

[09/01/26]

TO: PLAN HOLDERS LIST

SUBJECT: PROCUREMENT NO. 072026-1051
ARKEMA INTERIM ACTION-PHASE 1

ADDENDUM NUMBER 02

This addendum is issued to amend the following:

Plan Sheet C2.10:

Changed vault lid product number

Plan Sheet C2.25:

Changed vault notes

00 11 13 – Advertisement for Bids:

Changed Bid Date from September 10th, 2026 to September 17th, 2026

Fixed misspelled Conference to Conference

00 73 46 – Washington State Prevailing Wage Rates:

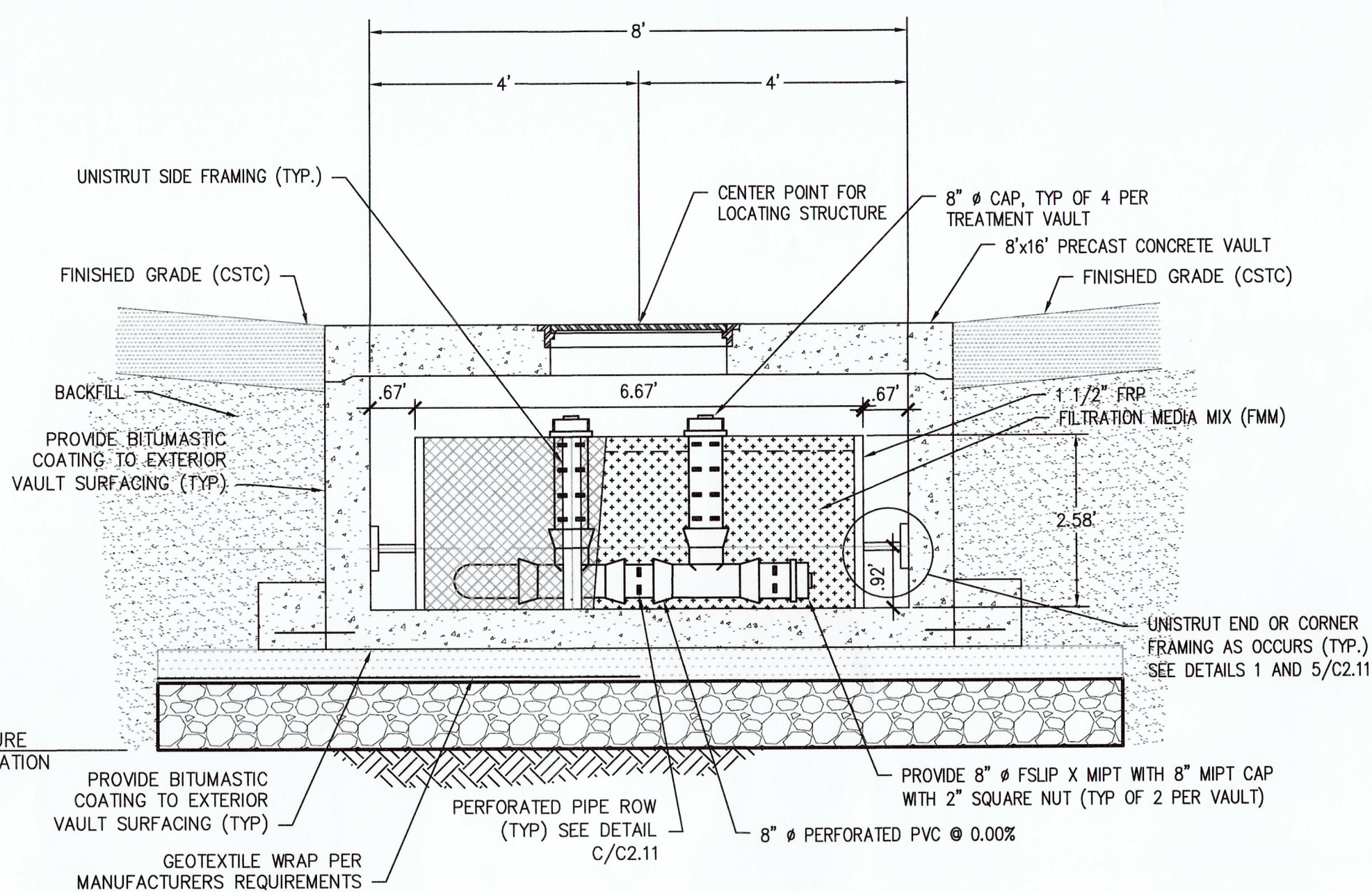
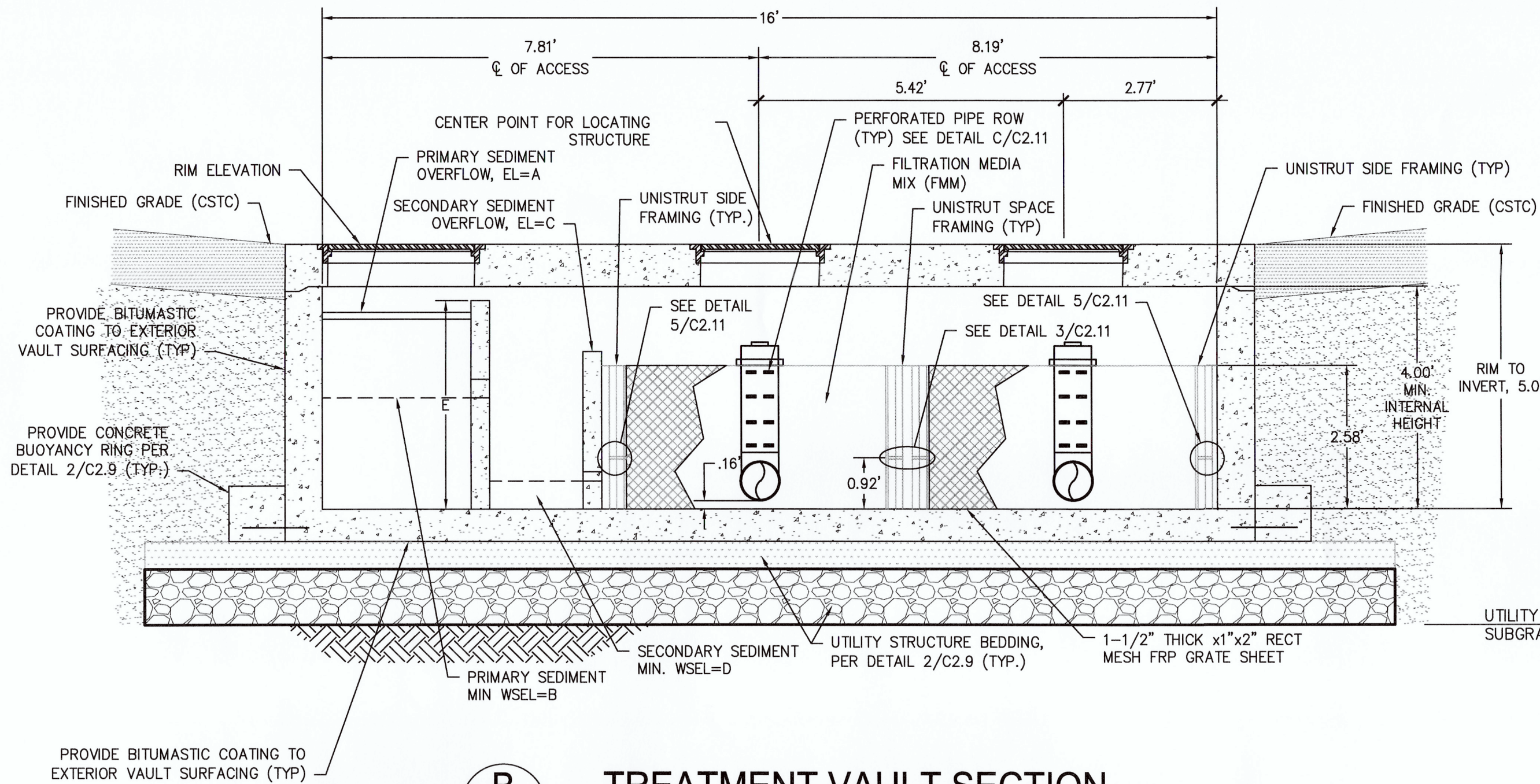
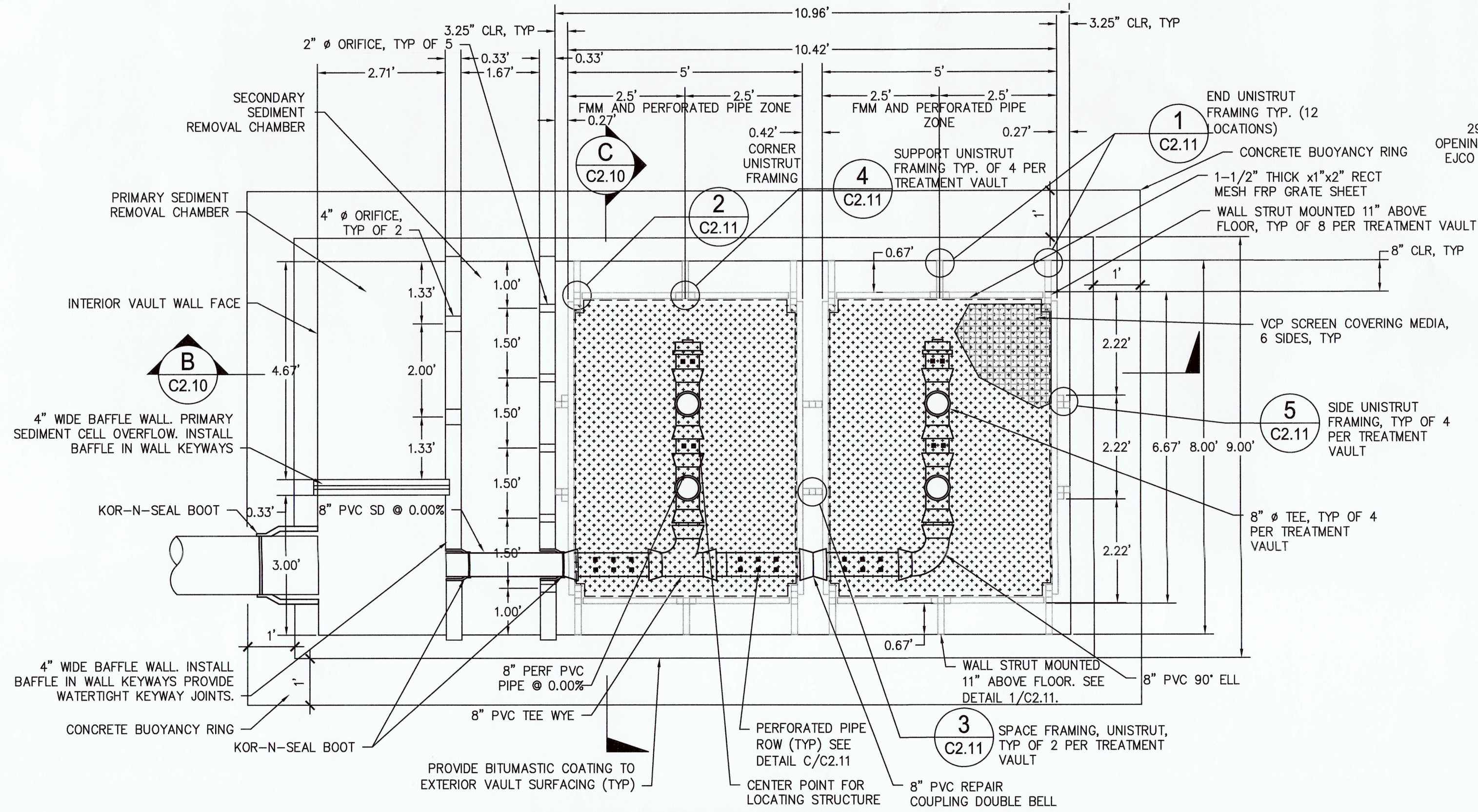
Changed applicable date for prevailing wages from September 10th, 2026 to September 17th, 2026

01 20 00 – Price and Payment Procedures:

Changed bid item #10 description to clarify storm drain pipe surcharge is included in the bid item

33 05 63 – Utility Vaults and Structures:

Revised 2.03.B.1 and grate and cover fastening hardware and stamping



NOTES

1. FOR ANCHORAGE OF CORNER UNISTRUT FRAMING TO CONCRETE FOUNDATION SEE DETAIL 6 ON SHEET C2.11
2. ALL FILTER MEDIA FRAMING MATERIALS (UNISTRUT, HARDWARE, ANCHORS, ETC) SHALL BE STAINLESS STEEL.
3. SEE SPECIFICATIONS FOR FMM, FRP AND VCP REQUIREMENTS.
4. SEE SPECIFICATIONS FOR VAULT LOADING REQUIREMENTS.

TREATMENT VAULT

BASIS OF DESIGN:
FMM CAGE SIDE SURFACE AREA = 120.4 SF
FMM CAGE TOP SURFACE AREA = 66.7 SF
FMM CAGE SURFACE AREA = 187.1 SF
TREATMENT RATE = 1 GPM/SF
REQUIRED VAULT TREATMENT CAPACITY = 187.7 GPM (0.42 CFS)

ELEVATIONS
A=41" ABOVE VAULT FLOOR, 39.5" WITH ONE 1.5" X 1.5" SS ANGLE IRON SET ON TOP OF CONCRETE WALL. PROVIDE BED OF CAULK AND CONCRETE ANCHORS TO SEAL OFF.
B=24" ABOVE VAULT FLOOR
C=34" ABOVE VAULT FLOOR, 35" W/ TWO 2x4 FLASHBOARDS
D=6" ABOVE VAULT FLOOR
E=47" ABOVE VAULT FLOOR

6697
C2.10
SH # 36 OF 44

ARKEMA INTERIM ACTION - PHASE 1
CONTAINMENT WALL
TREATMENT VAULT DETAILS 1

CONT/CONS: PA00000403
M. ID: 101585-01
PHASE: FOR BID

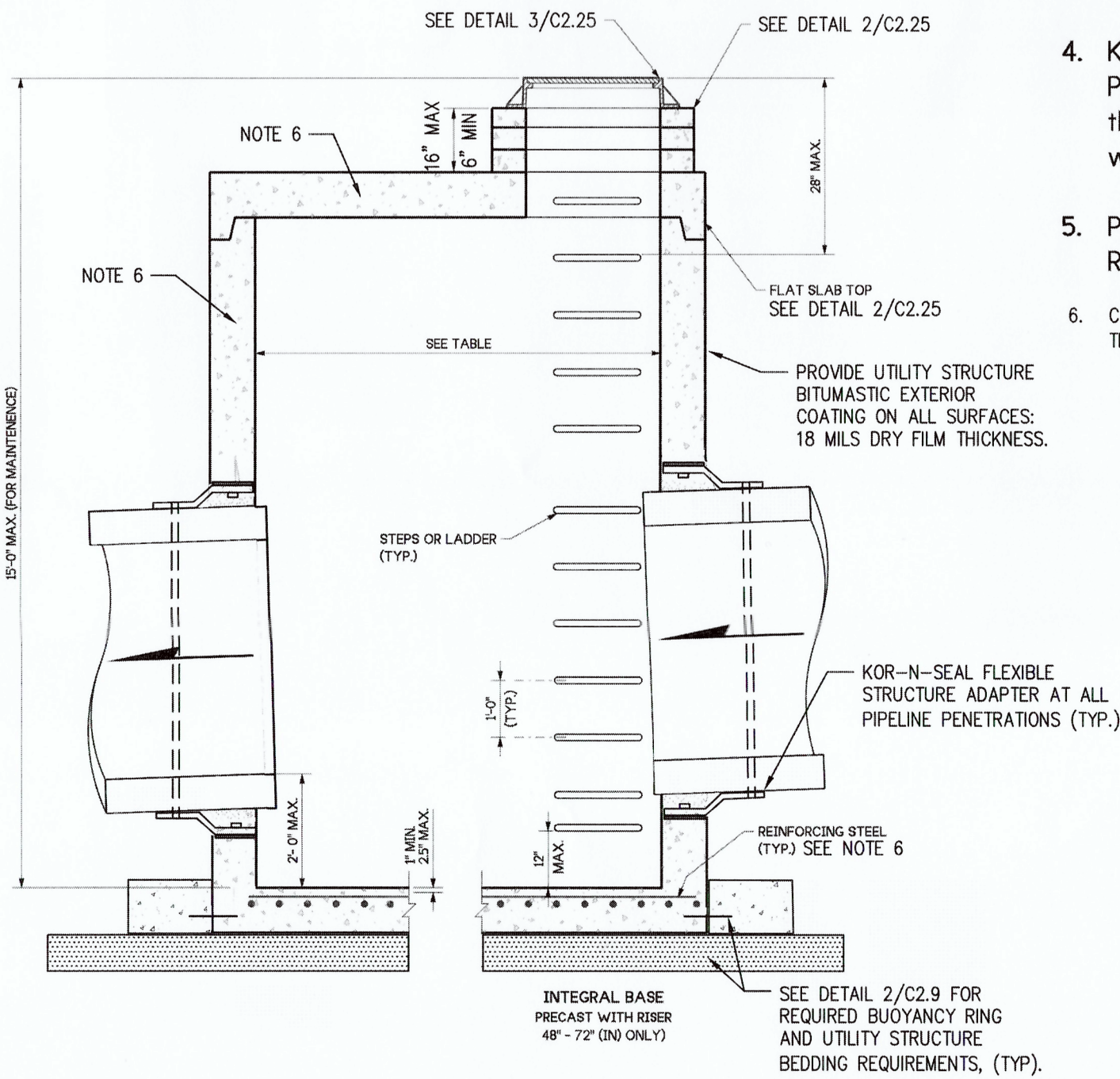
shsitts & hill
CIVIL & STRUCTURAL ARCHITECTURAL & SURVEY
P.O. BOX 887 TACOMA, WA 98401 (206)385-8441
FAX (206)385-8441
www.shsitts.com

APPROVED:
DIRECTOR ENG. DATE: 06/10/26
PRINTED BY: KrescherK Sep 01, 2026
TOWNSHIP: 21 NORTH RANGE: 3 EAST SECTION: 36
DATE-HRZ: WAB3/2011 VERT: MLW 15.73' @ POT MON #78
PARCEL: 0321351053
DRAWING SCALE: AS NOTED

Port of Tacoma
P.O. BOX 887 TACOMA, WA 98401 (206)385-8441
FAX (206)385-8441
www.portoftacoma.com

REVISION:
BY: RH
DATE: 09-01-2026
ADDENDUM 2

MARK: 2



NOTES:

1. No steps are required when height is 4' or less.
2. The bottom of the precast catch basin may be sloped to facilitate cleaning.
3. The rectangular frame and grate may be installed with the flange up or down. The frame may be cast into the adjustment section.
4. Knockouts shall have a wall thickness of 2" (in) minimum to 2.5" (in) maximum. Provide a 1.5" (in) minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with Standard Specification Section 9-04.3.
5. Pipe allowances will vary depending on the pipe material used. Contact the Region Hydraulics Engineer for assistance.
6. CONTRACTOR SHALL PROVIDE A DESIGN/BUILD SUBMITTAL FOR ALL PROJECT UTILITY STRUCTURES THAT MEET THE PORT'S LOADING REQUIREMENTS.

CATCH BASIN DIMENSIONS					
CATCH BASIN DIAMETER	MIN. WALL THICKNESS	MIN. BASE THICKNESS	MAXIMUM KNOCKOUT SIZE	MINIMUM DISTANCE BETWEEN KNOCKOUTS	
48"	4"	6"	36"	8"	
54"	4.5"	8"	42"	8"	
60"	5"	8"	48"	8"	
72"	6"	8"	60"	12"	
84"	8"	12"	72"	12"	
96"	8"	12"	84"	12"	
120"	10"	12"	96"	12"	
144"	12"	12"	108"	12"	

PIPE ALLOWANCES					
CATCH BASIN DIAMETER	PIPE MATERIAL WITH MAXIMUM INSIDE DIAMETER				
	CONCRETE	ALL METAL	CPSP (1) PP (4)	SOLID WALL PVC (2)	PROFILE WALL PVC (3)
48"	24"	30"	24"	30"	30"
54"	30"	36"	30"	36"	36"
60"	36"	42"	36"	42"	42"
72"	42"	54"	42"	48"	48"
84"	54"	60"	54"	48"	48"
96"	60"	72"	60"	48"	48"
120"	66"	84"	60"	48"	48"
144"	78"	96"	60"	48"	48"

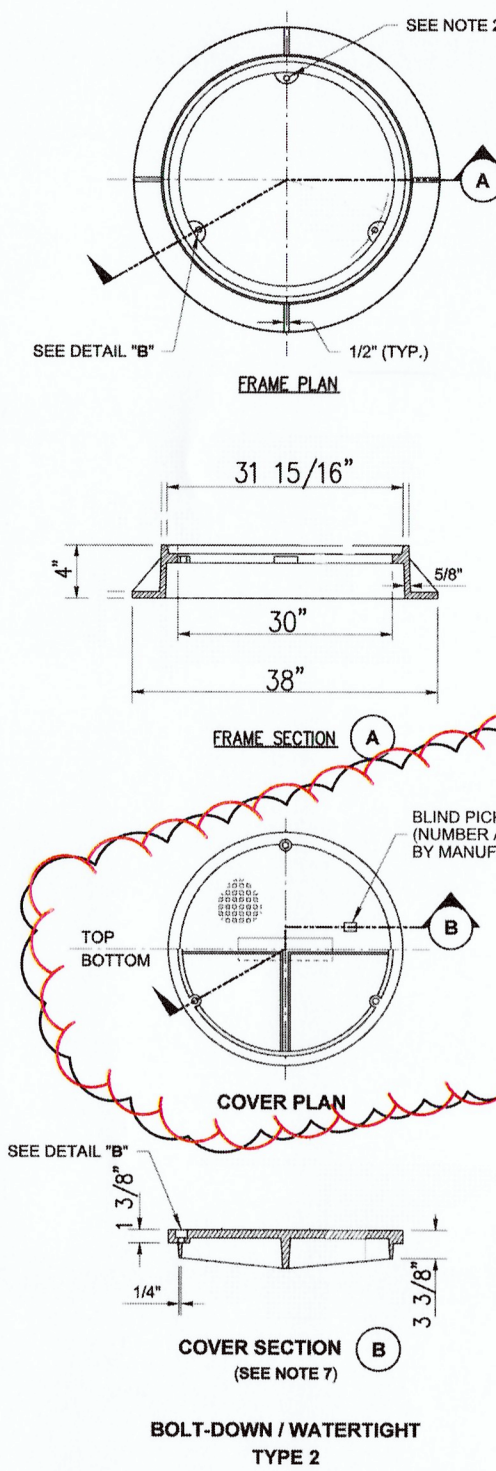
- ① Corrugated Polyethylene Storm Sewer Pipe (See Standard Specification Section 9-05.20)
② (See Standard Specification Section 9-05.12(1))
③ (See Standard Specification Section 9-05.12(2))
④ Polypropylene Pipe (See Standard Specification Section 9-05.24)

CATCH BASIN TYPE 2

STANDARD PLAN B-10.20-03
SHEET 1 OF 1 SHEET

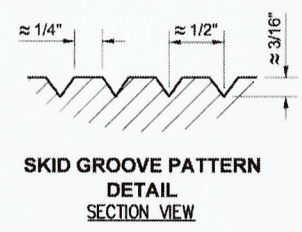
1 C2.5-7 CATCH BASIN DETAIL

SCALE: NTS



NOTES

1. The gasket and groove may be in the seat (frame) or in the underside of the cover. The gasket may be "T" shaped in section. The groove may be cast or machined.
2. Bolt-down capability is required on all frames, grates, and covers, unless specified otherwise in the Contract. Provide 3 minimum holes in the frame that are vertically aligned with the grate or cover slots. The frame shall accept the 304 Stainless Steel (S.S.) 1/2" x 2" (in) hex head bolt by being lapped, or other approved mechanism. Location of bolt down holes varies by manufacturer.
3. For bolt-down manhole ring and covers that are not designated "Watertight", the neoprene gasket, groove, and washer are not required.
4. Washer shall be neoprene (Detail "B").
5. Provide blind pick notch or pick bars for manhole covers. Hole location and number of holes may vary by manufacturer.
6. Alternative reinforcing designs are acceptable in lieu of the rib design.
7. For clarity, the vertical scale of the Cover Section has been exaggerated, it is 1.5 times the horizontal scale (1H:1.5V).
8. Contractor shall provide a submittal for all project utility structures that meet the port's loading requirements.
9. Provide EICO product number 001810159W01 or equal.

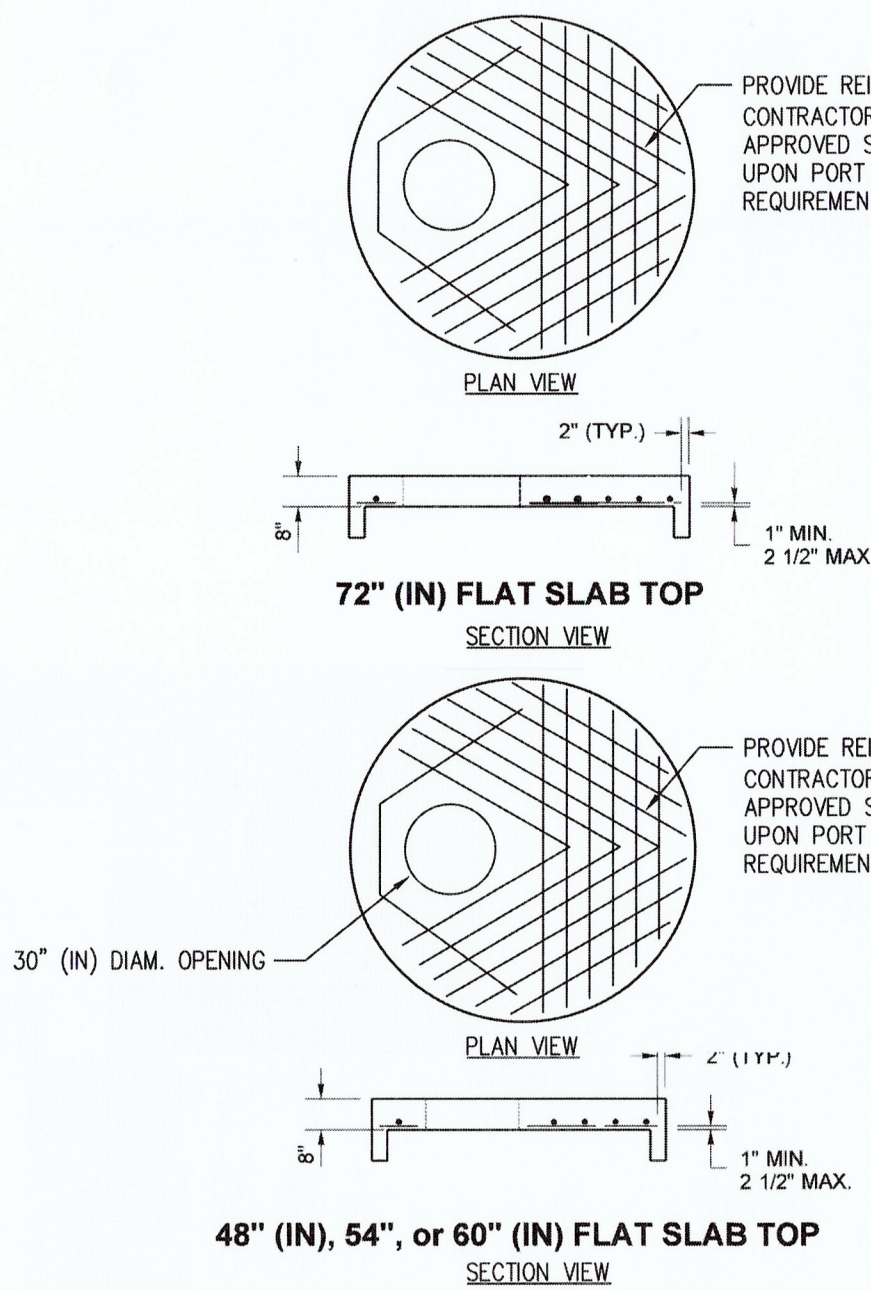
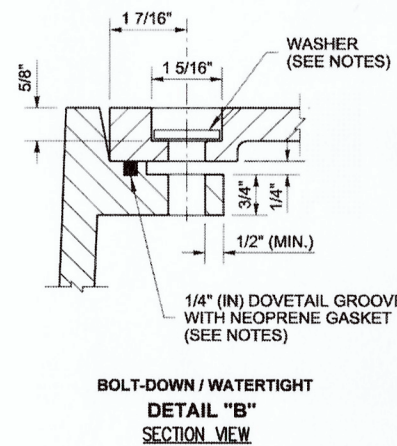


CIRCULAR FRAME (RING) AND COVER

ISOMETRIC VIEW

3 C2.25 CATCH BASIN FRAME AND COVER DETAIL

SCALE: NTS



TYPICAL ORIENTATION FOR ACCESS AND STEPS

PROVIDE REINFORCEMENT PER CONTRACTOR DESIGN/BUILD APPROVED SUBMITTAL BASED UPON PORT LOADING REQUIREMENTS.

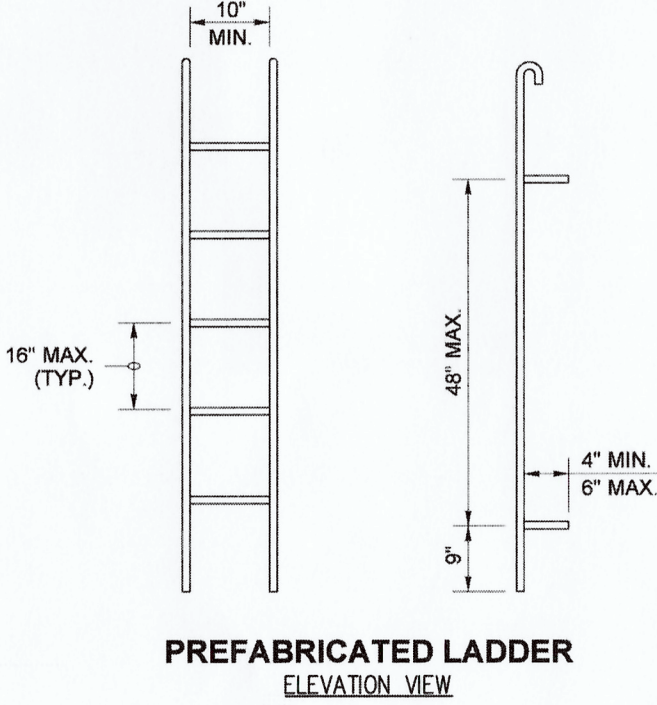
CIRCULAR ADJUSTMENT SECTION

For rectangular and circular adjustment sections, approved alternate material compositions are acceptable in lieu of precast concrete designs

2 C2.25 CATCH BASIN DETAIL

SCALE: NTS

- NOTE
1. LADDER RUNGS FOR MANHOLES AND CATCH BASINS SHALL MEET THE REQUIREMENTS OF AASHTO M 199 AND BE POLYPROPYLENE COATED CONFORMING TO ASTM D-4101.
 2. LADDERS SHALL COMPLY WITH ASTM C-497 REQUIREMENTS.



MISCELLANEOUS DETAILS FOR DRAINAGE STRUCTURES STANDARD PLAN B-30.90-02
SHEET 1 OF 1 SHEET

6697

C2.25

SH # 44 OF 44

ARKEMA INTERIM ACTION - PHASE 1
CONTAINMENT WALL

STORM DRAINAGE DETAILS

CONT./CONS: PA000000403 TOWNSHIP: 21 NORTH RANGE: 3 EAST SECTION: 36

M. ID: 101585.01 DAT-HRZ: WA83/2011 VERT: MLW 15.73' @ POT MON #178

PHASE: FOR BID PARCEL: 0321351053 DRAWING SCALE: AS NOTED

APPROVED: RCH 06/10/26

CHECKED BY: DATE

RCH 06/10/26

PROJ. ENGR DATE

PRINTED BY: Kreischer Sep 01, 2026

PORT ADDRESS: ONE SITCUM PLAZA

TACOMA, WA 98401-1837



CIVIL & STRUCTURAL ARCHITECTURAL & SURVEY
P.O. BOX 1837 TACOMA WA 98401-1837
PHONE: (253) 474-4444 FAX: (253) 474-4445
WWW.SH-SITTS-AND-HILL.COM

DATE: 09-01-2026

APPR: RH

BY: RH

REVISION: ADDENDUM 2

MARK: /

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ARKEMA INTERIM ACTION - PHASE 1

PROJECT NO. 101585.01 | PROCUREMENT NO. 072026-1051

- Scope of Work:** The Work required for this Project includes:
- Containment Wall: the work consists of constructing a continuous wall with a self-hardening slurry that consists of a mixture of ground granulated blast furnace slag, select clay and water to form a low permeability barrier to contain groundwater. The wall shall be keyed into the second site aquitard by vibrating beam methods.
- Site Preparation and Wall Area Capping: the existing site will require preparation, excavation, fill, grading, demolition, surcharge, and temporary works prior to containment wall installation. An impervious cap consisting of imported soil, geotextile and a PVC liner will be placed over the wall area following wall installation to reduce stormwater infiltration within the containment wall.
- Stormwater Conveyance Improvements: one new 30-inch outfall and one existing 36-inch outfall will be modified as part of the Work. Outfall construction and modification includes piping, vaults, headwalls, steel piling installation, check valves and cofferdams. A collection and conveyance system will be installed to connect the wall cap area to new and existing outfalls.
- Bid Estimate:** Estimated cost range is \$6,500,000 to \$7,000,000, plus Washington State Sales Tax (WSST).
- In accordance with RCW 39.04.320, fifteen (15) percent apprenticeship participation is required for certain projects estimated to cost one million (\$1,000,000) dollars or more. Bidders may contact the Department of Labor and Industries, Specialty Compliance Services Division, Apprenticeship Section, P.O. Box 44530, Olympia, WA 98504-4530, by phone (360) 902-5320, or e-mail at Apprentice@lni.wa.gov, to obtain information on available apprenticeship programs.
- In accordance with new legislation HB 1050 all port districts are required to add the requirement that **apprentices must perform** 15% or more of the total labor hours in public works contracts estimated at \$1 million or more. If the 15% apprenticeship labor hours is met the contractor will receive an incentive fee of \$1,000. If less than 15% apprenticeship labor hours is used a \$500 decrease in the total amount of the contract will be taken for not meeting the required apprenticeship labor hours. L&I will monitor apprenticeship labor hours.

Sealed Bid Date/ Time/Location: Bids will be received at the Front Reception Desk, Port Administration Office, One Sitcum Plaza, Tacoma, Washington 98421 until **2:00 P.M. on September 17th**, 2026, at which time they will be publicly opened and read aloud and the apparent low bid will be determined.

Pre-Bid Conference and Site Tour: A pre-Bid conference and site visit have been set for August 20th, 2026 at 9:00 A.M. The site visit will convene at the project site. The following Protective Equipment is required for the site visit: sturdy shoes, reflective vest, gloves, and safety glasses. Attendees will be required to sign a Release and Acceptance of Responsibility and Acknowledgement of Risks Form prior to entering the site and shall provide their own Personal Protection Equipment (PPE) as required above.

Bid Security: Each Bid must be accompanied by a Bid security in an amount equal to five (5) percent of the Base Bid in a form allowed by the Instructions to Bidders.

Contact Information: Any questions to the Port may be submitted to the Procurement Department through the Procurement and Question Submission Portal (Portal link is accessible via this specific procurements website. See left side of page.). A direct link is also available here: [Procurement and Question Portal Link](#). No oral responses will be binding by the Port. Instructions for utilizing the portal can be found here: [Procurement and Question Submission Portal Instructions](#). Questions will not be accepted after seven (7) days prior to the Bid Date.

Bidding Documents: Plans, Specifications, Addenda, and Plan Holders List for this Project are available on-line through The Port of Tacoma's Website portoftacoma.com. Click on "Contracts," "Procurement," and then the Procurement Number 072026-1051. Bidders must subscribe to the Holder's List on the right hand side of the screen in order to receive automatic email notification of future addenda and to be placed on the Holder's List. Holder's Lists will be updated regularly and posted to the specific procurements page. Additional Instructions available in Section 00 21 00 - Instructions to Bidders.

Public Works Training Requirements: Effective July 1, 2019, all businesses are required to have training before bidding on public works projects and prevailing wage under RCW 39.04.359 and RCW 39.12, or is on the list of exempt businesses maintained by the Department of Labor and Industries. The bidder must designate a person or persons to be trained on these requirements. The training will be provided by the Department of Labor and Industries or by a training provider whose curriculum is approved by the Department of Labor and Industries.

Please refer to Labor and Industries' web site (https://www.lni.wa.gov/TradesLicensing/PrevWage/Contractors/Training.asp?utm_medium=email&utm_source=govdelivery) for more information and training dates, requirements, and exemptions. Failure to attend this training could result in a determination of "not responsible" and the bidder not being awarded a public works contract.

Project Specific Supplemental Bidder Criteria: Pursuant to RCW 39.04.350, Bidders are advised the Port has established relevant project specific Supplemental Bidder Responsibility Criteria for determining bidder responsibility included in Appendix D of the Responsibility Contract Documents.

Special Conditions: Partial funding of this project is being provided by the Washington State Department of Ecology. All terms and conditions included in the grant between the Port of Tacoma and Washington State Department of Ecology are fully incorporated into the Port of Tacoma agreement with the Contractor.

END OF SECTION

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PART 1 - GENERAL

1.01 PREVAILING AND OTHER REQUIRED WAGES

- [2]
- A. The Contractor shall pay (and shall ensure that all Subcontractors of any tier pay) all prevailing wages and other wages (such as Davis-Bacon Act wages) applicable to the Project.
 - B. Pursuant to RCW 39.12, "Prevailing Wages on Public Works," no worker, laborer, or mechanic employed in the performance of any part of the Work shall be paid less than the "prevailing rate of wage" in effect as of the date that bids are due.
 - 1. Based on the Bid Date, the applicable effective date for prevailing wages for this Project is September ~~10th~~ 17th, 2026.
 - C. The State of Washington prevailing wage rates applicable for this public works Project, which is located in Pierce County, may be found at the following website address of the Department of Labor and Industries:

<https://www.lni.wa.gov/licensing-permits/public-works-projects/prevailing-wage-rates/>
 - D. The schedule of the prevailing wage rates is made a part of the Contract Documents by reference as though fully set forth herein, and a printed copy of the applicable prevailing wage rates are also available for viewing at the Port Administration Building, located at 1 Sitcum Plaza, Tacoma, WA 98421 (253-383-5841). Upon request to the Procurement Department at procurement@portoftacoma.com, the Port will email or mail a hard copy of the applicable Journey Level prevailing wages for this Project.
 - E. Questions relating to prevailing wage data should be addressed to the Industrial Statistician.
 - Mailing Address: Washington State Department of Labor and Industries
Prevailing Wage Office
P.O. Box 44540
Olympia, WA 98504
 - Telephone: (360) 902-5335
 - Facsimile: (360) 902-5300
 - 1. If there is any discrepancy between the provided schedule of prevailing wage rates and the published rates applicable under WAC 296-127-011, the applicable published rates shall apply with no increase in the Contract Sum. It is the Contractor's responsibility to ensure that the correct prevailing wage rates are paid.
 - F. Statement to Pay Prevailing Wages
 - 1. Prior to any payment being made by the Port under this Contract, the Contractor, and each Subcontractor of any tier, shall file a Statement of Intent to Pay Prevailing Wages with the Department of Labor and Industries for approval.
 - 2. The statement shall include the hourly wage rate to be paid to each classification of workers entitled to prevailing wages, which shall not be less than the prevailing rate of wage, and the estimated number of workers in each classification employed on the Project by the Contractor or a Subcontractor of any tier, as well as the Contractor's contractor registration number and other information required by the Department of Labor and Industries.

3. The statement, and any supplemental statements, shall be filed in accordance with the requirements of the Department of Labor and Industries. No progress payment shall be made until the Port receives such certified statement.
- G. The Contractor shall post, in a location readily visible to workers, at the Project site: (i) a copy of the Statement of Intent to Pay Prevailing Wages approved by the Industrial Statistician of the Department of Labor and Industries and (ii) the address and telephone number of the Industrial Statistician of the Department of Labor and Industries to whom a complaint or inquiry concerning prevailing wages may be directed.
- H. If a State of Washington prevailing wage rate conflicts with another applicable wage rate (such as Davis-Bacon Act wage rate) for the same labor classification, the higher of the two shall govern.
- I. Pursuant to RCW 39.12.060, if any dispute arises concerning the appropriate prevailing wage rate for work of a similar nature, and the dispute cannot be adjusted by the parties in interest, including labor and management representatives, the matter shall be referred for arbitration to the Director of the Department of Labor and Industries, and his or her decision shall be final and conclusive and binding on all parties involved in the dispute.
- J. Immediately following the end of all Work completed under this Contract, the Contractor and each Subcontractor of any tier, shall file an approved Affidavit of Wages Paid with the Department of Labor and Industries.
- K. The Contractor shall defend (at the Contractor's sole cost, with legal counsel approved by Port), indemnify, and hold the Port harmless from all liabilities, obligations, claims, demands, damages, disbursements, lawsuits, losses, fines, penalties, costs, and expenses, whether direct, indirect, including, but not limited to, attorneys' fees and consultants' fees and other costs and expenses, from any violation or alleged violation by the Contractor or any Subcontractor of any tier of RCW 39.12 ("Prevailing Wages on Public Works") or RCW Title 51 ("Industrial Insurance"), including, but not limited to, RCW 51.12.050.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Procedures for preparation and submittal of applications for progress payments.

1.02 PAYMENT PROCEDURES

- A. Monthly pay estimates shall clearly identify the work performed for the given time period based on the approved Schedule of Values.
1. At the Pre-construction meeting, the Engineer and the Contractor shall agree upon a date each month when payment applications shall be submitted.
- B. For each pay estimate the Contractor shall submit the following:
1. Completed Contractor invoice and updated Schedule of Values tracking sheet as required by Division 01 or as established by the Engineer.
 2. Baseline Project Schedule and narrative updated as required by Section 01 32 16 of the Project Manual.
 3. Completed "Amounts Paid to Subcontracts and Suppliers" showing total contract amount, amount paid this estimate, total paid to date, and balance owing.
 4. Completed "Conditional Release and Waiver of Liens and Claims."
 5. An estimated cashflow statement projecting the Contractor's monthly billings on the project shall be submitted with each payment application.
- C. Prior to submitting a payment application, the Contractor and Engineer shall meet each month to review the work accomplished to determine the actual quantities including labor, materials and equipment charges to be billed.
1. Prior to the payment application meeting, the Contractor shall submit to the Engineer all measurement documentation as referenced in these contract documents; to include all measurement by weight, volume or field.
 2. For all change work being done on a force account basis, the Contractor shall submit prior to meeting with Engineer all Force Account back-up documentation as required to process the payment application where Force Account work is being billed. The Engineer and the Contractor shall review the documentation at the payment application meeting to verify quantities and review the work accomplished.
 3. The Contractor shall bring a copy of all documentation to the pay application meeting with the Engineer.
 4. The Contractor shall submit the updated baseline project schedule for review prior to submitting the payment application to ensure the payment processing is not held up due to necessary schedule revisions.
- D. Following the Engineers' review, the Contractor shall submit the agreed upon pay estimate electronically, with complete supporting documentation attached, using Adobe PDF file format to cpinvoices@portoftacoma.com.

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 public agencies having jurisdiction, including safety and health requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA).
- 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.
- D. 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.
- E. The Port of Tacoma 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 LUMP SUM MEASUREMENT

- A. Lump sum measurement will be for the entire item, unit of Work, structure, or combination thereof, as specified and as indicated in the Contractor's submitted bid.
 - 1. If the Contractor requests progress payments for lump sum items, such progress payments will be made in accordance with an approved Schedule of Values. The quantity for payment for completed work shall be an estimated percentage of the lump sum amount, agreed to between the Engineer and Contractor, payable in monthly progress payments in increments proportional to the work performed in amounts as agreed between the Engineer and the Contractor.

1.05 MEASUREMENT OF QUANTITIES FOR UNIT PRICES

- A. Measurement Standards:
 - 1. All Work to be paid for at a contract price per unit measurement, as indicated in the Contractor's submitted bid, will be measured by the Engineer in accordance with United States Standard Measures.
- B. Measurement by Weight:
 - 1. Unless shipped by rail, material to be measured and paid for by weight shall be weighed on sealed scales regularly inspected by the Washington State Department of Agriculture's Weights and Measures Section or its designated representative. Measurement shall be furnished by and at the expense of the Contractor. All weighing, measuring, and metering devices shall be suitable for the purpose intended and shall conform to the tolerances and specifications as outlined in Washington State Department of Transportation Standard Specifications, Division 1, General Requirements, Article 1-09.2, Weighing Equipment.

2. Provide or utilize platform scales of sufficient size and capacity to permit the entire vehicle or combination of vehicles to rest on the scale platform while being weighed. Combination vehicles may be weighed as separate units provided they are disconnected while being weighed. Scales shall be inspected and certified as often as the Engineer may deem necessary to ascertain accuracy. Costs incurred as a result of regulating, adjusting, testing, inspecting, and certifying scales shall be borne by the Contractor.
 3. A licensed weighmaster shall weigh all Contractor-furnished materials. The Engineer may be present to witness the weighing and to check and compile the daily record of such scale weights. However, in any case, the Engineer will require that the Contractor furnish weight slips and daily summary weigh sheets. In such cases, furnish a duplicate weight slip or a load slip for each vehicle weighed, and deliver the slip to the Engineer at the point of delivery of the material.
 4. If the material is shipped by rail, the certified car weights will be accepted, provided only actual weight of material will be paid for and not minimum car weights used for assessing freight tariff. Car weights will not be acceptable for material to be passed through mixing plants. Material to be measured by weight shall be weighed separately for each bid item under which it is to be paid.
 5. Trucks used to haul material being paid for by weight shall be weighed empty daily and at such additional times as the Engineer may require. Each truck shall bear a plainly legible identification mark. The Engineer may require the weight of the material be verified by weighing empty and loaded trucks on such other scales as the Engineer may designate.
- C. Measurement by Volume:
1. Measurement by volume will be by the cubic dimension indicated in the Contractor's submitted bid. Method of volume measurement will be by the unit volume in place or removed as shown on the Contract Drawings or as specified.
 2. When material is to be measured and paid for on a volume basis and it is impractical to determine the volume by the specified method of measurement, or when requested by the Contractor in writing and accepted by the Engineer in writing, the material may be weighed in accordance with the requirements specified for weight measurement. Such weights will be converted to volume measurement for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Resident Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities will be accepted.
- D. Measurement by Area: Measurement by area will be by the square dimension shown on the Contract Drawings or as specified. Method of square measurement will be as specified.
- E. Linear Measurement: Linear measurement will be by the linear dimension listed or indicated in the Contractor's submitted bid. Unless otherwise indicated, items, components, or Work to be measured on a linear basis will be measured at the centerline of the item in place.
- F. Field Measurement for Payment:
1. The Contractor shall take all measurements by providing equipment, workers, and survey crews as required to measure quantities in accordance with the provisions for measurement specified herein. No allowance will be made for specified tolerances.
 2. The Engineer will verify all quantities of Work performed by the Contractor on a unit-price basis, for progress payment purposes.

1.06 REJECTED, EXCESS, OR WASTED MATERIALS

- A. Quantities of material wasted or disposed of in a manner not called for under the Contract; rejected loads of material, including material rejected after it has been placed by reasons of the failure of the Contractor to conform to the provisions of the Contract; material not unloaded from the transporting vehicle; material placed outside the lines indicated on the Contract Drawings or established by the Engineer; or material remaining on hand after completion of the Work, will not be paid for, and such quantities shall not be included in the final total quantities. No additional compensation will be permitted for loading, hauling, and disposing of rejected material.

1.07 MEASUREMENT AND PAYMENT

A. Item #1: Mobilization and Demobilization

- 1. Payment for Mobilization and Demobilization 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 and from the project site; temporary facilities and controls; for the establishment and removal of its offices, buildings and other facilities necessary for work on the project; for other work and operations which it must perform or costs it must incur before beginning production work on the various items on the project site, and for removal of personnel, equipment, supplies, offices, building facilities, sheds, fencing, and other incidentals from the site. This item shall include an office location for the Engineer's representative.
- 2. Mobilization and Demobilization shall be paid at the lump sum price listed in the Contractor's submitted bid. Incremental payment shall be made for each location as follows:
 - a. 40% after completion of 5% of the total contract amount of other bid items have been earned.
 - b. 40% after completion of 20% of the total contract amount of other bid items have been earned.
 - c. 20% after completion of all work on the project has been completed, including cleanup and acceptance of the project by the Port.

B. Item #2: Project Administration

- 1. Item Description: The Work of this item includes all administrative costs associated with administering and supervising the project including, but not limited to supervision of personnel, coordination of all work activities, coordination of subcontractors and/or suppliers, preparation and transmittal of submittals, permit acquisitions, for premiums on bonds and insurance for the project, and project overhead.
- 2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
- 3. Payment: This item will be paid for at the Contract lump sum price as specified in the Contractor's submitted bid, in accordance with the approved Schedule of Values.

C. Item #3: TESC

1. Item Description: The Work of this item includes all labor, equipment and materials necessary to furnish, install, maintain, improve and remove best management practices (BMP's) to manage erosion, water quality and stabilize the site in accordance with project Specifications and Drawings. The Work shall include updating, maintaining and reporting requirements and obligations of the General Construction Stormwater Permit.
 2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
 3. Payment: This item will be paid for at the Contract lump sum price as specified in the Contractor's submitted bid, in accordance with the approved Schedule of Values.
- D. Item #4: Clearing and Grubbing
1. Item Description: The Work of this item includes all labor, equipment and materials necessary to remove and dispose of trees, shrubs and other vegetative growth within the limits shown on the Drawings.
 2. Measurement: This item will be measured by ACRE complete for the overall area complete.
 3. Payment: This item will be paid for by ACRE as specified in the Contractor's submitted bid, in accordance with the approved Schedule of Values.
- E. Item #5: Demolition - Asphalt (4-inch Thickness)
1. Item Description: The Work of this item includes all labor, material and equipment as necessary for the demolition of existing asphalt surfaces. The item shall include the excavation, handling, transport, stockpiling and stockpile covering for future reuse of asphalt material. Stockpile location shall be on site as directed by Engineer.
 2. Measurement: This item will be measured by Cubic Yard (CY) in stockpile locations.
 3. Payment: This item will be paid based on actual quantities for the period being billed.
- F. Item #6: Demolition - Concrete
1. Item Description: The Work of this item includes all labor, material and equipment as necessary for the demolition of existing concrete structures. This item shall include the breaking, excavation, handling, transport, stockpiling and stockpile covering for future reuse of concrete material. Concrete thicknesses range between 6-inches and 2-feet in areas identified for demolition. Stockpile location shall be on site as directed by Engineer.
 2. Measurement: This item will be measured by Cubic Yard (CY) in stockpile locations.
 3. Payment: This item will be paid for based on actual quantities for the period being billed.
- G. Item #7: Demolition - Rail Road Ties
1. Item Description: The Work of this item includes all labor, material, equipment and fees as necessary to legally remove and dispose creosote rail road ties from within the TESC limits. Rail ties remain in historical rail alignments where rails were previously removed.
 2. Measurement: This item will be measured by Ton.
 3. Payment: This item will be paid for based on actual quantities by Ton for the period being billed.
- H. Item #8: Demolition - Subsurface Utilities

1. Item Description: The Work of this item includes all labor, material, equipment and as necessary to cut and grout plug existing utilities and remove obstructions in accordance with the Specifications and Drawings. This work shall include any trenching, backfill and dewatering to complete the work. Dewatering shall include pumping and conveyance to the Temporary Utility Trench Dewatering Pump and Treatment System. Disposal of removed utilities and obstructions shall be paid in accordance with Item #9: Demolition - Miscellaneous Debris Allowance.
 2. Measurement: This item will be measured by LS.
 3. Payment: This item will be paid for based on percentage complete for the period being billed.
- I. Item #9: Demolition - Miscellaneous Debris Allowance
1. Item Description: The Work of this item includes all labor, material and equipment as necessary for the demolition, collection and disposal of existing miscellaneous debris on site. This Item shall include utilities, metal pipe, steel casing, plastic pipe, miscellaneous steel such as grates, covers, and bollards, conduit, conductors, and other debris. The estimate assumes 17 tons of debris could be collected. Concrete debris is not included and shall be stockpiled in accordance with Bid Item #6 - Demolition - Concrete.
 2. Measurement: This item will be measured by Ton.
 3. Payment: This item will be paid for based on actual quantities.
- J. Item #10: Preload Placement & Compaction - On Site Material
1. Item Description: The Work of this item includes all labor, material and equipment as necessary to excavate, transport, place and compact existing site soil material as Preload Placement and Compaction in preparation for Containment Wall and Storm Piping installation from within the Dredging Sediment Pile area located at the southwest corner of the site. The Engineer estimates 5,700 cubic yards are available for use on site and assumes 3,700 cubic yards will be used as preload.
 2. Measurement: This item will be measured by cubic yard (CY).
 3. Payment: This item will be paid for based on actual quantities for the period being billed.
- K. Item #11: Preload Placement & Compaction - Import Material
1. Item Description: The Work of this item includes all labor, material and equipment as necessary to transport, place and compact import soil materials as preload in preparation for Containment Wall installation. The Engineer estimates 9,320 cubic yards of import will be necessary to complete preload placement and compaction. Source material approval and testing shall be in conformance with the contract documents and Department of Ecology approved work plans for the site. The Engineer estimates 9,300 cubic yards of imported material for preload placement and compaction will be repurposed under Item #27: Containment Wall Surfacing.
 2. Measurement: This item will be measured by cubic yard (CY).
 3. Payment: This item will be paid for based on actual quantities for the period being billed.
- L. Item #12: Preload Removal & Stockpiling

1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to excavate, transport and stockpile excess surcharge material in accordance with project Specifications and Drawings. The Work shall also include installation of a stockpile cover.
2. Measurement: This item will be measured by Cubic Yard.
3. Payment: This item will be paid for based on actual quantities for the period being billed.

M. Item #13: Storm Drain Preload Removal

1. Item Description: The Work of this item includes all labor and equipment as required to remove the uppermost 2 feet of installed preload material located above the project storm drain utility in accordance with the drawings and specifications. The removed material may be graded down the preload slope and compacted so that the finish graded slope is flatter than the temporary preload slope. The Engineer estimates a volume of 710 cubic yards.
2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
3. Payment: This item will be paid for based on percentage complete for the period being billed.

N. Item #14: Pre-cap Grading and Earthworks

1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to establish the Pre-Cap Grading Plan contours and elevations in accordance with project Specifications and Drawings. This item includes grading existing site soils from within the grading limits as well as grading existing site soils from the Dredging Sediment Pile. The Engineer estimates the grading of 9,400 cubic yards of cut from existing site soils from within the grading limits. The Engineer estimates an additional 2,400 cubic yards of material from the Dredging Sediment Pile will be required to meet the Pre-Cap Grading Plan contours and elevations. The Contractor shall assume 1,200 cubic yards of Preload Placement & Compaction - On Site Material shall be repurposed and paid for under Item #12: Preload Removal and Stockpiling. The contractor shall assume this bid item will include the excavation, transportation, grading and compaction of an additional 1,200 cubic yards of onsite soils from the Dredging Sediment Pile shall be to meet the required elevations .
2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
3. Payment: This item will be paid for at the Contract lump sum price as specified in the Contractor's submitted bid, in accordance with the approved Schedule of Values.

O. Item #15: North Outfall

1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to furnish and install the North Outfall. The North Outfall shall include all work components in accordance with the project Specifications, permits, and Drawings from the start of the slab to the end of the splash pad. This bid item shall include, but not be limited to, excavations, sheet pile wall cofferdams and dewatering installations, import aggregate backfill, the transport of trench spoils to a covered onsite stockpile location, concrete headwall, debris barrier and splash pad installations, and the subsequent removal of temporary facilities. This item does not include Storm Piping or WASTOP In-Line Check Valves.
2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
3. Payment: This item will be paid for based on actual quantities for the period being billed.

P. Item #16: South Outfall

1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to furnish and install the South Outfall. The South Outfall shall include all work components in accordance with the project Specifications, permits, and Drawings from the start of the slab to the end of the splash pad. This bid item shall include, but not be limited to, removal of existing outfall tide gate valve, modifying the existing outfall piles, excavations, the transport of trench spoils to a covered onsite stockpile location, sheet pile wall cofferdams and dewatering installations, import aggregate backfill, concrete headwall, debris barrier and splash pad installations, and the subsequent removal of temporary facilities. This item does not include Storm Piping or WASTOP In-Line Check Valves.
2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
3. Payment: This item will be paid for based on actual quantities for the period being billed.

Q. Item #17: Storm Piping

1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to furnish and install project Storm Piping in accordance with project Specifications and Drawings. The Work shall include, but not be limited to the salvage of existing 36" diameter HDPE storm piping, excavation, dewatering and conveyance of trench groundwater to the Temporary Utility Trench Dewatering Pump and Treatment System, providing and installation of import storm piping bedding, trench dams, and trench backfill aggregate materials, and the transport of trench spoils to a covered onsite stockpile location. The Work shall include drainage system testing and reporting as required by the Specifications and Drawings to verify drainage system performance and the subsequent removal of all temporary facilities.
2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
3. Payment: This item will be paid for based on actual quantities for the period being billed.

R. Item #18: Utility Structures

1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to furnish and install project Utility Structures in accordance with project Specifications and Drawings. The Work includes, but is not limited to, excavation, dewatering and conveyance of trench groundwater to the Temporary Utility Trench Dewatering Pump and Treatment System, providing and installation of import utility structure foundation, bedding and trench backfill aggregate materials, and the transport of trench spoils to a covered onsite stockpile location. The Work shall include the removal of temporary facilities, the required fill transport and grading to establish the proposed finish grade around each structure. Material from the Dredging Sediment Pile may be used to establish indicated finish grades.
2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
3. Payment: This item will be paid for based on actual quantities for the period being billed.

S. Item #19: Treatment Vaults

1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to furnish and install project Treatment Vaults in accordance with project Specifications and Drawings. The work shall also include procuring and installing the vault utility structure, the vault media, the vault plumbing, the vault metalwork, excavation, import backfill, the transport of trench spoils to a covered onsite stockpile location, and dewatering and conveyance of groundwater to the Temporary Utility Trench Dewatering Pump and Treatment System as required.
2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
3. Payment: This item will be paid for based on actual quantities for the period being billed.

T. Item #20: Inline Check Valves

1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to furnish and install Inline Check Valves in accordance with project Specifications and Drawings.
2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
3. Payment: This item will be paid for based on actual quantities for the period being billed.

U. Item #21: Temporary East-West Ditch Stormwater Reroute Pump System

1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to furnish, install and remove temporary pump system to reroute stormwater around the existing outfall during Outfall South, Storm Piping and Utility Structure Work that impacts existing ditch drainage. The work shall include restoring the ditch to the lines and grades prior to system installation. Temporary security fencing and relocation of traffic barriers shall be included in this item.
2. Measurement and Payment: This item shall be paid at the lump sum price listed in the Contractor's submitted bid as follows:
 - a. 80% after completion of system installation
 - b. 20% after removal of system and existing ditch restoration

- V. Item #22: Temporary East-West Ditch Stormwater Reroute Pump System Operation
1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to operate and maintain the Temporary East-West Ditch Stormwater Reroute Pump System to manage ditch drainage surface water. This item shall assume the system will operate up to 21 days.
 2. Measurement: This item will be measured by DAY.
 3. Payment: This item will be paid for based on actual quantities for the period being billed.
- W. Item #23: Temporary Utility Trench Dewatering Pump and Treatment System
1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to furnish and install a water treatment system capable of receiving pumped utility trench and excavation groundwater consisting of arsenic contaminated dewatering water. The system shall be designed by the contractor to meet discharge and treatment criteria as specified in the Project Drawings, Specifications and Permits.
 2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
 3. Payment: This item will be paid for at the Contract lump sum price as specified in the Contractor's submitted bid, in accordance with the approved Schedule of Values.
- X. Item #24: Temporary Utility Trench Dewatering Pump and Treatment System Operation
1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to operate and maintain the Dewatering Pump and Treatment System to manage arsenic contaminated utility trench groundwater dewatering discharge. This item shall assume the system will operate up to 21 days.
- Y. Item #25: Containment Wall
1. Item Description: The Work of this item includes all labor, material, testing, and equipment as necessary to furnish and install the Containment Wall to the dimensions and elevations per the Specifications and Drawings. This item shall include Protective Caps Where Subject to Traffic, berms as required to isolate slurry work areas and Work Pad to support Containment Wall construction equipment.
 2. Measurement: This item will be measured by vertical square foot (VSF).
 3. Payment: This item will be paid for based on actual quantities for the period being billed in accordance with the approved Schedule of Values.
- Z. Item #26: Permanent Containment Wall Protective Cap
1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to furnish and install the Permanent Containment Wall Protective Cap per the Specifications and Drawings. This work shall include two (2) layers of non-woven geotextile, the 30-mil PVC liner, and liner key-in trench. This work shall include fusing the cap to PVC monitoring well casings.
 2. Measurement: This item will be measured by square foot (SF).
 3. Payment: This item will be paid for based on actual quantities for the period being billed.
- AA. Item #27: Containment Wall Surfacing

1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to furnish and grade a (1) one-foot thick crushed surfacing base course rock cap on top of and around the Permanent Containment Wall Protective Cap to the elevations and grades of the Restoration Surface. This item estimates import, placement, and compaction of 9,300 cubic yards of either Preload Placement & Compaction - Import Material or virgin material that meets the Specifications.
2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
3. Payment: This item will be paid for based on actual quantities for the period being billed in accordance with the approved Schedule of Values.

BB. Item #28: Trench Safety Systems.

1. Item Description: The Work of this item includes shoring and safety systems for all trench excavations exceeding 4-foot depths.
2. Measurement: This item will be measured as a lump sum unit.
3. Payment: This item will be paid for at the Contract lump sum price as specified in the Contractor's submitted bid.

CC. Item #29: Utility Trench Over Excavation and Backfill Allowance

1. Item Description: The Work of this item includes all labor, material, equipment as necessary to provide authorized over excavation and backfill below the contract trench subgrade elevations. The Work includes, but is not limited to, excavation below the contract trench bedding subgrade elevation to replace a soft trench foundation, shoring, dewatering, replacing the excavated over excavation volumes with 2"-4" quarry spalls backfill, and compaction to the required trench bedding subgrade elevation to provide a firm trench foundation.
2. Measurement: This item shall be field measured (length of trench (ft) x width of trench (ft) x depth of trench (ft) / 27 cft/cy x 1.7 tons/cy) = Tons. The Contractor and the Engineer shall agree upon the measurements in the field prior to requesting payment.
3. Payment: This item will be paid as on a case-by-case basis and deducted from the total or remaining allowance figure. For example, if the total allowance figure is XX tons (100 tons initially), and there are 3 new cases that the total requires 30 tons payment, then 30 tons will be paid at the Unit bid price and the allowance figure total is reduced to XX-30 ton total (100-30 = 70 tons). Should the entire allowance be used, then an additional allowance figure will be established in accordance with contract requirements. Should the contract not require 100 tons, then there will be a net credit to the Port at the project conclusion.

[1] DD. Item #30: Shoreline Debris Removal

1. Item Description: The Work of this item includes all labor, material, and equipment as necessary to remove (10) ecology blocks from the shoreline and place them upland at a location within the property as directed by the Engineer. This item shall also include removal of a 3.5 foot by 3.5 foot by 3.5 foot boulder off the northwest corner of the existing concrete pier. The boulder shall be placed in the Demolition - Concrete stockpile. No wetlands shall be disturbed by Contractor operations. Any disturbed shoreline shall be restored to pre-activity conditions. See Section 00 31 00 – Available Project Information for additional information.
2. Measurement: This item will be measured as a lump sum unit.

3. Payment: This item will be paid for at the Contract lump sum price as specified in the Contractor's submitted bid.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXEUTION - NOT USED

END OF SECTION

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PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Section includes:
 - 1. Storm Drain Utility System Catch Basins, Manholes and Vaults
 - 2. Adjusting existing utility manhole frames and covers
 - 3. Utility Frames and Covers.
 - 4. Utility Structure Adapters
 - 5. Catch Basin Protection Devices

1.02 REFERENCES

- A. Washington State Department of Transportation
 - 1. 2026 Standard Specifications for Road, Bridge, and Municipal Construction, publication M41-10.

1.03 SUBMITTALS

- A. General: All project utility structures are required to comply with project loading requirements herein, unless specifically exempted.
- B. Shop Drawings: Submit Utility Structure shop drawings. The shop drawings shall include detailed calculations (design loads, deflections, bearing requirements), details and shall be stamped by a structural engineer registered in the State of Washington for each utility structure.
 - 1. Provide detailed shop drawings of each utility structure assembly and the components in the assembly for the required installation.
 - 2. Indicate layout and fabrication details.
 - 3. Indicate reinforcing steel bar sizes, spacing's, locations, bending and cutting schedules, supporting and spacing devices.
 - 4. Indicate pertinent dimensions, openings, methods of construction, types of connections, materials, joint arrangement and details.
 - 5. Indicate grade ring adjustment sections.
 - 6. The shop drawings shall indicate structure identification (names), locations, elevations, sections, piping and conduit penetrations and sizes.
- C. Product Data:
 - 1. Submit frames, grates, covers and dimensions for all project metal work.
 - 2. Submit utility structure adapters for storm drain utility structures.
 - 3. Submit ladders and steps.
 - 4. Submit utility structure exterior coatings.
 - 5. Utility structure joint sealants and gaskets.
 - 6. Catch Basin Structure protection devices.
 - 7. Non Shrink Grout.

8. Concrete shall comply with Section 32 13 13 – Concrete Paving requirements unless otherwise specified in the design build calculations/design.
- D. Manufacturer's Certificates: Submit Certification of Compliance documents, supporting data, from materials suppliers attesting that provided precast concrete utility structures meet or exceed specification requirements.
 1. Submit test report of the exterior coating DFT of each structure.

1.04 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record location of pipe runs, connections, manholes, cleanouts, and invert elevations in accordance with Section 01 71 23 - Field Engineering requirements.
- B. Submit utility structure vacuum test logs and results.

1.05 JOB CONDITIONS

- A. Utility Structure Design Loading Requirements: All utility structures for the storm drain utility system shall comply with the following design loading requirements:
 1. All utility structures and metal work shall be able to withstand industrial vehicular axle loading up of 240 kips, and wheel loading of 125 kips. The maximum industrial vehicle tire pressure is 150 psi.
 2. Provide detailed calculations and details stamped by a structural engineer registered in the state of Washington for each utility structure type.

1.06 QUALITY ASSURANCE

- A. Obtain precast concrete utility structures from single source.
- B. Perform structural design in accordance with ACI 318.
- C. Perform Work in accordance with NPCA Quality Control Manual for Precast Plants.
- D. Perform Work in accordance with Contract Document requirements.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Comply with precast concrete manufacturer's instructions for unloading, storing and moving precast structures. Lift structures from designated lifting points.
- B. Do not deliver products until concrete has cured 7 days or attained minimum 80 percent of specified 28 day compressive strength.
- C. Store precast concrete structures to prevent damage to Port's property or other public or private property. Repair property damaged from materials storage.
- D. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Contract Documents to indicate its intended use.
- E. Transport and handle precast concrete units with equipment designed to protect units from damage.
- F. Do not place concrete units in position to cause overstress, warp or twist.

PART 2 - PRODUCTS

2.01 PRECAST CONCRETE UTILITY STRUCTURES

- A. General: Utility Structures shall be reinforced precast concrete in accordance with project utility structure requirements.
 - 1. All pre-cast utility structures shall comply with project design loading requirements specified herein, except for ACB 13.
 - 2. Concrete and reinforcement shall be in accordance with the approved shop drawing requirements.
- B. Storm Drain System Utility Structures:
 - 1. Minimum vault type utility structure dimensional requirements are detailed in the Contract Documents. Actual utility structure dimensions shall be provided in the shop drawing submittals.
 - 2. No drain lines for vault type utility structures shall be provided.
 - 3. Catch basin type utility structure dimensional requirements are detailed in the Contract Documents. Actual utility structure dimensions shall be provided in the shop drawing submittals.
 - 4. Utility structure ACB 13 does not need to comply with project loading requirements. ACB 13 shall comply with WSDOT Standard Plan B-10.20-03 and Contract Document dimensional requirements.

2.02 CONFIGURATION

- A. Shape: Cylindrical and Rectangular.
- B. Clear Inside Dimensions: As indicated on Contract Documents and approved submittals.
- C. Clear Cover Opening: As indicated on Contract Documents and approved submittals.
- D. Pipe and Conduit Openings: Provide core drill openings as indicated on Contract Documents and approved submittals.
- E. Steps and Ladders: Provide Utility Structure steps and ladders in accordance with Contract Document requirements.

2.03 FRAMES AND COVERS

- A. General: All utility structure metal work requires a design/submittal/build process. All utility structure metal work shall comply with project loading requirements provided herein.
 - 1. Metal work materials may conform to ASTM A536 ductile, ASTM A48 cast iron or other recognized ASTM requirements provided they comply with project loading requirements.
 - 2. Fabricated steel grates and frames require Engineer approval. Fabricated steel frame and graters require a coating that will withstand industrial traffic wear and corrosion protection that from the weather elements for 30+ years. Fabricated steel frames and covers provided with a hot dipped galvanized protective coating alone is not acceptable.
- B. Storm Drain Utility:
 - 1. Metal Work:

- [2] a. Round frame and cover types and dimensioning requirements are shown on the Contract Documents. All covers shall be lock type with ~~5/8-inch diameter~~ stainless steel bolts ~~with 1/2 inch Allen wrench heads~~. Solid covers shall be stamped "STORM" or "DRAIN".
 - [2] b. Rectangular inlet grates shall conform to drawing requirements. The frames shall be sized to match the grates. All grates shall be lock type with ~~5/8-inch diameter~~ stainless steel bolts ~~with 1/2 inch Allen wrench heads~~. The inlet grate opening pattern may be herringbone, straight, checkered or other approved pattern.
2. Beehive Grate: Shall comply with Contract Document Drawing requirements.

2.04 ACCESSORIES

- A. Non-Shrink Grout: Shall be prepackaged material conforming to Type 2, ASTM C 1107 non-shrink applications, consisting of non-metallic aggregate, cement, water reducing and plasticizing agents capable of developing minimum compressive strength of 2,400 psi in 48 hours, 4,000 psi at 7 days and 7,000 psi in 28 days.
- B. Utility Structure Steps:
 - 1. Formed steel reinforced polypropylene rungs.
 - 2. Diameter: 3/4 inch.
 - 3. Width: 12 inches.
 - 4. Spacing: 12 inches on center vertically.
 - 5. Steel reinforced copolymer polypropylene meeting the following specifications:
 - a. ASTM C478.
 - b. ASTM C497, Method of test.
 - c. ASTM D4104, PP0344B33534Z02 copolymer polypropylene.
- C. Utility Structure Joint Sealants and Joint Gaskets:
 - 1. Gasket Joints for Utility Structure: ASTM C443; standard oil-resistant rubber gaskets.
 - 2. Joint Sealants: Where preformed rubber gaskets are not available for joints, provide a butyl rubber blended product installed in the tongue and groove joint to provide a watertight structure.
- D. Utility Structure Adapters:
 - 1. All utility structures shall be provided with flexible structure adapter in accordance with the following requirements:
 - a. All storm drain utility structures shall be provided with rubber "Kor-N-Seal" boot with stainless steel band or equal.
- E. TESC Storm Drain Utility Protection:
 - 1. Storm Drain Utility structures that are equipped with inlet grates shall be provided with TESC catch basin inlet protection devices as specified in Section 01 57 13 - Temporary Erosion and Sediment Control and Construction Stormwater Pollution Prevention.

- F. Utility Structure Coating: The exterior surfaces of all pre-cast concrete utility structures shall be provided with two heavy coats of waterproof coal tar paint, 18 mils total dry film thickness (DFT). The waterproofing material shall be applied by brush or paint spray in accordance with manufacturer's instructions. Allow sufficient drying and curing time in between subsequent coats and prior to installation. The waterproofing material shall be Koppers "Bitumastic Super Service Black", Tnemec "46-450 Heavy Tnemecol" or Porter "Tar Mastic 100" or equal. Provide test reports verifying DFT.

2.05 SOURCE QUALITY CONTROL

- A. Allow Engineer witnessing of factory inspections and test at manufacturer's test facility. Notify the Engineer at least seven days before inspections and tests are scheduled.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify items designated (labeled items) are provided at the correct locations.
- B. Verify correct size and elevation of excavation.
- C. Verify subgrade and bedding is properly prepared, compacted and ready to receive Work of this section.
- D. Verify piping connection, size, location and invert elevations.

3.02 PREPARATION

- A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.
- B. Do not install structures where site conditions induce loads exceeding structural capacity of structures.
- C. Ream pipe ends and remove burrs.
- D. Remove scale and dirt from components before assembly.
- E. Establish invert elevations for each component in system.
- F. Inspect precast concrete structures immediately prior to placement in excavation to verify that they are internally clean and free from damage. Remove and replace damaged units.
- G. Coordinate with other sections of Work to provide correct size, shape, and location.

3.03 INSTALLATION

- A. Excavations for utility structures shall be in accordance with Section 31 20 00 - Earthwork.
- B. Set precast structures bearing firmly and fully on utility bedding, compacted in accordance with provisions of Section 31 20 00 - Earthwork.
- C. Lift precast concrete structures at lifting points designated by manufacturer.
- D. When lowering structures into excavations and joining pipe to units, take precautions to ensure interior of pipeline and structure remains clean.
- E. Install precast concrete utility structures to required elevations and alignments. Install utility structures plumb and level, supported at proper grade and alignment.
- F. Assemble multi-section structure risers and top sections by lowering each section into the excavation.

1. Clean joint surfaces.
 2. Install utility structure components joint seals watertight in accordance with manufacturer's instructions using gasket joints or elastomeric joint sealants.
 3. Remove foreign materials from joint surfaces and verify sealing materials are placed properly. Maintain alignment between sections by using guide devices affixed to lower section.
- G. Verify installed structures satisfy required alignment and grade.
- H. Core drill utility structure openings to receive structure adapters. Do not use hammers or other destructive methods to create openings.
- I. Install utility structure adapter. In cases where the utility structure adapter is grouted in place, fill the annular space between the utility structure and the adapter's exterior surface with grout the entire utility structure wall width. Grouting shall occur on both the interior and exterior side of the structure, full circumference around the adapter. Provide a smooth grout finish. All grouting shall be watertight.
- J. Connect pipe to structure adapter. Seal watertight. Cut pipe beyond the interior wall surface by 3 inches.
- K. Install ladder steps and grout all structure lifting holes watertight.
- L. Perform vacuum test prior to commencing backfill operations in the presence of the Engineer.
- M. Backfill excavations for utility structures in accordance with Section 31 20 00 – Earthwork requirements.
- N. Install reinforced pre-cast concrete circular grade ring adjustment sections between the frame and catch basin utility structure. Provide non-shrink grout between successive layers of grade rings and between the grade rings and the utility structure to provide a watertight seal at the top of the utility structure.
- O. Install frame and cover.

3.04 FRAME AND COVER INSTALLATION

- A. Install frames on a bed of non-shrink grout. Provide non-shrink grout between the frame and adjustment grade rings. Install frame and cover to required finish grades, level without tipping to required elevations.
- B. Install new TESC BMP's in all new catch basin inlet installations in accordance with the manufacturer's instructions after all punchlist work is complete and prior to final completion.

3.05 FIELD QUALITY CONTROL

- A. Perform utility structure vacuum test in accordance with ASTM C1244 prior to commencing backfilling operations.

END OF SECTION