



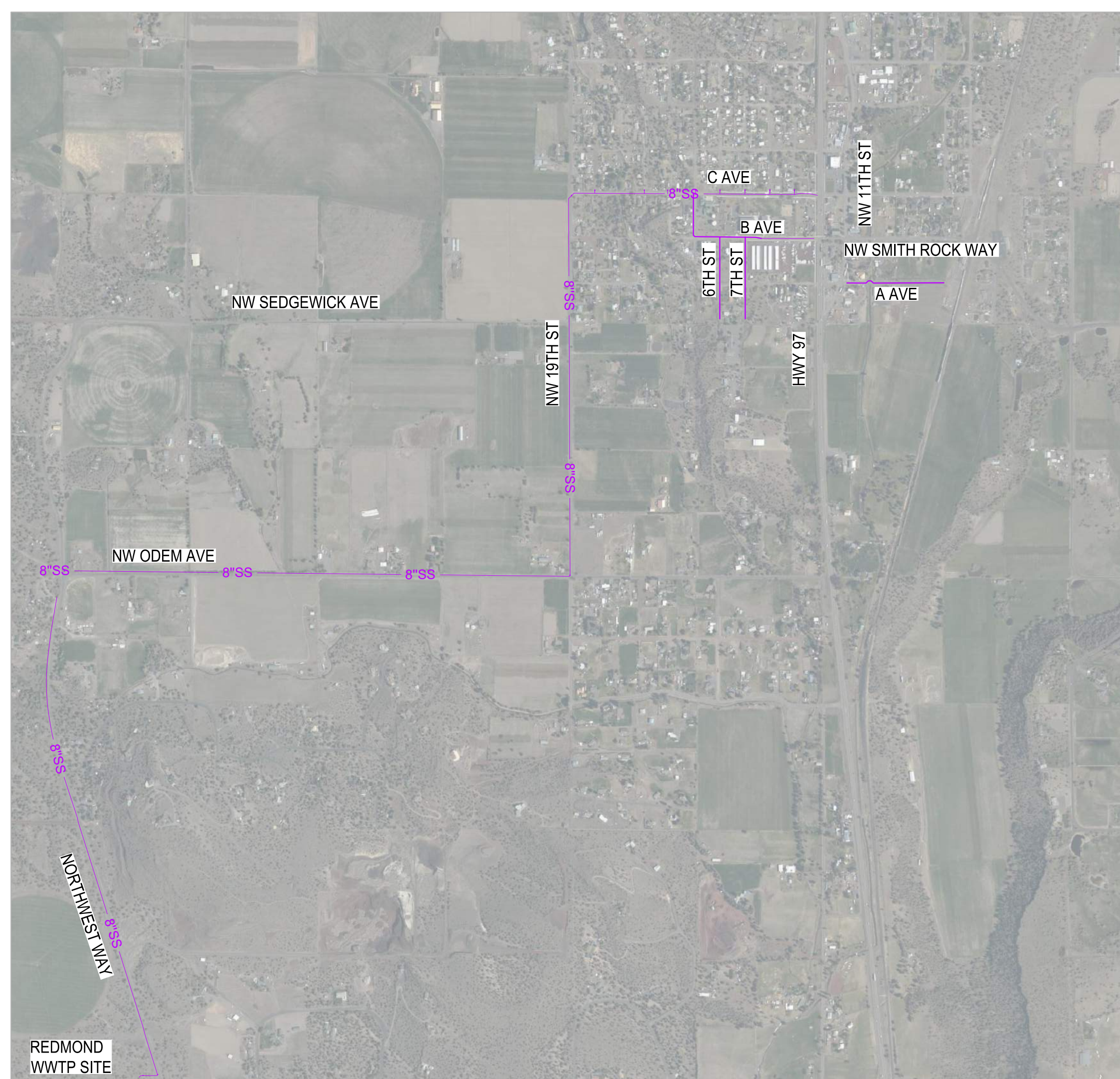
# TERREBONNE STEP COLLECTION SYSTEM EXPANSION SEPTEMBER, 2023 TERREBONNE, DESCHUTES COUNTY, OREGON

OWNER:  
DESCHUTES COUNTY  
117 NW LAFAYETTE, AVE  
BEND, OR, 97703  
(541) 388-6575

REVISIONS	DATE	BY

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PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-008 Terrebonne\WWS\Study\PH2\99Sves\CADD\DWG\SHEETS PLOTTED BY: weybjjes DATE: Tuesday, September 5, 2023 8:33:18 AM LAYOUT: COVER SHEET



### LEGEND

EXISTING LINETYPES	PROPOSED LINETYPES	DESCRIPTION
8" SS	8" SS	8" SANITARY SEWER MAIN
6" SS	6" SS	6" SANITARY SEWER MAIN
SS	SS	SANITARY SEWER MAIN

EXISTING SYMBOLS	PROPOSED SYMBOLS	DESCRIPTION
○	●	SANITARY SEWER MANHOLE
○	●	SANITARY SEWER CLEANOUT
□	□	WATER METER
⊗	⊗	BUTTERFLY VALVE
⊗	⊗	GATE VALVE
▲	▲	REDUCER
●	●	FIRE HYDRANT
⊗	⊗	SEWER SERVICE CONNECTION

### ABBREVIATIONS

STA	STATION
EX	EXISTING
BFV	BUTTERFLY VALVE
COR	CITY OF REDMOND
DEQ	DEPARTMENT OF ENVIRONMENTAL QUALITY
EG	EXISTING GRADE
FG	FINISH GRADE
GV	GATE VALVE
LF	LINEAL FEET
MAX	MAXIMUM
MIN	MINIMUM
MJ	MECHANICAL JOINT
TSD	TERREBONNE SANITARY DISTRICT
TYP	TYPICAL

CIVIL ENGINEER:

**PARAMETRIX**

150 NW PACIFIC PARK LANE SUITE 110  
BEND, OREGON, 97701  
CONTACT: RYAN RUDNICK, PE  
(541) 508-7785

Parametrix ENGINEERING - PLANNING - ENVIRONMENTAL SCIENCES

DATE	DESIGNED	CHECKED
8/10/2023	RWR	RWR
JOB NO.	DRAWN	APPROVED
297-2509-008	JDW	RWR

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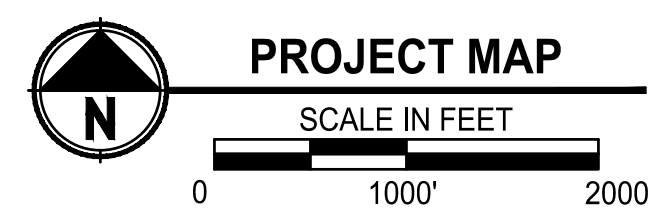
PRELIMINARY

PROJECT NAME  
**TERREBONE SEWER**  
TERREBONE, OR

**COVER SHEET**



Know what's below.  
Call before you dig.



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DRAWING NO.  
**C1.00**

LAYOUT: C1.01 GENERAL NOTES PATH: U:\Bend\Projects\Clients\2509-008 Terrebonne\WWS\Study\PH2\995\cs\CADD\DWG\SHEETS PLOTTED BY: wey@rjs DATE: Tuesday, September 5, 2023 8:33:27 AM

**GENERAL NOTES**


- ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE CURRENT DESCHUTES COUNTY, STATE OF OREGON, AND OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY (DEQ) REQUIREMENTS.
- CONTRACTOR SHALL NOTIFY WFR FIVE (5) DAYS IN ADVANCE OF STARTING CONSTRUCTION AND SHALL COORDINATE NECESSARY INSPECTIONS THROUGHOUT FINAL APPROVAL AND COORDINATE LOCATES.
- CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES AND IMPROVEMENTS.
- ANY DAMAGE TO EXISTING FACILITIES OR UTILITIES RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE.
- ALL DISTURBED AREAS MUST BE RESTORED TO PRIOR CONDITIONS AND GRADED TO MATCH SURROUNDINGS.
- LOCATION OF EXISTING UTILITIES BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR TO POTHOLE PRIOR TO STARTING CONSTRUCTION TO CONFIRM SIZE, LOCATION, AND ELEVATION.
- CONTRACTOR SHALL EXPOSE, VERIFY, CONNECT AND/OR MATCH EXISTING UTILITIES AND IMPROVEMENTS IN CONFORMANCE WITH THE INTENT OF THESE PLANS AND SPECIFICATIONS TO PROVIDE COMPLETE AND/OR OPERATIONAL SYSTEMS.
- DURING THE COURSE OF THE WORK, CONTRACTOR SHALL COORDINATE AND ACCOMMODATE OTHER CONTRACTORS OR OPERATIONS OF OWNER.
- FOLLOW CURRENT OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS FOR TRENCHES. USE NON-PLASTIC, INORGANIC, NON-FROZEN MATERIAL PASSING A 3" SCREEN FOR BACKFILL TO 95% STANDARD PROCTOR. PROVIDE COMPACTION TESTING FOR BACKFILL EVERY 500 FT OF TRENCH, AT DEPTH REQUIRED BY ENGINEER.
- USE 3/4"-0" CRUSHED ROCK SUPPLIED BY OWNER FOR BEDDING AND PIPE ZONE, WITH 3" SCREENED NATIVE BACKFILL COMPACTED TO 95% PROCTOR. ROCK SOURCE IS ON OWNER'S PROPERTY BUT IS NOT ON-SITE
- PRESSURE SEWER PIPE SHALL CONSIST OF THE FOLLOWING, UNLESS OTHERWISE NOTED IN PLANS:
  - MAINS 4" AND LARGER SHALL BE C900 PVC DR25 OR HDPE DR17
  - MAINS 3" AND SMALLER SHALL BE SCH80 PVC OR HDPE DR17
  - SEWER SERVICES SHALL BE SCH80 PVC OR C904 PEX PRESSURE PIPE (MUNICIPEX FORCE MAIN)
- AT WATER LINE CROSSINGS, SEWER MAINS AND LATERALS SHALL BE INSTALLED AT LEAST 18" (VERTICAL SEPARATION) BELOW THE WATER CROSSING. THE SEWER PIPE SHALL BE ONE FULL LENGTH SECTION CENTERED AT THE WATER CROSSING.
- FOLLOW DESCHUTES COUNTY, OESC, AND NEC FOR ELECTRICAL INFRASTRUCTURE.
- ALL VALVES AND VALVE CONNECTIONS SHALL BE FLANGED, RESTRAINED MJ, OR MJ WITH MEGALUG AND PIPE JOINT SLEEVES.
- UNLESS OTHERWISE SPECIFIED, CONTRACTOR TO FOLLOW OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2021 EDITION.
- THE OWNER WILL PROVIDE MARKED FIELD LOCATES WHERE POSSIBLE. CONTRACTOR TO NOTIFY OWNER 5 DAYS IN ADVANCE OF NEEDING LOCATES.
- THIRD PARTY TO PERFORM TESTING OF THE FOLLOWING INSTALLED COMPONENTS:
  - PRESSURE TEST FORCEMAINS AT 150 PSI PER DEQ REQUIREMENTS
- RESTRAIN ALL PROPOSED AND DISTURBED EXISTING PIPE PER JOINT RESTRAINT TABLE ON C1.01
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT "UNDERGROUND LOCATE SERVICE" AT 1-800-332-2344 AT LEAST 48 BUSINESS DAY HOURS PRIOR TO THE START OF CONSTRUCTION FOR THE LOCATION OF GAS, POWER, CABLE TV AND TELEPHONE UNDERGROUND FACILITIES. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR CONTACTING THE APPROPRIATE PUBLIC AGENCY FOR THE LOCATION OF UNDERGROUND FACILITIES.

RESTRAINED LENGTH TABLE FOR PVC PIPE FITTINGS				
FITTING	NOMINAL MAIN SIZE (IN)	BEND ANGLE (°)	BRANCH SIZE (IN)	MIN. RESTRAINED LENGTH (FT)
HORIZONTAL	4	11.25		2
HORIZONTAL	4	22.50		4
HORIZONTAL	4	45		7
HORIZONTAL	4	90		17
TEE	4		4	LR 2, LB 34
TEE	4		4	LR 4, LB 17
TEE	4		4	LR ≥ 6, LB 1
HORIZONTAL	6	11.25		3
HORIZONTAL	6	22.50		5
HORIZONTAL	6	45		10
HORIZONTAL	6	90		23
TEE	6		6	LR 3, LB 45
TEE	6		6	LR 6, LB 19
TEE	6		6	LR ≥ 9, LB 1
HORIZONTAL	8	11.25		3
HORIZONTAL	8	22.50		6
HORIZONTAL	8	45		13
HORIZONTAL	8	90		30
TEE	8		10	LR 4, LB 58
TEE	8		10	LR 8, LB 23
TEE	8		10	LR ≥ 11, LB 1
HORIZONTAL	10	11.25		4
HORIZONTAL	10	22.50		7
HORIZONTAL	10	45		15
HORIZONTAL	10	90		35
TEE	10		10	LR 5, LB 67
TEE	10		10	LR 10, LB 22
TEE	10		10	LR ≥ 13, LB 1

TO DEVELOP MINIMUM RESTRAINED LENGTH, THE EBAA IRON RESTRAINT LENGTH CALCULATOR WAS USED WITH THE FOLLOWING ASSUMPTIONS: SEWER LINES ARE TO BE BACKFILLED AND COMPACTED PER SPECIFICATIONS, PIPE MATERIAL USED IS PVC, SOIL TYPE IS GW (WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES), A FACTOR OF SAFETY OF 2, TRENCH TYPE 5, DEPTH OF BURY 2.5 FT, AND A TEST PRESSURE OF 150 PSI. IN SOME INSTANCES IT MAY BE REQUIRED TO DEVIATE FROM 2.5 FEET OF BURY. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THE WATER SYSTEM IS FULLY RESTRAINED IN AREA OF WORK. THIS MAY INCLUDE IDENTIFYING AND RESTRAINING JOINTS ON EXISTING PIPING AT WATERLINE CONNECTIONS. PIPE RESTRAINTS ON EXISTING AND PROPOSED WATERLINES ARE INCIDENTAL TO CONTRACT. ASSUMES NO JOINTS WITHIN RESTRAINED LENGTH SPECIFIED ALONG RUN (LR) ON EITHER SIDE OF TEE, AND NO UNRESTRAINED JOINTS WITHIN LENGTH SPECIFIED ALONG BRANCH (LB).

REVISIONS	DATE	BY
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DATE: 8/10/2023  
 JOB No.: 297-2509-008  
 DESIGNED: RWR  
 DRAWN: MJ  
 CHECKED: RWR  
 APPROVED: RWR

PRELIMINARY

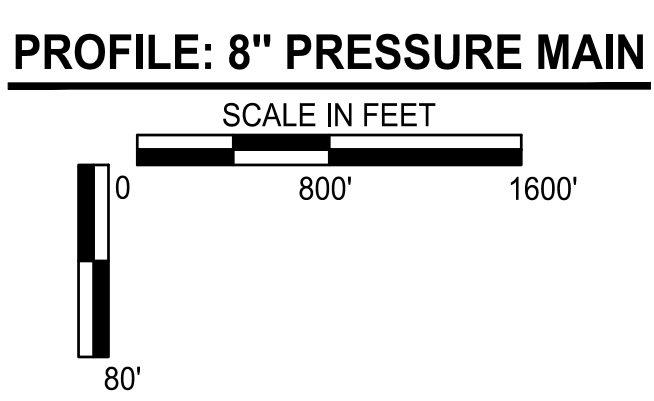
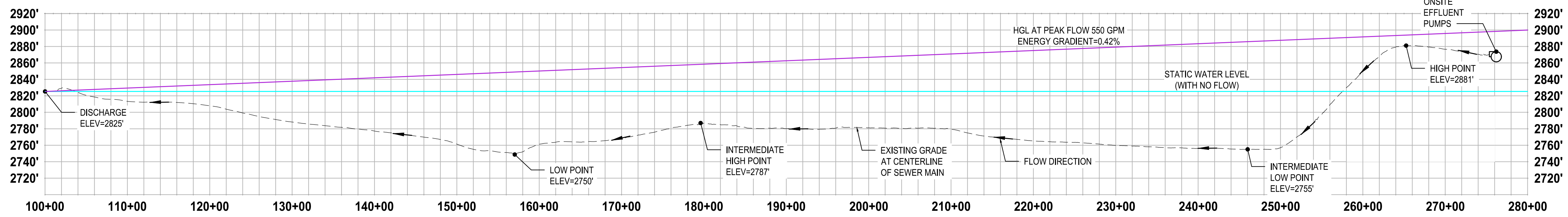
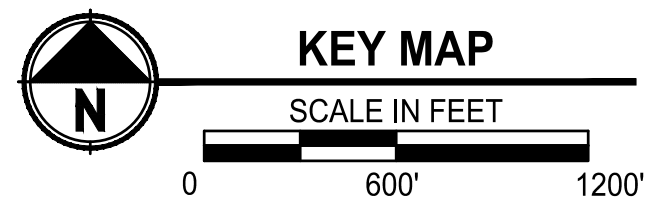
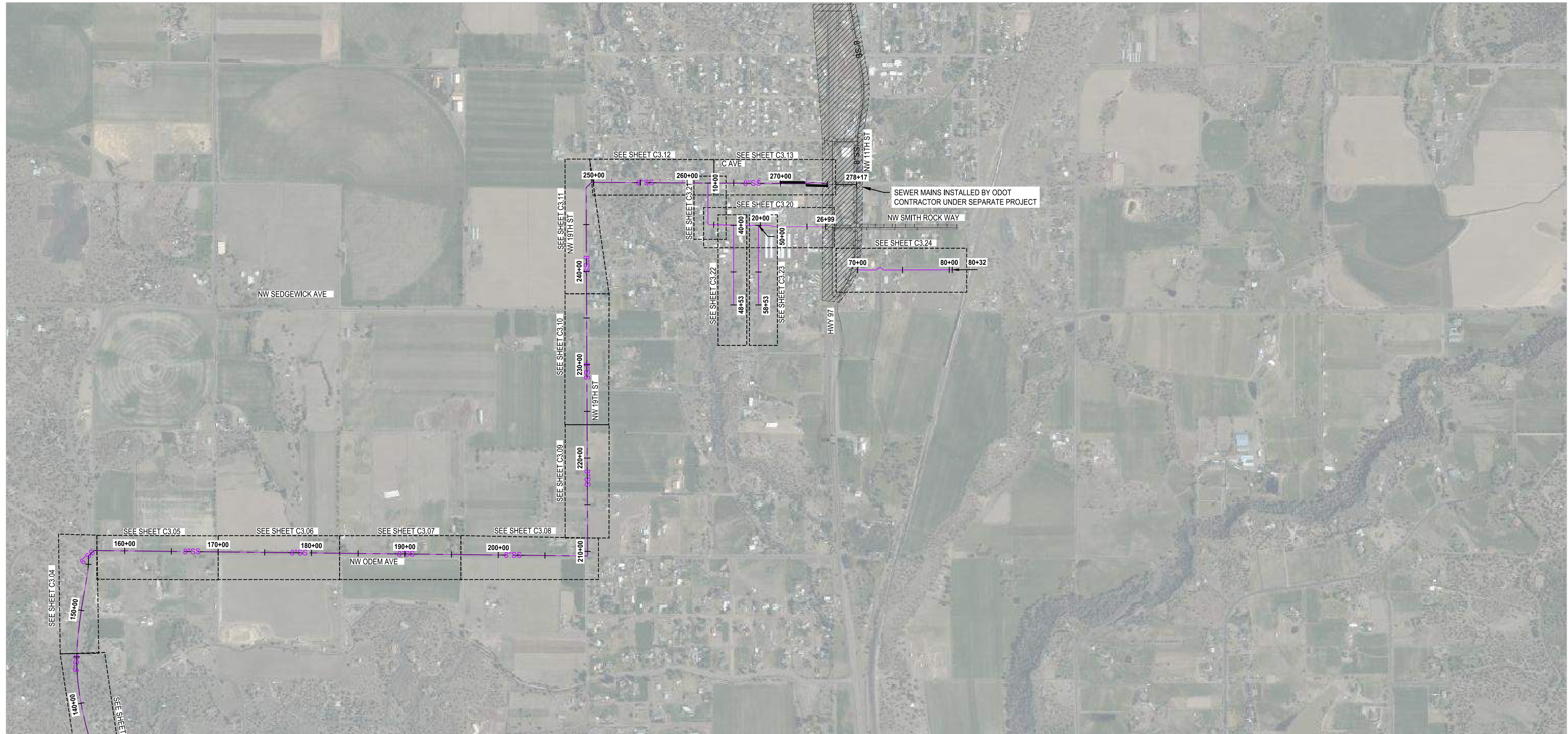
PROJECT NAME  
**TERREBONE SEWER**  
 TERREBONE, OR

**GENERAL NOTES**

DRAWING NO.  
**C1.01**

**30 % REVIEW SUBMITTAL**  
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LAYOUT: KEY MAP PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-008 Terrebonne\WStudy\Ph2\995vcs\CAOD\DWG\SHEETS PLOTTED BY: weybrjes DATE: Tuesday, September 5, 2023 8:34:05 AM



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	DATE: 8/10/2023 JOB No.: 297-2509-008	RWR

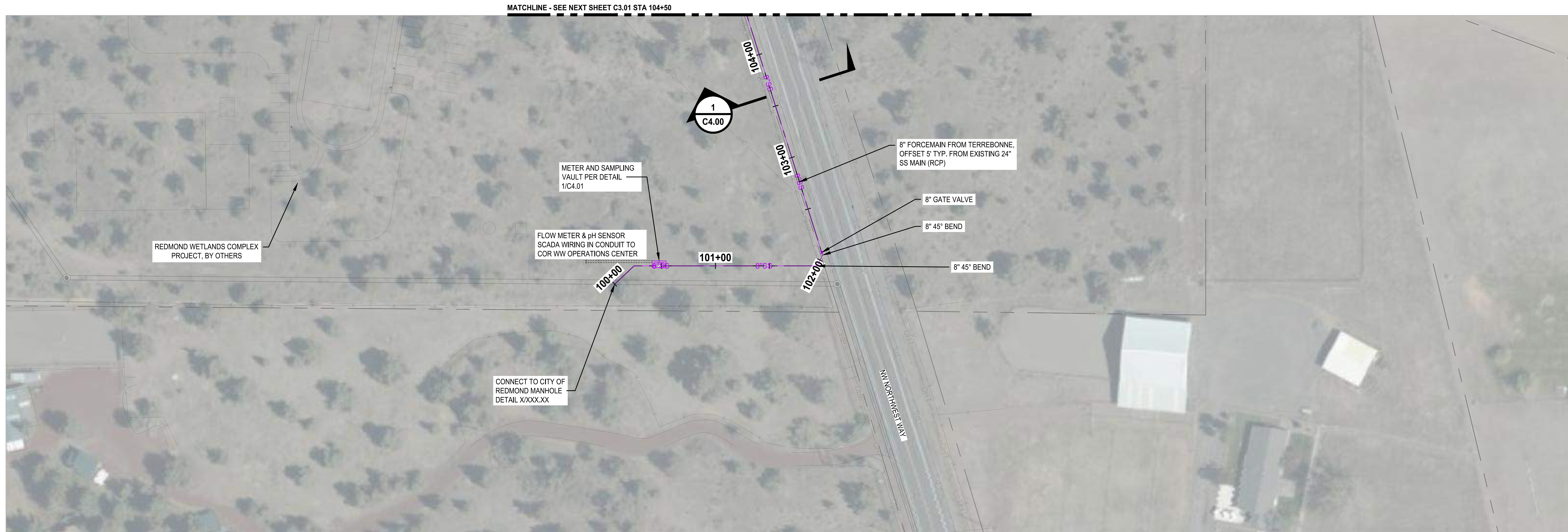
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TERREBONE, OR

**KEY MAP**

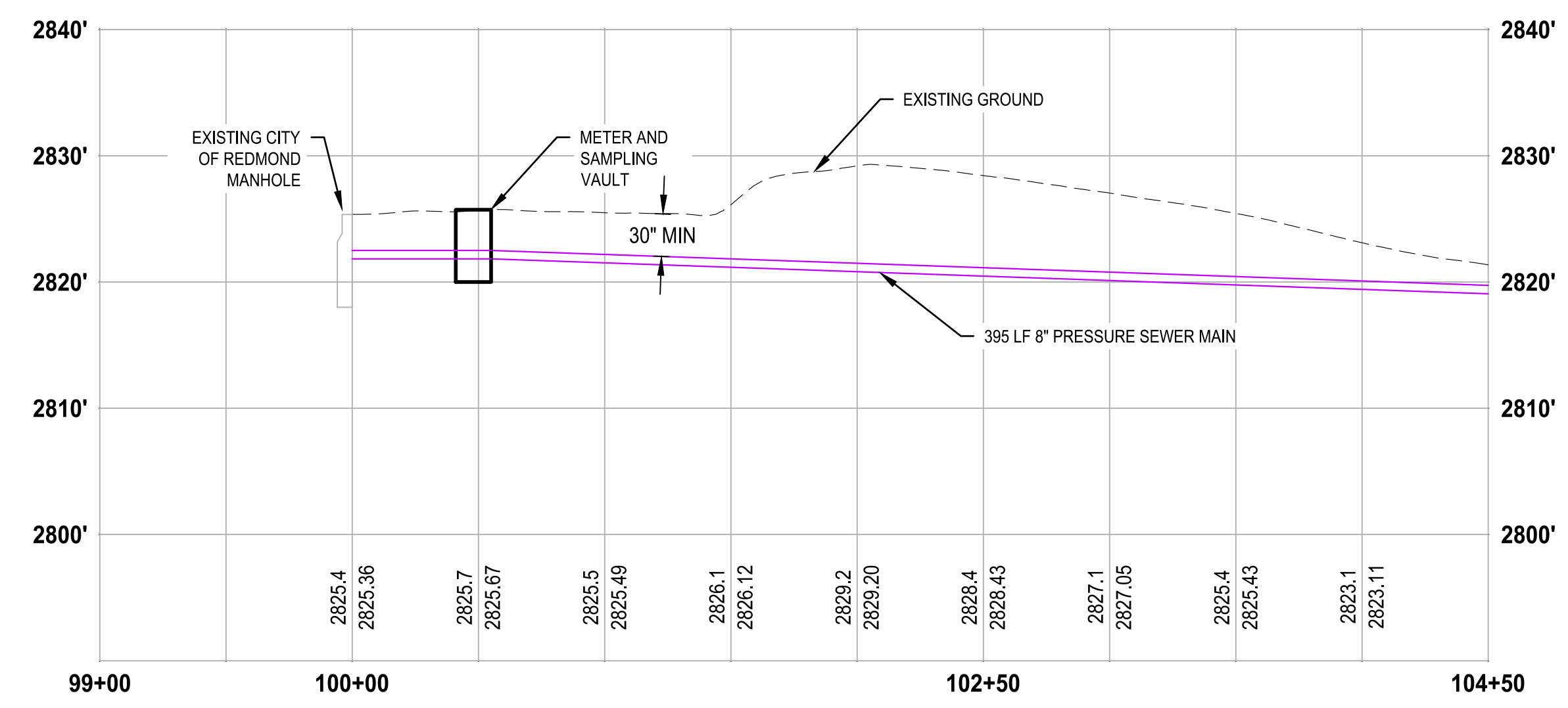
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LAYOUT: C3.00 FORCE MAIN STA 100+00 - 104+50 PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-008 TerrebonneWWS\Study\PH2\99Sves\CADD\DWG\SHEETS PLOTTED BY: weybjjes DATE: Tuesday, September 5, 2023 8:34:52 AM



**PLAN: FORCE MAIN STA 100+00 - 104+50**  
 SCALE IN FEET  
 0 50' 100'



**PROFILE: FORCE MAIN STA 100+00 - 104+50**  
 SCALE IN FEET  
 0 50' 100'

REVISIONS	DATE	BY

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JOB NO.: 297-2509-008	DRAWN: MJJ	APPROVED: RWR

PRELIMINARY

PROJECT NAME  
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 TERREBONE, OR

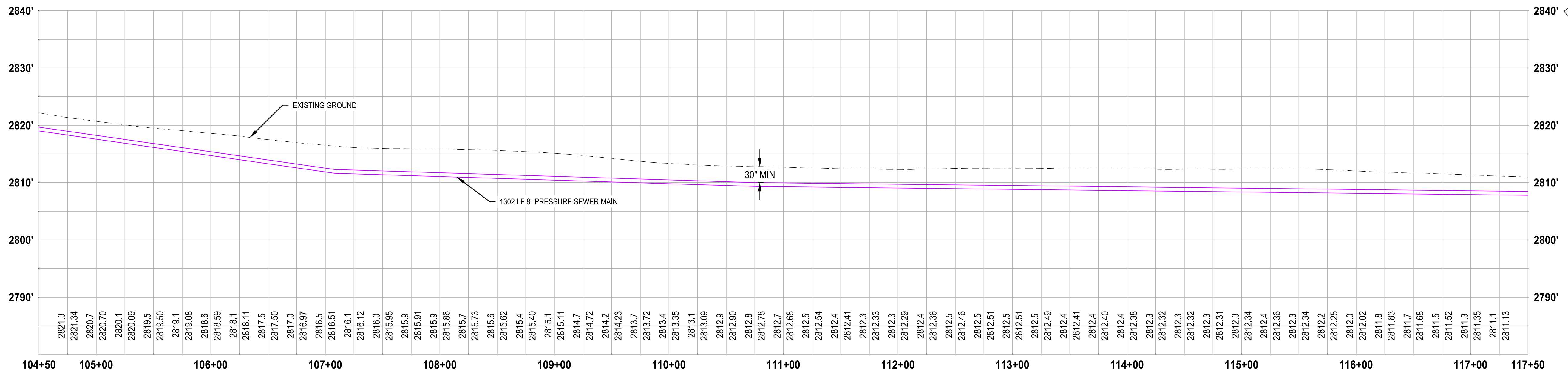
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**C3.00**

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**PLAN: FORCE MAIN STA 104+50 - 117+50**  
SCALE IN FEET  
0 50' 100'



**PROFILE: FORCE MAIN STA 104+50 - 117+50**  
SCALE IN FEET  
0 50' 100'  
4'

REVISIONS	DATE	BY

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	RWR	RWR
DATE	DRAWN	APPROVED
8/10/2023	MJI	RWR
JOB No.	297-2509-008	RWR

PROJECT NAME  
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TERREBONE, OR

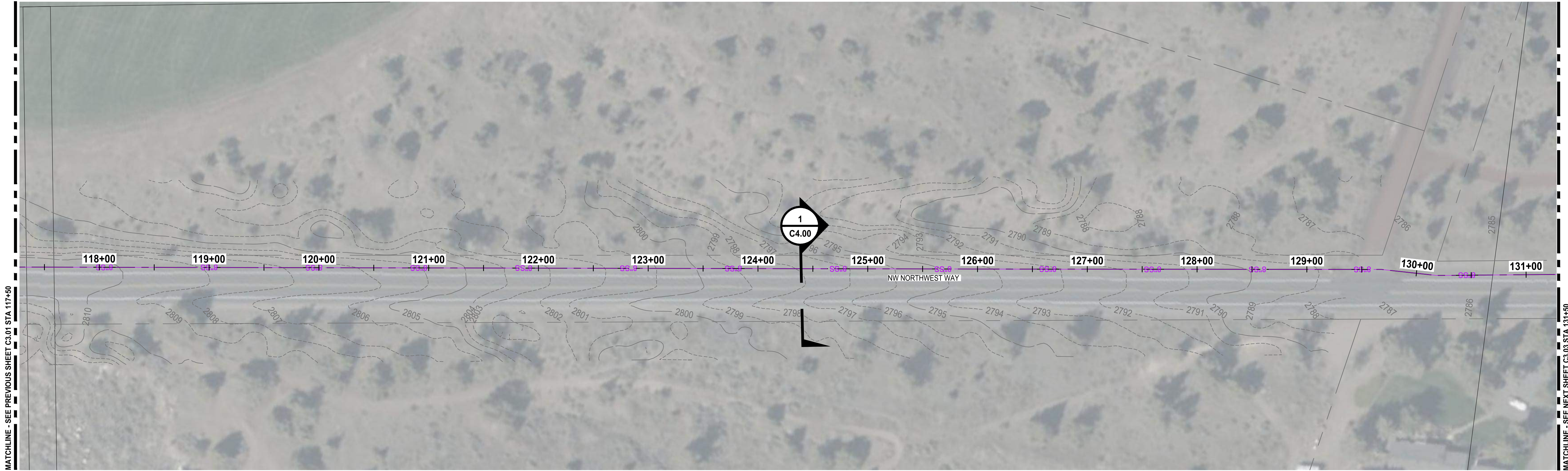
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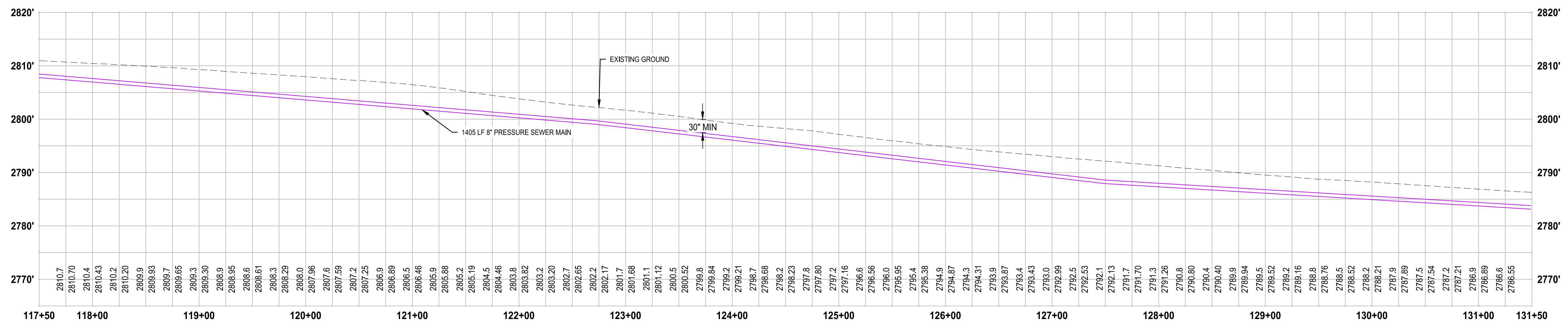
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LAYOUT: C3.02 FORCE MAIN STA 117+50 - 131+50 PATH: U:\Band\Projects\Clients\2509-Deschutes County\297-2509-008 Terrebonne\Wstudy\FH2\95\svcs\CADD\DWG\SHEETS PLOTTED BY: weybrjcs DATE: Tuesday, September 5, 2023 8:36:18 AM



**PLAN: FORCE MAIN STA 117+50 - 131+50**  
 SCALE IN FEET  
 0 50' 100'



**PROFILE: FORCE MAIN STA 117+50 - 131+50**  
 SCALE IN FEET  
 0 50' 100'

REVISIONS	DATE	BY

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	DRAWN	MJI	APPROVED	RWR
DATE	8/10/2023	JOB NO.	297-2509-008	

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 TERREBONE, OR

**FORCE MAIN STA 117+50 - 131+50**

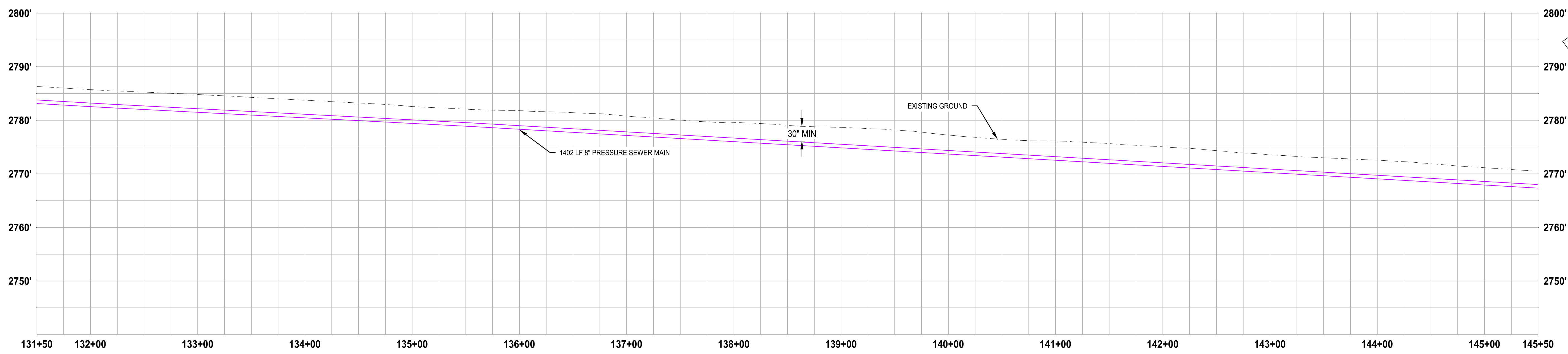
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**PLAN: FORCE MAIN STA 131+50 - 145+50**  
SCALE IN FEET  
0 50' 100'



**PROFILE: FORCE MAIN STA 131+50 - 145+50**  
SCALE IN FEET  
0 5' 100'

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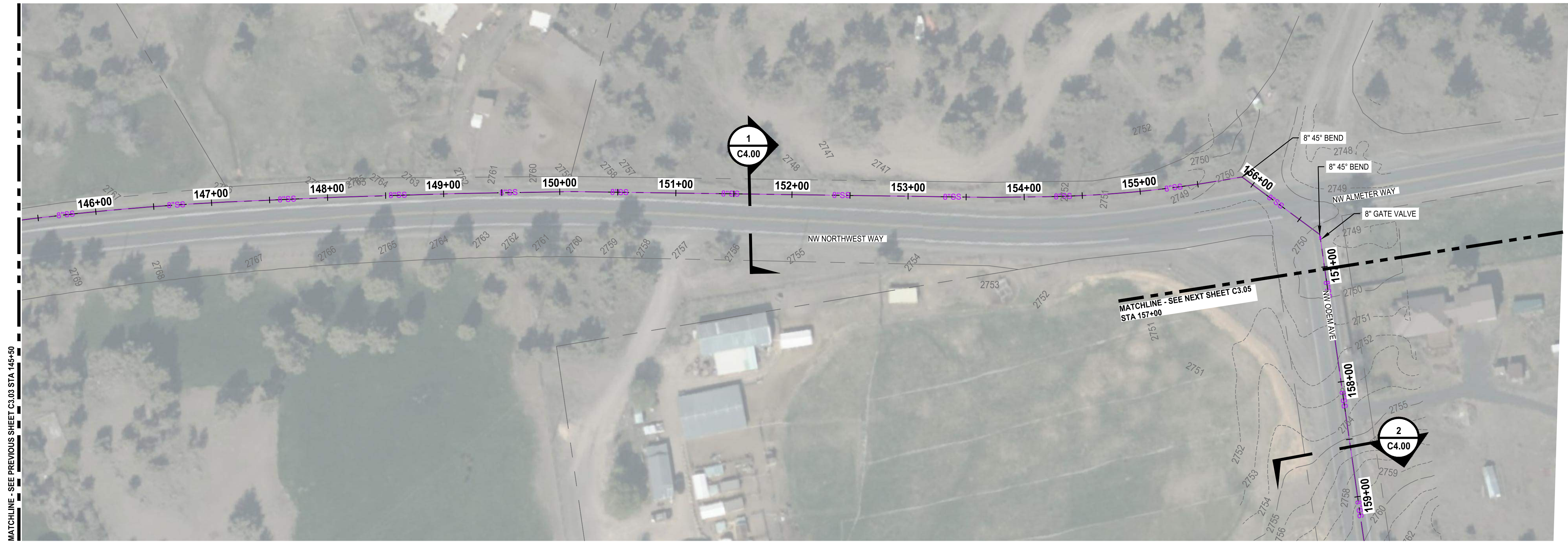
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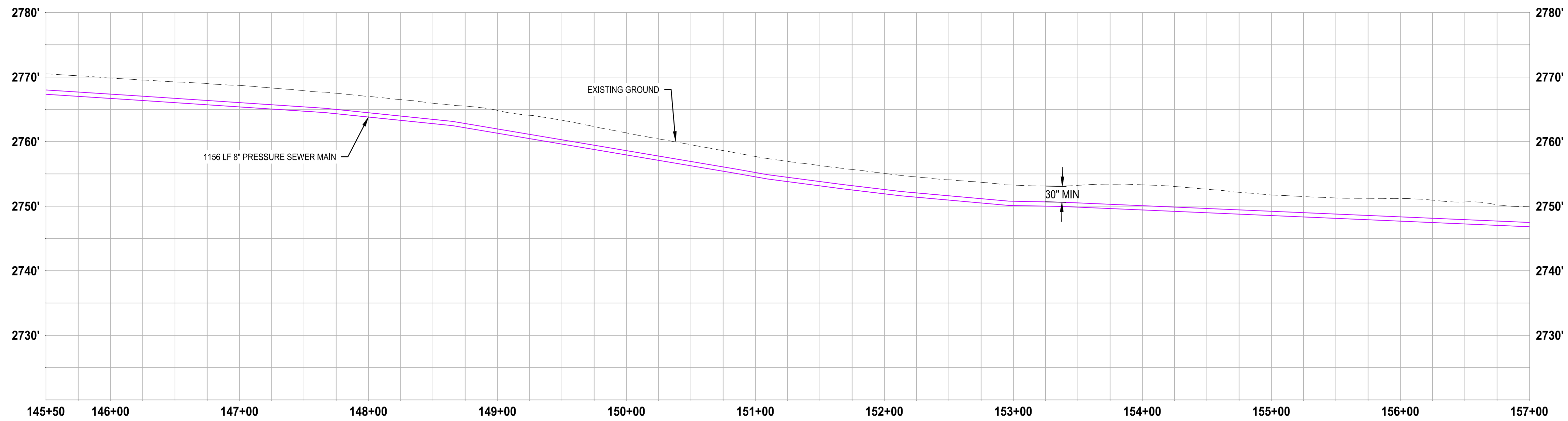
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**PROFILE: FORCE MAIN STA 145+50 - 157+00**  
 SCALE IN FEET  
 0 50' 100'  
 4'

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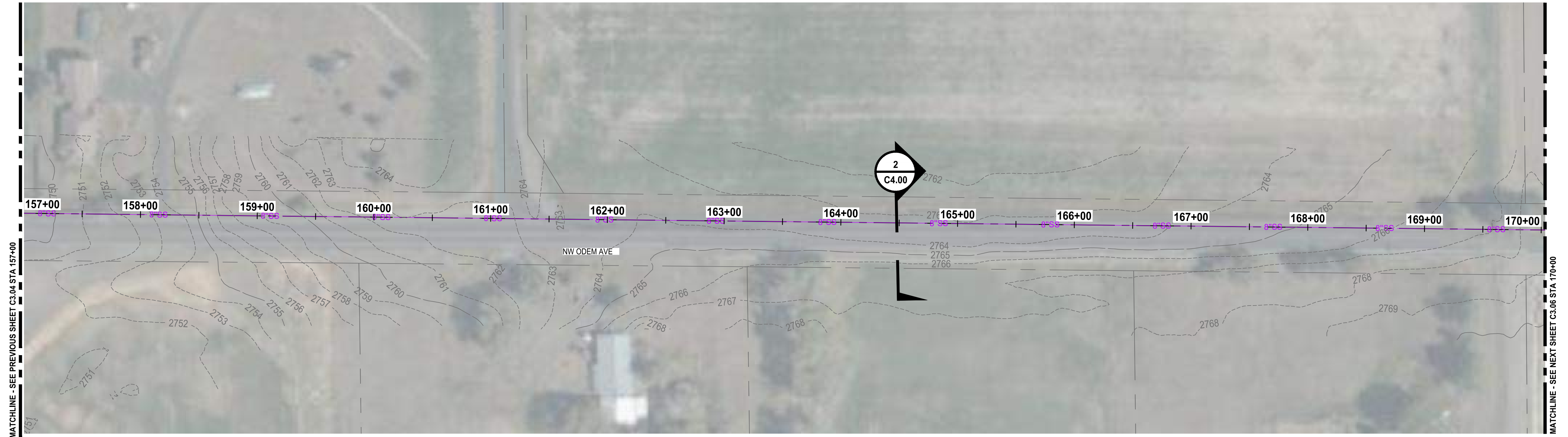
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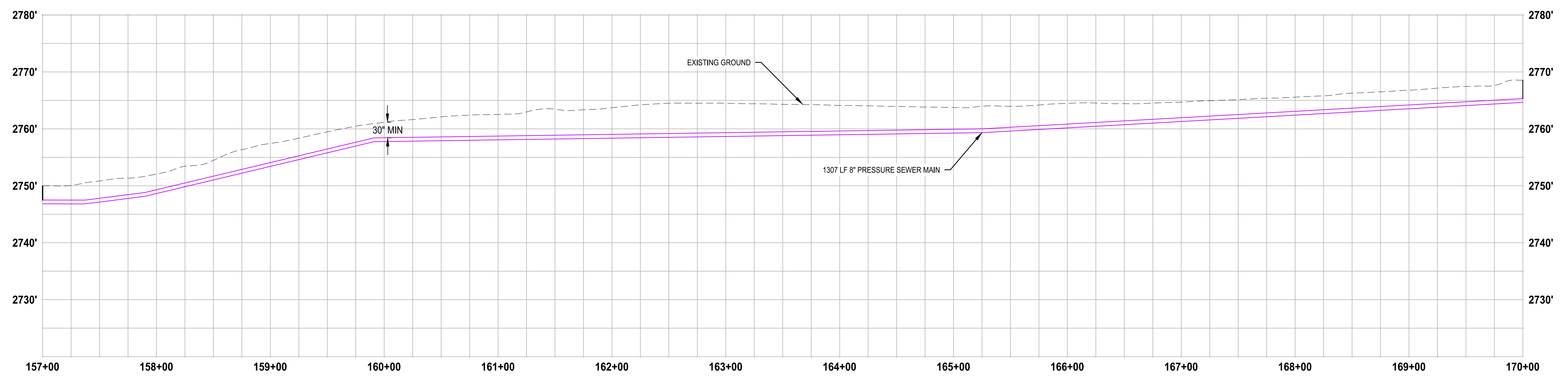
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 0 50' 100'



**PROFILE: FORCE MAIN STA 157+00 - 170+00**  
 SCALE IN FEET  
 0 50' 100'  
 4'

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**FORCE MAIN STA 157+00 - 170+00**

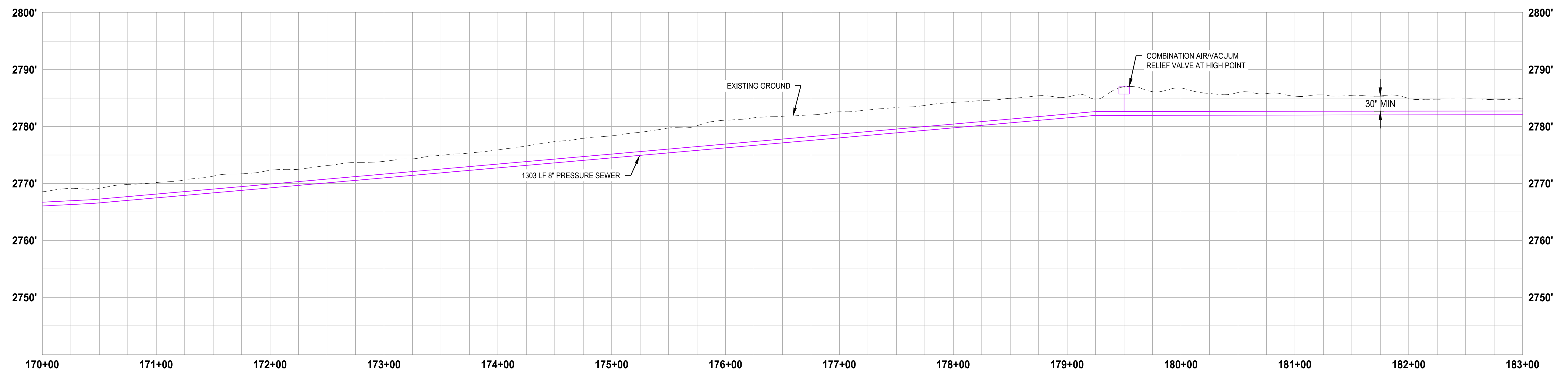
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**PLAN: FORCE MAIN STA 170+00 - 183+00**  
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 0 50' 100'



**PROFILE: FORCE MAIN STA 170+00 - 183+00**  
 SCALE IN FEET  
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 4'

PRELIMINARY

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PROJECT NAME  
**TERREBONE SEWER**  
 TERREBONE, OR

**FORCE MAIN STA 170+00 - 183+00**

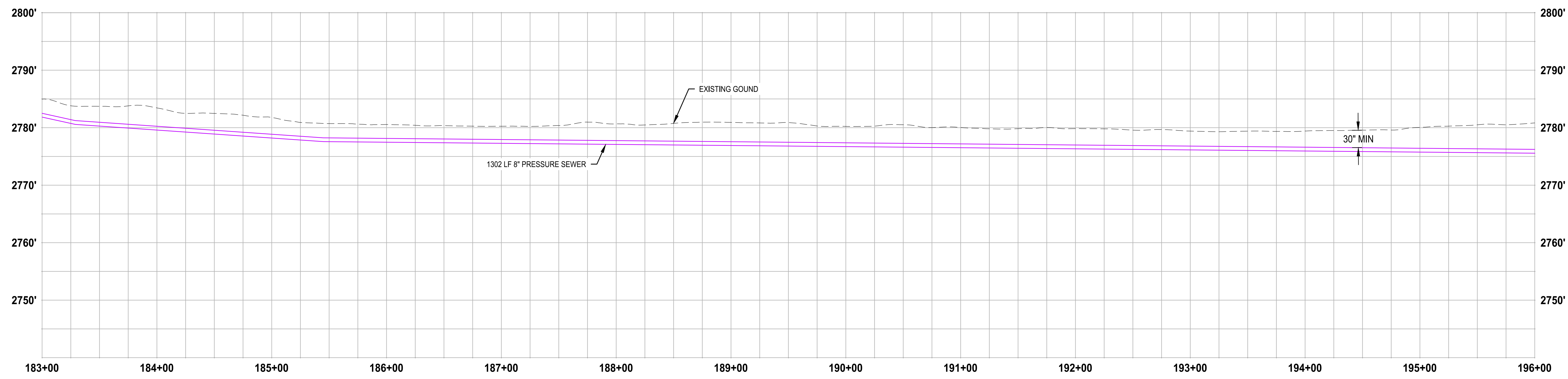
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**PLAN: FORCE MAIN STA 183+00 - 196+00**  
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 0 50' 100'



**PROFILE: FORCE MAIN STA 183+00 - 196+00**  
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 4'

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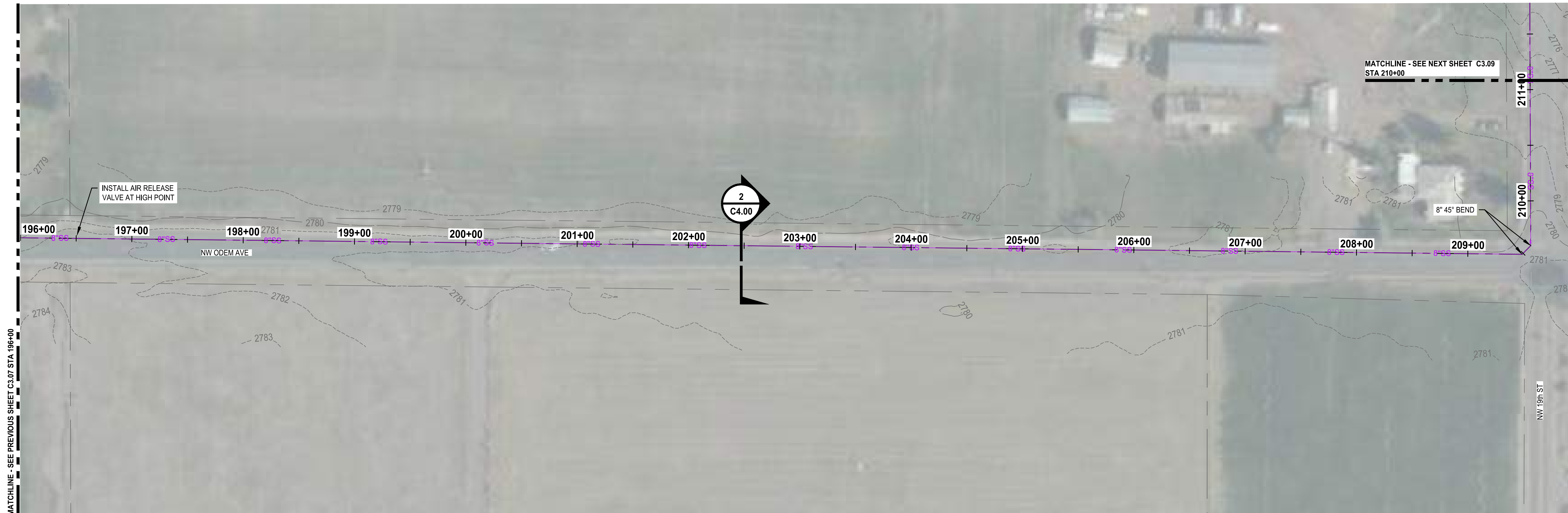
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 TERREBONE, OR

**FORCE MAIN STA  
 183+00 - 196+00**

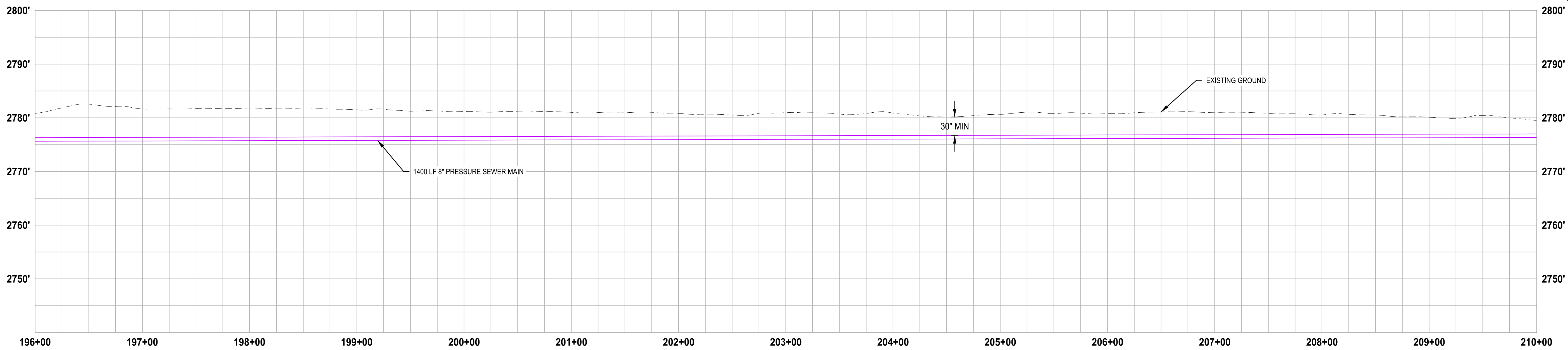
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**30 % REVIEW SUBMITTAL  
 NOT FOR CONSTRUCTION**

LAYOUT: C3.08 FORCE MAIN STA 196+00 - 210+00 PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-008 TerrebonneWWS\Study\PH2\CADD\DWG\SHEETS PLOTTED BY: weybfjes DATE: Tuesday, September 5, 2023 8:39:55 AM



**PLAN: FORCE MAIN STA 196+00 - 210+00**  
 SCALE IN FEET  
 0 50' 100'



**PROFILE: FORCE MAIN STA 196+00 - 210+00**  
 SCALE IN FEET  
 0 50' 100'  
 4'

REVISIONS	DATE	BY

ONE INCH AT FULL SCALE IF NOT ACCORDINGLY

**Parametrix**  
 ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES

DATE	DESIGNED	CHECKED
8/10/2023	RWR	RWR
JOB NO.	DRAWN	APPROVED
297-2509-008	MJI	RWR

PROJECT NAME  
**TERREBONE SEWER**  
 TERREBONE, OR

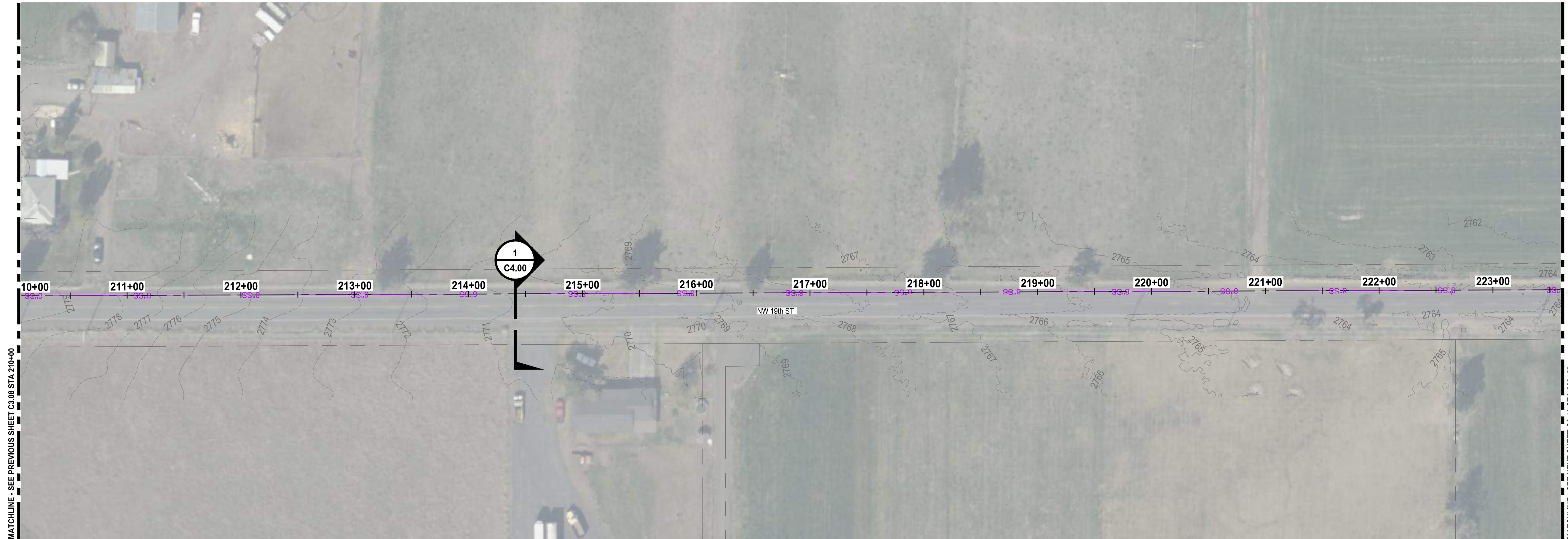
**FORCE MAIN STA 196+00 - 210+00**

DRAWING NO.  
**C3.08**

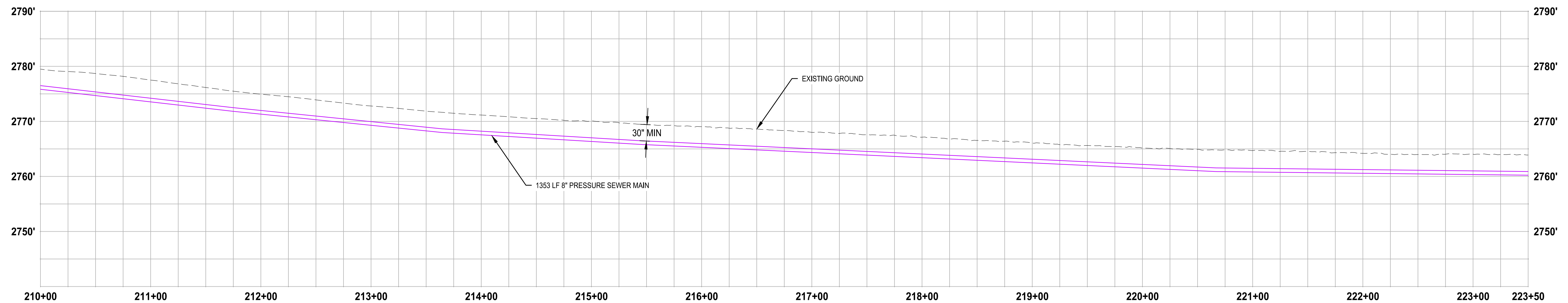
**30% REVIEW SUBMITTAL**  
 NOT FOR CONSTRUCTION

PRELIMINARY

LAYOUT: C3.09 FORCE MAIN STA 210+00 - 223+50 PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-008 Terrebonne\WWS\Study\PH2\995\svcs\CADD\DWG\SHEETS PLOTTED BY: weybjjes DATE: Tuesday, September 5, 2023 8:40:33 AM



**PLAN: FORCE MAIN STA 210+00 - 223+50**  
 SCALE IN FEET  
 0 50' 100'



**PROFILE: FORCE MAIN STA 210+00 - 223+50**  
 SCALE IN FEET  
 0 50' 100'  
 4'

REVISIONS	DATE	BY

ONE INCH AT FULL SCALE IF NECESSARY

**Parametrix**  
 ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES

DATE	DESIGNED	CHECKED
8/10/2023	RWR	RWR
JOB NO.	DRAWN	APPROVED
297-2509-008	MJI	RWR

PRELIMINARY

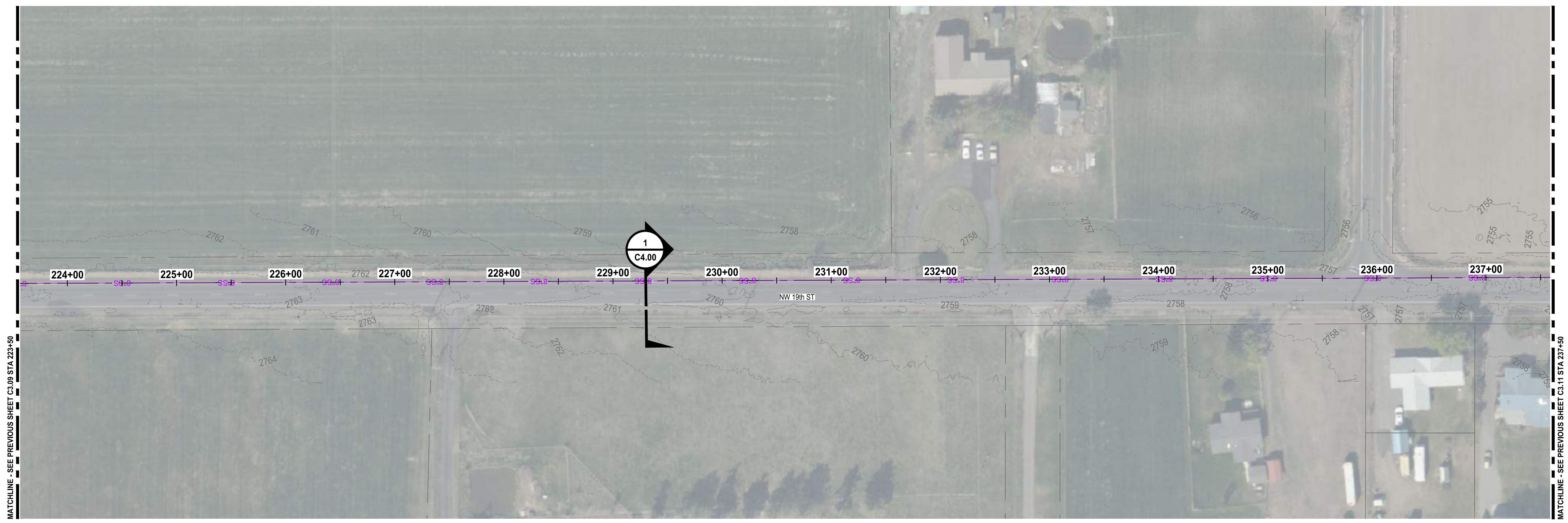
PROJECT NAME  
**TERREBONE SEWER**  
 TERREBONE, OR

**FORCE MAIN STA 210+00 - 223+50**

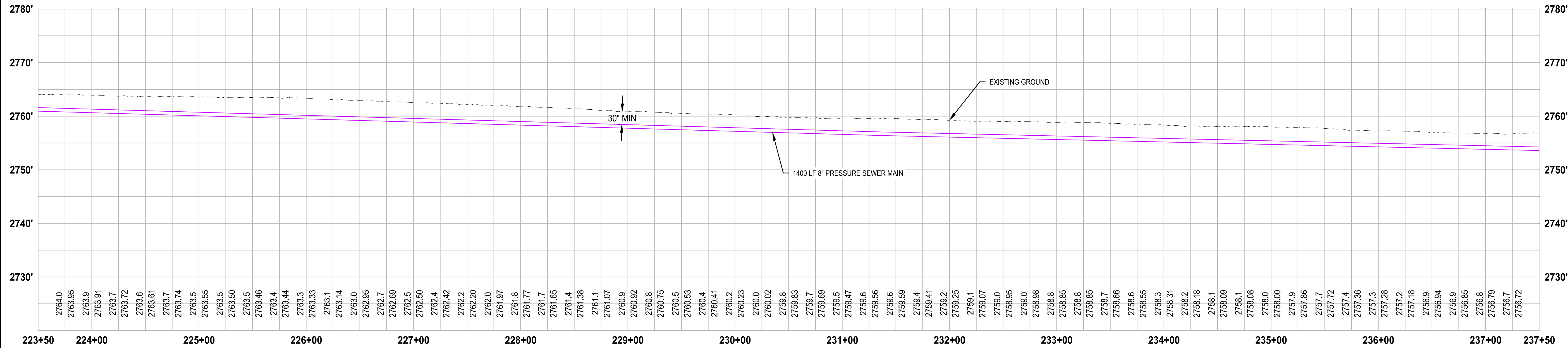
DRAWING NO.  
**C3.09**

**30 % REVIEW SUBMITTAL**  
 NOT FOR CONSTRUCTION

LAYOUT: C3.10 FORCE MAIN STA 223+50 - 237+50 PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-008 Terrebonne\WWS\Study\PH2\995\cads\CADD\DWG\SHEETS PLOTTED BY: weybjjes DATE: Tuesday, September 5, 2023 8:41:19 AM



**PLAN: FORCE MAIN STA 223+50 - 237+50**  
 SCALE IN FEET  
 0 50' 100'



**PROFILE: FORCE MAIN STA 223+50 - 237+50**  
 SCALE IN FEET  
 0 50' 100'  
 4'

REVISIONS	DATE	BY

ONE INCH AT FULL SCALE IF NOT ACCORDINGLY

**Parametrix**  
 ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES

DATE	DESIGNED	CHECKED
8/10/2023	RWR	RWR
JOB NO.	DRAWN	APPROVED
297-2509-008	MJI	RWR

PRELIMINARY

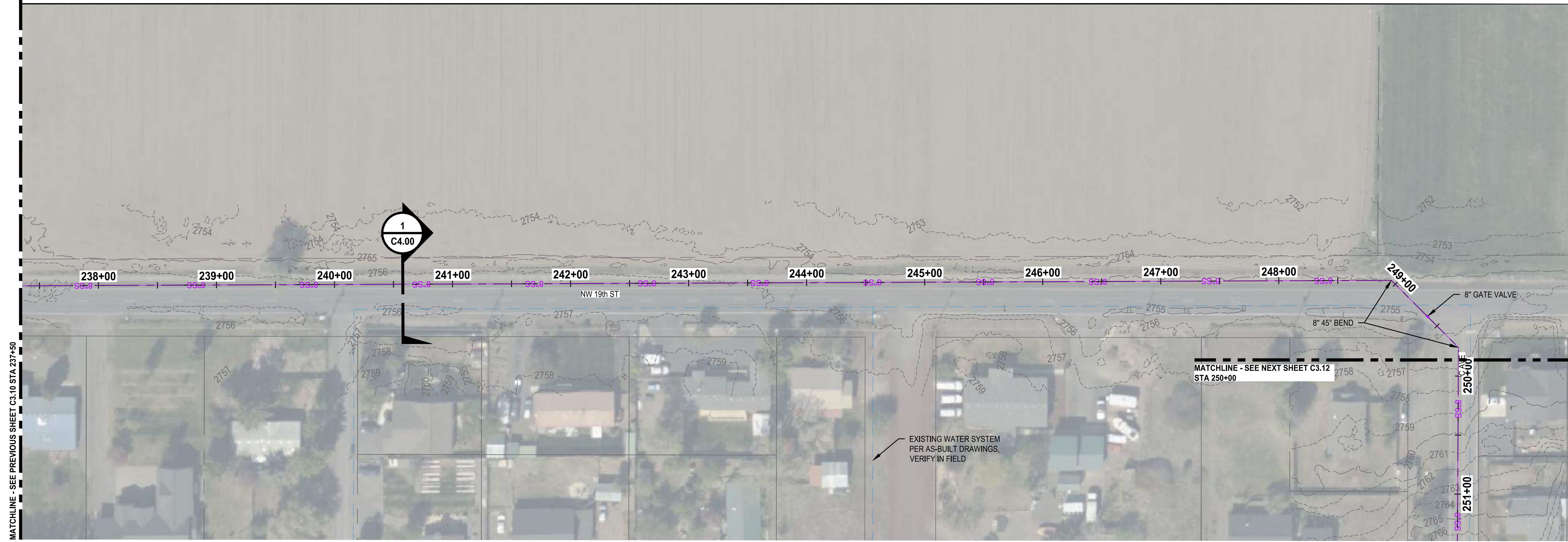
PROJECT NAME  
**TERREBONE SEWER**  
 TERREBONE, OR

**FORCE MAIN STA 223+50 - 237+50**

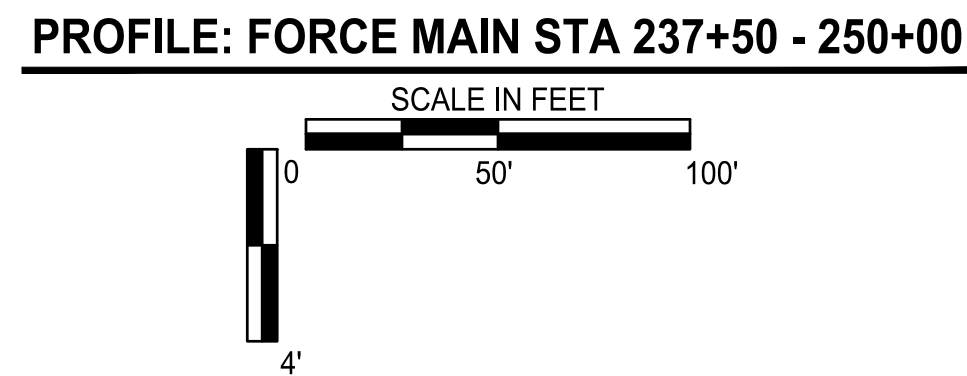
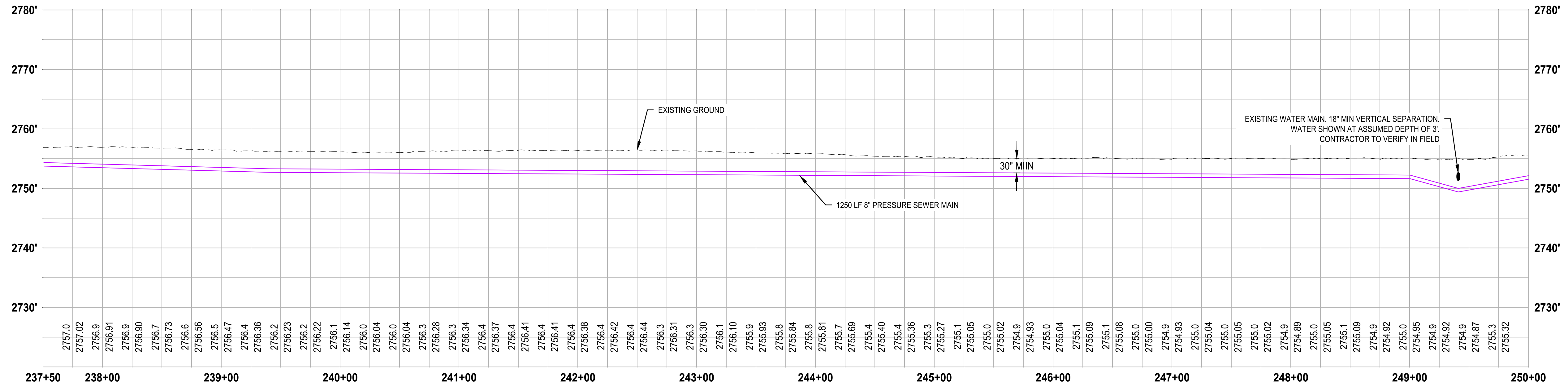
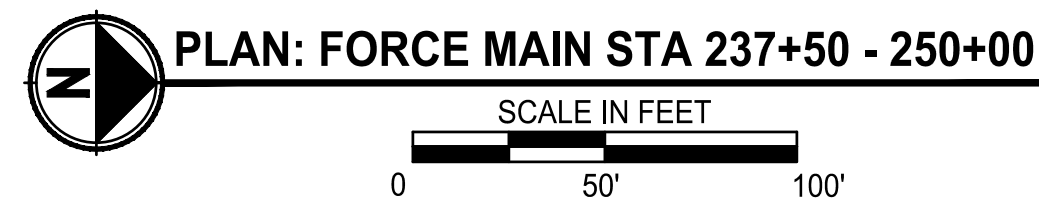
DRAWING NO.  
**C3.10**

**30 % REVIEW SUBMITTAL**  
 NOT FOR CONSTRUCTION

LAYOUT: C3.11 FORCE MAIN STA 237+50 - 250+00 PATH: U:\Bend\Projects\Clients\2509-Deschutes County\237-2509-008 Terrebonne\Study\PH2\CADD\DWG\SHEETS PLOTTED BY: weybjjes DATE: Tuesday, September 5, 2023 8:42:11 AM



NOTE: CONTRACTOR TO POTHOLE CROSSING UTILITIES AT LEAST 200' AHEAD OF CURRENT WORK AREA TO ADJUST PIPE ALIGNMENT AND GRADE TO AVOID CONFLICTS.



REVISIONS	DATE	BY

ONE INCH AT FULL SCALE, IF NOT SHOWN OTHERWISE, ACCORDINGLY

**Parametrix**  
ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES

DATE: 8/10/2023  
JOB NO.: 297-2509-008

DESIGNED: RWR  
DRAWN: MJ

CHECKED: RWR  
APPROVED: RWR

PRELIMINARY

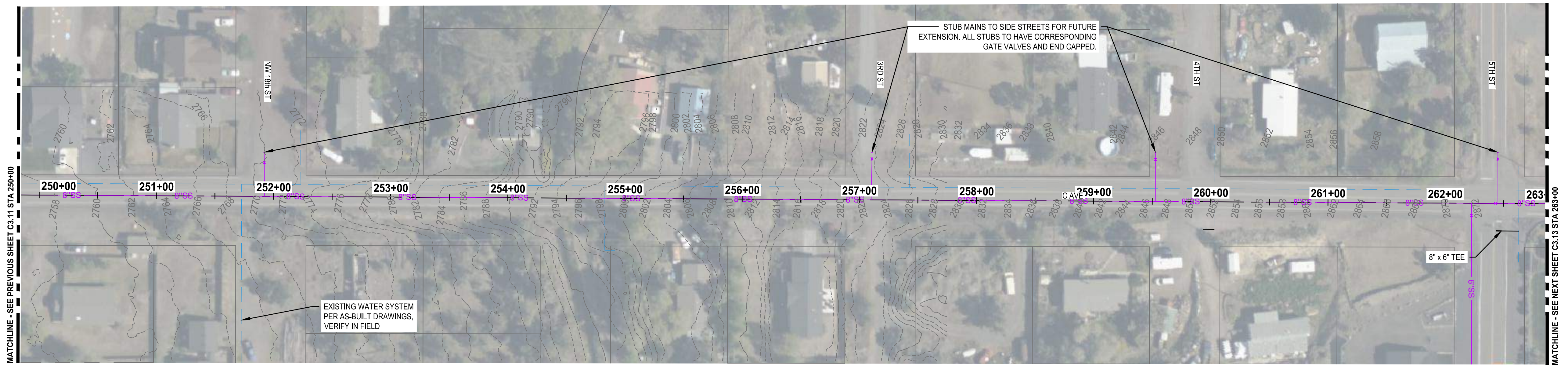
PROJECT NAME  
**TERREBONE SEWER**  
TERREBONE, OR

**FORCE MAIN STA 237+50 - 250+00**

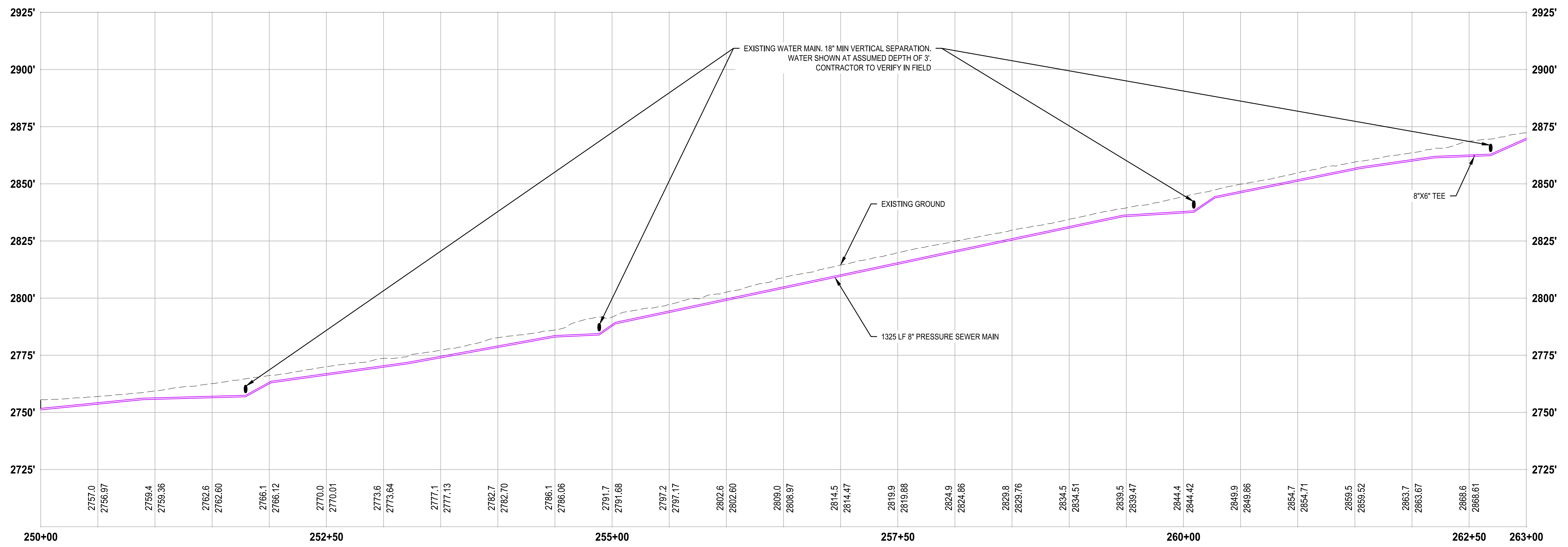
DRAWING NO.  
**C3.11**

**30 % REVIEW SUBMITTAL**  
NOT FOR CONSTRUCTION

LAYOUT: C312 FORCE MAIN STA 250+00 - 263+00 PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-008 Terrebonne\WWS\Study\PH2\995\secs\CADD\DWG\SHEETS PLOTTED BY: weybfjes DATE: Tuesday, September 5, 2023 8:43:08 AM



**PLAN: FORCE MAIN STA 250+00 - 263+00**  
 SCALE IN FEET  
 0 50' 100'



**PROFILE: FORCE MAIN STA 250+00 - 263+00**  
 SCALE IN FEET  
 0 50' 100'  
 25'

REVISIONS	DATE	BY

**Parametrix**  
 ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES

DATE: 8/10/2023	DESIGNED: RWR	CHECKED: RWR
JOB NO.: 297-2509-008	DRAWN: MJ	APPROVED: RWR

PRELIMINARY

PROJECT NAME  
**TERREBONE SEWER**  
 TERREBONE, OR

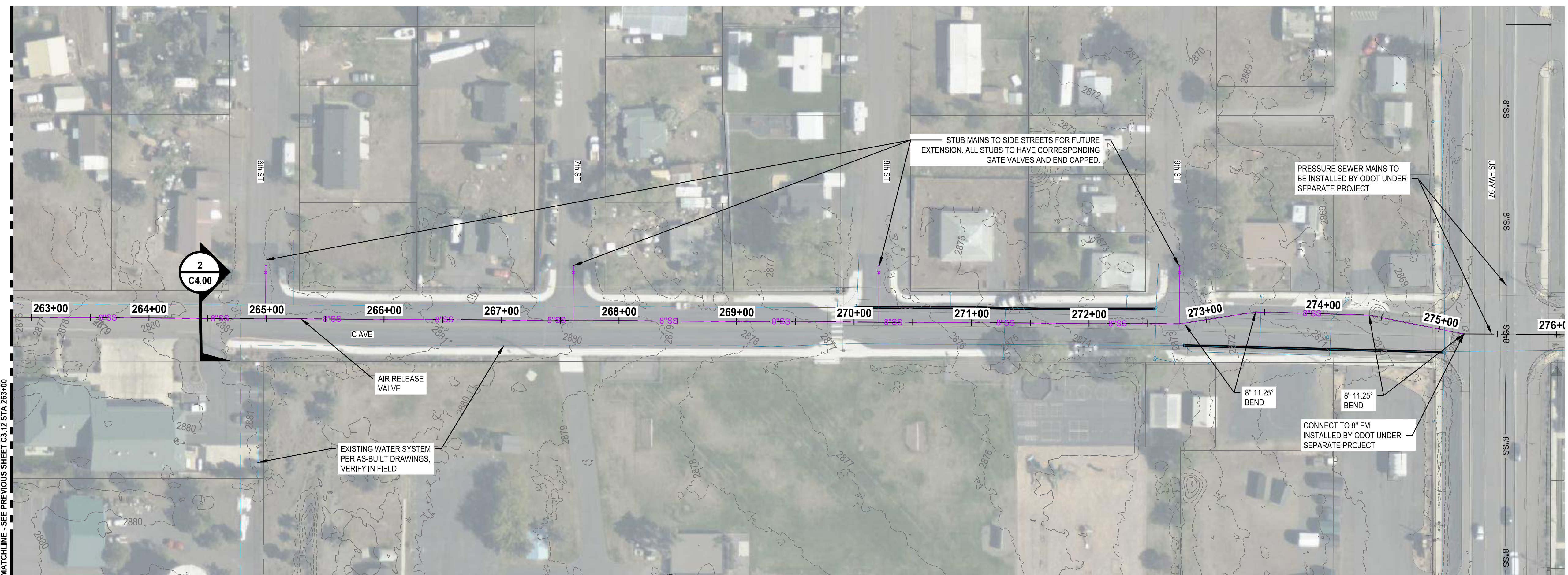
**FORCE MAIN STA  
 250+00 - 263+00**

DRAWING NO.  
**C3.12**

**30 % REVIEW SUBMITTAL  
 NOT FOR CONSTRUCTION**

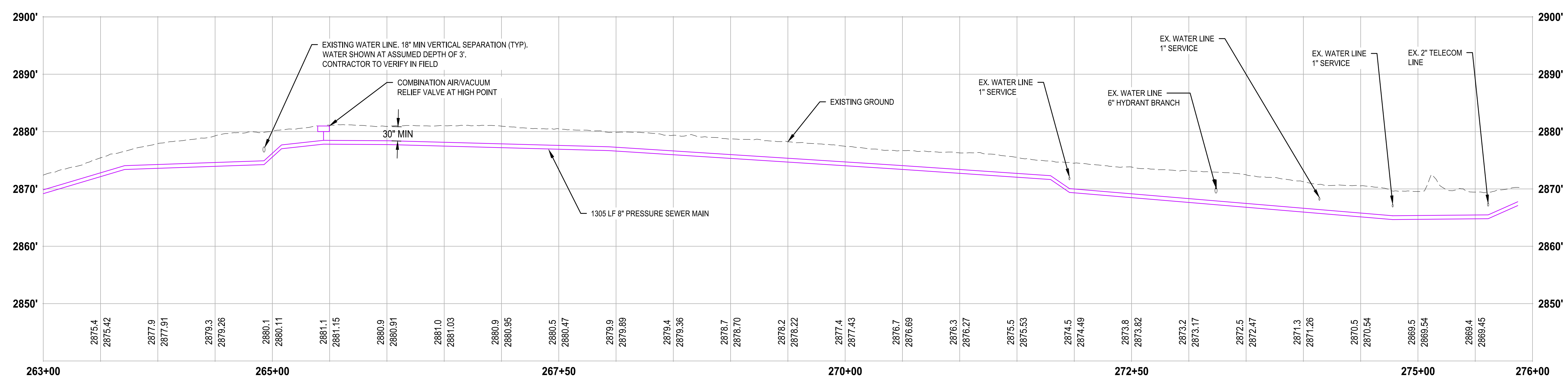


LAYOUT: C3.13 FORCE MAIN STA 263+00 - 275+36 PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-008 Terrebonne\WWS\Study\PH2\995\cadd\DWG\SHEETS PLOTTED BY: weybfjes DATE: Tuesday, September 5, 2023 8:44:01 AM

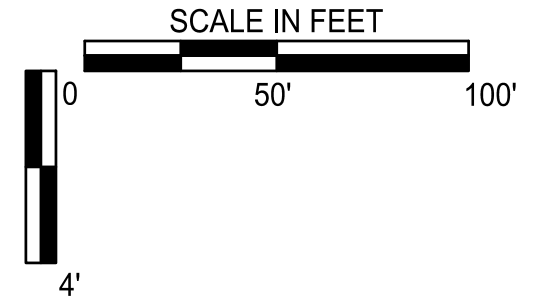


NOTE: CONTRACTOR TO POTHOLE CROSSING UTILITIES AT LEAST 200' AHEAD OF CURRENT WORK TO ADJUST PIPE ALIGNMENT AND GRADE TO AVOID CONFLICTS.

**PLAN: FORCE MAIN STA 263+00 - 275+36**



**PROFILE: FORCE MAIN STA 263+00 - 275+36**



REVISIONS	DATE	BY

**Parametrix**  
ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES

DATE: 8/10/2023	DESIGNED: RWR	CHECKED: RWR
JOB NO.: 297-2509-008	DRAWN: MJ	APPROVED: RWR

PRELIMINARY

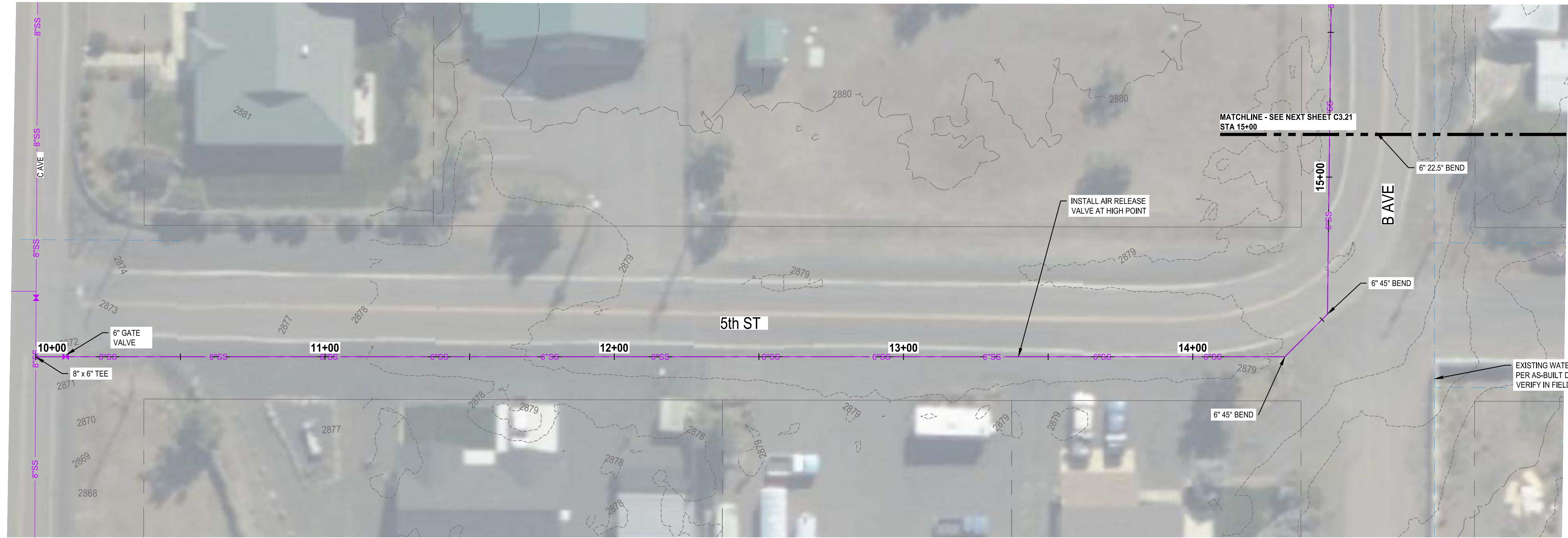
PROJECT NAME  
**TERREBONE SEWER**  
TERREBONE, OR

**FORCE MAIN STA 263+00 - 275+36**

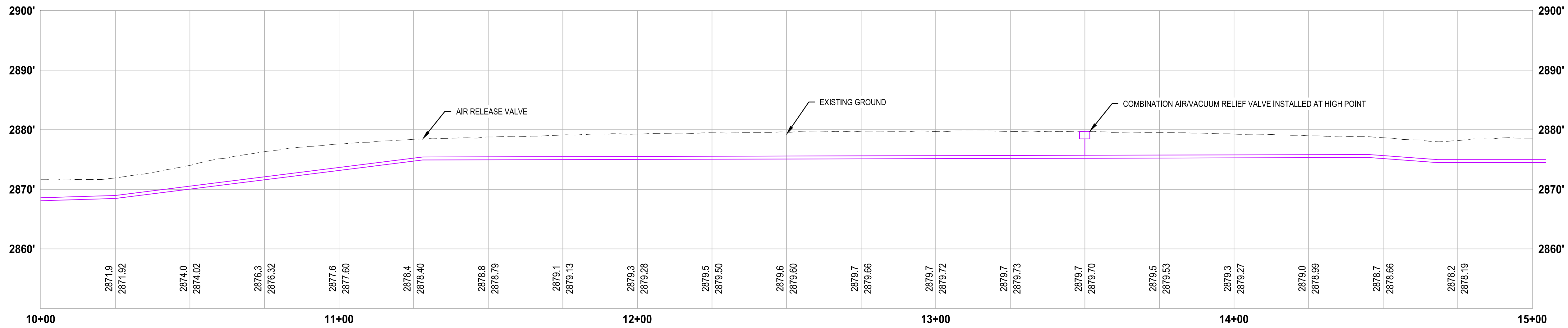
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**C3.13**

**30 % REVIEW SUBMITTAL**  
NOT FOR CONSTRUCTION

LAYOUT: C3.20 FORCE MAIN STA 10+00 - 15+00  
 PATH: U:\Bend\Projects\Clients\2509--Deschutes County\297-2509-008 Terrebonne\WWS\Study\PH2\995\svcs\CADD\DWG\SHEETS  
 PLOTTED BY: woybfjes DATE: Tuesday, September 5, 2023 8:44:37 AM



**PLAN: FORCE MAIN STA 10+00 - 15+00**  
 SCALE IN FEET  
 0 20' 40'



**PROFILE: FORCE MAIN STA 10+00 - 15+00**  
 SCALE IN FEET  
 10' 0 20' 40'

REVISIONS	DATE	BY

ONE INCH AT FULL SCALE IF NOT SHOWN OTHERWISE

**Parametrix**  
 ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES

DATE: 8/10/2023  
 JOB NO.: 297-2509-008

DESIGNED	RWR	CHECKED	RWR
DRAWN	MJI	APPROVED	RWR

PRELIMINARY

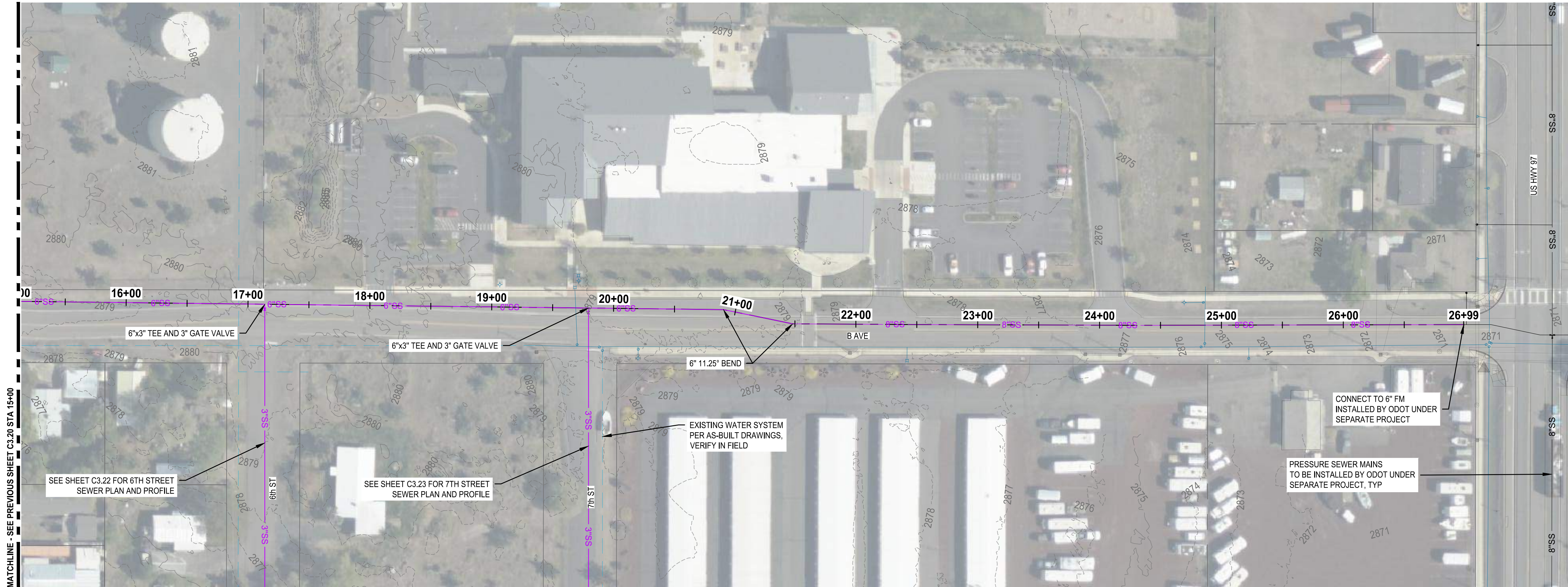
PROJECT NAME  
**TERREBONE SEWER**  
 TERREBONE, OR

**FORCE MAIN STA 10+00 - 15+00**

DRAWING NO.  
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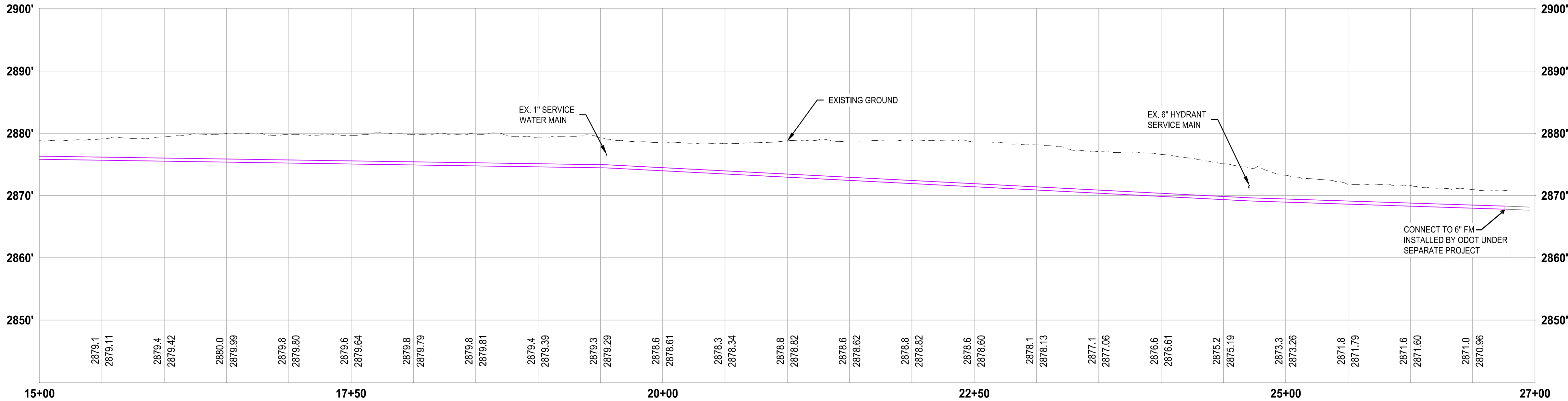
**30 % REVIEW SUBMITTAL**  
 NOT FOR CONSTRUCTION

LAYOUT: C3.21 FORCE MAIN STA 15+00 - 26+83 PATH: U:\Bend\Projects\Clients\2509--Deschutes County\297-2509-008 Terrebonne\WWS\Study\PH2\95\svcs\CADD\DWG\SHEETS PLOTTED BY: wjbjjes DATE: Tuesday, September 5, 2023 8:45:16 AM



NOTE: CONTRACTOR TO POTHOLE CROSSING UTILITIES AT LEAST 200' AHEAD OF CURRENT WORK AREA TO ADJUST PIPE ALIGNMENT AND GRADE TO AVOID CONFLICTS

**PLAN: FORCE MAIN STA 15+00 - 26+78**  
SCALE IN FEET  
0 50' 100'



**PROFILE: FORCE MAIN STA 15+00 - 26+83**  
SCALE IN FEET  
0 50' 100'

REVISIONS	DATE	BY

ONE INCH AT FULL SCALE IF NOT OTHERWISE INDICATED

<b>Parametrix</b> ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES	
DATE: 8/10/2023	CHECKED: RWR
JOB NO.: 297-2509-008	DESIGNED: RWR
	DRAWN: MJ
	APPROVED: RWR

PRELIMINARY

PROJECT NAME  
**TERREBONE SEWER**  
TERREBONE, OR

**FORCE MAIN STA 15+00 - 26+83**

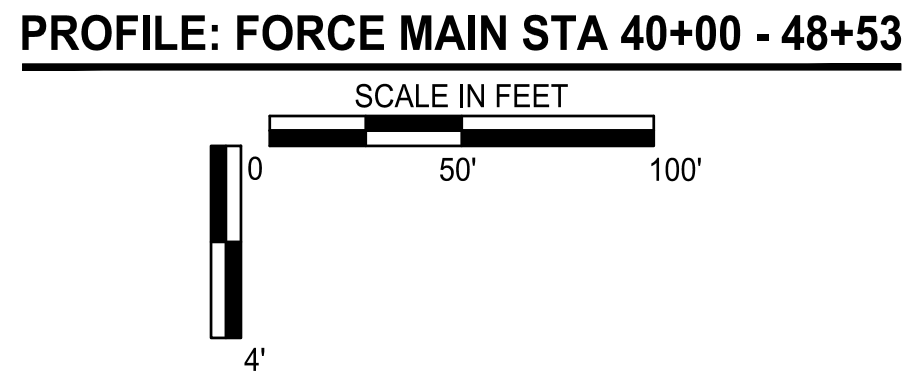
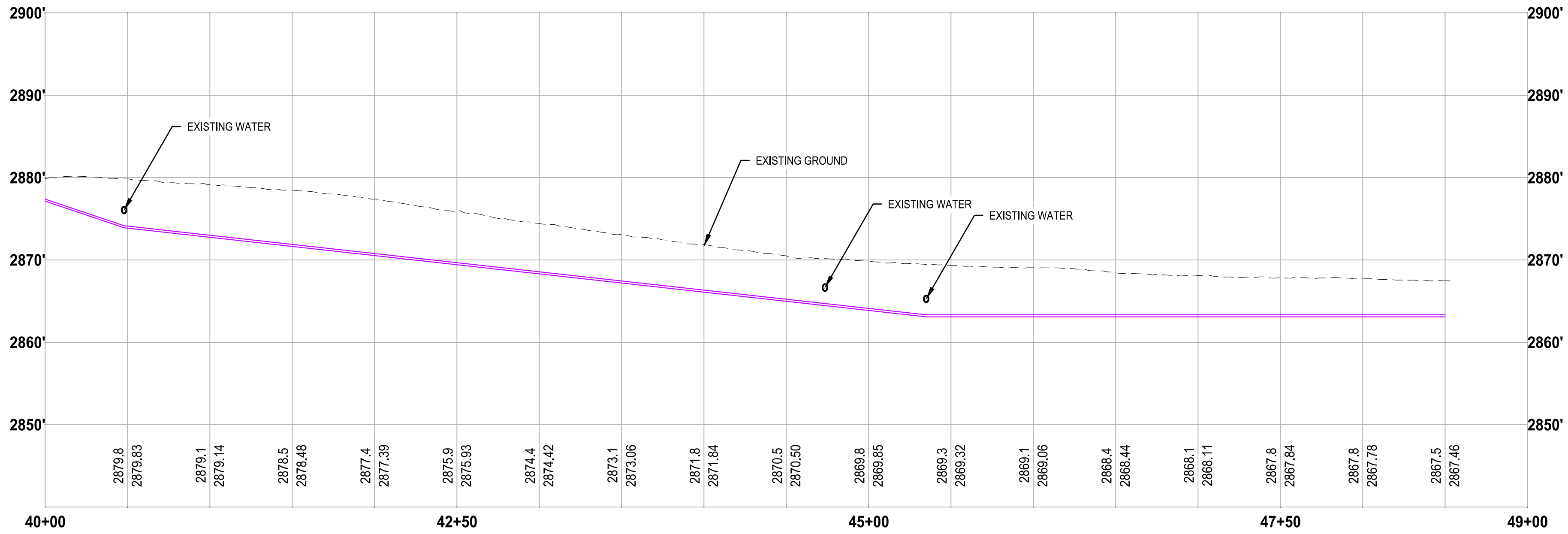
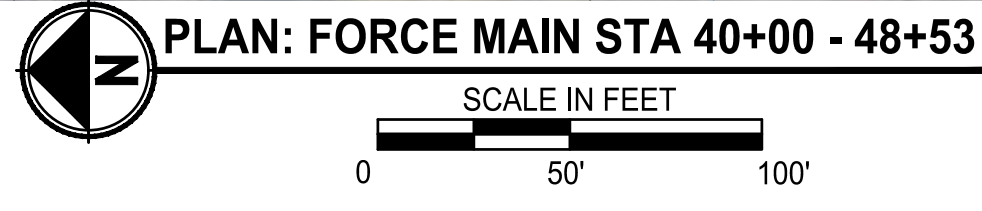
DRAWING NO.  
**C3.21**

30 % REVIEW SUBMITTAL  
NOT FOR CONSTRUCTION

LAYOUT: C3.22 FORCE MAIN STA 40+00 - 48+53 PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-008 Terrebonne\WWS\Study\PH2\995\svcs\CADD\DWG\SHEETS PLOTTED BY: weybrjcs DATE: Tuesday, September 5, 2023 8:45:55 AM



NOTE: CONTRACTOR TO POTHOLE CROSSING UTILITIES AT LEAST 200' AHEAD OF CURRENT WORK AREA TO ADJUST PIPE ALIGNMENT AND GRADE TO AVOID CONFLICTS



PRELIMINARY

REVISIONS	DATE	BY

ONE INCH AT FULL SCALE IF NOT INDICATED OTHERWISE

	DATE	DESIGNED	CHECKED
	8/10/2023	RWR	RWR
	JOB NO.	DRAWN	APPROVED
	297-2509-008	MJI	RWR

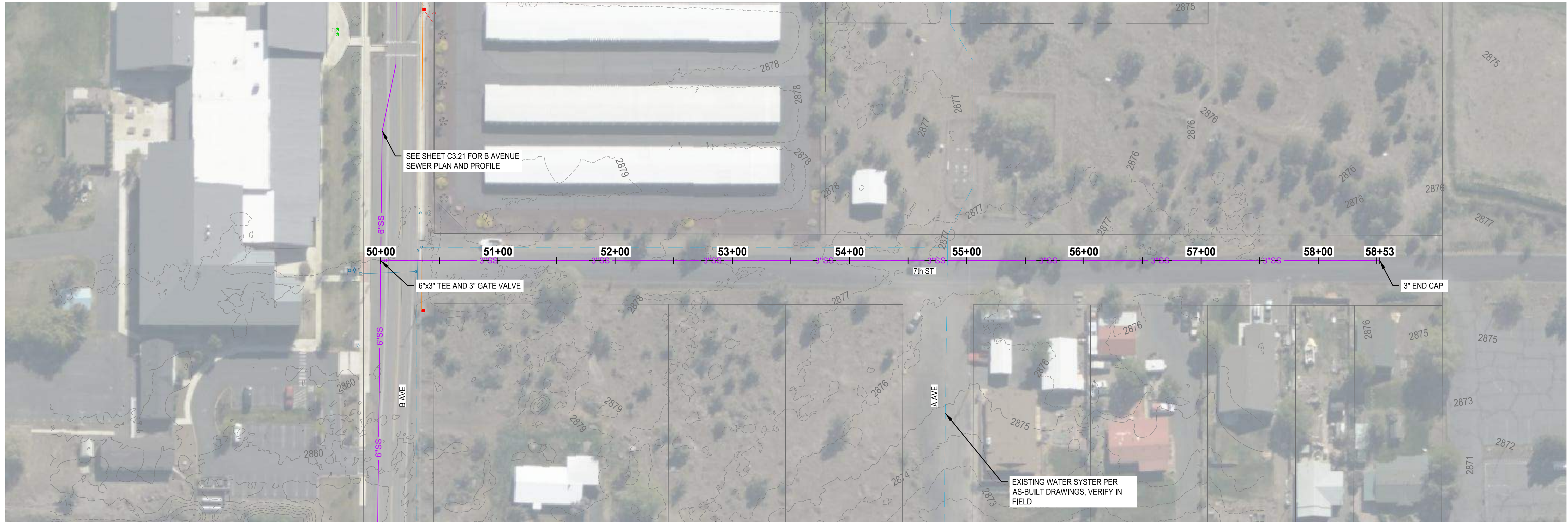
PROJECT NAME  
**TERREBONE SEWER**  
TERREBONE, OR

**FORCE MAIN STA 40+00 - 48+53**

DRAWING NO.  
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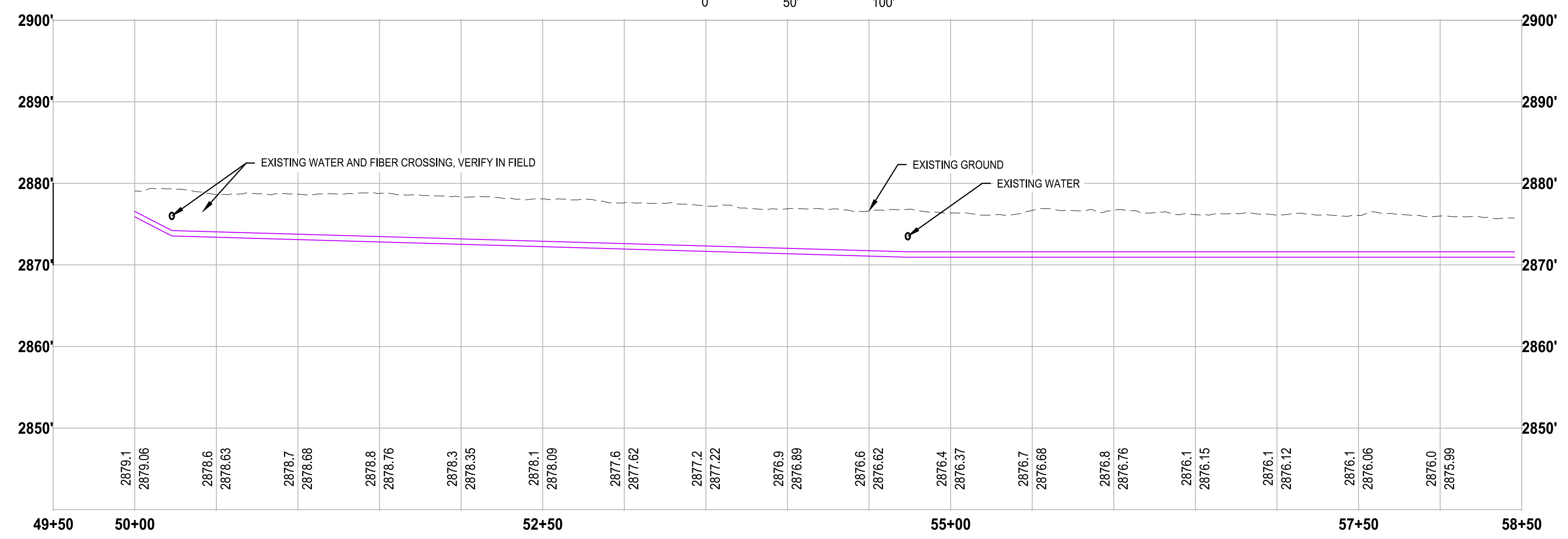
**30 % REVIEW SUBMITTAL**  
NOT FOR CONSTRUCTION

LAYOUT: C3.23 FORCE MAIN STA 50+00 - 58+46 PATH: U:\Bend\Projects\Clients\2509--Deschutes County\297-2509-008 Terrebonne\WWS\Study\PH2\995\svcs\CADD\DWG\SHEETS PLOTTED BY: weybrjcs DATE: Tuesday, September 5, 2023 8:46:33 AM



**PLAN: FORCE MAIN STA 50+00 - 58+46**  
SCALE IN FEET  
0 50' 100'

NOTE: CONTRACTOR TO POTHOLE CROSSING UTILITIES AT LEAST 200' AHEAD OF CURRENT WORK AREA TO ADJUST PIPE ALIGNMENT AND GRADE TO AVOID CONFLICTS



**PROFILE: FORCE MAIN STA 50+00 - 58+50**  
SCALE IN FEET  
0 50' 100'  
4'

PRELIMINARY

REVISIONS	DATE	BY

ONE INCH AT FULL SCALE, IF NOT ACCORDINGLY

<b>Parametrix</b> ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES	
DATE: 8/10/2023	CHECKED: RWR
JOB NO.: 297-2509-008	APPROVED: RWR
DESIGNED: RWR	DRAWN: MJI

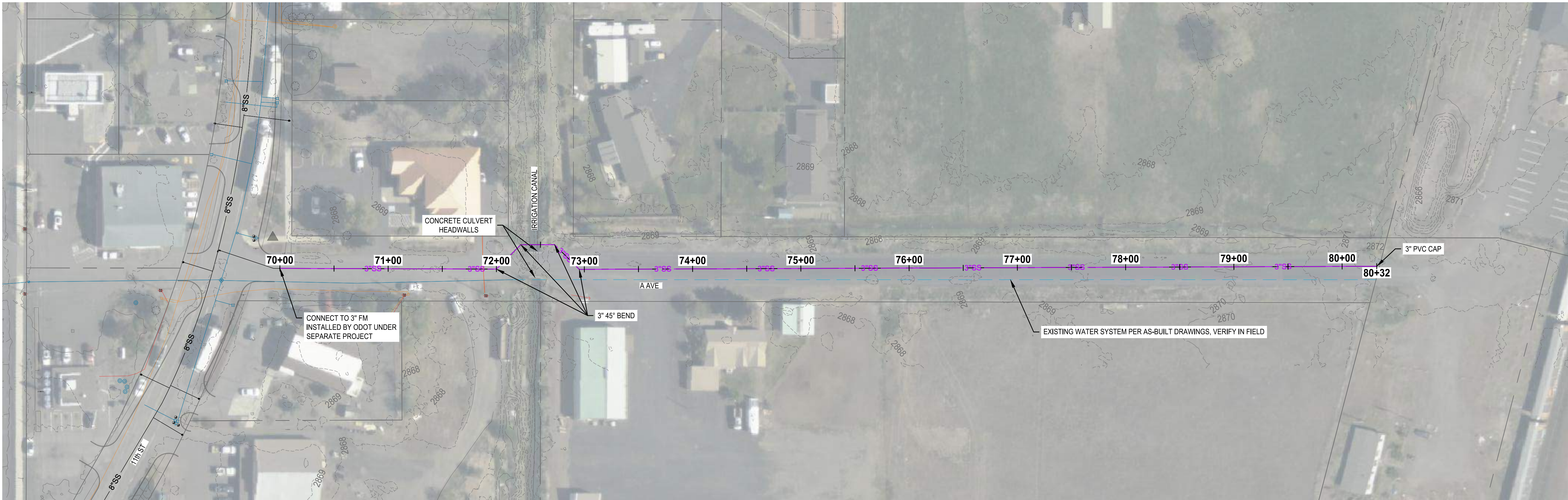
PROJECT NAME  
**TERREBONE SEWER**  
TERREBONE, OR

**FORCE MAIN STA 50+00 - 58+46**

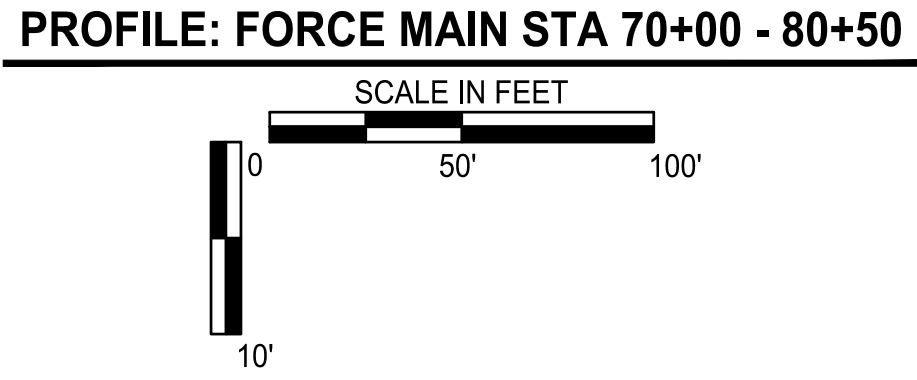
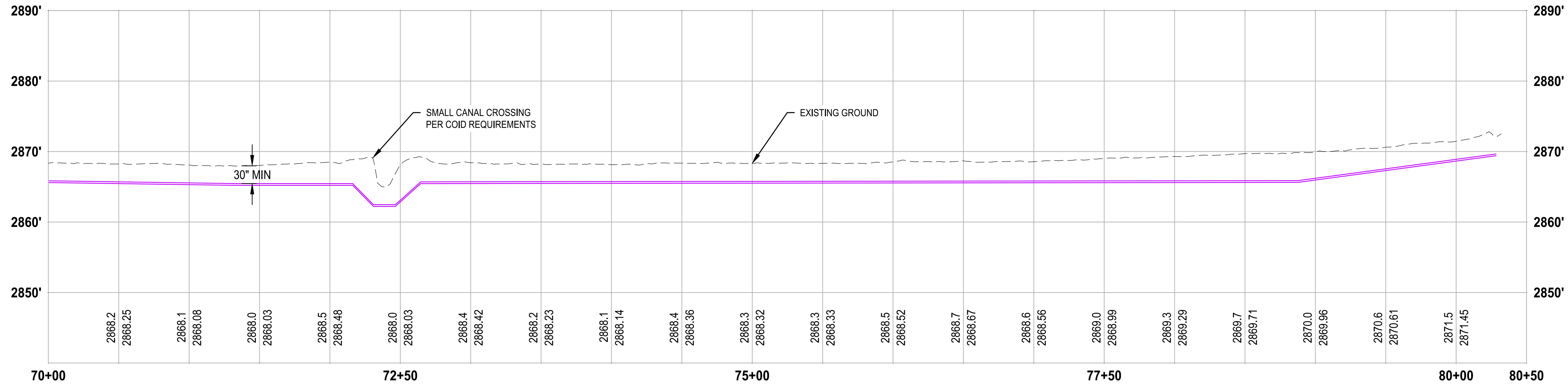
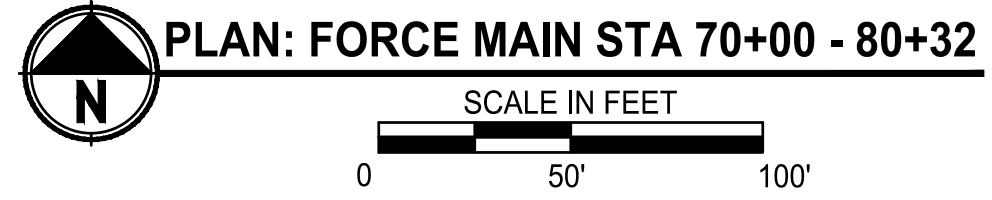
DRAWING NO.  
**C3.23**

**30 % REVIEW SUBMITTAL**  
NOT FOR CONSTRUCTION

LAYOUT: C3.24 FORCE MAIN STA 70+00 - 80+32 PATH: U:\Bent\Projects\Clients\2509-Deschutes County\297-2509-008 Terrebonne\WWSStudy\PH2\995ves\CADD\DWG\SHEETS PLOTTED BY: weybjr Date: Tuesday, September 5, 2023 8:47:31 AM



NOTE: CONTRACTOR TO POTHOLE CROSSING UTILITIES AT LEAST 200' AHEAD OF CURRENT WORK AREA TO ADJUST PIPE ALIGNMENT AND GRADE TO AVOID CONFLICTS



REVISIONS	DATE	BY

ONE INCH AT FULL SCALE. IF NOT SHOWN, SCALE ACCORDINGLY.

<b>Parametrix</b> ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES	DATE: 8/10/2023 JOB NO.: 297-2509-008	DESIGNED: RWR DRAWN: MJJ	CHECKED: RWR APPROVED: RWR
	PROJECT NAME: TERREBONE, OR FORCE MAIN STA 70+00 - 80+32		

PRELIMINARY

PROJECT NAME  
**TERREBONE, OR**

**FORCE MAIN STA 70+00 - 80+32**

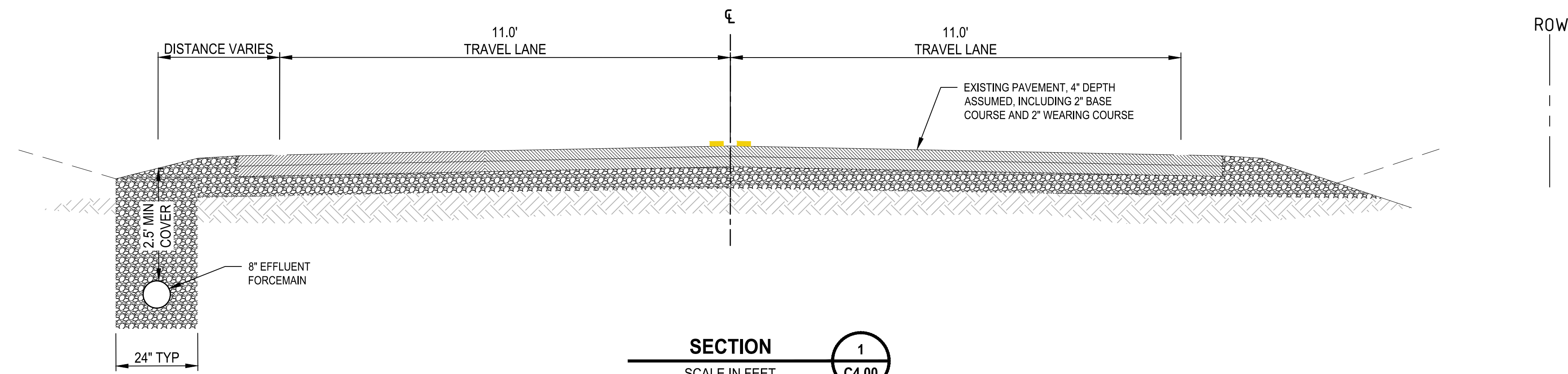
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**C3.24**

**30% REVIEW SUBMITTAL**  
NOT FOR CONSTRUCTION

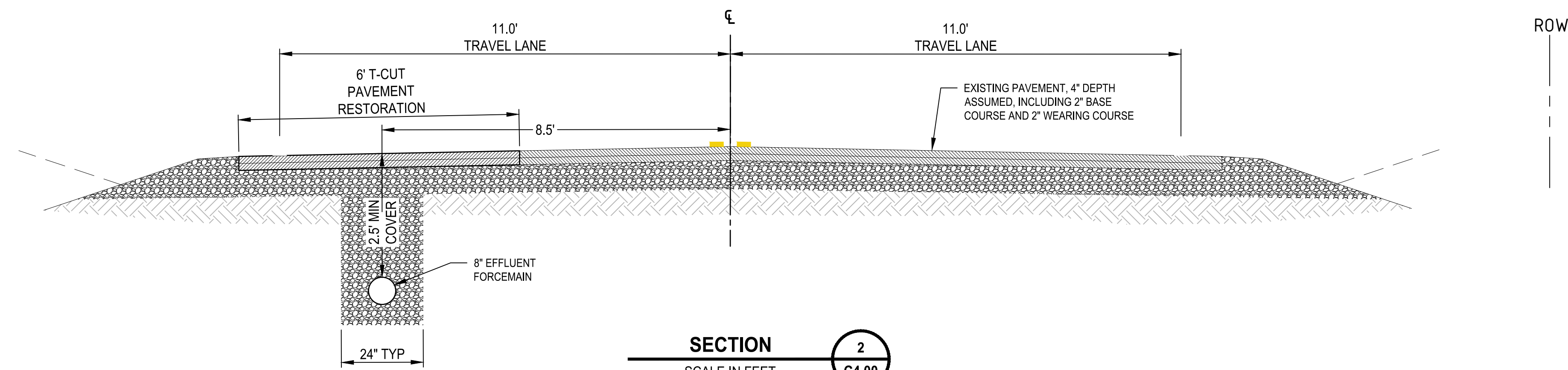
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ROW

ROW



**SECTION 1**  
SCALE IN FEET  
0 2' 4'  
C4.00



**SECTION 2**  
SCALE IN FEET  
0 2' 4'  
C4.00

REVISIONS	DATE	BY

ONE INCH AT FULL SCALE IF NOT ACCORDINGLY

	DESIGNED	RWR	CHECKED	RWR
	DRAWN	MJI	APPROVED	RWR
DATE	8/10/2023	JOB No.	297-2509-008	

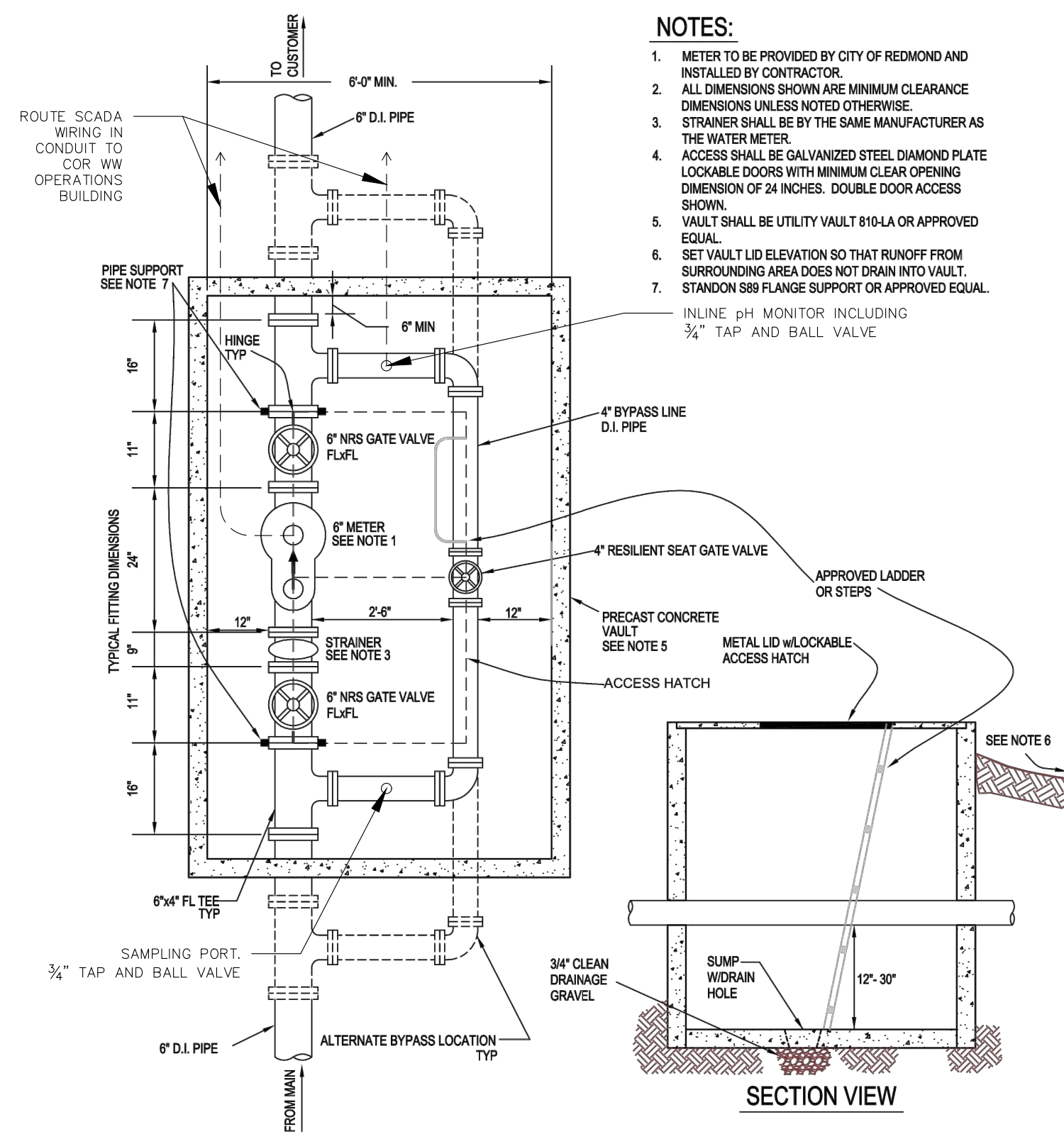
PRELIMINARY

PROJECT NAME	TERREBONE SEWER
	TERREBONE, OR

DETAILS
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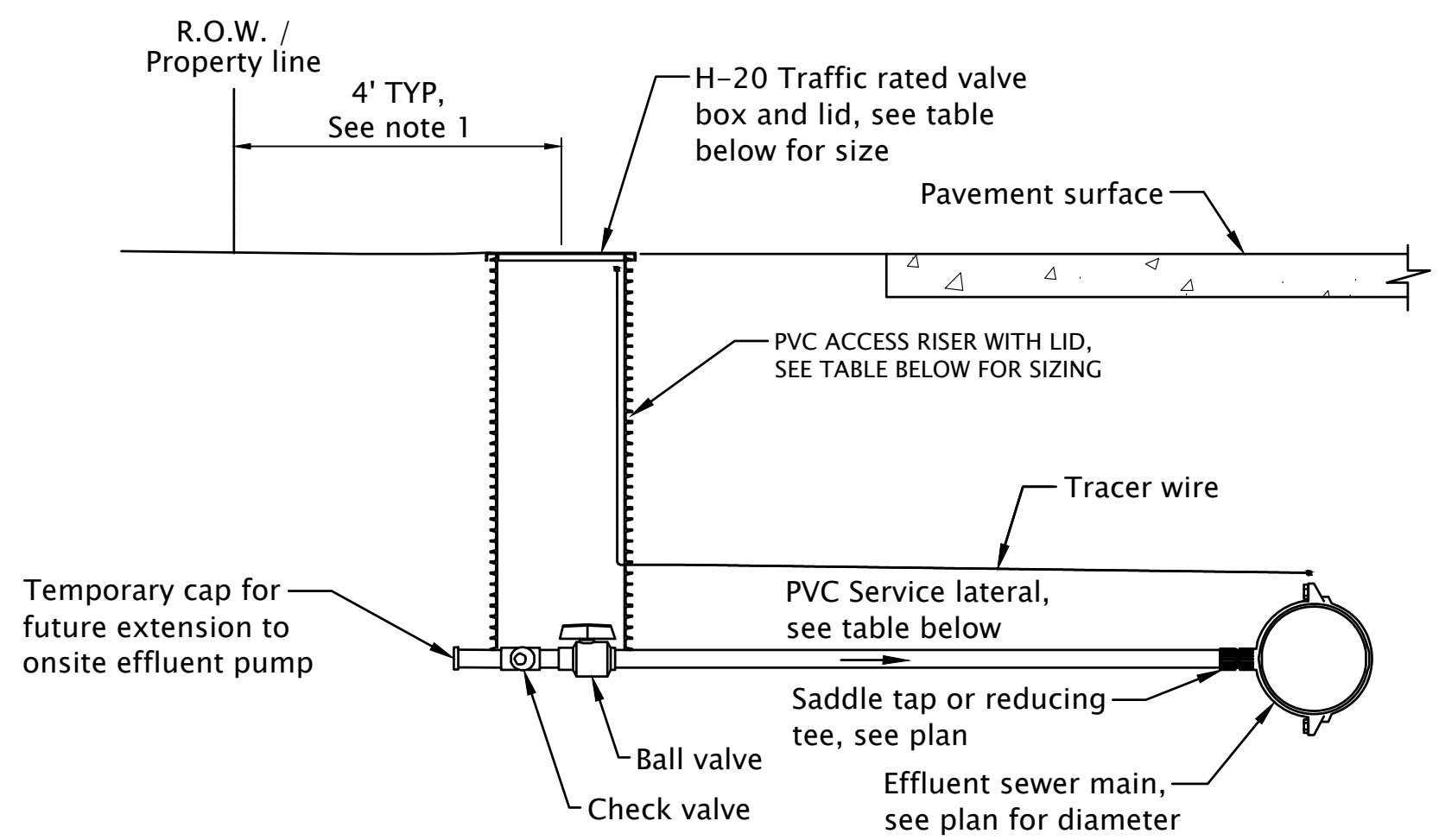
DRAWING NO.	C4.00
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30 % REVIEW SUBMITTAL  
NOT FOR CONSTRUCTION



- NOTES:**
- METER TO BE PROVIDED BY CITY OF REDMOND AND INSTALLED BY CONTRACTOR.
  - ALL DIMENSIONS SHOWN ARE MINIMUM CLEARANCE DIMENSIONS UNLESS NOTED OTHERWISE.
  - STRAINER SHALL BE BY THE SAME MANUFACTURER AS THE WATER METER.
  - ACCESS SHALL BE GALVANIZED STEEL DIAMOND PLATE LOCKABLE DOORS WITH MINIMUM CLEAR OPENING DIMENSION OF 24 INCHES. DOUBLE DOOR ACCESS SHOWN.
  - VAULT SHALL BE UTILITY VAULT 810-LA OR APPROVED EQUAL.
  - SET VAULT LID ELEVATION SO THAT RUNOFF FROM SURROUNDING AREA DOES NOT DRAIN INTO VAULT. STANDON 888 FLANGE SUPPORT OR APPROVED EQUAL.
  - INLINE pH MONITOR INCLUDING 3/4" TAP AND BALL VALVE.

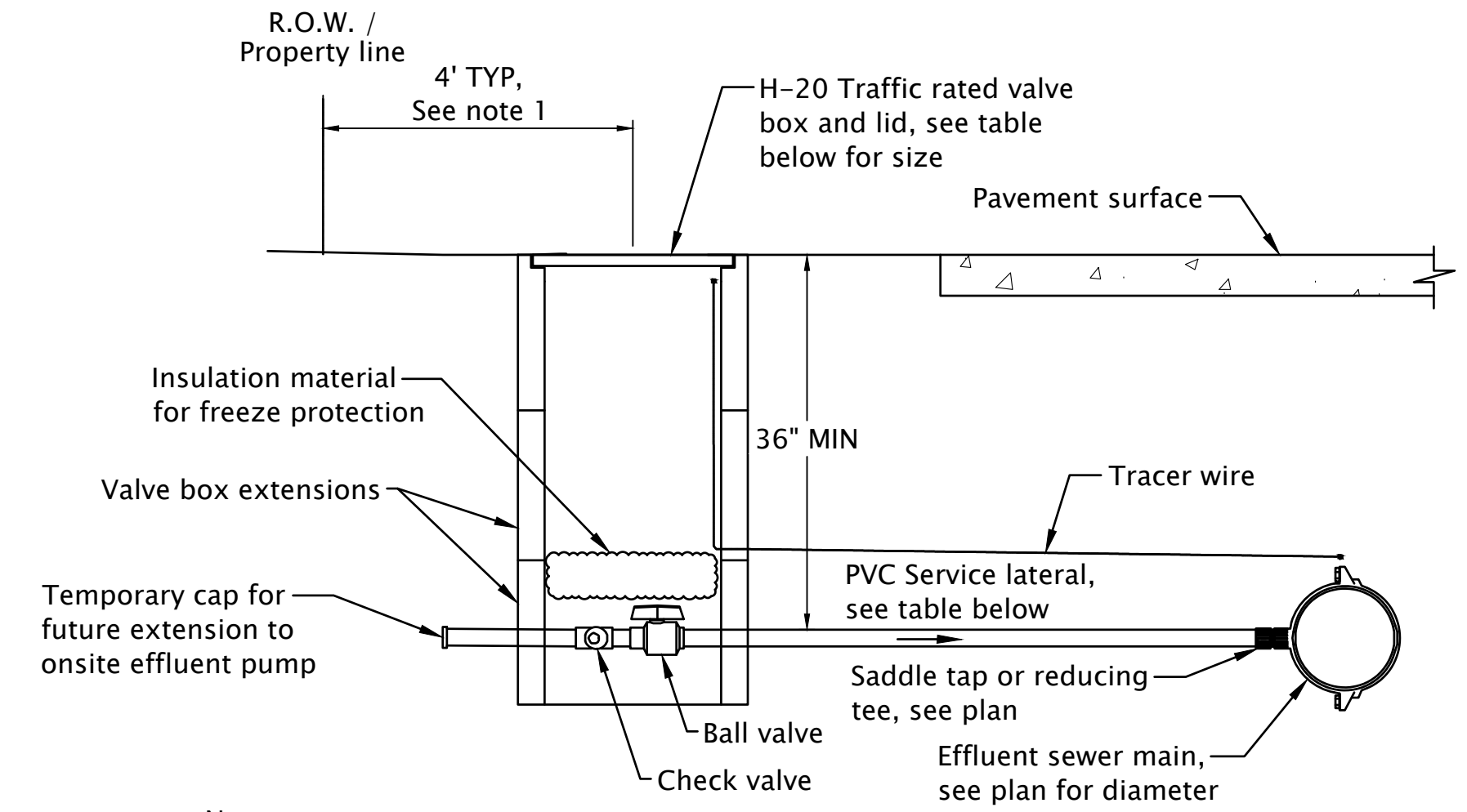
**EFFLUENT METER & SAMPLING VAULT DETAIL** 1  
N.T.S. C4.01



- Notes:**
- Where space between back of sidewalk and R.O.W. is insufficient for valve box to be placed 4 feet O.C. from the R.O.W., valve box may be installed closer to property line, if a T.C.E. is obtained for construction at service location.
  - If located within paved area see sewer service and valve box in pavement detail.

SERVICE TYPE	RESIDENTIAL	COMMERCIAL
SERVICE LINE AND VALVE DIAMETER	1"	2"
VALVE BOX DIAMETER	12"	18"

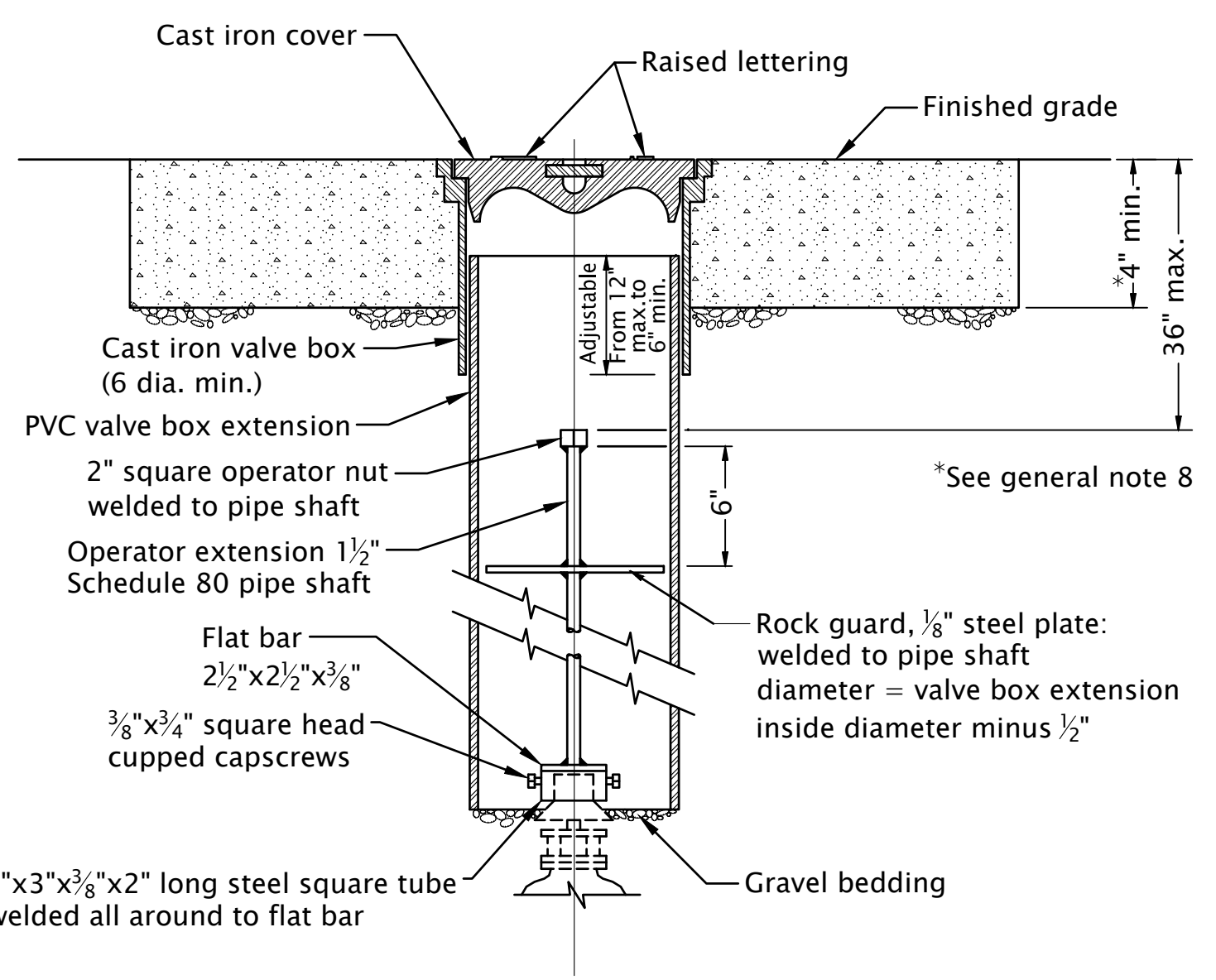
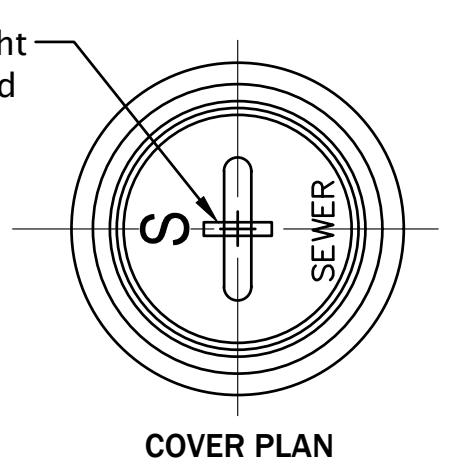
**SEWER SERVICE AND VALVE BOX IN UNPAVED AREA** 3  
N.T.S. C4.01



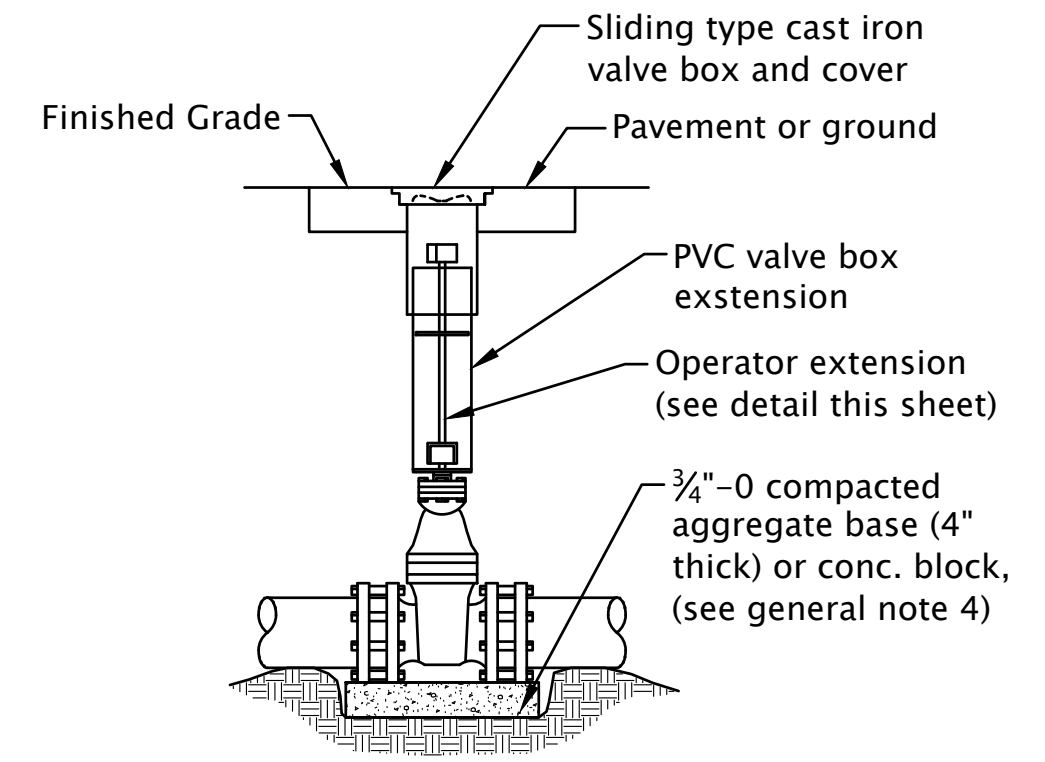
- Notes:**
- Where space between back of sidewalk and R.O.W. is insufficient for valve box to be placed 4 feet O.C. from the R.O.W., valve box may be installed closer to property line, if a T.C.E. is obtained for construction at service location.
  - If located outside of paved area see sewer service and valve box in unpaved area detail.

SERVICE TYPE	RESIDENTIAL	COMMERCIAL
SERVICE LINE AND VALVE DIAMETER	1"	2"
VALVE BOX DIMENSION	13" DIA.	16"x22"
VALVE BOX SPECIFICATION (OR APPROVED EQUAL)	CHRISTY G12	CHRISTY B1017

**SEWER SERVICE AND VALVE BOX IN PAVEMENT** 3  
N.T.S. C4.01



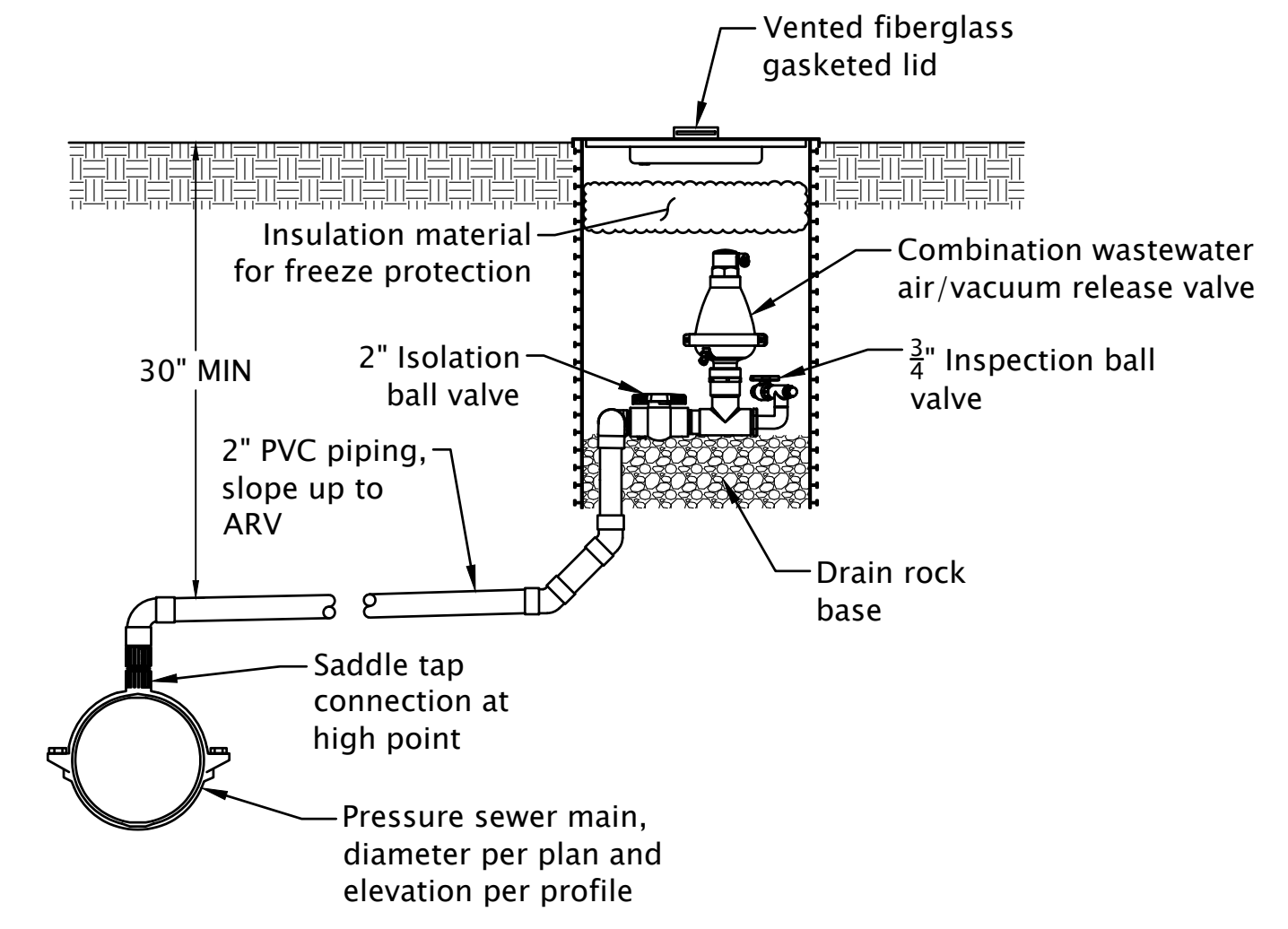
**VALVE BOX EXTENSION SECTION**



**VALVE BOX ASSEMBLY DETAIL**

- GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:**
- Valve box not to rest on operating assembly.
  - Operator extension required when valve nut is deeper than 4' from finish grade.
  - Center valve box on axis of operator nut.
  - Valves 12" and smaller shall be provided with compacted aggr. base on undisturbed ground. Valves greater than 12" shall be installed on precast concrete block, (4" thick).
  - Welds shall be minimum 1/4" all around.
  - Hot dip galvanize operator extension after fabrication.
  - Casting shall meet H20 load requirement.
  - Provide concrete or asphalt pad (24" square, 4" thick), when required.
  - See project plans for details not shown.

**TYPICAL VALVE BOX ASSEMBLY** 3  
N.T.S. C4.01



**AIR RELEASE VALVE ASSEMBLY**

N.T.S. 3 C4.01

BY	DATE	REVISIONS

ONE INCH AT FULL SCALE IF NOTED ACCORDINGLY

**Parametrix**  
ENGINEERING - PLANNING - ENVIRONMENTAL SCIENCES

DATE: 8/10/2023  
JOB NO.: 297-2509-008

DESIGNED: RWR  
DRAWN: RWR  
CHECKED: RWR  
APPROVED: RWR

PRELIMINARY

PROJECT NAME  
**TERREBONE SEWER**  
TERREBONE, OR

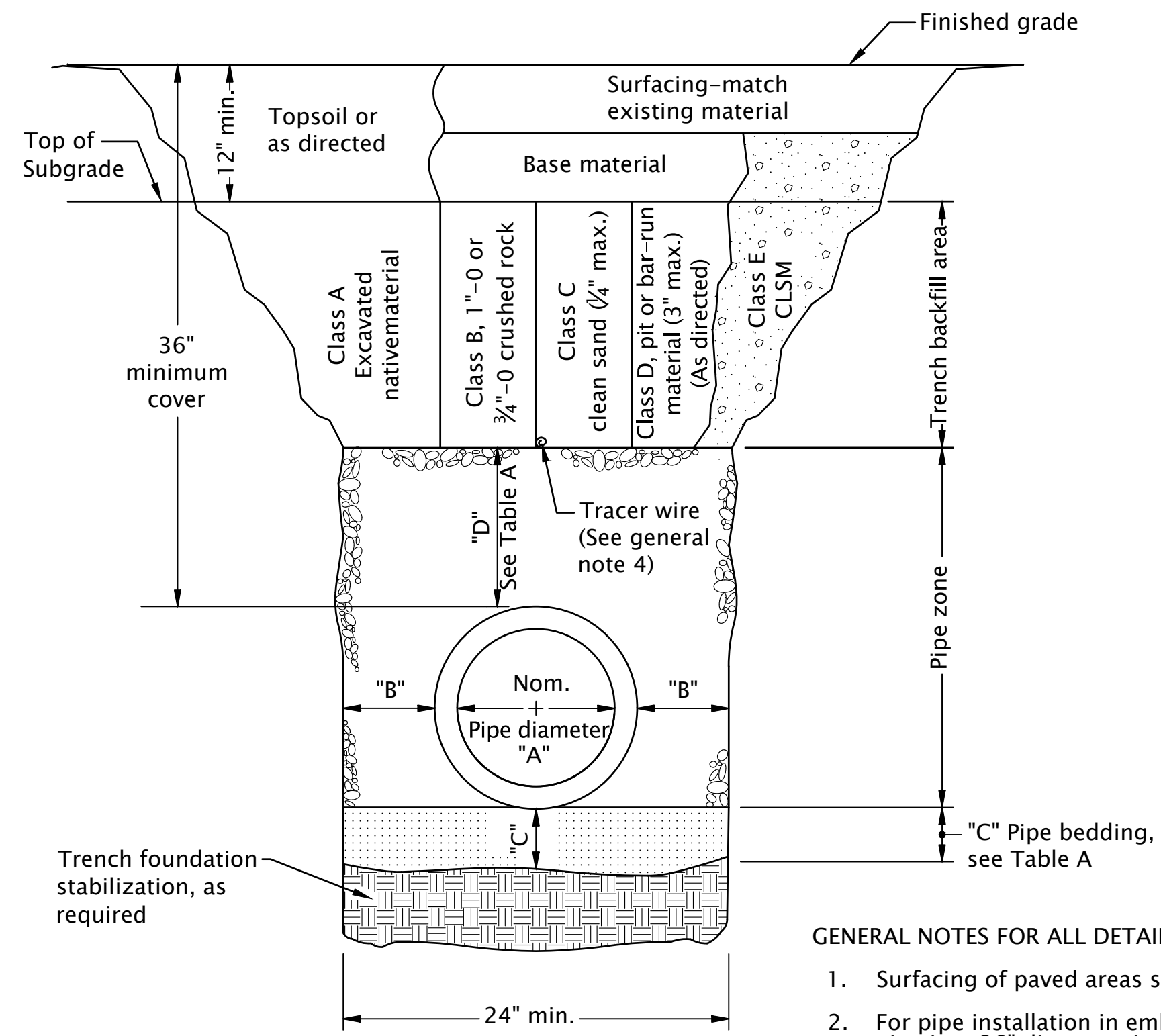
**DETAILS**

DRAWING NO.  
**C4.01**

**30 % REVIEW SUBMITTAL**  
NOT FOR CONSTRUCTION



PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-008 Terrebonne\StudyPH2\_995vcs\CADD\DWG\SHEETS  
 LAYOUT: DETAILS  
 PLOTTED BY: wjbjjes DATE: Tuesday, September 5, 2023 8:48:23 AM



**TABLE A**

"A" (in)	"B" (in)	"C" (in)	"D" (in)
4	10	4	8
6	10	4	8
8	10	6	10
10	10	6	10
12	12	6	10
15	12	6	10
18	16	6	12
21	16	6	12
24	18	6	12
30	18	6	12
36	24	6	14
42	24	6	14
48	24	6	14
54	24	6	14
60	24	6	14
66	24	6	14
72	24	6	14

For pipes over 72" diameter, see general note 3.

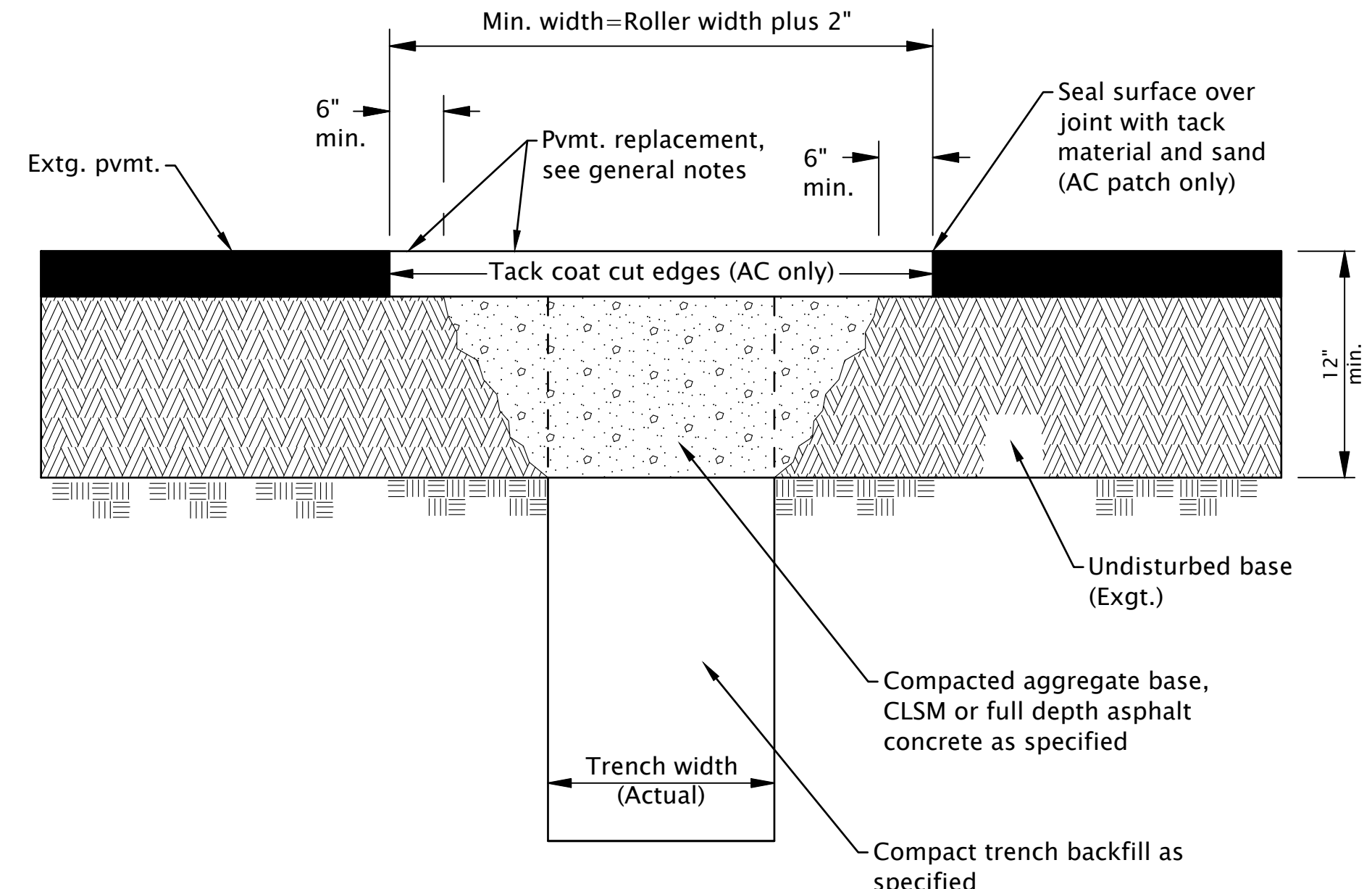
**GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:**

- Surfacing of paved areas shall comply with street cut Std. Dwg. RD302.
- For pipe installation in embankment areas where the trench method will not be used and the pipe is  $\geq 36"$  diameter, increase dimension "B" to nominal pipe diameter.
- Pipes over 72" diameter are structures, and are not applicable to this drawing.
- See Std. Dwg. RD336 for tracer wire details (When required).
- Provide 1.5' min. vertical separation at water/sewer crossings per OAR 333-061-0050 (9)(c)(A).

**TRENCH BACKFILL, BEDDING, PIPE ZONE AND MULTIPLE INSTALLATIONS**

N.T.S

1  
C4.02



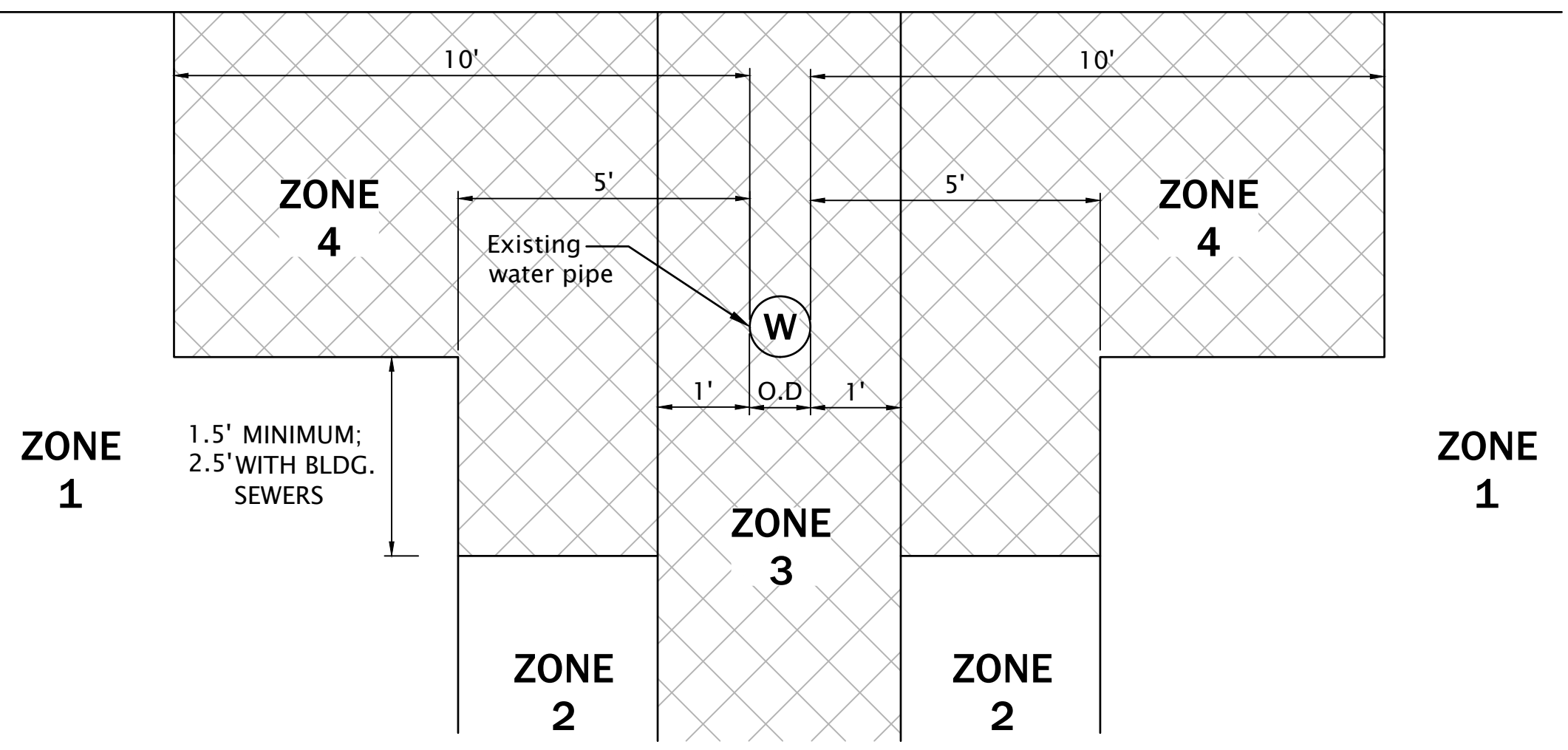
**GENERAL NOTES FOR ALL DETAILS ON THIS SHEET:**

- All existing AC or PCC pavement shall be sawcut prior to repaving.
- Concrete pavement shall be replaced with concrete to a minimum thickness of 8" or to the thickness of removed pavement, whichever is greater.
- For joining new concrete to existing concrete, see contract plans for specific details.
- Place AC mix minimum thkn. of 6" or the thkn. of the removed pavement, whichever is greater. compact as specified.

**STREET CUT**

N.T.S

2  
C4.02

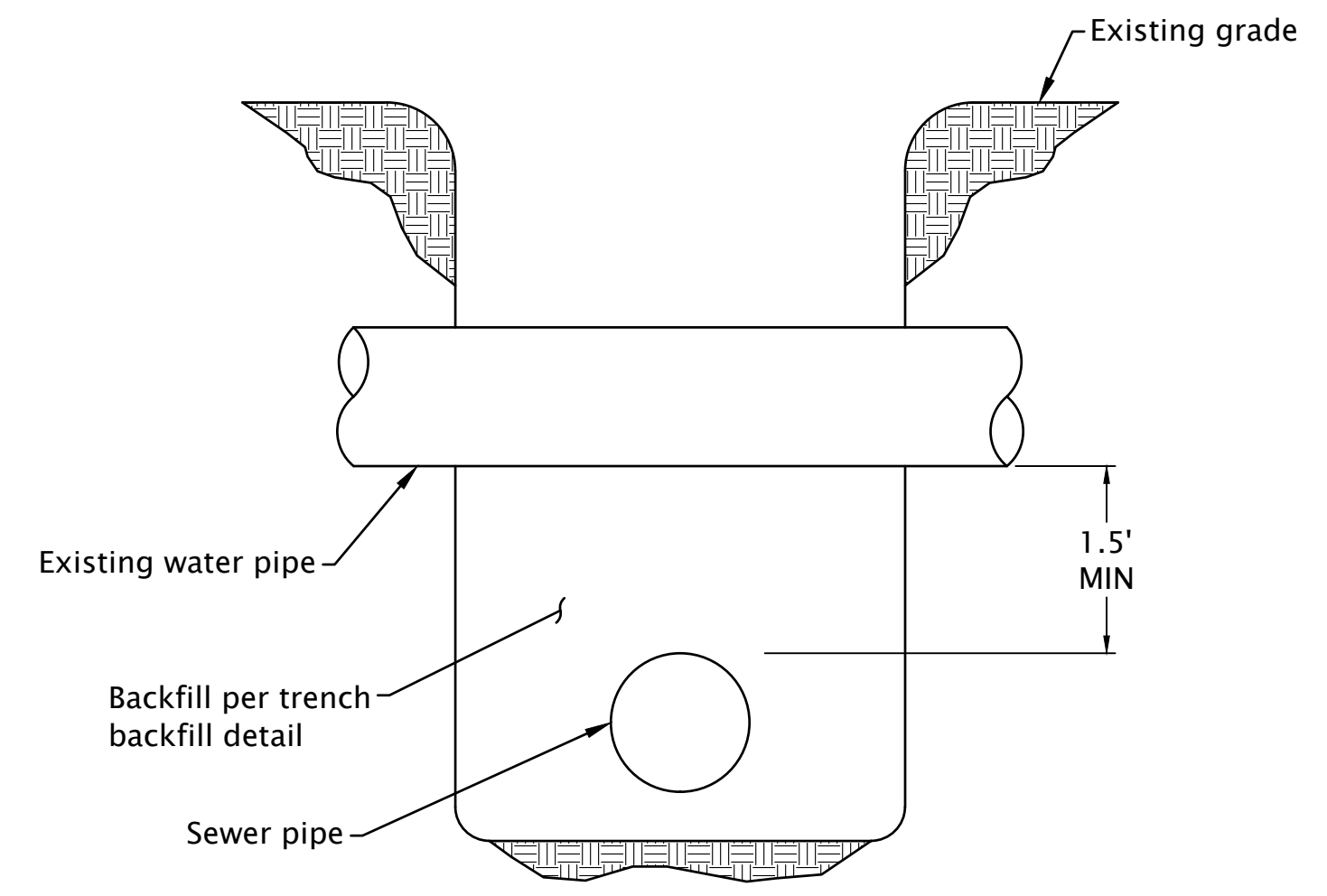


- ZONE 1** SEWER LINE CAN BE LAID IN THIS AREA WITH NO SPECIAL REQUIREMENTS OF EITHER CONSTRUCTION OR MATERIALS
- ZONE 2** INSTALLING A SEWER LINE IN THIS ZONE IS NOT ADVISABLE AND MUST BE JUSTIFIED IN EACH CASE. WATER LINE SHOULD BE LOCATED ON A BENCH OF UNDISTURBED EARTH WHEN CONSTRUCTED CONCURRENTLY IN A COMMON TRENCH WITH SEWER LINE.
- ZONE 3** INSTALLING A SEWER MAIN DIRECTLY OVER A WATER MAIN OR DIRECTLY UNDER A WATER MAIN IN THIS ZONE IS PROHIBITED SINCE TAPPING AND O. & M. OF EACH LINE WOULD BE IMPAIRED.
- ZONE 4** SEWER LINE CONSTRUCTION IN THIS ZONE WOULD GENERALLY NOT BE PERMITTED. EACH INSTALLATION MUST BE JUSTIFIED. IF CONSTRUCTION WAS PERMITTED, PRESSURE PIPE MATERIALS FOR THIS SEWER LINE WOULD BE REQUIRED.

**TYPICAL WATER/SEWER SEPARATION FOR PARALLEL MAINS**

N.T.S

3  
C4.02



OAR 333-061-0050 (9)(c)(A) WHEREVER POSSIBLE, THE BOTTOM OF THE WATER LINE SHALL BE 1.5 FEET OR MORE ABOVE THE TOP OF THE SEWER LINE AND ONE FULL LENGTH OF THE WATERLINE SHALL BE CENTERED AT THE CROSSING

**TYPICAL WATER/SEWER SEPARATION FOR PERPENDICULAR CROSSING**

N.T.S

4  
C4.02

**RESTRAINED LENGTH TABLE FOR PVC PIPE FITTINGS**

FITTING	NOMINAL MAIN SIZE (IN)	BEND ANGLE (°)	BRANCH OR REDUCED SIZE (IN)	MIN. RESTRAINED LENGTH (FT)
END CAP	3			47
BEND	4	11.25		2
BEND	4	22.50		4
BEND	4	45		7
TEE	4		3	LR 1, LB 34
TEE	4		3	LR 2, LB 17
TEE	4		3	LR $\geq 4$ , LB 1
END CAP	4			51
BEND	6	11.25		3
BEND	6	45		10
TEE	6		6	LR 3, LB 45
TEE	6		6	LR 6, LB 19
TEE	6		6	LR $\geq 9$ , LB 1
TEE	6		4	LR 1, LB 38
TEE	6		4	LR 2, LB 26
TEE	6		4	LR $\geq 4$ , LB 1
REDUCER	6		4	37
END CAP	6			71
REDUCER	8		6	39
END CAP	8			93

TO DEVELOP MINIMUM RESTRAINED LENGTH, THE EBAA IRON RESTRAINT LENGTH CALCULATOR WAS USED WITH THE FOLLOWING ASSUMPTIONS: SEWER LINES ARE TO BE BACKFILLED AND COMPACTED PER SPECIFICATIONS. PIPE MATERIAL USED IS PVC. SOIL TYPE IS GW (WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES). A FACTOR OF SAFETY OF 2, TRENCH TYPE 5, DEPTH OF BURY 2.5 FT, AND A TEST PRESSURE OF 150 PSI. IN SOME INSTANCES IT MAY BE REQUIRED TO DEVIATE FROM 2.5 FEET OF BURY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE WATER SYSTEM IS FULLY RESTRAINED IN AREA OF WORK. THIS MAY INCLUDE IDENTIFYING AND RESTRAINING JOINTS ON EXISTING PIPING AT WATERLINE CONNECTIONS. PIPE RESTRAINTS ON EXISTING AND PROPOSED WATERLINES ARE INCIDENTAL TO CONTRACT. ASSUMES NO JOINTS WITHIN RESTRAINED LENGTH SPECIFIED ALONG RUN (LR) ON EITHER SIDE OF TEE, AND NO UNRESTRAINED JOINTS WITHIN LENGTH SPECIFIED ALONG BRANCH (LB).

**30 % REVIEW SUBMITTAL  
NOT FOR CONSTRUCTION**

REVISIONS	DATE	BY

ONE INCH  
AT FULL  
SCALE IF  
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SPECIFIED  
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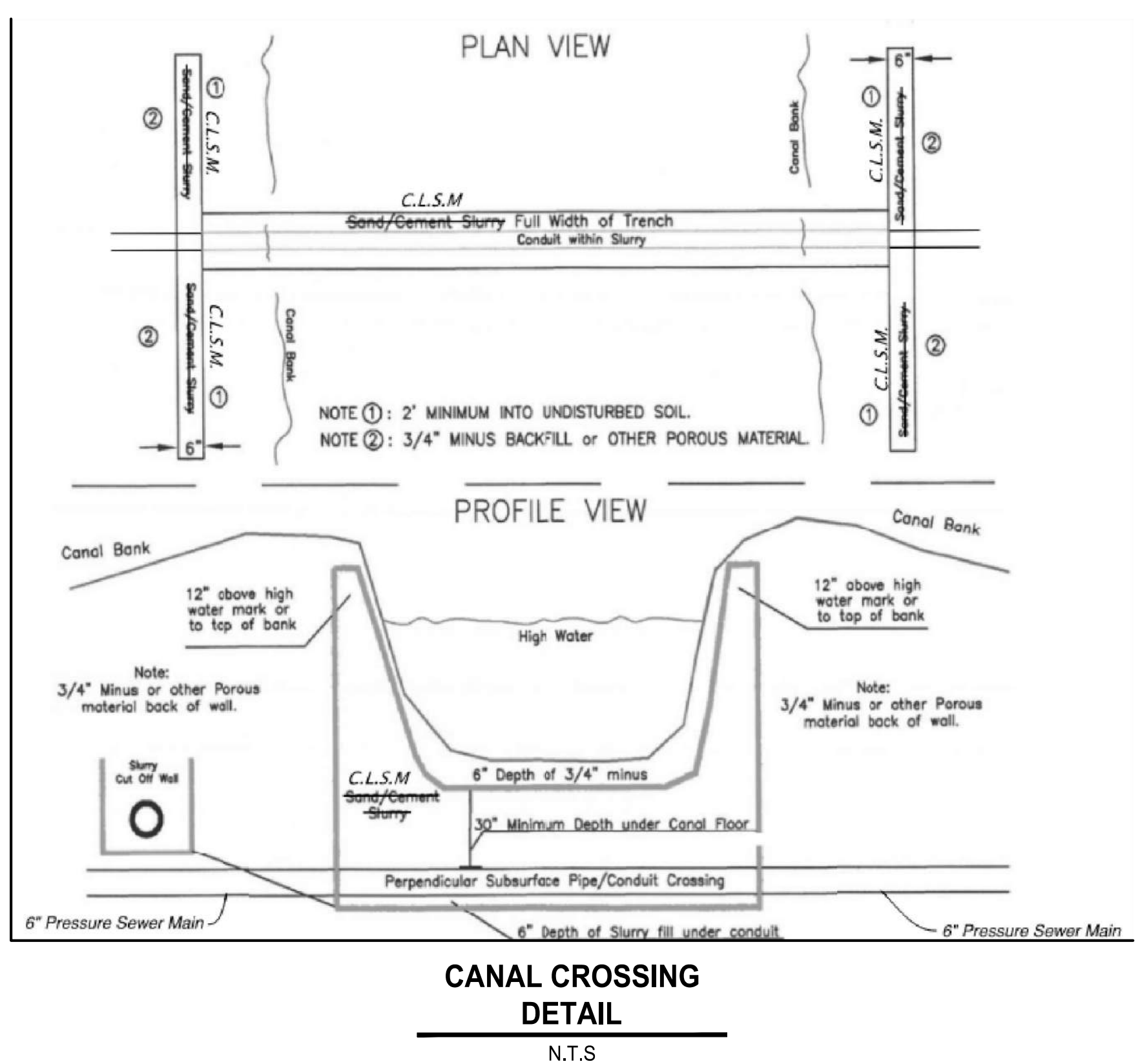
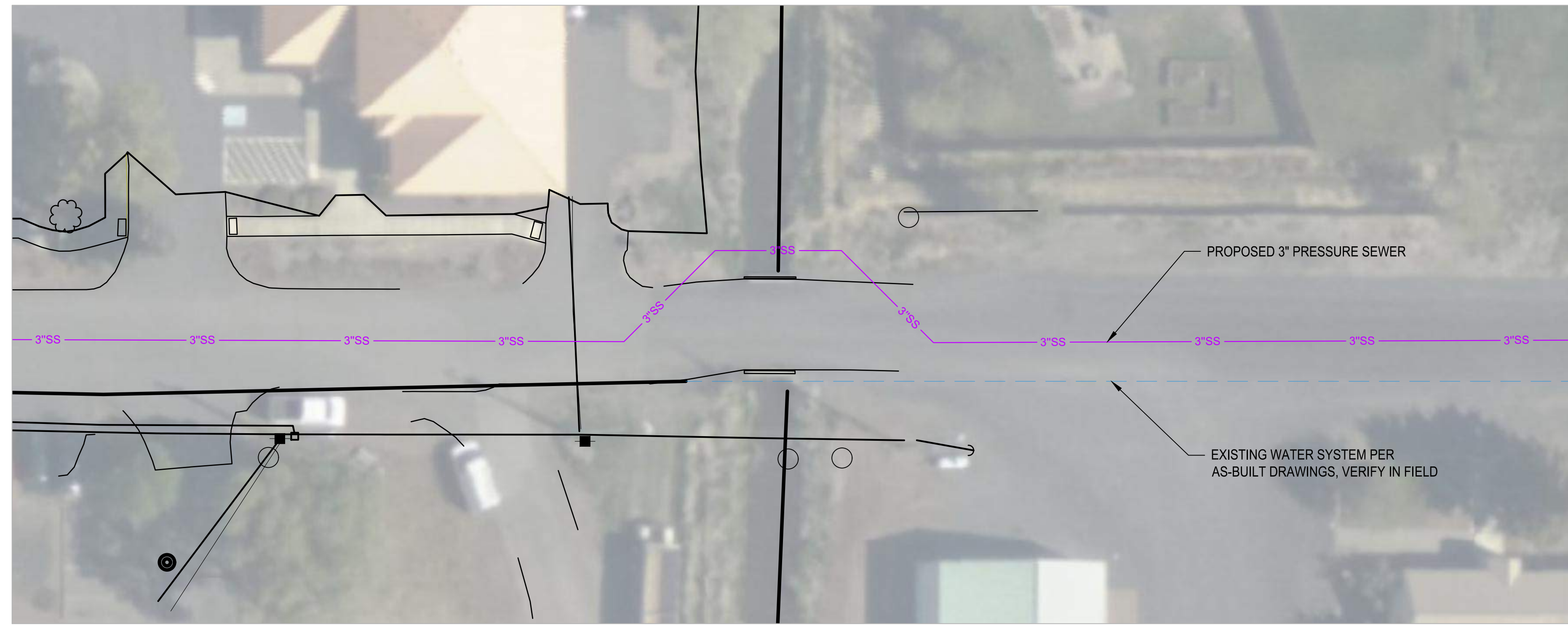
PROJECT NAME  
**TERREBONE SEWER**  
TERREBONE, OR

**DETAILS**

DRAWING NO.  
**C4.02**

PRELIMINARY

LAYOUT: DETAILS PATH: U:\Bend\Projects\Clients\2509-Deschutes County\297-2509-008 TerrebonneWWS\StudyPH2\_995vcs\CADD\DWG\SHEETS PLOTTED BY: weybjjes DATE: Tuesday, September 5, 2023 8:48:49 AM



REVISIONS	DATE	BY

**Parametrix**  
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DATE: 8/10/2023	DESIGNED: RWR	CHECKED: RWR
JOB No.: 297-2509-008	DRAWN: RWR	APPROVED: RWR

PRELIMINARY

PROJECT NAME  
**TERREBONE SEWER**  
TERREBONE, OR

**DETAILS**

DRAWING NO.  
**C4.03**

**30 % REVIEW SUBMITTAL**  
NOT FOR CONSTRUCTION