SR 520 Evergreen Point
Floating Bridge and Landings Project

Environmental Compliance Plan

Appendix I
Construction Water Quality Monitoring and Protection Plan (Order No. 9011)

Prepared for Submittal to
Washington State Department of Transportation

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July 20, 2016

REVISION 6

Released for Construction

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List of Abbreviations/Acronyms

Abbreviation/ Acronym	Definition
BMP	Best Management Practice
CSWGP	Construction Stormwater General Permit
CWQMPP	Construction Water Quality Monitoring and Protection Plan
ECM	Environmental Compliance Manager
Ecology	Washington State Department of Ecology
ECP	Environmental Compliance Plan
HPA	Hydraulic Project Approval
Kenmore Yard	Kenmore Construction and Support Yard
KGM	Kiewit/General/Manson, A Joint Venture
Medina	City of Medina
NGCS	Next Generation Concrete Surface
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Unit
OHWM	Ordinary High Water Mark
RFP	Request for Proposal
SPCCP	Spill Prevention, Control, and Countermeasures Plan
SR 520 FBL Project	State Route 520 Evergreen Point Floating Bridge and Landings Project
SR 520 FBL Site	Floating Bridge and Landings Site
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WQC	Water Quality Certification
WQMPP	Water Quality Monitoring and Protection Plan
WSDOT	Washington State Department of Transportation

1.0 Introduction

Kiewit/General/Manson, A Joint Venture (KGM) has prepared this Construction Water Quality Monitoring and Protection Plan (CWQMPP) for the Washington State Department of Transportation (WSDOT) to facilitate construction of the State Route 520 Evergreen Point Floating Bridge and Landings Project (SR 520 FBL Project). This document pertains to the in-water and over-water construction activities within the SR 520 limits of construction within Lake Washington and is not applicable to any other locations that may be used to support the project.

KGM will implement this CWQMPP for any in-water or over-water construction activities within the SR 520 limits of construction within Lake Washington. A water quality monitoring and protection plan (WQMPP) is required per the SR 520 FBL Project 401 Water Quality Certification (WQC) and is intended to provide specific information on activities that will be performed within and/or over waters of the state, and provide a monitoring schedule for tracking the performance of best management practices (BMPs) used during in-water and over-water construction work within the project limits of the Floating Bridge and Landings Site (SR 520 FBL Site). For the SR 520 FBL Project, and per the WSDOT Request for Proposal (RFP), the project specific WQMPP is titled the *Construction* Water Quality Monitoring and Protection Plan (WSDOT 2010). The CWQMPP was also prepared per the requirements described in Section 2.8.3.2.3.1.3 of the WSDOT RFP, the Environmental Commitments List (Appendix C1 of the RFP), and the terms and conditions provided in Biological Opinions prepared by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) for the SR 520 FBL Project. This plan is submitted to WSDOT as Appendix I of the SR 520 FBL Project Environmental Compliance Plan (ECP).

Any changes to BMPs, procedures, and/or monitoring must be approved by the Washington State Department of Ecology (Ecology) prior to conducting the work. Approval is not necessary for minor adjustments to BMPs and/or procedures that are needed as the work is being done.

All waters generated from the land-based construction activities in the eastside uplands of the City of Medina (Medina), consisting of dewatered groundwater, stormwater, and uplands Pier 1 cofferdam dewatering effluent, will be managed under and must meet the requirements of the SR 520 FBL Project National Pollution Discharge Elimination System (NPDES) Construction Stormwater General Permit (CSWGP) for bridge and approach construction. The SR 520 FBL Site Temporary Erosion and Sediment Control and associated Stormwater Pollution Prevention Plan, and the SR 520 FBL Project Spill Prevention, Control, and Countermeasures Plan (SPCCP) provide descriptions of: the uplands construction activities, BMPs that will be implemented to reduce potential impacts to and protect Lake Washington, construction stormwater pollution prevention measures, and all discharge monitoring requirements per the CSWGP (Appendices B.2 and C of the ECP). The Concrete Collection, Containment, and Disposal Plan (CCDP) also includes BMPs to be implemented in the upland areas associated with concrete management, handling, and disposal (Appendix D of the ECP). The SPCCP also includes BMPs relevant to in-water and over-water activities.

The procedures defined in this CWQMPP will achieve the following goals:

- Document the performance of BMPs and procedures used within and over Lake Washington.

- Determine if Water Quality Standards are being met at the point of compliance as defined in Washington Administrative Code (WAC) Chapter 173-201A-200, “Fresh water designated uses and criteria.”
- Help to ensure compliance with the conditions of the 401 WQC for construction activities conducted below the Ordinary High Water Mark (OHWM) and over water.

This CWQMPP identifies the appropriate parameters to be monitored, monitoring locations, monitoring and sampling procedures, and the frequency of monitoring. It also contains the BMPs and construction procedures that will be used to reduce impacts to waters of the state during specific identified construction activities over waters and/or below OHWM. These elements are described in detail in the following sections, which refer to drawings when appropriate. This plan does not include BMPs and construction procedures for the demolition activities associated with the existing floating bridge. Demolition of the existing floating bridge is scheduled to occur from approximately December 2014 to summer 2015. Prior to the start of any demolition activities over water and/or below OHWM, an amendment to this CWQMPP will be submitted to Ecology for review and approval per the 401 WQC.

2.0 Project Description

The purpose of the SR 520 FBL Project is to build a six-lane floating bridge and landings as a component of the Interstate 5 (I-5) to Medina: Bridge Replacement and High Occupancy Vehicle (HOV) Project. Final construction and assembly of the SR 520 FBL Project will be completed in Medina, and over water on Lake Washington between Medina and the City of Seattle.

The SR 520 FBL Project involves several phases of work associated with construction of a new six-lane bridge that includes HOV lanes, bicycle/pedestrian facilities, and the ability to accommodate future light rail. The layout of the SR 520 FBL Project Site is presented in Figure I.1 and shows where the construction activities will be performed. The SR 520 FBL Site construction activities are described below:

- Mobilization activities.
- Construction of a temporary eastside construction staging area for outfitting and assembly of floating bridge components, and construction of a temporary work bridge at the Medina shoreline.
- Construction of the floating bridge structure, a fixed east approach, and transition structures between the fixed structures and floating bridge.
- Construction of a new floating bridge maintenance facility and dock located beneath the east approach structure.
- All aspects of floating bridge assembly, comprising temporary moorage, towing all pontoons to Lake Washington, assembly of the pontoon substructure, and installation of the superstructure and roadway deck.
- Deconstruction of the existing floating bridge and landing components.
- Site demobilization.

As stated above, an amendment to this CWQMPP for the activities associated with the demolition of the existing floating bridge and landings will be submitted at a later date for Ecology review and approval. The amendment will describe the specific demolition work activities, how the work will be conducted, and the BMPs that will be used to reduce impacts and/or protect waters of the state.

2.1 IN-WATER/OVER-WATER CONSTRUCTION ACTIVITY DESCRIPTION

Most of the work associated with the SR 520 FBL Project will occur below the OHWM and/or over Lake Washington. The lake is the only surface water within the project area. The discharge of polluting matter to waters of the state is a violation of the Washington State Water Pollution Control Law (RCW 90.48.080). This CWQMPP is intended to help prevent violation of that law.

All in-water work will be conducted during the in-water work windows identified in the Hydraulic Project Approval (HPA) and authorized by the Washington Department of Fish and Wildlife (WDFW) and as presented in Table I.1. The project baseline linear construction schedule is provided in Attachment I.1. The construction activity plan sheets and water quality monitoring locations are presented in Attachments I.2 and I.3. Throughout all in-water and over-water work KGM will ensure, through implementation of the BMPs described below, that all construction-related debris is collected and contained and that no debris, garbage, or fuel will enter the lake.

Visual monitoring for floating debris (trash, oil sheen, etc.) will be conducted and boats will be available during construction for debris retrieval.

During in-water and over-water activities conducted for bridge construction, KGM will comply with the SR 520 FBL Project 401 WQC (provided in Appendix A of the ECP). There are three types of water associated with bridge construction in-water and over-water activities that require management:

- **Concrete Process Water:** Concrete process water is defined as concrete slurry resulting from drilled shafts, grinding residue water, and any other concrete-derived waters. All concrete process water will be contained and collected for off-site upland disposal at a licensed facility.
- **High pH Stormwater:** High pH stormwater is defined as rainwater that falls on uncured “green” concrete during the first 7 days of the curing process. Stormwater that falls on uncured concrete will be contained, tested, and treated as necessary to ensure compliance with pH and turbidity water quality standards prior to discharge to the lake. If high pH stormwater mixes with concrete process water, then it becomes concrete process water and will be contained and collected for off-site upland disposal at a licensed facility.
- **Work Area Stormwater**: Work area stormwater is defined as rainwater that falls into bridge work areas of active construction that contain debris and/or stockpiled materials. These work areas will require that catch basins be blocked for water containment and collection. Work area stormwater will be contained, tested, and treated as necessary to ensure compliance with pH and turbidity water quality standards prior to discharge to the lake.

If rainwater falls onto clean, cured concrete surfaces and bridge work areas, it will be allowed to run off the structure or surface directly to the lake. Fully cured concrete surfaces, such as the bridge roadway or pontoons, will be regularly cleaned (e.g., sweeping, debris collection and removal, etc.) and managed under the provision of the SPCCP and the Collection, Containment, and Disposal Plan (Appendices C and D of the ECP) to allow stormwater to run off these structures directly to the lake.

The BMPs that will be implemented during the project and apply to all in-water and over-water construction activities are presented below:

- Daily vehicle and construction equipment inspection (e.g., leaks, drips, or maintenance needs).
- Vehicles will be inspected prior to entering any over-water work zone in accordance with the SPCCP (Appendix C of the ECP). Vehicles and equipment (including cranes) will be kept clean of excessive oil and grease build-up.
- When over-water fueling is necessary, the BMPs and procedures described in the SPCCP will be implemented. Temporary land-based fueling stations will be used to the extent practicable and will be located at least 50 feet away from the shoreline.
- Eco-friendly lubricants and fuel sources (e.g., vegetable-based hydraulic fluid) will be used for in-water construction where practicable.
- The over-water cranes (located on the work trestle), including the tower crane and crawler crane(s), are a relatively newer fleet of equipment that will be well maintained and regularly cleaned. Fueling BMPs, as described in the SPCCP, will be

implemented during all fueling operations. For crane storage overnight, BMPs, such as diapers and plastic, will be placed underneath the crane engines and maintained daily.

- Temporary construction staging areas will be constructed within the upland portion of the site and will include spill containment measures in accordance with the SPCCP and erosion control BMPs presented in the Temporary Erosion and Sediment Control Plan, SWPPP, and the NPDES CSWGP.
- Spill containment kits and visqueen plastic will be kept in multiple locations on-site and within construction vehicles/barges for easy deployment in the event of a spill.
- Oil containment booms to contain and localize any potential spills, and thus minimize pollution and to assist in the removal of any spilled oil, will be present and available during all construction activities.
- Absorbent materials will be placed under all vehicles and equipment 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.
- For significant equipment repairs, off-site equipment repair shops will be used to the extent practicable.
- Tie downs and other methods will be used to secure materials to aid in preventing discharges to the lake via wind forces.
- Over-water work areas and temporary stockpile materials will be covered when not in use. Nets, tarps, platforms, scaffolds, blankets, barges, and/or floats will be used as necessary to contain and control debris beneath structures being constructed.
- Curbing, bull rails, or toe boards will be installed around the perimeter of work trestles, platforms, and barges, as appropriate, to contain potential spills and prevent materials, tools, and debris from leaving the over-water structures. These applications will be installed with a minimum vertical height appropriate to contain runoff water. All concrete process water, as defined above, will be contained and collected for off-site disposal.
- Weather forecasting will be used to schedule concrete pour periods during fair weather conditions and allow for the early implementation of BMPs prior to predicted storm events to avoid and minimize any releases.
- “Pour Watches” will occur during all concrete pour events for health and safety, construction quality control, and release or spill prevention. Pour Watches will include inspection of formwork integrity and containment of all concrete process water.
- Formwork soffit systems will have edge forms and containment curbing systems that will contain concrete cure water and rainfall on curing concrete, so that the water can be collected and treated.
- Concrete will be poured in the dry or in conditions when rainwater falling on freshly poured uncovered concrete can be contained and collected for off-site disposal. Rainwater falling on freshly poured, uncured concrete will be considered high pH stormwater. High pH stormwater will be contained, tested, and treated as necessary to ensure compliance with the pH and turbidity water quality standards prior to

discharge to the lake. Concrete will be allowed to cure for at least 7 days before contact with surface water.

- When not in immediate use, Eco-Pans will be covered to prevent rainwater accumulation and minimize the generation of water requiring handling, treatment, and disposal, and to minimize the risk of a release of high pH stormwater or concrete process water.
- Concrete pumps and pipelines will be equipped with emergency cut-off valves so that no uncured concrete comes into contact with surface water.
- When construction activities are occurring on the bridge in work areas where water must be collected and treated (Work Area Stormwater), catch basins will be blocked to collect and contain construction waters.
- Treatment will include pumping the ballast water to a temporary holding tank, allowing the turbidity to settle, and treating for pH via a CO_2 bubbler or other approved BMP designed to reduce pH to within an acceptable discharge limit, as necessary.
- Barges used for construction will not be allowed to ground within the project area.
- Barges and other floating equipment shall be operated so that there is minimal suspension of nearshore sediments.

Bridge construction will include the specific in-water and over-water activities described in the following sections.

2.1.1 Establishment of the Temporary Eastside Staging Area

One of the first in-water work activities on this project will be the installation of dolphins and anchors for the construction of the eastside staging area that will be used for pontoon outfitting and assembly. The staging area will be located approximately 450 feet from the eastern shoreline of Lake Washington, as shown in Figure I.1.

The eastside staging area will utilize 4 temporary pile anchor dolphins (each consisting of four (4) 30-inch diameter steel piles) and 10 temporary Danforth-type anchors within the WSDOT right-of-way to hold the pontoons in place as they are being assembled and outfitted. Danforth-type anchors are commonly used lightweight boat anchors. The temporary pile anchor dolphins will be located on the east end of the staging area. They are required (rather than Danforth-type anchors) in this location because a rigid temporary anchoring system with lateral stability is necessary to prevent the pontoons from moving east to west and damaging the existing bridge during storm events. Temporary piles will be driven by vibratory hammer to the maximum extent possible; however, to resist the lateral and vertical loads that are expected on these piles, pile installation will likely require proofing with an impact hammer following vibratory installation.

The westside staging area will utilize 8 temporary pile anchor dolphins (each consisting of three (3) 36-inch diameter steel piles) within the WSDOT right-of-way to construct two (2) temporary storage rafts for pontoon and barge storage. The temporary pile anchor dolphins will be located on the west end of the project north of the existing bridge. They are required in this location because a rigid temporary anchoring system with lateral stability is necessary to prevent the pontoons from moving east to west and damaging the existing bridge during storm events. Temporary piles will be driven by vibratory hammer to the maximum extent possible.

Water quality monitoring for turbidity will be conducted during pile-driving operations for the establishment of the temporary eastside and westside staging areas (Table I.2).

In addition to the BMPs listed Section 2.1 above, the following in-water BMPs will be implemented during installation of dolphins and anchors for construction of the eastside staging area:

- Pile driving will occur only during approved in-water work windows identified in the HPA and authorized by WDFW, or as otherwise authorized by WDFW to minimize the potential effects on fish species (Table I.1).
- Underwater sound attenuation in the form of a bubble curtain will be used during impact pile driving and underwater noise monitoring will be conducted (Appendix J of the ECP).

2.1.2 Cofferdam Construction/Removal and Pier 1 Construction

Another early in-water work activity on this project is the construction of a cofferdam and spread footing for Pier 1 (Attachment I.3). The cofferdam will be used to prevent sediment, concrete, and steel debris from mixing with waters of the state. The construction and removal of the cofferdam will occur only during the in-water construction periods; however, once the cofferdam is installed, work inside the cofferdam can occur at any time. Two spread footings will be used for the new bridge and will exist below the mudline at a depth of approximately 2 to 4 feet, with only the bridge columns present at the mudline. Only one of the spread footings will be constructed in the water (Pier 1). The other, Pier 2, will be constructed in the upland area in Medina. The location of the Pier 1 in-water spread footing and cofferdam is presented in Attachment I.3.

The cofferdam will be constructed by vibrating template piles or beams to guide the sheet pile enclosure installation. Steel walers, frames, and struts will be installed and the sheet piles will then be vibrated about 20 feet into the substrate, around the perimeter of the walers. Interlock sealant may then be applied to sheet pile joints to keep them watertight.

After completion of the cofferdam, it will be dewatered and any trapped fish will be removed using approved WSDOT fish handling and exclusion protocols or appropriately adapted and approved methods as described in the Fish Handling Plan for KGM Operations at the Pier 1 Cofferdam (Appendix M.2 of the ECP). The area within the cofferdam will then be excavated below the existing mudline with a clamshell bucket (prior to any concrete work) and dewatered again, if necessary. All excavated sediment will be transferred to a barge, and hauled off-site for proper disposal.

Initial dewatering effluent (prior to concrete placement) will be pumped to a barge-mounted tank system for turbidity treatment. Once the suspended solids in the effluent have settled and the water is monitored to ensure compliance with turbidity water quality standards, the water will be discharged back into Lake Washington.

Following completion of excavation and initial dewatering of the cofferdam interior, and prior to the construction of the spread footing, rock fill material will be spread across the top of the soil. A 2-foot concrete slab will then be constructed within the entire interior area of the cofferdam. The cofferdam sheet piles will act as the formwork to contain the concrete, and the inward pressure of the lake water to the sheet pile walls will prevent any potential seepage or leakage of concrete outside of the cofferdam interior. This concrete slab will provide a stable and safe work surface during the construction of the spread footing and Pier 1. Following initiation of concrete work within the cofferdam, water management will be consistent with and based on the types of water described above in Section 2.1. Concrete process water will be contained and collected for off-site upland disposal at a licensed facility. Stormwater that falls on uncured concrete (high pH stormwater) will be contained, tested, and treated as necessary to ensure compliance with pH and turbidity water quality standards prior to discharge to the lake. If high pH stormwater mixes with concrete process water, then it becomes concrete process water and will be contained and collected for off-site upland disposal at a licensed facility. Uncured concrete will be prevented from contacting waters of the state.

The concrete pier columns and pier table will be constructed with cast-in-place concrete, off of the spread footings and with the cofferdam still in place. The formwork and the cofferdam enclosure will provide secondary containment for the concrete column placement. Freshly poured concrete will be covered during curing. Water entering the cofferdam (i.e., rainwater or surface water seeps) that is not in contact with uncured concrete will be contained within the cofferdam and will be pumped to the barge-mounted tank for turbidity and pH treatment as needed, prior to discharge to the lake. Concrete will be delivered from a concrete pump truck equipped with a boom arm located on the east approach work trestle.

Following construction of the spread footing and columns, the excavated area within the cofferdam will be backfilled, the cofferdam filled with lake water, and then the cofferdam steel sheet piles will be removed by vibratory methods. The sheet pile removal will occur at a slow controlled rate to minimize turbidity.

Water quality monitoring for turbidity will be conducted during the installation and removal of the Pier 1 cofferdam. Water quality monitoring is limited to only the installation and removal of the cofferdam sheets because all spread footing construction will be conducted and contained within the cofferdam.

In addition to the BMPs listed in Section 2.1 above, the following in-water and over-water BMPs will be implemented during cofferdam construction and removal and Pier 1 construction:

- The formwork used during cast-in-place concrete column construction will be secure, preventing any leaks of cure water or concrete, and concrete Pour Watches will be conducted. Visual monitoring will be conducted following the placement of the forms to ensure that the forms are secure.
- Eco-Pans and visqueen plastic will be used underneath the concrete hopper on the work trestle where concrete from the concrete trucks enters the system and a concrete pump pushes it through the slick line or pump boom.
- When not in immediate use, the Eco-Pans will be covered to prevent rainwater accumulation, minimize the generation of water requiring handling, treatment, and disposal, and to minimize the risk of an Eco-Pan release.
- Backfilled surfaces will be stabilized within the cofferdam, the cofferdam will be filled with lake water, and turbidity settlement within the cofferdam will occur prior to removing the cofferdam sheet piles.
- To minimize turbidity, the cofferdam sheet piles will be gradually removed with vibratory methods.

- All material used for the temporary cofferdam structure will be removed and properly disposed of off-site.

2.1.3 Dredging Prior to Cofferdam Construction at Pier 1

As described above, the Pier 1 cofferdam will be constructed by vibrating template piles or beams to guide the sheet pile enclosure installation. Steel walers, frames, and struts will be installed and the sheet piles will then be vibrated about 20 feet into the substrate, around the perimeter of the walers. Based on difficult pile driving at the uplands Pier 2 cofferdam location and at the Temporary East-side Staging Area (Figure I.1), it is anticipated that similar hard subsurface sediment conditions are present at Pier 1, since it is located between those two areas. To ensure that the cofferdam sheet piles are installed in their accurate locations given these hard sediment conditions, it is necessary to install the lower cofferdam frame to its final location prior to driving the sheet piles. The installation of the lower cofferdam frame will require pre-dredging of approximately 6,000 cubic yards of sediment, which is the total of the target 45,000 cubic yards plus an estimated additional 1,500 cubic yards of sloughing based on a 3V:1H repose. The dredge cut footprint is approximately 52 feet by 181 feet by 15 feet deep (Attachment I.3). Because the surface sediments (upper 5 feet of the sediment column) are not firm enough to support vertical sides, it is anticipated that the sides of the dredge cut will slough, or collapse, into the area being dredged. There may be additional sloughing that results from the vibratory installation of the sheet piling that will be used to construct the cofferdam. To account for all potential sloughing, including that directly resulting from dredging as well as from vibration during sheet pile installation, the estimated maximum area of impact is approximately 80 feet by 210 feet by 15 feet deep.

If determined to be necessary, prior to dredging, a total of 10 36-inch diameter steel pipe spuds will be installed with a vibratory hammer 50 feet from the neatline dredge cut and outside of the anticipated footprint of sloughing for vessel working on or in the cofferdam so the sheets or wale frame are not moved by vessel contact. If needed, the spud piles will remain in place for the duration that the cofferdam is in place to protect it from vessels and provide a means of mooring for vessels necessary to the cofferdam work, particularly those without their own spuds (e.g., concrete and rebar delivery barges). The installation of the spud piles may not be necessary if existing piling are sufficient for vessel mooring and to avoid vessel contact with the sheets and wale frame. If existing piling are not sufficient and without the spud piles, those vessels would otherwise have to be on anchors, some of which would extend into the navigation channel and present a navigation hazard. Following the installation of the spud piles, a full depth silt curtain (extending from the surface of the lake to the mudline) will be installed around the dredge cut footprint to contain any suspended solids or turbidity and aid in settling to reduce the potential impacts of dredging to the water column. The silt curtain will be secured to the spud piling around the perimeter of the dredged area at all times while dredging is occurring, eliminating the need to use anchors to secure the silt curtain and minimizing the additional suspended of sediments typically resulting from curtain anchors. Fish will be removed from within the silt curtain prior to the starting of dredging activities. The dredging will be completed in water depths of approximately 20 to 25 feet and within a lake environment that does not contain significant currents or tidal fluctuations. These conditions are favorable for use of a full depth silt curtain to contain turbidity. The area within the silt curtain (or the dredge cut footprint, including potential sloughing) is expected to encompass approximately 0.39 acres.

To exclude fish from the interior of the silt curtain, the silt curtain will be deployed doubled-up on itself. A skiff, or multiple skiffs, will tow the open end of the doubled-up curtain to the first piling, where it will be opened enough to allow it to encompass the first piling, then closed until the next piling is reached. This process will be repeated until all 10 pilings have been included in the interior of the silt curtain. The two ends of the curtain will then be attached at the float, creating a cell that will enclose the dredging work while excluding fish. This method of silt curtain installation will reduce or eliminate the need for further efforts to exclude or herd fish out of the interior of the cell. If the bottoms of the curtain do not remain closed during movement, additional weight will be added to help keep them together so that fish are not inadvertently introduced into the cell. The cell will be checked visually to ensure that fish have been excluded prior to the commencement of dredging.

The sediments will be mechanically dredged with a standard clamshell bucket as the subsurface conditions prohibit the use of the Ecology bucket (e.g., environmental bucket). The dredged sediments will be loaded onto receiving barges, and transported to an off-site transload facility for upland disposal. During barge sediment dewatering, BMPs as described below will be implemented to minimize potential water quality impacts. If water quality exceedances occur, the release of dewatered return water will be staggered to provide a controlled release and prevent water quality criteria exceedances at the point of compliance, or the sediment water will be contained and pumped to a barge mounted or upland treatment area for turbidity removal. Alternatively, the sediment water will be contained and handled and removed at the off-site transload facility for upland disposal. Barge dewatering will be monitored per the water quality monitoring schedule in Table I.2.

Following completion of dredging, the interior of the silt curtain will be visually and physically inspected to ensure that turbidity levels are not too elevated prior to the removal of the silt curtain. If the turbidity is elevated to a level where an exceedance of water quality criteria may be expected at the 150 feet point of compliance, the silt curtain will not be removed until the suspended sediments have been allowed to settle. In the event that the suspended sediments consist of a small particle size and are not settling, the silt curtain will be slowly opened and closed in stages such that the silt curtain enclosure footprint is slightly reduced each time to provide a staggered and controlled release of the enclosed water. Water quality monitoring for turbidity will be conducted during the opening and closing of the silt curtain if this activity is required. Following the removal of the silt curtain the wale frames will be installed in preparation for driving the cofferdam sheet piles.

After the completion of the installation of the cofferdam sheet piles, the interior lake water will be dewatered using a pump with a compliant fish screen on the inlet hose and any fish present within the cofferdam will be removed. The cofferdam cell will be visually scanned for fish prior to the last bit of water being removed. If any fish are present, personnel will walk the sediment floor with a seine net or nets and remove the fish to an aerated cooler, which will be transferred for release in the lake. If the sediment floor is not firm enough to support personnel, a skiff or skiffs will be used to catch and remove fish with seine nets and dip nets. Following dewatering, the upper 5 feet of sediment from within the cofferdam will be excavated in the dry using standard excavation equipment and excavated sediments will be handled following the same best management practices as described below and in Section 2.1. The upper 5 feet of sediment that will be excavated in the dry following cofferdam construction is not being included in the pre-dredge activities due to concerns that dredging these sediments without dewatering could potentially jeopardize the quality of the subgrade material necessary for Pier 1 footing construction.

Water quality monitoring for turbidity will be conducted during all dredging activities, outside of the enclosed silt curtain at the point of compliance as identified in Section 4.0 and Table I.2.

In addition to the BMPs listed in Section 2.1 above, the following in-water BMPs will be implemented during sediment dredging:

- Use of a full depth silt curtain to contain all suspended sediment generated from the dredging work.
- Horizontal control for dredging operations will be achieved by careful tracking of clamshell bucket positions using an electronic positioning system that provides real-time display and tracking of the horizontal position of the dredge bucket.
- Receiving derrick barges will not be overfilled to the point where recovered sediment overflows directly back to the lake and barges will be suitably equipped to prevent spillage of turbid water while *en-route* to the transload facility.
- Dredging will be conducted using procedures that will minimize potential impacts to water and sediment quality to the extent practicable. These procedures include the following:
  - ∗ Stockpiling of material below MHHW will not be allowed (i.e., each time the bucket is closed it will be brought to the surface).
  - ∗ The bucket will be required to pause for several seconds at the water surface during retrieval to release excess water.
  - ∗ Ensuring that the bucket is completely emptied of sediments over the barge before re-submerging the bucket in the lake.
- Dredging will occur only during the most restrictive (i.e., shortest) approved in-water work window (East Approach Impact Pile Driving) identified in the HPA and authorized by WDFW, or as otherwise authorized by WDFW, to minimize the potential effects on fish species (Table I.1).
- Return water draining from the barge containing dredged sediment will be treated by filtering water through straw bales and/or geotextile fabric before returning to the lake.
- During sediment dewatering, the barge will remain within the project area.
- Return water from the barge will not be allowed to discharge to the lake outside the project area (e.g., during transport to a transloading site).

2.1.4 Backfilling of Post-Dredge Sloughing Areas at Pier 1

As described above, it is anticipated that the sides of the Pier 1 dredge cut will slough, or collapse, into the area being dredged and that there may be additional sloughing that results from the vibratory installation of the sheet piling that will be used to construct the cofferdam. The areas that have sloughed outside of the cofferdam sheet piles will be backfilled with either native sediment that was dredged or with washed gravel sized rock similar to that used in the shoreline habitat mitigation areas.

If native dredged sediment is used for backfill, a silt curtain attached to the cofferdam as described above would be installed prior to the start of backfilling operations which would provide a complete enclosure for backfill placement. The silt curtain would be moved as backfilling with native sediment occurs throughout the sloughed area(s). Fish will be removed from within the silt curtain prior to the start of backfilling activities. The dredged sediment would be placed in the sloughed areas with the use of a clamshell bucket.

Water quality monitoring for turbidity will be conducted during sloughed areas backfilling within the silt curtain. If dredged native sediments are used to backfill the sloughed areas the following in-water BMPs, in addition to those identified in Section 2.1 with be implemented:

- Use of a full depth silt curtain to contain all suspended sediment generated from the backfilling work.
- Horizontal control for backfilling operations will be achieved by careful tracking of clamshell bucket positions using an electronic positioning system that provides real-time display and tracking of the horizontal position of the bucket.

If gravel is used for backfill, it will be accurately placed within the sloughed areas with use of a tremie line system and a barge-mounted hopper. A clamshell bucket will be used to load the gravel from a barge to the barge-mounted hopper. Water quality monitoring for turbidity will be conducted during the placement of the gravel in the sloughed areas. If washed gravel/rock is used to backfill the sloughed areas the following in-water BMPs, in addition to those identified in Section 2.1 with be implemented:

- The gravel backfill will be placed in the barge-mounted hopper with a controlled clamshell bucket to minimize turbidity.
- Clean gravel backfill (i.e., without substantial fines) will be used to minimize turbidity.
- A tremie line will be used for accurate placement of gravel within the sloughed areas.
- During gravel loading to the hopper for backfilling, the clamshell bucket will be fully closed and not overfilled to prevent the release of any gravel between the supply barge and the hopper barge.

2.1.5 Construction of the East Approach Temporary Work Trestle

A temporary work trestle will be constructed along the east side of Lake Washington (Attachment I.3). The work trestle will consist of heavy timber decking supported by steel beams. The trestle will be supported by 23 24-inch steel piles and at the end of the trestle 13 24-inch steel piles will be installed to support a movable unloading ramp and an alignment dolphin. A vibratory hammer will be used to initially insert the temporary steel piles; however, an impact hammer will be used to complete the installation and confirm the load-bearing capacity of each pile at the end of the pile-driving process. During impact pile driving a bubble curtain sound attenuation device will be employed to completely surround the piles during impact driving.

Water quality monitoring for turbidity will be conducted during pile-driving operations for the construction of the east approach temporary work trestle.

In addition to the BMPs listed in Section 2.1 above, the following in-water and over-water BMPs will be implemented during construction of the temporary work trestle:

- Pile driving will occur only during approved in-water work windows identified in the HPA and authorized by WDFW, or as otherwise authorized by WDFW, to minimize the potential effects on fish species, unless otherwise authorized (Table I.1).
- Underwater sound attenuation in the form of a bubble curtain will be used during impact pile driving and underwater noise monitoring will be conducted.

- Material on the trestle will be secured with tie downs or similar devices and bull rails or toe boards will be installed around the perimeter of the work trestle to prevent any over-water releases of debris.
- The work trestle will be regularly swept and cleaned to prevent over-water releases of dirt, dust, or debris.

2.1.6 Drilled Shaft Construction

The fixed portions of the bridge on the west side of Lake Washington will be supported by reinforced concrete drilled shaft foundations. Four drilled shafts and concrete support columns will be constructed at the western terminus of the floating span to support the eastbound and westbound transition spans. Four approximately 12-foot diameter drilled shafts will comprise a single pier bent (Pier #36) of the future west approach span.

In addition, drilled shafts will be used for five shallow anchors where the use of gravity anchors would not allow for the required navigational water depth. Drilled anchor shafts are constructed the same as drilled shafts, but shaft anchors are smaller and approximately 10 feet in diameter. The locations of the drilled shaft and drilled shaft anchors are included in Attachment I.2.

Drilled shaft construction requires an initial installation of temporary piling and construction of a template to facilitate the precise placement of the shafts. Then a steel casing of specified diameter and length is installed and the interior of the shaft steel casing is excavated to a specified diameter and depth. Next, a steel reinforcing cage is installed and the interior of the shaft is backfilled with reinforced concrete, which for anchor construction ends at approximately 6 feet above the mudline, and for drilled shaft construction ends at approximately 7 feet above lake level. The shaft steel casing will be installed using a vibratory hammer, and the steel reinforcing cage is set inside the open shaft and hung at elevation.

During construction, the steel casing extends out of the water, containing all material within the casing and preventing releases to open water. The interior of the shaft casing will be excavated using an auger or clamshell bucket supported by a floating derrick. The excavated or augured spoils will be fully contained and will be loaded onto receiving barges and transported to an off-site transload facility for disposal. Since the drilled shafts are backfilled with concrete, displacing water and sediment material, and the concrete slurry is recirculated with the auger, the resulting waste slurry and all associated slurry waters and sediment will be pumped into barge-mounted waste bins and the barges will go to a transloading facility for off-site disposal. After the shaft casing is backfilled with concrete, the shaft casing will be cleaned out and then cut off by a diver at the top of the concrete or at the mudline.

Water quality monitoring for turbidity will be conducted during the installation of the drilled shaft casings. All other drilled shaft construction activities are contained within the casing, and all excavated sediments, concrete slurry, and slurry waters will be contained, collected for offsite disposal, and will not be allowed to discharge to the lake.

In addition to the BMPs listed in Section 2.1 above, the following in-water BMPs will be implemented during drilled shaft construction:

- The shaft steel casing will be installed with vibratory methods.
- Material excavated from within casing (slurry and sediment) will be loaded onto receiving barges that will not be overfilled to the point where material overflows directly back to the lake.

- Eco-Pans and visqueen plastic will be used to contain and collect any concrete or slurry drips to prevent spills.
- Barge-mounted slurry waste bins that will receive concrete and/or slurry water will be lined to prevent leakage.
- The tops of the shaft casings will be cleaned prior to cutting of the casing by either vacuum or agitation and pumping or air lift, depending on the depth of the drilled shafts and shaft anchors.

2.1.7 Anchor Installation

The new floating bridge will be secured in place three types of anchors. As with the existing bridge, the two primary anchor types will be gravity anchors for harder lake bed materials and sloped areas (likely 8 such anchors, near the shores), fluke anchors for soft bottom sediments and flat areas (likely 40 such anchors, middle of the lake), and 5 drilled shaft anchors in shallow areas of the lake, to the north of the new bridge on the east side of the lake, and to the south of the existing bridge near Pier 36, where gravity anchors would present a navigation hazard. Both the gravity and fluke types of anchors will be deployed using a barge-mounted crane. Drilled shaft anchors will be constructed using the same equipment and methodology as the drilled shafts as described above in Section 2.1.4. Following installation, anchors will be connected to the floating pontoons with high-strength steel cables. The locations of the gravity, fluke, and shaft anchors are presented in Attachment I.2.

Fluke anchors are installed using a combination of their own weight and water-jetting to set them below the mudline. Water supplied by pumps and hoses is jetted through pipes cast into the concrete anchors. As the high-pressure water exits the bottom of the anchor, it liquefies the soft substrate and allows the anchors to penetrate the substrate. Once fluke anchor installation has started, it cannot be stopped or the jet nozzles will become plugged and the fluke anchor would be stuck at the depth at which the jetting stopped. The typical duration of the installation of each fluke anchor is expected to be up to 8 hours, but could potentially be as short as 2 to 3 hours, depending on the site-specific sediment and equipment conditions. The depth of the fluke anchors prevents the use of containment BMPs to address turbidity. The water quality standards (WAC 173-201-200), as described in detail below in Section 3.0, are based on the aquatic life use of the lake, which will be Core Summer Salmonid Habitat. The approximate depth range at which elevated turbidity is a concern to potentially impact aquatic life is from the surface to approximately 40 to 60 feet below the water surface. The fluke anchors and associated water-jetting will be used for the deepest anchor locations, approximately 180 feet or more. Additionally, in June 2011, WSDOT conducted a study to summarize the potential effects on lake circulation from the new floating bridge, which will be deeper, longer, and wider than the current bridge. Lake Washington water temperature profiles that were collected between March and September in the years 2008, 2009, and 2010 indicate that seasonal stratification occurs in the shallow depths of the lake (between the surface and 65 feet), but that temperature does not vary at the deeper depths of the lake, below approximately 65 feet. Based on these temperature profile data that indicate lake water at deeper depths is not driven by surface mechanisms, turbidity at the deeper depths is not expected to affect the overlying shallow water. Therefore, the unavoidable turbidity that will be generated during installation of the fluke anchors is not expected adversely impact the aquatic life within the shallower depths of the lake. KGM will conduct visual water quality monitoring for turbidity plumes throughout the duration of fluke anchor installation. If a plume of turbidity is observed, documentation and contingency monitoring will occur, as described below in Section 4.2.

Gravity anchors are planned to be used in areas with harder lake bed materials and in sloped areas. Fill will be required to obtain level substrate surfaces for gravity anchor installation. The fill will consist of rock fill pads on the sloping portion of the lake bed. The rock fill will be barged into the work area, and will be placed with clamshell buckets. If excavation of the sloped substrate is required for gravity anchor installation, the excavated material will be placed out of the excavation and anchor installation area and will not be removed from the lake bed. Rock will be accurately placed within each of the four internal cells of the gravity anchor, once placed, with use of a tremie line system and a barge-mounted hopper. A clamshell bucket will be used to load the rock from a barge to the barge-mounted hopper.

Water quality monitoring for turbidity will be conducted during the installation of gravity anchors, including the excavation and/or leveling of sediments and the placement of the gravity anchor.

Shaft anchors will be constructed in the same manner as the drilled shaft foundation elements. Refer to Section 2.1.4 for the description of the drilled shaft construction activities and associated BMPs.

In addition to the BMPs listed in Section 2.1 above, the following in-water BMPs will be implemented during gravity anchor installation:

- The rock fill will be placed with a controlled clamshell bucket to minimize turbidity.
- Clean rock fill (i.e., without substantial fines) will be used to minimize turbidity.
- An environmental clamshell bucket will be used for the dredging/excavation of surface sediments as required for gravity anchor placement; however, in the event that the environmental clamshell bucket encounters debris or cannot successfully dig through the material, heavier digging using a standard clamshell bucket may be required.
- Controlled placement of any excavated material outside of the gravity anchor installation area to minimize turbidity.
- A tremie line will be used for accurate placement of rock within the interior gravity anchor cells.
- During rock loading to the hopper for gravity anchor filling, the clamshell bucket will be fully closed and not overfilled to prevent the release of any rock between the rock supply barge and the hopper barge.

2.1.8 East Approach Construction

The fixed portion of the east approach will be completed using the segmental concrete-balanced cantilever construction technique. This method will also be used for the construction of the bridge on top of the Pier 1 and Pier 2 columns.

Segmental concrete-balanced cantilever construction begins with construction of “pier tables” above the columns from which to begin construction of the balanced cantilever bridge sections. A pier crossbeam is constructed to connect the pier tables and then form travelers (which are mechanical formwork) will be installed on this initial segment of the bridge. The forms, including the soffit support system, will be extended out from the pier in both directions. Rebar will be installed and concrete poured to create cantilevered bridge sections extending from the pier. Concrete will be delivered from a concrete pump truck equipped with a boom arm located either on the uplands or on the work trestle, and possibly through the use of a slick line. All concrete process water will be collected for disposal with appropriate BMPs described in Section 2.1 and below. High pH stormwater will be contained, tested, and treated as necessary to ensure compliance with the pH and turbidity water quality standards prior to discharge to the lake. In-water water quality monitoring will not be performed during east approach construction; however, contingency monitoring will be performed in the event of an unauthorized release as described in Section 4.2.

Following concrete placement, the bridge sections will be post-tensioned. As part of the post-tensioning process, steel reinforcing cables will be placed in ducts within the structure, the steel tensioned, and then the ducts pressure grouted. BMPs for pressure grouting are described below. Epoxy will also be used in the post-tensioning process with similar containment BMPs as those identified below for the pressure grouting work.

In addition to the BMPs listed in Section 2.1, the following over-water BMPs will be implemented during fixed bridge superstructure construction:

- Formwork soffit systems will have edge forms and containment curbing systems that will contain concrete process water, so that the water can be collected and treated.
- Eco-Pans and visqueen plastic will be used to contain and collect any concrete or slurry drips to prevent spills. Waste bins that will receive concrete and/or slurry water will be watertight.
- Eco-Pans and visqueen plastic will be used underneath the concrete hopper in the uplands or on the work trestle where concrete from the concrete trucks enters the system.
- Concrete line cleaning will be conducted by hand on the waste bin barges or other contained areas to minimize potential releases. Grout, followed by water, and then a final sponge “rabbit” will be pushed through the concrete line to ensure removal of all concrete within the line for line maintenance and prevention of line failures after each pour.
- Dry grout bags will be stored under plastic cover.
- A small portable grout mix plant will be used for grout preparation. Grout preparation, including the grout mix plant placement, will be conducted within areas that have secondary containment, using Eco-Pans, visqueen plastic, and temporary curbing.
- Eco-Pans and visqueen plastic or plastic containment buckets will be used at the ends of post-tensioning ducts to contain and collect any grout and/or epoxy and to prevent spills.

2.1.9 Floating Bridge Superstructure Outfitting

Floating bridge superstructure outfitting consists of the construction of bridge superstructure and roadway decking on the top of the pontoons. Pontoon outfitting includes constructing the columns that support the roadway, installing pier cross beams between the columns, and placing and connecting the precast concrete roadway deck panels.

There are five pontoon assembly cycles anticipated for the eastside staging area. Up to 16 pontoons would be present in the eastside staging area at any given time during the 3-year construction period. Temporary moorage and outfitting at the eastside staging area could last up to 3 months for each cycle of pontoons. On-site outfitting will initially commence at the eastside staging area. Outfitting efforts could continue at this location until the next complete cycle of pontoons arrives from the fabrication sites, or just prior to the arrival of the new pontoons all completed work may be shifted to the permanent bridge location where outfitting will be completed.

Most of the bridge superstructure to be installed on the pontoons is comprised of pre-cast concrete components that will be constructed in upland controlled environments and will be barged to the eastside staging area for installation. Cast-in-place concrete columns will be constructed on the pontoons to support pre-cast cross beams, girders and deck panels. Small-scale “closure pours” of cast-in-place concrete will be used to connect deck panels and cross beams. Following completion of the concrete work, the superstructure components will be post-tensioned. As part of the post-tensioning process, steel reinforcing cables are placed in ducts within the structure, the steel is tensioned and then the ducts are pressure grouted. BMPs for pressure grouting are described below. Epoxy will also be used in the post-tensioning process with similar containment BMPs as those identified below for the pressure grouting work.

For outfitting work, all cast-in-place concrete work will be conducted above the pontoon surface. Each area where cast-in-place concrete work is conducted will have operational surrounds to collect and contain concrete process water. Derrick barge-mounted cranes will be used for handling and installation of the precast concrete components placed on the pontoons in the eastside staging area.

For outfitting operations, concrete will be delivered to either the eastside staging area or the bridge final alignment by two different mechanisms. Concrete will be provided to the eastside staging area using a hard-line pumping system (slick line) from a fixed location adjacent to the existing bridge on the Medina uplands, and/or concrete will be provided to the bridge final alignment via moored barges and concrete trucks. For this delivery system a barge will be moored off of the work trestle ramp, and another barge will be moored off the other side of the primary barge. The moored barges form a rigid, solid “barge bridge” that connects to the pontoon that will be outfitted. Concrete trucks would then be able to drive down the work trestle platform, down the ramp, and across the barge bridge to deliver concrete to the pontoons via the truck hopper. When the barge bridge is in use for concrete delivery the barges will be spudded down; however, when concrete is not being delivered, the barge spuds will be pulled up and the barges will relocate. The barge bridge used for concrete delivery provides a rigid working platform, and the same BMPs that will be implemented during concrete delivery via the eastside staging area will be employed during operation of this delivery system. Concrete trucks supplying concrete to the eastside staging area and bridge final alignment for outfitting will ingress/egress at the Medina property, adjacent to Evergreen Point Road.

Washout areas and procedures will be established on-site for all concrete-related activities. As described in the CCDP (Appendix D of the ECP) concrete trucks will not be washed out into storm drains, open ditches, streets, or streams. Concrete washout facilities will be located a safe distance away from storm drains or open drainage facilities, and a minimum of 50 feet away from water bodies, and away from construction traffic or access areas to prevent disturbance.

A concrete slick line delivery system would run from the abutment of the existing east high-rise, eastward along the edge of the existing bridge and newly constructed employee access walkway, down to the existing pontoons, and then laterally to the staging area. Redi-mix concrete trucks would deliver concrete to one or more line pumps located at the east abutment; from there, the concrete will flow through piping to the staging area. As pontoons are added from the east to the west, the delivery system will be extended with each pontoon. The total planned length of the system is approximately 2,500 feet. Flexible connections utilizing steel reinforced concrete pump hoses will be used where necessary at transition points, and for connections to the placement boom. Custom-made brackets will be used to clamp the line to the existing bridge and access walkways to cross over to the staging area.

At the end of each concrete pour the line will be cleaned by discharging the remaining concrete in the line into lined waste bins (approximately 10 cubic yards in size) located on pontoons or barges. The boom connected to the pipeline will extend to the waste bins over visqueen plastic, to prevent any over-water releases. The bins will be transported off-site and replaced as required. The concrete waste within the waste bins will be removed off-site for proper disposal.

Any rainwater that falls on the uncured concrete components during the first 7 days of curing will be considered High pH stormwater. High pH stormwater will be contained and tested to ensure compliance with the pH and turbidity water quality standards prior to discharge to the lake. In-water water quality monitoring will not be performed during superstructure outfitting; however, contingency monitoring to be performed in the event of an unauthorized release as described in Section 4.2. In addition to the BMPs listed in Section 2.1 above, the following over-water BMPs will be implemented during superstructure outfitting and concrete delivery:

- Eco-Pans will be used underneath the concrete hopper on the barge where concrete from the concrete trucks is provided to the pontoons.
- Concrete trucks and/or equipment will not be washed out or cleaned on the barge bridges. All concrete cleaning will be done in an upland-designated washout area with containment BMPs (refer to the CCDP, Appendix D of the ECP).
- Eco-Pans and visqueen plastic will be used to contain and collect any concrete or slurry drips to prevent spills. Waste bins that will receive concrete and/or slurry water will be watertight.
- Dry grout bags will be stored under plastic cover.
- A small portable grout mix plant will be used for grout preparation. Grout preparation, including the grout mix plant placement, will be conducted within areas that have secondary containment, using Eco-Pans, visqueen plastic, and temporary curbing.
- Eco-Pans and visqueen plastic or plastic containment buckets will be used to contain and collect any grout and/or epoxy and to prevent spills.
- Temporary curbing will be installed in each area where concrete is being poured. Concrete process water will be contained within the temporary containment area with curbing and visqueen plastic.
- Edge forms will be used to fully contain concrete process water and high pH stormwater.
- Formwork will be secure and watertight to fully contain all concrete process water and high pH stormwater.

Additional BMPs if the concrete slick line delivery system is used:

- The concrete pumps that feed the slick line will be placed at the east abutment because it is the closest point to the water line that truck access can be established (due to the very steep slope).
- The piping system will be located on the employee access walkways to the staging area such that it can be continuously inspected and maintained.

- Concrete slick line containment BMPs, such as Eco-Pans and visqueen plastic, will be readily available and focused on the flexible joints of the line, which are more vulnerable to wear and tear and leaks than the rigid portions of the line. The concrete slick line will continuously be inspected to ensure integrity and conduct preventive maintenance (e.g., if any sections of the pipe appear weak or thin, or small leaks are noted the line will be depressurized, shut off, opened, cleaned and repaired, and reconnected).
- The concrete pipeline will be supported upon the decking of the main access walkways with toe boards, which will serve as secondary containment along the majority of the routing.
- Eco-Pans will be used underneath the concrete hopper on the uplands where concrete from the concrete trucks enters the system and a concrete pump pushes it through the pipeline.
- The concrete pipeline will be rigid steel pipe with restrained gasketed joints. During line connections or during cleaning, secondary containment BMPs, such as Eco-Pans and visqueen plastic, will be readily available and used.
- Concrete line cleaning will be conducted by hand on the waste bin barges or other contained areas to minimize potential releases. Grout, followed by water, and then a final sponge “rabbit” will be pushed through the concrete line to ensure removal of all concrete within the line for line maintenance and prevention of line failures after each pour.

2.1.10 Connection of a New Side Sewer to the Existing Sanitary Sewer Main

An existing City of Bellevue lake line sewer main runs north to south along the Medina shoreline. The sewer line is located approximately at the lake water’s edge, although the elevation and horizontal location varies along the shoreline. At the Medina property for the SR 520 FBL Project, a clean-out, where an existing side sewer joins the main, is located underneath an existing private dock at the northern right-of-way boundary. As part of KGM’s work for the SR 520 FBL Project, the dock will be demolished and KGM will construct a new 8-inch ductile iron side sewer line that will connect to the City of Bellevue’s lake line sewer main, near the existing side sewer connection. The existing lake line sewer main is located along the shoreline at the edge of the lake water level. The work to be performed to connect the new side sewer line to the existing lake line sewer main is expected to consist of limited hand digging or excavation with small equipment of the shoreline sediment around the existing line in approximate dimensions of 2 to 3 feet wide and 2 to 3 feet deep. The work will be conducted in the dry as much as possible and blocked off from the lake with the use of a temporary dam constructed of sandbags or equivalently effective BMP. The location of the existing side sewer connection and the location of the new side sewer line are shown on the Medina TESC site plans (refer to Appendix B.2 of the ECP).

Water quality monitoring will be performed for turbidity during the shoreline sewer line connection activities.

In addition to the BMPs listed in Section 2.1 above, the following in-water BMPs will be implemented during the connection of new side sewer line:

- Work will be conducted as expediently as possible for the disturbance of the shoreline sediment and sewer line connection. Work will be targeted to be performed during lower lake water levels to maximize the duration of the work to be completed in the dry and minimize the amount of water to be displaced.

- The sewer line work area will be blocked off from the lake with a temporary dam constructed of sandbags or equivalent.
- All work activities will be conducted by equipment located at the top of bank, or by hand within the work area. Excavated material will be immediately placed in the upland area of the site and appropriately managed per the Temporary Erosion and Sediment Control (TESC) requirements.
- After the new surfaces within the work area are stabilized, the sandbag dams or equivalent will be removed in a manner to minimize the generation of turbidity.
- Upon completion of the sewer line connection work, all material used for the construction of the temporary dams will be removed from the site and the site returned to the pre-project or improved conditions.

2.1.11 Assembly of Bridge Floating Components

Prior to superstructure outfitting, pontoons will be joined into clusters. To join pontoons, divers will clean the joining ends of the pontoons via pressure washing, remove temporary towing plugs, and install rubber seal elements. Once pontoons have been brought together with the help of tugs or boats, assembly bolts will be installed, and the watertight joints will be dewatered with a small electric pump and grouted. Once the pontoon joining is completed, the temporary anchors will be removed and the joined pontoons, now a completed section of the bridge, will be towed to the final bridge position.

Once the joined pontoons are in final bridge position, anchor cables will be connected and the sections of the bridge and pontoons to be joined will be pressure washed before assembly. pH water quality monitoring adjacent to the pontoon or bridge surface being cleaned will be conducted during pressure washing. Since these concrete floating bridge components will be fully cured prior to towing, any rainwater on the surfaces will be allowed to run off directly into the surface water.

The BMPs described in Section 2.1 above will be implemented during the assembly of the floating bridge components.

2.1.12 Discharge of Temporary Pontoon Ballast Water

Each pontoon used in constructing the new bridge will contain both rock and water ballast. Ballast water is required in order to make adjustments to trim and level the pontoons during outfitting and assembly. Prior to towing the pontoons to Lake Washington, the inside cells of the pontoons to receive ballast water will be cleaned at the casting facility (the Concrete Technology Corporation Pontoon Casting Facility Tacoma or Grays Harbor) to remove dust and debris before the ballast water is placed in the cells. The water ballast added to the pontoons at the CTC Facility and Grays Harbor will be fresh water, likely from the fire water systems. The pontoons will have cells dedicated to water ballast, with water and rock ballast kept separate. The ballast water will require continuous adjustments (addition and removal) during staging and outfitting for pontoon trim adjustments. The pump intake for water ballast addition will be screened to avoid fish entrainment and impingement. Once the new bridge section comprised of joined pontoons is in final bridge position, all of the temporary ballast water will be pumped out of the pontoons, the ballast water cells cleaned via pressure washing, and the final rock ballast will be added. The rock ballast will be placed in the pontoons with the use of a barge-mounted conveyer. The pH and turbidity of the temporary pontoon ballast water will be tested to ensure compliance with the pH and turbidity water quality standards prior to discharge of all ballast water, including both the discharge of water for trim adjustment during outfitting, and the final discharge of ballast water prior to pontoon interior cleaning and final rock ballasting as described above. If the pH or turbidity of the temporary pontoon ballast water is found to be greater than the respective water quality standard, the ballast water will be treated and tested again to ensure compliance with water quality standards prior to discharge.

In addition to the BMPs listed in Section 2.1 above, the following over-water BMPs will be implemented during the discharge of temporary pontoon ballast water:

- The pontoons will be cleaned at the casting facility prior to towing and entry into the lake to prevent dust or debris impacts to the lake from towing and temporary ballast water.
- The pontoon water ballast cells will be cleaned prior to final rock ballasting to prevent any biological growth within the cells of the pontoons.
- During the conveyance of rock ballast to pontoon interior cells for final ballasting, the pontoon and surfaces will be cleaned and managed in accordance with the SPCCP (RFP Section 7C and Appendix C to the ECP) to allow for the runoff of normal stormwater (i.e., rain fall) to the lake and prevent impacts to water quality.
- During the conveyance of rock ballast to pontoon interior cells for final ballasting secondary containment, such as shielding, will be used at the end of the rock conveyer to prevent releases of rock to the lake.

2.1.13 Bridge Deck Grinding and Texturing

There are two types of concrete grinding that will be required for construction of the floating bridge. The first will be the surface smoothing grinding to remove roadway imperfections, and the second will be texturing. KGM will apply a Next Generation Concrete Surface (NGCS) texture to all mainline Portland Cement Concrete Pavement driving lanes, bridge approach slabs, and bridge decks. The NGCS grinding will eliminate joint or crack faults and provide lateral drainage by maintaining a constant cross slope between grinding passes in each line.

Concrete slurry and grinding residue will be removed from the bridge roadway on a continuous basis immediately behind the grinding operations. Concrete slurry and grinding residue will not be allowed to drain into the lake, and will be collected via vacuum and transported off-site via truck to a permitted disposal site. Water quality monitoring will not be performed during bridge deck grinding and texturing; however, contingency monitoring will be performed in the event of an unauthorized release of concrete slurry as described in Section 4.2.

In addition to the BMPs listed in Section 2.1 above, the following over-water BMPs will be implemented during grinding:

- The bridge barrier rail will be in place during all grinding activities.
- Bridge deck drains will be plugged and checked to ensure water capture, prior to grinding, and all concrete slurry and grinding residue will be removed via vacuum from the bridge roadway on a continuous basis immediately behind the grinding operations and transported for off-site disposal.
- Water will be used to minimize and control grinding-generated dusts and residues. Grinding waters will be removed via vacuum from the bridge roadway on a

continuous basis immediately behind the grinding operations and transported for off-site disposal.

2.1.14 Preparation and Application of Bridge Pigmented Sealer

As part of final bridge aesthetics, a pigmented sealer will be added to the exposed above-ground and above-water surfaces of the bridge, excluding the pontoons and the roadway deck surface. The pigmented sealer will be applied to the following bridge structures and architectural elements: all sides of the outermost girder of any structure, all exposed sides of the superstructure, all exposed sides of cap beams, columns, all walls (retaining, pier, abutment, and noise), barriers, and railings. The bridge surfaces will be prepared by surface cleaning prior to applying the pigmented sealer. Surface preparation cleaning, neutralization of the surface, and subsequent penetration of the pigmented sealer will be achieved by light sandblasting. A mesh screen will be hung in place on the windward side of the bridge structure during sand blasting to block wind and assist with capture of the sand blast particles. The sand blast particles are large sand grains that readily settle and fall onto the underlying concrete surfaces and plastic sheets for containment. The sand blast particles will be immediately swept and/or vacuumed behind the blasting operations.

The pigmented sealer is a spray-on application that will be applied with the use of pressurized spray wands. The spray nozzle on the wand will be positioned next to the concrete surface for accurate and controlled application. Per the WSDOT standard specifications (6-02.3(14)C), the pigmented sealer will not be applied to damp surfaces, nor will it be applied when the air is misty, or otherwise unsatisfactory for the work. Water quality monitoring will not be performed during preparation and application of bridge pigmented sealer; however, contingency monitoring will be performed in the event of an unauthorized release as described in Section 4.2.

In addition to the BMPs listed in Section 2.1 above, the following over-water BMPs will be implemented during grinding:

- A windward screen will be in place during sand blasting operations to block the wind and assist with capture of sand blast particles.
- Visqueen plastic will be used under sand blasting areas to contain and collect sand blasting particles.
- All sand blasting particles will be removed via sweeping and vacuum from the bridge surfaces and plastic on a continuous basis immediately behind the sand blasting operations and transported for off-site disposal.
- The pigmented sealer spray nozzle will be positioned adjacent to the concrete surface for accurate and controlled application of the sealer.
- Any opening or transferring of the sealer from the original containers will occur within secondary containment consisting of a plastic container or pan and visqueen plastic.

2.1.15 Maintenance Facility Dock Construction

The proposed bridge maintenance facility will be constructed underneath the new east bridge approach structure, between the east shore of Lake Washington and Evergreen Point Road. A component of the proposed maintenance facility is the construction of a new dock to replace the current moorage facility for maintenance vessels at the mid-span of the existing floating bridge. The dock will consist of a fixed (not floating) approach pier and service platform. A fixed structure is required to provide safe and stable boat access during rough weather and waves.

The approach pier will be elevated above the water and land. The T-shaped pier will start at the maintenance building and extend approximately 120 feet over the water, with 2 mooring dolphins. The pier and platform will be constructed of reinforced concrete and steel and sit on nine (9) 24-inch-diameter in-water precast concrete piles, and 2 additional moorage dolphin piles. A vibratory hammer will be used to initially insert the precast concrete piles; however, an impact hammer will be used to complete the installation and confirm the load-bearing capacity of each pile at the end of the pile-driving process. Impact pile driving of concrete piles does not generate underwater noise at the level of impact driving steel piles; therefore, a bubble curtain sound attenuation device will not be required. Water quality monitoring will be performed for turbidity during pile-driving operations for the construction of the maintenance facility dock.

The maintenance facility dock will be constructed with a combination of land-based and water-borne equipment that can access the shallow water work area.

In addition to the BMPs listed Section 2.1 above, the following in-water BMP will be implemented during construction of the maintenance facility dock:

- Pile driving will occur only during approved in-water work windows identified in the HPA and authorized by WDFW, or as otherwise authorized by WDFW, to minimize the potential effects on fish species (Table I.1).

2.1.16 Shoreline Mitigation Project Construction

Mitigation for the I-5 to Medina Project will occur at several sites throughout the region. One of these mitigation sites is the shoreline area in Medina near the proposed maintenance facility. The shoreline mitigation project includes the removal of wood, rock bulkheads, and rip-rap, and regrading and replanting the shoreline and riparian area to provide a naturally functioning habitat. In addition to the shoreline and riparian activities, 0.75 acres of offshore habitat will be supplemented with gravel suitable for sockeye spawning. This in-water mitigation activity will be conducted by KGM. KGM will place spawning-suitable gravel with the use of an excavator for gravel staged either on a barge or upland. Water quality monitoring will be performed for turbidity during gravel placement operations.

In addition to the BMPs listed in Section 2.1 above, the following in-water BMPs will be implemented during gravel placement:

- The gravel spawning substrate will be placed with a controlled clamshell bucket to minimize turbidity.
- If the gravel will be staged on an over-water barge, during gravel transfer from the barge to the mitigation area, the clamshell bucket or excavator bucket will not be overfilled to prevent the release of any gravel between the gravel supply barge and the mitigation area.

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2.1.17 Pontoon Repair Work in Floating Coffercell

Two pontoons (U and V) will require repairs on both ends of each pontoon. With the supplemental pontoons attached, the pontoons will be too wide to fit through the Ballard Locks for repairs. To remedy this, KGM is constructing a metal floating cofferdam (Coffercell) to attach to the ends of the pontoons to remove the water and provide a dry working area to facilitate the pontoon repairs. The coffercell is an open top, box shaped, floating containment device made of steel that is specifically designed to attach around the ends of the damaged pontoons. It will be assembled at an offsite yard and floated into Lake Washington on a barge. The coffercell will be launched off the barge and will have supplemental flex-i-floats attached to it for balancing. After the coffercell is balanced it will be floated into place around the end of the pontoon and the rubber seals will be closed. Once attached to the pontoon the coffercell will be dewatered of all lake water and will be checked for leaks. Divers will seal the leaking joints to prevent leaking using Splash Zone sealing compound. Once dewatered and dried out the coffercell will be used as the work platform for performing the repairs to the damaged pontoons.

In-water water quality monitoring will not be performed during coffer cell de-watering; however if there is a visual change in the lake, not due to rust, contingency monitoring will be performed as described in Section 4.2.

In order to complete the repairs KGM will drill out damaged portions of concrete on the ends of the pontoons and fill them with grout and epoxy using small manual equipment. The repair grout will be delivered using small buckets due to the limited quantity needed for the repairs. Prior to disconnecting the coffercell from the repaired end of the pontoon, KGM will ensure the coffercell is cleaned to the greatest extent practicable to remove all contaminants prior to flooding the coffercell with lake water. This will mitigate the possibility of the water becoming contaminated between cycles as the lake water enters the coffercell. This process will be repeated over 4 cycles with each cycle lasting approximately 6-8 weeks. This work activity is anticipated to begin in early December 2013 and will continue through July 2014. The work will take place in Lake Washington approximately 1000 ft west of the East Side Staging Area, north of the 520 Bridge within the ROW where the water is at least 100 feet deep. This location was selected to keep the work outside of the fish migration channels as another preventative measure to limit the amount of fish that could potentially be impacted by the coffer cell work.

Water quality monitoring will not be performed during pontoon repair work; however in the event of an unauthorized release of grout or process water, contingency monitoring will be performed as described in Section 4.2.

In addition to the BMPs listed in Section 2.1 above, the following BMPs will be implemented:

- All grout and concrete mixes will be contained in seal containers
- Concrete washout/concrete slurry will be contained in Eco Pans and will be recycled.
- Any fresh lake water entering the coffercell area will be segregated and pumped back into the lake to prevent comingling with processed water.
- All epoxy containers and other chemicals used will be stored in containment to prevent spills and comingling with lake water.
- Processed water will be pumped into Baker tanks for proper disposal.

2.1.18 Existing Bridge Demolition – Deck, Girder, Crossbeam and Column Demolition

The road deck on the approaches will be demolished by stitch breaking the decking between the girders or saw-cutting the concrete between the girders. When stitch breaking is utilized, a hoe ram will break the concrete between the girders, as well as the diaphragm and girder ends after girders are removed. When saw-cutting the deck, which is anticipated only for span 43, the end and diaphragm will still require the use of a hoe ram to remove the deck over the diaphragm and the diaphragm itself. When the diaphragm has been removed, the remaining deck can be removed with a saw. The cuts will angle slightly inward with depth, such that the sawed section acts as a plug and cannot fall through the deck to the lake below. Holes will be drilled in the deck, through which pins can be inserted and rigging attached to allow the deck section to be removed by crane. After the cuts along the girders have been completed, the final cut will be made to cut the deck section to length and it will be removed. Sidewalk sections will be demolished in place with a small breaker on a skid-steer (Bobcat).

The girders and crossbeams will be broken free of the bridge and lowered down onto barges. Once on the barge, the girders and crossbeams will be broken down to smaller pieces as necessary on the barge within the construction limits. In order to demolish the existing concrete approach span column piles, the operation will require in-water work and modifications to the lake bed. The depth of the water in the column work areas varies from 10 to 30 feet in depth. A derrick crane will be deployed to support and handle the column removal. There are 13 column bents that need to be removed. The crane will use a clamshell bucket to remove lake bed material away from the base of the columns so that the columns are exposed and can be cut 2 feet below mudline. The total area of excavation is 20’ by 60’ per column bent with a small over excavation to mitigate sluffing of the excavation. The material will be side-cast approximately 50 ft. away from the columns without the clamshell bucket extending above the water surface. The location of the excavated material will be documented and will be used for backfill. Then, the pile will be rigged to the derrick crane. Once the crane is holding the weight of the pile, the pile will be cut with an underwater shear and underwater wire saw at the 2 feet below mudline elevation. The pile will be hoisted onto the barge. Once on the barge, the columns will be broken down to smaller pieces as necessary on the barge within the construction limits. Material from the deck, girders, crossbeams and columns will be offloaded using a ramp and a loader in the Kenmore Yard directly to trucks to be hauled for disposal. The material transfer will require a front end loader to board the barge on a solid ramp made of road plates with a type of edge/curbing on it. The loader will remove a couple truckloads of material from the barge, drive it back across the ramp upland to the truck to load the truck. Once there is space sufficient for the trucks to drive onto the barge, trucks will back onto the barge and will be loaded on the barge. KGM/Northstar will monitor the loading operation to help prevent any spills or releases of materials. The derrick crane will use the clamshell bucket to restore the lake bed to the original mudline elevation by moving the sidecast material into the void left by the pile. It is anticipated that the side cast materials will be adequate to fill in the void left by the hollow piles. The crane hoist lines will be painted in 1 foot intervals to gauge the depth of the backfilling operation. If additional material is required to fill the voids KGM will utilize a previous approved fill material. Throughout the operation water quality monitoring will be performed as described in Table I.2.

In addition to the BMPs listed in Section 2.1 above, the following BMPs will be implemented:

- Barges used as containment under demo operations will be equipped with water tight structures to contain water from dust suppression and a wall/barrier structure to keep debris from bouncing off the barge into Lake Washington.

- Barges used for breaking materials down onsite will be equipped with a water tight containment structure to contain water from demolition dust suppression.
- Clam shell buckets will remain under water while side casting lake bed materials to minimize turbidity.
- Barges will be staged near the column removal area to catch any debris or slurry.
- If turbidity levels exceed the thresholds described in Table I.2 KGM will deploy a turbidity curtain around the operation and will continue to monitor water quality levels until the return below the threshold.
- If pH levels exceed KGM will install a pump near the discharge point to capture the slurry being generated by the cutting operation. The pump will have a fish screen on it. The discharge would be pumped into a filter bag which traps the cementitious particles and lets the water filter out. The water will then be tested and treated for pH with a CO_2 injector as needed before being discharged to the lake.
- Potable water or water from the well located at the Kenmore facility will be used for dust control, typically by spraying at the point of impact for impact-type demolition, at the jaws of the processer for crushing-type demolition, and through a pressure washer wand upwind of the work occurring near residential structures when spray at the point of impact or crushing is not adequate to fully control dust emissions from the activity in question. All dust control waters directly contacting structural concrete being demolished will be retained on the barge where processing is occurring on the barge(s) below the work on approach structure demolition.
- Barges and flexi-float barges will be used to prevent demolition debris from stitch breaking falling into the lake. The barges/flexi-floats will have plywood containment walls eight feet in height to prevent debris from bouncing out of containment.
- “Donuts” made of plywood will be cut to fit the columns and will be placed around the columns to help bridge the gap between the barge on the west side of the columns and barge on the east side of the columns, and crane mats or other wood mats will be used to span that same gap between the columns.
- A vacuum will be used to collect the slurry generated by the saw on the top of the deck for saw-cutting operations, as well as for collection of dust control water from the demolition of sidewalk sections with the skid steer.
- A false deck will be installed between pairs of girders, and a tarp or other waterproof material will be hung above the false deck to catch saw-cutting slurry that comes through the kerf as the saw advances. The slurry will be vacuumed up from the containment for disposal (see attachments I.5 and I.6).

2.1.19 Existing Bridge Demolition – Pontoon Superstructure Demolition

Superstructure on the existing bridge pontoons will typically occur in the East Side Staging Area (ESSA). Two sections of deck will be demolished at a time, with debris falling primarily onto the pontoon deck. Debris falling outside the footprint of the pontoon will fall onto containment barges with walls/structures to prevent that material from bouncing out into the lake (see attachment I.8). Crane mats will span the gaps between the pontoons and the containment barges, and will be overlain with visqueen and then covered with plywood to reduce the likelihood of damage to the plastic that could result in a release of dust control water. The barges and crane mats will be moved along the length of the pontoons as needed to protect the work.

In addition to the BMPs listed in Section 2.1 above, the following BMPs will be implemented:

- Barges used as containment under demo operations will be equipped with water tight structures to contain water from dust suppression and a wall/barrier structure to keep debris from bouncing off the barge into Lake Washington.
- Barges used for breaking materials down onsite will be equipped with a water tight containment structure to contain water from demolition dust suppression.
- Gaps between the pontoons and containment barges will be spanned with crane mats that are covered in plastic sheeting and then a plywood overlay will be put into place to protect the plastic from damage.

2.1.20 Existing Bridge Demolition - Pier and Footing Demolition

Prior to demolition of Piers 40 and 41, the lake bed material will be excavated and side casted to allow for removal of the concrete debris to 2 feet below the mudline. The material will be side-cast approximately 50 ft. away from the footing without the clamshell bucket extending above the water surface. Approximately 800 sf per footing will have to be removed to allow full access to remove the footings from the lake bed. The location of the excavated material will be documented and will be used for backfill. Once the material is side cast, a material barge will be moored on both sides of the transition pier and decked with crane mats between the barges for containment of the concrete debris from demolishing the pier. A long reach excavator with a breaker attachment (jack hammer) will be utilized to demolish the transition pier into small pieces until the pier is demolished down to the deck level of the material barges. Once the pier has been demolished to barge deck level, the long reach excavator with breaker attachment will continue to break the pier and footing below water line. Approximately 24 ft. of column (125 CY) and 8 ft. of footing (400 CY) will be removed underwater for each pier. The pier footings will be demolished down to 2 ft. below existing mudline. The long reach excavator with breaker attachment will work in tandem with a derrick crane so that once the material begins to stockpile underwater the derrick crane will use a clam shell to remove broken pieces of concrete out of the lake and onto a material barge. Once on the barge the material will be broken down to smaller pieces as necessary on the barge within the construction limits. Material will be offloaded using a ramp and a loader in the Kenmore Yard directly to trucks to be hauled for disposal. The material transfer will require a front end loader to board the barge on a solid ramp made of road plates with a type of edge/curbing on it. The loader will remove a couple truckloads of material from the barge, drive it back across the ramp upland to the truck to load the truck. Once there is space sufficient for the trucks to drive onto the barge, trucks will back onto the barge and will be loaded on the barge. KGM/Northstar will monitor the loading operation to help prevent any spills or releases of materials. The derrick crane will use the clamshell bucket to restore the lake bed to the original mudline elevation by moving the side cast material into the void left by the pile. It is anticipated that the side cast materials will be adequate to fill in the void left by the pier footings. If additional material is required to fill the voids KGM will utilize a previous approved fill material. Throughout the operation water quality monitoring will be performed as described in Table I.2.

In addition to the BMPs listed in Section 2.1 above, the following BMPs will be implemented:

- Barges used as containment under demo operations will be equipped with water tight structures to contain water from dust suppression and a wall/barrier structure to keep debris from bouncing off the barge into Lake Washington.
- Barges used for breaking materials down onsite will be equipped with a water tight containment structure to contain water from demolition dust suppression.
- Barges used for breaking materials down onsite will be equipped with barrier or fencing as needed to contain debris and keep it from entering Lake Washington.

- Equipment used below the water will utilize vegetable oil or other environmentally friendly oils in all hydraulics.
- Hydraulic hoses will be housed in the excavator to prevent wear and damage of the hoses.
- An oil boom and turbidity curtain will be deployed during all underwater work and will remain in place until the lake bed is restored.
- Clam shell buckets will remain under water while side casting lake bed materials to minimize turbidity.
- If the pH levels reach or exceed the limits outline in Table I.2, KGM will implement one of the following BMPs:
    - KGM will slow the demolition operation to reduce the speed in which pH is introduced into the water. KGM will continue to monitor the pH levels until they return to acceptable levels.
    - KGM will remove the buildup of demolished materials to remove the pH generating debris form the lake. KGM will continue to monitor the pH levels until they return to acceptable levels.

2.1.21 Existing Bridge Demolition - Anchor Pile Demolition

Four anchor piles on the existing bridge that require removal as part of the bridge demolition. They are required to be cut to 2 ft. below mudline and removed. The anchor piles are in water depths from approximately 40 ft. to 70 ft. This work begins by mooring a derrick crane next to the pile. The derrick crane will clam shell and side cast the material around the anchor pile to expose the pile to 2 ft. below mudline. The location of the excavated material will be documented and will be used for backfill. After the soil is removed, a crane will be rigged to the pile with assistance from a diver. Once the crane is holding the weight of the pile, divers will cut the pile at least 2 ft. below the original grade. The pile will be hoisted out of the water and set onto a barge. It will be transported to an offsite recycling facility (Schnitzer, Seattle Iron, or similar.). The derrick crane will use the clamshell bucket to restore the lake bed to the original mudline elevation by moving the side cast material into the void left by the pile. It is anticipated that the side cast materials will be adequate to fill in the void left by the pier footings. Throughout the operation water quality monitoring will be performed as described in Table I.2.

In addition to the BMPs listed in Section 2.1 above, the following BMPs will be implemented:

- Equipment used below the water will utilize vegetable oil or other environmentally friendly oils in all hydraulics.
- Clam shell buckets will remain under water while side casting lake bed materials to minimize turbidity.
- If turbidity levels exceed the thresholds described in Table I.2 KGM will stop the operation and deploy a turbidity curtain around the operation. KGM will continue to monitor water quality levels until they return below the threshold.

2.1.22 Existing Bridge Demolition - Pontoon Separation

All pontoons on the existing bridge must be separated to allow removal from Lake Washington. The first step in separation would be to disengage the retro-fit post-tensioning (PT) inside the pontoons. In order to safely disengage the post-tensioning cable, the outer covering will need to be removed. The covering includes a grout coating that will be removed using a high pressured water blasting tool (Hydro-blaster) to break the grout loose and expose the cable. The supply water for the hydro-blaster will be pulled from Lake Washington using a pump equipped with a fish screen. The resulting water from the blasting activity will be contained inside the pontoon. The water will be tested for compliance with 401 pH and Turbidity limits. If the water meets those limits it will be returned to Lake Washington. If the water is found to be above the limits, it will be removed from the pontoon as needed for proper disposal. If water does not need to be removed, it will be allowed to remain in the cells.

After the retrofit PT is disengaged and removed from the grouted joint between the pontoons, the joining bolts will be removed in a specific sequence; all of the bolt sleeves will be plugged to prevent water intrusion inside the pontoons. Once bolts and PT are removed, a containment system (grout catcher) consisting of a former walkway lined with the conveyer belt material from the previous grout catcher BMP and sealed on the ends with plywood and timbers will be installed under the pontoon joint and the pontoons will be pulled apart using tug boats and the grout in the joint is expected to separate with little or no effort. This is based on past experiences with pontoon grouted joint separation on this project and at the I-90/Lacey V. Murrow Floating Bridge pontoon separations. A tug boat and derrick crane will be used to remove the free pontoon. Then the pontoon will be transported to temporary moorage on the lake (buoys, West Side Staging Area, East Side Staging Area). Some pontoons will require additional demolition work, such as removing the elevated roadway, prior to leaving the lake. Finally, the pontoons will be transported out of the lake for demolition or transfer to a third party purchasing the pontoon. Currently, all pontoons have been sold. ~~The remaining 10 pontoons will be demolished at the Port of Tacoma CTC basin.~~ Throughout the operation water quality monitoring will be performed as described in Table I.2.

In addition to the BMPs listed in Section 2.1 above, the following BMPs will be implemented:

- A containment and debris catchment system, consisting of an aluminum walkway lined with conveyer belt material and blocked on the ends with plywood and timbers, will be installed along the pontoon joint being separated to prevent debris from falling into the lake (see attachment I.7).
- Bolt holes and post tensioning holes will be plugged with metal plates and neoprene seals to minimize water entering the pontoon cells.
- Containment tanks will be used as needed for water created from hydroblasting.
- Water from hydroblasting will be sampled for turbidity and pH to meet standard before discharging.

2.1.23 Existing Bridge Demolition - Pontoon Ballasting

Ballast water may need to be added to the pontoons. This would be to facilitate separation of pontoons, or to make the pontoons stable as elevated road deck is removed from the pontoons. In addition, the existing pontoons have active pumps that remove water when it is leaking into the cells from cracks in the concrete. More leaks may develop from cracks during pontoon removal. This “additional ballast” may need to be pumped out. All ballast water will come from the lake and will be pumped back into the lake. Similar to current ballast requirements, any water that is pumped out of the pontoon cells will be tested to confirm pH is within allowable limits and the water will be treated with CO_2 to regulate the pH. Throughout the operation water quality monitoring will be performed as described in Table I.2.

In addition to the BMPs listed in Section 2.1 above, the following BMPs will be implemented:

- CO_2 will be used to regulate pH if needed.

- Pumps will be equipped with screens to prevent fish from getting injured from the pumping.

2.1.24 Existing Bridge Demolition - Anchor Cable Removal

Existing pontoons are held in place with anchor cables that stretch to under water anchors. These anchors range in depth from 30 to 210 feet with the majority of the anchors at depths greater than 100 feet. There are three types of anchors: Jetted fluke (shown above), gravity, and pile. The jetted anchor has an eye that extends from its underground location to the anchor cable. The gravity anchors are heavy concrete structures that hold the tension from the bridge with their mass and friction on the lake floor. An eye bar extends from the bottom of the gravity anchor to the anchor cable. Finally, there are four pile anchors that are driven in pairs of steel H pile that anchor the cables. Pile anchors, along with all cable attachments will be removed as described below. In all cases, the anchor cable is held to the anchorage with sockets.

KGM will utilize two methods to remove anchor cables.

- During pontoon separation, a remote operated hydraulic cutting tool will cut the cable at the socket. The cable will then be spooled up and disposed of off-site. The eye bar and socket will remain in place.
- During pontoon separation, the cables will be placed on a buoy. Later, a diver will cut the eye bar at mudline. Part of the eye bar, the socket, and the cable will be spooled up and disposed of off-site. The other portion of the eye bar will remain in place.

In addition to the BMPs listed in Section 2.1 above, the following BMPs will be implemented:

- The equipment for this operation will utilize vegetable based oils or similar environmentally friendly hydraulic fluid.

3.0 Water Quality Standards

The Washington State Department of Ecology establishes surface water quality standards (Chapter 173-201A WAC) as required by the U. S. Environmental Protection Agency (USEPA). All surface waters of the state have uses designated to them for protection under this chapter. These standards are intended to protect surface waters of the state for beneficial uses. These uses include public health, recreation, and the propagation and protection of fish, shellfish, and wildlife.

Surface waters of the state include lakes, rivers, ponds, streams, inland waters, saltwater, wetlands, and all other surface waters and water courses within the jurisdiction of the state of Washington. The aquatic use of the water body, as identified in Ecology's Water Resource Inventory Area (WRIA), determines the applicable WAC Aquatic Use Criteria for the parameter(s) of concern per WAC 173-201A-200. Lake Washington is included in WRIA 8. The Aquatic Use Designation of Lake Washington is Core Summer Salmonid Habitat.

The Aquatic Use Criteria for the following parameters for this designation are discussed below:

- **Turbidity:** Turbidity shall not exceed 5 nephelometric turbidity units (NTUs) over background when background is 50 NTUs, or a 10 percent increase in turbidity when the background turbidity is more than 50 NTUs.
- **pH:** pH must be within the range of 6.5 to 8.5, with human-caused variation within this range of less than 0.2 units.
- **Oil and Grease:** No visible sheen.

The turbidity water quality standard includes an allowed 150-foot mixing zone from the in-water activity, and water quality monitoring for turbidity will be conducted at the 150-foot radius point of compliance per the WAC 173-201A-200 Aquatic Use Criteria. A mixing zone is not allowed for pH.

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4.0 Monitoring Plan

The objective of water quality monitoring is to ensure that in-water and over-water activities do not result in exceedances of the applicable water quality turbidity and pH standards at the point(s) of compliance, as defined in the 401 WQC.

4.1 MONITORING LOCATIONS AND SCHEDULE

Throughout all in-water work, KGM will conduct visual monitoring of turbidity. Additionally, visual monitoring for floating debris (trash, oil sheen, etc.) will be performed to ensure that water quality is being protected. The water quality monitoring schedules for each in-water and over-water activity described above are presented in Table I.2. Water quality monitoring will be conducted at the compliance monitoring locations shown on the activity plan sheets.

Per WAC 173-201A-200, for projects working within or along lakes or other nonflowing waters, the point of compliance for turbidity is a radius of 150 feet from the activity causing the turbidity exceedance. Therefore, compliance monitoring for turbidity will be conducted at a 150-foot radius from the in-water construction activity. A mixing zone is not allowed for pH, and prior to the discharge of any high pH stormwater during the concrete curing period of 7 days, the pH must be tested and ensured to be within the water quality standard range.

Background water quality monitoring will be conducted prior to the start of in-water activity, and on the same day as the activity is to be performed. Once work has started, monitoring will occur as listed in Table I.2. If, at any time, physical or visual monitoring shows that there is an exceedance of water quality standards for turbidity, then another background sample will be taken outside the area of influence (refer to Section 4.2).

Prior to pressure washing of the floating bridge component for joining, and prior to the discharge of ballast waters and interior pontoon cleaning waters, as described above in Section 2.1, background pH levels will be monitored at two locations: (1) adjacent to the surface of the concrete surface that will be cleaned, and (2) 150 feet away from the concrete surface, outside of the area of potential influence. The lake water pH measurement taken during pressure washing will be compared to the immediate background conditions, with an understanding that any potential variation of background pH levels would be attributable to the presence of the pontoons.

Monitoring locations will be located in the field using a Differential Global Positioning System (DGPS) on board the sampling vessel. Water quality monitoring will be measured and recorded at a shallow depth within 1 meter of the water surface.

For each specific and unique in-water activity, as described in Section 2.0 in detail, water quality monitoring will be conducted at the frequencies and for the parameters as shown in Table I.2. Intensive and normal monitoring schedules are presented for each activity. Normal monitoring schedules will only be implemented if during initial intensive monitoring the activity is shown to be in compliance with water quality standards.

During intensive or normal monitoring the last monitoring event will be conducted approximately 30 minutes following completion of the activity and stop work for the day. If during the normal monitoring schedule there are significant changes to the construction in-water or over-water relevant equipment or activity BMPs then monitoring will return to the intensive schedule to ensure compliance with water quality standards.

4.2 CONTINGENCY MONITORING

If there is a visual change in surface water turbidity due to work activities outside of a scheduled monitoring event or a potential increase in pH, or an unauthorized discharge, contingency sampling is required. If monitoring/sampling at that location within the 150 foot radial area of mixing confirms an exceedance of water quality standards, then another sample will be taken at the point of compliance (edge of the mixing zone). If that sample shows an exceedance of water quality standards, then another background sample will be taken outside the area of influence and additional monitoring will be conducted to determine the duration and magnitude of the event. KGM will implement corrective actions based on the activity, or stop the activity causing the problem and commence hourly monitoring until standards are met for two consecutive monitoring events. Once compliance with water quality standards is achieved, the project shall return to its normal monitoring schedule.

If there is an unauthorized discharge of concrete process water (e.g., concrete slurry, slurry waters, grinding residues, etc.) or high pH stormwater to the lake, the discharge will be documented and that information included in the monthly monitoring report to be submitted to Ecology, in addition to the notification and documentation procedures described in Sections 4.3 and 6.0. Discharge information to be documented includes the following: why/how the unauthorized discharge occurred (e.g., BMP failure), approximate volume of the release, associated construction activity, steps taken to minimize the release or prevent additional discharge, and any resulting monitoring. KGM will attempt to test the pH of the discharged water, or the pH of water that is representative of what was released (e.g., waters still remaining in containment besides that volume that was discharged) to understand the quality of the discharge. If feasible, KGM will also test the pH of the receiving lake water at the point of the discharge.

During fluke anchor installation KGM will conduct visual monitoring for turbidity plumes within the area of influence or mixing zone of 150 feet. The results of visual monitoring will be documented on the Water Quality Monitoring and Protection Plan Monitoring Form (Attachment I.4). If a turbidity plume is observed, KGM will document the approximate dimensions and duration of the plume, and conduct turbidity monitoring at the 150-foot point of compliance to characterize the extent of the observed turbidity plume.

4.2.1 Biological Opinion Monitoring Requirements

Additionally, to meet the requirements of the USFWS Biological Opinion, during in-water and over-water activities, if monitoring conducted 150 feet from sediment-generating activities indicates turbidity in excess of 9 NTUs over background, then monitoring shall also be conducted at 300 feet from sediment-generating activities (USFWS 2011). Monitoring shall be conducted at 30-minute intervals until turbidity falls to less than 9 NTUs over background.

Per the USFWS Biological Opinion, if turbidity levels measured at 300 feet from the sediment-generating activity exceed 84 NTUs over background at any time, 40 NTUs over background for more than 1 hour continuously, or 18 NTUs over background for more than 3 hours, cumulatively, over an 18-hour workday, then the amount of take authorized by the Incidental Take Statement will have been exceeded. Sediment-generating activities shall cease, and KGM will notify WSDOT, who will contact a consulting biologist with the Transportation Planning Branch at the Washington Fish and Wildlife Office in Lacey, Washington (360-753-9440) within 24 hours.

Based on the more stringent WAC 173-201A-200 water quality standards and monitoring requirements, however, the additional USFWS Biological Opinion monitoring and exceedances of turbidity levels should not occur during these in-water and over-water activities.

4.2.2 Bridge Demolition and Underwater Demolition Monitoring Variance

Upon completion of the new SR 520 Floating Bridge, KGM will demolish and remove the existing bridge. The demolition consists of several over and under water work activities listed in Sections 2.1.18 thru 2.1.23 of the CWQMPP. The majority of these activities will require pH monitoring, turbidity monitoring or a combination of the two. During the underwater demolition activities there is a greater safety risk with the equipment working in the area and the underwater obstructions. Monitoring will be performed adjacent to the activity as allowed by the safe work conditions. When conditions don't allow for monitoring adjacent to the activity, monitoring will be performed at 25 feet from the activity.

4.3 NON-COMPLIANCE

If monitoring confirms that water quality standards are not achieved as described above, KGM will immediately inform the WSDOT Environmental Compliance Manager, and file an Environmental Compliance Assurance Procedure Report with the WSDOT environmental office. WSDOT will then notify Ecology immediately.

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5.0 Monitoring Procedures and Equipment

5.1 MONITORING EQUIPMENT

Equipment that will be used to perform water quality monitoring will include the following:

- Water quality meter: Troll 9500, YSI 6920 Sonde (or other suitable equipment)
- Field observations field notebook
- Deionized water for rinsing water quality monitoring equipment
- Personal protective equipment
- Camera
- Cellular phone and project contact phone numbers

Turbidity and pH levels will be measured using a water quality meter. Prior to each use, the meter will be calibrated according to the manufacturer's instructions. When the interface screen shows no significant change in the readings, the probe will be considered calibrated and ready for monitoring. All water quality monitoring field data as described in Section 6.0 will be documented on the Water Quality Monitoring Results Reporting Form (Attachment I.4) for the duration of the activity that triggered the monitoring.

5.2 FIELD EQUIPMENT CALIBRATION AND MAINTENANCE

Field instruments will be properly operated, calibrated, and maintained by qualified personnel prior to each use according to the manufacturer's guidelines and recommendations. Documentation of routine and special preventive maintenance and calibration information will be maintained in the appropriate field logbook, and copies will be made available upon request. Each maintenance and calibration logbook entry will include the date and initials of the individual performing the activity.

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6.0 Documentation and Reporting

All water quality monitoring will be recorded on the Water Quality Monitoring Results Reporting Form (Attachment I.4). The monitoring form will be used to document the person conducting the monitoring, date, time, weather, activity prompting monitoring, location of monitoring, waterbody, monitoring results, and applicable comments.

In addition to the monitoring form, a copy of the site map and any applicable drawings, as shown in Figure I.1 and Attachments I.2 and I.3, may also be provided to Ecology. These records will be in a form that is accessible by interested individuals upon request, such as Ecology's Federal Project Coordinator.

All monitoring results, including reporting forms, will be submitted monthly to the Ecology Federal Project Coordinator per Condition A2 (Order No. 9011) by WSDOT. If monitoring results indicate a violation of water quality standards or if conditions of the 401 WQC or the CWQMPP are not being followed, notification shall be made immediately (within 24 hours) to Ecology's Federal Project Coordinator via phone or e-mail (e-mail is preferred). Notifications shall be identified with Order No. 9011 and will include the project name, project location, project contact, and the contact's phone number.

In addition to the phone or e-mail notification, KGM will provide WSDOT will all necessary information, as listed above, such that WSDOT will submit a detailed written report to Ecology within 5 days that describes the nature of the non-compliance event, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.

Monitoring results and notification will be sent to:

Penny Kelley
Federal Project Coordinator
(360) 407-7298
pkel461@ecy.wa.gov

6.1 ADDITIONAL AGENCY REPORTING REQUIREMENTS

WSDOT will submit the results of water quality monitoring to NMFS within 60 days of the completion of each in-water work season. WSDOT will also submit a monitoring report to the Washington Fish and Wildlife Office in Lacey, Washington (Attn: Transportation Planning Branch), by April 15 following each construction season. The report shall include, at a minimum, the following: (1) dates, times, and locations of construction activities, (2) monitoring results, sample times, locations, and measured turbidities (in NTUs), (3) summary of construction activities and measured turbidities associated with those activities, and (4) a summary of corrective actions taken to reduce turbidity.

WSDOT will also copy USFWS with any water quality monitoring data or reports submitted to Ecology as required by related permits.

6.1.2 Bridge Demolition and Underwater Demolition Reporting Variance

Upon completion of the new SR 520 Floating Bridge, KGM will demolish and remove the existing bridge. The demolition consists of several over and under water work activities listed in Sections 2.1.18 thru 2.1.23 of the CWQMPP. The majority of these activities will require pH monitoring, turbidity monitoring or a combination of the two. The underwater demolition activities require cutting and demolishing concrete underwater. Since the work needs to be performed underwater the slurry and fines produced from these activities can not all be captured. As a result the monitoring and reporting has been modified aid in compliance and mitigation. During the demolition of the Piers and Footings KGM will monitor pH levels at the safe distance described in 4.2.2 and in Table I.2 of this plan. The results of that monitoring will be sent to the Department of Ecology on a weekly basis. If there are exceedances of the levels indicated in Table I.2 up to a pH level of 10, the report will be included in the weekly report to Ecology. KGM will perform mitigation measures outlined in 2.1.19 of this plan. Those measures will be included in the report. Any pH exceedance above 10 will be reported immediately and additional monitoring will be performed at the 150 foot radius to monitor if the pH levels have extended past the immediate work area.

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7.0 Communications and Contacts

All communication and correspondence with Ecology will occur with Penny Kelley as the primary point of contact. WSDOT's Environmental Compliance Manager (ECM), Stephen Sax, will be responsible for providing Ecology with the necessary notifications and results of the water quality monitoring on a monthly basis and at the conclusion of the monitoring period. KGM will provide the WSDOT ECM with water quality monitoring results on a monthly basis for WSDOT's submittal to Ecology.

KGM will provide WSDOT with notification of the pre-construction meeting and start of in-water activities such that WSDOT can provide notifications to Ecology in accordance with the requirements of the 401 WQC.

KGM will provide immediate notification to WSDOT of any confirmed water quality standard violations and potential corrective actions, or if a revision from the 401-WQC-permitted work is needed such that WSDOT will then immediately notify Ecology.

KGM and WSDOT will ensure that all appropriate project engineers, lead contractors, subcontractors, and site managers at the SR 520 FBL Site have read and understand the relevant conditions of the 401 WQC and all permits and approvals referenced in the 401 WQC (Appendix A of the ECP).

Contact information is provided below for the key KGM, WSDOT, and agency personnel responsible for water quality protection for the project.

WSDOT Project Engineer
Dave Becher
Office phone number is 425-576-7045

WSDOT Environmental Compliance Manager
Stephen Sax
Office phone number is 425-576-7133
or Cell 206-713-9783

WSDOT Environmental Compliance Inspector
Office phone number is 425-576-7041
or Cell 206-276-4489

KGM Project Director
Cody Bishop
Office phone number is 425-576-7119
or Cell 425-765-9871

KGM Environmental Manager
Robert Brenner
Office phone number is 425-576-7138
or Cell 425-577-2939.

KGM Water Quality Monitoring Lead
John Gage
Office phone number is 425-576-7138
or Cell 817-789-2380.

KGM Spill Response Subcontractor
Global Diving and Salvage Aaron Harrington, Environmental Division Manager
Office phone number is 206-623-0621
or Cell 260-730-9362

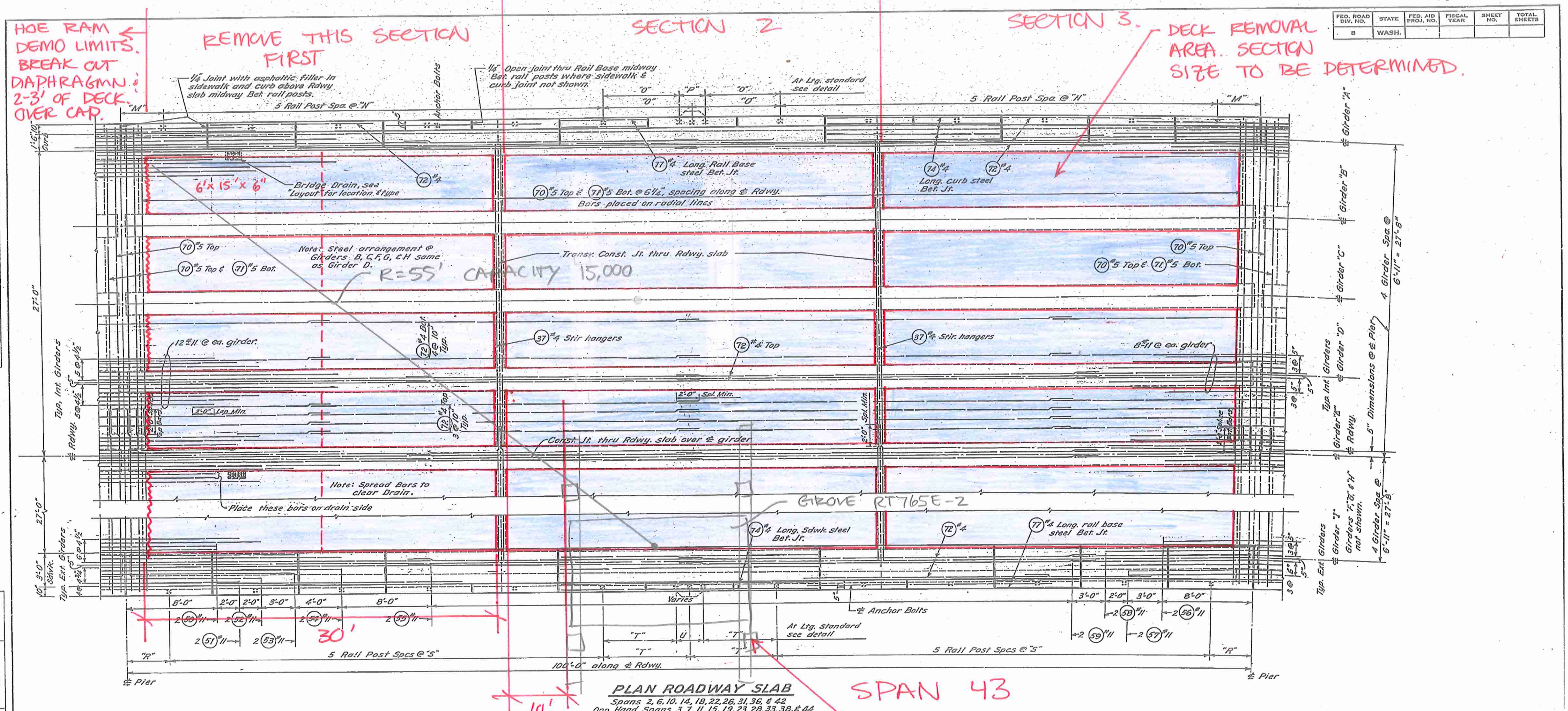
Ecology Emergency Spill Response Northwest Regional Office
Phone number is 425-649-7000

8.0 References

National Marine Fisheries Service (NMFS). 1997. *Fish Screening Criteria for Anadromous Salmonids*.

U. S. Fish and Wildlife Service (USFWS). 2011. *Endangered Species Act – Section 7 Consultation Biological Opinion, State Route 520, Interstate-5 to Medina Bridge Replacement and HOV Project, Grays Harbor, King, Pierce, Snohomish, Thurston, and Whatcom Counties, Washington.* 15 April.

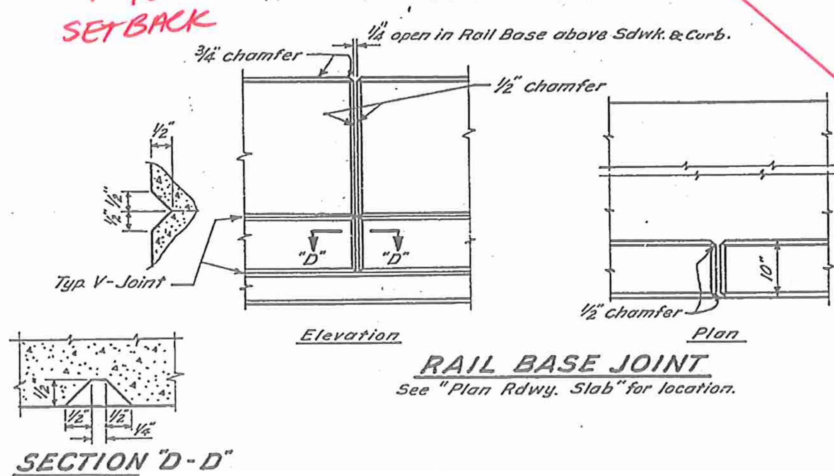
Washington State Department of Transportation (WSDOT). 2010. *SR 520 Evergreen Point Floating Bridge and Landings Project Request for Proposal.* Olympia, Washington. 6 December.



RAIL POST SPACING

Dimensions are horizontal along ℄ Anchor Bolts

Span	"M"	"N"	"O"	"P"	"R"	"S"	"T"	"U"
2, 6, 10, 14, 18, 42, 44	4'-0"	7'-8"	7'-8"	—	4'-0"	7'-8"	7'-8"	—
3, 7, 11, 15, 19, 31	4'-0"	7'-8"	6'-6"	2'-4"	4'-0"	7'-8"	7'-8"	—
22, 26, 28	3'-10 9/16"	7'-9½"	7'-9½"	—	3'-10 1/16"	7'-7"	7'-7"	—
23	3'-10 9/16"	7'-9½"	6'-7½"	2'-4"	3'-10 1/16"	7'-7"	7'-7"	—
33	3'-10 7/16"	7'-7"	7'-7"		3'-10 15/16"	7'-9½"	6'-7½"	2'-4"
36	3'-10 7/16"	7'-7"	7'-7"	—	3'-10 15/16"	7'-9½"	7'-9½"	—
38	3'-9½"	7'-8"	7'-8"	—	3'-8 5/8"	7'-9"	7'-9"	—



SECOND LAKE WASHINGTON BRIDGE
UNIT NO. 2 - EAST AND WEST APPROACHES
KING COUNTY

PLAN ROADWAY SLAB

WASHINGTON STATE HIGHWAY COMMISSION
DEPARTMENT OF HIGHWAYS
OLYMPIA, WASHINGTON

Approved: March 8, 1961

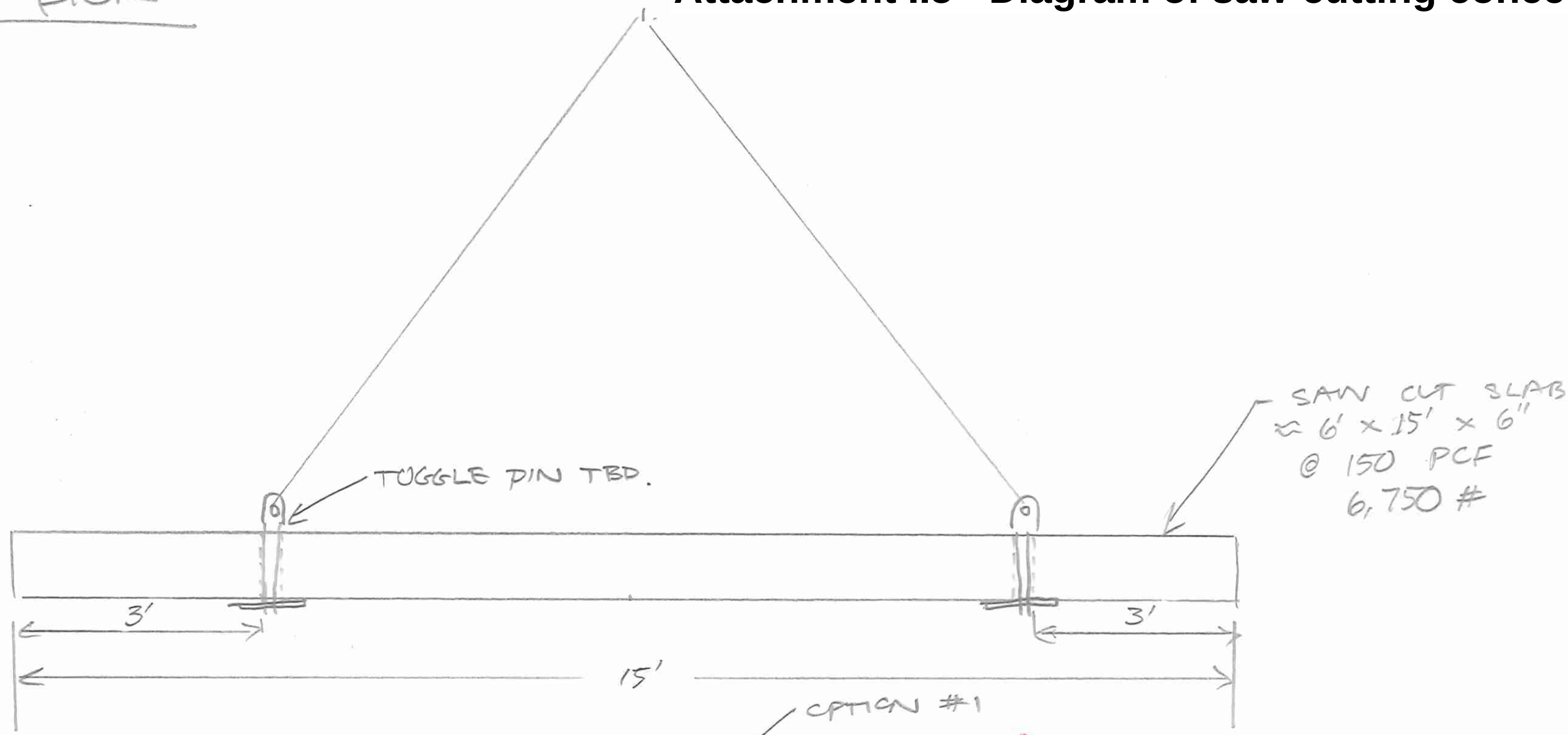
SHEET 10 OF 36 SHEETS

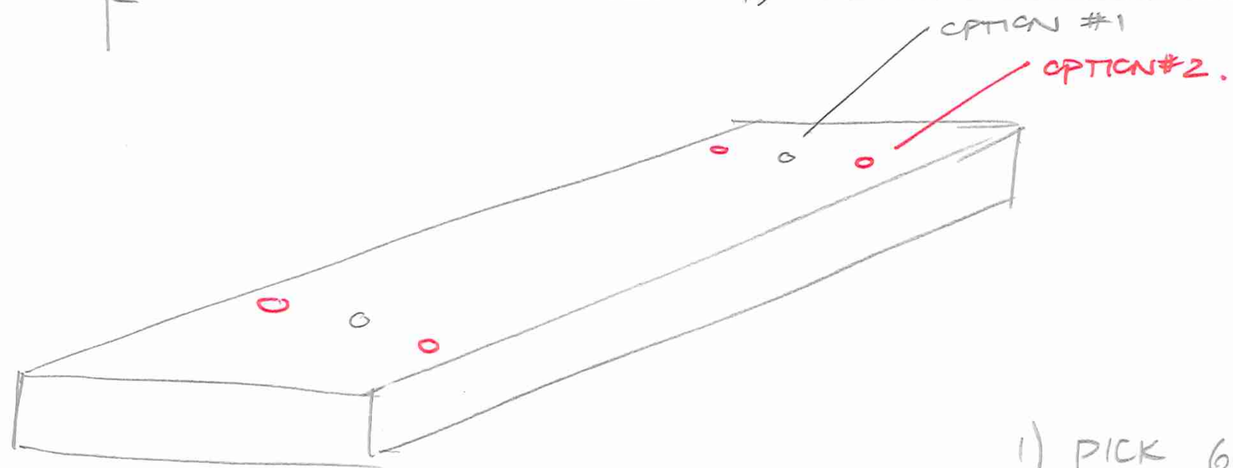
CONTRACT NO. T-6651

Attachment I.5 - Diagram of saw-cutting concept

Attachment I.5 - Diagram of saw-cutting concept

SLAB PICK





SAM,

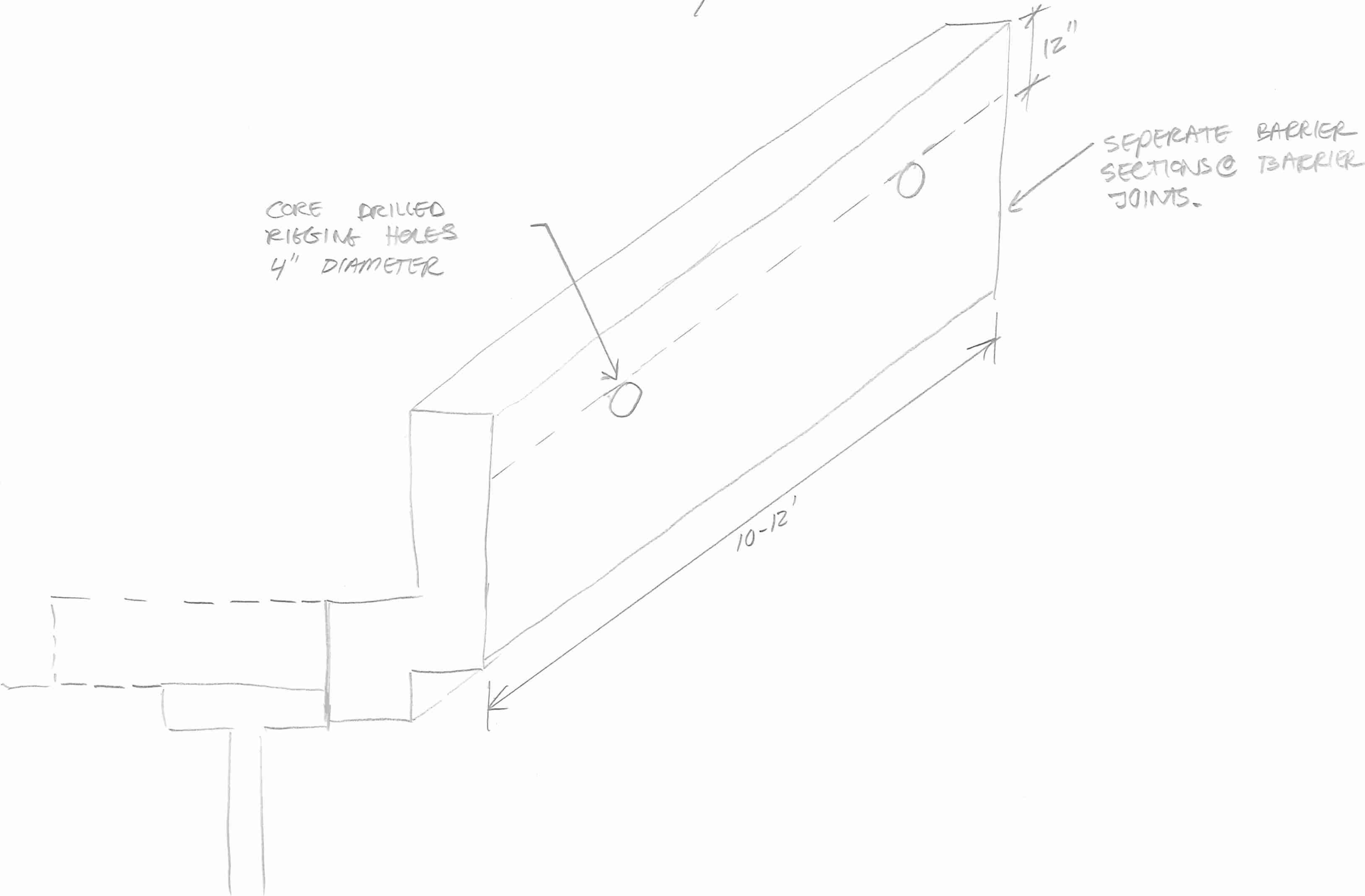
PLEASE LOOK INTO THE FOLLOWING OPTIONS.

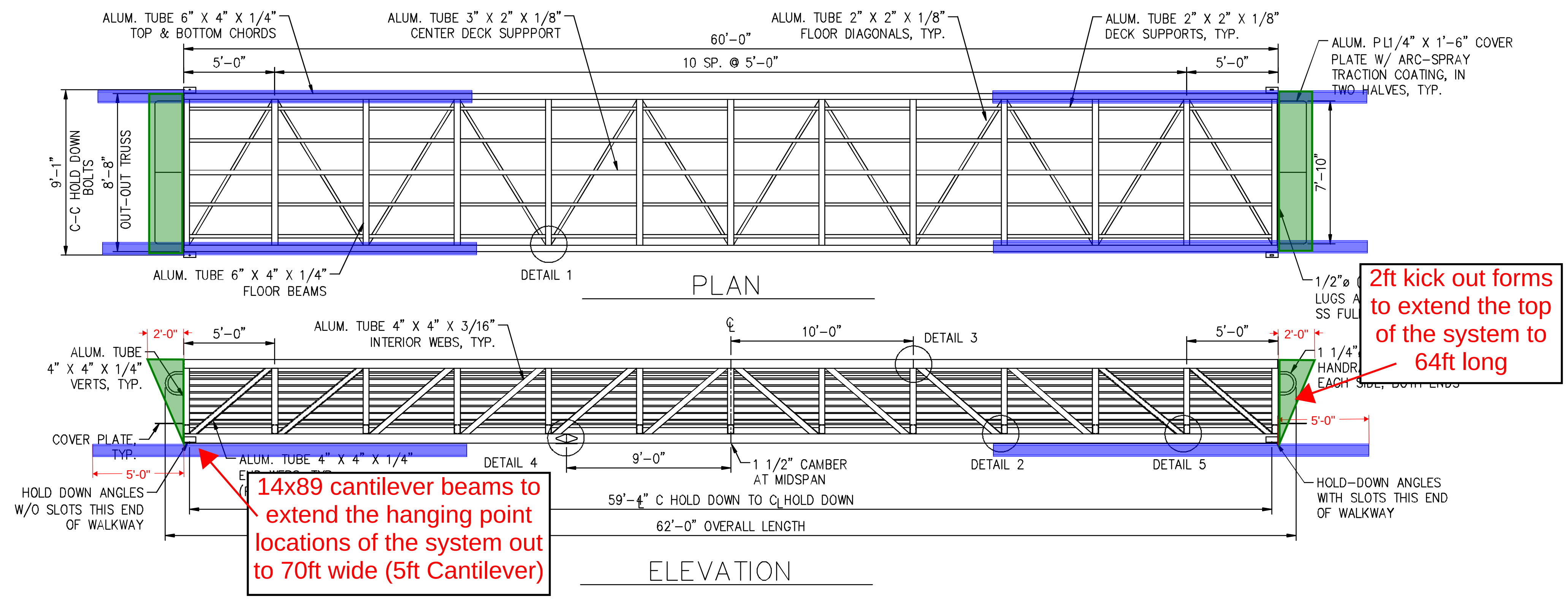
1) PICK 6 x 15' W/ TWO PICK POINTS. 3' FROM EACH SIDE.

IF OPTION ONE DOES NOT WORK. LOOK @ OPTION 2

2) PICK W/ 4 PICK POINTS

SOUTH BARRIER PICK / NORTH BARRIER PICK





DESIGN NOTES

DESIGN OF WALKWAY ASSUMES THAT END SUPPORTS (DESIGNED BY OTHERS) ARE ADEQUATE FOR THE SAFE AND STABLE SUPPORT OF THE WALKWAY FOR ALL DESIGN LOADS.

ALL WELDING SHALL BE PERFORMED IN CONFORMANCE WITH THE LATEST D1.2 (ALUMINUM) WELDING CODE BY AWS CERTIFIED STRUCTURAL WELDERS. FILLER WIRE FOR ALUMINUM SHALL BE ALLOY 5356.

ALL ALUMINUM IS ALLOY 6061-T6, MILL FINISH EXCEPT AS NOTED.

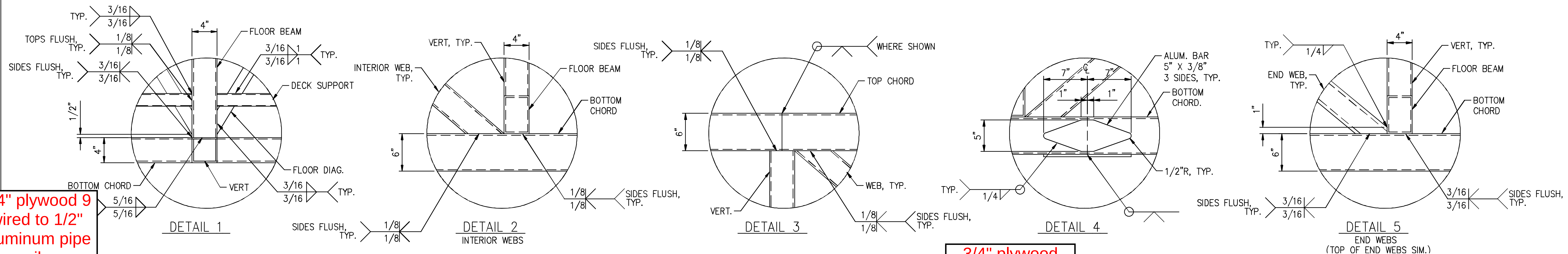
ESTIMATED DEAD LOAD REACTION OF THE WALKWAY (EACH END) IS 2,975 LBS.

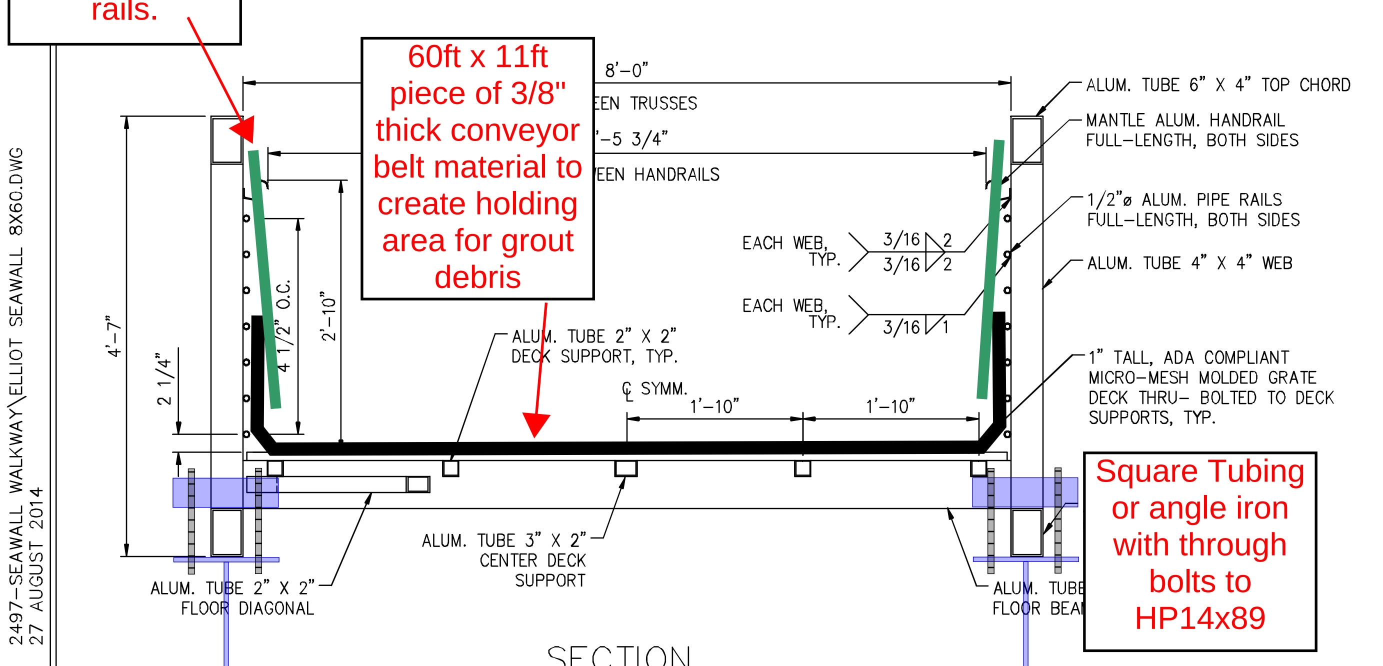
TOTAL SHIPPING/PICKING WEIGHT IS 5,950 LBS.

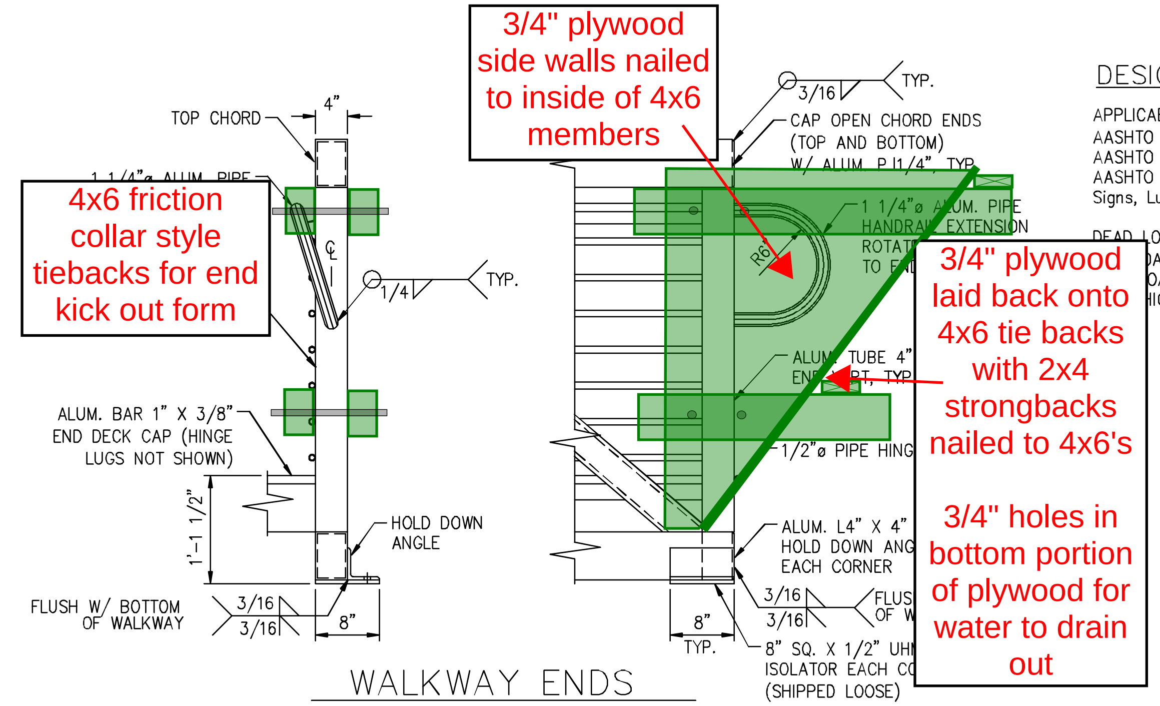
DESIGN LIVE LOAD REACTION (EACH END) IS 21.6 KIPS. (VERTICAL)

DESIGN WIND LOAD REACTION (EACH END) IS 6.2 KIPS (HORIZONTAL)

NOTE: ALUM. L4" X 4" HOLD DOWN ANGLES ARE TO BE PROVIDED ON EACH CORNER OF ALL WALKWAYS AS SHOWN. THE HOLES AND SLOTS ARE TO BE FIELD LOCATED AND FIELD DRILLED, BY THE CONTRACTOR, TO ACCEPT 3/4"ø (MIN.) STAINLESS STEEL BOLTS AND SECURELY ATTACHED TO THE WALKWAY END SUPPORTS, BY OTHERS, USING THE 1/2" THICK, UHMW-PE ISOLATORS PROVIDED.







DESIGN CRITERIA

APPLICABLE CODES:
AASHTO LRFD 2012 Bridge Design Specifications 6th Ed. (US)
AASHTO LRFD 2009 Guide Specifications for Design of Pedestrian Bridges
AASHTO 2008 Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals

DEAD LOAD: ALL STRUCTURE PLUS 0 PPF UTILITY
...OAD: 90 PSF (UNIFORM)
...OAD: 100 MPH
...HICLE, EQUESTRIAN OR SIGNAGE LOADS

Redpoint STRUCTURES
1264 Mt. Baker Hwy.
P.O. Box 31280, Bellingham, WA 98226
T 360.715.0121

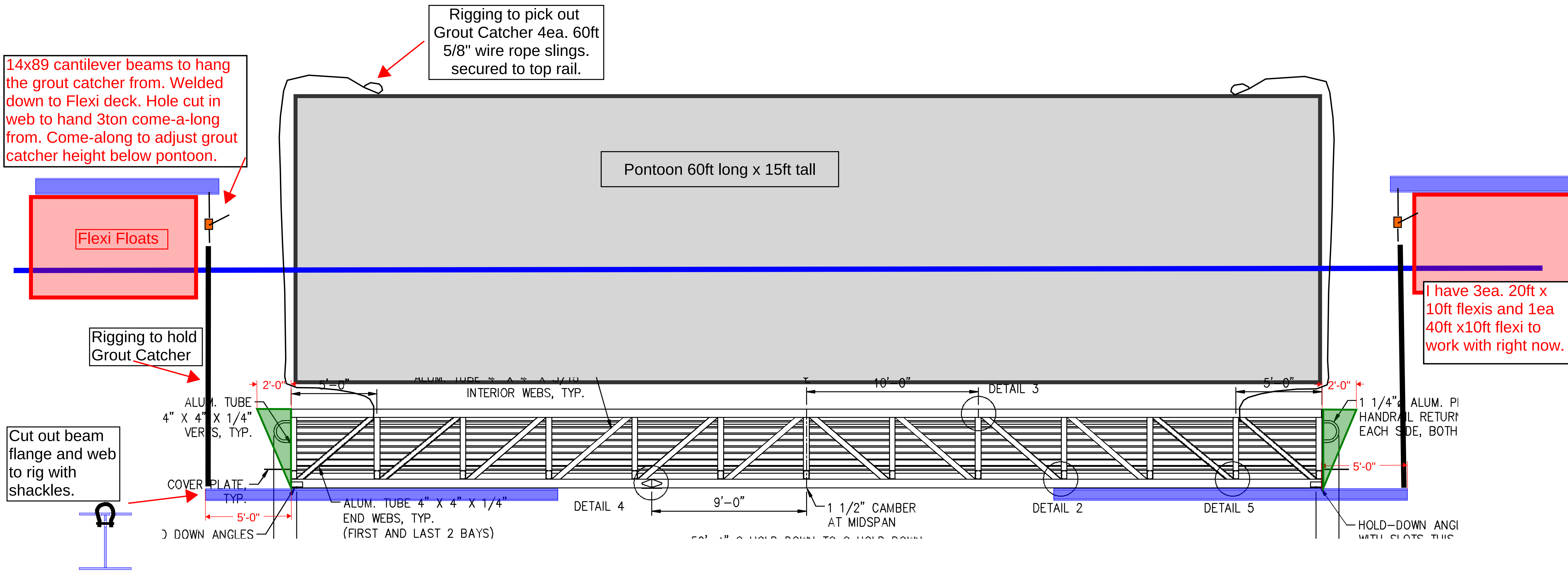
MANTLE INDUSTRIES INC. PH (360) 332-5276
1100 YEW AVENUE, BLAINE, WASHINGTON 98230

SCALE:	APPROVED BY:	DRAWN BY: KDL
DATE: AUG. '14		REVISED:

ELLIOTT BAY SEAWALL PROJECT
TEMP. PEDESTRIAN WALKWAYS
8'-0" X 60' ALUMINUM WALKWAY
PLAN, ELEVATION, SECTION & DETAILS

DRAWING NUMBER 1 OF 1

2497-SEAWALL WALKWAY\ELLIOT SEAWALL 8X60.DWG
27 AUGUST 2014


14x89 cantilever beams to hang the grout catcher from. Welded down to Flexi deck. Hole cut in web to hand 3ton come-a-long from. Come-along to adjust grout catcher height below pontoon.
Rigging to pick out Grout Catcher 4ea. 60ft 5/8" wire rope slings. secured to top rail.
Pontoon 60ft long x 15ft tall
Flexi Floats
I have 3ea. 20ft x 10ft flexis and 1ea 40ft x10ft flexi to work with right now.
Rigging to hold Grout Catcher
Cut out beam flange and web to rig with shackles.
2'-0"
5'-0"
INTERIOR WEBS, TYP.
10'-0"
DETAIL 3
5'-0"
2'-0"
ALUM. TUBE
4" X 4" X 1/4"
VERTS, TYP.
HANDRAIL RETURN
EACH SIDE, BOTH
5'-0"
COVER PLATE,
TYP.
5'-0"
ALUM. TUBE 4" X 4" X 1/4"
END WEBS, TYP.
(FIRST AND LAST 2 BAYS)
DETAIL 4
9'-0"
1 1/2" CAMBER
AT MIDSPAN
DETAIL 2
DETAIL 5
HOLD-DOWN ANGLES