Biological Assessment

Dell Sharpe Bridge Replacement Project
Walla Walla County, Washington

Prepared for:
Walla Walla County Public Works Department
990 Navion Lane
Walla Walla, Washington 99362

March 2022
PBS Project 66257.000

PBS
5 NORTH COLVILLE ST, STE 200
WALLA WALLA, WA 99362
509.956.3026 MAIN
866.727.0140 FAX
PBSUSA.COM

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Executive Summary

The Dell Sharpe Bridge Replacement Project (project) is located in unincorporated Walla Walla County, Washington, within Section 2, Township 9 North, Range 35 East. The project consists of a new bridge over the Touchet River and removing the existing concrete arched Dell Sharpe Bridge which has a mid-channel pier within the river channel.

This work includes grading and construction of new bridge approaches, constructing a 320-foot-long bridge with a single central pier, creation of stormwater features, and demolition of the existing Dell Sharpe Bridge. The overall purpose of the project is to replace the existing bridge that is nearing the end of its serviceable lifespan, improve safety with revised approaches to the bridge, and provide stormwater treatment and infiltration.

The action area for the project is within Water Resource Inventory Area (WRIA) 9 (Walla Walla), 6th field Hydrologic Unit Code (HUC) 171100130302. Identified habitat areas for listed species within the action area include the aquatic habitats of the Touchet River which are accessible to anadromous fishes. Endangered Species Act (ESA) listed fish species potentially affected include bull trout and Middle Columbia River distinct population segment (DPS) steelhead. The action area includes critical habitat for bull trout and Middle Columbia River DPS steelhead. Terrestrial species that may be present in the action area include yellow-billed cuckoo, which use large blocks of riparian habitat. However, this species is rarely found in Washington state.

Potential direct effects of the project on protected species include harm caused fish handling, temporary turbidity and sedimentation associated with road grading and filling activities, and removal of the existing Dell Sharpe Bridge. All construction activities in or adjacent to the stream will use appropriate project best management practices (BMPs), including sediment and erosion control measures to reduce potential impacts to these waters. Potential effects on yellow-billed cuckoo include construction-generated noise.

Table ES-1 provides a summary of ESA species potentially present in the action area, their ESA status, and effects determination for the species. The project area does not contain essential fish habitat as regulated under the Magnuson-Stevens Fishery Conservation and Management Act.

Table ES-1

Species	Status	Critical Habitat	Species Effect	Critical Habitat Affect
Mid-Columbia River DPS Steelhead	T	Yes	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Bull Trout	T	Yes	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Yellow-Billed Cuckoo	T	No	May Affect, Not Likely to Adversely Affect	N/A

T = Threatened, E = Endangered, P = Proposed

1 INTRODUCTION

Walla Walla County (County) proposes to replace the existing Dell Sharpe Bridge. The bridge is past its serviceable lifetime and the County has struggled with scour and river hydraulics which have caused stability concerns for the bridge foundations. The piers for the bridge are not anchored to the bedrock and simply sit on the streambed. Additionally, the current bridge alignment has operational issues, in the form of safety and maintenance concerns, because of its alignment in relation to the approaches to the bridge. The project includes the following activities.

- Grading of new bridge approaches on both sides (north and south) of the bridge.
- Construction of geosynthetic retaining walls at the terminus of the approaches.
- Construction of bridge abutments landward of the ordinary high water mark (OHWM) of the Touchet River.
- Construction of a central cast-in-place pier located within the 100-year floodplain but outside of the current OHWM.
- Placing of precast bridge girders, pouring of bridge deck and traffic barriers, and paving of asphalt approaches.
- Construction of stormwater conveyance system and infiltration swales.
- Demolition and removal of existing Dell Sharpe Bridge deck and piers.

The proposed project will include in-water work in regulated waters and will require a Clean Water Act Section 404 permit from the US Army Corps of Engineers (USACE), a water quality certification from the Washington State Department of Ecology (Ecology), and a Hydraulic Project Approval (HPA) from the Washington Department of Fish and Wildlife (WDFW).

The project has received federal funding from the Federal Highway Administration (FHWA) and administered through the Washington State Department of Transportation (WSDOT) Local Programs. The use of federal funds represents a federal nexus that requires the FHWA to consult with the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) to assess the potential for effects to species or critical habitats listed under Section 7 of the Endangered Species Act (ESA) and to essential fish habitat (EFH) under the provisions of the Magnuson-Stevens Fishery Conservation and Management Act. The FHWA is the lead federal agency in this consultation. The action area does not contain essential fish habitat (EFH) and therefore no analysis under the Magnuson-Stevens Fisheries Conservation and Management Act (MSA) is required.

1.1 Consultation History

No prior consultation has occurred with USFWS or the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) regarding this project.

2 PROJECT LOCATION

The proposed project area extends along Pettyjohn Road from approximately 500 feet south of the Sharp Road intersection to approximately 1,000 feet north of this intersection (Figure 1). The project lies in Sections 2 and 3, Township 9 North, Range 35 East, and is entirely within Walla Walla County, Washington. The project is within Water Resource Inventory Area (WRIA) 33, Walla Walla River watershed, and the 6th field Hydrologic Unit Code (HUC) 170701020702.

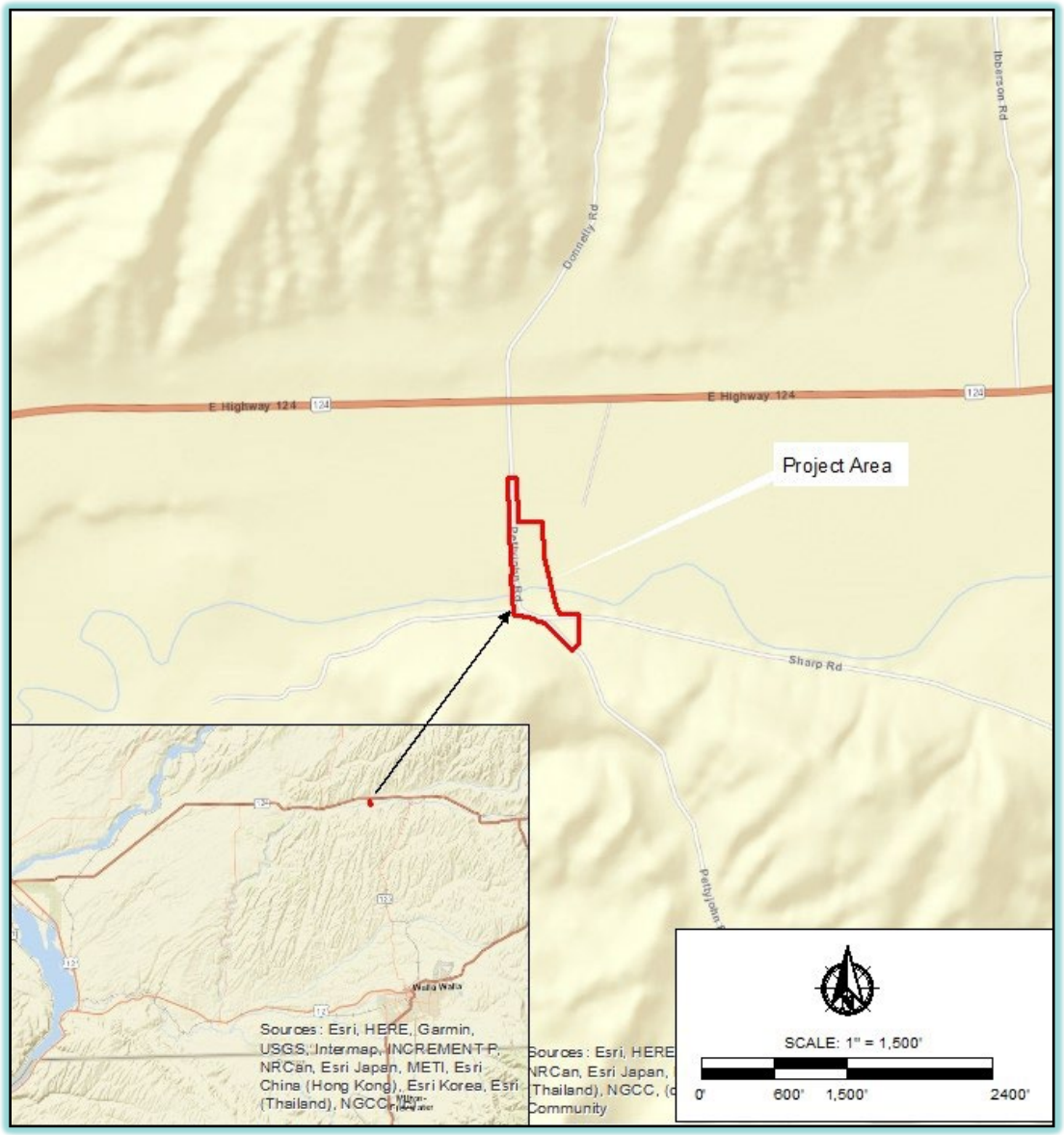

Figure 1. Vicinity Map and Project Area

3 PROJECT DESCRIPTION

Walla Walla County is proposing to replace the existing Dell Sharpe Bridge which is currently beyond its service life and is being undermined by scour and river hydraulics (Photograph 1). This is concerning as the bridge abutments are not anchored to bedrock, they simply rest on the bottom of the channel. The proposed improvements will include clearing, grading, filling, and paving activities throughout the project limits and construction of a new bridge over the Touchet River. Upon completion and following the rerouting of traffic onto the new bridge, the existing Dell Sharpe Bridge will be removed along with the existing roadbed approaches.

Photograph 1- Existing Dell Sharpe Bridge (facing north)

Earthwork will consist primarily of fills to achieve proper grades. Proposed fill has been estimated at 20,000 cubic yards. Fill material will consist of clean fill material obtained from an approved source.

Construction and subsequent demolition will use typical heavy construction equipment, such as backhoes, bulldozers, dump trucks, and excavators. Graders, rollers, and similar heavy construction equipment will also be used in the affected areas. Heavy construction equipment is expected to generate a maximum combined noise level of 97 A-weighted decibels (dBA). Noise from these activities will be confined to allowable work hours under local, state, and federal permit restrictions.

In-water work will be conducted during the WDFW-approved fish window (June 16–September 30). All work areas below the OHWM will be isolated with sandbag cofferdams; water within the isolated area will be pumped out and discharged to a vegetated upland location. Approved fish screens will be installed and maintained on all pumps removing surface waters. Block netting will be installed upstream and downstream of the work area during in-water work periods. Following dewatering, all fish will be relocated downstream of the work area using methods consistent with Washington State Department of Transportation (WSDOT) fish exclusion protocols and standards (WSDOT, 2016) and the NOAA *Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act* (NOAA Fisheries, 2000).

3.1 Detailed Project Description

3.1.1 *Primary Project Elements*

Primary elements of the project include grading and constructing new bridge approaches, new bridge and deck, and the removing the existing Dell Sharpe Bridge. The 50% design set for the project is included in Appendix A. To aid the reader, the construction sequence for the bridge construction portion of the project is presented in Sheet S04. The primary project elements are detailed below.

3.1.2 *Bridge Approaches and Geosynthetic Walls*

The project will entail realigning and constructing new bridge approaches that are located approximately 400 feet directly east of the existing road alignment as it passes over the Touchet River. This alignment was chosen during the initial project design phases as it represents a safer approach in terms of vehicular traffic sight lines in addition to utilizing exiting topography to construct a bridge design with minimal features within the 100-year floodplain. The approaches will require both cut and fill activity to achieve designed grades although filling is the predominant activity.

Geosynthetic retaining walls will be constructed to limit the amount of earthwork required to obtain the appropriate grades and transitions between the bridge and its north and south approaches. Retaining wall locations can be reviewed on page S06 with details in RW04 of Appendix A. These geosynthetic walls will be constructed using standard construction techniques that involve constructing sequential fabric wrapped soil lifts. A notable departure from typical geosynthetic retaining walls is the addition of a layer of shotcrete that will be installed along the exterior of the bridge. This feature will increase bridge aesthetics in addition to helping protect the structure from weathering and erosion.

3.1.3 *Bridge Abutments*

Bridge abutments will be located on both ends of the bridge, immediately adjacent to the terminus of the geosynthetic walls. Each bridge abutment will be supported by two concrete columns formed as extensions of drilled shafts. Shafts will be drilled, and the material removed from the center of the shaft with an auger to allow for rebar cages to be lowered into place and concrete to be pumped into the shaft. Once the poured shafts and their adjoining columns have cured, pier caps will be formed and poured on top of the piles to support the bridge superstructure. This work is performed within the uplands located to the north and south of the OHWM of the Touchet River. Locations and details are provided in Sheets S06 and S10.

3.1.4 *Central Bridge Pier*

The central bridge pier is the only portion of the project that will be subject to inundation during flood events. The pier is located outside of the OHWM of the Touchet River but is within the channel mender zone of the river (Sheet C03). The construction of this pier will be completed in the dry season during low flows within the Touchet River. The central pier consists of a single drilled shaft with a formed and poured pier cap (Sheet S12). Shaft drilling will be completed with the drill rig situated on the gravel/sand bar, landward of the OHWM. Erosion control best management practices (BMPs) will consist of containment of debris and material used during the construction of the pier. These will include sediment fences, straw wattles, and containment of excavated materials. Full BMP measures are listed within the impact and avoidance section. The process of constructing the central pier is identical to the process described in the bridge abutment section above.

3.1.5 *Remaining Bridge Construction Activities*

The prefabricated concrete girders will be delivered via truck and placed into position with a crane. Following placement of the girders over the central pier, bridge decking will be installed. At this time the bridge decking will be cast in-place concrete.

3.1.6 *Bridge Demolition Activities*

The bridge demolition will be scheduled so that the removal of the central bridge pier will occur within the approved in-water work window of June 16 to September 30. A full containment system will be approved by Walla Walla County Public Works and installed prior to the commencement of demolition activities to ensure that debris do not enter the river. Containment will likely employ the use of debris curtains hung from the bridge to catch any debris. It does not appear at this time that construction of a pile supported trestle to facilitate debris containment will be necessary. All concrete cutting will use water injection mechanisms to limit the amount of concrete dust generated.

The roadbed and bridge superstructure will be cut into manageable sections and removed via a land-based crane. Demolition of the abutments and central pier will commence following removal of the bridge deck. The southern bridge abutment sits entirely above the OHWM while the northern abutment forms the OHWM. Abutment removal will require the use of jack hammers, concrete saws, and excavators. Excavators will operate from the shore and not within the river channel.

The north abutment and central pier demolition will require flows to be diverted around the in-water work area. The construction of a simple sandbag or bulk bag coffer dam will push flows to the southern portion of the river channel and isolate the work area. The dam will be approximately 3 feet high and approximately 100 feet long. The work area will be isolated and de-fished by a team of biologists in accordance with WSDOT in-water work isolation guidelines, the USACE nationwide permit, and the WDFW HPA. The size of the in-water work isolation area is estimated to be approximately 2,300 sq. ft.

Demolition and removal of the bridge abutments will include the removal of rip rap material and Large angular rock that was placed on the upstream side of the bridge. The existing bridge is not armored with riprap like modern bridges are. Armoring consists of random large pieces of rock. The volume of this material to be removed was estimated at approximately 50 cubic yards.

3.1.7 *Stormwater Facilities*

Stormwater from the proposed bridge approaches and bridge structure will be routed to four separate stormwater infiltration swales located within upland areas adjacent to the bridge. Stormwater treatment and detention was designed in accordance with Ecology's 2019 Stormwater Management Manual for Eastern Washington.

The proposed improvements will result in an increase of 0.70 acre of impervious surface. However, the project will only result in an increase of 0.52 acre of new pollution generating impervious surface (PGIS) as upon completion of the project, vehicle traffic will be eliminated from the existing bridge approaches, and portions of the approaches will be removed. Stormwater plans for the project show that treatment and detention for a total of 1.5 acres of new and existing impervious surfaces will be provided. All stormwater will be infiltrated with no planned discharges to surface waters.

3.2 Secondary Project Elements

3.2.1 *Riparian Area Revegetation*

The riparian area for this project has been defined as all areas within the 200-foot shoreline buffer that is administered by Walla Walla County. The total amount of impacts to this area equals 0.82 acre and will result from the creation of the fill slopes to support the bridge approaches and abutments. Approximately 70% of this impact area is vegetated with invasive non-native grasses and forbs. The remaining portions are largely

vegetated with native emergent, shrub, and tree species. The areas vegetated with native vegetation are located on the north bank of the river and within the gravel bar area surrounding the central pier.

To mitigate for the loss of riparian vegetation, a native tree and shrub plant community will be installed along the Touchet River in four separate locations that total 0.66 acre in size. Planting densities equal roughly 10 trees and 20 shrubs per 1,000 sq. ft. of enhancement area. Planting locations have been selected to provide for wildlife habitat, increase shading of surface waters, promote channel stability through establishment of dense vegetation, and provide a source of future woody debris recruitment for instream habitat creation. These plantings will also increase native plant diversity, forage opportunities for resident and migratory wildlife, and cover. Figure 2 below identifies the locations of the planned enhancement plantings.

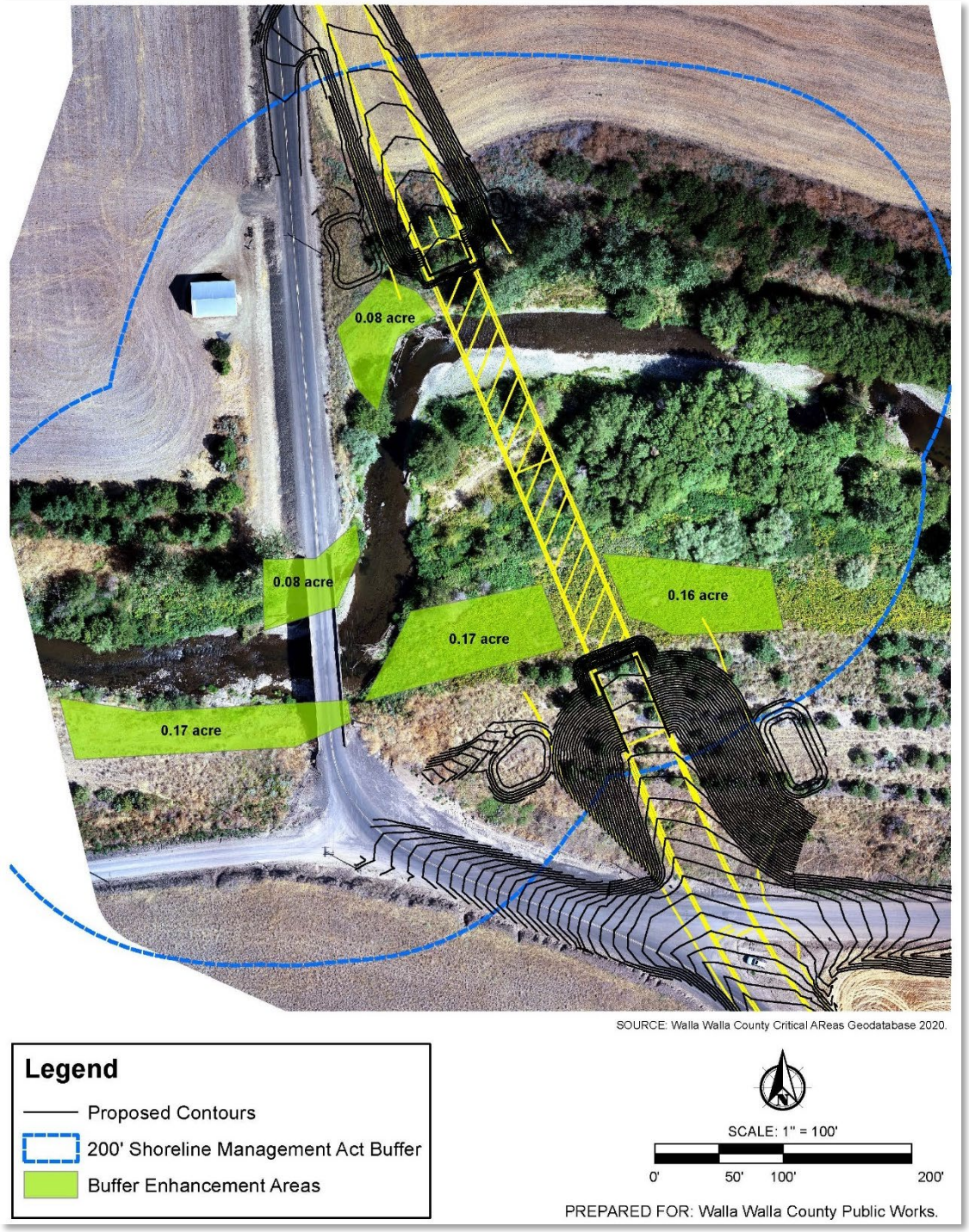

Figure 2 - Riparian Habitat Enhancement Plan

3.2.2 *Construction Access, Staging Areas, and Detours*

Project staging will be located within previously disturbed areas within the project area and generally within the existing and proposed road easements. These consist of gravel maintenance roads and cleared areas

directly adjacent to the existing Pettyjohn Road alignment. No vegetation within the riparian zone will be removed for staging or access. Staging areas will be delineated with orange construction fencing or flagging and suitable erosion control measures employed if erosion is identified. Any areas within the riparian zone that are cleared will be restored through the establishment of native grasses and herbs.

Traffic will be maintained along the existing bridge during construction of the new bridge and approaches. Upon completion of the new bridge alignment, traffic will be routed to the new bridge to allow demolition to commence. No formal detour will be required for the project.

3.2.3 *Construction Equipment*

Construction of the roadway improvements is expected to use the equipment and methods shown below as organized from loudest to quietest. Noise levels expressed in A-weighted decibels (dBA) are based on WSDOT guidance (WSDOT, 2020) and are provided in parenthesis:

- Jackhammer for breaking up asphalt/concrete (95 dBA)
- Dump trucks to haul debris, soil, and aggregates to and from the site (91 dBA)
- Concrete saws (90 dBA)
- Concrete pump trucks (89 dBA)
- Excavators to remove concrete and asphalt and excavate for walls, new pavement subgrades, storm pipes and culverts, and utilities (87 dBA)
- Dozers to place embankment and aggregate material for roadbed construction (86 dBA)
- Paving machines for placing hot mix asphalt (82 dBA)
- Mixer trucks to deliver and off-load concrete (81 dBA)
- Rollers for subgrade, embankment, and hot mix asphalt compaction (81 dBA)
- Backhoes for smaller excavation and loading activities (80 dBA)
- Drill rig truck (79 dBA)
- Loaders to move debris, soil, and aggregates around the site (71 dBA)
- Cranes and boom trucks to set heavy structures and bridge girders (71 dBA)

4 PROJECT TIMELINE

Demolition and construction work for the project is expected to begin on March 1, 2023, with completion anticipated by November 30, 2023. The initial work will include clearing, excavation, filling, and grading activities for the roadway and associated wall structures conducted within the existing road rights-of-way and uplands. This work will be ongoing throughout the project. In-water work in (including demolishing and removing the existing bridge) will be conducted during the WDFW approved fish window (June 16 to September 30). Work activities will be conducted during daylight hours throughout this period. Table 1 shows the currently estimated work elements start and end dates.

Table 1. Anticipated Project Schedule

Project Element	Start	End
Entire project	March 1, 2023	November 30, 2023
Install erosion and sediment control BMPs	March 1, 2023	March 15, 2023
Site preparation	March 1, 2023	March 15, 2023
Grading approaches/constructing retaining walls	March 15, 2023	May 15, 2023
Constructing abutments and central pier	May 15, 2023	September 30, 2023
Girder placement/bridge decking	August 1, 2023	September 30, 2023
Stormwater infrastructure	March 15, 2023	June 15, 2023
Roadway paving and stripping	August 1, 2023	September 30, 2023
Restoration and enhancement plantings	October 1, 2023	November 30, 2023
Constructing debris containment system(s) (demolition)	May 1, 202	May 5, 2023
Demolishing bridge structure	May 5, 2023	June 1, 2023
Begin in-water work window (June 16)		
Coffer dam, fish removal, and dewatering	June 16, 2023	June 17, 2023
Demolishing bridge abutments and central pier	June 17, 2023	September 30, 2023
End in-water work window (September 30)		
Final cleanup and demobilization	September 30, 2023	October 15, 2023

5 IMPACT AVOIDANCE AND MINIMIZATION MEASURES

The project improvements have been designed to avoid or minimize impacts to streams, riparian areas, and buffers. Impacts to these features have been reduced or avoided using the following design/construction methods:

- Multiple design and location approaches were assessed to minimize potential impacts while meeting the overall purpose and need of the project.
- The proposed project will cross the Touchet River at a more appropriate location and result in the removal of in-stream bridge infrastructure.

Project design impact minimization measures include:

- Seasonal restrictions applied to work conducted within or below the OHWM will follow requirements identified in the HPA issued by WDFW and Water Quality Standards for Surface Waters of the State of Washington (Washington Administrative Code [WAC] Chapter 173-201A).
- Construction impacts will be confined to the minimum area necessary to complete the project.
- Construction/demolition activities will follow local, state, and federal permit restrictions for allowable work hours.

Grading, Cutting, or Filling:

- Fill material will only be placed in specified and permitted locations.
- Temporary fill will be placed outside all sensitive areas.
- Temporary fill will be entirely removed, and the site restored to preexisting conditions.

Vegetation Removal and Clearing:

- Boundaries of clearing limits associated with site access and construction limits will be clearly flagged to prevent ground disturbance outside the limits.
- Removal of riparian vegetation will be minimized to the greatest extent possible.
- Temporarily disturbed areas will be restored to prework conditions to the extent possible, including protecting existing root systems and allowing resprouting of herbaceous and woody plants. Where replanting is required, native trees and shrubs will be used, and monitoring of plantings will occur for a minimum of five years.
- Mitigation for the loss of riparian vegetation will be completed through the installation and maintenance of a native tree and shrub plant community.
- Revegetation shall occur no later than spring of the year following construction.

In-Water Work:

- All work below OHWM will be isolated from flowing water and will occur during the approved in-water work window.
- A temporary sandbag or bulk bag cofferdam will be installed to isolate the work area. This coffer dam can likely isolate the north abutment and central pier at the same time and push in-stream flows to the south in order to reduce the need for separate fish removal and work area isolation sessions.
- All fish and other aquatic life will be removed from the work area prior to any in-water work activities. Fish salvage will be conducted, consistent with *WSDOT Fish Exclusion Protocols and Standards* (WSDOT, 2021), and the *Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act* (NOAA Fisheries, 2000).
- Sediment-laden water in the work area will be pumped to settling tanks or ponds and allowed to settle before discharging to the creek. Sediment will be disposed of in accordance with Ecology requirements. Water will be discharged over a well-vegetated area, water energy dissipation pad, or bedrock.
- Prior to entering the work area, equipment will be checked daily for leaks and will be well-maintained to prevent lubricants and any other deleterious materials from entering waters of the state. All

equipment will be free of any external petroleum products, hydraulic fluid, and coolants. Wash water will not be discharged to any water body without pretreatment.

- Project operations will cease under high-flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.

Sensitive Aquatic Habitat/Overwater Work:

- No contractor will stage heavy equipment within 100 feet of streams, unless site-specific review completed by the project biologist indicates that no impacts to the sensitive resource areas will occur due to topography or other factors. All equipment will be fueled and maintained more than 100 feet from the nearest ditches or flowing or standing water, unless site-specific review completed by the project biologist indicates that no impacts to the resource areas will result. Stationary equipment will include full-time containment systems. Containment measures will be implemented when fueling and maintaining equipment.
- The contractor will be responsible for developing a temporary erosion and sediment control (TESC) plan to address erosion control during and after construction (including directing runoff away from unstabilized soils, slowing runoff with structures, and installing silt fence to catch particulates). The TESC plan will be a component of plans and specifications.
- A Spill Prevention, Control, and Countermeasure (SPCC) plan will be developed and implemented for the project. The SPCC plan will identify construction planning elements, including containment measures, and potential spill sources at the site. The plan will also outline responsive actions in the event of a spill or release, identify notification and reporting procedures, and include contractor management elements such as personnel responsibilities, project site security, site inspections, and training.
- Absorbent materials and watertight pans, or similar BMPs, will be placed under all stationary equipment and staged vehicles on barges or other over-water structures. Absorbent materials will be applied immediately on small spills, and promptly removed and disposed of properly. An adequate supply of spill cleanup materials, such as absorbent materials, will be maintained and available in multiple locations on site.
- All construction platforms where such surfaces are used for containment of uncured concrete, slurry, or residue to prevent discharges to waters of the state, will include watertight surfaces/watertight plastic on curbing, bull rails, toe boards, or other devices.
- Nets, tarps, platforms, scaffolds, blankets, barges, floats, or combination thereof, will be used to contain and control debris beneath structures being constructed or demolished.
- The curbing, bull rails, toe boards, or other devices will be installed with a height to be sufficient to contain runoff water, high pH water, and process water.
- Concrete pumps and pipelines will be equipped with emergency shutoff valves so that no uncured concrete comes into contact with waters of the state.
- Concrete and grout delivery systems situated over water will be inspected daily to prevent any discharges of concrete, grout, and/or slurry water into waters of the state.
- Concrete truck cleanout areas will be established to properly contain wet concrete and wash water and prevent it from entering nearby waterbodies.

- The contractor will protect all inlets and catchments from stormwater runoff from sediment, fresh concrete, tackifier, paving, or paint striping in case inclement weather unexpectedly occurs.
- All unstable slopes resulting from construction activities with a high likelihood of delivery of material to listed species-bearing waters will be stabilized within two days from October through June, and within seven days from July through September.
- Temporary material storage piles consisting of erosive materials shall by placed entirely outside the 100-year floodplain.
- No paving, chip sealing, or stripe painting will be initiated in rainy weather.
- There will be no visible sheen from petroleum products in the receiving water as a result of project activities.

6 ACTION AREA

The action area (AA) for a proposed project is defined as all areas to be affected directly and indirectly by the federal action, and not merely the immediate area involved in the action (ESA 50 CFR 17.11). Direct effects include all immediate impacts (adverse and beneficial) from project-related actions, impacts that are directly related to project elements that occur close to the time of the action itself (such as sedimentation), and those impacts from are interrelated or interdependent actions. Indirect effects are those that are caused by or result from the proposed action and are still reasonably certain to occur but occur later in time. The primary direct and indirect activities that define the action area with regard to transportation projects are physical disturbance, project-generated noise, and related aquatic impacts.

6.1 Potential Direct Impacts

6.1.1 ***Physical Disturbance***

The construction-related physical disturbance zone includes all staging, clearing, excavating, grading, construction, paving, and demolition activities. Detours required for construction of the project will use existing paved roadway surfaces. These detours will not result in any additional construction-related extensions to the action area. The limits of these activities are shown as the work area on Figure 3.

6.1.2 ***Noise***

6.1.2.1 Terrestrial

Potential noise disturbance resulting from project construction was calculated using WSDOT methodology for determining the extent of noise impacts for construction projects. Construction noise levels and attenuation distances were calculated using the rules for decibel addition for construction equipment noise and ambient noise level data based on the noise assessment guidance from WSDOT (2020).

The three loudest pieces of construction equipment to be used for the project are:

- Jackhammer for breaking up asphalt/concrete (95 dBA)
- Dump trucks to haul debris, soil, and aggregates to and from the site (91 dBA)
- Concrete saws (90 dBA)

The resulting maximum combined noise level using the WSDOT guidelines for decibel addition is 97 dBA. There are no formal noise analysis reports for the project area to measure background noise levels. Because of its remote location the bridge does not experience a high level of traffic. Daily trips were estimated at 100 trips per day with 20% of those trips consisting of heavy trucks. Noise levels for the project area were estimated using a JavaScript calculator with inputs for average daily car and truck trips and speed (Rigolet,

2021). Six cars and one truck per hour at a speed of 40 miles per hour would generate a noise level of 47 dbL at 50 feet.

Noise attenuation distance was calculated using WSDOT's spherical spreading loss model, expressed as:

$$D = Do * 10((\text{Construction Noise} - \text{Ambient Sound Level in dBA})/\alpha)$$

Where D = the distance from the noise source, Do = the reference measurement distance (50 feet), and α = 25 for soft ground. For point source noise, a spherical spreading loss model is used. The alpha (α) value assumes a 7.5 dBA reduction per doubling distance over soft ground.

Based on these data and calculations, terrestrial construction noise from the project would attenuate to background levels within 5,000 feet of the construction activities. This 5,000-foot limit was used as the limit of construction-related noise effects on terrestrial species and habitats (Figure 3). The Action Area includes the Touchet River between river mile (RM) 30-32.

6.1.3 ***Water Quality***

In-stream work will be limited to the demolition of existing bridge piers. Even though this work will be done during the summer low flow season and the work areas will be isolated from flowing waters, some degree of sedimentation of downstream waters is anticipated. Water quality impacts may include potential sedimentation and turbidity resulting from the temporary in-stream work when the existing bridge pier is removed, potential debris entering the steam during demolition, and erosion of exposed areas prior to stabilization.

The downstream extent of the aquatic zone of effect for the demolition was determined based on the criteria in the Water Quality Standards for Surface Waters of the State of Washington (WAC Chapter 173-201A) and flow estimates developed for the bridge design. The US Geological Survey stream gauge #14017000 indicates that normal low flow conditions for the Touchet River during the in-water work period is 20 cubic feet per second. The code states "for waters with flows from 10 to 100 cubic feet per second at the time of construction, the point of compliance shall be 200 feet downstream of the activity causing the turbidity exceedance" (Ecology, 2006). This 200-foot limit serves as the outer extent of the potential water quality effects of the project and defines the aquatic action area shown in Figure 4.

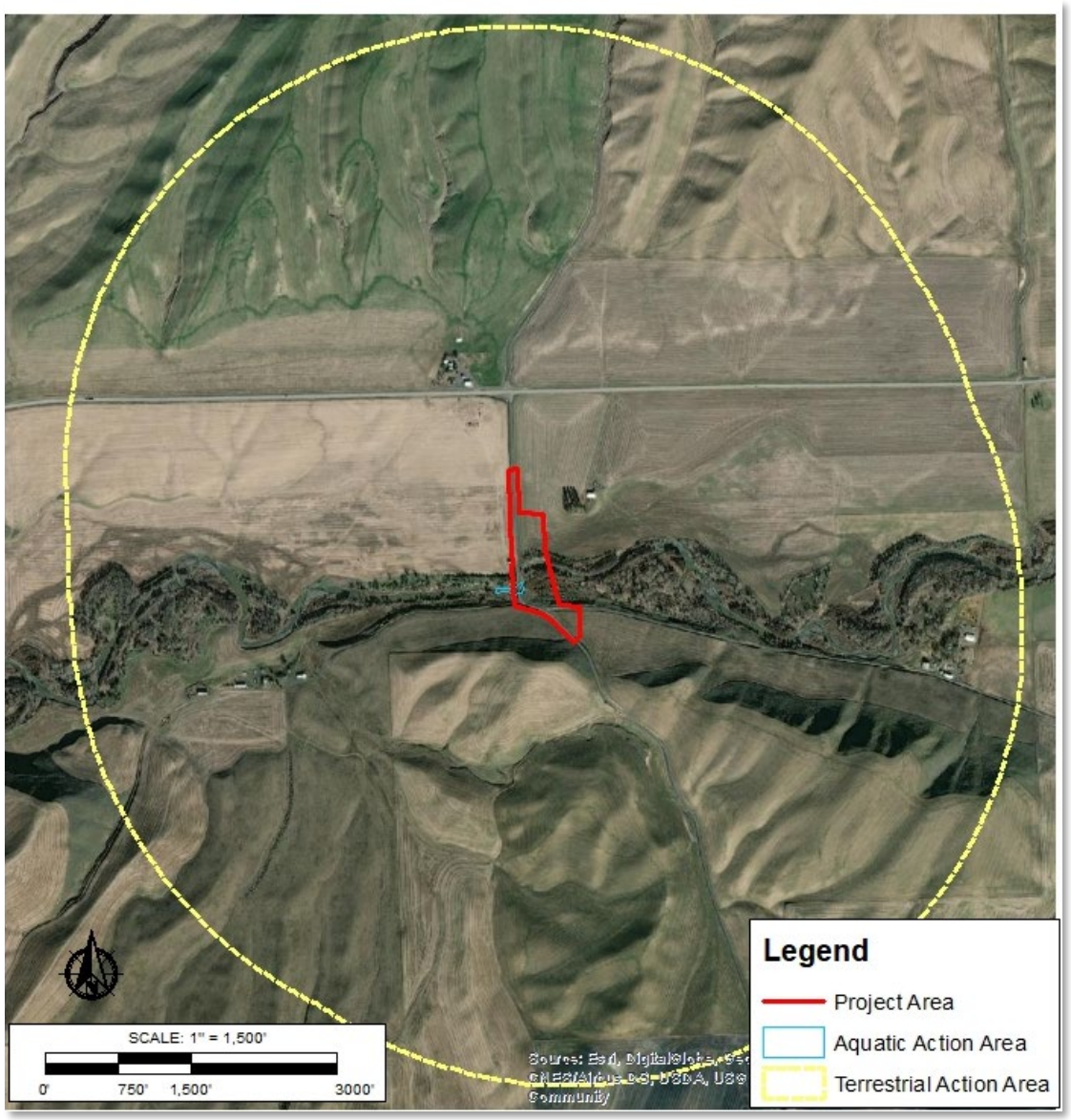

Figure 3. Project Terrestrial Action Area

Figure 4. Aquatic Action Area

Species and Habitat Information

7 SPECIES AND CRITICAL HABITAT ADDRESSED IN BIOLOGICAL ASSESSMENT

Table 2. Federally Protected Species & Critical Habitats in the Action Area

Species	Ecological Significant Unit/ Distinct Population Segment	Federal Status	Critical Habitat
Aquatic Species			
Steelhead trout (Oncorhynchus mykiss)	Middle Columbia River DPS	Threatened	Final designated
Bull trout (Salvelinus confluentus)	US, conterminous lower 48 states	Threatened	Final designated
Terrestrial Species			
Yellow-billed cuckoo (Coccyzus americanus)	Western US DPS	Threatened	

8 SPECIES AND CRITICAL HABITAT OCCURRENCE

8.1 Steelhead Trout Middle Columbia River DPS

8.1.1 *Status of Species*

The steelhead (*Oncorhynchus mykiss*) Middle Columbia River Distinct Population Segment (DPS) was first listed as threatened by NOAA Fisheries on March 25, 1999. The designation was updated on February 6, 2006, and on April 14, 2014. This DPS includes naturally spawned anadromous populations originating below natural and humanmade impassible barriers from the Columbia River upstream of the wind and Hood River and includes fish from the Yakima River. The Middle Columbia DPS does not include stocks originating from the Snake River basin. The species is supported through four separate artificial propagation programs. A

recovery plan for this population was established in 2009 (NOAA Fisheries, 2009). The species recovery within the Touchet River basin has been challenging and the population viability was evaluated as being at a high risk of extirpation (WDFW, 2016).

8.1.2 *Status of Critical Habitat*

Critical habitat for Middle Columbia River DPS steelhead was designated on September 2, 2005. The spawning range of the Middle Columbia River DPS steelhead extends over an area of approximately 35,000 square miles in the Columbia plateau of eastern Washington and eastern Oregon. The DPS includes all naturally spawned populations of steelhead in drainages upstream of the Wind River, Washington, and the Hood River, Oregon (exclusive), up to, and including, the Yakima River, Washington, excluding steelhead from the Snake River Basin Major drainages in this DPS are the Deschutes, John Day, Umatilla, Walla Walla, Yakima, and Klickitat river systems. The Cascade Mountains form the western border of the plateau in both Oregon and Washington, while the Blue Mountains form the eastern edge. The southern border is marked by the divides that separate the upper Deschutes and John Day basins from the Oregon High Desert and drainages to the south. The Wenatchee Mountains and Palouse areas of eastern Washington border the Middle Columbia on the north (NOAA Fisheries, 2009).

8.1.3 *Occurrence in the Action Area*

Summer run steelhead are presumed to migrate through the portions of the Touchet River within the action area. Winter run steelhead within the Columbia River are not found upstream of the Klickitat River (Smith, 2004). Fish enter the Touchet River as early as May in the year prior to spawning, and as late as the following April (WDFW, 2015). Steelhead spawn upstream of the project location. Abundance figures for steelhead within the Touchet River are limited. Because of high summer water temperatures and low amounts of suitable cover, this section of the Touchet River is used by steelhead for migration (Trump, 2021). The lowest recorded redds were observed at RM45, approximately 10 miles upstream from the action area (WDFW, 2015). Steelhead are most likely to be within the action area during migration that correspond with heavy precipitation events (Trump, 2021).

Juvenile summer steelhead rear successfully in the Touchet River above RM 40, and are widely spread throughout the upper mainstem, each of the major forks, and smaller tributaries. Rearing success appears to be dependent upon habitat and water quality, which is poor below RM 40, and only moderate between RM 40-53 (Mendel et al 1999). Above RM 53, rearing conditions are good for steelhead. Juveniles will typically spend from one to three (primarily two) years in the Touchet River before emigrating as smolts, though a few age four individuals have been identified from adult scale samples (Bumgarner and Dedloff, 2015).

8.1.4 *Critical Habitat*

The Touchet River is designated critical habitat for middle Columbia River DPS steelhead. Critical habitat was designated on February 16, 2000. NOAA Fisheries physical and biological features (PBF, formerly primary constituent elements [PCEs]) for Middle Columbia River DPS steelhead critical habitat that are applicable to streams in the action area include:

1. Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation, and larval development.
2. Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.

3. Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.

8.1.5 *Critical Habitat PCEs within action area*

Of the PCEs listed above, the action area provides migration opportunities. Water quality impairments, principally temperature, prevent usage of the action area reaches for spawning and rearing. While micro-habitats such as pools, undercut banks, and low flow side channels due exist within the action area, water surface temperatures in the summer months exceed 70 degrees Fahrenheit prevent utilization of these areas.

8.2 Bull Trout

8.2.1 *Status of Species*

The bull trout (*Salvelinus confluentus*) population segment was listed as threatened by USFWS on November 1, 1999. The Mid-Columbia Recovery Unit (Mid-C RU) comprises 24 bull trout core areas. The recovery unit is located within eastern Washington, eastern Oregon, and portions of central Idaho and major drainages include the Methow River, Wenatchee River, Yakima River, John Day River, Umatilla River, Walla Walla River, Grande Ronde River, Imnaha River, Clearwater River, and smaller drainages along the Snake River and Columbia River and a recovery plan was established in 2015 (USFWS, 2015).

8.2.2 *Status of Critical Habitat*

Critical habitat for the bull trout was designated on September 26, 2005, and revised on October 18, 2010. This final designation includes approximately 3,828 miles of streams; 143,218 acres of lakes in Idaho, Montana, Oregon, and Washington; and 985 miles of shoreline paralleling marine habitat in Washington. Designated critical habitat includes the Columbia River and its tributaries, including the Walla Walla and Touchet Rivers.

8.2.3 *Occurrence in the Action Area*

Bull trout within the Touchet River system are mostly located in the upper reaches within the North Fork Touchet River and Wolf Fork Touchet River that supply the cooler surface water temperatures that bull trout require (Trump, 2021; (Mendel et al., 2003). Eight years of surveys for the presence of bull trout from 1998 to 2006 within the lower reaches of the Touchet River (Confluence to Coppei Creek) yielded one observation of a bull trout (WDFW, 2007). There have been no spawning or redd surveys done for bull trout within the action area reach. Bull trout use this reach of the Touchet only for migration (Trump, 2021). Water temperatures within the action area during the in-water Work window which runs from June through September well exceed those that can be tolerated by bull trout. Seven day averages for June, July, and September recorded between 2003-2006 indicate water surface temperatures exceed 70 degrees by the 2nd week of June and don't fall below 70 until the 2nd or 3rd week of September (WDFW, 2007).

8.2.4 *Critical Habitat*

Designated critical habitat for bull trout includes the Columbia River and its tributaries, which includes the Touchet River. The following nine points summarize the USFWS PBFs appropriate to freshwater aquatic systems in the action area:

1. Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.
2. Migration habitats with minimal physical, biological, or water quality impediments.
3. An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.

4. Complex river, stream, lake, reservoir, and marine shoreline aquatic environments, and processes that establish and maintain these aquatic environments.
5. Water temperatures ranging from 2 to 15 degrees Celsius (°C or 36 to 59 degrees Fahrenheit [°F]), with adequate thermal refugia available.
6. Spawning and rearing areas with suitable substrate.
7. A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges.
8. Sufficient water quality and quantity.
9. Low levels of occurrence of non-native predatory species.

8.2.5 *Critical Habitat PCEs within action area*

Of the PCSs listed above, only spawning sites with suitable substrate are present within the action area. However, water quality parameters far exceed those required for bull trout presence and utilization.

8.3 Yellow-Billed Cuckoo

8.3.1 *Status of Species*

The yellow-billed cuckoo (*Coccyzus americanus*) is a relatively large bird with a long tail and slender body. The Western US Distinct Population Segment (DPS) of the yellow-billed cuckoo was listed as threatened by USFWS on November 3, 2014. This DPS occurs in the western US from Texas to British Columbia and California to Colorado. Yellow-billed cuckoo populations have declined extensively in the west, particularly in Washington and Oregon where breeding populations are considered to be extirpated (WDFW, 2013).

8.3.2 *Status of Critical Habitat*

Critical habitat for the yellow-billed cuckoo was proposed on August 15, 2014, and revised on April 21, 2021. Critical habitat units were proposed in California, Nevada, Idaho, and other southwestern states, but not Washington.

8.3.3 *Occurrence in the Action Area*

The project action area contains riparian corridors with cottonwood (*Populus balsamifera*) and willow (*Salix* sp.) cover that could provide suitable nesting habitat for western yellow-billed cuckoo. There is a strong correlation between habitat size and presence of yellow-billed cuckoo where contiguous cottonwood-willow habitats larger than 40 hectares were preferred by the birds in California (Laymon, 1989). The riparian corridor along the Touchet River is relatively narrow and is flanked to the north and south by agricultural land. As a result, these areas are likely too fragmented and lack canopy coverage and density to provide habitat for yellow-billed cuckoo. General information on the life history of this species in provided in Appendix C.

Environmental Setting/Baseline

9 GENERAL SETTING

The Dell Sharpe Bridge Replacement project is within unincorporated Walla Walla County and is situated in the northern extent of the Columbia Plateau. This region of Washington is characterized by rolling volcanic plains typically vegetated with sagebrush. Precipitation ranges from 7 to 18 inches per year from east to west across the ecoregion. This area experiences long, hot summers and short, cold winters.

The general vicinity of the AA is characterized by rolling hills dedicated to non-irrigated agricultural activities. The topography of the site is highly variable and essentially spans from rolling hills and slopes in the south to a flat valley to the north. The Touchet River flows west through the southern edge of this valley. Pettyjohn Road descends into the project area and becomes flat where it crosses Sharp Road. South of Sharp Road, there are short, steep slopes that lead down to the Touchet River floodplain.

Current land uses in the vicinity of the project is dominated by wheat and hay production. There is a single residence and outbuildings located approximately one mile west of the project site (Figure 3). Additionally, there is an old school building located directly north of the existing bridge, on the west side of the road. There are no other developments within the action area.

Vegetation within the AA includes active wheat and hay fields in the northern and southern extents and unmanaged vegetation in the central portions of the area, directly adjacent to the Touchet River. The slopes leading down to the Touchet River floodplain are dominated by large amounts of invasive, non-native plant species. These include Canada thistle (*Cirsium arvense*), perennial ryegrass (*Lollium perrene*), cheatgrass (*Bromus tectorum*), cereal rye (*Secale cereale*), curly dock (*Rumex crispus*), Canada goldenrod (*Solidago canadensis*), and poison hemlock (*Conium maculatum*). The upper portions of this slope are sparsely vegetated within grasses and forbs and scattered Russian olive (*Elaeagnus augustifolia*) and big sagebrush (*Artemisia tridentata*). The lower bench that sits slightly above the floodplain areas consists of a thick stand of poison hemlock. Below the poison hemlock, a less disturbed vegetation community comprises a native understory and an understory of both native and non-native grasses and forbs. The overstory consists of dense stands of black cottonwood (*Populous trichocarpa*), water birch (*Betula occidentalis*), white alder (*Alnus rhombifolia*), and coyote willow (*Salix exigua*). Understory vegetation along the river consists of young coyote willow, red-osier dogwood (*Cornus alba*), nootka rose (*Rosa nootkana*), Russian olive, and scattered false-indigo bush (*Amorpha fruticose*).

9.1 Waters

The only water within the AA is the Touchet River, which flows west under the existing Dell Sharpe Bridge. The Touchet River Watershed originates from streams on the northwestern slopes of the Blue Mountains, and from seasonal streams draining Palouse hillsides to the north. The Touchet River drains into the Walla Walla River just west of the town of Touchet, Washington. There are currently no mapped non-fish passable culverts between the confluence with the Walla Walla River and the project area (WDFW, 2021b). Within the AA, the river exists as a moderate gradient stream with riffle and glide habitats with a few small shallow pools. The banks of the river are a mixture of steep, eroded banks on the outside meander bend of the river near the existing bridge and relatively flat vegetated floodplain areas. There is a small amount of large woody debris (LWD) in the channel and several areas with undercut banks and some areas of overhanging vegetation that likely provide cover habitat. Photographs of the stream are provided in Appendix E.

10 ENVIRONMENTAL BASELINE

The following sections describe the environmental baseline for ESA listed species and their habitats present in the action area.

10.1 Terrestrial Species and Habitat

Terrestrial environments in the project action area were evaluated for the presence of suitable habitat for listed species. Baseline conditions assessed included the following elements:

- Foraging habitat
- Nesting or dispersal habitat
- Habitat for prey
- Suitable or occupied habitat

The terrestrial portion of the AA is dominated by agricultural fields used to grow pasture grasses and grains. E Highway 124 runs east-west through the northern portion of the AA. The only habitats within the AA that are not currently farmed is the narrow strip of vegetation adjacent to the Touchet River. Vegetation in this area is a mixture of non-native grasses, forbs, and shrubs that transitions to a predominately native vegetation within the floodplain of the river.

The slopes leading down to the Touchet River floodplain are dominated by large amounts of invasive, non-native plant species. These include Canada thistle, perennial ryegrass, cheatgrass, cereal rye, curly dock, Canada goldenrod, and poison hemlock. The upper portions of this slope are sparsely vegetated with grasses and forbs and scattered Russian olive and big sagebrush. The lower bench that sits slightly above the floodplain areas consists of a thick stand of poison hemlock.

The floodplain areas directly adjacent to the Touchet River are vegetated by a mixture of native trees and shrubs with an understory comprising a mixture of non-native herbs and grasses. There is a dense overstory of black cottonwood, water birch, white alder, and coyote willow. Emergent vegetation is very sparse, likely due to seasonal flooding and scouring of the floodplain and is dominated by scattered reed canarygrass (*Phalaris Aurundinacea*), bentgrass (*Agrostis sp*.), and scattered soft rush (*Juncus effusus*).

10.2 Aquatic Species and Habitat

NOAA Fisheries has prepared guidance on the evaluation of properly functioning conditions (PFC) for ESA-listed salmonids. Existing environmental conditions within action area for the project were evaluated using the Pathways and Indicators matrices for properly functioning conditions developed by NOAA Fisheries.

The environmental baseline conditions for the Touchet River were rated as functioning at risk based on these matrices (see Appendix D).

10.3 Water Quality

Detailed current temperature data is not available for the Touchet River as it flows through the AA. However, past water quality monitoring indicates that summertime water temperatures well exceed levels tolerable to salmonids. Between 2001-2006, the WDFW measured surface water temperatures from May 1st- July 16 and September 1st- November 2nd at a location that is 1.5 miles above the AA (WDFW, 2007). The results of these measurements showing the seven day maximum temperatures are presented in Figure 4 below. The shaded cells indicate temperatures that would be thermal barriers to fish passage to passage temperatures (>68°F).

Table 4. Seven day average maximum temperatures from May 1st –July 16th and September 1st –November 2nd for the lower portions of the Touchet River, Walla Walla River, Mill Creek, and Dry Creek, 2001-2006 (listed from upstream to downstream for each stream). Shaded cells suggest thermal barriers to migration (>68°F from Table 3)

	Touchet River @ Bolles Bridge						Touchet River @ Harvey Shaw Rd.					
	2001	2002	2003	2004	2005	2006	2001[a]	2002	2003	2004	2005	2006
May 1-7	54.31				59.27[b]		55.38			63.28[c]		
May 8-14	59.79		60.71[d]	57.13[e]	60.70		63.28		64.03[d]	62.14		
May 15-21	58.12		56.36	59.98	58.97		60.39		60.03	64.00		
May 22-28	69.40		65.44	58.53	64.65		74.66		69.96	61.50		
May29-June 4	63.54		67.72	61.60	67.43		68.90		72.60	64.92	69.53[f]	
Max Temp for May	**71.86**		**69.68**	**62.26**	**72.52**		**77.43**		**75.03**	**66.85**		
Min of Max Temp for May	**49.28**		**53.42**	**52.42**	**54.37**		**50.44**		**57.18**	**54.06**		
June 5-11	64.79		72.76	60.33	64.77		69.04		78.34	64.05	69.61	
June 12-18	66.41		73.64	64.33	66.99		70.35		78.62	68.64	71.86	
June 19-25	72.20		68.37	74.45	74.27		76.68		72.49	80.07	79.75	
June 26-July 2	73.98		75.41	76.91	73.45	77.89[g]	79.85		79.96	81.28	78.39	83.52[g]
Max Temp for June	**78.33**		**78.23**	**78.07**	**77.15**	**80.57**	**83.84**		**84.95**	**83.45**	**81.97**	**87.25**
Min of Max Temp for June	**57.38**		**63.85**	**54.37**	**57.71**	**71.28**	**58.82**		**65.78**	**59.95**	**62.11**	**76.21**
July 3-9	79.53		76.06	75.10	75.69	79.10	85.38		80.30	79.47	79.94	83.85
July 10-16	77.92		78.87	77.86	76.36	77.51	82.94		82.81	82.47	81.32	80.93
Max Temp for July	**83.47**		**81.06**	**81.88**	**78.40**	**83.50**	**88.90**		**86.62**	**86.10**	**83.62**	**89.34**
Min of Max Temp for July	**71.26**		**71.78**	**71.61**	**70.72**	**72.48**	**74.62**		**74.72**	**75.83**	**75.07[h]**	**75.27**
Sept. 1-7	69.85		73.77	68.69	69.89	70.26	74.41		77.00	71.32		73.04
Sept. 8-14	69.36		64.44	65.61	65.45	68.24	74.69		67.45	67.53		70.25
Sept. 15-21	68.15		63.53	61.49	63.30	59.52	72.91		66.49	63.62		61.36
Sept. 22-28	64.56		65.68	64.65	60.15	62.55	68.75		68.96	68.01		64.62
Sept. 29-Oct. 5	60.34		63.52	61.94	57.88	60.59	64.43		66.12	64.44		61.94
Max Temp for Sept.	**73.66**		**76.05**	**70.71**	**73.13**	**72.18**	**78.06**		**79.73**	**73.97**		**75.27**
Min of Max Temp for Sept.	**61.06**		**60.71**	**59.98**	**59.13**	**57.38**	**64.55**		**62.59**	**61.65**		**59.36**
Oct. 6-12	53.36		58.95	59.09	57.55	55.39	54.90		59.64	61.17		56.47
Oct. 13-19	53.56		55.08	56.24	57.84	54.56	55.67		56.55	57.74		55.47
Oct. 20-26	50.37		55.70	50.75	55.34[i]	51.41	51.67		57.50	51.24		51.71
Max Temp for Oct.	**62.49**		**64.43**	**61.40**	**59.70**	**61.35**	**66.59**		**66.66**	**63.94**		**62.50**
Min of Max Temp for Oct.	**47.62**		**50.63**	**48.51**	**53.25**	**49.28**	**49.59**		**52.15**	**47.66**		**48.99**

[a] Site was actually 1.5miles above Harvey Shaw Rd.
[b] No data before May 6th.
[c] No data before May 5th.
[d] No data before May 14th.
[e] No data before May 10th.
[f] No data before June 1st.
[g] No data before June 26th.
[h] No data after July 21st.
[i] No data after October 21st.

Figure 4 - 7-day Average Water Temperatures (from WDFW, 2007).

The one-day maximum temperatures were between 30.01 and 33°C (Ecology, 2007). This temperature is significantly higher than the less than 20°C target set by the Environmental Protection Agency (EPA) for migrating salmonids. It has been shown that salmonids will completely avoid waters with temperatures exceeding 22 to 24°C (EPA, 1999). The entire Walla Walla Watershed is currently covered under TMDLs for temperature, bacteria, DO, and pH (Ecology, 2021).

10.4 Habitat Access

The Touchet River generally has good aquatic habitat access owing to low development rates in the watershed and a lack of non-fish passable culverts and structures. The WDFW state fish passage map does not show any non-fish passable culverts between the project site and the downstream confluence with the Walla Walla River (WDFW, 2021). Despite the lack of recorded migratory blockages, low flows in the Touchet River may prevent adult fish from entering the system until heavy precipitation events. Low flows in the lower Walla Walla and Touchet rivers may prevent or inhibit adult steelhead from migrating above the mouth of the Touchet River until December in many years (Mahoney et al., 2001). WDFW staff think this is likely a function of water surface elevations and temperature (Trump, 2021).

10.5 Habitat Elements

Sands, gravels, and cobbles predominate in the substrate of the project site reach of the Touchet River. Embedment of channel substrate is very low, likely due to the absence of silts. Large woody debris is uncommon or absent in the affected portions of both streams with less than 10 pieces per 100 meters and the existing riparian zones are narrow and lack potential for woody debris recruitment. Instream habitat in the affected stream reaches is run and riffle type; there is only a single pool located adjacent to the bridge pier and appeared shallow (less than 3 feet deep). Riparian cover is fair while there is a good amount of woody

vegetation adjacent to the stream and undercut banks are present. There is no off-channel habitat within the affected stream reach.

10.6 Channel Condition

Stream width to depth ratios vary within the Touchet River reach within the AA. The creek generally has a width to depth ratio of around 30. In general, the river displays appropriate channel geometry with steeper banks on the outside of channel meanders and shallow, gently sloped areas on the inside of channel meanders. While most of the channel banks are stable, there are a few isolated areas that show active erosion.

10.7 Flow, Hydrology, and Watershed Conditions

The majority of the watershed that feeds the Touchet River comprises lands converted to agriculture. The hydrology of the river does not suffer from flashy hydrology or prolonged peak flows typical of more urbanized streams, but summer stream flows are reduced due to agriculture diversions. Reductions in flows have been identified as one of the major reasons for the high temperatures recorded within the river. There has been a significant effort in recent years by various organizations to purchase water rights to increase stream flows.

11 ANALYSIS OF EFFECTS

Under the ESA, federal agencies must evaluate the effects of the proposed action on endangered species and critical habitats. The analysis must include direct effects and delayed consequences (i.e., future effects that are reasonably likely to occur). The following sections describe direct effects and delayed consequences, as well as effects resulting from interrelated/interdependent actions and cumulative project impacts.

11.1 Direct Effects

Direct effects of the Dell Sharpe Bridge Replacement Project include potential discharge of hazardous materials to surface waters, construction-related noise, disturbance of instream habitat, and vegetation clearing. These effects are described in detail below.

11.1.1 ***Hazardous Materials and Chemical Spills***

The use and storage of hazardous materials and chemicals (e.g., diesel fuel, lubricants, drilling fluids, uncured concrete) near waterways could potentially impair water quality if they are spilled or released. In general, construction-related chemical spills could affect fish by increasing physiological stress, altering primary and secondary production, affecting juvenile salmonid prey species, and possibly causing direct mortality. Hazardous materials can have lethal and sub-lethal effects on aquatic organisms. Sub-lethal effects may influence populations by affecting reproduction. Likewise, sub-lethal effects may cause physiological stress that leads to increased susceptibility to other sources of mortality, such as predation. Adverse effects related to contaminant spills and leaks could result, but will be adequately mitigated by implementing a SPCC plan as part of the environmental commitments for the project. With BMPs in place, any impacts from hazardous materials are anticipated to be insignificant.

11.1.2 ***Noise***

11.1.2.1 Terrestrial

Yellow-billed cuckoo are sensitive to noise when nesting; however, this species is not known to breed in Washington state, and the AA does not provide suitable nesting habitat. The AA does provide potential foraging habitat, but the habitat is not of high quality and its use by this species is unlikely. In the unlikely event that yellow-billed cuckoo are present within the AA, they could be temporarily displaced during noise-generating construction activities.

11.1.2.2 Aquatic

No impacts to aquatic species are expected from noise created by project construction. There will be no in-water pile driving that could produce noise. Portions of the project will be completed below the OHWM of the Touchet River but the work will be completed within isolated areas that are pumped dry. The proposed work is not anticipated to generate any measurable noise in sections of the stream where fish may be present.

11.1.3 ***Fish Salvage***

Potential direct effects to ESA-listed fish could result from fish capture and relocation during construction. The proposed bridge abutment and pier removals will coincide with the WDFW in-water work window to reduce the chance that ESA-listed fish species are present in the work area. In addition to adherence to the in-water work window, surface water temperatures within this time period would likely cause salmonids and other temperature sensitive fish to completely avoid the AA. Although no areas of potential thermal refuge such as seeps or springs were identified within the action area, this area could exist. Fish encountered during the fish salvage period would likely be limited to juvenile fish that could take advantage of these smaller pocket of thermal refuge.

11.1.4 ***Disturbance of In-Stream Habitat***

Potential direct effects to critical habitats in the Touchet River will result from removal of the existing bridge abutments and central pier. This will cause temporary disruption in gravel and sediment distributions in the immediate area. This disruption would be limited to the areas surrounding the removal activities and would be short term.

Beneficial effects of the project include removing the large central pier of the existing Dell Sharpe Bridge. The new bridge, with its smaller, single pier design located outside the OHWM will improve in-stream habitat functions by spanning the entire channel migration zone of the river; allowing for easier passage of LWD; maintaining current flood elevations; and allowing the formation of natural channel meanders which are currently prevented by the existing bridge abutments.

These factors are expected to increase habitat complexity and encourage pool formation, create natural cover, and generally improve migration potential, which address current deficiencies in the PBFs. Overall, the proposed project will result in an improvement to natural stream processes and in-stream habitat in the AA.

11.1.5 ***Vegetation Clearing***

A total of 0.61 acre of vegetation will be cleared for construction of the new bridge and approaches. Most of this vegetation consists of non-native shrubs and forbs located outside the riparian zone. Impacts to native vegetation within the riparian zone will be limited to clearing that is determined to be necessary for bridge girder placement. Vegetation within these areas is limited to shrubs and small cottonwood trees. A formal tree survey was not completed but it has been estimated from aerial photographs that total trees that will need to be removed will be nine to ten individual trees. It should be noted that the tree removal on the northern bank of the river is not anticipated to reduce shading of surface waters due to their location. Due to the small number of trees slated for removal, the short-term loss of vegetation will be insignificant and should not result in a temporal loss of riparian functions until such time that planted vegetation matures.

Temporarily exposed soils that will not be disturbed for two days during the wet season or seven days during the dry season shall be immediately stabilized with the approved erosion/sediment control methods (e.g., seeding, mulching, plastic covering, etc.). All seeding areas will include the use of hydraulically applied erosion control product (HECP) using a natural fiber based long-term mulch and native seed mix. All seeding areas will

be prepared with longitudinal depressions formed perpendicular to the natural flow of water on the slope to reduce velocity runoff.

The project will include the enhancement of 0.61 acre of riparian area through the planting of native trees and shrubs that will be maintained for a period of five years. The soil preparation will utilize native soils that satisfy specific requirements conducive to plant establishment including organic matter, soil texture classification, and pH. Riparian vegetation serves important functions in stream ecosystems by providing shade, sediment storage, nutrient inputs, channel and streambank stability, habitat diversity, LWD input, and cover and shelter for fish (Murphy and Meehan, 1991). As such, the proposed project will result in a small increase in riparian habitat quality and associated in-stream benefits.

11.1.6 *Sedimentation and Turbidity*

Project construction (clearing, grubbing, and grading) will remove vegetation and disturb soil to construct the bridge approaches and bridge abutments. These activities can result in large areas of exposed soils that are susceptible to erosion, subsequently increasing turbidity and sedimentation in project receiving waters. Following the onset of the rainy season or rewatering the new channel, these suspended sediments could move downstream into the Touchet River. In addition, placement and subsequent removal of in-water isolation damns can cause the creation of small scale increases in temporary turbidity.

Increased turbidity and suspended sediments can have physical and behavioral effects on salmonids. Physical effects would result when fish are exposed to suspended sediments and may include alterations to blood sugar levels and osmoregulatory function and damage to gills. Behavioral effects include avoidance of turbid water, changes in foraging ability, reduced avoidance of predators, and reduced territoriality (Bash et al., 2001).

Increased sedimentation downstream of the construction areas may negatively affect benthic invertebrates through alteration of water quality and substrate conditions. Benthic macroinvertebrates affected by sedimentation within the action area are expected to recover rapidly following construction (Reid et al., 2002). Few, if any, measurable effects on listed fish species are anticipated because of the degraded water quality conditions within the action area and lack of suitable holding habitats that would represent thermal refuge.

To minimize construction-related erosion and sedimentation to project water bodies, the contractor will implement erosion and sediment control measures described in a site-specific TESC plan. Implementation of BMPs in the TESC plan and other measures, as necessary, will be performed to allow the project to comply with Washington state water quality standards and anticipated permit conditions. With appropriate measures in place, the project is expected to result in only minor, short-term increases of turbidity and suspended sediment. Water quality impacts are not expected to extend beyond 200 feet downstream of the project. Sedimentation may occur downstream of the work areas but is not expected to cause significant impacts.

12 DELAYED CONSEQUENCES

Delayed consequences of the proposed project include potential impacts to aquatic habitats from sedimentation and turbidity that may result after construction and impacts to fish access and stream and floodplain processes in the project area. Specific effects are discussed below.

12.1 Noise

The proposed project will not create additional lanes of traffic or result in an increase of bridge utilization that would cause noise levels to increase within the AA.

12.2 Water Quality

The pollution generating roads and bridge within the project area currently have no stormwater management. In addition, there are several small erosion rills directly adjacent to Pettyjohn Road that are delivering sediment and pollutants directly to surface waters in the Touchet River.

Stormwater impacts will result from changes of impervious surfaces in the work area. Stormwater treatment and detention for the proposed project was designed in accordance with Ecology's 2019 Stormwater Management Manual for Eastern Washington. The project will result in an increase of 0.70 acre of impervious surface and a net increase in pollution generating impervious surface (PGIS) of 0.52 acre. However, the proposed stormwater facilities will collect, treat, and infiltrate a total of 1.5 acres of PGIS which represents an increase in water quality over existing conditions. As stormwater will be fully infiltrated, there will be no stormwater outfalls that could disrupt the hydrology of the Touchet River.

12.3 Stream and Floodplain Processes

Removal of the existing Dell Sharpe bridge will involve the demolition of the bridge abutments and central pier. These features currently serve to restrict the ability to form natural channel meanders as well as disrupt woody debris distribution. Eliminating these features will result in an increase in the ability of the Touchet River to hydrologically sort sediments for channel evolution and fish habitat creation, transport woody debris that form scour pools and in-stream cover and reduce bank erosion by allowing flood flows to pass through the new crossing.

The project will include the planting of native trees and shrubs within 0.61 acre of Touchet River riparian area. Upon maturity, these plantings will increase water quality parameters such as temperature and increase wildlife habitat.

13 INTERRELATED AND INTERDEPENDENT ACTIONS

An interrelated action is one that is part of the larger action and depends on that larger action for its justification. An interdependent action is one that has no independent utility apart from the action under consultation. Interrelated and interdependent actions that could result in direct or indirect effects are those that would not occur "but for" the proposed action.

The proposed project is being constructed to facilitate the repair of aging infrastructure and has independent utility. The project will not serve to spur further development actions or improvement projects within the County.

14 CUMULATIVE EFFECTS

Cumulative effects are defined in 50 CFR § 402.02 as those effects of future state or private activities, not involving federal activities, that are reasonably certain to occur within the action area of the federal action subject to consultation. The project team is not aware of any specific future non-federal activities within the action area that could adversely affect the species and critical habitat evaluated in this BA.

15 CONCLUSIONS AND EFFECTS DETERMINATIONS

15.1 Middle Columbia Steelhead

15.1.1 *Species*

The project **may affect** Middle Columbia River DPS steelhead. The project may affect steelhead because:

- Middle Columbia steelhead may be present in the action area.
- The project includes in-water work within streams in the action area.

- Construction may temporarily degrade water quality during construction.

The project is **likely to adversely affect** Middle Columbia River DPS steelhead because:

- Middle Columbia River DPS steelhead may be present during the in-water work window and require relocation outside the exclusion areas.
- Fish handling would result in mortality or stress to fish.
- Temporary sedimentation could result in Steelhead avoiding the Action Area.
- In-water work would exclude fish from portions of the river.

15.1.2 *Critical Habitat*

The proposed project **may affect** Middle Columbia River DPS steelhead critical habitat for the following reasons:

- The project will require in-water work in the Touchet River.
- The project will disrupt riverbed material and generate turbidity during in-water work associated with bridge removal.
- The proposed work will entail vegetation clearing that could result in sedimentation of the Touchet River that may result in decreased water quality.

The proposed project is **likely to adversely affect** critical habitat for Middle Columbia River DPS steelhead for the following reason:

- There will be a temporary loss of in-stream habitat as work areas are isolated to complete in-water work.
- Removal of the existing bridge superstructure will disrupt the riverbed and disrupt channel bed materials.
- Turbidity generated during construction could negatively affect benthic organisms.

15.2 Bull Trout

15.2.1 *Species*

The project **may affect** bull trout. The project may affect bull trout because:

- Bull trout are potentially present in the action area.
- The project will require in-water work that may temporarily degrade water quality during and following construction.
- Construction may temporarily degrade water quality during construction.

The project is **likely to adversely affect** bull trout because:

- Bull trout may be present during the in-water work window and may have to be relocated outside the exclusion areas.
- Fish handling would result in mortality or stress to fish.
- Temporary sedimentation could result in bull trout avoiding the Action Area.
- In-water work would exclude fish from portions of the river.

15.2.2 *Critical Habitat*

The proposed project **may affect** critical habitat for bull trout for the following reasons:

- The Touchet River is designated critical habitat for bull trout.
- The project will require in-water work in the Touchet River.
- The project could result in disruption of riverbed material and short-term turbidity during bridge removal.

The proposed project is **likely to adversely affect** critical habitat for bull trout for the following reasons:

- There will be a temporary loss of in-stream habitat as work areas are isolated to complete in-water work.
- Removal of the existing bridge superstructure will disrupt the riverbed and disrupt channel bed materials.
- The proposed work will entail vegetation clearing that could result in sedimentation of the Touchet River.

15.3 Yellow-Billed Cuckoo

15.3.1 *Species*

The proposed project **may affect** yellow-billed cuckoo for the following reasons:

- Marginal potential habitat for the yellow-billed cuckoo is present within the action area.
- Construction-generated noise may cause yellow-billed cuckoo to avoid the area.

However, the proposed project is **not likely to adversely affect** yellow-billed cuckoo for the following reasons:

- Yellow-billed cuckoos are extremely rare in Washington state with only 17 observations made over the last 50 years.
- The most northern breeding range along the West Coast is believed to be southern California, although some breeding may be taking place in coastal northern California along the Eel River. No documented breeding pairs are present in Washington state.
- The habitat in the proposed construction area is limited to the narrow riparian corridor along the Touchet River which is not likely suitable for yellow-billed cuckoo utilization.
- No stands of cottonwood or willow trees are present in the riparian areas where clearing or grading will occur.

Table 3 below summarizes the effects determinations for species and critical habitats addressed in this BA.

Table 3. Summary of Effects Determinations

Listed Species	Species Affects	Critical habitat Affects
Middle Columbia DPS Steelhead	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Bull Trout	May Affect, Likely to Adversely Affect	May Affect, Likely to Adversely Affect
Yellow-Billed Cuckoo	May Affect, Not Likely to Adversely Affect	N/A

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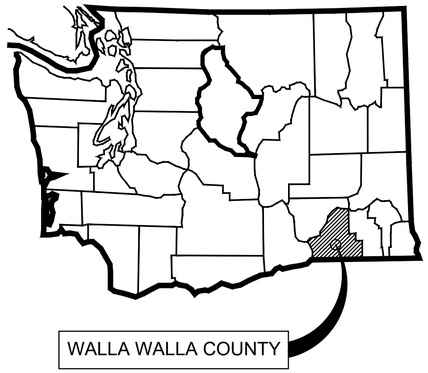
Appendix A
Plan Sheets

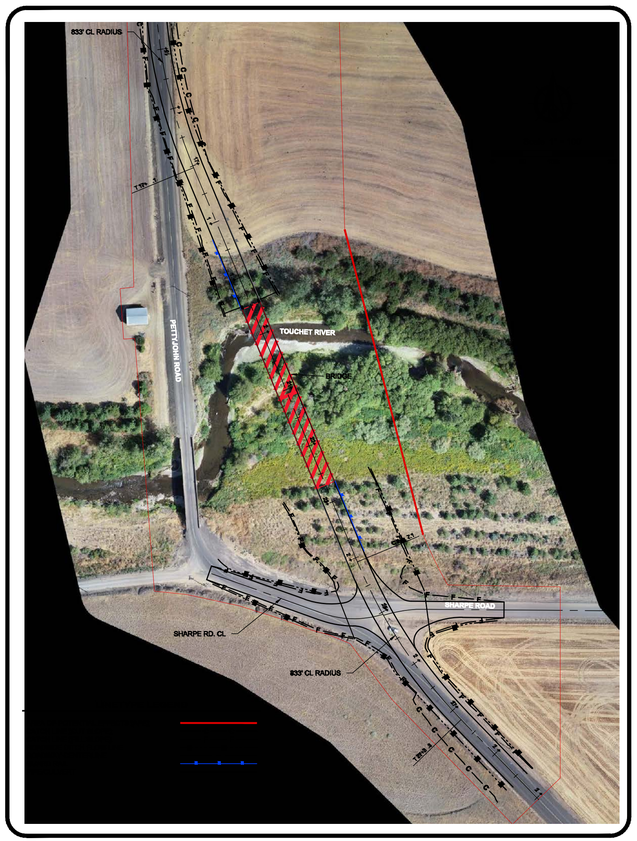
STATE OF WASHINGTON



DELL SHARPE BRIDGE REPLACEMENT PROJECT

CRP 20-02

WALLA WALLA COUNTY, WA



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CIVIL		
	C01	CIVIL NOTES, LEGENDS, AND TYPICAL SECTIONS
	C02	PETTY JOHN ROAD PLAN/PROFILE SHEET
	C03	PETTY JOHN ROAD PLAN/PROFILE SHEET
	C04	PETTY JOHN ROAD PLAN/PROFILE SHEET
	C05	SHARPE ROAD PLAN/PROFILE & INTERSECTION GEOMETRY SHEET
STRUCTURAL		
	S01	BRIDGE PLAN AND ELEVATION
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	S03	NOTES, SECTION & SUPERELEVATION
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	S06	BRIDGE FOUNDATION PLAN
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Not Incl.	S40	RAILING AND PILLER LAYOUT 1
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	RW02	WALL ELEVATIONS - NORTH APPROACH
	RW03	WALL ELEVATIONS - SOUTH APPROACH
	RW04	RETAINING WALL DETAILS

TRANTECH Engineering LLC

BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

DATE:	ISSUED / REVISED	BY:
.	.	.

NICK N NIKPOUR — STATE OF WASHINGTON — 21020015 — REGISTERED PROFESSIONAL ENGINEER

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

COVER SHEET

PROJECT NUMBER CRP20-02

SHEET G01

PAGE 1 OF XX

Existing Linetype Legend

Existing Sanitary Sewer Pipe	
Existing 4" Sanitary Sewer Pipe	
Existing 6" Sanitary Sewer Pipe	
Existing 8" Sanitary Sewer Pipe	
Existing 10" Sanitary Sewer Pipe	
Existing 12" Sanitary Sewer Pipe	
Existing 15" Sanitary Sewer Pipe	
Existing 18" Sanitary Sewer Pipe	
Existing 24" Sanitary Sewer Pipe	
Existing 30" Sanitary Sewer Pipe	
Existing Sanitary Force Main	
Existing Storm Sewer Pipe	
Existing 4" Storm Sewer Pipe	
Existing 6" Storm Sewer Pipe	
Existing 8" Storm Sewer Pipe	
Existing 10" Storm Sewer Pipe	
Existing 12" Storm Sewer Pipe	
Existing 15" Storm Sewer Pipe	
Existing 18" Storm Sewer Pipe	
Existing 24" Storm Sewer Pipe	
Existing Water Pipe	
Existing 4" Water Pipe	
Existing 6" Water Pipe	
Existing 8" Water Pipe	
Existing 10" Water Pipe	
Existing 12" Water Pipe	
Existing 15" Water Pipe	
Existing 18" Water Pipe	
Existing 24" Water Pipe	
Existing Water Lateral	
Existing Irrigation Pipe	
Existing 4" Irrigation Pipe	
Existing 6" Irrigation Pipe	
Existing 8" Irrigation Pipe	
Existing 10" Irrigation Pipe	
Existing 12" Irrigation Pipe	
Existing Irrigation Lateral	
Existing Cable Tv Line	
Existing Electric Line	
Existing Gas Line	
Existing Over Head Power Line	
Existing Telephone Line	
Existing Fiber Optic Line	
Existing Underground Utility Line	
Existing Centerline	
Existing Curb	
Existing Curb & Gutter	
Existing Lot Line	
Existing Gravel road	
Existing Flow Line	
Existing Paint Stripe	
Existing Right-of-way	
Existing Fence	
Existing Building	
Existing Wetland Perimeter	
Existing Wetland Buffer	
Existing Property Line	
Existing Utility Easement	
Existing Quarter Section	
Existing Railroad	
Existing Fence	
Existing Wall	
Existing Lot Line	
Existing Contour	253

Proposed/Future Linetype Legend

Proposed Sanitary Sewer Pipe
Proposed Sanitary Lateral
Proposed Sanitary Force Main
Proposed Storm Under Drain
Proposed Storm Rain Drain
Proposed Storm Pipe
Proposed Water Lateral
Proposed Water Pipe
Proposed Irrigation Pipe
Proposed Irrigation Lateral
Proposed Lot Line
Proposed Flow Line
Proposed Centerline
Proposed Right-of-way
Proposed Sawcut Line
Proposed Easement
Proposed Curb & Gutter
Proposed End Of Pav't
Proposed Sidewalk
Proposed Wall
Proposed Building
Proposed Setback
Proposed Property Line
Proposed Cut Line
Proposed Score Line
Proposed Paint Stripe
Proposed Fence
Proposed Wetland Buffer
Proposed Wetland Perimeter
Proposed Contour 253
Erosion Control Filter Fabric Fence
Fill Catch Slope
Cut Catch Slope
Ordinary High Water Line

Hatching Legend

- Proposed Asphalt Concrete
- Proposed Cement Concrete
- Proposed Gravel Road
- Existing Asphalt To Be Removed

Symbol Legend

Existing Water Valve	WV
Existing Gas Valve	GV
Existing Fire Hydrant	
Existing Power Pole	
Existing Water Meter	
Existing Electrical Pedestal	
Existing Power Riser	
Existing Power Meter	
Existing Sanitary Manhole	
Existing Storm Manhole	
Existing Catch Basin	
Existing Area Drain	
Existing Combo Inlet	
Existing Telephone Pad	
Existing Telephone Riser	
Existing Roof Drain	
Existing Cleanout	
Existing Guy Anchor	
Existing Project Bench Mark	
Existing Iron Rod	
Existing Sign	
Existing Shrub	
Existing Deciduous Tree	
Existing Coniferous Tree	
See Extg. Sanitary Sewer Data	X
See Extg. Storm Drainage Data	X
Existing Flow Arrow	
Proposed Bollard	
Proposed Street Light	
Proposed Road Barrier	
Proposed Road Sign	
Proposed Flow Arrow	
Proposed Fire Protection Vault	
Proposed Water Meter	
Proposed Water Backflow Device	
Proposed Water Valve	
Proposed Water Bend Tee W/valve	
Proposed Water Bend Tee W/tb	
Proposed Water 22½° Bend W/tb	
Proposed Water 11¼° Bend W/tb	
Proposed Water 45° Bend W/tb	
Proposed Water 90° Bend W/tb	
Proposed Water Stand Pipe	
Proposed Water Bend X	
Proposed Water Temporary Blowoff	
Proposed Water Standard Blowoff	
Proposed Water Reducer	
Proposed Water Thrust Block	
Proposed Fire Hydrant	

Symbol Legend

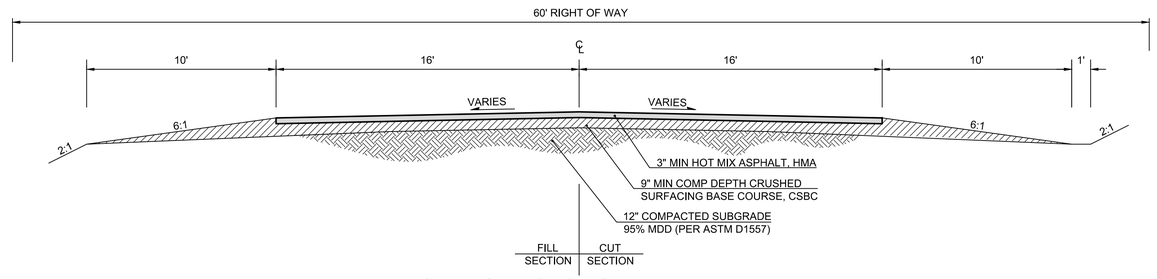
Proposed Catch Basins	
Proposed Area Drain	
Proposed Combination Curb Inlet	
Proposed Storm Reducer	
Proposed Rain Drain	
Proposed Storm Cleanout	
Proposed Storm Manhole	
Proposed Sedimentation Manhole	
Proposed Drywell	
Proposed Sanitary Cap	
Proposed Sanitary Reducer	
Proposed Sanitary Cleanout	
Proposed Sanitary Manhole	
Proposed Irrigation Meter	
Proposed Irrigation Backflow Device	
Proposed Irrigation Valve	
Proposed Irrigation Bend Tee W/valve	
Proposed Irrigation Bend Tee W/tb	
Proposed Water 22½° Bend W/tb	
Proposed Water 11¼° Bend W/tb	
Proposed Irrigation 45° Bend W/tb	
Proposed Irrigation 90° Bend W/tb	
Proposed Irrigation Stand Pipe	
Proposed Irrigation Bend X	
Proposed Irrigation Temporary Blowoff	
Proposed Irrigation Standard Blowoff	
Proposed Irrigation Reducer	
Proposed Irrigation Thrust Block	
Proposed Inlet Protection Pillow	
Proposed Gravel Construction Entrance	
Proposed Sedimentation Trap	
Erosion Control feature code & ID number	E 3.30
BMP Type	IP-1

Abbreviation Legend

Acres	AC
Assembly	ASS'Y
Avenue	AVE
Approved	APP'D
Butterfly	BF
Boulevard	BLVD
Benchmark	BM
Blow Off	BO
Back Of Curb	BOC
Begin Vertical Curve	BVC
Care Of	C/O
Catch Basin	CB
Cubic Feet	CF
Cast Iron	CI
Cement	CEM
Circle	CIR
Centerline	℄
Corrugated Metal Pipe	CMP
Cleanout	CO
Combination	COMB
Compaction	COMP
Concrete	CONC
Construction	CONST
Corrugated Polyethylene	CPE
Concrete Sewer Pipe	CSP
Court	CT
Cubic Yard	CY
Cement	CEM
Depth	D
Ductile Iron	DI
Diameter	DIA
Ductile Iron Pipe	DIP
Down Spout	DS
Edge Of Pavement	EOP
End Curb Return	ER
Easement	ESMT
Existing	EXTG
Elevation	EL
Electric	ELEC
End Vertical Curb	EVC
Finished Floor	FF
Finished Grade	FG
Fire Hydrant	FH
Flange	FLG
Force Main	FM
Foot / Feet	FT
Gas	G
Galvanized Iron	GI
Ground	GRD
Gate Valve	GV
High Density Polyethylene	HDPE
Horizontal	HORIZ

Abbreviation Legend

High Water Elevation	HW
Hydrant	HYD
Invert Elevation	IE
Intersection	INTX
Invert	INV
Length	L
Lateral	LAT
Left	LT
Maximum	MAX
Manhole	MH
Minimum	MIN
Mechanical Joint	MJ
Number	No. or #
Overhead Electric	OHE
Pavement	PAV'T
Point Of Curve	PC
Power Pole	PP
Point Of Reverse Curve	PRC
Point Of Reverse Vertical Curve	PRVC
Point Of Tangent	PT
Point Of Vertical Intersection	PVI
Polyvinyl Chloride	PVC
Place	PL
Radius	R
Right Of Way	R/W
Return	RET
Right	RT
Sheet	SHT
Stainless Steel	SS
Steel	STL
Sidewalk	S/W
Street	ST
Station Centerline	STA
Standard	STD
Sanitary	SAN
Storm	STM
Tangent	T
Thrust Block	TB
Temporary Benchmark	TBM
Top Of Concrete	TC
Telephone	TEL
Temporary	TEMP
Top Of Manhole	TOP
Typical	TYP
Underground Electric	UGE
Vertical Curve	VC
Vertical	VERT
Water	WTR
With	W/
Without	W/O
With Yellow Plastic Cap	W/YPC
Water Meter	WM
Yard	YD



TYPICAL ROAD SECTION DETAIL

NTS

TRANTECH Engineering LLC

BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

DATE:	ISSUED / REVISED	BY:
.	.	.

RYAN JEFFREY BILLEN — STATE OF WASHINGTON — 46338 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509, 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

CIVIL NOTES, LEGENDS, AND TYPICAL SECTIONS

PROJECT NUMBER CRP20-02

SHEET C01

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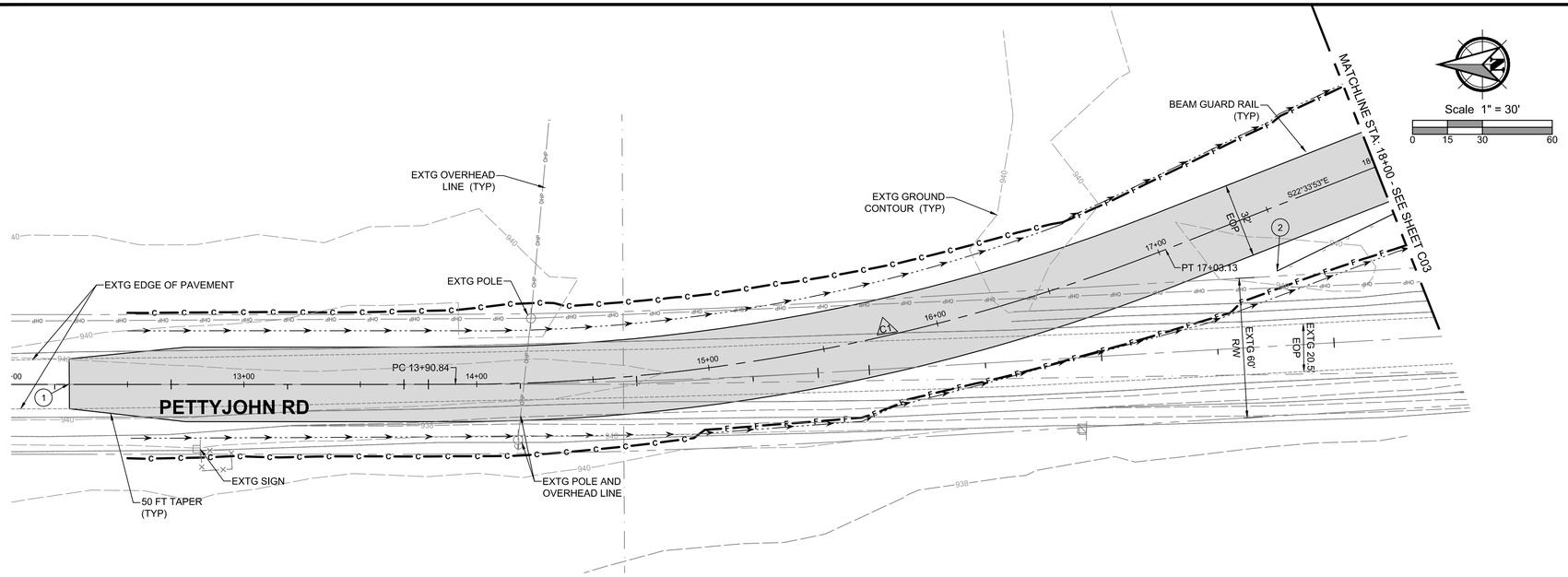


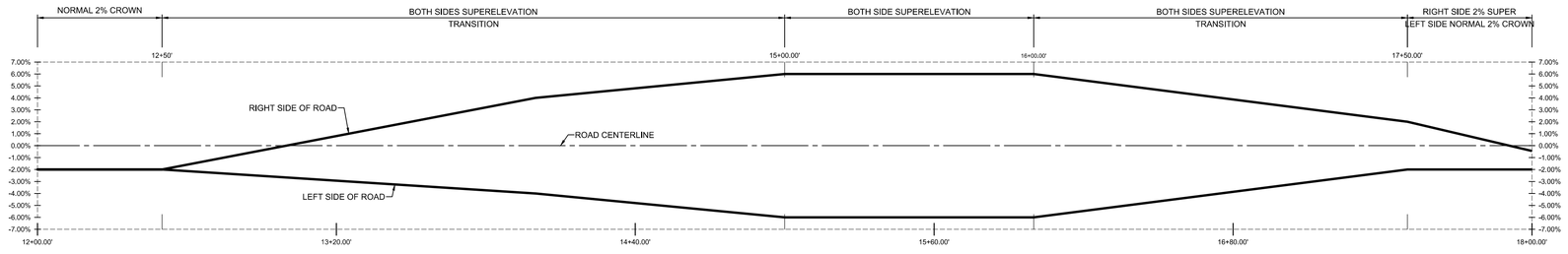
GENERAL CONSTRUCTION NOTES:

1. SEE SHEET 2 FOR GENERAL CONSTRUCTION NOTES AND DETAILS.
2. INSTALL SURVEY MONUMENTS AT ALL CENTERLINE STREET INTERSECTIONS, CENTER POINTS, AND PT / PC GEOMETRY POINTS PER WALLA WALLA COUNTY STANDARDS.

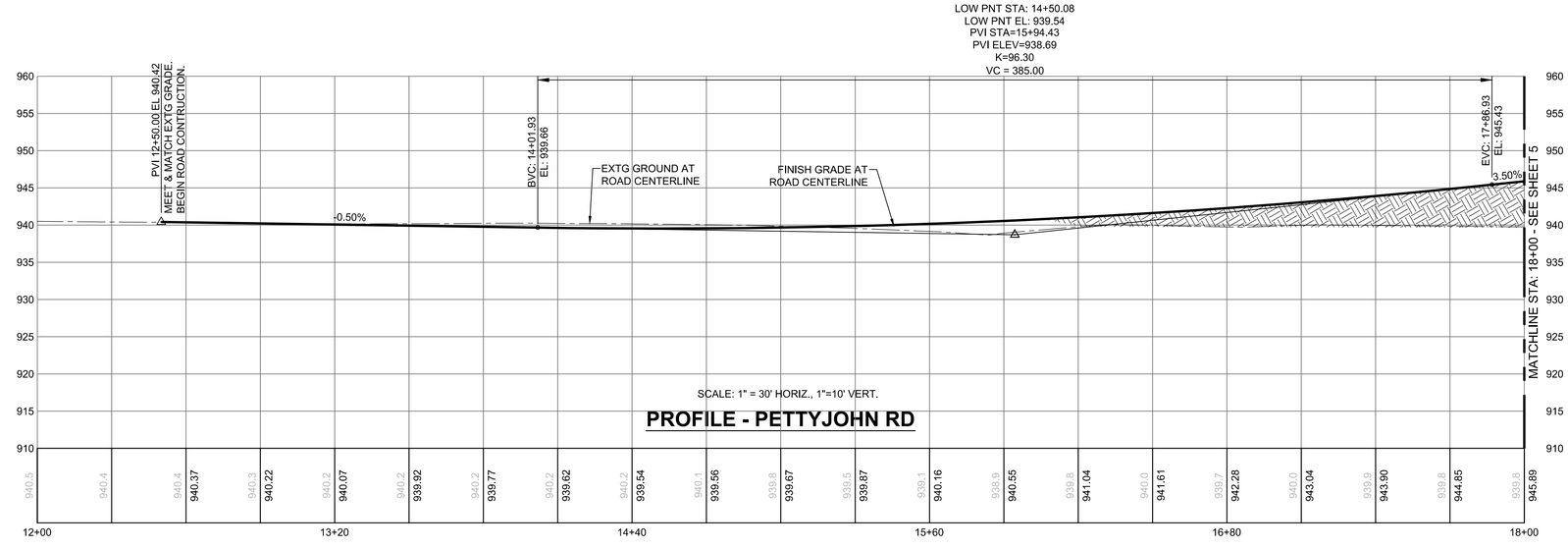
KEYED CONSTRUCTION NOTES:

(1) STA: 12+25.00 (0.0' LT/RT) - BEGIN ROADWAY IMPROVEMENTS. SAW-CUT A MINIMUM OF 2' FROM EXISTING EDGE OF ASPHALT PROVIDING A NEAT VERTICAL EDGE AND REMOVE CUT-OFF PORTION OF EXISTING PAVEMENT FOR NEW CONSTRUCTION AND UTILITIES. MATCH EDGE OF NEW ASPHALT TO EXISTING PROVIDING A SMOOTH TRANSITION.

(2) STA: 17+44.37 (26.09' RT) - START GUARDRAIL, ANCHOR TYPE 10 PER WSDOT STD PLAN C23.60



CURVE DATA				
⚠	Δ	R	L	T
C4	14°45'17"	200.00	51.50	25.90
C3	33°50'56"	155.00	91.57	47.16
C1	21°28'48"	833.00	312.29	158.00
C2	21°32'12"	833.00	313.11	158.43



SCALE: 1" = 30' HORIZ., 1"=10' VERT.

PROFILE - PETTYJOHN RD

TRANTECH Engineering LLC

BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

DATE:	ISSUED / REVISED	BY:
.	.	.

RYAN JEFFREY BILLEN — STATE OF WASHINGTON — 46338 — REGISTERED PROFESSIONAL ENGINEER — RELIMINARY

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

PETTY JOHN ROAD PLAN/PROFILE SHEET

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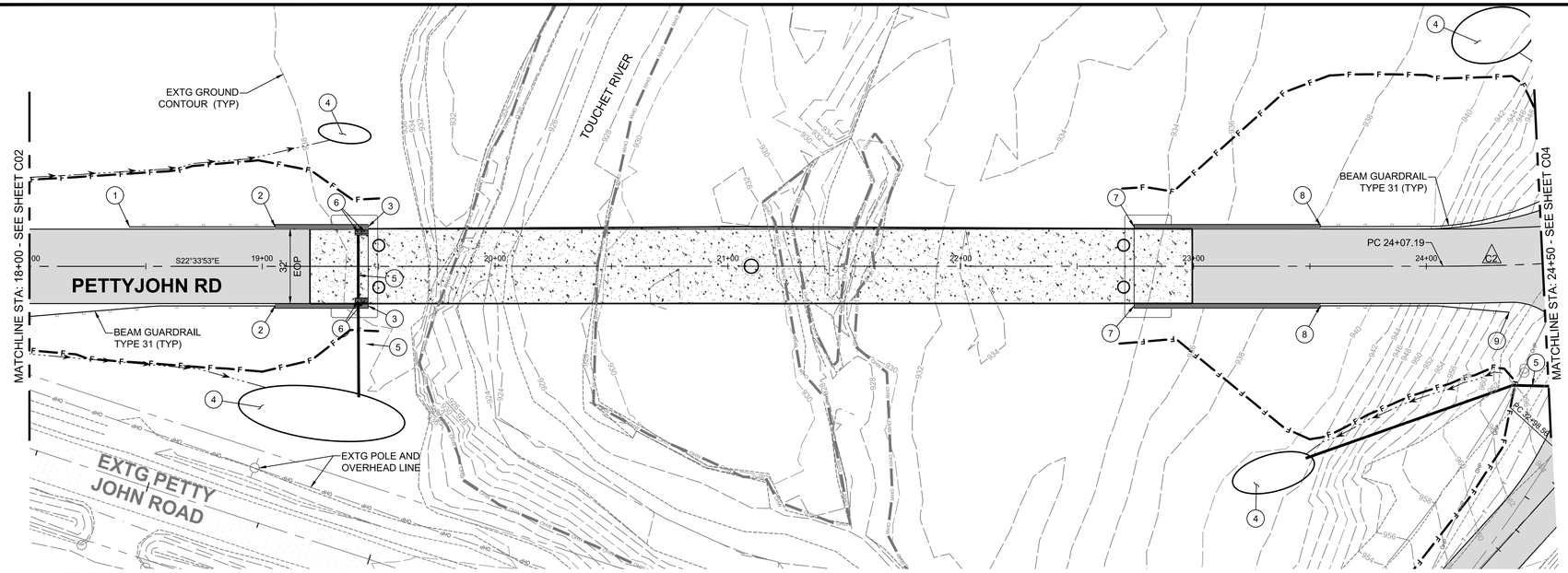


GENERAL CONSTRUCTION NOTES:

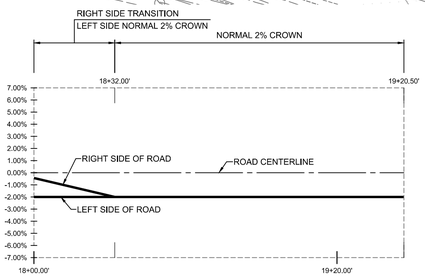
1. SEE SHEET 2 FOR GENERAL CONSTRUCTION NOTES AND DETAILS.
2. INSTALL SURVEY MONUMENTS AT ALL CENTERLINE STREET INTERSECTIONS, CENTER POINTS, AND PT / PC GEOMETRY POINTS PER WALLA WALLA COUNTY STANDARDS.

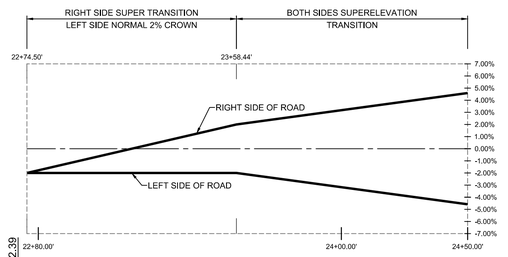
KEYED CONSTRUCTION NOTES:

1. STA: 18+43.00 (17.0' LT) - BEAM GUARDRAIL ANCHOR TYPE 10 PER WSDOT STD PLAN C23.60
2. STA: 19+05.50 (17.0' LT/RT) - END BEAM GUARDRAIL TRANSITION TYPE 21, BEGIN SINGLE SLOPE CONCRETE BARRIER. TRANSITION TO BARRIER PER WSDOT STD PLAN C24.10-02.
3. STA: 19+45.50 (17.0' LT/RT) - END SINGLE SLOPE CONCRETE BARRIER, TRANSITION TO BRIDGE SECTION.
4. APPROXIMATE LOCATION OF STORMWATER FACILITIES/SWALE
5. 12" STORM PIPE
6. TYPE 1 CATCH BASIN PER WSDOT STD PLAN B-5.20-03.
7. STA: 22+74.50 (17.0' LT/RT) - START SINGLE SLOPE CONCRETE BARRIER, TRANSITION FROM BRIDGE SECTION.
8. STA: 23+54.50 (17.0 LT/RT) - END SINGLE SLOPE CONCRETE BARRIER, BEGIN BEAM GUARDRAIL TRANSITION TYPE 21. TRANSITION TO GUARDRAIL PER WSDOT STD PLAN C24.10-02.
9. STA: 24+34.95 (20.30' RT) - END BEAM GUARDRAIL WITH ANCHOR TYPE 10, PER WSDOT STD PLAN C23.60.

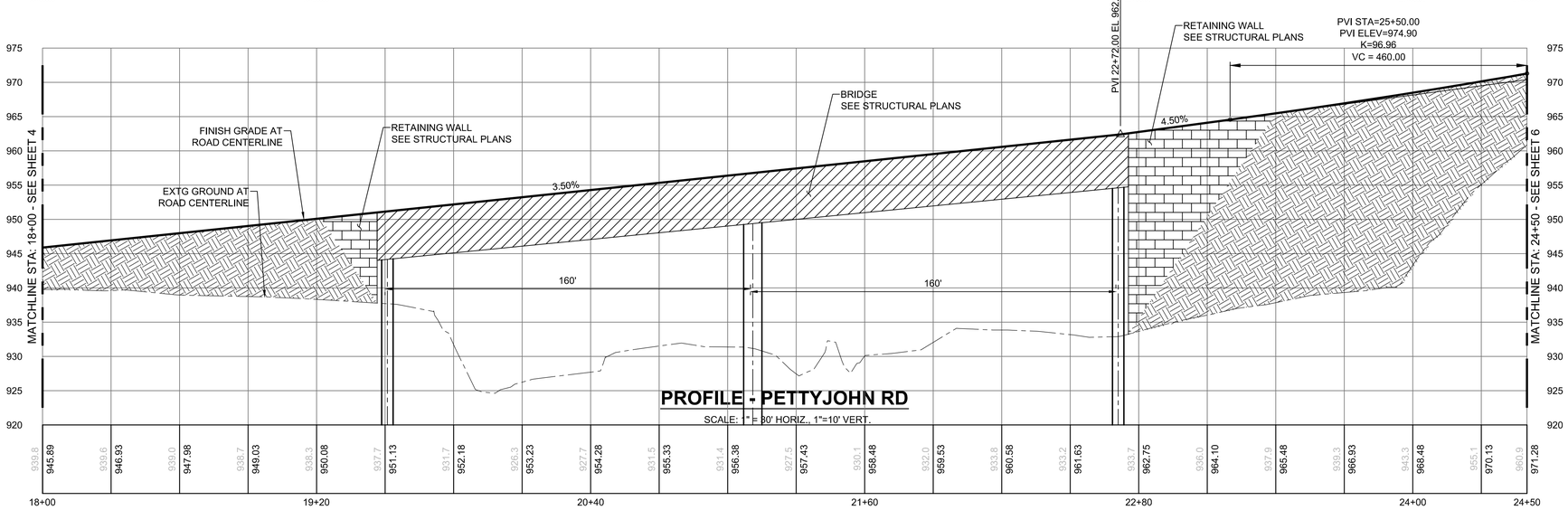
Scale 1" = 30'

0 15 30 60





CURVE DATA				
	Δ	R	L	T
C1	21°28'48"	833.00	312.29	158.00
C2	21°32'12"	833.00	313.11	158.43
C3	33°50'56"	155.00	91.57	47.16
C4	14°45'17"	200.00	51.50	25.90



PROFILE - PETTYJOHN RD

SCALE: 1" = 30' HORIZ., 1"=10' VERT.

TRANTECH Engineering LLC

BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

DATE:	ISSUED / REVISED	BY:
.	.	.

RYAN JEFFREY BILLEN — STATE OF WASHINGTON — 46338 — REGISTERED PROFESSIONAL ENGINEER — RELEASED FOR CONSTRUCTION

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

PETTY JOHN ROAD PLAN/PROFILE SHEET

PROJECT NUMBER CRP20-02

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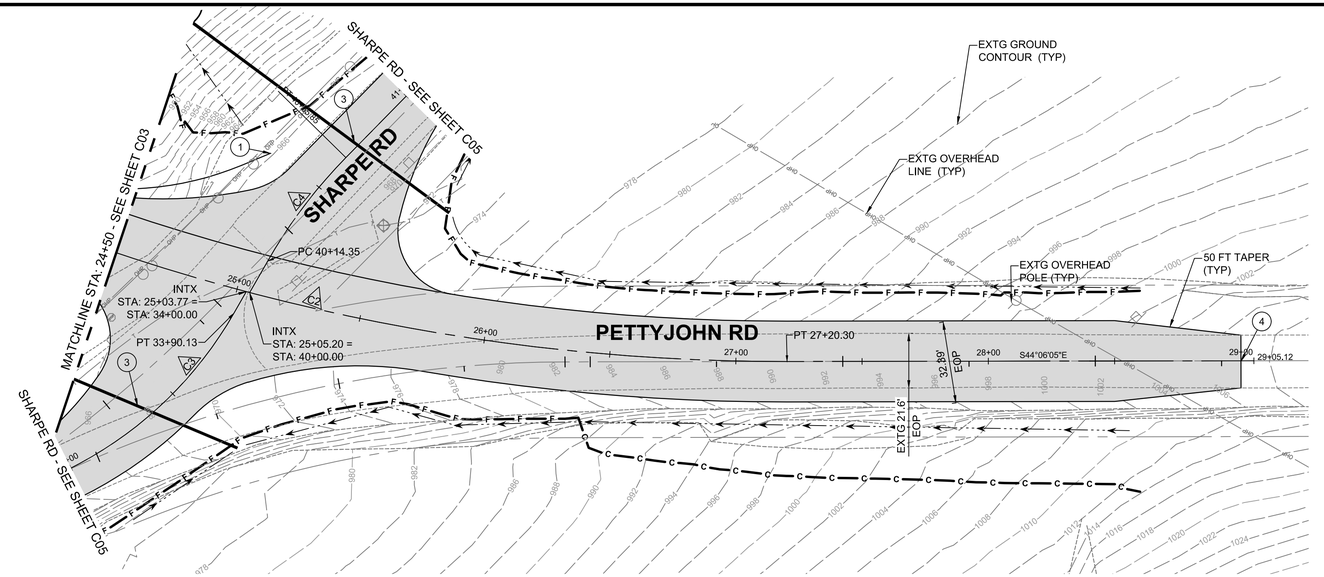

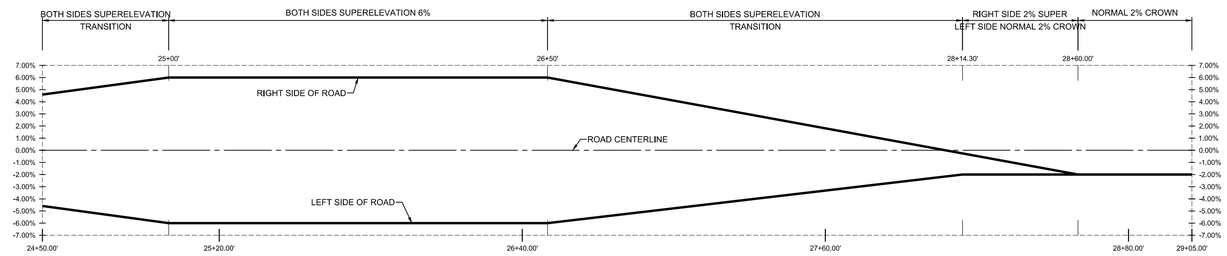

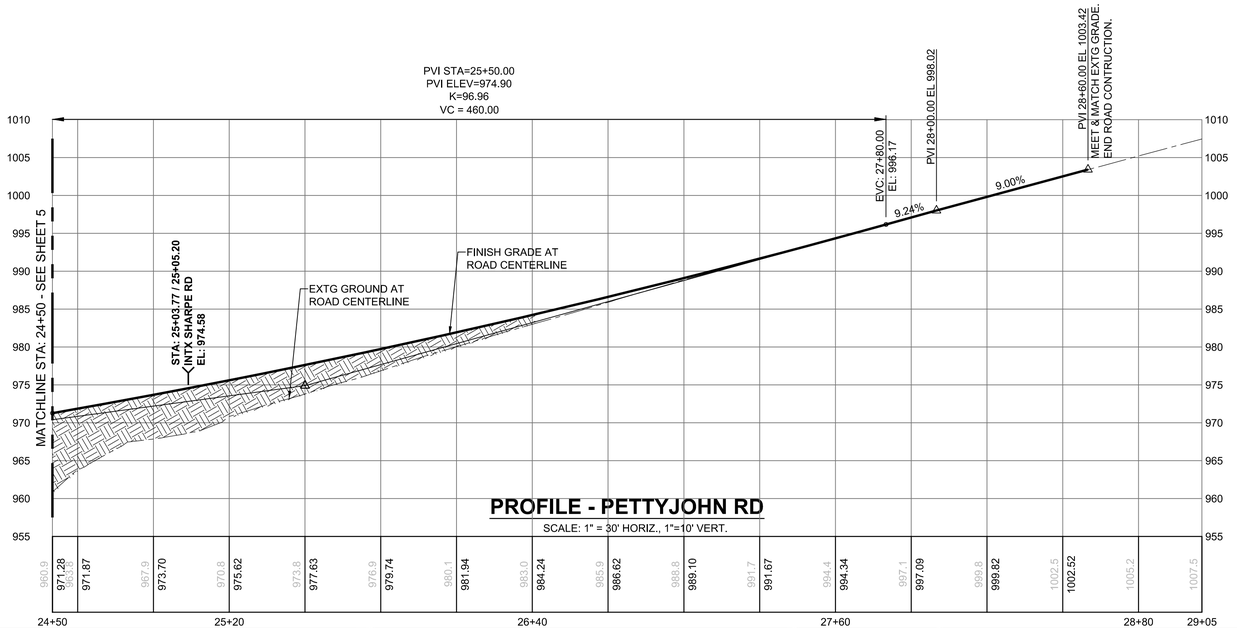

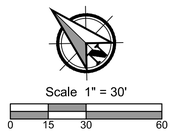

GENERAL CONSTRUCTION NOTES:

1. SEE SHEET 2 FOR GENERAL CONSTRUCTION NOTES AND DETAILS.
2. INSTALL SURVEY MONUMENTS AT ALL CENTERLINE STREET INTERSECTIONS, CENTER POINTS, AND PT / PC GEOMETRY POINTS PER WALLA WALLA COUNTY STANDARDS.

KEYED CONSTRUCTION NOTES:

1. STA: 24+98.78 (55.42' LT) - END BEAM GUARDRAIL WITH ANCHOR TYPE 10, PER WSDOT STD PLAN C23.60.
2. APPROXIMATE LOCATION OF STORMWATER FACILITIES/SWALE
3. 12" STORM PIPE
4. STA: 29+00.00 (0.0' LT/RT) - END ROADWAY IMPROVEMENTS. SAW-CUT A MINIMUM OF 2' FROM EXISTING EDGE OF ASPHALT PROVIDING A NEAT VERTICAL EDGE AND REMOVE CUT-OFF PORTION OF EXISTING PAVEMENT FOR NEW CONSTRUCTION AND UTILITIES. MATCH EDGE OF NEW ASPHALT TO EXISTING PROVIDING A SMOOTH TRANSITION.

CURVE DATA				
	Δ	R	L	T
C1	21°28'48"	833.00	312.29	158.00
C2	21°32'12"	833.00	313.11	158.43
C4	14°45'17"	200.00	51.50	25.90
C3	33°50'56"	155.00	91.57	47.16

TRANTECH Engineering LLC

BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

DATE:	ISSUED / REVISED	BY:
.	.	.

RYAN JEFFREY BILLEN — STATE OF WASHINGTON — 44358 — REGISTERED PROFESSIONAL ENGINEER — RELEASED

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

PETTY JOHN ROAD PLAN/PROFILE SHEET

PROJECT NUMBER CRP20-02
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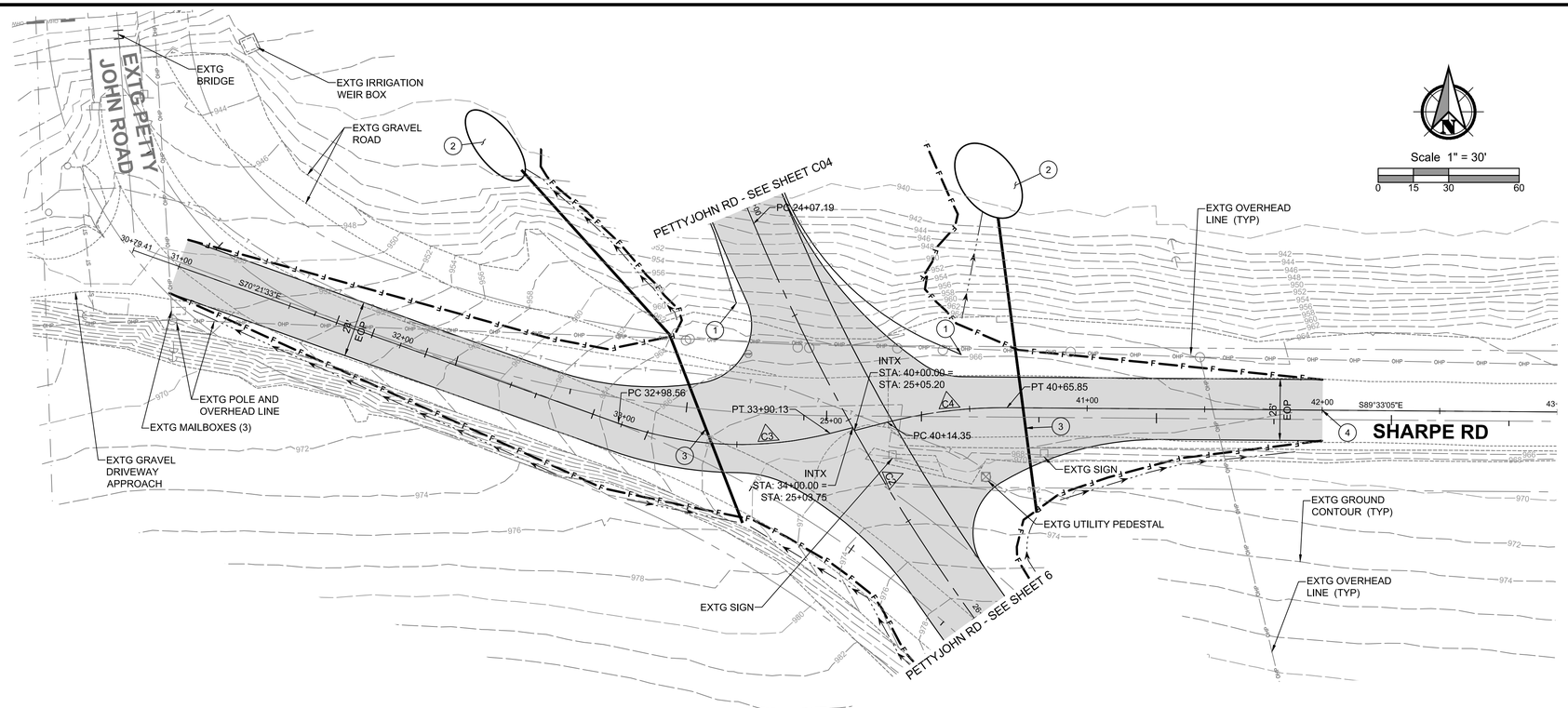


GENERAL CONSTRUCTION NOTES:

1. SEE SHEET 2 FOR GENERAL CONSTRUCTION NOTES AND DETAILS.
2. INSTALL SURVEY MONUMENTS AT ALL CENTERLINE STREET INTERSECTIONS, CENTER POINTS, AND PT / PC GEOMETRY POINTS PER CITY OF WALLA WALLA STANDARDS.

KEYED CONSTRUCTION NOTES:

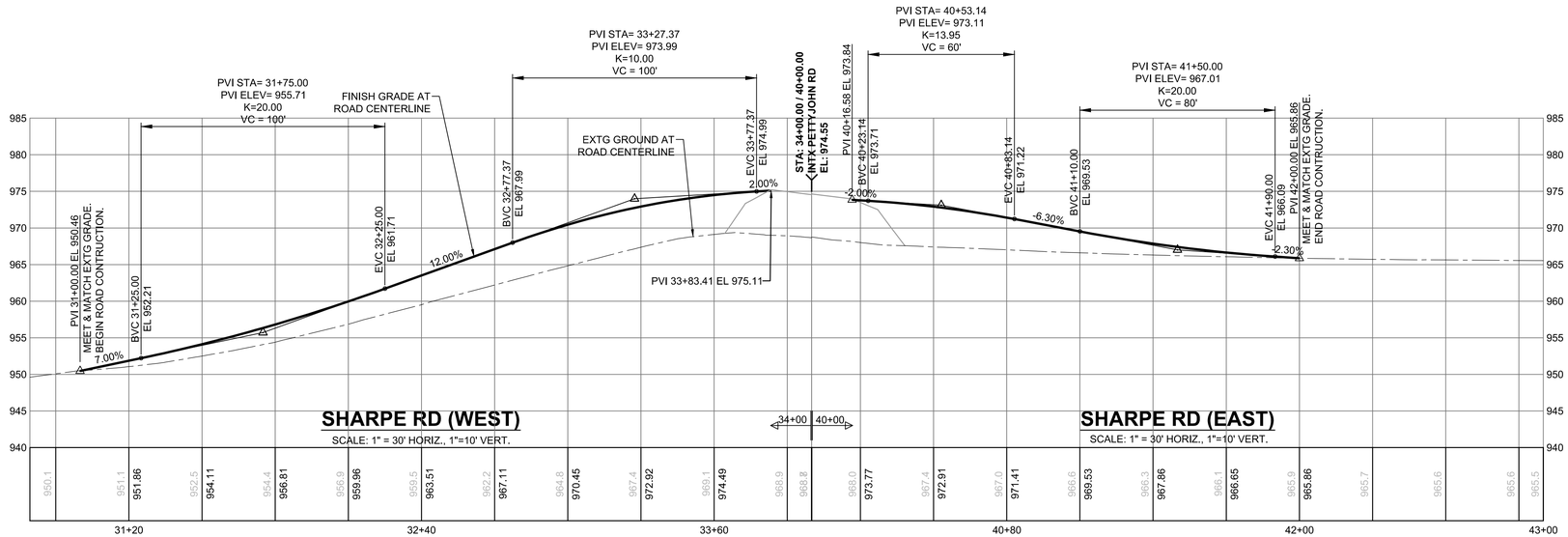
(1) GUARDRAIL - SEE PETTY JOHN ROAD PLAN AND PROFILE FOR DETAILS.

(2) APPROXIMATE LOCATION OF STORMWATER FACILITIES/SWALE

(3) 12" STORM PIPE

(4) STA: 42+00.00 (0.0' LT/RT) - END ROADWAY IMPROVEMENTS, TRANSITION TO EXISTING GRAVEL ROAD.

CURVE DATA				
	Δ	R	L	T
C3	33°50'56"	155.00	91.57	47.16
C4	14°45'17"	200.00	51.50	25.90
C1	21°28'48"	833.00	312.29	158.00
C2	21°32'12"	833.00	313.11	158.43



TRANTECH Engineering LLC

BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

DATE:	ISSUED / REVISED	BY:
.	.	.

RYAN JEFFREY BILEN — STATE OF WASHINGTON — 46338 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

SHARPE ROAD PLAN/PROFILE SHEET AND INTERSECTION GEOMETRY SHEET

PROJECT NUMBER CRP20-02

SHEET C05

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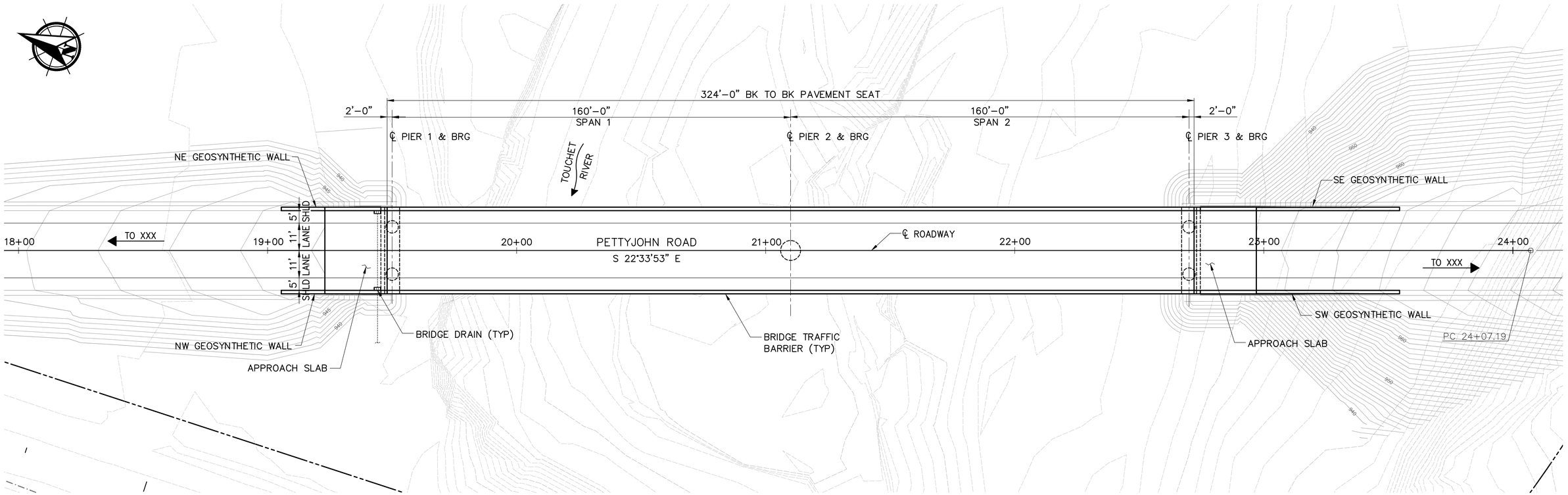
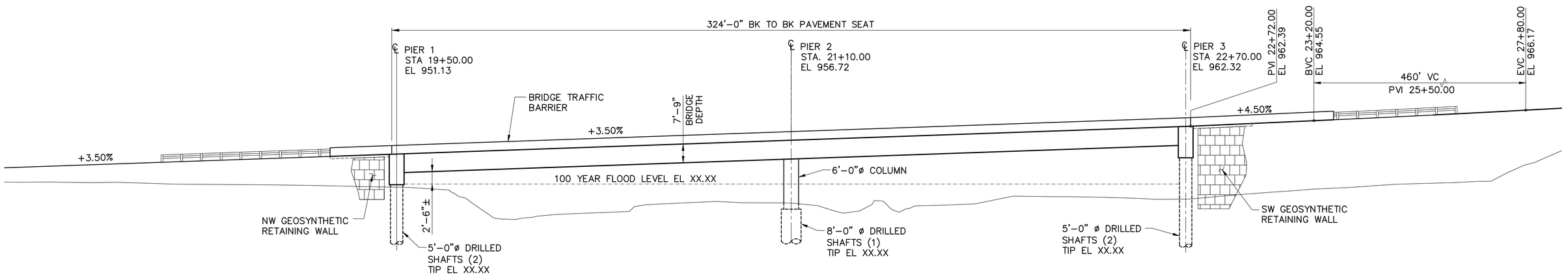


BRIDGE PLAN

BEARINGS OF ALL PIERS ARE NORMAL TO ℄ ROADWAY



BRIDGE ELEVATION

LOOKING UPSTREAM – GRADE ELEVATIONS SHOWN ARE FINISH GRADES AT TOP OF DECK AND ARE EQUAL TO PROFILE GRADE AT ℄ OF ROADWAY.

DATUM
NGVD 29

TRANTECH Engineering LLC

BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

DATE:	ISSUED / REVISED	BY:
.	.	.

NICHOLAS NIKEOUROV — STATE OF WASHINGTON — 21020015 — REGISTERED PROFESSIONAL ENGINEER

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

BRIDGE PLAN AND ELEVATION

PROJECT NUMBER CRP20-02
SHEET S01
PAGE XX OF XX

GENERAL NOTES

1. ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS, THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION DATED 2021, AMENDMENTS AND PROJECT SPECIAL PROVISIONS.

2. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION, DATED 2020 AND STATE OF WASHINGTON DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL LRFD, DATED 2020.

3. DESIGN LOADS:

   DEAD LOAD:
   - NORMAL REINFORCED CONCRETE – 155 PCF
   - STRUCTURAL STEEL – 490 PCF
   - PRESTRESSED CONCRETE – 165 PCF

   LIVE LOAD:
   - VEHICLE – HL93 AASHTO TRUCK (W/IMPACT)

   WIND LOAD:
   - BASIC WIND SPEED – 85 MPH (3 SECOND GUST)

   THERMAL FORCES:
   - NORMAL TEMPERATURE – 64° F
   - TEMPERATURE RANGE – 36° F RISE, 64° F FALL
   - COEFFICIENT OF THERMAL EXPANSION – 0.000006.

   FUTURE WEARING SURFACE: – 25 PSI

4. SEISMIC DESIGN OF THIS STRUCTURE CONFORMS TO THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS USING THE FOLLOWING SITE DATA:
   - SITE CLASS – B
   - PEAK GROUND ACCELERATION COEFFICIENT – 0.105g
   - DESIGN SPECTRAL ACCELERATION COEFFICIENT AT 0.2 SEC – 0.23g
   - DESIGN SPECTRAL ACCELERATION COEFFICIENT AT 1.0 SEC – 0.07g
   - SEISMIC DESIGN CATEGORY – A

5. THE CONCRETE IN THE SHAFT SHALL BE CLASS 5000P. THE CONCRETE IN THE ROADWAY DECK SHALL BE CLASS 4000D, THE CONCRETE IN THE APPROACH SLABS SHALL BE CLASS 4000A AND CLASS 4000W FOR THE CONCRETE SEALS. ALL OTHER CONCRETE SHALL BE CLASS 4000, UNLESS NOTED ON THE PLANS. REINFORCEMENT BAR SHALL CONFORM TO ASTM A706 GR 60 UNLESS NOTED OTHERWISE.

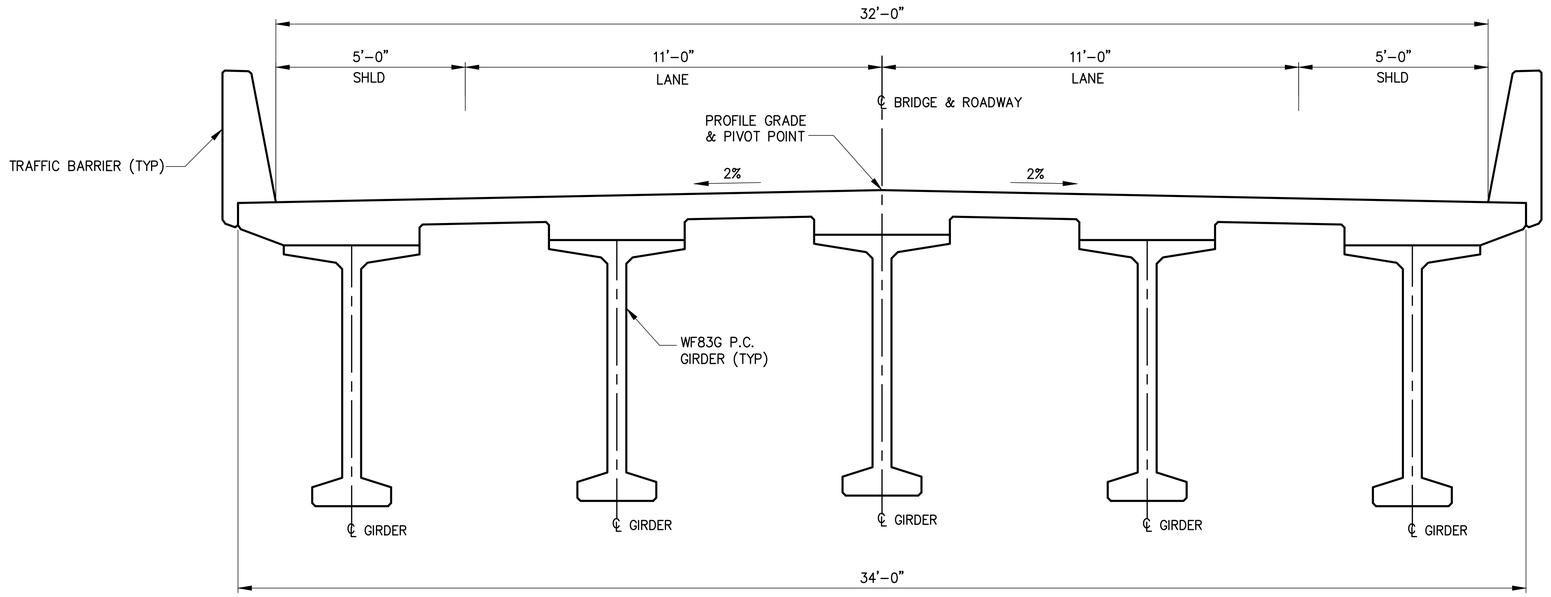
6. UNLESS OTHERWISE SHOWN ON THE PLANS, CLEAR CONCRETE COVER FROM THE TOP OF BRIDGE DECK TO ANY REINFORCEMENT BAR SHALL BE 2½ INCHES, 1 INCH FROM THE BOTTOM OF THE BRIDGE DECK, 6 INCHES FROM DIAMETER SHAFT WALL AND 1½ INCHES FROM ALL OTHER CONCRETE SURFACES.

7. ALL PLAN DIMENSIONS SHOWN ARE MEASURED HORIZONTALLY UNLESS OTHERWISE NOTED, AND REFLECT THE ULTIMATE GEOMETRIC SHAPE AND LOCATION OF ALL ELEMENTS AT A MEAN TEMPERATURE OF 64° F.

8. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED ¾" UNLESS OTHERWISE SHOWN OR NOTED.

9. CONSTRUCTION JOINTS SHOWN ARE OPTIONAL UNLESS NOTED OTHERWISE.

10. FOR GEOTECHNICAL INFORMATION, SEE GEOTECHNICAL ENGINEERING REPORT PREPARED BY PBS INCLUDED IN THE BID DOCUMENTS.



TYPICAL BRIDGE SECTION

TRANTECH Engineering LLC

BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

DATE:	ISSUED / REVISED	BY:
.	.	.

NICK A. NIKOLAI — STATE OF WASHINGTON — 21020015 — REGISTERED PROFESSIONAL ENGINEER

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

NOTES, SECTION & SUPERELEVATION

PROJECT NUMBER CRP20-02

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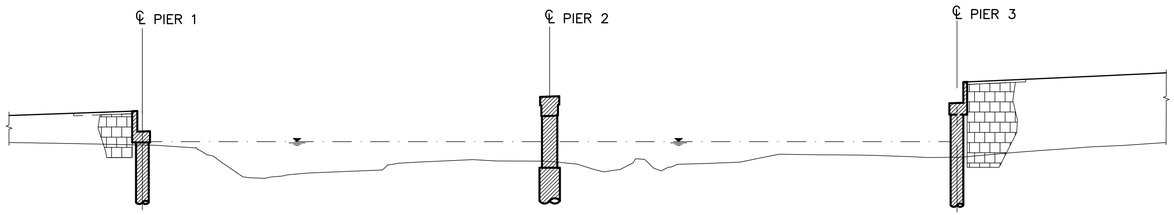
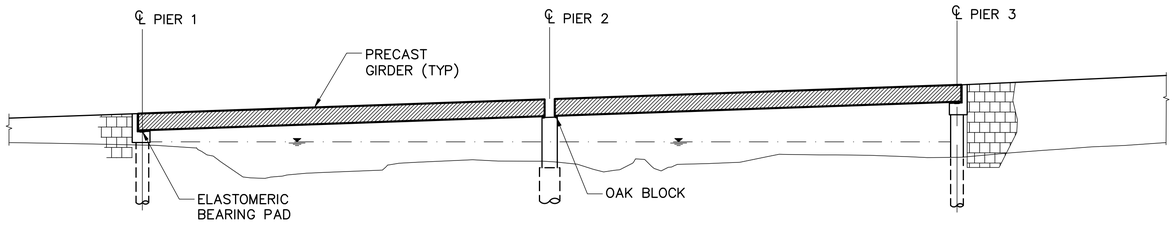
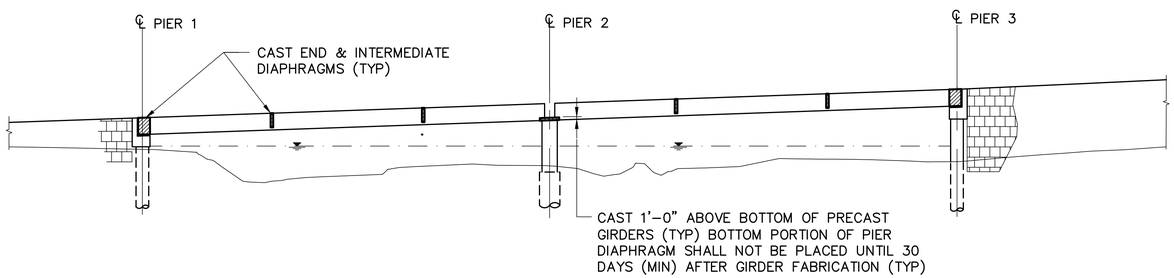


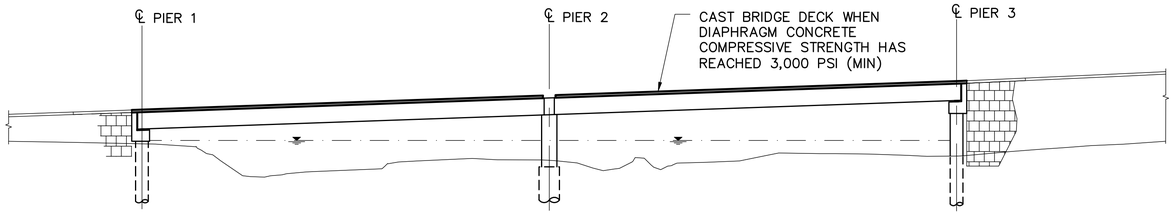
STAGE 1:
CONSTRUCT PIER SUBSTRUCTURE AND
GEOSYNTHETIC RETAINING WALLS



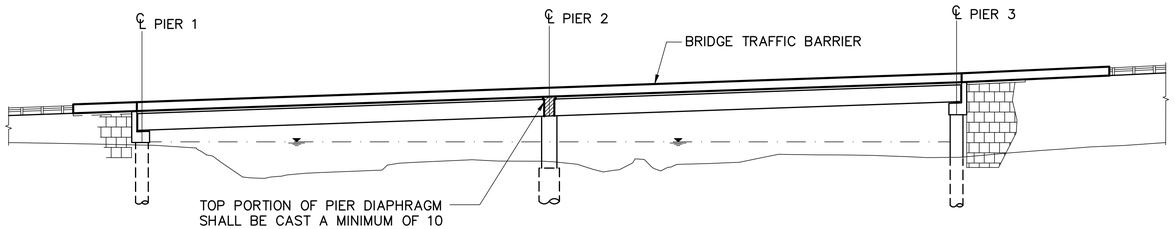
STAGE 2:
SET PRECAST GIRDERS



STAGE 3:
CAST DIAPHRAGMS AND PLACE BRIDGE
DECK REINFORCEMENT



STAGE 4:
CAST BRIDGE DECK AND TOP
PORTION OF END DIAPHRAGMS



STAGE 5:
CAST TOP PORTION OF PIER DIAPHRAGM
AND CAST TRAFFIC BARRIER

STAGE 6:
REMOVE EXISTING BRIDGE

NOTE:
NO LIVE LOAD SHALL BE ALLOWED ON THE SPANS UNTIL
THE TOP PORTION OF THE PIER DIAPHRAGM CONCRETE
COMPRESSIVE STRENGTH HAS REACHED 3,000 PSI (MIN).

TRANTECH Engineering LLC

BELLEVUE OFFICE:
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BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

DATE:	ISSUED / REVISED	BY:
.	.	.

NICHOLAS NIKKOUR
STATE OF WASHINGTON
21020015
REGISTERED
PROFESSIONAL ENGINEER

Walla Walla County PUBLIC WORKS

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362

Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

SUGGESTED CONSTRUCTION SEQUENCE

PROJECT NUMBER
CRP20-02

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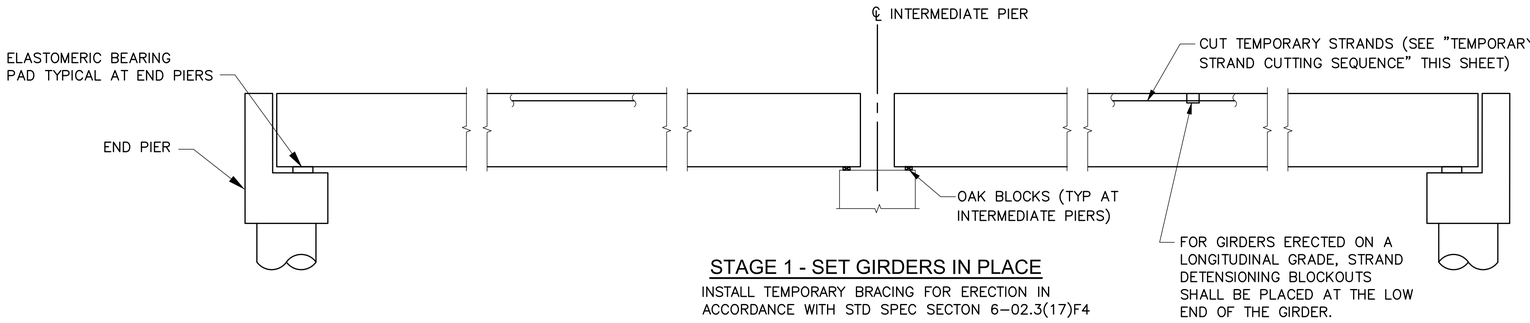
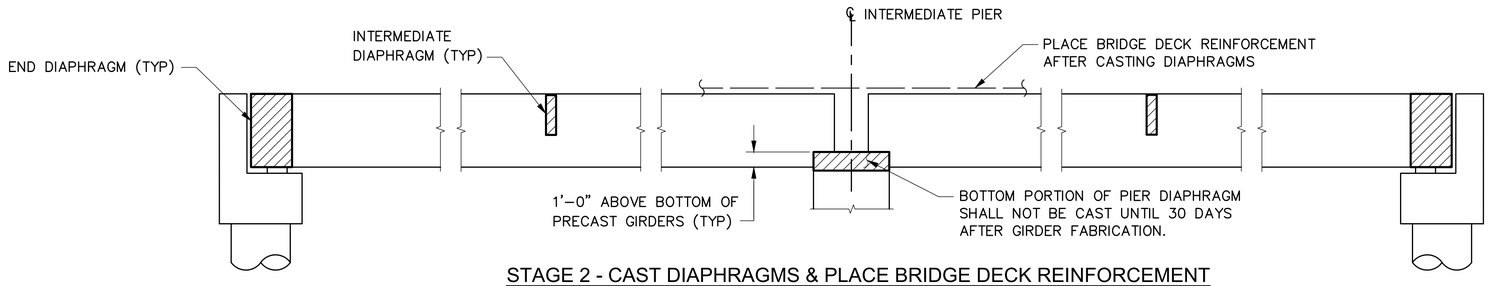


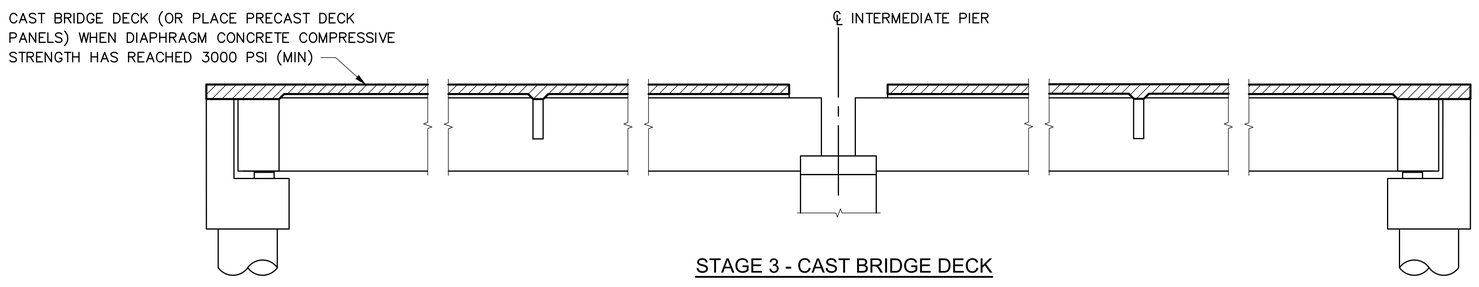
STAGE 1 - SET GIRDERS IN PLACE

INSTALL TEMPORARY BRACING FOR ERECTION IN ACCORDANCE WITH STD SPEC SECTON 6–02.3(17)F4

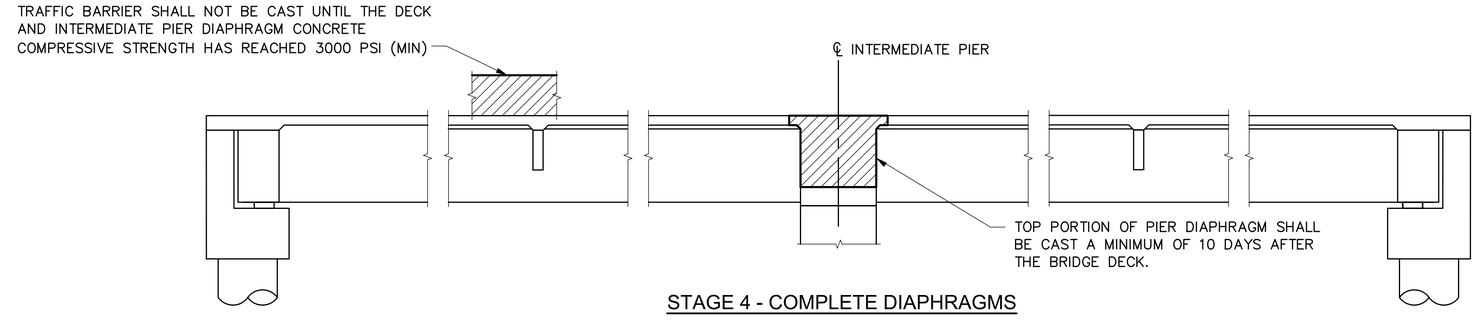


STAGE 2 - CAST DIAPHRAGMS & PLACE BRIDGE DECK REINFORCEMENT

INSTALL TEMPORARY BRACING FOR DIAPHRAGM AND DECK PLACEMENT IN ACCORDANCE WITH STD SPEC SECTON 6–02.3(17)F5



STAGE 3 - CAST BRIDGE DECK



STAGE 4 - COMPLETE DIAPHRAGMS

TEMPORARY STRAND CUTTING SEQUENCE

1. ERECT AND BRACE GIRDERS.
2. JUST PRIOR TO CUTTING THE TEMPORARY STRANDS, REMOVE EXPANDED POLYSTYRENE IN BLOCKOUTS IN TOP FLANGE OF GIRDERS. ONCE THE EXPANDED POLYSTYRENE HAS BEEN REMOVED FROM THE STRAND DETENSIONING BLOCKOUT, PREVENT MOISTURE FROM ENTERING THE BLOCKOUT UNTIL THE TEMPORARY TOP STRAND IS CUT AND THE BLOCKOUT FILLED WITH GROUT.
3. CUT STRANDS IN BLOCKOUTS. STRANDS MAY BE CUT BY USING A CUTTING TORCH AND MOVING THE FLAME BACK AND FORTH OVER THE LENGTH OF EXPOSED STRAND TO LET INDIVIDUAL WIRES BREAK ONE AT A TIME TO LESSEN THE SHOCK TO THE GIRDER. STRANDS SHALL BE RELEASED IN A SYMMETRICAL MANNER ABOUT THE GIRDER CENTERLINE STARTING WITH THOSE FURTHEST FROM THE CENTERLINE AND WORKING INWARDS.
4. WITHIN 24 HOURS OF CUTTING THE TEMPORARY STRANDS, FILL THE BLOCKOUTS WITH A GROUT CONFORMING TO STD. SPEC. 9–20.3(2). REMOVE ALL MOISTURE IN BLOCKOUTS PRIOR TO FILLING THEM WITH GROUT.

NOTE:
NO LIVE LOAD SHALL BE ALLOWED ON THE SPANS UNTIL THE COMPRESSIVE STRENGTH OF THE TOP PORTION OF THE PIER DIAPHRAGM HAS REACHED 3000 PSI (MIN.).

TRANTECH Engineering LLC
BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

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NICK A. NIKOLAS, STATE OF WASHINGTON, 21020015, REGISTERED PROFESSIONAL ENGINEER

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

SUPERSTRUCTURE CONSTR. SEQUENCE

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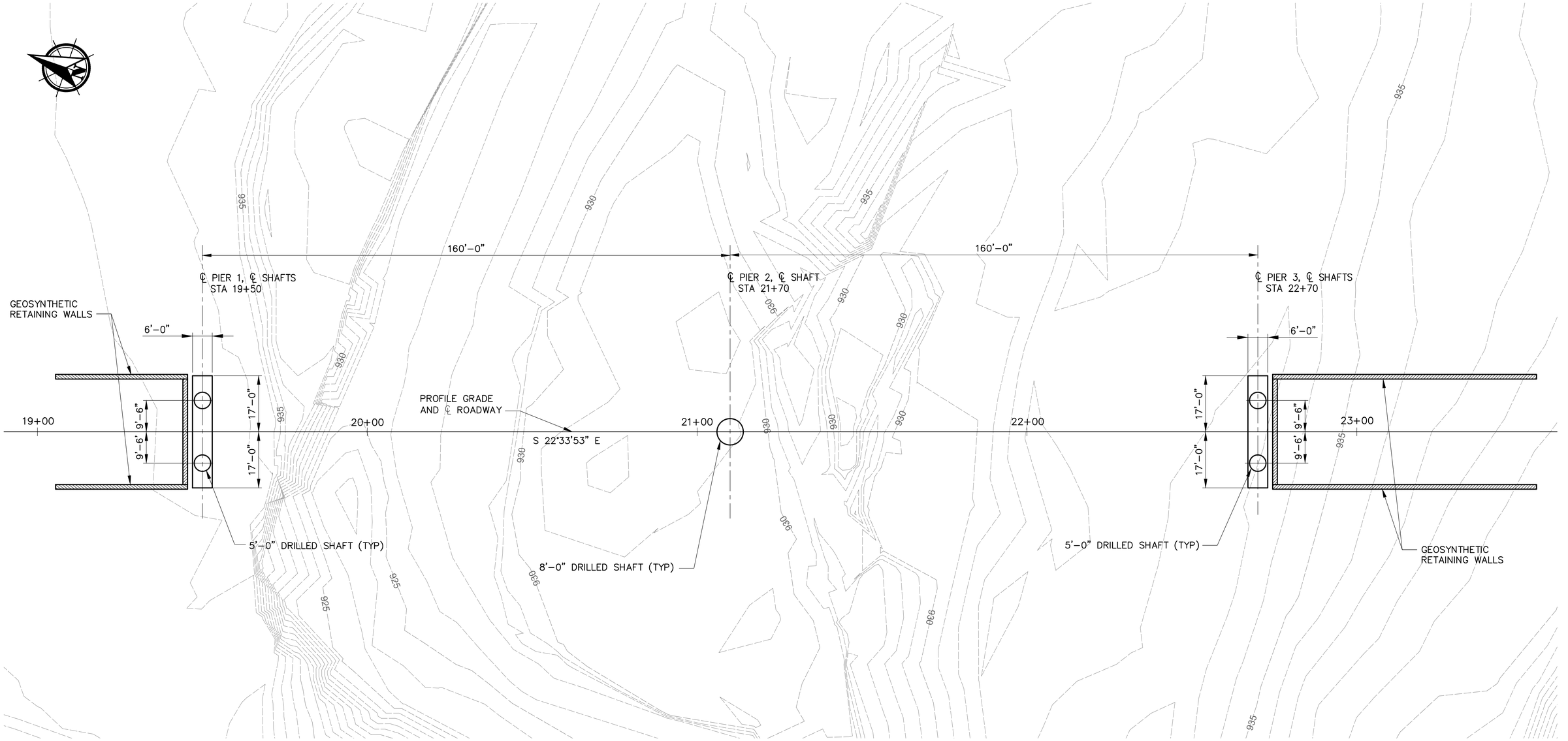

FOUNDATION PLAN

BEARING OF ALL PIERS IS N 67°26'07" E

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BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

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NICK A NIKKOUR
STATE OF WASHINGTON
21020015
REGISTERED
PROFESSIONAL ENGINEER

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

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BRIDGE FOUNDATION LAYOUT

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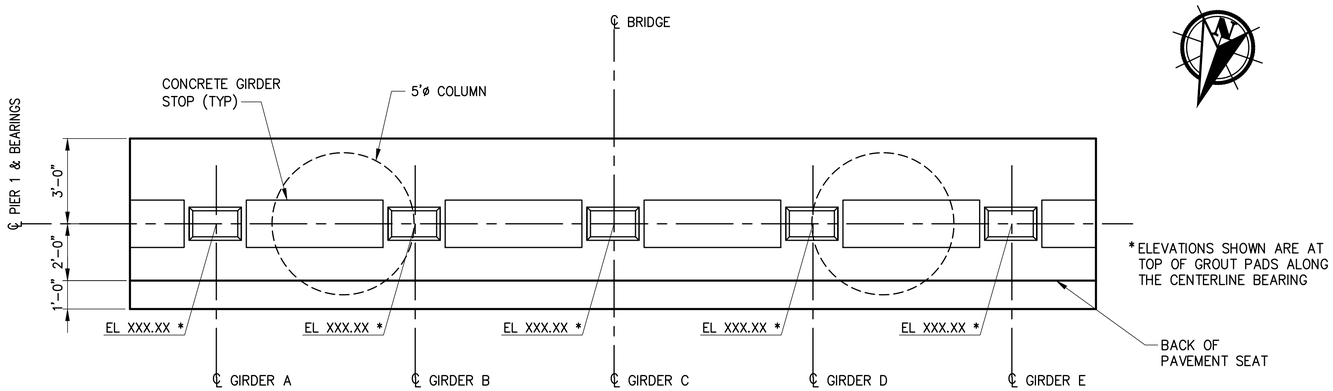
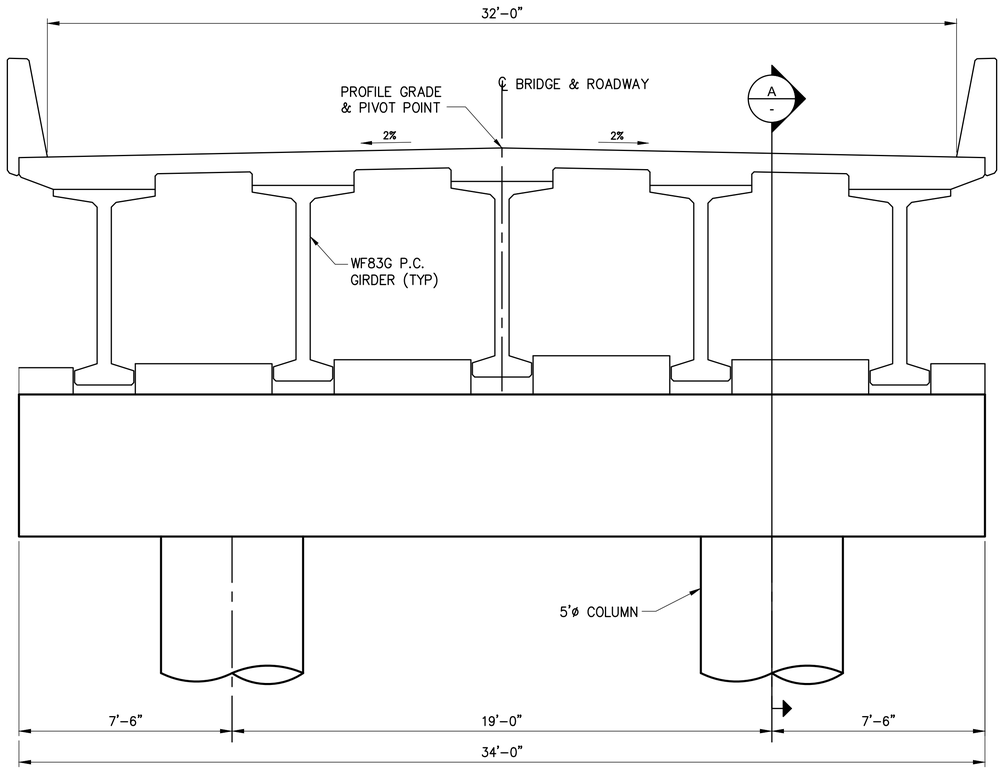
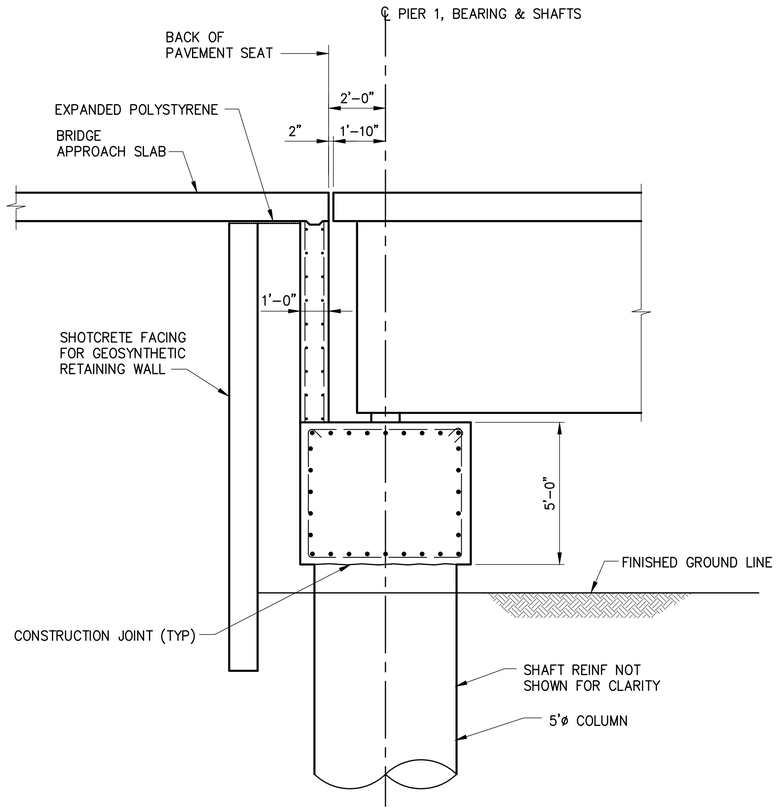


PLAN - PIER 1



ELEVATION - PIER 1

LOOKING BACK ON STATIONING



SECTION A

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BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

DATE:	ISSUED / REVISED	BY:
.	.	.

JACK N NIKPOUR — STATE OF WASHINGTON — 21020015 — REGISTERED PROFESSIONAL ENGINEER

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

PIER 1 PLAN & ELEVATION

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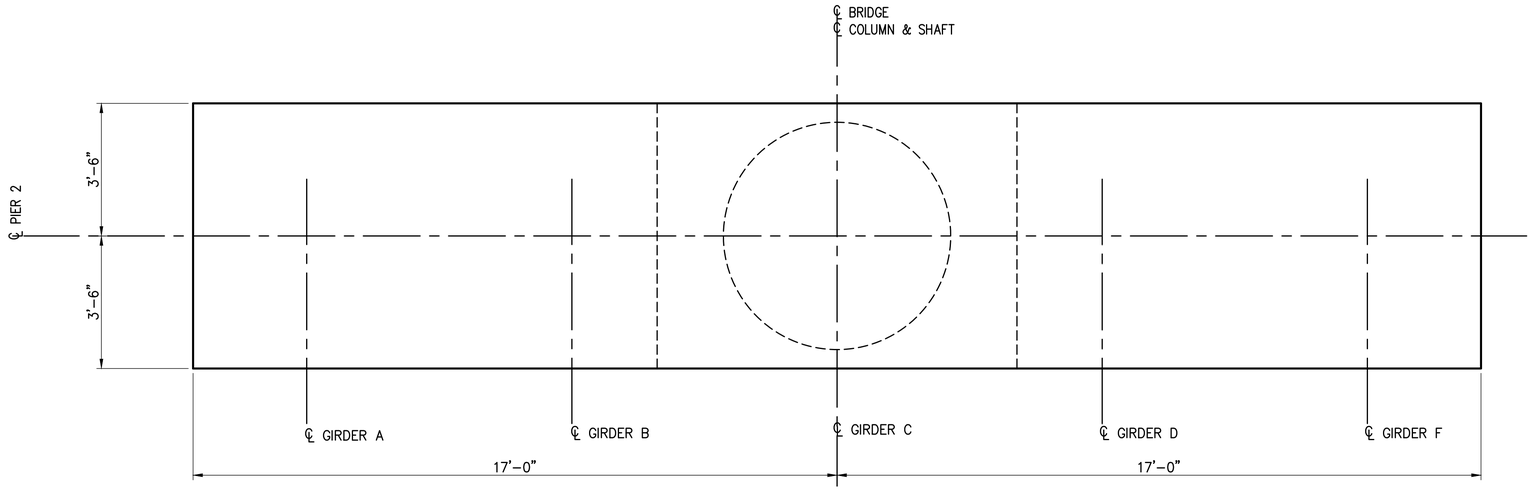
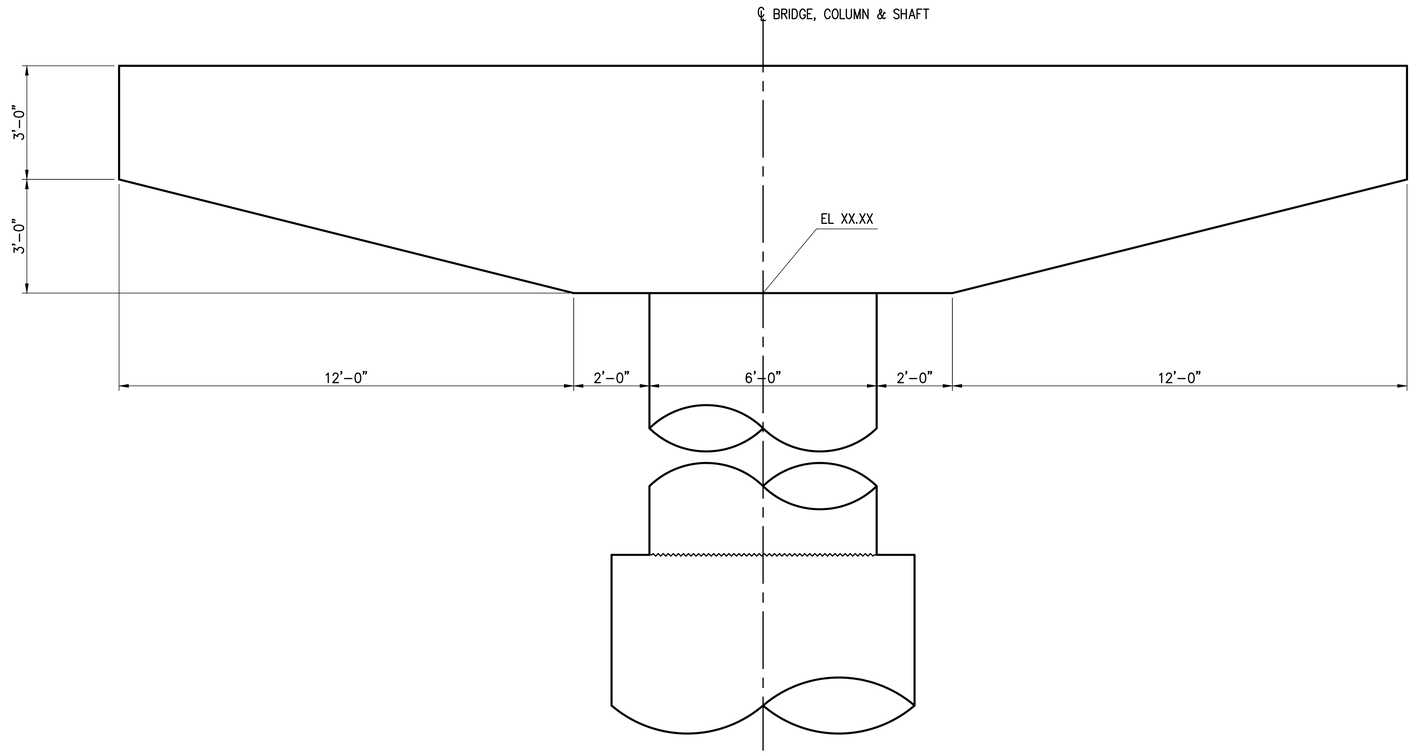


PLAN - PIER 2



ELEVATION - PIER 2

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BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

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NICK N NIKPOUR — STATE OF WASHINGTON — 21020015 — REGISTERED PROFESSIONAL ENGINEER

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

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PIER 2 PLAN & ELEVATION

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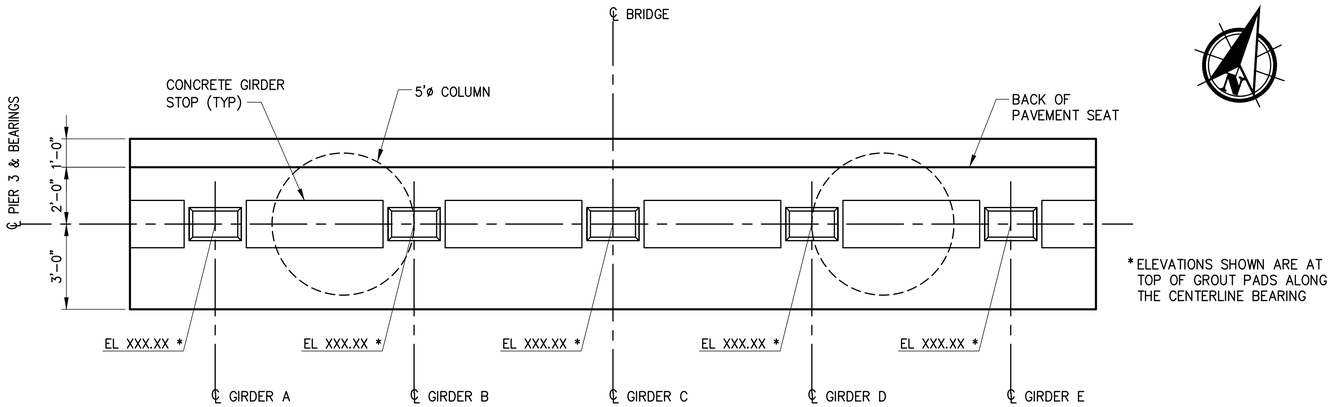

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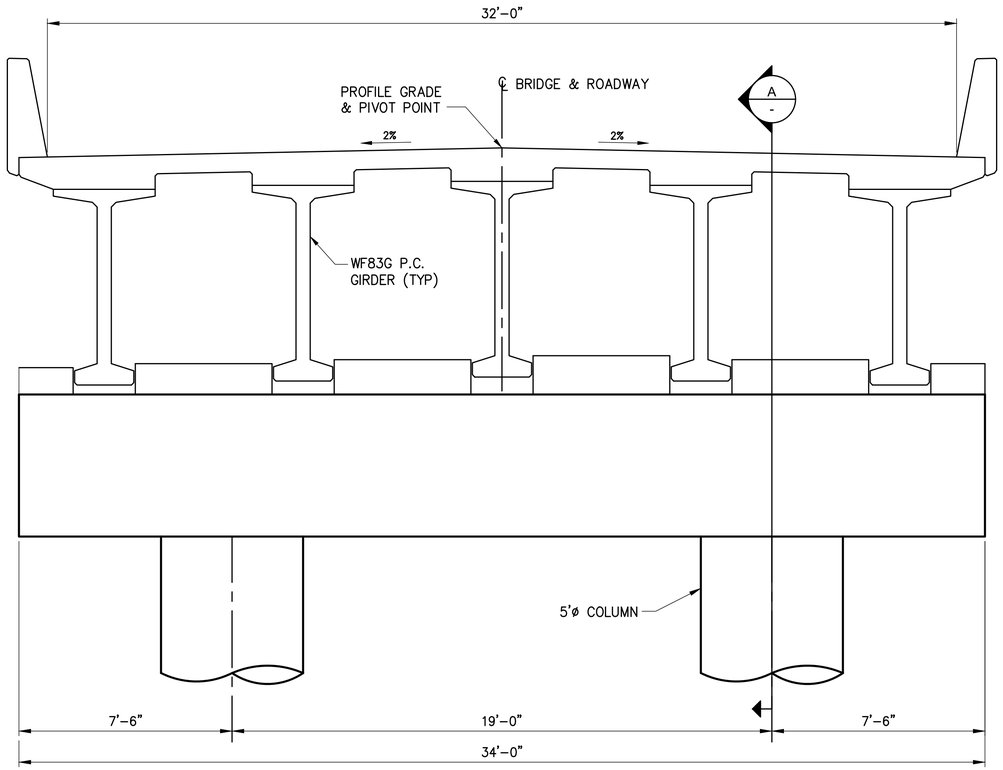
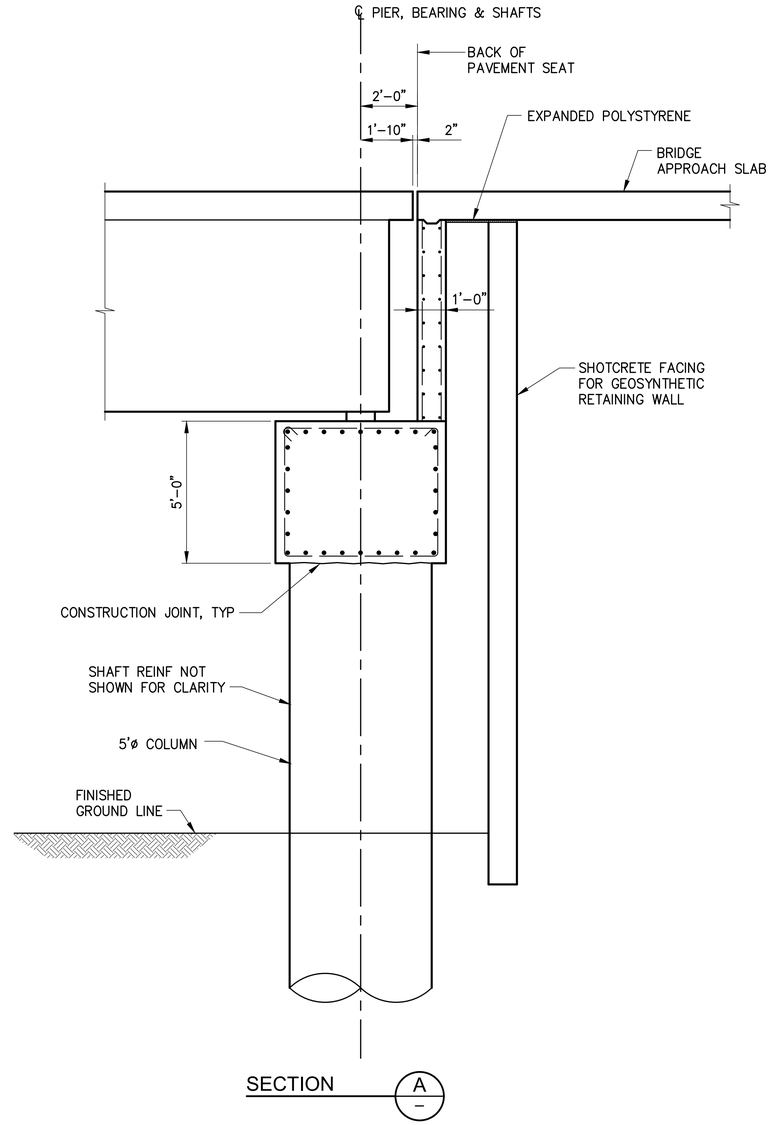


ELEVATION - PIER 3

LOOKING AHEAD ON STATIONING



TRANTECH Engineering LLC

BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
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NICK A NIKOLOV — STATE OF WASHINGTON — 21020015 — REGISTERED PROFESSIONAL ENGINEER

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

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PIER 3 PLAN & ELEVATION

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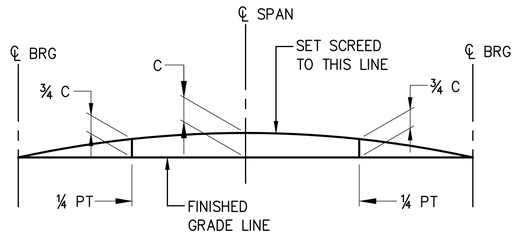
SPAN	GIRDER	GIRDER SERIES	PLAN LENGTH (ALONG GIRDER GRADE) (SEE GIRDER NOTE 1)	INT. DIAPHRAGM TYPE (FULL OR PARTIAL)	GIRDER END DETAILS							MIN. CONC. COMP. STRENGTH		NUMBER OF STRANDS (SEE GIRDER NOTE 2)			LOCATION OF C.G. STRANDS			STRAIGHT STRANDS TO EXTEND				"A" DIMENSION AT ℄ BEARINGS	DECK SCREED CAMBER C	MIDSPAN VERTICAL DEFLECTION D		REINFORCEMENT DETAILS												SHIPPING AND HANDLING DETAILS					
					END 1 TYPE	END 2 TYPE	Ld	Q1	Q2	P1	P2	@ 28-DAYS F'C (KSI)	@ RELEASE F'CI (KSI)	STRAIGHT	HARPED	TEMPORARY	E	F℄	Fo	END 1		END 2				LOWER BOUND @ 40 DAYS	UPPER BOUND @ 120 DAYS	ZONE 1		ZONE 2		ZONE 3		ZONE 4		ZONE 5		ZONE 6		H1	MAX MIDSPAN VERTICAL DEFLECTION AT SHIPPING	L	L1	L2	K_p MINIMUM SHIPPING SUPPORT ROTATIONAL SPRING CONSTANT	W_{CC} MINIMUM SHIPPING SUPPORT CTR-TO-CTR WHEEL SPACING
																				STRANDS	EXTENSION LENGTH	STRANDS	EXTENSION LENGTH					SPACING	LENGTH	SPACING	LENGTH	SPACING	LENGTH	SPACING	LENGTH	SPACING	LENGTH	SPACING	LENGTH						
1	ALL	WF83G	157'-1⅛"	–	–	–	–	90°	90°	2'-0"	–	8	6	36	14	2	3⅛"	4¼"	9½"	–	–	–	–	12"	2⅜"	2⅛"	5"	3"	2"	4"	7"	6"	4"	9"	2¼"	12"	26"	18"	58"	8'-1⅝"	6⅛"	7'-6"	13'-6"	13'-6"	50,000 KIP·IN/RAD	6'-0"
2	ALL	WF83G	157'-1⅛"	–	–	–	–	90°	90°	–	2'-0"	8	6	36	14	2	3⅜"	4¼"	9½"	–	–	–	–	12"	2⅜"	2⅛"	5"	3"	2"	4"	7"	6"	4"	9"	2¼"	12"	26"	18"	58"	8'-1⅝"	6⅛"	7'-6"	13'-6"	13'-6"	50,000 KIP·IN/RAD	6'-0"



SCREED SETTING DIMENSIONS

FOR DIMENSION "C" SEE GIRDER SCHEDULE

GIRDER NOTES:

1. PLAN LENGTH SHALL BE INCREASED AS NECESSARY TO COMPENSATE FOR SHORTENING DUE TO PRESTRESS AND SHRINKAGE.
2. ALL PRETENSIONED AND TEMPORARY STRANDS SHALL BE 0.6"ø AASHTO M203 GRADE 270 LOW RELAXATION STRANDS, JACKED TO 202.5 KSI.

TRANTECH Engineering LLC

BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

DATE:	ISSUED / REVISED	BY:
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NICK N NIKPOUR STATE OF WASHINGTON 21020015 REGISTERED PROFESSIONAL ENGINEER

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

PRESTRESSED GIRDER DETAILS 1

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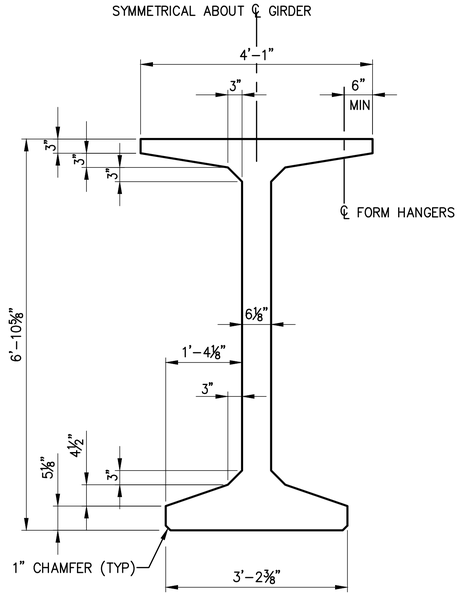
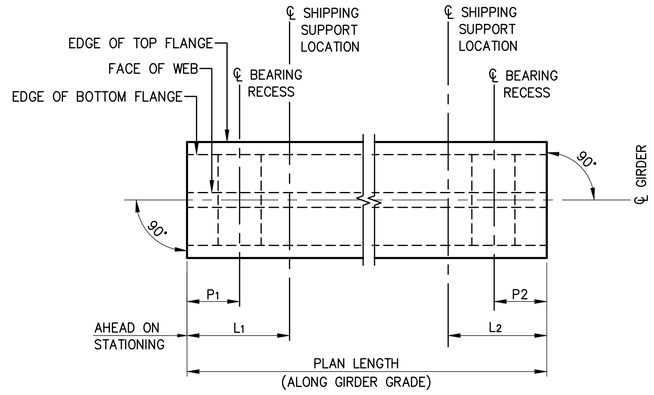
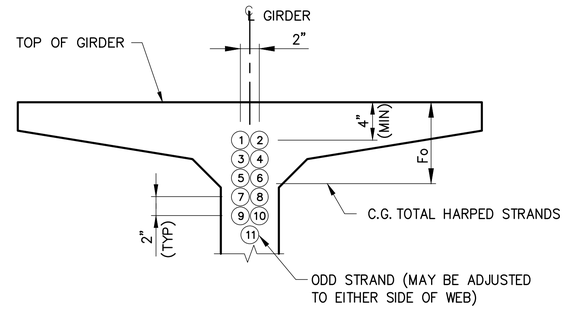


SECTION A
REINF AND STRANDS NOT SHOWN

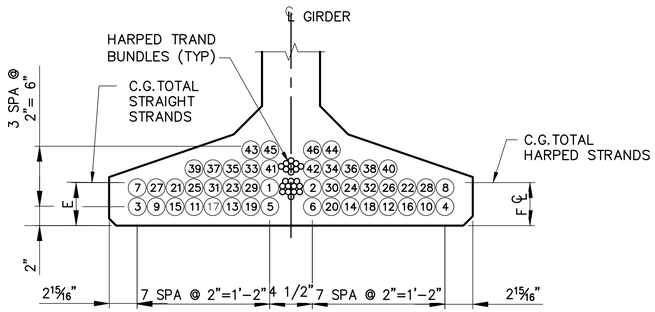


GIRDER PLAN



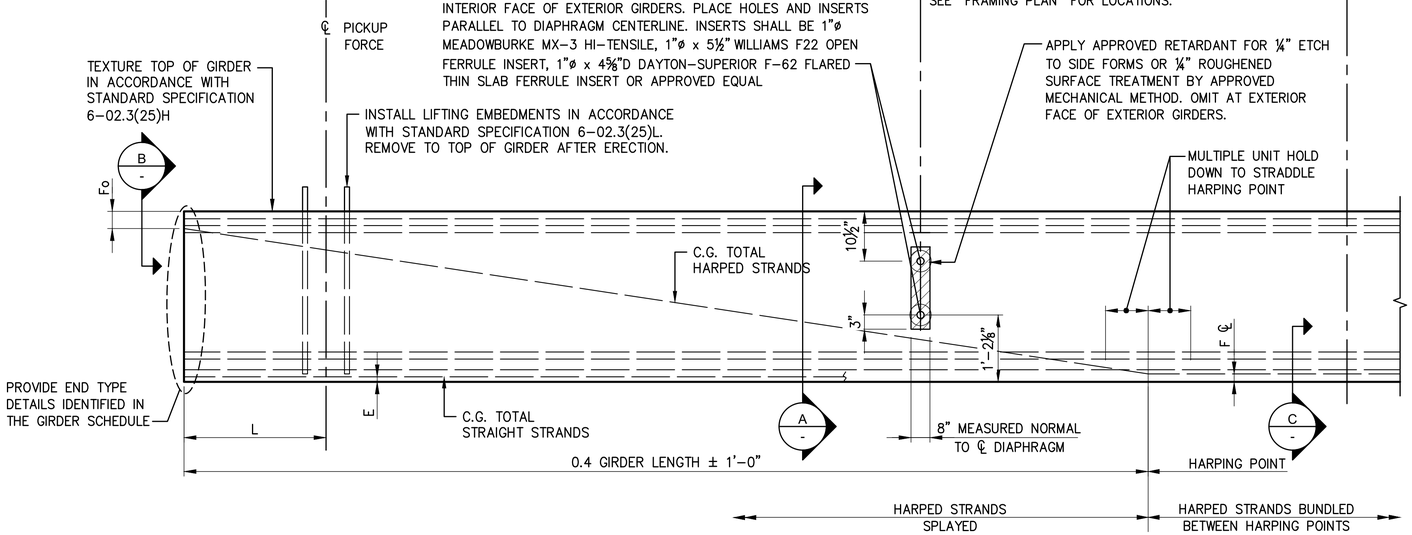
VIEW B
REINF AND STRANDS NOT SHOWN

HARPED STRAND LOCATION SEQUENCE SHALL BE AS SHOWN (1), (2), ETC



SECTION C
REINF AND STRANDS NOT SHOWN

STRAIGHT STRAND LOCATION SEQUENCE SHALL BE AS SHOWN (1), (2), ETC



GIRDER ELEVATION

TRANTECH Engineering LLC
BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

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NICHOLAS NIKKOLAS STATE OF WASHINGTON 21020015 REGISTERED PROFESSIONAL ENGINEER

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

PRESTRESSED GIRDER DETAILS 2

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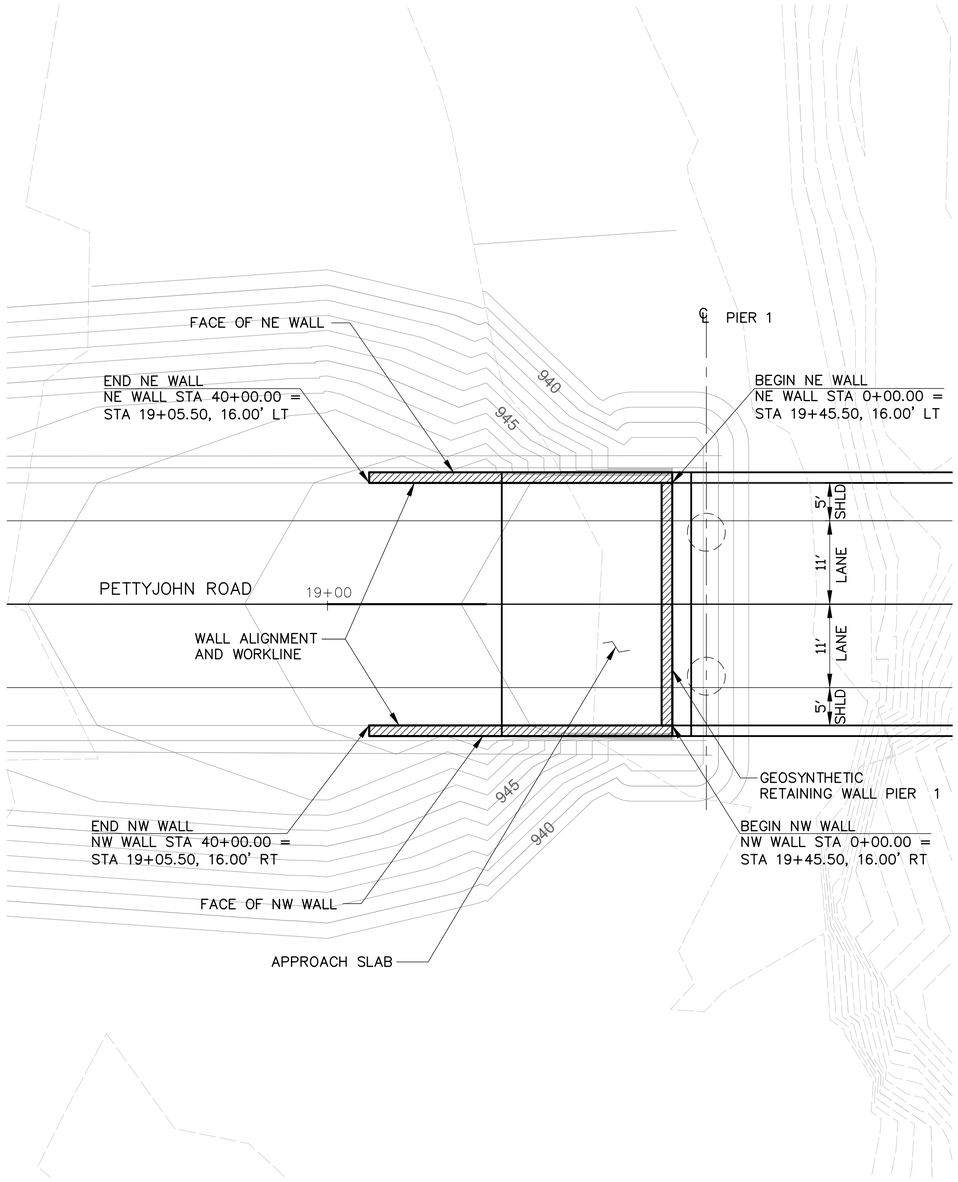
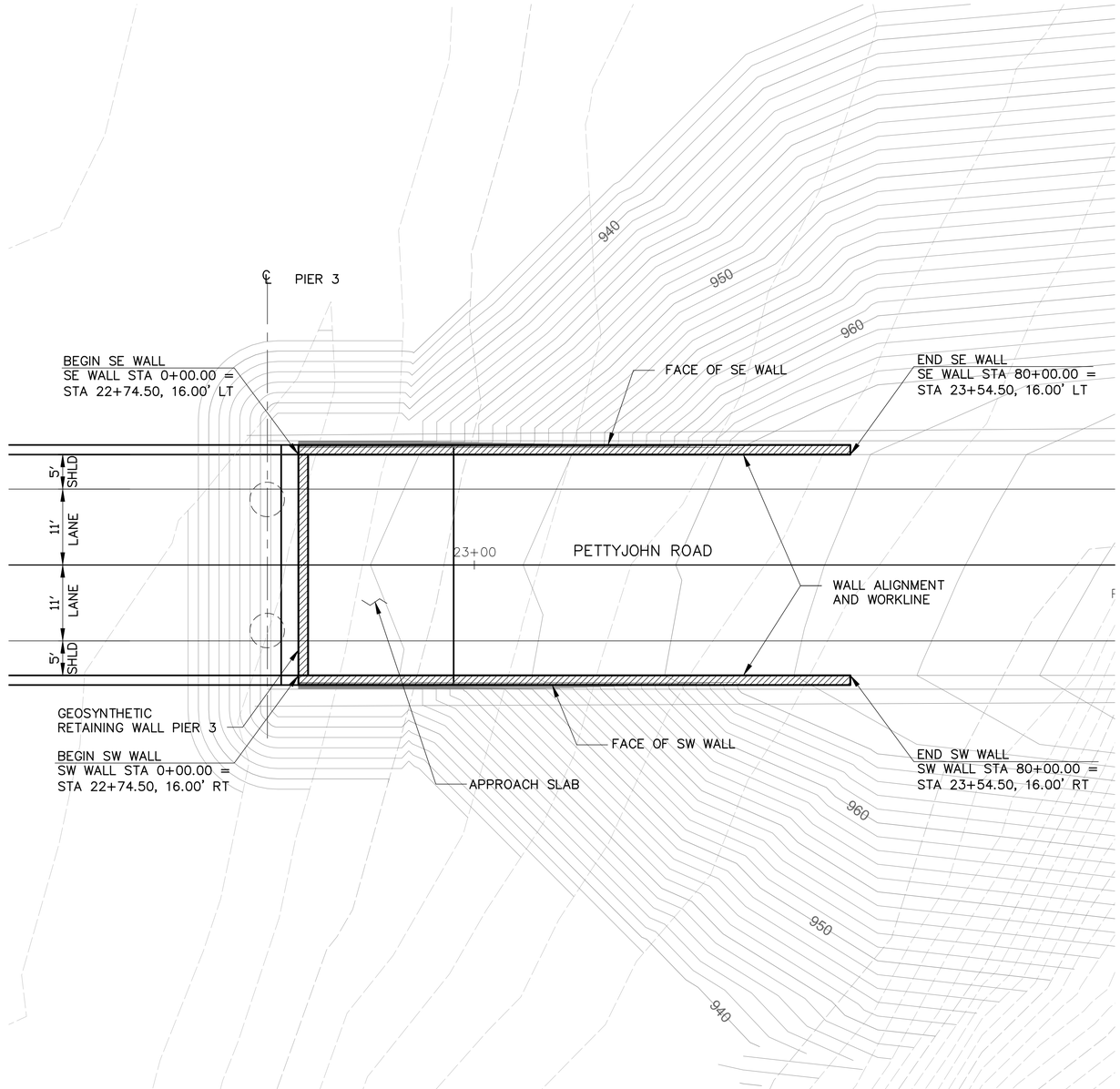


NE & NW RETAINING WALL PLAN



SE & SW RETAINING WALL PLAN

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BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

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NICK A NIKPOUR
STATE OF WASHINGTON
21020015
REGISTERED
PROFESSIONAL ENGINEER

Walla Walla County PUBLIC WORKS

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509, 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

RETAINING WALL LAYOUTS

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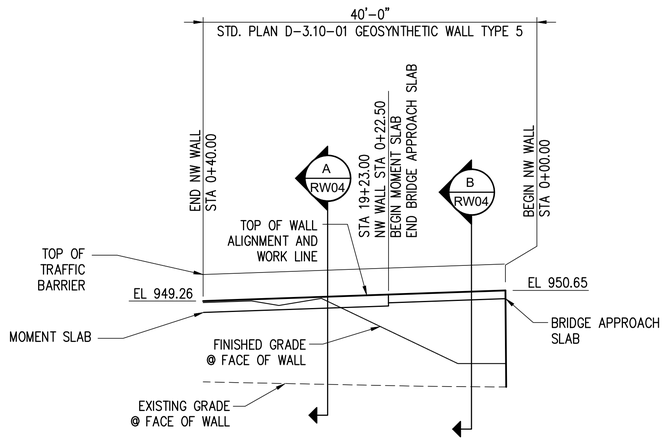
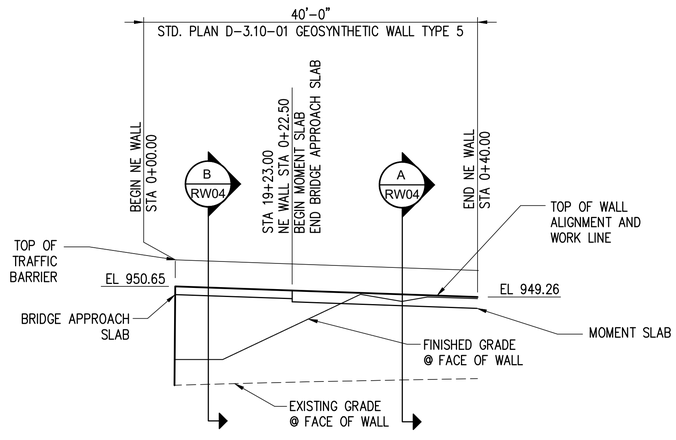
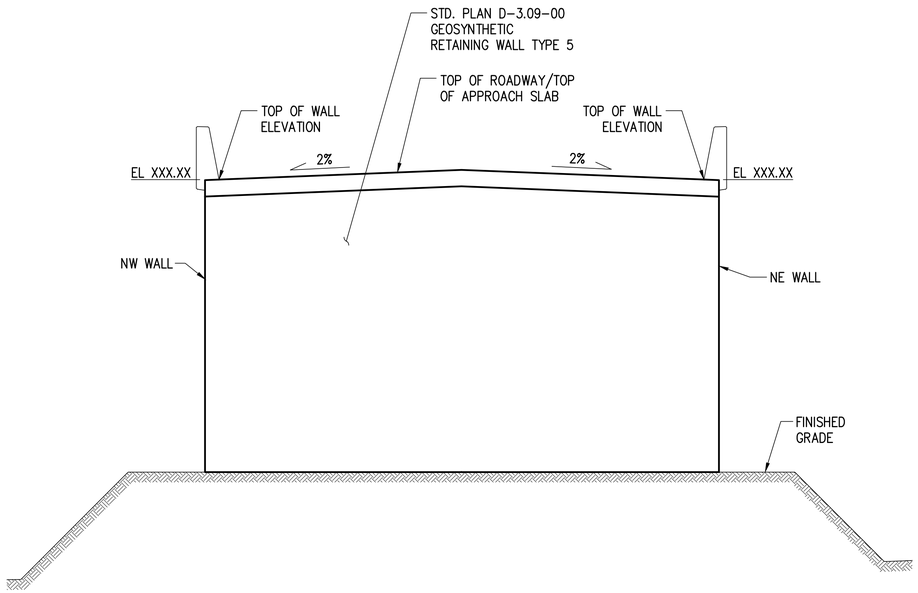


NW WALL ELEVATION



NE WALL ELEVATION



GEOSYNTHETIC RETAINING WALL - PIER 1 ELEVATION

LOOKING BACK ON STATIONING

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365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

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NICK N. NIKPOUR STATE OF WASHINGTON 21020015 REGISTERED PROFESSIONAL ENGINEER

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

WALL ELEVATIONS - NORTH APPROACH

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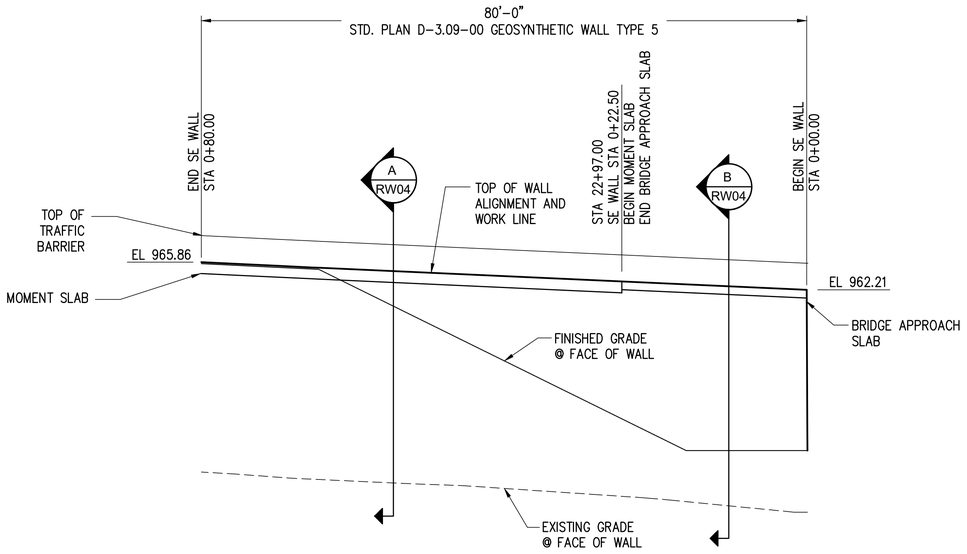
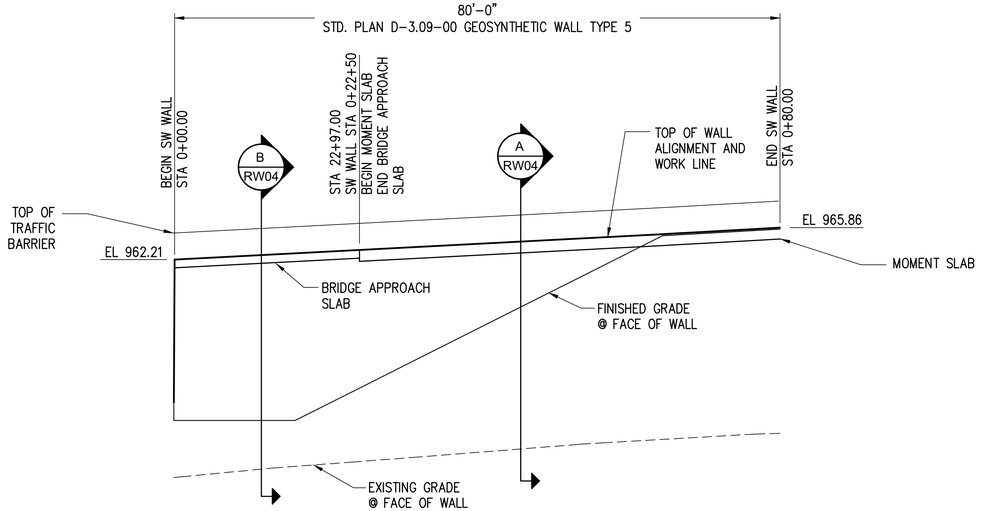
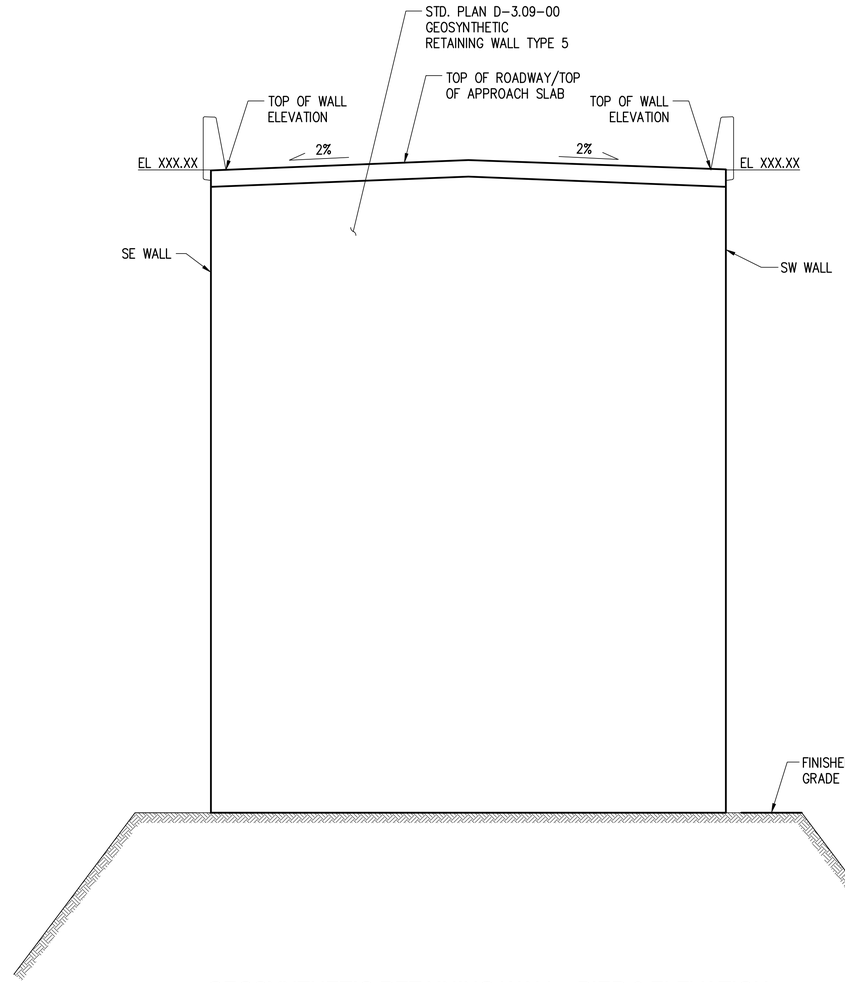


SE WALL ELEVATION



SW WALL ELEVATION



GEOSYNTHETIC RETAINING WALL - PIER 3 ELEVATION

LOOKING AHEAD ON STATIONING

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365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

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NICK N NIKPOUR
STATE OF WASHINGTON
21020015
REGISTERED
PROFESSIONAL ENGINEER

Walla Walla County PUBLIC WORKS

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

WALL ELEVATIONS - SOUTH APPROACH

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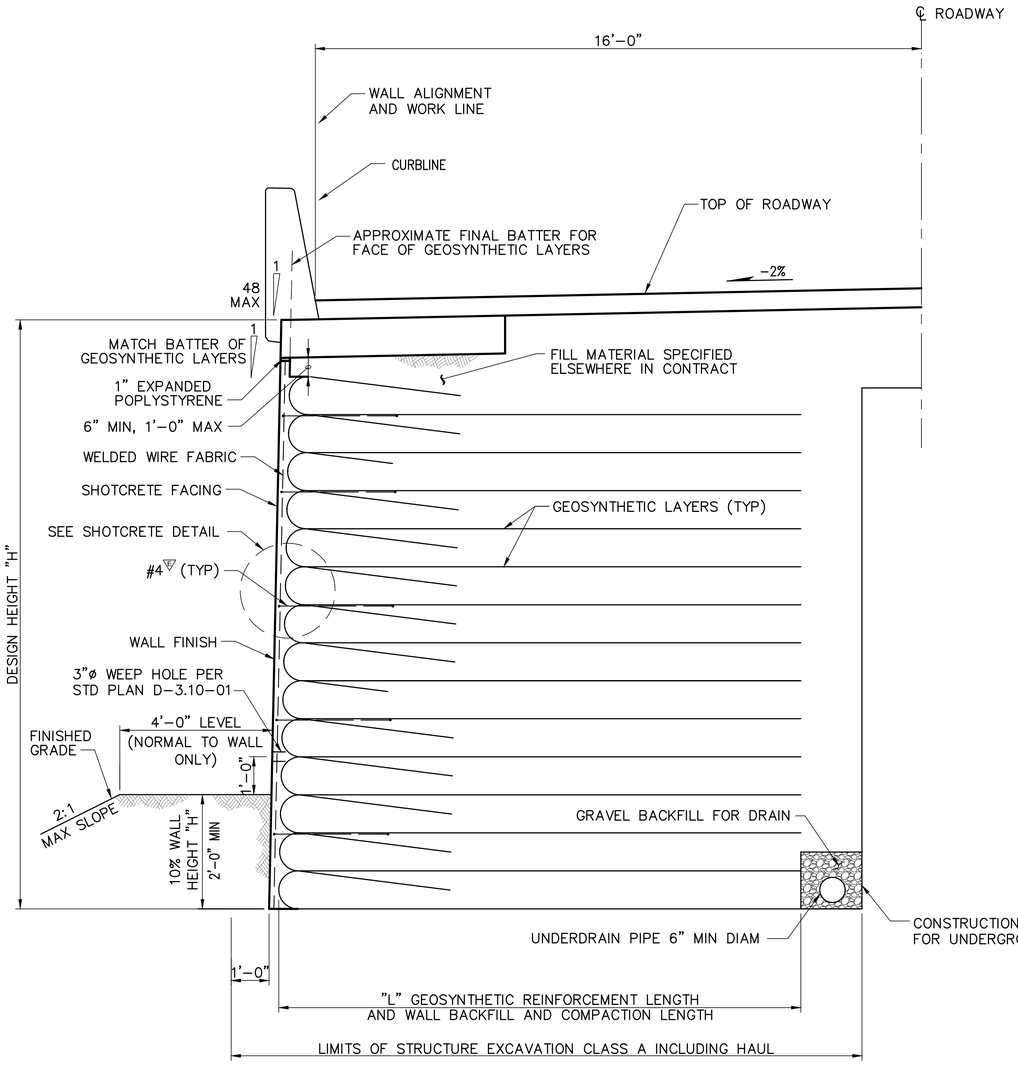
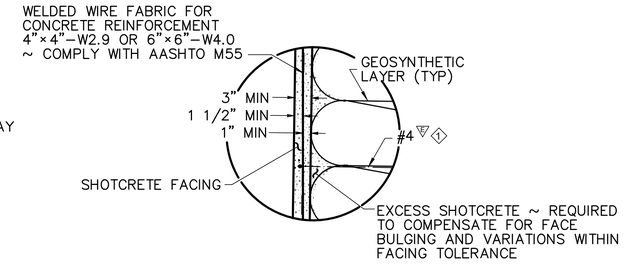


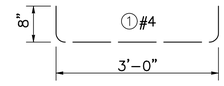
WALL & BARRIER TYPICAL SECTION
BEYOND BRIDGE APPROACH SLAB LIMITS (A)
XXX RW02, RW03



SHOTCRETE DETAIL

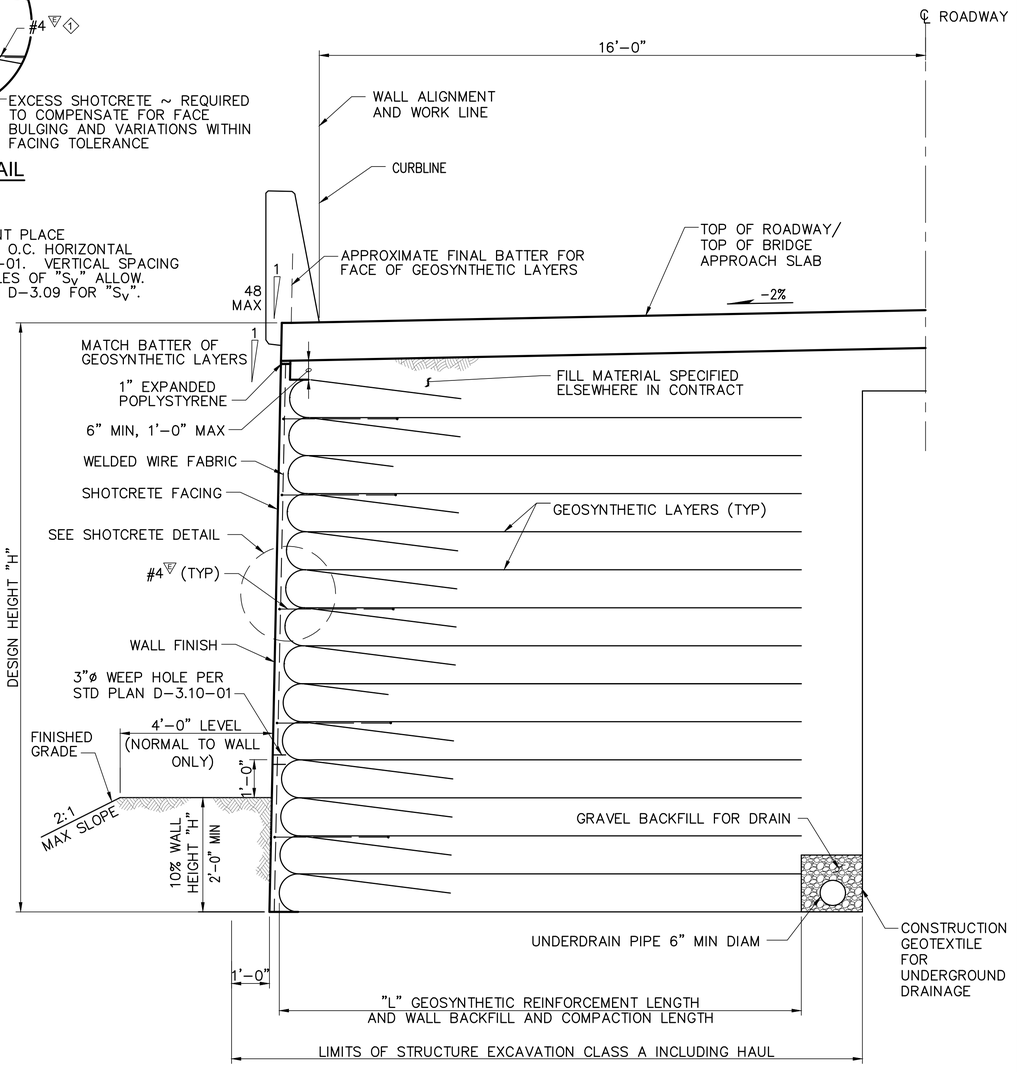
KEY NOTES

① "N" ROWS OF ① #4 DOWEL REINFORCEMENT PLACE BETWEEN GEOSYNTHETIC LAYERS AT 5'-0" O.C. HORIZONTAL SPACING, SEE TABLE ON STD PLAN D3.10-01. VERTICAL SPACING BETWEEN ROWS TO BE EQUAL, AS MULTIPLES OF "S_V" ALLOW. ROWS MAY BE STAGGERED. SEE STD PLAN D-3.09 FOR "S_V".



NOTES:

1. PIERS 1 AND 3 DRILLED SHAFTS SHALL NOT BE INSTALLED UNTIL AFTER THE GEOSYNTHETIC REINFORCEMENT AND GRAVEL BORROW FOR STRUCTURAL EARTH WALL HAVE BEEN INSTALLED FOR THE WALLS.
2. ALL BARS SHOWN ON THIS PLAN SHALL BE ASTM A706 UNLESS OTHERWISE SPECIFIED IN THE CONTRACT.



WALL & BARRIER TYPICAL SECTION
WITHIN BRIDGE APPROACH SLAB LIMITS (B)
XXX RW02, RW03

TRANTECH Engineering LLC
BELLEVUE OFFICE:
365 - 118th AVE. SE, STE 100
BELLEVUE, WA 98005
WWW.TRANTECHENG.COM
PH: 425-453-5545
FAX: 425-453-6779

DATE:	ISSUED / REVISED	BY:
.	.	.

NICK N NTKPOUR STATE OF WASHINGTON 21020015 REGISTERED PROFESSIONAL ENGINEER

WALLA WALLA COUNTY
Public Works Department
999 Navion Lane
Walla Walla, Washington, 99362
Phone: 509. 524-2710
Web Address: www.wwcountyroads.com

DELL SHARPE BRIDGE REPLACEMENT PROJECT

RETAINING WALL DETAILS

PROJECT NUMBER CRP20-02
SHEET RW04
PAGE XX OF XX

Appendix B
Official Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
Phone: (360) 753-9440 Fax: (360) 753-9405
http://www.fws.gov/wafwo/

In Reply Refer To: August 24, 2021
Consultation Code: 01EWFW00-2021-SLI-0699
Event Code: 01EWFW00-2021-E-03420
Project Name: Dell Sharpe Bridge Replacement Project

Subject: Updated list of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated and proposed critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. The species list is currently compiled at the county level. Additional information is available from the Washington Department of Fish and Wildlife, Priority Habitats and Species website: http://wdfw.wa.gov/mapping/phs/ or at our office website: http://www.fws.gov/wafwo/species_new.html. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether or not the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species, and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). You may visit our website at http://www.fws.gov/pacific/eagle/for information on disturbance or take of the species and information on how to get a permit and what current guidelines and regulations are. Some projects affecting these species may require development of an eagle conservation plan: (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Also be aware that all marine mammals are protected under the Marine Mammal Protection Act (MMPA). The MMPA prohibits, with certain exceptions, the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas. The importation of marine mammals and marine mammal products into the U.S. is also prohibited. More information can be found on the MMPA website: http://www.nmfs.noaa.gov/pr/laws/mmpa/.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Related website:
National Marine Fisheries Service: http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
(360) 753-9440

Project Summary

Consultation Code: 01EWFW00-2021-SLI-0699
Event Code: 01EWFW00-2021-E-03420
Project Name: Dell Sharpe Bridge Replacement Project
Project Type: BRIDGE CONSTRUCTION / MAINTENANCE
Project Description: replacement of existing bridge over the Touchet River
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@46.29345235,-118.40532377480136,14z

Counties: Walla Walla County, Washington

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Bull Trout *Salvelinus confluentus* Population: U.S.A., conterminous, lower 48 states There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8212	Threatened

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Bull Trout *Salvelinus confluentus* https://ecos.fws.gov/ecp/species/8212#crithab	Final

Appendix C
Biology of Listed Species

Steelhead Middle Columbia River Distinct Population Segment

Steelhead follow a generalized life history, which includes the hatching of embryos; emergence and initial rearing of juveniles in fresh water; migration to oceanic habitats for extended periods of feeding and growth; return to natal waters for completion of maturation and spawning; and return to oceanic habitats. The species *Oncorhynchus mykiss* exhibits perhaps the most complex suite of life history traits of any species of Pacific salmonid. These fish can be anadromous (migratory) or freshwater residents (and under some circumstances, apparently yield offspring of the opposite form). Steelhead can spawn more than once (iteroparous), whereas all other *Oncorhynchus* except cutthroat trout (*O. clarki*) spawn once and then die (semelparous) (NOAA Fisheries, 2009).

Within this general life history strategy, steelhead have highly diverse variations in life histories, even within the Middle Columbia River DPS. Steelhead can be divided into summer-run and winter-run types, based on the timing and level of maturity at fresh-water entry and length of spawning migration. Summer-run, or stream-maturing fish, enter rivers between May and October, migrate to headwater areas, and remain for several months before spawning the following spring. Summer run steelhead are the only type upstream of the Klickitat River.

Adult steelhead inhabit marine waters, returning to freshwater streams to spawn. Adults hold in pools or side channels during high winter flows before spawning. Suitable spawning habitat occurs in high-gradient streams with relatively swift water, typically inside channels, riffles, and pool tailouts with gravel and cobble substrates. Juvenile steelhead generally rear in freshwater for two years and spend one to three years in the ocean environment before returning to spawn (NOAA Fisheries, 2009).

Primary threats to the species include freshwater habitat degradation and fragmentation and the effects of these on habitat connectivity (NOAA Fisheries, 2009).

Bull Trout

Bull trout are a native char to the northwest that can reach up to 32 pounds. Bull trout occur in widespread, but fragmented habitats. Bull trout exhibit multiple life history patterns, including resident and freshwater migratory, and a rarer anadromous form, occurring only in western Washington (USFWS, no date). Resident bull trout complete their life cycles in the tributary (or nearby) streams in which they spawn and rear. Migratory bull trout spawn in tributary streams where juvenile fish rear from one to four years before migrating to either a lake (adfluvial), river (fluvial), or in certain coastal areas, to saltwater (anadromous or amphidromous) to mature (Fraley and Shepard, 1989; Goetz, 1989).

Bull trout have more specific habitat requirements than other salmonids. Bull trout are a cold-water species, found in moderate to fast flowing streams and rivers and cold-water lakes and reservoirs; bull trout are believed to be limited by waters that exceed 15°C (59°F) (Fraley and Shepard, 1989). Additional components (limiting factors) that appear to influence bull trout distribution and abundance include cover, channel form and stability, valley form, spawning and rearing substrates, and migratory corridors (Oliver, 1979; Pratt, 1984 and 1992; Fraley and Shepard, 1989; Goetz, 1989). Adult bull trout use the bottoms of deep pools for cover. Complex habitats, including riffles, deep pools, undercut banks, side channels, and LWD, provide shelter and foraging cover for juvenile bull trout (USFWS, no date). Juvenile bull trout feed on insects and macrozooplankton; adult bull trout prey on fish and other small vertebrates.

Bull trout are multi-year spawners and typically spawn from August to September during periods of decreasing water temperatures. Migratory bull trout frequently begin spawning migrations as early as April and have been known to move upstream as far as 250 kilometers (155 miles) to spawning grounds. Spawning

occurs in water temperatures below 48°F (9°C) (McPhail and Baxter, 1996); successful incubation of the eggs requires temperatures below 40°F. Spawning substrates include loose gravels and cobbles with low levels of fine sediments in 12 to 24 inches of deep water (Fraley and Shepard, 1989; Goetz, 1989; Boag 1991; Baxter and McPhail, 1996). Bull trout fry emerge in April–May and rear near their spawning areas. The growing juveniles can adopt one of the three life strategies discussed above. Some fry may drop downstream looking for foraging opportunities and, depending on the rearing habitats that they select, may enter the estuary. The foraging juvenile and sub-adult char may migrate throughout the basin looking for feeding opportunities. Juvenile migratory bull trout remain in their natal stream for one to four years before out-migrating (USFWS, no date).

Primary threats to the species include fish passage, habitat fragmentation and degradation, and non-native species (USFWS, no date).

Yellow-Billed Cuckoo

The western yellow-billed cuckoo is a neotropical migrant that occurs in large tracts of riparian habitat in North America during the breeding season, particularly cottonwood and willow riparian woodlands associated with low gradient rivers and streams in open valleys and broad floodplains (USFWS, 2014a and 2014b). Western yellow-billed cuckoos forage and nest in willow and cottonwood riparian forests that are usually 50 acres or larger; optimal sites are larger than 200 acres and have dense canopy closure (USFWS, 2014a). Dense, closed-canopy riparian forests prevent cuckoo predation by birds of prey, and provide moist conditions necessary for egg and nestling survival and prey abundance (USFWS, 2014a). Cuckoos arrive at breeding grounds in June and nesting is timed to coincide with prey abundance (USFWS, 2013). Cuckoos primarily feed on insects (caterpillars, grasshoppers, katydids, beetles, and crickets) and occasionally prey upon tree frogs and lizards (USFWS, 2014a). Brood size and number is related to prey abundance; cuckoos typically have two broods and can raise up to three in one season if prey is abundant (USFWS, 2013). Eggs hatch in 11 to 12 days and nestlings fledge in 5 to 7 days. Yellow-billed cuckoos leave breeding grounds in August to winter in South America.

Primary threats to the species include loss and degradation of riparian habitat.

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Appendix D

Environmental Baseline for Aquatic Habitats

Table 1. Matrix of Diagnostics/Pathways and Indicators

Diagnostics/Pathways Indicators	Population and Environmental Baseline		Effects of the Action		
	Properly Functioning Criteria	Functionality (PF/AR/NPF)*	Restore	Maintain	Degrade
Water Quality:					
Temperature Avg Max Summer	40 to 57°F for spawning and incubation	NPF		X	
Sediment/Turbidity	Less than 12% fines (fines = <6.4 millimeter)	AR		X	
Chemical Contamination/ Nutrients	Low levels of contamination, no 303(d) streams	NPF		X	
Habitat Access:					
Physical Barriers	Less than one fish passage barrier	PF		X	
Habitat Elements:					
Substrate Embeddedness Percent Clean Substrate	Gravel, cobble dominant; embeddedness greater than 20%	PF		X	
Large Woody Debris (LWD)	10 to 20 pieces/100 linear feet	NPF		X	
Pool Frequency	Channel width #pools/mile 5 feet = 184 10 feet = 96 15 feet = 70 20 feet = 56 25 feet = 47 50 feet = 26 75 feet = 23	NPF		X	
Pool Quality	3.28 feet or 1 meter deep with good cover	NPF		X	
Large Pools	Each reach has many large pools (3.28 feet or 1 meter deep)	NPF		X	
Off-Channel Habitat:	Many backwaters with cover	NPF		X	
Refugia:	Sufficient with adequate buffer and riparian	AR		X	
Channel Conditions and Dynamics:					
Avg. Wetted Width/Max. Depth Ratio	Ratio is 10	NPF		X	
Stream Bank Condition	≥90% stable	AR		X	
Floodplain Connectivity	Frequent hydrologic connection to main channel	AR		X	
Flow/Hydrology:					
Change in Peak/Base Flows	Disturbance relative to undisturbed watershed	AR		X	
Increase in Drainage Network	Zero or minimum increase in drainage network	NPF		X	

Diagnostics/Pathways Indicators	Population and Environmental Baseline		Effects of the Action		
	Properly Functioning Criteria	Functionality (PF/AR/NPF)*	Restore	Maintain	Degrade
Road Density and Location	<2 miles/mile; no valley bottom roads	AR		X	
Disturbance History	Less than 15% Equivalent Clear-Cut Area (ECA); base flow, peak, and flow timing comparable to undisturbed	NPF		X	
Riparian Reserves	Riparian corridor at least 80% intact; composed of 50% endemic vegetation	AR		X	

PF = properly functioning, AR = at risk, NPF = not properly functioning

Table 2. Environmental Baseline Conditions for Bull Trout

Diagnostics/ Pathways Indicators	Population and Environmental Baseline			Effects of the Action		
	Criteria	Present condition	Functionality (FP/AR/FUR)*	Restore	Maintain	Degrade
Subpopulation Size	Mean population size greater than several thousand individuals. All life stages equally represented.	No resident populations within the action area. Individuals present during migration only.	FUR		X	
Growth and Survival	Population resilience to short-term disturbances.	Limited information is available about population resilience in the action area. However, population levels appear to be consistently low in the action area, and habitat use is limited to migration.	FUR		X	
Life History Diversity and Isolation	Migratory form is present; subpopulations exist close to other spawning and rearing groups.	Spawning occurs only in the upper reaches of the watershed. No spawning has been documented in the action area and habitat is not suitable for spawning.	FUR		X	

Diagnostics/ Pathways Indicators	Population and Environmental Baseline			Effects of the Action		
	Criteria	Present condition	Functionality (FP/AR/FUR)*	Restore	Maintain	Degrade
Persistence and Genetic Integrity	Connectivity among populations.	Little or no connectivity present.	FUR		X	
Integration of Species and Habitat Conditions	Habitat quality; connectivity between subpopulations.	Spawning habitat not present in action area; no subpopulation connectivity.	FUR		X	

FP = Functioning appropriately
AR = Functioning at risk
FUR = Functioning at unacceptable risk

Appendix E
Site Photographs

Photo 1. Upstream of Bridge facing north

Photo 2. Gravel banks immediately upstream of project site.

Photo 3. Vegetated floodplain upstream of bridge

Photo 4. Meander at bridge (facing north)

Photo 5. Bank armoring river right upstream of bridge.

Photo 6. +100 year flood at bridge

Photo 7. +100 year flood level at bridge

Photo 8. Drone photo of floodplain at approximate proposed bridge location.