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PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. The accompanying Drawings and Specifications show and describe the location and type of work to be performed under this project under the following Division Numbers:
1. DIVISION 1—GENERAL REQUIREMENTS
 2. DIVISION 2—EXISTING CONDITIONS
 3. DIVISION 3—CONCRETE
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 6. DIVISION 31—EARTHWORK
 7. DIVISION 32—EXTERIOR IMPROVEMENTS
 8. DIVISION 33—UTILITIES
 9. DIVISION 35—WATERWAY AND MARINE CONSTRUCTION
- B. The Port of Bellingham (Port) requires contaminated sediment to be remediated within the Whatcom Waterway Cleanup Site (Work Site) as part of the Whatcom Waterway Phase 1 Cleanup Project (Project), located in Bellingham Bay, adjacent to Bellingham, Washington. The Port will designate a representative (Engineer) to coordinate and monitor this work on behalf of the Port.
- C. The Whatcom Waterway Phase 1 Cleanup Project is not a standard dredging and disposal, or structures installation project. Dredged material within the Work Site is contaminated with various chemicals of concern and the Contractor shall use extra care to conduct its work in a manner that is suitable for environmental cleanup and not in a production dredging or excavation manner. The Port and the Washington State Department of Ecology (Ecology; as the oversight agency) are concerned that resuspension of contaminated sediments caused by the Contractor's construction activities may result in re-contaminating portions of the Work Site that are not contaminated or that have been cleaned up, and/or adversely impact water quality. The Contractor shall conduct its work in a manner to minimize, to the greatest extent practicable, resuspension and

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redistribution of contaminated sediment and to comply with environmental protection requirements in these Specifications and permit conditions.

- D. In-water work must be constructed during limited work windows and all work must be performed under permit requirements. See Section 01 41 26—Permits. This work will be completed under a Nationwide Permit 38 and adherence by the Contractor to permit conditions and the requirements of the Specifications is critical.
- E. The work under this contract is to provide all labor and to furnish and/or install all materials and equipment, as may be required to complete the work as installed, tested, fully operational, ready for use, and as described in these documents. The work for this project as shown in the Drawings and described in the Specifications includes:
 - 1. Mobilization of construction equipment to the Work Site as required to complete the work. Cleanup and demobilization from the Work Site after all work is completed and accepted by the Engineer as complete.
 - 2. Work Site preparation activities, including construction of an offloading area (as necessary) at the former Georgia-Pacific (GP) West property; construction of On-Site Staging and Stockpile Area(s) at the former GP West and Central Waterfront properties; set up of the Contractor's On-Site and Off-Site Transload Facility(ies) and On-Site Staging and Stockpile Area(s) for the management, transport, and disposal of contaminated sediment and debris; and implementation of temporary erosion and sediment control (TESC) and water collection and treatment management practices. Work Site preparation also includes disconnecting all Work Site utilities that may be affected by the work and making the site ready, including any required clearing and grubbing, for all other construction activities.
 - a. The Port will make space available to the Contractor, at no cost, at the former GP West property, as shown on the Drawings, for offloading and temporary stockpiling/staging of dredged sediment, debris and upland excavation materials.
 - b. The Port will not provide direct rail access at the GP West property; active rail spurs from the main rail line to the GP West property do not exist. However, the Contractor may negotiate directly with the Railroad Line(s) to obtain rail access for transport and disposal of dredged debris and

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sediment from this facility (or via the Milwaukee Siding, as shown on the Drawings).

- c. Trucking dredged materials from the Work Site for disposal is not allowed. All dredged materials shall be barged from the Work Site to a Contractor-provided Off-Site Transload Facility for transportation of dredged materials to the Port-approved upland Permitted Disposal Facility, unless the Contractor has approval from the Railroad Line(s) to use their rail lines for transporting contaminated dredged material.
 - d. Trucking shoreline debris and upland excavation materials from the Work Site for disposal or recycling will be allowed.
3. Removal and disposal of shoreline debris within the Inner Waterway and Log Pond Work Site areas, including concrete, asphalt, trash, pipes, bricks, chains, cable, and wood debris, and piling as shown on the Drawings.
 4. Excavation (dredging) and disposal of approximately 100,000 cubic yards of contaminated sediments and debris from the Work Site, as shown on the Drawings. The dredging work will be performed in the Inner Waterway and Bellingham Shipping Terminal (BST) Work Site areas using a mechanical dredge, and dredged sediment and debris will be offloaded at a location(s) identified by the Contractor. The Contractor may use its Off-Site Transload Facility, the Port-provided On-Site Transload Facility, or a combination of both.
 5. Providing certifications of marine vessels by a certified marine architect, including certified barge displacement charts for haul barges to be used for tracking dredge sediment, debris tonnage, and capping materials.
 6. Placement of capping materials (sand, gravel filter, and rock armour) after the dredging work is completed and accepted by the Port in the Inner Waterway area. The Contractor shall also place capping materials along the shoreline of the Log Pond area, and place Residuals Management Cover Material over the dredged footprint in the BST area.
 - a. Placement of approximately 113,000 cubic yards of clean capping material and Residuals Management Cover Material in the Inner Waterway, BST, and Log Pond Work Site areas, as shown on the Drawings. Clean capping material includes

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- sand, gravel, and riprap armor, as described in the Specifications.
- b. Placement of approximately 8,400 cubic yards of Residuals Management Cover Material within the dredge areas adjacent to the BST Work Site area, as shown on the Drawings.
- 7. Additional work includes structures removal and disposal as shown on the Drawings and described in these Specifications, including removal of the Chevron pier and timber bulkhead; clarifier tank and foundation elements and clarifier bulkhead; foam tank; piling; shoreline debris, including concrete, asphalt, trash, pipes, bricks, chains, cable, and wood debris; and other bulkhead structures.
 - 8. Installation of new bulkhead structures including steel sheetpile walls (as source control structures) along portions of the Central Waterfront shoreline and an anchored replacement bulkhead at the current location of the Maple Street bulkhead, as shown on the Drawings.
 - 9. Installation of dolphins, mooring pilings, fender pilings, and catwalks, as shown on the Drawings.
- F. This work shall include all additional work that may be required to conduct the remediation and structural elements described above. Such additional work may include, but is not limited to: quality control, project coordination, health and safety, environmental protection, TESC, permit compliance, and preparation of submittals as described in the Specifications.
 - G. The Work Site is an actively used waterway for commercial and recreational operations. Upland businesses use the waterway for transfer of bulk materials, for boatyard operations such as maintenance and repair, and for vessel storage. Businesses will need to remain open during completion of the work and the Contractor shall adhere to the sequencing requirements described in these Specifications and seek to conduct its operations to accommodate ongoing use of the waterway. The Contractor shall closely coordinate with the Port and Engineer to understand the Work Site usage and frequency of vessel calls, and to coordinate its work around active Work Site use.
 - H. Contractor shall be solely responsible for (i) the proper handling and disposal of any soil, sediment, debris, or other material, and (ii) any liability arising from the mishandling of any soil, sediment, debris, or other material from the moment the Contractor first handles the soil, sediment, debris, or other material (including during any stockpiling or handling on

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the Owner's property) until it is delivered to the approved Disposal Facility or Recycling Facility. The Port will take ownership of on-site recycle material that is stockpiled by the Contractor at the designated recycle stockpile location, as shown on the Drawings.

- I. The work will require a planned, careful, and flexible approach by an experienced Contractor to ensure that structures identified for removal are carefully removed and new structures are carefully constructed, contaminated sediment is dredged and disposed of in a proper manner, and in-water placement of materials is performed according to the methods described in these Specifications in order to maintain environmental quality.
- J. The work to be performed by the Contractor shall include all of the requirements specified throughout each of the sections that comprise the Specifications unless otherwise expressly stated to be performed by the Port or others (Engineer). To fully comprehend the work, the Specifications shall be read in conjunction with the Drawings, the Bid Form included in the Contract Documents, the Water Quality Monitoring Plan (WQMP), Work Site information (including reference drawings, documents, surveys, and other data), Permits, and other Contract Documents.
- K. No separate payment will be made for effort associated with work described in this Specification Section. Work required to comply with this Specification Section is considered to be inclusive to all other activities described in the Contract Documents.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout the Specifications.

1.03 LOCATION

- A. The Work Site for the Whatcom Waterway Phase 1 Cleanup Project is located on Whatcom Waterway in Bellingham Bay in Bellingham, Washington. It is north of Cornwall Avenue, west of Roeder Avenue, and bounded by the Central Waterfront properties to the north and former GP West property to the south.

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1.04 ACCESS TO SITE

- A. The Contractor shall have access to the Work Site via water from Bellingham Bay and Whatcom Waterway and via land from Cornwall and Roeder Avenues and C Street.
- B. Upland laydown and On-Site Staging and Stockpile Area locations are shown on the Drawings.
- C. The former GP West property shall be the location for Contractor office and parking. A limited number of parking spaces will be made available at the Central Waterfront properties On-Site Staging and Stockpile Area(s) to support upland and nearshore work that will be performed in this area of the Work Site. Coordinate with Engineer for number of parking spaces.
- D. The Contractor may be required to relocate entry and related work areas as required by the Port. The Contractor shall conduct all business through the gates assigned by the Engineer.

1.05 DEFINITIONS

- A. Definitions for terms provided in the Specifications and on the Drawings are provided here for reference. Additional terms may be used throughout the Specifications that are not defined here and Contractor shall be responsible for understanding the intention of all terms as they are used in the Contract Documents.
 - 1. Definitions related to electrical work are provided in Division 26 of the Specifications.
- B. Cap Type: Specified areas require placement of engineered cap materials. The engineered capping design is separated into several Cap Types as described below and as shown on the Drawings. Each Cap Type has a different makeup for material types:
 - 1. Type 1. This Cap Type consists of two layers, including Type 1 Sand Material and Type 1 Filter Material, and is designated for placement in the open-water Work Site areas as shown on the Drawings. Both cap materials are described in Section 35 20 26—Waterway Capping.
 - a. Minimum Required Thickness for Type 1 Sand Material is 2.0 feet.
 - b. Minimum Required Thickness for Type 1 Filter Material is 1.0 foot.

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2. Type 2. This Cap Type consists of two layers, including Type 2 Sand Material and Type 1 Filter Material, and is designated for placement in the lower elevation slope areas of the Work Site, as shown on the Drawings. Both cap materials are described in Section 35 20 26—Waterway Capping.
 - a. Minimum Required Thickness for Type 2 Sand Material is 2.0 feet.
 - b. Minimum Required Thickness for Type 1 Filter Material is 1.0 foot.
3. Type 3. This Cap Type consists of three layers, including Type 2 Sand Material, Type 2 Filter Material, and Armor Material, and is designated for placement in the upper elevation slope areas of the Work Site, as shown on the Drawings. The three cap materials are described in Section 35 20 26—Waterway Capping.
 - a. Minimum Required Thickness for Type 2 Sand Material is 2.0 feet.
 - b. Minimum Required Thickness for Type 2 Filter Material is 1.0 foot.
 - c. Minimum Required Thickness for Armor Material is 1.5 feet.
4. Type 4. This Cap Type consists of three layers, including Type 2 Sand Material, Type 2 Filter Material, and Armor Material, and is designated for placement in the upper elevation slope areas of the Work Site, as shown on the Drawings. The three cap materials are described in Section 35 20 26—Waterway Capping. Type 4 Cap Type is differentiated from Type 3 Cap Type because it includes placement of Armor Material at a steeper grade with varying thickness.
 - a. Minimum Required Thickness for Type 2 Sand Material is 2.0 feet.
 - b. Minimum Required Thickness for Type 2 Filter Material is 1.0 foot.
 - c. Minimum Required Thickness for Armor Material is 1.5 feet.
5. Type 5A. This Cap Type consists of two layers, including Type 2 Filter Material and Armor Material, and is designated for placement in the nearshore areas of the Work Site within the Log Pond area,

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as shown on the Drawings. Both cap materials are described in Section 35 20 26—Waterway Capping.

- a. Minimum Required Thickness for Type 2 Filter Material is 1.0 foot.
 - b. Minimum Required Thickness for Armor Material is 1.5 feet.
6. Type 5B. This Cap Type consists of two layers, including Type 2 Filter Material and Armor Material, and is designated for placement adjacent to the BST timber bulkhead within the Log Pond area, as shown on the Drawings. Both cap materials are described in Section 35 20 26—Waterway Capping.
- a. Minimum Required Thickness for Type 2 Filter Material is 1.0 foot.
 - b. Minimum Required Thickness for Armor Material is 1.5 feet.
7. Type 6. This Cap Type consists of three layers, including a geotextile, Type 2 Filter Material, and Armor Material, and is designated for placement in the nearshore, oversteepened areas of the Work Site within the Log Pond area, as shown on the Drawings. Both cap materials are described in Section 35 20 26—Waterway Capping.
- a. Minimum Required Thickness for Type 2 Filter Material is 1.0 foot.
 - b. Minimum Required Thickness for Armor Material is 1.5 feet.
- C. Construction Quality Control Plan: The Contractor must submit a Construction Quality Control Plan describing Contractor's means and methods by which completion of construction activities will be monitored for compliance with the Contract. The Construction Quality Control Plan must be reviewed and accepted by the Port of Bellingham prior to the start of work.
- D. Construction Work Plan: The Construction Work Plan is a pre-construction submittal that includes Contractor means and methods for the completion of the work of the Contract. The Construction Work Plan must be reviewed and accepted by the Engineer prior to the start of work.
- E. Contingency Re-Dredging: Contingency Re-dredging shall be additional dredging as specified by the Engineer after Required Dredging activities have been completed, and based on Port-conducted confirmational

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sampling and testing results. Any need for Contingency Re-Dredging, as well as the horizontal and vertical limits for Contingency Re-Dredging, will be determined by the Engineer. Contingency Re-Dredging, if required, only applies to the BST area.

- F. Contingency Re-Dredge Volume: Contingency Re-dredge Volume is the volume of all contaminated materials that may require removal as part of Contingency Re-Dredging, as identified by the Engineer, and that will be paid for within the quantity and unit price for Bid Item 11 – Required Dredging, Contingency Re-Dredging, Barge Dewatering and In-Water Transportation and Bid Item 12 – Offloading, Upland Transportation and Disposal.
- G. Daily Construction Report: The Daily Construction Report will be submitted by the Contractor to the Engineer on a daily basis and will document all activities associated with the work that are completed each day. Specific submittal requirements for the Daily Construction Report are described in the individual Specification sections.
- H. Debris: Debris is defined as any solid waste materials other than sediment or soil excavated as part of the dredging operations, such as logs, wire, cable, steel bands, anchors, lumber, trash, concrete, etc. Debris shall be disposed of at a Port-approved upland landfill or Recycling Facility and in accordance with applicable local, state, and/or federal regulations.
 - 1. Shoreline Debris: Shoreline debris is further defined for purposes of Measurement and Payment as Debris located above elevation +5 feet MLLW and that is removed using land-based equipment.
 - 2. Dredge Debris: Dredge debris is further defined for purposes of Measurement and Payment as Debris located within the Dredge Prism that is removed using floating equipment and is considered incidental to Dredging work.
- I. Disposal Facility: An existing Subtitle D landfill facility located in the United States. The name of the Disposal Facility, including copy of the facility's permit, shall be submitted to the Port as part of the Contractor's Construction Work Plan.
- J. Dredge Pay Volume: Dredge Pay Volume is the in-situ quantity of dredged material calculated above the Payable Over-dredge Allowance elevation and grades using pre- and post-dredge Measurement and Payment surveys, minus Excessive Dredging. Contractor shall anticipate that some up-slope material will slough into the Dredge Prism when completing dredging activities adjacent to the GP dock and BST dock. Contractor shall account for anticipated Slough Material in the unit price for bid;

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however, no separate payment for removal and disposal of under-pier Slough Material shall be made.

- K. Dredge Prism: The Dredge Prism is the area defined by the horizontal and vertical limits of dredging shown on the Plans that the Contractor is required to dredge. The Contractor shall remove all material above the Required Dredging elevation and grades within the Dredge Prism, including Side Slopes. The Contractor shall not directly remove material from outside of the Dredge Prism. The Dredge Prism limit is a vertical cut at the pier-face of GP dock and BST dock, as shown on the Drawings. The Contractor shall remove Slough Material that falls into the Dredge Prism.
- L. Dredge Residuals: Dredge Residuals are defined as contaminated materials that are generated and suspended during dredging activities and that settle to the surface of the seabed.
- M. Engineer: The Engineer will be the Port's representative during construction. The Engineer is the only person with approval authority for the Port.
- N. Excessive Capping: Material placed outside of the capping limits and/or above the Maximum Over-placement Allowance or Restricted Elevations is Excessive Capping.
 - 1. Do not perform Excessive Capping.
 - 2. Contractor will be required to remedy Excessive Capping.
 - 3. Contractor will not be paid for Excessive Capping.
 - 4. Contractor will be responsible for any regulatory agency fees and/or fines incurred as a result of Excessive Capping.
- O. Excessive Dredging: Material dredged outside of the Dredge Prism limits and/or below the Maximum Over-dredge Allowance is Excessive Dredging.
 - 1. Do not perform Excessive Dredging.
 - 2. Contractor will not be paid for Excessive Dredging.
 - 3. Contractor will be responsible for any regulatory agency fees and/or fines incurred as a result of Excessive Dredging.
 - 4. Do not perform Excessive Dredging at the toe of cuts along the Shoreline Dredging areas to obtain required grades and side

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slopes. Excessive Dredging at the toe of slopes may cause significant sloughing of Side Slope material, which may resuspend and transport sediment, and/or cause damage to existing structures or unintended slope movement. Structural damage or slope movement caused by Excessive Dredging, as determined by the Engineer, shall be repaired by the Contractor at no cost to the Port.

- P. Inherent Delays: The Contractor shall anticipate and include allowance for Inherent Delays while conducting all construction activities as part of this project. Inherent Delays include, but are not limited to commercial shipping traffic within, inclement weather, and tribal fishing activities. Commercial shipping traffic and tribal fishing activities shall have precedence over the Contractor's activities and will require the Contractor to stop, move, adjust, and/or slow down to accommodate vessel movement or fishing activities. Costs for Inherent Delays shall be included in the Contractor's bid prices for this Contract.
- Q. In-Water Construction Window: The U.S. Army Corps of Engineers (USACE) Nationwide 38 permit identifies the periods of time that in-water work is not allowed (i.e., Fisheries Closure). In-water work is allowed outside of the Fisheries Closure period and is referred to as the In-Water Construction Window.
- R. Maximum Over-Dredge Allowance: The USACE Nationwide 38 permit allows dredging up to two (2) feet below the Required Dredging line as shown on the Drawings to account for variability in dredging accuracies. Dredging beyond the Maximum Over-Dredge Allowance is called Excessive Dredging and is expressly prohibited by the project permits and will not be paid for.
- S. Minimum Required Thickness: The Minimum Required Thickness is defined as the thickness that the Contractor shall place Sand (Type 1 and Type 2) Material, Filter (Type 1 and Type 2) Material, Armor Material, and Residuals Management Cover Material within areas as shown on the Drawings.
- T. Missed Inventory: Missed Inventory is defined as contaminated materials that may remain below the Required Dredging elevations in the BST open-water dredge area, as identified by results of Port confirmation sampling and testing.
- U. Off-Site Transload Facility: If used, the Contractor's Off-Site Transload Facility is defined as the Contractor provided off-site upland site where contaminated sediment and debris that has been generated from the Work Site is offloaded, stockpiled, dewatered and treated (if applicable), rehandled, and transferred onto trucks or rail cars (if rail access is

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available) for disposal at a Disposal Facility. The transload facility shall be operated in compliance with federal, state, and local regulations and permits regulating the activities undertaken.

- V. On-Site Staging and Stockpile Area(s): The On-Site Staging and Stockpile Area(s) are defined as the upland areas provided by the Port for Contractor use, located adjacent to Whatcom Waterway as shown on the Drawings, where the Contractor may stage equipment and materials and temporarily stockpile and dewater dredged sediment and debris, prior to transportation and disposal of the material at a Disposal Facility. There are three general areas where on-site staging and stockpiling operations may be conducted: (1) Central Waterfront Staging and Stockpile Area, (2) South Shoreline Staging and Stockpile Area, and (3) former GP West Staging and Stockpile Area as shown on the Drawings.
1. Within the former GP West Staging and Stockpile Area, the Contractor may transload and temporarily stockpile Dredge Debris and sediment in the Dredged Debris and Sediment Staging and Stockpile Area, as shown on the Drawings. Dredge Debris and sediment shall not be stockpiled at the Central Waterfront or South Shoreline Staging and Stockpile Areas.
 2. Contractor shall stockpile Shoreline Debris and upland excavation materials at Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area(s) that may be located within any of the three On-Site Staging and Stockpile Area(s). The Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area(s) are locations where the Contractor will bring shoreline debris and excavation soils for segregation, processing or recycling or on-site re-use, testing, and stockpiling. Shoreline debris and Temporary Excavation Materials Staging and Stockpile Area(s) must be kept and maintained separate from the Dredged Debris and Sediment Staging and Stockpile Area.
- W. On-Site Transload Facility(ies): If used, the Contractor's On-Site Transload Facility(ies) is defined as the Contractor provided on-site upland area where contaminated sediment and Dredge Debris that has been generated from the Work Site is offloaded, stockpiled, dewatered rehandled, and transferred back into an in-water containment barge or rail cars (if rail access is available) for disposal at a Disposal Facility. The On-Site Transload Facility(ies) is located as shown on the Drawings and the facility shall be operated in compliance with federal, state, and local regulations and permits regulating the activities undertaken.
- X. Pay Tonnage: Pay Tonnage is the measured weight of material used for payment associated with upland excavation and backfilling and shoreline

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debris removal and disposal activities as described in these Specifications. Pay Tonnage shall be the accepted weights from the Contractor's on-site weight scale or certificates of disposal for materials brought to a Disposal Facility or Recycling Facility as part of the work.

- Y. Payable Overdredge Allowance: A vertical distance, as shown on the Drawings, below the Required Dredging elevation and grades that will be paid. The Contractor shall select its means and methods to conduct its dredging work to stay within the Payable Overdredge Allowance limits to the extent practicable. Material dredged beyond the Payable Overdredge Allowance will not qualify for separate payment. Dredging beyond the Payable Over-dredge Allowance but above the Maximum Over-dredge Allowance is allowable but will not be paid. The Contractor shall account for potential non-payable dredge volume in its bid prices.
- Z. Post-Construction Survey: Post-Construction Surveys will be completed by the Contractor to document bathymetric and topographic conditions following completion of each component of the Work. The Post-Construction Surveys will be used for measurement of Contractor work completed within the Work Site. These surveys are described as follows:
 - 1. Required Dredging Post-Construction Survey(s). The Contractor shall conduct one or more post-construction survey(s) after Required Dredging is completed and accepted by the Engineer, after review of Contractor's Progress Surveys.
 - 2. Contingency Re-Dredging Post-Construction Survey. The Contractor shall conduct one or more post-construction survey(s) in all areas designated by the Engineer following completion of contingency re-dredging activities.
 - 3. Capping Post-Construction Survey. The Contractor shall conduct one or more post-construction survey(s) in slope and open-water areas of the Work Site after placement of each layer of cap material (e.g., sand types 1 and 2, filter types 1 and 2 and armor) as shown on the Drawings.
 - 4. Residuals Management Cover Material Placement Post-Construction Survey. The Contractor shall conduct a post-construction survey over the entire area where Residuals Management Cover Material is placed.
- AA. Pre-Construction Meeting: The Pre-Construction Meeting shall be defined as the coordination meeting with the Port of Bellingham and the Contractor, prior to the start of work. The Port of Bellingham will schedule the Pre-Construction Meeting following award of Contract.

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- BB. Pre-Construction Survey: The Pre-Construction Survey will be completed by the Contractor to document bathymetry (subtidal) and topographic (intertidal and shoreline) conditions in advance of conducting work. The Pre-Construction Survey will be used as the basis for measurement of Contractor work completed within the Work Site.
- CC. Progress Meeting: Progress Meeting is defined as a meeting between the Port of Bellingham and the Contractor that will occur on a regular basis throughout the duration of the work. The Contractor shall be responsible for scheduling Progress Meeting with the Port of Bellingham.
- DD. Progress Payment Quantities: Progress Payment Quantities are Contractor-calculated and Engineer approved quantities of unit price bid items (e.g, cubic yard, square foot, each) that have been completed that will be used to determine payment to the Contractor as part of a monthly progress payment.
- EE. Progress Surveys: Contractor shall conduct Progress Surveys on a daily basis to document progress of construction activities completed as part of the Work. Progress Surveys will be used as the basis for monthly progress payment to the Contractor. Progress surveys are described as:
1. Required Dredging Progress Survey. Contractor shall conduct on a daily basis to document dredging progress for Required Dredging.
 2. Contingency Re-Dredging Progress Survey. Contractor shall conduct on a daily basis to document dredging progress for Contingency Re-Dredging activities if required based on results of sampling and testing following completion of Required Dredging activities.
 3. Capping Progress Survey. Contractor shall conduct on a daily basis in slope and open-water areas of the Work Site to document placement thicknesses of each layer of cap (e.g., sand types 1 and 2, filter types 1 and 2 and armor) as shown on the Drawings.
 4. Residuals Management Cover Placement Progress Survey. Contractor shall conduct on a daily basis to document required placement thickness and placement area of Residuals Management Cover Material.
- FF. Recycling Facility: An existing and permitted facility located in the United States where materials or various types may be delivered for purposes of recycling and or re-use. The name of the Recycling Facility, including copy of the facility's permit, shall be submitted to the Port as part of the Contractor's Construction Work Plan.

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- GG. Required Dredging: The elevation and grades within the Dredge Prism as shown on the Drawings that the Contractor is required to remove all material above, including associated side slopes or slough materials. The bid quantity for Bid Item # 30 (Dredging, Contingency Re-Dredging, Barge Dewatering and In-Water Transportation) does include the Payable Over-dredge Allowance volume as part of the bid quantity. However, the Contractor is not required to remove the entire Payable Over-dredge Allowance volume. Additional Contingency Re-Dredging (as defined in this Section) may be necessary based on Port confirmation sampling and testing results.
- HH. Residuals Management Cover: Residuals Management Cover is defined as clean sand material meeting the requirements of Section 35 20 26—Waterway Capping that the Contractor shall place in BST areas, as shown on the Drawings.
1. The Required Required Thickness for Residuals Management Cover is 0.5 feet.
 2. The maximum over-placement allowance for Residuals Management Cover is 0.5 feet above the Minimum Required Thickness as described in the Specifications and as shown on the Drawings.
 3. Contractor shall not place additional Residuals Management Cover at elevations above the maximum over-placement allowance.
- II. Restricted Elevation: The Restricted Elevation shall be the highest elevation that the top of the open water cap can be placed up to within Whatcom Waterway, as shown on the Drawings. Restricted Elevations have been set to ensure that the top of the cap remains below an established navigation elevation within Whatcom Waterway. Material placed above the Restricted Elevation or combination of layers that result in exceedance of the Restricted Elevation shall be removed by the Contractor at no additional cost to the Port.
- JJ. Side Slope: The Side Slope is the slope to be excavated between the toe of slope and the intersect point at original ground level (top of slope). Side Slopes have required grades as shown on the Drawings (e.g., 3 horizontal to 1 vertical).
- KK. Slope Tolerance: Slope Tolerance for constructing slope caps is provided to account for cap placement tolerances on the slope cap areas. The Slope Tolerance applies to the Target Surface and Grade and allows the

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sloped cap surface to vary up to one (+1) foot above and one (-1) foot below the Target Surface and Grade as shown on the Drawings. Slope cap material placed above the Slope Tolerance +1 foot line may need to be removed at the sole discretion of the Engineer at no additional cost to the Port. If the final slope cap surface is under the Slope Tolerance -1 foot line, the Contractor shall conduct corrective action to achieve the Slope Tolerance at no additional cost to the Port.

- LL. Slough Material: Sediment and debris from the underpier areas that lose toe support and sloughs into the Dredge Prism from the underpier slope above as a result of making a vertical cut to grade along any pier face as shown on the Drawings. Sloughing of sediment from underpier areas is expected. The Contractor shall remove such material until the Required Dredging elevation and grade is met in front of the pier structure as shown on the Drawings.
- MM. Target Surface and Grade: The Targeted Surface and Grade represents the target line as shown on the Drawings to which the Contractor is required to place capping materials in slope areas, within a specified Slope Tolerance, while still achieving the Minimum Required Thicknesses for each discrete slope cap layer (e.g., sand, filter, and armor materials).
- NN. Weekly Construction Report: The Weekly Construction Report will be submitted by the Contractor to the Engineer each week and shall provide a summary of the week's construction activities that were completed as part of the Contract. Specific submittal requirements for the Weekly Construction Report are described in the individual Specification sections.
- OO. Work Site: The Work Site is defined as the area where Work will be completed under this Contract. The Work Site encompasses Whatcom Waterway and the Log Pond, adjacent upland areas that may be utilized by the Contractor, On-Site Staging and Stockpile Area(s), and On-Site and Off-Site Transload Facility(ies).

1.06 WORK SEQUENCING

- A. Prepare a construction sequencing approach section in the Construction Work Plan submittal that describes the Contractor's implementation approach for all construction activities and how this approach will meet the sequencing and operational facility requirements of these Specifications.
- B. Develop the Contractor's construction sequencing approach and construction schedule to meet the following performance objectives (as listed in order of importance to the project) to the maximum extent practicable.

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Section 01 10 00—Summary

1. Provide for safe working conditions.
 2. Complete all required work, including potential contingency re-dredging, within the Contract duration.
 3. Prevent or minimize to the extent practicable sediment recontamination within the Work Site.
 4. Minimize, to the extent practicable, impacts to Port tenant operations.
- C. The Engineer will review the construction sequencing approach and schedule for compliance with the Construction Documents and will notify the Contractor of potential sequencing conflicts with tenant operations, which may require the Contractor to modify its construction sequence at no additional cost to the Port:
- D. The Contractor shall bid and perform the work as described in this Contract under the following general sequencing requirements. The general sequencing listed below does not identify all necessary work elements and is only intended to provide an overview of the required sequence of construction for several key work elements. The Contractor may propose an alternate sequencing approach in its Construction Work Plan, but this alternate sequencing shall require Engineer review and acceptance of deviation from the specified sequencing:
1. Prepare pre-construction submittals for Port and Ecology review and approval. Conduct Pre-Construction Survey, and order materials if needed.
 2. Conduct mobilization and site preparation, including quality control and temporary environmental controls, and set up temporary facilities including the On-Site Staging and Stockpile Area(s), On-Site Transload Facility(ies) (as necessary) and the Off-Site Transload Facility.
 - a. Engineer reserves the right to inspect all Contractor quality control and environmental protection measures to ensure they are in place and working properly prior to initiating construction activities. Construction activities may not begin until appropriate Contractor quality control and environmental protection components are in place and working properly.
 3. Conduct in-water construction activities during the permitted construction window as identified in the Nationwide 38 Permit.

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Section 01 10 00—Summary

Upland work activities may commence prior to the in-water construction windows.

4. Conduct Shoreline Debris and Structures Removal work. Specific sequencing requirements exist for specific structures and areas of work. Refer to Related Specifications for details.
 - a. Remove loose debris that does not protect the slope or support existing bulkheads from the entire shoreline cap area above approximate elevation +5 feet MLLW
 - b. Remove the Clarifier Tank, the existing timber and steel bulkhead, and the Foam Tank structures (including timber catwalk structure).
 - c. Stand alone piles designated for removal shall be pulled or cutoff at mudline and removed.
 - d. Debris on slopes with replacement bulkheads or containment structures shall initially be removed only as necessary to facilitate replacement bulkhead or source control structure installation. After new structure installation is complete, remaining debris can be removed as required to facilitate dredging and cap material placement. Reference individual replacement bulkhead or containment structure installation for details.
 - e. Remove the existing barge ramp and support infrastructure as described in the Specifications and shown on the Drawings. The replacement bulkhead at Maple Street shall be installed prior to removal of the barge ramp support infrastructure.
 - f. The existing timber pier and bulkhead located at the Former Chevron Property are not to be removed until the new shoreline containment wall is installed.
5. Conduct replacement bulkhead and shoreline containment structure installation. Structure installation activities shall be completed prior to dredging and placement of capping material in shoreline areas adjacent to the structures. These shoreline structures are in areas with steep slopes and it is necessary to install structures prior to conducting the slope dredging in front of these structures to prevent potential slope failure. Dredging may occur concurrently with replacement bulkhead and/or containment structure installation, as long as the dredging does not interfere

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Section 01 10 00—Summary

with structures installation and is conducted a sufficient offset distance away from toes of slope areas to prevent potential slope failure.

- a. Develop Contractor's overall sequencing approach for structure installation to minimize the amount of time the upland excavation areas are left exposed/open prior to backfill. Coordinate with the Engineer and Port tenants to minimize, to the extent practicable, impacts to tenant operations.
 - b. Install the replacement bulkhead at Maple Street prior to removal of the barge ramp support infrastructure.
 - c. Complete temporary upland excavation as necessary to install the new structures and to relieve excess upland ground pressure on the replacement bulkhead or containment structure.
 - d. Backfill temporary upland excavation areas adjacent to shoreline replacement bulkheads and containment walls only after completing dredging and capping activities on the slope areas adjacent to the structures.
 - e. Structure installation may begin as soon as the area is clear of shoreline debris or other obstacles that may impede installation of the structures.
6. Conduct Dredging activities. Prior to placing capping material in dredge areas or placing Residuals Management Cover Material at the BST area, dredging must be completed and approved as complete by the Engineer. Dredging shall be performed in accordance with the means and methods described in the Contractor's Construction Work Plan, as approved by the Engineer.
- a. Dredging activities shall be preceded by shoreline debris and piling removal in the Inner Waterway area.
 - b. Dredging may be completed in the BST area prior to or concurrent with other construction activities in the Inner Waterway and Log Pond areas.
 - c. Dredging adjacent to new replacement bulkhead and shoreline containment structure areas shall be preceded by new structure installation and temporary upland excavation.

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Section 01 10 00—Summary

- d. Dredging on shoreline slopes shall be completed from top of slope to bottom of slope to minimize uncontrolled slope sloughing.
 - e. Dredge cuts at the face of replacement bulkhead and shoreline containment structures shall be done with care as to not damage the structures with dredge equipment.
 - f. Dredge areas must be surveyed and specified work reviewed and approved as complete by the Engineer prior to cap placement.
7. Conduct Capping activities. After completing dredging activities, and approval of the work by the Engineer, the Contractor shall place capping materials within the areas shown on the Drawings.
- a. Place all capping materials (sand, filter and armor) on slopes, laying material from the bottom of slope to top of slope, to maintain slope stability and minimize movement of cap materials down the slope.
 - b. Place capping materials using lift thicknesses as described in the specifications in order to maintain stability of soft sediment surfaces.
 - c. Verify uniform cover and lift thickness of sand cap by survey, as described in the Specifications. Place additional material or remove material as required to comply with design requirements.
 - d. Following Engineer approval of sand layer placement, proceed with placement of filter material in shoreline areas or armor material in open-water areas.
 - e. Verify uniform cover and lift thickness of filter material by survey, as described in the Specifications. Place additional material or remove material as required to comply with design requirements.
 - f. Following Engineer approval of filter material layer placement, proceed with placement of armor material in shoreline slope areas.
 - g. Verify placement thickness of armor material by survey, as described in the Specifications. Place additional material or

DIVISION 01—GENERAL REQUIREMENTS

Section 01 10 00—Summary

remove material as required to comply with design requirements.

- h. Filter and armor layer placement must be expedited and placed as soon as reasonably possible after sand cap placement to protect sand cap material from sloughing, wind/wave action, propeller wash or other erosive forces. If previously placed cap layers are damaged (or eroded) before the next cap layer is placed, due to the Contractor not expediting the slope filter and armor placement work, the Contractor shall repair any such damage at no additional cost to the Port.
- 8. Install in-water piling (dolphin piles, fender piles, and mooring piles).
 - a. Installation of in-water piling must be completed following placement of filter material and prior to placement of armor material in the shoreline slope areas of the Inner Waterway.
- 9. Place Residuals Management Cover Material will be placed in the BST area after completing and obtaining Engineer approval of all required and contingency dredging activities in the BST area.
- 10. Complete transport and disposal/recycling of all dredged materials, debris, and upland excavation soils to applicable off-site Permitted Disposal Facility, Recycling Facility, or Port On-Site Recycling Stockpile.
- 11. Clean up Work Site and Contractor's On-Site Staging and Stockpile Area(s), On-Site Transload Facility(ies), and Off-Site Transload Facility(ies) area(s) (including decontamination of Contractor equipment) and remove all temporary facilities.
- 12. Demobilize following receiving the Notice of Completion from the Engineer.

1.07 CONSTRUCTION WORK PLAN

- A. Contractor shall submit a detailed Construction Work Plan as required in the sections of these Specifications that describe the Contractor's means and methods for completing the various parts of the work. The Construction Work Plan shall be submitted for Engineer review and approval within twenty-eight (28) calendar days after Notice of Award.

DIVISION 01—GENERAL REQUIREMENTS

Section 01 10 00—Summary

1. As part of the Construction Work Plan, provide a Construction Work Schedule in a Gantt chart format showing the critical path of work. The construction work schedule shall identify the work clearly, showing the detailed items of work. The breakdown of work shall, at a minimum, show all of the items identified in the Bid Form and significant design, manufacturing, construction, and installation activities. Submittals and long lead items shall be included and the relationship between a submittal and the work item shall be identified. The relationship between the work items shall clearly show the starting and completion dates, and include all details of the work within the timeframe shown.
2. Should any activity not be completed by the stated scheduled date, the Engineer will have the right to require the Contractor to expedite completion of the activity by whatever means appropriate and necessary, without additional compensation to the Contractor.

1.08 ADJACENT PORT TENANTS AND OTHER PROPERTY OWNERS

- A. Adjacent Port tenants and other property owners will be using in-water portions of the Work Site and other adjacent upland and in-water areas for their operations. The Contractor shall coordinate with these parties on their operations to avoid impacting tenant or property owner activities.

1.09 INTERFERENCE WITH NAVIGATION

- A. Whatcom Waterway is a federal navigation channel up to the east end of the Bellingham Shipping Terminal and must be kept available for commerce. Commercial activities shall take priority over the Contractor's operations. The Port's tenants and other entities must have access through the Work Site for the duration of the construction. The Contractor shall conduct its operations in a manner that will minimize interference with those activities. In the event that the Contractor's construction equipment (e.g., dredge, tug, barges, survey vessel, workboats, anchors, lines, etc.) obstructs the navigable waterway or berthing area so as to hinder movement of commercial vessels, the equipment shall immediately be moved to facilitate the shipping activity.
- B. The Contractor shall make allowance in its Construction Schedule for Inherent Delays or interruptions due to vessel movement in the waterway. No additional payment shall be made to the Contractor for these Inherent Delays or interruptions.
- C. Any damage to the Contractor's equipment due to the Contractor's failure to move when required shall be at the Contractor's sole risk and expense.

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Section 01 10 00—Summary

1.10 PROTECTION OF EXISTING FACILITIES

- A. Any damage to the pier structures, and/or existing facilities caused by the Contractor's operations, as determined by the Engineer, shall immediately be repaired to the pre-project condition at the Contractor's expense.
- B. Condition Survey of Existing Structures: The Contractor and the Engineer shall jointly review and verify the pre-construction condition of piers and wharves, fender systems, electrical vaults, pipelines, and outfalls within the work areas prior to beginning work to ascertain existing conditions.
- C. The former GP west Log Pond area has a previously constructed sediment remediation isolation cap made out of sand. The Log Pond area has shallow water depth and there are areas of eelgrass habitat within the Log Pond area, as shown on the Drawings. Do not disturb or place equipment above the eelgrass habitat areas. Barge grounding and equipment anchoring is not permitted in the Log Pond area. The Contractor may use spuds for floating equipment within the Log Pond area, and is required to describe it's spudding means and methods in the Construction Work Plan.

1.11 MISPLACED MATERIAL

- A. Should the Contractor, during the execution of the work, lose, dump, throw overboard, sink, or misplace any material, barge, machinery, or appliance, the Contractor must promptly recover and remove the same. Give immediate verbal notice, followed by written confirmation, of the description and location of such obstructions to the Engineer and mark and buoy such obstructions until they are removed.
- B. Should the Contractor refuse, neglect, or delay compliance with this requirement, such obstructions may be removed by the Port or its agents, and the cost of such operations may be deducted from any money due to the Contractor, or may be recovered from the Contractor's bond.
- C. The liability of the Contractor for the removal of a vessel wrecked or sunk without his fault or negligence shall be limited to that provided in Sections 15, 19, and 20 of the Rivers and Harbors Act of 3 March 1899 (33 U.S.C. 410 et seq.).
- D. The Contractor shall be responsible for any fees, fines, penalties, or other costs resulting from misplaced materials.

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Section 01 10 00—Summary

1.12 ENGINEERING AND INSPECTION

- A. Representatives of regulatory agencies and Port representatives (e.g, inspectors, consultants and others as identified by the Engineer) shall be allowed on the Work Site and on Contractor equipment to inspect the work at any time.

1.13 COORDINATION

- A. Port Activities: The Contractor shall coordinate all activities with the Port so that interference with Port activities will be minimized. In addition, the Contractor shall carry out work in a manner that minimizes interference and does not delay Port operations.
- B. The Contractor shall coordinate all marine activity and vessel movements with the U.S. Coast Guard.
- C. Adjacent tenants: Adjacent tenants will be using in-water portions and adjacent uplands of the Work Site for their operations. The Contractor shall coordinate with these parties on their operations to avoid and/or minimize impacts to tenant activities. Adjacent tenants include Colony Wharf.
- D. The Contractor shall be responsible for coordinating Work Site construction activities with operational activities that occur on a regular basis within Whatcom Waterway, and shall complete the work in accordance with the sequencing requirements provided in these Specifications, and in a manner that minimized disruption to ongoing operational uses of the waterway and shoreline areas. Work Site access areas will be shared with Port tenants and other property owners and other vessels that utilize the waterway for commercial operations. The Contractor shall coordinate Work Site construction activities, including Work Site access, parking, and lay down areas, with other operational activities, and keep disruptions to other activities to a minimum.
- E. Coordinate work of sub-trades. Convene meetings between subcontractors whose work interfaces and ensure awareness of areas and extent of interface required.
 - 1. Provide each subcontractor with a complete set of Drawings and Specifications for the Contract, to assist them in planning and carrying out their respective work.
 - 2. Develop coordination drawings when required, illustrating potential interference between works of various trades, and distribute to affected parties.

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Section 01 10 00—Summary

- a. Pay particular close attention to overhead work and work within or near to structural elements.
 - b. Identify building elements, service lines, and rough-in points on coordination drawings and indicate location service entrances to site.
 - c. Facilitate meeting and review coordination drawings. Ensure subcontractors agree and sign off on drawings.
 - d. Plan and coordinate work in such a way to construct as-built conditions as shown on the Drawings.
3. Ensure cooperation between trades in order to facilitate general progress of work and avoid situations of spatial interference.
 4. Ensure that each trade provides all other trades reasonable opportunity for completion of work and in such a way as to prevent unnecessary delays, and removal or replacement of completed work.
 5. Ensure disputes between subcontractors are resolved.
 6. The Engineer is not responsible or accountable for extra costs incurred as a result of the Contractor's failure to coordinate work among trades and subcontractors.
- F. All costs associated with coordination of the work shall be considered incidental to the lump sum and unit prices set forth in the Bid Form.

1.14 SITE SECURITY

- A. Contractor shall verify all site access and security requirements for the different Work Site areas with the Engineer.
- B. The Contractor shall notify the U.S. Coast Guard (USCG) as required to comply with USCG, Maritime Security (MARSEC), and Port regulations for operating within Bellingham Bay and the Whatcom Waterway. All costs associated with implementation of required security measures will be considered inclusive to the Contract and should be included in the Contractor's Bid.

1.15 MATERIALS TESTING

- A. Necessary materials testing, as described in these Specifications, shall be performed by an independent testing laboratory and paid for by the

DIVISION 01—GENERAL REQUIREMENTS

Section 01 10 00—Summary

Contractor. Access to the area necessary to perform the testing and/or to secure the material for testing, shall be provided by the Contractor.

1.16 SALVAGE

- A. The Engineer reserves the right to identify items for Port salvage during completion of the work.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION

DIVISION 01—GENERAL REQUIREMENTS

Section 01 14 00—Work Restrictions

PART 1 – GENERAL

1.01 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 01 10 00—Summary
- B. Section 01 41 26—Permits
- C. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout the Specifications.
- D. No separate payment will be made for effort associated with work described in this Specification Section. Work required to comply with this Specification Section is considered to be inclusive to all other activities described in the Contract Documents.

1.02 USE OF PREMISES

- A. Use of Work Site: Limit use of premises to work in areas indicated. Do not disturb portions of the Work Site beyond areas in which the work is indicated. Disturbance outside the Limits of Work (as shown on the Drawings) shall be limited to designated access points and storage areas as shown on the Drawings or specified herein.
 - 1. Limits of Work: Confine construction operations to limits as shown on the Drawings. In those locations where existing vegetation is to remain, the Contractor must work around and protect the vegetation from damage.
 - 2. Port and Tenant Occupancy: Allow the Engineer, private landowners and property tenants, regulatory agency personnel, and the Port's representatives access to the Work Site, but the general public shall be restricted.
 - 3. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to the Port, Port's employees, Port Tenants, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances
 - b. Schedule deliveries to minimize space and time requirements or storage of materials and equipment on site

DIVISION 01—GENERAL REQUIREMENTS

Section 01 14 00—Work Restrictions

4. Move any stored products, under the Contractor's control, that interfere with the operations of the Port, private landowners, and property tenants or access to adjacent properties.
- B. The following areas within the Limits of Work are to be protected from any and all negative impacts during construction including materials storage and silt laden runoff:
1. Stormwater outfalls, including the C Street Outfall. Additional City, private property, or Port Tenant outfalls, as shown on the Drawings, are also to be protected.
 2. Former Georgia-Pacific (GP) Log Pond remediation cap. There is an existing isolation cap in the GP Log Pond area that was constructed as part of a previous remediation project. Do not use anchors when working within the Log Pond area to prevent damage to the remediation cap. Use of spuds will be permitted (if the Contractor has no alternative method to hold its equipment in place). The Contractor shall describe its spudding method and equipment in the Capping Plan (included as part of the Construction Work Plan) for Engineer approval.
 3. Eelgrass beds. Eelgrass bed locations are shown on the Drawings. The Contractor shall not damage eelgrass beds located outside the Limits of Work.
 4. Existing structures and utilities that are not to be removed, including but not limited to the Bellingham Shipping Terminal (BST) and GP dock.
 5. Access roads and areas outside of the On-Site Staging and Stockpile Area(s).

1.03 ON-SITE STAGING AND STOCKPILE AREA(S)

- A. On-Site Staging and Stockpile Area(s) are limited to the areas (former GP West and Central Waterfront properties) shown on the Drawings. The Contractor's use of these areas shall be limited to purposes directly related to the construction of this project. Prior to mobilization, the Contractor shall identify in the Temporary Facilities and Controls Work Plan (included as part of the Construction Work Plan) its proposed use of these (and other) areas, indicating planned use of the area(s), access, security, signage, restoration, and anticipated duration of use. No use of these On-Site Staging and Stockpile Area(s) is permitted until the Port provides written approval of the Contractor's Construction Work Plan.

DIVISION 01—GENERAL REQUIREMENTS

Section 01 14 00—Work Restrictions

- B. The Contractor may provide its own legal staging and stockpile areas off site at the Contractor's discretion. Provide the Port with locations in the Temporary Facilities and Controls Work Plan for Engineer approval.
 - 1. Upon completion of work, provide the Engineer with a release from off-site property owner(s) that certifies that the off-site area was returned in an acceptable condition and all obligations associated with its use have been met.
- C. The Contractor shall protect downstream areas by covering, or otherwise containing, stockpiles of loose materials.
- D. Comply with other On-Site Staging and Stockpile Area(s) and Off-Site Staging and Stockpile Area(s) requirements listed in other Specification sections.

1.04 RESTORATION

- A. Restore all areas disturbed by the construction process (e.g., On-Site Staging and Stockpile Area(s), damaged pavement, and similar). As applicable, all ingress or egress points that are disturbed must be re-graded, re-seeded, re-planted, or re-paved to restore them to original or better conditions.
- B. Unless otherwise designated, protect all existing Work Site features to remain from potential Contractor damage above and below grade. If unavoidable damage occurs, notify the Port immediately and a decision will be rendered as to how the Contractor is to replace or repair the damage at the Contractor's expense.
- C. Surround protected upland areas with highly visible fencing prior to the start of work.

1.05 NEW AND EXISTING WORK

- A. Unless otherwise noted, any new work authorized by the Port shall be assumed to be performed in conditions corresponding to existing conditions and shall utilize similar material, workmanship, grade, and finish. Existing work shall be cut, drilled, altered, removed or temporarily removed, and replaced for performance of work under the Contract. Work replaced shall match similar existing work. Work remaining in place that is damaged during this Contract shall be restored to the condition at time of award of Contract, or replaced with new work as determined by the Port. Patch existing work as required for proper interface.

DIVISION 01—GENERAL REQUIREMENTS

Section 01 14 00—Work Restrictions

1.06 EQUIPMENT STANDARDS

- A. All equipment furnished and/or installed under this Contract shall meet safety requirements of all applicable codes.

1.07 PARKING

- A. Parking for personnel on the work will be limited to areas as shown on the Drawings or at other off-site locations arranged by the Contractor. The Contractor can obtain additional off-site parking, material stockpiling, and storage with the approval of the Port. The Contractor will be responsible for ensuring that no nuisance is created for the Port or adjacent properties through use of the streets for parking or workers' access.

1.08 TRUCK AND EQUIPMENT ACCESS

- A. To avoid traffic conflict with local private landowners, commercial operators on the waterway, and residents, and to avoid overloading of streets and driveways elsewhere on the Port's property, limit the access of trucks and equipment to a route as approved by the Port prior to mobilization.
- B. Vehicular traffic is limited to areas within the project limits except areas designated for access.
- C. Trucking dredged materials from the Work Site for disposal is not allowed. All dredged materials shall be barged from the Work Site to a Contractor-provided Off-Site Transload Facility, for transportation of dredged materials to the Port-approved upland Permitted Disposal Facility, unless the Contractor has approval from the Railroad Line(s) to use their rail lines for transporting contaminated dredged material.
- D. Trucking Shoreline Debris and Upland Excavation materials from the Work Site for disposal or recycling will be allowed.

1.09 WORK HOURS

- A. Offshore work hours are unrestricted and the Contractor is allowed to work twenty-four (24) hours per day, seven (7) days per week.
- B. Normal onshore work hours are 7:00 am to 7:00 pm, seven (7) days per week.
- C. Submit a schedule of proposed working hours to the Port in the Construction Work Plan for Engineer review and approval. Do not perform any activities outside of these hours without prior approval of the

DIVISION 01—GENERAL REQUIREMENTS

Section 01 14 00—Work Restrictions

Engineer. Said approval shall be requested no later than 48 hours prior to the proposed work to be performed outside of these hours.

1.10 PERMIT RESTRICTIONS AND REGULATORY REQUIREMENTS

- A. The Contractor shall comply with all conditions in approved permits found in the Specification appendices and subsequently obtained by the Port and Contractor. See Section 01 41 26—Permits and Section 01 45 00—Quality Control.
- B. In-water work shall be limited to the applicable fish window of August 1 to February 15 as prescribed in the permit documents. An extension to the allowable in-water work window (for completion of limited additional in-water work activities) to March 15 may be allowed by the permitting agencies if necessary. Work conducted above the Mean Higher High Water (MHHW) elevation is not restricted to the fish window period.
- C. Intertidal work (below ordinary high water) may be completed during periods of low tide (i.e., in the dry) beginning on July 15. Contractor shall clearly describe in the Schedule of Work and in the Construction Work Plan any activities that are proposed for completion during this time period and prior to the start of the allowable in-water work window on August 1.

1.11 SEQUENCING

- A. See Section 01 10 00—Summary and Section 01 32 00—Construction Progress Documentation for construction sequencing requirements.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION

Division 01—GENERAL REQUIREMENTS
Section 01 20 00—Price and Payment Procedures

PART 1 – GENERAL

1.01 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 01 29 73—Schedule of Values
- B. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout the Specifications.

1.02 PAYMENT PROCEDURES

- A. Monthly pay estimates shall be addressed to John Hergesheimer (Engineer) at Port of Bellingham, 1801 Roeder Avenue, PO Box 1677, Bellingham, WA 98227; or submitted electronically using Adobe PDF file format. PDF files can be e-mailed to the Engineer at johnh@portofbellingham.com.
- B. Monthly pay estimates shall clearly identify the work performed for the given time period based on a percentage of work completed for lump sum bid items as presented in the approved “Schedule of Values” and Progress Payment Quantities completed for unit price items.

1.03 PAYMENT PRICING

- A. Pricing for the various lump sum or unit prices in the Bid Form, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the work in accordance with the requirements of the Contract Documents.
- B. Pricing also includes all costs of compliance with the regulations of all public agencies having jurisdiction, including, but not limited to, safety and health requirements of the Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor, and the U.S. Longshore and Harbor Workers’ Compensation Act.
- C. No separate payment will be made for any item that is not specifically set forth in the Bid Form, and all costs therefore shall be included in the prices named in the Bid Form for the various appurtenant items of work. All other work not specifically mentioned in the measurement and payment sections identified below shall be considered incidental to the work performed and merged into the various unit and lump sum prices bid. Payment for work under one item will not be paid for under any other item.

Division 01—GENERAL REQUIREMENTS
Section 01 20 00—Price and Payment Procedures

- D. The Port of Bellingham reserves the right to make changes should unforeseen conditions necessitate such changes. Where work is on a unit price basis, the actual quantities occasioned by such changes shall govern the compensation.

1.04 MEASUREMENT AND PAYMENT

- A. Measurement for Base Bid Item payments will be at the Lump Sum or Unit Price as stipulated in the Bid Form for the items listed below. Payment shall be considered full compensation for furnishing all labor, materials, and equipment to complete the work specified.

1. Bid Item No. 1 - MOBILIZATION AND DEMOBILIZATION:
MAXIMUM OF 10 PERCENT OF SUBTOTAL BASE BID

- a. Payment for “Mobilization and Demobilization: Maximum of 10 percent of subtotal base bid” shall be for preparatory work and operations performed by the Contractor including, but not limited to, those necessary for the movement of its personnel, equipment, supplies and incidentals to the Work Site; for premiums on bonds and insurance for the Project and for other work and operations which it must perform or costs it must incur before beginning production work on the various items at the Work Site; and for preparation of pre-construction, construction and post-construction submittals. This item also includes the removal of equipment, remaining materials and construction related debris from the Work Site and to clean and restore all work areas, storage and On-Site Staging and Stockpile Area(s) to their pre-construction condition or better, and for Contractor submittal of Record Drawings to the Port.
- b. “Mobilization and Demobilization: Maximum of 10 percent of subtotal base bid” shall be paid at the lump sum price listed in the bid, but not to exceed a maximum of ten percent (10 percent) of the other bid items in the Base Bid (excluding Mobilization and Demobilization). Incremental payment shall be made as follows:
- 1) 40 percent after completion of 5 percent of the total contract amount of other bid items have been earned.
 - 2) 40 percent after completion of 20 percent of the total contract amount of other bid items have been earned.

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- 3) 20 percent after completion of all work on the project has been completed, including cleanup submission of Record Drawings and Final Acceptance of the project by the Port.
 - c. Execute the Mobilization and Demobilization work as required by the Contract Documents.
2. Bid Item No. 2 – SITE PREPARATION
 - a. Measurement for “Site Preparation” will be made on a lump sum basis.
 - b. The lump sum price offered in the schedule for “Site Preparation” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Contractor field location of On-Site Staging and Stockpile Area(s) boundaries (as shown on the Drawings), Off-Site Transload Facility(ies), existing utilities, and Work Site features in adjacent upland areas.
 - 2) Setup, operation, maintenance, and deconstruction of On-Site Staging and Stockpile Area(s), the On-Site Transload Facility(ies) (as necessary) and the Off-Site Transload Facility(ies) throughout the duration of the project.
 - 3) Establishment of Contractor offices, buildings, Engineer’s field office, and other facilities necessary for work on the project, including provision for installation of temporary utilities.
 - 4) Completion of all clearing and grubbing of vegetation as described in Section 31 11 00—Clearing and Grubbing.
 - 5) Electrical work including removal and relocation of existing electrical systems, equipment, and lighting, as well as new work to support the relocation of existing items.
 - 6) Utility removal including:
 - i. Cut and cap storm drain line at limit of shoring wall excavation.

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- ii. Drain, clean and abandon existing hydraulic line from existing hydraulics shed to existing barge ramp.
 - iii. Cut and cap abandoned water line at extents of excavation zone.
 - 7) Extension of existing storm drainage outfalls.
 - 8) Miscellaneous site cleanup including removal, hauling and disposal, or salvage, of miscellaneous steel debris, wood buildings, concrete foundations as shown on the Drawings or in the Technical Specifications, including but not limited to: steel cleats, steel gangways, steel bullrail, wood hydraulics shed and associated concrete foundation.
 - c. Payment for “Site Preparation” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, materials, equipment, and incidentals required to complete the work of the Contract Documents.
3. Bid Item No. 3 – SURVEYS
- a. Measurement for “Surveys” will be made on a lump sum basis.
 - b. The lump sum price offered in the schedule for “Surveys” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Completion of a Pre-Construction Survey in advance of conducting work. The Pre-Construction Survey will be used as the basis for measurement of Contractor work completed within the Work Site.
 - 2) Completion of Progress Surveys including (but not limited to) Required Dredging Progress Surveys, Contingency Re-Dredging Progress Surveys (as necessary), Slope Capping Progress Surveys, Open-Water Capping Progress Surveys, Capping Progress Surveys, and Residuals Management Cover Placement Progress Surveys.
 - 3) Completion of Post-Construction Surveys including (but not limited to) Required Dredging Post-

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Construction Surveys, Contingency Re-Dredging Post-Construction Surveys (as necessary), Slope Capping Post-Construction Surveys, Open-Water Capping Post-Construction Surveys, Capping Post-Construction Surveys, and Residuals Management Cover Placement Post-Construction Surveys.

- 4) Completion of all other surveys as necessary to perform the requirements of the work described in the Contract Documents.
- c. Payment for “Surveys” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, materials, equipment, and incidentals required to complete the work of the Contract Documents. Payment for “Surveys” shall also include all costs in connection with collection, processing, and reporting of all survey data (pre-construction, progress, and post-construction) that shall be used to calculate or verify progress and measurement and payment volumes, areas, limits, positions, and other aspects of the work, and calculating quantities for progress reporting and measurement and payment purposes, as described in these Specifications.
4. Bid Item No. 4 – REMOVAL AND DISPOSAL: TIMBER AND STEEL DOLPHINS
 - a. Measurement for “Removal and Disposal: Timber and Steel Dolphins” will be made per each location of timber dolphin removed.
 - b. The unit price offered in the schedule for “Removal and Disposal: Timber and Steel Dolphins” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Removal, hauling and disposal, or salvage, of fourteen (14) timber and steel dolphin pile structures within the Inner Waterway and Log Pond areas, and other materials shown on the Drawings or in the Technical Specifications.
 - c. Payment for “Removal and Disposal: Timber and Steel Dolphins” will be made at the contract unit price as stated in the bid and will be full compensation for furnishing all labor,

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equipment, and incidentals required to complete the work of the Contract Documents.

5. Bid Item No. 5 – REMOVAL: MONITORING WELLS
 - a. Measurement for “Removal: Monitoring Wells” will be made on a per each monitoring well basis.
 - b. The unit price offered in the schedule for “Removal: Monitoring Wells” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Removal and decommissioning of up to 8 monitoring wells located within the Work Site, as shown on the Drawings.
 - c. Payment for “Removal: Monitoring Wells” will be made at the contract unit price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

6. Bid Item No. 6 – UPLAND EXCAVATION AND HANDLING FOR ON-SITE RE-USE
 - a. Measurement for “Upland Excavation and Handling for On-Site Re-Use” will be made on a per ton basis.
 - b. The unit price offered in the schedule for “Upland Excavation and Handling for On-Site Re-Use” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Excavation, hauling, screening, segregating, stockpiling, and transportation for re-use of suitable material generated from upland excavation areas in the Central Waterfront and Southern Shoreline areas as determined by field screening and/or stockpile testing activities, and as described on the Drawings or in the Technical Specifications.
 - c. Payment for “Upland Excavation and Handling for On-Site Re-Use” will be made at the contract unit ton price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

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7. Bid Item No. 7 –UPLAND EXCAVATION, HANDLING AND OFF-SITE LANDFILL DISPOSAL
 - a. Measurement for “Upland Excavation, Handling and Off-Site Landfill Disposal” will be made on a per ton basis.
 - b. The unit price offered in the schedule for “Upland Excavation, Handling and Off-Site Landfill Disposal” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Excavation, hauling, screening, segregating, stockpiling, and disposal of contaminated or unsuitable material generated from upland excavation areas in the Central Waterfront and Southern Shoreline areas at a Disposal Facility, as determined by field screening and/or stockpile testing activities, and as described on the Drawings or in the Technical Specifications.
 - c. Payment for “Upland Excavation, Handling and Off-Site Landfill Disposal” will be made at the contract unit ton price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
8. Bid Item No. 8 – SHORELINE DEBRIS REMOVAL, HANDLING AND OFF-SITE LANDFILL DISPOSAL
 - a. Measurement for “Shoreline Debris Removal, Handling and Off-Site Landfill Disposal” will be made on a per ton unit basis. Tonnage will be measured using certified weight tickets obtained from the approved Disposal Facility upon disposal of the Shoreline Debris.
 - b. The unit price offered in the schedule for “Shoreline Debris Removal, Handling and Off-Site Landfill Disposal” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Removal, staging, transportation, and disposal of Shoreline Debris material between the top of bank and approximate elevation +5 feet MLLW, as shown on the Drawings or in the Specifications.
 - c. Payment for “Shoreline Debris Removal, Handling and Off-Site Landfill Disposal” will be made at the contract unit price

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as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

9. Bid Item No. 9 – SHORELINE DEBRIS REMOVAL AND HANDLING FOR ON-SITE RE-USE
 - a. Measurement for “Shoreline Debris Removal and Handling for On-Site Re-Use” will be made on a per ton unit basis. Tonnage will be measured using certified weight tickets provided by the Contractor for recycled concrete Shoreline Debris that remains on-site. Tonnage shall be measured at the Work Site as the crushed Shoreline Debris material (i.e., concrete) leaves the On-Site Staging and Stockpile Area(s) for placement at the Port’s designated recycle stockpile locations, as shown on the Drawings.
 - b. The unit price offered in the schedule for “Shoreline Debris Removal and Handling for On-Site Re-Use” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Removal, staging, processing (i.e., crushing), and transportation of Shoreline Debris material removed between the top of bank and elevation +5 feet MLLW, as shown on the Drawings or in the Specifications.
 - 2) Placement of crushed Shoreline Debris material (i.e., concrete) at the Port-designated recycling stockpile locations, as shown on the Drawings.
 - c. Payment for “Shoreline Debris Removal and Handling for On-Site Re-Use” will be made at the contract unit price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
10. Bid Item No. 10 – SHORELINE DEBRIS REMOVAL, HANDLING AND OFF-SITE RECYCLING
 - a. Measurement for “Shoreline Debris Removal, Handling and Off-Site Recycling” will be made on a per ton unit basis. Tonnage will be measured using certified weight tickets obtained from the approved Recycling Facility upon disposal of recycled debris. Weight tickets obtained from the approved Recycling Facility will also be compared to weight

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tickets generated as material leaves the On-Site Staging and Stockpile Area(s).

- b. The unit price offered in the schedule for “Shoreline Debris Removal, Handling and Off-Site Recycling” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Removal, staging, transportation, and recycling of Shoreline Debris material removed between the top of bank and approximate elevation +5 feet MLLW, as shown on the Drawings or in the Specifications.
 - 2) Off-site recycling includes Contractor transport of the Shoreline Debris material to an approved off-site Recycling Facility for disposal.
- c. Payment for “Shoreline Debris Removal, Handling and Off-Site Recycling” will be made at the contract unit price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

11. Bid Item No. 11 – REQUIRED DREDGING, CONTINGENCY RE-DREDGING, BARGE DEWATERING AND IN-WATER TRANSPORTATION

- a. Measurement for “Required Dredging, Contingency Re-Dredging, Barge Dewatering and In-Water Transportation” shall be made on a cubic yard basis, based on comparison of the Contractor’s Pre-Construction and Post-Construction Surveys, as defined in these Specifications.
- b. The actual in situ volume of dredge material that the Contractor removes in order to achieve the Required Dredging and Contingency Re-Dredging elevations and grades is dependent upon the Contractor's dredging means and methods. The Payable Overdredge Allowance is the maximum extent of dredging below the Required Dredging elevations and grades that the Port has accounted for in its Bid Quantity. The Contractor shall select its means and methods to conduct its dredging work to stay within the Payable Overdredge Allowance limits to the extent practicable. Should the Contractor's dredging means and methods result in dredging beyond the Payable Overdredge

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Allowance, the Contractor shall account for this non-payable dredge volume in its bid unit prices.

- c. The unit price offered in the schedule for “Required Dredging, Contingency Re-Dredging, Barge Dewatering and In-Water Transportation” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Removal of approximately 100,000 cubic yards of sediment and Dredge Debris to the Required Dredge Elevations and within the Payable Overdredge Allowance limits, as shown on the Drawings or in the Specifications.
 - 2) Barge dewatering of sediment and Dredge Debris at the Work Site, prior to offloading at the On-Site Transload Facility(ies) (if necessary) and in-water transportation of material to the Off-Site Transload Facility(ies).
 - 3) Offloading and sediment and Dredge Debris handling at the On-Site Transload Facility(ies) (as necessary) and management of the materials in the designated On-Site Staging and Stockpile Area(s), as shown on the Drawings.
 - 4) Reloading of sediment and Dredge Debris to the Contractor containment barge at the On-Site Transload Facility(ies) (as necessary) for in-water transportation to the Off-Site Transload Facility(ies).
 - 5) In-water transportation of the sediment and Dredge Debris to the Off-Site Transload Facility(ies).
- d. The Contractor shall assume that cost to handle and transport all Dredge Debris associated with this work is included in the unit price cost for this Bid Item.
- e. Payment for “Required Dredging, Contingency Re-Dredging, Barge Dewatering and In-Water Transportation” will be made at the contract unit cubic yard price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
- f. Payment shall be made for only the Dredge Pay Volume and Payable Overdredge Allowance.

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Debris associated with this work is included in the unit price cost for this Bid Item.

- d. Payment for “Offloading, Upland Transportation and Disposal” and all work associated with off-site offloading, stockpiling, dewatering (if applicable), and upland rehandling of dredged sediment and Dredge Debris, loading into trucks or railcars, upland transportation to the Disposal Facility, and final disposal will be made by the payable in situ cubic yard (cy), based on comparison of Pre-Construction and Post-Construction Surveys, under the Bid Item for OFFLOADING, UPLAND TRANSPORTATION AND DISPOSAL as indicated on the Bid Form.
- e. Monthly progress payments during completion of the work will be measured based on Contractor-reported volumes calculated using Contractor Progress Surveys. Progress payments will be made for work certified by the Contractor as completed. Contractor shall breakdown its progress payment requests to identify volumes associated with completed work under each respective Bid Item and include a statement certifying that the work has been completed.
- f. Final payment will be based on the final measurement of Dredge Pay Volume and Payable Overdredge Allowance, and final payment shall be reconciled with previous monthly progress payments to determine the amount of final payment.
- g. The Contractor shall assume that effort for off-site transload, transportation and disposal of all Dredged Debris is included in the cost for this Bid Item.

13. Bid Item No. 13 – PURCHASE AND PLACE TYPE 1 CAP

- a. Measurement for “Purchase and Place Type 1 Cap” shall be made on a per square foot basis, based on plan view surface areas as shown on the Drawings and provided on the Bid Form.
- b. The unit price offered in the schedule for “ Purchase and Place Type 1 Cap” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Procurement and placement of Type 1 Sand Material and Type 1 Filter Material to the Minimum Required

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Thickness and grades shown on the Drawings and described in these Specifications.

- 2) Contractor shall be responsible for calculating the placement volumes of Type 1 Sand Material and Type 1 Filter Material necessary to meet the requirements of the work, as shown on the Drawings and described in these Specifications.
 - c. Payment for “Purchase and Place Type 1 Cap” will be made at the contract per square foot price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
14. Bid Item No. 14 – PURCHASE AND PLACE TYPE 2 CAP
- a. Measurement for “Purchase and Place Type 2 Cap” shall be made on a per square foot basis, based on plan view surface areas as shown on the Drawings and provided on the Bid Form.
 - b. The unit price offered in the schedule for “Purchase and Place Type 2 Cap” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Procurement and placement of Type 2 Sand Material and Type 1 Filter Material to the Minimum Required Thickness and grades shown on the Drawings and described in these Specifications.
 - 2) Contractor shall be responsible for calculating the placement volumes of Type 2 Sand Material and Type 1 Filter Material necessary to meet the requirements of the work, as shown on the Drawings and described in these Specifications.
 - c. Payment for “Purchase and Place Type 2 Cap” will be made at the contract per square foot price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
15. Bid Item No. 15 – PURCHASE AND PLACE TYPE 3 CAP
- a. Measurement for “Purchase and Place Type 3 Cap” shall be made on a per square foot basis, based on plan view

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surface areas as shown on the Drawings and provided on the Bid Form.

- b. The unit price offered in the schedule for “Purchase and Place Type 3 Cap” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Procurement and placement of Type 2 Sand Material, Type 2 Filter Material, and Armor Material to the Minimum Required Thickness and grades shown on the Drawings and described in these Specifications.
 - 2) Contractor shall be responsible for calculating the placement volumes of Type 2 Sand Material, Type 2 Filter Material necessary to meet the requirements of the work, as shown on the Drawings and described in these Specifications.
- c. Payment for “Purchase and Place Type 3 Cap” will be made at the contract per square foot price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

16. Bid Item No. 16 – PURCHASE AND PLACE TYPE 4 CAP

- a. Measurement for “Purchase and Place Type 4 Cap” shall be made on a per square foot basis, based on plan view surface areas as shown on the Drawings and provided on the Bid Form.
- b. The unit price offered in the schedule for “Purchase and Place Type 4 Cap” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Procurement and placement of Type 2 Sand Material, Type 2 Filter Material, and Armor Material to the Minimum Required Thickness and grades shown on the Drawings and described in these Specifications.
 - 2) Contractor shall be responsible for calculating the placement volumes of Type 2 Sand Material, Type 2 Filter Material, and Armor Material necessary to meet the requirements of the work, as shown on the Drawings and described in these Specifications.

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- c. Payment for “Purchase and Place Type 4 Cap” will be made at the contract per square foot price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

17. Bid Item No. 17 – PURCHASE AND PLACE TYPE 5A CAP

- a. Measurement for “Purchase and Place Type 5A Cap” shall be made on a per square foot basis, based on plan view surface areas as shown on the Drawings and provided on the Bid Form.
- b. The unit price offered in the schedule for “Purchase and Place Type 5A Cap” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Procurement and placement of Type 2 Filter Material and Armor Material to the Minimum Required Thickness and grades shown on the Drawings and described in these Specifications.
 - 2) Contractor shall be responsible for calculating the placement volumes of Type 2 Filter Material and Armor Material necessary to meet the requirements of the work, as shown on the Drawings and described in these Specifications.
- c. Payment for “Purchase and Place Type 5A Cap” will be made at the contract per square foot price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

18. Bid Item No. 18 – PURCHASE AND PLACE TYPE 5B CAP

- a. Measurement for “Purchase and Place Type 5B Cap” shall be made on a per square foot basis, based on plan view surface areas as shown on the Drawings and provided on the Bid Form.
- b. The unit price offered in the schedule for “Purchase and Place Type 5B Cap” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Procurement and placement of Type 2 Filter Material and Armor Material to the Minimum Required

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Thickness and grades shown on the Drawings and described in these Specifications.

- 2) Contractor shall be responsible for calculating the placement volumes of Type 2 Filter Material and Armor Material necessary to meet the requirements of the work, as shown on the Drawings and described in these Specifications.
- c. Payment for “Purchase and Place Type 5B Cap” will be made at the contract per square foot price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

19. Bid Item No. 19 – PURCHASE AND PLACE TYPE 6 CAP

- a. Measurement for “Purchase and Place Type 6 Cap” shall be made on a per square foot basis, based on plan view surface areas as shown on the Drawings and provided on the Bid Form.
- b. The unit price offered in the schedule for “Purchase and Place Type 6 Cap” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Procurement and placement of geotextile in oversteepened areas of the Log Pond area, as shown on the Drawings, prior to placement of Type 6 cap materials.
 - 2) Procurement and placement of Type 2 Filter Material and Armor Material to the Minimum Required Thickness and grades shown on the Drawings and described in these Specifications.
 - 3) Contractor shall be responsible for calculating the placement volumes of Type 2 Filter Material and Armor Material necessary to meet the requirements of the work, as shown on the Drawings and described in these Specifications.
- c. Payment for “Purchase and Place Type 6 Cap” will be made at the contract per square foot price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

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20. Bid Item No. 20 – PURCHASE AND PLACE RESIDUALS MANAGEMENT COVER MATERIAL
- a. Measurement for “Purchase and Place Residuals Management Cover Material” shall be made on a per square foot basis, based on plan view surface areas as shown on the Drawings and provided on the Bid Form.
 - b. The unit price offered in the schedule for “Purchase and Place Residuals Management Cover Material” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Procurement and placement Residuals Management Cover Material to the Minimum Required Thickness and grades shown on the Drawings and described in these Specifications.
 - 2) Contractor shall be responsible for calculating the placement volumes of Residuals Management Cover Material necessary to meet the requirements of the work, as shown on the Drawings and described in these Specifications.
 - c. Payment for “Purchase and Place Residuals Management Cover Material” will be made at the contract per square foot price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
21. Bid Item No. 21 – FURNISH AND INSTALL STEEL DOLPHINS
- a. Measurement for “Furnish and Install Steel Dolphins” shall be made on a per each basis.
 - b. The unit price offered in the schedule for “Furnish and Install Steel Dolphins” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish, deliver, and store steel pipe piles at the Work Site.
 - 2) Drive steel pipe piles in the locations and to the tip elevation specified within the Contract Documents.
 - 3) Cut off piles to elevations shown.

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- 4) Furnish and install concrete fill inside the piles specified within the Contract Drawings.
 - 5) Furnish and install fender pile wrap and all associated hardware and connections as specified within the Contract Documents.
 - 6) Furnish and install pile elbow bollards and top bollards and all associated connections as specified within the Contract Documents.
- c. Payment for “Furnish and Install Steel Dolphins” will be made at the contract unit per each price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
22. Bid Item No. 22 – FURNISH AND INSTALL MOORING CLEATS
- a. Measurement for “Furnish and Install Mooring Cleats” shall be made on a lump sum basis.
 - b. The unit lump sum offered in the schedule for “Furnish and Install Mooring Cleats” shall include all materials, labor, and equipment needed to complete the following work. Furnish and install mooring cleats and their connections as specified within the Contract Documents and at locations shown on the plans:
 - 1) Furnish and install all mooring cleats, inserts, and associated hardware as specified in the Drawings.
 - c. Payment for “Furnish and Install Mooring Cleats” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
23. Bid Item No. 23 – REMOVAL AND DISPOSAL: FORMER CHEVRON TIMBER PIER
- a. Measurement for “Removal and Disposal: Former Chevron Timber Pier” will be made on a per square foot unit basis.
 - b. The unit price offered in the schedule for “Removal and Disposal: Former Chevron Timber Pier” shall include all

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materials, labor, and equipment needed to complete the following work:

- 1) Contractor field location of existing utilities and site features in adjacent upland areas.
 - 2) Removal, hauling and disposal, or salvage, of approximately 3,600 square feet of timber infrastructure including support piling, and other materials shown on the Drawings or in the Technical Specifications.
- c. Payment for “Removal and Disposal: Former Chevron Timber Pier” will be made at the contract unit price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
24. Bid Item No. 24 – REMOVAL AND DISPOSAL: FORMER CHEVRON TIMBER BULKHEAD
- a. Measurement for “Removal and Disposal: Former Chevron Timber Bulkhead” will be made on a lump sum basis.
 - b. The lump sum price offered in the schedule for “Removal and Disposal: Former Chevron Timber Bulkhead” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Demolition, removal, hauling, and disposal or salvage of approximately 200 lineal feet of deteriorated timber bulkhead structure located at the western end of the Central Waterfront area, and other materials shown on the Drawings or in the Specifications.
 - c. Payment for “Removal and Disposal: Former Chevron Timber Bulkhead” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
25. Bid Item No. 25 – REMOVAL AND DISPOSAL: BARGE RAMP STRUCTURE
- a. Measurement for “Removal and Disposal: Barge Ramp Structure” will be made on a lump sum basis.

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- b. The unit price offered in the schedule for “Removal and Disposal: Barge Ramp Structure” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Deconstruction, removal, handling and disposal of approximately 70 cubic yards of concrete foundation.
 - 2) Deconstruction, removal, handling and disposal of approximately 35 concrete piles and associated timber lagging.
 - 3) Removal, hauling, and disposal of the debris shall be as shown on the Drawings or in the Specifications.
 - c. Payment for “Removal and Disposal: Barge Ramp Structure” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
26. Bid Item No. 26 – REMOVAL AND DISPOSAL: WEST CENTRAL WATERFRONT AND MAPLE STREET CONCRETE SLABS
- a. Measurement for “Removal and Disposal: West Central Waterfront and Maple Street Concrete Slabs” will be made on a lump sum basis.
 - b. The lump sum offered in the schedule for “Removal and Disposal: West Central Waterfront and Maple Street Concrete Slabs” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Contractor field location of existing utilities and Work Site features in adjacent areas.
 - 2) Sawcut, removal, crushing, and on-site stockpiling of concrete slabs near the West Central Waterfront Wall and the Maple Street Bulkhead, as shown on the Drawings or in the Specifications. On-site stockpile locations for recyclable materials are shown on the Drawings.
 - c. Payment for “Removal and Disposal: West Central Waterfront and Maple Street Concrete Slabs” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and

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incidentals required to complete the work of the Contract Documents.

27. Bid Item No. 27 – REMOVAL AND DISPOSAL: TIMBER PILES NEAR FLOATING DOCKS AND STEEL GANGWAYS AT NORTHEAST CORNER OF INNER WATERWAY
- a. Measurement for “Removal and Disposal: Timber Piles Near Floating Docks and Steel Gangways at Northeast Corner of Inner Waterway” will be made on a lump sum basis.
 - b. The lump sum price offered in the schedule for “Removal and Disposal: Timber Piles Near Floating Docks and Steel Gangways” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Pulling or cutting of approximately 11 piling in shoreline areas, removal, hauling and disposal, or salvage, of the debris as shown on the Drawings (R-series) or in the Technical Specifications.
 - c. Payment for “Removal and Disposal: Timber Piles Near Floating Docks and Steel Gangways at Northeast Corner of Inner Waterway” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
28. Bid Item No. 28 – STRUCTURAL FILL
- a. Measurement for “Structural Fill” shall be made on a per ton basis.
 - b. The unit prices offered in the schedule for “Structural Fill” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Haul, placement, grading, and compaction of structural fill at the existing barge ramp cavity, behind the bulkhead at West Central Waterfront shoreline area, and in the clarifier area as shown on the Drawings or in the Technical Specifications.
 - c. Payment for “Structural Fill” will be made at the contract unit cubic yard prices as stated in the bid and will be full compensation for furnishing all labor, equipment, and

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incidentals required to complete the work of the Contract Documents.

29. Bid Item No. 29 – 6-INCH GRAVEL BALLAST
- a. Measurement for “6-Inch Gravel Ballast” shall be made on a per ton basis.
 - b. The unit prices offered in the schedule for “6-Inch Gravel Ballast” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Haul, placement and grading of gravel ballast at the existing barge ramp cavity, behind the bulkhead at West Central Waterfront and in the clarifier area as shown on the Drawings or in the Technical Specifications.
 - c. Payment for “6-Inch Gravel Ballast” will be made at the contract unit ton prices as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
30. Bid Item No. 30 – CAST IN PLACE CONCRETE SLAB
- a. Measurement for “Cast in Place Concrete Slab” shall be made on a per cubic yard basis.
 - b. The unit price offered in the schedule for “Cast in Place Concrete Slab” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish, haul, placement, and grading of Cast in Place Concrete Slab at the East Central Waterfront Wall as shown on the Drawings or in the Technical Specifications.
 - c. Payment for “Cast in Place Concrete Slab” will be made at the contract unit per cubic yard price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
31. Bid Item No. 31 – FURNISH AND INSTALL SHEET PILING: AT FORMER CHEVRON WING WALL AND WEST CENTRAL WATERFRONT

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- a. Measurement for “Furnish and Install Sheet Piling at Former Chevron Wing Wall and West Central Waterfront” shall be made on a per square foot basis.
 - b. The unit price offered in the schedule for “Furnish and Install Sheet Piling at Former Chevron Wing Wall and West Central Waterfront” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish, deliver and store sheetpiles at the project site.
 - 2) Seal the sheetpile interlock joints per the Technical Specifications and the Contract Drawings.
 - 3) Drive sheetpiles to the specified tip elevation as specified within the contract documents.
 - 4) Cut-off surplus sheetpile section as necessary.
 - c. Payment for “Furnish and Install Sheet Piling at Former Chevron Wing Wall and West Central Waterfront” will be made at the contract unit square foot price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
32. Bid Item No. 32 – FURNISH AND INSTALL WALL AT WEST MAPLE STREET
- a. Measurement for “Furnish and Install Wall at West Maple Street” shall be made on a lump sum basis.
 - b. The lump sum price offered in the schedule for “Furnish and Install Wall at West Maple Street” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish, deliver, and store the king piles and intermediate sheetpiles at the project site.
 - 2) Seal the steel pile interlock joints per the Technical Specifications and the Contract Drawings.
 - 3) Drive king piles and intermediate sheetpiles to the specified tip elevations as specified within the Contract Documents.

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- 4) Cut-off surplus sheetpile section as necessary.
 - c. Payment for “Furnish and Install Wall at West Maple Street” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
33. Bid Item No. 33 – FURNISH AND INSTALL SHEET PILING AT MAPLE STREET REPLACEMENT BULKHEAD
- a. Measurement for “Furnish and Install Sheet Piling at Maple Street Replacement Bulkhead” shall be made on a per square foot basis.
 - b. The unit price offered in the schedule for “Furnish and Install Sheet Piling at Maple Street Replacement Bulkhead” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish, deliver, and store sheetpiles at the project site.
 - 2) Seal the sheetpile interlock joints per the Technical Specifications and the Contract Drawings.
 - 3) Drive sheetpiles to the specified tip elevation as specified within the contract documents.
 - 4) Cut-off surplus sheetpile section as necessary.
 - 5) Furnish and Install CDF between existing wall and new wall according to the Contract Drawings.
 - c. Payment for “Furnish and Install Sheet Piling at Maple Street Replacement Bulkhead” will be made at the contract unit square foot price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
34. Bid Item No. 34 – FURNISH AND INSTALL GROUTED TIEBACK ANCHORS AT MAPLE STREET REPLACEMENT BULKHEAD
- a. Measurement for “Furnish and Install Grouted Tieback Anchors at Maple Street Replacement Bulkhead” shall be made on a per each basis.

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- b. The unit price offered in the schedule for “Furnish and Install Grouted Tieback Anchors at Maple Street Replacement Bulkhead” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Drill grouted tieback anchors at the angle specified within the contract documents.
 - 2) Dispose of all spoils as specified within the Specifications.
 - 3) Furnish and Install grout, tieback and all associated hardware, connections and protection to install the tiebacks as specified within the contract documents..
 - 4) Provide performance and proof testing as specified within the Specifications.
 - c. Payment for “Furnish and Install Grouted Tieback Anchors at Maple Street Replacement Bulkhead” will be made at the contract unit per each price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
35. Bid Item No. 35 – FURNISH AND INSTALL MAPLE STREET REPLACEMENT BULKHEAD WALER
- a. Measurement for “Furnish and Install Maple Street Replacement Bulkhead Waler” shall be made on a lump sum basis.
 - b. The lump sum offered in the schedule for “Furnish and Install Maple Street Replacement Bulkhead Waler” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Fabricate, deliver and store waler material and its connections at the project site.
 - 2) Install waler and all associated hardware as specified within the contract documents.
 - c. Payment for “Furnish and Install Maple Street Replacement Bulkhead Waler” will be made at the contract lump sum price as stated in the bid and will be full compensation for

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furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

36. Bid Item No. 36 – FURNISH AND INSTALL SHEET PILING AT EAST CENTRAL WATERFRONT
- a. Measurement for “Furnish and Install Sheet Piling at East Central Waterfront” shall be made on a per square foot basis.
 - b. The unit price offered in the schedule for “Furnish and Install Sheet Piling at East Central Waterfront” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish, deliver, and store sheetpiles at the project site.
 - 2) Drive sheetpiles to the specified tip elevation as specified within the contract documents.
 - 3) Cut-off surplus sheetpile section as necessary.
 - 4) Work that is associated with installing the new wall near the existing concrete wall at the east edge of the new wall.
 - c. Payment for “Furnish and Install Sheet Piling at East Central Waterfront” will be made at the contract unit square foot price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
37. Bid Item No. 37 – FURNISH AND INSTALL CONCRETE CAP AT WEST CENTRAL WATERFRONT WALL
- a. Measurement for “Furnish and Install Concrete Cap at West Central Waterfront Wall” shall be made on a cubic yard basis.
 - b. The unit price offered in the schedule for “Furnish and Install Concrete Cap at West Central Waterfront Wall” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish and install formwork for the concrete cap as required in the contract documents.

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- 2) Fabricate, deliver, store and install reinforcing steel internal to the concrete cap and steel embed plates as specified in the contract documents.
 - 3) Furnish, deliver, and place cast in place concrete as specified in the contract documents.
 - 4) Strip concrete formwork and cleanup of work area.
 - 5) Furnish and install bullrail, inserts, bolts, plates and any associated hardware as specified in the contract documents.
- c. Payment for “Furnish and Install Concrete Cap at West Central Waterfront Wall” will be made at the contract unit cubic yard price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
38. Bid Item No. 38 – FURNISH AND INSTALL CONCRETE CAP AT WEST MAPLE STREET BULKHEAD
- a. Measurement for “Furnish and Install Concrete Cap at West Maple Street Bulkhead” shall be made on a lump sum basis.
 - b. The lump sum price offered in the schedule for “Furnish and Install Concrete Cap at West Maple Street Bulkhead” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish and install formwork for the concrete cap as required in the contract documents.
 - 2) Fabricate, deliver, store, and install reinforcing steel internal to the concrete cap and steel embed plates and associated hardware as specified in the contract documents.
 - 3) Furnish, deliver, and place cast in place concrete as specified in the contract documents.
 - 4) Strip concrete formwork and cleanup of work area.
 - 5) Furnish and install bullrail, inserts, bolts, plates and any associated hardware as specified in the contract documents.

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- c. Payment for “Furnish and Install Concrete Cap at West Maple Street Bulkhead” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

- 39. Bid Item No. 39 – FURNISH AND INSTALL CONCRETE CAP AT MAPLE STREET REPLACEMENT BULKHEAD
 - a. Measurement for “Furnish and Install Concrete Cap at Maple Street Replacement Bulkhead” shall be made on a cubic yard basis.
 - b. The unit price offered in the schedule for “Furnish and Install Concrete Cap at Maple Street Replacement Bulkhead” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish and install formwork for the concrete cap as required in the contract documents.
 - 2) Fabricate, deliver, store, and install reinforcing steel internal to the concrete cap and steel embed plates as specified in the contract documents.
 - 3) Furnish, deliver, and place cast in place concrete as specified in the contract documents.
 - 4) Strip concrete formwork and cleanup of work area.
 - 5) Furnish and install bullrail, inserts, bolts, plates and any associated hardware as specified in the contract documents.
 - c. Payment for “Furnish and Install Concrete Cap at Maple Street Replacement Bulkhead” will be made at the contract unit cubic yard price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

- 40. Bid Item No. 40 – FURNISH AND INSTALL CONCRETE CAP AT EAST CENTRAL WATERFRONT WALL
 - a. Measurement for “Furnish and Install Concrete Cap at East Central Waterfront Wall” shall be made on a cubic yard basis.

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- b. The unit price offered in the schedule for “Furnish and Install Concrete Cap at East Central Waterfront Wall” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish and install formwork for the concrete cap as required in the contract documents.
 - 2) Fabricate, deliver, store, and install reinforcing steel internal to the concrete cap and steel embed plates as specified in the contract documents.
 - 3) Furnish, deliver, and place cast in place concrete as specified in the contract documents.
 - 4) Strip concrete formwork and cleanup of work area.
 - 5) Furnish and install bullrail, inserts, bolts, plates and any associated hardware as specified in the contract documents.
 - c. Payment for “Furnish and Install Concrete Cap at East Central Waterfront Wall” will be made at the contract unit cubic yard price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
41. Bid Item No. 41 – FURNISH AND INSTALL STEEL MOORING PILES
- a. Measurement for “Furnish and Install Steel Mooring Piles” shall be made on a per each basis.
 - b. The unit price offered in the schedule for “Furnish and Install Steel Mooring Piles” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish, deliver, and store steel pipe piles at the Work Site.
 - 2) Drive steel pipe piles in the locations and to the tip elevation specified within the Contract Documents.
 - 3) Cut off piles to elevations shown.

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- c. Payment for “Furnish and Install Steel Mooring Piles” will be made at the contract unit per each price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

- 42. Bid Item No. 42 – FURNISH AND INSTALL MAPLE STREET REPLACEMENT BULKHEAD FENDER PILES
 - a. Measurement for “Furnish and Install Maple Street Replacement Bulkhead Fender Piles” shall be made on a per each basis.
 - b. The unit price offered in the schedule for “Furnish and Install Maple Street Replacement Bulkhead Fender Piles” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish, deliver, and store steel pipe piles and HDPE sleeve at the project site.
 - 2) Drive steel pipe piles in the locations and to the tip elevation specified within the contract documents and install HDPE sleeve.
 - 3) Furnish and install concrete fill inside the piles specified within the Contract Drawings.
 - c. Payment for “Furnish and Install Maple Street Replacement Bulkhead Fender Piles” will be made at the contract unit per each price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

- 43. Bid Item No. 43 – FURNISH AND INSTALL MAPLE STREET REPLACEMENT BULKHEAD FENDER SYSTEM
 - a. Measurement for “Furnish and Install Maple Street Replacement Bulkhead Fender System” shall be made on a lump sum basis.
 - b. The unit price offered in the schedule for “Furnish and Install Maple Street Replacement Bulkhead Fender System” shall include all materials, labor, and equipment needed to complete the following work:

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- 1) Furnish and install the fender system, which includes but not limited to installation of the rubber fenders and their attachments, steel waler beams and their connections, shear chains and their attachments, timber and UHMW rub strips and the rope guard mounted to the fender piles.
 - c. Payment for “Furnish and Install Maple Street Replacement Bulkhead Fender System” will be made at the contract unit lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
44. Bid Item No. 44 – REMOVAL AND DISPOSAL: TIMBER FOAM TANK AND PIPING
- a. Measurement for “Removal and Disposal: Timber Foam Tank and Piping” will be made on a lump sum basis.
 - b. The unit price offered in the schedule for “Removal and Disposal: Timber Foam Tank and Piping” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Contractor field locate all existing utilities and Work Site features adjacent to the foam tank and piping to be demolished.
 - 2) Deconstruction, removal, handling and disposal of approximately 415 square feet of timber foam tank.
 - 3) Cutting, capping, removal, handling and disposal of approximately 175 linear feet of existing piping, fittings and pipe supports in the area of the foam tank.
 - 4) Cutting, removing and disposing of the top 5 feet of 6 existing creosote support piles and pulling completely 2 existing creosote support piles in the area of the foam tank.
 - 5) Removal, hauling and disposal of the Debris shall be as shown on the Drawings or in the Specifications.
 - c. Payment for “Removal and Disposal: Timber Foam Tank and Piping” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all

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labor, equipment, and incidentals required to complete the work of the Contract Documents.

45. Bid Item No. 45 – REMOVAL AND DISPOSAL: CLARIFIER TIMBER AND STEEL BULKHEAD WALL
- a. Measurement for “Removal and Disposal: Clarifier Timber and Steel Bulkhead Wall” will be made on a lump sum basis.
 - b. The unit price offered in the schedule for “Removal and Disposal: Clarifier Timber and Steel Bulkhead Wall” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Removal, handling, and disposal of approximately 120 timber piles.
 - 2) Removal, handling, and disposal of approximately 1,800 linear feet of timber bulkhead.
 - 3) Removal, handling, and disposal of approximately 90 linear feet of steel bulkhead.
 - 4) Removal, hauling, and disposal of the debris shall be as shown on the Drawings or in the Technical Specifications.
 - c. Payment for “Removal and Disposal: Clarifier Timber and Steel Bulkhead Wall” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
46. Bid Item No. 46 – REMOVAL AND DISPOSAL: TIMBER CATWALK
- a. Measurement for “Removal and Disposal: Timber Catwalk” will be made on a lump sum basis.
 - b. The unit price offered in the schedule for “Removal and Disposal: Timber Catwalk” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Contractor field location of existing utilities and site features in adjacent upland areas.

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- 2) Removal, hauling and disposal, or salvage, of 580 square feet of the timber catwalk and associated pile located to the southwest of the Clarifier Bulkhead, and other materials shown on the Drawings or in the Technical Specifications.
 - c. Payment for “Removal and Disposal: Timber Catwalk” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
47. Bid Item No. 47 – REMOVAL AND DISPOSAL: CLARIFIER CONCRETE STRUCTURE, SCUM BOX, PHOSPHORIC ACID TANK AND REMNANT FOUNDATIONS
- a. Measurement for “Removal and Disposal: Clarifier Concrete Structure, Scum Box, Phosphoric Acid Tank and Remnant Foundations” will be made on a lump sum basis.
 - b. The unit price offered in the schedule for “Removal and Disposal: Clarifier Concrete Structure, Scum Box, Phosphoric Acid Tank and Remnant Foundations” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Pumping existing stored storm water from the clarifier to No. 6 Sewer Pump Pit.
 - 2) Removal, handling, hauling and disposal of stormwater solids collected from the bottom of the clarifier.
 - 3) Removal, handling, hauling, and disposal of miscellaneous structures attached to and immediately adjacent to the clarifier structure.
 - 4) Removal, handling, and disposal of approximately 310 cubic yards of concrete clarifier wall.
 - 5) Removal, handling, and disposal of approximately 115 cubic yards of concrete clarifier foundation.
 - 6) Handling, grading, and placement of approximately 1,450 cubic yards of structural fill and breaking approximately 50 drainage holes in remaining slab.

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- 7) Removal, handling, and disposal of approximately 120 cubic yards of concrete scum box and foundation.
 - 8) Cleaning, removal, handling, and disposal of approximately one phosphoric acid tank and approximately 10 cubic yards of associated concrete foundation.
 - 9) Removal, handling, and disposal of approximately 20 cubic yards of remnant concrete foundation near the clarifier.
 - 10) Foam tank utility modifications to include connect to 24"Φ FRP pipe and lay approximately 55 LF of 24"Φ Ductile Iron pipe, fittings and supports and reconnect to 42"Φ FRP pipe.
 - 11) Storm drainage modifications to include the removal and delivery to the Port of an existing pump from a 72-inch manhole in the clarifier area; additional demolition of the clarifier slab and piles within the pipe trench; furnishing and installing approximately 185 LF of 12-inch concrete storm drainage pipe, bedding, connections to the existing 72-inch manhole and No. 6 Pump pit; and backfill and compaction as indicated on the plans.
 - 12) Removal, hauling, and disposal of existing pumping equipment and miscellaneous structures from the No. 6 Sewer Pump Pit and installation of a chain link fence as indicated on the plans.
 - 13) Removal, hauling, and disposal of the debris shall be as shown on the Drawings or in the Technical Specifications.
- c. Payment for "Removal and Disposal: Clarifier Concrete Structure, Scum Box, Phosphoric Acid Tank and Remnant Foundations" will be made at the contract unit sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
48. Bid Item No. 48 – PULL OR CUT AND DISPOSAL: BROKEN PILE STUBS (SOUTH SHORELINE AREA)

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- a. Measurement for “Pull or Cut and Disposal: Broken Pile Stubs (South Shoreline Area)” will be made on a lump sum basis.
 - b. The lump sum price offered in the schedule for “Pull or Cut and Disposal: Broken Pile Stubs (South Shoreline Area)” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Pulling or cutting of approximately 80 broken piling in shoreline and open-water areas, removal, hauling and disposal, or salvage, of the debris as shown on the Drawings or in the Technical Specifications.
 - c. Payment for “Pull or Cut and Disposal: Broken Pile Stubs (South Shoreline Area)” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
49. Bid Item No. 49 – FURNISH AND INSTALL SOUTH SHORELINE MOORING BOLLARD
- a. Measurement for “Furnish and Install South Shoreline Mooring Bollard” shall be made on a lump sum basis.
 - b. The unit price offered in the schedule for “Furnish and Install South Shoreline Mooring Bollard” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Furnish, deliver and store steel pipe pile at the project site.
 - 2) Drive steel pipe pile in the location and to the tip elevation specified within the contract documents.
 - 3) Furnish and install concrete fill inside the piles specified within the Contract Drawings.
 - 4) Furnish and install mooring bollard and connections as specified within the contract documents.
 - 5) Furnish and install steel frame and platform and connections as specified within the contract documents.

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- 6) Furnish and install aluminum gangway and connections as specified within the contract documents.
 - c. Payment for “Furnish and Install South Shoreline Mooring Bollard” will be made at the contract unit lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
50. Bid Item No. 50 – REMOVAL AND DISPOSAL: LOG POND TIMBER BULKHEAD PILING
- a. Measurement for “Removal and Disposal: Log Pond Timber Bulkhead Piling” will be made on a lump sum basis.
 - b. The lump sum price offered in the schedule for “Removal and Disposal: Log Pond Timber Bulkhead Piling” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Cutting off tops of approximately 20 existing timber piling along the timber bulkhead structure, and removal, hauling and disposal, or salvage, of the Debris, as shown on the Drawings or in the Specifications.
 - c. Payment for “Removal and Disposal: Log Pond Timber Bulkhead Piling” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.
51. Bid Item No. 51 – PULL OR CUT AND DISPOSAL: BROKEN PILE STUBS (LOG POND AREA)
- a. Measurement for “Pull or Cut and Disposal: Broken Pile Stubs (Log Pond Area)” will be made on a lump sum basis.
 - b. The lump sum price offered in the schedule for “Pull or Cut and Disposal: Broken Pile Stubs (Log Pond Area)” shall include all materials, labor, and equipment needed to complete the following work:
 - 1) Pulling or cutting of approximately 80 broken piling in shoreline and open-water areas, removal, hauling and

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disposal, or salvage, of the debris as shown on the Drawings or in the Technical Specifications.

- c. Payment for “Pull or Cut and Disposal: Broken Pile Stubs (Log Pond Area)” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

52. Bid Item No. 52 – RELOCATE: LOG BOOM

- a. Measurement for “Relocate: Log Boom” will be made on lump sum basis.
- b. The allowance price offered in the schedule for “Relocate: Log Boom” shall include all materials, labor and equipment needed to complete the following work:
 - 1) Relocation and reconnection, of approximately 450 lineal feet of floating timber log boom within the Log Pond area, and all materials required to connect log boom to timber piles shown on the Drawings.
 - 2) Replacement of log chain (as necessary) and directed salvage or re-use of the log chain as applicable.
- c. Payment for “Relocate: Log Boom” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

53. Bid Item No. 53 – REMOVAL AND DISPOSAL: LOG BOOM

- a. Measurement for “Removal and Disposal: Log Boom” will be made on lump sum basis.
- b. The allowance price offered in the schedule for “Removal and Disposal: Log Boom” shall include all materials, labor and equipment needed to complete the following work:
 - 1) Removal and disposal of approximately 350 lineal feet of floating timber log boom within the Log Pond area, removal, hauling and disposal, or salvage, of the debris as shown on the Drawings or in the Technical Specifications.

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- c. Payment for “Removal and Disposal: Log Boom” will be made at the contract lump sum price as stated in the bid and will be full compensation for furnishing all labor, equipment, and incidentals required to complete the work of the Contract Documents.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION

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PART 1 – GENERAL

1.01 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 01 33 00—Submittal Procedures
- B. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout the Specifications.
- C. No separate payment will be made for effort associated with work described in this Specification Section. Work required to comply with this Specification Section is considered to be inclusive to all other activities described in the Contract Documents.

1.02 QUALITY CONTROL

- A. The Contract is based upon products and standards established in the Contract Documents without consideration of proposed substitutions.
- B. Products specified define standard of quality, type, function, dimension, appearance, and performance required. All equipment, materials, and articles incorporated into the permanent work:
 - 1. Shall be new, unless the Specifications permit otherwise
 - 2. Shall meet the requirements of the Contract and be approved by the Engineer
 - 3. May be inspected or tested at any time during their preparation and use
 - 4. Shall not be used in the work if they become unfit after being previously approved
- C. The Engineer will consider proposals for substitutions of materials, equipment, and methods only when such proposals are accompanied by full and complete technical data as required by the Engineer to evaluate the proposed substitution.
- D. Do not substitute materials, equipment, or methods unless such substitution has been specifically approved in writing for this work by the Engineer.
- E. Do not substitute products unless substitution has been accepted and approved in writing by the Engineer.

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Section 01 25 00—Substitution Procedures

1.03 TIME OF SUBSTITUTION REQUESTS

- A. Each substitution request shall, in accordance with the applicable provisions of Section 01 33 00—Submittal Procedures, describe the proposed substitution in its entirety including the name of the material or equipment, drawings, catalog cuts, performance or test data, and all other information required for an evaluation. The submittal shall also include a statement noting all changes required in adjoining, dependent, or other interrelated work necessitated by the incorporation of the proposed substitution. The bidder shall bear the burden of proof to show that the proposed substitution meets or exceeds the required function and is equal or superior to the specification.
- B. The Engineer may require that samples be submitted or demonstration made prior to approval. The Engineer will be the sole judge as to the type, function, and quality of any such substitute material or equipment. The Engineer's decision of approval or disapproval of a proposed substitution will be final.
- C. Approval of substitutions will be made by addenda. When, in the sole opinion of the Engineer, the product is equivalent, in all respects to the product specified, it will be approved subject to Contract requirements and the Contractor's assumption of all responsibility therefore.
- D. After written approval, this submission shall become a part of the Contract and may not be deviated from except upon written approval of the Engineer.
- E. Catalog data for equipment approved by the Engineer does not, in any case, supersede the Contract Documents. The approval by the Engineer shall not relieve the Contractor from responsibility for deviations from Drawings or Specifications, unless the Contractor has, in writing, called the Engineer's attention to such deviations at the time of the submission, nor shall it relieve the Contractor from responsibility for errors of any sort in the items submitted. Check the work described by the catalog data with the Contract Documents for deviations and errors.
- F. It shall be the responsibility of the Contractor to ensure that items to be furnished fit the space available. The Contractor shall make necessary field measurements to ascertain space requirements, including those for connections, and shall order such sizes and shapes of equipment that the final installation shall suit the true intent and meaning of the Drawings and Specifications.
- G. Where equipment requiring different arrangement of connections from those shown as approved is used, it shall be the responsibility of the

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Section 01 25 00—Substitution Procedures

Contractor to install the equipment to operate properly, and in harmony with the intent on the Drawings and Specifications, and to make all changes in the work required by the different arrangement of connections together with any cost of redesign necessitated thereby, all at the Contractor's expense.

- H. Where the phrase "or equal" or "or equal as approved by the Engineer" occurs in the Contract Documents, do not assume that material, equipment, or methods will be approved as equal by the Engineer unless the item has specifically been approved as a substitution for this work by the Engineer.
- I. The decision of the Engineer will be final.

1.04 SUBSTITUTION PROCEDURES

- A. Limit each request to one proposed substitution.
- B. Submit substitution requests complete with attachments necessary to fully document the proposed substitution.
- C. Document each request with supporting data substantiating compliance of proposed substitution with the Contract Documents, including:
 - 1. Manufacturer's name and address, product, trade name, model, or catalog number, performance and test data, and reference standards.
 - 2. Itemized point-by-point comparison of proposed substitution with specified product, listing variations in quality, performance, and other pertinent characteristics.
 - 3. Reference to article and paragraph numbers in Specifications section.
 - 4. Cost data comparing proposed substitution with specified product and amount of net change to Contract Sum.
 - 5. Changes required in other work.
 - 6. Availability of maintenance service and source of replacement parts, as applicable.
 - 7. Certified test data to show compliance with performance characteristics specified.
 - 8. Samples, when applicable or requested.
 - 9. Other information as necessary to assist the Engineer's evaluations.

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Section 01 25 00—Substitution Procedures

- D. A request for substitution constitutes a representation that the Contractor:
1. Has investigated the proposed product and determined that it is equal or superior in all respects to the specified product.
 2. Will provide identical or better warranty as required for the specified product.
 3. Will coordinate installation and make changes to other work that may be required.
 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 5. Certifies that the proposed product will not affect or delay the Construction Progress Schedule.
 6. Will pay for changes to building design, including architectural or engineering design, detailing, and construction costs caused by the requested substitution.
- E. Substitutions will not be considered when:
1. Indicated or implied on shop drawings or product data submittals without a formal request submitted in accordance with this Section.
 2. Submittal for substitution request by a subcontractor has not been reviewed and approved by the Contractor.
 3. Acceptance will require substantial revision of Contract Documents or other items of the work.
 4. Submittal for substitution request does not include point-by-point comparison of proposed substitution with specified product.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION

DIVISION 01—GENERAL REQUIREMENTS

Section 01 29 73—Schedule of Values

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section defines the process whereby the Schedule of Values for lump sum bid items shall be developed.
- B. The Schedule of Values will establish unit prices for individual items of work.
- C. The Schedule of Values will be the basis for payment of all lump sum contract work.
- D. The Port may require a Schedule of Values for other Bid Items during completion of the work at no additional cost to the Port.
- E. No separate payment will be made for effort associated with work described in this Specification Section. Work required to comply with this Specification Section is considered to be inclusive to all other activities described in the Contract Documents.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 01 20 00—Price and Payment Procedures
- B. Section 01 31 00—Project Management and Coordination
- C. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout the Specifications.

1.03 PREPARATION OF SCHEDULE OF VALUES

- A. To facilitate monthly pay requests, the lump sum price stipulated in the Bid Form shall be divided up to reflect the elements of work identified on the Drawings and in the Specifications. The Contractor shall submit for approval a Schedule of Values for the major components of the work at the Pre-construction Conference in accordance with Section 01 31 00—Project Management and Coordination. The listing shall include, at a minimum, the proposed value for the major work components as described in Article 3.01 herein. The summary of detail provided in the Schedule of Values shall separately include materials costs (as appropriate by unit), installation costs (labor and equipment components), and other incremental breakouts. The detail summary total shall match the Contractor's lump sum bid amount for each bid item.

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Section 01 29 73—Schedule of Values

- B. The Progress Payment Quantities for each bid item indicated in the schedule of values shall be an estimated value of the lump sum amount, substantiated by the Contractor to the extent necessary and agreed to between the Port and Contractor, payable in monthly progress payments in increments proportional to the work performed.

1.04 SUBMITTAL

- A. Submit a preliminary Schedule of Values at the Pre-construction Meeting. **DO NOT SUBMIT THE SCHEDULE OF VALUES WITH YOUR BID PACKAGE.**
- B. Submit a corrected Schedule of Values within seven (7) calendar days upon receipt of reviewed Schedule of Values.
- C. Upon request, support prices with data that will substantiate their correctness.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

3.01 SAMPLE SCHEDULE OF VALUES

- A. The sample Schedule of Values provided below is the minimum level of detail expected. Bid items reflected on the Bid Form but not addressed in the approved Schedule of Values shall be included in the monthly pay request based on the unit of measure indicated on the Bid Form.
 - 1. Bid Item No. 1 “Mobilization and Demobilization: Maximum of 10 Percent of Subtotal Base Bid” shall be paid as described in Section 012000—Price and Payment Procedures.
 - 2. Bid Item No. 2 “Site Preparation” shall be itemized to include at a minimum the following cost items:
 - a. Temporary facilities setup (that not included in mobilization/demobilization), including field offices, temporary utilities, sanitation, and communications
 - b. Set up of On-Site Staging and Stockpile Area(s) at Central Waterfront and former GP West properties, as shown on the Drawings
 - c. Completion of clearing and grubbing activities as described in Section 31 11 00—Clearing and Grubbing

DIVISION 01—GENERAL REQUIREMENTS

Section 01 29 73—Schedule of Values

- d. Operational costs per day for temporary facilities, including but not limited to On-Site Staging and Stockpile Area(s) management and daily cleanup
 - e. Deconstructing and final cleanup of all temporary facilities
 - f. Cutting and capping existing utilities
 - g. Structure and debris removal activities and stockpiling of material
 - h. Electrical removal, relocation, and new work
 - i. Disposal and salvage costs
3. Bid Item No. 3 “Surveys” shall be itemized to include at a minimum the following cost items:
- a. Completion of the Pre-Construction Survey
 - b. Completion of individual Progress Surveys
 - c. Completion of individual Post-Construction Surveys
 - d. Price and durations for completion third-party surveys (by survey) for all required third-party surveys
 - e. Cost for completion of Construction Progress Surveys on a per day basis
4. Bid Item No. 22 “Furnish and Install Mooring Cleats” shall be itemized to include at a minimum the following cost items:
- a. Furnish coated steel cleats, inserts and bolt connections
 - b. Installation of cleats and inserts
5. Bid Item No.24 “Removal and Disposal: Chevron Timber Bulkhead” shall be itemized to include at a minimum the following cost items:
- a. Removal activities and stockpiling of material
 - b. Disposal or salvage costs
6. Bid Item No. 25 “Removal and Disposal: Barge Ramp Structure” shall be itemized to include at a minimum the following cost items:
- a. Removal activities and stockpiling of material

DIVISION 01—GENERAL REQUIREMENTS

Section 01 29 73—Schedule of Values

- b. Disposal or salvage costs
7. Bid Item No. 26 “Removal and Disposal: West Central Waterfront and Maple Street Concrete Slabs” shall be itemized to include at a minimum the following cost items:
 - a. Removal activities and stockpiling of material
 - b. Disposal or salvage costs
 8. Bid Item No. 27 “Removal and Disposal: Timber Piles Near Floating Docks and Steel Gangways at Northeast Corner of Inner Waterway” shall be itemized to include at a minimum the following cost items
 - a. Removal activities and stockpiling of material
 - b. Disposal and salvage costs
 9. Bid Item No. 32 “Furnish and Install Wall at West Maple Street” shall be itemized to include at a minimum the following cost items:
 - a. Furnishing sheet piling and king piling
 - b. Driving of sheet piling and king piling
 - c. Joint grouting
 - d. Cut off of sections as required
 10. Bid Item No. 35 “Furnish and Install Maple Street Replacement Bulkhead Waler” shall be itemized to include at a minimum the following cost items:
 - a. Furnish steel waler including stiffeners, bearing plates and any other supporting hardware
 - b. Installation of waler and associated connections
 11. Bid Item No. 38 “Furnish and Install Concrete Cap at West Maple Street Bulkhead” shall be itemized to include at a minimum the following cost items:
 - a. Furnish and install formwork for the concrete cap as required in the contract documents
 - b. Fabricate, deliver, store and install reinforcing steel internal to the concrete cap and steel embed plates as specified in the contract documents

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- c. Furnish, deliver and place cast in place concrete as specified in the contract documents
 - d. Strip concrete formwork and cleanup of work area
- 12. Bid Item No. 43 “Furnish and Install Maple Street Bulkhead Fender System” shall be itemized to include at a minimum the following cost items:
 - a. Furnish coated steel waler, rub strips, chains, plates, bolts, rope guard, rubber fender and associated hardware
 - b. Installation of waler, rub strip, fender and all associated hardware and connections
- 13. Bid Item No. 44 “Removal and Disposal: Timber Foam Tank and Piping” shall be itemized to include at a minimum the following cost items:
 - a. Removal activities and stockpiling of material
 - b. Disposal or salvage costs
- 14. Bid Item No. 45 “Removal and Disposal: Clarifier Timber and Steel Bulkhead Wall” shall be itemized to include at a minimum the following cost items:
 - a. Removal activities and stockpiling of material
 - b. Disposal or salvage costs
- 15. Bid Item No. 46 “Removal and Disposal: Timber Catwalk” shall be itemized to include at a minimum the following cost items:
 - a. Removal activities and stockpiling of material
 - b. Disposal or salvage costs
- 16. Bid Item No. 47 “Removal and Disposal: Clarifier Concrete Structure, Scum Box, Phosphoric Acid Tank, and Remnant Foundations” shall be itemized to include at a minimum the following cost items:
 - a. Pumping and removal of stormwater solids from the clarifier structure
 - b. Removal activities and stockpiling of material
 - c. Disposal or salvage costs

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- d. Placement of crushed concrete
 - e. Storm drainage pipe and fittings
 - f. Installation and connection of utility modifications
 - g. Furnish and install chain link fencing
17. Bid Item No. 48 “Pull or Cut and Disposal: Broken Pile Stubs (South Shoreline Area)” shall be itemized to include at a minimum the following cost items:
- a. Pull or cut pile on per pile basis and stockpiling of material
 - b. Disposal or salvage costs
18. Bid Item No. 49 “Furnish and Install South Shoreline Mooring Bollard” shall be itemized to include at a minimum the following cost items:
- a. Furnish coated steel pipe pile, concrete, plates, frames, bollard, aluminum gangway and connecting hardware
 - b. Driving of piles and installation of concrete, bollard, platform, gangway and any associated hardware and connections
19. Bid Item No. 50 “Removal and Disposal: Log Pond Timber Bulkhead Piling” shall be itemized to include at a minimum the following cost items:
- a. Removal activities and stockpiling of material
 - b. Disposal or salvage costs
20. Bid Item No. 51 “Pull or Cut and Disposal: Broken Pile Stubs (Log Pond Area)” shall be itemized to include at a minimum the following cost items:
- a. Pull or cut pile on per pile basis and stockpiling of material
 - b. Disposal or salvage costs
21. Bid Item No. 52 “Relocate: Log Boom” shall be itemized to include at a minimum the following cost items:
- a. Relocation and attachment costs

DIVISION 01—GENERAL REQUIREMENTS

Section 01 29 73—Schedule of Values

22. Bid Item No. 53 “Removal and Disposal: Log Boom” shall be itemized to include at a minimum the following cost items:
 - a. Removal activities and stockpiling of material
 - b. Disposal or salvage costs

END OF SECTION

DIVISION 01—GENERAL REQUIREMENTS
Section 01 31 00—Project Management and Coordination

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. The work described in this Section includes the requirements for the Pre-Construction Meeting, Progress Meetings, and coordination throughout the duration of the project.
- B. The Contractor shall attend all required meetings and provide required preparation and follow-up materials.
- C. No separate payment will be made for effort associated with work described in this Specification Section. Work required to comply with this Specification Section is considered to be inclusive to all other activities described in the Contract Documents.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout the Specifications.

1.03 ADMINISTRATIVE

- A. The Contractor shall complete the following activities regarding administration of meetings throughout the progress of the work:
 - 1. Schedule and administer Progress Meetings and Tailgate Meetings as required, or at the request of the Engineer.
 - 2. Prepare agendas for Progress Meetings.
 - 3. Provide physical space and make arrangements for Progress Meetings and Tailgate Meetings.
 - 4. Preside at Progress Meetings and Tailgate Meetings.
- B. The Contractor will record the Progress Meeting minutes, including significant proceedings and decisions, and identify actions by parties.
 - 1. The Contractor will reproduce and distribute copies of Progress Meeting minutes within three (3) working days after meetings and transmit to the meeting participants. The Engineer will review meeting minutes and request changes as applicable. The Contractor shall provide a final copy of meeting minutes within three (3) working days after receipt of comments from the Engineer.

DIVISION 01—GENERAL REQUIREMENTS

Section 01 31 00—Project Management and Coordination

- C. Representatives of the Contractor, subcontractors, and suppliers attending Progress Meetings will be qualified and authorized to act on behalf of the party each represents.

1.04 PRE-CONSTRUCTION MEETING

A. Notification

- 1. Following the award, the Port will notify the selected bidder of the time and date of a Pre-Construction Meeting.

B. Location

- 1. The Pre-Construction Meeting will be conducted at the Port of Bellingham's offices, located at 1801 Roeder Avenue, Bellingham, Washington 98225.

C. Attendance

- 1. The following are requested to attend:

- a. Port Representatives:

- 1) Project Manager
- 2) Engineer
- 3) Contract Administrator
- 4) Consultants
- 5) Inspectors
- 6) Other Port personnel

- b. Contractor's Representatives:

- 1) Project Manager and Site Superintendent
- 2) Contractor Quality Control Supervisor
- 3) Contractor Site Health and Safety Officer
- 4) Major Subcontractors (e.g., Dredging, Capping, Sheetpile and Piling Installation, Surveyor)

- 2. Suggested Agenda:

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- a. The Contractor shall be prepared to discuss and/or provide, at a minimum, the following information:
 - 1) The work: sequence, phasing, and occupancy
 - 2) Construction schedule: The Contractor shall prepare weekly updates of its Construction Schedule reflecting the progress of the work. Weekly updates shall be submitted to the Engineer at the Weekly Construction Meeting in the form of the 3-week look-ahead schedule.
 - 3) Job communications
 - 4) Contractor Health and Safety
 - 5) Environmental controls and protection
 - 6) Contractor's use of the premises
 - 7) Schedule of submissions, including but not limited to, the Construction Work Plan, Health and Safety Plan, Quality Control Plan, and Environmental Protection Plan
 - 8) Progress Meetings
 - 9) Special project procedures
 - 10) Permit requirements
 - 11) Procedures and processing
 - a) Field decisions
 - b) Proposal requests
 - c) Submittals
 - d) Change Orders
 - e) Application for Payment
 - f) Other
 - 12) Record Documents

DIVISION 01—GENERAL REQUIREMENTS

Section 01 31 00—Project Management and Coordination

- 13) Requirements for temporary facilities, site sign, offices, storage sheds, utilities, and fences
 - 14) Security procedures
 - 15) Safety and first-aid procedures
 - 16) Housekeeping procedures
 - 17) Other
- b. The Contractor will present and distribute information indicating:
- 18) List of major subcontractors and suppliers
 - 19) Preliminary construction schedule
 - 20) Draft Schedule of Values

1.05 PROGRESS MEETINGS

- A. During the course of the work, the Port shall schedule Progress Meetings at least once per week.
- B. .The Port will arrange meetings, prepare standard agenda with copies for participants, preside at meetings, record minutes, and distribute copies within three (3) calendar days to the Contractor, meeting participants, and others affected by decisions made. The Contractor will review Progress Meeting minutes and provide revisions within two (2) calendar days of receipt of the draft minutes. The Port shall provide a final copy of Progress Meeting minutes within two (2) calendar days after receipt of comments from the Contractor.
- C. Attendance is required for the Contractor's Site Superintendent, Quality Control Supervisor, Health and Safety Officer, and other key personnel, as appropriate to the agenda topics for each meeting.
- D. Standard Agenda
 1. Review minutes of previous meeting.
 2. Health and safety considerations.
 3. Review of work progress.
 4. Field observations, problems, and decisions.

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Section 01 31 00—Project Management and Coordination

5. Environmental management.
6. Identification of problems that impede planned progress.
7. Updated Construction Schedule: The Contractor shall prepare weekly updates of its Construction Schedule reflecting the progress of the work. Weekly updates shall be submitted to the Engineer at the Weekly Construction Meeting in the form of the 3-week look-ahead schedule.
8. Effect of proposed changes on progress schedule and coordination.
9. Corrective measures to regain projected schedules.
10. Review submittal schedules, RFI, and field directive status and expedite as required.
11. Planned progress during succeeding work period.
12. Coordination requirements with tenants and property owners.
13. Maintenance of quality and work standards.
14. Current or potential Change Order discussions.
15. Demonstration that the project record drawings are up-to-date.
16. Pay request (as required).
17. Other business relating to the work.

1.06 TAILGATE MEETINGS

- A. During the course of the work, the Contractor shall schedule daily Tailgate Meetings to occur at the start of each work shift. Multiple Tailgate Meetings shall be required if the Contractor intends to work multiple shifts within a 24-hour period.
- B. Tailgate Meeting agendas shall include, at a minimum, the following:
 1. Sign-in of all attendees.
 2. Planned work activities and environmental considerations for that shift.
 3. Hazards associated with these work activities, including environmental hazards (e.g., potential for hypothermia, heat exhaustion, or heat stroke).

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Section 01 31 00—Project Management and Coordination

4. Appropriate job-specific safe work procedures.
5. Required personal protective equipment (PPE).
6. Appropriate emergency procedures.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION

DIVISION 01—GENERAL REQUIREMENTS

Section 01 32 00—Construction Progress Documentation

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. The work described in this Section includes the requirements for preparation of construction schedules, maintaining documents on the Work Site, documenting daily quantities, and daily and weekly construction reports.
- B. No separate payment will be made for effort associated with work described in this Specification Section. Work required to comply with this Specification Section is considered to be inclusive to all other activities described in the Contract Documents.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout the Specifications.

1.03 CONSTRUCTION SCHEDULE:

- A. As part of the Construction Work Plan submittal, prepare a Preliminary Construction Schedule in a Gantt chart format showing specific tasks, dates, and critical path necessary for completion of the project within the Contract time limits.
 - 1. After receiving the Port's comments, re-submit the Construction Preliminary Schedule within seven (7) calendar days for Engineer acceptance.
- B. Upon the Engineer's acceptance, the Preliminary Construction Schedule will become the Project Construction Schedule.
 - 1. The Project Construction Schedule will be reviewed and updated at each progress meeting.
 - 2. All changes to the Progress Construction Schedule of more than three (3) calendar days shall be documented on the updated Project Construction Schedule and shall be submitted, both in writing and electronic format (e-mailed) to the Engineer.
 - 3. The Project Construction Schedule, as accepted by the Engineer, will be an integral part of the Contract and will establish interim completion dates for the various activities under the Contract.
 - 4. The Project Construction Schedule shall be updated and submitted weekly in paper and electronic formats.

DIVISION 01—GENERAL REQUIREMENTS

Section 01 32 00—Construction Progress Documentation

- C. The Project Construction Schedule format shall be a network analysis of the critical path method (CPM).
 - 1. The Project Construction Schedule shall identify the work clearly, showing the detailed items of work.
 - 2. The breakdown of work shall, at a minimum, show all of the items identified in the Schedule of Values and significant design, manufacturing, construction, and installation activities.
 - 3. Submittals and long lead items shall be included and the relationship between submittal and the work item shall be identified.
 - 4. The relationship between the work items shall clearly show the starting dates, and include all details of the work within the time frame shown.
- D. The Project Construction Schedule shall include sufficient time for cleaning to the designated substantial completion date.
- E. The Project Construction Schedule shall be used to justify time extension days requested by the Contractor. For additional days requested, the Project Construction Schedule shall be detailed enough to identify the work item(s) affected and the relationship to the changed or added work.
- F. Should any activity not be completed by the stated scheduled date, the Port will have the right to require the Contractor to expedite completion of the activity by whatever means appropriate and necessary, without additional compensation to the Contractor.

1.04 ON-SITE DOCUMENTS

- A. Maintain at the Work Site, in good order for ready reference by the Port, one complete record copy of the Contract Documents, including the Addenda, Change Orders, and all working drawings, Project Construction Schedule, and other approved submittals.
- B. Generate and keep on site all documents and reports required by applicable permit conditions.
- C. The Contract record drawings shall be marked to record all changes made during construction.
 - 1. The location of all existing or new underground piping, valves and utilities, and obstructions as located during the work, shall be appropriately marked on the ground until the Contractor incorporates the actual field location dimensions and coordinates into the project's record drawings.

DIVISION 01—GENERAL REQUIREMENTS

Section 01 32 00—Construction Progress Documentation

2. The project's record drawings shall be updated on a weekly basis and before elements of the Work are covered or hidden from view.
3. After the completion of the work or portions of the work and before requesting final inspection, the record copy of the Drawings shall be given to the Engineer.
4. The Port reserves the right to withhold monthly progress payments until such time as the record drawings are brought current.

1.05 DOCUMENTATION OF WEEKLY QUANTITIES

- A. Meet with the Engineer weekly to agree upon the quantities of materials or work completed during the day's work. Both parties shall initial the Weekly Construction Report that shows there is agreement (or a lack of agreement) over the amount of work performed that during that week.

1.06 DAILY AND WEEKLY CONSTRUCTION REPORTS

- A. Submit to the Engineer a Daily Construction Report that documents all activities associated with the work that are completed each day. Specific submittal requirements for the Daily Construction Report are described in the individual Specification sections. The Daily Construction Report shall be submitted on a daily basis, before noon of the morning following completion of work for the previous day.
- B. Submit to the Engineer a Weekly Construction Report that provides a summary of the week's construction activities that were completed as part of the Contract, including documentation of weekly quantities of different types of work performed. Specific submittal requirements for the Weekly Construction Report are described in the individual Specification sections. The Weekly Construction Report shall be submitted on a weekly basis before noon on Monday morning following the previous week's work.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION

DIVISION 01—GENERAL REQUIREMENTS

Section 01 33 00—Submittal Procedures

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. The work described in this Section includes the format and procedures required for project submittals.
- B. The Contractor shall be required to provide submittals to the Engineer in advance of, and throughout, the duration of the work.
- C. This Section specifies general requirements and procedures for the Contractor's submissions of all required submittals following award of the Contract (including the Construction Work Plan, other plans, product samples, and product testing data) to the Engineer for review. Additional specific requirements for submissions are specified in the individual Specification Sections.
- D. No separate payment will be made for effort associated with work described in this Specification Section. Work required to comply with this Specification Section is considered to be inclusive to all other activities described in the Contract Documents.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Specification. Work related to this section is described throughout the Specifications.

1.03 SUBMITTALS LIST

- A. Individual submittals are required in accordance with the pertinent sections of these Specifications. Other submittals may be required during the course of the project and are considered part of the normal work to be completed under the Contract.
- B. This summary list is presented for the Contractor's convenience only, but no warranty is given to its accuracy or completeness. In the event of any discrepancies with the requirements of the individual Specification Sections, those individual Specification sections apply.
- C. Submittals associated with completion of electrical work are described in the Division 26 Specification sections.

DIVISION 01—GENERAL REQUIREMENTS

Section 01 33 00—Submittal Procedures

**SUMMARY LIST OF SUBMITTALS
Pre-Construction Submittals**

Section	Clause	Submittal	Submittal Schedule
01 10 00 01 50 00 01 57 19 02 41 00 31 41 13.16 31.62.16.16 31 68 13 35 20 23 35 20 23.01 35 43 00	1.05 A1 1.03 A 1.01 F 1.01 A/ 1.04 G/ 1.05 A1 1.06 A6 1.06 A1/ 1.05 A5 1.03 A1/ 3.02 C4/D1 1.01 C/ 1.03 A1 and 2 and 3e and f / 1.05 A 3.04 C3	Construction Work Plan	Within twenty-eight (28) calendar days after Notice of Award
01 29 73	1.04 A	Preliminary Schedule of Values	At the Pre-Construction Meeting
01 29 73	1.04 B	Corrected Schedule of Values	Within seven (7) calendar days upon receipt of reviewed Schedule of Values
01 32 00	1.03 A1	Preliminary Construction Schedule	As part of the Construction Work Plan
01 32 00	1.03 B4	Project Construction Schedule	Within seven (7) calendar days of receipt of Preliminary Construction Schedule comments
01 57 19	1.04	Environmental Protection Plan	Within twenty-eight (28) calendar days after Notice of Award
01 45 00	1.03 A	Construction Quality Control Plan	Within twenty-one (21) calendar days after Notice of Award
01 35 29	1.03 A	Health and Safety Plan	Within twenty-eight (28) calendar days after Notice of Award
01 71 23	1.05 A	Survey and Positioning Control Plan	As part of the Construction Quality Control Plan
01 71 23	1.01 G	Pre-Construction Survey	At least fourteen (14) calendar days prior to start of work (excluding mobilization and temp facility setup)

DIVISION 01—GENERAL REQUIREMENTS

Section 01 33 00—Submittal Procedures

Section	Clause	Submittal	Submittal Schedule
35 20 23.01	1.05B	Disposal Facility Permits	Within fourteen (14) calendar days following Notice of Award

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Section 01 33 00—Submittal Procedures

Progress Submittals

Section	Clause	Submittal	Submittal Schedule
01 32 00 01 71 23 02 1 10 02 41 00 35 20 23 35 20 23.01 35 43 00	1.06 A 1.05 B1d/B5d 3.02 C2 1.04 C2 1.04 C2 1.05 B1 1.03 B1 1.06 C2	Daily Construction Report	Before noon of the morning following completion of work for the previous day
01 32 00 01 71 23 02 1 10 02 41 00 35 20 23 35 20 23.01 35 43 00	1.06 B 1.05 A1e/B5d 3.04 C4a/C5b/C6a/C7a 1.04 C3 1.05 C3 1.05 B2 3.02 D3a 1.03 B2 1.06 C3	Weekly Construction Report	Before noon on Monday morning following the previous week's work
01 71 23	1.05 B1	Progress Surveys	Included in the Contractor's Daily Construction Report
01 71 23	1.05 B1	Post-Construction Surveys	Within seventy-two (72) hours of completing the survey, as part of the Weekly Construction Report
31 41 16.13	1.06	Pile Driving Records	At the end of each day when piles are driven
35 20 26	1.04 D2 2.02 A2	Material Samples	Within twenty-eight (28) days following Notice of Award
02 56 16	1.03 2F	Weigh Scale Certification and Calibration	At least seven (7) days prior to use at Work Site
35 20 23.01	1.01 F/1.03 A3	Certificate of Disposal	Within three (3) calendar days after material is brought to the Disposal Facility
01 57 19	1.04 D	Environmental Protection Inspection Report	As part of the Weekly Construction Report

DIVISION 01—GENERAL REQUIREMENTS

Section 01 33 00—Submittal Procedures

Section	Clause	Submittal	Submittal Schedule
35 20 26	2.02 A4	Material Samples	At least one month prior to start of capping or residuals management cover placement activities
35 20 26	2.02 A9	Material Test Results	At least fourteen (14) calendar days prior to material delivery at the Work Site
01 32 00	1.03 B4	Project Construction Schedule	Submitted Weekly at the Weekly Construction Meeting

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Section 01 33 00—Submittal Procedures

Post-Construction Submittals

Section	Clause	Submittal	Submittal Schedule
01 70 00	1.03 B	Record Drawings	At least fourteen (14) calendar days prior to physical completion of the work

1.05 ADMINISTRATIVE

- A. Submit to the Engineer all submittals required for review as described in these Specifications. Submit promptly and in an orderly sequence so as to not cause a delay in work. Failure to submit in ample time is not considered sufficient reason for extension of Contract duration and no claim for extension by reason of such default will be allowed.
- B. Allow necessary time for the following:
 - 1. Review of product and sample data
 - 2. Review of re-submissions as necessary
 - 3. Ordering of accepted materials and/or products
- C. The Contractor shall allow a minimum of seven (7) calendar days for Engineer review of each submittal and an additional seven (7) calendar days for Engineer review of re-submittals. Unless stated otherwise in the Specifications, the Contractor shall be allowed seven (7) calendar days for revising initial submittals and providing re-submittals to the Engineer. The Contract time shall not be extended on the basis that the Contractor experienced delays due to rejection of submittals.
- D. Do not proceed with work affected by a submittal until Engineer review and approval, if appropriate, is complete.
- E. Review submittals prior to submission to the Engineer. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of work and Contract Documents. Submittals with content that does not meet the requirements of the Specifications, not signed, dated, and identified as to specific project, will be returned without being examined and considered rejected. Engineer review time starts only when a complete submittal is received.
- F. Notify the Engineer, in writing at time of submission, identifying deviations from requirements of Contract Documents and stating reasons for deviations.

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Section 01 33 00—Submittal Procedures

- G. Verify that field measurements and affected adjacent work are coordinated.
- H. The Contractor's responsibility for errors and omissions in its submissions is not relieved or diminished by the Engineer's review and acceptance of the Contractor's submissions. The Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Engineer's review and acceptance of submittals.
- I. The Contractor shall revise all submittals that are determined by the Engineer to be inadequate or non-compliant with the Contract Documents or permit conditions.
- J. Re-submittals are the responsibility of the Contractor and shall be compensated at no additional costs to the Port. Submittals shall be completed to the satisfaction of the Engineer.
- K. Keep one reviewed, and approved, if appropriate, copy of each submission at the Work Site.

PART 2 – PRODUCTS

2.01 COMPLIANCE

- A. Failure to comply with these requirements shall be deemed as the Contractor's agreement to furnish the exact materials specified or materials selected by the Port based on these Specifications.

2.02 SHOP DRAWINGS

- A. The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data that are to be provided by Contractor to illustrate details of a portion of work.
- B. Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes, and other information necessary for completion of work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of section under which adjacent items will be supplied and installed. Indicate cross-references to design Drawings and Specifications.
- C. Adjustments made on shop drawings by the Engineer are not intended to change the Bid Price for the Contract. If adjustments affect value of work, state such in writing to the Engineer and obtain approval to proceed prior to proceeding with work.

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Section 01 33 00—Submittal Procedures

- D. Make changes in shop drawings as the Engineer may require, consistent with Contract documents. When resubmitting, notify the Engineer in writing of revisions other than those requested.
- E. The Engineer will not accept shop drawings that prohibit the Port from making copies for its own use.
- F. Quality: Shop drawings shall be prepared accurately to a scale sufficiently large to indicate all pertinent features of the products and the method of fabrication, connection, erection, or assembly with respect to the work.
- G. Submittals typically provided on paper may be submitted electronically as PDFs. This is the preferred method of the Port.
- H. All shop drawings submitted to the Engineer for approval shall be drawn on full-size (ANSI D) copy or half-scale sets on 11 inches by 17 inches, bond paper only. Electronic versions of the shop drawings will also be submitted in the following formats on CD-ROM:
 - 1. DWG
 - 2. TIF
 - 3. PDF – Formatted to print to half-scale set on 11-inch by 17-inch paper
- I. Type of Prints Required:
 - 1. Submit six paper copies of all shop drawings or supplemental working drawings in accordance with the General Conditions.
 - 2. In lieu of the above, the Contractor may submit shop drawings or supplemental working drawings in the form of one sepia transparency of each sheet plus one blue line or black line print of each sheet.
 - 3. Distribution: In the event the action described in I.2 above is selected by the Contractor, the Engineer will review the drawings, mark the sepia with appropriate notations, prepare the required number of prints for their use, and return the marked sepia to the Contractor. The Contractor may then order as many additional copies as required for Contractor's work.
- J. If, upon review by the Engineer, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of work may proceed. If shop drawings are rejected, a noted copy will be returned and resubmission of corrected shop drawings,

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Section 01 33 00—Submittal Procedures

through same procedure indicated above, must be performed before fabrication and installation of work may proceed.

- K. The review of shop drawings by the Engineer is for sole purpose of ascertaining conformance with general concept.
 - 1. This review shall not mean that the Port, the Engineer, or others approve detail design inherent in shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract documents.
 - 2. The Contractor is responsible for dimensions to be confirmed and correlated at the Work Site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for coordination of work of subcontractors.

2.03 MANUFACTURERS' LITERATURE

- A. Submittals typically provided on paper may be submitted electronically as PDFs. The manufacturer's original electronic issue is preferred by the Port.
- B. Submit six paper copies of manufacturers' literature for approval.
- C. Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions, or brochures shall show the type, size, ratings, style, color, manufacturer, physical appearance, and catalog number of each item and be complete enough to provide for positive and rapid identification in the field. Catalog data shall be submitted in an orderly bound form. General catalogs or partial lists will not be accepted.

2.04 SAMPLES

- A. The sample submitted shall be the exact or precise article proposed to be furnished.

2.05 SUBSTITUTIONS

- A. Refer to Section 01 25 00—Substitution Procedures.

PART 3 – EXECUTION

3.01 TRANSMITTALS

- A. Submittals typically provided on paper may be submitted electronically as PDFs. This is the preferred method for the Port.

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Section 01 33 00—Submittal Procedures

- B. Preparation: A separate submittal form shall be prepared for each product or procedure and shall be further identified by referencing the Specification Section and paragraph number, and each submittal shall be numbered consecutively. All submittals shall be dated, signed, and certified by the Contractor as being correct and in conformance with the Contract Documents.
- C. Mailing: The original shall be sent in every instance and will be the Contractor's record and final correspondence for every submittal.

3.02 COORDINATION

- A. Shop and detail drawings shall be submitted in related packages. All equipment or material details that are interdependent or are related in any way must be submitted indicating the complete installation. Submittals shall not be altered once approved for construction. Revisions shall be clearly marked and dated. Major revisions must be submitted for approval.
- B. Thoroughly review all shop and detail drawings, prior to submittal, to ensure coordination with other parts of the work. The Contractor's failure to do this will be the cause for rejection. Submittals shall bear this approval stamp and initials.

END OF SECTION

DIVISION 01—GENERAL REQUIREMENTS

Section 01 35 29—Health, Safety, and Emergency Response Procedures

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. The work includes the requirements for health and safety provisions necessary for all work at the Work Site for this project. The work also includes compliance with all laws, regulations, and ordinances with respect to safety, noise, dust, fire and police action, civil disobedience, security, emergency response, or traffic.
- B. It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work.
- C. No separate payment will be made for effort associated with work described in this Specification Section. Work required to comply with this Specification Section is considered to be inclusive to all other activities described in the Contract Documents.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout the Specifications.

1.03 SUBMITTALS

- A. The Contractor shall submit a site-specific Health and Safety Plan (HASP) that meets all the requirements of local, state, and federal laws, rules, and regulations and the pertinent regulations listed in the Contract Documents. The HASP shall be submitted within twenty-eight (28) calendar days after Notice of Award. The HASP shall address all requirements for general health and safety and shall include, but not be limited to, the following:
 - 1. Identify personnel and alternates responsible for site safety and health.
 - a. Provide name and qualifications of the Contractor's proposed Site Safety and Health Officer. The Port has the right to reject the Contractor's proposed Site Safety and Health Officer and require the Contractor to provide an alternate at no additional cost to the Port.
 - b. Provide organization chart identifying the Contractor's Health and Safety lines of reporting internal to the Contractor's team and externally, including the Port and other regulatory agencies as appropriate.

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Section 01 35 29—Health, Safety, and Emergency Response Procedures

2. Description of work to be performed and anticipated chemical and/or physical hazards associated with the work.
 - a. Map of the sites illustrating the location of the anticipated hazards and areas of control for those hazards.
3. Hazardous material inventory and Material Safety Data Sheets (MSDS) for all chemicals that will be brought to the Work Site.
4. Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.
5. Signage appropriate to warn Work Site personnel and visitors of anticipated Work Site hazards.
6. Personal protective equipment (PPE) and clothing including head, foot, skin, eye, and respiratory protection and personal flotation device (PFD) as applicable.
7. Procedures that will be used, if appropriate, for:
 - a. Lock-out/Tag-out
 - b. Fall Protection
 - c. Trenching and shoring
 - d. Hot Work
 - e. Explosive conditions due to methane
 - f. Oxygen-deficient conditions
 - g. Asbestos and lead hazards
 - h. Confined-space entry (could include dewatering storage tanks, manholes, or other items)
 - i. Odorous conditions and toxic gases
8. Contractor provided monitoring to be used to evaluate actual hazards compared with anticipated conditions.
9. Access procedures for floating equipment.
10. Site housekeeping procedures and personal hygiene practices.
11. Personnel and equipment decontamination plan.

DIVISION 01—GENERAL REQUIREMENTS

Section 01 35 29—Health, Safety, and Emergency Response Procedures

12. Medical surveillance program for site personnel before, during, and after completion of site work, if required.
 13. Record keeping including:
 - a. Documentation of appropriate employee training
 - b. Respirator fit testing
 - c. Copies of incident and accident reports
 - d. Signatory page for site personnel to acknowledge receipt, understanding, and agreement to comply with the HASP
- B. Emergency Procedures
1. In a separate section within the HASP, list standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e., names/telephone numbers) of:
 - a. Designated personnel from own company
 - b. Local emergency resources
 - c. Engineer and other Port staff and representatives, as required
 2. Provide written rescue/evacuation procedures as required for, but not limited to:
 - a. Work in confined spaces or where there is a risk of entrapment
 - b. Underground or underpier work
 - c. Structures removal
 - d. Work on, over, under and adjacent to water
- C. Submission of the Health and Safety Plan, and any revised version, to the Engineer is for information and reference purposes only. It shall not:
1. Be construed to imply approval by the Engineer
 2. Be interpreted as a warranty of being complete, accurate, and legislatively compliant

DIVISION 01—GENERAL REQUIREMENTS

Section 01 35 29—Health, Safety, and Emergency Response Procedures

3. Relieve the Contractor of his legal obligations for the provision of health and safety on the project

1.04 SITE SAFETY AND HEALTH OFFICER

- A. The Contractor shall provide a person designated as the Site Safety and Health Officer, who is thoroughly trained in construction safety, marine construction safety, pile driving, dredging and excavation, confined space entry, rescue procedures, and the use of all necessary safety equipment, air monitoring equipment, and gas detectors that the work requires.
- B. Be on site during execution of work. If the Contractor's work hours and schedule necessitate use of additional personnel to support the Site Safety and Health Officer, identify those personnel in the HASP.
- C. The Site Safety and Health Officer is responsible for implementing, daily enforcement, and monitoring the Contractor's compliance with the site-specific project HASP.
- D. The Site Safety and Health Officer shall be empowered with the delegated authority to order any person or worker on the project site to follow the safety rules. Failure to observe these rules is sufficient cause for removal of the person or worker(s) from this project.

1.05 POTENTIAL PHYSICAL AND OTHER HAZARDS

- A. The work of the Contractor is described elsewhere in these Specifications. Precautions to prevent all anticipated physical and other hazards, including heavy equipment and vessels, shall be addressed in the HASP.
- B. Specific aspects of construction resulting in physical hazards anticipated for this project include, but are not limited to, the following:
 1. Work over water, presenting hazards of falling overboard, hypothermia from exposure to the elements, and drowning.
 2. Operation of marine and upland equipment, including winches, dredges, pile driving equipment, dozers and loaders, and related equipment, presenting hazards of entrapment, pinching/crushing, ensnarement, and being struck by moving parts.
 3. Work on steep slopes and debris areas adjacent to water, presenting hazards of trips and falls, and potentially unstable slope conditions.
 4. Trenching or deep excavation adjacent to shoreline areas.

DIVISION 01—GENERAL REQUIREMENTS

Section 01 35 29—Health, Safety, and Emergency Response Procedures

5. Removal of existing structures and installation of new sheetpile wall structures.
 6. Completion of diver surveys with specific health and safety elements.
- C. Other anticipated physical hazards include, but are not limited to, the following:
1. Heat stress, such as that potentially caused by impermeable clothing (may reduce the cooling ability of the body due to evaporation reduction).
 2. Cold stress, such as that potentially caused during times when temperatures are low, winds are high, and especially when precipitation occurs during these conditions.
 3. Biological hazards, such as insect stings or bites.
 4. Trips and falls.
 5. Welding and metal cutting.
- D. Unforeseen Hazards
1. Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of the work, immediately stop work and advise the Engineer verbally and in writing.
- E. Firewatch Procedures
1. A firewatch is implemented to ensure the fire-safety of a building, structure, or area in the event of any act (e.g., “hot” work) or situation instigating an increased risk to persons or property. The term “firewatch” is used to describe a dedicated person or persons whose sole responsibility is to look for fires within an established area.
 2. When is a firewatch required?
 - a. A firewatch is required when “hot” work is being performed.
 3. How is a firewatch conducted?
 - a. “Hot” Work: During “hot” work operations, the firewatch is to perform the following functions:

DIVISION 01—GENERAL REQUIREMENTS

Section 01 35 29—Health, Safety, and Emergency Response Procedures

- 1) Firewatch personnel are to keep diligent watch for fires in the general area where the work is being performed.
- 2) Firewatch personnel are to be familiar with facilities and procedures for sounding an alarm in the event of a fire.
- 3) Firewatch personnel are to have fire extinguishing equipment readily available and be trained in its use, including practice on test fires.
- 4) Firewatch personnel are to inspect the site prior to “hot” work activities to ensure that combustibles are removed or covered and that any nearby holes or penetrations in the ground and walls are sealed or covered with fire-safe materials.
- 5) Firewatch personnel are to watch for fires in all exposed areas. If a fire is located, firewatch personnel are to sound the evacuation alarm immediately and after that try to extinguish the fire only when obviously within the capacity of the equipment available.
- 6) For “hot” work operations, the firewatch is to be maintained for at least 30 minutes after completion of cutting, welding, or other open-flame operations to detect and extinguish smoldering and flaming fires. During this time, the work area and other adjacent areas, where sparks or flame may have traveled, are to be searched for signs of combustion.

PART 2 – PRODUCTS

2.01 PRODUCTS SPECIFIED FOR HEALTH AND SAFETY

- A. Provide the equipment and supplies necessary to support the work as described in the site-specific HASP. Equipment and supplies may include, but are not limited to, the following:
 1. Chemicals to be used on site including dust suppressants/wetting agents, cleaning, degreasing, and/or welding or cutting supplies
 2. Hazardous materials inventory and MSDS for the chemicals brought on site

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3. Enclosure equipment (for dust and asbestos fiber control)
4. Fencing and barriers
5. Warning signs and labels
6. Trenching equipment
7. Fire extinguishers
8. Equipment to support “hot” work
9. Equipment to support lock-out/tag-out procedures
10. Scaffolding and fall protection equipment
11. PPE (e.g., hard hats, foot gear, and skin, eye, and respiratory protection) and PFDs
12. Area and personnel exposure monitoring equipment
13. Odor control materials if necessary for sediment stockpiles
14. Removal equipment and supplies
15. Decontamination equipment and supplies
16. First aid equipment
17. Release prevention equipment
18. Field documentation logs and supplies

PART 3 – EXECUTION

3.01 WORK AREA PREPARATION

- A. The Contractor shall comply with health and safety rules, regulations, and ordinances promulgated by the local, state, and federal government, the various construction permits, and other sections of the Contract Documents. Such compliance shall include, but not be specifically limited to: any and all protective devices, equipment, and clothing; guards; restraints; locks; latches; switches; and other safety provisions that may be required or necessitated by state and federal safety regulations. The Contractor shall determine the specific requirements for safety provisions and shall allow inspections and reports to be conducted by the appropriate safety authorities to ensure compliance with the intent of the regulations.

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Section 01 35 29—Health, Safety, and Emergency Response Procedures

- B. The Contractor shall inform employees and subcontractors and their employees of the potential danger in working with any potentially contaminated materials, equipment, soils, and groundwater at the project site.
- C. The Contractor shall perform whatever work is necessary for safety and be solely and completely responsible for conditions of the Work Site, including safety of all persons (including employees of the Port, and Contractor) and property during the Contract period. This requirement applies continuously and is not limited to normal working hours.
- D. Provide safety barricades and lights around the Work Site (as necessary) and the Contractor's On-Site and Off-Site Transload Facility(ies) and On-Site and Off-Site Staging and Stockpile Area(s) as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.
- E. Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the Work Site and the Contractor's On-Site and Off-Site Transload Facility(ies) and On-Site and Off-Site Staging and Stockpile Area(s).
- F. Secure site(s) at night-time as deemed necessary to protect site against entry.
- G. Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform work and protect tenant users.
- H. Provide secure, rigid guard-rails and barricades around deep excavations, open shafts as needed.
- I. Maintain access to property, including overhead clearances, for use by emergency response vehicles.

3.02 SAFETY MEETINGS

- A. Ensure that all Contractor personnel attend a daily health and safety "tailgate" meeting, which at a minimum shall include:
 - 1. Sign-in of all attendees
 - 2. Planned work activities and environmental considerations for that shift

DIVISION 01—GENERAL REQUIREMENTS

Section 01 35 29—Health, Safety, and Emergency Response Procedures

3. Hazards associated with these work activities, including environmental hazards (e.g., potential for hypothermia, heat exhaustion, or heat stroke)
4. Appropriate job-specific safe work procedures
5. Required personal protective equipment (PPE)
6. Appropriate emergency procedures

3.03 UTILITY CLEARANCE

- A. The Contractor is solely responsible for utility clearance.
- B. The Contractor shall not rely upon Drawings or other information provided with utility locations.

3.04 CORRECTION OF NON-COMPLIANCE

- A. Immediately address health and safety non-compliance issues identified by the Engineer.
- B. Provide Engineer with written report of action taken to correct non-compliance with health and safety issues identified.
- C. The Engineer may issue a “stop work order” if non-compliance of health and safety regulations is not corrected immediately or within posted time. The Contractor/subcontractors will be responsible for any costs arising from such a “stop work order”.

3.05 NOTIFICATION

- A. Accidents causing death, injuries, or damage must be reported immediately to the Port in person or by telephone or messenger. In addition, promptly report, in writing, to the Port all accidents arising out of, or in connection with, the performance of the work whether on, or adjacent to, the Work Site, giving full details and statements of witnesses.
- B. If a claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts, to the Port in writing within 24 hours after occurrence, giving full details of the claim.

END OF SECTION

DIVISION 01—GENERAL REQUIREMENTS

Section 01 41 26—Permits

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section describes the Contract-applicable permits and substantive requirements.
- B. Copies of permits are located in the appendices to the Contract Documents.
- C. No separate payment will be made for effort associated with work described in this Specification Section. Work required to comply with this Specification Section is considered to be inclusive to all other activities described in the Contract Documents.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout the Specifications.

1.03 PERMITS

- A. Keep fully informed of all local ordinances, as well as state and federal laws that affect the work specified herein in any manner. At all times, comply with said ordinances, laws, and regulations, and protect and indemnify the Port and its officers and agents against any claim or liability arising from or based on the violation of such laws, ordinances, or regulations. Secure and pay for all permits, licenses, and inspection fees necessary for prosecution and completion of the work unless otherwise specified.
- B. Comply with all conditions attached to applicable Federal and State permits and approvals found in the appendices to the Contract Documents. These include but are not limited to the following:
 - 1. Nationwide Permit (NWP) 38 (under Section 10/404) – issued by U.S. Army Corps of Engineers (USACE)
 - 2. Washington State Department of Natural Resources Aquatic Resources Use Authorization
 - 3. Additionally, comply with the terms and conditions detailed in the attached letters and memorandum from the City of Bellingham and the Washington State Department of Fish and Wildlife that detail the substantive requirements for complying with the intent of the

DIVISION 01—GENERAL REQUIREMENTS

Section 01 41 26—Permits

local and additional state permits that would be applicable to the project if it were not being completed under a Model Toxics Control Act (MTCA) remedial action.

- a. Major Grading Permit: City of Bellingham (City) Grading Ordinance, Bellingham Municipal Code (BMC) 16.70. Contractor will comply with substantive requirements of the City's Grading Ordinance. Those substantive requirements include: staking and flagging property corners and lines when near adjacent property, location and protection of potential underground hazards, proper vehicle access point to prevent transport of soil off site, erosion control, work hours and methods compatible with weather conditions and surrounding property uses, prevention of damage or nuisance, maintaining a safe and stable work site, compliance with noise ordinances and zoning provisions, development of a traffic plan when utilizing city streets, and written permission for grading from legal property owner.
- C. If historical, archaeological, cultural, or biological resources or artifacts are suspected to have been discovered or observed by the Contractor during construction activities, all work in that area shall cease immediately and the Engineer shall be notified immediately.

1.04 PERMITS OBTAINED AFTER BID SUBMITTAL

- A. If, after the bid submittal date, the Port obtains any permits that require changes to the work hereunder and thereby cause an increase or decrease in the cost of, or the time required for, the performance of the work, the Contractor shall submit information sufficient for the Engineer to determine the extent of the effects on the cost and/or schedule. If the Engineer agrees that the cost and/or schedule will be affected by such changes, such effects will be handled in accordance with the General Conditions. The Engineer will provide the Contractor with a copy of any such permits. Comply with all applicable terms and conditions contained in such permits.

1.05 POSTING PERMITS

- A. Post permits at the Work Site.

1.06 INSPECTIONS

- A. Make any arrangements for all inspections and testing required by the permits and substantive requirements, and conditions of the permits.
- B. Post inspection reports at the Work Site.

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Section 01 41 26—Permits

1.07 RESTORATION OF PROPERTY

- A. Comply with all property restoration requirements contained in permits, agreements and substantive requirements to complete the work.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION

DIVISION 01—GENERAL REQUIREMENTS

Section 01 45 00—Quality Control

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section describes the Contractor's quality control requirements, duties, and responsibilities during execution of the work. The intent of this Section is to require the Contractor to establish a necessary level of control that will:
1. Provide sufficient information to assure both the Contractor and the Engineer that the Specification requirements are and have been met.
 2. Establish, provide, and maintain a Construction Quality Control (CQC) Plan as specified herein, detailing the methods and procedures that will be taken to ensure that all materials and completed construction elements conform to the Drawings, Specifications, and other requirements. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the Specifications, it is the responsibility of the Contractor to ensure that construction and construction quality control are accomplished in accordance with the stated purpose and Specifications as described herein.
 3. Be prepared to discuss and present, at the Pre-construction Meeting, an understanding of the quality control requirements. Do not begin any construction until the CQC Plan has been reviewed and approved by the Engineer.
- B. No separate payment will be made for effort associated with work described in this Specification Section. Work required to comply with this Specification Section is considered to be inclusive to all other activities described in the Contract Documents.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout these Specifications.

1.03 SUBMITTALS

- A. Contractor's Construction Quality Control (CQC) Plan.
1. Submit a CQC Plan to the Port as a Pre-Construction Submittal within twenty-one (21) calendar days after Notice of Award. The

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Section 01 45 00—Quality Control

CQC Plan will be reviewed by the Port and must be approved before any work can start. The CQC Plan will be used to document inspections, monitoring, surveys, and other actions to be taken by the Contractor to ensure that the work complies with all Contract requirements.

2. The CQC Plan shall identify personnel, procedures, methods, instructions, records, and forms to be used to control the work and verify that the work conforms to the Contract Documents.
3. The CQC Plan shall include the following elements, at a minimum:
 - a. Description of the quality control organization, including an organization chart showing the various Quality Control (QC) team members, along with their designated responsibilities and lines of authority. At a minimum, the Contractor shall identify the following key personnel:
 - 1) Superintendent
 - 2) Quality Control Supervisor
 - 3) Health and Safety Representative
 - 4) Survey Lead (or firm that the Contractor has hired to perform measurement and payment, and Progress Surveys)
 - 5) Other key personnel deemed necessary by the Contractor for the successful implementation and completion of this work
 - b. Quality control methods and procedures to ensure compliance with specifications and permit conditions.
 - c. Acknowledgement that the QC staff will conduct inspections for all aspects of the work specified, and shall report to the QC Supervisor, or someone of higher authority in the Contractor's organization.
 - d. The name, qualifications, duties, responsibilities, and authorities of each person assigned a primary QC function.
 - e. A summary of the delegated responsibilities of the QC Supervisor, signed by an authorized official of the firm.

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- f. Procedures for scheduling and managing submittals, including those of subcontractors, off-site fabricators, and material suppliers.
 - g. Testing methods, schedules, and procedures used to report QC information to the Port, including samples of the various reporting forms.
 - 4. QC Organization
 - a. QC Supervisor: Identify an individual within the Contractor's organization, located at the Work Site, who shall be responsible for overall QC management, and have the authority to act in all QC matters for the Contractor.
 - b. Personnel: A staff shall be maintained under the direction of the QC Supervisor to perform all QC activities. The actual number of the staff during any specific work period may vary to cover shift needs and rates of performance. The personnel of this staff shall be fully qualified by experience and technical training to perform their assigned responsibilities and shall be directly hired for the work by the Contractor.
 - c. Submit the qualifications in resume format of the personnel identified in this Specification as part of the CQC Plan.
 - 5. The Contractor is encouraged to add any additional elements to the CQC Plan deemed necessary to adequately control all production and/or construction processes required by this Contract.
- B. Daily CQC Reports.
- C. Landfill or Recycling Facility disposal documentation (certified weight tickets) submitted as part of the Daily Progress Report.

1.04 REFERENCES AND STANDARDS

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code.
- C. Obtain copies of standards where required by product Specification Sections.

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- D. Neither the contractual relationships, duties, nor responsibilities of the parties in the Contract, nor those of the Port, shall be altered from the Contract Documents by mention or inference otherwise in any reference document.
- E. All pertinent laws, ordinances, rules, regulations, and codes shall govern construction activities at the Work Site.
- F. Construction that is not governed by governmental regulations or the Specifications will be governed by the more stringent provisions of the latest published edition or statute adopted edition, at the time of Contract signing, following applicable codes and standards:
 - 1. Uniform Building Code
 - 2. National Electrical Code
 - 3. Uniform Plumbing Code
 - 4. Uniform Fire Code

1.05 PERMITS

- A. Refer to Section 01 41 26—Permits and the Specification appendices for permit requirements.

1.06 TESTING SERVICES

- A. Necessary materials testing, as described in these Specifications, shall be performed by an independent testing laboratory and paid for by the Contractor. Access to the area necessary to perform the testing and/or to secure the material for testing, shall be provided by the Contractor.
- B. Testing does not relieve the Contractor to perform work to Contract requirements.
- C. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent test laboratory. The Contractor is responsible for all re-testing expenses.

1.07 CONTRACTOR PERSONNEL REQUIREMENTS

- A. All Contractor personnel shall be trained, experienced, and qualified to perform the tasks assigned to them.
- B. Submit the Bidder Qualifications of the Contractor's proposed Site Superintendent to the Engineer for review and approval. The Port

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reserves the right to reject the Contractor's proposed Superintendent or other key personnel for any reason. The Contractor shall provide a Superintendent that is acceptable to the Port, and who shall be the full time Superintendent for this project. The Contractor may not remove and replace the Superintendent from the project without submitting a formal request to the Engineer. Any proposed replacement Superintendent must be approved by the Port before he or she can take over the role of Superintendent. The proposed field superintendent shall have a minimum of 5 years of experience as a field superintendent, in addition to having been the field superintendent on three projects of similar type and size, described below.

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Field Superintendent Qualifications:

The Field Superintendent must have successfully completed three projects of similar type and size. Each project must have managed contaminated sediment, involved dredging and upland disposal and/or engineered capping of contaminated sediment.

Name: _____

Address: _____

Phone: _____

Name of Contractor Employed By: _____

#1 Project Name: _____

Owner: _____

Contact Person: _____

Name of Contractor Employed By: _____

Completion Date: _____

#2 Project Name: _____

Owner: _____

Contact Person: _____

Name of Contractor Employed By: _____

Completion Date: _____

#3 Project Name: _____

Owner: _____

Contact Person: _____

Name of Contractor Employed By: _____

Completion Date: _____

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PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

3.01 DOCUMENTATION

A. Specific Contractor Quality Control Records required for the Contract shall include, but are not necessarily limited to, the following records:

1. Quality Control Records are those documents that have been reviewed and accepted by the Contractor as complete, correct, and legible. Quality Control Records shall include the documents such as:

- a. Drawings, specifications, procedures used for construction, procurement documents, inspections, and test records
- b. Submittals
- c. Personnel and procedure qualification records
- d. Material, chemical, and physical property test results
- e. Certificates of Compliance, and shipment releases
- f. Landfill and Recycling Facility certified weight tickets
- g. Contractor on-site weight scale reports
- h. Non-compliance reports and corrective action

All Quality Control Records shall be identified in the CQC Plan and maintained in the Contractor's Work Site files. The Engineer shall be provided access to these files when requested. Upon the completion of the Contractor's contractual activities, these files shall be turned over to the Engineer.

2. Daily CQC Report: Prepare and maintain a Daily CQC report of operations as part of the Contractor's Daily Progress Report. At a minimum, information in this daily CQC report will include the date, period covered by the report, equipment used, description of activity as identified by stationing and offset, quantity of debris removed and disposed/recycled that day and to date, downtime and delays to the operation, health and safety status, and other relevant comments concerning conduct of the operation. The

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report shall include the results of all Contractor inspections, surveys, and monitoring activities and shall be signed by the Contractor's Superintendent or QC Supervisor.

B. Document Control

The Contractor's CQC Plan must require that Contractor-generated documents pertaining to quality-related items be controlled. The following types of documents shall be on controlled distribution to ensure that changes to them are transmitted and received when applicable:

1. Manuals
2. Instructions
3. Procedures
4. Specifications
5. Drawings
6. Inspection and test plans
7. Field change requests

3.02 CORRECTIVE ACTION REQUIREMENTS

- A. The CQC Plan shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control.

3.03 QUALITY CONTROL—CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from the Port before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

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Section 01 45 00—Quality Control

- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- H. Familiarity with Pertinent Codes and Standards: In procuring all items used in this work, it is the Contractor's responsibility to verify the detailed requirements of the specifically named codes and standards and to verify that the items procured for use in this work meet or exceed the specified requirements.
- I. Rejection of Non-Complying Items: The Port reserves the right to reject items incorporated into the work that fail to meet the specified minimum requirements. The Port further reserves the right, and without prejudice to other recourse the Port may take, to accept non-complying items subject to an adjustment in the Awarded Contract Price as approved by the Port.

3.04 OVERSIGHT BY THE ENGINEER

- A. All items of material and equipment shall be subject to oversight by the Engineer at the point of production, manufacture, or shipment to determine if the Contractor, producer, manufacturer, or shipper maintains an adequate quality control system in conformance with the requirements detailed herein and the applicable Specifications and Drawings. In addition, all items of materials, equipment, and work in place shall be subject to inspection by the Engineer at the Work Site for the same purpose.
- B. To facilitate oversight by the Engineer, allow the Engineer access to any equipment at the request of the Port while the work is being performed.
- C. In cases of dispute, decisions as to standard or quality of work rest solely with the Engineer, whose decision is final.
- D. Oversight by the Engineer does not relieve the Contractor of performing quality control inspections of either on-site or off-site Contractor's or subcontractor's work.

3.05 NON-COMPLIANCE

- A. The Engineer will notify the Contractor of any non-compliance with any of the foregoing requirements. After receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or his/her authorized representative to the Contractor or his/her authorized representative at the Work Site, shall be considered sufficient notice.

END OF SECTION

DIVISION 01—GENERAL REQUIREMENTS
Section 01 50 00—Temporary Facilities and Controls

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section presents requirements for establishment of temporary facilities as part of the work, including but not limited to Contractor access to the Work Site, Contractor parking, Contractor offices, locations for materials delivery, storage, and utility connections that will be made available during completion of construction activities.
- B. Locations for temporary facilities, On-Site Staging and Stockpile Area(s) and storage, utility connections, and where temporary facilities will be made available to the Contractor at the Work Site during completion of the work are shown on the Drawings.
- C. The work includes compliance with all controls or ordinances with respect to safety, noise, dust, security, and traffic.
- D. Install, maintain, and operate all temporary facilities and controls as long as needed for the safe and proper completion of the work.
- E. Details regarding environmental protection measures associated with temporary facilities are presented in Section 01 57 19—Temporary Environmental Controls.
- F. Work under this Specification Section is paid under Bid Item 2 – Site Preparation as shown on the Bid Form and described in Section 01 20 00—Price and Payment Procedures.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout these Specifications.

1.03 SUBMITTALS:

- A. Submit a Temporary Facilities and Controls Plan, as part of the Construction Work Plan that provides the Work Site layouts in accordance with requirements of these Specifications.
- B. The Temporary Facilities and Controls Plan shall include, as a minimum:
 - 1. Layout of all proposed temporary facilities, including but not limited to, on-site Contractor office, employee parking, materials delivery

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Section 01 50 00—Temporary Facilities and Controls

area(s), equipment/material lay-down and storage areas, fueling facility, and On-Site and Off-Site Transload Facility(ies).

- a. Provide drawings to illustrate the layout and dimensions of all temporary facilities, including fencing, entry, and exit locations
 - b. Utility connections
2. Methods for temporary facilities maintenance and security.
 3. Methods for traffic control, where and when needed.
 4. Requirements referenced in other Specification sections.

1.04 ACCESS AND DELIVERY

- A. The designated entry and exit of Contractor's vehicles to the Work Site (and On-Site Staging and Stockpile Area(s) at the Central Waterfront and former GP West properties) are shown on the Drawings. Access to the On-Site Staging and Stockpile Area(s) at the Central Waterfront properties will be limited and shall not interfere with current Port tenant operations that will be ongoing during completion of the work.
- B. The Contractor shall locate all offices, employee parking, and staging and stockpiling operations at the On-Site Staging and Stockpile Area located at the former GP West property. Use of the On-Site Staging and Stockpile Area(s) at the Central Waterfront properties shall be only for Contractor access to complete the work, equipment and materials laydown, and removal of Shoreline Debris and upland excavated soils from the area.
- C. The Contractor is required to use only the designated entrance(s) to access the Work Site as shown on the Drawings, for deliveries to the site, and access to the temporary site office and On-Site Staging and Stockpile Area(s).
 1. Maintain for duration of Contract
 2. Repair damage resulting from Contractor's use
- D. Use of the upland properties surrounding Whatcom Waterway will be granted to the Contractor through the Engineer.
 1. Parking for the Contractor's staff shall be at the former GP West property, as shown on the Drawings.
- E. Provide and maintain access roads, sidewalk crossing ramps, and construction runways as may be required for access to the work. All

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Section 01 50 00—Temporary Facilities and Controls

roadways and walkways outside of the Contractor's Work Site must be kept clear of materials and equipment at all times.

- F. Provide and maintain competent flag operators, traffic signals, barricades and flares, lights, or lanterns as may be required to perform work and to protect other users at the Work Site.

1.05 ACCESS TO IN-WATER EQUIPMENT

- A. Provide access to in-water equipment from the On-Site Staging and Stockpile Area located at the former GP West property, as shown on the Drawings. The Contractor shall assess conditions of the Work Site and assess specific elements that are necessary to provide safe access to in-water equipment. Elements may include ladders, temporary floats, and vessels to provide Contractor personnel access to in-water marine equipment.
- B. Comply with all health and safety regulations pertaining to access to in-water equipment.

1.06 REMOVAL OF TEMPORARY FACILITIES

- A. Remove temporary facilities from the Work Site when advised by the Engineer.
- B. Clean and repair damage caused by installation or use of temporary work.

1.07 CLEANUP

- A. Conduct all project cleanup activities in accordance with these Specifications.
- B. Remove construction debris, waste materials, and packaging material from the Work Site daily.
- C. Clean dirt or mud tracked onto paved or surfaced roadways.
- D. Store salvageable materials that result from work activities.

PART 2 – PRODUCTS

2.01 TEMPORARY SIGNAGE

- A. Bulletin Board
 - 1. Immediately upon beginning work, provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for

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Section 01 50 00—Temporary Facilities and Controls

displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Engineer.

2. Locate the bulletin board at the Work Site in a conspicuous place easily accessible to all employees, as approved by the Engineer.

B. Project and Safety Signs

1. Erect signs within 15 days after receipt of the notice to proceed.
2. Maintain signs and notices in good condition for duration of the work, and dispose off site on completion of the project or when advised by the Engineer.

2.02 TEMPORARY TRAFFIC CONTROL

A. Haul Roads

1. At Contractor's expense, construct on-site access and haul roads necessary for proper implementation of the work under this Contract.
2. Construct with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic are to be avoided.
3. Provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic.
4. The method of dust control must be adequate to ensure safe operation at all times.
5. Location, grade, width, and alignment of construction and hauling roads are subject to approval by the Engineer.
6. Lighting must be adequate to ensure full and clear visibility for full width of haul road and work areas during any night work operations.

B. Barricades

1. Erect and maintain temporary barricades to limit public access to hazardous areas.
2. Whenever safe public access to paved areas such as roads, parking areas, or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic, barricades will be required.

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Section 01 50 00—Temporary Facilities and Controls

3. Securely place barricades clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

C. Fencing

1. Provide fencing in portions of the Work Site at all open excavations and tunnels to control access by unauthorized people.
2. Fencing must be installed to be able to restrain a force of at least 250 pounds against it.
3. Remove the fence upon completion and acceptance of the work.

2.03 UTILITIES

A. Provide adequate facilities for Contractor's operation at Contractor's expense, including:

1. Water

- a. Fresh drinking water for employees shall be provided by the Contractor near sanitary containers. Make arrangements with the City of Bellingham or other sources to supply construction water for the duration of this Contract.
- b. Install backflow preventers between the water utility source and the Contractor's connection to that source.
- c. All such connections, fittings, etc., shall be furnished, installed by the Contractor, and removed upon completion of the work, to the satisfaction of the Port.

2. Construction Electricity

- a. Make all arrangements for the furnishing of electric power for construction purposes. The power meter shall be registered in the name of the Contractor.

3. Toilet Room Facilities

- a. Install and maintain necessary temporary sanitary toilet facilities with hand washing facilities during the term of this Contract. All toilet facilities shall be regularly maintained in a sanitary condition. Toilets shall be of a chemical type; removed at completion of work and the premises disinfected.

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Section 01 50 00—Temporary Facilities and Controls

4. Communications
 - a. Install and maintain the appropriate equipment to allow for the efficient communication via voice and the Internet with the Port and with outside parties at all times during the term of this Contract. Remove at completion of work. All accounts shall be registered in the name of the Contractor.
5. Contractor Field Office
 - a. Install and maintain necessary field office space during the work. Remove at the completion of work.

2.04 USE AND OCCUPANCY

- A. The Contractor will be allowed space for the storage of materials, equipment, and employee parking, as shown on the Drawings.
 1. Employee parking will be confined to the On-Site Staging and Stockpile Area located at the former GP West property. Employee parking at the Central Waterfront properties On-Site Staging and Stockpile Area(s) is not allowed.
 2. No on-street equipment or employee parking is allowed.
- B. Make arrangements with private property owners as desired to secure additional space for material storage, employee parking, etc.
 1. All space must be within local land use and permitting requirements at the Contractor's expense.
 2. Provide the Port with a copy of the release from the private property owner that all obligations of the property use arrangement have been met before final payment to the Contractor is issued.
- C. The Work Site shall be closed to the public at all times. Abide by any special requests of security personnel and local police and fire departments.

END OF SECTION

DIVISION 01—GENERAL REQUIREMENTS
Section 01 57 19—Temporary Environmental Controls

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section covers preventing environmental pollution during, and as a result of, construction operations. Other Specification Sections may also contain specific requirements for environmental protection. Those specific requirements are in addition to the requirements in this Section; the more stringent requirements shall control. The control of environmental pollution requires consideration of noise levels, air, water, and land.
- B. The Contractor is responsible for environmental protection during all construction activities at all locations it performs work. Work locations include, but are not limited to, the Work Site, On- and Off-Site Transload Facility(ies), On-Site Staging and Stockpile Area(s), and during barge transport over water and land-based transportation of all contaminated materials. This Section primarily addresses work conducted at the Work Site, but the Contractor is responsible for complying with environmental protection regulations at all locations that are used for the work of this project.
- C. Environmental degradation arising from construction activities shall be prevented, abated, controlled, and minimized by complying with all applicable federal, state, and local laws and regulations concerning environmental pollution control and abatement, as well as the specific requirements in the project permits. The Contractor shall comply with all permit conditions; permits have precedence over these Specifications.
- D. The work includes compliance with all controls or local, state, and federal ordinances with respect to safety, noise, odor, dust, fire and police action, civil disobedience, security, or traffic.
- E. The work also includes implementing temporary erosion and sediment controls (TESC), including stormwater pollution prevention measures to prevent dredged sediment, excavated soils, and contaminated stormwater from entering Whatcom Waterway and Bellingham Bay.
- F. The work also includes providing control measures to prevent or limit to the extent practicable recontamination of cleaned up areas or adjacent non-contaminated areas during construction activities.
- G. No separate payment will be made for effort associated with work described in this Specification Section. Work required to comply with this Specification Section is considered to be inclusive to all other activities described in the Contract Documents.

DIVISION 01—GENERAL REQUIREMENTS
Section 01 57 19—Temporary Environmental Controls

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout the Specifications.

1.03 REFERENCES

- A. The following is a general list of federal, state, and local environmental statutes, ordinances, and regulations that deal with the prevention of environmental pollution and the preservation of public natural resources that affect or may affect this project. This list is not to be considered as all-inclusive, nor shall the absence of a law, ordinance, or regulation from this list be construed to relieve the Contractor from complying with such law, ordinance, or regulation, to the extent it is applicable to the Contractor and this project:
1. Federal Statutes, Regulations, and Guidelines:
 - a. Clean Air Act
 - b. Clean Water Act
 - c. Rivers and Harbors Act of 1899
 - d. Resource Conservation and Recovery Act
 - e. Toxic Substances Control Act
 - f. Environmental Protection Agency Regulations on National Primary and Secondary Ambient Air Quality Standards
 - g. Environmental Protection Agency Regulations Establishing Effluent Guidelines
 - h. Environmental Protection Agency Regulations on the Discharge of Oil
 - i. Coast Guard Regulations on Oil Spills
 - j. Environmental Protection Agency Regulations on Discharge of Dredged or Fill Material into Navigable Waters
 - k. Environmental Protection Agency Regulations for Hazardous Waste Management

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2. State Statutes, Regulations, and Guidelines:
 - a. Washington State Department of Ecology (Ecology), *Stormwater Management Manual for Western Washington* current edition
 - b. Washington State Department of Transportation 2012 Standard Specification M41-10, Division 8-01 Erosion Control and Water Pollution Control
 - c. Clean Air Act
 - d. Water Pollution Control Act
 - e. Washington Solid Waste Management Law
 - f. Washington Hazardous Waste Disposal Law
 - g. State Noise Control Act
 - h. Model Toxics Control Act
 - i. Department of Ecology Regulations Relating to Minimum Functional Standards for Solid Waste Handling
 - j. Department of Ecology Regulations for Waste Discharge Permits
 - k. Department of Ecology Regulations for Dangerous Waste
 - l. Department of Ecology Regulations Relating to Noise
 - m. Department of Ecology Model Toxics Control Act Cleanup Regulations
3. Local Ordinances and Regulations
 - a. City of Bellingham Comprehensive Stormwater Plan, City of Bellingham Public Works, December 2007 or current edition
 - b. City of Bellingham Grading Ordinance
 - c. Puget Sound Clean Air Agency Regulation I

1.04 SUBMITTALS

- A. Submittals shall be in accordance with Section 01 33 00—Submittal Procedures.

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Section 01 57 19—Temporary Environmental Controls

- B. Submit within twenty-eight (28) calendar days after Notice of Award an Environmental Protection Plan (EPP) that presents the procedures by which the Contractor shall establish and maintain quality control for environmental protection during all construction activities.
 - 1. The EPP shall comply with all applicable federal, state, and local statutes, ordinances, and regulations; and all project permit and approval conditions.
 - 2. The Engineer must review and approve the EPP before the Notice to Proceed is given to the Contractor.
 - 3. The Contractor shall address all comments from the Engineer's review(s) and resubmit a revised EPP for review. No additional compensation to the Contractor will be made for revising the EPP.

- C. Submit an EPP that includes, at the minimum, the following items:
 - 1. Organization chart and names of persons responsible for EPP compliance:
 - a. Names and qualifications of persons responsible for manifesting waste to be removed from the Work Site
 - b. A list of key personnel, including phone numbers (home and office), qualified to act as the emergency coordinator

 - 2. Site Layouts: Prior to mobilization to the Work Site, and as part of the EPP; submit site layout drawings for the Work Site, the Contractor's On- and Off-Site Transload Facility(ies), and On-Site Staging and Stockpile Area(s) showing existing conditions and facilities, Contractor's temporary facilities, and temporary controls provided by the Contractor including the following:
 - a. Equipment and personnel decontamination areas
 - b. Means of ingress, egress, and temporary traffic control facilities
 - c. Contractor parking areas
 - d. Equipment and material staging areas
 - e. On-site equipment refueling and/or maintenance areas
 - f. Soil, sediment, and debris stockpile areas

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Section 01 57 19—Temporary Environmental Controls

- a. Identify potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharge from the Work Site.
 - b. Methods to manage stormwater at the Work Site and Contractor's On- and Off-Site Transload Facility(ies), and On-Site Staging and Stockpile Area(s) to comply with all applicable laws, regulations, and permit requirements.
 - c. Methods to direct surface waters that have not contacted potentially contaminated materials to existing surface drainage systems.
 - d. Methods to contain and collect water from sediment dewatering and/or stockpile areas and decontamination facilities and properly dispose of collected water.
6. Hazardous Waste Contingency Plan
- a. Identify the procedures that the Contractor shall implement if Contractor encounters suspected hazardous waste during construction.
7. Air Pollution and Odor Control Plan
- a. Describe air pollution control procedures and air permit application for on-site crushing operations, as applicable.
 - b. Describe dust minimization practices.
 - c. Describe contingency actions to address odor from sediment stockpiles if necessary. Describe methods and materials that may be used should odor control be required.
8. Wastewater Management Plan
- a. Identify methods and procedures for managing waste waters that are directly derived from construction activities, such as cleanup water, dewatering of sediment stockpiles on barges and at the Contractor's On- and Off-Site Transload Facility(ies) or On-Site Staging and Stockpile Area(s), disinfection water, personnel and equipment decontamination facilities, and water used in flushing of lines
9. On-Site and Off-Site Transload Facility(ies) Plan

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Section 01 57 19—Temporary Environmental Controls

- a. Specification Section 35 20 23.01—Offloading, Upland Transportation and Disposal requires the Contractor to describe in its Construction Work Plan the Contractor's operations and environmental controls to be implemented at its Transload Facility(ies).
10. On-Site Staging and Stockpile Area(s) Plan
 - a. Specification Section 35 20 23.01 Offloading, Upland Transportation and Disposal requires the Contractor to describe in its Construction Work Plan the Contractor's operations to be implemented at its On-Site Staging and Stockpile Area(s).
11. Marine Water Quality Criteria Compliance Plan
 - a. Describe the Best Management Practices (BMPs), specialized equipment (e.g., silt curtains, environmental buckets), means, methods, and procedures used to prevent marine water quality criteria exceedances during completion of in-water activities, such as dredging, in-water removal, pile and sheetpile wall installation, capping and Residuals Management Cover Material placement operations.
 - b. Describe Contractor's contingency actions that will be taken to restore compliance with marine water quality criteria should water quality exceedances occur during any in-water activities.
 - c. Delays caused by complying with marine water quality criteria will not be cause for additional compensation to the Contractor.
 - d. The Contractor shall detail the methods that it will use to monitor its haul barges for leakage during transport of dredged material to the On-Site or Off-Site Transload Facility(ies). If leakage is observed, however minor, the barge transport operations shall be halted and not restarted until repairs, satisfactory to the Engineer, are made.
12. Sediment Recontamination Control Plan
 - a. Dredging and other in-water activities will suspend contaminated sediment within the Work Site, and these suspended sediments may be transported by vessel propwash or currents to areas outside of the immediate area of work.

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- b. Describe how the Contractor will control the dispersion of suspended solids away from the point of dredging, other in-water construction activities, and due to vessel propwash during completion of in-water work in order to prevent or reduce to the extent practicable the potential for sediment recontamination.
- c. Describe the Best Management Practices (BMPs), specialized equipment (e.g., silt curtains, environmental buckets), means, methods, and procedures, and construction sequencing used to prevent or reduce recontamination during completion of in-water activities.
 - 1) If the Contractor proposes to use a silt curtain, provide the following information:
 - a) The type and make of the silt curtain system
 - b) Silt curtain layout, dimensions, and how the system will operate with the Contractor's equipment
 - c) Silt curtain anchoring plan
 - d) Methods and procedures for Contractor inspection, maintenance, and repair of silt curtain system during construction
- D. During construction, submit a weekly written Environmental Protection Inspection Report to the Engineer as part of the Contractor's Weekly Construction Report, summarizing the daily inspections, condition of the environmental protection equipment and materials, and repairs or modifications to environmental protection means and methods.

1.05 ENVIRONMENTAL RESPONSIBILITY

- A. The Contractor shall demonstrate in the performance of the work that it is environmentally responsible by complying with environmental laws, ordinances and regulations; following all Engineer instructions and policies, practices, and procedures established by the Engineer with respect to the environment that are communicated by the Engineer to the Contractor from time to time; being observant for, and immediately notifying the Engineer of, any environmental problems that develop at the Work Site or Contractor Facilities; and taking all reasonable and necessary measures in the performance of the work to avoid causing negative impacts to the environment. Where negative impacts occur, the Contractor must immediately advise the Engineer and shall be solely liable

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to undertake all reasonable and necessary measures to minimize the effect of such negative impacts.

- B. Sequence Contractor's work to prevent or minimize, to the extent practicable, the potential for recontamination of the Work Site or adjacent non-contaminated areas.
- C. Maintain key pollution control systems in working condition throughout the project and undertake all works such that there are no unauthorized discharges of liquids or solids to the marine environment, or of gas to the atmosphere.
- D. Maintain a neat work area free of unnecessary debris, tools, equipment, or materials; dispose of sewage, refuse, and chemical wastes in compliance with the applicable regulations and permit requirements for this work; and remove all tools, equipment, supplies, and wastes from the Work Site upon completion of the work.
- E. Maintain all equipment and machinery in good working order and free of leaks or excess oil, grease, and debris. Ensure that appropriately equipped spill kits are available on all equipment at the Work Site and Contractor Facilities, and that workers and supervisory staff are knowledgeable with the provisions of the EPP and are adequately trained to implement the measures contained therein.

1.06 FIRES

- A. Fires and burning of rubbish at the Work Site are not permitted.

1.07 WASTEWATER MANAGEMENT AND DISPOSAL

- A. Provide, operate, and maintain wastewater storage tanks to store wastewaters.
- B. Discharges: Comply with applicable discharge limitations and requirements; do not discharge wastewaters to site sewer systems that do not conform to, or are in violation of, such limitations or requirements.
- C. Do not discharge wastewater from personnel hygiene/decontamination facility or toilet facilities on site.
- D. Dewatering and equipment decontamination wastewater may be discharged to receiving waters at the Work Site, provided it meets requirements for on-site discharge per the Department of Ecology 401 Water Quality Certification.

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1.08 DISPOSAL OF NON-SEDIMENT WASTES

- A. Do not bury rubbish and waste materials on the Work Site.
- B. Do not dispose of waste or volatile materials, such as mineral spirits, oil, or paint thinner into waterways, storm sewers, or sanitary sewers.
- C. Do not discharge wastes into streams or waterways.
- D. The Contractor is responsible for storing, separating, handling, transporting, and disposing of all waste materials in accordance with applicable regulations and requirements, and at appropriate Disposal Facilities or transfer stations.
- E. Disposal or recycling of other waste generated during the project shall be done in compliance with applicable regulations and the facilities used will need to be reviewed by the Engineer.

1.09 NOTIFICATION

- A. The Engineer will notify the Contractor, in writing, of observed noncompliance with federal, state, or local environmental statutes, ordinances or regulations, permits, and other elements of the Contractor's EPP. Notwithstanding this notification process, the Contractor shall be responsible for conducting all construction activities in a manner compliant with these regulations.
- B. The Contractor shall inform the Engineer of proposed corrective action after receipt of such notice, and take such action for approval by the Engineer.
- C. The Engineer may issue a stop work order until satisfactory corrective action has been taken.
- D. No time extensions shall be granted or equitable adjustments allowed to the Contractor for such suspensions.

PART 2 – PRODUCTS

2.01 CATCH BASIN INSERTS

- A. Catch basin inserts shall meet the following requirements, or substitution may be allowed upon formal submittal and approval of a substitution request from the Contractor to the Engineer:

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Style	Material Properties	
	ASTM	Specification
Geotextile		
Water Flow	D4491	90 gpm/ft ²
AOS	D4751	80 Sieve
Grab Tensile Strength	D4632	200 lbs.
Cylindrical Filter Section		
Outside Diameter	--	16 inches
Length	--	24 inches
Apron Section		
Length	--	48 inches
Width	--	36 inches
Stitching		
Style	--	Modified 401 Chain
Stitch/Inch	--	4
Thread		
Material	--	100% Bonded Nylon
Total Denier	--	1,440
Breaking Strength	--	22.45 lbs

2.02 TEMPORARY EROSION AND SEDIMENT CONTROLS

A. Components for Silt Fences

1. Filter Fabric

- a. Provide synthetic filter fabric that contains ultraviolet ray inhibitors and stabilizers to ensure a minimum of 6 months of expected usable construction life at a temperature range of 0 to 120 degrees Fahrenheit. The filter fabric shall meet or exceed the following requirements:

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FILTER FABRIC FOR SILT SCREEN FENCE		
PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile Elongation (%)	ASTM D4632	100 lbs minimum; 30 percent maximum
Trapezoid Tear	ASTM D4533	55 lbs minimum
Permittivity	ASTM D4491	0.2 sec ⁻¹
AOS (U.S. Standard Sieve)	ASTM D4751	20 - 100

2. Silt Fence Stakes and Posts

- a. Use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction shall have a minimum cross section of 2 by 2 inches when oak is used and 4 by 4 inches when pine is used, and have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 5 feet.

3. Mill Certificate or Affidavit

- a. Provide a mill certificate or affidavit attesting that the fabric and factory seams meet physical and manufacturing requirements specified above. Specify in the mill certificate or affidavit the actual Minimum Average Roll Values and identify the fabric supplied by roll identification numbers. Submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

B. Components for Straw Bales

- 1. The straw in the bales shall be stalks from oats, wheat, rye, barley, rice, or from grasses such as byhalia, bermuda, etc., furnished in air dry condition. Provide bales with a standard cross section of 14 by 18 inches. Wire-bound or string-tie all bales.
 - a. Use either wooden stakes or steel posts to secure the straw bales to the ground. Wooden stakes utilized for this purpose shall have a minimum dimension of 2 by 2 inches in cross-section and have a minimum length of 3 feet.

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- b. Steel posts (standard "U" or "T" section) utilized for securing straw bales, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 3 feet.

2.03 SILT CURTAIN

- A. The Contractor may choose to use a silt curtain to limit suspended sediment transport during completion of in-water construction activities. The curtain shall be supported by floats at the top that keep the top of the silt curtain above the water surface, and weighted at the bottom. It shall be designed, installed, managed, and moved such that minimal dispersion of suspended sediment in the water column occurs, and to help meet the water quality requirements of the Ecology 401 Water Quality Certification or to help reduce the potential for recontamination of the Work Site.
- B. The Contractor shall be responsible for design, procurement, installation, operation, inspection, maintenance, and repair of all silt curtains, if used for this work.
- C. If Contractor plans on using a silt curtain, the Contractor shall submit manufacturer information and a silt curtain installation, operations, and maintenance plan to the Engineer as part of the EPP.

2.04 FOAM

- A. The Contractor shall submit manufacturer information on any proposed foam and foam application equipment to be used for Engineer review.
- B. Foam shall consist of a non-hardening, water-based foam.

PART 3 – EXECUTION

3.01 GENERAL

- A. Maintain a copy of the EPP at the Work Site and at Contractor's On-Site and Off-Site Transload Facility(ies).
- B. In the event of conflict between these requirements and environmental and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply as determined by the Port.
- C. No discharge of water to Whatcom Waterway shall be allowed that exceeds the regulated pollutant levels in the National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges Associated with Construction Activities.

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- D. The Contractor shall be solely responsible for any damages and fines incurred because of Contractor, subcontractor, or supplier actions in implementing the requirements of this Section.
- E. The Contractor shall be solely responsible for schedule impacts incurred because of Contractor, subcontractor, or supplier actions in implementing the requirements of this Section.
- F. Supervision
 - 1. During the work, the Contractor shall supervise all activities, including those of subcontractors, to ensure compliance with the intent and details of the EPP. The Contractor shall conduct weekly environmental compliance meetings for itself and its subcontractors to ensure that all personnel working at the site are familiar with the environmental protection provisions. All equipment and materials for environmental protection shall be inspected every week to assure that they are in proper order, being applied correctly, and have not deteriorated.
- G. Daily Inspection and Weekly Reporting
 - 1. Conduct daily inspection of the Contractor's environmental protection measures to ensure that all are working properly and adequately maintained during the duration of construction.
 - 2. Prepare a weekly written Environmental Protection Inspection Report to the Engineer as part of the Contractor's Weekly Construction Report, summarizing the daily inspections, condition of the environmental protection equipment and materials, and repairs or modifications to environmental protection means and methods.

3.02 SITE MAINTENANCE

- A. The Contractor shall keep the Work Site, On-Site and Off-Site Transload Facility(ies), On-Site Staging and Stockpile Area(s), and Contractor's temporary facilities clean and free from rubbish and debris. Materials and equipment shall be removed from the Work Site when they are no longer necessary. Upon completion of the work, and before final acceptance, the Work Site shall be cleared of equipment, unused materials, and rubbish to present a clean and neat appearance in conformance with the present condition of the Work Site.
- B. Catch Basins

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1. Clean catch basins of all debris and sediment. Debris and sediment removed shall be disposed of in a Subtitle D landfill.
2. Maintain catch basin inserts during construction. Clean out or replace catch basin inserts when one-quarter full of sediment and debris.
3. Remove and dispose of catch basin inserts after substantial completion. Remove and dispose of all sediment and debris in catch basins.

C. Cleanup:

1. Maintain work in tidy condition, free from accumulation of waste products and debris.
2. Dispose of waste materials and debris off site in accordance with these Specifications.
3. Waste material of any kind shall not be permitted to remain on the site of the work or on adjacent streets. Immediately upon such materials becoming unfit for use in the work, they shall be collected, carried off the site, and properly disposed of by the Contractor.
4. Keep all buildings occupied by the Contractor clear of all refuse, rubbish, and debris that may accumulate from any source and shall keep them in a neat condition to the satisfaction of the Engineer.
5. Paints, solvents, petroleum products, hazardous substances, bulk cement, concrete cure washings, crushed concrete, waste streams generated during construction, and other construction materials shall be handled with care to prevent entry of contaminants into storm drains, surface waters, or soils. Excess materials shall be disposed of off site in accordance with applicable local, state, and federal regulations.
6. In the event that waste material, refuse, debris, and/or rubbish are not removed from the work by the Contractor, the Port reserves the right to have the waste material, refuse, debris and/or rubbish removed, and the expense of the removal and disposal charged to the Contractor.

D. Street Cleaning:

1. Prevent dirt and dust from escaping from trucks departing the Work Site, by covering all loads, scrubbing and/or washing truck tires and undercarriages before leaving the site, installing inserts at catch

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basins, and other reasonable methods. Take all measures necessary to prevent the tracking of mud and other debris from the Work Site to the surrounding streets.

2. When working dump trucks and/or other equipment are on paved streets and roadways, clean said streets and roadways at the conclusion of each day's operations at a minimum and as required by the Engineer to prevent tracking of soil or other transported materials on paved roads at no additional cost to the Port. Properly dispose of all collected material. This shall be the case, whether the vehicles or equipment is owned and/or operated by the Contractor or its subcontractors or not.
3. In the event that the above requirements are violated and no action is taken by the Contractor after notification of non-compliance by the Engineer, the Port reserves the right to have the streets and roadways in question cleaned by others and the expense of the operation charged to the Contractor.

3.03 AIR POLLUTION AND ODOR CONTROL

- A. Do not discharge smoke, dust, odor, and/or other contaminants into the atmosphere that violate the regulations of any legally constituted authority. Internal combustion engines shall not be allowed to idle for prolonged periods of time. Maintain construction vehicles and equipment in good repair. Exhaust emissions that are determined to be excessive by the Engineer shall be repaired or replaced.
- B. Minimize dust nuisance by cleaning, sweeping, vacuum sweeping, sprinkling with water, or other means. The use of water, in amounts that result in mud on public streets, is not acceptable as a substitute for sweeping or other methods. Equipment for this operation shall be on the jobsite or available at all times.
 1. Execute work by methods to minimize raising dust from construction operations.
 2. Apply water as required for dust control, and when advised by Engineer. Dust control methods shall be chosen such that a minimal amount of water is required.
 3. Apply water with distributors equipped with spray system to ensure uniform application and with means of shut off.
 4. Runoff from water used for dust control shall not enter the storm drains.

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- C. Conduct all operations and maintain the Work Site so as to minimize and suppress objectionable odors and the potential for organic vapors associated with the Work consistent with all local, state, and federal regulations.
 - 1. Monitor odor as necessary to comply with any applicable health and safety regulations and implement procedures to reduce or eliminate odor from sediment stockpiles if necessary.
 - 2. Implement measures to suppress organic vapor concentrations and/or odors at no additional cost to the Port. Acceptable measures include covering stockpiles with polyethylene sheeting, backfilling open excavations, and/or application of an odor/organic vapor suppression foam. If covering stockpiles or backfilling are not effective at controlling odor, and if odor remains objectionable, which causes a safety or air quality problem, the Contractor shall apply odor/organic vapor suppression foam to the exposed impacted material deemed to be the source of the odor in accordance with foam manufacturer's recommendations.
 - 3. Provide odor/organic vapor suppression foam and maintain adequate equipment and supplies on site at all times to apply the foam to sediment processing areas, excavation areas, stockpiles, or other operations that are determined to be the source of odor.
 - 4. The Port reserves the right to suspend Work at any time in the event the Contractor's operations result in organic vapors or objectionable odors which are deemed to cause a potential safety and/or air quality issue. Contractor shall not be entitled to any additional compensation for suspension of Work under such conditions.

3.04 NOISE AND LIGHTING CONTROL

- A. Construction involving noisy operations, including starting and warming up of equipment, shall be in compliance with local noise ordinances. Noisy operations shall be scheduled to minimize their duration. City of Bellingham policy limits construction to the hours of 7 a.m. to 8 p.m., unless otherwise approved.
- B. Comply with all local controls and noise level rules, regulations, and ordinances that apply to any work performed pursuant to the Contract.
- C. Each internal combustion engine used for any purpose on the job or related to the job shall be enclosed and be equipped with a muffler and spark arrester of a type recommended by the manufacturer. No internal

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combustion engine shall be operated on the project without said muffler and enclosure. Ensure that noise control devices on construction equipment are properly maintained. All construction equipment shall be operated with exhaust systems in good repair to minimize noise.

- D. The Contractor shall implement use of lighting shrouds for work to be completed during night-time hours to minimize lighting disruptions to local residents.

3.05 SPILL PREVENTION AND CONTROL

- A. The Contractor shall be responsible for prevention, containment, and cleanup of spilling of oil, fuel, and other petroleum products used in the Contractor's operations. All such prevention, containment, and cleanup costs shall be borne by the Contractor.
- B. The Contractor is advised that discharge of oil from equipment or facilities into state waters or onto adjacent land is not permitted under state water quality regulations.
- C. The Contractor shall, at a minimum, take the following measures regarding oil spill prevention, containment, and cleanup:
 - 1. Fuel hoses, lubrication equipment, hydraulically-operated equipment, oil drums, and other equipment and facilities shall be inspected regularly for drips, leaks, or signs of damage, and shall be maintained and stored properly to prevent spills. Proper security shall be maintained to discourage vandalism.
 - 2. All land-based oil and products storage tanks shall be diked or located so as to prevent spills from escaping to the water. Diking and sub-soils shall be lined with impervious material to prevent oil from seeping through the ground and dikes.
 - 3. All visible floating oils shall be immediately contained with booms, dikes, or other appropriate means and removed from the water prior to discharge into state waters. All visible oils on land shall be immediately contained using dikes, straw bales, or other appropriate means and removed using sand, ground clay, sawdust, or other absorbent material, which shall be properly disposed of by the Contractor. Waste materials shall be temporarily stored in drums or other leak-proof containers after cleanup and during transport to disposal. Waste materials shall be disposed off-property at an approved and permitted Disposal Facility
 - 4. Use environmentally-sensitive hydraulic fluids that are non-toxic to aquatic life and that are readily or inherently biodegradable.

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5. In the event of any oil or product discharges into public waters, or onto land with a potential for entry into public waters, the Contractor shall immediately notify the Engineer, and other required reporting agencies at their listed 24-hour response numbers, including but not limited to:
 - a. National Response Center: (800) 424-8802
 - b. Washington Emergency Management Division: (800) 258-5990 or (800) OILS-911
 - c. Washington State Department of Ecology, Northwest Regional Office: (425) 649-7000
 - d. U.S. Coast Guard: (206) 217-6002
 6. Maintain on the jobsite the following equipment and materials in sufficient quantities to address potential spills from Contractor's floating and land-based equipment:
 - a. Oil-absorbent booms
 - b. Oil-absorbent pads or bulk material
 - c. Oil-skimming system
 - d. Straw bales
 - e. Oil dry-all, gloves, and plastic bags
 - f. Contractor employee PPE for emergency spill response
 - g. Concentrated odor neutralizer
- D. Perform construction activities by methods that will prevent entrance or accidental spillage of solid matter, contaminants, debris, or other pollutants or wastes into saltwater bodies, streams, flowing or dry watercourses, lakes, wetlands, reservoirs, or underground water sources. Such pollutants and wastes include, but are not restricted to: refuse, garbage, cement, sanitary waste, industrial waste, hazardous materials, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts, and thermal pollution.

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3.06 TEMPORARY EROSION AND SEDIMENT CONTROL

- A. The Contractor is responsible for developing and implementing the SWPPP including TESC BMPs. The Contractor shall address the following issues as part of developing and implementing the TESC BMPs:
1. The TESC notes and details shown in the Drawings and the information in this Section of these Specifications are minimum requirements for the anticipated site conditions during the construction period. During the construction period the Contractor shall, at no additional cost to the Owner, upgrade the TESC facilities as needed for unexpected storm events and modify these facilities for changing site conditions (such as relocation of ditches and silt fences, etc.).
 2. Inspect the TESC facilities daily and maintain these facilities to ensure continued proper functioning during the construction period. Written records of these inspections shall be submitted to the Engineer as part of the Contractor's Weekly Construction Report on a weekly basis.
 3. Any areas of exposed soils, including embankments, which will not be disturbed for 2 days during the wet season (October 1 through April 30) or 7 days during the dry season (May 1 through September 30), shall immediately be stabilized by the Contractor with the approved TESC measure (e.g., plastic covering, etc.).
 4. Any areas needing TESC measures not requiring immediate attention shall be addressed by the Contractor at the Engineer's discretion.
 5. Erosion control measures, including silt fences, filter fabric, plastic sheeting, sedimentation ponds, placement of straw bales along the peripheries of construction sites, temporary detention ponds, and terraced slopes shall be employed as appropriate and shall be in place prior to any clearing or grading activity.
- B. Silt Fences
1. Provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Properly install silt fences to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g., clearing and grubbing, excavation, embankment, and grading).
- C. Straw Bales

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1. Provide bales of straw as a temporary structural practice to minimize erosion and sediment runoff. If bales are used, properly place the bales to effectively retain sediment immediately after completing each phase of work (e.g., clearing and grubbing, excavation, embankment, and grading) and remove/ replace/ relocate the bales as needed for work to progress in the drainage area.
- D. If monitoring or inspection shows that the erosion controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.

3.07 WASTEWATER MANAGEMENT CONTROLS

- A. Stockpile and Equipment Decontamination Areas Wastewater Control Measures:
1. Fully contain all Stockpile and Equipment Decontamination Area(s) located within the On-Site Staging and Stockpile Area(s) to prevent release of unfiltered effluent and suspended sediments, or other potentially contaminated materials from the stockpile area. Provide impermeable barriers (e.g., impermeable liner) to prevent effluent from infiltrating into groundwater, or escape through containment barriers (e.g., Jersey barriers).
 2. Cover exposed excavated areas and stockpiles when runoff from rain is, or would be likely to, cause turbid waters to enter Whatcom Waterway at all times except when working the pile. Suspend work in the rain if such work cannot be performed without causing turbid runoff.
 3. There will be no discharge of excavation groundwater to the sanitary sewer, storm drains, or to the waterway without prior specific authorization of Ecology in writing.
 4. Utilize the existing stormwater collection and treatment system at the former GP West property for management of construction water generated as part of the work.
 5. Discharge of hazardous substances will not be permitted under any circumstances.

3.08 STORMWATER MANAGEMENT CONTROLS

- A. Drainage and Surface Water Management

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1. Conform to the regulations and requirements of legally authorized surface water management agencies.
2. Divert stormwater runoff from upslope areas away from contaminated stockpile and/or excavation areas. Implement structural practices to divert flows from exposed soils, temporary storage flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the Work Site.
3. Use methods of dewatering, excavating, or stockpiling sediment, soil, and debris materials that include prevention measures to control silting and erosion, and that will intercept and settle any runoff of soil- or sediment-laden wastewaters.
4. Before construction begins, establish appropriate perimeter barriers to prevent excess surface water flows from causing erosion. Work areas shall be kept free of surface water run-on from adjacent upland areas and as free from immersion as possible. Unless otherwise specified, all temporary facilities, equipment, and structures for care and diversion of water shall be removed upon completion of the work, except the permanent drainage features of the project.
5. To avoid solids or turbid runoff from entering Whatcom Waterway, cover, secure, and/or berm excavated areas and stockpiles and employ other methods as necessary such as straw bale around storm drains or around excavated areas; use of cut and cover construction method; or use of sedimentation basins.
6. Prevent construction site runoff from directly entering any storm drain or the waterway; use straw bales or other filtration method suitable to the Engineer.

3.09 ON-SITE AND OFF-SITE TRANSLOAD FACILITY(IES) CONTROLS

- A. Comply with requirements specified in Specification Section 35 20 23.01 Offloading, Upland Transportation and Disposal.

3.10 ON-SITE STAGING AND STOCKPILE AREA(S) CONTROLS

- A. Comply with requirements specified in Specification Section 35 20 23.01 Offloading, Upland Transportation and Disposal.

3.11 FUEL STORAGE TANKS MANAGEMENT:

- A. Storage tank placement: Place fuel or other petroleum product (hereinafter referred to collectively as fuel) storage tanks or containers at least 20 feet

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from saltwater bodies, streams, flowing or dry watercourses, wetlands, reservoirs, and any other water source in a discharge area.

- B. Storage area dikes: Construct storage area dikes at least 12 inches high or graded and sloped to permit safe containment of leaks and spills equal to the capacity located in each area plus a sufficient amount of freeboard to contain the 25-year rainstorm.
- C. Diked area barriers: Provide diked areas with an impermeable barrier at least 50 mils thick. Provide areas used for refueling operations with an impermeable liner at least 50 mils thick buried under 2 to 4 inches of soil.
- D. Underground tank prohibitions: Do not use underground storage tanks.

3.12 MARINE WATER QUALITY CRITERIA COMPLIANCE

- A. The Contractor shall be responsible for meeting marine water quality criteria for in-water construction activities as defined in the Ecology 401 Water Quality Certification, and applicable local, state, and federal standards. The Port will conduct its own marine water quality monitoring during the project to assess the Contractor's compliance, but this does not alleviate the responsibility of the Contractor to conduct its own monitoring to comply with the 401 Water Quality Certification conditions. In the event of a water quality exceedance, the Contractor will be required to modify its procedures, methods, or equipment appropriately so as to remedy the exceedances, at no additional expense to the Port. The purpose of the specified water quality monitoring is to provide ongoing assessment of water quality impacts during dredging, capping, and other in-water construction activities as specified in the Water Quality Monitoring Plan. The Contractor shall have in place:
 - 1. BMPs to prevent water quality exceedances and to prevent/minimize to the extent practicable sediment recontamination within the Work Site from in-water construction activities
 - 2. Contingency measures to implement should water quality exceedances occur
- B. The Contractor shall review and comply with conditions discussed in the Ecology approved Water Quality Monitoring Plan (WQMP). The WQMP is available as a reference document to the Contract Documents. Should the plan not provide specific guidance, paragraph C below should be followed.
- C. In the event that water quality criteria are exceeded in the work area during dredging, clean material placement, structures removal or

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installation activities, two types of corrective action shall be implemented, depending on the nature of water quality impacts:

1. **Modification of Operations:** If water quality criteria, as identified in the Ecology 401 Water Quality Certification, are exceeded, the Contractor shall take immediate steps to correct the exceedance and improve water quality conditions. Such steps may include modified operational practices, engineering controls, and other measures as appropriate. All modifications proposed by the Contractor shall be communicated to the Engineer prior to implementing them. If corrective actions do not result in water quality criteria being met, the Contractor shall temporarily suspend operations until water quality criteria comes back into compliance with the Ecology 401 Water Quality Certification. If an exceedance occurs, the Contractor shall submit, within 24 hours, a report to the Engineer documenting steps taken to return operations to compliance.
2. **Cessation of Operations:** Construction activities shall cease as a result of the first indication of a regulated substance spill (e.g., oil) within of the work area, or at the first indication of distressed or dying fish in the vicinity of construction. When such conditions occur, the Contractor shall cease all operations and take all necessary steps to correct the problem. The Engineer shall be immediately notified of the problem. Operations may resume upon approval of the Engineer after the problem has been corrected.

D. Marine Water Quality and Sediment Recontamination Controls

1. The Contractor shall procure, design, install, operate, inspect and maintain BMPs and control measures as necessary to comply with water quality criteria and prevent/minimize to the extent practicable sediment recontamination within the Work Site.
2. The Contractor is not required to use a silt curtain or environmental bucket during in-water construction activities. However, Contractor shall be required to be able to procure and implement either or both of these water quality environmental control methods within one calendar week if so directed by the Engineer.

3.13 CONTAMINATED/HAZARDOUS SOILS AND GROUNDWATER

A. Contractor's Responsibility

1. Monitor soils, groundwater (seeps), and waste materials by instructing workers to observe and report questionable materials

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and odors, such as oily sheen or color on soils or water, and oily or chemical odors. If suspected hazardous or contaminated materials (other than debris) are encountered, stop all work in that area and notify the Engineer immediately.

2. Be responsible for all matters related to work safety and for detection of contaminated soils and groundwater encountered during the construction as they relate to worker safety. Ensure the protection of the safety and health of construction workers and other authorized persons at the work site from exposure to potential toxic materials.
3. As part of the Contractor's safety program, workers shall be instructed by a Contractor provided and qualified specialist on methods or techniques to assist workers in detecting hazardous soils or groundwater during construction of this project.

B. Notification and Suspension

1. In the event that the Contractor detects the presence of suspicious materials, the Contractor's Site Safety and Health Officer shall immediately notify the Engineer. Following such notification by the Contractor, the Engineer shall, in turn, notify the various regulatory agencies concerned with the presence of potentially dangerous materials. Depending upon the type of problem identified, the Engineer may suspend the work in the vicinity of the material discovery under the provisions of the General Conditions.
2. Following completion of any further testing necessary to determine the nature of the materials involved, the Engineer will determine how the material shall be handled and disposed of. Although the actual procedures used in resuming the work shall depend upon the nature and extent of the questionable material, the following alternate methods of operation are foreseen as possible:
 - a. Contractor to resume work as before the suspension.
 - b. Contractor to move its operations to another portion of the Work Site until measures to eliminate any hazardous conditions can be developed and approved by the appropriate regulatory agencies.
 - c. For dangerous or hazardous waste, or other non-municipal refuse waste, the Engineer will direct the Contractor to dispose of the excavated material in accordance with

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regulatory requirements. Such work shall be paid by force account.

3.14 EQUIPMENT DECONTAMINATION

- A. Decontaminate equipment after working in potentially contaminated work areas and prior to subsequent work or travel on clean areas.
- B. Perform equipment decontamination on Contractor-constructed equipment decontamination pad or in watertight barges to prevent cross-contaminating un-impacted areas.
- C. Each piece of equipment may be inspected by the Engineer after decontamination and prior to removal from site and/or travel on clean areas. The Engineer will have the right to require that additional decontamination be completed if deemed necessary at no additional cost to the Port.
- D. Collect decontamination wastewaters and sediments that accumulate on equipment decontamination pad and properly dispose.
- E. Furnish and equip personnel engaged in equipment decontamination with PPE including suitable disposable clothing, respiratory protection, and face shields.

END OF SECTION

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Section 01 70 00—Closeout Requirements

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section provides project closeout requirements for post-construction submittals that the Contractor shall be required to submit to the Engineer following completion of the work.
- B. This Section also presents process and requirements for inspection and declaration that the work has been completed as required by the Contract Documents. Upon formal review and acceptance of the work by the Engineer, the work will be determined to be complete and the Contractor shall then demobilize from the Work Site.
- C. Work under this Specification section is paid under Bid Item 1 – Mobilization and Demobilization as shown on the Bid Form and described in Section 01 20 00—Price and Payment Procedures.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described throughout these Specifications.

1.03 SUBMITTALS

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- B. At least fourteen (14) calendar days prior to physical completion of the work, submit to Engineer four (4) final hard copies of all Record Drawings and other required post-construction documents, and one (1) set of electronic files of all of the Record Drawings and “Record” Information on CD-ROM(s).

1.04 INSPECTION AND DECLARATION

- A. Contractor Inspection: The Contractor and its subcontractors shall conduct inspection of work, identify deficiencies and defects, and repair as required to conform to requirements of the Contract Documents.
 - 1. The Contractor shall prepare a punchlist prior to requesting an inspection by the Engineer. An inspection shall not be requested or granted if the work is incomplete.

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2. Notify the Engineer, in writing, of satisfactory completion of Contractor inspection and that corrections have been made.
 3. Request Engineer Inspection: Contractor shall make the request for Engineer inspection in writing and with the punchlist attached at least three (3) working days prior to the requested date of inspection.
- B. Engineer Inspection: The Engineer and Contractor will perform inspection of the work to identify defects or deficiencies. The Contractor shall correct work accordingly, as required by the Engineer, at no cost to the Port.
- C. Final Inspection: When items noted above are completed, request final inspection of work by the Engineer at least three (3) working days prior to requested final inspection date. If work is deemed incomplete by the Engineer, complete outstanding items and request re-inspection, at no cost to the Port.

1.05 SUBSTANTIAL COMPLETION

- A. The Substantial Completion Date is the day the Engineer determines the Port has full and unrestricted use and benefit of the facilities, both from the operational and safety standpoint, and only minor incidental work, replacement of temporary substitute facilities, or correction or repair remains for the Physical Completion of the total Contract.
- B. The date of Substantial Completion is established in a Notice of Substantial Completion letter issued by the Engineer.
- C. In order to achieve Substantial Completion, the Contractor must:
1. Complete disposal of all dredged materials, shoreline debris, and recycled materials at off-site Disposal Facility or Recycling Facility or applicable On-Site Staging and Stockpile Areas and submit all weight tickets from the Disposal Facility and/or Recycling Facility, or as generated at the On-Site Staging and Stockpile Areas. This condition may be modified as stated in the “Contract Days” section of the Special Provisions.
 2. Satisfactorily pass the substantial completion inspection and receive the Notice of Substantial Completion from the Engineer.

1.06 PHYSICAL COMPLETION

- A. Notice of Physical Completion will be issued in writing by the Engineer when all the physical work is complete.

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- B. Notice of Physical Completion will be issued in writing by the Port only after:
 - 1. Contractor demobilization is satisfactorily completed.
 - 2. All temporary locks, keys, or other items loaned or signed out to the Contractor, including subcontractors, sub-subcontractors, suppliers, and vendors are returned.
 - 3. Project Record Documents have been submitted and approved by the Engineer.
 - 4. Satisfactorily complete incomplete punchlist items resulting from the Engineer inspection.
 - 5. Perform Final Cleaning of the project site as required by the Contract Documents.
 - 6. Submit for approval to the Engineer any Special Warranties, Bonds, or follow-on contracts required by the Contract Documents.

1.07 WARRANTIES, BONDS, TEST RESULTS, AND INSPECTION REPORTS

- A. Promptly (within 48 hours) repair or replace all defective or damaged items delivered under the Contract.
- B. Haul away all defective or damaged items prior to Physical Completion of the work.
- C. Obtain warranties, bonds, test results, and inspection reports executed in duplicate by subcontractors, suppliers, manufacturers, and inspection agencies within fourteen (14) calendar days after completion of the applicable item of work.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

3.01 RECORD DOCUMENTS (FOR “AS-BUILT” PURPOSES)

- A. Record Drawings
 - 1. The terms "drawings," "contract drawings," "drawing files," "working record drawings," and "final record drawings" refer to Contract Drawings that are revised to be used for Final Record Drawings showing as-built conditions.

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2. The final Computer-Aided Design and Drafting (CADD) Record Drawings must consist of one (1) set of electronic CADD drawing files in the specified format, two (2) sets of prints, and one (1) set of the approved working Record Drawings.
 3. After the completion of the work and before requesting substantial completion, the Record Drawings shall be completed and submitted to the Engineer.
- B. Submit Record information for all elements of the work as required by the Contract Documents. Record information shall include, but not be limited to, the following:
1. Pre-Construction Survey for the entire Work Site.
 2. Post-Construction Surveys for completion of work elements, including but not limited to post-dredge, post-capping, and post-Residuals Management Cover Material placement surveys. Surveys shall be those used for the basis of measurement and payment of the work.
 3. Any additional Record information provided as part of Daily and Weekly Construction Reports.
 4. Record Drawings for all installed structures and utilities.
 5. Additional Record information provided by the Contractor shall include electronic records from the dredge positioning software (e.g., bucket maps), and weight tickets generated from debris and sediment disposal at Off-Site Disposal Facility and/or Recycling Facility, and Contractor tonnage weight records from On-Site Staging and Stockpile Area(s) management.
 6. Provide one (1) set of electronic files of all Record Drawings and Record information on CD-ROM(s).
- C. Working Record and Final Record Drawings
1. Revise two sets of paper drawings by red-line process to show the as-built conditions during the prosecution of the project.
 2. Keep these working as-built marked drawings current on a weekly basis and at least one (1) set available on the job site at all times.
 3. Changes from the Drawings that are made in the work, or additional information that might be uncovered in the course of construction, must be accurately and neatly recorded as they occur by means of details and notes.

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4. Prepare final record (as-built) drawings after the completion of each definable feature of work as listed in the Contractor Quality Control Plan (Foundations, Utilities, Structural Steel, etc., as appropriate for the project).
5. The working as-built marked prints and final record (as-built) drawings will be jointly reviewed for accuracy and completeness by the Engineer and the Contractor prior to submission of each monthly pay estimate.
6. If the Contractor fails to maintain the working and final record drawings as specified herein, the Engineer will deduct from the monthly progress payment an amount representing the estimated cost of maintaining the record drawings. This monthly deduction will continue until an agreement can be reached between the Engineer and the Contractor regarding the accuracy and completeness of updated drawings.
7. Show on the working and final record drawings, but not limited to, the following information:
 - a. The actual location, kinds, and sizes of all subsurface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, show by offset dimensions to two permanently fixed surface features the end of each run, including each change in direction, on the record drawings. Locate valves, splice boxes, and similar appurtenances by dimensioning along the utility run from a reference point. Also record the average depth below the surface of each run.
 - b. Correct grade, elevations, cross section, or alignment of, earthwork, structures, or utilities if any changes were made from the Contract Drawings.
 - c. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including, but not limited to, fabrication, erection, installation plans and placing details, etc.
 - d. Topography, invert elevations, and grades of drainage installed or affected as part of the project construction.
 - e. Changes or modifications that result from the final inspection.

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- f. Where Contract Drawings or Specifications present options, show only the option selected for construction on the final as-built prints.

D. Drawing Preparation

1. Modify the record drawings as may be necessary to correctly show the features of the project as it has been constructed by bringing the Contract set into agreement with approved working as-built prints, and adding such additional drawings as may be necessary.
2. These working as-built marked prints must be neat, legible, and accurate. These drawings are part of the permanent records of this project and must be returned to the Engineer after approval by the Port.
3. Any drawings damaged or lost by the Contractor must be satisfactorily replaced by the Contractor at no expense to the Port.

E. CADD Drawings

1. Only employ personnel proficient in the preparation of CADD drawings to modify the Contract Drawings or prepare additional new drawings.
2. Additions and corrections to the Contract Drawings must be equal in quality and detail to that of the originals.
3. Line colors, line weights, lettering, layering conventions, and symbols must be the same as the original line colors, line weights, lettering, layering conventions, and symbols.
4. If additional Drawings are required, prepare them using the specified electronic file format applying the same graphic standards specified for original Drawings.
5. The title block and drawing border to be used for any new final Record Drawings must be identical to that used on the Contract Drawings.
6. Accomplish additions and corrections to the Contract Drawings using CADD files.
7. The Contractor will be furnished "as-designed" Drawings in AutoCAD Release 2012 format compatible with a Windows operating system. The electronic files will be supplied on CD-ROM(s).

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8. Provide all program files, software, and hardware necessary to prepare final Record Drawings.
9. The Engineer will review final Record Drawings for accuracy and return them to the Contractor for required corrections, changes, additions, and deletions.
 - a. Provide CADD "base" colors of red, green, and blue. Color code for changes as follows:
 - 1) Deletions (Red) – Over-strike deleted graphic items (lines), lettering in notes, and leaders
 - 2) Additions (Green) – Added items, lettering in notes, and leaders
 - 3) Special (Blue) – Items requiring special information coordination, or special detailing or detailing notes
 - b. When final revisions have been completed, show the wording "RECORD DRAWINGS / AS-BUILT CONDITIONS" followed by the name of the Contractor in letters at least 3/16-inch high on the cover sheet drawing. Mark all other contract drawings either "Record" Drawing, denoting no revisions on the sheet, or "Revised Record," denoting one or more revisions. Date original Contract Drawings in the revision block.
 - c. Within fourteen (14) calendar days after Engineer approval of all of the working Record Drawings for a phase of work, prepare the final CADD Record Drawings for that phase of work and submit two (2) sets of black-lined prints of these drawings for Engineer review and approval. The Engineer will return one (1) set of prints annotated with any necessary corrections. Within 1 week, revise the CADD files accordingly at no additional cost and submit one (1) set of final prints for the completed phase of work to the Engineer. At least fourteen (14) calendar days prior to substantial completion of all phases of work, submit the final Record Drawing package for the entire project. Submit one (1) set of electronic files on CD-ROM(s), two (2) sets of black-line prints, and one (1) set of the approved working Record Drawings. They must be complete in all details and identical in form and function to the Contract Drawing files supplied by the Port. Any transactions or adjustments necessary to accomplish this are the responsibility of the Contractor. The Port reserves the right to reject any drawing files it deems

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incompatible with the Port's CADD system. Paper prints, drawing files, and storage media submitted will become the property of the Port upon final approval. Failure to submit final Record Drawing files and marked prints as specified will be cause for withholding any payment due the Contractor under this Contract. Approval and acceptance of final Record Drawings must be accomplished before final payment is made to the Contractor.

3.02 CLEANUP

- A. Final cleanup and cleanup during the course of the work is defined in the Specifications. Those paragraphs are supplemented to provide the following:
1. Definition: Except as otherwise specifically provided, "clean" (for the purpose of this Specification) shall be interpreted as meaning the level of cleanliness generally provided by commercial building maintenance subcontractors using commercial quality building maintenance equipment and materials.
 2. General: Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final cleaning as described above.
 3. Site: Unless otherwise specifically directed by the Port, hose down construction affected areas of the Work Site, including paved areas, public sidewalks, and catch basins on adjoining streets. Completely remove all resultant debris.
 4. Exterior: Visually inspect all exterior surfaces and remove all traces of sediment, waste material, smudges, and other foreign matter. Remove all traces of splashed materials from adjacent surfaces. If necessary to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure. In the event of stubborn stains not removable with water, the Engineer may require light sandblasting or other cleaning at no additional cost to the Port.
 5. Timing: Schedule final cleaning as approved by the Port to enable the Port to occupy a completely clean project.

END OF SECTION

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PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section describes the general requirements for Measurement and Payment Surveying, Progress Surveying and positioning control, utilities and record drawings, progress surveying, record keeping, and submittals. Measurement and Payment Surveys refers to the pre-construction and post-construction topographic and bathymetric surveys as described in this Section. Progress surveying refers to daily and weekly progress surveying.
- B. The Contractor shall employ a third-party professional land surveyor (PLS) licensed in Washington State (i.e., do not use Contractor's in-house survey crew) to perform bathymetric and topographic Measurement and Payment surveys (i.e., pre-construction and post-construction surveys) as described in this Section. The PLS is required to stamp and sign all Measurement and Payment surveys. The Contractor may utilize its own in-house surveyors to conduct Progress Surveying. Progress surveys do not need to be stamped and signed by a PLS. The Contract shall provide the name of the PLS as part of the Construction Quality Control Plan.
- C. Local survey control and upland benchmark locations are shown on the Drawings. The Contractor shall refer to benchmark location information to help establish survey control for the Contract work.
- D. The Drawings represent conditions existing on the date of the surveys shown on the Drawings and are for information purposes only. The Drawings serve as the basis for the estimated quantities of materials as described in the Bid documents.
- E. Methods and procedures for bathymetric (also referred to as hydrographic) surveys shall meet or exceed the accuracy requirements of "Navigation and Dredging Support Surveys – Hard Bottom" per the Hydrographic Surveying Engineering and Design Manual (EM 1110-2-1003) as prepared by U.S. Army Corps of Engineers (USACE), dated April 1, 2004 or latest version. Should there be discrepancies between the Hydrographic Surveying Engineering and Design Manual and these Specifications, the more strict survey requirements shall take precedence, unless the Contractor obtains clarification from the Engineer otherwise.
- F. Land surveying equipment and methods shall meet or exceed the standards associated with the latest version of EM 1110-1-1005 "Control and Topographic Surveying" (USACE) for contract payment surveys. Should there be discrepancies between the "Control and Topographic Surveying" and these Specifications, the more strict survey

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requirements shall take precedence, unless the Contractor obtains clarification from the Engineer otherwise.

- G. The Contractor shall conduct and submit to the Engineer a Pre-Construction Survey for Engineer review and acceptance at least fourteen (14) calendar days prior to start of any work on site, excluding mobilization and establishment of temporary facilities. The Contractor shall schedule the Pre-Construction Survey in coordination with the Engineer in order to allow the Engineer to have the Port's surveyor observe the Pre-Construction Survey.
- H. The Port may conduct its own Pre-Construction Survey to compare against the Contractor's Pre-Construction Survey for quality assurance. If there are discrepancies between the two pre-construction surveys, the Contractor's third-party surveyor shall coordinate with the Port surveyor to determine which survey is inaccurate, and if the Engineer determines that the Contractor's survey means and methods are inaccurate, the Contractor shall adjust and correct its surveying means and methods at no additional cost to the Port. No excavation or dredging work may commence until the Engineer has accepted both the Pre-Construction Survey and the Contractor's positioning control methods.
- I. The Contractor shall perform Post-Construction (final) Surveys following Engineer acceptance of the work, based on Progress Survey results. Final measurement and payment for the work will be determined using the Contractor's Measurement and Payment survey results.
- J. The Port may review the Contractor's survey work or conduct additional surveys throughout the construction work as a quality assurance check of the Contractor's Progress and Post-Construction Survey work.
- K. The Contractor shall establish its survey and positioning control to provide an accurate method of horizontal and vertical control before any in-water work starts.
- L. The Contractor shall provide daily progress surveying and positioning control, as described further in this Section, to provide quality control of the work and to calculate or verify volumes, areas, limits, positions, and other aspects of the work.
- M. Progress survey data collected by the Contractor shall be used for work progress tracking and for monthly progress payment for work completed.
- N. The Contractor shall calculate completed in situ quantities for dredging and capping, based on survey results, for progress reporting and measurement and payment purposes.

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- O. Work under this Specification Section is paid under Bid Item 3 – Surveys as shown on the Bid Form and described in Section 01 20 00—Price and Payment Procedures.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 01 33 00—Submittal Procedures
- B. Section 02 11 00—Upland Excavation, Handling and Backfilling
- C. Section 35 20 23—Dredging, Contingency Re-Dredging, Barge Dewatering and In-Water Transportation
- D. Section 35 20 26—Engineered Sediment Capping

1.03 DEFINITIONS

- A. See Section 01 10 00—Summary for all definitions related to these Contract Documents.

1.04 REFERENCES

- A. U.S. Army Corps of Engineers
 - 1. USACE EM1110-1-1005—Control and Topographic Surveying, 1 January 2007 or latest version
 - 2. USACE EM1110-2-1003—Hydrographic Surveying, 1 April 2004 or latest version

1.05 SUBMITTALS

- A. Pre-Construction Submittals
 - 1. As part of the Contractor's Quality Control Plan, in accordance with Section 01 33 00—Submittal Procedures and Section 01 45 00—Quality Control, the Contractor shall prepare a Survey and Positioning Control Plan that describes the means and methods that will be implemented for all surveying and positioning control activities required for the work. In-water construction activities shall not begin until the Quality Control Plan has been reviewed and accepted by the Engineer. At a minimum, the Survey and Positioning Control Plan shall contain the following information:
 - a. Name, address, telephone number, PLS license number and license expiration date, and statement of qualification for the PLS proposed by the Contractor. This PLS shall be responsible for stamping and signing all Measurement and

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Payment surveys as described in this Section. The Port reserves the right to require that the Contractor substitute another licensed surveyor, at no additional cost to the Port, if the Port determines that the proposed PLS does not have sufficient experience or capacity to conduct the Measurement and Payment Surveys.

- b. Describe survey equipment proposed for use in collection of all survey data for the work.
- c. Describe survey methods and procedures.
- d. Describe how the Contractor will provide positioning control (horizontal and vertical control) for the equipment conducting the work.
- e. Describe the Contractor's procedures to ensure that daily Progress Survey data, including all electronic information and data from survey instruments, is reviewed and included as part of Daily and Weekly Construction Report submittal requirements as described in these Specifications.
- f. Procedures for providing daily, weekly, and monthly summary Progress Survey data and volume and area calculations to the Engineer for progress review and monthly progress payments during work.
- g. Procedures and quantity calculation methods for calculating Measurement and Payment volumes and areas including survey data interpretation software (e.g., Hypack).
- h. Describe the quality control procedures used for surveying, positioning control, and volume calculations.

B. Construction Submittals

1. Pre-Construction, Progress, and Post-Construction Surveys
 - a. The Contractor's licensed professional surveyor shall stamp all Engineer-accepted Pre-Construction and Post-Construction Surveys. The licensed surveyor does not need to stamp the Progress Surveys.
 - b. Submit all surveys to the Engineer in hard copy drawing format and electronic drawing format as described below.

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- c. Submit Pre-Construction Survey and calculated quantities to the Engineer at least fourteen (14) calendar days prior to start of work, excluding Mobilization and Temporary Facility setup.
 - d. Submit daily Progress Surveys and calculated quantities to the Engineer as part of the Contractor's Daily Construction Report, to be submitted at the beginning of the following work day.
 - e. Submit Post-Construction Surveys and calculated quantities to the Engineer within 72 hours after completing the Post-Construction Survey and as part of the Contractor's Weekly Construction Report.
2. As-Built Drawings
- a. Upon completion of all activities, the Contractor shall prepare as-built drawings. The post-construction as-built drawing shall locate all features as constructed and all real estate/property boundaries and public land survey section corners and lines. The as-built drawings shall be produced full size (ANSI D) on bond paper signed by the surveyor and Contractor. The Contractor shall also prepare a paper copy of half-size as-built drawings. The Contractor will submit as-built drawings in paper and electronic formats.
 - b. Contractor electronic files for the as-builts shall be fully editable so as to allow future changes by the Port. The Contractor shall submit the electronic version of the as-built drawings with hard copies as specified.
3. Hard Copy Drawing Requirements
- a. Provide plan view contour drawing using 1-foot contour intervals.
 - b. Provide plan view spot elevation drawing.
 - c. Provide cross-sections through the area where work was completed at no greater than 50-foot spacing between cross-sections unless otherwise accepted by the Engineer. Cross-section information shall show the pre-construction elevations and grades, progress or post-construction elevations and grades, and the design template (elevations and grades).

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- d. Indicate on drawing, at a minimum, the date of survey, datums, extent of survey coverage, elevation markings (for spot elevations and contour lines), location of cross-sections, scale bar, and licensed professional surveyor stamp and signature (for Pre-Construction and Post-Construction Surveys).
4. Electronic Drawing Requirements
 - a. Submit all survey data in AutoCAD Civil3D 2012 format or older format if acceptable to the Engineer.
 - b. Submit all survey data in a separate ASCII text file with XYZ spot elevation data.
 - c. The Engineer will provide the Contractor with the Work Site basemap file in *.dwg format for Contractor use.
 5. Quantity Calculations
 - a. Dredging-related bid items will be paid for based on in situ volume calculations using pre-construction and post-construction surveys. Capping-related bid items will be paid based on completed cap type surface areas. Shoreline debris and upland excavation-related bid items will be paid for based on measured weights of materials disposed of at various disposal locations.
 - b. The Contractor shall submit its quantity (volume) calculations to the Engineer for review and acceptance. The Contractor shall also submit supporting information to help the Engineer verify that the Contractor's calculated quantities are accurate. Supporting information shall include, but is not limited to, certified weight tickets, barge tonnage estimates (based on barge displacement measurements), and other field inspection information that the Contractor may elect to use for quality control purposes.
 - c. For dredging-related bid items, quantities shall be computed to the nearest in situ cubic yard based on comparison to the Contractor's Pre-Construction Survey or relevant Progress Surveys. Quantities shall be broken down by each bid item listed in the Unit Price Table. Each quantity shall also be broken down into payable quantities, and Excessive Overdredging quantities.

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- d. For dredging-related bid items, quantities for Measurement and Payment shall be computed using Triangulated Irregular Network (TIN) or similar three-dimensional calculation methods using generated surfaces from the survey data. The Contractor shall describe its quantity calculation method(s) in the Survey and Positioning Control Plan. Double end area method will not be an acceptable quantity calculation method for Measurement and Payment purposes, but is sufficient for monthly progress payment purposes.
- e. For capping-related bid items, quantities shall be computed to the nearest square foot of completed cap type based on Engineer acceptance of completed cap areas.
- f. For shoreline debris or upland excavation related bid items, the Contractor shall weigh quantities as specified, or the Contractor shall submit certified weight tickets from landfill disposal and/or recycling facilities.
- g. Quantities calculations shall be submitted on a daily and weekly basis as part of the Daily Construction Report and Weekly Construction Report, and as part of monthly progress payment requests for completion of the work.

1.06 SURVEY VERTICAL DATUM

- A. Project survey elevations shall reference the NOAA/USGS Tidal Datum (MLLW=0.00') as leveled from recovered 1983-2001 tidal epoch benchmark ID #9449211, Tidal BM #7.
- B. Benchmark is a brass plate set vertically in the northerly corner of the building at the southerly corner of Roeder and Chestnut Streets. ELEVATION=20.745' (MLLW=0.00').

1.07 SURVEY HORIZONTAL DATUM

- A. Project horizontal datum shall reference Washington State Plane Coordinate System, North Zone, NAD 83/96 CORS.

1.08 QUALITY CONTROL

- A. The Contractor is responsible for providing all necessary quality controls to successfully complete the work.

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- B. The Contractor is responsible for scheduling the Contractor's surveys and verifying that it has met the Contract requirements prior to proceeding to the next sequence of work.
- C. All dredging and capping-related surveys for verification of pay quantities will be performed and stamped and signed by the Contractor's third-party licensed surveyor acceptable to the Port.
- D. If the Contractor's own Progress Surveying means and methods are the same as the Contractor's third-party licensed surveyor's means and methods, and the Contractor demonstrates to the Engineer's satisfaction that its own Progress Surveys achieve the same level of accuracy as the Contractor's third-party surveys, the Engineer will accept the Contractor's Progress Surveys for Measurement and Payment purposes for Capping work.
- E. The Port (Engineer or other Port representatives) will inspect the work for quality assurance purposes. Port inspection shall in no way release the Contractor from complying with the Specifications and all permits, and shall in no way be construed as acceptance of work. The Port reserves the right to retain an independent surveyor to periodically check the Contractor's survey. Surveying performed by the Port will be at no cost to the Contractor.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

3.01 GENERAL

- A. At the Pre-Construction Meeting, the Contractor's third-party licensed surveyor shall meet with the Engineer and Port's surveyor to discuss the survey proceedings, methods, and equipment to be employed for the Contractor's surveys, and the survey submittal schedules.

3.02 SURVEY EQUIPMENT AND METHODS

- A. The Contractor and the Contractor's third-party licensed surveyor shall use multi-beam survey equipment for all Progress, Pre-Construction, and Post-Construction Bathymetric Surveys. Accuracy for measured elevations shall be +/- 0.5 feet; accuracy of horizontal position shall be +/- 3 feet at the 95% confidence interval.

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- B. Bathymetric surveying methods shall meet or exceed the standards associated with the latest version of USACE EM 1110-2-1003 for Navigation and Dredging Support Surveys – Hard Bottom.
- C. Land surveying equipment and methods shall meet or exceed the standards associated with the latest version of USACE EM 1110-1-1005 for contract payment surveys.
- D. The Contractor shall employ an accepted method to locate and control horizontal position that can include: Real Time Kinematic Global Positioning System (RTK-GPS) or Differential Global Positioning System (DGPS). If the Contractor proposes to use an alternative positioning method, that method must be submitted to the Engineer and accepted prior to start of work.

3.03 SURVEY AND POSITIONING CONTROL POINTS

- A. The Contractor shall establish an accurate method of horizontal and vertical control before the work begins. Survey control points shown on the Drawings are provided for reference purposes only to assist the Contractor in establishing horizontal and vertical control.
- B. The proposed method and maintenance of the horizontal control system shall be subject to the acceptance of the Engineer and if, at any time, the method fails to provide accurate location of the work, the Contractor may be required to suspend its operations until such time that accurate control is established.
- C. The Contractor shall lay out its work using control points established by the Contractor as part of the work and shall be responsible for all measurements taken to establish these points.
- D. The Contractor shall furnish, at its own expense, all stakes, templates, platforms, equipment, range markers, transponder stations, and labor as may be required to lay out the work shown on the Drawings.
- E. The Contractor shall furnish, set, and maintain in good order, all ranges, buoys, and other markers necessary to define the work and to facilitate inspection. The Contractor shall establish and maintain tide gauges or boards in locations where they may be clearly seen during dredging operations and inspections in each of the inner and outer waterways and the Log Pond area. The Contractor shall also install an automatic recording tide gauge with water level sensor. The tide gauge shall provide a continuous recording of tidal change for every 15-minute interval or each 0.1-foot change, whichever occurs first. Tidal changes shall be recorded in NOS MLLW datum, with these changes visually provided to the

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dredging and/or capping equipment operator(s) at all times during the in-water construction activities to allow proper adjustment of dredging and capping elevations and grades. All costs for providing the tide gauges and other survey controls shall be incidental to this work.

- F. It shall be the responsibility of the Contractor to maintain all control points established for the work until authorized to remove them. If such control points are destroyed or disturbed by the Contractor prior to an authorized removal, they shall be replaced by the Contractor at no additional expense to the Port.
- G. Prepare and submit application to the Washington State Department of Natural Resources for a permit to remove survey monuments for those monuments anticipated to be removed or disturbed during construction.

3.04 SURVEYS

A. Condition Survey

- 1. Wilson Engineering performed the condition survey as shown on the Drawings. This multi-beam condition survey is the basis for the estimated bid quantities listed in the Bid Form.

B. Pre-Construction Survey

- 1. The Contractor shall conduct a pre-construction multi-beam bathymetric survey and supplemental topographic surveys as necessary to fully identify pre-construction elevations and grades throughout the Work Site. Bathymetric survey equipment may not be suitable for surveying the upper slope and upland areas, and the Contractor may have to conduct a supplemental topographic survey. This Pre-Construction Survey shall be completed and submitted to the Engineer for review and acceptance at least fourteen (14) calendar days prior to the start of work, excluding Mobilization and Temporary Facility setup, and will be used as the basis for measurement and payment purposes.
- 2. The bathymetric survey shall be adequate resolution to allow subsequent accurate calculations of excavated volumes. Locate all tops and toes of slopes, and all grade breaks, with horizontal and vertical coordinates.
- 3. The Pre-Construction Survey shall cover all areas of work as shown on the Drawings, and extend at least 50 feet past the boundaries of the Work Site, with the exception of underpier areas at the GP dock and BST.

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4. The Pre-Construction Survey shall cover the full extent of the Work Site involving any and all construction activities including, but not limited to, dredging, capping, shoreline debris removal, temporary excavation, demolition, structural installation, and Residuals Management Cover Material placement.
5. If vessels or other obstructions prevent the Contractor from being able to fully survey all of the Work Site, coordinate with the Engineer to determine whether to rely upon the Drawings in those areas or to rely upon initial Progress Survey in those areas to supplement the Pre-Construction Survey, or to re-survey those missing areas to complete the Pre-Construction Survey.

C. Progress Surveys

1. The Contractor shall provide daily (or less frequent only if accepted by the Engineer) measurements of the previous day's work, using multi-beam (and topographic if needed) survey equipment. The survey's spot elevation spacing shall be determined by the Contractor and shall provide sufficient density of spot elevation data to provide adequate information for the Contractor to provide quality control of its work. The Engineer shall be satisfied as to the survey's data density, and if not satisfied may advise the Contractor to increase the survey data density at no additional cost to the Port.
2. The survey data will accompany the Contractor's Daily Construction Report submitted to the Engineer, including all electronic information and data from survey instruments the morning of the next work day.
3. Survey results may be used to adjust construction procedures to ensure that the configuration of the work conforms to the Drawings and permit requirements. The Contractor may be required to adjust its construction procedures to ensure compliance with the Drawings and permit requirements, at no additional expense to the Port.
4. Dredging Progress Surveys
 - a. The Contractor shall complete Required Dredging Progress Surveys on a daily basis to document daily progress for completion of Required Dredging activities. Results of daily Progress Surveys should accurately depict the daily progress of the dredging work and shall be submitted as part of the Contractor Daily and Weekly Construction Reports.

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- b. The Contractor's Required Dredging Progress Surveys will be used to determine post-required dredging elevations and grades and for computing progress dredge volumes used for progress payment for the work.
 - c. The Engineer reserves the right to conduct its own surveys during construction to verify the Contractor's survey work. In the event of a discrepancy, the Port may choose to retain another surveyor mutually acceptable to both the Contractor and Engineer to resolve the discrepancy.
5. Contingency Re-Dredging Progress Surveys
- a. Following evaluation of confirmation sampling data collected by the Port within the BST area, the Engineer may require the Contractor to conduct additional dredging activities for removal of missed inventory within select areas of the BST area.
 - b. The Contractor shall complete Contingency Re-Dredging Progress Surveys on a daily basis, during completion of additional dredging activities, to document progress for completion of the work. Results of daily Contingency Re-Dredging Progress Surveys should accurately depict the daily progress of the additional dredging work and shall be submitted as part of the Contractor Daily and Weekly Construction Reports.
 - c. The Contractor and Engineer shall follow the same procedures regarding acceptance of the work as described above for Required Dredging Progress Surveys.
6. Capping Progress Surveys
- a. The Contractor shall complete capping Progress Surveys on a daily basis to document daily progress for completion of material placement activities. Results of capping Progress Surveys should accurately depict the daily progress of the material placement work and shall be submitted as part of the Contractor Daily and Weekly Construction Reports.
 - b. The Contractor and Engineer shall follow the same procedures regarding acceptance of the work as described above for Required Dredging Progress Surveys.
7. Residuals Management Cover Placement Progress Surveys

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- a. The Contractor shall complete Residuals Management Cover placement Progress Surveys on a daily basis to document daily progress for completion of material placement activities. Results of daily Residuals Management Cover placement Progress Surveys should accurately depict the daily progress of the material placement work and shall be submitted as part of the Contractor and Weekly Construction Reports.
 - b. The Contractor and Engineer shall follow the same procedures regarding acceptance of the work as described above for Required Dredging Progress Surveys.
- D. Post-Construction Surveys
1. Required Dredging Post-Construction Survey
 - a. Following completion of Required Dredging work and Engineer acceptance of the work, based upon review of the Progress Surveys, the Contractor shall conduct a Post-Construction Survey (for Required Dredging) that will be used for final measurement and payment for Required Dredging work.
 - b. Results of this survey will be compared to the monthly progress reports provided by the Contractor (for progress payment) and adjustments to final payment for the work will be made as necessary.
 - c. If all of the Required Dredging has not been satisfactorily completed, as determined by the Engineer, the Contractor shall correct the deficiencies indicated in the survey and re-survey the area, and the Engineer will review the re-survey to confirm that Required Dredging has been satisfactorily completed. The cost for Contractor re-survey will not be cause for additional compensation to the Contractor.
 - d. This Post-Construction Survey will be used as the Pre-Construction Survey for Contingency Re-Dredging activities in the BST area if needed, capping placement, and/or Residuals Management Cover Material placement depending upon the location of the work.
 - e. The Engineer reserves the right to conduct its own Post-Construction Survey to verify the Contractor's survey work. In the event of a discrepancy, the Port may choose to retain

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another surveyor mutually acceptable to both the Contractor and Engineer to resolve the discrepancy.

2. Contingency Re-Dredging Post-Construction Survey

- a. Following completion of Contingency Re-Dredging work within the BST area if needed, and Engineer acceptance of the work, based upon review of Progress Surveys, the Contractor shall conduct a Post-Construction Survey (for Contingency Re-Dredging) that will be used for final measurement and payment for Contingency Re-Dredging work.
- b. Results of this survey will be compared to the monthly progress reports provided by the Contractor (for progress payment) and adjustments to final payment for the work will be made as necessary.
- c. This Post-Construction Survey will be used as the Pre-Construction Survey for the Residuals Management Cover Material placement within the BST area.
- d. The Contractor and Engineer shall follow the same procedures regarding acceptance of the work as described above for Required Dredging Post-Construction Surveys.

3. Capping Post-Construction Surveys

- a. Following completion of each capping layer (e.g., Sand Type 1 or 2, Filter Material, and Rock Armor placement) and Engineer acceptance of the work based upon review of Progress Surveys, the Contractor shall conduct a Post-Construction Survey of each cap layer placed that will be used for final measurement and payment purposes.
- b. Results of this survey will be compared to the monthly progress reports provided by the Contractor (for progress payment) and adjustments to final payment for the work will be made as necessary.
- c. Each Post-Construction Survey will be used as the Pre-Construction Survey for each subsequent cap layer.
- d. The Contractor and Engineer shall follow the same procedures regarding acceptance of the work as described above for Required Dredging Post-Construction Surveys.

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4. Residuals Management Cover Material Placement Post-Construction Survey
 - a. Following completion of all Residuals Management Cover Material placement work in the BST area, and Engineer acceptance of the work, based upon review of Progress Surveys, the Contractor shall conduct a Post-Construction Survey of the Residuals Management Cover Material placement work that will be used for final measurement and payment purposes.
 - b. Results of this survey will be compared to the monthly progress reports provided by the Contractor (for progress payment) and adjustments to final payment for the work will be made as necessary.
 - c. The Contractor and Engineer shall follow the same procedures regarding acceptance of the work as described above for Required Dredging Post-Construction Surveys.

3.05 UNDERGROUND UTILITIES

- A. Locate all underground utilities and notify all underground utility companies prior to commencing work.
- B. Provide as-built drawings showing accurate locations of utilities installed or relocated as part of the work.
- C. Become familiar with location of stormwater conveyance pipes that extend beneath Whatcom Waterway, as shown on the Drawings, to transport stormwater from the former GP West property to the Aerated Stabilization Basin (ASB).

3.06 NEW CONSTRUCTION

- A. The Contractor shall develop and make all detailed surveys necessary for construction of new work, including setting bench marks for location of working points, verification of existing structures and critical topographic features, cut sheets, slope stakes, and other surveys as required to ensure the work is installed in accordance with the Contract Documents. The Contractor is responsible for notifying the Port of any discrepancies found as a result of the detailed survey.

END OF SECTION

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Section 02 11 00—Upland Excavation, Handling and Backfilling

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section specifies the temporary excavation and backfilling of soil behind the new West Central Waterfront Sheetpile Wall in order to allow removal of contaminated sediments in the Central Waterfront area, and excavation and backfilling of soils in the South Shoreline cutback area within the footprint of the clarifier tank, as shown on the Drawings. Work covered under this Section includes, but is not limited to, the following elements:
1. Excavation and stockpiling of soils from behind the west Central Waterfront containment wall, removal of contaminated soil and sediment from the barge ramp area, and layback of the shoreline at the South Shoreline area.
 - a) Approximately 300 cubic yards of contaminated soils are identified for excavation from the existing barge ramp area and will be designated for disposal at an off-site Disposal Facility.
 - b) Approximately 850 cubic yards of clean and contaminated soils are identified for excavation from the upland area behind the west Central Waterfront containment wall. The design assumes that approximately 50 percent of this excavation volume will be suitable for re-use as structural fill and 50 percent of the volume will be designated for disposal at an off-site Disposal Facility.
 - c) Approximately 6,100 cubic yards of clean and contaminated soils are identified for excavation from the South Shoreline area as part of the slope layback behind the existing timber bulkhead. The design assumes that approximately 1,700 cubic yards of this excavation volume will be placed into the foundation of clarifier tank following removal of the structure. The remaining volume of excavation material will be transported to the Shoreline Debris Removal and Temporary Excavation Materials Staging and Stockpile Area(s) and managed as described in Section 02 56 16 – Staging and Stockpiling. The design assumes that approximately 30 percent of this remaining excavation volume will be suitable for re-use as structural fill and 70 percent of the remaining volume will be designated for disposal at an off-site Disposal Facility
 2. Transport of excavated soil material and debris to the Shoreline Debris Removal and Temporary Excavation Materials Staging and Stockpile Area(s), as shown on the Drawings.

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Section 02 11 00—Upland Excavation, Handling and Backfilling

3. Backfilling of temporary excavation areas including placement of on-site re-use soils and import structural fill and aggregate base course.
 4. Transport and Disposal of upland excavation materials (soil and debris) that are determined to be unsuitable for on-site re-use or recycling.
 5. Details regarding management, stockpiling and segregation of materials at the Shoreline Debris Removal and Temporary Excavation Materials Staging and Stockpile Area(s) are provided in Section 02 56 16 – Staging and Stockpiling.
 6. Details regarding characteristics of aggregate base course materials are provided in Section 32 11 23 – Aggregate Base Courses
- B. Work under this Specification section is paid under Bid Item 6 – Upland Excavation and Handling for On-Site Re-Use, Bid Item 7 – Upland Excavation, Handling and Off-Site Landfill Disposal, Bid Item 28 – Structural Fill, and Bid Item 29 – 6-Inch Gravel Ballast as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 01 10 00—Summary of Work
- B. Section 01 57 19—Temporary Environmental Controls
- C. Section 02 41 00 – Shoreline Debris Removal and Disposal
- D. Section 02 56 16—Staging and Stockpiling
- E. Section 32 11 23 – Aggregate Base Course

1.03 REFERENCES

- A. All references to the Washington State Department of Transportation (WSDOT) shall refer to *2012 Standard Specifications for Road, Bridge, and Municipal Construction*
- B. 29 Code of Federal Regulations (CFR) 1910 – Occupational Safety and Health Regulations
- C. Washington Administrative Code (WAC) 296-155, Safety Standards for Construction Work, including Part N, Excavations, Trenches, and Shoring

DIVISION 02—EXISTING CONDITIONS

Section 02 11 00—Upland Excavation, Handling and Backfilling

- D. 29 CFR 1926 – Safety and Health Regulations for Construction
- E. Revised Code of Washington (R.C.W.) Chapter 49.17 Washington Industrial Safety and Health Act (WISHA)
- F. R.C.W. Chapter 39.04.180 Public Works/Trench Excavations – Safety Systems Required

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00—Submittal Procedures.
- B. Upland Excavation and Backfilling Work Plan
 - 1. Prepare and submit a detailed, written Upland Excavation and Backfilling Work Plan, as part of the Construction Work Plan, to the Engineer within twenty-eight (28) calendar days following Notice of Award. Excavation activities shall not begin until:
 - a. The Upland Excavation and Backfilling Work Plan has been reviewed and approved by the Engineer
 - b. Agency-required notifications have been completed in accordance with the permits
 - 2. At a minimum, the Upland Excavation and Backfilling Work Plan shall contain the following:
 - a. Work Sequence and Equipment:
 - 1) Describe the order in which the work is to be performed, indicating the work sequence.
 - 2) Describe the number, types, and capacity of equipment to be used, including names of all upland and marine vessels to be used.
 - 3) Include hours of operation.
 - 4) Describe the methods of operation and the time required to complete each activity.
- C. Construction Submittals
 - 1. Daily Construction Report: Keep a daily record of the work under this Specification. Submit this daily record to the Engineer the

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Section 02 11 00—Upland Excavation, Handling and Backfilling

morning following completion of the work for that day in a Daily Construction Report. The Daily Construction Report shall be signed by the Contractor's upland excavation and backfilling superintendent or quality control manager.

2. Weekly Construction Report: Summarize the week's work in a Weekly Construction Report to be submitted to the Engineer the following Monday morning. The Weekly Construction Report shall identify work completed to date, identify anticipated work to be completed in the present week, and present the latest progress survey information related to upland excavation and backfilling work.

1.05 JOB CONDITIONS

A. Character of Materials

1. Subsurface investigations were performed to characterize the subsurface material in the project area. Detailed results from geotechnical and chemical testing of the soils in the area of work are discussed in Section 02 32 00—Geotechnical Investigations and provided in the appendices to the Contract Documents.
2. Verify the nature of materials present at the Work Site prior to bidding. The type of materials encountered at the Work Site may vary from the conditions described in the appendices to the Contract Documents. Variations in the type of materials encountered may occur that do not differ materially from those indicated in these Specifications, and if encountered, will not be considered as basis for claims due to differing Work Site conditions.
3. Verify the quantity of material to be used for the work activities based on the Contractor's own calculations and the survey information on the Drawings before submitting a bid.

1.06 PERMITS

- A. Perform upland excavation and backfill activities in required areas, as shown on the Drawings, in accordance with the sequencing requirements provided in these Specifications.
- B. Perform upland excavation and backfill activities during the work period listed in the project permits, as provided in the appendices to the Contract Documents. See Section 01 41 26—Permits, for substantial completion milestone dates related to this work.

DIVISION 02—EXISTING CONDITIONS

Section 02 11 00—Upland Excavation, Handling and Backfilling

PART 2 – PRODUCTS

2.01 GENERAL

- A. The Contractor shall provide all required materials for the project. Materials shall be of the quality, size, shape, and gradation as specified in this part. Imported materials to be used for backfilling the temporary excavation areas will be imported, clean, granular material free of roots, organic material, contaminants, and all other deleterious and objectionable material.
 - 1. Import material requirements for aggregate base course are provided in Section 32 11 23 – Aggregate Base Course.

2.02 MATERIAL TESTING REQUIREMENTS

- A. Import materials to be placed in upland excavation areas shall be identified and tested in accordance with Section 35 20 26 – Engineered Sediment Capping. Contractor shall test Structural Fill samples in accordance with this Specification. Testing of 6-Inch Ballast (as described in Section 32 11 23 – Aggregate Base Course) is not required.

2.03 STRUCTURAL FILL

- A. Material shall be clean, free-draining, granular material obtained from natural deposits. Individual particles shall be free from all objectionable coatings. The material shall contain no organic matter, nor soft friable particles in quantities considered objectionable by the Port.
- B. Material shall be graded between the limits specified below:

U. S. Standard Sieve	Percent by Weight, Passing
4-inch	90 to 100
3/4-inch	50 to 75
U.S. No. 4	35 to 55
U.S. No. 10	25 to 45
U.S. No. 40	10 to 25
U.S. No. 200	0 to 4

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Section 02 11 00—Upland Excavation, Handling and Backfilling

PART 3 – EXECUTION

3.01 ORDER OF WORK

- A. Excavation work behind the west Central Waterfront containment wall shall not commence until the containment wall is installed.
- B. Dredging in front of the west Central Waterfront containment wall shall not occur until the temporary excavation behind the wall is completed.
- C. Backfilling behind the west Central Waterfront containment wall shall not commence until the dredged area in front of the new wall is capped to final designed grade.
- D. Excavation work in the South Shoreline cutback area shall not commence until activities related to removal and disposal of the clarifier tank have been completed.

3.02 GENERAL

- A. Conduct all required activities associated with the work to meet the site cleanup goals in accordance with the requirements of the Contract Documents and as otherwise directed by the Engineer to complete the work under this Contract. Coordinate the work with the Engineer to limit adverse effects of the work on the activities within the Work Site and other owners of properties within the Work Site, other adjacent public and privately owned areas, and the public.
- B. Clearing and grubbing shall be completed in accordance with Section 31 11 00—Clearing and Grubbing.

3.03 UPLAND EXCAVATION AND STOCKPILING

- A. Soils behind the West Central Waterfront sheetpile wall, utility trenches and within the South Shoreline cutback area shall be excavated to the grades and elevations shown on the Drawings.
- B. All excavated soils shall be stockpiled for visual inspection, segregation, and potential testing for possible re-use as clean backfill material in accordance with Section 02 56 16—Staging and Stockpiling. The intent is to reuse as much of the non-contaminated soil as possible as backfill within the Work Site.
- C. Contractor shall transport upland excavation materials to the Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area, as shown on the Drawings. Excavation soils and debris shall be inspected

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Section 02 11 00—Upland Excavation, Handling and Backfilling

and handled according to the methods and procedures described in Section 02 56 16—Staging and Stockpiling.

- D. Temporary slopes and shoring shall be in accordance with WAC 296-155, Part N. The stability of open-cut slopes is a function of soil type, groundwater level, slope inclination, and nearby surface loads. The use of inadequately designed open cuts could impact the stability of adjacent structures and existing utilities and endanger personnel.
- E. It should be expected that unsupported cut slopes would experience some sloughing and raveling if exposed to surface water. Berms, hay bales, plastic sheeting, fencing laid over the slope, or other provisions could be installed along the top and sides of the excavation to reduce the potential for sloughing and erosion of cut slopes during wet weather, as appropriate.
- F. Where excavation limits infringe on, or potentially endanger or compromise, an existing site facility or feature, provide temporary shoring, sheeting, and bracing as required to complete the excavations. All required temporary shoring, sheeting, and bracing systems needed to complete the work shall be designed and stamped by a structural engineer licensed to practice in the State of Washington. Unless otherwise specified or approved by the Port, repair and make good any damage to any facility or feature caused by Contractor's work under this Specification at no additional cost to the Port.

3.04 BACKFILLING

- A. Backfill material will consist of either stockpiled excavated, non-contaminated geotechnical suitable soils, or imported Structural Fill.
- B. Place and compact backfill material in lifts with loose thickness no greater than 10 inches. Where small hand-operated compaction equipment is used, lifts should not exceed 8 inches in thickness.
- C. Perform compaction with small vibratory plate or self-propelled walk-behind equipment within 2 feet of the sheetpile wall (in the Central Waterfront area) to minimize the potential for overcompaction adjacent to the wall. Overcompaction could result in additional lateral loads on the wall.
- D. Compact the backfill material immediately adjacent to the sheetpile wall to a minimum of 90 percent of modified proctor maximum dry density as determined by ASTM D 1557.

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Section 02 11 00—Upland Excavation, Handling and Backfilling

- E. The moisture content of the backfill material shall be controlled to within 2 percent of the optimum moisture. Optimum moisture is the moisture content corresponding to the maximum proctor dry density.

3.05 SITE CLEANUP AND MANAGEMENT OF DEBRIS AND WASTE MATERIALS

- A. The Contractor shall be responsible for preventing the off-site movement of all waste materials, spills, etc. resulting from the work under this Contract and shall be responsible for any consequences of any such off-site movement of material.
- B. The Contractor shall clean up soil tracked from the site onto public roadways on a daily basis or more frequently, as directed by the Engineer.
- C. The Contractor shall periodically clean up wastes, debris, and leftover materials resulting from the earthwork activities. Clear the work areas of all debris and waste materials that may have accumulated during execution of the work, and dispose of such materials in accordance with all applicable regulations.

END OF SECTION

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Section 02 32 00—Geotechnical Investigations

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section is intended to provide the Contractor with sources of information regarding geotechnical information available for the Whatcom Waterway Phase 1 Cleanup project. It is not intended to be an exhaustive list of resources, but serves as a guide to known data sources.
- B. Data Sources
 - 1. Existing information regarding geotechnical conditions at the Work Site is presented in the appendices to these Specifications, and includes, but is not limited to, the following:
 - a. Pre-Remedial Design Investigation Report (PRDI; Anchor QEA 2010)
 - b. Central Waterfront Shoreline Investigation Memorandum (Anchor QEA 2013)
 - c. Geotechnical appendix to the Engineering Design Report (EDR; Anchor QEA 2013)
 - 2. Additional data sources not listed in this Specification may be available to the Contractor as part of the appendices to these Specifications.
- C. No separate payment will be made for effort associated with work described in this Specification Section. Work required to comply with this Specification Section is considered to be inclusive to all other activities described in the Contract Documents.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

3.01 PREPARATION

- A. The Contractor shall read and become familiar with the geotechnical information provided in the appendices to these Specifications.

END OF SECTION

DIVISION 02—EXISTING CONDITIONS

Section 02 41 00—Shoreline Debris Removal and Disposal

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. The work described in this Section includes establishing areas of work, developing a Shoreline Debris Removal and Disposal Work Plan (as part of the Construction Work Plan); removing and satisfactory disposal or recycling of Shoreline Debris including all anthropogenic (man-made) materials (including, but not limited to, chains, cables, plastic, rope, lines, tires, timbers, concrete rubble, asphalt, and metal), which are designated for removal on the Drawings or within these Specifications. All timber shall be considered treated and shall not be recycled, unless approved by the Engineer.
- B. The Contractor shall be prepared to remove approximately 9,500 tons of Shoreline Debris from the Inner Waterway and Log Pond areas of the Work Site as part of this project. Locations and photographs of Shoreline Debris located in these areas of the Work Site are presented on the Drawings.
- C. Shoreline Debris shall be removed to facilitate installation of the shoreline containment walls and to prepare intertidal surfaces for completion of dredging activities. Shoreline Debris removal activities shall also assist in preparation of no-dredge surfaces for placement of engineered sediment capping materials.
- D. The Contractor shall familiarize itself with all relevant laws, regulations, and guidance documents applicable to this work in order to safely manage, stockpile, transport, and dispose of (or recycle) debris and waste materials.
- E. The Contractor's On-Site Staging and Stockpile Area(s) are identified on the Drawings and include space for Contractor parking (at the former GP West property only), access, lay down, and stockpiles. Areas outside of the Contractor's designated On-Site Staging and Stockpile Area(s) shall not be used for Contractor staging or stockpiling unless approved by the Engineer. Any damage to existing facilities, utilities, or structures not designated for removal shall be repaired or replaced by the Contractor at no additional cost to the Port.
- F. Requirements for handling, segregating, screening and stockpiling Shoreline Debris at the On-Site Staging and Stockpile Area (as shown on the Drawings) as discussed in Section 02 56 16—Staging and Stockpiling.
- G. Shoreline Debris removal work shown on the Drawings are schematic in nature, and is intended to identify general features of the materials or

DIVISION 02—EXISTING CONDITIONS

Section 02 41 00—Shoreline Debris Removal and Disposal

other obstructions to be removed. Specific Shoreline Debris to be removed will be provided by the Engineer during construction. Bidders shall visit the Work Site during the pre-bid period to inspect and fully understand the required Shoreline Debris removal work to their satisfaction. Lack of complete details on the project Drawings will not be considered as grounds for additional compensation.

- H. The Contractor shall transport and dispose of all Shoreline Debris at a Port-approved Disposal Facility, with the exception of Shoreline Debris that is determined by the Port to be reusable on-site or determined by the Contractor and approved recycling facility to be acceptable for recycling. The Port requires the Contractor to recycle as much of the Shoreline Debris material as is feasible. The Contractor shall directly coordinate with approved Disposal Facilities and Recycling Facilities to determine what is acceptable for recycling instead of landfill disposal.
 - 1. The Contractor is required to re-use on site all concrete Shoreline Debris that may be crushed and re-used for structural fill. Work for this project will include crushing of concrete Shoreline Debris at the former GP West property and stockpiling of crushed debris at the locations shown on the Drawings.
 - 2. The Contractor shall provide means and methods for weighing (as part of measurement and payment) all concrete Shoreline Debris that is recycled, as discussed in Section 02 56 16—Staging and Stockpiling.
- I. Work under this Specification section is paid under Bid Item 8 – Shoreline Debris Removal, Handling and Off-Site Landfill Disposal, Bid Item 9 – Shoreline Debris Removal and Handling for On-Site Re-Use, and Bid Item 10 – Shoreline Debris Removal, Handling and Off-Site Recycling, as shown on the Bid Form and described in Section 01 20 00—Price and Payment Procedures.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 01 10 00—Summary
- B. Section 01 57 19—Temporary Environmental Controls
- C. Section 02 11 00—Upland Excavation and Disposal
- D. Section 02 56 16—Staging and Stockpiling

DIVISION 02—EXISTING CONDITIONS

Section 02 41 00—Shoreline Debris Removal and Disposal

1.03 JOB CONDITIONS

- A. Examine the Work Site and become familiar with existing local conditions affecting work including, but not limited to, Work Site layout, buildings, structures, working around existing operations, weather conditions, tidal variation, sea state and wave conditions, and access to the items to be removed.
- B. Coordinate with the Engineer to determine access points and restrictions to the work areas. The Contractor shall be responsible for adhering to the construction sequencing requirements for work on or adjacent to Port tenant and private properties, as described in Section 01 10 00—Summary and in these Specifications.
- C. The former GP West property Log Pond area has a previously constructed sediment remediation isolation cap made out of sand. The Log Pond area has shallow water depth and there are areas of eelgrass habitat within the Log Pond area, as shown on the Drawings. Do not disturb or place equipment above the eelgrass habitat areas. Barge grounding is not permitted. The Contractor may use spuds for floating equipment within the Log Pond area, and is required to describe its spudding means and methods in its Construction Work Plan.
- D. Locate existing underground utilities in the areas of work. Those utilities that are to remain shall be adequately protected from damage.
- E. The tonnages provided on the Bid Form for completion of Shoreline Debris Removal and Off-Site Landfill Disposal, Shoreline Debris Removal and On-Site Reuse, and Shoreline Debris Removal and Off-Site Recycling assume removal and disposal, re-use, or recycling of a 3-foot thickness of Shoreline Debris between the existing top of bank and approximate elevation +5 feet mean lower low water (MLLW), as shown on the Drawings.
- F. Pre-Construction Submittals
 - 1. Submit to the Engineer, as a pre-construction submittal and as part of the Construction Work Plan, a Shoreline Debris Removal and Disposal Work Plan that addresses the following, at a minimum:
 - a. Work sequence
 - b. Hours of operation
 - c. Type, size, and number of equipment to be used for all operations

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Section 02 41 00—Shoreline Debris Removal and Disposal

- d. Means and methods to anchor or secure floating equipment (if used) in the Inner Waterway and Log Pond areas
- e. Means and methods for use of upland excavation equipment (if used) in the Inner Waterway and Log Pond areas and management of excavated Shoreline Debris materials, including segregation of material for disposal and/or recycling, and transport of Shoreline Debris material from the On-Site Staging and Stockpile Area(s) located at the Central Waterfront properties to the On-Site Staging and Stockpile Area located at the former GP West property. Specific methods and procedures for stockpiling Shoreline Debris material at the On-Site Staging and Stockpile Area are described in Section 02 56 16—Staging and Stockpiling.
- f. Means and methods to provide safe navigation around floating equipment for other waterway users.
- g. Means and methods to offload debris loaded on barges to On-Site Staging and Stockpile Area or at the On-Site or Off-Site Transload Facility(ies), and protection against loss of debris during offloading.
- h. Means and methods to minimize waste and maximize salvage and recycling of materials.
- i. Means and methods for recycling of concrete Shoreline Debris material including means and methods for weighing materials identified for recycling.
- j. Disposal procedures including details of debris containment, collection, temporary stockpiling, transport, and disposal.
- k. Documentation for Disposal Facilities and Recycling Facilities including copies of permits, permissions, and receipt of disposal as necessary.
- l. Transportation methods and routes that minimize disruption to local traffic to and from the Disposal Facility and/or Recycling Facility.
- m. Construction stormwater and temporary erosion and sediment control (TESC) means and methods (as required in Section 01 57 19—Temporary Environmental Controls) to be implemented to contain debris during Shoreline Debris removal activities. Reference to these items can be made as part of the Environmental Protection Plan.

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- G. Submit the Shoreline Debris Removal and Disposal Work Plan, as part of the Construction Work Plan, to the Engineer within 14 calendar days after Notice of Award. No work shall begin at the Work Site until the Construction Work Plan has been reviewed and approved by the Engineer.
- H. Construction Submittals
 - 1. Construction Schedule: Refer to Section 01 32 00—Construction Progress Documentation.
 - 2. Daily Construction Report: Keep a daily record of the Shoreline Debris and structure removal area(s) completed, the estimated or weighed tonnage of debris disposed of at the Disposal Facility or Recycling Facility, estimated tonnage of concrete Shoreline Debris re-used on site, and a summary of other details of the work. Submit this daily record to the Engineer the morning following completion of the work for that day in a Daily Construction Report. The Daily Construction Report shall be signed by the Contractor's Superintendent or Quality Control Supervisor.
 - 3. Weekly Construction Report: Summarize the week's work in a Weekly Construction Report to be submitted to the Engineer the following Monday morning of the week when the work was completed. The Weekly Construction Report shall identify the Shoreline Debris work completed to date and anticipated work to be completed in the present week. Submit the previous week's landfill and recycling receiver tickets (certified weight tickets) and trip tickets. The Weekly Construction Report shall be signed by the Contractor's Superintendent or Quality Control Supervisor.

PART 2 – PRODUCTS

2.01 CONTAINMENT AND SORBENT BOOM

- A. Floating containment boom shall be a commercially produced boom capable of being anchored in position and of a depth below water that all floating debris generated during Shoreline Debris removal activities will be contained. Inspect the floating containment boom on a daily basis and maintain the condition of the containment boom throughout the duration of the work.
- B. Floating sorbent boom shall be deployed within the containment boom at all times the Contractor is completing Shoreline Debris removal activities. Inspect the sorbent boom on a daily basis and maintain the condition of

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the sorbent boom throughout the duration of the work, and replace the sorbent boom once it becomes ineffective at absorbing sheen.

- C. The Contractor shall be prepared to use and implement other temporary environmental controls as necessary in order to meet requirements of the Water Quality Monitoring Plan (WQMP) and permit requirements.

2.02 SHORELINE DEBRIS

- A. Shoreline Debris, as defined in Section 01 10 00—Summary, includes all anthropogenic (man-made) materials (including, but not limited to, chains, cables, plastic, rope, lines, tires, timbers, concrete rubble, asphalt, and metal) as indicated on the Drawings.
- B. No known hazardous waste materials are part of the Shoreline Debris.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Locate upland Shoreline Debris removal Limits of Work, as shown on the Drawings, and implement erosion control measures and establish temporary fencing to establish a secure site for completion of removal activities, as described in Section 01 50 00—Temporary Facilities and Controls, Section 01 57 19—Temporary Environmental Controls and Section 02 56 16—Staging and Stockpiling.
- B. Provide, erect, and maintain any temporary barriers and other such precautions as required to provide Work Site safety and maintain the safety for the public and vehicles.

3.02 SITE ACCESS

- A. The Contractor can access items to be removed from either the waterside or landside, but shall at no time limit access to adjacent properties.
- B. The Contractor shall perform all stockpiling and shoreline debris segregation activities at the On-Site Staging and Stockpile Area(s) located on the Drawings.

3.03 CONTAINMENT BOOM

- A. Maintain a floating containment boom throughout the course of the Shoreline Debris removal activities. Material that inadvertently falls into the water shall be removed on an ongoing basis during all hours of operation. All floating debris shall be removed prior to stopping work each day.

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Section 02 41 00—Shoreline Debris Removal and Disposal

- B. Maintain a floating sorbent boom throughout the course of the Shoreline Debris removal activities. Sorbent boom shall be maintained by the Contractor to protect spread of sheen that may be generated during completion of the work.

3.04 SALVAGED MATERIAL

- A. Anchors, chains, straps, and other articles or Debris brought to the surface during the course of the Shoreline Debris removal activities shall remain the property of the Contractor and shall be disposed of at an approved Disposal Facility or Recycling Facility. Salvage and removal of such material will be considered inclusive to the Debris removal work, and included in the unit price therefore.
- B. If encountered, hazardous material or waste, consisting of creosote piles, batteries, polychlorinated biphenyls (PCBs), and the like shall be disposed of in accordance with applicable federal, state, and local regulations. The Port does not expect hazardous material to be within the Work Site. If such material or waste is encountered, the Contractor shall immediately notify the Engineer pursuant the Contract Documents to determine the course of action to be taken.

3.05 TRANSPORT

- A. Provide controls to prevent loss of any Debris or waste materials during transport, whether by truck, rail, or barge, to an approved Disposal Facility or Recycling Facility. Should any spillage, accident, or loss of Debris during transport occur, the Contractor shall immediately notify the Engineer and appropriate emergency responders. The Contractor shall be responsible for all costs and liability associated with any required cleanup or fees imposed by regulatory agencies in the event of a spill or loss of Debris.

3.06 DISPOSAL

- A. All materials, except those indicated to be salvaged, recycled, or saved, and those classified as containing hazardous substances or potentially hazardous by regulating local, state, or federal controlling agencies, shall, upon their removal, become the property of the Contractor and shall be disposed off site at a Disposal Facility, and in accordance with all local, state, and federal laws and regulations.
- B. Be aware that the existing timber wharf and timber piling contain treated lumber and its re-use is not allowed. The pile Debris shall be disposed at an approved Disposal Facility that is permitted to accept regulated materials such as treated lumber. Shoreline Debris may be disposed of at

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an approved Recycling Facility, provided materials are acceptable for recycling.

- C. The Port encourages the salvage and recycling of material from Shoreline Debris removal activities. Salvage or recycle, in a manner acceptable to environmental agencies and the Engineer, at the Contractor's option, any of the materials designated for disposal.
- D. Non-salvageable or non-recyclable Debris and contaminated items shall be transported to an approved Disposal Facility for disposal.
 - 1. The Contractor has the option to secure its own Debris, asphalt, and creosote material disposal or recycle site(s) provided it has acquired all permits and approvals necessary from governing agencies and the Engineer.
- E. Submit to the Engineer copies of trip tickets and receiver tickets (certified weight tickets) for all materials transported to approved Disposal Facilities or Recycling Facilities.

3.07 CLEANUP

- A. Refer to Section 01 70 00—Execution and Closeout Requirements. After completion of Shoreline Debris removal activities, and removal of structures and obstructions, the Contractor shall clean and grade the area eliminating debris, rubble, or litter left at the site from any of the Shoreline Debris removal operations.

END OF SECTION

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Section 02 41 16 — Site and Structure Removal and Disposal

PART 1 – GENERAL

1.01 RELATED WORK DESCRIBED ELSEWHERE

- A. The provisions and intent of the Contract, including the Procurement and Contracting Requirements and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described in:
1. Section 01 10 00—Summary
 2. Section 01 14 00—Work Restrictions
 3. Section 01 33 00—Submittal Procedures
 4. Section 01 35 29—Health, Safety, and Emergency Response Procedures
 5. Section 01 41 26—Permits
 6. Section 01 50 00—Temporary Facilities and Controls
 7. Section 01 57 19—Temporary Environmental Controls
 8. Section 01 70 00—Execution and Closeout Requirements
 9. Section 02 11 00—Upland Excavation and Disposal
 10. Section 02 56 16 —Staging and Stockpiling
- B. Work under this Specification section is paid under Bid Item 2 – Site Preparation, Bid Item 4 – Removal and Disposal: Timber and Steel Dolphins, Bid Item 23 – Removal and Disposal: Former Chevron Timber Pier, Bid Item 24 – Removal and Disposal: Former Chevron Timber Bulkhead, Bid Item 25 – Removal and Disposal: Barge Ramp Structure, Bid Item 26 – Removal and Disposal: West Central Waterfront and Maple Street Concrete Slabs, Bid Item 27 – Removal and Disposal: Timber Piles Near Floating Docks and Steel Gangways at NE Corner of Inner Waterway, Bid Item 44 – Removal and Disposal: Timber Foam Tank Piping, Bid Item 45 – Removal and Disposal: Clarifier Timber and Steel Bulkhead Wall, Bid Item 46 – Timber Catwalk and Associated Piling, Bid Item 47 – Removal and Disposal: Clarifier Concrete Structure, Scum Box, Phosphoric Acid Tank and Remnant Foundations, Bid Item 48 – Pull or Cut and Disposal: Broken Pile Stubs (South Shoreline Area), Bid Item 50 – Removal and Disposal: Log Pond Timber Bulkhead Piling, Bid Item 51 – Pull or Cut and Disposal: Broken Pile Stubs (Log Pond Area), Bid Item 52 – Relocate: Log Boom, Bid Item 53 – Removal and Disposal: Log Boom

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and as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures

1.02 DESCRIPTION OF WORK

- A. The work described in this Section includes establishing areas of work, developing a Site and Structure Removal and Disposal Work Plan (as part of the Construction Work Plan); the relocation of existing log boom, the removal and satisfactory disposal or recycling of timber bulkheads, timber piles, timber piers, timber and steel dolphins, timber catwalk, log boom, timber foam tank, clarifier timber and steel bulkhead, clarifier concrete structure and all associated piping, equipment and scum box, remnant concrete foundations, phosphoric acid tank and concrete foundation, steel barge ramp, monitoring wells, concrete slabs, equipment, utilities, and other obstructions which are designated for removal on the Drawings or within these Specifications. All timber shall be considered treated and shall not be recycled, unless approved by the Engineer
- B. The Contractor shall familiarize itself with all relevant laws, regulations, and guidance documents applicable to this work in order to safely manage, stockpile, transport, and dispose of (or recycle) debris and waste materials.
- C. The Contractor's On-Site Debris and Upland Excavation Staging Area(s) are identified on the Drawings and described in Section 02 56 16 – Staging and Stockpiling.
- D. No stockpiling of site or structure removal debris shall be allowed at the Central Waterfront On-Site Staging Area.
- E. Requirements for handling, segregating, screening and stockpiling Shoreline Debris at the On-Site Debris and Upland Excavation Staging Area (as shown on the Drawings) as discussed in Section 02 56 16 – Staging and Stockpiling.
- F. Site and structure removal work shown on the Drawings is schematic in nature, and is intended to identify general features of the structures, utilities, paving, materials, or other obstructions to be removed. Bidders shall visit the Work Site during the pre-bid period to inspect and fully understand the required Site and Structure removal work to their satisfaction. Lack of complete details on the project Drawings will not be considered as grounds for additional compensation.
- G. The Contractor shall transport and dispose of all site and structure removal debris at a Engineer-approved Disposal Facility, unless the

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Engineer approves site and structure removal debris to be acceptable for recycling or on-site reuse.

1. The Contractor is required to recycle all structural steel, piping, equipment (pumps, motors, panels, etc.) removal debris that is determined by the Engineer and Contractor to be suitable for recycling.
2. The Contractor is required to crush and stockpile for reuse as structural fill on-site, all concrete generated by the removal of the concrete clarifier structure. Work for this project will include crushing of removed clarifier concrete structure at the former GP West property and stockpiling of crushed debris at the locations shown on the Drawings.

1.03 CODES, PERMITS, AND INSPECTIONS

- A. The work under these Drawings and Specifications shall comply with all applicable local and state codes. These Drawings and Specifications shall not be interpreted in any way that requires or permits deviation from the requirements of such governing codes.
- B. The Contractor shall arrange and pay for any additional permits, fees, and inspections required for execution of work, that are not provided by the Port as identified in Section 01 41 26—Permits.
- C. The Contractor, in coordination with the Engineer, shall request and ensure completion of inspections required by the local authorities.

1.04 JOB CONDITIONS

- A. Examine the Work Site and become familiar with existing local conditions affecting work including, but not limited to, Work Site layout, buildings, structures, working around existing operations, weather conditions, tidal variation, sea state and wave conditions, and access to the items to be demolished or removed.
- B. Coordinate with the Engineer to determine access points and restrictions to the work areas. The Contractor shall be responsible for adhering to the construction sequencing requirements for work on or adjacent to Port tenant and private properties, as described in Section 01 10 00—Summary and in these Specifications.
- C. Notify the U.S. Coast Guard (USCG) as required to comply with USCG, Maritime Security (MARSEC), and Port regulations for operating within Whatcom Waterway. All costs associated with implementation of required

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security measures will be considered inclusive to the Contract and should be included in the bid price for Mobilization and Demobilization.

- D. The Whatcom Waterway is a navigable waterway in which there is periodic commercial vessel traffic and recreational usage. Conduct operations in a manner that will minimize interference with those activities, and provide for safe navigation for vessels around its floating equipment at all times. Provide USCG-approved lighting and/or buoys to notify other waterway users of the presence of spuds and/or anchor lines and to keep a safe distance away from construction activities.
 - 1. Make allowance in the construction schedule for delays or interruptions due to vessel movement in the waterway.
 - 2. Any damage to the Contractor's equipment due to the Contractor's failure to move when required shall be at the Contractor's sole risk and expense.
- E. Anticipate Inherent Delays while conducting structure removal operations in the waterway. Inherent Delays include, but are not limited to, commercial shipping traffic. Commercial shipping traffic shall have precedence over the Contractor's activities and will require the Contractor to stop, move, adjust, and/or slow down to accommodate vessel movement. The bid prices shall include allowances for such Inherent Delays.
- F. Locate existing underground utilities in the areas of work. Those utilities which are to remain shall be adequately protected from damage.
- G. The live load capacity of the existing structures are unknown. The Contractor shall take all precautions necessary to ensure the health and safety of all personnel.

1.05 SUBMITTALS

- A. Pre-construction Submittals
 - 1. Submit to the Engineer, as a pre-construction submittal and as part of the Construction Work Plan, a Site and Structure Removal and Disposal Work Plan that addresses the following, at a minimum:
 - a. Work sequence for all stages of removal and sequencing with other work items to meet project phasing requirements;
 - b. Worker safety;
 - c. Protection to the public;

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- d. Hours of operation;
- e. Type, size, and number of equipment to be used for all operations;
- f. Means and methods to anchor or secure floating equipment (if used) in the Inner Waterway and Log Pond areas;
- g. Means and methods for use of upland excavation equipment (if used) in the Inner Waterway and Log Pond areas and management of excavated materials resulting from site or structure removal, including segregation of material for disposal and/or recycling, and transport excavation of material from the On-Site Staging Area located at the Central Waterfront properties to the On-Site Debris and Upland Excavation Staging Area located at the former GP West property. Specific methods and procedures for stockpiling excavated material at the On-Site Debris and Upland Excavation Staging Area is described in Section 02 56 15 – Staging and Stockpiling;
- h. Means and methods to provide safe navigation around floating equipment for other waterway users;
- i. Means and methods to offload debris loaded on barges to On-Site Debris and Upland Excavation Staging Area or at the Off-Site Transload Facility, and protection against loss of debris during offloading;
- j. Means and methods to minimize waste and maximize salvage and recycling of materials;
- k. Means and methods for recycling of removed clarifier concrete structure material;
- l. Disposal procedures including details of debris containment, collection, temporary stockpiling, transport, and disposal;
- m. Documentation for Disposal Facilities and recycling facilities including copies of permits, permissions, and receipt of disposal as necessary;
- n. Transportation methods and routes that minimize disruption to local traffic to and from the Disposal Facility and/or recycling facility;

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containment boom on a daily basis and maintain the condition of the containment boom throughout the duration of the work.

- B. Floating sorbent boom shall be deployed within the containment boom at all times the Contractor is completing site and structure Removal activities. Inspect the sorbent boom on a daily basis and maintain the condition of the sorbent boom throughout the duration of the work, and replace the sorbent boom once it becomes ineffective at absorbing sheen.
- C. The Contractor shall be prepared to use and implement other temporary environmental controls as necessary in order to meet requirements of the Water Quality Monitoring Plan (WQMP) and permit requirements.

2.02 REMOVAL ITEMS

- A. Site and Structures to be removed, as indicated on the Drawings:
 - 1. Timber bulkheads, timber piles, timber piers, timber and steel dolphins, timber catwalk, log boom, timber foam tank, clarifier timber and steel bulkhead, clarifier concrete structure and associated scum box, remnant concrete foundations, phosphoric acid tank and concrete foundation, steel barge ramp, monitoring wells, concrete slabs, asphalt, equipment and utilities.

2.03 EQUIPMENT

- A. The Contractor shall have available on site sufficient pumping equipment and/or other machinery to drain the existing clarifier above ground concrete structure.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Locate site and structure removal Limits of Work, as shown on the Drawings, and implement erosion control measures and establish temporary fencing to establish a secure site for completion of removal activities, as described in Section 01 50 00—Temporary Facilities and Controls and Section 01 57 19—Temporary Environmental Controls.
- B. Provide, erect, and maintain any temporary barriers and other such precautions as required to provide Work Site safety and maintain the safety for the public and vehicles.

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3.02 SITE ACCESS

- A. The Contractor can access items to be removed from either the waterside or landside, but shall at no time limit access to adjacent properties.
- B. The Contractor shall perform all stockpiling and segregation activities at the On-Site Debris and Upland Excavation Staging Area located at the former GP West property. Stockpiling of removal debris at the On-Site Staging Area located at the Central Waterfront properties shall not be allowed.

3.03 CONTAINMENT BOOM

- A. Maintain a floating containment boom throughout the course of the site and structure removal activities that are performed over-water or along the shoreline area. Material that inadvertently falls into the water shall be removed on an ongoing basis during all hours of operation. All floating debris shall be removed prior to stopping work each day.
- B. Maintain a floating sorbent boom throughout the course of the site and structure removal activities that are performed over-water or along the shoreline area. Sorbent boom shall be maintained by the Contractor to protect spread of sheen that may be generated during completion of the work.
- C. All sawdust from cutting of treated piles and timbers shall be contained and collected. It shall be prevented from entering the water to the maximum extent possible. Any sawdust that enters the water shall be removed using dip nets or other effective means. All collected sawdust shall be properly disposed.

3.04 SITE AND STRUCTURE REMOVAL

- A. The structure removal activities shall be sequenced in accordance with the phasing requirements described in Section 01 10 00—Summary, within these Specifications, and as shown on the Drawings.
- B. Meet all water quality requirements, as identified in the 401 Water Quality Certification and as described in the WQMP, as provided the appendices to these Specifications, when performing in-water structure removal activities.
- C. Employ whatever measures are required to adequately protect existing structures, pavements, utilities, in-water features, and other items designated to remain. Remove existing structures and obstructions, exercising care to prevent settlement of adjacent structures or utilities that are to remain in use. Provide temporary shoring and bracing as needed to

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prevent damage to adjacent facilities that are to remain in place. Interfaces with the structures to be removed and structures to be left in place shall be as shown in the Drawings.

- D. All pavement and concrete slabs designated for removal shall be broken up, loaded and disposed of by the Contractor. Care shall be taken, in removing any pavements that damage does not occur to the pavement outside of the designated removal areas. All removals shall be accomplished by making a neat vertical saw cut at the boundaries of the area to be removed.
- E. Prior to removal of the clarifier the Contractor shall drain the above ground structure. Using pumping equipment and/or other machinery the Contractor shall pump water from the clarifier directly to the existing No. 6 Sewer Pump Pit indicated on the Drawings. An adequate screen shall be provided to prevent damage of the existing pipelines. Once pumping is complete stormwater solids that have accumulated at the bottom of the tank shall be collected and disposed of in accordance with Section 02 11 00 – Upland Excavation and Backfilling.
- F. Completely remove designated timber bulkheads, timber piles, timber piers, timber and steel dolphins, timber catwalk, log boom, timber foam tank, clarifier timber and steel bulkhead, clarifier concrete structure and all associated piping, equipment and scum box, remnant concrete foundations, phosphoric acid tank and concrete foundation, steel barge ramp, monitoring wells, concrete slabs, asphalt, equipment, utilities and other obstructions. All structures designated for removal shall be broken up, loaded and disposed of at approved Disposal Facility and/or recycling facilities by the Contractor.
 - 1. The Contractor is required crush and stockpile for reuse as structural fill on-site all concrete generated by the removal of the concrete clarifier structure.
 - a. Concrete shall be crushed to maximum of 4-inches in any direction.
 - b. Reinforcing steel will be properly disposed of or recycled off-site.
- G. Timber bulkheads within the former Chevron property, the timber and steel bulkhead near the concrete clarifier and the timber foam tank structure, extend below the waterline. As part of the removal the Contractor shall cut all structures designated for removal on the Drawings that extend below the waterline at the existing mudline or at a maximum of 12-inches above the mudline or as indicated on the drawings.

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Section 02 41 16 — Site and Structure Removal and Disposal

- H. All timber piles and timber and steel dolphins designated as being removed on the Drawings extend below the waterline and shall be pulled completely unless noted otherwise on the Drawings. If a pile inadvertently breaks during extraction, the Contractor shall cut it at the existing mudline or at a maximum of 12-inches above the mudline. After timber pile extraction, piles shall be cut into sections approximately 4 feet in length and properly disposed.
 - 1. All timber pile debris and associated timber must be promptly removed from the water in conjunction with completion of pile removal activities. Contractor shall be responsible for removal of in-water timber debris associated with these activities throughout completion of the work.
- I. Timber piles located at the Chevron Pier shall be cut at the existing mudline or at a maximum of 12-inches above the mudline, in order to maintain stability of the shoreline slope in this area of the site.
- J. Replace, at no additional cost, any existing structure, pavement, utility, or other object designated to remain that is damaged as part of the structure removal work.
- K. Offload, stockpile, transport, manage, and dispose (or recycle) removal debris according to means and methods identified in the Contractor's approved Construction Work Plan.
- L. Blasting shall not be used for structure removal activities. Other special operations necessary for the removal of structures or obstructions shall be subject to the review and approval of the Engineer.

3.05 UTILITY DECOMMISSION AND REMOVAL

- A. Perform surveys to locate all existing utilities prior to beginning utility decommissioning and removal activities.
- B. Remove, or abandon utility lines exposed by removal activities, excavation or trenching for new work as shown in the Drawings.
- C. Excavate utility lines to be cut and capped, drain as required and provide a permanent leak-proof closure, thrust blocking, and any necessary fittings, backfill, or other restraints and materials to cap existing water, and storm drain pipes.
- D. The Contractor shall properly collect hydraulic fluid and any equipment containing petroleum or chemical products and dispose of them in accordance with all local, state and federal requirements.

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Section 02 41 16 — Site and Structure Removal and Disposal

3.06 MONITORING WELL DECOMMISSIONING

- A. Groundwater monitoring wells exist within the upland excavation and dredge limits indicated on the Drawings. The depth, type and use for each well is unknown. The Contractor shall decommission monitoring wells, as identified on the Drawings, in accordance with all applicable local, state and federal regulations. After appropriately decommissioning the wells, the Contractor may begin upland or nearshore excavation activities.

3.07 RELOCATE LOG BOOM

- A. Relocate the existing Log Boom and secure to existing timber dolphin and the shoreline as indicated on the Drawings.

3.08 MISPLACED MATERIALS IN WATER

- A. Should the Contractor, during the execution of the work, lose, dump, throw overboard, sink, or misplace any debris, barge, machinery, or appliance, promptly recover and remove the same. Give immediate verbal notice, followed by written confirmation, of the description and location of such obstructions to the Engineer and mark and buoy such obstructions until they are removed. Should the Contractor refuse, neglect, or delay compliance with this requirement, such obstructions may be removed by the Port or its agents, and the cost of such operations may be deducted from any money due to the Contractor, or may be recovered from the Contractor's bond. The liability of the Contractor for the removal of a vessel wrecked or sunk without its fault or negligence shall be limited to that provided in Sections 15, 19, and 20 of the Rivers and Harbors Act of 3 March 1899 (33 U.S.C. 410 et seq.). The Contractor shall be responsible for any fees, fines, penalties, or other costs resulting from misplaced materials.

3.09 TRANSPORT

- A. Provide controls to prevent loss of any Debris or waste materials during transport, whether by truck, rail, or barge, to an approved Disposal Facility or recycling facility. Should any spillage, accident, or loss of Debris during transport occur, the Contractor shall immediately notify the Engineer and appropriate emergency responders. The Contractor shall be responsible for all costs and liability associated with any required cleanup or fees imposed by regulatory agencies in the event of a spill or loss of Debris.

3.10 DISPOSAL

- A. All materials, except those indicated to be salvaged, recycled, or saved, and those classified as containing hazardous substances or potentially hazardous by regulating local, state, or federal controlling agencies, shall,

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upon their removal become the property of the Contractor and shall be disposed off site at a Disposal Facility, and in accordance with all local, state, and federal laws and regulations.

- B. Be aware that the existing timber wharf and timber piling contain treated lumber and its reuse is not allowed. The timber removal Debris shall be disposed at an approved Disposal Facility that is permitted to accept regulated materials such as treated lumber.
- C. The Port encourages the salvage and recycling of material from site and structure removal activities. Salvage or recycle, in a manner acceptable to environmental agencies and the Engineer, at the Contractor's option, any of the materials designated for disposal.
- D. Non-salvageable or non-recyclable removal Debris and contaminated items shall be transported to an approved Disposal Facility for disposal.
 - 1. The Contractor has the option to secure its own removal debris, asphalt, and creosote material disposal or recycle site(s) provided it has acquired all permits and approvals necessary from governing agencies and the Engineer.
- E. Submit to the Engineer copies of trip tickets and receiver tickets (certified weight tickets) for all materials transported to approved Disposal Facilities or recycling facilities.

3.11 CLEANUP

- A. Refer to Section 01 70 00—Execution and Closeout Requirements. After completion of site and structure removal activities, the Contractor shall clean and grade the area eliminating debris, rubble, or litter left at the site from any of the site and structure removal operations.

END OF SECTION

DIVISION 02—EXISTING CONDITIONS
Section 02 56 16—Staging and Stockpiling

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section addresses the staging and stockpiling of materials on site at the On-Site Staging and Stockpile Area(s) (as shown on the Drawings and as described in the Specifications). The Port will provide to the Contractor three On-Site Staging and Stockpile Areas for use during completion of this work, as shown on the Drawings. These areas are identified as the Central Waterfront Staging and Stockpile Area, the South Shoreline Staging and Stockpile Area, and the Former GP West Staging and Stockpile Area.
- B. The Contractor shall use the On-Site Staging and Stockpile Area(s) for temporary staging of office and other temporary facilities required for completion of the work and for laydown of equipment and materials that are being used to complete the various work activities as described in the Specifications and shown on the Drawings.
- C. The On-Site Staging and Stockpile Area(s) shall also be utilized for weighing, handling, sorting, screening, stockpiling, and loading of trucks for Shoreline Debris and upland excavation materials as they are generated during completion of Shoreline Debris removal and upland excavation activities at the Central Waterfront, South Shoreline, and Log Pond areas of the Work Site.
 - 1. The Contractor shall be responsible for measuring and tracking tonnages of Shoreline Debris and upland excavation materials as they are generated from the Central Waterfront, South Shoreline, and Log Pond areas of the Work Site, and prior to placement into the Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area(s).
 - 2. Contractor shall also be responsible for screening, sorting, handling, and management of stockpiled Shoreline Debris and upland excavation materials (for the three Work Site areas) at designated Temporary Excavation Materials Staging and Stockpile Area(s) to manage one of the following alternatives for disposal or re-use of the materials:
 - a) Off-site disposal at an approved Disposal Facility
 - b) Off-site disposal at an approved Recycling Facility
 - c) On-site re-use as backfill for placement in upland excavation areas
 - d) Processing and on-site recycling of concrete debris

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Section 02 56 16—Staging and Stockpiling

3. Following identification of the appropriate disposal or re-use option for the Shoreline Debris and upland excavation material, the Contractor shall measure and track tonnages of the materials (for each of the three Work Site areas) as they are transported away from the Work Site (for off-site disposal or recycling) or kept on-site for re-use and/or recycling.
 4. Contractor measurement and tracking of tonnages shall be used as the basis for measurement and payment for the work, as described on the Bid Form.
 5. Shoreline Debris and upland excavation materials identified for off-site disposal or recycling may be removed from the Work Site via haul trucks or barge.
- D. Contractor may also use the Former GP West Staging and Stockpile Area for temporary stockpiling of Dredge Debris and sediment, as shown on the Drawings.
1. Dredge Debris and sediment must be stockpiled in a Dredged Debris and Sediment Staging and Stockpile Area that is maintained separately from the Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area located within the Former GP West Staging and Stockpile Area.
 2. All Dredge Debris and sediment must be removed from the Work Site via barge unless the Contractor is able to obtain permission and an agreement with a railroad company for removal of this material for disposal by rail car, as described in the Specifications.
- E. The work also includes implementing temporary erosion and sediment controls (TESC), including stormwater pollution prevention measures to prevent soil, dredge material, wastewater, or debris from entering the Whatcom Waterway and Bellingham Bay, as described in Section 01 57 19—Temporary Environmental Controls.
- F. Specific means and methods for environmental management of stockpile areas is provided in Section 01 57 19—Temporary Environmental Controls and Section 35 20 23.01—Offloading, Upland Transportation and Disposal.
- G. On-Site Staging and Stockpile Area(s) shall be enclosed by a temporary construction fence to clearly delineate the On-Site Staging and Stockpile Area(s) from the surrounding facility, as described in Section 01 50 00 – Temporary Facilities and Controls.
- H. The Contractor shall be responsible for inspection and verification of pier capacity at the GP dock (i.e., On-Site Transload Facility) for activities that

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Section 02 56 16—Staging and Stockpiling

will be completed at and on this structure. The Contractor's planned surface loading on the GP dock (as necessary) shall be described in the Construction Work Plan.

- I. Work under this Specification section is paid under Bid Item 6 – Upland Excavation and Handling for On-Site Re-Use, Bid Item 7 – Upland Excavation, Handling and Off-Site Landfill Disposal, Bid Item 8 – Shoreline Debris Removal, Handling and Off-Site Landfill Disposal, Bid Item 9 – Shoreline Debris Removal and Handling for On-Site Re-Use, Bid Item #10 – Shoreline Debris Removal, Handling and Off-Site Recycling and Bid Item 12 – Offloading, Upland Transportation and Disposal as shown on the Bid Form and described in Section 01 20 00—Price and Payment Procedures.

1.02 RELATED SECTIONS

- A. Section 01 10 00—Summary
- B. Section 01 50 00 – Temporary Facilities and Controls
- C. Section 01 57 19—Temporary Environmental Controls
- D. Section 02 11 00—Upland Excavation, Handling and Backfilling
- E. Section 02 41 00—Shoreline Debris Removal and Disposal
- F. Section 35 20 23 – Dredging, Contingency Re-Dredging, Barge Dewatering and In-Water Transportation
- G. Section 35 20 23.01 – Offloading, Upland Transportation and Disposal

1.03 SUBMITTALS

- A. Submittals shall be in accordance with Section 01 33 00—Submittal Procedures. Prior to commencing construction activities or delivery of materials to the work
- B. Pre-construction Submittals
 1. Submit to the Engineer with twenty-eight (28) calendar days after Notice of Award, as part of the Construction Work Plan, a Staging and Stockpile Management Plan that presents the procedures by which the Contractor will sort and segregate Shoreline Debris and suitable and unsuitable soils for on-site re-use, on-site recycling or disposal at an off-site Disposal Facility or Recycling Facility.
 2. Submit a Staging and Stockpile Management Plan that includes, at a minimum, the following items:

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- a. On-Site Staging and Stockpile Area Layouts: Prior to start of staging and stockpiling activities and as part of the Construction Work Plan; submit On-Site Staging and Stockpile Area layout drawings for the Work Site showing existing conditions and facilities, Contractor's temporary facilities, and temporary controls provided by the Contractor including the following:
 - 1) General layout of the Dredge Debris and Sediment Staging and Stockpile Area if proposed for use as part of this project.
 - 2) General layout of the Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area(s) including locations of subareas for segregation of unsuitable soil and Shoreline Debris (for off-site disposal or recycling), concrete debris suitable for on-site crushing and recycling, and suitable soil for on-site re-use as backfill.
 - 3) The designated entry and exit of Contractor's vehicles to the Work Site (and On-Site Staging and Stockpile Area(s) at the Central Waterfront, South Shoreline and Former GP West areas) are shown on the Drawings. Access to the On-Site Staging and Stockpile Area(s) at the Central Waterfront properties will be limited and shall not interfere with current Port tenant operations that will be ongoing during completion of the work.
 - 4) Contractor parking areas
 - 5) Equipment and material staging areas
- b. Methods for managing and tracking materials entering and leaving stockpiles; weighing; sorting and segregating; stockpiling dredge material and debris (including piling, structures debris, Dredge Debris, Shoreline Debris, and other anthropogenic debris), and upland excavation materials; protecting stockpiles (including surface runoff and dust control), water management (including collection, storage, treatment, testing, and discharge), and other requirements in these Specifications.
- c. Means and methods for segregation of Shoreline Debris and unsuitable soil identified for off-site disposal or recycling,

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crushed concrete for on-site recycling, and suitable soil for on-site re-use.

- d. Proposed trucking haul routes on city streets for each of the On-Site Staging and Stockpile Area(s) as shown on the Drawings.
- C. Contractor shall submit weigh scale certification and calibration information at least seven (7) calendar days prior to use of the weigh-scale at the Shoreline Debris and Temporary Excavation Material Staging and Stockpile Area(s).
- D. Contractor shall report the tonnages of material brought to, and leaving from, the Shoreline Debris and Temporary Upland Excavation Staging and Stockpile Area(s) in the Daily Construction Reports. Material tonnages shall also be summarized in the Weekly Construction Report for work completed during that reporting period. Empty truck weights shall also be provided in these reports to verify Pay Tonnages for materials generated.
- E. Contractor shall provide a summary of all weigh-in and weigh-out tonnages for each Work Site area and from each stockpile sub-area dedicated to that Work Site area. The intent for providing this information is to balance total tonnage brought to and taken away from the Shoreline Debris and Temporary Excavation Staging and Stockpile Area(s) and to compare these tonnages against disposal certificates produced at the Disposal Facility and Recycling Facility.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Liners. Stockpiles for unsuitable materials shall be lined with a minimum of 20 mil thick geomembrane free of holes and other damage. A scrim-reinforced geomembrane liner minimum with a minimum weight of 40 lbs/1,000 square feet may also be used. Contractor shall construct and maintain stockpile areas and sub-areas so that tearing or other damage to the liners does not occur during handling of the materials.
- B. Covers. Stockpiles shall be covered with a minimum of 10 mil thick polyethylene sheeting meeting the requirements of ASTM D 4397. A scrim-reinforced geomembrane cover with a minimum weight of 26 lbs/1,000 square feet may also be used.
- C. See also Section 01 57 19 – Temporary Environmental Controls for specifics regarding temporary erosion and sediment control requirements and odor control.

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Section 02 56 16—Staging and Stockpiling

PART 3 –EXECUTION

3.01 PREPARATION

- A. Contractor shall prepare the Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area(s) and Dredged Debris and Sediment Staging and Stockpile Area (if used) in accordance with environmental protection requirements as described in Section 01 57 19 – Temporary Environmental Controls and Section 35 20 23.01 – Offloading, Upland Transportation and Disposal.
- B. Contractor shall prepare Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area(s) in a manner that allows for Shoreline Debris and upland excavation material to be weighed as it is brought to the Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area(s) for initial screening and debris or unsuitable material segregation, and weighed as materials is transported from the On-Site Staging and Stockpile Areas.
- C. Contractor shall establish dedicated stockpile sub-areas within the Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area(s) for management of Shoreline Debris and upland excavation materials generated from the Central Waterfront, South Shoreline, and Log Pond Work Site areas, as shown on the Drawings.
 - 1. The minimum anticipated number of discrete segregated stockpiles is twelve (12) and consist of four (4) separate stockpiles (See 1.01.D.2 for description) for material from each of the shoreline debris and upland excavation Work Site areas (Log Pond, South Shoreline, Central Waterfront). Additional stockpiles may be needed for the Contractor's means and methods and shall be identified in the Contractor's Staging and Stockpiling Plan.
 - 2. No individual stockpile shall be larger than 1 acre in size.
- D. The Contractor shall provide equipment that is capable of crushing concrete debris to a 4-inch minus material gradation, and be of sufficient capacity to maintain an appropriate production rate to avoid impacting the overall construction schedule. Contractor shall inspect and maintain such equipment on a daily basis to keep it in safe operating order.
- E. Provide berms or pre-cast concrete block barriers surrounding each stockpile to prevent intermixing of materials from each Work Site area and/or from segregated disposal or recycling stockpiles. Also provide bermed vehicle access points.

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Section 02 56 16—Staging and Stockpiling

- F. The ground surface on which the liner is to be placed shall be free of rocks greater than ½-inches in diameter and any other object that could damage the membrane.
- G. If multiple sheets of liner material are required to create a contiguous liner system, individual sheets shall be overlapped by a minimum of three feet.
- H. Pavement may be used as the liner system as long as it is continuous and impervious under the stockpile area.

3.02 ON-SITE WEIGHING AT ARRIVAL

- A. Provide a WSDOT-certified, calibrated scale for weighing materials to be re-used on the site or taken off-site for disposal or recycling, at a minimum.
- B. Shoreline Debris and upland excavation material generated within the Central Waterfront, South Shoreline, and Log Pond areas of the Work Site shall be weighed upon arrival at the Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area(s). fully-loaded and unloaded weight of the transport vehicle shall be provided and approved by the Engineer for each truck load of material that is either brought to or taken away from the Shoreline Debris and Temporary Excavation Material Staging and Stockpile Area(s).
- C. Contractor shall provide daily and weekly summaries (as part of the Daily and Weekly Construction Reports) of weights of Shoreline Debris and upland excavation materials to be placed into each of the Staging and Stockpile sub-areas for Log Pond, South Shoreline, and Central Waterfront materials.
- D. Dredge Debris and sediment does not need to be weighed when transferred from the barge at the On-Site Transload Facility for transportation to the Dredged Debris and Sediment Staging and Stockpile Area.

3.03 MATERIAL SEGREGATION AND STOCKPILING IN SUB-AREAS

- A. Shoreline Debris and upland excavation materials generated from the Log Pond area, South Shoreline area and the Central Waterfront area shall be segregated and stockpiled in stockpile sub-areas that are dedicated to each of the three Work Site areas (Log Pond, South Shoreline, Central Waterfront), prior to transport for on-site reuse, on-site recycle, or disposal at approved off-site Disposal Facility(ies) and Recycling Facility(ies). Shoreline Debris and upland excavation materials generated from one Work Site area shall not be intermingled with Shoreline Debris and upland excavation materials generated from other Work Site areas. Segregation of the three Work Site materials is required for Port reporting purposes.

DIVISION 02—EXISTING CONDITIONS
Section 02 56 16—Staging and Stockpiling

- B. Following completion of on-site weighing at arrival, the Shoreline Debris and upland excavation materials shall be offloaded at a sorting and screening area for initial identification of disposal, recycling or re-use. Materials shall be sorted and segregated by the Contractor, and as directed by the Engineer, within the screening area to identify the following:
1. Shoreline Debris and upland excavation materials that are visually determined to be unsuitable for on-site re-use or on-site recycling.
 - a. Shoreline debris and upland excavation materials that contain plastic and bricks shall be considered unsuitable for on-site re-use or on-site recycling.
 - b. Upland excavation materials that appear to be contaminated with oily product, have strong odor, or exhibit other visible or olfactory indicators of contamination shall be considered unsuitable for on-site re-use or recycling.
 2. Concrete debris that is suitable for crushing and on-site recycling.
 - a. Concrete debris shall be segregated from the Shoreline Debris and crushed to a 4-inch minus material gradation.
 3. Soil that appears (visually) to be suitable for re-use as backfill.
- C. Portions of the upland excavation soils that are not clearly suitable or unsuitable for on-site re-use may require chemical testing to determine its suitability for on-site re-use. Contractor shall provide a separate holding stockpile area for Engineer to collect samples to have tested. Contractor shall anticipate that upland excavation soils may need to be held at this holding stockpile until test results are obtained (approximately 2 calendar weeks) before Engineer directs Contractor as to its disposition for final off-site disposal or on-site re-use.
- D. The Contractor shall transport the segregated materials to the designated stockpile sub-area for the Work Site area (i.e., Central Waterfront area, South Shoreline area, and Log Pond area) in which they were generated. A conceptual schematic diagram for potential layout of Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area is provided on the Drawings for general information. Contractor is responsible for designing, constructing, operating and maintaining the On-Site Staging and Stockpile Areas to meet Specification requirements.
1. Three stockpile sub-areas shall be constructed for each Work Site Area including, Shoreline Debris and upland excavation materials that are unsuitable for on-site re-use or recycling, crushed concrete, and soil that is suitable for on-site re-use.

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Section 02 56 16—Staging and Stockpiling

2. The Contractor shall further segregate Shoreline Debris and upland excavation materials in the stockpile sub-areas that are identified as unsuitable for on-site re-use or recycling into stockpiles that contain materials for off-site disposal and off-site recycling at the accepted Disposal Facility(ies) and Recycling Facility(ies).

3.04 MATERIAL TESTING AND DISPOSAL

- A. Soil material that is placed in the holding stockpile sub-area will be tested by the Engineer to determine acceptance for on-site re-use or designation for off-site disposal. Crushed concrete and unsuitable Shoreline Debris and upland excavation materials will not be tested.
 1. The Contractor shall assist the Engineer (or other Port-representative) in sampling these stockpile subareas by providing access and equipment assistance to collect the necessary samples for testing.
 2. Contractor shall allow at least fourteen (14) calendar days for testing of soils to determine final disposition of the material. Soil that passes the testing criteria shall be confirmed for on-site re-use and soil that does not pass the criteria shall be identified for off-site disposal at a Disposal Facility.
- B. Prior to loading of trucks, the Contractor shall provide to the Engineer the empty weight of the vehicle.
- C. Following loading each truck, the Contractor shall provide to the Engineer the loaded weight of the vehicle and designate which Work Site area (Log Pond, Central Waterfront or South Shoreline) the material was generated from.
- D. Upon identification of final disposition of the Shoreline Debris and upland excavation materials, the Contractor shall load materials from the stockpile sub areas into trucks for on-site re-use, on-site recycling, or off-site disposal/off-site recycling.
 1. Contractor shall load trucks such that each individual truck load only contains material from one stockpile sub-area (and separated by material generated from the Log Pond area, Central Waterfront area, and South Shoreline area). No co-mingling of suitable, unsuitable or suitable soil shall be allowed.
- E. Contractor shall weigh each truck load of material (using a separate weigh-out scale or the same weigh-in scale) before it leaves the Temporary Excavation Materials Staging and Stockpile Area and each truck load of material shall be tracked by Work Site area (Log Pond area, Central Waterfront area, and South Shoreline area) as follows:

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Section 02 56 16—Staging and Stockpiling

1. Unsuitable material for off-site disposal at a Disposal Facility
 2. Unsuitable material for off-site disposal at a Recycling Facility
 3. Crushed concrete for on-site recycling
 4. Suitable soil for on-site re-use
- F. Materials identified for off-site disposal or off-site recycling shall be transported to the Engineer-approved Disposal Facility(ies) and Recycling Facility(ies).
- G. Crushed concrete material shall be transported to the on-site stockpile locations, as shown on the Drawings.
- H. Suitable soil material generated in the Central Waterfront area shall be transported back to the Central Waterfront upland excavation area for re-use as structural fill.
- I. Suitable soil material generated in the South Shoreline area shall be transported to the on-site stockpile locations, as shown on the Drawings.
- J. Dredge material and dredge debris stockpiled in the Dredge Material and Dredge Debris Staging and Stockpile Area shall be reloaded onto barges at the On-Site Transload Facility, as shown on the Drawings, for in-water transportation to the Contractor's Off-Site Transload Facility.

3.05 STOCKPILE MAINTENANCE

- A. This section provides requirements for Staging and Stockpile Areas management in addition to those indicated in Section 01 57 19 – Temporary Environmental Controls.
- B. Cover the stockpiles with a polyethylene cover free of holes or other damage to prevent precipitation from entering the stockpile. Extend the cover material over the berms and anchor or ballast it to prevent it from being removed or damaged by wind.
- C. Provide ballast or weight (e.g., sand bags) upon the cover to prevent the covers from being displaced in all weather conditions.
- D. If multiple sheets of cover material are required to create a contiguous cover system, individual sheets shall be overlapped by a minimum of three feet at all locations within the stockpile.
- E. The liner shall be maintained free of tears and holes as the stockpile is used. If tears or holes are observed in the liner, it shall be replaced with a contiguous liner.

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Section 02 56 16—Staging and Stockpiling

- F. Maintain all stockpiles in accordance with the approved Staging and Stockpiling Plan, submitted as part of the Construction Work plan; and the Environmental Protection Plan, and all applicable permits and regulations.

END OF SECTION

DIVISION 03 – CONCRETE
Section 03 10 00 – Concrete Formwork

PART 1—GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. The provisions and intent of the Contract, including the General Conditions, apply to this work as if specified in this section. Work related to this section is described in:
1. Section 03 20 00 - Concrete Reinforcement
 2. Section 03 30 00 - Cast-in-Place Concrete
- B. Work under this Specification section is paid under Bid Item 30 – Cast In-Place Concrete Slab, Bid Item 37 – Furnish and Install Concrete Cap at West Central Waterfront Wall, Bid Item 38 – Furnish and Install Concrete Cap at West Maple Street Bulkhead, Bid Item 39 – Furnish and Install Concrete Cap at Maple St Replacement Bulkhead, Bid Item 40 – Furnish and Install Concrete Cap at East Central Waterfront Wall as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures.

1.02 DESCRIPTION OF WORK

- A. The work includes furnishing of all necessary material, labor, and equipment for providing the support and forms for all concrete work. Also included in this section are the requirements for removal of the forms and their support.

1.03 QUALITY ASSURANCE

- A. Concrete forms and false work shall be designed by the Contractor to meet the requirements of the type of concrete, sequence of placing schedule, control of dimensions of the hardened concrete, and other conditions of the project. Formwork and shoring design shall be completed by a professional engineer registered in the State of Washington.
- B. Concrete Forms: Clean concrete forms of all material or other objects considered deleterious to the concrete structure or surface.
- C. The reference standards for formwork are ACI 347 and ACI 301.
- D. Make joints in forms watertight.
- E. Limit panel deflection to 1/180th of each component span to achieve tolerances specified.

DIVISION 03 – CONCRETE
Section 03 10 00 –Concrete Formwork

1.04 SUBMITTALS

- A. Statement of Qualifications for formwork designer shall be submitted to the Engineer for review.

PART 2—PRODUCTS

2.01 GENERAL

- A. Materials for concrete forms may be new or used. The quality of the materials, not the age or previous usage, will be the determining factor as to their suitability.

2.02 JOB-BUILT FORMS

A. FORMS

1. Framing lumber shall be of standard dimensions and of such quality as to meet the requirements of the stresses applied.
2. Material can be plywood, hard plastic finished plywood, overlaid waterproof particle board, or steel in “new and undamaged” condition, of sufficient strength and surface smoothness to produce specified finish.

2.03 PREFABRICATED FORMS

- A. All prefabricated forms, whether they are part of a patented system or custom-fabricated, shall be approved by the Engineer prior to assembly.
- B. Formwork systems that are intended to be left in place shall not be permitted unless it will be covered by soil in its final condition and approved by the Engineer.

2.04 FORM LINERS AND COATINGS

- A. Line, coat, or treat forms with a suitable bond-breaker to ensure their timely removal with minimum damage to the concrete. Bond-breaker material shall be non-coloring and shall not leave a film on the concrete surface that will prohibit the subsequent finishing activities required to attain the desired appearance.

2.05 FORM TIES AND ACCESSORIES

DIVISION 03 – CONCRETE

Section 03 10 00 –Concrete Formwork

- A. Form ties shall be manufactured items with premeasured, break-back, weakened area so that ties can be removed within 3/4-inch of the concrete surface.
- B. Form tie rods for use with she bolts shall be set back (1-1/2 inches) from the concrete surface.
- C. Wire ties and wood spacers shall not be used.
- D. Corner brackets, friction collars, column clamps, and other specialized accessories shall be utilized in accordance with the manufacturer's recommendations.

PART 3—EXECUTION

3.01 GENERAL

- A. Forms shall be cleaned before assembly of all material that would be considered harmful to the concrete structure/surface.

3.02 FORM INSTALLATION

- A. Forms shall be built to the exact size and shape of the concrete member or part shown or specified. Forms shall be constructed to be unyielding, true to line and level, and sufficiently tight to prevent escape of mortar, and shall be properly and effectively braced to prevent collapse or deformation of the member being cast. Openings in concrete shall be placed at the location shown on the Drawings. All openings shall be formed and fastened securely in position to maintain the specified concrete cover of all reinforcement, and to leave a smooth and true opening after the forms are removed.
- B. Prior to final setting or placing reinforcing steel, forms shall be treated with a bond breaker or parting compound. The compound shall be applied at a rate recommended by the manufacturer that will provide a smooth surface free of dusting action caused by the chemical reaction of the compound.
- C. Forms may be set with a slight bevel or draft for easy removal, where approved by the Engineer. Corners shall be chamfered 3/4-inch, unless shown otherwise on the Drawings.
- D. All forms shall be mortartight. Standing water in the forms will not be permitted. Immediately prior to placing concrete, the forms shall be cleaned and wetted.

DIVISION 03 – CONCRETE
Section 03 10 00 –Concrete Formwork

3.03 REMOVAL OF FALSEWORK AND FORMS

- A. Formwork not supporting weight of concrete (i.e., side faces and similar parts of the work) may be removed after cumulatively curing at not less than 50 degrees F for 24 hours from time of concrete placement if:
 - 1. Concrete is sufficiently hard so as not to sustain damage by form removal operations, and
 - 2. Curing and protection operations are maintained.
- B. Leave forms and shoring supporting concrete in place, in accordance with ACI 318, Chapter 6, and until concrete has reached compressive strength equal to 75 percent of specified 28-day compressive strength as determined by test cylinders.
- C. In no case shall the removal of forms, as herein stipulated, relieve the Contractor of responsibility for the final acceptability or appearance of the work.
- D. All form removal shall be accomplished in a manner that will prevent injury to the concrete.

END OF SECTION

DIVISION 03—CONCRETE

Section 03 20 00—Concrete Reinforcement

PART 1 – GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. The provisions and intent of the Contract, including the General Conditions, Supplementary Conditions, and General Requirements, apply to this work as if specified in this section. Work related to this section is described in:
1. Section 03 10 00 - Concrete Formwork
 2. Section 03 30 00 - Cast-in-Place Concrete
 3. Section 05 50 00 - Metal Fabrications
- B. Work under this Specification section is paid under Bid Item 21 – Furnish and Install Steel Dolphins, Bid Item 22 – Furnish and Install Mooring Cleats, Bid Item 37 – Furnish and Install Concrete Cap at West Central Waterfront Wall, Bid Item 38 – Furnish and Install Concrete Cap at West Maple Street Bulkhead, Bid Item 39 – Furnish and Install Concrete Cap at Maple St Replacement Bulkhead, Bid Item 40 – Furnish and Install Concrete Cap at East Central Waterfront Wall, Bid Item 43 – Furnish and Install Maple St Replacement Bulkhead Fender System as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures.

1.02 DESCRIPTION OF WORK

- A. The Work includes the requirement for furnishing, detailing, cutting, bending, transporting, and placing of all concrete reinforcement and associated items required or indicated on the Drawings.

1.03 QUALITY ASSURANCE

A. INSPECTION AND TESTING

1. The Contractor shall carry out such inspections and tests, including inspection of placed and welding of reinforcing steel and constituent materials required for testing and inspection, at no additional cost to the Port.

B. QUALIFICATIONS OF WORKMEN:

Provide at least one 1 person who shall be present at all times during execution of this portion of the Work, and who shall be thoroughly familiar

DIVISION 03—CONCRETE

Section 03 20 00—Concrete Reinforcement

with the type of materials being installed and the best methods for their installation, and who shall direct all work performed under this section.

C. REFERENCE STANDARDS:

1. ACI 318, Building Code Requirements for Reinforced Concrete
2. ACI 315, Manual of Standard Practice for Detailing Reinforced Concrete Structures
3. ACI 301, Specifications for Structural Concrete
4. ASTM, American Society for Testing and Materials
5. American Welding Society (AWS) D1.4 Structural Welding Code – Reinforcing Steel

1.04 SUBMITTALS

- A. Submit complete shop Drawings for the Engineer's review, prior to fabrication.
- B. Submit mill certificates for each heat of reinforcing steel, indicating Specification compliance regarding strength and chemistry of steel to be furnished.
- C. Submit qualified welding procedure including, at a minimum, all information contained within Annex A of AWS D1.4.
- D. Submit procedure and welder qualification test reports.

1.05 PRODUCT HANDLING

A. PROTECTION

1. Protect reinforcement before, during, and after installation and protect the installed work and materials of other trades.
2. Store in a manner to prevent fouling with dirt, grease, and other bond-breaking coatings.
3. Use all necessary precautions to maintain identification after the bundles are broken.

B. REPLACEMENTS

DIVISION 03—CONCRETE

Section 03 20 00—Concrete Reinforcement

1. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer at no additional cost to the Port.

PART 2 - PRODUCTS

2.01 REINFORCEMENT

- A. All reinforcement material shall be new and free from rust.
- B. All reinforcing bars, except as noted below, shall be deformed billet steel bars, conforming to ASTM A 615, Grade 60 or, if needed to be welded, ASTM A706, Grade 60.
- C. Terminators for reinforcing bars, if necessary, shall be Lenton Terminators as manufactured by Erico, Inc., or approved equal.
- D. Mechanical couplers for reinforcing bars are subject to Engineer's approval, and shall be Bar-Lock MT or approved equal. Couplers shall provide 125 percent of the minimum yield strength of reinforcing bar.
- E. Welded Headed Studs (WHS) shall conform to ASTM A 108, Grades C-1010 through C-1020.
- F. Threaded inserts shall conform to ASTM A 395, Grade 60.

2.02 OTHER MATERIALS:

- A. All other materials, not specifically described but required for a complete and proper installation of reinforcement, shall be as selected by the Contractor, subject to the approval of the Engineer.

PART 3 – EXECUTION

3.01 GENERAL

- A. Prior to installation of this section, carefully inspect the installed work of other trades and verify that such work is complete to the point where this installation may properly commence.
- B. Details of bending, placing, and splicing of all reinforcing steel shall conform to ACI 318, except as modified herein.

DIVISION 03—CONCRETE

Section 03 20 00—Concrete Reinforcement

3.02 REINFORCING STEEL BARS

A. ORDER LISTS

1. Before ordering material, furnish all order lists and bending diagrams for review by the Engineer; reinforcement placing Drawings submitted for approval shall conform to CRSI detailing practice.
2. The review of order lists and bending diagrams by the Engineer shall in no way relieve the Contractor of responsibility for the correctness of such lists and diagrams.

B. FABRICATION

Bend all bars cold to the shapes indicated on the Drawings unless otherwise approved by the Engineer. Do not field-bend bars partially embedded in concrete except as indicated on the Drawings or as approved by the Engineer. Make bends and hooks in accordance with the applicable portions of the Concrete Reinforcing Steel Institute.

C. PLACING AND FASTENING

1. Place all steel reinforcement accurately and hold firmly in the position indicated on the Drawings during the placing and setting of concrete. Tie bars at all intersections.
2. Minimum concrete cover shall be in accordance with ACI 315 and ACI 318 unless otherwise noted on the Plans.
3. Distance from the forms shall be maintained by means of stays, blocks, ties, hangers, or other approved supports. Blocks for holding reinforcement from contact with the forms shall be precast mortar blocks of not less than 4,000-psi compressive strength, of approved shape and dimensions, or approved metal chairs. Metal chairs that are in contact with the exterior surface of the concrete shall be plastic coated. Layers of bars shall be separated by spacer bars, plastic-coated chairs, precast mortar blocks of not less than 4,000-psi compressive strength, or other equally suitable devices.
4. In the event that conduits, piping, inserts, sleeves, or other items interfere with placing reinforcement as indicated on the Drawings or as otherwise required, immediately consult the Engineer and obtain approval of new procedure before placing concrete.

DIVISION 03—CONCRETE

Section 03 20 00—Concrete Reinforcement

3.03 SPLICING

- A. All reinforcement, except as noted below, shall be furnished in the full lengths as indicated on the Drawings.
- B. Longitudinal reinforcement over 40 feet in length may be spliced.
- C. Splices, when permitted, shall be staggered, with no more than 50 percent of the bars being spliced at any one location. Minimum lap lengths for splices shall be as shown on the Drawings. Minimum distance between spliced zones shall be three lap lengths.

3.04 WELDING

- A. Welding of reinforcing steel shall be done at the Contractor's option and by Engineer approval only, and shall be limited to reinforcement conforming to ASTM A 706 only.
- B. Welding of all reinforcing steel shall be performed in strict accordance with AWS D1.4. Weld size shall be approved by the Engineer.
- C. Processes used to place welds shall be either shielded metal arc or flux core arc (inner shield only) welding.
- D. Procedures and welder qualification tests shall be witnessed by an AWS-certified welding inspector approved by the Engineer. All tests shall be conducted in accordance with AWS D1.4. Such tests shall include a longitudinal tension test and macro-etch test. Welding on a production basis shall not start until a qualified welding procedure has been established.
- E. Filler metal, preheat, and interpass temperature requirements shall conform with Section 5 of AWS D1.4.
- F. Exposure times for low hydrogen coated electrodes shall be in accordance with Section 5.7 of AWS D1.4.
- G. At the option of the Engineer, an ongoing verification program shall be established in which tensile tests will be performed as a quality assurance measure. At a minimum, the Contractor shall provide one connection sample for every 200 production connections. The Contractor shall provide all necessary samples, at no cost to the Port, for performing these quality assurance tests.

DIVISION 03—CONCRETE

Section 03 20 00—Concrete Reinforcement

- H. Failure of production weld samples to meet the tensile test requirements of ASW D1.4 shall be cause for automatic rejection.

3.05 CLEANING REINFORCEMENT

- A. Steel reinforcement, at the time concrete is placed around it, shall be free from loose rust or mill scale, oil, paint, and all other coatings that would destroy or reduce bond between steel and concrete.

3.06 INSPECTION

- A. Reinforcement in any member shall be placed and then inspected an accredited testing agency authorized by the Engineer or the Engineer before the placing of concrete may begin. Concrete placed in violation of this provision may be rejected, and the Contractor will be required to remove the rejected concrete at no additional cost to the Port.

3.07 TESTING

- A. Nondestructive Testing of Welded Reinforcement shall be in accordance with AWS D1.4.
- B. 100% of Adhesive Anchors with Deformed Bar Dowels shall be observed during installation by an accredited testing agency authorized by the Engineer to ensure that work is performed in accordance with the manufacturer's instructions and the ICBO Research Report

END OF SECTION

DIVISION 3 – CONCRETE
Section 03 30 00 –Cast-in-Place Concrete

PART 1 – GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. The provisions and intent of the contract, including the General Conditions, Supplemental Conditions, and General Requirements, apply to this work as if specified in this section. Work related to this section is described in:
1. Section 03 10 00 – Concrete Formwork
 2. Section 03 20 00 – Concrete Reinforcement
- B. Work under this Specification section is paid under Bid Item 21 – Furnish and Install Steel Dolphins, Bid Item 37 – Furnish and Install Concrete Cap at West Central Waterfront Wall, Bid Item 38 – Furnish and Install Concrete Cap at West Maple Street Bulkhead, Bid Item 39 – Furnish and Install Concrete Cap at Maple St Replacement Bulkhead, Bid Item 40 – Furnish and Install Concrete Cap at East Central Waterfront Wall, Bid Item 42 – Furnish and Install Maple St Replacement Bulkhead Fender Piles, Bid Item 49 – Furnish and Install South Shoreline Mooring Bollard as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures.

1.02 DESCRIPTION OF WORK

- A. The extent and location of the cast-in-place concrete work are indicated on the Drawings. Locations include the concrete cap on top of the bulkhead along the central waterfront. The work includes furnishing of all labor, material, and equipment for providing cast-in-place concrete, control-density-fill (CDF) and associated work, all as indicated in the Drawings, notes, and this Specification.

1.03 GENERAL

- A. All concrete work shall conform to the requirements of ACI 301 unless otherwise noted in the Drawings and/or this Specification.

1.04 QUALITY ASSURANCE

A. INSPECTION AND TESTING

1. The Contractor shall carry out such inspections and tests, including sufficient mixed concrete and constituent materials required for testing and inspection, at no additional cost to the Port.

DIVISION 3 – CONCRETE
Section 03 30 00 –Cast-in-Place Concrete

B. QUALIFICATION OF WORKMEN

1. Provide at least one person who shall be present at all times during execution of this portion of the work, who shall be thoroughly trained and experienced in concrete work, and who shall direct all work performed under this section.
2. Trained and experienced journeyman concrete finishers shall be responsible for finishing of exposed surfaces.

C. REFERENCE STANDARDS

1. ASTM, American Society for Testing and Materials
2. ACI 318, Building Code Requirements for Reinforced Concrete
3. ACI 301, Specification for Structural Concrete
4. ACI 305, Hot Weather Concreting
5. ACI 306, Cold Weather Concreting
6. ACI 308, Standard Practice for Curing Concrete
7. ACI 315, Manual of Standard Practice for Detailing Reinforced Concrete Structures
8. ACI 309, Guide for Consolidation of Concrete
9. WSDOT Standard Specification

1.05 SUBMITTALS

- A. The following documents shall be submitted to and approved by the Engineer, before any concrete can be placed on the job:
1. Certificates of Specification compliance for materials to be used.
 2. Proposed concrete design mix and CDF mix design, indicating constituent material contents per cubic yard of concrete.
 3. Test certificates for compressive strength, yield, air content, and slump of the proposed concrete mix. As a minimum, compressive strength test results at 7, 14, and 28 days shall be provided.

DIVISION 3 – CONCRETE

Section 03 30 00 –Cast-in-Place Concrete

4. Manufacturer's name and Specifications and certificates of compliance with applicable standards shall be provided for all admixtures, concrete bonding agents, curing compounds, etc., proposed for use on the job.

PART 2—PRODUCTS

2.01 GENERAL

- A. All concrete, unless otherwise noted or specifically permitted by the Engineer, shall be ready-mix. Batching, mixing, transportation, and delivery of ready-mix concrete shall conform to ASTM C 94.

2.02 MATERIALS

- A. Portland cement for use shall be Type I or Type II conforming to ASTM C 150 and ASTM C 595.
- B. Fly ash shall meet the requirements of ASTM C618, Type F, with the added provisions that the loss on ignition shall not exceed 1 percent, and that the fly ash is stored in a separate silo from that of cement. Split bins are not acceptable.
- C. All coarse and fine aggregate shall consist of hard, tough, durable particles free from foreign materials, and shall be stored in such a manner as to prevent segregation, excessive breakage, and the introduction of foreign material. Aggregate shall conform to ASTM C33. The maximum size of coarse aggregate shall not be larger than three fourths of the minimum clear spacing between reinforcing steel bars and/or between bars and side forms and/or between bars and top or bottom surface of the concrete. Lightweight aggregate or aggregate larger than 1-1/2 inch shall not be used. The maximum size of coarse aggregate for "pea gravel" concrete shall be 3/8-inch.
- D. Water-reducing admixtures may be used and shall conform to the requirements of ASTM C 494. Dosage rates shall be in accordance with the manufacturer's recommendations.
- E. Air-entraining admixtures shall conform to ASTM C 260. Dosage rates shall be in accordance with the manufacturer's recommendations to meet the air content specified herein.
- F. Controlled Density Backfill (CDF) shall meet the WSDOT Standard Specification section 2-09.3(1)E Backfill.

DIVISION 3 – CONCRETE

Section 03 30 00 –Cast-in-Place Concrete

2.03 OTHER MATERIALS

- A. All other materials, not specifically described but required for a complete and proper installation of cast-in-place concrete, shall be as selected and provided by the Contractor subject to the approval of the Engineer.

2.04 MIX PROPORTIONS AND STRENGTH

- A. The total soluble Chloride ion (Cl-) content of the mixed concrete shall not exceed 0.10 percent by weight of cementitious material for reinforced concrete. An initial evaluation shall be obtained by testing individual concrete ingredients for total chloride ion content and totaling these to determine the total water soluble Chloride ion (Cl-) or the total water soluble Chloride ion (Cl-) in accordance with ASTM C 1218.
- B. Concrete shall contain fly ash as a mineral admixture. Fly ash shall be combined with the cement at the batch plant or during production of cement in accordance with ASTM C 595.
- C. The proportions of aggregate to cement for any concrete shall be such as to produce a mixture that will work readily into the corners and angles of the forms, around reinforcement and embedded items, with the least possible segregation of the material and preventing excess free water to collect on the surface.
- D. The Contractor shall submit to the Engineer, for review and approval, details of proposed concrete mixes, including certificates of Specification compliance as described in paragraph 1.05 of this section.
- E. The mix proportions shall be selected in accordance with ACI 318. Test data representing 30 recent consecutive tests for each mix shall be submitted to establish the standard deviation used in Section 5.3.1 of ACI 318. The criteria for acceptance of submitted tests shall be in accordance with Section 5.3.1.1. Deviation from any reviewed design mix without written authorization of the Engineer will not be permitted.
- F. All concrete, shall develop a minimum compressive strength of 4,000 psi in 28 days and shall meet the following requirements:
 - 1. Minimum Total Cementitious Material:
 - i. Fly ash shall constitute 25% to 35% (by weight) of this total.
 - ii. Portland cement shall make up the balance of this total.

DIVISION 3 – CONCRETE

Section 03 30 00 –Cast-in-Place Concrete

2. Maximum Water/Cement Ratio (by weight, including free moisture on aggregate) 0.40*

*If a mineral admixture is used, the water/cement ratio shall be calculated as the weight of water divided by the weight of cement plus the weight of the mineral admixture.

3. Air Content 5% \pm 1-1/2%
4. Water-reducer admixture shall be Type A, D, F, or G. The amount shall be selected to control the desired workability and water/cement ratio of the mix.
5. Slump: 3 to 5 inches. The slump shall be chosen to enhance workability without violating the specified maximum water/cement ratio.

PART 3 – EXECUTION

3.01 PREPARATORY WORK

A. INSPECTION:

1. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
2. Verify that all items to be embedded in concrete are in place, properly oriented, located, and secured.
3. Verify that concrete may be placed to the lines and elevations indicated on the Drawings, with all required clearance for reinforcement.

B. GENERAL

1. All areas in which concrete is to be placed shall be thoroughly cleaned to remove all wood debris, sawdust, tie wire cuttings, and all deleterious materials. Existing concrete or concrete from a previous pour shall be cleaned and roughened to provide a bondable surface. Concrete forms which have not been treated with oils, waxes, or other bond breakers shall be thoroughly wet prior to placing concrete.

DIVISION 3 – CONCRETE

Section 03 30 00 –Cast-in-Place Concrete

2. All transporting and handling equipment shall be cleaned of all hardened concrete.

C. NOTIFICATION

1. Notify the Engineer at least 24 hours in advance of concrete pour.

3.02 TRANSPORTING AND PLACING CONCRETE

- A. Concrete shall be placed as soon as possible after mixing and shall be plastic and readily workable when placed in the forms. Partially set concrete must not be retempered for use.
- B. The method and manner of placing concrete shall avoid segregation of the aggregate, or displacement of reinforcement.
- C. Conveyor belts, when used, shall be limited to approximately 300 feet in length to prevent segregation, and shall be covered to protect the concrete from sun or rain.
- D. Aluminum conduits or tremies shall not be used for pumping or placing concrete.
- E. Concrete shall be placed in continuous horizontal layers not exceeding 18 inches, and so consolidated that there will be no line of separation between layers. Care shall be taken to fill each part of the form by depositing concrete directly in, or as near to, the final position as possible.
- F. When concrete must be dropped more than 5 feet into the forms, it shall be deposited through an approved conduit. An approved conduit shall also be used to place concrete in sloping forms or in other locations, as directed, to prevent concrete from sliding around reinforcing or other embedments.
- G. In general, the method of depositing and consolidating concrete shall be conducted to form a compact, dense, impervious concrete with the required surface and a minimum of segregation. Defective concrete shall be removed at the Contractor's expense.
- H. Concrete shall not be placed within 30 feet of other work in the area, such as driving piling or sheets, or other vibratory action which will adversely affect the initial set or strength of the concrete until the concrete has reached a minimum strength of $f'c=3,000$ psi or 48 hours, whichever occurs first.

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Section 03 30 00 –Cast-in-Place Concrete

- I. Mechanical vibrators shall not be used for transporting concrete.

3.03 CONSTRUCTION JOINTS

- A. Joints and stoppages, except as specifically shown on the Drawings, shall generally conform to ACI 318. Joints shall be located so as not to significantly impair the strength of the structure, and only as approved by the Engineer. Thoroughly clean all joints to remove all loose concrete and laitance. Roughen joint surface to 1/4" amplitude. Unless otherwise noted, wet and coat all cleaned joints with neat cement bond grout immediately before placing fresh concrete. The use of stay-form or similar stay-in-place concrete forms will not be allowed.

3.04 COLD/HOT WEATHER CONCRETING

- A. Do not place concrete when the atmospheric temperature drops below 40°F or rises above 90°F, unless special procedures are followed. For recommended practices for hot and cold weather concreting, refer to ACI 305 and ACI 306.

3.05 CONSOLIDATING CONCRETE

- A. Refer to ACI 309 for recommended practices for consolidating concrete.
- B. The Contractor shall provide suitable internal vibrators for use in consolidating all concrete. The vibrators shall be of the type designed to be placed directly in the concrete, and their frequency of vibration shall be not less than 7,000 impulses per minute when in actual operation.
- C. Vibration shall be such that the concrete becomes uniformly plastic. Vibrators shall be inserted to a depth sufficient to vibrate the bottom of each layer effectively, but shall not be allowed to penetrate partially hardened concrete. The vibrators shall not be applied directly to steel that extends into partially hardened concrete. The distance between points of insertion shall be such that the area visibly affected by the vibrator overlaps the adjacent just-vibrated area. In no case shall this distance be greater than 2'-6".
- D. In addition to visibly settling the concrete into the formwork, the vibration shall continue an adequate duration to allow removal of entrapped air bubbles.

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Section 03 30 00 –Cast-in-Place Concrete

- E. Vibration shall not continue in any one spot to the extent that pools of grout are formed or that concrete is allowed to segregate. In vibrating and finishing top surfaces that are exposed to weather or wear, extreme care shall be exercised to avoid drawing water or laitance to the surface. In relatively high lifts, the top layer shall be comparatively shallow and the concrete mix shall be as stiff as can be effectively vibrated into place and properly finished. Vibrators shall not be used to transport or move concrete inside the form.
- F. The Contractor shall supply a sufficient number of vibrators to vibrate all of the concrete placed. Hand tamping shall be required wherever necessary to secure a smooth and dense concrete on the outside surfaces.

3.06 CURING CONCRETE

- A. Refer to ACI 308 for recommended practices for curing concrete.
- B. Concrete (other than high-early strength) shall be maintained above 50°F and in a moist condition for at least the first 10 days after placement.
- C. High-early strength concrete shall be maintained above 50°F and in a moist condition for at least the first three days after placement.
- D. Cast-in-place concrete shall be cured as follows:
 - 1. Immediately after finishing the concrete and as soon as the visible bleed water has evaporated, or when directed by the Engineer, the Contractor shall apply an ASTM C309 Type 1 A or B curing compound to the fresh concrete. The rate of coverage shall be at least 1 gal/100 square feet and sufficient to effectively obscure the original color of the concrete. The curing compound shall be applied in two applications to ensure full coverage of the concrete with the second coat applied in a direction perpendicular to that of the first application. Care shall be taken to avoid getting any curing compound on construction joints or on exposed reinforcing steel. Any curing compound on construction joints or reinforcing steel shall be completely removed before the following concrete pour.
 - 2. Only solvent-based type curing compound shall be used. The curing compound shall be thoroughly agitated immediately before and during application.

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Section 03 30 00 –Cast-in-Place Concrete

3. The Contractor shall supply backup spray equipment and sufficient workers to apply the curing compound.

3.07 FINISHING CONCRETE

A. GENERAL

1. All permanently exposed surfaces, unless specifically noted otherwise, shall be free from local bulging, and all unsightly ridges or lips shall be removed to leave a smooth, flat surface. Excessive rubbing will not be permitted. Patching mortar, if used, shall be of the same color as the surrounding concrete. White Portland cement shall be added to patching mortar for color matching purposes.

B. PROTECTION OF FINISH

1. Every precaution shall be taken by the Contractor to protect finished surfaces from stains or abrasions. Surfaces or edges likely to be injured during the construction period shall be properly protected.

3.08 TESTING

- A. Testing of concrete material shall be done by an accredited testing agency authorized by the Engineer. Methods of sampling, testing, evaluation, and acceptance shall conform to ACI 301. All fresh concrete samples intended for testing shall be taken at the point of deposit into the formwork.
- B. Testing, as described above, will be at the Engineer's discretion and in no way relieves the Contractor of any obligations. The Contractor is expected to provide for its own tests to assure the specified quality of materials and work.
- C. Tests shall be performed at no cost to the Port, except as noted. The following services shall be performed, when necessary, at the Contractor's cost:
 1. Additional testing and inspection required because of changes in materials, proportions, and procedures requested by the Engineer.
 2. Additional testing of materials or concrete occasioned by their failure by test or inspection to meet Specification requirements.

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Section 03 30 00 –Cast-in-Place Concrete

3.09 PLACING CONTROLLED DENSITY FILL (CDF)

- A. Place CDF where specified in the Contract Drawings or when approved by the Engineer, the Contractor shall supply CDF as backfill material.
- B. Compaction of controlled density fill will not be required. If water is present and prevents the Contractor from properly placing controlled density fill as determined by the Engineer, it shall be removed by pumping or other means.
- C. Contractor shall not place CDF in lifts greater than 8 feet unless otherwise noted or approved by the Engineer. The contractor shall wait 48 hours between CDF lifts.

END OF SECTION

DIVISION 5 – METALS

Section 05 50 00 – Metal Fabrications

PART 1 – GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. The provision and intent of the Contract, including the General Conditions, apply to this work as if specified in this section. Work related to this section is described in:
1. Section 31 41 16.13 – Steel Sheet Piling
 2. Section 03 30 00 – Cast-in-Place Concrete
 3. Section 09 96 00 – Marine Coatings
- B. Work under this Specification section is paid under Bid Item 21 – Furnish and Install Steel Dolphins, Bid Item 22 – Furnish and Install Mooring Cleats, Bid Item 34 – Furnish and Install Grouted Tieback Anchors at Maple Street Replacement Bulkhead, Bid Item 35 – Furnish and Install Maple Street Replacement Bulkhead Waler, Bid Item 37– Furnish and Install Concrete Cap at West Central Waterfront Wall, Bid Item 38– Furnish and Install Concrete Cap at West Maple Street Bulkhead, Bid Item 39– Furnish and Install Concrete Cap at Maple Street Replacement, Bid Item 40– Furnish and Install Concrete Cap at East Central Waterfront Wall, Bid Item 43– Furnish and Install Maple Street Fender System, Bid Item 47- Removal and Disposal: Clarifier Concrete Structure, Scum Box, Phosphoric Acid Tank and Remnant Foundations, Bid Item 49– Furnish and Install South Shoreline Mooring Bollard as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures.

1.02 DESCRIPTION OF WORK

- A. All metal fabrications are to be steel, as indicated on the Drawings, unless otherwise noted. The work shall consist of furnishing all materials, labor, and equipment for fabricating and/or repairing, coating, galvanizing, and erecting metal fabrications, all in accordance with the Drawings, notes, and this Specification.

1.03 QUALITY ASSURANCE

- A. Qualifications Of Fabricator
1. The fabricator shall be experienced in the fabrication and working of metals, including cutting, bending, forming, and finishing.
- B. Qualification Of Welders

DIVISION 5 – METALS

Section 05 50 00 – Metal Fabrications

1. Welders shall be currently certified by the American Welding Society or the State of Washington for structural welding. Welding procedures, operations, welders, and tackers shall be qualified in accordance with the AWS Structural Welding Code.

1.04 REFERENCE STANDARD

- A. AISC Specifications for Design, Fabrication, and Erection of Structural Steel for Buildings
- B. AISC Code of Standard Practice
- C. AWS D1.1, Structural Welding Code – Steel
- D. ANSI/ASME BPV-1X, Qualification Standard
- E. ASTM, American Society for Testing and Materials

1.05 SUBMITTALS

- A. Submit complete shop Drawings indicating all shop and erection details, including cuts, copes, connections, holes, fasteners, and welds.
- B. Fabrication shall not be started until the relevant shop Drawings have been reviewed by the Engineer.
- C. Welding Certifications.
- D. Gangway Designer and Manufacture Certifications
- E. Gangway installation and erection plans

1.06 PRODUCT HANDLING

- A. Protection
 1. Use all means necessary to protect the materials before, during, and after installation and to protect the installed work of other trades.
- B. Replacements
 1. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Port.

DIVISION 5 – METALS

Section 05 50 00 – Metal Fabrications

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Structural Carbon Steel shall comply with:
 - 1. ASTM A 36 minimum for plates, angles and bars unless noted otherwise.
 - 2. ASTM A572 or A 992, GR 50 minimum for rolled shapes as noted on drawings.
- B. Structural Tubing
 - 1. ASTM A 500 GR B (FY = 46 KSI).
- C. Steel Pipe
 - 1. ASTM A 500, GR B (FY = 42 KSI)
- D. Fittings for Steel Pipe
 - 1. Standard malleable iron fittings ASTM A 47/A 47M.
- E. Bolts
 - 1. ASTM A 325 unless noted otherwise.
- F. Anchor Bolts
 - 1. ASTM F 1554 GR 36, GR 55 or GR 105 as noted on drawings.
 - 2. Adhesive Anchors
 - a. Install only after concrete has attained design strength. Install in accordance with manufacturer's instructions. Provide minimum embedment, edge distance, and spacing per manufacturer's recommendations unless otherwise shown.
 - b. Use only drill type, bit type, and diameter recommended by the anchor manufacturer. Clean hole of debris and dust with a brush and compressed air or other methods as recommended by the manufacturer. When embedded steel or rebar is encountered in the drill path, slant drill to clear obstruction. If drill must be slanted more than 10 degrees to

DIVISION 5 – METALS

Section 05 50 00 – Metal Fabrications

clear obstruction, notify the Engineer of Record for direction on how to proceed.

- c. Do not install adhesive anchors when temperature of concrete is less than 40 or greater than 100 degrees F. Remove any standing water from hole with oil-free compressed air. Inside surface of hole shall be dry where required by manufacturer's instructions.

3. Expansion type Anchors

- a. Install in accordance with manufacturer's instructions. Provide minimum embedment, edge distance, and spacing per manufacturer's recommendations unless otherwise shown. Use only drill type, bit type, and diameter recommended by the anchor manufacturer. Clean hole of debris and dust with a brush and compressed air or other methods as recommended by the manufacturer. When embedded steel or rebar is encountered in the drill path, slant drill to clear obstruction. If drill must be slanted more than 10 degrees to clear obstruction, notify the Engineer for direction on how to proceed. Do not exceed maximum torque as specified in manufacturer's instructions.

G. Chain and Shackles

1. Chain shall be hot dip Galvanized 3/4" Grade 3 Welded Stud-Link Chain with a Proof Load capacity of 48 kips or greater.
2. Shackles shall be hot dip Galvanized 3/4" Bolt and Nut Straight Pin Shackle with a Proof Load capacity of 48 kips or greater.

H. Aluminum

1. All structural aluminum shall be alloy 6061-T6 per ASTM B308 and welded per AWS D1.2.

2.02 FABRICATION FINISHES

A. Stainless Steel

1. AISI 326/316L Use Stainless steel bolts, anchor bolts, nuts, washers for all steel and UHMW fabrication/installation where noted in the Contract Drawings.

B. Galvanizing

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Section 05 50 00 – Metal Fabrications

1. Hot-dip galvanize items specified to be zinc-coated, after fabrication where practicable. Galvanizing: ASTM A 123 Gr 100.
 2. Hot-Dip Galvanize all metal fabrications unless noted otherwise in the Contract Drawings.
- C. Repair of Zinc-Coated Surfaces
1. Repair damaged surfaces with galvanizing repair method and paint conforming to ASTM A 780 or by application of stick or thick paste material specifically designed for repair of galvanizing, as approved by the Engineer of Record. Clean areas to be repaired and remove slag from welds. With a torch, heat surfaces to which stick or paste material is applied to a temperature sufficient to melt the metallics in stick or paste; spread molten material uniformly over surfaces to be coated and wipe off excess material.
- D. Shop Cleaning and Painting
1. Surface Preparation
 - a. Blast clean surfaces in accordance with SSPC SP 6 or in accordance with paint manufacturer's recommendations. Wash cleaned surfaces that become contaminated with rust, dirt, oil, grease, or other contaminants with solvents until thoroughly clean. Steel to be embedded in concrete shall be free of dirt and grease.
 2. Pretreatment, Priming and Painting
 - a. Apply pretreatment, primer, and paint in accordance with manufacturer's printed instructions
- E. Nonferrous Metal Surfaces
1. Protect by plating, anodic, or organic coatings.

2.03 ALUMINUM GANGWAY

- A. Design of the aluminum gangway shall be in accordance with latest addition of the Aluminum Association 'Specifications for Aluminum Structure'. Design of the gangway shall be completed by a Licensed Professional Engineer registered in the State of Washington, and the design drawings shall include the professional engineers' stamped seal. The design drawings and any accompanying documentations shall clearly detail how the Contractor intends to assemble and install the gangway

DIVISION 5 – METALS

Section 05 50 00 – Metal Fabrications

and connections at the required alignment and elevation as indicated in the Contract Drawings.

2.04 MISCELLANEOUS PLATES AND SHAPES

- A. Provide for items that do not form a part of the structural steel framework, such as support framing and miscellaneous mountings and frames.
- B. Provide with connections and fasteners.
- C. Provide angles and plates, ASTM A 36/A 36M, for embedment. Galvanize embedded items exposed to the elements according to ASTM A 123/A 123M.

2.05 OTHER MATERIALS

- A. All other materials, not specifically described but required for a complete and proper installation, shall be new, free from rust, best quality of their respective kinds, and subject to the approval of the Engineer.

PART 3 – EXECUTION

3.01 PREPARATORY REVIEW

- A. Prior to all work of this section, carefully inspect the installed work of all other trades affecting this work and verify that all such work is complete to the point where this installation may properly commence.

3.02 FABRICATION

- A. All structural steel shall be fabricated in accordance with the approved shop Drawings and reference standards.
- B. Insofar as practicable, shop prefabricate all items complete and ready for installation.
- C. Unless otherwise indicated on the Drawings, weld all shop connections. All joints shall be tightly fitting, securely fastened, square, plumb, straight, and true.
- D. Drill or punch all holes required for the attachment of work of other trades and for bolted connections. Burned holes are not acceptable.
- E. Welding of all metal fabrications shall conform to AWS D1.1 and AWS D1.2.

3.03 PROTECTIVE COATING

DIVISION 5 – METALS

Section 05 50 00 – Metal Fabrications

A. Galvanizing

1. All misc metals shall be galvanized shall be hot-dipped galvanized after fabrication in compliance with ASTM A 123 GR 100 unless otherwise noted in the Contract Drawings.

3.04 ERECTION

- A. Erect and install all metal fabrications in strict accordance with the design Drawings, shop Drawings, and reference standards.

END OF SECTION

DIVISION 9 – FINISHES

Section 09 96 00 – Marine Coatings

PART 1 – GENERAL

1.01 RELATED WORK ELSEWHERE

- A. The provisions and intent of the contract, including the General Conditions, Supplementary Conditions, and General Requirements apply to this work as if specified in this section. Work related to this section is described in:
 - 1. Section 05 50 00 - Metal Fabrications
 - 2. Section 31 62 16.16 – Steel Pipe Piling
- B. Work under this Specification section is paid under Bid Item 21 – Furnish and Install Steel Dolphins, Bid Item 22 – Furnish and Install Mooring Cleats, Bid Item 41 – Furnish and Install Steel Mooring Piles, Bid Item 42 – Furnish and Install Maple St Fender Piles, Bid Item 43 – Furnish and Install Maple St Fender System, Bid Item 49 – Furnish and Install South Shoreline Mooring Bollard as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures.

1.02 DESCRIPTION OF WORK

- A. The work includes all materials, equipment, and accessories necessary for preparing and providing the required finished paint/protective coating for steel pipe piles and associated metals and fabrications.

1.03 QUALITY ASSURANCE

- A. APPLICATION
 - 1. Applications shall be by experienced painter or painting firm employing experienced personnel certified to level QP1 and QP3 by the Society for Protective Coatings.
- B. MANUFACTURERS' SPECIFICATIONS, DIRECTIONS, AND RECOMMENDATIONS
 - 1. Conform to manufacturers' Specifications, directions, and recommendations for best results in use of each of their products for each condition. Should they be at variance with this Specification, report discrepancy to the Engineer for decision.
- C. STEEL PAINTING REFERENCE STANDARD

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Section 09 96 00 – Marine Coatings

Steel Structures Painting Council (SSPC), Steel Structures Painting Manual, Vols. I and II.

1.04 SUBMITTALS

A. The following documents shall be submitted to and approved by the Engineer:

1. LIST OF PRODUCTS

- a. Complete list of products proposed for use on the project; include manufacturers' product descriptions of all materials; obtain approval before proceeding. Use same manufacturer's products for all coats of each individual finish unless approved otherwise in writing by the Engineer.

2. PRODUCT DATA

- a. Manufacturers' published literature for specified products and accessories as applicable, including manufacturers' Specifications, physical characteristics, and performance data. Submit as a supplement to manufacturers' instructions and directions for applications if not included in manufacturers' published literature.

3. SAMPLES

- a. Submit samples of all paints and finishes proposed for use on the projects.

4. REPAIR and TOUCH-UP PROCEDURES

- a. Submit specifications and procedures for use in performing filed repairs and touch-ups to coating systems.

5. APPLICATORS EXPERIENCE

- a. Submit applicators experience prior to performing coating systems.

1.05 PRODUCT HANDLING

A. DELIVERY AND STORAGE

DIVISION 9 – FINISHES

Section 09 96 00 – Marine Coatings

1. Deliver paint materials in unbroken, unopened containers, manufacturers' labels thereon. Store materials in dry locations where indicated ambient temperature of storage is not less than 50°F.

B. PRECAUTIONS

1. Take extraordinary care to prevent fire; open containers or inflammable materials only as needed; keep rubbing cloths and oily rags in tightly closed metal containers, or remove from the site daily. Benzene, gasoline, and distillate will not be permitted on the job.

C. PROTECTION

1. Care shall be exercised in the handling of painting materials to ensure this work and the work of other trades are not damaged, before, during, or after the installation.

D. REPLACEMENTS

1. Damaged work, if any, shall be repaired or replaced as necessary to the approval of the Engineer at no additional cost to the Port.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Except as otherwise specified, materials shall be the products of the following manufactures: Tnemec Company, ICI DeVoe Coatings, The Sherwin Williams Co Industrial and Marine Coatings, Preservative Paint Company, Parker Paint Manufacturing Company Inc., Pratt & Lambert, Kelly-Moore Paint Company or International Marine Coatings. Proposed alternates will be evaluated based on systems equivalent to the ones indicated.
- B. The coating product shall be appropriate for steel corrosion protection in the marine environment.
- C. Materials selected for coating systems for each type surface shall be the product of a single manufacturer.
- D. All materials shall be delivered to the job in the original, unbroken containers bearing the manufacturers' labels indicating the contents and directions for use, storage, and handling.

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- E. Materials not specifically noted but required for the work, such as thinners, or other materials, shall be the product of the approved paint manufacturer.

2.02 MIXING

- A. Paint products shall be mixed according to the manufacturer's printed directions and shall not be adulterated in any manner except upon specific approval of the Engineer.

2.03 COLOR SELECTION

- A. All items scheduled for painting: Color to be selected by the Port.

2.04 IDENTIFICATION

- A. The manufacturer's identification numbers and specifications listed are for the purpose of indicating the type and quality of paint product desired for the purpose indicated.

2.05 SUBSTITUTIONS

- A. If the Contractor desires to use an alternate manufacturer's materials or methods of application, it shall submit these in writing to the Engineer for review and approval prior to procurement of material. Substantiating technical data are required. Approval will not be granted unless, in the opinion of the Engineer, the quality of finished construction will be equal to that intended.

2.06 METAL FABRICATIONS

- A. Galvanized surfaces to be painted or coated shall be solvent cleaned to remove contaminants using a biodegradable, water soluble cleaner in conformance with SSPC, SP-1.
- B. Cleaned galvanized surfaces to be painted shall receive a light, sweeping abrasive sand blast to create a toothed surface profile in accordance with SSPC, SP-7.
- C. Abrasive sand blasted surfaces shall be protected from recontamination immediately after blasting by applying an epoxy base, two component chemically cured primer to a minimum dry film thickness range of 2 to 3 mils. The primer shall be applied within the same working shift that included the abrasive blast surface treatment.

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- D. All surfaces to be painted shall receive a chemically cured, aliphatic, polyurethane paint. The minimum dry film thickness of paint shall be 3 mils.

PART 3 – EXECUTION

3.01 GENERAL

- A. The Contractor shall apply the paints in accordance with the manufacturer's recommendations as to the application, weather, and temperature conditions. Provide "highest" quality workmanship performed to the Engineer's satisfaction. Use clean equipment and brushes when applying paint; spread paint materials evenly without runs, sags, laps, brush marks, variations in color, texture or sheen, and without "holidays." Vary colors or sheens between coats and apply all coats to uniform thicknesses. Refinish any work judged defective at no additional cost to the Port, and repair all work damaged during the progress of the construction. Leave finished surfaces clean, completely covered, uniform in appearance, and satisfactory to the Engineer.

3.02 APPLICATION

A. APPLICATION STANDARD

1. Coating application shall be based on the following standard for the Tnemec coating product. Alternate products shall be equivalent to this standard.
2. Primer: One coat Tnemec Series 66-1211 Epoxoline Primer, 3-5 mils Minimum Dry Film Thickness (MDFT).
3. Finish Coat: Two coats Tnemec Series 66 Hi-Build Epoxoline, total system 10-12 mils MDFT to include primer.

B. NUMBER OF COATS

1. As specified hereinbefore for each type of finish. On shop-primed work, an additional prime coat is not intended.

C. THICKNESS OF COATS

1. Use ample undiluted materials; apply in uniform thickness over entire areas; do not exceed manufacturer's recommended spreading rate per gallon.

D. COLORS OF COATS

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1. Tint prime coats if necessary to obtain uniform finish coats.

3.03 TOUCHUP PAINTING

- A. Paint film damaged accidentally or due to field welding shall be restored immediately to its original thickness, after thorough cleaning and necessary surface preparation. Areas damaged due to field welding must be touched up immediately upon completion of welding.

3.04 INSPECTION

- A. Contractor shall measure dry paint thickness on metal surfaces by means of magnetic gages as described in SSPC-PA2. Copies of measurement reports shall be provided to the Engineer.

END OF SECTION

DIVISION 26 — ELECTRICAL
SECTION 26 00 10 — Basic Electrical Requirements

PART 1 - GENERAL

1.01. APPLICABLE PROVISIONS

- A. The General, Supplementary and other Conditions of the Contract, modifications to the General Conditions, the Drawings, and the applicable provisions of the other Divisions are hereby made a part of this Division and all its sections.

1.02. SUMMARY

- A. The requirements of this Section and the other Division 26 Sections apply to all the electrical work.
- B. Coordinate electrical work with related work shown and specified elsewhere.
- C. Work Included: The Contractor shall perform all the Work required (including the furnishing of all supervision, labor, services, tools, materials and equipment and the performance of all operations and incidentals necessary) for a complete, safe and reliable electrical installation, adjusted, tested and ready for operation. The electrical work is generally described as follows:
 - 1. Demolition.
 - 2. Panelboard & power distribution system modifications.
 - 3. Grounding.
 - 4. Wiring devices and special purpose receptacles.
 - 5. Lighting, fixtures, and lamps.
 - 6. Branch circuit wiring system for lighting, outlets, equipment, etc.
 - 7. Supports.
 - 8. Pull strings and ropes.
 - 9. Moisture, fire and dust stopping and sealing.
 - 10. Temporary construction power & lighting.
 - 11. Testing and completing.
 - 12. Obtaining and paying for all required licenses, permits, inspections and fees.

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1.03. EXISTING CONDITIONS

- A. Before submitting bid, examine existing site (and building or equipment) conditions to determine effect on execution of the electrical work and include costs in bid.
- B. Existing circuits indicated on the plan are based on what was shown on the original construction drawings and may not be exactly how the actual construction was done. The contractor shall include circuit tracing to determine how the actual conduits were installed.
- C. Damaged electrical and telecommunications (telephone, computer/data, television, fiber, copper, etc.) cables shall be replaced in their entirety. Splicing will not be allowed.

1.04. PERMITS

- A. The Contractor shall arrange for inspections and pay for all required licenses, permits, inspections, plan review fees and any other fees.

1.05. DEFINITIONS

- A. The term "Contractor" used throughout Division 26 and all its sections of these specifications and on the electrical drawings shall be understood to mean the Electrical Contractor. All other work shall be called out by name.
- B. "Approved" means approved by the Engineer. "For approval" means for the Engineer's approval.
- C. "Furnish" means to supply and deliver to the Project, ready for installation and in operable condition.
- D. "Install" means to incorporate in the work in final position, complete, anchored, connected, and in operable condition.
- E. "Provide" means furnish and install.
- F. "Remove" means to remove the existing item indicated and all associated conduit, boxes, cables, etc. to their point of origin and/or destination; except, concealed conduits and flush boxes may be abandoned in place and/or re-used in the new installation. Cables shall be removed and/or replaced.
- G. "Replace" means to remove the existing and add in lieu the new as indicated.
- H. "As directed" means as directed by the Engineer.
- I. "Concealed" means hidden from sight in trenches, walls, chases, ceilings, etc.
- J. "Exposed" means within sight; that is, not concealed as defined above, and installed on the surface of walls, ceilings, etc.

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- K. "C.O." means conduit only; that is, without cable (except, provide pull string or rope).
- L. "F.O.I.C." means Furnished by Others (e.g. general contractor, other subcontractors, equipment suppliers, Owner, systems contractors working directly with the Owner, etc.), Installed by Contractor.
- M. "N.I.C." means Not in Contract.
- N. Definitions of all other terms, etc. are in accordance with AIA, ANSI, IEEE, IES, NEMA, etc. standard definitions.

1.06. DRAWINGS & SPECIFICATIONS

- A. The electrical plan drawings are general in form and do not attempt to show complete details or list every item of the electrical systems, the building construction or the various equipment (new or existing); however, the routing of raceways and circuits, and the locations of equipment, devices, fixtures, etc. represent the desired finished arrangement; except, as governed by structural or mechanical conditions or obstructions.
- B. Existing circuits indicated on the plan may not be exactly how the actual construction was done. The contractor shall expect that circuit tracing and locating to determine how the actual circuits are installed will be required.
- C. Specifications are, in some cases, written in an abbreviated form. Words such as shall, shall be, the Contractor shall, and similar mandatory phrases are supplied by inference.
- D. Investigate the structural and finish conditions affecting the work. Refer to the civil and structural drawings, supplier shop drawings and submittals, etc. for additional details, equipment ratings, dimensions, location and swing of doors, location and size of partitions, cabinets, etc. and similar features. Verify all dimensions, equipment ratings, etc. with the actual before installation. Arrange the work accordingly.
- E. The intent of the drawings and specifications is to include all items necessary for the proper execution and completion of the Work; however, any item or detail not specifically mentioned in the specifications or shown on the drawings, but which is necessary to produce the intended results shall be included.
- F. The Contractor shall bring to the Engineer's attention any discrepancies, inconsistencies, conflicts, errors, or omissions within the Contract Documents, between the Contract Documents and field conditions, and any design and layout changes required due to specific equipment selection, etc. prior to equipment and material purchasing and installation. If Contractor purchases any equipment or materials and performs any construction activity, and it knows or reasonably should have known that the documents contain a discrepancy, inconsistency, conflict, error or omissions, corrective work shall be at the Contractor's expense.
- G. Verify all equipment and device locations with the Owner and Engineer prior to rough-in.
- H. Verify exposed raceway routing with the Owner and Engineer prior to rough-in.

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1.07. SUBMITTALS

- A. Provide submittals for the equipment, boxes, devices, fixtures, special raceways, systems and their components, etc. as directed in the various sections of the specifications.
- B. Submit M.S.D.S. (Manufacturer's Safety Data Sheets) for all chemicals or hazardous materials. All chemicals and hazardous materials to meet NIOSH Permissible Exposure Levels (P.E.L.) and OSHA Time Weighted Average (T.W.A.) requirements before commencing work.
- C. If requested by the Owner, provide samples of materials for evaluation.
- D. Submittals shall provide sufficient detail so compliance with the drawings and specifications can be ascertained. Clearly identify each item by manufacturer, brand, trade name, number, size, rating, or whatever other data is necessary to properly identify and review materials and equipment. Catalog pages containing more than one product shall be marked with arrows to indicate the proposed product.
- E. Obtain approval before purchasing any products. Items not in accordance with the drawings and specifications will be rejected.
- F. Forward all submittals to the Owner, together, at one time, in bound folders or three-ring binders with tabs and index for each section. Each tabbed section shall be provided with a front page with space for review comments. Individual or incomplete submittals are not acceptable.
- G. The Contractor shall establish quantities, check drawings and data, verify space requirements, dimensions, and possible interferences prior to submittal.
- H. The Engineer will review each submittal, mark to indicate action taken, and return. Compliance with specified characteristics is the Contractor's responsibility.
- I. Approval of submittals does not release the Contractor from a proper installation, compliance with the drawings, specifications, codes, standards, etc. or coordination of the work.
- J. Allow two weeks turnaround time for each submittal from the time of receipt at the engineer's office, except the engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until the related submittals are received.

1.08. SUBSTITUTE PRODUCTS APPROVAL

- A. During Bidding:
 - 1. Substitutions for equipment and materials other than that specified will be considered if equal (or better and/or higher) in quality, ratings and function; and similar in type, style, size and appearance.
 - 2. Submit written requests to Owner and Engineer.

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- a. If received no later than 7 work days prior to Bid opening, requests will be considered, but not thereafter.
 - b. Bidders will be informed by Addendum of any approved items.
 - c. No responses will be provided for rejected items.
3. Requests shall be accompanied by complete specifications, samples, record or performance, certified tests by impartial, recognized laboratories, and other such information as required to clearly represent the proposed substitution.
 4. Lighting fixture substitution requests shall include photometric data.
 5. Final decisions as to quality and suitability of proposed substitutions rest solely with the Owner and Engineer, and will be based on proof submitted.
 6. The cost of changes required in order to incorporate the proposed substitution, such as revisions to controls, raceways, wiring, openings, appurtenances, etc., shall be included in the bid. Any cost reduction resulting from substitutions shall benefit the Owner through a reduced bid.
 7. When Owner and Engineer approve a proposed substitution, it is with the understanding that Bidder certifies that substitute articles or materials are equal to or better than those specified and that no exception is taken with any of the performance objectives, service or warranty requirements or features herein specified.

B. After Bidding:

1. Substitute products requests will not be considered.
2. Product substitutions are allowed solely under the conditions stated in Division 1 Section "Product Requirements."

1.09. RECORD DOCUMENTS

- A. Submit record documents at completion of the project in accordance with the specific submittal requirements listed elsewhere in these documents.
- B. Provide "as-built" drawings in both full size reproducible form and in software form as AutoCAD .dwg type files.
- C. All record documents in software form shall be provided on a single CD-ROM. Include the necessary program(s) to read test results. Separate submittals for the various disciplines will not be accepted.

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1.10. "AS BUILT" DRAWINGS

- A. The Contractor shall continuously maintain a marked job set of as-built drawings as the work progresses, to indicate deviations from the original design, including change orders. Maintain records of all concealed wiring and of actual equipment, device, etc. locations. Provide dimensions from accepted reference lines as needed. The as-built drawings shall be kept on-site and available for inspection by the Owner.
- B. Include any detailed equipment, raceway, wiring, etc. diagrams and layouts prepared by Contractor or his subcontractors, suppliers, etc.
- C. At substantial completion, Contractor shall modify one complete set of reproducible copies, with all "as built" information and submit these drawings to the Owner for approval. Each sheet shall be marked "CORRECTED TO AS BUILT"; or, if there are no changes, drawings shall be marked "NO CHANGES, INSTALLATION PER PLAN".
- D. After approval, Contractor shall transfer all "as built" information from the marked job set and other information as appropriate to AutoCAD .dwg type files. (Consultant/Engineer will provide construction drawings AutoCAD files to contractor.) Utilize the layering scheme, font types, line types, title block, etc. provided in the AutoCAD drawing files. All drawings shall be noted as "As-Built" with a stamp and date. After adding the "as-built" information, return the AutoCAD files to the Consultant/Engineer for inclusion into the final project record set.
- E. "As-built" drawings for all portions of the work shall be combined into a single set matching the contract documents. Separate submittals for the various disciplines will not be accepted.

1.11. OPERATION AND MAINTENANCE MANUALS

- A. Following installation of the electrical systems, but prior to acceptance of the work, Contractor shall submit to Engineer one loose-leaf volume with information systematically segregated and indexed for easy reference to be reviewed by the Owner and Engineer. This submittal copy will be returned to the Contractor, and the material can be used in preparation of final volumes. After approval of preliminary copy, but prior to project completion, submit 3 finished copies.
- B. Format shall be 8¹/₂" x 11" size with neat, clean copies, drawings (accordion folded), etc. Manuals shall have a typewritten index, and divider sheets with identification tabs between categories. Manuals shall be in hard cover 3 ring binders with titles permanently embossed on the cover face and the spine. The front of each volume shall be imprinted with the project name, title (e.g. "Electrical Equipment and Devices Operating Instructions and Maintenance Manual"), Owner, Electrical Engineer and Contractor.
- C. Manuals shall include:
 - 1. Record documents (see above); except, full size reproducible bond paper copy of drawings to be provided separately.
 - 2. Submittals, updated to "as built" conditions.

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3. Test results; except, telecommunications equipment, cables, etc. test results shall be in a separate binder.
4. Description of systems configuration and operation including component identification and interrelations, including diagrams and supplementary drawings where necessary.
5. Installation, operation, maintenance and programming manuals covering the installed systems, equipment and materials.
6. Maintenance instructions (frequency of service, type of service, etc.).
7. Parts lists for all equipment; including recording information, recommended spares and anticipated useful life.
8. Supplier's names, addresses, telephone and reference order numbers for all equipment and materials.
9. Warranties and Bonds.
10. Copies of final inspection certificates from the authorities having jurisdiction.

D. Omit non-applicable data.

1.12. WARRANTY

- A. The complete installation shall be guaranteed for a period of one (1) year after date of project completion. For warranty purposes, the date of project completion shall be considered the date of final acceptance of the installation by the Owner certified in writing, and after Owner has received all project close-out requirements. All corrective work, if needed and requested by the Owner, shall be provided without cost to the Owner during the guarantee period.
- B. All corrective work performed by the Contractor in remedying defective work during the guarantee period following the Owner's acceptance of the project shall be subject to the same guarantee requirements of the original work for a period as specified from the date of completion of the corrective work.
- C. Corrective work shall include on-site service by the Contractor, subcontractor or supplier (e.g. fire alarm and telecommunications systems), and/or nearest technical service representative of the equipment manufacturer. Service shall be provided within 24 hours from the time of request for warranty service by the Owner.

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1.13. TRAINING/INSTRUCTION AND ASSISTANCE

- A. After the installation is complete and operating, and prior to acceptance of the work, conduct a minimum of a one (1) hour training/instruction period at the site for each type of system to point out locations of service and maintenance and instruct the Owner's in the operation of all systems and equipment.
- B. The person(s) who conduct these instructions and demonstrations shall be a qualified representative(s) of the manufacturer with substantial training and operating experience on this equipment and project, and shall be versed in the operating theory as well as practical operation and maintenance work. Instructor(s) shall have the necessary educational and interpersonal skills, as well as proven ability to effectively perform the training. Their qualifications shall be submitted to the Owner before conducting the instruction period.
- C. Each period shall include preliminary discussion and presentation of information using the actual maintenance manuals required for this project. Contractor shall notify Owner and Engineer at least 48 hours in advance of readiness to conduct the instruction period. The actual time and date of instruction period shall be acceptable to the Owner and Engineer.
- D. All training material shall be furnished and supplied by the Contractor.

1.14. QUALITY ASSURANCE

- A. The Contractor and Contractor's personnel shall be experienced, thoroughly trained and completely familiar with the systems, equipment, devices, fixtures, materials, etc. and the required methods of installation.
- B. The Contractor shall provide, upon request, after bid opening and prior to notice to proceed, a company resume including a list of project personnel with years of experience and qualifications/certifications, a list of similar projects completed within the past 5 years with contact information for the Owners and Engineers for each project and any other information which may be pertinent to the project. If requested, the Contractor shall provide a similar resume for sub-contractors.
- C. The Contractor shall provide proof, upon request, that all personnel are licensed according to Washington State RCW19.28.161.
- D. All materials, equipment and workmanship shall be properly inspected by the Contractor and shall at all times be subject to inspection by the Owner and Engineer. Contractor shall provide all samples, data and documents necessary for such inspection. Owner and Engineer shall be afforded full and free access at the jobsite and the shops and places of business of the Contractor for such inspection and to determine the status of the work. If Contractor covers all or any part of the work prior to any inspection or test specifically requested by Owner and/or Engineer, the cost of any necessary uncovering and replacing shall be borne by the Contractor.
- E. Neither the failure to make inspections or tests, nor to discover defective workmanship, materials or equipment, shall prejudice the rights of the Owner or Engineer thereafter to reject the work and/or require its correction.

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- F. The completed installation shall comply with the more stringent of the requirements of the drawings and specifications, the authorities having jurisdiction, and all laws, ordinances, rules, regulations and requirements in effect at the site, including current editions of the following:
1. NEC - National Electrical Code.
 2. National Electrical Safety Code.
 3. OSHA - Occupational Safety and Health Act (and its Washington State equivalent).
 4. ADA - Americans with Disabilities Act (and its Washington State equivalent).
 5. International Fire Code (and its Washington State equivalent).
 6. International Building Code (and its Washington State equivalent).
 7. Washington State Rules and Regulations for Installing Electrical Wires and Equipment (WAC 296-46).
 8. Washington State Safety Standards for Electrical Workers (WAC 296-45).
 9. Washington State Non-Residential Energy Code (NREC).
 10. City of Bellingham Fire Protection Development Standards.
- G. The following standards establish the minimum requirements for the equipment and installation, unless exceeded by the requirements of the drawings or specifications:
1. ANSI - American National Standards Institute.
 2. BICSI – Building Industry Consulting Service International
 3. ICEA - Insulated Cable Engineers Association.
 4. IEEE - Institute of Electrical and Electronics Engineers.
 5. NEMA - National Electrical Manufacturers Association.
 6. NEIS – National Electrical Installation Standards
 7. NFPA - National Fire Protection Association.
 8. NECA – National Electrical Contractors Association
 9. EIA - Electronic Industries Association.
 10. TIA - Telecommunications Industry Association.
- H. Nothing in the drawings or specifications shall be construed to direct or permit work not conforming to applicable laws, ordinances, rules, regulations, requirements or standards. Discrepancies or conflicts shall be brought to the attention of the Owner and Engineer promptly for resolution.
- I. The Owner and Engineer shall be advised prior to any inspection being requested. The Owner and Engineer shall be provided the opportunity to inspect the installation prior to finish installation. Any materials, equipment or workmanship that is not (in the opinion of the Owner, Engineer or Inspector) as it should be, shall be taken out and replaced without cost to the Owner.

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PART 2 - PRODUCTS

2.01. GENERAL

- A. Coordinate the features of materials and equipment so they form an integrated system.
- B. Contractor shall make certain that all materials selected by him, his subcontractors or by his suppliers, conform exactly to requirements of the drawings and specifications. Transmittal of such specifications and drawing information to subcontractors, person manufacturing and/or supplying materials to the project, and rigid adherence thereto, is the Contractor's responsibility.
- C. All equipment, devices, luminaires, materials, etc. shall be UL (Underwriter's Laboratories, Inc.) listed, labeled and approved for the service intended where UL standards have been established. If no UL label is available, the label of a testing agency or conformance to national standards recognized and approved by the electrical inspector having jurisdiction is required.
- D. All equipment, devices, fixtures, materials, etc. shall be new and installed only if in first class condition.
 - 1. Unless specifically designated as existing.
 - 2. Existing raceways, boxes, etc. may be re-used if in "like new condition" and appropriate for the new installation.
- E. All equipment, devices, etc. and their components shall be designed for continuous duty without degradation of function or performance.
- F. In the event that any item is not available exactly as specified, the Contractor shall so notify the Owner and Engineer in writing prior to bidding as early as possible to allow ample time for an alternate item to be selected without delay to the project.

2.02. EQUIPMENT MANUFACTURERS

- A. Unless specifically noted otherwise, all references to manufacturer's or supplier's model numbers and other pertinent information herein is intended to establish minimum standards of performance, function and quality.
- B. All equipment, devices, materials, etc. shall be of a type manufactured by reputable recognized vendors. Each type or groups of items, system components, etc. having the same or similar function shall be the same manufacturer, make and quality throughout the facility.
- C. Approval of a manufacturer's name and/or type does not release the Contractor of the responsibility for providing materials which comply in all details with requirements in the contract documents.

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2.03. ENCLOSURES

- A. Equipment, devices, luminaires, boxes, etc. located indoors shall have general purpose (NEMA 1) enclosures, except:
- B. Equipment, devices, luminaires, boxes, etc. located outdoors shall be provided with weatherproof (NEMA 3R) enclosures. Surface finish shall be a rust inhibiting primer followed by an epoxy or polyurethane polyester top coat.
- C. Provide gaskets, seals, etc. as required to prevent the entrance of moisture, debris, insects, etc.
- D. Enclosures and boxes shall be fabricated from code gauge, or heavier, galvanized steel. Surface preparation and finish shall be manufacturer's standard unless noted otherwise.
- E. Include all necessary mounting, etc. accessories.

2.04. LOCKS

- A. All equipment, panels, etc. shall be provided with suitable locks, keyed alike.
- B. Provide a minimum of 2 keys for each lock.

2.05. SUPPORTS AND CHANNEL

- A. Channel, framing members, etc. shall be 12 gauge steel, galvanized, $1\frac{5}{8}$ inch channel width with all necessary accessories.
- B. Threaded rod shall be steel, minimum $\frac{3}{8}$ inch diameter.

2.06. ANCHORS AND FASTENERS

- A. Anchors and fasteners used shall be of a type designed for use in the base material to which the item is to be attached. Attach to wood with wood or lag screws, to metal with machine screws or bolts and to concrete with carbon steel wedge or sleeve type expansion anchors or self-drilling metal anchors and machine screws or bolts.
- B. Pad and floor mounted equipment shall be secured with suitable hot dipped galvanized steel anchor bolts, washers, hex nuts, etc.
- C. Powder actuated fasteners, plastic expansion type anchors, nails and toggle bolts are not permitted.
- D. Anchors shall be non-corrosive or have suitable corrosion resistant coatings or treatment.
- E. Bolts, nuts, screws and other threaded devices shall have standard threads and heads, unless required for tamper-proof installation.

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2.07. IDENTIFICATION

- A. Provide nameplates for all equipment (e.g. switchboards, panels, disconnecting means, control panels, control stations, etc.) and other devices used for the control of circuits, equipment, etc. Nameplates shall adequately describe the function or operation of the identified equipment, devices, etc. and include the panel and circuit number(s) from which it is fed. Nameplate designations shall be consistent with the project documents. Submit proposed inscriptions for approval.
- B. Provide nameplates for switchboards and panelboards to identify the system color coding scheme for phase and neutral conductors as required.
- C. Definite purpose devices shall be labeled with a description of the device's function, rating and include the panel and circuit number(s) from which it is fed.
- D. All equipment and outlets shall be labeled with the panel and circuit number(s) from which it is fed.
- E. Nameplates shall be laminated plastic, with lettering etched through the outer covering. Character size as appropriate for the application, approved by Engineer; ¼ inch except minimum 1/4 inch. Nameplates shall be securely fastened with suitable adhesive or self tapping screws. Character and background colors shall conform to the following system color code:

<u>Background.</u>	<u>Char.</u>	<u>System</u>
Black	White	Power & Lighting

- F. Identification tags shall be plastic, flexible type with a label. Identification tags shall be securely fastened with cable ties. Tags shall be mounted so as to be clearly visible.
- G. Labels shall be heavy duty adhesive type, clear background with black letters on light colored devices and clear background with white letters on dark colored devices; except, labels on devices connected to the emergency power system shall have red letters. Lettering shall be appropriately sized for the application, ¼ inch except minimum 1/8 inch. Labels on ceiling mounted devices shall be large enough to read from the floor. Labels shall be as manufactured by Kroy, Brothers, or approved equal. Self-adhesive circuit numbers, masking tape, plastic punch type "Dymo" labels, etc. are not acceptable.

PART 3 - EXECUTION

3.01. CONSTRUCTION/WIRING METHODS

- A. Wiring methods shall be as follows:
 - 1. Branch circuits - GRS above grade (PVC below grade).

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- B. All wire and cable shall be enclosed within the raceway system.
- C. Equipment shall be surface mounted unless noted otherwise.

3.02. CONTRACTOR CONTROL AND SUPERVISION

- A. Contractor shall supervise and direct the Work, using its best skill and attention, and shall perform the work in a skillful manner. Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the work, unless the Contract Documents give other specific instructions concerning these matters. Contractor shall disclose its means and methods of construction when requested by Owner.
- B. Performance of the work shall be directly supervised by a competent superintendent (and/or foreman) who is satisfactory to Owner and has authority to act for Contractor. The superintendent (and/or foreman) shall constantly supervise the work and check all materials prior to installation for conformance with the Contract Documents. The superintendent (and/or foreman) shall not be changed without the prior written consent of Owner.
- C. Contractor shall enforce strict discipline and good order among Contractor's employees and other persons performing the Work. Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. Contractor's employees shall at all times conduct business in a manner which assures fair, equal, and nondiscriminatory treatment of all persons.
- D. Inappropriate activity or comments by Contractor, Contractor's employees and other persons performing the work will result in immediate removal from the site.

3.03. GENERAL

- A. The installation shall be done in a neat and workmanlike manner and shall be suitable for the location. Conduit stub-ups, sleeves and ends left open for future connection, unused hubs in fittings and unused holes in boxes shall be plugged or capped to prevent the entrance of moisture and debris.
- B. For the actual fabrication, installation and testing use only persons thoroughly trained, experienced and completely familiar with the items required and with the manufacturers' recommended methods of installation. In acceptance or rejection of the work, no allowance will be made for lack of skill or experience.
- C. Circuits shall be run from equipment to equipment, outlet to outlet, luminaire to luminaire, device to device, etc. and all homeruns shall be run exactly as shown on the drawings unless permission is obtained from the Engineer to alter the arrangement.
- D. Changes in location (e.g. equipment and devices up to 10 feet, raceway routing, equipment locations, etc.) made before installation and deviations to avoid interferences shall be made without increase in Contract Sum.

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- E. The Contractor shall conduct operations in a manner to avoid the risk of bodily harm to persons or damage to any property. Construction equipment and tools shall be in good operating condition and be designed to perform the work required. The Contractor shall continuously inspect all work to discover any unsafe conditions and be solely responsible for their correction.
- F. Use all means necessary to protect the equipment and materials and the work, materials, etc. of the other trades before, during and after installation. Do all cutting carefully to prevent damage to the work. Correct lifting, jacking and/or moving methods shall be used. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner and Engineer without increase in Contract Sum.
- G. The Contractor shall provide all cutting, patching, core drilling, etc. as required for the work. Use only journeymen skilled in the necessary cutting or patching operation. Patching shall match adjacent work. Structural members shall not be cut without approval of the Engineer. Where penetrations in structural members for conduits, cables, etc. are allowed, the holes shall be no larger than absolutely necessary.
- H. Contractor shall x-ray or otherwise determine the exact location of existing structural components, conduits, piping, wiring, ducts and the like prior to making any new penetrations or openings (or expanding existing openings) in any floor, wall or ceiling.
- I. The premises shall be kept free from the accumulation of rubbish and debris caused by the work. Dust, fibers, debris, etc. caused by the work shall be cleaned up immediately (prior to the worker leaving the area, room or space) and not tracked to other areas, rooms, spaces, etc. Cleanup shall be with a vacuum cleaner or similar provided with a proper HEPA filter.
- J. The Contractor shall provide all hangers, supports, chases, anchor bolts, inserts, sleeves and other openings in the construction required for the electrical work.

3.04. PROTECTION OF PERSONS, FACILITIES & UTILITIES

- A. Provide devices and methods and proceed with sufficient caution to preclude damaging any facilities, utilities (e.g. power, water, sewer, natural gas, telecommunications, etc.) or similar, above ground or underground, concealed or exposed, known or unknown, located or not located. In the event unidentified utilities are encountered, notify the utility, Owner and Engineer.
- B. Unless otherwise provided by the drawings or specifications, do not cut or alter any existing utility or similar without authorization of the Owner and Engineer. The Contractor shall pay all costs, as determined by the Engineer, of remedial work necessitated by unauthorized or accidental cutting, patching, etc. which damages and/or impairs the performance of existing utilities or similar (e.g. power, water, sewer, natural gas, telecommunications, etc.), above ground, concealed or exposed, known or unknown, located or not located.
- C. All such work shall be verified with Owner and Engineer before execution of replacement, re-routing, relocation, repair or termination commences.

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- D. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of Owner and utility, without increase in Contract Sum.
- E. Damaged electrical and telecommunications (telephone, computer/data, television, fiber, copper, etc.) cables shall be replaced in their entirety. Splicing will not be allowed.

3.05. COORDINATION AND SCHEDULING

- A. The Contractor shall coordinate the work and cooperate with the Owner, Tenants, other trades and System Contractors to have the work completed to the best advantage, insure there are no interferences, provide reasonable opportunity for the other trades and Contractors to complete their work and to not delay the work.
- B. Work under this project will be undertaken with the facility in full operation.
- C. Contractor shall coordinate work to avoid disturbance to building operations and personnel, and to allow access for both persons to and within all portions of the facility and vehicles to the facility.
- D. Contractor shall schedule all equipment, utility, electrical, telecommunications, fire alarm, etc. interruptions with the Owner in accordance with the owner's scheduling requirements. Interruptions and closures shall not be extended overnight.
- E. Contractor shall schedule building closures, complete or partial, with the Owner in accordance with the owner's scheduling requirements.
- F. Any and all costs incurred for non-standard hours, double-shifts, overtime, etc. or any other costs associated with completing the project within the completion times required shall be included without increase in contract sum.

3.06. DELIVERY, STORAGE AND HANDLING

- A. All equipment and materials shall be stored neatly and out of the way. Conduit, fittings, cable, etc. shall be stored off the ground, protected from the weather in racks or bins or on shelves. Equipment, panelboards, fixtures, devices, etc. shall be stored indoors in a dry, warm area, free of dust and one in which condensation will not occur.
- B. Ship equipment in its original package to prevent damage or entrance of foreign matter. Perform all handling and shipping in accordance with manufacturer's recommendations and packing label instructions. Provide protective coverings during construction.
- C. Following installation, protect materials and equipment from corrosion, condensation, physical damage, and the effects of moisture. Keep openings in boxes or equipment closed when work is not being done in them during construction.
- D. Identify materials and equipment delivered to the site and storage organized to permit checking against approved material lists and submittals.

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3.07. TEMPORARY POWER

- A. The Contractor shall provide all temporary power services, facilities, equipment, devices, material, etc. required for the construction; including adequate lighting, outlets, testing, etc. as may be necessary for the proper performance and inspection of the work.
- B. Electrical power at 120 volts, 1 phase for operation of lighting, small power construction tools and light-duty equipment may be obtained from the existing buildings, free of utility costs. During power interruptions, and if Contractor's equipment will not operate on the available power, the contractor shall supply all equipment needed, such as transformer(s), generator(s), etc. and pay all costs involved.
- C. The temporary power system shall be provided in a neat and safe manner, in compliance with governing codes and good working practice.
- D. The temporary power system shall be removed when no longer required.

3.08. REMOVAL

- A. Contractor shall remove all items indicated as to be removed and in the areas being remodeled (whether indicated or not), and all associated equipment, devices, raceways, boxes, cables, etc. back to their point of origin and/or destination; except, concealed conduits & boxes may be abandoned in place and/or existing conduits and boxes may be re-used if in good condition and appropriate for the new installation, at the option of the Contractor. Existing cables shall be removed or replaced. Provide pull strings in existing conduits being abandoned in place. Existing below grade conduits shall be cut off and capped flush with the floor. Existing concealed boxes shall be provided with suitable blank covers and/or wallplates.
- B. Label the ends of conduits abandoned in place with origin and destination description, and note locations on the as-built drawings.
- C. Where existing equipment, fixtures, devices, etc. are indicated to be replaced, remove and dispose of the existing and provide new in its place.
- D. All existing cabling that is no longer used or abandoned, either as part of the work, or as a result of previous work, shall be removed from point of origin to destination, unless noted otherwise.
- E. For all items indicated as to be removed or re-wired, Contractor shall remove all associated conduit, boxes, cables, etc. back to their point of origin &/or destination; except, concealed conduits & boxes may be abandoned in place &/or existing conduits & boxes may be re-used if in good condition & appropriate for the new installation, at the option of the Contractor. Existing cables shall be removed or replaced.
- F. Existing equipment, fixtures, devices, etc. to remain shall be protected as required during demolition and construction. In the event of damage, immediately make all repairs and/or

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replacements necessary to the approval of the Owner and Engineer without increase in Contract Sum.

- G. Existing equipment, fixtures, devices, etc. to be re-used in the new work shall be removed carefully, and protected as required during demolition and construction. In the event of damage, immediately make all repairs and/or replacements necessary to the approval of the Engineer without increase in Contract Sum.
- H. Items not indicated shall remain "as is"; except, shall be re-connected as required if its circuit is interrupted during the demolition.
- I. Holes, openings, etc. where existing raceways, cables, boxes, outlets, etc. are removed and not replaced shall be patched to match adjacent surface.
- J. All surplus materials removed during the demolition shall be inspected by the Owner and those items selected shall remain the property of the Owner. All remaining surplus materials shall be removed from the site and disposed of by the Contractor without increase in Contract Sum.

3.09. INTERRUPTIONS

- A. Power, fire alarm, telecommunications and other systems interruptions, whether to individual equipment or to the entire system, shall not be done without prior approval and scheduling with the Owner. Power, fire alarm and/or telecommunications interruptions required to facilitate construction work and that affect operation of the existing facility shall not be done during normal working hours. Some working of non-standard or longer than standard hours will be required, without increase in Contract Sum.
- B. Power interruptions to panels and/or circuits feeding existing telecommunications equipment, devices, etc. shall not exceed 1 hour, and then performed only after normal working hours at times approved by the owner.
- C. Change-over of individual items shall be done 1 at a time.
- D. As much as possible, items shall be pre-assembled and systems prefabricated to minimize the change-over time.
- E. Shutdowns will not be allowed to extend beyond the time Contractors personnel are present.

3.10. LOCATIONS

- A. Locations and mounting heights of equipment, devices, etc. shall be consistent, and in accordance with the requirements of NFPA, ADA and the authority having jurisdiction.
- B. Devices and associated wallplates shall be located so as to not span different types of building finishes.
- C. In general, surface raceways, cable racks, etc. shall be mounted as unobtrusively as possible.

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- D. Prior to rough-in, the Contractor shall mark or otherwise show the location of all equipment and devices, and the proposed routing of raceways. Obtain specific approval for the location of each from the Owner and Engineer before rough-in.
- E. Changes in location (e.g. equipment and devices up to 10 feet, conduit routing, etc.) made before installation and deviations to avoid interferences shall be made without increase in Contract Sum.

3.11. EQUIPMENT, LUMINAIRES AND DEVICES

- A. Equipment, luminaires, devices, etc. shall be installed plumb and true, and shall be square with the adjacent walls, ceilings, structural members and other equipment; in a horizontal or vertical position as intended. The location of similar items shall be consistent.
- B. Equipment, panels, boxes, fixtures, devices, etc. shall be accurately mounted and leveled and be firmly supported either directly or indirectly by a sound and safe structural member of the building in accordance with manufacturer's instructions, or as directed. Supports shall be neatly placed and properly fastened.
- C. The correct lifting, jacking and/or moving gear which will prevent damage shall be used.
- D. All bolts, nuts, screws and other fastenings shall be tightened in accordance with manufacturers or listing instructions and all covers replaced on equipment and boxes. All electrical connections, particularly those on bus work in panelboards, etc. shall be checked to ensure tightness and electrical conductivity.
- E. Follow manufacturer's installation details wherever available. Provide supports, boxes, mountings, wiring, fittings, etc. as required, standard or special. Wherever any conflict arises between manufacturer's instructions, codes and regulations, and these Contract Documents, follow Owner's decision.
- F. Following installation, protect materials and equipment from corrosion, condensation, physical damage, and the effects of moisture. Keep openings in boxes or equipment closed when work is not being done in them during construction.
- G. Provide gaskets, seals, etc. as required to prevent the entrance of moisture, debris, insects, etc. Check for proper fit.

3.12. SUPPORTS

- A. Provide all necessary supports, anchors, fasteners, and backing for all raceways, cable trays, cable racks, boxes, enclosures, fixtures and equipment.
- B. Hangers and supports shall be made from standard structural shapes and hardware or systems of shapes, fittings and hardware designed for the purpose.
- C. Hangers and supports shall be adequately and safely attached. Equipment or materials to be supported shall be securely fastened to the supporting means. Use size and number of

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attachments as required for a safety factor of at least four. In addition to the weight of the material, consideration shall be given to the weight of the support itself, the weight of materials within, vibration, external operational forces, shock load, etc.

- D. Brace all equipment, cable tray, cable racks, etc. as required to meet the requirements of International Building Code (IBC).
- E. Attach to wood with wood or lag screws, to metal with machine screws or bolts and to concrete with carbon steel wedge or sleeve type expansion anchors or self-drilling metal anchors and machine screws or bolts.
- F. Pad and floor mounted equipment shall be secured with suitable hot dipped galvanized steel anchor bolts, washers, hex nuts, etc.
- G. Below the existing floor slab is a methane gas collection system. Drilling, roto-hammering, core drilling, etc. through existing floor is not allowed.

3.13. CORROSION PROTECTION

- A. Maintain the integrity of factory provided corrosion protection. Repair damaged corrosion protection and touch-up paint all scratched, marred or damaged factory finish on equipment, devices, luminaires, enclosures, etc.; per manufacturer's instructions where available.
- B. Paint field cuts with a suitable cold galvanizing compound.

3.14. APPROVALS

- A. Prior to rough-in, the Contractor shall mark or otherwise show the location of all equipment and devices, and the proposed routing of raceways, cables, etc. Obtain specific approval for the location of each from the Owner and Engineer before rough-in.
- B. Prior to beginning installation of cables, obtain approval of concealed raceway installation from the Owner and Engineer.
- C. Prior to beginning installation of cables, obtain approval of the raceway installation from the Owner and Engineer.

3.15. CLEANING

- A. Remove trash, combustible material, and other debris from areas around equipment.
- B. Remove shipping materials, supports, spacers, etc. from equipment, devices, etc.
- C. Remove all debris from equipment, devices, etc. including all scraps of wire, plaster, dust, and other foreign material. Vacuum cabinet clean and wipe down with a clean, dry, lint-free cloth or soft bristled brush.

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- D. Remove paint splatters and other spots, dirt, and debris.
- E. Touch up scratches to match original finish.
- F. Remove all traces of soil, dirt, dust, smudges, fingerprints and other foreign matter from visible surfaces of equipment, devices, luminaires, etc. Pay close attention to highly finished surfaces such as glass and polished metals. Wipe lamps clean.
- G. Maintain adequate ventilation during cleaning.
- H. Follow manufacturer's instructions. Failure to follow manufacturer's recommendations when cleaning equipment can result in damage from the use of improper cleaning methods or agents.

3.16. VISUAL AND MECHANICAL INSPECTION

- A. Verify that all equipment and their components are sized properly for the load and the types, sizes, etc. are in accordance with the contract documents, approved submittals, etc.
- B. Visually inspect equipment for physical damage. Repair physical damage, if practical and approved by the manufacturer. Consult Owner, Engineer and manufacturer for recommendations for suitable protective barriers to prevent future damage.
- C. Inspect molded and formed equipment and components (e.g. circuit breaker cases, fuses, starters, relays, insulators, supports, etc.) for cracks or other defects.
- D. Check all bolts, connections, cable terminations, etc. for tightness using a calibrated torque wrench or screwdriver. Refer to manufacturer's instructions and markings for proper torque values.
- E. Visually check the equipment, its components and associated raceways, conductors, etc. for proper grounding and bonding. Ensure that grounding and bonding terminal bars, bus bars, straps, and conductors are properly connected.
- F. Verify that cables do not contact live parts and that cables are properly secured to withstand the effects of fault currents.
- G. Check equipment anchorage, mounting, clearances, alignment and fit of components.
- H. Check that phase barriers are in place, if applicable.
- I. Visually check disconnect switch blade alignment, blade penetration, travel stops, and mechanical operation.
- J. Inspect each fuse holder to determine whether it seems to be adequately supporting the fuse and that the fuse holders are securely attached to the mounting base. Verify fuses are set tightly in the clips provided.

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- K. Operate equipment and components (e.g. disconnect switches, circuit breakers, etc.) to insure smooth operation.
- L. Motor bearings shall be checked for proper lubrication and the shaft turned to ensure it is free to rotate.
- M. Compare all circuits (internal and external) with wiring and/or control diagrams to verify they are installed correctly.
- N. Confirm correct operation and sequencing of electrical and mechanical interlock systems, if so equipped. Attempt closure on locked-open devices. Attempt to open locked-closed devices.
- O. Confirm that equipment nameplates and safety labels are provided.

3.17. TESTING

- A. The Contractor shall perform all tests required in the various sections of the specifications and in accordance with manufacturer's recommendations. Record test results and include in operation and maintenance manuals.
- B. Test equipment in accordance with manufacturer's recommendations. Maintain test results for future comparisons. Include in operation and maintenance manuals.
- C. Upon completion, all equipment and systems shall be tested for functional operation, including all intended modes and sequences of operation.
- D. Readings of the voltage and amperage shall be taken on each phase at each panelboard and at the end of the longest branch circuit at no load and full load conditions.
- E. All systems shall test free from shorts and grounds and shall be without mechanical and electrical defects. If any test indicates a failure, in the opinion of the Engineer; the item shall be replaced or suitably repaired to the approval of the Owner and Engineer, and the test repeated without additional cost to the Owner.

3.18. ENERGIZING

- A. Energize equipment in accordance with manufacturer's recommendations.
- B. The Owner, Engineer and other affected personal shall be notified one week prior to energizing so that the energizing may be witnessed.
- C. Energize equipment, feeders, circuits, etc. from the source end and working to the load. Close main devices, feeder devices, motor/branch circuit devices, etc. in sequence.
- D. Verify all temporary grounding, etc. connections are removed prior to energizing.
- E. Verify that all load disconnecting, etc. devices are open, padlocked and tagged prior to energizing.

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3.19. CONTRACT CLOSE-OUT

- A. Upon completion of the work, and prior to final acceptance, the Contractor shall thoroughly check the installation. Checking shall consist of visual inspection and manual adjustment to confirm correct installation and arrangement and to assure the intended function, response and operability. Checking shall include, as a minimum, the following:
1. Check that equipment, devices, etc. are of the correct type and rating.
 2. Check that all raceways, fittings, devices, boxes, enclosures, etc. are secure and that all conduit connections are tight.
 3. Check that all electrical connections are correctly tightened.
 4. Check that equipment, devices, panelboard circuit directories, etc. are correctly labeled.
 5. Check that equipment, fixtures, devices, etc. are clean with all unnecessary labels removed.
- B. Upon completion of the work, and before final acceptance and payment, the Contractor shall:
1. Remove from the site and dispose of all surplus and discarded equipment, materials, rubbish, and debris which may have accumulated during the execution of the work.
 2. Submit approved "As Built" Drawings, Record Documents, Test Records, Manuals, etc.
 3. Submit written warranty statements for equipment, materials and installation.
 4. Conduct system tests.
 5. Obtain final inspections from the authorities having jurisdiction.
- C. Subsequent to final completion and testing operations, instruct Owner's authorized representatives as required in operation, adjustment and maintenance of equipment and systems.

END OF SECTION

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SECTION 26 05 00 — Common Work Results For Electrical

PART 1 - GENERAL

1.01. APPLICABLE PROVISIONS

- A. The General, Supplementary and other Conditions of the Contract, modifications to the General Conditions, the Drawings, and the applicable provisions of the other Divisions are hereby made a part of this Division and all its sections.

1.02. SUMMARY

- A. The requirements of this Section and the other Division 26 Sections apply to all the electrical work.
- B. Coordinate electrical work with related work shown and specified elsewhere.
- C. Provide all materials necessary for the proper execution and completion of the work as herein specified or called for on the drawings. Required items not specifically mentioned in the specifications or indicated on the drawings shall be provided as necessary to produce the intended results.
- D. In the event that any item is not available exactly as specified, the Contractor shall so notify the Engineer in writing as early as possible to allow ample time for an alternate item to be selected without delay to the project.

PART 2 - PRODUCTS

2.01. RACEWAYS

- A. Raceways, where required, shall be of the types listed below, unless noted otherwise:
 - 1. Polyvinyl Chloride Conduit (PVC) - below grade, except as noted below.
 - 2. Galvanized Rigid Steel Conduit (GRS) - Below grade conduit bends and risers.
 - 3. Galvanized Rigid Steel Conduit (GRS):
 - a. Below grade conduit bends and risers.
 - b. Exterior exposed conduits, above grade.
- B. Raceways shall be sized so that the cable fill does not exceed 40%; except, minimum conduit sizes shall be as follows:
 - 1. 1 inch – branch circuits.
 - 2. 1 inch – below grade.

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- C. PVC conduit shall be heavy-wall (Schedule 40), flame-retardant, suitable for use with 90°C cable, shall not distort from heat it will normally encounter and shall be resistant to low temperature and sunlight effects, impact and crushing.
- D. Rigid steel conduit shall be hot-dipped galvanized with threaded couplings and connectors. Below grade steel conduits shall be coated with a suitable asphalt (or equivalent) compound for corrosion protection.
- E. Electrical metallic tubing shall be electro-galvanized steel.
- F. Flexible conduit shall be galvanized steel; except outdoors, flexible conduit shall be liquidtight type PVC coated galvanized steel. Flexible conduit connections shall be a minimum of 18 inches long.
- G. Conduit elbows and bends in conduits 2 inch diameter and smaller shall be not less than 6 times the conduit diameter and bends in larger conduits shall be not less than 10 times the conduit diameter.

2.02. RACEWAY FITTINGS

- A. Fittings for steel conduit shall be steel, galvanized or cadmium plated, threaded type. Couplings shall be galvanized steel. Locknuts and bushings shall be galvanized steel.
- B. Connectors, couplings, etc. for EMT shall be steel set-screw type; except, steel raintight compression type in potentially wet or damp locations (e.g. outdoors).
- C. Fittings for flexible metal conduit shall be of a type specifically designed for the purpose.
- D. Fittings for nonmetallic conduits shall be of same manufacturer and material as the conduit.
- E. End bells and/or insulated bushings shall be used on all underground conduit system terminations at vaults, junction boxes, padmounted equipment, etc. Conduit terminations at equipment, etc. shall be suitably sealed and/or plugged at both ends to prevent the entrance of moisture. Spare, c.o., etc. conduits shall be provided with removable gasketed covers at the high end to prevent the flow of moisture from one box to another.
- F. Provide approved properly bonded expansion fittings (capable of expansion and contraction as required), deflection couplings, etc. wherever conduits pass over or through joints or other locations where raceways may be affected by dissimilar movements of the supporting structure.

2.03. BOXES

- A. Boxes shall accommodate any devices to be installed and shall be sized as required by the applicable codes for number and size of conduits and cables entering and leaving; except minimum as noted below.
- B. Exterior outlet boxes shall have while-in-use weatherproof covers.
- C. Unless noted otherwise, boxes installed in wet or damp locations and outdoors shall be threaded rigid body type, cast aluminum or galvanized iron.

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- D. Unless noted otherwise, larger size pull, splice and terminal boxes shall be fabricated from code gauge galvanized steel, with full access screw type cover unless noted otherwise. Sizes shall be as required, except minimum as indicated.
- E. Switch, power outlet, device, etc. boxes shall be single or ganged to accommodate the required number of devices; except, flush mounted boxes shall be minimum 4 inches square for conduits 1 inch or less and $4\frac{11}{16}$ inches square for larger conduits. Boxes containing a single device shall be minimum $1\frac{1}{2}$ inches deep. Boxes containing multiple devices shall be minimum $2\frac{1}{8}$ inches deep. Flush mounted boxes shall be equipped with plaster rings and suitable wallplates. Surface mounted boxes shall have raised surface type covers.
- F. Junction and pull boxes shall be sized as required by the NEC except the minimum size shall be 4 inch, square or octagonal as required, by $1\frac{1}{2}$ inches deep. Junction and pull boxes shall have full-access screw covers.
- G. Boxes shall be equipped with mud rings where required and proper wallplates and/or covers.
- H. Unused boxes, including existing abandoned in place, shall have blank wallplates or ceiling box type covers. Color shall match existing surface paint color as close as possible with manufacturer's standard colors.
- I. Openings in boxes, etc. through which cables are intended to pass shall be provided with suitable nonmetallic grommets.

2.04. WIRE AND CABLE

- A. Wire and cable sizes indicated and/or specified are minimums only and shall be increased as required due to NEC, system, load, voltage drop, etc. requirements.
- B. All wire and cable (power, control, ancillary systems, etc.) installed in below grade conduit shall be suitable for wet locations.
- C. Branch circuit cable and equipment ground cable, where run in raceways, shall be single conductor copper with 600 volt type XHHW insulation. The minimum conductor size shall be #12 AWG. Conductors shall be stranded.
- D. Cords shall be multi-conductor stranded copper with a green insulated grounding conductor, 600 volt type SO insulation and an overall neoprene jacket. The minimum conductor size shall be #14 AWG.
- E. Color coding for power cable shall be as follows:
 - 1. 208Y/120 volt, 3 phase, 4 wire:
Phase A = black, B = red, C = blue, N = white;
 - 2. 480Y/277 volt, 3 phase, 4 wire:
Phase A = brown, B = orange, C = yellow, N = gray;
 - 3. Equipment ground cables shall be green.

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4. Switch legs shall be the same color as the phase conductors. Switch travelers shall be purple.

- F. Cable pulling lubricants shall be gel type, of the best quality and shall not have any damaging effect on the insulation. (Ideal Yellow 77 is not approved.)

2.05. CABLE SUPPORTS

- A. Cable ties shall be utilized in panelboards, etc. to group and support conductors. Multi-wire branch circuits shall be grouped together as required. All cable shall be fanned-out to terminals and identified by labels; or, if terminated on circuit breakers or control devices, by typewritten indexes or nameplates.

2.06. LOW VOLTAGE CONNECTIONS AND TERMINATIONS

- A. Taps and splices shall be kept to a minimum.
- B. Taps and splices in #8 AWG, and smaller, shall be made with twist-on spring type wire nuts. Taps and splices in telecommunications cables, ancillary systems cables, larger branch circuit cables, feeder cables, control cables, etc. or below grade will not be allowed without specific approval from the Engineer.
- C. Taps and splices in #8 AWG and larger cable, where allowed, shall be made with proper size squeeze-type copper compression tap and splice connectors. (Mechanical set-screw type connectors will not be allowed.) Wrap completely with suitable electrical insulating tape or shrink-wrap in accordance with manufacturers instructions.

2.07. WARNING TAPE

- A. Yellow 3" wide polyethylene metalized warning tape shall be direct buried 12 inches above the topmost underground conduits. For multi-use excavations and trenches, provide multiple tapes.
- B. Tape shall be printed with the words:
1. "Caution, Buried Power Line Below" or similar above electrical conduits.

2.08. PULL STRING AND ROPE

- A. Spare, c.o., etc. conduits shall be provided with pull rope below grade and pull string above grade.
- B. Pull string shall be resistant to rot and mildew and shall not deteriorate when exposed to oil, grease, etc.
- C. Pull rope shall be twisted polypropylene treated with ultraviolet stabilizers, minimum $\frac{1}{4}$ inch diameter. Rope shall be resistant to rot and mildew and shall not deteriorate when exposed to oil, grease, etc.

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PART 3 - EXECUTION

3.01. RACEWAYS

- A. Raceways shall be installed straight, plumb and true and shall be without kinks or sags. Exposed raceway runs shall be either parallel or at right angles to walls and structural members, as neatly and unobtrusively as possible (e.g. adjacent to window and door trims and base, at wall/wall or wall/ceiling intersections, etc.).
- B. Below grade conduits shall be direct buried between 24 and 30 inches below grade and spaced a minimum of 2 inches between conduits, except:
 - 1. Where required to avoid interferences with existing utilities and where rock is encountered, conduit depth may be reduced to 24 inches below grade in roadways and parking areas, and 18 inches below grade elsewhere.
- C. Underground conduits extending into the building and at transformers, panels, etc. shall be suitably sealed or plugged at both ends. Sealant shall be removable. Ductseal is not acceptable.
- D. PVC conduit shall be solvent welded to prevent the entrance of moisture.
- E. Verify location, mounting heights, etc. of raceways from the Owner and Engineer prior to installation. In general, surface conduit shall be mounted as unobtrusively as possible.
- F. Raceways shall be located to not interfere with the removal of pipes or equipment for maintenance or repair. All raceways shall be kept a minimum of 6 inches away from items producing heat.
- G. Above grade raceways, fittings, etc. shall be securely supported from permanent structural members. Single runs of exposed conduit shall be supported with steel pipe straps.
- H. Bends in raceways shall be made without flattening, kinking or reducing the cross-sectional area of the raceway.
- I. All raceway cuts shall be made square with a proper cutting tool. The inside and outside of all raceway ends shall be reamed after cutting and/or threading to eliminate burrs and rough edges, then wiped clean. Joints shall be cut square and shall butt solidly into couplings. Running threads will not be permitted.
- J. Raceways shall be closely and tightly fitted in couplings, connectors, boxes, etc. to provide an electrically continuous low resistance ground fault return path. Threaded joints shall be made up with at least 5 threads fully engaged.
- K. The raceway systems shall be complete (including the installation of bushings, grommets, etc.), snaked and cleaned, and approval of the installation is obtained from the Owner and Engineer, before installation of any wallboard where the raceway is concealed in walls and above ceilings.
- L. Exposed raceways shall be painted.

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3.02. EXCAVATION AND BACKFILLING

- A. Excavate to depths noted, and as required for proper completion of all below grade work and cut to sufficient size to provide ample room for construction of forms, shoring and bulkheads as required.
- B. Cut existing asphalt, concrete, etc. as required. Push under existing curbs, sidewalks, etc. where possible.
- C. Underground utilities (electrical, water, sewer, cable television, etc.) are known to exist in the area of construction. The location of existing utilities shown on the drawings is approximate only and is not guaranteed to be an indication of all utilities in the area. The contractor is responsible for contacting the Owner and all utility companies and for field location of all utilities prior to construction. The one-call number for underground utility location services is 1-800-424-5555. The Contractor shall promptly notify the Engineer of any conflicts between the contract documents and field location of existing utilities. The Contractor is responsible for maintaining the integrity of all existing utilities during construction.
- D. Damaged electrical and telecommunications (telephone, computer/data, television, fiber, copper, etc.) cables shall be replaced in their entirety. Splicing will not be allowed.
- E. Provide a spotter at all times when excavation occurs by use of a backhoe, excavator or other mechanical equipment.
- F. Shore and brace excavations where necessary to prevent cave-ins and in accordance with all safety laws and codes.
- G. During excavations and backfilling, extreme care shall be taken to keep rocks and other rough material away from conduits and cables. Pack a minimum of 6 inches of soft fill material (free from stones, rocks and other rough material that might be forced against the conduits and cables during backfilling, or when settling or frost-heaving disturbs the surrounding earth) around conduits and cables. Wash in to avoid air gaps.
- H. Backfill shall be good compactable material without large rocks, chunks or sticks. Backfill in all excavations shall be progressively compacted in maximum 12 inch lifts to 95% of maximum density, and shall be without voids.
- I. Prior to excavation, the Contractor shall mark or otherwise show the location of all equipment and vaults, and obtain specific approval from the Owner and Engineer for the location of each prior to installing equipment, boxes, raceways, etc.
- J. Maintain all bench marks, control monuments and stakes, whether newly established by Surveyor or previously existing. Protect from damage and dislocation. If necessary to disturb existing benchmark, re-establish in a safe place.
- K. The clearance between the underground conduit systems and other underground items, such as water and sewer lines shall be as large as necessary to permit maintenance of any of the systems without damage to the other items.
- L. Keep all excavations, pits, trenches, etc., entirely free from water. Protect excavations from rain or water from any source during construction. Use suitable pumping equipment or other means as required by conditions. Continue pumping as necessary until completion of work.

DIVISION 26 — ELECTRICAL

SECTION 26 05 00 — Common Work Results For Electrical

- M. When operations are interrupted by unfavorable weather conditions, prepare areas by grading and compaction to avoid ponding and erosion.
- N. Dirt shall not be permitted to accumulate on roads or adjacent green belts, nor to be washed into drainage ditches or waterways.
- O. Appropriate steps, such as the application of water, shall be taken to prevent airborne dust due to the work, particularly during excavation and moving of materials.
- P. Trenches, excavations and any damage to adjoining areas shall be repaired/restored to existing or better condition to the approval of the Owner and Engineer.

3.03. WARNING TAPES

- A. Direct bury warning tape 12 inches above topmost conduits. For multi-use excavations and trenches, provide multiple tapes. Tapes shall extend into vaults and be stubbed up with and secured to conduits as required for access when testing.

3.04. LABELING & IDENTIFICATION

- A. In each junction and pull box, neutral conductors shall be grouped with associated phase conductors by taping the conductors together.
- B. Color coding for power cable shall be as follows:
 - 1. 208Y/120 volt, 3 phase, 4 wire:
Phase A = black, B = red, C = blue, N = white;
 - 2. 480Y/277 volt, 3 phase, 4 wire:
Phase A = brown, B = orange, C = yellow, N = gray;
 - 3. Equipment ground cables shall be green.
 - 4. Switch legs shall be the same color as the phase conductors. Switch travelers shall be purple.

3.05. BOXES

- A. Boxes shall be installed plumb and true and be firmly supported either directly or indirectly by a sound and safe structural member of the building with approved anchors and fasteners, and shall be readily accessible for maintenance.
- B. Pull boxes or fittings shall be provided in conduit runs as required to prevent excessive stress on the cables during pulling and to allow the minimum required bending radius.

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3.06. WIRE AND CABLE

- A. All wire and cable shall be enclosed within the raceway system.
- B. Inspect cable prior to installation to verify that it is identified properly on the reel or box identification label, that it is of proper gauge, containing correct number of pairs, etc. Note any buckling of the jacket which would indicate possible problems. Damaged cable or any other components failing to meet specification shall not be used in the installation.
- C. Conductors of different voltages, systems, functions, etc. shall not be combined in the same raceway or cable unless specifically noted otherwise.
- D. Wire and cable shall not be exposed to weather or mechanical damage longer than necessary. Cut ends of the cable shall be immediately sealed to protect from moisture. Duct tape is not an acceptable means of sealing.
- E. The contractor shall not receive cable from the supplier if it arrives onsite with the cable ends unsealed.
- F. Cable shall be unrolled from reels, or removed from cartons, and installed in a manner which will prevent kinking, crushing or excessive tension on conductors and insulation. Use only guides, rollers, sheaves, etc. that are free-turning and clean. Cable shall not be dragged on the ground or over sharp edges or abrasive surfaces. Slack wire shall be provided at all pull points.
- G. Cable shall be installed or drawn into the raceway system only after all work of any nature that might cause injury to the cable is completed. The raceway system shall be complete, snaked and cleaned before pulling any cable.
- H. All cables shall terminate in an approved enclosure or fitting.
- I. Provide wire/cable markers (Brady type or equivalent/better) identifying its circuit number and/or final destination on all cables/conductors (power, telephone/computer, and other ancillary systems) at panels, devices, junction points, etc.
- J. Cable pulling lubricants shall be used to minimize pulling stresses on cable pulled into raceways.
- K. All cable is subject to subtle damage that may degrade future performance, if abused during installation. In all cable installation, set reels and use sufficient pulleys and manpower so that cables are not pulled around corners or against material that might cause chafing.

OBSERVATION OF IMPROPER CABLING HANDLING TECHNIQUES MAY CAUSE THE CONSULTANT/ENGINEER AND/OR OWNER TO REQUIRE THE CONTRACTOR TO DISCARD AFFECTED CABLES, INCLUDING ANY OTHERS ALREADY INSTALLED BY THE PERSONNEL FOUND USING INCORRECT PROCEDURE.

- L. Conductor connections shall be made with connectors of the proper size and type. Compression connections shall be made with the correct die and number of crimps, or the correct tightening torque in the case of mechanical connectors, according to manufacturer's instructions and recommendations. Use suitable oxide inhibiting joint compound on all aluminum terminations. Care shall be taken to not nick conductors during insulation removal.

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SECTION 26 05 00 — Common Work Results For Electrical

- M. At pulling points, the cables shall be neatly bundled by circuit.
- N. Taps and splices shall be kept to a minimum; and are not allowed in cables larger than #8 AWG, control cable, ancillary systems cable, etc. and below grade without prior approval from the Engineer.
- O. Insulated cable supports shall be provided to relieve any strain imposed by cable weight or movement, and to secure cable as required to withstand the effects of fault currents.
- P. Field wiring shall not contact live parts.
- Q. Suitable cable ties and/or supports shall be utilized in switchboards, panelboards, terminal boxes, junction boxes, vaults, etc. to group and support conductors. All cable shall be fanned-out to terminals and identified by labels; or, if terminated on circuit breakers or control devices, by typewritten indexes or nameplates.
- R. Branch lighting and general purpose receptacle circuits do not require an insulation test, functional tests only are required; except, all receptacles shall be tested for correct connection using a suitable receptacle tester.

3.07. PULL STRINGS AND ROPES

- A. Provide pull strings in spare conduits.

End of Section 26 05 00

DIVISION 26 — ELECTRICAL
SECTION 26 05 26 — Grounding and Bonding

PART 1 - GENERAL

1.01. APPLICABLE PROVISIONS

- A. The General, Supplementary and other Conditions of the Contract, modifications to the General Conditions, the Drawings, and the applicable provisions of the other Divisions are hereby made a part of this Division and all its sections.

1.02. SUMMARY

- A. The requirements of this Section and the other Division 26 Sections apply to all the grounding work.
- B. Coordinate grounding work with related work shown and specified elsewhere.
- C. Provide all materials necessary for the proper execution and completion of the work as herein specified or called for on the drawings. Required items not specifically mentioned in the specifications or indicated on the drawings shall be provided as necessary to produce the intended results.
- D. In the event that any item is not available exactly as specified, the Contractor shall so notify the Engineer in writing as early as possible to allow ample time for an alternate item to be selected without delay to the project.

PART 2 - PRODUCTS

2.01. GROUNDING

- A. Ground rods shall be copper clad steel, $\frac{5}{8}$ inch diameter by 10 feet long minimum.
- B. Ground clamps, bolts, nuts, washers, etc. shall be corrosion resistant high copper alloy or silicon bronze.

2.02. SWITCHBOARDS AND PANELS

- A. Provide both ground and neutral bars in switchboards and panels (new and existing). All connectors and lugs shall be solderless, pressure type suitable for copper or aluminum wire.

2.03. WIRE AND CABLE

- A. Ground wire and cable sizes indicated and/or specified are minimums only and shall be increased as required due to NEC, system, load, voltage drop, etc. requirements.

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- B. Equipment ground cable shall be single conductor copper with 600 volt type XHHW. Conductor size shall match feeder, branch circuit, etc. conductor size unless noted otherwise. Conductors shall be stranded.
- C. Cable lugs at ground bars, equipment, racks, etc. shall two-hole bolt-on compression type, long barrel, $\frac{5}{8}$ inch hole spacing for # 6 AWG and smaller cables, 1 inch hole spacing for # 4 AWG through # 1/0 AWG cable and $1\frac{3}{4}$ inch hole spacing for # 2/0 AWG and larger cable. Mounting bolts shall be $\frac{1}{4}$ inch, $\frac{3}{8}$ inch or $\frac{1}{2}$ inch diameter (as required), with hex head bolts, beveled or spring type washers, lock washers and hex head nuts; Thomas & Betts 548 series or Burndy YA series (no exceptions).

PART 3 - EXECUTION

3.01. GROUNDING

- A. All electrical equipment, enclosures, boxes, devices, etc. shall be provided with a ground fault return path by means of an insulated grounding conductor installed with the circuit conductors, and the integrity of the raceway system if applicable. Bond raceway system as required.
- B. Ground terminals of all equipment, devices, etc. shall be grounded by the equipment ground conductor.
- C. Raceways shall be closely and tightly fitted in couplings, connectors, boxes, etc. to provide an electrically continuous low resistance ground fault return path. Threaded joints shall be made up with at least 5 threads fully engaged.
- D. Building steel and metal piping systems shall be suitably bonded.
- E. Exothermic welded connections shall be done strictly in accordance with manufacturer's instructions, and then enclosed in an air-tight sealing compound to prevent moisture intrusion and minimize corrosion. Molds shall not be altered. All connection materials shall be of the same manufacturer.
- F. Compression connections shall be made with the correct die and number of crimps, or the correct tightening torque in the case of mechanical connectors, according to manufacturer's instructions and recommendations.
- G. Grounding conductors exposed to mechanical damage shall be protected with PVC conduit sleeves with bushings.
- H. Before grounding connections are made, contact surfaces shall be thoroughly cleaned and anti-oxidant solution applied.
- I. Connections shall be both mechanically and electrically secure. Torque connecting hardware in accordance with the manufacturer's instructions and recommendations.
- J. Tests shall be made to verify the continuity of the ground system and all ground fault return paths.
- K. After completion of the grounding system, the resistance of the grounding network to earth shall be measured using a ground megger. The minimum ground earth resistance shall be 25 ohms.

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SECTION 26 05 26 — Grounding and Bonding

End of Section 26 05 26

DIVISION 26 — ELECTRICAL
SECTION 26 10 00 — Electrical Transmission

PART 1 - GENERAL

1.01. APPLICABLE PROVISIONS

- A. The General, Supplementary and other Conditions of the Contract, modifications to the General Conditions, the Drawings, and the applicable provisions of the other Divisions are hereby made a part of this Division and all its sections.

1.02. SUMMARY

- A. The requirements of this Section and the other Division 26 Sections apply to all the electrical work.
- B. Coordinate electrical work with related work shown and specified elsewhere.
- C. Provide all materials necessary for the proper execution and completion of the work as herein specified or called for on the drawings. Required items not specifically mentioned in the specifications or indicated on the drawings shall be provided as necessary to produce the intended results.
- D. In the event that any item is not available exactly as specified, the Contractor shall so notify the Engineer in writing as early as possible to allow ample time for an alternate item to be selected without delay to the project.

1.03. SUBMITTALS

- A. Provide submittals for the following:
 - 1. Panelboards.

PART 2 - PRODUCTS

2.01. PANELS

- A. Panels shall be dead-front, circuit breaker type panelboards, suitable for use as service entrance equipment where required. Branch circuits shall be arranged using double row construction. Interiors shall be rigid and so designed that circuit breakers can be replaced, changed or added without disturbing adjacent units and without machining, drilling, or tapping.
- B. Busses shall be copper or tinned aluminum. Ground and neutral bars shall be provided. All connectors and lugs shall be solderless, pressure type suitable for copper or aluminum wire.
- C. Circuit breakers shall be bolt-on in panelboards, molded-case, thermal magnetic, quick make-quick break type with trip indicating handles. Branch circuit breakers for motor loads shall be HACR type. Branch circuit breakers for lighting loads shall be SWD type. Multi-pole breakers shall be single-handle, internal common trip. Tandem breakers shall not be used.
- D. Provide padlocking devices on circuit breakers where required.

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SECTION 26 10 00 — Electrical Transmission

- E. Provide approved handle ties between single pole circuit breakers for all multiwire branch circuits as required.
- F. Main and/or feeder breakers and branch circuit panels and breakers shall be series short circuit rated.
- G. Circuit breakers for installation in the existing panelboard(s) shall be of the same manufacturer, and be of a type manufactured specifically for that type, vintage and short circuit rating of the panelboard.
- H. Spaces shall be bussed for the maximum device that can fit into them, and shall be equipped with mounting and connecting accessories for future installation of circuit breakers.
- I. Panels shall be suitable for top and bottom entry of feeder and branch circuit conduits, cables, etc.
- J. Panels shall be industrial/commercial type panelboards with hinged door, catch and lock (all keyed alike). Residential type loadcenters will not be allowed.
- K. Panels and each feeder breaker in each (clearly and accurately identifying the function and location) shall have laminated plastic master nameplates.
- L. Panels shall be provided with laminated plastic nameplates to identify the system color coding scheme for phase and neutral conductors as required.
- M. Panels shall be provided with warning labels to warn personnel of potential arc-fault hazards.
- N. Panels shall have a circuit directory frame and card with a transparent cover furnished on the door. Directory cards shall have a typewritten index clearly and accurately identifying the function and location of the circuit. Provide new typewritten circuit directory cards for all existing panels that are modified in any way.
- O. Circuit directory cards shall be arranged to match the physical arrangement of the breakers, with odd numbered circuits on the left side of the card and even numbered circuits on the right side of the card. Where required due to the size of the directory frame, the odd numbered circuits may be on a separate card from the even numbered circuits. Odd and even numbered circuits shall not be intermingled together.

2.02. WIRING DEVICES

- A. Wiring devices shall be specification grade, all of the same manufacturer, ivory colored.
- B. Switches shall be toggle, AC quiet type rated 20 amps, 120-277 volt.
- C. General purpose receptacles shall be 20 amp, 125 volt, AC, straight blade, 3-wire grounding type.
- D. Ground fault interrupter (GFI) type receptacles shall be duplex, Class A, 20 amp, 125 volt with end of life protection (either by rendering itself incapable of delivery power or by visual indication) and reverse line-load miswire protection. Provide individual ground fault interrupter type receptacles at

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each location indicated or as required. Feed-through type protection of multiple outlets will not be allowed.

- E. Special purpose receptacles shall be of the type, ratings and design for the use intended, NEMA configuration. Provide matching plugs where indicated.
- F. Weather-proof devices (other than receptacles) shall be equipped with stainless steel or cast metal covers and spring-loaded gasketed doors.
- G. Weather-proof receptacles shall be equipped with high impact metal covers. Covers shall maintain a weatherproof rating whether or not an attachment plug is inserted. Intermatic WP1010MC or equal.
- H. Definite purpose devices shall be labeled with a description of the device's function, rating and circuit identification.
- I. All outlets shall be labeled with the panel and circuit number(s) from which the device is fed. Labels shall be heavy duty adhesive type, clear with black letters on light colored devices and clear with white letters on dark colored devices. Lettering shall be appropriately sized for the application, except minimum $\frac{1}{8}$ inch. Labels on ceiling mounted devices shall be large enough to read from the floor. Labels shall be as manufactured by Kroy, Brothers, or approved equal. Self-adhesive circuit numbers, masking tape, plastic punch type "Dymo" labels, etc. are not acceptable.

2.03. EQUIPMENT IDENTIFICATION

- A. Provide nameplates for all equipment and other devices used for the control of circuits, equipment, etc. Include the panel and circuit number(s) from which it is fed.
 - 1. Panelboards and each feeder circuit breaker within each.
 - 2. Motor starters, contactors, etc.
 - 3. Disconnect switches.
- B. All distribution equipment (switchboard, panelboards, motor control centers, etc.) shall be provided with laminated plastic nameplates to identify the system color coding scheme for phase and neutral conductors as required.
- C. Definite purpose devices shall be labeled with a description of the device's function, rating and include the panel and circuit number(s) from which it is fed.
- D. All equipment and outlets shall be labeled with the panel and circuit number(s) from which it is fed.
- E. Labels shall be heavy duty adhesive type, clear with black letters on light colored devices and clear with white letters on dark colored devices. Lettering shall be appropriately sized for the application, except minimum $\frac{1}{4}$ inch. Labels on ceiling mounted devices shall be large enough to read from the floor. Labels shall be as manufactured by Kroy, Brothers, or approved equal. Self-adhesive circuit numbers, masking tape, plastic punch type "Dymo" labels, etc. are not acceptable.

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- F. Nameplates shall adequately describe the function or operation of the identified equipment, devices, etc. and, where applicable, include the panel and circuit number(s) from which it is fed. Nameplate designations shall be consistent with the project documents. Submit proposed inscriptions for approval.

PART 3 - EXECUTION

3.01. TEMPORARY POWER

- A. The Contractor shall provide all temporary power services, facilities, equipment, devices, material, etc. required for the construction; including adequate lighting, outlets, balancing, testing, etc. as may be necessary for the proper performance and inspection of the work.
- B. During power interruptions, and if Contractor's equipment will not operate on the available power, the contractor shall supply all equipment needed, such as transformer(s), generator(s), etc. and pay all costs involved.
- C. The temporary power system shall be provided in a neat and safe manner, in compliance with governing codes and good working practice.
- D. The temporary power system shall be removed when no longer required.

3.02. LOCATIONS

- A. The mounting heights and location of similar equipment and devices shall be consistent, in accordance with the requirements of the ADA where applicable. Special purpose items shall be located conveniently for the purpose intended.
- B. Devices shall be located to not interfere with the removal of pipes or equipment for maintenance or repair. All devices shall be kept a minimum of 6 inches away from items producing heat.
- C. Disconnect switches, circuit breakers, etc. shall, in no case, be installed so that the grip of the operating handle, when in its highest position, is more than 6¹/₂ feet above the floor or working platform.
- D. Prior to rough-in, the Contractor shall mark or otherwise show the location of all equipment and devices, and obtain specific approval from the Owner and Engineer for the location of each prior to installing enclosures, boxes, raceways, etc.

3.03. EQUIPMENT AND DEVICES

- A. Equipment, devices, enclosures, etc. shall be installed plumb and true and shall be square with the adjacent walls, ceilings and structural members.
- B. Equipment, cabinets, boxes, etc. shall be accurately mounted and leveled and be firmly supported either directly or indirectly by a sound and safe structural member of the building in accordance with manufacturer's instructions, or as directed. Supports shall be neatly placed and properly fastened.

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- C. Bolts, nuts, screws and other fastenings shall be tightened and all covers replaced on equipment and boxes. Electrical connections, particularly those on bus work in panelboards, etc. shall be checked to ensure tightness and electrical conductivity. Gaskets, seals, etc. shall be checked for proper fit.
- D. Follow manufacturer's installation details wherever available. Provide boxes, mountings, wiring or fittings required, standard or special.
- E. The Contractor shall touch-up paint all scratched, marred or damaged factory finish on equipment, devices, enclosures, etc.

3.04. TESTING

- A. Before testing, visually inspect equipment thoroughly, and perform mechanical operation and key interlock tests in accordance with manufacturer's instructions.
- B. Before energization, test all equipment in accordance with manufacturer's recommendations; except minimum as described below.
- C. Compare test results with factory-obtained results and results on similar equipment. Investigate variations. Consult manufacturer for recommendations.
- D. Upon completion, all equipment and systems shall be tested for functional operation, including all intended modes and sequences of operation.
- E. Record the values of each test, along with the description of the instrument, voltage level, temperature, time, and date of the test on the form included in the contract documents. Sign the results.

End of Section 26 20 00

DIVISION 31—EARTHWORK
Section 31 11 00—Clearing and Grubbing

PART 1 – GENERAL

1.01 SUMMARY

- A. The work described in this Section includes, but is not limited to, site clearing, removal of trees and brush, grubbing, and removal of other miscellaneous items needed to complete construction of the project.
- B. Work under this Specification section is paid under Bid Item 1 – Site Preparation, as shown on the Bid Form and described in Section 01 20 00—Price and Payment Procedures.

1.02 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 01 10 00—Summary
- B. Section 01 31 00—Project Management and Coordination
- C. Section 01 57 19—Temporary Environmental Controls

1.03 EXISTING CONDITIONS

- A. By submitting a bid, the Contractor represents that it has visited the Work Site to become familiar with the quantity and character of all materials to be cleared, and agrees that the premises were made available prior to the deadline for submission of bids for whatever inspection and tests the Contractor deemed appropriate.
- B. The Work Site has underground and other utilities. It is the responsibility of the Contractor to determine the location of all existing utilities adequately to avoid damage to utilities prior to initiating work related to this Section. Reference to information regarding locations of existing utilities is provided in the appendices to these Specifications.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

3.01 PROTECTION

- A. Roads and Walks
 - 1. Keep roads and walkways free of dirt and debris at all times.
- B. Existing Facilities

DIVISION 31—EARTHWORK

Section 31 11 00—Clearing and Grubbing

1. Protect existing facilities to remain from damage incidental to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require.

C. Utility Lines

1. Protect existing utility lines that are indicated to remain from damage.
2. Immediately notify the Engineer of any damage to, or an encounter with, an unknown existing utility line.
3. The Contractor is responsible for the repairs of damage to existing utility lines that are indicated or made known to the Contractor prior to the start of clearing and grubbing operations.
4. Notify the Engineer in ample time, when encountering utility lines to be removed within the area of operations, to minimize interruption of the service.
5. Refer to Section 01 31 00—Project Management and Coordination and Section 01 57 19—Temporary Environmental Controls for additional utility protection.

3.02 CLEARING

- A. Mark clearing units for approval by the Port prior to commencing clearing.
- B. Preserve and provide protection for:
 1. Adjacent facilities: Exercise extreme care to prevent damage to adjacent facilities that are to remain.
 2. Monuments: Carefully maintain benchmarks, monuments, and other reference points. If disturbed or destroyed, replace as directed. Note the position of all monuments on the Record Drawings.
- C. Visit the site prior to bidding to generally ascertain vegetation to be removed for construction.
- D. Clear rights-of-way to be occupied by permanent construction and required for access to the work. However, remove vegetation only as required; do not do an initial general clearing and grubbing of the Work Site that leaves areas exposed that will not have immediate follow-up construction.

DIVISION 31—EARTHWORK

Section 31 11 00—Clearing and Grubbing

- E. All temporary erosion and sediment control (TESC) measures must be in place prior to clearing and grubbing.
- F. Adhere to City of Bellingham seasonal restrictions for land clearing.

3.03 GRUBBING

- A. Remove stumps, roots, and vegetation to a minimum of 12 inches below final excavation lines and grades or until organic matter is removed.
- B. Perform clearing and grubbing according to the sequencing requirements described in Section 01 10 00—Summary and within these Specifications. Clearing and grubbing activities shall be performed in advance of Shoreline Debris removal, excavation, and grading work.

3.04 DISPOSAL OF CLEARED MATERIAL

- A. Remove and legally dispose of all cleared material at an approved Disposal Facility. Dispose of the refuse resulting from clearing and grubbing in a manner consistent with all federal, state, and local regulations.
- B. In no case shall refuse material be left at the Work Site, or be buried in embankments or trenches on the Work Site unless directed otherwise by the Port.

END OF SECTION

DIVISION 31 – SHORING AND UNDERPINNING

Section 31 41 16.13 – Steel Sheet Piling

PART 1 – GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. The drawings and general provisions of the Contract, including the General Conditions, Supplementary Conditions and the sections of Division 1 – General Requirements apply to this work as if specified in this section. Work related to this section is described in:
 - 1. Section 05 50 00 – Metal Fabrications
 - 2. Section 09 96 00 – Marine Coatings
 - 3. Section 31 68 13 – Soil Foundation Anchors
- B. Work under this Specification section is paid under Bid Item 31 – Furnish and Install Sheet Piling at West Central Waterfront Wall, Bid Item 32 – Furnish and Install Wall at West Maple Street, Bid Item 33 – Furnish and Install Sheet Piling at Maple St Replacement Bulkhead, Bid Item 36 – Furnish and Install Sheet Piling at East Central Waterfront Wall as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures.

1.02 DESCRIPTION OF WORK

- A. The extent and location of the “Sheet Pile Piling” is indicated on the Drawings. The work includes the driving of sheet piles and steel king piles and intermediary piles, installing a steel waler and threaded tie rod tiebacks as indicated on the Drawings.
- B. The horizontal and vertical control of the installed wall shown on the Drawings are critical to ensure proper installation of the sheet piles and king piles where needed. As described herein, the Contractor shall record and submit measurements in their Daily Driving Reports to confirm that the sheet pile walls are installed within the required tolerances.
- C. Throughout the duration of pile installation, the Contractor shall monitor the surrounding properties for vertical displacement, horizontal displacement, and damage.
- D. The Contractor shall be responsible for installing tiebacks that will develop the allowable load indicated on the Contract Drawings in accordance with the Section 31 68 13.

1.03 REFERENCES

DIVISION 31 – SHORING AND UNDERPINNING

Section 31 41 16.13 – Steel Sheet Piling

- A. American Society for Testing and Materials (ASTM).

1.04 QUALITY ASSURANCE

- A. The Contractor shall facilitate and assist in keeping driving records, noting the location, horizontal alignment and tip elevation for each pile driven. Data shall be recorded in a format acceptable to the Engineer. Facilitate and assist shall include, but not be limited to, providing access to the pile driving site, providing visual access during driving, and access to Contractor driving records.
- B. The Contractor shall submit to the Engineer a copy of the pile records at the end of each day.
- C. The Contractor shall not have less than three successfully completed contracts with similar soil and groundwater conditions, depths, and volumes of work contained in this project. Submit satisfactory Proof of Compliance to the Engineer.
- D. The Contractor shall provide skilled workmen at all times, who shall be experienced and familiar with the construction of sheet pile retaining walls in marine environments. Supervisory Personnel shall have a minimum of 5 years of experience with the work performed in this section.

1.05 PRODUCT DELIVERY STORAGE AND HANDLING

- A. Sheet Piles and Steel King Piles:
 - 1. Protection
 - a. Piles in storage shall be supported in such a manner that will not impair the alignment of the piles.
 - b. Piles shall be handled and transported only with acceptable equipment and by qualified personnel.
 - 2. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer at no additional cost to the Port.
 - 3. Dents, gouges, or arc strikes in the piling greater than 1/8-inch shall be removed or repaired as required per AWS. Pile

DIVISION 31 – SHORING AND UNDERPINNING

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deficiencies greater than 1/8-inch will be rejected, and the pile shall be removed from the site and replaced by the Contractor at no additional cost to the Port.

1.06 SUBMITTALS

- A. The following documents shall be submitted to and approved by the Engineer:
1. Pile Mill Certifications: Pile mill certificates shall be provided for all piling. Mill certificates shall indicate that all piles are in conformance with Item 2, "Products," of this section.
 2. Records verifying fabrication/erection inspection and NDT test conformance.
 3. Shop Drawings for all piling, waler, tie backs and assemblies shall be submitted to the Engineer for review.
 4. List of equipment intended to be utilized in the driving of piles, noting hammer sizes, lead lengths, and crane capacities. The Contractor is responsible for selecting an appropriate hammer size that has the capacity to drive the sheet without repairable damage.
 5. Prior to driving steel sheet piling and king piling, submit details of driving equipment, templates and falsework per Section 3.02 of this section to the Engineer for review. Design of the template and/or falsework shall be completed by a Licensed Professional Engineer registered in Washington State, and the design drawings shall include the professional engineers' stamped seal. The design drawings and any accompanying documentation shall clearly detail how the Contractor intends to assemble and install the sheet pile and king pile walls at the required alignment and elevation, and within the tolerances as shown on the Drawings and in these Specifications.
 6. The Contractor shall submit a Construction Work Plan which includes a written description of the means and methods to be used to construct the sheet pile and king pile walls for review by the Engineer prior to beginning pile installation. At a minimum, this description shall define the sequence for driving the piles and the methods to be used to assure that the wall can be constructed as shown on the drawings. Included in the work plan shall be a wall layout showing the installed wall meets the total length of wall specified in the contract drawings

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7. The Contractor shall provide a written description of proposed means and methods for dealing with subsurface obstructions that prevent installation of the sheet pile and king pile wall as shown on the Drawings.
8. Daily Pile Driving Records
 - a. Pile driving records shall be delivered at the end of each day to the Engineer for piles driven that day as described in Articles 1.04.A and 1.04.B of this section. This information shall include recorded measurements to confirm the following:
 - (1) Horizontal Control: The wall is installed as shown on the drawings with adequate tolerance requirements as called for in these specifications. This data shall include plan locations of each sheet pile pair and steel king pile.
 - (2) Vertical Control: The wall is installed to the required depth of embedment and tip elevation as shown on the Drawings.
 - (3) Obstructions: Locations (specific stations) and description of obstructions encountered during driving. See sub-paragraph 3.03.C for further requirements.
9. As-built information for horizontal and vertical alignment of the sheet pile and king pile wall submitted in a Drawing format.

1.07 PROJECT CONDITIONS:

- A. Refer to the Geotechnical Report.

PART 2 – PRODUCTS

2.01 STEEL SHEET PILING

- A. The Contractor shall be responsible for furnishing steel sheet piles in accordance with the following requirements:

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1. Steel sheet piles shall be manufactured in accordance with ASTM A 572, with a minimum yield strength of 50 ksi. Pile shapes and interlocks shall be manufactured using a hot rolled process. Cold formed shapes or bends will not be allowed.

2.02 STEEL KING PILES

- A. Steel King Piles order lengths shall be as indicated on the drawings. Piling shall conform to ASTM A 992, with a minimum yield strength of 50 ksi.

2.03 SHEET PILING/KING PILING INTERLOCKS

- A. Interlock connections between the steel king piles and the steel sheet piles and intermediary piles shall be provided by the same supplier as the sheet piling and be designed for use with the supplied sheet piles. Attachment of the interlocks to the king piles shall be welded per the Contract Drawings.
- B. All Joints and interlocks shall be sealed with a hydrophilic joint filler unless otherwise noted in the Contract Drawings. Use Adeka Ultra-Seal A30 or equal.

2.04 WALER AND CONNECTION

- A. Waler and connection material shall be manufactured in accordance with ASTM A 36 with a minimum yield strength of 36 ksi. The Waler and connection steel shall be galvanized in accordance with Section 09 96 00.

PART 3 – EXECUTION

3.01 GENERAL

- A. Steel sheet piling and king piling shall be installed to the embedment and elevation shown on the Contract Drawings in such a way as to avoid any damage to the surrounding structures, including the existing wharf and existing buildings.

3.02 PILING DRIVING EQUIPMENT

- A. The Contractor will be responsible for selecting the appropriate vibratory hammer for the method of driving the piles to the tip elevation shown on the plans, based upon a thorough review of the site conditions and available

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geotechnical information. Impact hammers are not allowed unless approved by the Engineer. If the hammer selected is not able to drive the piles to tip it is the Contractor's responsibility to select a new hammer to get the required tip elevation. During driving the Engineer reserves the right to have the hammer be tested by a third party for energy output of the hammer to determine if the energy is within the manufacture's specification. This test will be at Contractor's cost.

1. Vibratory Hammers

a) The size or capacity of hammers must be as recommended by the hammer manufacturer for the total pile weight and the character of the soil formation to be penetrated. The hammer must provide for maintaining a rigid connection between the hammer and the pile. In accordance with paragraph "Submittals" in this section, submit the following information for each vibratory hammer proposed:

1. Make and model.
2. Eccentric moment (inch-pounds).
3. Dynamic force (tons).
4. Steady state frequency or frequency range (cycles per minute).
5. Vibrating weight (pounds).
6. Amplitude (inches).
7. Maximum pull capacity (tons).
8. Non-vibrating weight (pounds).
9. Power pack description.

3.03 TEMPLATES

A. Provide template or driving frame suitable for aligning, supporting, and maintaining sheet piling or king piling in correct position during setting and driving. At minimum, the template shall have the following properties:

1. Structural frame sufficiently rigid to resist lateral driving forces.

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2. For the king piles provide at least two levels of support not less than 10 ft apart.
3. Provide wood or UHMW blocking to bear against webs of alternate sheet piling.
4. Provide outer restraints to prevent sheets from warping or wandering.
5. Provide visible markings on templates to verify correct sheet piling location and direction.

3.04 STRUCTURE MONITORING

- A. The contractor shall note surrounding buildings that could be affected by the pile driving operations and monitor them to ensure that driving does not cause damage to those buildings. The engineer shall direct the contractor how to monitor the surrounding buildings at no additional cost to the Port.

3.05 STEEL KING AND SHEET PILING

- A. Handling, Transporting and Storing

The Contractor shall be responsible for transporting, handling, and storing king piles and sheet piles so as to prevent damage that would render them unsuitable for use in the work.

- B. Driving Sheet Piling and King Piling

1. The Contractor shall use falsework and/or a template to accurately guide and install the sheet piles and king piles to the position shown on the Contract Drawings. Falsework and/or templates shall be designed and fabricated to provide adequate support of the piling during installation to ensure that the piling can be installed as shown on the Drawings.
2. Deviations in wall location, alignment, and plumbness to avoid interference from obstructions will not be permitted; such obstructions, when encountered, shall be addressed as required in Article 3.05.C of this section before proceeding with driving.

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3. Drive sheet pile sections with the ball end ahead. Continuous interlocks shall be a tight fit after driving, and welded where required per the Contract Drawings.
4. If driving sheet piles or steel king piles with either diesel, steam, or air-driven hammers, the hammer shall be equipped with a suitable “driving head,” “driving cap,” or “helmet” fabricated of forged or cast steel, or approved alternate material, shaped to fit the particular pile being driven and designed for the particular hammer being used.

C. Obstructions

1. Any obstructions encountered during the driving of the sheet piles or king piles that prevent driving to the elevations and alignment shown on the Drawings shall be immediately reported to the Engineer.
2. Where obstructions make it impossible to drive piles in the location indicated and to the final tip elevation, the Contractor shall employ the approved means and methods proposed in these specifications for dealing with obstructions to install piles as required, including but not limited to: spudding or other means as directed by the Engineer. Jetting or use of an impact hammer may not be used, except by permission of the Engineer.
3. Limited extraction of obstructions preventing installation of sheet piling or king piling may be necessary. If removal of an obstruction is required, the method for extracting the material must be pre-approved by the Engineer. Extraction or excavation activities shall not extend more than twenty feet ahead of the sheet piling installation site. Removal of obstructions, where discovered during the operation of driving and as directed by the Engineer, will be at no additional cost to the Port.
4. Where vertical obstructions or other non-removable obstructions are encountered that prevent driving to full depth (and the obstruction cannot be removed as described above), the Contractor shall notify the Engineer as required in Article 3.05.C.1 of this section.
5. All proposed changes to the sheet pile wall layout or drive depths that lie beyond the specified tolerances shall be approved by the Engineer. The Contractor shall not cut or otherwise modify any sheet pile pairs or king piles without prior approval of the Engineer.

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- D. Achieving Horizontal Alignment
 - 1. Horizontal Position: 3 inches from locations indicated on the Contract Drawings.
- E. Achieving Final Elevations (Tip and Cutoff)
 - 1. The Contractor may temporarily mate (by welding or other means) two sheets end to end to facilitate interlocking driving adjacent sheets and then cut off the sheet, following final driving, to the cutoff elevation shown on the Contract Drawings. Sheet pile shall have continuous interlock.
- F. Driving Tolerances
 - 1. Drive piles within the following maximum tolerances (any pile deviated in final position more than the limits specified will be automatically rejected):
 - a. Horizontal Position: 3 inches from locations indicated for face of sheet pile, king pile, or intermediary pile.
 - b. Vertical Position: Within 1 inch from top of pile elevation shown on the Drawings.
 - c. Plumbness or Deviation from verticality normal to the line of wall: Maintain 1 inch in 10'-0" from the vertical, or a maximum of 3 inches.
 - d. Plumbness or Deviation from verticality along the line of wall: Maintain 1 inch in 10'-0" from the vertical, or a maximum of 3 inches.
 - 2. Pile driving shall comply with all rules and regulations and any conditions placed on the pile driving by the permitting authorities. Pile driving shall be limited to the days and hours in accordance with project permit requirements.
- G. It will be the Contractor's responsibility to provide a means of monitoring the driving to ensure the cutoff elevation is as shown on the Contract Drawings. The Contractor shall submit sheet pile and king pile wall elevations as described in Article 1.06 of this section.

END OF SECTION

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PART 1 – GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. The provisions and intent of the Contract, including the General Conditions, Supplemental Conditions, and General Requirements, apply to this work as if specified in this section. Work related to this section is described in:
 - 1. Section 09 96 00 – Marine Coatings
- B. Work under this Specification section is paid under Bid Item 21 – Furnish and Install Steel Dolphins, Bid Item 41 – Furnish and Install Steel Mooring Piles, Bid Item 42 – Furnish and Install Maple St Fender Piles, Bid Item 49 – Furnish and Install South Shoreline Mooring Bollard as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures.

1.02 DESCRIPTION OF WORK

- A. The extent and location of the steel pipe piles is along the shoreline of the central waterfront property. The pipe piles include monopile dolphins and an integrated fender system at Maple St. Bulkhead.

1.03 GENERAL

- A. All steel pipe work shall conform to the requirements of ASTM A 252 unless otherwise noted in the Drawings and/ or this Specification.

1.04 QUALITY ASSURANCE

- A. Contractor shall facilitate and assist in keeping driving records, noting the location, horizontal alignment and tip elevation for each pile driven. Data shall be recorded in a format acceptable to the Engineer. Facilitate and assist shall include, but not be limited to, providing access to the pile driving site, providing visual access during driving, and access to Contractor driving records.
- B. Contractor shall submit to the Engineer a copy of the pile records at the end of each day.
- C. Contractor shall not have less than three successfully completed contracts with similar soil conditions and depths. Submit satisfactory Proof of Compliance to the Engineer.

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- D. Contractor shall provide skilled workmen at all times, who shall be experienced and familiar with the construction of steel pipe piling in marine environments. Supervisory Personnel shall have a minimum of 5 years of experience with the work performed in this section.

1.05 PRODUCT DELIVERY STORAGE AND HANDLING

A. Steel Pipe Piles:

1. Protection

- a. Piles in storage shall be supported in such a manner that will not impair the alignment of the piles.
 - b. Piles shall be handled and transported only with acceptable equipment and by qualified personnel.
 - c. Stack piles during delivery and storage so that each pile is maintained in a straight position and is supported intermittently along its length as necessary to prevent exceeding the maximum camber or sweep.
2. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer at no additional cost to the Port.
3. Dents, gouges, or arc strikes in the piling greater than 1/8-inch shall be removed or repaired as required under AWS. Pile deficiencies greater than 1/8-inch will be rejected, and the pile shall be removed from the site and replaced by the Contractor at no additional cost to the Port.

1.06 SUBMITTALS

A. The following documents shall be submitted to and approved by the Engineer:

1. Submit pile mill certifications for all piling. Mill certificates shall indicate that all piles are in conformance with Item 2, "Products," of this section.
2. Submit all shop drawings for piling and associated hardware.

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3. Submit records verifying fabrication/erection inspection and NDT test conformance.
5. Submit descriptions of pile driving equipment at least 21 days prior to commencement of work.
6. Submit shop drawings of templates used for driving at least 21 days prior to commencement of work.
7. Submit the proposed form for compiling pile driving records 21 days prior to commencement of work.
8. Submit delivery, storage, and handling plans for piles at least 21 days prior to delivery of piles to the job site.
9. Submit complete and accurate job pile driving records as specified in paragraph entitled "Records" of this section, within 15 calendar days after completion of driving.
10. The Contractor shall submit a Construction Work Plan at least 21 days prior to commencement of work. The work shall include a written description of the means and methods to be used to install the piles, pile wrap and bollards.

1.07 PROJECT CONDITIONS

- A. Refer to the Geotechnical Report.

PART 2 – PRODUCTS

2.01 GENERAL

- A. The Contractor shall be responsible for furnishing steel pipe piles in accordance with the following requirements:

2.02 MATERIALS

- A. Steel Pipe Piling

1. Steel pipe piles shall conform to the requirements of ASTM A252 Grade 3, yield strength shall be a minimum of 45, as required by the Drawings. Steel pipe piles shall be manufactured to the outside diameter, wall thickness, lengths and quantities required by the Drawings. The dimensional tolerance requirements and testing of the piles shall be per this section.

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Steel pipe piling shall be helical (spiral) welded with complete joint penetration seam and butt weld, welded per AWS D1.1.

Steel pipe piling shall be manufactured in conformance with the dimensional and fabrication tolerances for thickness and ovality indicated in ASTM A139. The diameter tolerance of the piling shall be the lesser of the tolerances defined in ASTM A139 and $\pm 1/8$ inch. The deviation in straightness of the piling is not to exceed 0.002 times the length.

The carbon equivalency (CE) of steel for steel pipe piles, as defined in Section AWS D1.1, Section X15.1, shall not exceed 0.45. The sulfur content of steel for steel pipe piles shall not exceed 0.05 percent.

Fabrication inspection requirements at the manufacturing plant are as follows:

- a. 100% of weld shall be visually inspected to AWS D1.1, Section 6, visual inspection criteria.
- b. Inline ultrasonic testing shall be performed on 100% of the seam welds per ASTM A53.
- c. All indications for all piles found with inline ultrasonic testing shall be delineated by AWS D1.1, Section 6 for statically-loaded, non-tubular connections.
- d. Coil splices for all piles shall receive 100% inline ultrasonic testing per ASTM A53 with indications delineated per AWS D1.1, Section 6 for statically-loaded, non-tubular connections.

B. Epoxy Paint Protection

1. All steel pipe piles shall be epoxy coated in accordance with Section 09 96 00 after fabrication.
2. Any damage to the coating before final project close out shall be the responsibility of the Contractor and shall be repaired per Section 09 96 00.

PART 3 – EXECUTION

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3.01 GENERAL

- A. Steel sheet piling and king piling shall be installed to the embedment and elevation shown on the Contract Drawings in such a way as to avoid any damage to the surrounding structures, including the existing wharf and existing buildings.

3.02 PILE DRIVING EQUIPMENT

- A. The Contractor will be responsible for selecting the appropriate vibratory hammer for the method of driving the piles to the tip elevation shown on the plans, based upon a thorough review of the site conditions and available geotechnical information. Impact hammers are not allowed unless approved by the Engineer. If the hammer selected is not able to drive the piles to tip it is the Contractor's responsibility to select a new hammer to get the required tip elevation. During driving the Engineer reserves the right to have the hammer be tested by a third party for energy output of the hammer to determine if the energy is within the manufacture's specification. This test will be at Contractor's cost.

- 1. Vibratory Hammers

- a) The size or capacity of hammers must be as recommended by the hammer manufacturer for the total pile weight and the character of the soil formation to be penetrated. The hammer must provide for maintaining a rigid connection between the hammer and the pile. In accordance with paragraph "Submittals" in this section, submit the following information for each vibratory hammer proposed:

- 1. Make and model.
- 2. Eccentric moment (inch-pounds).
- 3. Dynamic force (tons).
- 4. Steady state frequency or frequency range (cycles per minute).
- 5. Vibrating weight (pounds).
- 6. Amplitude (inches).
- 7. Maximum pull capacity (tons).

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8. Non-vibrating weight (pounds).

9. Power pack description.

3.03 TEMPLATES

A. Provide template or driving frame suitable for aligning, supporting, and maintaining pipe piling in correct position during setting and driving.

3.04 INSTALLATION

A. Inspect piles when delivered and immediately before driving. Handle piles so as to protect pile coatings. Repair damage or defects in pile coatings as specified. Cut piles at cutoff grade by an approved method.

B. Pile Driving Records

1. Develop a form for compiling pile driving records.

a. Compile and submit accurate records of the pile driving operations on the approved form in accordance with paragraph "Submittals" in this section. Include the following in driving records for each pile: date driven, pile identification number, cross section shape and pile dimensions, location, deviations from design location, original length, ground elevation, top elevation, tip elevation, batter alignment, description of hammer used, total driving time in minutes and seconds, and any other pertinent information as required or requested such as unusual driving conditions, interruptions or delays during driving, damage to pile resulting from driving, heave in adjacent piles, redriving, weaving, obstructions, and depth and description of voids formed adjacent to the pile.

C. Pile Placement and Tolerances in Driving

1. Develop and submit a pile placement plan that shows the installation sequence and the methods proposed for controlling the location and alignment of piles. Accurately place piles in the correct location and alignments, both laterally and longitudinally, and to the vertical or batter lines indicated.

2. A final lateral deviation from the correct location at the cutoff elevation of not more than 4 inches will be permitted for vertical

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piles. Manipulation of piles will not be permitted. A variation of not more than 0.25 inch per foot of pile length from the vertical for vertical piles, nor more than 0.50 inch per foot of pile length from the required angle for batter piles will be permitted. A vertical deviation of not more than 1 inch from the correct cutoff elevations shown is permitted. Inspect piles for heave. Redrive heaved piles to the required tip elevation. Piles damaged or not located properly, or exceeding lateral and vertical deviation, or variation in alignment, must be pulled and redriven at no additional cost to the Port.

D. Survey Data

1. After the driving of each pile group is complete, provide the Engineer with an as-driven survey showing actual location and top elevation of each pile. Present a survey in such form that it gives deviation from plan location in two perpendicular directions and elevations of each pile to nearest half inch.

E. Pile Penetration Criteria

1. The controlling depth of penetration for piles will be as shown on the contract drawings or as determined by the Designer of Record.

F. Pile Driving

1. Notify the Engineer 21 days prior to the date pile driving is to begin. Drive piles with hammers of the same model and manufacturer, same energy and efficiency, and using the same driving system. Operate hammers at all times at the speed and under the conditions recommended by the manufacturer. Prior to driving and with the pile head seated in the hammer, check each pile to ensure that it has been aligned correctly. A pile that cannot be driven to the required depth because of an obstruction must be pulled and redriven, or approved by the Designer of Record, then cut off and used as-is, whichever is directed. After piles are driven, cut off square as required at the indicated cutoff elevation. If, in driving, it is found that pile is not of sufficient length to support the capacity specified, notify the Engineer, who will determine the procedure to be followed.
2. Splicing Piles
 - a. Avoid field splices for lengths under 80 feet. Construct splices to maintain the true alignment and position of the pile

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sections. Splices must develop the full strength of the pile in both bearing and bending.

3. Heaved Piles

- a. When driving piles in clusters or under conditions of relatively close spacing, perform observations to detect heave of adjacent piles. Backdrive heaved piles to original depth of penetration without additional cost to the Port.

4. Pulled Piles

- a. Pull and replace piles damaged or impaired for use during driving with new piles, or cut off and abandon and drive new piles as directed without additional cost to the Port. The Contracting Officer may require that any non-conforming pile be pulled for inspection. Redrive pulled piles as directed and found to be in suitable condition at another location as directed. Replace pulled piles as directed and found to be damaged with new piles at the Contractor's expense.

END OF SECTION

DIVISION 31 – EARTHWORK

Section 31 68 13 – Soil Foundation Anchors

PART 1 – GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. The drawings and general provisions of the Contract, including the General Conditions, Supplementary Conditions and the sections of Division 1 – General Requirements apply to this work as if specified in this Section. Work related to this section is described in:
 - 1. Section 31 41 16.13 – Steel Sheet Piling
- B. Work under this Specification section is paid under Bid Item 34 – Furnish and Install Grouted Tiebacks at Maple St Replacement Bulkhead as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures.

1.02 DESCRIPTION OF WORK

- A. The extent and location of the Soil Anchors is at the Maple St Bulkhead indicated on the Drawings. The work includes installing drilled-in grouted tiebacks and threaded tie rod or strand tiebacks as indicated on the Drawings.
- B. The Contractor shall select the tieback type, drilling method, grouting method, grouting pressures, and, subject to the minimum values in the Contract Drawings, determine the bond length, free stressing (unbounded) length. The Contractor shall be responsible for installing tiebacks that will develop the allowable proof load indicated on the Contract Drawings in accordance with the testing subsection of this Specification.
- C. Provide the design of the soil anchor system that will be completely the Contractor's responsibility. General design criteria are shown on the drawings. The materials, design, stressing, load testing, and acceptance shall be in accordance with PTI 1 and these specifications. Soil anchors may be threaded bar or strand type and shall meet PTI 1 Class 1 protection or equal. The Contractor is responsible for the design of the anchor and washer plate, determining drilling methods, and determining hole diameter and bond length. The complete design, including design computations, fabrication and installation drawings and installation plan, shall be certified by a registered Professional Engineer registered in the State of Washington and shall be submitted for approval. Approval of the design by the Engineer will not relieve the Contractor of responsibility for design and performance of the soil anchors.

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1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM)
- B. Post-Tensioning Institute (PTI):
 - 1. Recommendations for Prestressing Rock and Soil Anchors (PTI 1)
 - 2. Post-Tensioning Manual (PTI 2)
- C. Maple Street Bulkhead Drilled Tie-Back Anchor Pilot Study Summary and Recommendations by Anchor QEA

1.04 QUALITY ASSURANCE

- A. Submit anchor designer, fabricator and installer qualifications for approval in accordance with paragraph SUBMITTALS. The submittals shall, where applicable, identify individuals who will be working on this contract and their relevant experience. No changes shall be made in approved personnel without prior approval of the Engineer.
- B. Designer Qualifications
 - 1. The anchors shall be designed by Professional Engineers who have designed a minimum 3 soil anchors projects similar in size and scope to this project within the past ten years. The drawings and calculations shall be signed by the Professional Engineer.
- C. Fabricator Qualifications
 - 1. The anchors shall be fabricated by a manufacturer that has been in the practice of designing and fabricating soil anchors similar in size and scope to this project for at least ten years.
- D. Installer Qualifications
 - 1. The anchors shall be installed by a firm which is regularly engaged in the installation of soil anchors. The superintendent shall have installed anchors on at least five projects of similar scope and size.

1.04 SUBMITTALS

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- A. The following documents shall be submitted to and approved by the Engineer:
1. Drawings and detailed installation procedures and sequences showing complete details of the installation procedure and equipment; anchor fabrication; grouting methods; grout mix designs; anchor placement and installation; corrosion protection, stressing length and anchorage; anchorage and trumpet details; stressing and testing procedures with lengths, forces, deformations, and elongations for approval by the Engineer. Shop drawings for anchors shall include locations and details of the spacers, centralizers, and banding. If different types of anchors are to be installed, each anchor type shall be readily identifiable. Once reviewed by the Engineer, no changes or deviation from shop drawings will be permitted without further review by the Engineer.
 2. Catalog cuts, brochures, or other descriptive literature describing the equipment to be used for drilling, grouting, handling, and installing the soil anchors. Sketches, drawings or details showing the access and temporary supports where required for the drilling equipment and stressing frames. Descriptions of stressing jacks, gages, dynamometers, load cells, or other devices for measuring stressing load, certified calibration records for each set of jacking equipment, and current testing curves for stress measurement gages which show that gages have been calibrated for the jacks for which they are used 30 days prior to the start of the testing operations.
 3. Submit Designer, Fabricator, Installer and Soil Sampling Qualifications.
 - a. The qualifications and experience records for approval. Experience records shall identify all the individuals responsible for the anchors and shall include a listing of projects of similar scope performed within the specified period along with points of contact. Qualifications shall be submitted and approved by the Engineer prior to the installation of any anchors specified in this section.
 4. A Construction Work Plan for installing the soil anchors for review and comment. The proposal shall describe the sequence for installation and other restrictions as outlined on the drawings or specifications. The anchor installation procedures shall be determined by the Contractor as part of the anchor design. The installation plan shall also include descriptions of methods and equipment to be used for alignment checking of anchor holes.

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5. Design computations and data for the soil anchors, washer plates, and bond zones. The computations shall include drawings, design assumptions, calculations, and other information in sufficient detail to verify the design proposed. The design shall be certified by a Professional Engineer registered in Washington State with proven experience in design of soil anchor components as stated in paragraph Qualifications. Calculations shall be included for the stressing frames. The Engineer will approve the Contractor's design calculations. Approval of the Contractor's design calculations will not relieve the Contractor of responsibility for unsatisfactory performance of the installed soil anchors. All design computations shall be furnished at least 30 calendar days prior to the proposed commencement of drilling.
6. A design schedule for the anchors which includes the following:
 - a. Anchor number.
 - b. Anchor design load.
 - c. Type and size of tendon.
 - d. Minimum total anchor length.
 - e. Minimum bond length.
 - f. Minimum tendon bond length
 - g. Minimum unbonded length.
 - h. Details of corrosion protection, including details of anchorage and installation
7. Certified test reports for each heat or lot of prestressing steel with materials delivered to the site. Test reports for strands shall include bond capacity test results in accordance with ASTM A 981.
8. Mill reports of a certificate from the manufacturer stating chemical properties, ultimate strengths, yield strengths, modulus of elasticity, and any other physical properties needed for the required computations, for the type of steel furnished.
9. The mixture proportions that will produce grout of the quality required, thirty days prior to installation of anchors. Applicable test reports to verify that the grout mixture proportions selected will produce grout of the quality specified.
10. The original handwritten driller logs within two days of the completion of each hole.
11. Upon completion of installation of each anchor, top of bond zone elevation, bond length, free stressing length of anchor, grout mix,

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grouting pressure, bags of cement injected, and a report of performance test or proof test and extended creep test results, and hole alignment surveys. The performance test, proof test and extended creep test results shall include measured lengths of drill holes and anchors, the loads and elongations recorded during testing, monitoring and stressing of the anchors, and graphs of test results.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Materials shall be suitably wrapped, packaged or covered at the factory or shop to prevent being affected by dirt, water, oil, grease, and rust. Protect materials against abrasion or damage during shipment and handling. Place materials stored at the site above ground on a well-supported platform and covered with plastic or other approved material. Materials shall be protected from adjacent construction operations. Grounding of welding leads to prestressing steel will not be permitted. Reject and remove from the site prestressing steel which is damaged by abrasion, cuts, nicks, heavy corrosions, pitting, welds or weld spatter. Inspect tendons prior to insertion into anchor holes for damage to corrosion protection. Any such damage shall be repaired in a manner recommended by the tendon manufacturer and approved by the Engineer.

1.08 SITE CONDITIONS

- A. A soil investigation has been made at the site by the Engineer and data is presented in the geotechnical report. While the foundation information is representative of subsurface conditions at the respective locations, local variations in the characteristics of the subsurface materials may be anticipated. Local variations which may be encountered include, but are not limited to, classification and thickness and variation in the soil classifications. Such variations will not be considered as differing materially within the purview of the CONTRACT CLAUSES, paragraph Differing Site Conditions.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Prestressing Steel
 - 1. High-Strength Steel Bars
 - a. ASTM A 722/A 722M, Type II, meeting all supplementary requirements.

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2. Strand

- a. ASTM A 416/A 416M, Grade 270, low relaxation strand. Strand shall not be welded.

B. Structural Steel

1. ASTM A 572/A 572M, Grade 50

2.02 MANUFACTURED UNITS

A. Anchor Head

1. Anchor head shall consist of steel bearing plate with wedge plate and wedges for strand anchors or steel bearing plate with nut for bar anchors, trumpet and corrosion protection. Anchorage devices shall be capable of developing 95 percent of the guaranteed ultimate strength of prestressing steel. The anchorage devices shall conform to the static strength requirements of Section 3.1.6 (1) and Section 3.1.8 (1) and (2) of PTI 2. Wedges shall be designed to not cause premature failure of the prestressing steel due to notching or pinching. Provide special wedges as required for epoxy coated strand. Removal of epoxy coating to permit use of standard wedges will not be permitted. Threaded anchorage items for epoxy coated bars shall be designed to fit over the epoxy coating and maintain the capacity of the prestressing steel. The trumpet used to provide a transition from the anchorage to the unbonded length corrosion protection shall be fabricated from steel pipe or steel tube. The minimum wall thickness of the trumpet shall be up to .5 inches. The trumpet shall be welded to the bearing plate.

B. Prestressing Steel Couplers

1. Prestressing steel couplers for bars shall be capable of developing 100 percent of the minimum specified ultimate tensile strength of the prestressing steel.

C. Centralizers and Spacers

1. Centralizers and spacers shall be fabricated from plastic, steel or other approved material which is nondetrimental to the prestressing steel. Wood shall not be used. The centralizer shall be able to support the tendon in the drill hole and position the tendon so a

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minimum of 1 inch of grout cover is provided. Centralizers and spacers shall permit grout to freely flow up the drill hole.

D. Anchorage Covers

1. Fabricate anchorage covers from steel or plastic. The material used shall not be subject to attack by cement, corrosion-inhibiting greases or the environment. If plastic is used, it shall not be susceptible to ultraviolet light degradation. Securely attach the cover to the bearing plate. If the cover is to be grease filled, the cover shall form a permanent watertight enclosure for the anchorage device.

2.03 EQUIPMENT

- A. The Contractor's Quality Control manager shall verify that the equipment used on site is the same as the equipment submitted for approval.

B. Drilling Equipment

1. Provide drilling equipment suitable for advancing the drill tools to the depths and at the alignment specified.

C. Stressing Equipment

1. Stressing equipment shall be hydraulically operated and shall have a capacity sufficient to stress the anchors to the specified Test Loads. The equipment shall permit stressing of the tendon in increments and raising or lowering the load in the tendon. The equipment shall be calibrated with an accuracy of $\pm 2\%$ and the calibration certificate and graphs shall be available at the site. The production gage shall have graduations of 100 psi or less. A second certified gage shall be maintained for periodic verification of the production gage. A dial gage or approved device shall be provided to measure total elongation at each load increment to the nearest 0.001 inch. The dial gage shall be capable of measuring the entire anchor movement without being reset. Calibration of gages shall be verified no more than 30 calendar days prior to commencing work under this contract and at six-month intervals throughout the period of use.

D. Testing Equipment

1. Provide testing equipment consisting of a hydraulic jack with calibrated pressure gage for applying the load and a dial gage or vernier scale to measure anchor movement. The ram travel of the

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stressing equipment shall be not less than the theoretical elastic elongation of the total anchor length at the maximum Test Load. The pressure gage shall be graduated in 100psi increments. The stressing equipment and pressure gage must have been calibrated as a unit no more than 30 calendar days prior to commencing work under this contract and at six-month intervals throughout the period of use. The movement measuring device shall have a minimum travel equal to the theoretical elastic elongation of the total anchor length at the maximum Test Load without resetting the device. An approved dial gage or vernier scale and stand shall be provided to measure movement of the wall structure.

2.04 GROUT

A. Cement

1. ASTM C 150/C 150M, Type I, II

B. Water

1. Provide fresh, clean, potable water free from injurious amounts of sewage, oil, acid, alkali, salts, or organic matter.

C. Aggregates

1. Fine aggregate for sand-cement grout shall conform to ACI 301 and ASTM C 33/C 33M for grout for backfilling holes. Aggregates shall not contain substances which may be deleteriously reactive with alkalies in the cement.

D. Admixtures.

1. Admixtures which control bleed, improve flowability, reduce water content and retard set may be used in the grout subject to the approval of the Engineer. Any admixtures used shall be compatible with the prestressing steel and shall be mixed in accordance with the manufacturer's recommendations.

E. Grout for Anchors

1. Cement Grout

- a. Cement grout mixture proportions are the responsibility of the Contractor. Grout for grouting anchors shall consist of a homogenous, pumpable, stable mixture of portland cement and water. Submit the proposed mix design to the Engineer

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for approval. The water content shall be the minimum necessary for proper placement but the water-cement ratio shall not exceed 0.45 by weight. Final proportions of materials shall be based on results of tests made on sample mixtures of grout. The minimum compressive strength of two-inch cubes, molded, cured, and tested in accordance with ASTM C 109/C 109M, shall be 3,500 psi at the time of stressing. The Contractor is responsible for taking, curing, and breaking of grout test cubes for determining mix design, and all testing shall be done by an independent laboratory approved by the Engineer.

2.05 TENDON FABRICATION

A. General

1. Fabrication of the anchors shall be as recommended by the suppliers. Anchors shall be completely assembled with all centralizers, spacers, grout and vent tubes and corrosion protection prior to insertion into the hole. Fabricated anchors shall be protected, transported and stored in a manner to prevent contamination or damage to any components.

B. Tendon

1. All spacers for multiple element tendons shall be located as indicated on the approved shop drawings. Furnish strands full length with no splicing or coupling permitted. Tendon material shall be unblemished and free of pitting, nicks, grease, or injurious defects. When required to maintain the tendon location within the hole, provide centralizers at a maximum of 10 foot intervals center-to-center throughout the bond length. Spacers shall be provided at a maximum 10 foot intervals center-to-center throughout the bond length. The entire bond length of the tendon shall be free of dirt, lubricants, loose rust, corrosion-inhibiting coatings or other contaminants.

C. Bond Breaker

1. Bond breaker for free stressing length of unbonded anchors shall consist of smooth polyethylene tubing or smooth PVC tubing.

D. Vent Tubes

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1. Vent tubes used during grouting operations, if necessary, shall be any appropriate type for the job, as recommended by the supplier of the anchors.
- E. Grout Tubes
1. Grout tubes shall be polyethylene tubing or as recommended by the anchor manufacturer and approved by the Engineer. Inside diameter of grout tubes shall be adequate to fully grout the entire hole.
- F. Corrosion Protection
1. Corrosion protection shall be as indicated on the contract drawings and shall conform to PCI class 1 corrosion protection. Corrosion protection shall be provided for the entire anchor and shall include anchorages covers and trumpets filled with corrosion inhibiting compound or grout and encapsulation of the free stressing length and bond length.

PART 3 EXECUTION

3.01 DRILLING HOLES

- A. General
1. Care shall be taken while drilling to avoid damage of any kind to the existing structures. Damages of any nature will be evaluated and repairs or replacements shall be made as required. Provide a temporary plug for all holes drilled more than 10 days prior to installation of the anchor. Waste water from drilling operations shall be collected and recycled or treated; it shall not be discharged directly into the waterway or on the ground.
- B. Drilling Through Existing Structures
1. Holes through existing structure shall be drilled by core drilling equipment to prevent damage to the surrounding structure. The Contractor is advised that foreign material, including metals and other materials remaining from original construction of the existing structure, may be encountered during drilling through existing structures.
- C. Drilling In Soil

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1. Holes in soil may be drilled by rotary drilling, rotary percussive, or vibratory driven casing. Holes in soil shall be provided with steel casing where required for support of the surrounding material. Casing shall be removed prior to during anchor grouting. Hollow-stem augers which are used for installation of the tendon shall be removed during anchor grouting. Where soil is susceptible to caving, holes through soil shall be drilled by the duplex method using an inner and outer casing with return water flow between the casings.

D. Alignment

1. Tolerances

- a. The anchor hole shall be located within 8 inches of the plan location. The entry angle shall be within 3 degrees of the specified inclination. The alignment of the drilled hole shall be within 3 degrees of the theoretical alignment. The contractor shall be responsible to not have two anchors intersect and provide a minimum 18" clearance. If the hole alignment is not within these tolerances, the hole shall be backfilled with cement or sand-cement grout and a new hole drilled adjacent to the rejected hole.

2. Alignment Check

- a. Check each drilled hole for alignment as specified herein upon completion of drilling and before commencement of any other work. Check direction and inclination of all anchor holes for each 10-foot intervals throughout the hole. Checking the alignment of each anchor hole shall be done by measuring the inclination of the actual drilled anchor hole center line in place with respect to the specified anchor center line. The specified anchor center line shall consist of a single, straight, continuous line extending from the top of the hole to the required bottom elevation of the hole. Specified anchor centerlines shall slope at the inclinations shown on the drawings. The Engineer shall have access to holes for alignment surveys that may include, but not be limited to, slope indicators or other down-the-hole equipment. Drill rods may be required to be removed from the hole or left in place as directed by the Engineer. Holes, or portions of holes, which are out of alignment shall be corrected or filled with cement grout having a water-cement ratio of 0.40 or sand-cement grout, and a new hole drilled as directed by the Engineer. Slight adjustments to inclinations

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indicated on the drawings may be required, as directed by the Engineer. The Contractor is responsible for all drilled holes until accepted by the Engineer. Holes to replace incorrectly drilled holes shall be drilled at no additional cost to the Engineer. All equipment for checking alignment of anchor holes shall be operated by personnel experienced in the operation of such equipment.

3. Alignment Checking Equipment

- a. Check alignment of holes by means of a magnetic single shot survey instrument, or equal equipment. The camera and plumb-bob assembly shall be selected based on the maximum expected range of angle deviation to be measured. If embedded metal within the structure is reasonably believed to have affected the standard magnetic compass, then a down-hole gyrocompass may be required. Payment for use of the gyrocompass will be made at the contract unit price per day.

3.02 INSTALLATION OF ANCHORS

A. General

1. The Contractor is responsible for each drilled hole until the anchor has been installed, grouted, stressed and accepted.

B. Placing

1. All equipment used in handling and placing the anchors shall be such that it does not damage or deteriorate the prestressing steel, corrosion protection, or the anchorages. Each anchor shall be inspected prior to insertion into the hole. Any damage to corrosion protection shall be repaired prior to insertion or, if determined by the Engineer to be not repairable, the anchor shall be replaced. Insertion of anchors shall be in accordance with PTI 1.

C. Resin Grouted Anchors

1. Insertion of resin-grouted anchors shall be in accordance with the resin manufacturer's written recommendations. Tendons shall be inserted until contact is made with the first cartridge. The tendon shall then be rotated and advanced at the rate recommended by the resin grout manufacturer. After reaching its final position, the

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tendon shall be rotated as recommended by the resin grout manufacturer to ensure complete mixing of the resin.

E. Grouting of Soil Anchors

1. General

- a. Within the bond length, grout placement shall proceed such that the hole is filled in a manner to prevent air voids. The soil anchor hole shall be progressively filled with grout and maintained completely full from bottom to top of the zone until the grout has set. Grouting of a soil anchor hole shall be performed within 48 hours of the time the hole is drilled. Grouting may be accomplished through the casing pipe, grout tubes, hollow-stem augers or hollow drill rods. The grouting procedure used shall provide soil anchors which meet the specified design capacity. Post-grouting will be required.

2. Gravity Grouting

- a. Gravity grouting shall proceed from the bottom of the hole to the top of the hole.

3. Pressure Grouting

- a. The method of pressure grouting shall be determined by the Contractor. Production anchors shall be grouted using the methods and target pressures that were used on the acceptable demonstration anchor. Grouting pressures and pumping rates shall be controlled to prevent ground surface heave or fracturing. Grouting pressures shall be incrementally increased until a refusal is reached or an acceptable amount of grout is pumped.

4. Post-Grouting

- a. The number of phases of post-grouting shall be a minimum of 2 per anchor. Grouting pressures and pumping rates shall be controlled to prevent ground surface heave or fracturing. Grouting pressures shall be incrementally increased until a refusal is reached or an acceptable amount of grout is pumped.

F. Anchorage Installation

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1. The bearing plate and anchor head shall be installed perpendicular to the tendon, within 3 degrees, and centered on the tendon without bending of the stressing steel. Wedges, wedge holes and tendons shall be free of dirt, grout or other contaminants. Corrosion protection shall be maintained intact at the anchorage and any damage shall be repaired prior to stressing.

3.03 STRESSING

A. General Requirements

1. After the anchor grout in the bond zone has reached sufficient strength in accordance with the Contractor's design the specified strength, as verified by grout cube break, the anchors shall be stressed. Prior to stressing, surfaces upon which the stressing equipment is resting must be clean and the stressing equipment shall be aligned as nearly with the center of the hole as possible. An Alignment Load of 10 percent of the Design Load shall be applied to the anchor prior to setting dial gauges. Stress the anchor in accordance with the anchor manufacturer's recommendation, subject to the approval of the Engineer. Design Loads are given on the drawings. Determine the lock-off procedure so that the lift-off results meet the acceptance criteria specified in paragraph Acceptance. The maximum stress shall never exceed 80 percent of the guaranteed ultimate strength of anchor steel in any testing. The process of stressing the anchors shall be so conducted that accurate elongation of the anchor steel can at all times be recorded and compared with the computations submitted to, and accepted by the Engineer. Stressing elements of strand anchors shall be stressed simultaneously. Safety precautions shall be taken to prevent workers from being in front of the stressing equipment during stressing. Stressing of the anchors shall be performed in a sequence submitted by the Contractor for review by the Engineer. All stressing shall be done in the presence of a representative of the Engineer. At no time during the stressing and testing of an anchor shall the stressing equipment be disconnected from the temporary stressing head or anchor. Each anchor to be performance tested shall be declared acceptable before proceeding with drilling for other anchors within the section type represented by that anchor.

B. Lock-off

1. After completion of the all required tests, the load shall be returned to the Alignment Load and the specified Lock-off Load shall be applied to the anchor. A lift-off test shall be made to verify the load

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in the anchor tendon before the tendon is locked-off and the stressing equipment is removed. The lift-off reading shall be within five percent of the specified lock-off load. If the lift-off reading is not within five percent of the specified lock-off load, the anchorage shall be reset and another lift-off reading shall be made. This procedure shall be repeated until a satisfactory lift-off reading is obtained. The lock off load shall be 75% of the of the Design Load

3.04 FIELD QUALITY CONTROL

A. General

1. The first three anchors and a minimum of 2 percent of the remaining anchors shall be designated as demonstration test anchors. Designated demonstration test anchors shall be used to verify soil quality and the adequacy of the Contractor's anchor design and installation procedures. Demonstration test anchors shall pass the performance test prior to placing other anchors within the section represented by the respective demonstration test anchor. All other anchors shall be proof tested. During the stressing of each anchor, a record shall be kept of gage pressure and of anchor elongation at each stage of stressing to the specified test or Lock-off Load, as applicable. The Test Load shall not be exceeded. Provide a qualified engineer to evaluate the anchor test results and determine the acceptability of the anchors in accordance with the criteria indicated hereunder. Final acceptance of each anchor will be made by the Engineer. All tests shall be run in the presence of the Engineer or his representative. Design Loads are given on the drawings.

B. Performance Test

1. Performance tests should be completed on the first three soil anchors installed and on another 2 anchors, as directed by the Engineer.
2. Performance test shall consist of cyclically and incrementally loading and unloading the anchor, and shall be conducted in accordance with PTI 1, Paragraph 8.3.2. See Table 8.1 from PTI 1 for loading schedule and required measurements to be recorded. During the testing of each anchor, a record shall be kept of gage pressure and of anchor elongation at each stage of stressing to each Test Load required by PTI 1. Measurements of the elongation of prestressing steel shall be made in accordance with PTI 1. If the total movement at the end of 10 minutes at the Test Load exceeds 0.040 inch, the Test Load shall be held an additional 50 minutes

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and the movement readings shall be taken at the interval specified in PTI 1, Paragraph 8.3.2. Test records, including plots and graphical analysis of test data, shall be furnished upon acceptance of each performance tested anchor in accordance with paragraph SUBMITTALS.

B. Proof Test

1. Proof test shall consist of incrementally loading the anchor and shall be conducted in accordance with PTI 1, Paragraph 8.3.3. See Table 8.2 from PTI 1 for loading schedule. During the testing of each anchor, a record shall be kept of gage pressure and of anchor elongation at each stage of stressing to the Test Load required by PTI 1. Measurements of the elongation of prestressing steel shall be made in accordance with PTI 1. If the total movement at the end of 10 minutes at the Test Load exceeds 0.040 inch, the Test Load shall be held an additional 50 minutes and the movement readings shall be taken at the interval specified in PTI 1, Paragraph 8.3.3. Test records, including plots and graphical analysis of test data, shall be furnished upon acceptance of each proof tested anchor in accordance with paragraph SUBMITTALS. The proof test results shall be compared with similar anchors in which performance tests have been performed. If any significant variation from the proof tests occurs, the Engineer may require additional performance tests.

D. Extended Creep Test

1. At least two extended creep tests shall be made on permanent anchors and shall consist of incrementally loading the anchor and shall be conducted in accordance with PTI 1, Paragraph 8.3.4. The Creep Test shall be conducted by incrementally loading and unloading the anchor in accordance with the schedule of the Performance Test, except that at each new load maximum, the load shall be held constant in accordance with Table 8.3 with PTI 1. The Extended Creep Test shall be conducted on one of the first three performance anchors and one of the additional 2 anchors as required by the Engineer.

E. Driller Logs

1. Keep accurate driller logs and records of all work accomplished under this contract and shall deliver complete, legible copies of these logs and records to the Engineer upon completion of the work or at such other time or times as he may be directed. All such records shall be preserved in good condition and order by the

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Contractor until they are delivered and accepted, and the Engineer shall have the right to examine such records at any time prior to their delivery. Separate logs shall be made for each hole. The Contractor shall use DRILLING LOG, ENG FORM 1836 and 1836A [or other approved form which provides the required information] for his logs. The following information shall be included on the logs or in the records for each hole:

- a. Hole number or designation and elevation of top of hole.
- b. Inclination of the hole.
- c. Make and manufacturer's model designation of drilling equipment.
- d. Dates and time when drilling operations were performed.
- e. Time required for drilling each run.
- f. Steel casing seat elevation.
- g. Depth and elevation of rod drops and other unusual occurrences.
- h. Depth and elevation at which groundwater is encountered.
- i. Depths and elevations at which drill water is lost and regained and amounts.
- j. Depth and elevation of bottom of hole, determined by measuring the drill steel length.

F. Anchor Records

1. Upon completion of installation of each anchors, the anchor records shall be furnished to the Engineer as specified in paragraph SUBMITTALS. In addition as-built drawings showing the completed installation of the anchors shall be furnished upon completion of installation of all anchors.

3.05 ACCEPTANCE

A. General

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1. Acceptance of anchors shall be determined by the Engineer. The following criteria will be used in determination of the acceptability of each anchor:
 - a. Creep - Creep movement shall not exceed the movement requirements for the Performance Testing and Extended Creep Testing per PTI 1 and this Specification or the anchor shall be rejected.
 - b. Movement - Apparent free length shall be calculated from the observed elastic movement in accordance with PTI 1, Section 8.3.2.
 - i. Minimum Apparent Free Length - The calculated free length shall be not less than 80 percent of the designed free tendon length plus the jack length. If the anchor does not meet this criteria, the anchor shall be restressed from the Alignment Load to the Test Load and the apparent free length shall be recalculated. If the anchor does not meet this criteria after 3 attempts (original plus 2 restresses), the anchor shall be rejected.
 - ii. Maximum Apparent Free Length - The calculated free length shall be not more than 100 percent of the designed free tendon length plus 50 percent of the bond length plus the jack length. If the anchor does not meet this criteria, and the cause of the behavior is not investigated and explained to the satisfaction of the Engineer, the anchor shall be rejected.
 - c. Initial Lift-Off Reading - The initial lift-off reading shall be within 5 percent of the specified Lock-off Load. If the anchor does not meet this criteria, the anchor shall be adjusted as necessary and the lift-off reading shall be repeated.

B. Replacement of Rejected Anchors

1. Any anchor that fails the performance or proof test or is rejected by the Engineer shall be replaced. A replacement anchor, including a new anchor hole, shall be provided by the Contractor at no expense to the Port. The location of the replacement anchor shall be as directed by the Engineer. Provide all materials, supplies, equipment, and labor necessary to provide a new anchor assembly to the satisfaction of the Engineer. No drilling shall be performed for a replacement anchor until the grouting of all rock anchors within 50 feet of the replacement anchor location has been

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allowed to set for at least 24 hours. Payment will not be made for rejected or failed anchors. The Contractor shall either remove failed anchors and thoroughly ream and clear the anchor hole or remove the load and cut the anchor and casing flush.

END OF SECTION

DIVISION 32 — EXTERIOR IMPROVEMENTS

SECTION 32 11 23 – Aggregate Base Courses

PART 1 – GENERAL

1.01 RELATED WORK DESCRIBED ELSEWHERE

- A. The drawings and general provisions of the Contract, including the General Conditions, Supplementary Conditions and the sections of Division 1 – General Requirements apply to this work as specified in the section. Work related to this section is described in:
 - 1. Section 02 11 00 – Temporary Excavation and Backfilling
- B. Work under this Specification section is paid under Bid Item 29 – 6-inch Gravel Ballast as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures

1.02 DESCRIPTION OF WORK

- A. The extent of Aggregate Ballast is indicated on the Drawings. The work includes transporting, placing, shaping and compacting base courses in conformance with these Specifications and the dimensions and sections indicated on the Drawings or within the lines and grades established by the Engineer.

1.03 QUALITY ASSURANCE

- A. The Contractor will provide sampling and testing for compliance with the Contract provisions and shall be in accordance with Section 01 33 00 of these Specifications.
- B. Unless otherwise referenced or modified herein, quality control and quality standards for this section shall be as specified in the Washington State Department of Transportation Standard Specifications for Road, Bridge and Municipal Construction 2012 edition.

1.04 REFERENCES

- A. All references to the Washington State Department of Transportation (WSDOT) shall refer to 2012 Standard Specifications for Road, Bridge, and Municipal Construction.

1.05 SUBMITTALS

- A. The Contractor shall submit test reports in accordance with Section 01 33 00 for Contractor furnished import base course as follows:
 - 1. Sieve analyses for all materials specified in accordance with ASTM C-136.

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SECTION 32 11 23 – Aggregate Base Courses

2. Maximum Dry Density (ASTM D-1557).

PART 2 – PRODUCTS

2.01 AGGREGATE BALLAST

- A. Aggregate for ballast shall consist of clean, well graded granular material meeting the requirements of WSDOT Section 9-03.9(1).

PART 3 – EXECUTION

3.01 EQUIPMENT

- A. All equipment necessary for the satisfactory installation of base courses shall meet the requirements of WSDOT Section 4-04.3(1).

3.02 PREPARATION OF SUBGRADE

- A. Prepare subgrade as specified in Section 31 23 13 – Subgrade Preparation and obtain approval of the Engineer before placing base course materials.

3.03 PLACEMENT OF BASE COURSE AGGREGATES

- A. Equipment necessary for the satisfactory performance of this construction shall be on the project and approved by the Engineer prior to beginning work. If central-mix-plant methods are used, the central mixing plant shall comply with the applicable portions WSDOT Section 4-04.3(3).
- B. Prepare subgrades as specified above and obtain approval of the Engineer before placing base course, ballast or surfacing materials.
- C. Mixing: After each layer of material is placed, mix the material by motor graders or other approved equipment until the mixture is uniform throughout. Add water as directed by the Engineer to facilitate mixing and compacting.
- D. Placing and Spreading: Spread each layer of material by means of approved spreading equipment. Such equipment may be bottom-dump hauling equipment with transverse spreading facilities; self-propelled spreading and leveling machines; or spreader boxes equipped with wheels or so constructed as to preclude damage to the subgrade or underlying courses. Spreading in small areas of less than 2,000 square yards or in areas irregular in shape may be accomplished by other means

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SECTION 32 11 23 – Aggregate Base Courses

as directed by the Engineer. Material shall be placed in layers not exceeding 6 inches.

- E. Shaping and Compacting: Immediately following spreading and shaping, compact each layer to at least ninety five percent (95%) of the maximum dry density determined in accordance with ASTM D-1557 before the next succeeding layer is placed thereon. When the thickness of the base course is less than 0.15 feet, density testing may not be required and the Engineer will determine the number of coverage's required for the particular compaction equipment available.

Vibratory compactors or rollers shall be adequate in design and number to provide compaction and obtain the specified density for each layer while still moist. Apply a mist spray of water as needed to replace moisture lost by evaporation. The completed layer shall have a smooth, tight, uniform surface true to the line, grade and cross section indicated on the Drawings.

Variations in the surface of the top course shall be a maximum of 1/4 inch in 10 feet. Shave off or fill in variations greater than the allowable and recompact that area.

- F. Surface Maintenance: Maintain the surface of each layer of material true to line, grade and cross section by blading, watering and rolling until placing the succeeding course. Place the first course of material on all available subgrade before placing the succeeding course unless otherwise authorized by the Engineer. Should irregularities develop in any surface during or after compaction, remedy by loosening the surface and correcting the defects, then thoroughly recompact the entire area, including the surrounding surface. In the event that additional materials are necessary to make the repairs, they shall be provided at no additional cost to the Port.
- G. Route hauling equipment over the roadway in such a manner as to be most effective in the compacting of the material. Hauling over the surfacing in the process of construction will not be permitted when, in the opinion of the Engineer, the effect will be detrimental.

END OF SECTION

DIVISION 33 — UTILITIES

SECTION 33 40 00 — Storm Drainage Utilities

PART 1 – PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE:

- A. The provisions and intent of the Contract, including the General Conditions, Supplementary Conditions and General Requirements, apply to this work as if specified in this section. Work related to this section is described in:
 - 1. Section 01 57 19 – Temporary Environmental Controls
 - 2. Section 02 11 00 – Upland Excavation and Backfilling
 - 3. Section 02 41 16 – Site and Structure Removal and Disposal
 - 4. Section 02 56 16 – Staging and Stockpiling
- B. Work under this Specification section is paid under Bid Item 47 – Removal and Disposal: Clarifier Concrete Structure, Scum Box, Phosphoric Acid Tank and Remnant Foundations as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures.

1.02 DESCRIPTION OF WORK:

The location and extent of the storm drainage work is indicated on the drawings. The Work includes trenching, bedding, backfilling, pipe supports, furnishing and installing storm drainage utilities; the Contractor shall comply to these Specifications.

1.03 QUALITY ASSURANCE:

- A. Qualification of Workmen: Employ at least one person who shall be present at all times during execution of this portion of the Work, shall be thoroughly familiar with the type of materials being installed and the best methods for their installation and shall direct all work performed under this section.
- B. Codes and Standards: Comply with the applicable provisions of all pertinent codes and regulations. References made herein for manufactured materials, such as pipe, fittings and specialties refer to designations for American Association of State Highway and Transportation Officials (AASHTO) or to American Society for Testing Materials (ASTM).

1.04 REFERENCES

- A. All references to the Washington Department of Transportation (WSDOT) shall refer to 2012 Standard Specifications for Road, Bridge and Municipal Construction.

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SECTION 33 40 00 — Storm Drainage Utilities

1.05 SUBMITTALS:

- A. The Contractor shall submit the following information:
 - 1. Before any pipe, fittings or drainage structures are delivered to the job site; submit for approval manufacturer's literature including standard drawings or catalog cuts, manufacturer's Certificates of Conformance for materials which are specified to conform to publications referenced under "Products" in this section, and shop drawings.

PART 2 - PRODUCTS

2.01 DUCTILE IRON PIPE:

- A. Restrained joint pipe shall be 24" diameter Class 52 Ductile Iron manufactured in accordance with the requirements of ANSI/AWWA C151/A21.51. Push-on joints for such pipe shall be in accordance with ANSI/AWWA C111/A21.11. Pipe thickness shall be designed in accordance with ANSI/AWWA C150/A21.50. Restrained joint fittings and the restraining components shall be Ductile Iron in accordance with applicable requirements of ANSI/AWWA C110/A21.10 and/or C153/A21.53 with the exception of the manufacturer's proprietary design dimensions. Push-on joints for such fittings shall be in accordance with ANSI/AWWA C111/A21.11. Cement mortar lining and seal coating for pipe and fittings, where applicable, shall be in accordance with ANSI/AWWA C104/A21.4. Asphaltic outside coating shall be in accordance with ANSI/AWWA C151/A21.51 for pipe and ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53 for fittings.
- B. Restrained joint pipe and fittings shall be U.S. Pipe's TR FLEX Pipe and Fittings or approved equal.

2.02 FIBERGLASS REINFORCED PIPE (FRP)

- A. Fiberglass reinforced pipe, fittings and flanges shall match the properties of the existing FRP drainage system including laminate type, thicknesses, grades and flange types. The existing FRP drainage system including pipes and fittings consists of Ershigs manufactured products. FRP pipe and fittings as indicated on the drawings shall be manufactured by Ershigs or approved equal.

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2.03 CONCRETE PIPE:

- A. Concrete pipe shall be 12 inch diameter plain concrete pipe and shall conform to WSDOT Section 9-05.7(1). Joints and gasket materials shall be per WSDOT Section 9-05.7(3).

2.04 PIPE SUPPORTS:

- A. All pipe supports, saddles and u-bolts shall conform to Manufacturers Standardization Society (MSS), MSS-SP- 58 and MSS-SP-59

PART 3 - EXECUTION

3.01 EARTHWORK:

- A. Excavation shall be as specified in Section 02 11 00 – Upland Excavation and Backfilling. Bedding, and backfilling shall be per WSDOT Section 7-08.

3.02 SURVEYS:

Alignment and grade of site drainage piping will be established by the Contractor survey crews. Check the line and grade during installation to ensure that the Work is within the following allowable tolerances:

- A. Fine-grade and prepare bedding or pipe supports so the pipe can be initially placed with a variation from true line or grade, measured at each joint, of not more than 1/32 inch per inch diameter or 1/2 inch maximum, provided that:
 - 1. A resulting level or backsloping length of pipe does not occur; and
 - 2. No more than one-half of the permissible variation shall be accumulated between successive joints.
- B. Pipe laid within these tolerances shall not be subjected to any further adjustment. Measurement for grade shall be taken at the pipe invert, NOT TOP OF PIPE. Eccentricity of pipe barrels, with respect to jointing surfaces, shall not produce grade interruption adverse to flow of more than 1/4 inch maximum.

3.03 INSTALLATION OF UNDERGROUND PIPE:

- A. Placing: Place the pipe in appropriate bedding graded to conform with the grades and alignment indicated on the drawings and prepared as specified. Ensure that the pipe has a full, solid bearing along its entire length. Provide small depressions for pipe bells when utilized. Make

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minor adjustments to line and grade by scraping away, or filling in with, bedding material. Do not support pipes on blocks or mounds of any nature.

- B. Jointing: Take care to properly align the pipe and clean the bell and spigot or tongue of the pipe. Gaskets must be straight, properly lubricated and without twist. The pipe shall be partially supported by hand, sling, or crane, as required, to minimize lateral pressure on the gasket and to maintain concentricity until the pipe has been forced into final longitudinal position in accordance with the manufacturer's recommendations. Pipe handling, after the gasket has been affixed, shall be carefully controlled to avoid bumping the gasket and, thus, knocking it out of position or loading it with dirt or other foreign material. Gaskets so disturbed shall be removed, cleaned, relubricated and replaced before the joint is attempted.

Apply sufficient restraint to the line to ensure that the joints, once home, are held so by tamping fill material under and alongside the pipe. At the end of the day's work, block the last pipe in such a manner as may be required to prevent creep during down time.

3.04 INSTALLATION OF ABOVEGROUND PIPE:

- A. Install hangers, supports and attachments to support piping properly from the pier and existing piling; comply with MSS SP-69. Install supports where indicated on the drawings.
- B. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers and other accessories.
- C. Provision for Movement:
 - 1. Install hangers and supports to allow controlled movement of piping systems and to permit freedom of the existing expansion joint.
 - 2. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
 - 2. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes, and so that maximum pipe deflections allowed per pipe manufacturer are not exceeded.
- D. Fully install complete run of pipe and pipe supports prior to placement of capping material, see Section 35 20 26 – Waterway Capping for additional requirements.

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3.05 INSTALLATION OF FRP FITTINGS:

- A. Installation of FRP fittings and flanged end field butt joint shall be performed per manufacturer's recommendations and be made by trained personnel with experience in the work.
- B. Final fit-up and assembly of joints and fittings should not be made until the system hangers and supports have been properly located and installed.

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PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section describes work associated with dredging, Contingency Re-Dredging, barge dewatering, and in-water transportation of contaminated sediment and Dredge Debris from portions of Whatcom Waterway located within the Inner Waterway and Bellingham Shipping Terminal (BST) areas, in Bellingham Bay in Bellingham, Washington. Dredging work includes completing required dredging to remove contaminated sediments from the Work Site, and potential Contingency Re-Dredging to remove additional missed inventory materials, if Port confirmatory sampling and testing results indicate the need for Contingency Re-Dredging.
- B. Complete required dredging, barge dewatering and in-water transportation activities as shown on the Drawings and described in the Specifications.
- C. Complete Contingency Re-Dredging if directed by the Engineer. Potential Contingency Re-Dredging only applies to the BST area; potential Contingency Re-Dredging is not applicable for the Inner Waterway. The Port will coordinate with the Washington State Department of Ecology (Ecology) to determine whether any Contingency Re-Dredging is required to meet the project remedial objectives, based on results from the post-required dredging confirmatory sampling that will be conducted by the Port. If Contingency Re-Dredging is necessary, the Engineer will delineate the re-dredging extents (horizontal and vertical). Contingency Re-Dredging will be paid at the Unit Price bid for the Bid Item “Required Dredging, Contingency Re-Dredging, Barge Dewatering, and In-Water Transportation”.
- D. Perform the dredging work using mechanical dredging methods and dispose of the sediment at an approved upland Subtitle D Disposal Facility.
- E. Transport dredged material by haul barge to either Port provided On-Site Transload Facility and/or Contractor provided (and Port approved) Off-Site Transload Facility(ies).
- F. The Contractor is responsible for selecting the appropriate dredging equipment that considers the site conditions, character of materials, facilities usage, and existing structures adjacent to the dredge areas that may be encountered during dredging operations. By submitting its bid, the Contractor acknowledges that it has carefully considered these conditions and other project considerations and included appropriate means and methods for dredging activities.

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- G. Work under this section to be performed by the Contractor includes furnishing all labor, materials, tools, equipment, and incidentals required for dredging, barge dewatering, and in-water transportation of dredge material and Dredge Debris in support of the overall project as described in the Drawings and in these Specifications.
- H. Work under this Specification section is paid under Bid Item 11 – Required Dredging, Contingency Re-Dredging, Barge Dewatering and In-Water Transportation, as shown on the Bid Form and described in Section 01 20 00—Price and Payment Procedures.
- I. Table 35 20 23-1 provides the approximate surface area and estimated Pay Volume associated with Required Dredging.

Table 35 20 23-1
Dredge Pay Volume Summary by Work Site Area

	BST		Inner Waterway	Total
	Berth 1	Berth 2		
Dredge Pay Volume (cy)	53,250	3,050	35,300	91,600

Notes:

- 1) Volume includes Payable Overdredge Allowances as shown on the Drawings.
- 2) Volume estimate does not include additional volume for Contingency Re-Dredging.
- 3) Volume estimates do not include potential slough volume which may fall into the Dredge Prism when completing dredging activities adjacent to the GP Dock and BST Dock.

1.02 RELATED WORK

- A. The provisions and intent of the Contract, including the General Conditions, Supplemental Conditions, and General Requirements, apply to this work as if specified in this Section. Work related to this Section is described, but not limited to the following Sections:
 - 1. Section 01 10 00—Summary
 - 2. Section 01 32 00—Construction Progress Documentation
 - 3. Section 01 33 00—Submittal Procedures

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4. Section 01 35 29—Health, Safety, and Emergency Response Procedures
5. Section 01 41 26—Permits
6. Section 01 50 00—Temporary Facilities and Controls
7. Section 01 57 19—Temporary Environmental Controls
8. Section 02 41 00—Shoreline Debris Removal and Disposal
9. Section 35 20 23.01—Offloading, Upland Transportation and Disposal
10. Section 35 20 26—Engineered Sediment Capping

1.03 SUBMITTALS

A. Pre-Construction Submittals

1. Submit detailed Construction Work Plan in accordance with Section 01 33 00—Submittal Procedures within twenty-eight (28) calendar days following Notice of Award for review and acceptance by the Engineer.
 - a) As part of the detailed Construction Work Plan, in accordance with Section 01 33 00—Submittal Procedures, the Contractor shall prepare a section that describes the approach that will be implemented for Dredging, Contingency Re-Dredging, Barge Dewatering and In-Water Transportation. Dredging, Contingency Re-Dredging, barge dewatering, and in-water transportation activities shall not begin until: 1) the Construction Work Plan has been reviewed and accepted by the Engineer, 2) agency-required notifications and review have been completed, 3) the Contractor schedules and attends a pre-construction conference, and 4) Contractor receives Engineer's approval to begin work.
2. At a minimum, the Dredging, Contingency Re-Dredging, Barge Dewatering and In-Water Transportation approach description shall contain the following information:
 - a. Equipment identification, including the number, types (and names if applicable), and capacity of equipment to be used, including: dredges, tugboats, workboats, water treatment barge if used, haul barges, other marine vessels, and land-based equipment.

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- b. Work sequence: Reference the Contractor's Construction Schedule that identifies timing and sequencing for completion of dredging, barge dewatering, and in-water transportation activities, as they relate to other major elements of the work.
- c. Hours of operation.
- d. In-water transport route to the Contractor Off-Site Transload Facility, if used.
- e. Means and methods for completion of dredging, contingency re-dredging, barge dewatering, and in-water transportation activities:
 - 1) Methods, procedures, and equipment to be used for all Required Dredging, and Contingency Re-Dredging activities.
 - 2) Methods, procedures, and equipment to be used for anchoring floating equipment.
 - 3) Methods, procedures, and equipment to be used to provide lights, lighted buoys, or other required markings to warn other vessels of presence of floating equipment and anchoring lines (if used).
 - 4) Methods, procedures, and equipment to be used for all barge dewatering activities (including addition of amendments) of dredge material and Dredge Debris as necessary.
 - 5) Methods, procedures, and equipment to be used for in-water transportation of dredge material and Dredge Debris to the Contractor On-Site and Off-Site Transload Facility(ies), including procedures for preventing release of sediment and water during transportation.
 - 6) Methods, procedures, and controls to protect existing Port and other facilities against damage.
 - 7) Methods for coordination with port tenants throughout completion of the work.

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- f. Best management practices (BMPs) proposed by the Contractor during dredging, barge dewatering, and in-water transportation of dredge material and Dredge Debris.
- g. Dredge Debris Removal:
 - 1) Procedures and equipment for collecting and disposing of submerged and floating Dredge Debris encountered during dredging and other over-water activities.
 - 2) Procedures and equipment for offloading, stockpiling (if necessary), transport, and disposal of Dredge Debris. This information shall include methods to prevent spillage of dredge material and dredge debris back into the water during offloading and cleanup of the barge.

B. Construction Submittals

- 1. Daily Reporting: As part of the Daily Construction Report, as described in Section 01 33 00—Submittal Procedures, the Contractor shall keep a daily record of the area(s) dredged, the estimated Dredge Pay Volume removed including Payable Over-dredge Allowance volume, estimated Excessive Dredging volume removed, estimated Contingency Re-Dredging volume removed (as necessary), number of haul barge trips to either the On-Site Transload Facility or Contractor Off-Site Transload Facility(ies), estimated volume and tonnage of dredge materials and Dredge Debris transported to the Transload Facility(ies), Progress Surveys, and a summary of other details of the work. The Contractor shall also provide a copy of the Marine Surveyor Report with the Daily Construction Report. This daily record shall be submitted to the Engineer the morning following completion of the work for that day as part of the Daily Construction Report. The Daily Construction Report shall be signed by the Contractor's site superintendent and quality control manager.
- 2. Weekly Reporting: As part of the Weekly Construction Report, as described in Section 01 33 00—Submittal Procedures, the Contractor shall summarize the week's dredging activities in its Weekly Construction Report to be submitted to the Engineer the following Monday morning. The Weekly Construction Report shall identify work completed to date, anticipated work to be completed in the present week (including specific areas identified for

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dredging), and present the latest Progress Survey and Post-Construction Survey information. The Weekly Construction Report shall be signed by the Contractor's site superintendent and quality control manager.

1.04 JOB CONDITIONS

A. Character of Materials

1. Descriptions of material to be dredged are provided in the appendices and reference materials attached to these Specifications. The Contractor shall review this information and use it to inform the Contractor's work.
2. The Contractor shall satisfy itself regarding the nature of materials present at the Work Site prior to bidding. The type of materials encountered at the Work Site may vary from the conditions described in the attached appendices and reference drawings. Variations in the type of materials encountered may occur that do not differ materially from those indicated in these Specifications, and if encountered, will not be considered as basis for claims due to differing Work Site conditions.
3. Hard material in its natural state is defined as material requiring blasting, and includes boulders or fragments too large to be removed in one piece by the dredging equipment. Hard material in its natural state is not anticipated to be encountered at the Work Site under this Contract. The Contractor shall expect significant quantities of riprap and/or concrete debris to be removed as part of required dredging along the shoreline areas.
4. Material from the under-pier areas at the BST and GP dock is anticipated to slough into the dredge area once the toe support has been dredged and the Contractor will be required to remove it as part of this work.
5. Riprap and Dredge Debris
 - a. Riprap and any Dredge Debris that may be encountered during the work shall be disposed of at an appropriate off-site location (or recycled if applicable) in accordance with applicable local, state, and/or federal regulations. Cost for removal and disposal of such dredge debris, including known and unknown submerged logs, and riprap is incidental to the Contract and is considered part of the bid

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price for “Required Dredging, Contingency Re-Dredging, Barge Dewatering, and In-Water Transportation”. See also Section 02 41 00—Shoreline Debris Removal and Disposal.

- b. Dredge debris, such as anchors, rebar, cables, chains, straps, wood, and other man-made items, may be encountered during dredging operations. Some of this Dredge Debris material may not be suitable for disposal at the Disposal Facility(ies), intermingled with dredged sediment, as the Disposal Facility(ies) may require that contaminated sediment slated for disposal as daily cover be free of rebar, cables, and other debris. The Contractor shall coordinate with the Disposal Facility(ies) to determine whether dredge debris needs to be screened out of the dredged sediment prior to upland transport and disposal. The Contractor shall provide all necessary Dredge Debris removal screening, and transport and disposal, and the costs for this work shall be considered incidental to the work.
- c. For bidding purposes, the Contractor shall assume that there will be no hazardous waste in the Dredge Debris. The Contractor shall immediately notify the Engineer if any Dredge Debris is encountered that is considered hazardous waste and the Engineer will determine its disposition.

B. Dredge Prism Description

1. Open Water Dredging Areas
 - a. The majority of the dredge prism is located in the main navigation and berthing areas located within the Inner Waterway and BST areas, as shown on the Drawings.
2. Slope Dredging Areas
 - a. Slope dredging areas refer to the shoreline slope areas in the Inner Waterway, as shown on the Drawings, where the dredge prism extends from the toe of dredge cuts up to the top of bank or intertidal shoreline.
 - b. The Contractor shall anticipate difficult dredging conditions when dredging/excavating in the slope dredging areas, due to anticipated presence of shoreline debris, Dredge Debris, riprap, and areas with buried timber piles. Land-based

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excavation of sediment in the slope dredging areas is allowed.

3. Underpier Areas

- a. Material from the under-pier areas at the BST and GP dock is anticipated to slough into the dredge prism once the toe support has been dredged and the Contractor will be required to remove slough material that falls into the dredge prism as part of this work. The underpier areas are not within the dredge prism, and the Contractor is not required to dredge in the underpier areas.

C. Protection of Existing Facilities to Remain

1. Any damage to existing pier structures and/or existing facilities (not specified to be demolished/removed) that is caused by the Contractor's operations, as determined by the Engineer, shall be repaired to the pre-project condition at the Contractor's expense within a reasonable time period acceptable to the Engineer.
2. Condition Survey of Existing Structures to Remain: The Contractor and the Engineer shall jointly review the pre-construction condition of piers and wharves, fender systems, electrical vaults, and other existing facilities within the Work Site prior to beginning work to ascertain existing conditions.

1.05 MISPLACED MATERIALS

- A. Should the Contractor, during the execution of the work, lose, dump, throw overboard, sink, or misplace any material, dredge, barge, machinery, or appliance, the Contractor shall promptly recover and remove the same. The Contractor shall give immediate verbal notice, followed by written confirmation, of the description and location of such obstructions to the Engineer and shall mark and buoy such obstructions until they are removed.
- B. Should the Contractor refuse, neglect, or delay compliance with this requirement, such obstructions may be removed by the Port or its agents, and the cost of such operations may be deducted from any money due to the Contractor, or may be recovered from the Contractor's bond.
- C. The liability of the Contractor for the removal of a vessel wrecked or sunk without his fault or negligence shall be limited to that provided in Sections 15, 19, and 20 of the River and Harbor Act of 3 March 1899 (33 U.S.C. 410 et seq.).

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- D. The Contractor shall be responsible for any fees, fines, penalties, or other costs resulting from misplaced materials, and shall not pass costs to the Port.

1.06 ACCESS TO CONTRACTOR'S EQUIPMENT

- A. The Contractor shall grant access to its dredge derrick, barge(s), tug(s), and all other equipment mobilized for the project for inspection purposes, to the Engineer or to any Port-designated representative. Regulatory agency staff may also require access to equipment and will be escorted by Port-designated representatives at all times.

1.07 QUALITY CONTROL

- A. The Contractor is responsible for providing all necessary quality controls to successfully complete the work.
- B. The Port (Engineer or other Port representatives) will inspect the work for quality assurance purposes. Port inspection shall in no way release the Contractor from complying with the Specifications and all permits, and shall in no way be construed as acceptance of work.

PART 2 –

Not Used.

PART 3 – EXECUTION

3.01 SEQUENCING

- A. See Section 01 10 00—Summary for description of how dredging activities relate to the overall sequencing of the work.
- B. The Contractor shall dredge sediment within the Work Site to the required elevations and grades as shown on the Drawings during the in-water work period described in the project permits. See Section 01 41 26—Permits, and the completion milestone dates related to this work.
- C. Once required dredging is completed, the Contractor shall conduct a Required Dredging Post-Construction Survey to determine whether required dredging elevations and grades have been met. If high spots remain above the required dredge elevations and grades, the Contractor shall remove such high spots to the satisfaction of the Engineer at no additional cost to the Port.

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- D. Contingency Re-Dredging may be required based on results of post-required dredging confirmatory sampling conducted by the Port. Contingency Re-Dredging, if required, only applies to the BST dredge area. No Contingency Re-Dredging will occur in the Inner Waterway area.

3.02 CONDUCT OF WORK

A. Layout of Work

1. The Contractor shall establish an accurate method of horizontal and vertical control before dredging begins.
2. The proposed method and maintenance of the horizontal control system shall be subject to the acceptance of the Engineer and if, at any time, the method fails to provide accurate location for the dredging operation, the Contractor may be required to suspend its dredging operations until such time that accurate control is established.
3. The Contractor shall lay out its work from horizontal and vertical control points indicated on the Drawings and shall be responsible for all measurements taken from these points. The Contractor shall furnish, at its own expense, all stakes, templates, platforms, equipment, range markers, transponder stations, and labor as may be required to lay out the work from the control points shown on the Drawings.
4. It shall be the responsibility of the Contractor to maintain all points established for the work until authorized to remove them. If such points are destroyed by the Contractor or disturbed through its negligence prior to an authorized removal, they shall be replaced by the Contractor at its own expense.

B. Dredging

1. Dredging shall be performed using mechanical methods only.
2. The Contractor shall excavate the Dredge Prism to the required dredging lines, grades, slopes, and elevations shown on the Drawings. Each pass of the dredge bucket shall be complete, and there is to be no stockpiling of sediment in the water. Leveling of the completed dredging surface by dragging a beam or the dredge bucket is not permitted.
3. When dredging the slope dredging areas, conduct dredging starting from the top of slopes, working down the slope, in order to minimize

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the potential for uncontrolled slope movement. Inform Engineer if Contractor proposes to dredge slope dredging areas starting from the toe of slope and obtain Engineer acceptance.

4. The Contractor shall exercise great care when dredging the toe of slopes to avoid overcutting the toe of slopes below the Payable Overdredge Allowance, which may result in potential damage to existing structures. Undercutting the toe of slopes may result in excessive slope sloughing and damage to structures.
5. When dredging adjacent to the GP dock and BST, the Contractor shall limit dredge cut thickness to a maximum of 4 feet for each dredge pass, with the intent of initiating a controlled sloughing of underpier material. The Contractor shall note that several dredge passes may be required along the pier face within these two areas of the Work Site in order to reach the required dredging elevation, and shall account for such activity in their bid price.
6. After the required dredging elevation has been initially achieved along the pier face adjacent to the GP dock and BST, as determined by Contractor progress surveys, and before acceptance of the required dredging as complete, the Contractor shall complete at least one cleanup pass of dredging in front of the BST pier and the GP dock, along the pier face to remove any additional slough material that may have moved downslope during the work. Additional cleanup passes may be required to remove all slough material.
7. If daily Progress Survey results indicate that the Contractor is dredging excessively, or is dredging outside of the dredge prism, the Contractor shall modify its dredging operations and/or positioning control immediately to avoid additional excessive dredging. Excessive dredging, if performed, will be paid for by the Contractor at no additional expense to the Port.
8. The Contractor shall pay particular attention to the conditions of issued regulations and authorizations requiring minimizing turbidity and loss of resuspended sediments during dredging and transport operations and adherence to water quality requirements.
9. Control the dispersion of suspended solids away from the point of dredging, and due to vessel propwash during dredging activities in order to prevent or reduce to the extent practicable the potential for sediment recontamination.

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10. Upon completion of the work, but not until acceptance by the Engineer, the Contractor shall remove the dredging plant and associated equipment, including ranges, buoys, piles, and other markers or obstructions placed by the Contractor in the water or on shore.
11. All Contractor floating equipment shall be marked with U.S. Coast Guard-approved lights or lighted buoys, whenever operations and/or floating equipment laydown will occur during non-daylight hours.
12. Contingency Re-Dredging
 - a. After review of the post-dredge confirmatory sampling and testing results, and in coordination with Ecology, the Engineer may direct the Contractor to conduct Contingency Re-Dredging in specified locations of the BST area to remove Contingency Re-Dredge material.

C. Barge Dewatering

1. Unfiltered effluent release from the dredge material barge and/or dewatering barge is prohibited.
2. The Contractor is allowed to passively barge dewater dredged sediment (to remove suspended solids from the effluent), provided the method for passive barge dewatering is implemented in a manner that is compliant with the water quality requirements as described in the Water Quality Monitoring Plan, provided as a reference document to the Contract Documents. The Contractor shall be responsible for reviewing and understanding these water quality requirements.
3. The sediment shall be slightly heaped to promote drainage of excess water to the scuppers. No overtopping of the sideboards will be allowed.
4. The Contractor shall be responsible for ensuring that all scuppers, sideboards, or other passageways for effluent to discharge back to Work Site waters have the proper filtration material in place prior to discharge of effluent. Cover the scuppers and any discharge points with filter fabric (or similar material acceptable to the Engineer) to filter and retain sediment while allowing water to drain back into the receiving waters, and to meet water quality criteria requirements. Free water shall not be directly discharged back into the site waters

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without passing through filter media to prevent release of suspended sediment. The method for filtering return effluent must be described in the Construction Work Plan and accepted by the Engineer prior to conducting any dredging work.

5. Barge discharge is not allowed during in-water transportation of dredge material and Dredge Debris from the Work Site to any Contractor Off-Site Transload Facility(ies). Collect, store, treat as necessary, and discharge or dispose of effluent from barge in such a manner that meets the water quality requirements described in Section 01 57 19—Temporary Environmental Controls, and requirements of the 401 Water Quality Certification.
6. Water management on haul barges may be done with the addition of drying amendment. The Contractor shall select the type of amendment and appropriate dosage to facilitate dewatering. Use of amendments is at the sole discretion of the Contractor, and the Contractor is responsible for ensuring that use of amendments is acceptable by the Subtitle D Disposal Facility, and meets requirements of federal, state, local regulations, and permit conditions. Use of amendments will be considered incidental to the work.
7. It is the Contractor's responsibility to understand the dewatering requirements and costs to provide dewatering for the Contractor's selected Subtitle D Disposal Facility and include them in the bid price.
8. If water quality criteria exceedances are observed during completion of passive dewatering activities, the Contractor shall modify the passive barge dewatering process in order to comply with water quality criteria or cease passive barge dewatering activities at no additional cost to the Port.

D. In-Water Transportation

1. The Contractor shall transport contaminated sediment to the Port's On-Site Transload Facility and/or Contractor's Off-Site Transload Facility(ies) according to the means and methods described in the Construction Work Plan. Deviations from the Construction Work Plan must be accepted by the Engineer prior to haul barges leaving the Work Site.
2. The Contractor shall have a certified marine surveyor inspect each barge load of dredge material and Dredge Debris prior to transport

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from the Work Site and to the Contractor Off-Site Transload Facility(ies).

- a. The certified marine surveyor shall obtain barge displacement measurements prior to in-water transportation and establish an estimated tonnage of material associated with that barge load. Estimated tonnages for each barge load of material removed from the Work Site shall be recorded in the Contractor Daily and Weekly Construction Reports.
 - b. The certified marine surveyor shall also document seaworthiness of each barge used for transport of dredge material and Dredge Debris from the Work Site to the Contractor's Off-Site Transload Facility. Documentation of the seaworthiness of each transport barge shall be submitted to the Engineer prior to that barge leaving the Work Site.
3. Transportation of dredge material and Dredge Debris from the Work Site to the Contractor's Off-Site Transload Facility shall comply with federal, state, local regulations, and permit conditions.

3.03 WATER QUALITY MONITORING

- A. A Water Quality Monitoring Plan has been prepared by the Port and is attached as a reference document to the Contract Documents. In accordance with this plan, the Port will perform water quality monitoring for quality assurance purposes during completion of Contractor dredging and barge dewatering activities. The Contractor is responsible for complying with all water quality requirements as defined in the project 401 Water Quality Certification, and applicable local, state, and federal standards. The Contractor shall conduct its own water quality monitoring as needed to provide quality control of the Contractor's work. The Contractor shall have in place:
 1. Best management practices (BMPs) to prevent water quality exceedances.
 2. Contingency measures to implement should water quality exceedances occur.
- B. The Contractor shall describe in its Environmental Protection Plan the means, methods, and procedures that will be used to prevent water quality requirement exceedances, and what contingency actions will be taken to

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restore compliance with water quality requirements should water quality exceedances occur during completion of dredging, barge dewatering, and in-water transportation activities.

- C. Delays caused by complying with water quality requirements shall not be cause for additional compensation to the Contractor.

END OF SECTION

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section describes work associated with offloading, stockpiling, and handling (i.e., transloading) of dredged material and Dredge Debris, for upland transport and disposal at an approved Disposal Facility.
- B. The transloading of dredged material and Dredge Debris for upland transport and disposal may occur at the Port-provided On-Site Transload Facility (as shown on the Drawings), or at a Port approved Off-Site Transload Facility(ies) to be identified by the Contractor. The Contractor may also use the Port-provided On-Site Staging and Stockpile Area at the former GP West facility as shown on the Drawings and constructed by the Contractor to stockpile and re-handle dredged material and Dredge Debris.
 - 1. The Port will provide an On-Site Transload Facility and On-Site Staging and Stockpile Area at former GP West facility as shown on the Drawings for the Contractor to use at no cost to the Contractor for offloading, staging, dewatering, stockpiling, and other construction needs for dredged material management. The Contractor may elect not to use the Port provided On-Site Transload Facility and On-Site Staging and Stockpile Area at former GP West facility for dredged material and Dredge Debris management, and provide its own Off-Site Transload Facility to manage the offload, stockpiling, dewatering, rehandling and transport of dredged material and Dredge Debris.
 - 2. The On-Site Staging and Stockpile Area at former GP West facility will also be used to manage shoreline debris and upland excavation materials, provide storage, Contractor office(s), parking and other Contractor uses. See Specification Section 02 56 16 - (Staging and Stockpiling).
 - 3. Direct rail access at the On-Site Staging and Stockpile Area at the former GP West facility as shown on the Drawings is not available. The Port can provide truck route access and site staging abutting to the BNRR Milwaukee Siding, as shown on the Drawings, if the Contractor negotiates use of rail line to transport dredged material to the approved Disposal Facility.
 - 4. Truck transport of dredged material and Dredge Debris through City of Bellingham streets is not allowed for this project. Truck transport of Shoreline Debris and/or upland excavation materials through City

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of Bellingham streets will be allowed, provided city truck routes are used.

5. The Contractor may utilize On-Site and Off-Site Transload Facility(ies) to transfer dredged materials between the Contractor's floating equipment and land, including offloading the Contractor's haul barges of dredged material and Dredge Debris. The Contractor's Off-Site Transload Facility(ies) shall have in place all necessary federal, state, and local permits and approvals for work activities anticipated to occur at the Contractor's Off-Site Transload Facility(ies).
- C. The location and size of stockpile area(s), where dredge material and Dredge Debris are temporarily stored, shall be identified in the Contractor's Construction Work Plan. Stockpile area(s) shall be located within the Port provided On-Site Staging and Stockpile Area(s) or the Contractor's Off-Site Transload Facility(ies).
- D. The Port reserves the right to inspect all Contractor staging, stockpile, and transload facilities, including collection of sediment samples for characterization and assessment purposes.
- E. Stockpiling, upland transportation, and disposal activities can occur outside the in-water work period, but must be completed within the specified timeframe in the Contract for completion of all Work. The Contractor shall properly dispose of all dredge material and Dredge Debris, shoreline debris, and upland excavation materials, and submit final certification from the Disposal Facility(ies) to the Engineer within three (3) calendar days after the following delivery of the material to the Disposal Facility.
- F. Work under this Section to be performed by the Contractor includes furnishing of all labor, equipment, materials, and other incidentals required for haul barge offloading of dredged material and Dredge Debris at On-Site and Off-Site Transload Facility(ies), use of On-Site and Stockpile Area(s) for dredged material management (if used for dredged materials), facility management, temporary stockpiling, sediment dewatering and water management (if applicable), dredged material and Dredge Debris re-handling, upland transportation, and off-site disposal of dredged material at an approved Disposal Facility in support of the overall project as described in the Drawings and in these Specifications.
- G. Work under this Specification section is paid under Bid Item 12 – Offloading, Upland Transportation and Disposal, as shown on the Bid Form and described in Section 01 20 00—Price and Payment Procedures. Payment for this work will be made solely for offloading of Dredged Debris

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and sediment at the On-Site and Off-Site Transload Facilit(ies), and for management of on-site and off-site Dredge Debris and sediment Staging and Stockpile Area(s). Payment for work involving upland excavation and backfilling, Shoreline Debris removal and disposal and Shoreline Debris and Temporary Excavation Materials Staging and Stockpile Area management will be paid for under separate Bid Items for this project.

1.02 RELATED WORK

A. The provisions and intent of the Contract, including the General Conditions, Supplemental Conditions, and General Requirements, apply to this work as if specified in this section. Work related to this Section is described, but not limited to the following sections:

1. Section 01 10 00—Summary
2. Section 01 33 00—Submittal Procedures
3. Section 01 45 00—Quality Control
4. Section 01 50 00—Temporary Facilities and Controls
5. Section 01 57 19—Temporary Environmental Controls
6. Section 02 41 00—Shoreline Debris Removal and Disposal
7. Section 02 56 16—Staging and Stockpiling
8. Section 35 20 23—Dredging, Contingency Re-Dredging, Barge Dewatering and In-Water Transportation

1.03 SUBMITTALS

A. Pre-Construction Submittals

1. Submit detailed Construction Work Plan in accordance with Section 01 33 00—Submittal Procedures within twenty-eight (28) calendar days following Notice of Award for review and acceptance by the Engineer.
2. As part of the detailed Construction Work Plan, in accordance with Section 01 33 00—Submittal Procedures, the Contractor shall prepare a section that describes the approach that will be implemented for offloading (and stockpiling, dewatering, rehandling), upland transportation and disposal activities for dredged material and Dredge Debris. These work activities shall not begin until: 1) the Construction Work Plan has been reviewed

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and accepted by the Engineer; 2) agency-required notifications and review have been completed; 3) the Contractor schedules and attends a pre-construction conference; and 4) Contractor receives Engineer approval to begin the work.

3. At a minimum, the offloading, upland transportation, and disposal approach description shall contain the following information:
 - a. Contractor Off-Site Transload Facility(ies) location and copies of existing permits and approvals for operation of the facility to transload contaminated dredged materials.
 - b. On-Site Staging and Stockpile Area(s) and On-site and Off-Site Transload Facility(ies) layouts, including:
 - 1) Existing conditions and facilities, construction facilities, and temporary environmental controls provided by the Contractor.
 - 2) Surface water management features including ditches, catch basins, wastewater and surface water collection and storage features, wastewater treatment facility, spill aprons, or other spill prevention and water management measures.
 - 3) Dimensions of stockpile area(s), stockpile barriers, fencing, entry and exit access locations, truck routing.
 - 4) Barge landing and offload areas, environmental protection zones, equipment and personnel decontamination areas, wastewater treatment and storage areas.
 - c. Work Sequence: Reference the Contractor's Construction Schedule that identifies timing and sequencing for completion of offloading, stockpiling, dewatering, upland transportation and disposal activities, as they relate to other major elements of the work.
 - d. Proposed hours of operation for the On-Site Staging and Stockpile Area(s) and On-Site and Off-Site Transload Facility(ies) and associated activities.
 - e. Methods, procedures, and equipment to be used to complete offloading, stockpiling, dewatering, rehandling, upland transportation and disposal activities, including means and methods for providing environmental protection as described

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in Section 01 57 19—Temporary Environmental Controls. Specifically, the Contractor shall provide the following information as part of the Environmental Protection Plan:

- 1) Methods, procedures, and equipment to be used for all dredge material, Dredge Debris, and dredge water offloading from the in-water transportation barge
 - 2) Spill prevention measures during barge offloading
 - 3) Water management methods
- f. Means and Methods for Operating On-Site and Off-Site Transload Facility(ies), and On-Site Staging and Stockpile Area(s)
- 1) Describe the proposed perimeter containment to contain the sediment and effluent. Measures to prevent and capture spillage during rehandling and transport of sediment must be clearly presented in the Construction Work Plan.
 - 2) Describe the stockpiling operations (if used), including measures to prevent loss of sediment or associated effluent during stockpiling and rehandling within the On-Site Staging and Stockpile Area(s).
 - 3) The Construction Work Plan shall describe anticipated loads on Port docks and how the Contractor will assure that load restrictions are observed. Show proposed location and size of stockpile(s) (if used).
 - 4) Methods, procedures and equipment to be used to dewater dredged material (if necessary) at the On-Site Staging and Stockpile Area(s) and to treat (as necessary) the effluent to meet water quality criteria and permit conditions prior to discharge to receiving waters in Whatcom Waterway.
 - 5) Methods, procedures, and equipment for preventing untreated sediment and effluent release from the On-Site Staging and Stockpile Area(s) and On-Site and Off-Site Transload Facility(ies) into the receiving waters.

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- 6) All effluent to be discharged from the Port provided On-Site Staging and Stockpile Area(s) to Whatcom Waterway will require treatment to filter out suspended solids in order to meet water quality criteria per the permit conditions.
 - 7) Effluent from the Contractor's On-Site and Off-Site Transload Facility(ies) shall be captured and appropriately disposed of per federal, state, and local regulations applicable to the location of the On-Site and Off-Site Transload Facility(ies), and per any facility related effluent discharge permit requirements.
- g. Methods, procedures, and equipment to be used for loading trucks and/or rail cars, and upland transport of dredge material and Dredge Debris to the Disposal Facility(ies), including procedures for meeting federal, state, and local regulations including preventing release of water, dust, and materials during transportation.
 - h. Methods of transportation to be used, transport times, and methods employed to ensure safe transportation of the materials from the Port's On-Site Transload Facility and On-Site Staging and Stockpile Area(s) and/or the Contractor's Off-Site Transload Facility(ies) to the Disposal Facility(ies).
 - i. Methods, procedures, and controls to protect existing facilities against damage.
 - j. Methods, procedures, and equipment for cleanup and removal of On-Site Staging and Stockpile Area(s) and On-Site and Off-Site Transload Facility(ies).

B. Construction Submittals

1. As part of the Daily Construction Report, as described in Section 01 33 00—Submittal Procedures, the Contractor shall keep a daily record of offloading, upland transportation, and disposal activities, including the estimated quantity of dredged material and Dredge Debris offloaded at both the On-Site and Off-Site Transload Facility(ies) (including barge displacement measurements off full and empty barges), truck or rail car weight measurements for material sent off site for disposal at the Disposal Facility, certified weight tickets from the Disposal Facility, and a summary of other details of the work. The Daily Construction Report shall be submitted to the Engineer the morning following completion of the

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work for that day. The Daily Construction Report shall be signed by the Contractor's site superintendent and quality control manager.

2. Weekly Reporting: As part of the Contractor's Weekly Construction Report, as described in Section 01 33 00—Submittal Procedures, the Contractor shall summarize the week's work for offloading, upland transportation, and disposal activities. The Weekly Construction Report shall also identify anticipated work to be completed in the present week, and present the latest barge displacement measurements and estimated weight tonnages for material sent off site for disposal at the Disposal Facility. The Weekly Construction Report shall be signed by the Contractor's site superintendent and quality control manager.
3. The Contractor shall submit to the Engineer copies of all Certificates of Disposal to account for and demonstrate the disposal of all dredge material in relation to Section 35 20 23—Dredging, Contingency Re-Dredging, Barge Dewatering and In-Water Transportation. Certificates of Disposal for all dredged material shall be submitted to the Engineer no later than three (3) calendar days after the material has been delivered to the Disposal Facility.
4. The Contractor shall submit to the Engineer copies of all manifests, weight tickets, and other documentation to demonstrate and track the final disposition of the dredge material and Dredge Debris at a Disposal Facility(ies). The documentation shall track the material from the point of leaving the Work Site to final disposal at the Disposal Facility(ies).
5. The Contractor shall submit empty barge displacement measurements following offload of each dredge material and Dredge Debris barge and corresponding tonnage of material removed at On-Site (if applicable) or Off-Site Transload Facility(ies).

1.04 REGULATORY REQUIREMENTS

- A. The Contractor shall ensure that dredge material and Dredge Debris offloading, stockpiling, handling, dewatering, segregation, upland transport, and disposal is performed in compliance with federal, state, and local laws and regulations, and permit conditions.

1.05 LOCATION, PERMITTING, AND TRACKING

- A. The Contractor shall provide as part of their Construction Work Plan locations of all proposed Disposal Facilities.

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- B. The Contractor shall provide documentation acceptable to the Port that the dredge material and Dredge Debris can be accepted at the proposed Disposal Facility. Copies of the Disposal Facility permit must be submitted to the Engineer within fourteen (14) calendar days of Notice of Award.
- C. For all Disposal Facilities proposed by the Contractor, the Contractor must provide the following information:
 - 1. Location and owner of proposed Disposal Facility.
 - 2. Documentation that proposed Disposal Facility is licensed and suitable for accepting and disposing the dredge material and Dredge Debris.
 - 3. Elimination of liability and acceptance of ownership at the Disposal Facility.
 - 4. No disposal facility shall be created for the specific use of this Contract.

1.06 INSPECTION OF FACILITIES

- A. The Engineer may inspect the On-Site Staging and Stockpile Area(s), On-Site and Off-Site Transload Facility(ies), and Disposal Facility(ies) proposed by the Contractor prior to the start of construction, and at any time during completion of offloading, upland transportation and disposal activities to ensure that the facilities meet the requirements of these Specifications, permit conditions, and federal, state and local laws and regulations.
- B. The Contractor shall provide access to the Engineer or designee to inspect the facility(ies), including providing health and safety orientation and access to machinery to facilitate sampling, assessment, and documentation.

1.07 CONTRACTOR QUALITY CONTROL

- A. The Contractor is responsible for providing all necessary quality controls to successfully complete the work.
- B. The Port (Engineer or other Port representatives) will inspect the Work for quality assurance purposes. Port inspection shall in no way release the Contractor from complying with the Specifications and all permits, and shall in no way be construed as acceptance of work.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

3.01 SEQUENCING

- A. See Section 01 10 00—Summary for description of how offloading, upland transportation and disposal activities relate to the overall sequencing of the work.
- B. Offloading, upland transportation, and disposal activities shall not begin until the Engineer has reviewed and accepted the Contractor's Construction Work Plan.

3.02 CONDUCT OF WORK

- A. Offloading Operations
 - 1. The Contractor shall employ BMPs as described in Section 01 57 19—Temporary Environmental Controls, and included in the permits when performing dredge material and Dredge Debris offloading activities.
 - 2. The Contractor shall offload in-water transportation barges in a manner that prevents spillage of dredge material and Dredge Debris to the water. A spill apron (or equivalent spill prevention measure) shall be used during all offloading activities.
 - 3. No dredge material, Dredge Debris, or water transfer can begin until the spill prevention measures are reviewed by the Engineer and determined to be in place and working.
 - 4. Any spillage on the spill apron shall be removed as soon as practicable and properly disposed. Any such spillage outside of the enclosed stockpile area(s) shall be promptly cleaned up.
 - 5. It is the Contractor's responsibility to determine the structural capacity of the On-Site and Off-Site Transload Facility(ies) that are proposed for offloading use. The maximum structural capacity of these facilities shall not be exceeded by the Contractor.
 - 6. Loading restrictions may exist on Port facilities; Contractor shall coordinate with the Engineer to obtain loading restrictions on Port facilities.

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B. Upland Stockpiling Operations

1. The Stockpile Area(s), located within the Port provided On-Site Staging and Stockpile Area(s), shall be enclosed by a suitable barrier (e.g., Jersey Barrier, “Ecology” blocks, or similar method) and lined along the inside of the enclosure with an impermeable liner of polypropylene or similar material accepted by the Engineer.
2. The On-Site Staging and Stockpile Area(s) shall have signs or placards or reflective barriers placed around the area that are highly visible at night.
3. The Contractor’s planned height of the stockpile(s) and surface loading on any Port pier or dock being used shall be described in the Construction Work Plan.
4. The Contractor shall construct, operate, and maintain the On-Site Staging and Stockpile Area(s) such that all effluent drainage water, stormwater, or other form of discharges from stockpiled dredge material and Dredge Debris are collected for treatment and proper disposal. Surface water management outside of stockpiles but within the On-Site Staging and Stockpile Area(s) shall comply with requirements found in Section 01 57 19 - Temporary Environmental Controls.
 - a. No direct discharge of untreated effluent from the On-Site Staging and Stockpile Area(s) to the receiving waters is allowed.
 - b. All effluent from the On-Site Staging and Stockpile Area(s) shall be collected, treated, and discharged per federal, state, and local laws and regulations, and conditions of the permits.
 - c. The Contractor may elect to construct a water treatment system at the Work Site and shall demonstrate in the Environmental Protection Plan compliance with water quality requirements to discharge treated effluent back to ASB.
 - 1) For management of stormwater and dredge water at the On-Site Staging and Stockpile Area(s), the Contractor may pump water to the pump station wet wells for discharge at the ASB.
5. The Contractor may propose to mix additives with the dredged material to bind available water during offloading, stockpiling, or dewatering activities. However, the Contractor is solely responsible

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for determining whether the Disposal Facility will accept the contaminated sediment with additives for disposal. The Contractor has sole responsibility for cleanup and damage costs related to the use of additives.

6. Upon completion of the work, the Contractor shall remove all vestiges of waste, liner, pump, discharge pipe, and other materials and clean up the On-Site Staging and Stockpile Area(s) and On-Site and Off-Site Transload Facility(ies) to the pre-project condition.

C. Upland Transportation Operations

1. The Contractor shall load, transport, and dispose of dredge material and Dredge Debris at a Port approved Subtitle D Disposal Facility. The Contractor shall identify its proposed Disposal Facility as part of the Construction Work Plan.
 - a. Truck transport of dredge material and Dredge Debris from the Port provided On-Site Staging and Stockpile Area at the former GP West facility is not allowed.
2. It is the Contractor's responsibility to verify rail access and capacity for rail car staging both at the former GP West facility (if Contractor obtains approval to use the Milwaukee Siding), and at Off-Site Transload Facility(ies).
3. The Contractor shall employ all BMPs as described in 01 57 19—Temporary Environmental Controls, and included in the permits when transporting dredge material and Dredge Debris to the Disposal Facility.
4. The Contractor shall be responsible for the safe transport of all materials (including all dredge material and Dredge Debris) in accordance with federal, state, and local laws and regulations, and conditions of the permits.
5. Dredge material and Dredge Debris will be tarped and adequately secured in watertight containers, to minimize release of odors and dust and to prevent spillage during transport, to the satisfaction of the Engineer.

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6. The Contractor is responsible for preparing and signing all manifests and obtaining all acceptances for the transportation of all materials. Waste manifests (or Certificates of Disposal from the Disposal Facility(ies)) shall be provided to the Engineer. The Contractor must provide sufficient documentation to track all material from the Work Site to the Disposal Facility.

END OF SECTION

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Section 35 20 26—Engineered Sediment Capping

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. Provide and construct engineered sediment caps within the Inner Waterway, Bellingham Shipping Terminal (BST) and Log Pond Work Site areas, as shown on Drawings.
- B. Provide and place residuals management cover material within the BST Work Site area, as shown on the Drawings.
- C. Capping material details for the Whatcom Waterway Work Site areas are shown on the Drawings.
- D. Construct engineered sediment caps to provide stable slopes and surfaces that will resist erosive forces of vessel wakes, tidal currents, wind waves, and propeller wash.
- E. Construct engineered sediment caps as defined by the various Cap Types described in the Specifications and as shown on the Drawings. Place Sand Material, Filter Material, and Armor Material to the Minimum Required Thicknesses and within the Target Surface and Grade and Slope Tolerances shown on the Drawings.
 - 1. Cap Types, including Minimum Required Thicknesses for each material, are defined in Section 01 10 00—Summary.
 - 2. Cap material gradation requirements are provided in Part 2 of this Specification.
 - 3. Cap material chemistry testing and acceptability criteria are provide in Part 2 of this Specification and in Table 35 20 26-2, provided at the end of this Specification.
- F. For the Contractor's convenience, Table 35 20 26-1 provides the estimated cap material volumes (by cap material type) associated with materials to be placed in the Log Pond area, BST area, and Inner Waterway area at the Work Site. The volumes provided represent the estimated in situ volumes to construct engineered sediment caps to the upper bound of the Target Surface and Grade and Slope Tolerances and the Port does not warrant that these volumes accurately reflect the actual volumes that will be required to meet the Minimum Required Thickness criteria and the Target Surface and Grade within the Slope Tolerances provided.

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Section 35 20 26—Engineered Sediment Capping

Table 35 20 26-1

**Estimated Engineered Sediment Cap Material and Residuals Management Cover
Material Volumes by Cap Type**

Cap Type	Area of Placement (SF)	Type 1 Sand Material (CY)	Type 2 Sand Material (CY)	Type 1 Filter Material (CY)	Type 2 Filter Material (CY)	Armor Material (CY)
Type 1	282,400	26,200		15,700		
Type 2	63,700		6,600	3,600		
Type 3	114,800		26,000		6,400	10,700
Type 4	24,200		2,300		1,400	3,800
Type 5A	47,100				2,700	4,400
Type 5B	7,200				800	700
Type 6	17,900				700	1,700
Totals for Capping	557,300	26,200	34,900	19,300	12,000	21,300
Residuals Management Cover	226,000	8,400				

Notes:

- 1) Capping volume includes Minimum Required Thicknesses plus assumed over-placement allowances to attain the upper limit of the tolerances.
- 2) Where additional material is required meet the Minimum Required Thickness, surplus volume is assumed to be Type 1 Sand Material or Type 2 Sand Material.
- 3) Volume estimates to not include transition into upland areas along shoreline (Type 3, 5A, and 6 in Log Pond and Type 3 in Inner Waterway)

G. Work under this Specification section is paid under Bid Item 13 – Purchase and Place Type 1 Cap, Bid Item 14 – Purchase and Place Type 2 Cap, Bid Item 15 – Purchase and Place Type 3 Cap, Bid Item 16 – Purchase and Place Type 4 Cap, Bid Item 17 – Purchase and Place Type 5A Cap, Bid Item 18 – Purchase and Place Type 5B Cap, Bid Item 19 – Purchase and Place Type 6 Cap and Bid Item 20 – Purchase and Place Residuals Management Cover Material, as shown on the Bid Form and described in Section 01 20 00—Price and Payment Procedures.

1.02 RELATED SECTIONS

- A. Section 01 10 00—Summary
- B. Section 01 20 00—Price and Payment Procedures
- C. Section 01 33 00—Submittal Procedures
- D. Section 01 57 19—Temporary Environmental Controls
- E. Section 01 71 23—Field Engineering

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1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM C136 – (2006) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
 - 2. ASTM D422 – (2007) Standard Test Method for Particle-Size Analysis of Soils
- B. U.S. Environmental Protection Agency (EPA) Publication SW846 - *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*:
 - 1. SW846 Method 6000/7000 Series for Priority Pollutant Metals
 - 2. SW846 Method 8081A – Organochlorine Pesticides by Gas Chromatography (GC)
 - 3. SW846 Method 8082A – Polychlorinated Biphenyls (PCBs) by Gas Chromatography
 - 4. SW846 Method 8260 – Volatile Organic Compounds (VOCs)
 - 5. SW846 Method 8270D – Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
- C. Standard Methods (SM) - *Standard Methods for the Examination of Water and Wastewater*.
 - 1. SM Method 5310B – Total Organic Carbon (TOC)

1.04 PERMITS

- A. Perform engineered sediment capping and Residuals Management Cover Material placement activities in required areas, as shown on the Drawings, only after all dredging activities within those areas (e.g., BST area and Inner Waterway area) have been completed and accepted as complete by the Engineer.
- B. Perform engineered sediment capping and placement of Residuals Management Cover Material during the in-water work period listed in the project permits, as provided in the appendices to the Contract Documents. See Section 01 41 26—Permits, for substantial completion milestone dates related to this work.

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Section 35 20 26—Engineered Sediment Capping

1.05 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 00—Submittal Procedures.
- B. Engineered Sediment Capping and Residuals Management Cover Placement Plan
 - 1. Prepare and submit a detailed, written Engineered Sediment Capping and Residuals Management Cover Placement Plan, as part of the Construction Work Plan to the Engineer within twenty-eight (28) calendar days of Notice of Award. Engineered sediment capping and Residuals Management Cover Material placement activities shall not begin until:
 - a. The Engineered Sediment Capping and Residuals Management Cover Placement Plan has been reviewed and accepted by the Engineer.
 - b. Agency-required notifications have been completed in accordance with the permits.
 - 2. At a minimum, the Engineered Sediment Capping and Residuals Management Cover Placement Plan shall contain the following:
 - c. Work Sequence and Equipment:
 - 1) Describe the order in which the work is to be performed, indicating the work sequence.
 - 2) Present a Construction Schedule that identifies the timing and sequencing of the major activities and milestones of the engineered sediment capping and Residuals Management Cover Material placement activities. These shall include, but not be limited to, mobilization; material acquisition; stockpiling; loading; start of engineered sediment capping and Residuals Management Cover Material placement; duration of engineered sediment capping and Residuals Management Cover Material placement; and loading, demobilization, and cleanup.
 - 3) Describe the number, types, and capacity of equipment to be used, including names of all marine vessels to be used.
 - 4) Include hours of operation.

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- 5) Describe the methods of operation and the time required to complete each activity.
 - 6) Notification and procedures to be used for moving equipment to accommodate commercial vessel traffic using the surrounding waterway.
- d. Means and Methods for Engineered Sediment Capping and Residuals Management Cover Material Placement:
- 1) Present a list of the sources (quarries) of all engineered sediment capping materials, including name, location, ownership, material supplied, and contact information.
 - 2) Provide a list of the laboratory(ies) that will be conducting the testing of all engineered sediment capping materials, including name, location, ownership, laboratory certifications, list of tests to be performed, list of analysis methods and standards, and contact information.
 - 3) Present a description of the methods, procedures, and equipment to be used for engineered sediment capping and Residuals Management Cover Material placement.
 - 4) Describe the methods, procedures, and equipment to be used for transport of engineered sediment capping materials to the Work Site.
 - 5) Describe methods, procedures, and controls to protect existing Port facilities against damage.
- e. Methods and means for monitoring engineered sediment cap placement, including:
- 1) The rate of deposition of the engineered sediment cap material at all times
 - 2) The location of placed engineered sediment cap material in the project coordinate system.
 - 3) Average thickness of engineered sediment cap material placed during the previous day.
- f. Water Quality Criteria Compliance

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- 1) Describe the best management practices (BMPs), means, methods, and procedures used to prevent water quality criteria exceedances, and what contingency actions will be taken to restore compliance with water quality criteria should water quality exceedances occur during engineered sediment capping and Residuals Management Cover Material placement operations.
- 2) Delays caused by complying with water quality criteria will not be cause for additional compensation to the Contractor.

C. Construction Submittals

1. Daily Construction Report: Keep a daily record of the area(s) where engineered sediment caps and Residuals Management Cover Material is placed, the estimated quantity of materials placed, the number of haul barge trips from the source facility, daily progress surveys, and a summary of other details of the work. Submit this daily record to the Engineer the morning following completion of the work for that day in a Daily Construction Report. The Daily Construction Report shall be signed by the Contractor's site superintendent or quality control manager.
2. Weekly Construction Report: Summarize the week's work in a Weekly Construction Report to be submitted to the Engineer the following Monday morning. The Weekly Construction Report shall identify work completed to date, anticipated work to be completed in the present week, and present the latest progress survey information.

1.06 JOB CONDITIONS

A. Character of Materials

1. Subsurface investigations were performed to characterize the subsurface material in the project area. Detailed results from geotechnical and chemical testing of the sediments are provided in the appendices to the Contract Documents.
2. Verify the nature of materials present at the site prior to bidding. The type of materials encountered at the site may vary from the conditions described in the appendices to the Contract Documents. Variations in the type of materials encountered may occur that do not differ materially from those indicated in these Specifications,

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and if encountered, will not be considered as basis for claims due to differing site conditions.

3. Contractor shall calculate its own estimate of the quantity of material to be used for the engineered sediment capping and Residuals Management Cover Material placement activities based on the Contractor's own calculation methods, the Dredge Prism design as shown on the Drawings, the site subsurface conditions to assess the potential for bed consolidation/settlement, and Contractor's means and methods for both dredging and capping operations in order to account for Contractor's equipment tolerances. Contractor shall account for its own estimated quantities in the Contractor's bid.

B. Progress and Post-Construction Surveys

1. Contractor shall complete Capping Progress and Capping Post-Construction Surveys during and following completion of the work in accordance with Section 01 71 23—Field Engineering.

C. Adjacent Port Tenants and Other Property Owners

1. Adjacent Port tenants and other property owners will be using in-water portions of the site and other adjacent uplands for their operations. The Contractor shall coordinate with these parties on their operations to avoid impacting tenant activities.

1.07 ACCESS TO CONTRACTOR'S EQUIPMENT

- A. Grant access to the crane barge, material barge(s), tug(s), and all other equipment mobilized for the project for inspection purposes, to the Port or to any Port-designated representative.
- B. Regulatory agency staff may also require access to equipment and will be escorted by Port-designated representatives at all times.

1.08 PERMITS

A. Permits and Compliance

1. Adhere and conform to all applicable provisions, conditions, and requirements of the project permits, which are provided in the appendices to the Contract Documents and discussed in Section 01 41 26—Permits.

- B. Any conflicts between these Contract Specifications and issued permits will be brought to the attention of the Engineer immediately upon

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identification of the issue. Nothing whatsoever shall be deemed to authorize violation of these permits.

PART 2 – PRODUCTS

2.01 GENERAL

- A. The Contractor shall provide all required engineered sediment capping materials and Residuals Management Cover Material for the project. Engineered sediment capping materials and Residuals Management Cover Material shall be of the quality, size, shape, and gradation as specified in this part. Imported engineered sediment cap materials and Residuals Management Cover Material to be used for construction will be imported, clean, granular material free of roots, organic material, contaminants, and all other deleterious and objectionable material.
- B. Imported engineered sediment capping material and Residuals Management Cover Material shall have chemical concentrations less than the chemical criteria presented in Table 35 20 26-2, presented at the end of this section. Filter Material and Armor Material does not need to be tested for chemical criteria.

2.02 BORROW SOURCE AND MATERIALS CHARACTERIZATION

- A. The following activities shall be performed by the Contractor, as specified below, to ensure that imported materials are natural, native, virgin materials and free of contaminants, including debris or recycled materials, and which meet construction specifications. The Contractor shall provide certification that imported materials are free of hazardous or otherwise objectionable materials. The Port reserves the right to reject any materials that have been determined to be substandard for any reason. In the event of rejections, it shall be the responsibility of the Contractor to remove all stockpiles of rejected material from the site.
 - 1. A characterization of any and all imported material shall be performed by the Contractor prior to any on-site placement. The characterization will include analysis of a borrow source sample, site inspection, and site characterization. The Contractor shall submit a Borrow Source Characterization Report summarizing all the information contained within this section.
 - 2. Material Sources: Submit a list of the sources for all materials to be placed as part of engineered sediment capping and Residuals Management Cover Material placement activities. Coordinate with the Engineer for pre-construction inspection of the engineered sediment cap material supplier sources.

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3. The borrow source shall be inspected by the Contractor. During such inspection, the Contractor shall ensure that the engineered sediment capping materials and Residuals Management Cover Material to be delivered to the site meet the appropriate specifications. The Contractor shall provide notification to the Engineer within fourteen (14) calendar days of such inspections. At the Engineer's discretion, the Engineer or another Port-representative may accompany the Contractor to witness such inspections. This witnessing shall in no way release the Contractor from complying with the specifications and shall in no way be construed as approval of any particular source of material.
4. The Contractor shall provide the Engineer with a 5-gallon sample of Sand Material (Type 1 and 2) and Filter Material (Type 1 and 2) from each borrow source. Note, samples of Armor Material are not required. Each sample should be composed from no less than five sub-samples taken throughout any one source. The Contractor shall ensure that the samples are representative of all materials to be imported. Samples shall be provided to the Engineer at least one month prior to the start of engineered sediment capping and Residuals Management Cover Material placement activities.
5. Testing: Contractor (or its material supplier) shall conduct physical and chemical testing on the engineered sediment cap material and Residuals Management Cover Material to confirm that the materials meet the Specification requirements for use at the Work Site. Engineered sediment cap materials and Residuals Management Cover Material must meet the gradation specifications provided in this Specification and the chemical quality as shown on Table 35 20 26-2, attached at the end of this Specification.
 - a. Contractor shall note that more stringent, site-specific, chemical acceptance criteria for dioxin/furans and mercury have been established for this work. It shall be the responsibility of the Contractor to ensure that the proposed engineered sediment cap material and Residuals Management Cover Material suppliers can provide materials that meet the requirements of these Specifications.
 - b. The Port reserves the right to request additional samples of engineered sediment cap material and Residuals Management Cover Material in order to conduct its own testing for quality assurance purposes.

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6. Testing Laboratory: Submit certificates for laboratories (certified by Ecology in Washington State) providing required testing to validate that laboratory conforms to relevant paragraphs of ASTM D3740.
7. The Contractor shall test samples of all materials for chemical quality to be imported (other than Filter Material [Type 1 and 2] and Armor Material) for the following:
 - a. In situ moisture content (ASTM method D2216)
 - b. Priority Pollutant Metals per EPA SW846, the 6000/7000 method series
 - c. Volatile Organic Compounds per EPA SW846, method 8260 as modified by Puget Sound Estuarine Protocols [PSEP]
 - d. Semivolatile Organic Compounds per EPA SW846, method 8270D as modified by PSEP
 - e. Polychlorinated Biphenyls (PCBs) per EPA SW846, method 8082A as modified by PSEP
 - f. Pesticides per EPA SW846, method 8081A as modified by PSEP
 - g. Total Organic Carbon per SM method 5310B.
 - h. Polycyclic Aromatic Hydrocarbons (PAHs) using Method 8270 in Selected Ion Monitoring (SIM) mode
 - i. SW846 Method 8290 - Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry (HRGC/HRMS). USEPA Method 1613 may also be used as long as target reporting limits listed in Table 35 20 26-2 are achieved.
8. The Contractor shall chemically test samples of all materials to be imported (other than Armor Material) for grain size distribution (American Society for Testing and Materials [ASTM] method D422-63).
9. The Contractor shall provide the results of such tests at least fourteen (14) calendar days before delivery of the materials to the site. The results shall be provided in report form, with the reports clearly identifying the following:

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- a. Source of samples
 - b. Sampling dates
 - c. Chain of custody
 - d. Sampling locations
 - e. Material Certification: Submit certification from material supplier that the materials meet specification requirements for gradation and chemical testing.
10. Inspection of Materials at the Site: Truck or barge loads of imported engineered sediment capping material and Residuals Management Cover Material shall be visually inspected by the Contractor upon delivery. Materials shall be inspected for the presence of foreign, recycled, or reprocessed material. The Engineer may, at any and all times, perform an independent inspection. Engineered sediment capping materials and Residuals Management Cover Material may be rejected if identified as substandard or if test results show it to be substandard. Engineered sediment capping materials and Residuals Management Cover Material may be segregated for testing based on appearance or odor. Segregated engineered sediment capping materials and Residuals Management Cover Material may be tested according to designated procedures at the Engineer's discretion.
 11. The Contractor shall collect certified tickets from the borrow source for each load of material brought to the site. The tickets shall be submitted to the Engineer as part of the Contractor's Weekly Construction Report.
 12. The Port reserves the right to reject any engineered sediment capping materials or Residuals Management Cover Material that have been determined to be substandard for any reason. In the event of rejections, it shall be the responsibility of the Contractor to remove all stockpiles of rejected material from the site.
 13. The Contractor shall verify the quantity of engineered sediment capping materials and Residuals Management Cover Material to be placed for each location. An estimate of engineered sediment capping material and Residuals Management Cover Material volumes is provided in Table 35 20 26-1. Contractor shall verify its volume estimates to in the engineered sediment capping and

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residuals management cover areas shown on the Drawings before signing the negotiated contract.

2.03 RESIDUALS MANAGEMENT COVER MATERIAL

- A. Material shall be clean, free-draining, granular material obtained from natural deposits. Individual particles shall be free from all objectionable coatings. The material shall contain no organic matter, nor soft friable particles in quantities considered objectionable by the Engineer.
- B. Material shall be graded between the limits specified below:

U.S. Standard Sieve	Percent by Weight, Passing
2-inch	90 to 100
3/4-inch	60 to 80
U.S. No. 4	40 to 60
U.S. No. 40	15 to 35
U.S. No. 200	0 to 5

2.04 TYPE 1 SAND MATERIAL

- A. Material shall be clean, free-draining, granular material obtained from natural deposits. Individual particles shall be free from all objectionable coatings. The material shall contain no organic matter, nor soft friable particles in quantities considered objectionable by the Engineer.
- B. Material shall be graded between the limits specified below:

U.S. Standard Sieve	Percent by Weight, Passing
2-inch	90 to 100
3/4-inch	60 to 80
U.S. No. 4	40 to 60
U.S. No. 40	15 to 35
U.S. No. 200	0 to 5

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2.05 TYPE 2 SAND MATERIAL

- A. Material shall be clean, free-draining, granular material obtained from natural deposits. Individual particles shall be free from all objectionable coatings. The material shall contain no organic matter, nor soft friable particles in quantities considered objectionable by the Engineer.
- B. Material shall be graded between the limits specified below:

U.S. Standard Sieve	Percent by Weight, Passing
4-inch	90 to 100
3/4-inch	50 to 75
U.S. No. 4	35 to 55
U.S. No. 10	25 to 45
U.S. No. 40	10 to 25
U.S. No. 200	0 to 4

2.06 TYPE 1 FILTER MATERIAL

- A. Material shall be clean, free-draining, granular material obtained from natural deposits. Individual particles shall be free from all objectionable coatings. The material shall contain no organic matter, nor soft friable particles in quantities considered objectionable by the Engineer.
- B. Material shall be as defined in 9-03.11(2) for 4-inch Stream Bed Cobbles of the Washington State Department of Transportation Standard Specifications or meeting the following criteria:

U.S. Standard Sieve	Percent by Weight, Passing
4-inch	100
1½-inch	40 (maximum)
¾-inch	10 (maximum)

2.07 TYPE 2 FILTER MATERIAL

- A. Material shall be clean, free-draining, granular material obtained from natural deposits. Individual particles shall be free from all objectionable

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coatings. The material shall contain no organic matter, nor soft friable particles in quantities considered objectionable by the Engineer.

- B. Material shall be as defined in 9-03.14(1) Gravel Borrow of the Washington State Department of Transportation Standard Specifications.

2.08 ARMOR MATERIAL

- A. Material shall be clean, free-draining, granular material obtained from natural deposits. Individual particles shall be free from all objectionable coatings. The material shall contain no organic matter, nor soft friable particles in quantities considered objectionable by the Engineer.
- B. Material shall be as defined in Section 9-13.1(2) Light Loose Riprap of the Washington State Department of Transportation Standard Specifications.

2.09 GEOTEXTILE

- A. The Geotextile shall be Mirafi 1120N or equivalent.

PART 3 – EXECUTION

3.01 ORDER OF WORK

- A. All dredging work should be completed prior to engineered sediment capping and Residual Management Cover Material placement.
- B. The Contractor shall place engineered sediment capping materials and Residuals Management Cover Material within the Work Site to the Minimum Required Thicknesses and Target Surface and Grade (and within the Slope Tolerances) as shown on the Drawings during the in-water work period described in the project permits.
- C. Once engineered sediment capping materials and Residual Management Cover Material placement activities are completed, the Contractor will complete Capping Post-Construction Surveys to determine whether required elevations and grades have been met. If low spots remain, the Contractor shall place additional material to the satisfaction of the Engineer.

3.02 EQUIPMENT

- A. Engineered sediment capping material placement and Residual Management Cover Material placement activities shall be completed with mechanical equipment. Equipment to be used for engineered sediment

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capping and Residual Management Cover Material placement shall place the materials in a manner that does not disturb the subgrade or previous lifts of engineered sediment capping material. Placing engineered sediment capping materials and Residual Management Cover Material by use of a bottom dump barge is not allowed. The Port shall review and accept all proposed equipment (included in the Construction Work Plan) to be used for engineered sediment capping material and Residual Management Cover Material placement prior to starting material placement activities.

3.03 QUALITY CONTROL

- A. The Contractor shall establish procedures for monitoring the rate of placement of the engineered sediment capping material and Residual Management Cover Material, including use of a positioning system. The method should also determine the area of engineered sediment cap and Residual Management Cover Material coverage on a daily basis.
- B. The Contractor shall supply the Engineer with the following information pertaining to the previous day's engineered sediment capping and Residual Management Cover Material placement activities on a daily basis:
 - 1. The area capped or where Residual Management Cover Material was placed
 - 2. The estimated volume/tonnage of material placed
 - 3. Types of engineered sediment capping materials placed
 - 4. Daily Capping Progress surveys
- C. Engineered Sediment Capping Layer Placement Confirmation:
 - 1. The Contractor shall notify the Engineer after each engineered sediment capping material layer is completed, based on review of Progress Surveys, and prior to placing the next subsequent layer.
 - 2. Capping Post-Construction Surveys will be completed by the Contractor following placement of each engineered sediment capping layer, as described in Section 01 71 23 – Field Engineering. If the Contractor's Capping Post-Construction Survey indicates that the engineered sediment cap layer does not meet the requirements of the Contract Drawings and Specifications, the Contractor will perform additional work meet the Specification requirements at no additional cost to the Port.

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3. Contractor shall perform corrective action for any engineered sediment cap layers that have placement thicknesses less than the Minimum Required Thickness, or engineered sediment cap layers that exceed Restricted Elevations or Slope Tolerances. Cap thickness will be determined by the difference between the Dredging Post-Construction Survey and the Capping Post-Construction Surveys completed for each engineered sediment capping material layer placed.
4. After corrective action is completed, the Contractor shall re-survey the corrected engineered sediment capping areas. Additional Capping Post-Construction Surveys performed by the Contractor will be completed at no additional expense to the Port.
5. Engineer must review and accept each layer as complete before the Contractor can place the next engineered sediment capping layer.
6. The Port may collect cores through the Sand Material (Type 1 and 2) or Filter Material (Type 1 and 2) layers. Cores may be used to confirm engineered sediment cap and Residual Management Cover Material layer thickness.

3.04 CONDUCT OF ENGINEERED SEDIMENT CAPPING AND RESIDUAL MANAGEMENT COVER MATERIAL PLACEMENT

A. Layout of Work

1. Establish an accurate method of horizontal and vertical control, as described in Section 01 71 23—Field Engineering before engineered sediment capping or Residual Management Cover Material placement activities begin.
2. The proposed method and maintenance of the horizontal control system shall be subject to the approval of the Engineer and if, at any time, the method fails to provide accurate location for the engineered sediment capping and Residual Management Cover Material placement operations, the Contractor may be required to suspend its operations until such time that accurate control is established.
3. Lay out the work from horizontal and vertical control points indicated on the Drawings and be responsible for all measurements taken from these points. Furnish, at the Contractor's own expense, all stakes, templates, platforms, equipment, range markers,

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transponder stations, and labor as may be required to lay out the work from the control points shown on the Drawings.

4. Maintain all points established for the work until authorized to remove them. If such points are destroyed by the Contractor or disturbed through its negligence prior to an authorized removal, they shall be replaced by the Contractor at its own expense.

B. Engineered Sediment Capping Material and Residual Management Cover Material Placement

1. Engineered sediment capping and Residual Management Cover Material placement shall not begin within each dredging area (e.g., BST area and Inner Waterway area) until after all dredging activities within that area are completed.
2. Engineered sediment capping and Residual Management Cover Material placement shall be accomplished in the designated areas, and to the Minimum Required Thicknesses and Target Surface and Grade (and within the Slope Tolerances) as indicated on the Drawings. The Contractor shall attain full grade and lateral extent at each unique cap location prior to moving to a new location or subsequent layer.
3. Debris of concern in engineered sediment cap areas shall be properly removed and disposed of prior to placement of engineered sediment capping materials. Debris of concern is any debris that extends above the mudline grade more than half the total thickness of the engineered sediment cap section in that area.
4. All engineered sediment capping material and Residual Management Cover Material placement to be placed on slopes must be placed starting from the toe of the slope and working up the slope towards the top of slope.
5. The Sand Material (Type 1 and 2) layer shall be placed in a manner to minimize disturbance and mixing of engineered sediment cap material and Residuals Management Cover Material and sediment.
6. The first lift of Sand Material (Type 1 and 2) layer shall not be greater than 6 inches thick. Subsequent lifts shall not exceed 12 inches in thickness. Lifts of Filter Material (Type 1 and 2) or Armor Material shall not exceed 12 inches.
7. Each entire engineered sediment capping layer (Sand Material [Type 1 and 2] or Filter Material [Type 1 and 2]) shall be placed prior to placing the next layer on top.

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8. Subsequent engineered sediment cap layers shall be placed in a manner that does not damage the previously placed engineered sediment cap layer. Damage includes if the Armor Layer material penetrates or mixes into the underlying layer.
9. Armor Material and/or Filter Material shall be placed in a manner that does not damage the Geotextile in areas where the materials are placed directly on the geotextile, as shown on the Drawings.
10. Anchors cannot be set in areas previously capped. Use of spuds in areas previously capped (i.e., Log Pond) is allowed provided the Contractor's means and methods for spudding have been clearly described in the Construction Work Plan and approved by the Engineer.
11. There is to be no stockpiling of engineered sediment capping materials or Residuals Management Cover Materials in the water.
12. Contractor shall not place engineered sediment capping materials or Residuals Management Cover Material above any Restricted Elevation, as shown on the Drawings.
13. The Contractor shall monitor the engineered sediment cap and Residuals Management Cover placement work throughout the course of work for depth, slopes, location, and tolerances, and shall be responsible for damages due to over placement or capping outside the specified limits for capping placement.
14. The Contractor will not be allowed to drag equipment over capped areas to even out engineered sediment capping layer over-placement high spots.
15. Any engineered sediment capping material or Residuals Management Cover Material that is placed outside of the specified areas as shown on the Drawings, or other than as approved by the Engineer, will not be paid for, and the Contractor may be required to remove such misplaced material and deposit it where directed at its own expense.
16. Pay particular attention to the conditions of issued regulations and authorizations requiring minimizing turbidity and loss of material during engineered sediment capping and Residuals Management Cover Material placement and transport operations and adherence to water quality requirements.

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3.05 TRANSPORTING ENGINEERED SEDIMENT CAPPING MATERIAL AND RESIDUALS MANAGEMENT COVER MATERIAL FOR PLACEMENT

- A. Haul barges shall be in good condition with no leaks in the hull. The barge shall sail with sufficient freeboard inside the barge so that no material spills over the side walls while underway. Load lines shall be clearly shown on the barge, and loading shall not take the barge below the load lines. The tug shall be of sufficient horsepower for moving the barge and maneuvering through the area, bridges, and marine traffic encountered between the borrow site and the placement site.
- B. The Contractor shall provide the following information (as part of the Construction Work Plan) on each material barge that will be used:
 - 1. Name of barge.
 - 2. Length, beam, and molded depth of each barge.
 - 3. Material capacity of barge.
 - 4. Hydrostatic data certified by a naval architect for determining barge displacement in short tons, per each 1 foot of displacement between loaded and light drafts. The barge shall have clear and distinct draft marks.
 - 5. Expected draft of barge loaded to capacity with cap material.

3.06 WATER QUALITY MONITORING

- A. A Water Quality Monitoring Plan has been prepared by the Port and is attached as a reference document (as part of the Contract Documents) for the Contractor's information. In accordance with this plan, the Port will perform water quality monitoring for quality assurance purposes during completion of Contractor engineered sediment cap and Residual Management Cover Material placement activities. The Contractor is responsible for complying with all water quality requirements of the Water Quality Monitoring Plan, and applicable local, state, and federal standards. The Contractor shall conduct its own water quality monitoring as needed to provide quality control of the Contractor's work. The Contractor shall have in place:
 - 1. Best management practices (BMPs) to prevent water quality exceedances.
 - 2. Contingency measures to implement should water quality exceedances occur.

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- B. The Contractor shall describe in its Construction Work Plan and its Environmental Protection Plan the means, methods, and procedures that will be used to prevent water quality requirement exceedances, and what contingency actions will be taken to restore compliance with water quality requirements should water quality exceedances occur during completion of engineered sediment cap and Residual Management Cover Material placement activities.
- C. Delays caused by complying with water quality requirements shall not be cause for additional compensation to the Contractor.

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Table 35 20 26-2. Capping Material Sediment Quality Standards

Chemical	Container	Preservation	Maximum Holding Time (Days)	Required Reporting Limits	Maximum Level
Conventional Sediment Parameters					
Grain Size (%)	16 oz. glass	Cool, 4°C	14	1%	N/AP
Total Solids (%)	4 oz. glass	Cool, 4°C	14	0.1% (wet weight)	N/AP
Total Organic Carbon (%)	From total solids container	Cool, 4°C	14	1%	N/AP
Metals (mg/kg dw)	8 oz. glass	Cool, 4°C	28		
Arsenic				0.2	57
Cadmium				0.2	5.1
Chromium				0.5	260
Copper				0.5	390
Lead				1.0	450
Mercury				0.05	0.1
Silver				0.2	6.1
Zinc				4.0	410
PCBs (µ/kg dw)	8 oz. glass	Cool, 4°C	14 days until extraction, 40 days until analysis		
Total PCBs				10	130
LPAH (µg/kg)	16 oz. glass	Cool, 4°C	14 days until extraction, 40 days until analysis		
Naphthalene				20	2100
Acenaphthylene				20	560
Acenaphthene				20	500
Fluorene				20	540
Phenanthrene				20	1500
Anthracene				20	960
2-Methylnaphthalene				20	670
Total LPAH					5200
HPAH (µg/kg)	Same container as LPAH	Cool, 4°C	14 days until extraction, 40 days until analysis		
Fluoranthene				20	1700
Pyrene				20	2600
Benzo(a)anthracene				20	1300

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Chemical	Container	Preservation	Maximum Holding Time (Days)	Required Reporting Limits	Maximum Level
Chrysene				20	1400
Benzo(a)pyrene				20	1600
Indeno(1,2,3-Cd)Pyrene				20	600
Dibenzo(a,h)anthracene				20	230
Benzo(g,h,i)perylene				20	670
Total Benzofluoranthenes				20	3200
Total HPAH					12000
Chlorinated Hydrocarbons (µg/kg)	Same container as LPAH	Cool, 4°C	14 days until extraction, 40 days until analysis		
1,4-Dichlorobenzene				20	110
1,2-Dichlorobenzene				20	35
1,2,4-Trichlorobenzene				20	31
Hexachlorobenzene				20	22
Phthalates (µg/kg)	Same container as LPAH	Cool, 4°C	14 days until extraction, 40 days until analysis		
Dimethylphthalate					71
Diethylphthalate					200
Di-N-Butylphthalate					1400
Butylbenzylphthalate					63
Bis(2-Ethylhexyl)Phthalate					1300
Di-n-Octylphthalate					6200
Phenols (µg/kg)	Same container as LPAH	Cool, 4°C	14 days until extraction, 40 days until analysis		
Phenol				20	420
2-Methylphenol				20	63
4-Methylphenol				20	670
2,4-Dimethylphenol				20	29
Pentachlorophenol				100	400
Misc Extractables (µg/kg)	Same container as LPAH	Cool, 4°C	14 days until extraction, 40 days until analysis		
Benzyl Alcohol				20	57
Benzoic Acid				200	650
Dibenzofuran				20	540
Hexachlorobutadiene				5	11

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Chemical	Container	Preservation	Maximum Holding Time (Days)	Required Reporting Limits	Maximum Level
n-Nitroso-di-phenylamine				10	28
Dioxins and Furans (ng/kg)	8 oz. glass	Cool, 4°C	14 days until extraction, 40 days until analysis	5	1 ng/kg TEQ (WHO 2005)

Notes: N/AP = not applicable
 mg/kg dw = milligrams/kilogram dry weight
 µg/kg dw = micrograms/kilogram dry weight
 ng/kg dw = nanograms/kilogram dry weight
 LPAH = low molecular weight polycyclic aromatic hydrocarbons
 HPAH = high molecular weight polycyclic aromatic hydrocarbons
 TEQ = toxicity equivalency factor
 WHO 2005 = World Health Organization 2005 Human and Mammalian TEF from van den Berg, et al (2006)

END OF SECTION

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Section 35 59 13.19 – Arch-Type Rubber Marine Fenders

PART 1 – GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. The provisions and intent of the Contract, including the General Conditions, Supplemental Conditions, and General Requirements, apply to this work as if specified in this section.
- B. Work under this Specification section is paid under Bid Item 43– Furnish and Install Maple Street Fender System as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures.

1.02 DESCRIPTION OF WORK

- A. The extent and location of the arch fender is along the fender system at the Maple St. Bulkhead as indicated on the Drawings. The work includes furnishing the fenders, installation, and associated hardware.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM).

1.04 QUALITY ASSURANCE

- A. The Contractor shall provide skilled workmen at all times, who shall be experienced and familiar with the construction of cast-in-place inserts and fender system installation. Supervisory Personnel shall have a minimum of 5 years of experience with the work performed in this section.

1.05 PRODUCT DELIVERY STORAGE AND HANDLING

- A. Protection
 - 1. Fenders shall be undamaged when delivered and shall be handled and stored so as to prevent damage, such as bending or abrading end fittings, cutting of rubber, or damage to coating of hardware. Protect fenders from exposure to damaging liquids, oils, greases and extended exposure to sunlight.

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1.06 SUBMITTALS

- A. Submit the following information in accordance with Section 01 33 00 – Submittal Procedures:
1. Shop drawings of the fenders and hardware connections showing all relevant dimensions, materials, and the number and size of accompanying bolts, nuts, washers, cast in place inserts.
 2. Manufacturer's data sheets for the fenders including reaction – energy – percent compression curve.
 3. Manufacturer's installation instructions.
 4. Manufacturer's test reports of the rubber that is used in the fender including the following:
 - a. Minimum Tensile Strength
 - b. Shore Hardness (Durometer)
 - c. Modulus at 400 Percent Elongation
 - d. Maximum Compression Set
 - e. Tear Resistance
 - f. Minimum Elongation
 - g. Ozone Resistance
 - h. Low Temperature Impact Resistance
 - i. Water Absorption
 - j. Heat Resistance
 - k. Compression Deflection Resistance
 - l. Fender Compression Test
 - m. Angular Fender Compression Test

PART 2 – PRODUCTS

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2.01 GENERAL

- A. Fenders shall be capacity and grade of that specified in the contract documents or equal.

2.03 CONFIGURATION

- A. Fender shall be extruded and shall be continuous in the length indicated. The fenders shall have a truncated "A" cross section shape and be attached to the structure at the base, the widest dimension, of the arch. The connecting hardware shall be fully exposed. No encased hardware or molded fenders shall be allowed. Fender anchor bolts and method of anchorage shall be of the size and spacing required by the manufacturer's design and testing; however, the size and spacing of anchor bolts indicated on the drawings shall be construed to be the minimum required, unless exceeded by the requirements of the fender manufacturer's design.

2.04 ELASTOMER

- A. The elastomer shall be the ethylene propylene dimonomer (EPDM), as specified in ASTM D 2000, with the following properties:

- | | | |
|----|---|---------------|
| 1. | Minimum Tensile Strength
(ASTM D 412) | [2000 psi] |
| 2. | Shore Hardness (Durometer)
(ASTM D 412) | [70 ± 5] |
| 3. | Modulus at 400 Percent Elongation
(ASTM D 412) | [900 psi] |
| 4. | Maximum Compression Set
(ASTM D 395 Method B, Maximum Percent 22 Hr. at 158 Degrees F) | [25] Percent |
| 5. | Tear Resistance
(ASTM D 624; DIE B Min. 150 lb/in) | [300] lb/in. |
| 6. | Minimum Elongation
(ASTM D 412) | [500] Percent |
| 7. | Ozone Resistance
(ASTM D 1171 Exposure Method B; 70h Bent Loop at 100 Degrees F; 50pphm) | [80] H ± |

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8. Low Temperature Impact Resistance [-40] Degrees F
(ASTM D 746 Procedure B; Non-Brittle at -67 Degrees F)
9. Water Absorption [10.0] Percent
(ASTM D 471 Method B; 70h at 212 Degrees F.; Volume Change
±5 Percent)
10. Heat Resistance Shall exceed requirements
(ASTM D 573; 70h at 212 Degrees F; Ch Tensile, Elong. -25
Percent, Hardness +10)
11. Compression Deflection Resistance Shall exceed requirements
(ASTM D 575 Method B; 3 S Dwell at 73 Degrees F)

2.05 HARDWARE

A. Plates and Angles

1. ASTM A 479/A 479M, Type 316L stainless steel for plates, angles, and miscellaneous hardware required to attach the fenders to the structure.

B.

C. Composite Timber

1. All composite lumber shall have the following properties or equal:
 - a. Thermal Expansion: less than .005% per °F
 - b. Modulus of Rupture: Min 3000 psi
 - c. Modulus of Elasticity: 250000 psi
 - d. Compression: Min 3000 psi
 - e. 75% of physical properties retained after 15 years exposed to sunlight and salt water
 - f. Resistant to rot, insects, fungi and moisture

2.06 PERFORMANCE

- A. When vertically compressed by a plate extending the full length and width of a 1.00m section of the fender, the fender shall absorb 52,000 foot

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pounds of energy ± 5 percent when 100 percent compressed (to a dimension of 52.5 percent of its original height) with a corresponding load of not more than 75,700 lbs ± 5 percent.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install fenders with the fender longitudinal axis horizontal. Install the fenders in the position and at the spacing indicated on the drawings.

END OF SECTION

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Section 35 59 33 – Marine Bollards & Cleats

PART 1 – GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. The drawings and general provisions of the Contract, including the General Conditions, Supplementary Conditions and the sections of Division 1 – General Requirements apply to this work as if specified in this section. Work related to this section is described in:
 - 1. Section 05 50 00 – Metal Fabrications
 - 2. Section 03 30 00 – Cast-in-Place Concrete
- B. Work under this Specification section is paid under Bid Item 21 – Furnish and Install Steel Dolphins, Bid Item 22 – Furnish and Install Mooring Cleats, Bid Item 49– Furnish and Install South Shoreline Mooring Bollard as shown on the Bid Form and described in Section 01 20 00 – Price and Payment Procedures.

1.02 DESCRIPTION OF WORK

- A. The extent and location of the New Mooring Cleats and Mooring Bollards on the piles is indicated on the Drawings. The work includes furnishing the new cleats, bollards, inserts in the cap and installing the cleats and bollards as indicated on the Drawings.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM).

1.04 QUALITY ASSURANCE

- A. The Contractor shall provide skilled workmen at all times, who shall be experienced and familiar with the construction of cast-in-place inserts. Supervisory Personnel shall have a minimum of 5 years of experience with the work performed in this section.

1.05 PRODUCT DELIVERY STORAGE AND HANDLING

- A. Protection
 - 1. Cleats and bollards shall protected in storage and handling so as not to damage the coating.

1.06 SUBMITTALS

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- A. The following documents shall be submitted to and approved by the Engineer:
 - 1. Mill test certificates.
 - 2. Shop drawings of the cast steel bollards and cleats showing all relevant dimensions, materials, and the number and size of accompanying bolts, nuts, washers, cast-in-place inserts, and anchor plates.
 - 3. Manufacturer's data sheets for the cleats and inserts.

PART 2 – PRODUCTS

2.01 CLEATS

- A. The cleats shall have a load rating specified on the drawings in the direction of 0 to 45 degrees relative to the horizontal, and 0 to 180 degrees relative to the wall face.

2.02 BOLLARDS

- A. The bollards shall meet the requirements in accordance with Section 05 50 00.

2.02 FINISHES

- A. The cleats and bollards shall be supplied with the following 3-coat paint system or an approve equal:
 - 1. Primer coat shall be Carbozinc 11 Inorganic Zinc.
 - 2. Intermediate coat shall be Carboguard Cycloaliphatic Amine Epoxy.
 - 3. Top coat shall be Carbothane 134 HG Aliphatic Acrylic Polyurethane. The final color shall be yellow.

2.03 ANCHORAGE HARDWARE

- A. All anchorage hardware shall be hot-dipped galvanized according to ASTM A 123 Gr 100.

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PART 3 – EXECUTION

3.01 GENERAL

- A. The cast-in-place inserts shall be placed as directed in Section 03 30 00 - Cast-in-Place Concrete.
- B. It is the contractor's responsibility to repair any coating that is damaged during installation.

END OF SECTION