

**ADDENDUM #5
FORMAL BID 2022-104**

**KITSAP COUNTY PUBLIC WORKS WASTEWATER DIVISION
BANGOR-KEYPORT FORCE MAIN REPLACEMENT**

April 11, 2022

TO: All Respondents
FROM: Glen McNeill, Buyer
CLOSING DATE: **April 18th, 2022 at 3:00 PM (CHANGED PER ITEMS 2 AND 3)**
REF NO.: Bangor-Keyport Force Main Replacement
DATE: April 11, 2022

The purpose of this addendum is to modify the Contract Documents for the referenced project. This addendum shall become a part of these Contract Documents. Bidder shall acknowledge receipt of this 16-page addendum (including attachments) on the Bid Form.

VOLUME 1 OF 2 OF THE CONTRACT DOCUMENTS IS MODIFIED AS FOLLOWS:

TABLE OF CONTENTS

Item 1. REMOVE 33 05 23.32 Cured In-Place Pipe from the Table of Contents

INVITATION TO BID

Item 2. REVISE the Bid Submission Date & Time to Monday April 18, 2022 @ 3:00 PM.

Item 3. REVISE the Bid Opening Date and Time to Monday April 18, 2022 @3:15 PM.

BID PROPOSAL

Item 4. REPLACE pages 6 and 7 with the attached pages 6 and 7.

SUBCONTRACTORS LIST

Item 5. REPLACE page 2 with the attached page 2.

WSDOT DIVISION 1 – SPECIAL PROVISIONS

Item 6. REPLACE pages 1-83, 1-87 and 1-88 with the attached pages 1-83, 1-87 and 1-88.

TECHNICAL SPECIFICATIONS

Item 7. DELETE Specification Section 33 05 23.32 Cured-in-place Pipe in its entirety

APPENDICES

Item 8. Appendix C – Suggested Sequencing Plan REMOVE sheets 2 and 3 and REPLACE with attached sheets 2 and 3.

Item 9. Appendix D – Suggested Bypass Plans REMOVE sheets 1 and 2 and REPLACE with attached sheets 1 and 2.

VOLUME 2 OF 2 OF THE CONTRACT DOCUMENTS IS MODIFIED AS FOLLOWS:

Item 10. REMOVE sheet SS-8 and REPLACE with attached sheet SS-8.

Item 11. REMOVE sheet SS-9 and REPLACE with attached sheet SS-9.

Item 12. REMOVE sheet SS-60 and REPLACE with attached sheet SS-60.

Item 13. REMOVE sheet SS-61 and REPLACE with attached sheet SS-61.

Attachments For:

Item 4. Bid Proposal (Pages 6 and 7)

Item 5. Subcontractors List (Page 2)

Item 6. WSDOT Division 1-09 Measurement and Payment (Page 1-83, 1-87 and 1-88)

Item 8. Appendix C – Suggested Sequencing Plan Sheets 2 and 3.

Item 9. Appendix D – Suggested Bypass Plans Sheets 1 and 2.

Item 10. Revised Drawing SS-8.

Item 11. Revised Drawing SS-9.

Item 12. Revised Drawing SS-60.

Item 13. Revised Drawing SS-61.

End Addendum #5

SUBCONTRACTORS LIST

~~CURED-IN PLACE PIPE (CIPP) (Note: This is required by this contract and not RCW 39.30.060)~~

Subcontractor Name: _____

WET WELL COATING (Note: This is required by this contract and not RCW 39.30.060)

Subcontractor Name: _____

OTHER SUBCONTRACTORS (whose work is equal to or greater than 10% of the bid)
(Note: This is required by this contract and not RCW 39.30.060)

[THIS FORM SHALL BE COMPLETED IN FULL AND SUBMITTED WITH THE BID PROPOSAL]

END OF SUBCONTRACTORS LIST

Bid Schedule A – Pump Station 17 & Intersection of NE Tagholm Road/Brownsville Highway

Item No.	Ref. Section	Est. Quantity	Unit Price (in words)	Unit Price (in Numbers)	Extended Amount (Qty x Unit Price) (in numbers)
13A 24-inch Diameter HDPE DR 11 Sewer Force Main	Div. 22	3,400 LF		\$ _____	\$ _____
14A Horizontal Directional Drilled 24-inch Diameter, HDPE DR 11 Force Main	Div. 33	1 LS		\$ _____	\$ _____
15A 26-inch Diameter HDPE DR 11 Sewer Force Main	Div. 22	17,000 LF		\$ _____	\$ _____
16A 60-inch Diameter Manhole (BPA Easement) and Bioswale	Div. 22	1 EA		\$ _____	\$ _____
17A 20-inch Diameter CIPP Sewer Force Main Feasibility Investigation	Div. 22	830 LF 1 LS		\$ _____	\$ _____
18A 2-inch Combination Air Vacuum Valve Assembly	Div. 40	6 EA		\$ _____	\$ _____
19A 3-inch Combination Air Vacuum Valve Assembly	Div. 40	5 EA		\$ _____	\$ _____
20A 4-inch Blowoff Valve Assembly	Div. 40	8 EA		\$ _____	\$ _____
21A IPS Sewer Lateral from ROW to Main	Div. 22	5 EA		\$ _____	\$ _____
22A 26-inch Diameter HDPE DR 11 11.25 Degree Bend	Div. 22	4 EA		\$ _____	\$ _____
23A 26-inch HDPE DR 11 22.5 Degree Bend	Div. 22	3 EA		\$ _____	\$ _____
24A 24-inch HDPE DR 11 45 Degree Bend	Div. 22	8 EA		\$ _____	\$ _____

Bid Schedule A – Pump Station 17 & Intersection of NE Tagholm Road/Brownsville Highway

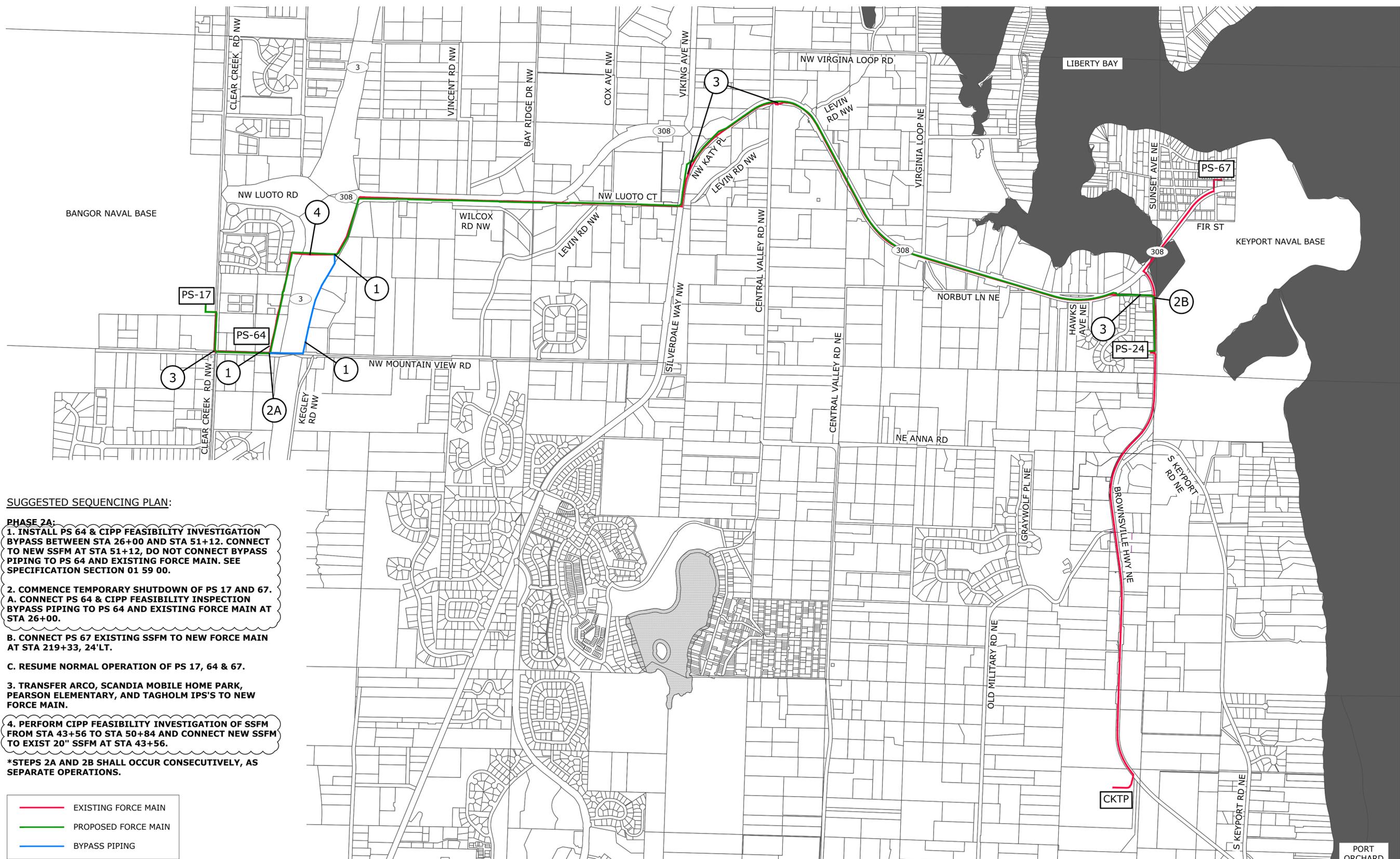
Item No.	Ref. Section	Est. Quantity	Unit Price (in words)	Unit Price (in Numbers)	Extended Amount (Qty x Unit Price) (in numbers)
25A 26-inch Diameter HDPE DR 11 45 Degree Bend	Div. 22	8 EA	_____	\$ _____	\$ _____
26A 26-inch Diameter HDPE DR 11 Non-Standard Degree Bend	Div. 22	1 EA	_____	\$ _____	\$ _____
27A 24-inch Diameter HDPE DR 11 Flange Adapter	Div. 22	17 EA	_____	\$ _____	\$ _____
28A 26-inch Diameter HDPE DR 11 Flange Adapter	Div. 22	14 EA	_____	\$ _____	\$ _____
29A Abandon Existing Force Main	Div. 33	20,500 LF	_____	\$ _____	\$ _____
30A Pump Station 17 Improvements, Bypass, and Final Connections	1-09	1 LS	_____	\$ _____	\$ _____
31A Brownsville Highway Connection	1-09	1 LS	_____	\$ _____	\$ _____
32A CIPP Bypass <u>for Feasibility Investigation</u>	1-09	1 LS	_____	\$ _____	\$ _____
33A Connect to Existing Pump Station 64	1-09	1 LS	_____	\$ _____	\$ _____
34A CIPP Existing 20-inch Ductile Iron Pipe Connection to New Saddle Manhole	Div. 33	1 LS	_____	\$ _____	\$ _____
35A CIPP Existing 20-inch Ductile Iron Pipe Connection to New 26- inch HDPE DR 11 Pipe	Div. 33	1 LS	_____	\$ _____	\$ _____
36A Asphalt Removal	Div. 32	18,900 SY	_____	\$ _____	\$ _____

Bid Items	Bid Item Name	Measurement/Payment Description
17A	20-inch Diameter CIPP Sewer Force Main Feasibility Investigation	The unit price for linear foot lump sum for 20-inch Diameter CIPP Sewer Force Main Feasibility Investigation shall include furnishing, installing, and curing 20-inch CIPP, including all work, materials, and equipment needed for excavation for up to 6 feet of cover, all exploratory investigations, preliminary CCTV inspection, draining of the pipe and other requirements to determine feasibility of CIPP of the 20-inch Diameter pipe, cleaning and surface preparation, and dewatering will be on a per linear foot basis for the 20-inch ductile iron pipe shown and to be without failure upon testing or subsequent failure within one year warranty period. Measurement will be based on total length of piping constructed and cured as indicated on the plans.
18A, 14B	2-inch Combination Air Vacuum Valve Assembly	The unit price per each shall include all work to furnish and install the combination air/vacuum valves and vaults, including, but not limited to, required excavation and backfilling, connection to force main, piping, fittings, valves, valve boxes, supports, hoses, vault interior and exterior coatings, odorous air canisters, detectable marking tape, and tracer wire.
19A, 15B	3-inch Combination Air Vacuum Valve Assembly	The unit price per each shall include all work to furnish and install the combination air/vacuum valves and vaults, including, but not limited to, required excavation and backfilling, connection to force main, piping, fittings, valves, valve boxes, supports, hoses, vault interior and exterior coatings, odorous air canisters, detectable marking tape, and tracer wire.
20A, 16B	4-inch Blowoff Valve Assembly	The unit price per each shall include all work to furnish and install the blowoff assembly, including, but not limited to, required excavation and backfilling, connection to force main, piping, fittings, valves, valve boxes, precast concrete structures, manhole lid and frame, detectable marking tape, and tracer wire.
21A, 17B	IPS Sewer Lateral from ROW to Main	The unit price per each shall include all work, materials, tools, labor, and equipment necessary to install a new side sewer force main from the new force main to the ROW line. Each unit price includes, but is not limited to, excavation, bedding and backfill, pipe, fittings, valves, valve boxes and appurtenances, detectable marking tape, and tracer wire.
22A	26-inch Diameter HDPE DR 11 11.25 Degree Bend	The unit price per each shall include all work, materials, tool, labor, and equipment necessary to furnish and install bend including, but not limited to, required thrust blocks as shown on the Plans and specified in the Contract Documents.

Bid Items	Bid Item Name	Measurement/Payment Description
31A,24B	Brownsville Hwy Connection	The lump sum shall include full compensation for work, materials, tools, labor and equipment necessary to complete the connections from the new Tagholm Road isolation valve and existing Pump Station 67 force main to the 30" HDPE force main on Brownsville Hwy as shown on the Plans and specified in the Contract Documents. The work includes, but is not limited to, haul, excavation, disposal of excess or waste material, bedding, backfill, compaction, installation of all 24-inch, 26-inch, and 30-inch ductile iron and HDPE piping, adaptors, reducers, valves, fittings and appurtenances, potholing, and removal of existing ductile iron force mains.
32A	CIPP Bypass <u>for Feasibility Investigation</u>	The lump sum shall include full compensation for work, materials, tools, labor and equipment necessary to complete bypassing during CIPP operations <u>feasibility investigation</u> . The work includes, but is not limited to, installation, operation, maintenance and removal of temporary bypass piping, fittings, valves, traffic control measures, verification of existing conditions, clearing, blocking, pressure testing, blowoffs and other items as required for a complete bypass system.
25B	Connect to Existing 30-inch Diameter HDPE DR 11 Force Main	The lump sum shall include full compensation for work, labor, materials, and equipment necessary to connect to the existing 30-inch Diameter HDPE DR 11 force main as shown on the Plans and specified in the Contract Documents. The work includes, but is not limited to, excavation, disposal of excess or waste material, bedding, backfill, compaction, verification of existing conditions, installation of temporary blowoffs, removal of existing force main piping and fittings, connection of new 30-inch HDPE force main to existing force main, installation of new blind flange on existing 30-inch HDPE force main, capping of existing C900 force main, and temporary bypass if required.
33A	Connect to Existing Pump Station 64	The lump sum shall include full compensation for work, labor, materials, and equipment necessary to connect to the existing Pump Station 64 force main isolation valve as shown on the Plans and specified in the Contract Documents. The work includes, but is not limited to, haul, excavation, disposal of excess or waste material, bedding, backfill, compaction, verification of existing conditions, installation of 3-inch HDPE pipe, fittings and appurtenances, and testing.

Bid Items	Bid Item Name	Measurement/Payment Description
34A	CIPP Existing 20-inch Diameter Ductile Iron Pipe Connection to New Saddle Manhole	Measurement and payment for <u>connection to the existing 20-inch Diameter Ductile Iron Pipe</u> cured-in-place pipe (CIPP) end connections shall be made on a per each basis. The unit price shall be full payment for furnishing all labor, materials, and equipment necessary to connect to the existing 20-inch ductile iron force main to the new Saddle Manhole as shown in the Plans and specified in the Contract Documents. The work includes, but is not limited to, including haul, excavation, disposal of excess or waste material, bedding, backfill, compaction, installation of sewer force main ductile iron pipe, fittings, and appurtenances. Work will also include verification of existing conditions, temporary blocking installation and removal, pressure testing, capping, temporary blowoffs and other items required for testing.
35A	CIPP Existing 20-inch Diameter Ductile Iron Pipe Connection to New 26-inch Diameter HDPE DR 11 Pipe	Measurement and payment for <u>connection to the existing 20-inch Diameter Ductile Iron Pipe</u> cured-in-place pipe (CIPP) end connections shall be made on a per each basis. The unit price shall be full payment for furnishing all labor, materials, and equipment necessary to connect to the existing 20-inch ductile iron force main to the new 26-inch HDPE force main as shown in the Plans and specified in the Contract Documents. The work includes, but is not limited to, including haul, excavation, disposal of excess or waste material, bedding, backfill, compaction, installation of sewer force main ductile iron pipe, fittings, and appurtenances. Work will also include verification of existing conditions, temporary blocking installation and removal, pressure testing, capping, temporary blowoffs and other items required for testing.
36A, 26B	Asphalt Removal	The unit price per square yard shall include work, materials, tools, labor, and equipment necessary for removal and disposal of as shown on the Plans and specified in the Contract Documents.
37A, 27B	Removal of Unsuitable Foundation Material (Allowance)*	The unit price per cubic yard shall include work, materials, tools, labor and equipment necessary for removal and disposal of unsuitable foundation material as defined by the Engineer. For the purpose of establishing a common basis for evaluating bids, a provisional quantity has been shown on the bid form and does not necessarily represent the quantity, if any, that may be necessary for project work.

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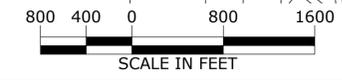
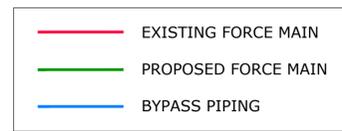


SUGGESTED SEQUENCING PLAN:

PHASE 2A:

- 1. INSTALL PS 64 & CIPP FEASIBILITY INVESTIGATION BYPASS BETWEEN STA 26+00 AND STA 51+12. CONNECT TO NEW SSFM AT STA 51+12, DO NOT CONNECT BYPASS PIPING TO PS 64 AND EXISTING FORCE MAIN. SEE SPECIFICATION SECTION 01 59 00.
- 2. COMMENCE TEMPORARY SHUTDOWN OF PS 17 AND 67.
 - A. CONNECT PS 64 & CIPP FEASIBILITY INVESTIGATION BYPASS PIPING TO PS 64 AND EXISTING FORCE MAIN AT STA 26+00.
 - B. CONNECT PS 67 EXISTING SSFM TO NEW FORCE MAIN AT STA 219+33, 24'LT.
 - C. RESUME NORMAL OPERATION OF PS 17, 64 & 67.
- 3. TRANSFER ARCO, SCANDIA MOBILE HOME PARK, PEARSON ELEMENTARY, AND TAGHOLM IPS'S TO NEW FORCE MAIN.
- 4. PERFORM CIPP FEASIBILITY INVESTIGATION OF SSFM FROM STA 43+56 TO STA 50+84 AND CONNECT NEW SSFM TO EXIST 20" SSFM AT STA 43+56.

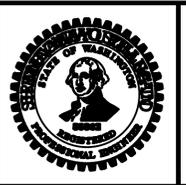
*STEPS 2A AND 2B SHALL OCCUR CONSECUTIVELY, AS SEPARATE OPERATIONS.



NO.	DATE	BY	REVISION
5	04/08/2022	TMH	ADDENDUM #5

NOTICE
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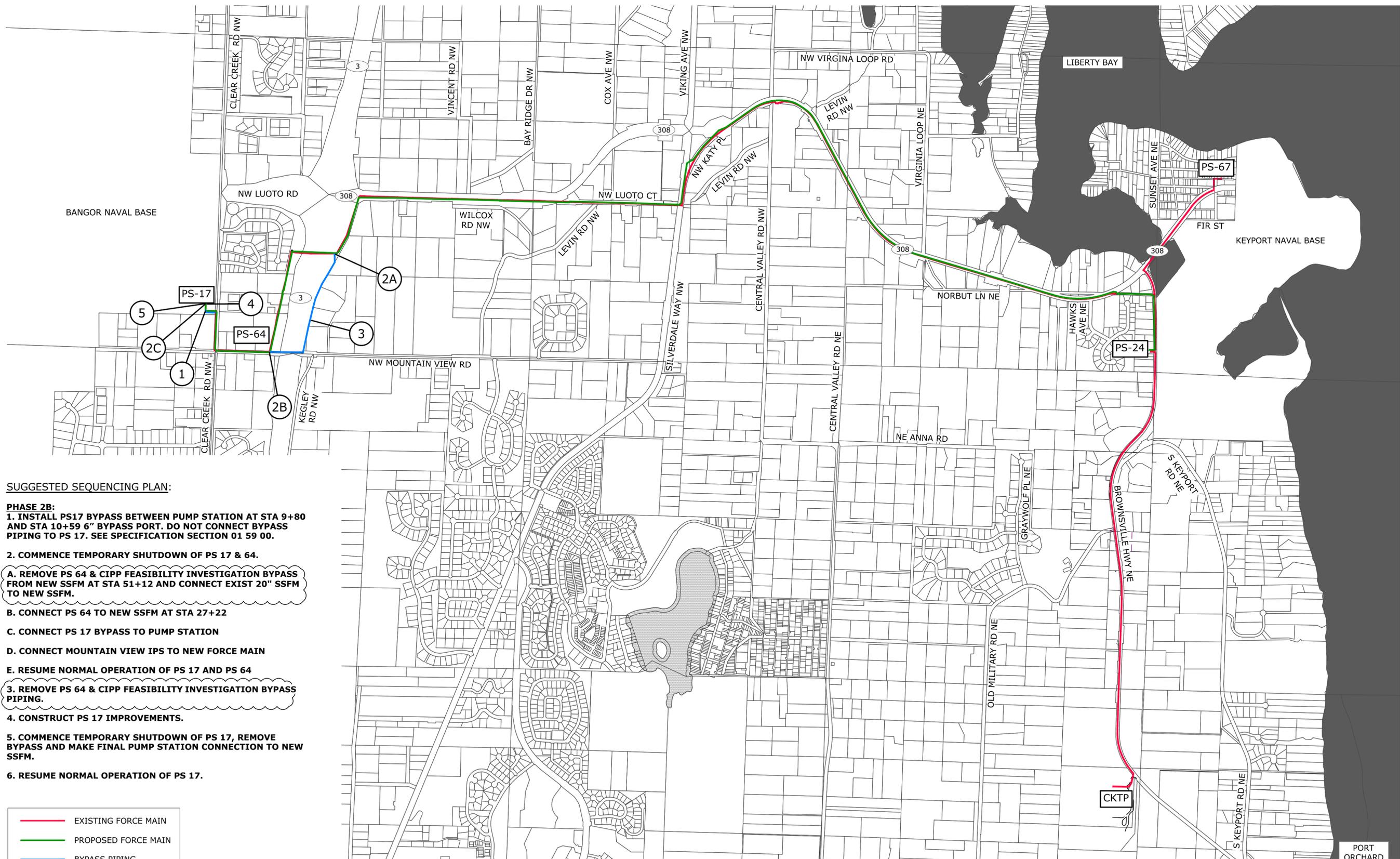


**BANGOR-KEYPORT
 FORCE MAIN
 REPLACEMENT**

**APPENDIX E
 SUGGESTED SEQUENCING
 PLAN - PHASE 2A -
 REFERENCE ONLY**

PROJECT NO.: 20-2815 SCALE: AS SHOWN DATE: FEBRUARY 2022

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SUGGESTED SEQUENCING PLAN:

PHASE 2B:

1. INSTALL PS17 BYPASS BETWEEN PUMP STATION AT STA 9+80 AND STA 10+59 6" BYPASS PORT. DO NOT CONNECT BYPASS PIPING TO PS 17. SEE SPECIFICATION SECTION 01 59 00.

2. COMMENCE TEMPORARY SHUTDOWN OF PS 17 & 64.

A. REMOVE PS 64 & CIPP FEASIBILITY INVESTIGATION BYPASS FROM NEW SSFM AT STA 51+12 AND CONNECT EXIST 20" SSFM TO NEW SSFM.

B. CONNECT PS 64 TO NEW SSFM AT STA 27+22

C. CONNECT PS 17 BYPASS TO PUMP STATION

D. CONNECT MOUNTAIN VIEW IPS TO NEW FORCE MAIN

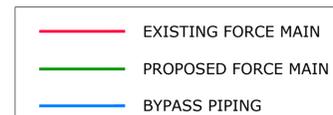
E. RESUME NORMAL OPERATION OF PS 17 AND PS 64

3. REMOVE PS 64 & CIPP FEASIBILITY INVESTIGATION BYPASS PIPING.

4. CONSTRUCT PS 17 IMPROVEMENTS.

5. COMMENCE TEMPORARY SHUTDOWN OF PS 17, REMOVE BYPASS AND MAKE FINAL PUMP STATION CONNECTION TO NEW SSFM.

6. RESUME NORMAL OPERATION OF PS 17.



NOTICE



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murraysmith



**BANGOR-KEYPORT
FORCE MAIN
REPLACEMENT**

**APPENDIX E
SUGGESTED SEQUENCING
PLAN - PHASE 2B -
REFERENCE ONLY**

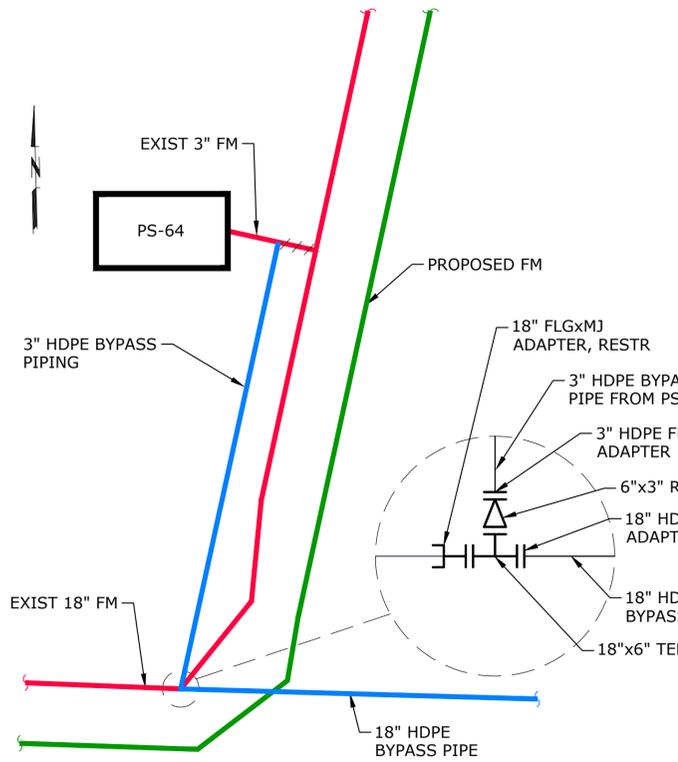
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3 OF 4

NO.	DATE	BY	REVISION
5	04/08/2022	TMH	ADDENDUM #5

PROJECT NO.: 20-2815 SCALE: AS SHOWN DATE: FEBRUARY 2022

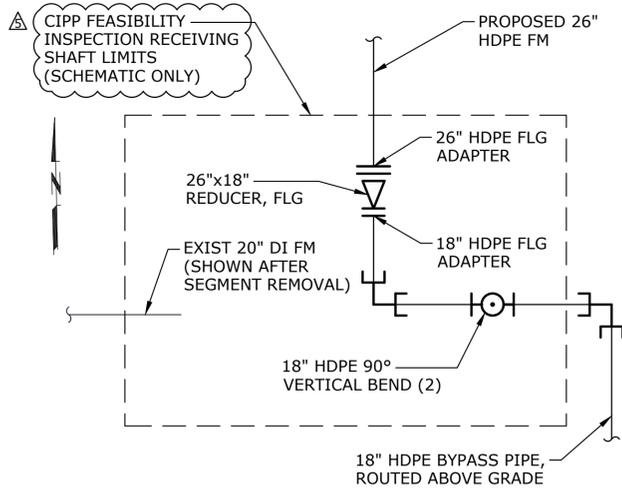
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PS 64 TEMP BYPASS CONNECTION

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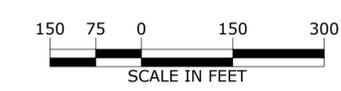
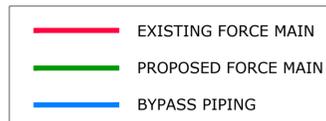
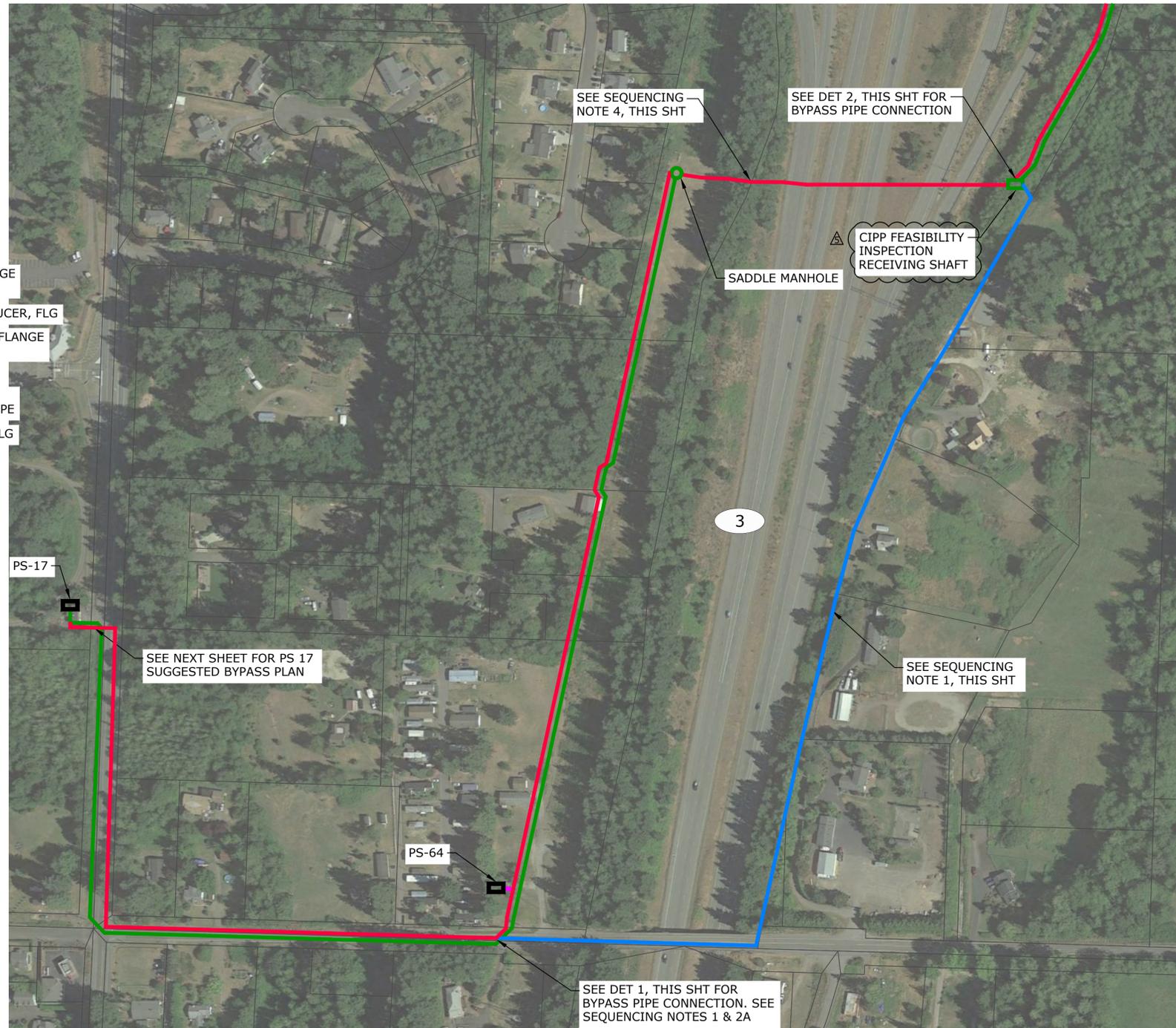
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CIPP RECEIVING SHAFT TEMP BYPASS CONNECTION

SCALE: NTS

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SUGGESTED SEQUENCING (SEE APPENDIX A FOR FULL PROJECT CONSTRUCTION SEQUENCE):

- PHASE 2A:**
1. INSTALL PS 64 & CIPP FEASIBILITY INVESTIGATION BYPASS BETWEEN STA 26+00 AND STA 51+12. CONNECT TO NEW SSFM AT STA 51+12, DO NOT CONNECT BYPASS PIPING TO PS 64 AND EXISTING FORCE MAIN. SEE SPECIFICATION SECTION 01 59 00.
 2. COMMENCE TEMPORARY SHUTDOWN OF PS 17 AND 67.
 - A. CONNECT PS 64 & CIPP FEASIBILITY INVESTIGATION BYPASS PIPING TO PS 64 AND EXISTING FORCE MAIN AT STA 26+00.
 - B. CONNECT PS 67 EXISTING SSFM TO NEW FORCE MAIN AT STA 219+33, 24'LT.
 - C. RESUME NORMAL OPERATION OF PS 17, 64 & 67.
 3. TRANSFER ARCO, SCANDIA MOBILE HOME PARK, PEARSON ELEMENTARY, AND TAGHOLM IPS'S TO NEW FORCE MAIN.
 4. PERFORM CIPP FEASIBILITY INVESTIGATION OF SSFM FROM STA 43+56 TO STA 50+84 AND CONNECT NEW SSFM TO EXIST 20" SSFM AT STA 43+56.
- *STEPS 2A AND 2B SHALL OCCUR CONSECUTIVELY, AS SEPARATE OPERATIONS.

GENERAL NOTES:

1. SUGGESTED BYPASS TO UTILIZE EXIST PS 17 & 64 PUMPS TO CONVEY FLOWS DURING BYPASS.
2. TEMPORARY SHUT DOWNS OF PS 17 AND PS 64 ARE REQUIRED FOR DRAINAGE OF EXIST FORCE MAIN AND CONNECTIONS TO TEMPORARY BYPASS PIPING AND PROPOSED FORCE MAIN; TEMPORARY SHUT DOWNS SHALL BE PERFORMED DURING LOW FLOW PERIODS AND UTILIZE TANKER TRUCKS TO TRANSPORT FLOWS.

NO.	DATE	BY	REVISION
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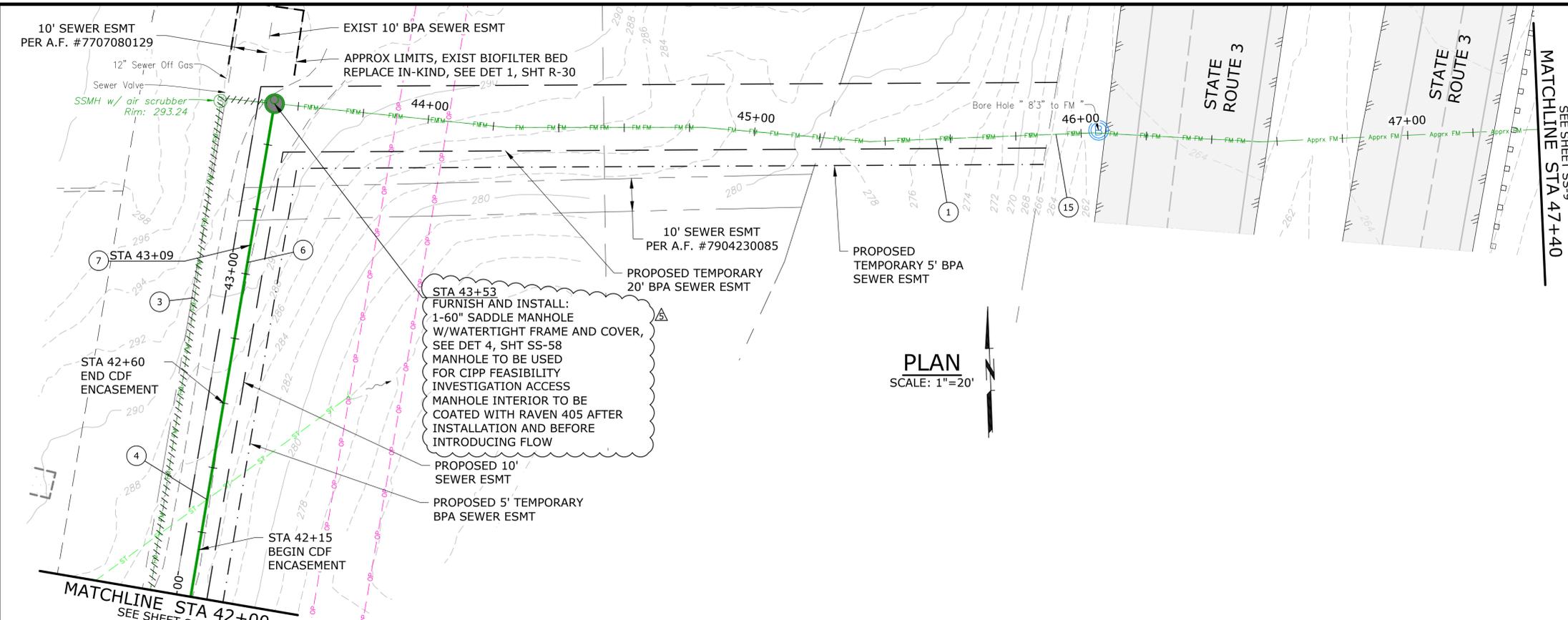
BANGOR-KEYPORT FORCE MAIN REPLACEMENT

**APPENDIX F
CIPP SUGGESTED BYPASS PLAN
- REFERENCE ONLY**

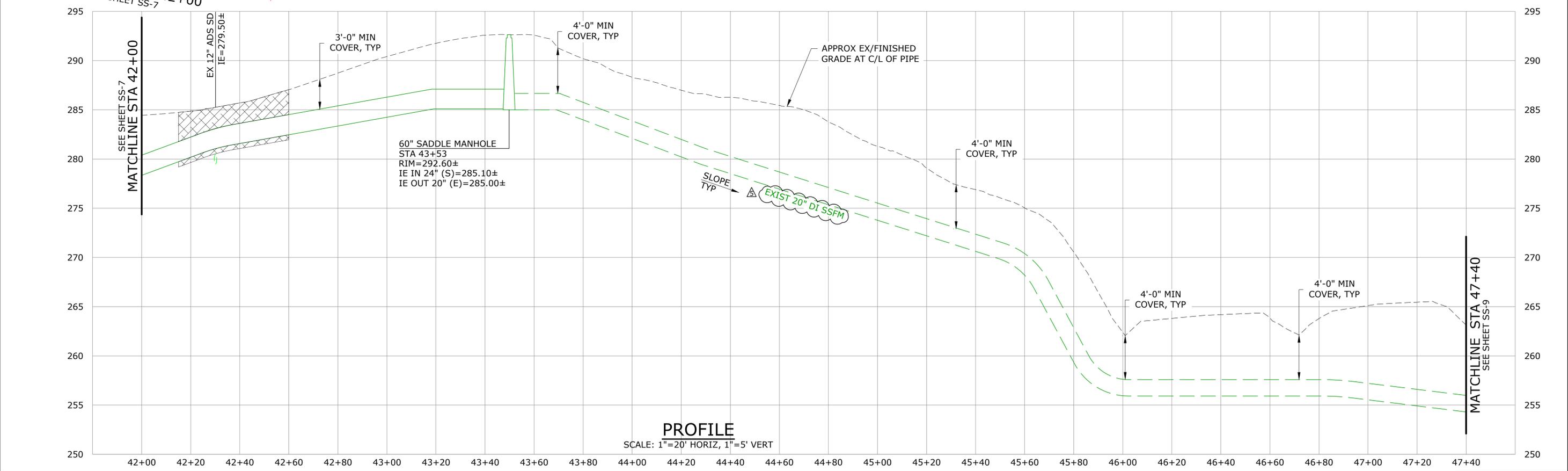
PROJECT NO.: 20-2815 SCALE: AS SHOWN DATE: FEBRUARY 2022

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- NOTES:**
1. THE CONTRACTOR SHALL AVOID EXISTING UTILITIES (WATER, NATURAL GAS, ELECTRICITY, CABLE/COMMUNICATIONS, STORM, IRRIGATION, ETC.) AND ASSOCIATED STRUCTURES. IF THE WORK REQUIRES THAT EXISTING UTILITIES BE PERMANENTLY OR TEMPORARILY RELOCATED, THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY.
 2. BEND PIPE TO ACHIEVE DESIRED ALIGNMENT AND NOT TO EXCEED MINIMUM ALLOWABLE BENDING RADIUS, PER MANUFACTURER RECOMMENDATIONS.
 3. TEMPORARY BYPASS SSFM FOR CIPP FEASIBILITY INVESTIGATION PER SPEC 01 59 00.
- CONSTRUCTION NOTES:**
- 1 CONSTRUCTION CL EQUALS PROPOSED PIPE CL, SEE SURVEY CONTROL PLAN, SHT G-5
 - 3 ABAND EXIST SS FM & APPURTENANCES IN ACCORDANCE W/ SPECS
 - 4 PROTECT EXISTING STORM DRAIN AND MAINTAIN MINIMUM VERTICAL SEPARATION OF 18" FROM STORM DRAIN TO SSFM MEASURED EDGE-TO-EDGE, SEE DET 1, SHT SS-62 FOR PIPE SUPPORT
 - 6 SS FM TRENCH SECTION PER DET 3, SHT SS-58
 - 7 FURNISH & INSTALL TRACER WIRE AND HANDHOLE PER DET 1, SHT SS-58
 - 15 PERFORM CIPP FEASIBILITY INVESTIGATION OF EXIST 20" DI FM, SEE NOTE 3, THIS SHT



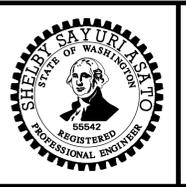
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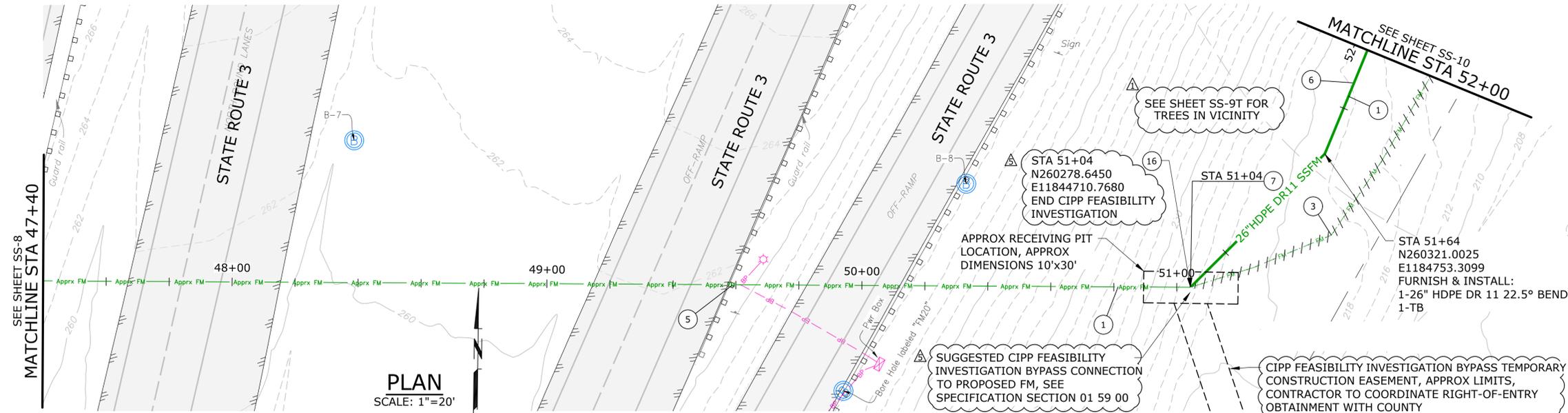
**BANGOR-KEYPORT
FORCE MAIN
REPLACEMENT**

**FORCE MAIN REPLACEMENT
PLAN & PROFILE STA 42+00
TO STA 47+40
SCHEDULE A**

PROJECT NO.: 20-2815 SCALE: AS SHOWN DATE: FEBRUARY 2022

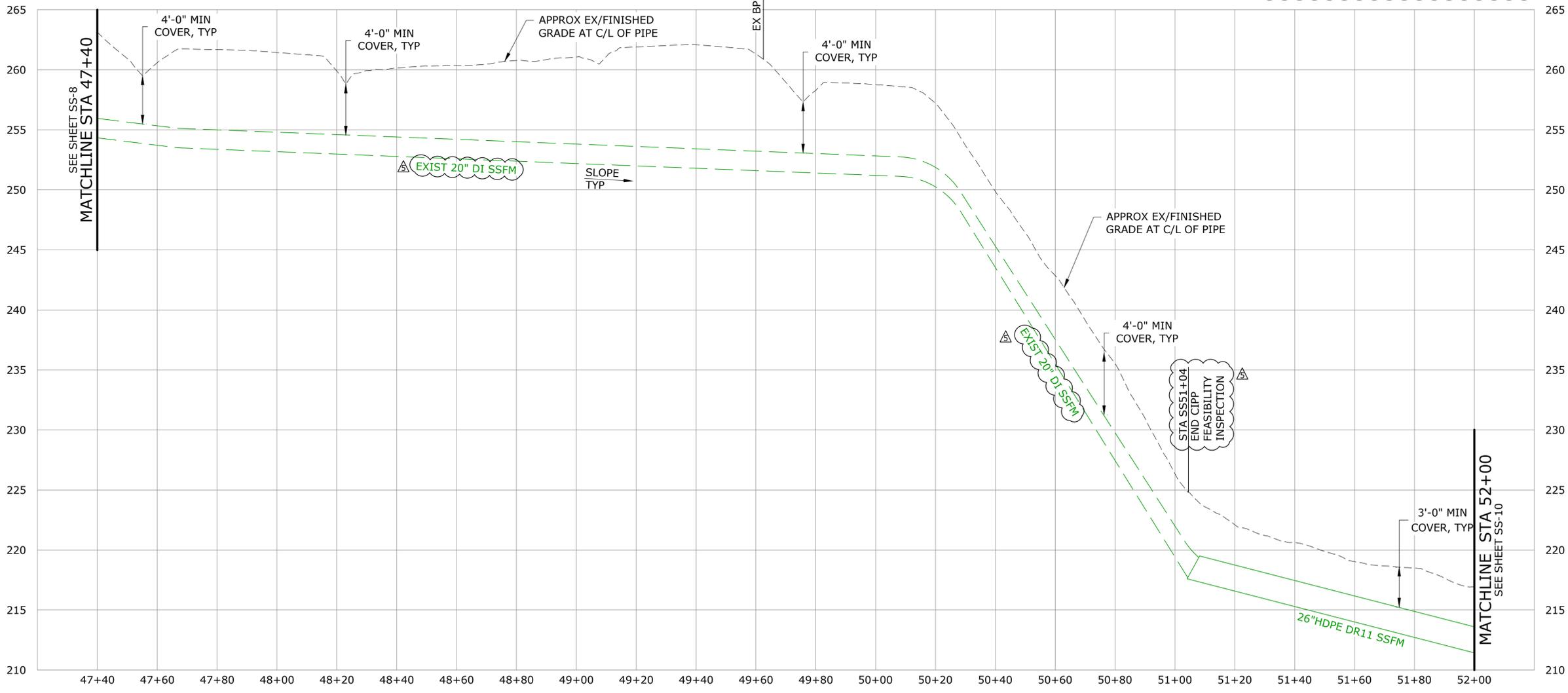
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- NOTES:**
1. THE CONTRACTOR SHALL AVOID EXISTING UTILITIES (WATER, NATURAL GAS, ELECTRICITY, CABLE/COMMUNICATIONS, STORM, IRRIGATION, ETC.) AND ASSOCIATED STRUCTURES. IF THE WORK REQUIRES THAT EXISTING UTILITIES BE PERMANENTLY OR TEMPORARILY RELOCATED, THE CONTRACTOR SHALL COORDINATE WITH THE HOMEOWNER AND THE UTILITY.
 2. BEND PIPE TO ACHIEVE DESIRED ALIGNMENT AND NOT TO EXCEED MINIMUM ALLOWABLE BENDING RADIUS, PER MANUFACTURER RECOMMENDATIONS.

- CONSTRUCTION NOTES:**
- 1 CONSTRUCTION CL EQUALS PROPOSED PIPE CL, SEE SURVEY CONTROL PLAN, SHT G-5
 - 3 ABAND EXIST SS FM & APPURTENANCES IN ACCORDANCE W/ SPECS
 - 5 PROTECT EXIST UNDERGROUND POWER AND TELECOMMUNICATION, DURING CONSTRUCTION
 - 6 SS FM TRENCH SECTION PER DET 3, SHT SS-58
 - 7 FURNISH & INSTALL TRACER WIRE AND HANDHOLE PER DET 1, SHT SS-58
 - 16 TRANSITION FROM EXIST 20" DI SSFM TO 26" HDPE DR 11 PIPE, SEE DET 4, SHT SS-60



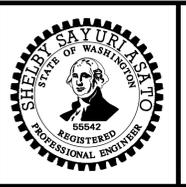
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△	03/07/2022	TMH	ADDENDUM #1

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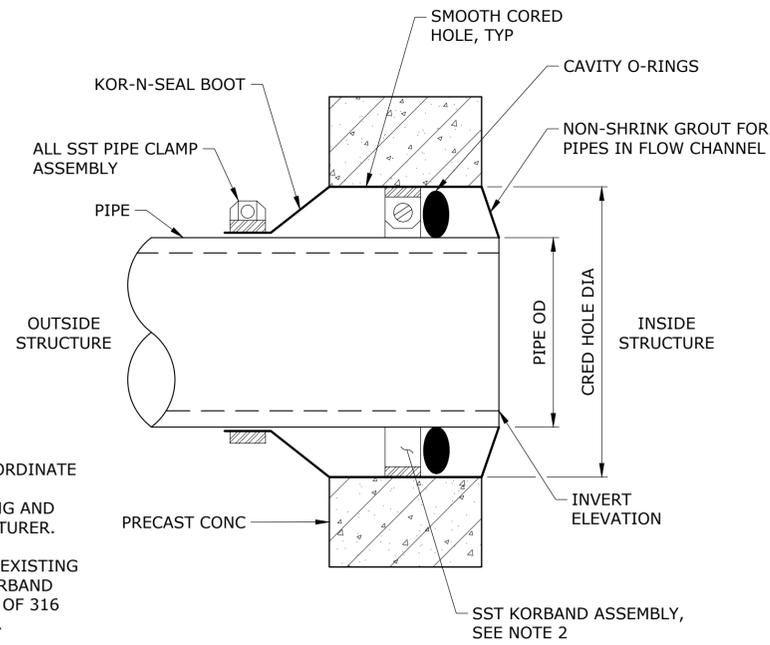
**BANGOR-KEYPORT
FORCE MAIN
REPLACEMENT**

**FORCE MAIN REPLACEMENT
PLAN & PROFILE STA 47+40
TO STA 52+00
SCHEDULE A**

PROJECT NO.: 20-2815 SCALE: AS SHOWN DATE: FEBRUARY 2022

SHEET
SS-9
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H:\LEVT_Projects\20\2815 - Kitsap County Bangor_Keyport FM Replacement\CAD\Sheets\20-2815-WA-AIR2.dwg SS-60 4/8/2022 5:06 PM NICK.MCFADDIN 23.0s (LMS Tech)



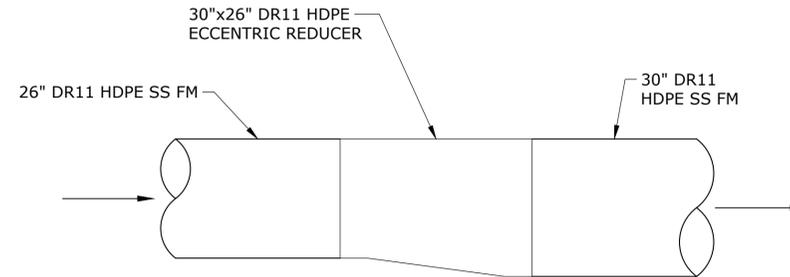
NOTES:

1. CONTRACTOR SHALL COORDINATE CORED HOLE DIAMETER REQUIREMENTS WITH PIPING AND MANHOLE/Vault MANUFACTURER.
2. FOR PENETRATION INTO EXISTING MANHOLES OR VAULTS, KORBAND ASSEMBLY SHALL CONSIST OF 316 STAINLESS STEEL WEDGES.

FLEXIBLE BOOT CONNECTION

SCALE: NTS

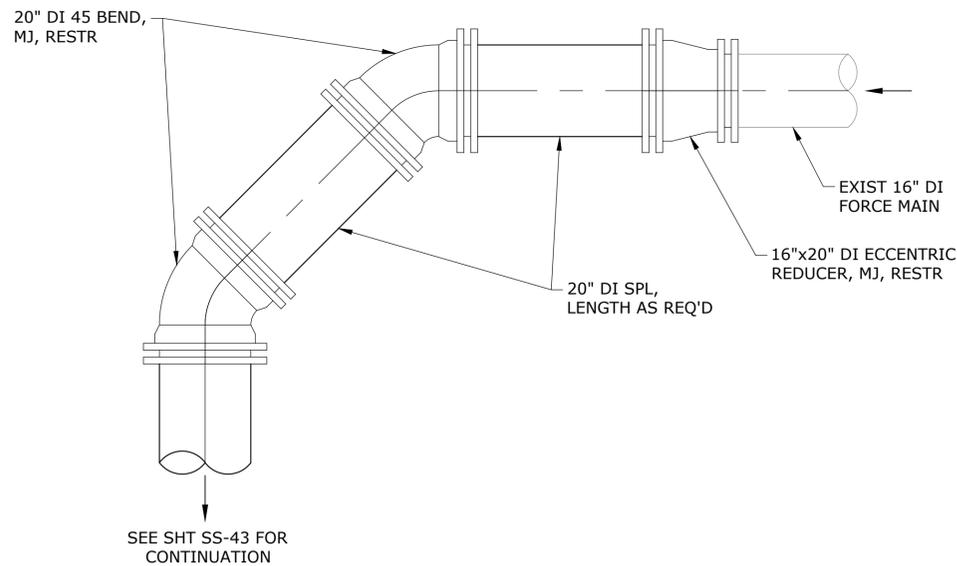
1
PS17-2/PS24-2



26" TO 30" HDPE TRANSITION

SCALE: NTS

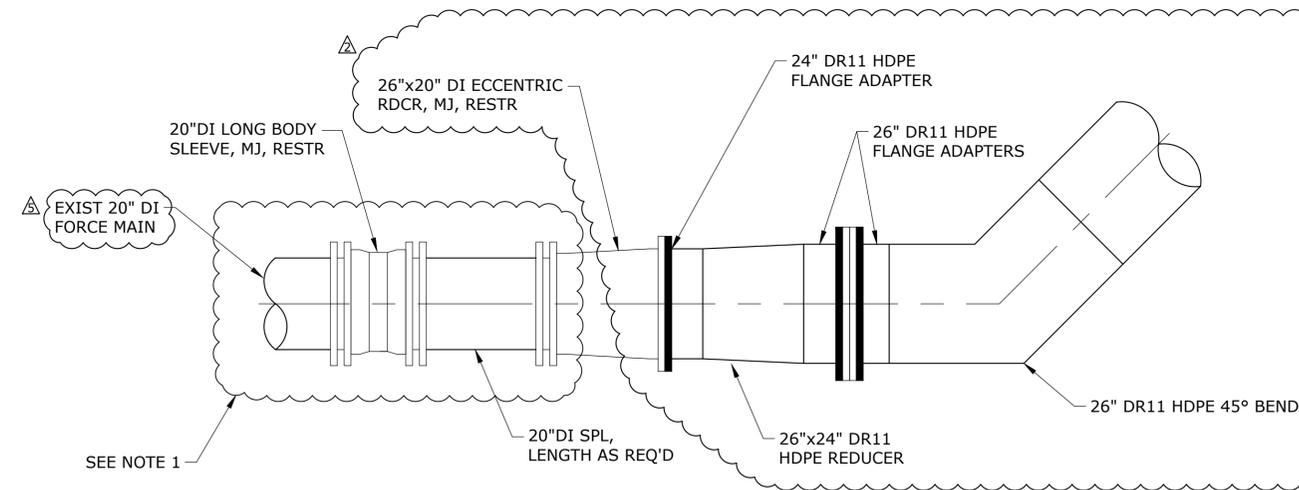
2
SS-43



CONNECTION TO EXIST 16" FORCE MAIN

SCALE: NTS

3
SS-43



NOTES:

1. SEE DETAIL 3, ON SHEET SS-61 FOR CIPP END CONNECTION.

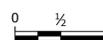
TRANSITION FROM 20" DI TO 26" HDPE

SCALE: NTS

4
SS-9

NO.	DATE	BY	REVISION
△	04/08/2022	TMH	ADDENDUM #5
△	03/14/2022	TMH	ADDENDUM #2

NOTICE



IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

TMH
DESIGNED
BAW
DRAWN
EKS
CHECKED



murraysmith



**BANGOR-KEYPORT
FORCE MAIN
REPLACEMENT**

**SCHEDULE A & SCHEDULE B
MISCELLANEOUS SEWER
DETAILS - 4**

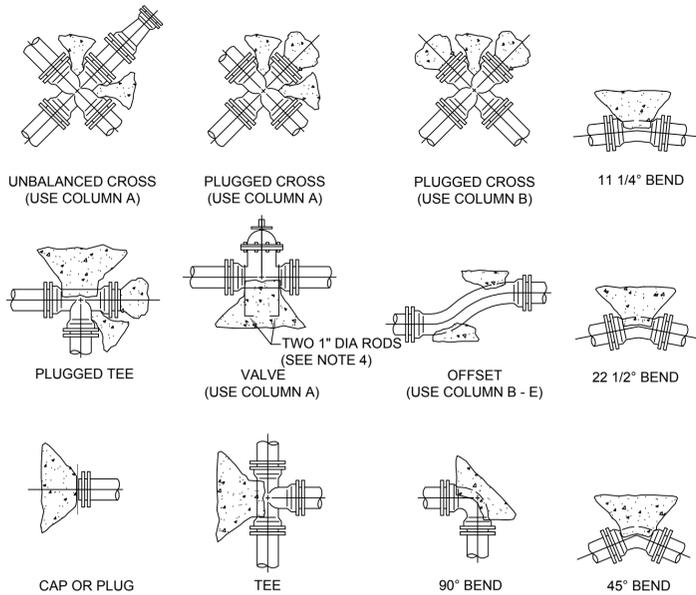
SHEET

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PROJECT NO.: 20-2815 SCALE: AS SHOWN DATE: FEBRUARY 2022

\\ad.msa-ep.com\everett\vt_projects\20\2815 - Kitsap County Bangor_keyport Fm Replacement\CAD\Sheets\20-2815-WA-AIR2.dwg SS-61 2/3/2022 1:45 PM JUSTIN DEUEL 23.0s (LMS Tech)



THRUST AT FITTINGS IN POUNDS								
SIZE	TEST PRESSURE PSI	A	B	C	D	E	F	G
		TEE AND DEAD ENDS	90° BEND	45° BEND	22.5° BEND	11.25° BEND	DIA RESTRAINT ROD (IN)	ALLOWABLE THRUST PER RESTRAINT ROD (LBS)
4"	250	3,140	4,440	2,405	1,225	615	5/8"	3,450
6"	250	7,070	9,995	5,410	2,760	1,385	3/4"	5,150
8"	250	12,565	17,770	9,620	4,905	2,465	3/4"	5,150
10"	250	19,635	27,770	15,030	7,660	3,850	7/8"	7,150
12"	250	28,275	39,985	21,640	11,030	5,545	7/8"	7,150
14"	250	38,485	54,425	29,455	15,015	7,545	1"	9,350
16"	250	50,265	71,085	38,470	19,615	9,855	1"	9,350
18"	250	63,620	89,980	48,700	24,820	12,480	1 1/8"	11,800
24"	250	113,100	159,960	86,580	44,120	22,180	1 1/4"	15,000
30"	250	176,720	249,930	135,270	68,940	34,650	1 1/4"	15,000

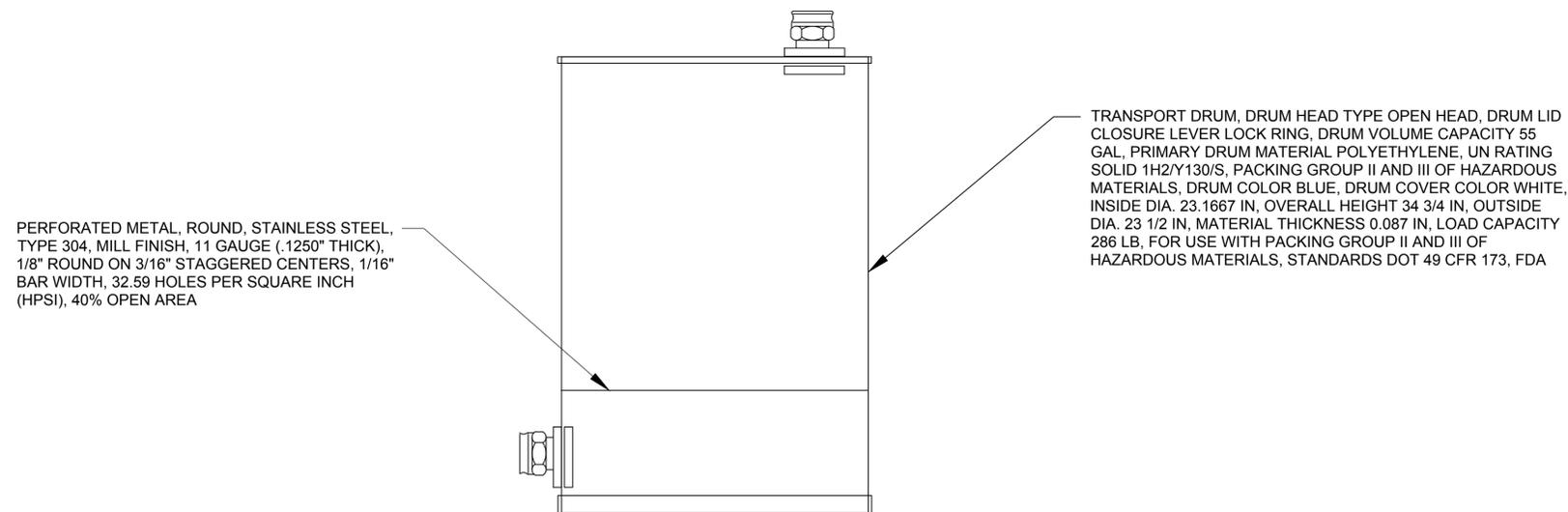
ELEVATION SOIL TYPE	SAFE BEARING LOAD PSF
MUCK, PEAT, ETS.	0
SOFT CLAY	1,000
SAND	2,000
SAND AND GRAVEL	3,000
SAND AND GRAVEL CEMENTED WITH CLAY	4,000
HARD SHALE	10,000

- NOTES:**
- CONTRACTOR TO PROVIDE BLOCKING ADEQUATE TO WITHSTAND FULL TEST PRESSURE.
 - DIVIDE THRUST BY SAFE BEARING LOAD TO DETERMINE REQUIRED AREA (IN SQUARE FEET) OF CONCRETE TO DISTRIBUTE LOAD.
 - AREAS TO BE ADJUSTED FOR OTHER PRESSURE CONDITIONS.
 - RESTRAINT RODS, NUTS, WASHERS AND APPURTENANCES SHALL BE CONSTRUCTED OF 304 SST. RODS SHALL BE ALL-THREAD DESIGN.
 - JOINTS USING RODS FOR RESTRAINT SHALL NOT EXCEED ALLOWABLE THRUST PER RESTRAINT ROD AS SHOWN IN COLUMN.
 - IN NO CASE SHALL LESS THAN 2 RODS BE USED.

CONCRETE THRUST BLOCK DETAIL

SCALE: NTS

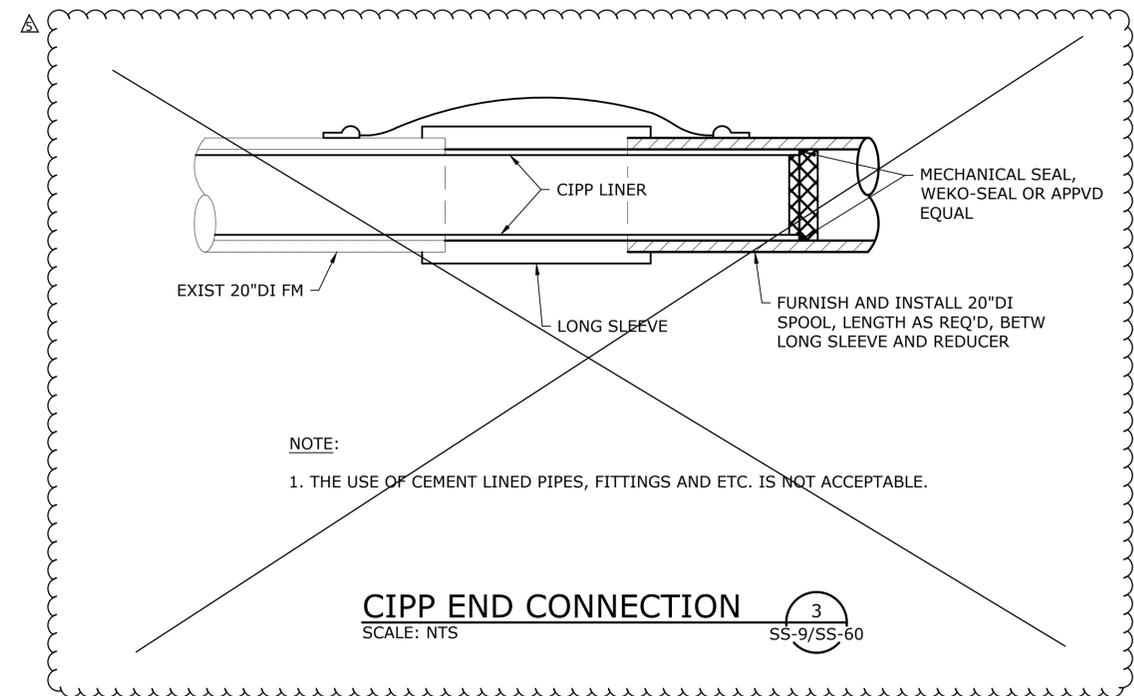
1
SS-43



OA CANISTER SECTION

SCALE: NTS

2
SS-59



CIPP END CONNECTION

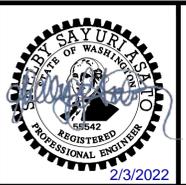
SCALE: NTS

3
SS-9/SS-60

NO.	DATE	BY	REVISION
5	04/08/2022	TMH	ADDENDUM #5

NOTICE
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

TMH DESIGNED
BAW DRAWN
EKS CHECKED



BANGOR-KEYPORT FORCE MAIN REPLACEMENT

MISCELLANEOUS SEWER DETAILS - 5

PROJECT NO.: 20-2815 SCALE: AS SHOWN DATE: FEBRUARY 2022

SHEET
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