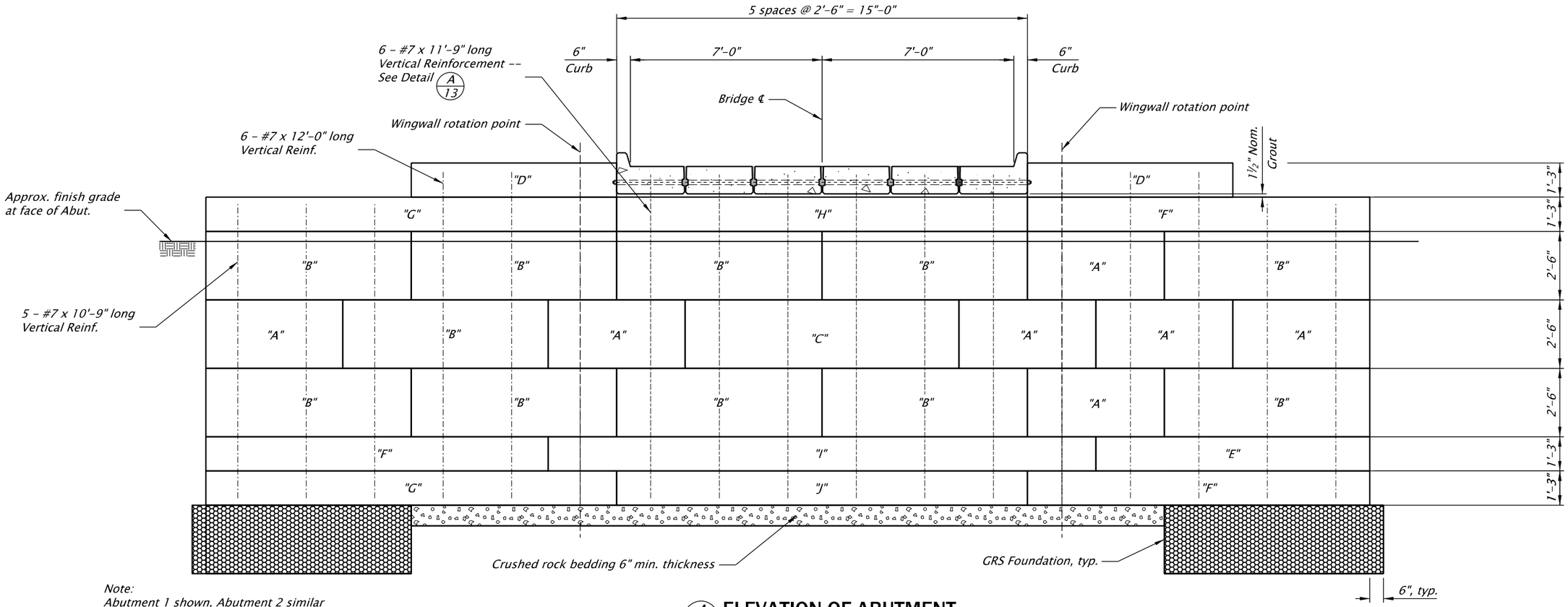
DESIGNER: JOSH GOODALL
REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA
CHECKER: CARLY DIEHL

LONGITUDINAL SECTION THRU BRIDGE

SHEET NO. 05



Note:
Abutment 1 shown, Abutment 2 similar

A/6 **ELEVATION OF ABUTMENT**
Scale: ¼" = 1"-0"

Precast Concrete Abutment Block Schedule

Unit Mark	Total Count	Unit Type	Reference	Dimension			End Shape		Reinf Bars	Notes
				Length	Height	Width	Left	Right		
"A"	14	Standard	Dwg. "A/11"	5'-0"	2'-6"	2'-6"	Round	Round	No	(1)
"B"	22	Standard	Dwg. "A/11"	7'-6"	2'-6"	2'-6"	Round	Round	No	(1)
"C"	2	Standard	Dwg. "A/11"	10'-0"	2'-6"	2'-6"	Round	Round	No	(1)
"D"	4	Mono	Dwg. "A/12"	7'-6"	1'-3"	2'-6"	Round	Round	Yes	(1)
"E"	2	Mono	Dwg. "A/12"	10'-0"	1'-3"	2'-6"	Round	Round	Yes	(1)
"F"	6	Mono	Dwg. "A/12"	12'-6"	1'-3"	2'-6"	Round	Round	Yes	(1)
"G"	4	Mono	Dwg. "A/12"	15'-0"	1'-3"	2'-6"	Round	Round	Yes	(1)
"H"	2	Mono	Dwg. "A/12"	15'-0"	1'-3"	2'-6"	Square	Square	Yes	(1)
"I"	2	Mono	Dwg. "A/12"	20'-0"	1'-3"	2'-6"	Round	Round	Yes	(1)
"J"	2	Footing	Dwg. "A/15"	15'-0"	1'-3"	4'-0"	Square	Square	Yes	(1) (2)

Note:
(1) These Units Are Reversible As Required By Project Layout (Left-To-Right).
(2) Lugs on These Blocks Are To Be Omitted.

B/6 **ABUTMENT BLOCK SCHEDULE**

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

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DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
Phone: 503.361.8655

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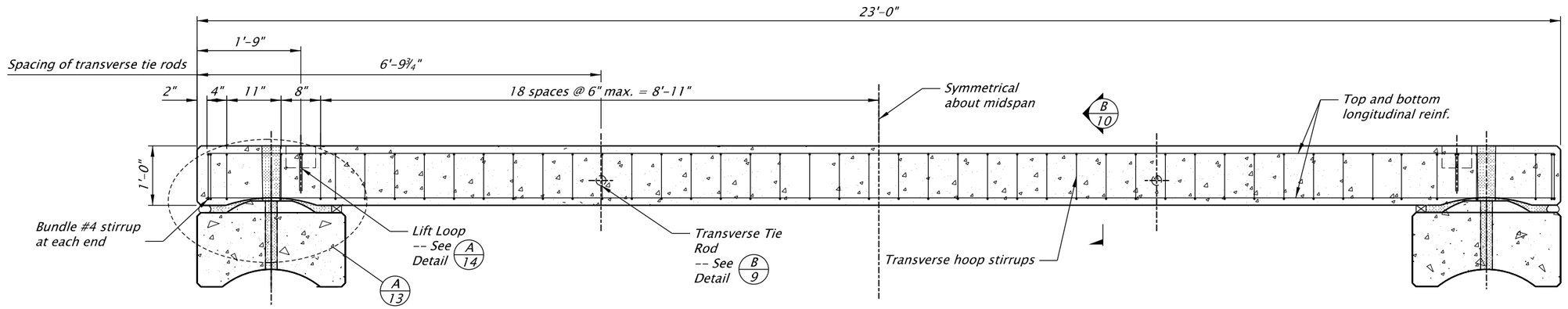
DESIGNER: JOSH GOODALL
REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA
CHECKER: CARLY DIEHL

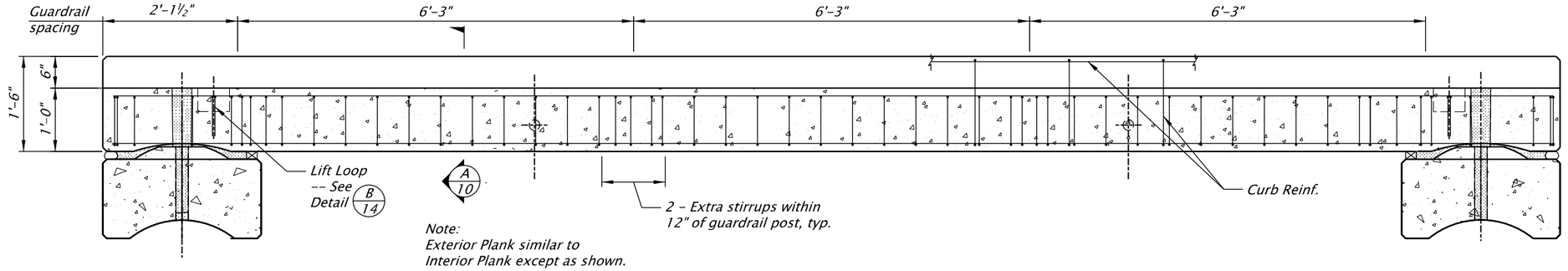
ABUTMENT ELEVATION

SHEET NO. 06



A/7 LONGITUDINAL SECTION OF CONCRETE INTERIOR PLANK - TYPE "2"

Scale: ½" = 1'-0"



Note:
Exterior Plank similar to Interior Plank except as shown.

B/7 LONGITUDINAL SECTION OF CONCRETE EXTERIOR PLANK – TYPE "1"

Scale: ½" = 1'-0"

Girder Shear Reinforcement							
Unit Mark	Total Count	Unit Type	Reference	Main Stirrup Number	Curb Stirrup Number	Extra Guardrail Stirrup	Unit Weight
Type "1"	2	Exterior	A/10	46	16	8	11 kips
Type "2"	4	Interior	B/10	46	N/A	N/A	10 kips

C/7 SHEAR REINFORCEMENT SCHEDULE

Notes:
1. Structure shown flat. See Project Plans for slope.
2. All Longitudinal reinforcing bars extend full length of Plank.
3. Adjust main stirrups as required to place Transverse Tie Rods. Do not exceed maximum stirrup spacing.

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

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DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S. Suite 200
Salem Oregon 97306
Phone: 503.361.8655

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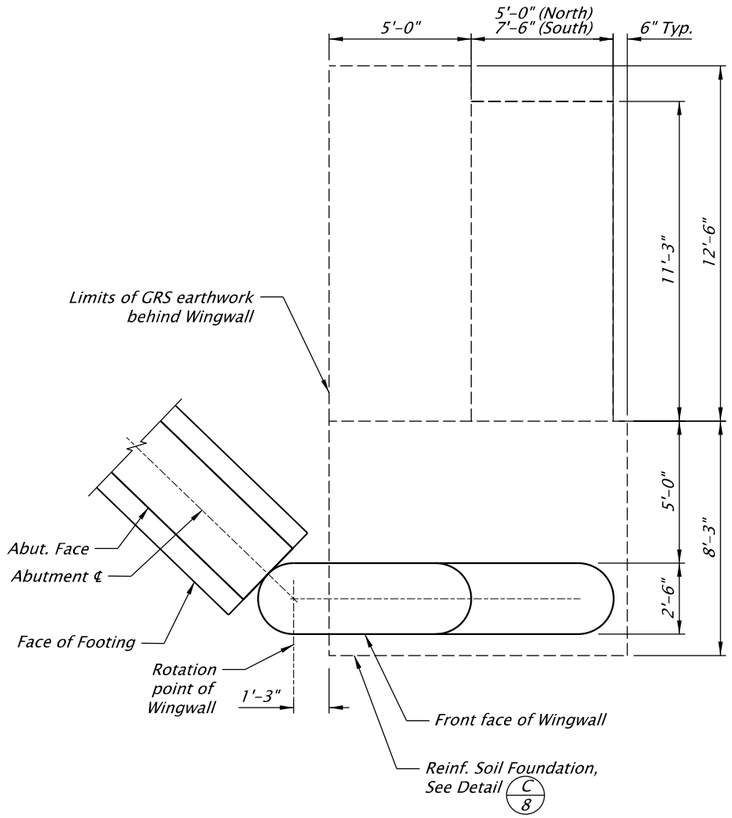
DESIGNER: JOSH GOODALL | REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA | CHECKER: CARLY DIEHL

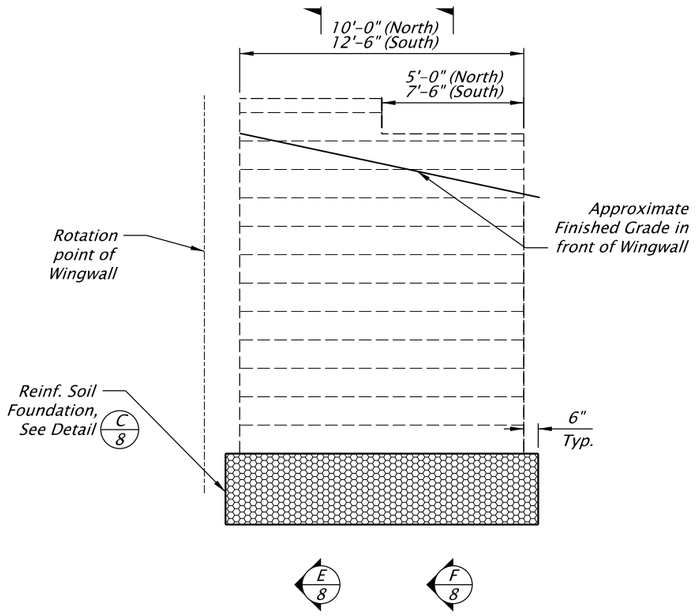
LONGITUDINAL SECTION OF PLANKS

SHEET NO. 07



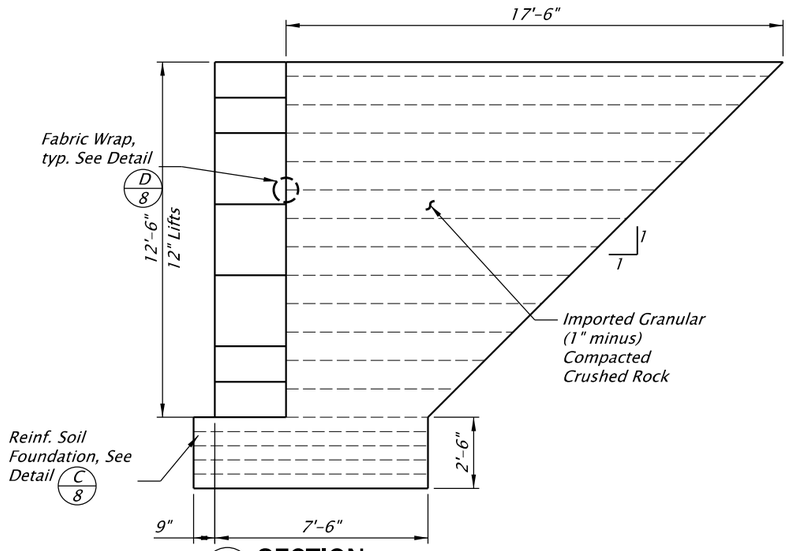
A/8 GRS WINGWALL PLAN VIEW

Scale: 3/16" =1'-0"



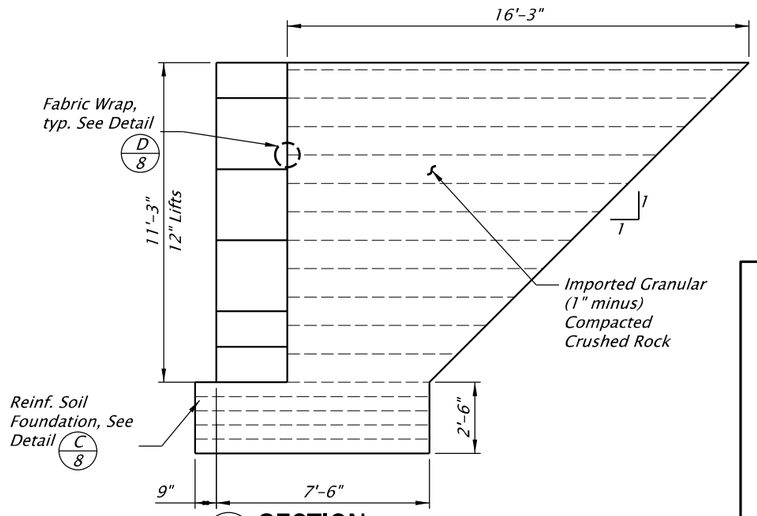
B/8 GRS WINGWALL ELEVATION VIEW

Scale: 3/16" = 1'-0"



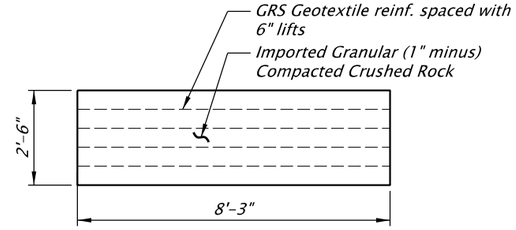
E/8 SECTION

Scale: 3/16" = 1'-0"



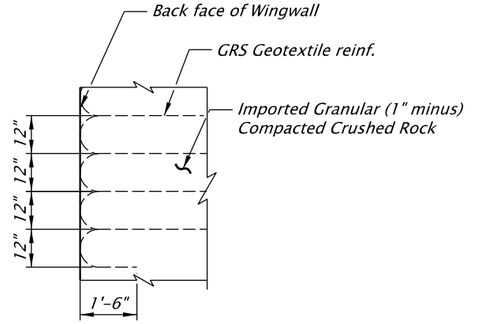
F/8 SECTION

Scale: 3/16" = 1'-0"



C/8 REINFORCED SOIL FOUNDATION DETAIL

Scale: 1/4" = 1'-0"



D/8 FABRIC WRAP DETAIL

Scale: 1/4" = 1'-0"

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

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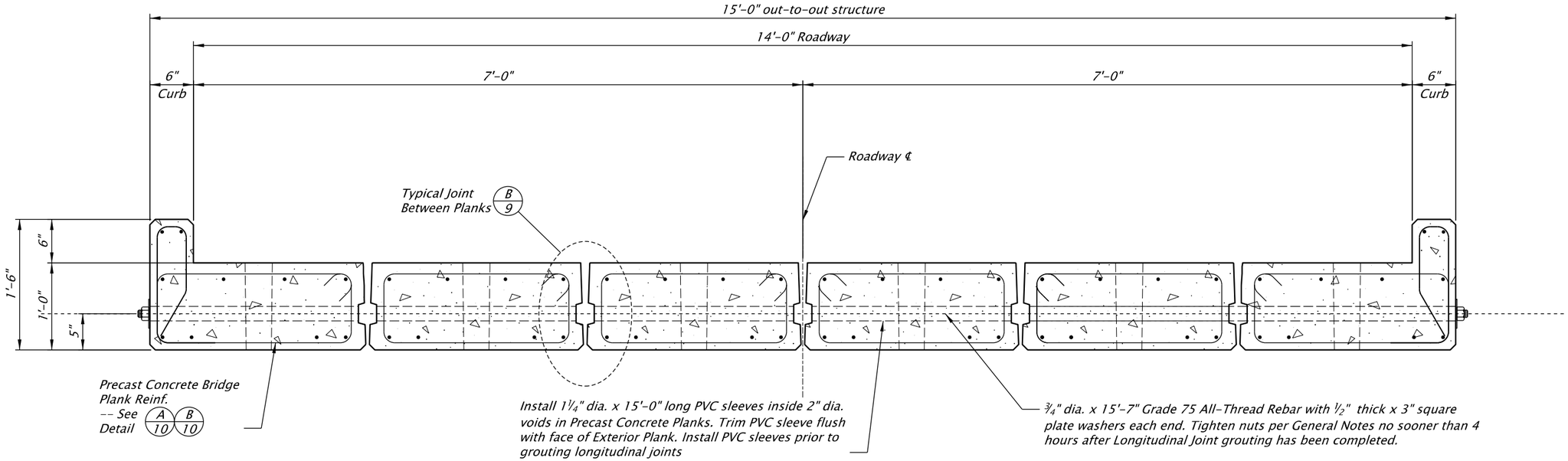
DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - EAST

DESIGNER: JOSH GOODALL	REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA	CHECKER: CARLY DIEHL

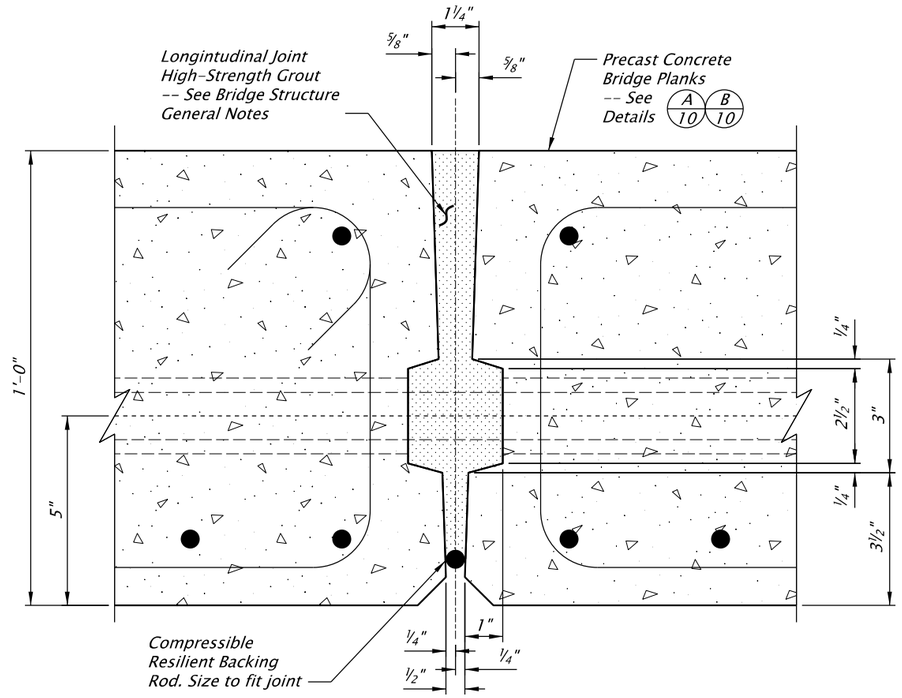
WINGWALL GRS DETAILS

SHEET NO. 08



A/9 TYPICAL TRANSVERSE TIE ROD ACROSS FULL WIDTH OF PRECAST CONCRETE PLANK BRIDGE DECK

Scale: ¾" = 1'-0"



B/9 TYPICAL LONGITUDINAL KEY JOINT BETWEEN 12" THICK PRECAST CONCRETE BRIDGE PLANKS

Scale: 3" = 1'-0"

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

RENEWS: 01-05-2025

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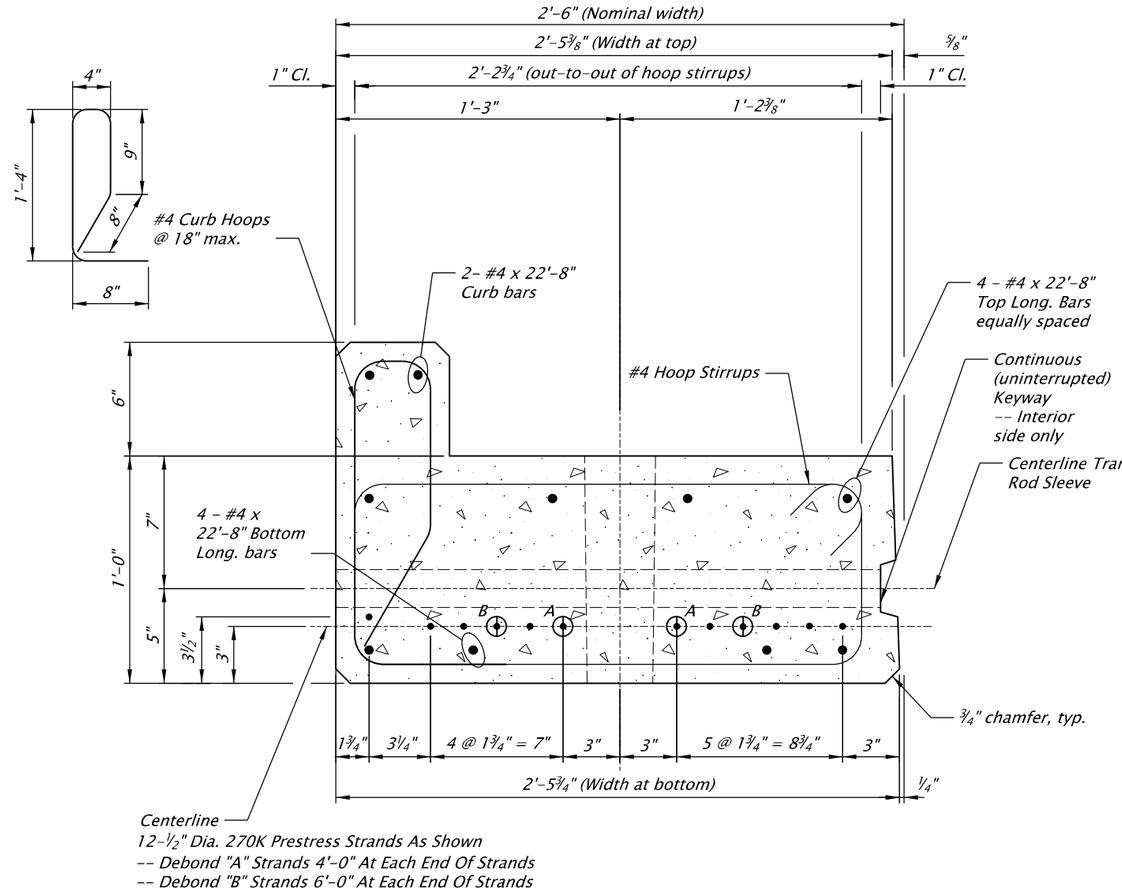
DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - EAST

DESIGNER: JOSH GOODALL | REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA | CHECKER: CARLY DIEHL

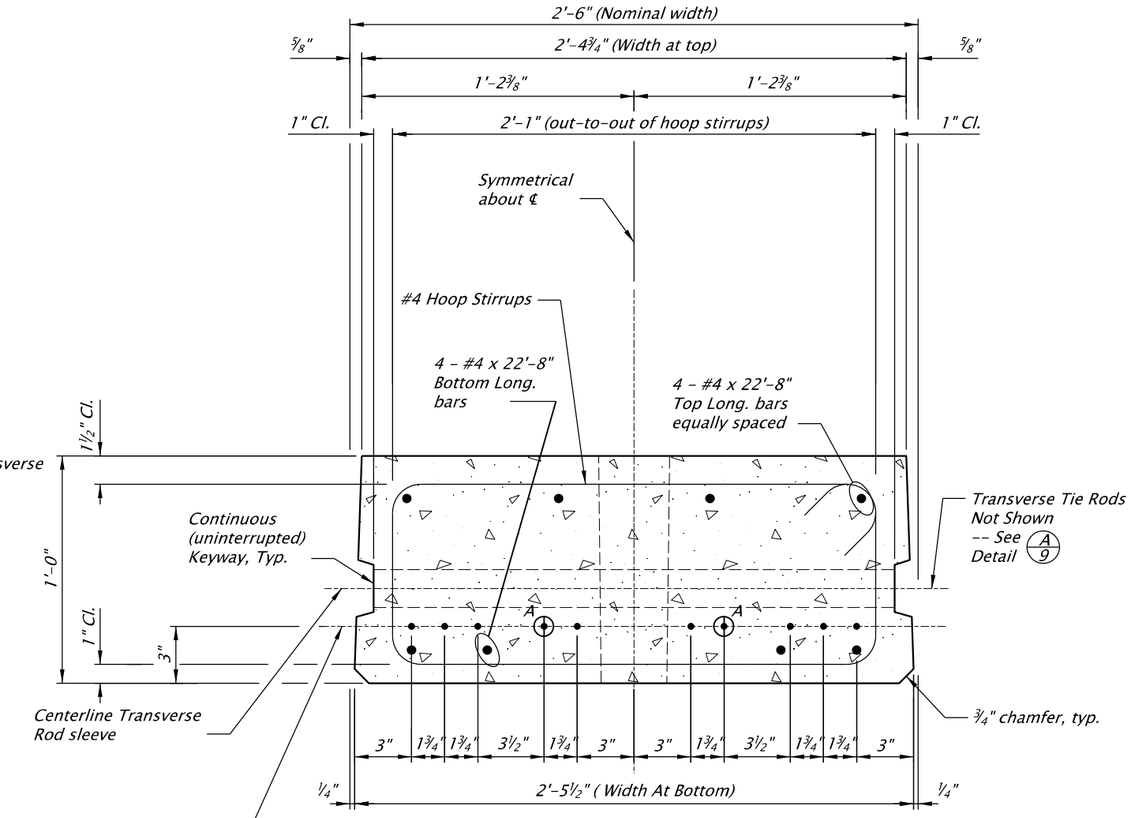
MISCELLANEOUS DECK PLANK DETAILS

SHEET NO. 09



A/10 TRANSVERSE SECTION THRU PRESTRESSED EXTERIOR PLANKS

Scale: 1½" = 1'-0"



B/10 TRANSVERSE SECTION THRU PRESTRESSED INTERIOR PLANKS

Scale: 1½" = 1'-0"

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Salem Oregon 97306
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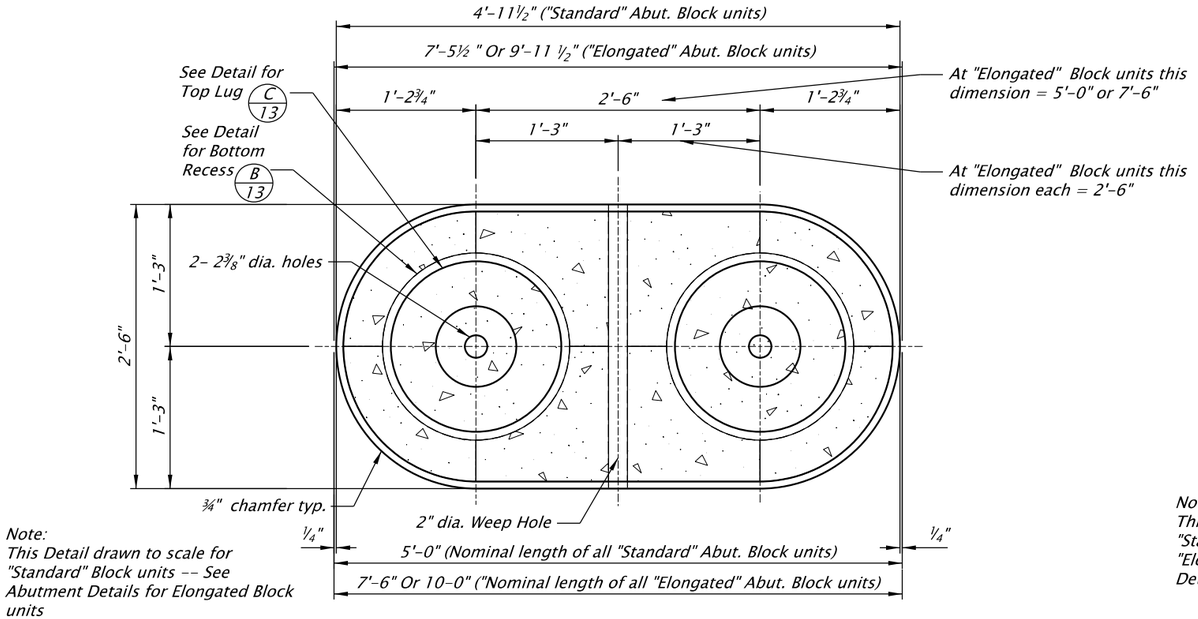
DESIGNER: JOSH GOODALL | REVIEWER: NICK PEEK

DRAFTER: ANGELA CHISA | CHECKER: CARLY DIEHL

DECK PLANK SECTIONS

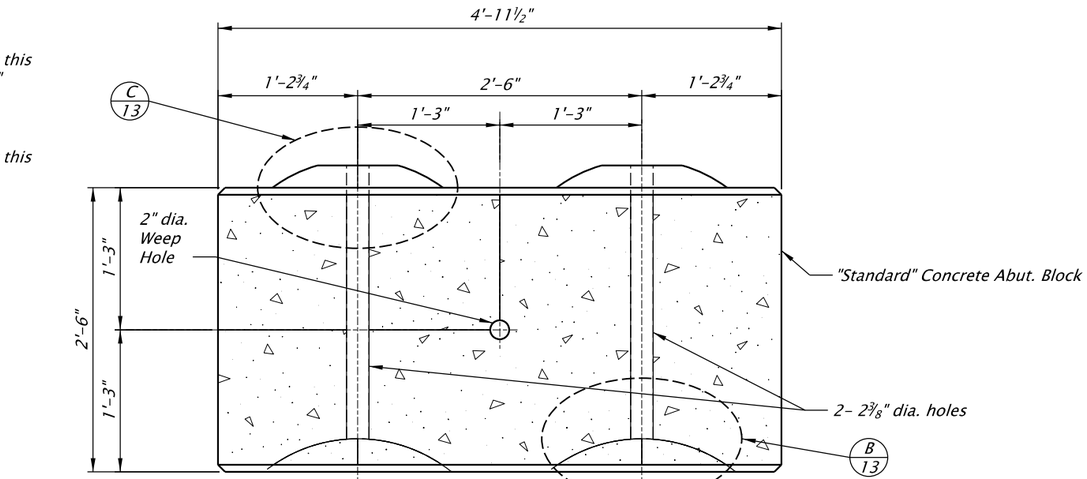
SHEET NO. 10



Note:
This Detail drawn to scale for "Standard" Block units -- See Abutment Details for Elongated Block units

A/12 TOP VIEW OF "STANDARD" & "ELONGATED" ABUTMENT BLOCKS

Scale: ¾" = 1'-0"

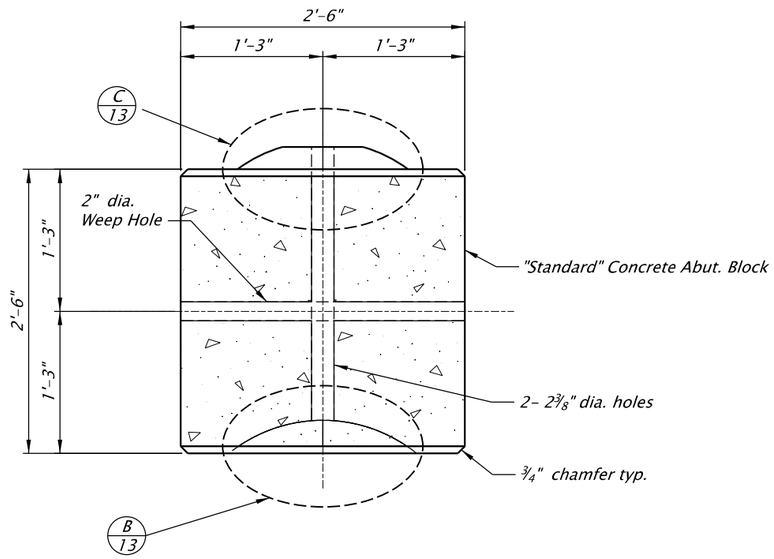


Note:
This Detail drawn to scale for "Standard" Block units -- for "Elongated" Block units See Abutment Details

Note:
"Elongated" Abutment Blocks have additional top Lug and bottom Recesses compared to a "Standard" Block. Lugs and Recesses should be spaced at 2'-6" O/C.

B/12 FRONT VIEW OF "STANDARD" ABUTMENT BLOCK

Scale: ¾" = 1'-0"



C/12 SIDE VIEW OF "STANDARD" ABUTMENT BLOCK

Scale: ¾" = 1'-0"

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

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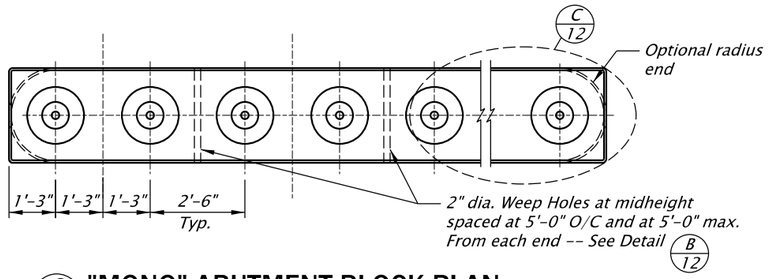
DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - EAST

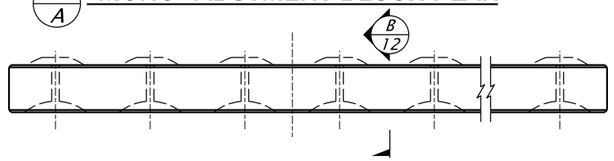
DESIGNER: JOSH GOODALL | REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA | CHECKER: CARLY DIEHL

"STANDARD" ABUTMENT BLOCK DETAILS

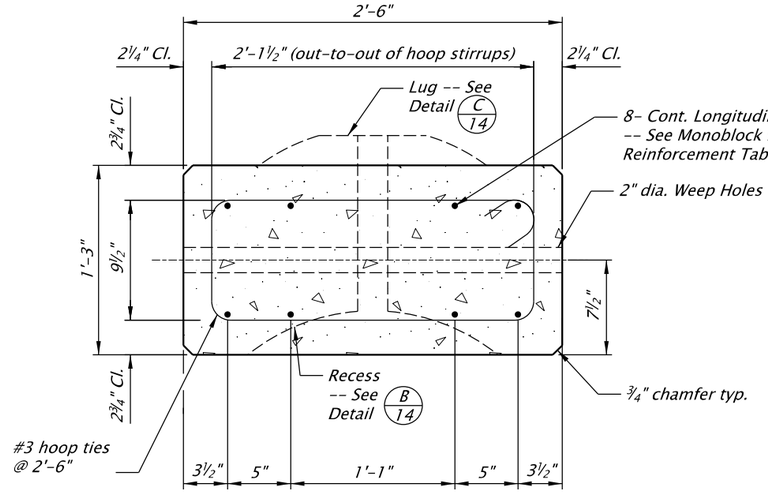
SHEET NO. 11



2/A "MONO" ABUTMENT BLOCK PLAN



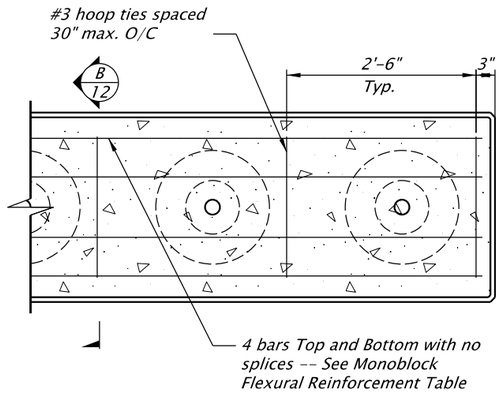
1/A TYPICAL "MONO" ABUTMENT BLOCK ELEVATION

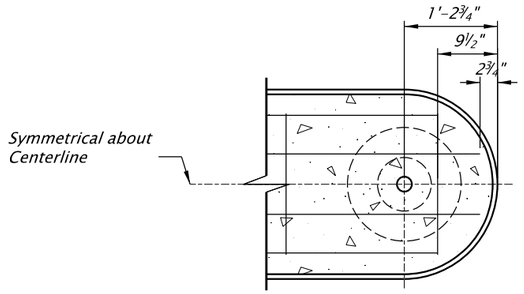


Monoblock Flexural Reinforcement	
Block Length	Bar Size
L ≤ 15'-0"	#4
15'-0" < L ≤ 22'-6"	#5
L > 22'-6"	#6

A/13 PLANS AND ELEVATION OF MODULAR CONCRETE "MONO" ABUTMENT BLOCK UNITS
Scale: ¼" = 1'-0"

B/13 TYPICAL SECTION THRU "MONO" ABUTMENT BLOCK
Scale: 1"= 1'-0"





1/C RADIUS (ROUND) END OPTION

C/13 TYPICAL CONCRETE MONO ABUTMENT BLOCK REINFORCING
Scale: ½" = 1'-0"

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

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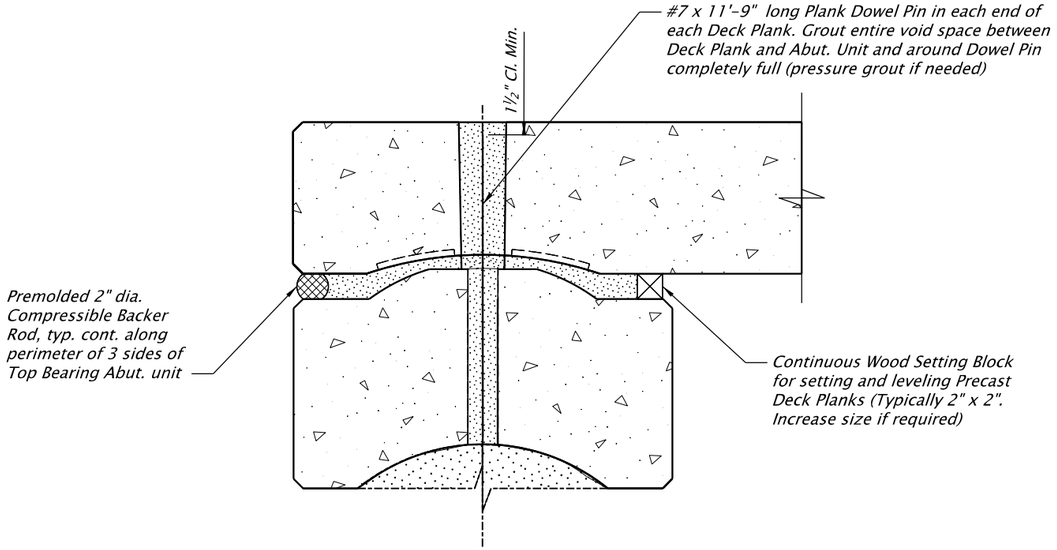
DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - EAST

DESIGNER: JOSH GOODALL | REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA | CHECKER: CARLY DIEHL

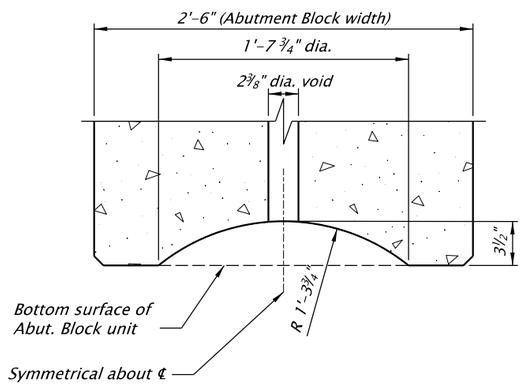
"MONO" ABUTMENT BLOCK DETAILS

SHEET NO. 12



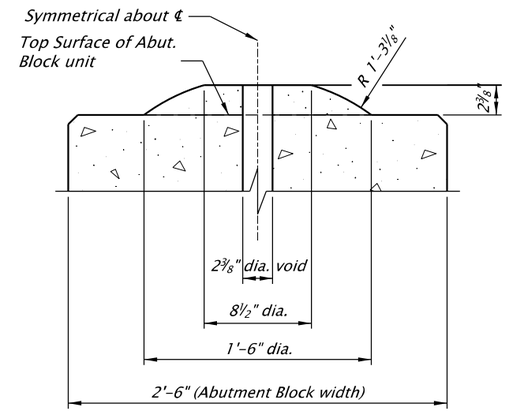
A/14 BRIDGE PLANK TO ABUTMENT CONNECTION

Scale: 1"=1'-0"



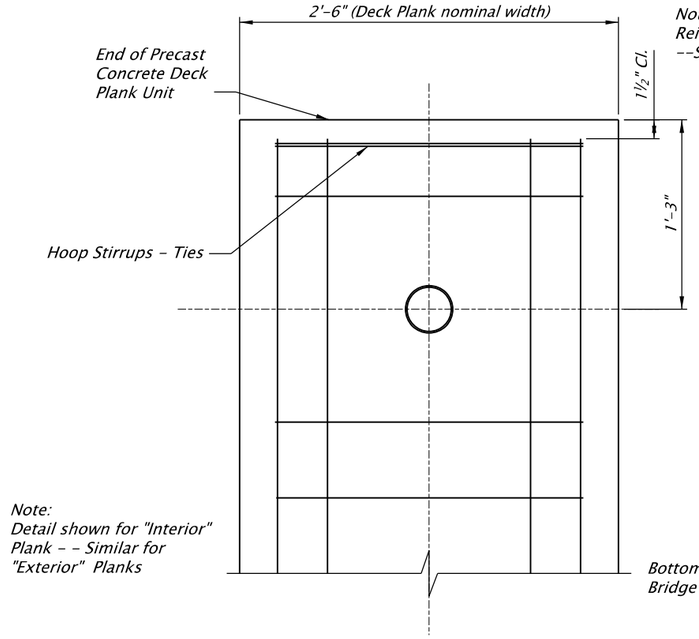
B/14 TYPICAL ABUTMENT BLOCK RECESS ON BOTTOM OF ALL ABUTMENT BLOCKS

Scale: 1"=1'-0"



C/14 TYPICAL ABUTMENT BLOCK RECESS ON TOP OF ALL ABUTMENT BLOCKS

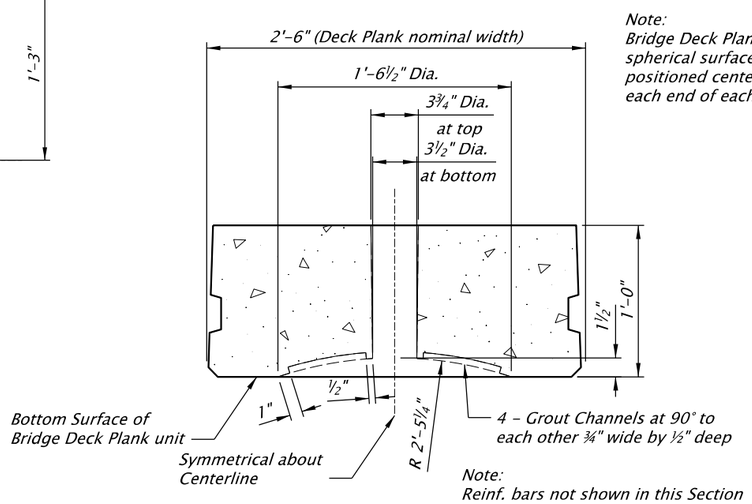
Scale: 1"=1'-0"



Note:
Reinf. Bars shown schematically
--See Details A/10 B/10

D/14 PLAN VIEW OF END OF EACH DECK PLANK UNIT

Scale: 1"=1'-0"



Note:
Bridge Deck Plank Recesses have spherical surfaces and are positioned centered at 1'-3" from each end of each Plank.

Note:
Reinf. bars not shown in this Section

E/14 TYPICAL END OF EACH DECK PLANK UNIT

Scale: 1"=1'-0"

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

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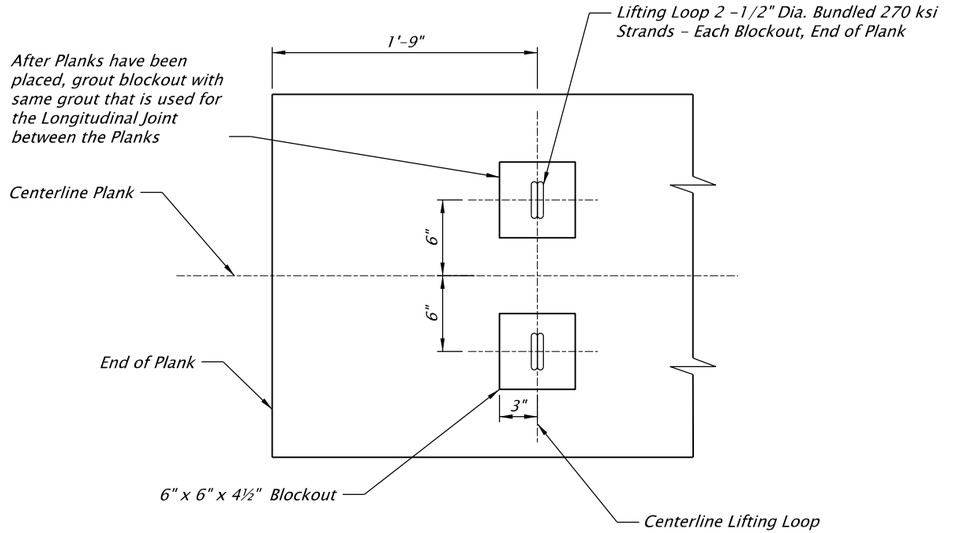
DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - EAST

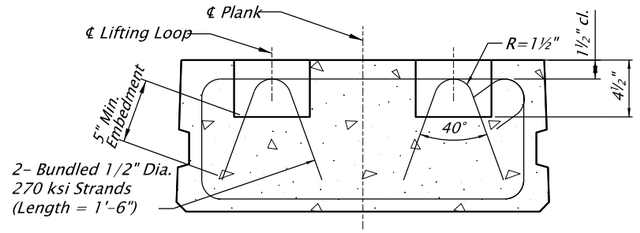
DESIGNER: JOSH GOODALL
REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA
CHECKER: CARLY DIEHL

PLANK AND BLOCK DETAILS #1

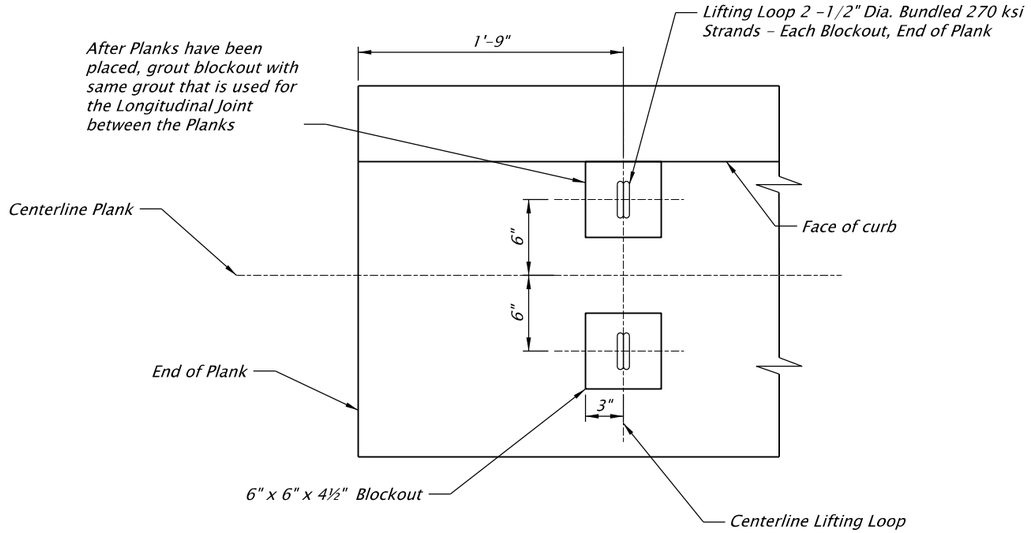
SHEET NO. 13



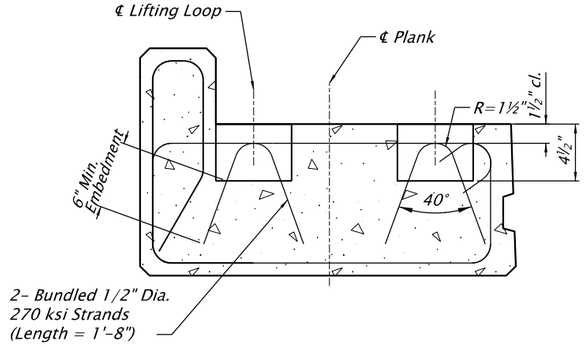
A/14 **LIFTING LOOP PLAN VIEW - INTERIOR PLANK**
Scale: 1" = 1'-0"



C/14 **LIFTING LOOP SECTION VIEW - INTERIOR PLANK**
Scale: 1" = 1'-0"



B/14 **LIFTING LOOP PLAN VIEW - INTERIOR PLANK**
Scale: 1" = 1'-0"



D/14 **LIFTING LOOP ELEVATION VIEW - EXTERIOR PLANK**
Scale: 1" = 1'-0"

JOSHUA K. GOODALL
STATE OF WASHINGTON
51303
REGISTERED
PROFESSIONAL ENGINEER
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5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
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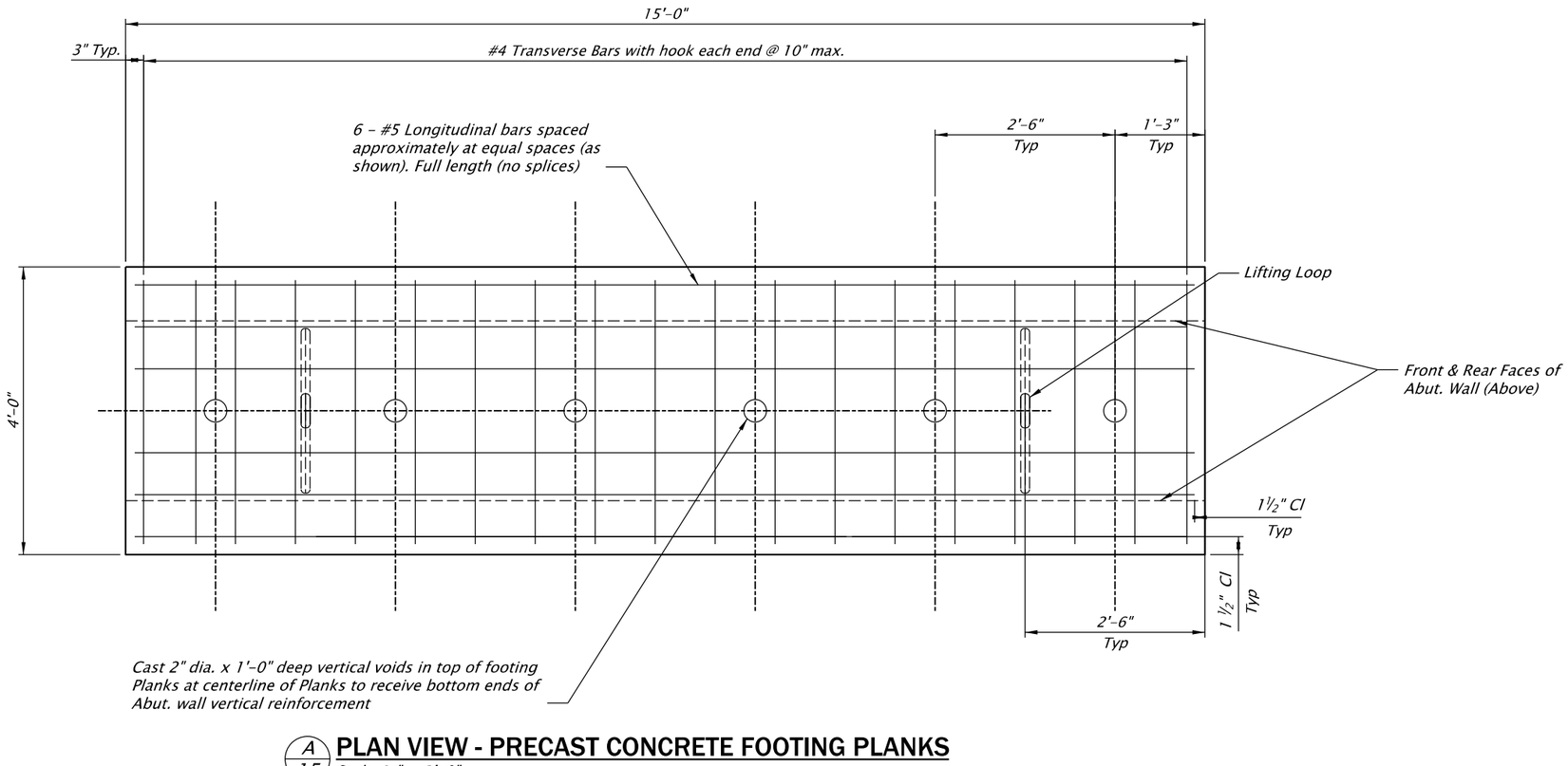
DESIGNER: JOSH GOODALL | REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA | CHECKER: CARLY DIEHL

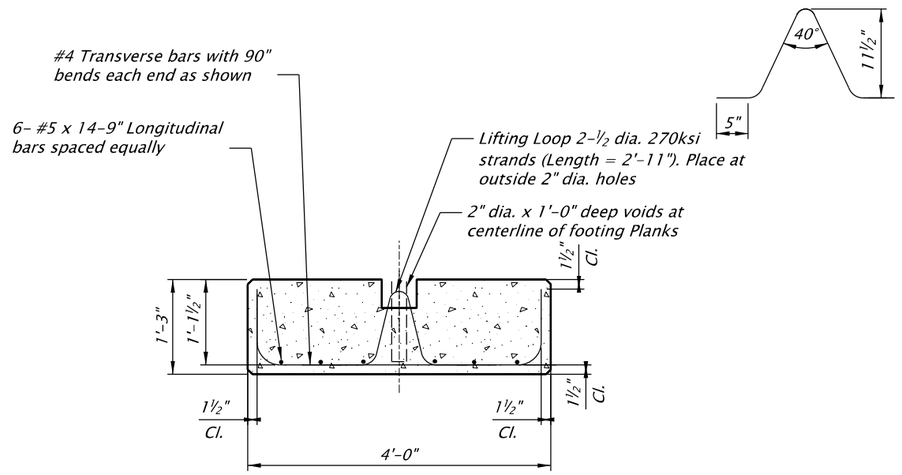
PLANK AND BLOCK DETAILS #2

SHEET NO. 14



A/15 PLAN VIEW - PRECAST CONCRETE FOOTING PLANKS

Scale: ½" = 1'-0"



B/15 SECTION VIEW - PRECAST CONCRETE FOOTING PLANKS

Scale: ½" = 1'-0"

JOSHUA K. GOODALL
STATE OF WASHINGTON
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51303
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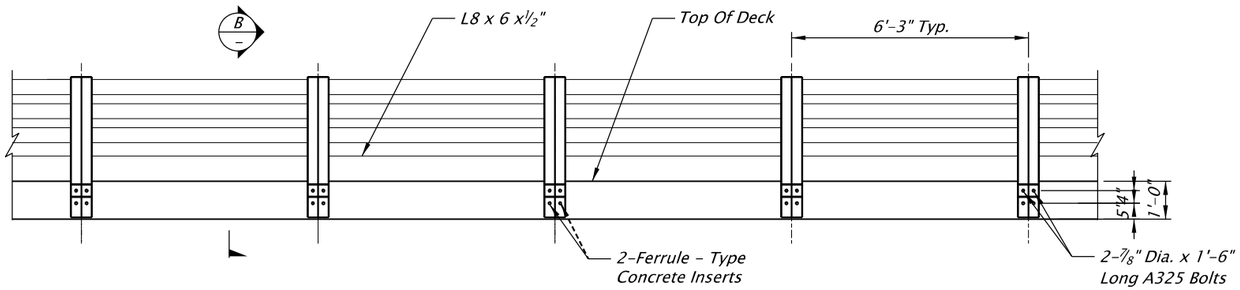
DESIGNER: JOSH GOODALL
REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA
CHECKER: CARLY DIEHL

FOOTING CONCRETE BLOCK DETAILS

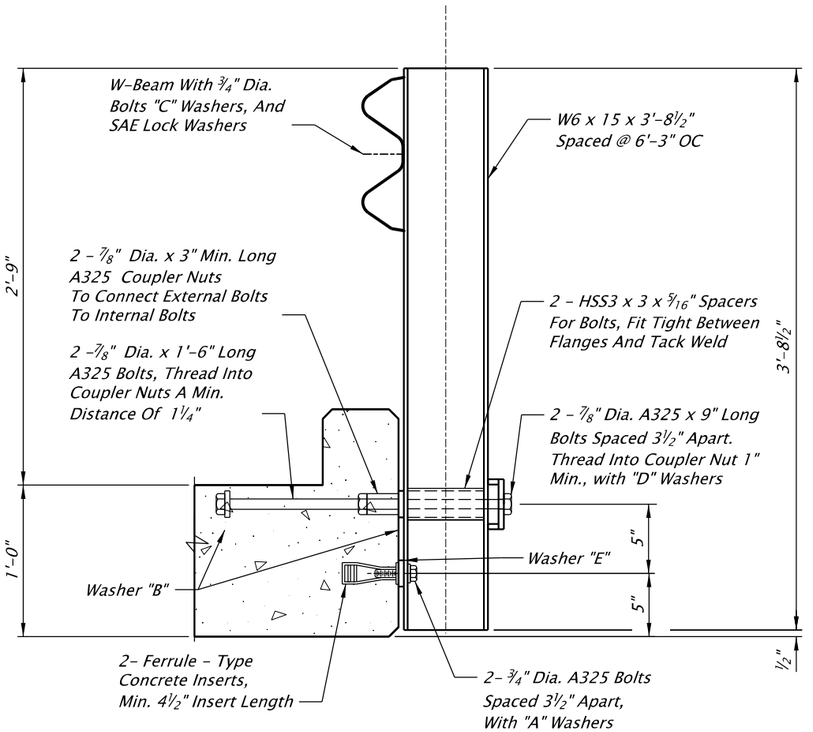
SHEET NO. 15



A/16 TYPICAL GUARDRAIL ANCHOR ELEVATION

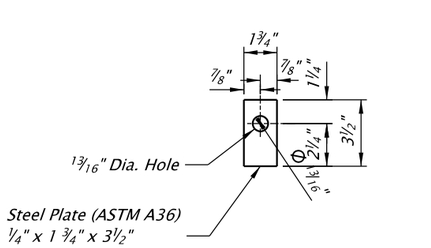
Scale: ¼" = 1'-0"

Note:
1. Hot-Dip Galvanize All Steel Hardware After Fabrication
2. For Washer "B", See Detail C



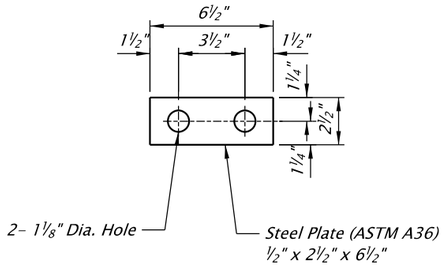
B/16 GUARDRAIL ANCHORS IN PRECAST BRIDGE PLANK

Scale: ¾" = 1'-0"



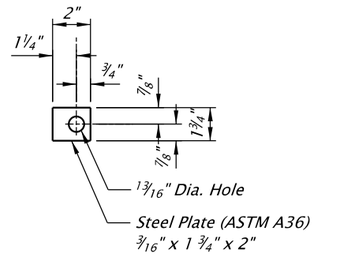
Note:
Position Washers To Completely Cover
Slotted Holes In Flange Of Steel Post

PLATE WASHER "A"



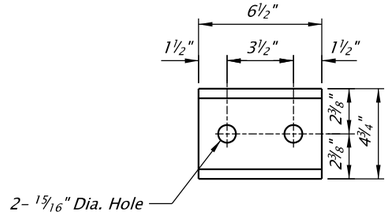
Note:
2- Washer "B" Required Per Post
(Including Cast In Bridge Plank)

PLATE WASHER "B"



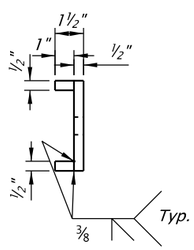
Note:
Position Washers To Completely Cover
Slotted Holes In Thrie-Beam Guardrail

PLATE WASHER "C"



Note:
Fabricate from Steel Plate (ASTM A36)
½" Thick Plates

PLATE WASHER "D"



Note:
All Washers Hot-Dip Galvanize After
Fabrication.

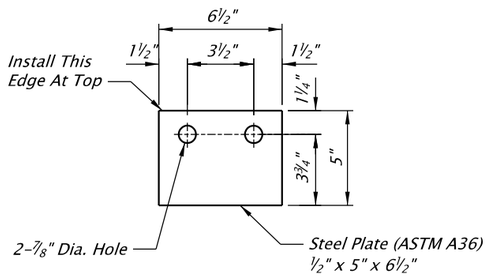


PLATE WASHER "E"

C/16 WASHER DETAILS FOR GUARDRAIL ANCHORS

Scale: 1½" = 1'-0"

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

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5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - EAST

DESIGNER:	JOSH GOODALL	REVIEWER:	NICK PEEK
DRAFTER:	ANGELA CHISA	CHECKER:	CARLY DIEHL

GUARDRAIL ANCHOR DETAILS

SHEET NO. 16

19'-0" LONG BY 15'-0" WIDE PRECAST CONCRETE BRIDGE
SWALE CREEK BRIDGE (WEST)
KLICKITAT COUNTY, WASHINGTON

05/01/2023

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02	*General Notes #1*
03	*General Notes #2*
04	*Bridge Layout Plan*
05	*Longitudinal Section Thru Bridge*
06	*Abutment Elevation*
07	*Longitudinal Section Of Planks*
08	*Wingwall GRS Details*
09	*Miscellaneous Deck Plank Details*
10	*Deck Plank Sections*
11	*"Standard" Abutment Block Details*
12	*"Mono" Abutment Block Details*
13	*Plank And Block Details #1*
14	*Plank And Block Details #2*
15	*Footing Details*
16	*Guardrail Anchor Details*

Plans Prepared For:

Pacific Bridge and Construction, Inc.
40800 SE Coalman Road
P.O. Box 1711
Sandy, Oregon, 97055

To Contact:	Phone:	Email:
Gene Copher	(503) 789-5362	Gene@PacBridgeInc.com
Steven Copher	(971) 563-9401	Steven@PacBridgeInc.com

JOSHUA K. GOODALL
STATE OF WASHINGTON
51303
REGISTERED
PROFESSIONAL ENGINEER

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Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - WEST

DESIGNER: JOSH GOODALL REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA CHECKER: CARLY DIEHL

TITLE SHEET/DRAWING INDEX SHEET NO. 01

THIS IS THE FILENAME LOCATION ################################ DD-MMM-YYYY HH:MM USERNAME

Bridge Structure General Notes

GENERAL NOTES

1. These plans contain information proprietary to Pacific Bridge and Construction, Inc. and is being furnished for the use of the Yakama Nation Fisheries Program only in connection with this project and the information contained herein may not be reused at other locations unless specifically authorized by Pacific Bridge and Construction, Inc. and David Evans and Associates, Inc.

DESIGN CRITERIA AND LOADINGS

1. Bridge structure designed to comply with the
   American Association of State Highway Officials Design Provisions
   - - AASHTO LRFD Bridge Design Specifications, Ninth Edition, 2020

2. Bridge structure design dead loads
   --The weight of all permanent bridge structure components plus the following:
   Future ACWS of 3" thickness weighing 35 psf.

3. Live load distribution factors:
   Exterior girder shear = 0.66
   Exterior girder moment = 0.40
   Interior girder shear = 0.51
   Interior girder moment = 0.35

4. Vehicular live load - - AASHTO "HL-93"definition.
   Service and Strength I limit states:
   HL-93: design truck

5. Soil pressure loadings on abutments
   A. Abutment wall backfill soil design parameters
   1) Failure State.....At Rest.
   2) Density.....125 pcf.
   3) Coefficient of internal friction.....31 deg.

6. Seismic design is performed in accordance with 6th edition of the "AASHTO Guide Specifications for LRFD Seismic Bridge Design".
   A. 1000 Year return period ("No Collapse" Criteria)
   1) Peak ground acceleration coefficient, PGA = 0.196
   2) Site coefficient for site class D: (fpga) = 1.408

7. Guardrails and/or handrails:
   A. System designed to comply with Crash - Test Level 1 Criteria (static loads only). Barrier system has not been formally crash tested.
   B. Loading and geometry criteria comply with AASHTO Table A13.2-1 and associated requirements.

GRS WINGWALL SYSTEM

1. GRS walls are designed per the design and construction guidelines for Geosynthetic Reinforced Soil Abutments and Integrated Bridge Systems, publication No. FHWA-HRT-17-080, June 2018.

2. Provide GRS Fabric MirafiHPS70, US4800/30, or WINFAB 570HP. If approved by the engineer, another equivalent fabric may be used.

SOILS, FOUNDATIONS, AND BACKFILLS

1. Because the bridge owner has not provided the bridge Engineer Of Record with a professionally qualified, site-specific, geotechnical report, the engineer has designed the bridge structure to be supported on soils having adequate strength and consolidation properties to properly perform under the assumed footing bearing pressures as stipulated in the bridge structural general notes. In addition, the bridge has been designed to be compatible with other on-site and imported soil properties identified in the general notes. The owner understands and agrees that the bridge Engineer Of Record accepts no responsibility and/or liability for injury, death, or property damage, due in whole or in part, because the foundation design for this bridge structure is based on assumed, unconfirmed soil properties, including stream scour.

SOILS, FOUNDATIONS, AND BACKFILLS (CONTINUED)

2. This project has been designed assuming an allowable bearing capacity of 4000 psf. Confirm assumed bearing capacity can be achieved prior to construction.

3. Remove existing fill or soil down to 6" below footing units. Excavate a minimum width of 5'-0" extending at least 6" beyond front and back faces of footing units.

4. Where excavation of fill and/or silt extends below bottom elevation of abutment blocks, provide imported angular crushed rock base per the design plans.

5. Compact imported base material to at least 95% relative compaction.

6. Provide a non-woven, needle-punched soil filter fabric of minimum 4 ounce per square yard weight between backfill soil and back face of abutment walls.
   A. Lap all joints, horizontal and vertical, a minimum of 6 inches.
   B. Install as shown on drawings.

7. Use only free-draining granular material as backfill behind abutment walls. Compact material placed behind walls to 95% relative compaction using only light or hand-operated compaction equipment.

8. To prevent unbalanced lateral loading of abutment walls, install backfill against back face of abutment walls no more than 5'0" above elevation of soil placed against front face until after abutment wall vertical reinforcement has been grouted and only after bridge deck plank units have been dowel-anchored-grouted to top of abutment walls at each end.

STEEL PLATES, PIPES, TUBES, ROLLED SHAPES, BOLTS, PINS, AND WELDS

1. Plate.....ASTM A36.

2. Pipe.....ASTM A53/Grade B or ASTM A501.

3. Rolled Shapes.....ASTM A992.

4. Structural Bolts.....F3125 Grade A325.

5. Weld in conformance with AWS D1.1 by properly certified welders using E70 Electrodes and AWS Prequalified Procedures.

6. Do not weld members after they have been galvanized.

7. Hot-dip galvanize all steel components that are not protected against atmospheric corrosion by a minimum of 1" of concrete cover.
   A. Provide a minimum zinc coating of 2.3 ounces per square foot per ASTM A123 or ASTM A385.
   B. Treat field drilled holes, field welds, and abrasions with one coat of Pittsburgh "Waterspar" or "Speedhide" galvanizing primer and two coats of "Ironhide" metal protective paint.

8. Paint all steel not encased in concrete and too large to be hot-dip galvanized.
   A. Shop-apply (3) paint coatings each 2.0 mil minimum dry thickness.
   1st Coat - Rust-O-Crylic "5769 Rust Inhibiting Red Primer".
   2nd Coat - Rust-O-Crylic "5791 White Primer".
   3rd Coat - Rust-O-Crylic "5700 System Top Coat" (Color per owner).
   B. After completing all field welding and bolting, field-apply the above painting system onto all steel surfaces field-welded, scratched, chipped, or otherwise unprotected against atmospheric corrosion.

CONCRETE

1. General
   A. Provide concrete complying with ACI 301.
   B. Use normal weight (145 pcf +/- 5 pcf) concrete.
   C. Air entrainment volume.....5% +/- 1%.
   D. Provide concrete having a minimum cement content of 6 sacks per cubic yard.
   E. Cast concrete using a maximum water/cement ratio of 5 ½ gals per sack of cement.
   F. Do not use any concrete unit having cracks over 1/16" wide.
   G. Fabricate block "lugs" and "recesses" and plank "recesses" such that the dimensions detailed for them on the drawings are achieved to a tolerance of +/- 1/16".

CONCRETE (CONTINUED)

2. Precast bridge deck planks
   A. Prestressed concrete planks
   1) Interior plank
   Minimum strength at 28 days.....f'c = 4000 psi.
   Strength at removal from form.....fcremove = 4000 psi.
   2) Exterior plank
   Minimum strength at 28 days.....f'c = 4000 psi.
   Strength at removal from form.....fcremove = 4000 psi.
   B. Use aggregates no larger than 1" and no smaller than ¾".
   C. Fabricate plank units to the following dimensional tolerances:
   1) Length..... +/- ½".
   2) Width..... +/- ½".
   3) Thickness..... +/- ¼".
   4) Twist, as measured by "lift" of corner, where the other (3) corners define a horizontal plane: +/- ¼".
   D. Supply plank units having the following surface finishes:
   1) Bottom, sides, and ends....."As-Cast in Steel Forms".
   2) Top surface.....transverse "rake" finish.
   (1/4" by ¼" deep groves spaced at ½" on center)
   E. Provide plank and panel units having no "honeycomb" voids and no corner or edge chips larger than 1" in any direction.

3. Precast abutment block units
   A. Minimum strength at 28 days.....f'c = 3000 psi.
   B. Minimum strength at removal from form.....fcremove = 2000 psi.
   C. Use aggregates no larger than 3" and no smaller than ¾".
   D. Fabricate units to the following dimensional tolerances:
   1) Overall width, length, and thickness..... +/- 1/8".
   2) Squareness on all (6) sides, as measured by comparing lengths of face diagonal distances.....+/- 1/8".
   E. Supply units having "As-Cast in Steel Forms" finish.
   F. Provide units having no "honeycomb" voids and no corner or edge chips larger than 2" in any direction.

4. Mortars and grouts
   A. Provide non-corrosive non-shrink cementitious grout by The Euclid Chemical Company an RPM Company. Grout should be in pourable consistency when placed in longitudinal joints between bridge deck planks.
   1) Provide pre-molded compressible back rods along bottom and at ends of joints to retain dry pack.
   2) Fill longitudinal joints flush with top surface of planks.
   B. Provide non-corrosive non-shrink cementitious grout by The Euclid Chemical Company an RPM Company. Grout should be in fluid consistency when placed between top of top abutment block units and underside of precast deck plank units.
   1) Provide wood setting blocks, pre-molded compressible backer rods, and/or expandable, closed-cell, expandable foam around perimeter of top abutment block(s) to retain grout.
   2) Fill vertical cylindrical voids
   a) Around abutment to deck anchor dowel pins.
   b) Around abutment block vertical reinforcing steel.
   3) Vibrate grout, as required, to assure that all voids spaces are completely filled.

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51303
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PROFESSIONAL ENGINEER

RENEWS: 01-05-2025
FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S. Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - WEST

DESIGNER: JOSH GOODALL	REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA	CHECKER: CARLY DIEHL

GENERAL NOTES #1 — SHEET NO. 02

Bridge Structure General Notes

CONCRETE REINFORCING STEEL

1. Provide deformed steel bars complying with ASTM A615, Grade 60.

2. Provide all bars full length.
   A. Do not lap-splice any bar.
   B. Do not weld-splice any bar.

3. Shop-fabricate all bars required to be bent.
   A. Cold-bend all bars.
   B. Do not apply heat to any bar or "tack weld" any bar.

4. Provide minimum concrete cover for reinforcing bars as follows:
   A. At bottom and sides of precast bridge planks.....1" +/- ¼".
   B. At ends of precast bridge planks.....2" +/- ¼".
   C. At top surface of precast bridge planks.....1 ½" +/- ¼".
   D. At all surfaces of reinforced abutment blocks.....1 ½" +/- ¼".

5. Position bars as shown on the drawings to the following tolerances:
   A. Bar location as measured perpendicular to bar length.....+/- ¼".
   B. Bar location as measured parallel to bar length.....+/- ½".
   C. Longitudinal location of bends and ends of bars.....+/- ½".

SPECIAL INSPECTIONS AND TESTING

1. All concrete is placed under "casting plant" conditions in reusable steel forms. No concrete is cast on-site.

   A. Provide periodic inspection of concrete reinforcement each day concrete is cast.

   B. Perform standard field tests on plastic concrete each day concrete is cast, and mold a minimum of 3 standard cylinders for testing at 28 days.

   C. Inspection/testing reports are available from Pacific Bridge and Construction, Inc.

HORIZONTAL TRANSVERSE RODS FOR PRECAST BRIDGE PLANKS

1. Provide transverse tie rods for precast bridge planks at elevations and spacing as shown on the drawings.

2. Use ¾" Grade 75 all-thread rebar.

3. Galvanize transverse rods, steel bearing plates, and heavy hex nuts to provide a minimum zinc coating thickness of 2.3 oz./sq ft.

4. Bring nuts on each end of all rods to fully "snug" condition, then tighten each nut $1\frac{1}{2}$ turns.

5. After nuts have been properly tightened, install lock nut at each end of rod. Rod shall extend ½" beyond lock nut.

6. Do not tighten nuts at ends of rods until grout in all longitudinal joints has cured to a minimum compressive strength of 5000 psi.

INSTALLATION NOTES

1. General
   A. These drawings and bridge structure general notes indicate finished constructed structure.
   B. Except as specifically indicated as "required" installation procedures, sequences, means, and methods are the sole responsibility of the installation contractor.
   C. Plans, sections, details, and bridge structure general notes provided by David Evans and Associates, Inc. pertain only to the bridge structure.
   D. These installation notes may not be all-inclusive. Installation contractor shall perform all work required to produce a properly constructed bridge structure.

INSTALLATION NOTES (CONTINUED)

2. Prepare site for installation of bridge
   A. Construct temporary dams and other required stream diversions.
   B. Provide acceptable required dewater and sediment controls.
   C. Install pumps, pipes, and other required apparatus.
   D. Install "required" signage and close road to traffic.
   E. Remove existing culvert, bridge structure, and abandoned debris.
   F. Excavate for placement of abutment footing units.
   G. Obtain acceptance of foundation bearing subsurface by geotech.
   H. Stability and safety of all temporary excavations and structures are the sole responsibility of the installation contractor.

3. Install abutments
   A. Place abutment footing units level and at proper elevation(s).
   B. Where necessary, provide grout plug in bottom of grout holes at footing vertical voids "required" to contain vertical rebar.
   C. Provide 8" to 10" diameter annular grout retainage rings on top of each abutment around vertical voids to be reinforced using a well-bonding insulating spray foam (to retain grout when abutment vertical rebar is grouted later).
   D. Stack abutment units plumb onto center of footings.
      1) Place fill on front and back sides of abutments.

4. Place precast concrete bridge plank units
   A. Place continuous wood bearing strips along top front edge or top back edge of top abutment units.
   B. Note that it is "required" that deck plank units be lifted at points located only at their ends.
   C. Use only proper lifting techniques such as spreader bars, etc.
   D. Set precast deck planks.
   E. Install premolded compressible backing rod full length at bottom and vertically at each end of all longitudinal grout joints.
   F. Thread PVC sleeves thru transverse tie rod voids.
   G. Fully grout all longitudinal joints full depth and full length.
   H. Allow longitudinal joint grout in all joints to cure a "Required" minimum of 4 hours.

5. Install premolded compressible backer rods continuous along (3) edges of top abutment blocks (under deck planks).

6. Install rebar dowels and/or verticals at each end of planks down into pre-formed and/or field-drilled holes in abutment block units.

7. Install vertical rebar through deck planks to bottom of footing units.

8. Fully grout (under pressure if required) voids around vertical rebar and simultaneously fill voids under deck planks at top of abutments. Allow grout to cure a minimum of 4 hours.

9. Install and fully tighten transverse tie rods as "required".

10. Remove 4" (minimum) lengths of backer rods under ends of planks at 2'0" (Maximum) intervals to confirm grout void has been filled. Confirmin that at least 80% of the length of the grout edge has full contact along both the top and bottom joint surfaces.

CONCRETE PRESTRESSING STRAND

1. Provide uncoated 7-wire, Grade 270, low-relaxation prestress strand conforming to ASTM A416, including current supplements of ½" diameter and cross-sectional area 0.151 sq in.

2. Do not use any portion of strand having scratches, gouges, nicks, or any other abrasion, or any portion of strand previously gripped by jacking chucks.

3. Run strand straight between jacking chucks - Do not harp strands.

4. Jack each ½" diameter strand to a force of 31,000 lbs. (75% of breaking strength).

5. Confirm jacking force by measuring stretch of strand as it is jacked.
   A. Strain at initial jacking force = 0.00711 in/in.
   B. Example: For a distance of 64'-4" between jacking chucks and a computed shortening of the self-stressing forms of ¼", the stressing jack will move 5 ¾" relative to the bulkhead.

6. Recommended jacking sequence:
   A. Apply initial jacking force of 5000 lbs. to each strand to seat jacking chucks (will stretch strand $\frac{7}{8}$").
   B. Starting with center strands, sequentially stress each strand.
   C. After stressing all strands, confirm that the required 31,000 lb. force has been achieved in each strand. (Center strands may require additional jacking.)
   D. After concrete has attained its required release strength, de-tension strands in reverse order of stressing the strands.

7. Prior to moving prestressed concrete unit from manufacturing plant provide corrosion protection by thoroughly coating ends of strands with a self-adhesive, asphalt-based, corrosion preventive mastic (Henry "HE209 - Elastomeric" and "104 Asphalt Primer", if required).

SHIPPING & HANDLING

1. Precast bridge planks shall only be picked by lifting loops at the ends of the plank. Contractor shall use equipment such that the attachment to the lifting loops remain vertical or no more than 20° from vertical.

2. Inspect lifting loops for damage prior to picking up planks. If damage has occurred to lifting loops do not proceed without engineer's approval.

3. During shipping or storage of the planks place wood blocking under the plank directly under the lifting loops at each end of the plank.

JOSHUA K. GOODALL
STATE OF WASHINGTON
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SWALE CREEK BRIDGE - WEST

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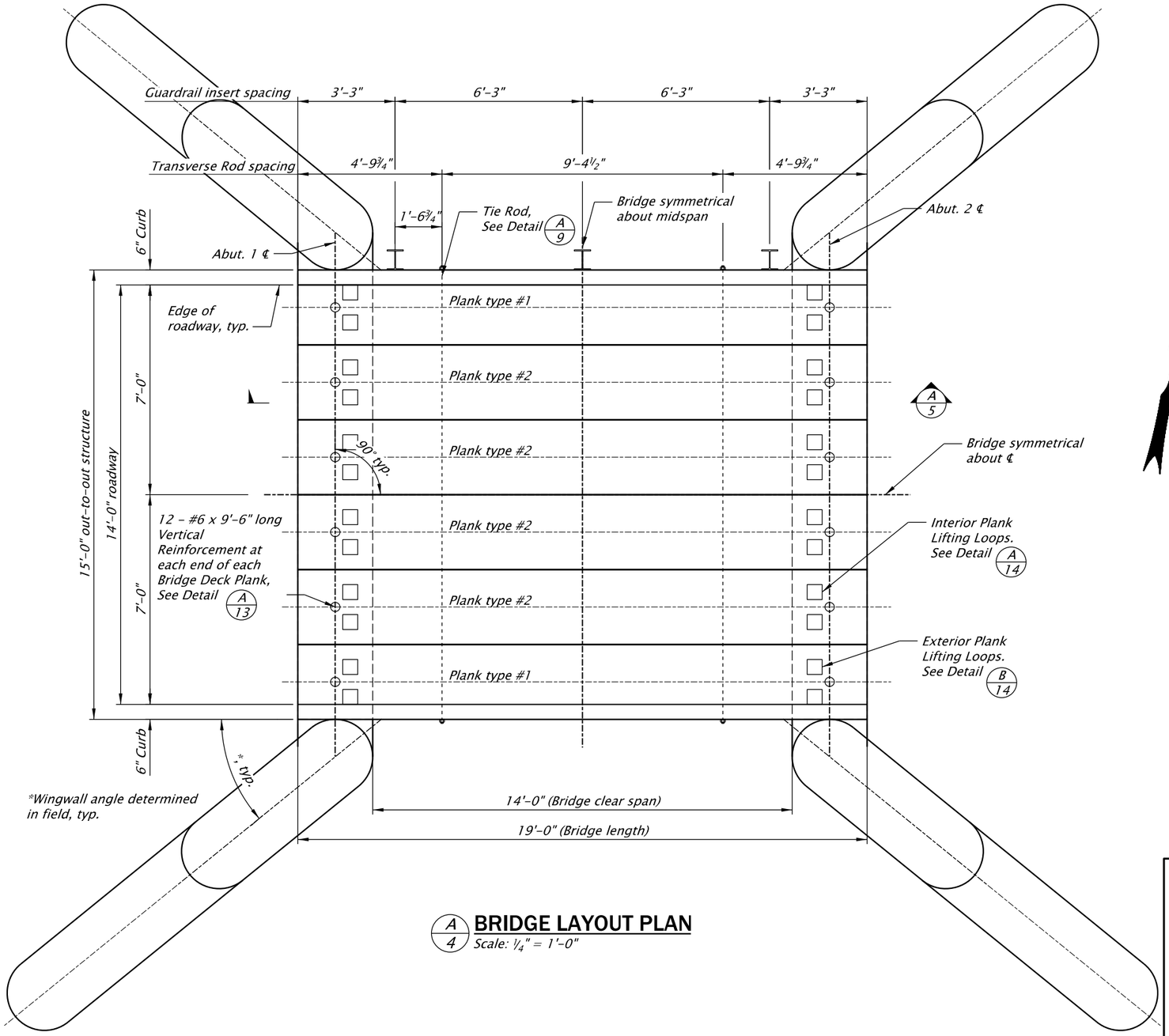
GENERAL NOTES #2

SHEET NO. 03



A/4 **BRIDGE LAYOUT PLAN**
Scale: ¼" = 1'-0"

N

JOSHUA K. GOODALL
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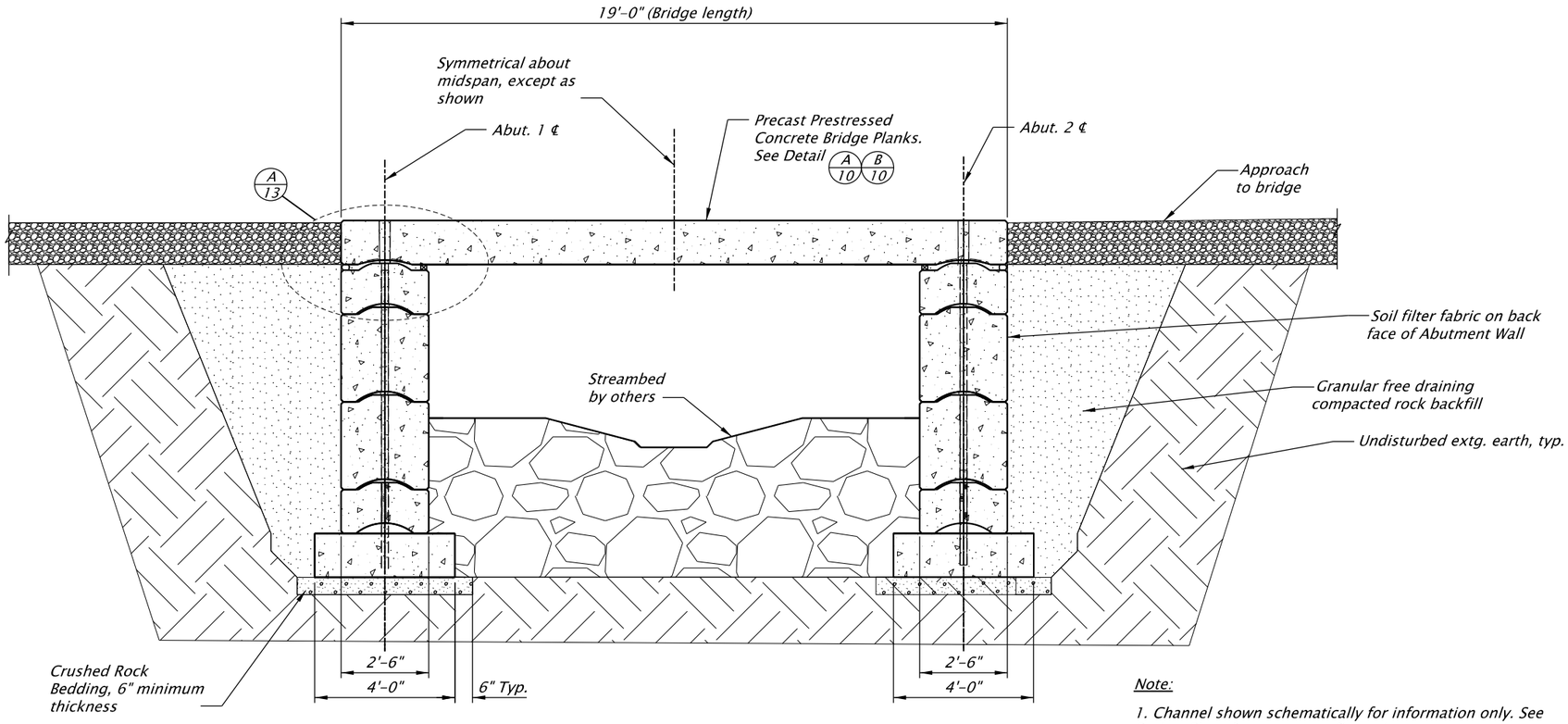
BRIDGE LAYOUT PLAN

SHEET NO. 04



A/5 LONGITUDINAL SECTION THROUGH BRIDGE

Scale: 3/8" = 1'-0"

Note:

1. Channel shown schematically for information only. See Project Plans for stream configurations.
2. Structure shown flat. See Project Plans for slope.

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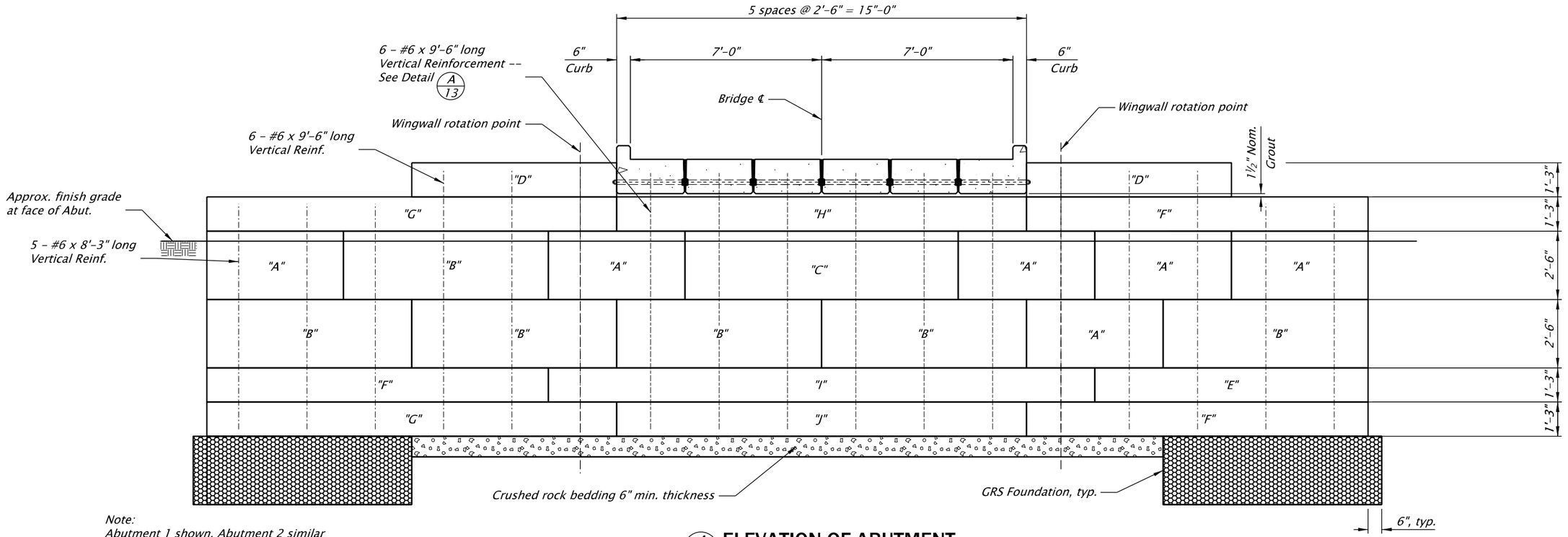
LONGITUDINAL SECTION THRU BRIDGE

SHEET NO. 05



Note:
Abutment 1 shown, Abutment 2 similar

A/6 ELEVATION OF ABUTMENT

Scale: ¼" = 1"-0"

Precast Concrete Abutment Block Schedule

Unit Mark	Total Count	Unit Type	Reference	Dimension			End Shape		Reinf Bars	Notes
				Length	Height	Width	Left	Right		
"A"	12	Standard	Dwg. "A/11"	5'-0"	2'-6"	2'-6"	Round	Round	No	(1)
"B"	12	Standard	Dwg. "A/11"	7'-6"	2'-6"	2'-6"	Round	Round	No	(1)
"C"	2	Standard	Dwg. "A/11"	10'-0"	2'-6"	2'-6"	Round	Round	No	(1)
"D"	4	Mono	Dwg. "A/12"	7'-6"	1'-3"	2'-6"	Round	Round	Yes	(1)
"E"	2	Mono	Dwg. "A/12"	10'-0"	1'-3"	2'-6"	Round	Round	Yes	(1)
"F"	6	Mono	Dwg. "A/12"	12'-6"	1'-3"	2'-6"	Round	Round	Yes	(1)
"G"	4	Mono	Dwg. "A/12"	15'-0"	1'-3"	2'-6"	Round	Round	Yes	(1)
"H"	2	Mono	Dwg. "A/12"	15'-0"	1'-3"	2'-6"	Square	Square	Yes	(1)
"I"	2	Mono	Dwg. "A/12"	20'-0"	1'-3"	2'-6"	Round	Round	Yes	(1)
"J"	2	Footing	Dwg. "A/15"	15'-0"	1'-3"	4'-0"	Square	Square	Yes	(1) (2)

Note:
(1) These units are reversible as required by project layout (left-to-right).
(2) Lugs on these Blocks are to be omitted.

B/6 ABUTMENT BLOCK SCHEDULE

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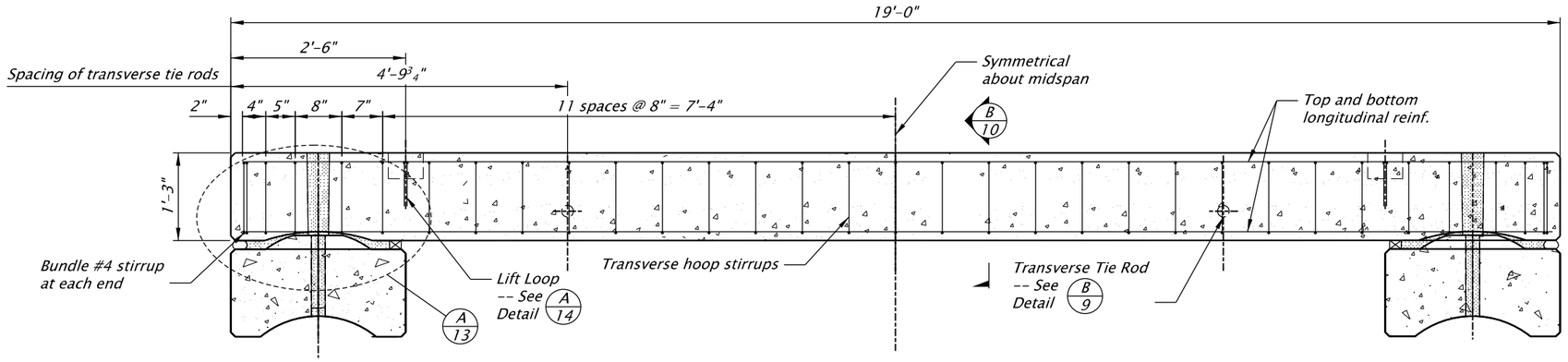
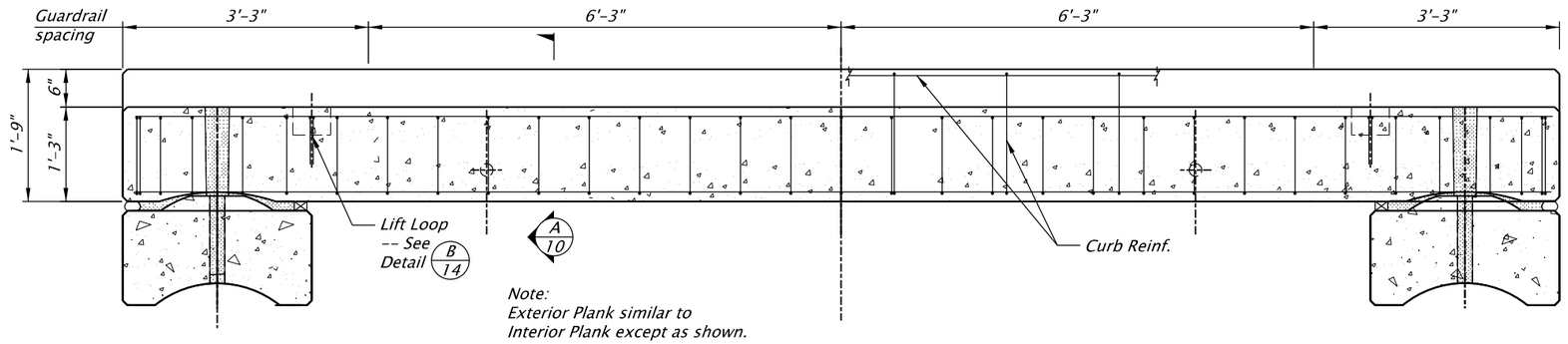
ABUTMENT ELEVATION

SHEET NO. 06



A/7 LONGITUDINAL SECTION OF CONCRETE INTERIOR PLANK - TYPE "2"

Scale: 1/2" = 1'-0"



Note:
Exterior Plank similar to Interior Plank except as shown.

B/7 LONGITUDINAL SECTION OF CONCRETE EXTERIOR PLANK – TYPE "1"

Scale: 1/2" = 1'-0"

Girder Shear Reinforcement

Unit Mark	Total Count	Unit Type	Reference	Main Stirrup Number	Curb Stirrup Number	Extra Guardrail Stirrup	Unit Weight
Type "1"	2	Exterior	A/10	33	13	0	10 kips
Type "2"	4	Interior	B/10	33	N/A	N/A	9 kips

Notes:
1. Structure shown flat. See Project Plans for slope.
2. All Longitudinal reinforcing bars extend full length of Plank.
3. Adjust main stirrups as required to place Transverse Tie Rods. Do not exceed maximum stirrup spacing.

C/7 SHEAR REINFORCEMENT SCHEDULE

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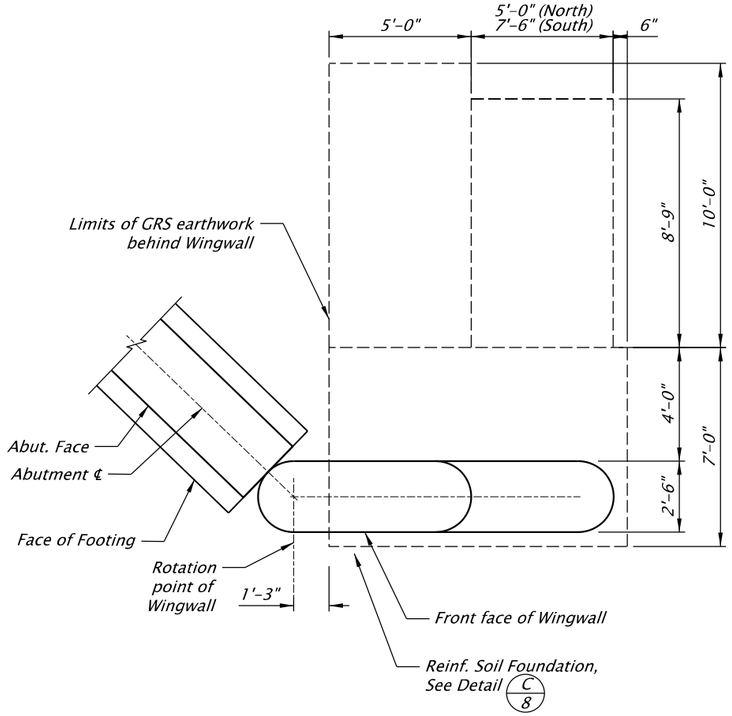
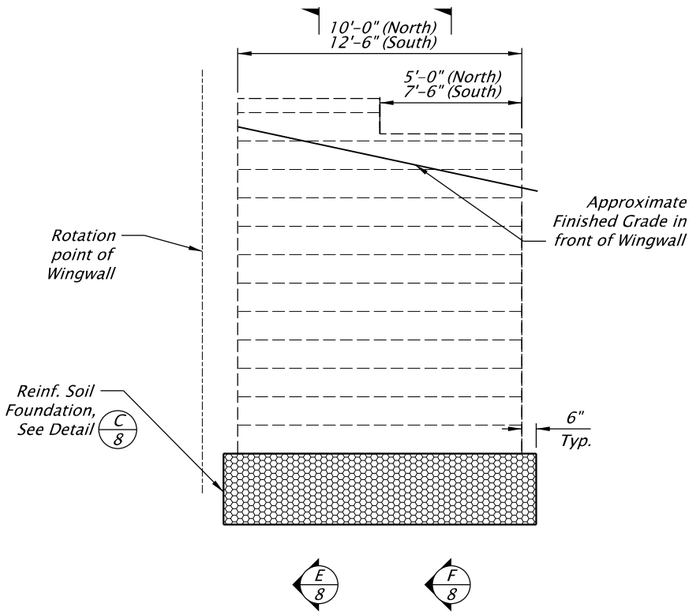
LONGITUDINAL SECTION OF PLANKS

SHEET NO. 07



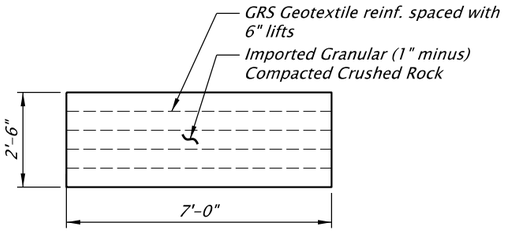
A/8 GRS WINGWALL PLAN VIEW

Scale: 3/16" =1'-0"



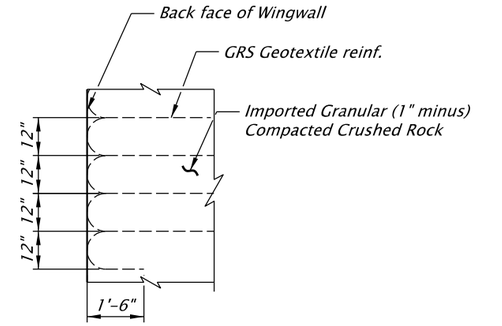
B/8 GRS WINGWALL ELEVATION VIEW

Scale: 3/16" = 1'-0"



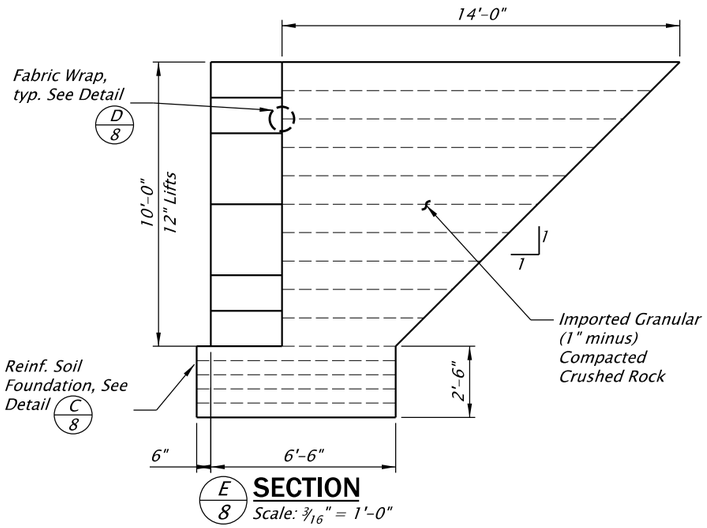
C/8 REINFORCED SOIL FOUNDATION DETAIL

Scale: 1/4" = 1'-0"



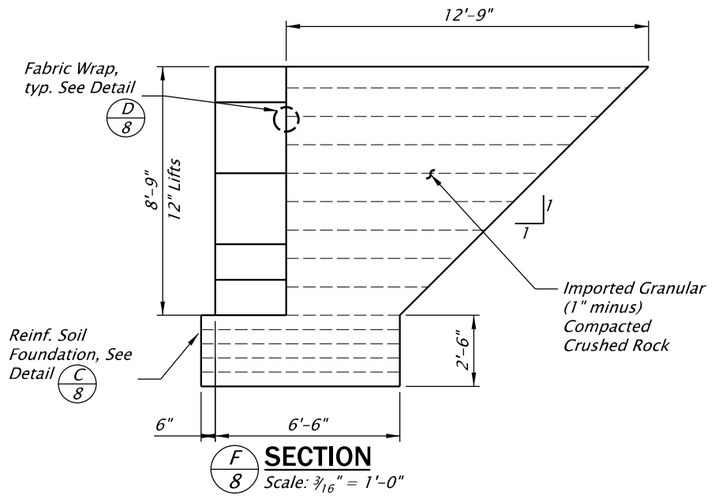
D/8 FABRIC WRAP DETAIL

Scale: 1/4" = 1'-0"



E/8 SECTION

Scale: 3/16" = 1'-0"



F/8 SECTION

Scale: 3/16" = 1'-0"

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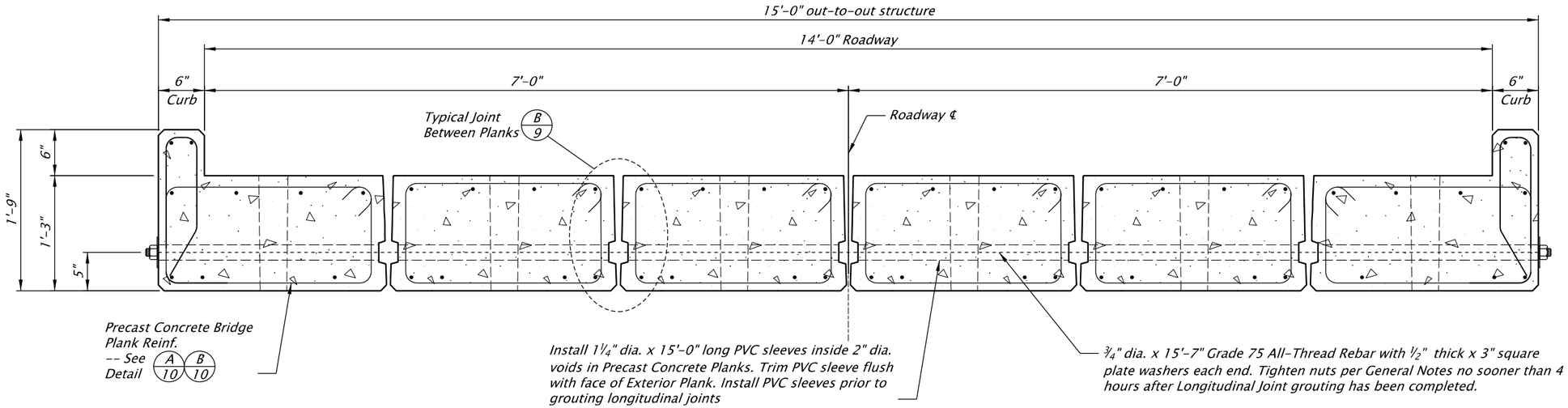
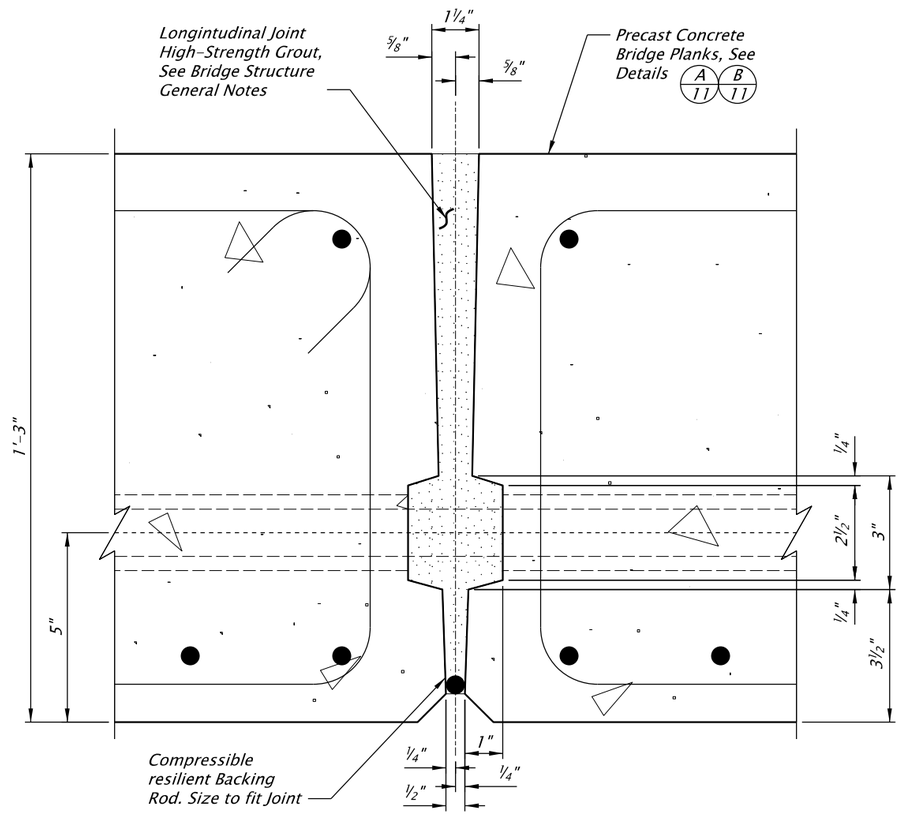
WINGWALL GRS DETAILS

SHEET NO. 08



A/9 TYPICAL TRANSVERSE TIE ROD ACROSS FULL WIDTH OF PRECAST CONCRETE PLANK BRIDGE DECK

Scale: ¾" = 1'-0"



B/9 TYPICAL LONGITUDINAL KEY JOINT BETWEEN 15" THICK PRECAST CONCRETE BRIDGE PLANKS

Scale: 3" = 1'-0"

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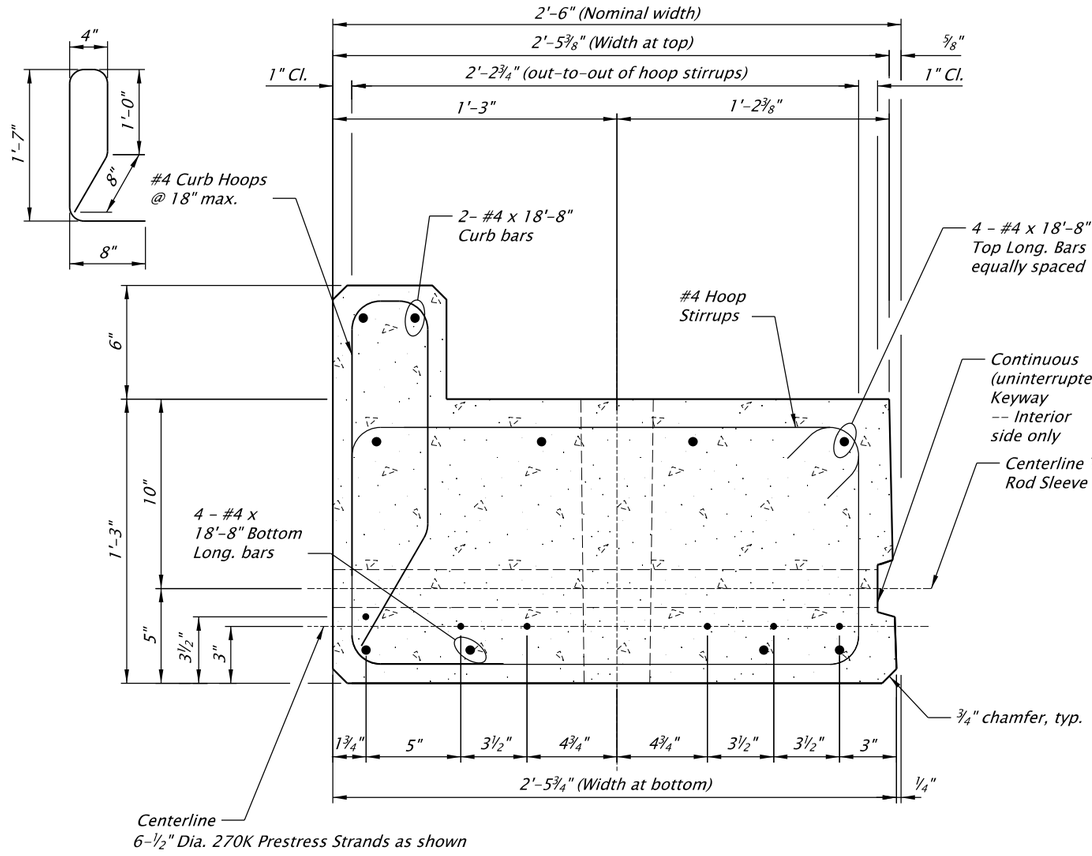
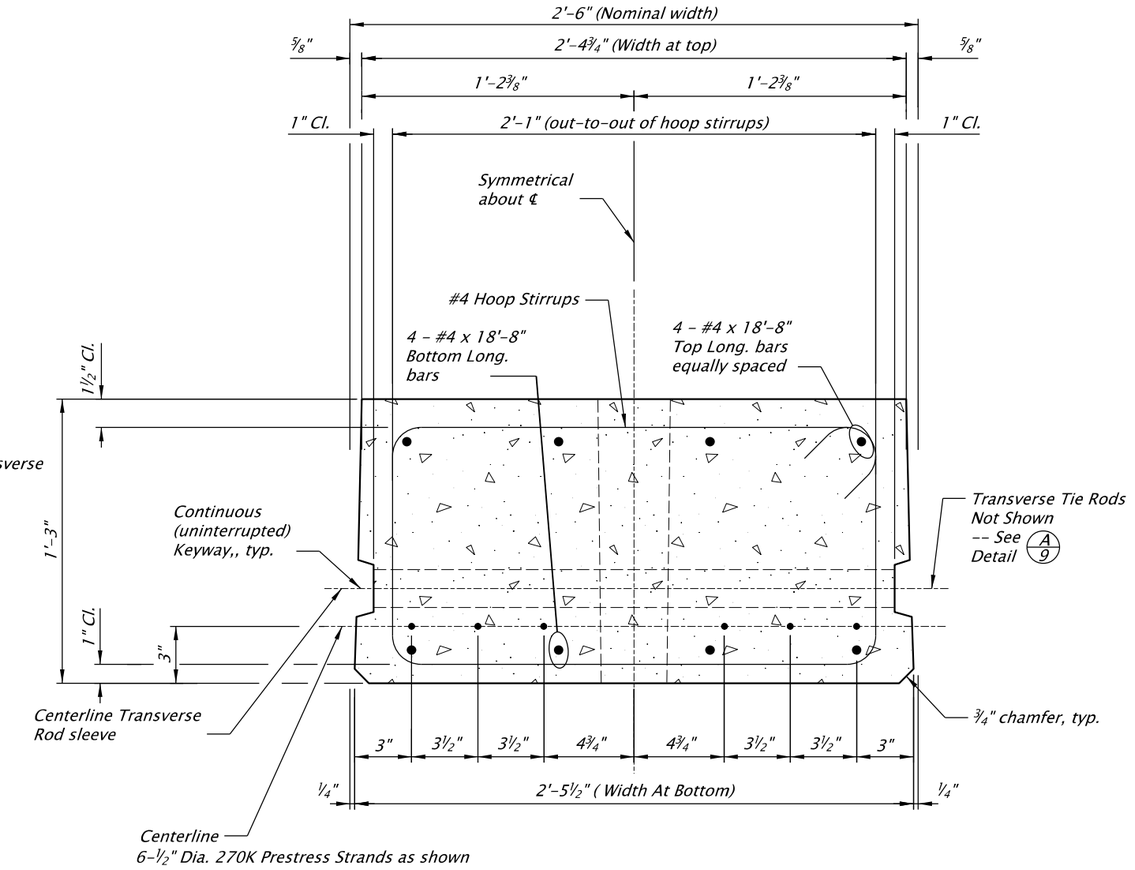
MISCELLANEOUS DECK PLANK DETAILS

SHEET NO. 09



A/10 TRANSVERSE SECTION THRU PRESTRESSED EXTERIOR PLANKS

Scale: 1½" = 1'-0"



B/10 TRANSVERSE SECTION THRU PRESTRESSED INTERIOR PLANKS

Scale: 1½" = 1'-0"

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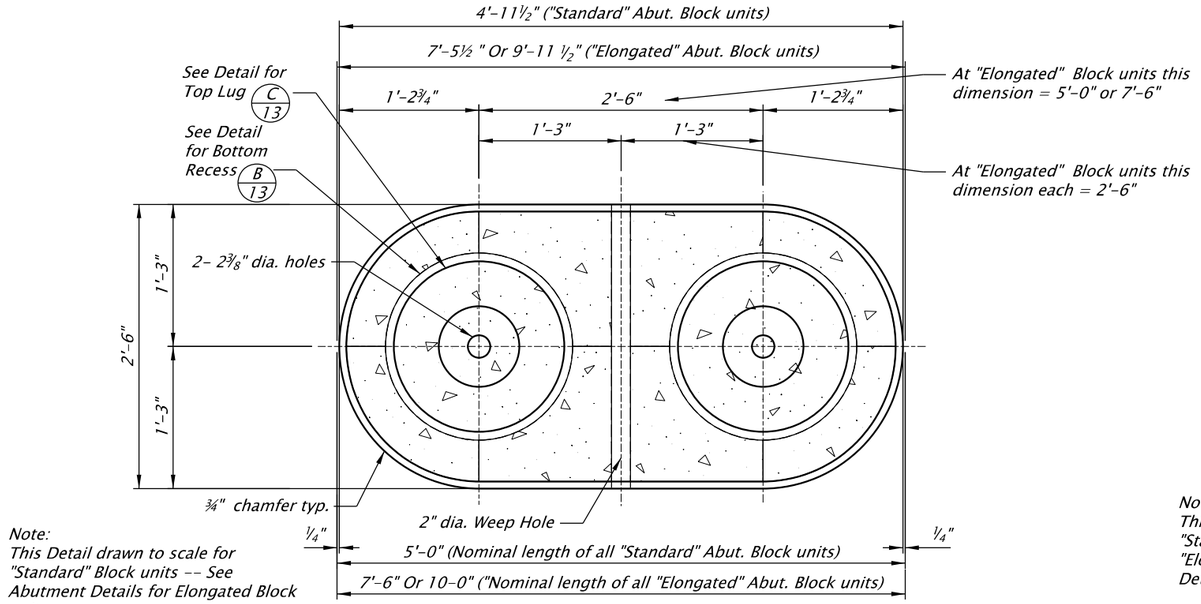
DECK PLANK SECTIONS

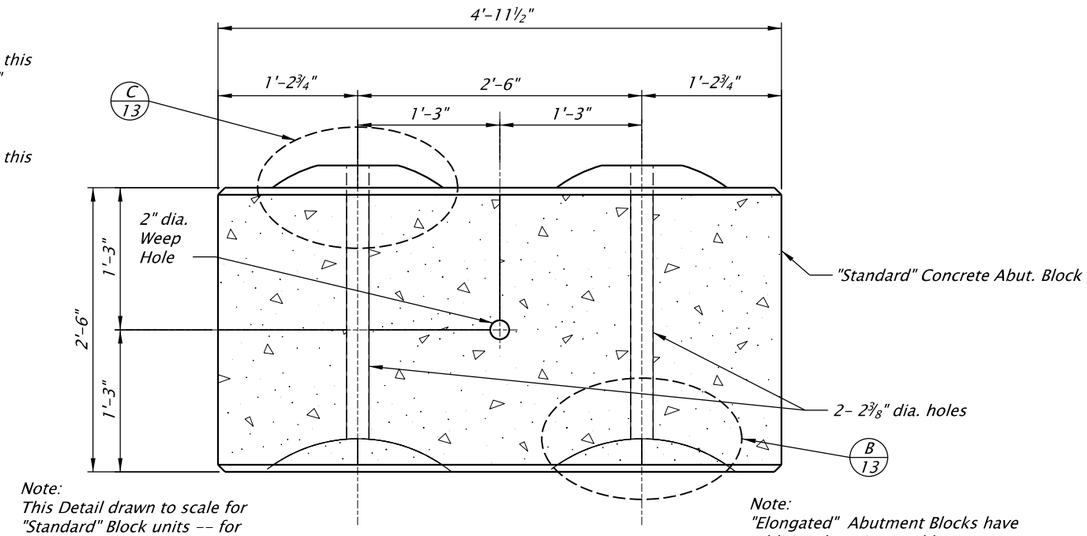
SHEET NO. 10



Note:
This Detail drawn to scale for "Standard" Block units -- See Abutment Details for Elongated Block units

A/11 TOP VIEW OF "STANDARD" & "ELONGATED" ABUTMENT BLOCKS

Scale: ¾" = 1'-0"

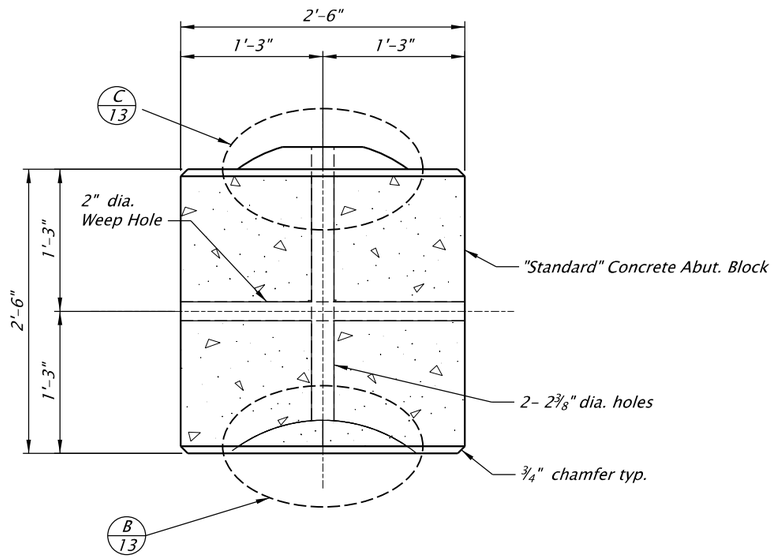


Note:
This Detail drawn to scale for "Standard" Block units -- for "Elongated" Block units See Abutment Details

Note:
"Elongated" Abutment Blocks have additional top Lug and bottom Recesses compared to a "Standard" Block. Lugs and Recesses should be spaced at 2'-6" O/C.

B/11 FRONT VIEW OF "STANDARD" ABUTMENT BLOCK

Scale: ¾" = 1'-0"



C/11 SIDE VIEW OF "STANDARD" ABUTMENT BLOCK

Scale: ¾" = 1'-0"

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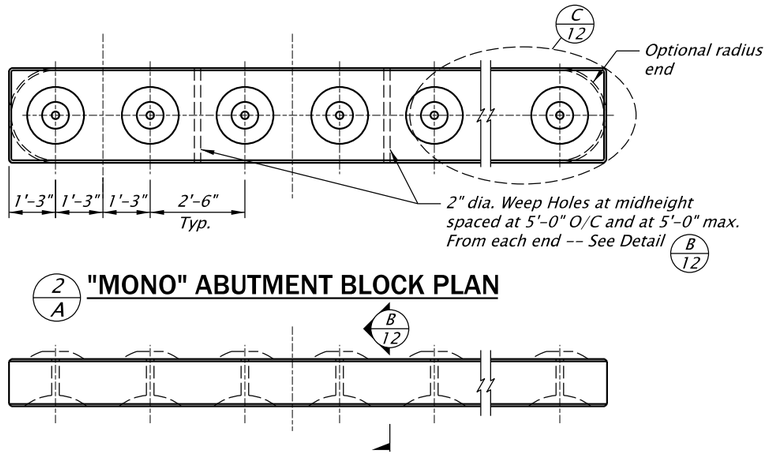
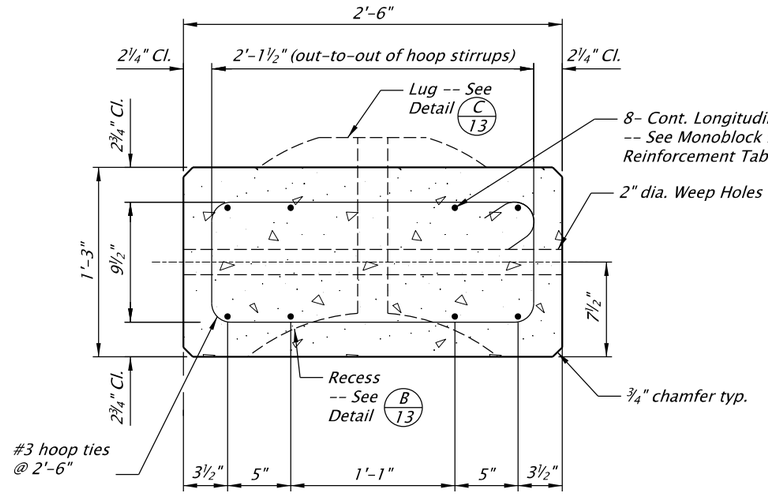
"STANDARD" ABUTMENT BLOCK DETAILS

SHEET NO. 11



2/A "MONO" ABUTMENT BLOCK PLAN

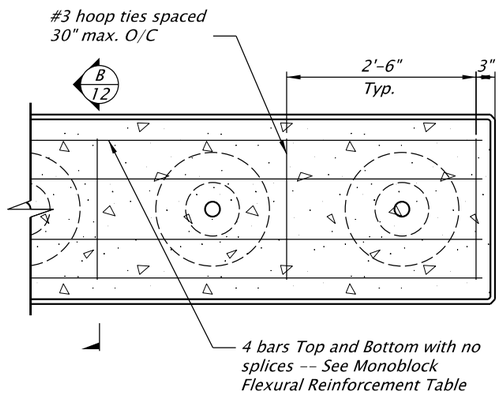
1/A TYPICAL "MONO" ABUTMENT BLOCK ELEVATION

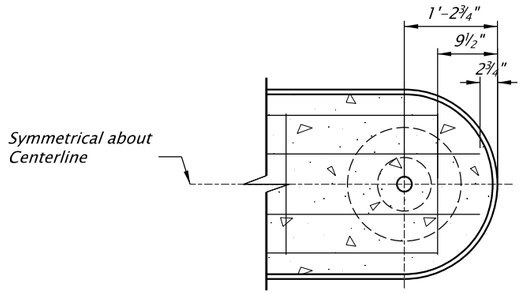


Monoblock Flexural Reinforcement	
Block Length	Bar Size
L ≤ 15'-0"	#4
15'-0" < L ≤ 22'-6"	#5
L > 22'-6"	#6

A/12 PLANS AND ELEVATION OF MODULAR CONCRETE "MONO" ABUTMENT BLOCK UNITS
Scale: ¼" = 1'-0"

B/12 TYPICAL SECTION THRU "MONO" ABUTMENT BLOCK
Scale: 1"= 1'-0"





1/C RADIUS (ROUND) END OPTION

C/12 TYPICAL CONCRETE MONO ABUTMENT BLOCK REINFORCING
Scale: ½" = 1'-0"

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER
RENEWS: 01-05-2025
FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

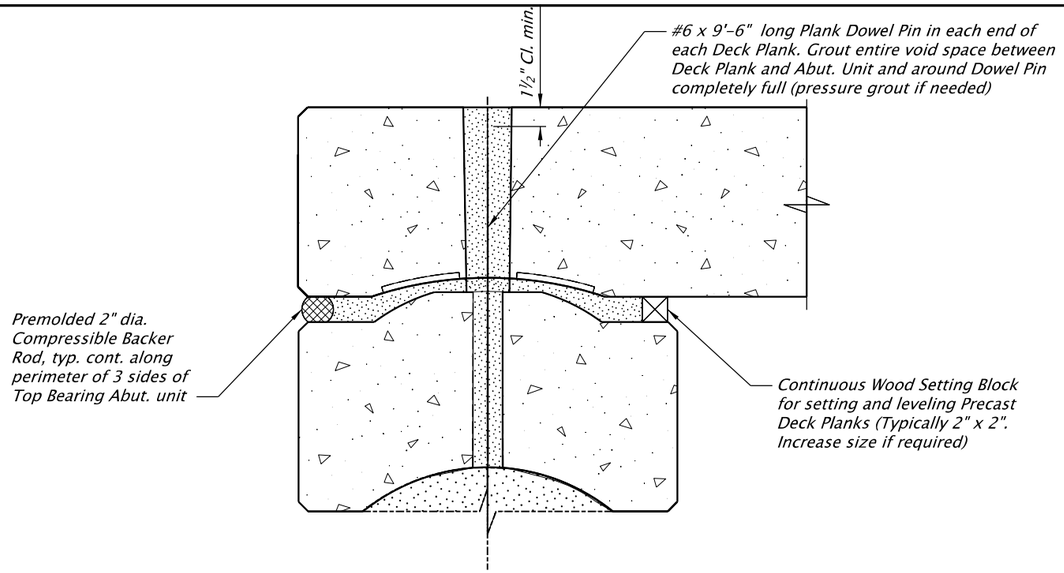
DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - WEST

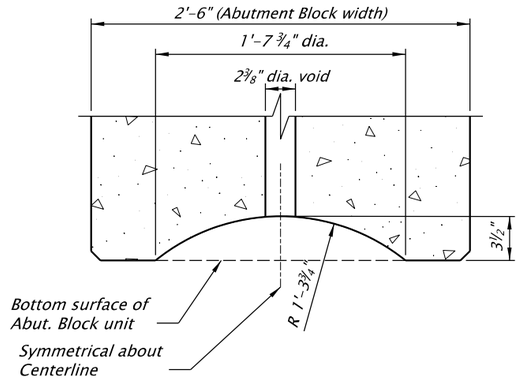
DESIGNER: JOSH GOODALL REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA CHECKER: CARLY DIEHL

"MONO" ABUTMENT BLOCK DETAILS

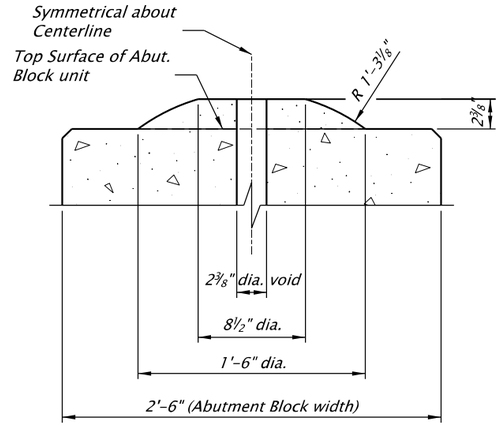
SHEET NO. 12



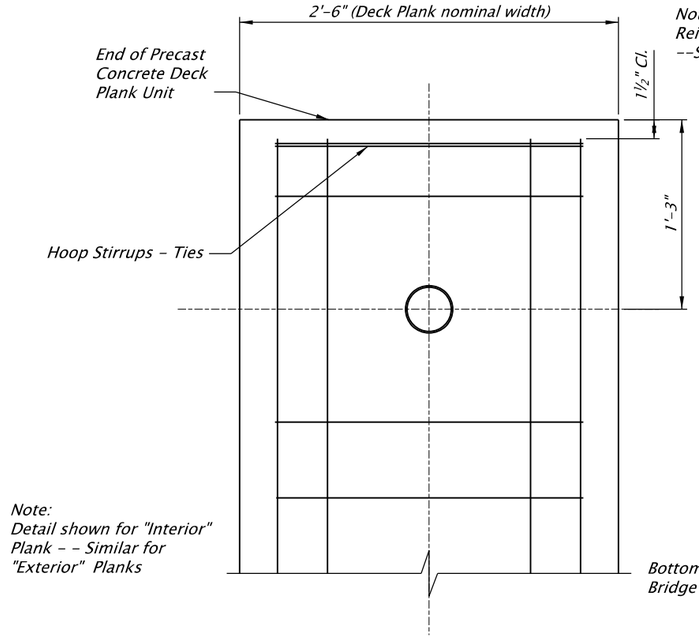
A/13 **BRIDGE PLANK TO ABUTMENT CONNECTION**
Scale: 1"=1'-0"



B/13 **TYPICAL ABUTMENT BLOCK RECESS ON BOTTOM OF ALL ABUTMENT BLOCKS**
Scale: 1"=1'-0"

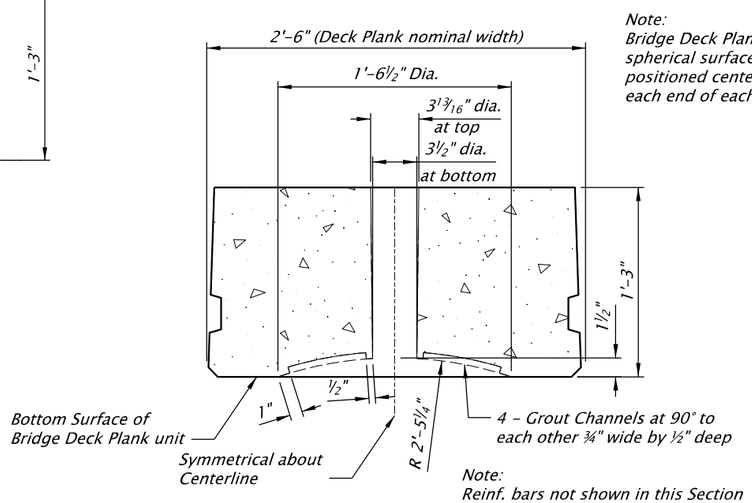


C/13 **TYPICAL ABUTMENT BLOCK RECESS ON TOP OF ALL ABUTMENT BLOCKS**
Scale: 1"=1'-0"



Note:
Reinf. Bars shown schematically
--See Details A/10 B/10

D/13 **PLAN VIEW OF END OF EACH DECK PLANK UNIT**
Scale: 1"=1'-0"



Note:
Bridge Deck Plank Recesses have spherical surfaces and are positioned centered at 1'-3" from each end of each Plank.

Note:
Reinf. bars not shown in this Section

E/13 **TYPICAL END OF EACH DECK PLANK UNIT**
Scale: 1"=1'-0"

JOSHUA K. GOODALL
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PROFESSIONAL ENGINEER

RENEWS: 01-05-2025
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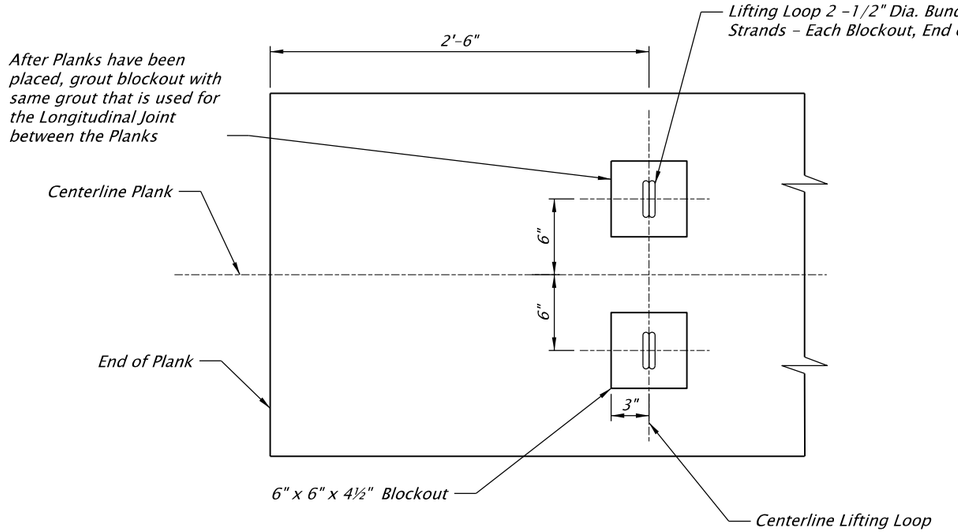
DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - WEST

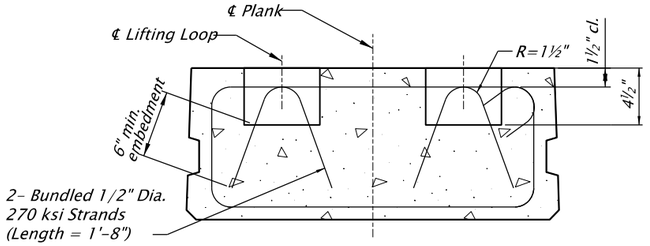
DESIGNER: JOSH GOODALL | REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA | CHECKER: CARLY DIEHL

PLANK AND BLOCK DETAILS #1

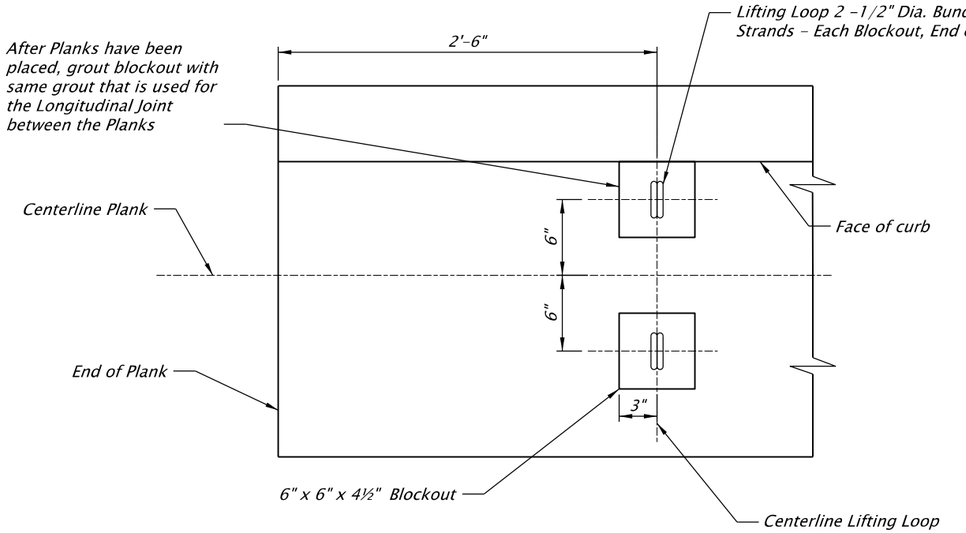
SHEET NO. 13



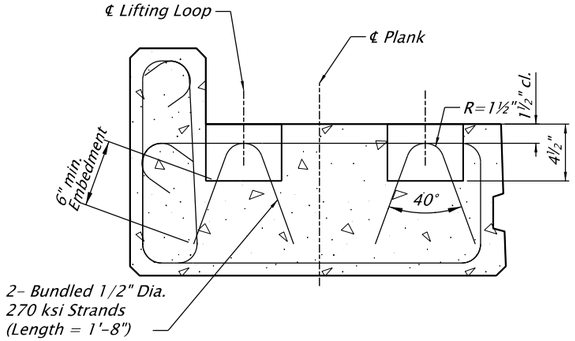
A/14 **LIFTING LOOP PLAN VIEW - INTERIOR PLANK**
Scale: 1" = 1'-0"



C/14 **LIFTING LOOP SECTION VIEW - INTERIOR PLANK**
Scale: 1" = 1'-0"



B/14 **LIFTING LOOP PLAN VIEW - INTERIOR PLANK**
Scale: 1" = 1'-0"



D/14 **LIFTING LOOP ELEVATION VIEW - EXTERIOR PLANK**
Scale: 1" = 1'-0"

JOSHUA K. GOODALL
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RENEWS: 01-05-2025
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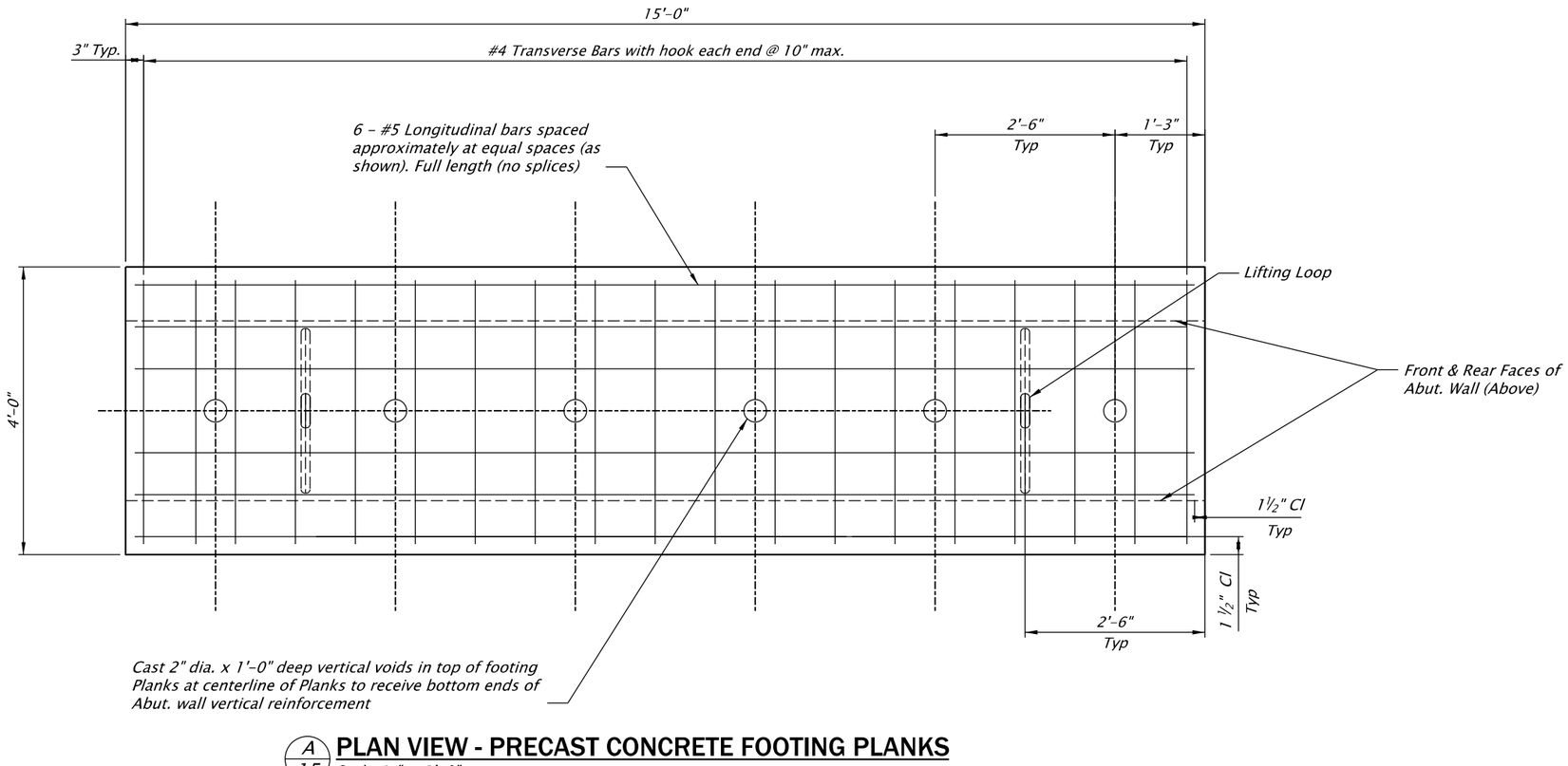
DAVID EVANS AND ASSOCIATES INC.
5121 Skyline Village Loop S, Suite 200
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - WEST

DESIGNER: JOSH GOODALL | REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA | CHECKER: CARLY DIEHL

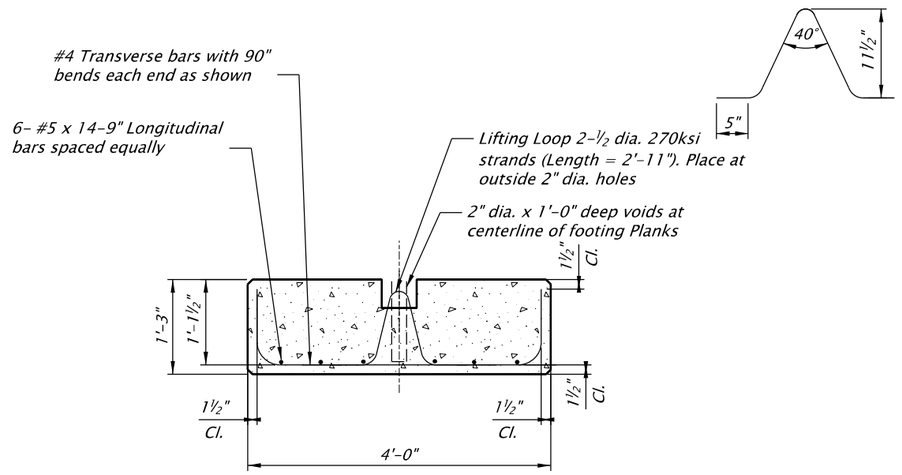
PLANK AND BLOCK DETAILS #2

SHEET NO. 14



A/15 PLAN VIEW - PRECAST CONCRETE FOOTING PLANKS

Scale: ½" = 1'-0"



B/15 SECTION VIEW - PRECAST CONCRETE FOOTING PLANKS

Scale: ½" = 1'-0"

JOSHUA K. GOODALL
STATE OF WASHINGTON
51303
REGISTERED PROFESSIONAL ENGINEER
DIGITALLY SIGNED

RENEWS: 01-05-2025
FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

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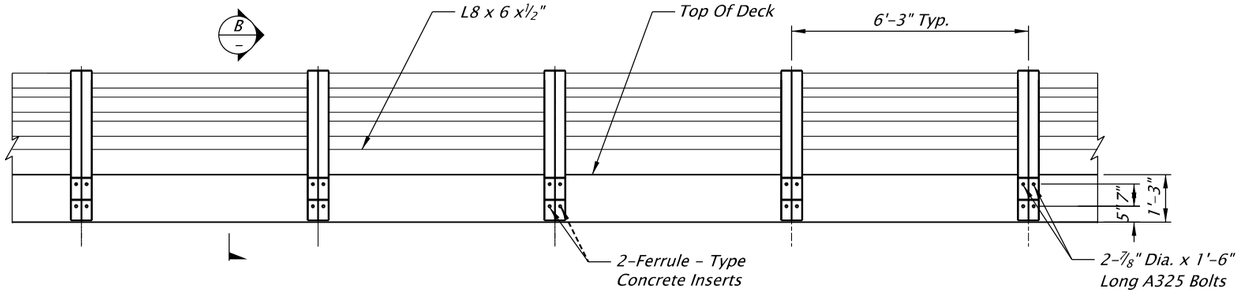
Salem Oregon 97306
Phone: 503.361.8655

SWALE CREEK BRIDGE - WEST

DESIGNER: JOSH GOODALL
DRAFTER: ANGELA CHISA
REVIEWER: NICK PEEK
CHECKER: CARLY DIEHL

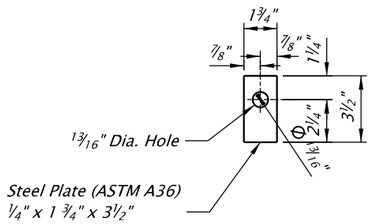
FOOTING CONCRETE BLOCK DETAILS

SHEET NO. 15



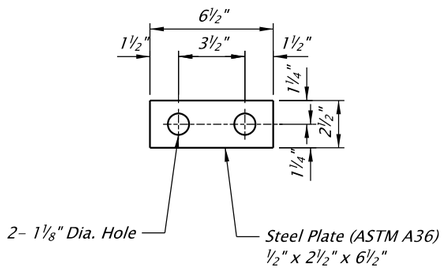
A/16 TYPICAL GUARDRAIL ANCHOR ELEVATION

Scale: ¼" = 1'-0"



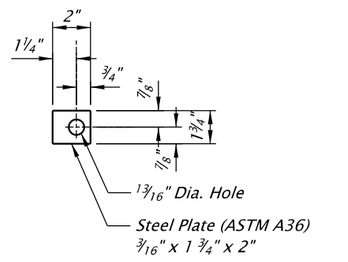
Note:
Position Washers To Completely Cover
Slotted Holes In Flange Of Steel Post

PLATE WASHER "A"



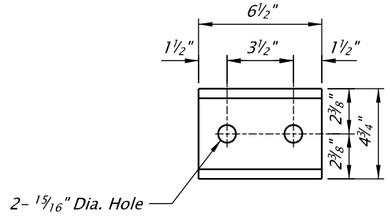
Note:
2- Washer "B" Required Per Post
(Including Cast In Bridge Plank)

PLATE WASHER "B"



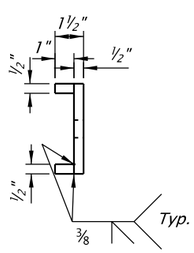
Note:
Position Washers To Completely Cover
Slotted Holes In Thrie-Beam Guardrail

PLATE WASHER "C"



Note:
Fabricate from Steel Plate (ASTM A36)
½" Thick Plates

PLATE WASHER "D"



Note:
All Washers Hot-Dip Galvanize After
Fabrication.

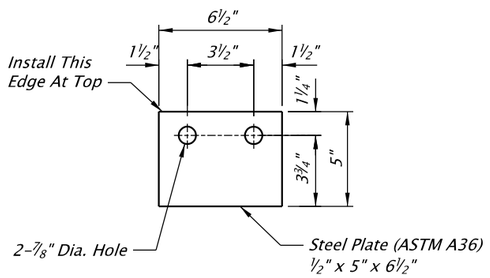
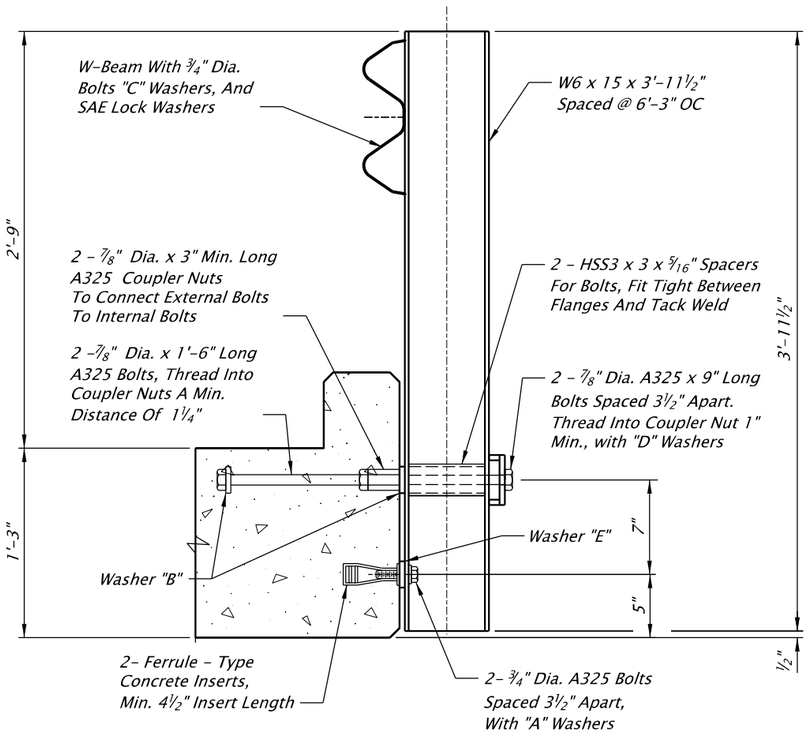


PLATE WASHER "E"

C/16 WASHER DETAILS FOR GUARDRAIL ANCHORS

Scale: 1½" = 1'-0"

Note:
1. Hot-Dip Galvanize All Steel Hardware After Fabrication
2. For Washer "B", See Detail C/16



B/16 GUARDRAIL ANCHORS IN PRECAST BRIDGE PLANK

Scale: ¾" = 1'-0"

JOSHUA K. GOODALL
STATE OF WASHINGTON
DIGITALLY SIGNED
51303
REGISTERED
PROFESSIONAL ENGINEER

RENEWS: 01-05-2025

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5121 Skyline Village Loop S, Suite 200
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SWALE CREEK BRIDGE - WEST

DESIGNER: JOSH GOODALL
REVIEWER: NICK PEEK
DRAFTER: ANGELA CHISA
CHECKER: CARLY DIEHL

GUARDRAIL ANCHOR DETAILS

SHEET NO. 16

APPENDIX C

POLLUTION PREVENTION

POLLUTION PREVENTION: TESC and SPCC PLANS and IMPLEMENTATION

Description

This work shall provide for preparation, implementation, and removal of a Temporary Erosion Sediment Control (TESC) plan and for the preparation and implementation of a Spill Prevention Control and Countermeasure (SPCC) plan in accordance with specifications in Exhibit B, page 3.

1. The Contractor shall submit a TESC for the project to the Owner for approval. The TESC must satisfy the requirements of the Washington Department of Ecology NPDES Stormwater General Permit for Construction Activity and all other applicable permits. The TESC included in the Drawings and described herein is intended to provide a baseline for sediment and erosion control and does not ensure that the standards established by any applicable permits will be met. The Contractor may use these measures or alternative measures of his own design to ensure satisfactory performance and that the erosion control requirements of all applicable permits are met. The contractor shall be named as the permit holder. The contractor shall be responsible for implementing, inspecting and filing reports, maintaining, replacing, and removing TESC and SPCC measures. The plan shall include the name, address and 24-hour contact number of the person responsible for erosion prevention and sediment control measures.

2. A spill Containment Kit shall be on site and crews shall be trained in its use. Measurement "TESC, SPCC Plan and Implementation," including the above amendments to the item will be measured by lump sum.

APPENDIX D

Glossary of Terms

CONTRACTOR	Contractor to be selected for the performance of work under this Bid Package.
Contractor Responsibilities	See Section II of this Contractor's Bid Package.
Equipment Requirements	See Section IV of this Contractor's Bid Package.
Mobilization	Arrival of all equipment and personnel at work site in working order.
OWNER	Yakama Nation
Permits	Tribal permits that list conditions under which the work can be performed. These include, but are not necessarily limited to, the permits identified in Appendix F.
Personnel Requirements	See Section IV of this Contractor's Bid Package.

APPENDIX E

Insurance Requirements and Other Documents Requiring Execution

1. Required Insurance: Contractor, at its sole cost and expense (including the cost of all deductibles), shall procure and maintain in force while performing services for Yakama Nation the following insurance:

   a. Workers Compensation Insurance, covering applicable statutory benefits in the State where the work is being performed; Employer's Liability Insurance in an amount of not less than $1,000,000 and (when applicable) the policy will be endorsed to cover benefits.

   b. Commercial General Liability Insurance, on a per occurrence basis, endorsed to cover on the premises operations, products/completed operations, personal injury and the contractual indemnity obligations of this agreement with limits of not less than $2,000,000 per occurrence.

   c. The Commercial General Liability Insurance shall name Mid-Columbia Fisheries Enhancement Group (a partner in the project) as an additional insured. An additional insured certificate shall be provided to Yakama Nation and Mid-Columbia Fisheries showing this prior to the start of work. Mid-Columbia Fisheries address for the certificate is P.O. Box 2211, White Salmon, WA 98672.

   d. Automobile Liability Insurance, including Liability insurance coverage for vehicles which may be used by Contractor in connection with this contract, with Limits of Liability of not less than $1,000,000 per occurrence.

   e. Should the Services supplied under this Agreement include waste disposal operations, Pollution or Environmental Impairment Liability Insurance, with limits of not less than $1,000,000 per occurrence. Should Federal, State or local regulatory body require insurance with higher limits, then such requirements shall apply in lieu of the specified $1,000,000 limits.

   The Workers Compensation/Employers Liability Insurance Policy will be endorsed to waive all rights of subrogation against the Yakama Nation.

   The aforesaid policies will be endorsed to provide the Yakama Nation thirty (30) days written notice prior to cancellation or reduction in coverage required by this agreement. The insurance policy shall be issued by insurance companies with a Bests rating of 'B' or better or equivalent and shall be subject to Buyer's approval, such approval not to be unreasonably withheld.

   Contractor shall require all Subcontractors performing services under this contract to maintain in force insurance of the types and amounts specified herein.

2. Other Documents Requiring Execution: The bidder must comply with these conditions and must submit with their bid the following signed documents:

   a. Insurance Certificates: Prior to the execution of the Contract, the Bidder shall furnish in a form satisfactory to the Yakama Nation Insurance Certificates covering the faithful performance of the Contract and the payment of all obligations arising thereunder.

   b. Power of Attorney: Attorneys-in-fact who sign Bid Bonds or Contract Bonds must file with each bond a certified and effectively dated copy of the Power of Attorney

APPENDIX F

Permits

Permit List

The Contractor is solely responsible for compliance with all Local, State and Federal permits. Local, State, and Federal permits that govern the performance of the work include the following:

NOAA Fisheries/USFWS	HIP III (attached)
Washing Department of Fish and Wildlife	HPA (attached)
Bonneville Power Administration	NEPA CATX (in-progress)
State Historic Preservation Office	SEC 106 (attached)
US Army Corps of Owner's Representatives	SEC10/404 (in-progress)

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

April 7, 2023

Kevin Cannell
Environment, Fish & Wildlife
Bonneville Power Administration
PO Box 3621
Portland, Oregon 97208

RE: Rattlesnake Gulch Fish Passage Project
BPA #: *WA 2021 258*
Wisaard No.: 2021-11-07934-BPA

Dear Kevin Cannell;

Thank you for contacting our department. We have reviewed the information and professional cultural resources survey report you provided for the proposed *Rattlesnake Gulch Fish Passage Project*, Klickitat County, Washington.

We concur with your Determination of No Adverse Effect with the stipulations for an unanticipated find plan.

We request you provide any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4) and, if necessary, specifically redact those elements that are exempt under the provisions of 36 CFR 800.11(c)(2) and provide the remainder of the document. Such documents can be provided in a pdf format.

In the event that archaeological or historic materials are encountered during project activities, work in the immediate vicinity must stop, the area secured, and the concerned tribe's cultural staff and cultural committee and this department notified.

These comments are based on the information available at the time of this review and on the behalf of the State Historic Preservation Officer in conformance with Section 106 of the National Historic Preservation Act and its implementing regulations 36CFR800. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment and a copy of these comments should be included in subsequent environmental documents.

Sincerely,

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: *rob.whitlam@dahp.wa.gov*

HYDRAULIC PROJECT APPROVAL

Washington Department of
Fish & Wildlife
PO Box 43234
Olympia, WA 98504-3234
(360) 902-2200

Issued Date: March 31, 2023
Project End Date: September 30, 2023

Permit Number: 2023-5-25+01
FPA/Public Notice Number: N/A
Application ID: 31100

PERMITTEE	AUTHORIZED AGENT OR CONTRACTOR
Yakama Nation ATTENTION: Gerald Lewis PO Box 151 Toppenish, WA 98948	Yakama Nation ATTENTION: David Lindley PO Box 215 Klickitat, WA 98328

Project Name: Rattlesnake Gulch Fish Passage and Restoration

Washington Department of
Fish & Wildlife
PO Box 43234
Olympia, WA 98504-3234
(360) 902-2200

HYDRAULIC PROJECT APPROVAL

Issued Date: March 31, 2023
Project End Date: September 30, 2023

Permit Number: 2023-5-25+01
FPA/Public Notice Number: N/A
Application ID: 31100

Project Description:

The goal of the project is to provide fish passage and improve habitat for ESA-listed Mid-Columbia Steelhead in Rattlesnake Gulch Creek by removal of two road culverts and small concrete dam, opening a total of 3.5 miles of habitat in the West Fork and East Fork Rattlesnake Gulch Creeks. Additionally, the project will improve habitat by removing a berm and embedded railroad ties adjacent to the stream, adding large and small wood, boulders, and installing riparian plants.

The goal of the project is to provide fish habitat and improve existing habitat in Rattlesnake Gulch Creek to benefit all life stages of ESA-listed Mid-Columbia Steelhead, other native fish in stream, and in lower Swale Creek. The proposed actions are expected to improve conditions in Rattlesnake Gulch Creek and nearby lower Swale Creek. The Recovery Plan for the Klickitat River Population of the Middle Columbia River Steelhead Distinct Population Segment (National Marine Fisheries Services Northwest Region, 2009) identifies streamflow, degraded habitat, and altered sediment routing as major factors on Swale Creek. Multiple publications confirm that lower Swale Cr. provides spawning and rearing habitat for Mid-Columbia Steelhead, listed as Threatened under the Endangered Species Act. The Klickitat Salmon Recovery Strategy lists all life stages of resident rainbow trout, summer and winter steelhead present in Swale Cr.; as well as juvenile spring Chinook salmon. Yakama Nation reports coho and bridgelip suckers in Swale Cr. (Conley, 2015). The Strategy notes that Swale Cr. is perennial in this reach.

The project will address a key limiting habitat factor of low baseflows in lower Swale Cr., and both flows and fish passage in Rattlesnake Gulch Creek. Rattlesnake Gulch Cr. provides habitat for O. mykiss (Yakama Nation, unpublished data, 2015 and 2021). Downstream of the project area there are no other fish passage barriers on Rattlesnake Gulch Cr. or downstream on Swale Cr. to the Klickitat River. Additionally, Yakama Nation biologists walked both forks of Rattlesnake Gulch in 2021 and confirmed there were no vertical steps in gradient profile that would prohibit upstream fish movement for 3.19 miles on the East Fork and 0.3 miles on the West Fork of Rattlesnake Gulch Creek. Unlike some other tributaries, Rattlesnake Gulch is unobstructed by the Klickitat Trail, which crosses the stream on a railroad trestle. In 2019, Wolf Water Resources found that Rattlesnake Gulch Cr. has the highest water contribution potential and largest sediment contribution potential of 18 tributaries studied in Swale Canyon.

The project area begins approximately 300 ft. from the confluence with Swale Creek and currently includes three fish passage barriers – two road culverts and a small dam. Both road culverts were assessed by WDFW in 2019 and determined to be only 33% passable. Additionally, a 125 ft berm was historically constructed along the stream bank and inhibits the ability of the stream to access the floodplain. This stream has been impacted by road construction and poorly placed, and undersized, culverts, the small dam, historic placement of fill in the floodplain, buried railroad ties along the stream, and likely the removal of large wood from the channel due to historic logging.

The desired future condition of lower Rattlesnake Gulch Cr. is fully restored fish passage, restored floodplain connectivity and function, improved riparian cover, and improved in-channel and floodplain habitat.

PROVISIONS

Issued Date: March 31, 2023
Project End Date: September 30, 2023

Permit Number: 2023-5-25+01
FPA/Public Notice Number: N/A
Application ID: 31100

TIMING - PLANS - INVASIVE SPECIES CONTROL

1. TIMING LIMITATION: You may begin the project on 7/1/2023 and you must complete the project by 9/30/2023.

2. RE-VEGETATION: You must complete re-vegetation by no later than 4/2024, and you must monitor the success of the re-vegetation through 4/2027.

3. APPROVED PLANS: You must accomplish the work per plans and specifications submitted with the application and approved by the Washington Department of Fish and Wildlife, entitled Rattlesnake Gulch Fish Passage and Restoration, dated 3/6/2023, and attached E-mail entitled, 'RE: Rattlesnake Gulch Fish Passage and Restoration, received on 3/6/2023, except as modified by this Hydraulic Project Approval. You must have a copy of these plans available on site during all phases of the project construction.

4. INVASIVE SPECIES CONTROL: Follow Method 1 for low risk locations (i.e. clean/drain/dry). Thoroughly remove visible dirt and debris from all equipment and gear (including drive mechanisms, wheels, tires, tracks, buckets, and undercarriage) before arriving and leaving the job site to prevent the transport and introduction of invasive species. For contaminated or high risk sites please refer to the Method 2 Decontamination protocol. Properly dispose of any water and chemicals used to clean gear and equipment. You can find this and additional information in the Washington Department of Fish and Wildlife's "Invasive Species Management Protocols", available online at https://wdfw.wa.gov/species-habitats/invasive/prevention.

NOTIFICATION REQUIREMENTS

5. NOTIFICATION: You, your agent, or contractor must contact the Washington Department of Fish and Wildlife by e-mail at HPAapplications@dfw.wa.gov; mail to Post Office Box 43234, Olympia, Washington 98504-3234; or fax to (360) 902-2946 at least three business days before starting work. The notification must include the permittee's name, project location, starting date, and the Hydraulic Project Approval permit number.

6. FISH KILL/ WATER QUALITY PROBLEM NOTIFICATION: If a fish kill occurs or fish are observed in distress at the job site, immediately stop all activities causing harm. Immediately notify the Washington Department of Fish and Wildlife of the problem. If the likely cause of the fish kill or fish distress is related to water quality, also notify the Washington Military Department Emergency Management Division at 1-800-258-5990. Activities related to the fish kill or fish distress must not resume until the Washington Department of Fish and Wildlife gives approval. The Washington Department of Fish and Wildlife may require additional measures to mitigate impacts.

STAGING, JOB SITE ACCESS, AND EQUIPMENT

7. Establish staging areas (used for equipment storage, vehicle storage, fueling, servicing, and hazardous material storage) in a location and manner that will prevent contaminants such as petroleum products, hydraulic fluid, fresh concrete, sediments, sediment-laden water, chemicals, or any other toxic or harmful materials from entering waters of the state.

8. Use existing roadways or travel paths.

9. Limit the removal of native bankline vegetation to the minimum amount needed to construct the project.

10. This Hydraulic Project Approval authorizes only the removal of the large woody vegetation shown in the approved plan. Clearly mark all large woody vegetation authorized for removal before starting work.

11. Confine the use of equipment to the specific access and work corridor shown in the approved plans.

12. Check equipment daily for leaks and complete any required repairs in an upland location before using the equipment in or near the water.

CONSTRUCTION-RELATED SEDIMENT, EROSION AND POLLUTION CONTAINMENT

13. Work in the dry watercourse (when no natural flow is occurring in the channel, or when flow is diverted around the job site).

14. Protect all disturbed areas from erosion. Maintain erosion and sediment control until all work and cleanup of the job

site is complete.

15. Stop all hydraulic project activities except those needed to control erosion and siltation, if flow conditions arise that will result in erosion or siltation of waters of the state.

16. Prevent project contaminants, such as petroleum products, hydraulic fluid, fresh concrete, sediments, sediment-laden water, chemicals, or any other toxic or harmful materials, from entering or leaching into waters of the state.

17. Route construction water (wastewater) from the project to an upland area above the limits of anticipated floodwater. Remove fine sediment and other contaminants before discharging the construction water to waters of the state.

IN-WATER WORK AREA ISOLATION USING A COFFERDAM STRUCTURE

18. Use a cofferdam, dike, or similar structure to exclude water from the work area.

19. Maintain water quality when installing and removing the cofferdam, dike or similar structure.

20. Route the construction water (wastewater) from the project to an upland area above the limits of anticipated floodwater. Remove fine sediment and other contaminants before discharging the construction water to waters of the state.

FISH LIFE REMOVAL

21. All persons participating in capture and removal must have training, knowledge, and skills in the safe handling of fish life.

STREAM BANK PROTECTION

22. Use fir, cedar, or other coniferous species to construct the log or rootwad fish habitat structure(s).

BRIDGE

23. Minimize damage to the bed and banks when placing bridge stringers.

24. Prevent the existing structure and associated construction materials from entering the stream when removing them.

WATER CROSSING REMOVAL

25. Remove the culvert in the dry or in isolation from the stream flow by using a bypass channel or culvert, or by pumping the stream flow around the work area. The Washington Department of Fish and Wildlife may grant exception if removing the culvert in the flowing stream reduces siltation or turbidity.

26. Remove all the components of a bridge or culvert crossing (approach material, sills, stringers, deck, riprap, guardrails, etc.).

LARGE WOODY MATERIAL

27. When placing, repositioning, or removing large woody material, station equipment on the bank.

28. Do not disturb large woody material embedded in a bank or bed except as approved by the Washington Department of Fish and Wildlife.

29. When repositioning or removing large woody material, minimize releasing bedload, logs, or debris downstream.

DEMOBILIZATION AND CLEANUP

30. Upon completion of the project, restore the disturbed bed, banks, and riparian zone to preproject condition to the extent possible.

31. Complete replanting of riparian vegetation during the first growing season after project completion per the approved plan. Maintain plantings for at least three years to ensure at least eighty percent of the plantings survive. Failure to achieve the eighty percent survival in year three will require you to submit a plan with follow-up measures to achieve requirements or reasons to modify requirements.

HYDRAULIC PROJECT APPROVAL

Washington Department of
Fish & Wildlife
PO Box 43234
Olympia, WA 98504-3234
(360) 902-2200

Issued Date: March 31, 2023
Project End Date: September 30, 2023

Permit Number: 2023-5-25+01
FPA/Public Notice Number: N/A
Application ID: 31100

LOCATION #1:	62 Lover's Lane Road, Klickitat, WA 98670					
WORK START:	July 1, 2023			WORK END:	September 30, 2023	
WRIA		Waterbody:			Tributary to:	
30 - Klickitat		Unknown Stream Number			Unknown	
1/4 SEC:	Section:	Township:	Range:	Latitude:	Longitude:	County:
SW 1/4	20	04 N	14 E	45.8121437	-121.0955614	Klickitat
Location #1 Driving Directions						

APPLY TO ALL HYDRAULIC PROJECT APPROVALS

This Hydraulic Project Approval pertains only to those requirements of the Washington State Hydraulic Code, specifically Chapter 77.55 RCW. Additional authorization from other public agencies may be necessary for this project. The person(s) to whom this Hydraulic Project Approval is issued is responsible for applying for and obtaining any additional authorization from other public agencies (local, state and/or federal) that may be necessary for this project.

This Hydraulic Project Approval shall be available on the job site at all times and all its provisions followed by the person (s) to whom this Hydraulic Project Approval is issued and operator(s) performing the work.

This Hydraulic Project Approval does not authorize trespass.

The person(s) to whom this Hydraulic Project Approval is issued and operator(s) performing the work may be held liable for any loss or damage to fish life or fish habitat that results from failure to comply with the provisions of this Hydraulic Project Approval.

Failure to comply with the provisions of this Hydraulic Project Approval could result in civil action against you, including, but not limited to, a stop work order or notice to comply, and/or a gross misdemeanor criminal charge, possibly punishable by fine and/or imprisonment.

All Hydraulic Project Approvals issued under RCW 77.55.021 are subject to additional restrictions, conditions, or revocation if the Department of Fish and Wildlife determines that changed conditions require such action. The person(s) to whom this Hydraulic Project Approval is issued has the right to appeal those decisions. Procedures for filing appeals are listed below.

HYDRAULIC PROJECT APPROVAL

Issued Date: March 31, 2023
Project End Date: September 30, 2023
Permit Number: 2023-5-25+01
FPA/Public Notice Number: N/A
Application ID: 31100

MINOR MODIFICATIONS TO THIS HPA: You may request approval of minor modifications to the required work timing or to the plans and specifications approved in this HPA unless this is a General HPA. If this is a General HPA you must use the Major Modification process described below. Any approved minor modification will require issuance of a letter documenting the approval. A minor modification to the required work timing means any change to the work start or end dates of the current work season to enable project or work phase completion. Minor modifications will be approved only if spawning or incubating fish are not present within the vicinity of the project. You may request subsequent minor modifications to the required work timing. A minor modification of the plans and specifications means any changes in the materials, characteristics or construction of your project that does not alter the project's impact to fish life or habitat and does not require a change in the provisions of the HPA to mitigate the impacts of the modification. If you originally applied for your HPA through the online Aquatic Protection Permitting System (APPS), you may request a minor modification through APPS. A link to APPS is at http://wdfw.wa.gov/licensing/hpa/. If you did not use APPS you must submit a written request that clearly indicates you are seeking a minor modification to an existing HPA. Written requests must include the name of the applicant, the name of the authorized agent if one is acting for the applicant, the APP ID number of the HPA, the date issued, the permitting biologist, the requested changes to the HPA, the reason for the requested change, the date of the request, and the requestor's signature. Send by mail to: Washington Department of Fish and Wildlife, PO Box 43234, Olympia, Washington 98504-3234, or by email to HPAapplications@dfw.wa.gov. You should allow up to 45 days for the department to process your request.

MAJOR MODIFICATIONS TO THIS HPA: You may request approval of major modifications to any aspect of your HPA. Any approved change other than a minor modification to your HPA will require issuance of a new HPA. If you originally applied for your HPA through the online Aquatic Protection Permitting System (APPS), you may request a major modification through APPS. A link to APPS is at http://wdfw.wa.gov/licensing/hpa/. If you did not use APPS you must submit a written request that clearly indicates you are requesting a major modification to an existing HPA. Written requests must include the name of the applicant, the name of the authorized agent if one is acting for the applicant, the APP ID number of the HPA, the date issued, the permitting biologist, the requested changes to the HPA, the reason for the requested change, the date of the request, and the requestor's signature. Send your written request by mail to: Washington Department of Fish and Wildlife, PO Box 43234, Olympia, Washington 98504-3234. You may email your request for a major modification to HPAapplications@dfw.wa.gov. You should allow up to 45 days for the department to process your request.

APPEALS INFORMATION

If you wish to appeal the issuance, denial, conditioning, or modification of a Hydraulic Project Approval (HPA), Washington Department of Fish and Wildlife (WDFW) recommends that you first contact the department employee who issued or denied the HPA to discuss your concerns. Such a discussion may resolve your concerns without the need for further appeal action. If you proceed with an appeal, you may request an informal or formal appeal. WDFW encourages you to take advantage of the informal appeal process before initiating a formal appeal. The informal appeal process includes a review by department management of the HPA or denial and often resolves issues faster and with less legal complexity than the formal appeal process. If the informal appeal process does not resolve your concerns, you may advance your appeal to the formal process. You may contact the HPA Appeals Coordinator at (360) 902-2534 for more information.

A. INFORMAL APPEALS: WAC 220-660-460 is the rule describing how to request an informal appeal of WDFW actions taken under Chapter 77.55 RCW. Please refer to that rule for complete informal appeal procedures. The following information summarizes that rule.

HYDRAULIC PROJECT APPROVAL

Issued Date: March 31, 2023
Project End Date: September 30, 2023

Permit Number: 2023-5-25+01
FPA/Public Notice Number: N/A
Application ID: 31100

A person who is aggrieved by the issuance, denial, conditioning, or modification of an HPA may request an informal appeal of that action. You must send your request to WDFW by mail to the HPA Appeals Coordinator, Department of Fish and Wildlife, Habitat Program, PO Box 43234, Olympia, Washington 98504-3234; e-mail to HPAapplications@dfw.wa.gov; fax to (360) 902-2946; or hand-delivery to the Natural Resources Building, 1111 Washington St SE, Habitat Program, Fifth floor. WDFW must receive your request within 30 days from the date you receive notice of the decision. If you agree, and you applied for the HPA, resolution of the appeal may be facilitated through an informal conference with the WDFW employee responsible for the decision and a supervisor. If a resolution is not reached through the informal conference, or you are not the person who applied for the HPA, the HPA Appeals Coordinator or designee may conduct an informal hearing or review and recommend a decision to the Director or designee. If you are not satisfied with the results of the informal appeal, you may file a request for a formal appeal.

B. FORMAL APPEALS: WAC 220-660-470 is the rule describing how to request a formal appeal of WDFW actions taken under Chapter 77.55 RCW. Please refer to that rule for complete formal appeal procedures. The following information summarizes that rule.

A person who is aggrieved by the issuance, denial, conditioning, or modification of an HPA may request a formal appeal of that action. You must send your request for a formal appeal to the clerk of the Pollution Control Hearings Boards and serve a copy on WDFW within 30 days from the date you receive notice of the decision. You may serve WDFW by mail to the HPA Appeals Coordinator, Department of Fish and Wildlife, Habitat Program, PO Box 43234, Olympia, Washington 98504-3234; e-mail to HPAapplications@dfw.wa.gov; fax to (360) 902-2946; or hand-delivery to the Natural Resources Building, 1111 Washington St SE, Habitat Program, Fifth floor. The time period for requesting a formal appeal is suspended during consideration of a timely informal appeal. If there has been an informal appeal, you may request a formal appeal within 30 days from the date you receive the Director's or designee's written decision in response to the informal appeal.

C. FAILURE TO APPEAL WITHIN THE REQUIRED TIME PERIODS: If there is no timely request for an appeal, the WDFW action shall be final and unappealable.

Habitat Biologist	Amber.Johnson@dfw.wa.gov		for Director
Amber Johnson	360-701-2738		WDFW

HIP
PROJECT NOTIFICATION FORM
HIP No: 2023034

NMFS Tracking #: WCRO-2020-00102			**USFWS Tracking #:** 01EOFW00-19Y-F-0710
Project Title:	Southern Territories Habitat Project – Rattlesnake Gulch Creek, Swale Creek Tributary, Fish Passage and Habitat Complexity		
BPA Project #:	1997-056-00	**Contract #:**	56662 REL 281
BPA EC Lead:	Carolyn Sharp	**Project Sponsor:**	Yakama Nation - YKFP
NMFS Branch Office:	**Columbia Basin Branch**		
USFWS Field Office:	**NA**		
Lat/Long: (in decimal degrees, WGS84)	Klickitat –Rattlesnake Gulch Creek: 45.812829, -121.088093		

Project Start Date:	6/1/2023	**Project End Date:**	10/31/2023	**Completed Form Due Date:**	12/31/2023

RISK LEVEL		
LOW	MED	HIGH
☐	☒	☐

Project Description

L. Remove/Breach Fish Passage Barrier- Rattlesnake Gulch Ck (Swale Creek Tributary) – Replace two culverts with bridges to resolve two partial fish passage barriers

As identified in the Klickitat Lead Entity Recovery Strategy fish passage at this location will address two fish passage barriers for O. mykiss limiting life stages including adult migration and juvenile rearing. This work will provide access to 3.0+ miles of habitat through the removal of a fish passage barrier impacting adult and juvenile life stage for O. mykiss (steelhead and rainbow trout). The barrier is caused by under sized culverts creating velocity and outfall drop. The barriers are due to improper sizing. Barrier removal and replacement will be completed by a construction firm with extensive experience in this type of project selected via a competitive solicitation.

L. Remove/Breach Fish Passage Barrier- Rattlesnake Gulch Ck (Swale Creek Tributary) – Remove small dam to resolve fish passage barrier

Removal of a small (~2 ft high) dam made of mortared rock. The vertical discontinuity will be addressed via a roughened riffle. Barrier observed to restrict juvenile fish movement under low flow conditions. This barrier is downstream of the two culverts to be replaced in WE L and this project in conjunction will access and passage to the limits of habitable range. Barrier removal and replacement will be completed by a construction firm with extensive experience in this type of project selected via a competitive solicitation.

L. Remove/Breach Fish Passage Barrier- Rattlesnake Gulch Ck (Swale Creek Tributary) – Complexity

As identified in Klickitat Lead Entity Salmon Recovery Strategy increasing aquatic and floodplain complexity at this location will address high priority limiting habitat factors as defined by the prioritization framework, to benefit the limiting life stages for steelhead (rearing and spawning) by reconnecting ~3 miles of steelhead habitat and restoring natural sediment, water, and drainage patterns, especially at tributary mouths. Associated with the passage actions aquatic complexity will be enhanced through the addition of 12 individual pieces of LWD, resulting in the creation/maintenance of 2 pools. The enhancement of in-stream complexity will occur along 0.10 miles of the main channel in that dam removal area (WE M) where springs and seeps occur. Aquatic and floodplain complexity will be completed by a qualified subcontractor selected via competitive solicitation.

NMFS Species/Critical Habitat Present in Action Area:

Anadromous Fish:

- ☐ Lower Columbia River Chinook
- ☐ Lower Columbia River coho
- ☐ Lower Columbia River steelhead
- ☒ Middle Columbia River steelhead
- ☐ Upper Columbia River spring-run Chinook
- ☐ Upper Columbia River steelhead
- ☐ Columbia River chum
- ☐ Green sturgeon
- ☐ Upper Willamette River Chinook
- ☐ Upper Willamette River steelhead
- ☐ Snake River spring/summer-run Chinook
- ☐ Snake River fall-run Chinook
- ☐ Snake River Basin steelhead
- ☐ Snake River sockeye
- ☐ Pacific eulachon

Essential Fish Habitat Species:

- ☒ Salmon (West Coast Salmon FMP)
- ☐ Estuarine Composite (Ground fish, pelagics)

USFWS Species/Critical Habitat Present in Action Area:

Freshwater Fish Species:

- ☐ Bull Trout

Amphibian Species:

- ☐ Oregon Spotted Frog

Mammalian Species:

- ☐ Canada lynx*
- ☐ Columbia white-tailed deer*
- ☐ Gray wolf (relisted 02/10/22)
- ☐ Grizzly bear*
- ☐ North American wolverine
- ☐ Pygmy rabbit*
- ☐ Northern Idaho ground squirrel*
- ☐ Woodland caribou*

Avian Species:

- ☐ Marbled murrelet
- ☐ Northern spotted owl
- ☐ Streaked horned lark
- ☐ Yellow Billed Cuckoo

Invertebrate Species:

- ☐ Fender's blue butterfly
- ☐ Bliss Rapids snail
- ☐ Taylor's checkerspot butterfly
- ☐ Snake River physa snail

Plant Species:

- ☐ ~~Bradshaw's lomatium~~ (delisted 05/05/21)
- ☐ Spalding's catchfly
- ☐ Howell's spectacular thelypody
- ☐ Kincaid's lupine
- ☐ Wenatchee Mountain checkermallow
- ☐ Nelson's checkermallow
- ☐ Slickspot peppergrass
- ☐ Golden paintbrush
- ☐ Ute ladies' tresses
- ☐ ~~Water howellia~~ (delisted 07/16/21)
- ☐ McFarlane's four o'clock
- ☐ Willamette daisy

***Requires confirmation of NLAA determination from USFWS**

Types of Action:

Identify the types of action(s) proposed.

1. Fish Passage Restoration (Profile Discontinuities)

- ☒ a. Dams, Water Control or Legacy Structure Removal
- ☐ b. Consolidate, or Replace Existing Irrigation Diversions
- ☒ c. Headcut and Grade Stabilization
- ☐ d. Low Flow Consolidation
- ☐ e. Providing Fish Passage at an Existing Facility

Fish Passage Restoration (Transportation Infrastructure)

- ☒ f. Bridge and Culvert Removal or Replacement
- ☐ g. Bridge and Culvert Maintenance
- ☐ h. Installation of Fords

2. River, Stream, Floodplain, and Wetland Restoration

- ☒ a. Improve Secondary Channel and Wetland Habitats
- ☐ b. Set-back or Removal of Existing, Berms, Dikes, and Levees
- ☐ c. Protect Streambanks Using Bioengineering Methods

☒ d. Install Habitat-Forming Natural Material Instream Structures (Large Wood, Small Wood & Boulders)
☒ e. Riparian Vegetation Planting
☐ f. Channel Reconstruction
☐ g. Install Habitat Forming Materials (Sediment & Gravel)

3. Invasive and Non-Native Plant Control
☐ a. Manage Vegetation using Physical Controls
☐ b. Manage Vegetation using Herbicides (Riverine)
☐ c. Manage Vegetation using Herbicides (Estuarine)
☐ d. Manage *Ludwigia* using Herbicides (Willamette)
☐ e. Juniper Burning
☐ f. Prescribed Burning

4. Piling Removal.
☐ Piling Removal

5. Road and Trail Erosion Control, Maintenance, and Decommissioning
☐ a. Maintain Roads
☐ b. Decommission Roads

6. In-channel Nutrient Enhancement
☐ In-channel Nutrient Enhancement

7. Irrigation and Water Delivery/Management Actions
☐ a. Convert Delivery System to Drip or Sprinkler Irrigation
☐ b. Convert Water Conveyance from Open Ditch to Pipeline or Line Leaking Ditches or Canals
☐ c. Convert from Instream Diversions to Groundwater Wells for Primary Water Sources
☐ d. Install or Replace Return Flow Cooling Systems
☐ e. Install Irrigation Water Siphon Beneath Waterway
☐ f. Livestock Watering Facilities
☐ g. Install New or Upgrade/Maintain Existing Fish Screens

8. Fisheries, Hydrologic, and Geomorphologic Surveys
☐ Fisheries, Hydrologic, and Geomorphologic Surveys

9. Special Actions (Terrestrial Species)
☐ a. Install/develop Wildlife Structures
☐ b. Fencing Construction for Livestock Control
☐ c. Plant Vegetation
☐ d. Tree Removal for LW Projects
☐ e. Willamette Valley Prairie Restoration

USFWS Terrestrial Species Review

Does the project require confirmation of NLAA Effects determination for:

				USFWS CONTACT
Mammalian Species	Yes ☐	No ☒	Approval Date: DATE	
Invertebrate Species	Yes ☐	No ☒	Approval Date: DATE	
Avian Species	Yes ☐	No ☒	Approval Date: DATE	
Plant Species	Yes ☐	No ☒	Approval Date: DATE	

HIP Review

Does the project require project review and approval:

				REVIEWER
BPA Engineering Review	Yes ☒	No ☐	Approval Date: 3/3/2023	Doug Knapp
NMFS Engineering Review	Yes ☐	No ☒	Approval Date: DATE	
NMFS Interagency Review	Yes ☐	No ☒	Approval Date: DATE	
USFWS Interagency Review	Yes ☐	No ☒	Approval Date: DATE	

BPA Determination of Consistency

The BPA must certify that the proposed project is consistent with all requirements and applicable terms and conditions of the HIP Consultation.

BPA EC Lead: Carolyn Sharp

Date of Certification: 3/8/2023

HIP Program Lead: Shawn Skinner

Date of Certification: 3/13/2023