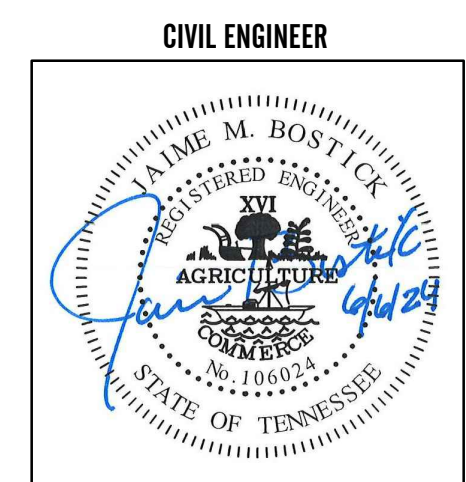


CITY OF BELLS SR 76 UTILITY RELOCATION



 **VICINITY MAP**
SCALE: NTS

CONSTRUCTION DOCUMENTS
JUNE 6, 2024
PROJECT NUMBER 21438



SR 76, CROCKETT COUNTY, TN

THIS DOCUMENT IS THE PROPERTY OF A2H, INC. AND ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS SHALL BE RETAINED BY SAME. ANY CHANGE IN DESIGN OR CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CLIENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES.

GENERAL NOTES

1. THE CONTRACTOR SHALL NOTIFY THE CITY OF BELLS GAS AND WATER DIVISION DEPARTMENT AT 731-663-2350 BEFORE COMMENCING CONSTRUCTION.
2. THE EXACT LOCATION OF ALL EXISTING UTILITIES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR. CARE SHALL BE TAKEN TO PROTECT ANY UTILITIES THAT ARE TO REMAIN AND ALL CONSTRUCTION SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY/AGENCY. ANY DAMAGE, REPAIR, OR RELOCATION SHALL BE DONE BY LOCAL STANDARDS AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED PRIOR TO ANY CONSTRUCTION ACTIVITIES TAKING PLACE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING ANY UTILITY COMPANY WHICH MAINTAINS A UTILITY LINE WITHIN THE BOUNDARIES OF THE PROJECT BEFORE THE INITIATION OF ANY CONSTRUCTION OR DEMOLITION ON THE PROJECT OR IN THE STREETS BORDERING THE PROJECT. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ANY DAMAGE INCURRED BY ANY UTILITY COMPANY TO THEIR UTILITY LINES WHETHER SHOWN ON THE CONSTRUCTION PLANS OR NOT, DURING WORK ON THE PROJECT.
4. SEVENTY-TWO (72) HOURS BEFORE BEGINNING ANY EXCAVATION, THE CONTRACTOR SHALL CALL TENNESSEE ONE-CALL 811 AND THE LOCAL UTILITY COMPANIES FOR THE LOCATION OF UNDERGROUND UTILITIES. THE CONTRACTOR IS ADVISED TO INQUIRE ABOUT ANY UTILITY OPERATORS WHO MAY NOT PARTICIPATE IN THE ONE CALL SYSTEM.

THE FOLLOWING INFORMATION IS REQUIRED WHEN NOTIFYING UTILITY OWNERS OF YOUR INTENT TO EXCAVATE.

| | |
|---------------------------|---------------------|
| NAME OF CALLER | START DATE & TIME |
| TELEPHONE NUMBER | TYPE OF WORK |
| COUNTY | BLASTING |
| TOWN | WORK BEING DONE BY |
| STREET ADDRESS | WORK BEING DONE FOR |
| NEAREST INTERSECTING ROAD | |

THIS INFORMATION IS DISTRIBUTED TO MEET THE REQUIREMENTS OF CFR TITLE 49 PART 192.614 OF THE PIPELINE SAFETY ACT.

5. ALL NEWLY CUT AND/OR FILLED AREAS LACKING ADEQUATE VEGETATION SHALL BE PERMANENTLY STABILIZED AS REQUIRED TO EFFECTIVELY PREVENT SOIL EROSION PER CITY OF BELLS AND STATE REGULATIONS.
6. ALL CONSTRUCTION WITHIN PUBLIC EASEMENTS AND RIGHT-OF-WAYS SHALL MEET THE CITY OF BELLS AND TENNESSEE DEPARTMENT OF TRANSPORTATION STANDARDS.
7. THE CONTRACTOR MUST HAVE WRITTEN APPROVAL FROM THE PROJECT ENGINEER BEFORE ANY CHANGE IN DESIGN IS MADE.
8. THE CONTRACTOR SHALL NOT ENTER UPON NOR CAUSE DAMAGE TO ANY ADJACENT PROPERTIES WITHOUT WRITTEN PERMISSION FROM SAID PROPERTY OWNERS.
9. ANY EXISTING UTILITIES REQUIRING RELOCATION OR REMOVAL SHALL BE THE DEVELOPER'S RESPONSIBILITY.
10. UTILITY SERVICES INCLUDING BUT NOT LIMITED TO POWER, SEWER, WATER, GAS, COMMUNICATION, ETC. SHALL BE PROTECTED AND MAINTAINED IN WORKING ORDER TO ALL ADJACENT PROPERTIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PHASING UTILITY DEMOLITION AND CONSTRUCTION AND/OR PROVIDING TEMPORARY SERVICES TO AFFECTED PROPERTIES.
11. PROTECT ALL EXISTING BENCHMARKS, IRON PINS, SURVEY CONTROL POINTS, OR OTHER MONUMENTS TO REMAIN.
12. NOTHING IN THE GENERAL NOTES OR SPECIAL PROVISIONS SHALL RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITIES TOWARD THE SAFETY AND CONVENIENCE OF THE GENERAL PUBLIC AND THE RESIDENTS ADJACENT TO THE PROPOSED CONSTRUCTION AREA.

UTILITY NOTES

1. THE LOCATIONS OF UTILITIES SHOWN WITHIN THESE PLANS ARE APPROXIMATE ONLY. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. ABOVE GRADE AND UNDERGROUND UTILITIES SHOWN WERE TAKEN FROM VISIBLE APPURTENANCES AT THE SITE, PUBLIC RECORDS, AND/OR MAPS PREPARED BY OTHERS. THEREFORE, RELIANCE UPON THE TYPE, SIZE, AND LOCATION OF UTILITIES SHOWN SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION, AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. IN TENNESSEE, IT IS A REQUIREMENT, PER "THE UNDERGROUND UTILITY DAMAGE PREVENTION ACT", THAT ANYONE WHO ENGAGES IN EXCAVATION MUST NOTIFY ALL KNOWN UNDERGROUND UTILITY OWNERS, NO LESS THAN THREE (3) OR NOT MORE THAN TEN (10) WORKING DAYS PRIOR TO THE DATE OF THEIR INTENT TO EXCAVATE AND ALSO TO AVOID ANY POSSIBLE HAZARD OR CONFLICT. NOTIFICATION BY CALLING THE TENNESSEE ONE CALL SYSTEM, INC., AT 1-800-351-1111 AS REQUIRED BY TCA 65-31-106 WILL BE REQUIRED.
2. UNLESS OTHERWISE NOTED, ALL UTILITY ADJUSTMENTS WILL BE PERFORMED BY THE UTILITY OR ITS REPRESENTATIVE. THE CONTRACTOR AND UTILITY OWNERS WILL BE REQUIRED TO COOPERATE WITH EACH OTHER IN ORDER TO EXPEDITE THE WORK REQUIRED BY THIS CONTRACT. ON CONTRACTS WHERE CONSTRUCTION STAKES, LINES, AND GRADES ARE CONTRACT ITEMS, THE CONTRACTOR WILL BE REQUIRED TO PROVIDE RIGHT-OF-WAY OR SLOPE STAKES, DITCH OR STREAM BED GRADES, OR OTHER ESSENTIAL SURVEY STAKING TO PREVENT CONFLICTS WITH THE HIGHWAY CONSTRUCTION. FREQUENTLY, THIS WILL BE REQUIRED AS THE FIRST ITEM OF WORK AND AT ANY LOCATION ON THE PROJECT DIRECTED BY THE ENGINEER.
3. THE CONTRACTOR WILL PROVIDE ALL NECESSARY PROTECTIVE MEASURES TO SAFEGUARD EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION OF THIS PROJECT. IN THE EVENT THAT SPECIAL EQUIPMENT IS REQUIRED TO WORK OVER AND AROUND THE UTILITIES, THE CONTRACTOR WILL BE REQUIRED TO FURNISH SUCH EQUIPMENT. THE COST OF PROTECTING UTILITIES FROM DAMAGE AND FURNISHING SPECIAL EQUIPMENT WILL BE INCLUDED IN THE PRICE BID FOR OTHER ITEMS OF CONSTRUCTION.

4. PRIOR TO SUBMITTING HIS BID, THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR CONTACTING OWNERS OF ALL AFFECTED UTILITIES IN ORDER TO DETERMINE THE EXTENT TO WHICH UTILITY RELOCATIONS AND/OR ADJUSTMENTS WILL HAVE UPON THE SCHEDULE OF WORK FOR THE PROJECT. WHILE SOME WORK MAY BE REQUIRED 'AROUND' UTILITY FACILITIES THAT WILL REMAIN IN PLACE, OTHER UTILITY FACILITIES MAY NEED TO BE ADJUSTED CONCURRENTLY WITH THE CONTRACTOR'S OPERATIONS. ADVANCE CLEAR CUTTING MAY BE REQUIRED BY THE ENGINEER AT ANY LOCATION WHERE CLEARING IS CALLED FOR IN THE SPECIFICATIONS AND CLEAR CUTTING IS NECESSARY FOR A UTILITY RELOCATION. ANY ADDITIONAL COST WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE CLEARING ITEM SPECIFIED IN THE PLANS.
5. THE CONTRACTOR SHALL NOTIFY EACH INDIVIDUAL UTILITY OWNER OF HIS PLAN OF OPERATION IN THE AREA OF THE UTILITIES. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL CONTACT THE UTILITY OWNERS AND REQUEST THEM TO PROPERLY LOCATE THEIR RESPECTIVE UTILITY ON THE GROUND. THIS NOTIFICATION SHALL BE GIVEN AT LEAST THREE (3) BUSINESS DAYS PRIOR TO COMMENCEMENT OF OPERATIONS AROUND THE UTILITY IN ACCORDANCE WITH TCA 65-31-106. NOTIFICATION BY CALLING THE TENNESSEE ONE CALL SYSTEM, INC AT 1-800-351-1111 WILL BE REQUIRED.

DEMOLITION NOTES

1. THE CONTRACTOR SHALL PROTECT ANY EXISTING STRUCTURES, PAVEMENTS, CURBS, SIDEWALKS, FENCES OR OTHER ELEMENTS DESIGNATED TO REMAIN. ANY EXISTING ELEMENT NOT INDICATED TO BE REMOVED, WHICH IS DAMAGED DURING THE COURSE OF DEMOLITION OR CONSTRUCTION, SHALL BE RESTORED TO ITS ORIGINAL CONDITION OR REPLACED IN KIND, AT NO ADDITIONAL COST TO THE OWNER.
2. THE CONTRACTOR SHALL MAINTAIN FIRE DEPARTMENT ACCESS TO ALL FIRE HYDRANTS OR PROVIDE TEMPORARY HYDRANTS WHERE ACCESS IS BLOCKED.
3. THE CONTRACTOR AT NO TIME SHALL ENCRoACH UPON OR CAUSE DISRUPTIONS TO TRAFFIC FLOW ON ADJACENT STREET RIGHT-OF-WAY WITHOUT SECURING THE PROPER PERMITS PRIOR TO COMMENCING DEMOLITION OR CONSTRUCTION OPERATIONS.
4. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ALL SAFETY BARRIERS, TEMPORARY CONTROLS AND PROTECTION DEVICES TO COMPLY WITH CITY, COUNTY, STATE OR FEDERAL REQUIREMENTS THROUGHOUT THE ENTIRE PROJECT CONSTRUCTION PERIOD.
5. ALL DEMOLITION LINES BETWEEN PROPOSED AND REMAINING PAVEMENTS SHALL BE SAW CUT STRAIGHT AND SMOOTH. ALL RADIAL CUTS SHALL BE CONSISTENT TO THE ARC AND COME TO A SMOOTH AND COMPLETE TRANSITION TO THE TANGENT.
6. EXISTING DRAINAGE SYSTEMS (SURFACE AND SUB-SURFACE) SHALL MAINTAIN POSITIVE DRAINAGE AT ALL TIMES DURING DEMOLITION AND CONSTRUCTION OPERATIONS.
7. AREAS THAT ARE DISTURBED OUTSIDE LIMITS OF CONSTRUCTION DURING THE LIFE OF THE PROJECT SHALL BE REPAIRED BY THE CONTRACTOR AT HIS/HER EXPENSE.

LAYOUT NOTES

1. THE SITE LAYOUT SHALL BE BASED ON THE DIMENSIONS AND OTHER INFORMATION SHOWN. MINOR ADJUSTMENTS TO LAYOUT APPROVED BY THE CONSULTANT MAY BE NEEDED IN THE FIELD TO ACHIEVE THE DESIRED ALIGNMENT WITH EXISTING FEATURES TO REMAIN.
2. CONTRACTOR SHALL BE FAMILIAR WITH THE SITE AND CHECK ALL FINAL DIMENSIONS ON THE GROUND PRIOR TO CONSTRUCTION ACTIVITIES. NOTIFY ENGINEER IMMEDIATELY OF DISCREPANCIES FROM THE PLANS.

SANITARY SEWER NOTES

1. CONTRACTOR SHALL ENSURE UNINTERRUPTED SEWER SERVICE ON EXISTING SEWER AND SERVICE CONNECTIONS BY PROVIDING AMPLE TEMPORARY WASTEWATER PUMPING AND/OR BYPASSING.
2. THE CONTRACTOR SHALL VERIFY EXISTING DATA AND REPORT ANY SIGNIFICANT DISCREPANCIES TO THE ENGINEER.
3. ALL SANITARY SEWER TO BE CONSTRUCTED AS PER CITY OF BELLS STANDARD CONSTRUCTION SPECIFICATIONS.
4. ALL SEWER MANHOLE LIDS IN OPEN AREAS ARE TO BE CONSTRUCTED 1.5' ABOVE PROPOSED GRADE. IN BACKYARDS, MANHOLE LIDS ARE TO BE 0.5' ABOVE FINAL GRADE.
5. ALL SANITARY SEWER, INCLUDING SERVICE CONNECTIONS, WHICH HAS LESS THAN 1.5' CLEARANCE (OUTSIDE OF PIPES) WITH DRAINAGE OR IN FILLED AREAS SHALL BE CLASS 50 D.I.P. OR CONCRETE ENCASED, 10' MINIMUM BOTH SIDES OF CROSSING. ALL DUCTILE IRON PIPE (D.I.P.) SHALL BE POLYETHYLENE LINED OR SHALL BE TREATED WITH PROTECTO 401, TNE MEC 431 OR APPROVED EQUIVALENT.
6. THE CITY OF BELLS SHALL HAVE INGRESS/EGRESS RIGHTS TO USE PRIVATE DRIVES AND YARDS FOR THE PURPOSE OF MAINTAINING ALL PUBLIC SEWER LINES AND SHALL BEAR NO RESPONSIBILITY FOR THE MAINTENANCE OF SAID PRIVATE DRIVES AND YARDS.
7. NO TREES, SHRUBS, PERMANENT STRUCTURES OR OTHER UTILITIES (EXCEPT FOR CROSSINGS) WILL BE ALLOWED WITHIN SANITARY SEWER EASEMENT. NO OTHER UTILITIES OR SERVICES MAY OCCUPY SANITARY SEWER EASEMENTS IN PRIVATE DRIVES AND YARDS EXCEPT FOR CROSSINGS.
8. ALL SANITARY SEWER MANHOLES IN REVERSE CROWN STREETS, ALLEYS, OR DRIVES (PUBLIC OR PRIVATE) SHALL BE PROVIDED WITH GASKETS AND PLUGS FOR PICK HOLES TO PREVENT DRAINAGE INFLOW INTO SEWER SYSTEM.
9. ALL PIPE RUNS CONSTRUCTED OF FLEXIBLE PIPE MATERIALS SHALL PASS A GO-NO GO DEFLECTION TEST.
10. PRIOR TO BRINGING ANY PART OF THE NEWLY INSTALLED SANITARY SEWER SYSTEM ONLINE, ALL LINES AND MANHOLES SHALL PASS LEAK TESTING.

WATER SPECIFICATION NOTES

1. ALL METERS LARGER THAN 1" SHALL USE FLANGED CONNECTIONS.
2. ALL MATERIALS AND INSTALLATION SHALL CONFORM TO THE STANDARDS OF THE CITY OF BELLS AND THE STATE OF TENNESSEE.
3. BLOCKING OF FIRE HYDRANTS, TEES, AND BENDS REQUIRED.
4. WATER LINES, VALVES, FITTINGS AND HYDRANT SHALL BE INSTALLED, DISINFECTED, PRESSURE TESTED AND LEAKAGE TESTED IN ACCORDANCE WITH ALL STATE AND LOCAL REQUIREMENTS.
5. ALL TRENCHES TO BE BACK-FILLED ACCORDING TO CONSTRUCTION SPECIFICATIONS.
6. ALL TIES TO EXISTING WATER LINES MUST BE MADE STARTING WITH A VALVE IF NO VALVE EXISTS.
7. THE LOCATION OF THE FIRE DEPARTMENT CONNECTION, PIV, AND FIRE LINE SIZES SHALL BE RECORDED ON THE AS-BUILT DRAWING AFTER COMPLETION OF THE PROJECT.

WATER LINE TESTING

1. AT THE END OF CONSTRUCTION WHEN THE NEW WATER LINES ARE TO BE FILLED FOR FLUSHING AND PRESSURE TESTING, THE CONTRACTOR SHALL COORDINATE WITH THE OWNER/OPERATOR OF THE UTILITY TO ENSURE THAT LOW PRESSURE PROBLEMS DO NOT ARISE IN OTHER AREAS OF THE WATER SYSTEM DURING THIS PROCESS.
2. ALL NEW WATER LINES ARE TO BE PRESSURE TESTED AND BACTERIAL SAMPLES ARE TO BE TAKEN AND APPROVED BEFORE CONNECTION TO SYSTEM.

GAS LINE NOTES

1. PROPOSED 2" AND 4" GAS MAIN MINIMUM COVER REQUIREMENTS: A MINIMUM OF 56 INCHES OF COVER IS REQUIRED.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION AND SIZE OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
3. CONTRACTOR SHALL MINIMIZE DAMAGE TO TREES.

SEWER AND WATER TESTING WHERE WATER IS PASSING UNDER SEWER

FOR INSTANCES WHERE WATER LINES ARE PROPOSED UNDER THE SEWER LINES, BOTH THE SEWER AND WATER MAIN MUST BE CONSTRUCTED USING MATERIALS APPROVED FOR WATER PIPELINES AND UNDERGO TESTING AS PER THE FOLLOWING GUIDELINES:

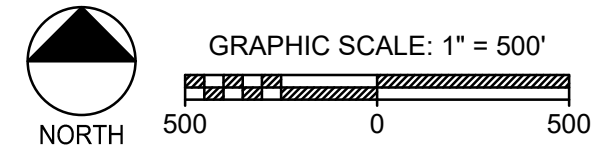
1. PRESSURE AND LEAKAGE TESTS SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT AWWA STANDARD C600 AND/OR MANUFACTURER'S INSTALLATION PROCEDURES.
2. THE TEST PRESSURE OF THE INSTALLED PIPE SHALL BE A MINIMUM OF 150 PSI OR 1.5 TIMES THE WORKING PRESSURE, WHICHEVER IS GREATER.
3. ALLOWABLE LEAKAGE SHALL BE NO GREATER THAN AS CALCULATED IN $L = SD / P / 133,200$ WHERE L IS ALLOWABLE LEAKAGE IN GALLONS/HOUR, S IS THE LENGTH OF PIPE TESTED IN FEET, D IS PIPE DIAMETER IN INCHES AND P IS TEST PRESSURE IN PSI

| SR 76 UTILITY RELOCATION | | | |
|--------------------------|--|------|----------|
| NO. | DESCRIPTION | UNIT | QUANTITY |
| 1 | MOBILIZATION | L.S. | 1 |
| 2 | 8" PVC SDR 21 WATER LINE WITH TRACER WIRE | L.F. | 5,660 |
| 3 | 2" PE GAS LINE WITH TRACER WIRE | L.F. | 2,126 |
| 4 | 3" PE GAS LINE WITH TRACER WIRE | L.F. | 166 |
| 5 | 4" PE GAS LINE TRACER WIRE | L.F. | 3,416 |
| 6 | 10" SDR 26 PVC SANITARY SEWER PIPE - COMPLETE IN PLACE | L.F. | 361 |
| 7 | 8" SDR 26 PVC SANITARY SEWER PIPE - COMPLETE IN PLACE | L.F. | 2,755 |
| 8 | SEWER MANHOLE (4' DIA.) | EACH | 15 |
| 9 | SEWER MANHOLE ABANDONMENT | EACH | 3 |
| 10 | SANITARY SEWER CONNECTION | L.S. | 1 |
| 11 | PAVEMENT REPAIR | L.S. | 1 |
| 12 | 16" STEEL CASING PIPE BY OPEN CUT FOR SEWER | L.F. | 361 |
| 13 | 15" STEEL CASING PIPE BY JACK & BORE FOR WATER | L.F. | 107 |
| 14 | 15" STEEL CASING PIPE BY OPEN CUT FOR WATER | L.F. | 285 |
| 15 | 12" STEEL CASING PIPE BY JACK & BORE FOR GAS | L.F. | 107 |
| 16 | 12" STEEL CASING PIPE BY OPEN CUT FOR GAS | L.F. | 285 |
| 17 | 8"x8" TAPPING SLEEVE AND VALVE | EACH | 1 |
| 18 | 6"x6" TAPPING SLEEVE AND VALVE | EACH | 3 |
| 19 | 8" GATE VALVE ASSEMBLY WITH BOX | EACH | 5 |
| 20 | CONNECT NEW WATERLINE INTO EXISTING | EACH | 6 |
| 21 | 8"x8"x8" DIMJ TEE WITH BLOCKING | EACH | 2 |
| 22 | 2" BALL VALVE FOR GAS | EACH | 8 |
| 23 | 3" BALL VALVE FOR GAS | | 2 |
| 24 | 4" BALL VALVE FOR GAS | EACH | 5 |
| 25 | CONNECT NEW GASLINE INTO EXISTING | EACH | 5 |
| 26 | FIRE HYDRANT ASSEMBLY | EACH | 10 |
| 27 | SEED & MULCH | L.S. | 1 |
| 28 | TRAFFIC CONTROL | L.S. | 1 |
| 29 | ROADWAY TRACER BOX WITH ANODE | EACH | 17 |

| | |
|-----|---------------------|
| D2 | QUANTITY ESTIMATION |
| NTS | |



| | |
|---------|--------------|
| C3 | VICINITY MAP |
| 1"=500' | |



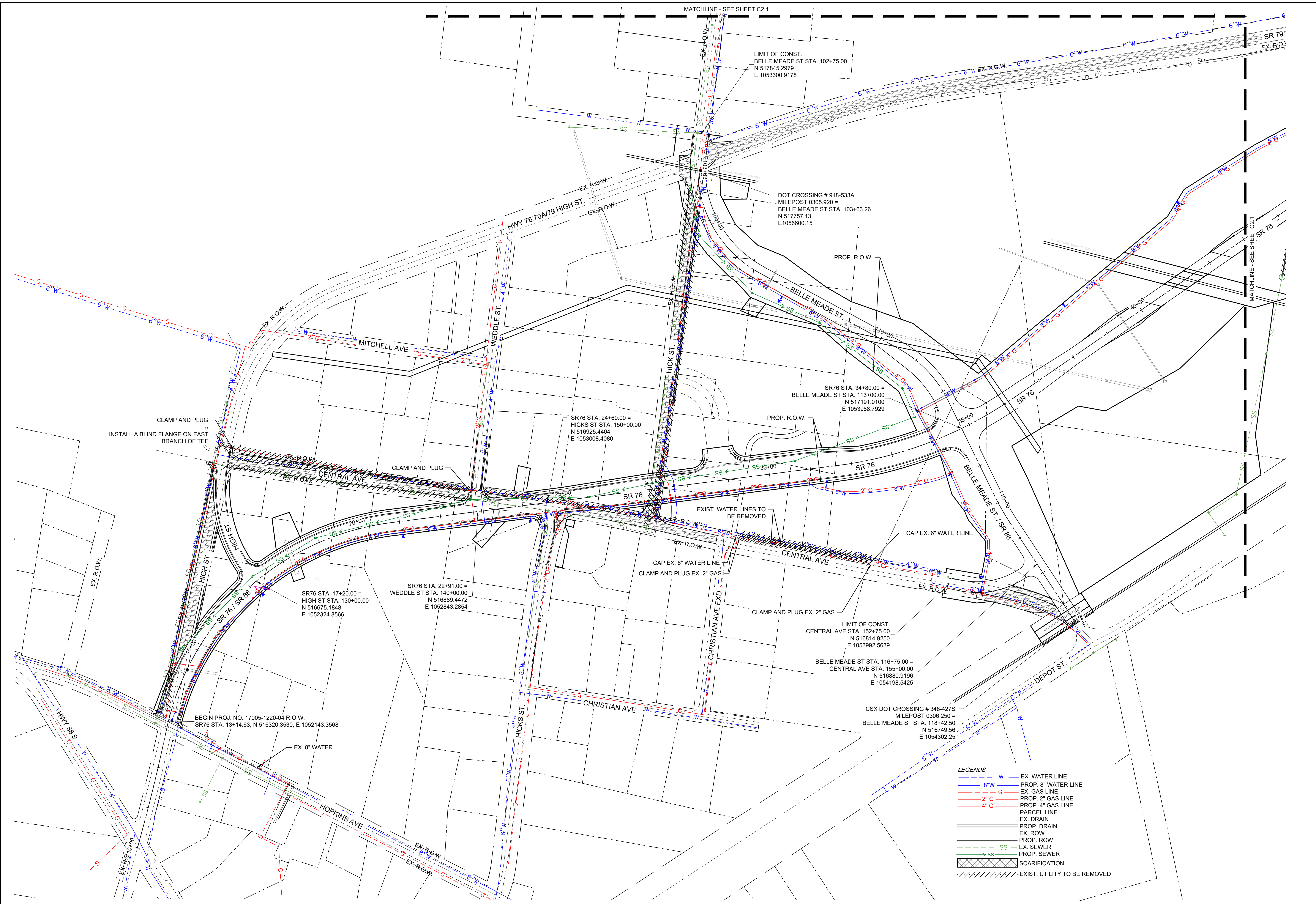
| SHEET INDEX | |
|--------------|---|
| SHEET NUMBER | SHEET TITLE |
| C0.0 | COVER SHEET |
| C0.1 | GENERAL NOTES |
| C2.0 | SITE PLAN (OVERALL) - SR76 - STA 10+00 TO 43+00 |
| C2.1 | SITE PLAN (OVERALL) - SR76 - STA 43+00 TO 63+00 |
| C5.0 | SR76 - STA 13+14.63 TO 28+00 |
| C5.1 | SR76 - STA 28+00 TO 41+00 |
| C5.2 | SR76 - STA 41+00 TO 56+00 |
| C5.3 | BELLE MEADE ST. - STA 103+50 TO 118+50 |
| C5.4 | OFFSITE SEWER STA 10+00 TO 17+59 |
| C5.5 | ENLARGEMENT |
| C5.6 | SEWER PIPE AND STRUCTURE TABLE |
| C10.0 | DETAIL |
| C10.1 | DETAIL |
| C10.2 | DETAIL |

| | |
|-----|-------------|
| D3 | SHEET INDEX |
| NTS | |



| | |
|-------------|--------------|
| PROJECT NO. | DATE |
| 21458 | JUNE 6, 2024 |
| DRAWN | CHECKED |
| TJC | JMB |

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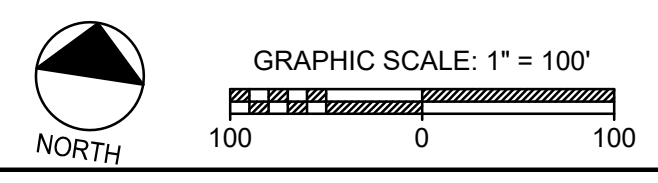


LEGENDS

| | |
|---------|------------------------------|
| — W — | EX. WATER LINE |
| — 8"W — | PROP. 8" WATER LINE |
| — G — | EX. GAS LINE |
| — 2"G — | PROP. 2" GAS LINE |
| — 4"G — | PROP. 4" GAS LINE |
| --- | PARCEL LINE |
| --- | EX. DRAIN |
| --- | PROP. DRAIN |
| --- | EX. ROW |
| --- | PROP. ROW |
| SS | EX. SEWER |
| SS | PROP. SEWER |
| | SCARIFICATION |
| | EXIST. UTILITY TO BE REMOVED |

1/2024/12/18/192_Civil/Proj/17005-2220-04 - SITE PLAN.dwg
 1" = 100'
 LATEST REV.

D1 SITE PLAN (OVERALL) - SR76 - STA 10+00 TO 43+00
 1" = 100'



NOTE: UTILITY DESIGN IS BASED ON STATE PROJECT NUMBER 17005-2220-04

A2H ENGINEERS ARCHITECTS PLANNERS
 A2H, INC.
 3009 DAVIES PLANTATION ROAD
 LAKELAND, TN 38002
 P. 901.372.0404
 WWW.A2H.COM



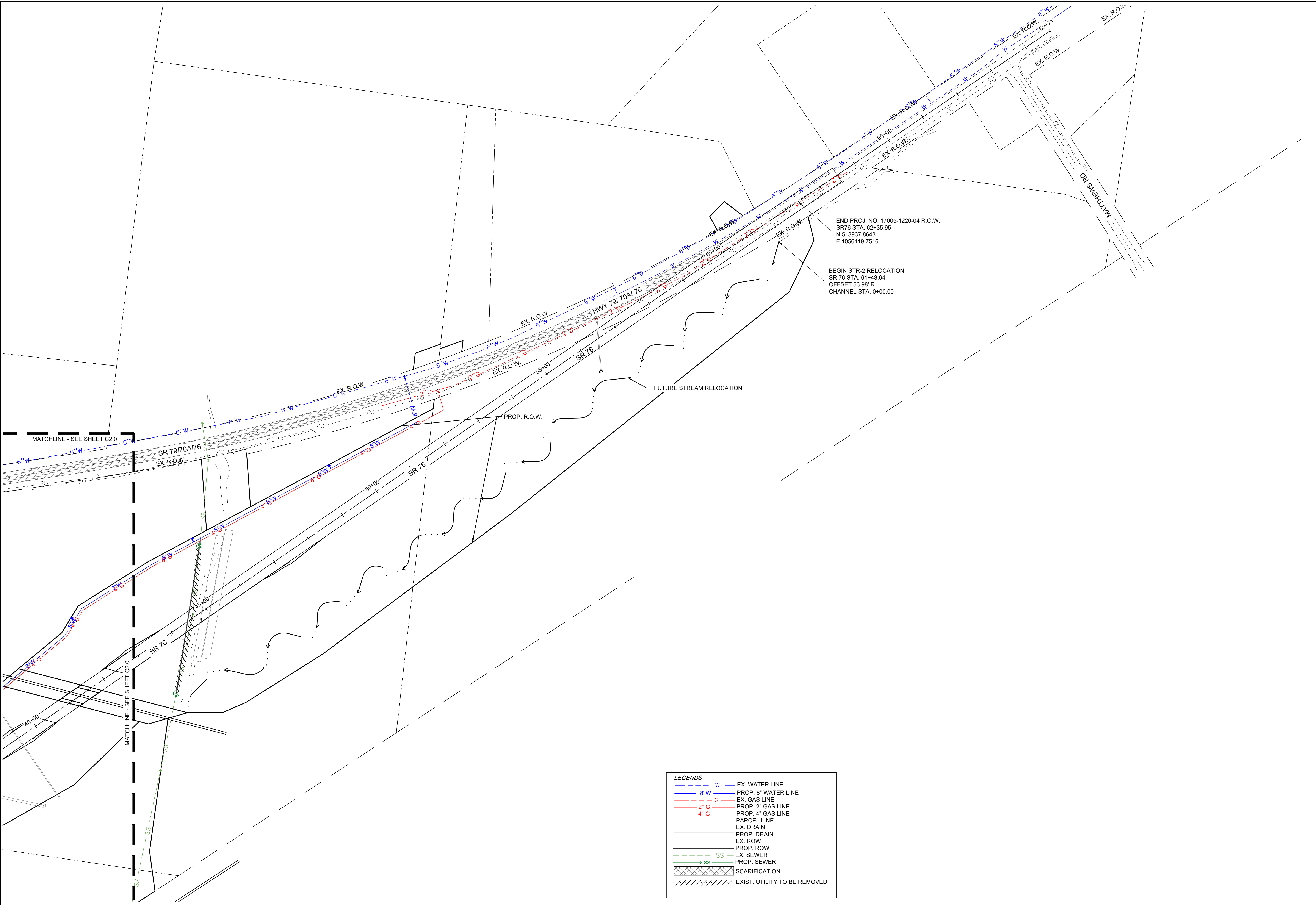
CITY OF BELLS
SR 76 UTILITY RELOCATION
SR 76
CONSTRUCTION DOCUMENTS
 REVISIONS

| | |
|-------------|--------------|
| PROJECT NO. | DATE |
| 21438 | JUNE 6, 2024 |
| DRAWN | CHECKED |
| TIC | JMB |

SITE PLAN (OVERALL) - SR76 - STA 10+00 TO 43+00

C2.0

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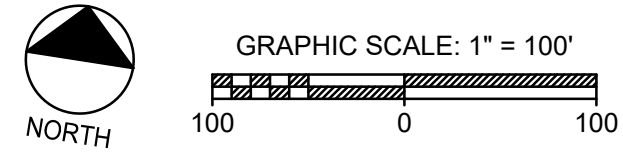
END PROJ. NO. 17005-1220-04 R.O.W.
 SR76 STA. 62+35.95
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 E 1056119.7516

BEGIN STR-2 RELOCATION
 SR 76 STA. 61+43.64
 OFFSET 53.98' R
 CHANNEL STA. 0+00.00

| LEGENDS | |
|----------|------------------------------|
| — W — | EX. WATER LINE |
| — 8"W — | PROP. 8" WATER LINE |
| — G — | EX. GAS LINE |
| — 2" G — | PROP. 2" GAS LINE |
| — 4" G — | PROP. 4" GAS LINE |
| — | PARCEL LINE |
| — | EX. DRAIN |
| — | PROP. DRAIN |
| — | EX. ROW |
| — | PROP. ROW |
| — SS — | EX. SEWER |
| — SS — | PROP. SEWER |
| | SCARIFICATION |
| | EXIST. UTILITY TO BE REMOVED |

1/2024/12/18/192_Civil/Projects/21438 - SITE PLAN.dwg
 PLOT SCALE: 1" = 100'
 LATEST REV.: 1

D1 SITE PLAN (OVERALL) - SR76 - STA 43+00 TO 63+00
 1" = 100'



NOTE: UTILITY DESIGN IS BASED ON STATE
 PROJECT NUMBER 17005-2220-04



CITY OF BELLS

SR 76 UTILITY RELOCATION

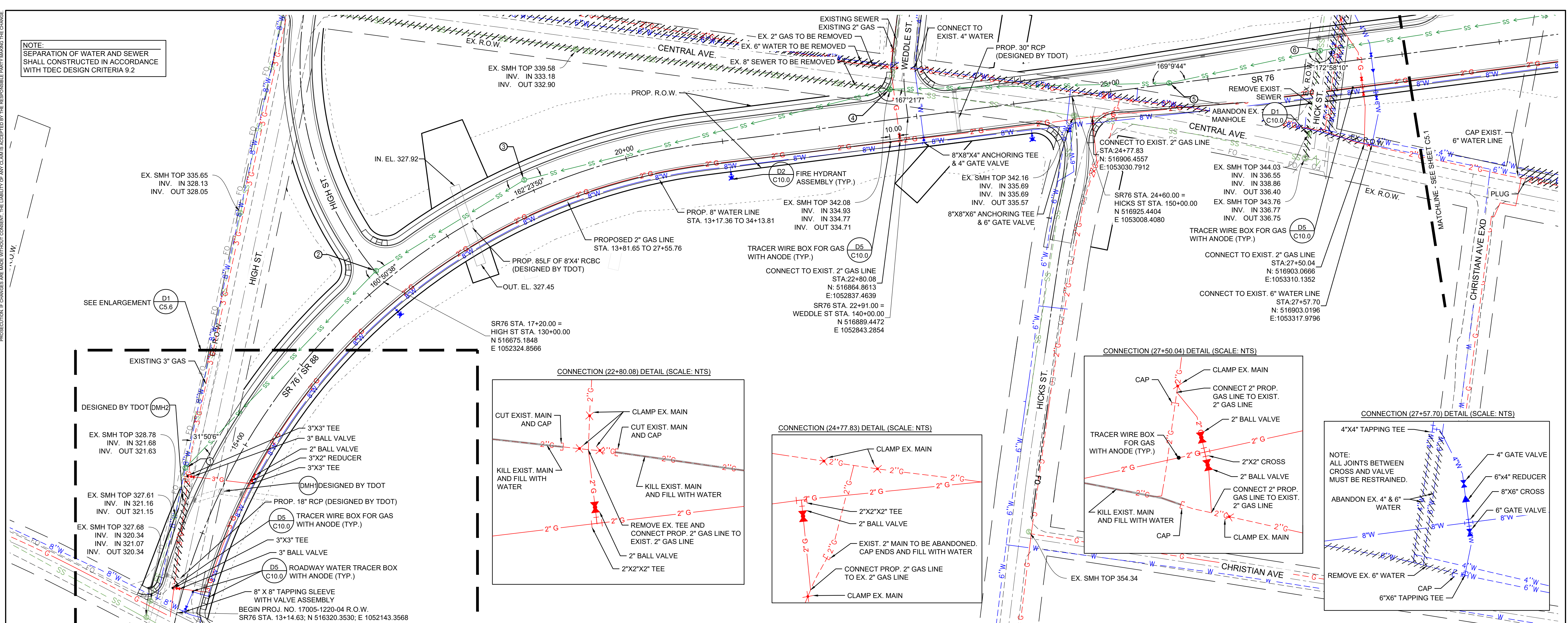
SR 76
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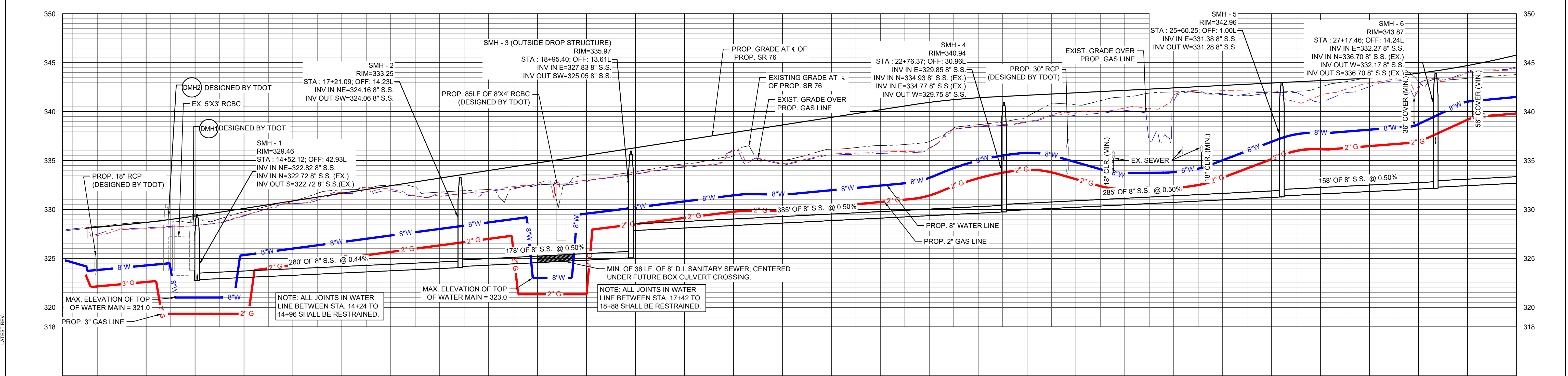
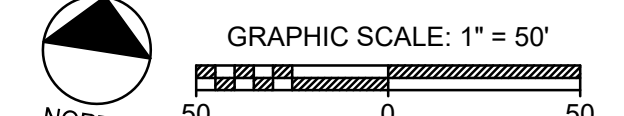
SITE PLAN (OVERALL) -
SR76 - STA 43+00 TO
63+00

C2.1

NOTE:
SEPARATION OF WATER AND SEWER
SHALL CONSTRUCTED IN ACCORDANCE
WITH TDEC DESIGN CRITERIA 9.2



C1 SR76 - STA 13+14.63 TO 28+00
1" = 50'



D1 PROFILE VIEW - STA 13+14.63 TO 28+00
1" = 50H/5V

NOTES:
1. ALL SEWER LINES SHALL BE SDR 26 PVC.
2. ALL WATER LINES SHALL BE SDR 21 PVC.

NOTE: UTILITY DESIGN IS BASED ON STATE PROJECT NUMBER 17005-2220-04



A2H, INC.
3009 DAVIES PLANTATION ROAD
LAKELAND, TN 38002
P. 901.372.0404
WWW.A2H.COM



CITY OF BELLS

SR 76 UTILITY RELOCATION

SR 76
CONSTRUCTION DOCUMENTS
REVISIONS

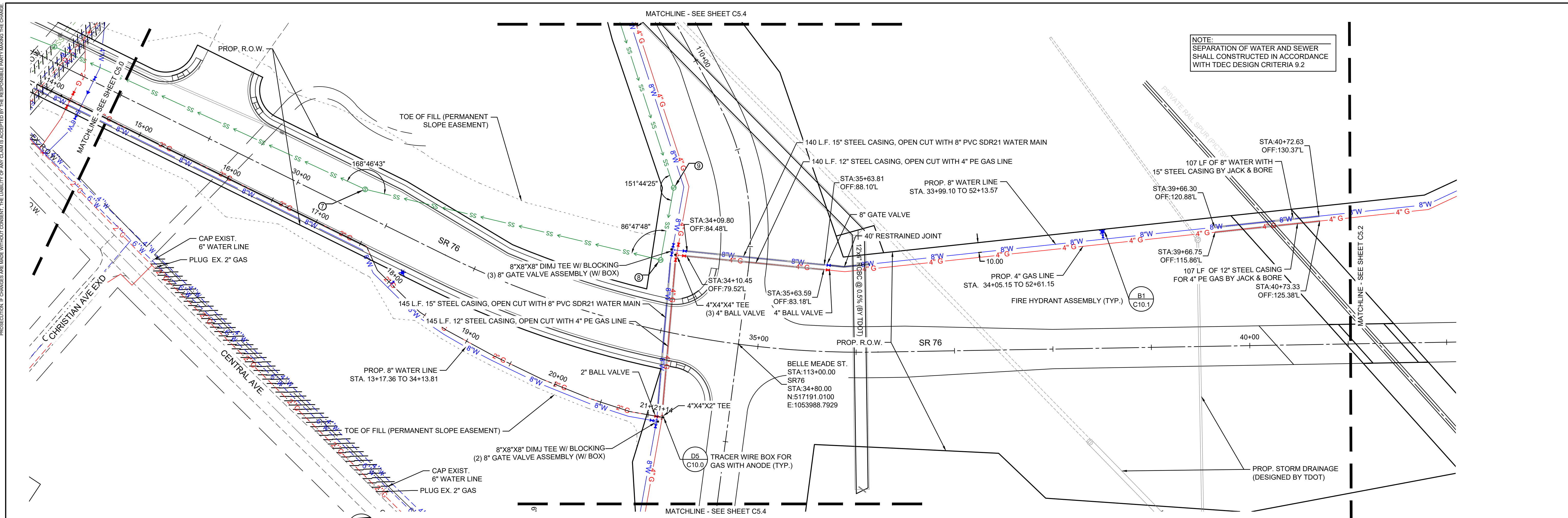
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SR76 - STA 13+14.63 TO 28+00

C5.0

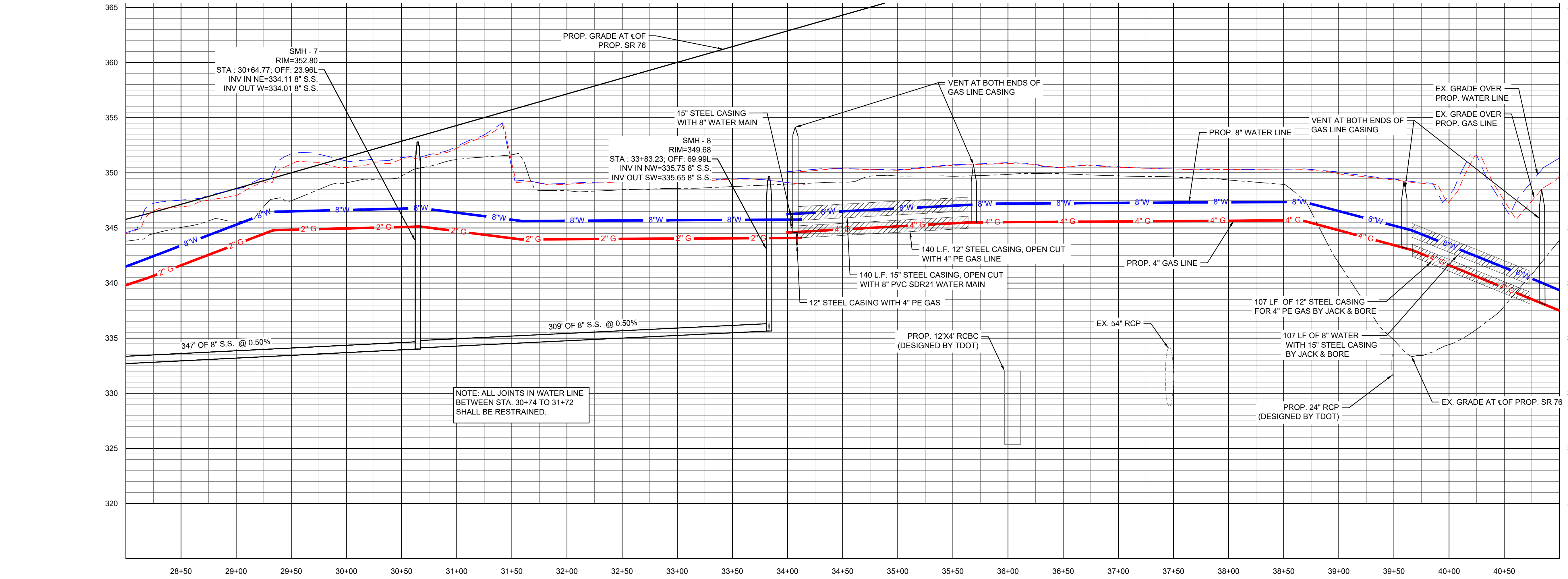
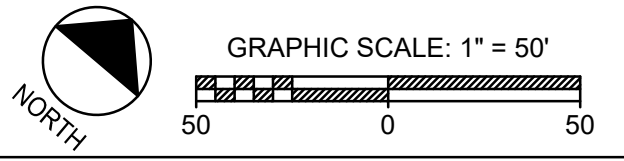
1/2024 12/18/24 CH: (P) 04/24/24 - PLAN & PROFILE DWG
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NOTE:
SEPARATION OF WATER AND SEWER
SHALL CONSTRUCTED IN ACCORDANCE
WITH TDEC DESIGN CRITERIA 9.2

B1 SR76 - STA 28+00 TO 41+00
1" = 50'



NOTE: ALL JOINTS IN WATER LINE
BETWEEN STA. 30+74 TO 31+72
SHALL BE RESTRAINED.

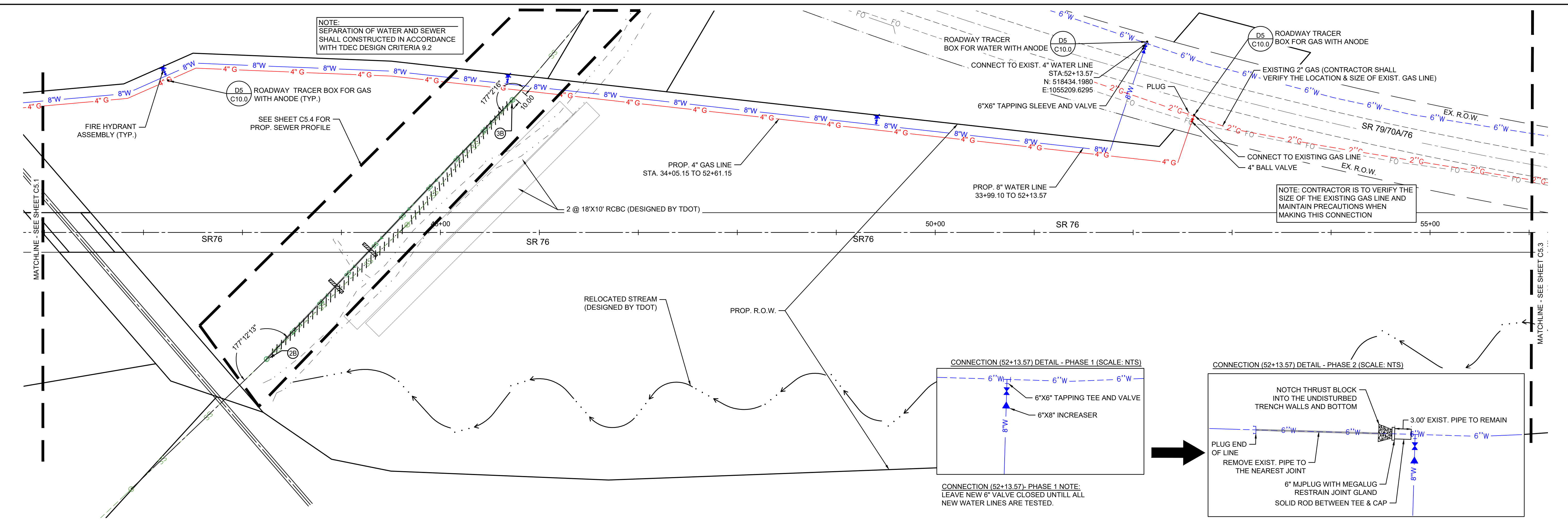
NOTES:
1. ALL SEWER LINES SHALL BE SDR 26 PVC.
2. ALL WATER LINES SHALL BE SDR 21 PVC.

NOTE: UTILITY DESIGN IS BASED ON STATE
PROJECT NUMBER 17005-2220-04

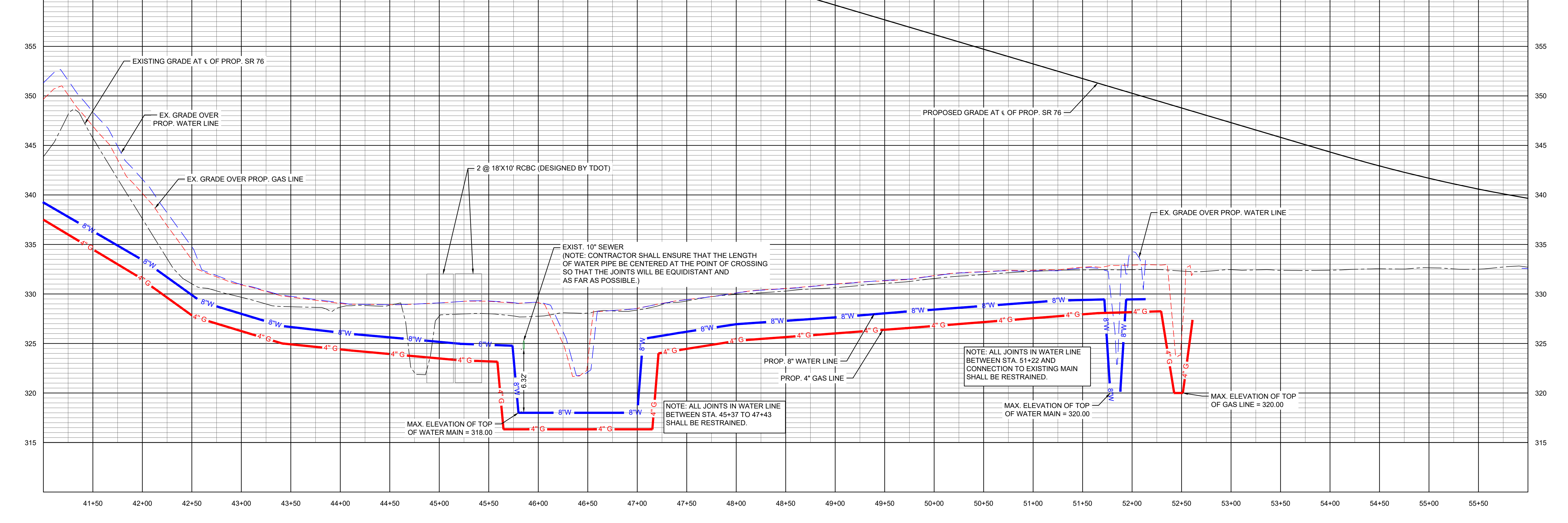
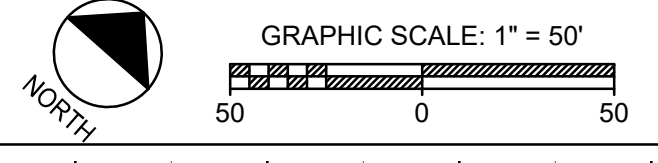
D1 PROFILE VIEW - STA 28+00 TO 41+00
1" = 50'H/V



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B1
 SR76 - STA 41+00 TO 56+00
 1" = 50'



D1
 PROFILE VIEW - STA 41+00 TO 56+00
 1" = 50'H/5'V

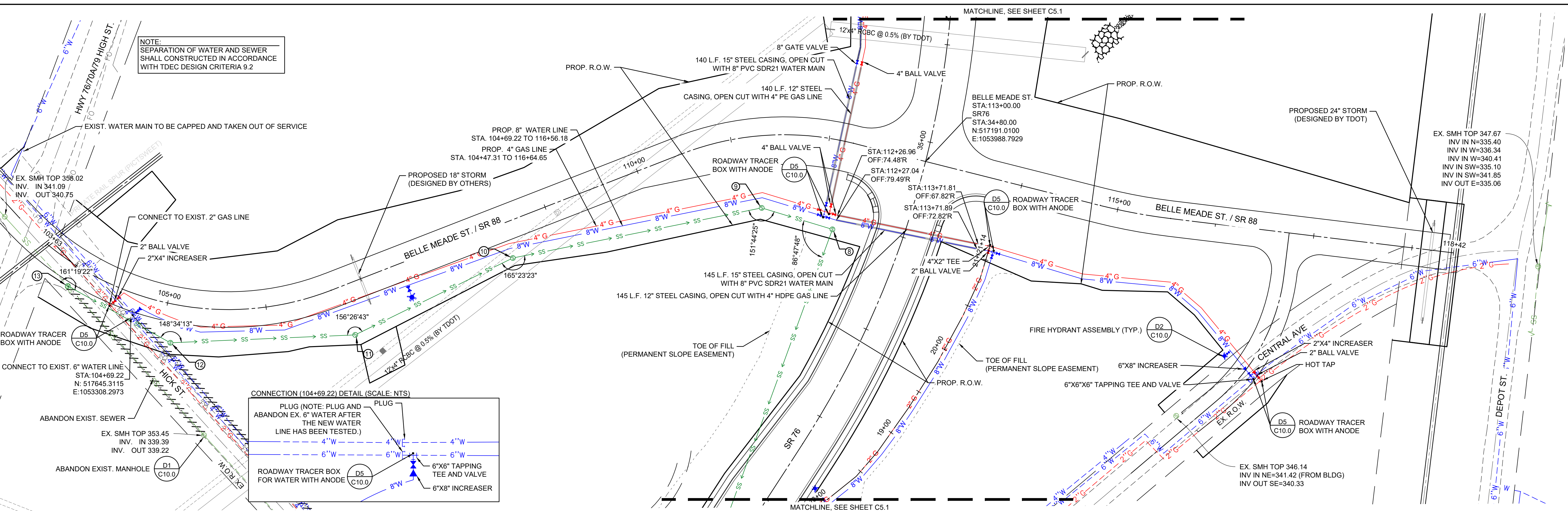
NOTES:
 1. ALL SEWER LINES SHALL BE SDR 26 PVC.
 2. ALL WATER LINES SHALL BE SDR 21 PVC.
NOTE: UTILITY DESIGN IS BASED ON STATE PROJECT NUMBER 17005-2220-04



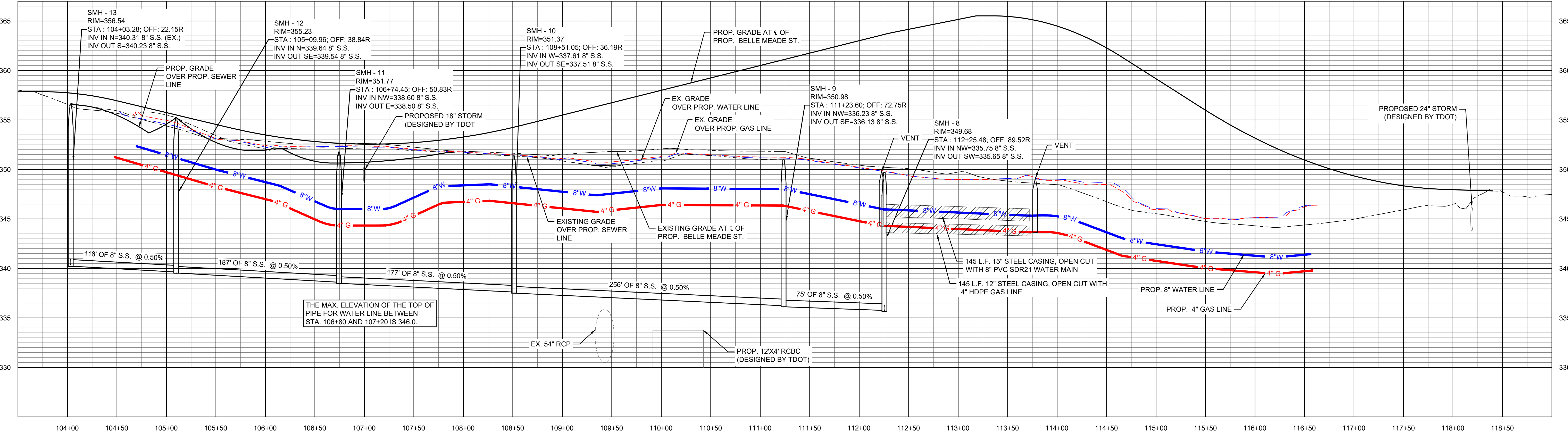
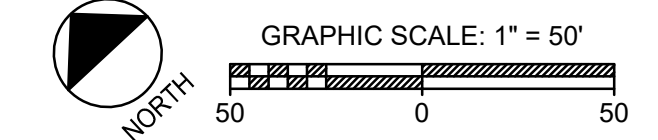
| PROJECT NO. | DATE |
|-------------|--------------|
| 21438 | JUNE 6, 2024 |
| DRAWN | CHECKED |
| TIC | JMB |

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NOTE:
 SEPARATION OF WATER AND SEWER
 SHALL CONSTRUCTED IN ACCORDANCE
 WITH TDEC DESIGN CRITERIA 9.2



B1 BELLE MEADE ST. - STA 103+50 TO 118+50
 1" = 50'



D1 PROFILE VIEW - STA 103+50 TO 118+50
 1" = 50'H/5'V

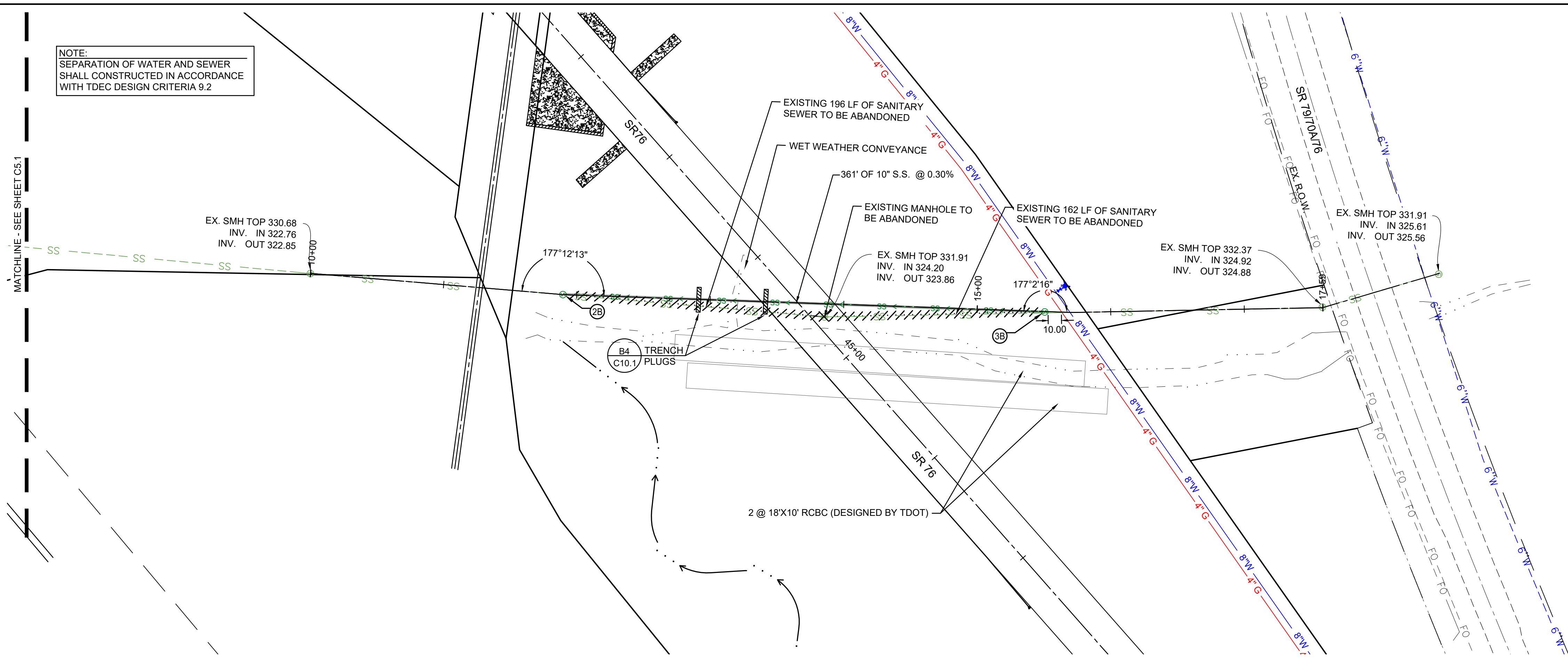
NOTES:
 1. ALL SEWER LINES SHALL BE SDR 26 PVC.
 2. ALL WATER LINES SHALL BE SDR 21 PVC.

NOTE: UTILITY DESIGN IS BASED ON STATE
 PROJECT NUMBER 17005-2220-04

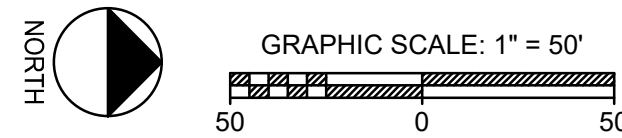


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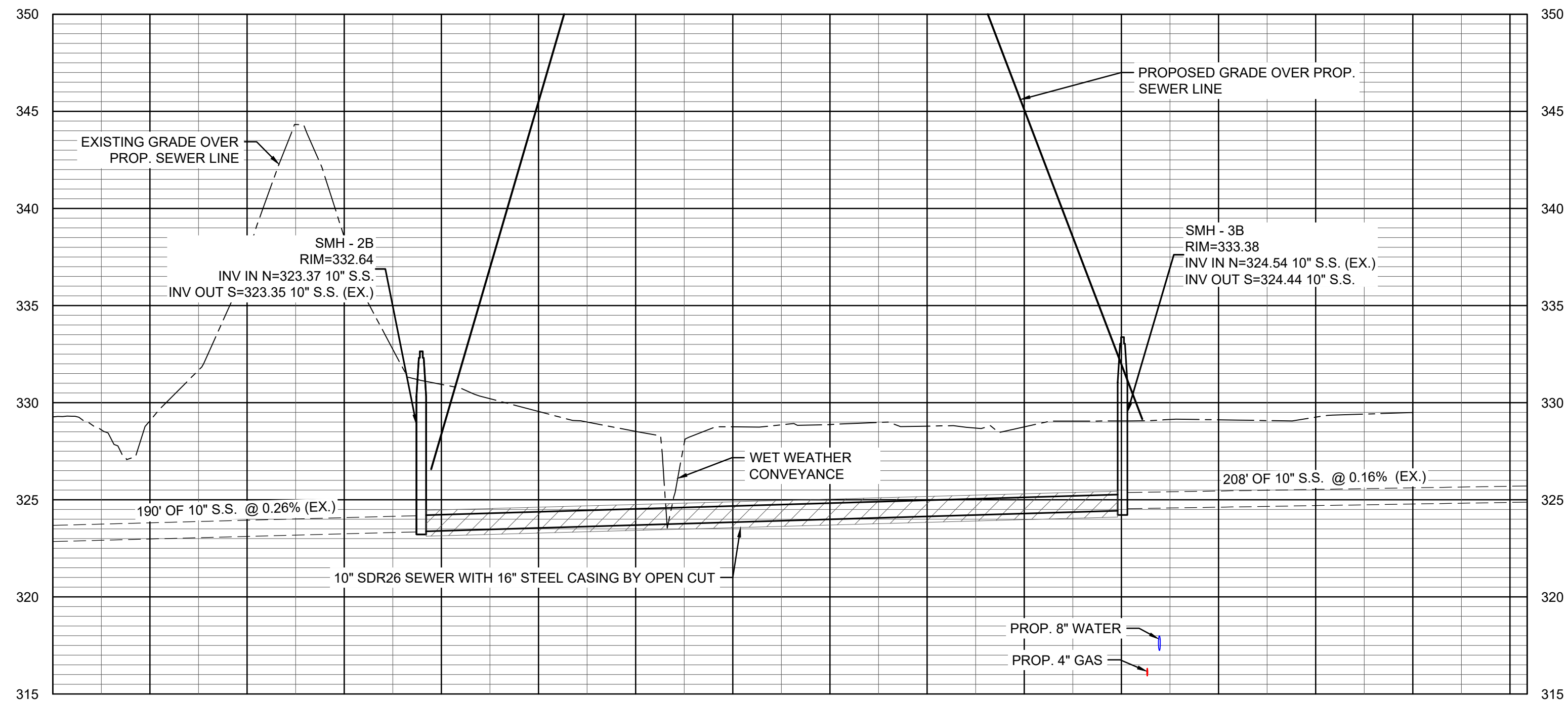
NOTE:
SEPARATION OF WATER AND SEWER
SHALL CONSTRUCTED IN ACCORDANCE
WITH TDEC DESIGN CRITERIA 9.2



B1 OFFSITE SEWER STA 10+00 TO 17+59
1" = 50'



OFFSITE SANITARY SEWER



NOTES:
1. ALL SEWER LINES SHALL BE SDR 26 PVC.
2. ALL WATER LINES SHALL BE SDR 21 PVC.

D1 PROFILE VIEW - OFFSITE SEWER STA 10+00 TO 17+59
1" = 50'H/5'V

NOTE: UTILITY DESIGN IS BASED ON STATE PROJECT NUMBER 17005-2220-04



A2H, INC.
3009 DAVIES PLANTATION ROAD
LAKELAND, TN 38002
P. 901.372.0404
WWW.A2H.COM



CITY OF BELLS

SR 76 UTILITY RELOCATION

**SR 76
CONSTRUCTION DOCUMENTS**

| | |
|----------------------|----------------------|
| PROJECT NO. 21438 | DATE JUNE 6, 2024 |
| DRAWN TIC | CHECKED JMB |

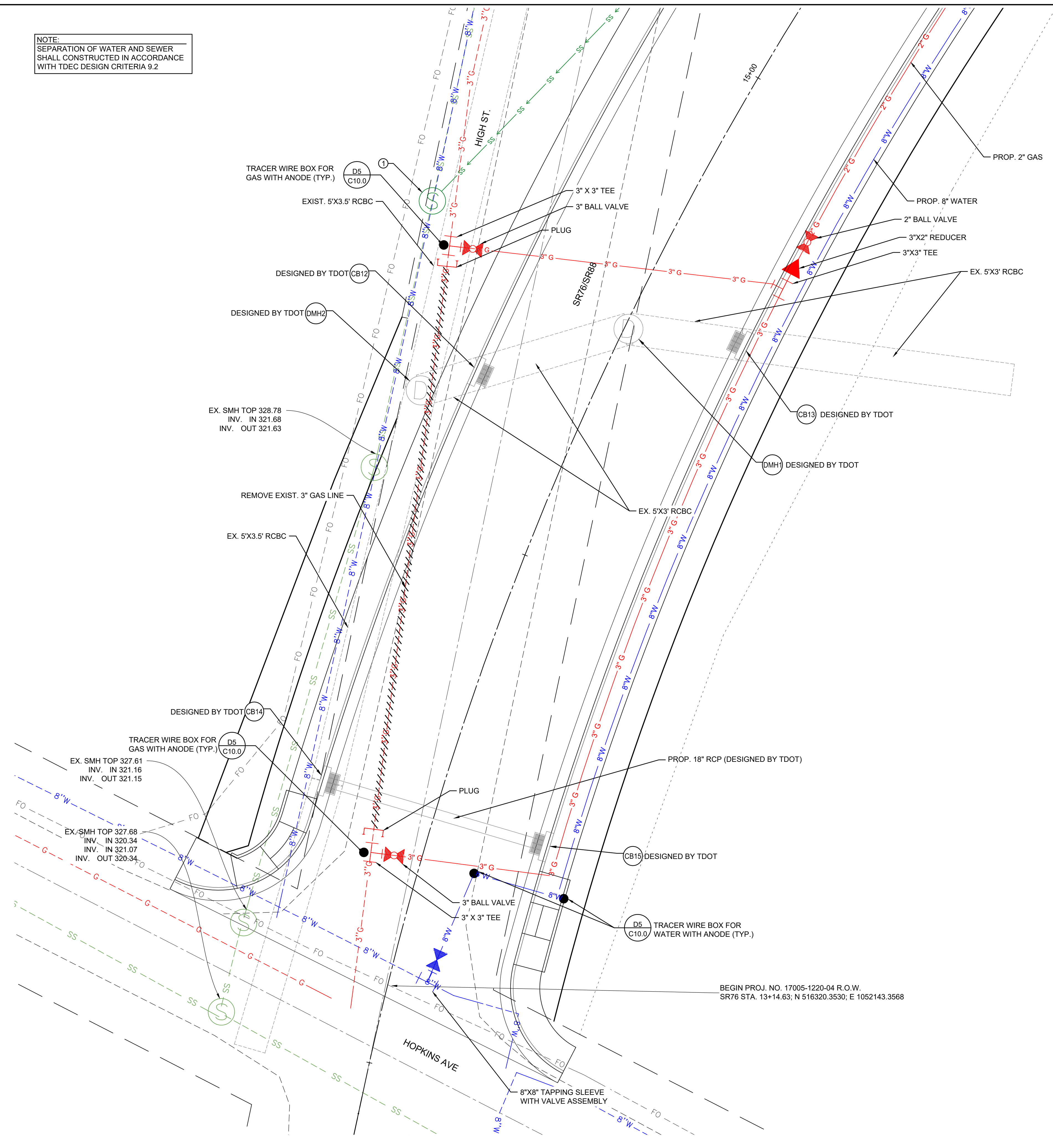
**OFFSITE SEWER STA 10 + 00
TO 17 + 59**

C5.4

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12/18/24 10:00 AM
TIC

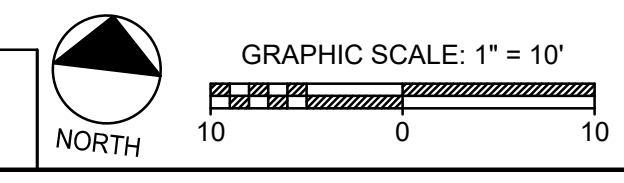
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NOTE:
 SEPARATION OF WATER AND SEWER SHALL CONSTRUCTED IN ACCORDANCE WITH TDEC DESIGN CRITERIA 9.2



1/2024/12/18/182_Civil/Projects/21438 - PLAN & PROFILE.dwg
 21438 - SR76 UTILITY RELOCATION - PLAN & PROFILE.dwg
 LATEST REV.

D1
 ENLARGEMENT
 1" = 10'



CITY OF BELLS

SR 76 UTILITY RELOCATION

SR 76
 CONSTRUCTION DOCUMENTS
 REVISIONS

| | |
|-------------|--------------|
| PROJECT NO. | DATE |
| 21438 | JUNE 6, 2024 |
| DRAWN | CHECKED |
| TIC | JMB |

ENLARGEMENT

C5.5

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| SEWER PIPE TABLE | | | | | | | | | | | |
|------------------|--------------|----|--------------|------|------|------------|---------|--------------------|------------------|-----------------|----------------|
| FROM | INVERT ELEV. | TO | INVERT ELEV. | SIZE | TYPE | LENGTH FT. | SLOPE % | As-Built From INV. | As-Built To INV. | As-Built Length | As-Built Slope |
| 13 | 340.23 | 12 | 339.64 | 8" | S.S. | 118 | 0.50% | | | | |
| 12 | 339.54 | 11 | 338.60 | 8" | S.S. | 187 | 0.50% | | | | |
| 11 | 338.50 | 10 | 337.61 | 8" | S.S. | 177 | 0.50% | | | | |
| 10 | 337.51 | 9 | 336.23 | 8" | S.S. | 256 | 0.50% | | | | |
| 9 | 336.13 | 8 | 335.75 | 8" | S.S. | 75 | 0.50% | | | | |
| 8 | 335.65 | 7 | 334.11 | 8" | S.S. | 309 | 0.50% | | | | |
| 7 | 334.01 | 6 | 332.27 | 8" | S.S. | 347 | 0.50% | | | | |
| 6 | 332.17 | 5 | 331.38 | 8" | S.S. | 158 | 0.50% | | | | |
| 5 | 331.28 | 4 | 329.85 | 8" | S.S. | 285 | 0.50% | | | | |
| 4 | 329.75 | 3 | 327.83 | 8" | S.S. | 385 | 0.50% | | | | |
| 3B | 324.44 | 2B | 323.37 | 10" | S.S. | 361 | 0.30% | | | | |
| 3 | 325.05 | 2 | 324.16 | 8" | S.S. | 178 | 0.50% | | | | |
| 2 | 324.06 | 1 | 322.82 | 8" | S.S. | 280 | 0.44% | | | | |

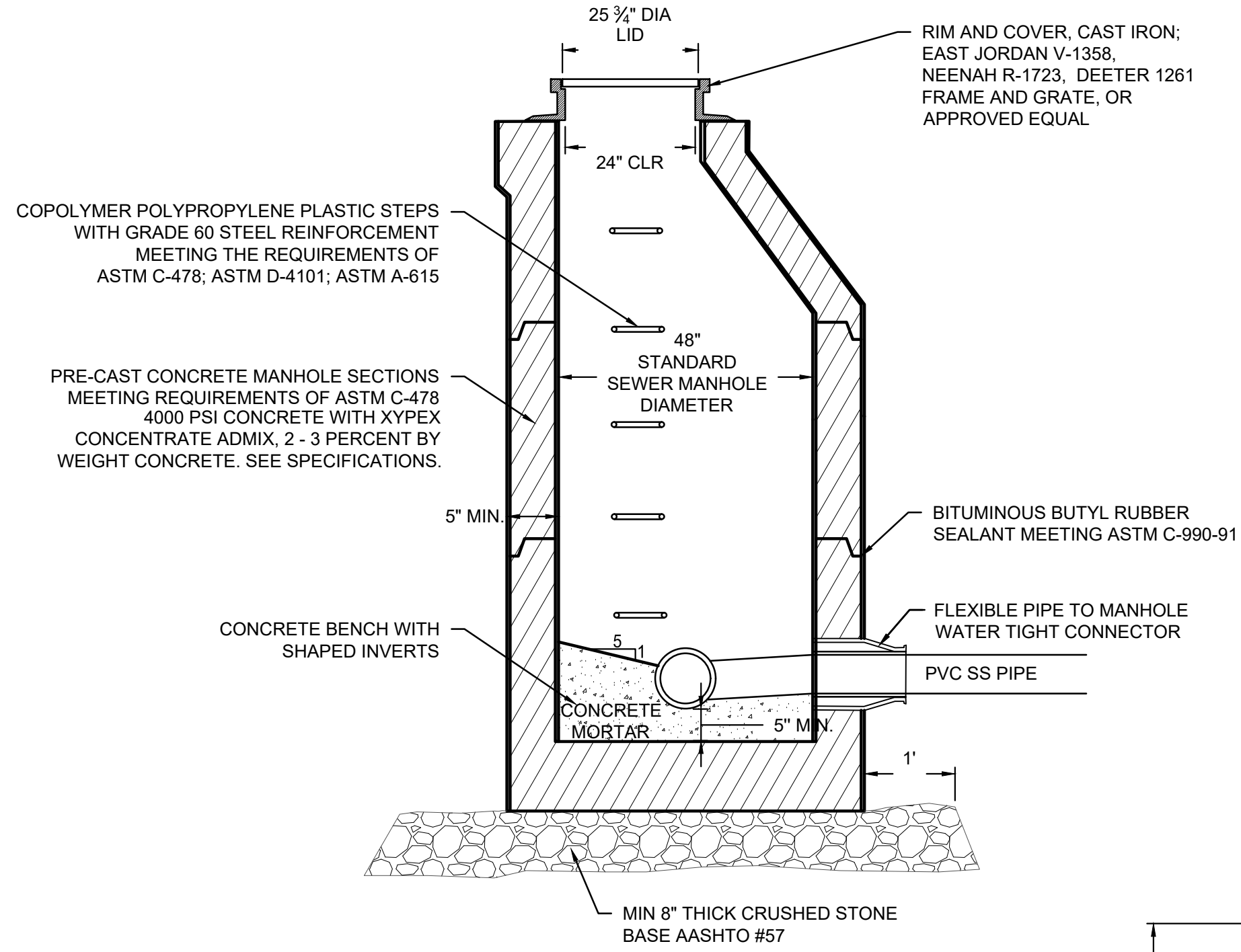
A1 SEWER PIPE TABLE
NTS

| SEWER STRUCTURE TABLE | | | | | | | |
|-----------------------|-----------|---|--------------------------------|------------|------------|-------------|------------------|
| NO. | RIM ELEV. | FL IN: | FL OUT: | DETAIL NO. | NORTHING | EASTING | AS-BUILT TOP/RIM |
| 13* | 356.54 | 8" 340.31 (EX. N) | 8" 340.23 (S) | B1/C10.0 | 517712.514 | 1053285.208 | |
| 12 | 355.23 | 8" 339.64 (N) | 8" 339.54 (SE) | B1/C10.0 | 517598.736 | 1053318.285 | |
| 11 | 351.77 | 8" 338.60 (NW) | 8" 338.50 (E) | B1/C10.0 | 517472.775 | 1053456.422 | |
| 10 | 351.37 | 8" 337.61 (W) | 8" 337.51 (SE) | B1/C10.0 | 517415.652 | 1053624.168 | |
| 9 | 350.98 | 8" 336.23 (NW) | 8" 336.13 (SE) | B1/C10.0 | 517274.421 | 1053838.230 | |
| 8 | 349.68 | 8" 335.75 (NW) | 8" 335.65 (SW) | B1/C10.0 | 517208.692 | 1053873.658 | |
| 7 | 352.80 | 8" 334.11 (NE) | 8" 334.01 (W) | B1/C10.0 | 517077.657 | 1053594.200 | |
| 6 | 343.87 | 8" 332.27 (E) 8" 336.70 (N) | 8" 332.17 (W) 8" 336.70 (S) | B1/C10.0 | 516994.190 | 1053256.928 | |
| 5 | 342.96 | 8" 331.38 (E) | 8" 331.28 (W) | B1/C10.0 | 516947.770 | 1053106.144 | |
| 4 | 340.94 | 8" 329.85 (E) 8" 334.93 (EX. N) 8" 334.77 (EX. E) | 8" 329.75 (W) | B1/C10.0 | 516916.576 | 1052822.393 | |
| 3 | 335.97 | 10" 324.54 (EX. N) | 8" 325.05 (SW) | B1/C10.0 | 516791.775 | 1052458.328 | |
| 3B | 333.38 | 10" 324.54 (N) | 10" 324.44 (S) | B1/C10.0 | 517982.080 | 1054752.075 | |
| 2 | 333.25 | 8" 324.16 (NE) | 10" 323.35 (EX. S) | B1/C10.0 | 516686.083 | 1052315.643 | |
| 2B | 332.64 | 10" 323.37 (N) | 10" 323.35 (S) | B1/C10.0 | 517621.960 | 1054727.451 | |
| 1 | 329.46 | 8" 322.82 (NE) 8" 322.72 (EX. N) | 8" 322.72 (EX. S) | B1/C10.0 | 516468.423 | 1052138.932 | |

* PLUG EX. FL OUT OF SEWER FOR SMH 13

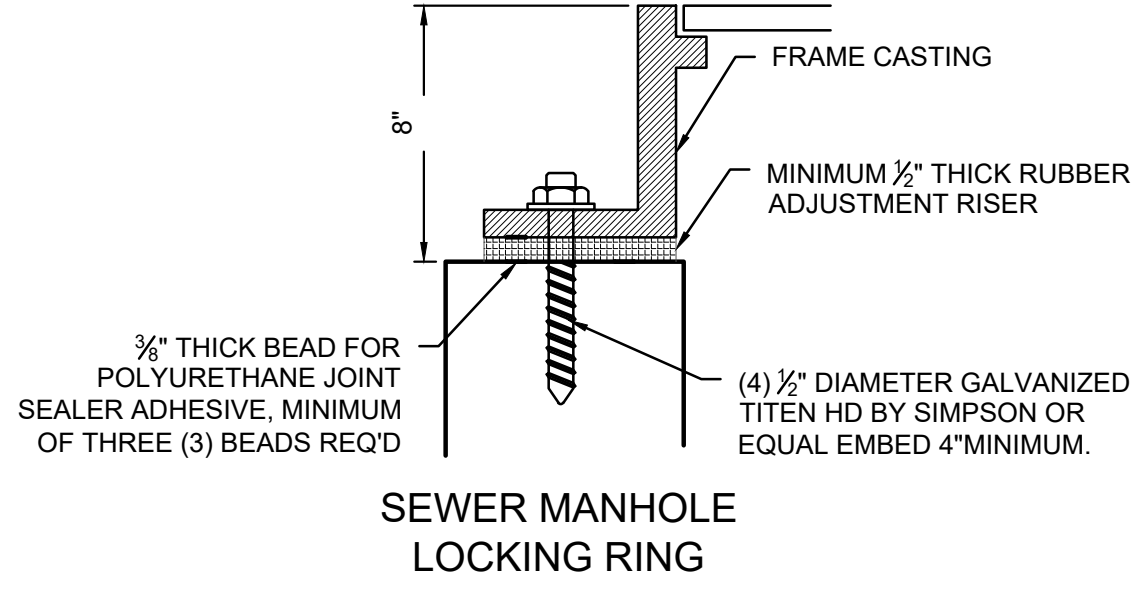
C1 SEWER STRUCTURE TABLE
NTS



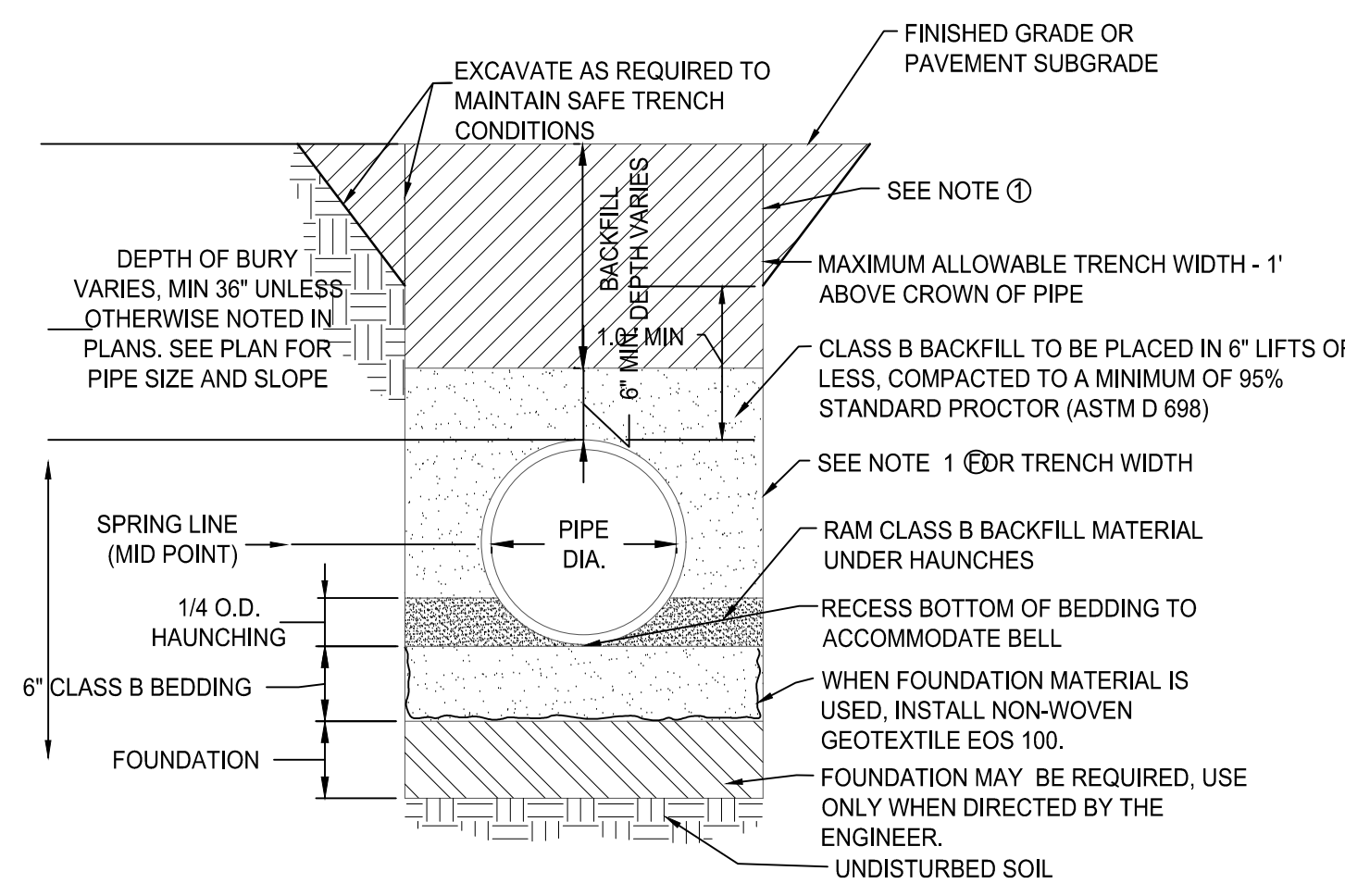


IF THE MANHOLE HEIGHT IS MORE THAN 8" BELOW FINISHED GRADE THE ADJUSTMENT MUST BE MADE BY A FULL DIAMETER MANHOLE SECTION.

USE TAPERED ADJUSTMENT RISER TO MATCH PAVEMENT SURFACE CROSS SLOPE. THERE MUST BE A RUBBER ADJUSTMENT RISER BETWEEN THE CONCRETE AND THE FRAME IRON. THE MAXIMUM VERTICAL ADJUSTMENT THAT CAN BE MADE WITH RUBBER RISERS IS 3". THE MAXIMUM VERTICAL ALLOWED IS 8". CONCRETE RISER RINGS SHALL BE USED FOR VERTICAL ADJUSTMENTS GREATER THAN 3". APPLY TWO (2) BEADS OF SEALANT BETWEEN EACH RISER SECTION. THE USE OF BRICK TO MAKE VERTICAL ADJUSTMENTS IS PROHIBITED.



SEWER MANHOLE LOCKING RING

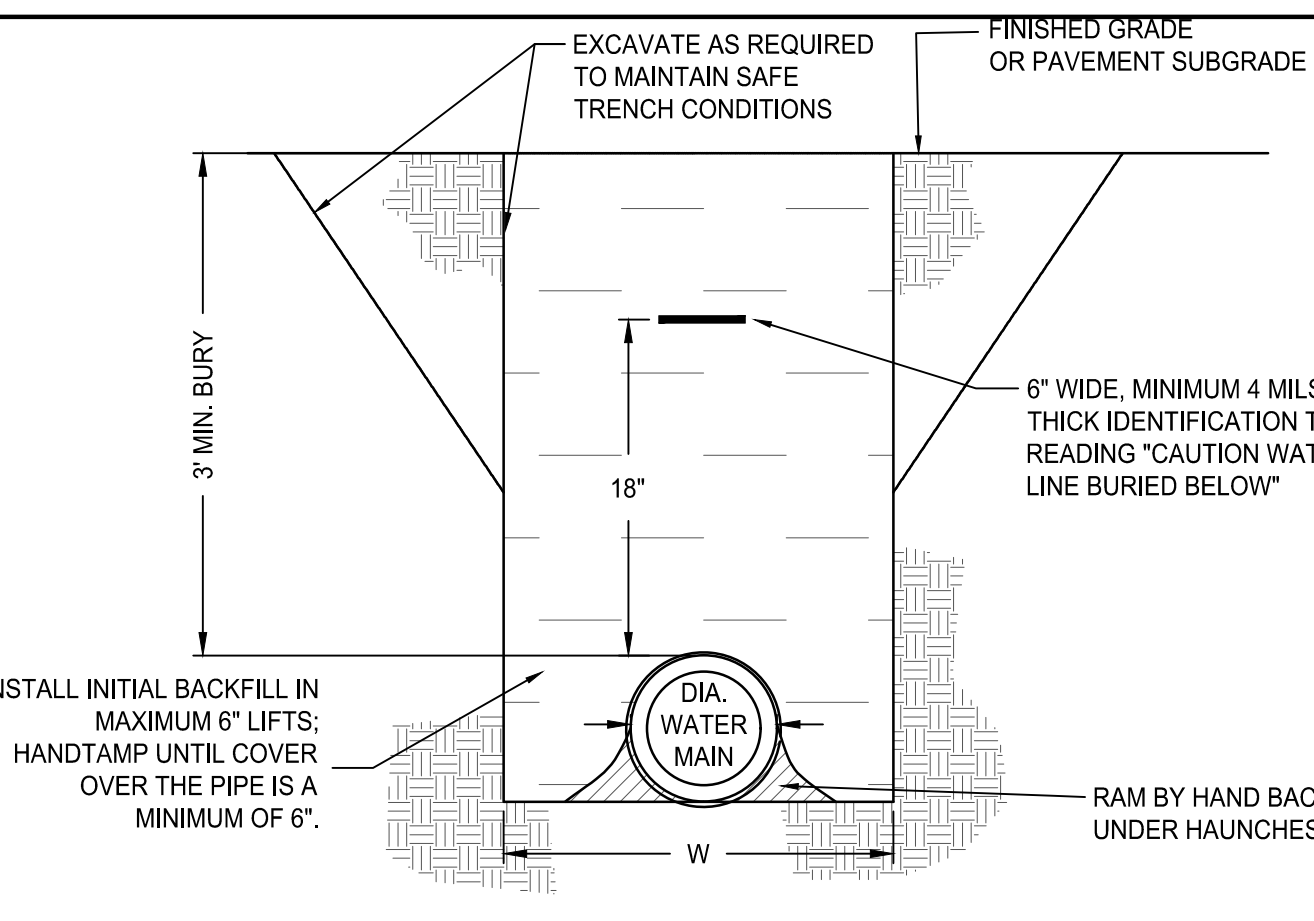


NOTE:

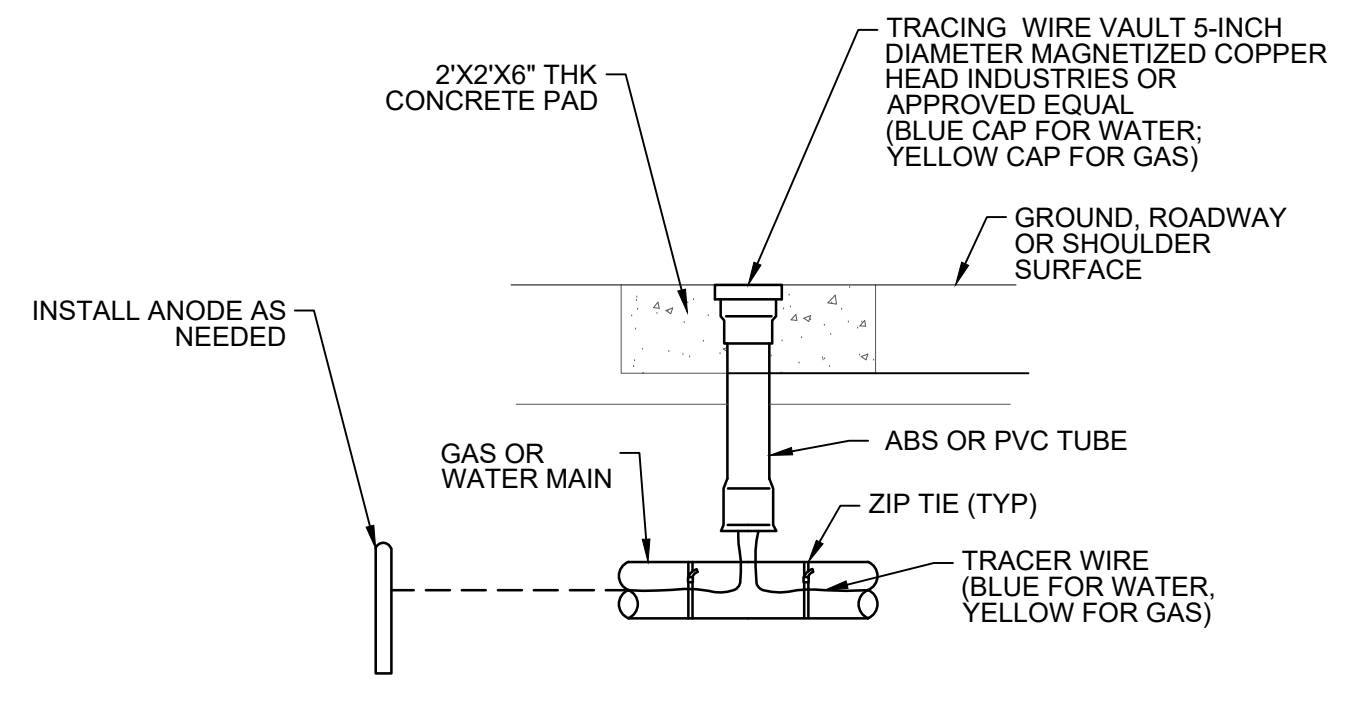
- MINIMUM AND MAXIMUM TRENCH WIDTHS MEASURED AT THE SPRING LINE OF THE PIPE AND ONE (1) FOOT ABOVE THE CROWN OF THE PIPE.
MINIMUM WIDTH = 1' + PIPE DIAMETER
MAXIMUM WIDTH = 4' + PIPE DIAMETER
- CLASS B BEDDING SHALL BE CRUSHED STONE, CHERT, OR SLAG MAY BE USED FOR CLASS B BEDDING MEETING THE FOLLOWING GRADATION:

| SIEVE SIZE | 1 1/2" | 1" | 3/4" | 3/8" | NO. 4 | NO. 10 | NO. 100 |
|------------|--------|--------|-------|-------|-------|--------|---------|
| % PASSING | 100 | 85-100 | 60-95 | 50-80 | 40-65 | 20-40 | 9-18 |

- BACKFILL MATERIAL SHALL BE SELECT ON SITE MATERIAL THAT IS FREE OF DEBRIS, ORGANIC MATTER, PERISHABLE COMPRESSIBLE MATERIALS, AND STONE OR ROCK FRAGMENTS. THE BACKFILL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING SIX (6) INCHES IN THICKNESS AND EACH LAYER IS TO BE COMPACTED TO A MINIMUM 95% OF STANDARD PROCTOR AS DETERMINED BY ASTM D 698. THE MOISTURE CONTENT OF EACH LAYER MUST BE WITHIN +/- 2 PERCENTAGE POINTS OF OPTIMUM. IN AREAS TO BE PAVED, BACKFILL SHALL BE CRUSHED STONE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- FOUNDATION MATERIAL #57 STONE, USE ONLY WHEN DIRECTED BY THE ENGINEER.



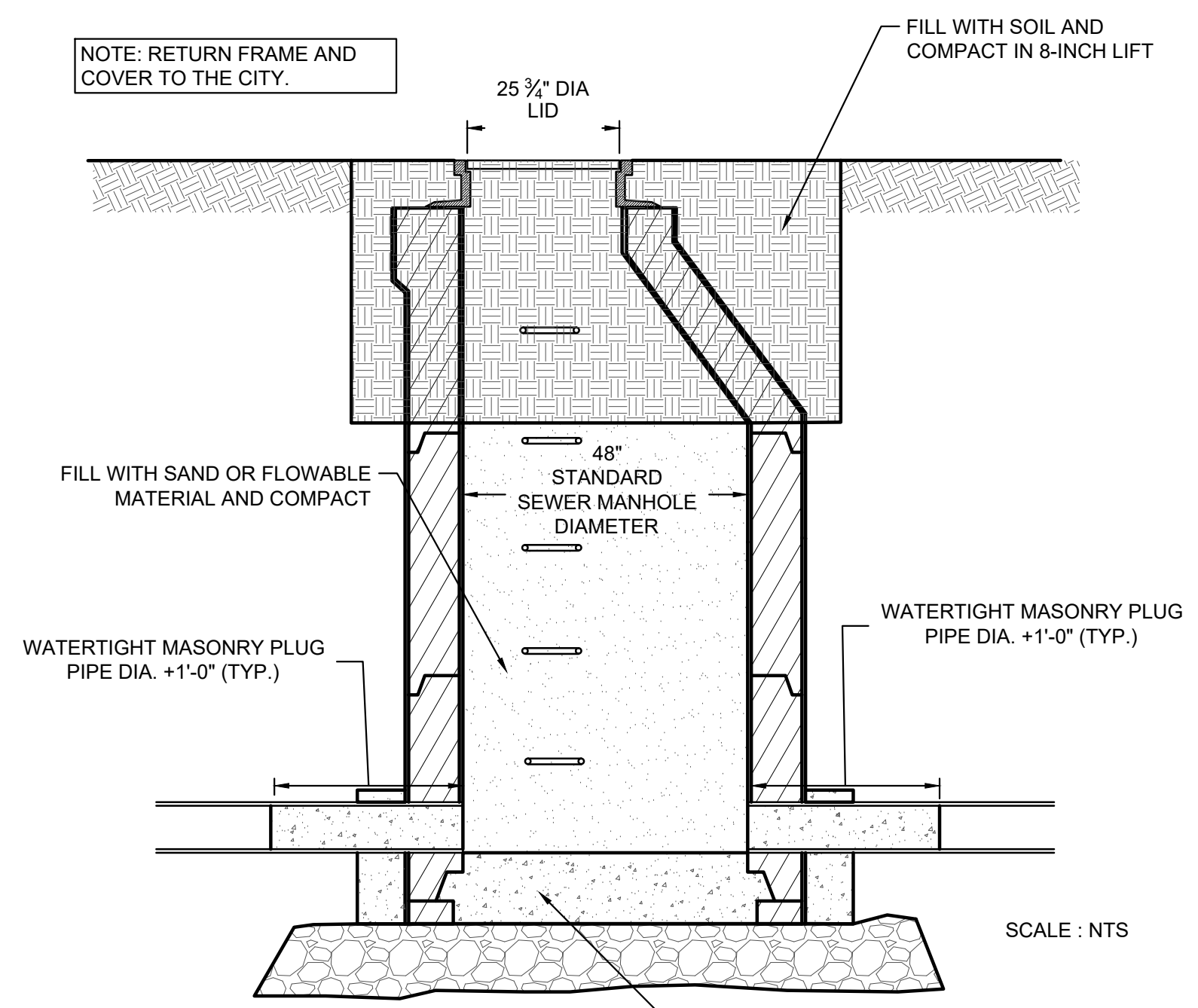
A4 WATER MAIN TRENCH DETAIL



B4 TRACER WIRE ROADWAY TRACER BOX DETAIL

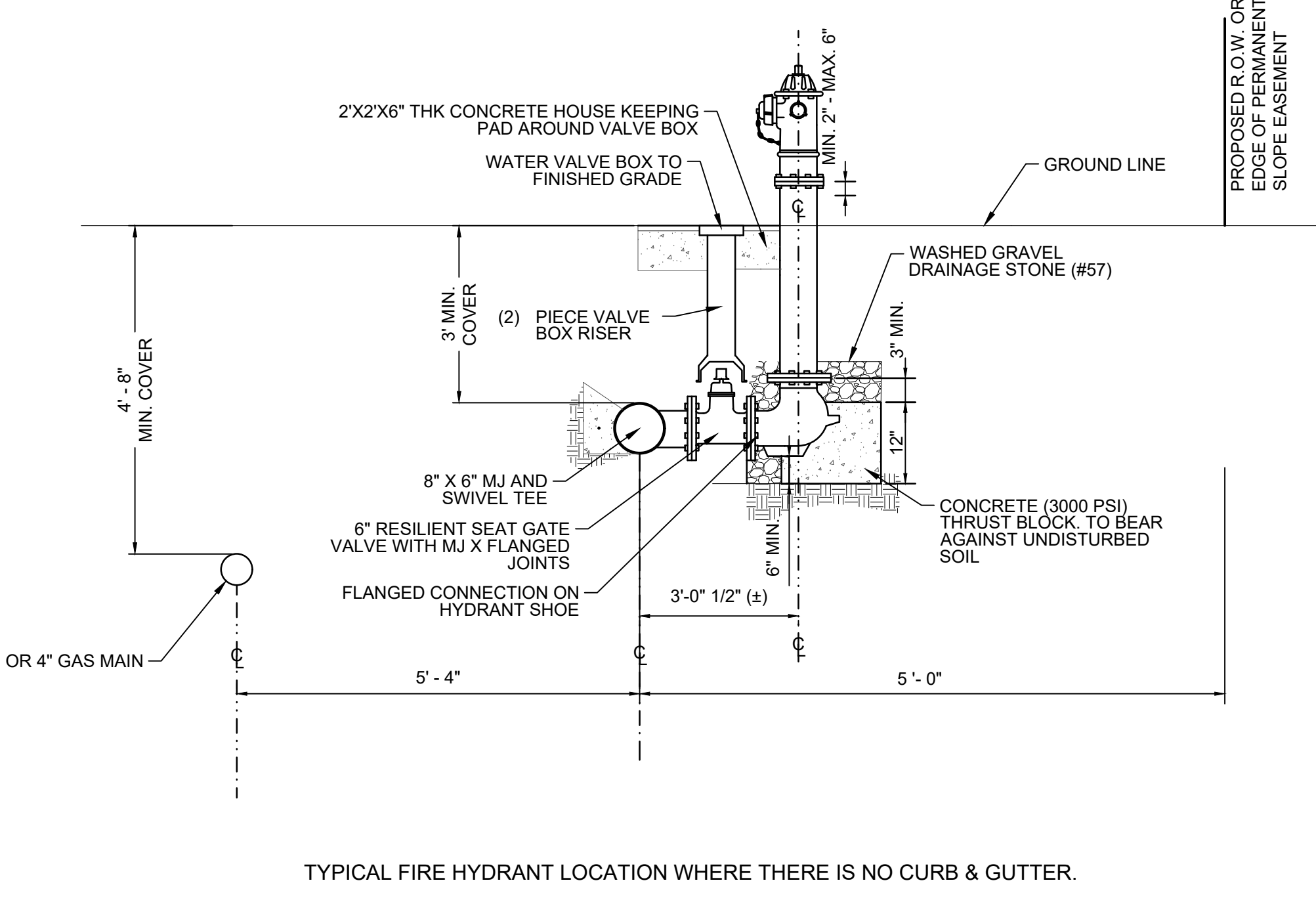
B1 PRECAST SANITARY SEWER MANHOLE DETAIL

B3 FLEXIBLE PIPE BEDDING



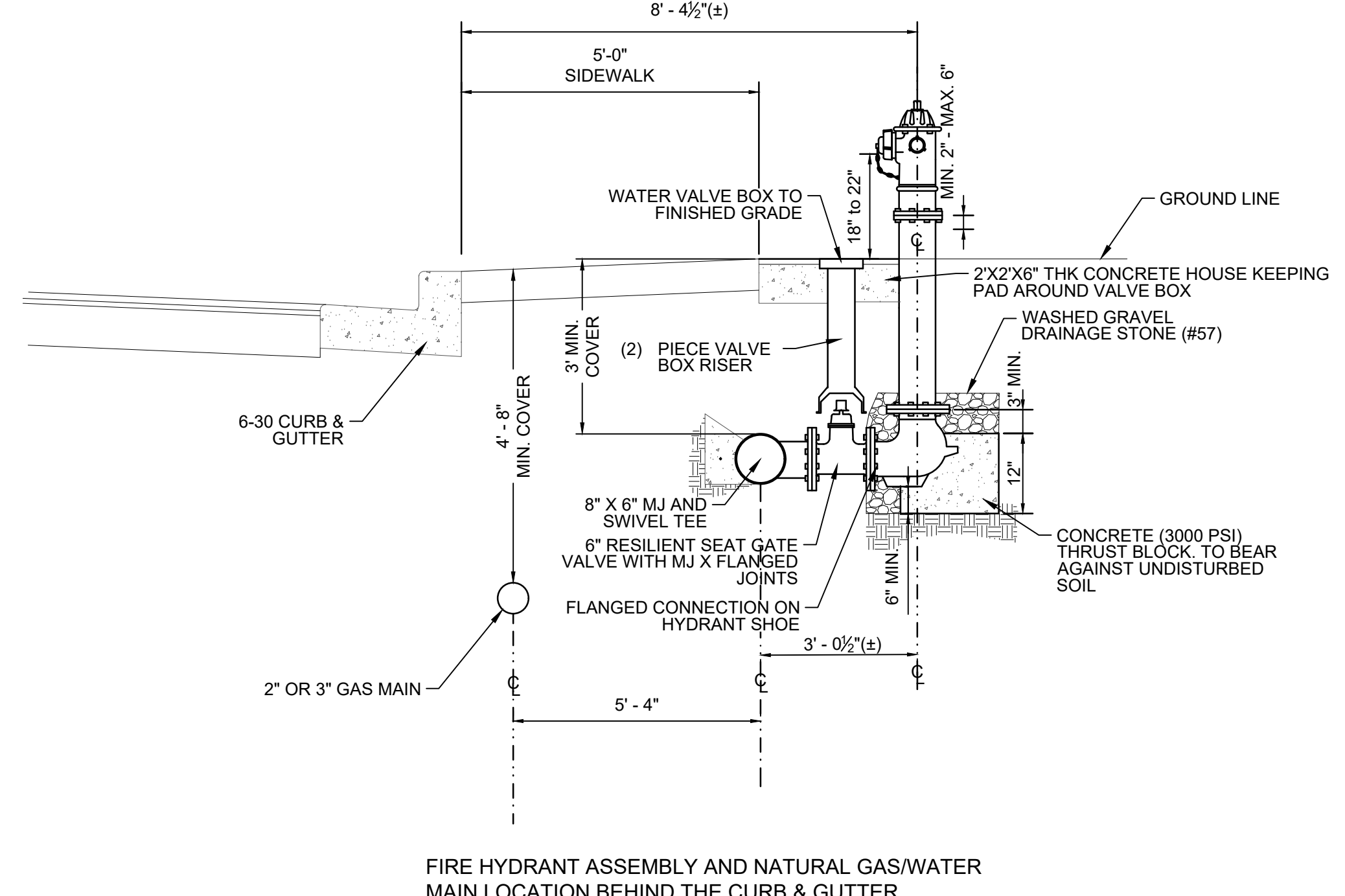
- STEPS:
- BLOCK SANITARY SEWER PIPES.
 - REMOVE FRAME, COVER, AND CONE SECTION.
 - FILL WITH SOIL.
 - COMPACT THE SOIL.

D1 ABANDONED SEWER MANHOLE & PIPES DETAIL



TYPICAL FIRE HYDRANT LOCATION WHERE THERE IS NO CURB & GUTTER.

D2 SECTION VIEW OF FIRE HYDRANT ASSEMBLY



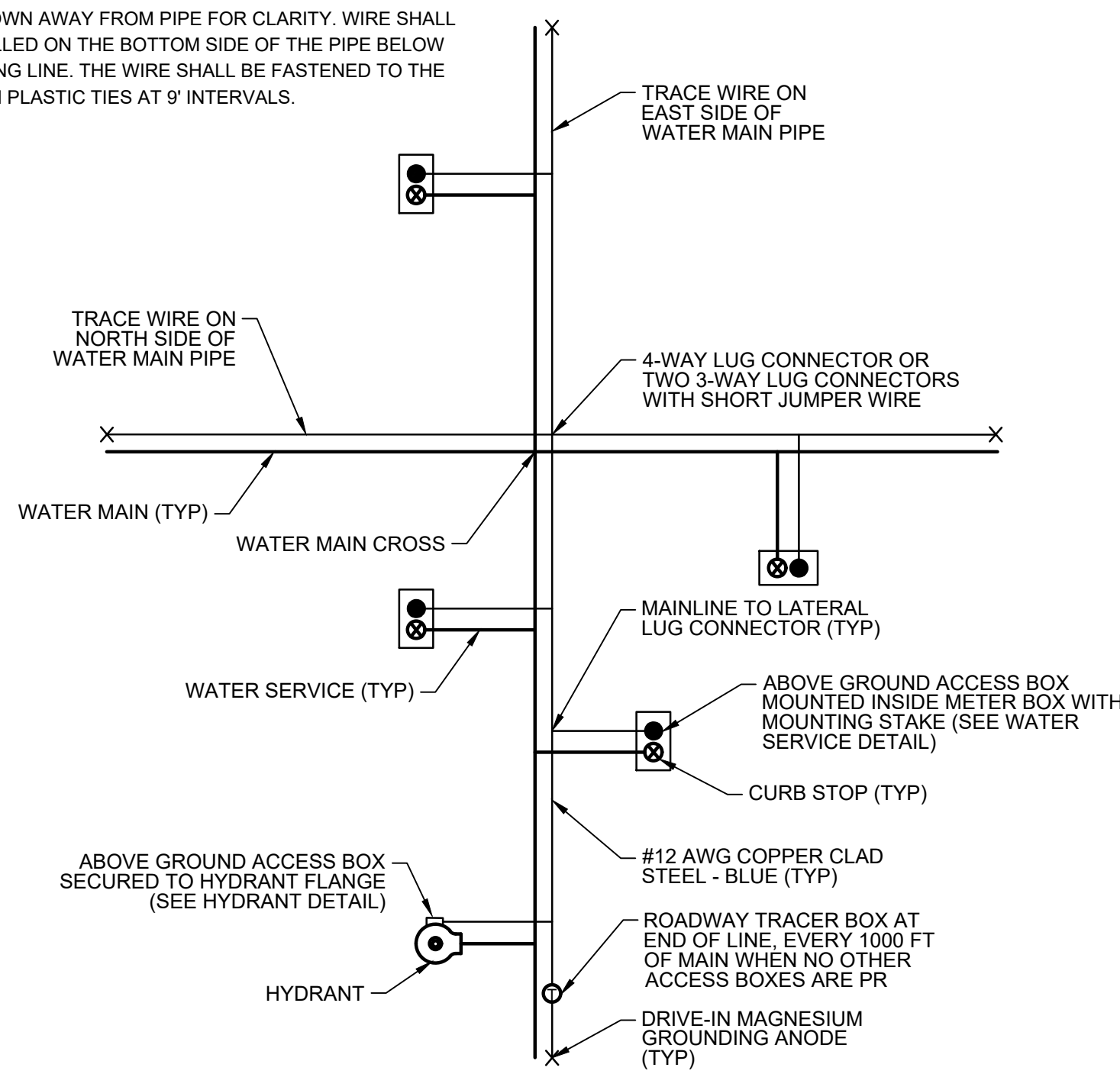
FIRE HYDRANT ASSEMBLY AND NATURAL GAS/WATER MAIN LOCATION BEHIND THE CURB & GUTTER. USE FROM THE BEGINNING OF PROJECT TO STA. 31+00.

- FIRE HYDRANT ASSEMBLY NOTES:
- FIRE HYDRANT SHALL BE BREAK AWAY 5 1/2" MULLER A-423 SUPER CENTURION 250. THE SHOE SHALL HAVE A FLANGED JOINT.
 - ALL JOINTS BETWEEN THE DISTRIBUTION MAIN AND THE FIRE HYDRANT SHALL BE RESTRAINED.
 - THE HYDRANT LEAD VALVE MUST BE ATTACHED TO A MJ SWIVEL TEE. THE DIAMETER OF MAIN BODY OF THE TEE SHALL MATCH THE DIAMETER OF THE DISTRIBUTION MAIN. THE BRANCH OF THE TEE SHALL BE 6-INCHES.
 - THE GATE VALVE SHALL BE RESILIENT WITH MJ X FLANGE JOINTS. THE MECHANICAL JOINT END SHALL BE ATTACHED DIRECTLY TO THE SWIVEL TEE AND THE FLANGE OF THE HYDRANT SHOE SHALL BE ATTACHED DIRECTLY TO THE FLANGE END OF THE VALVE.
 - THE FIRE HYDRANT SHALL BE SET VERTICALLY SO THAT THE BURY LINE ON THE LOWER BARREL SECTION IS VISIBLE ABOVE FINISHED GRADE. THE BURY LINE SHALL NOT BE BELOW GROUND LEVEL NOR MORE THAN 6-INCHES ABOVE FINISHED GRADE.

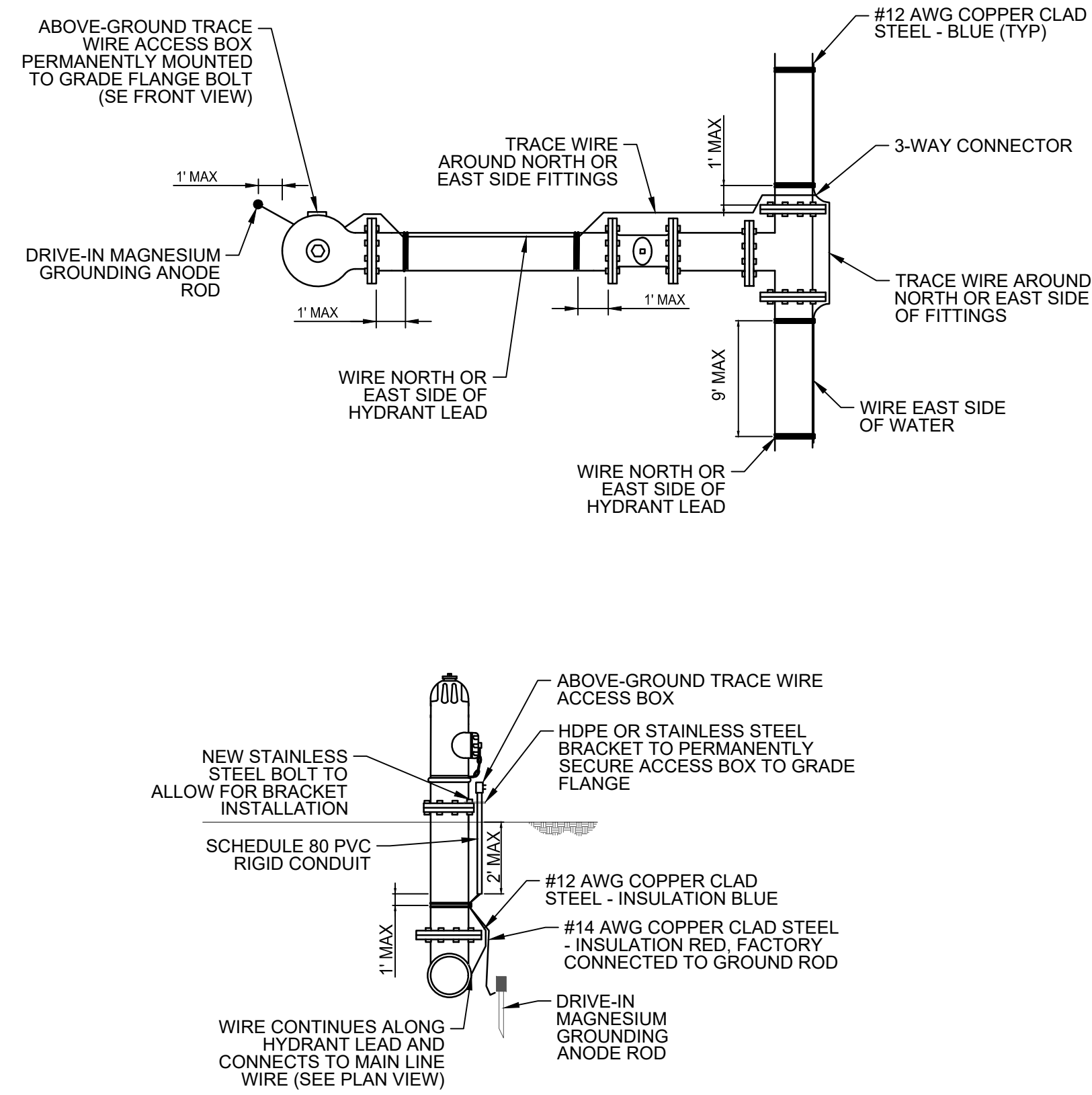


NOTES:

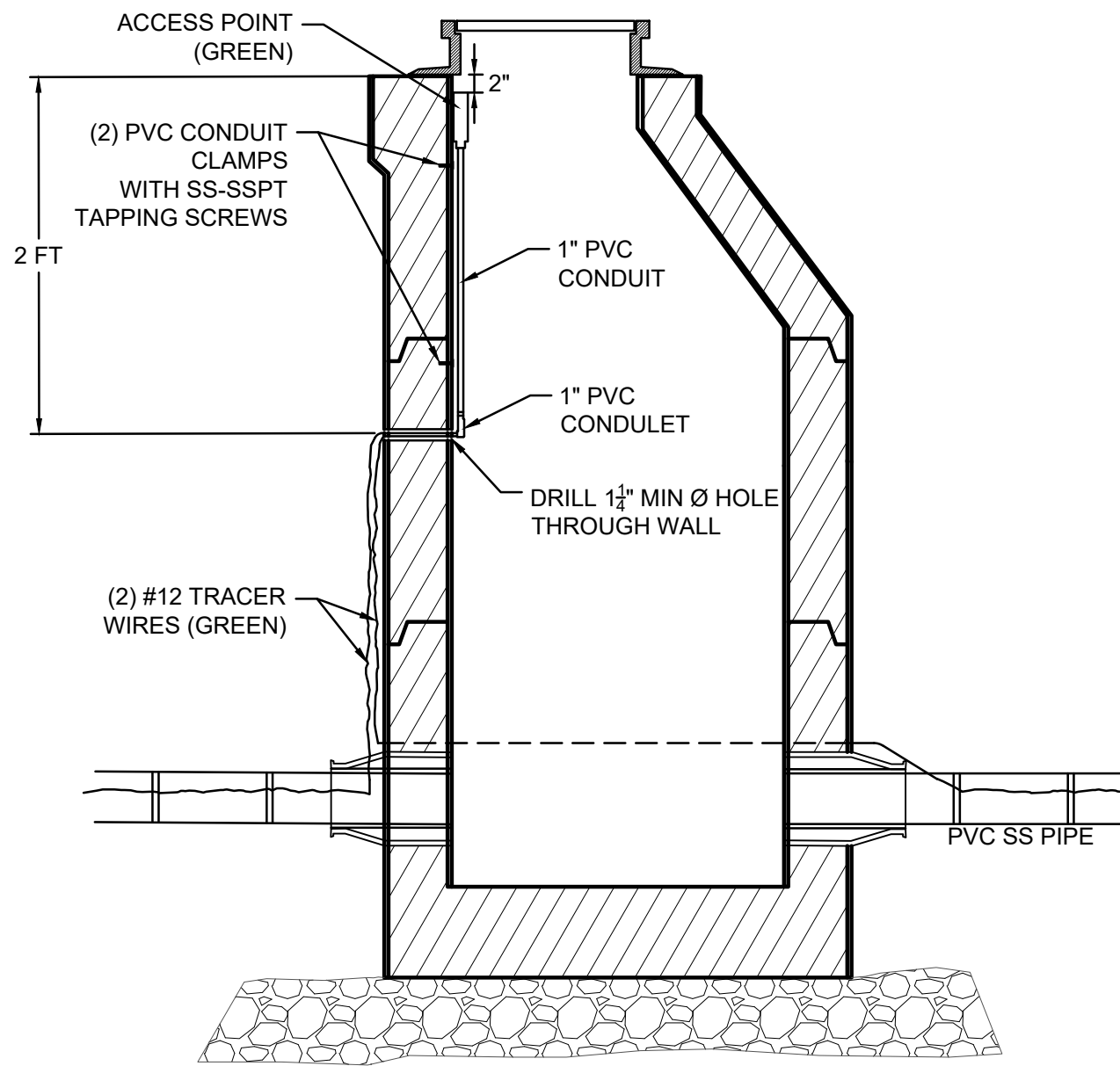
WIRE SHOWN AWAY FROM PIPE FOR CLARITY. WIRE SHALL BE INSTALLED ON THE BOTTOM SIDE OF THE PIPE BELOW THE SPRING LINE. THE WIRE SHALL BE FASTENED TO THE PIPE WITH PLASTIC TIES AT 9' INTERVALS.



B1 TRACE WIRE TYPICAL WATER PLAN



B2 TRACE WIRE HYDRANT DETAIL

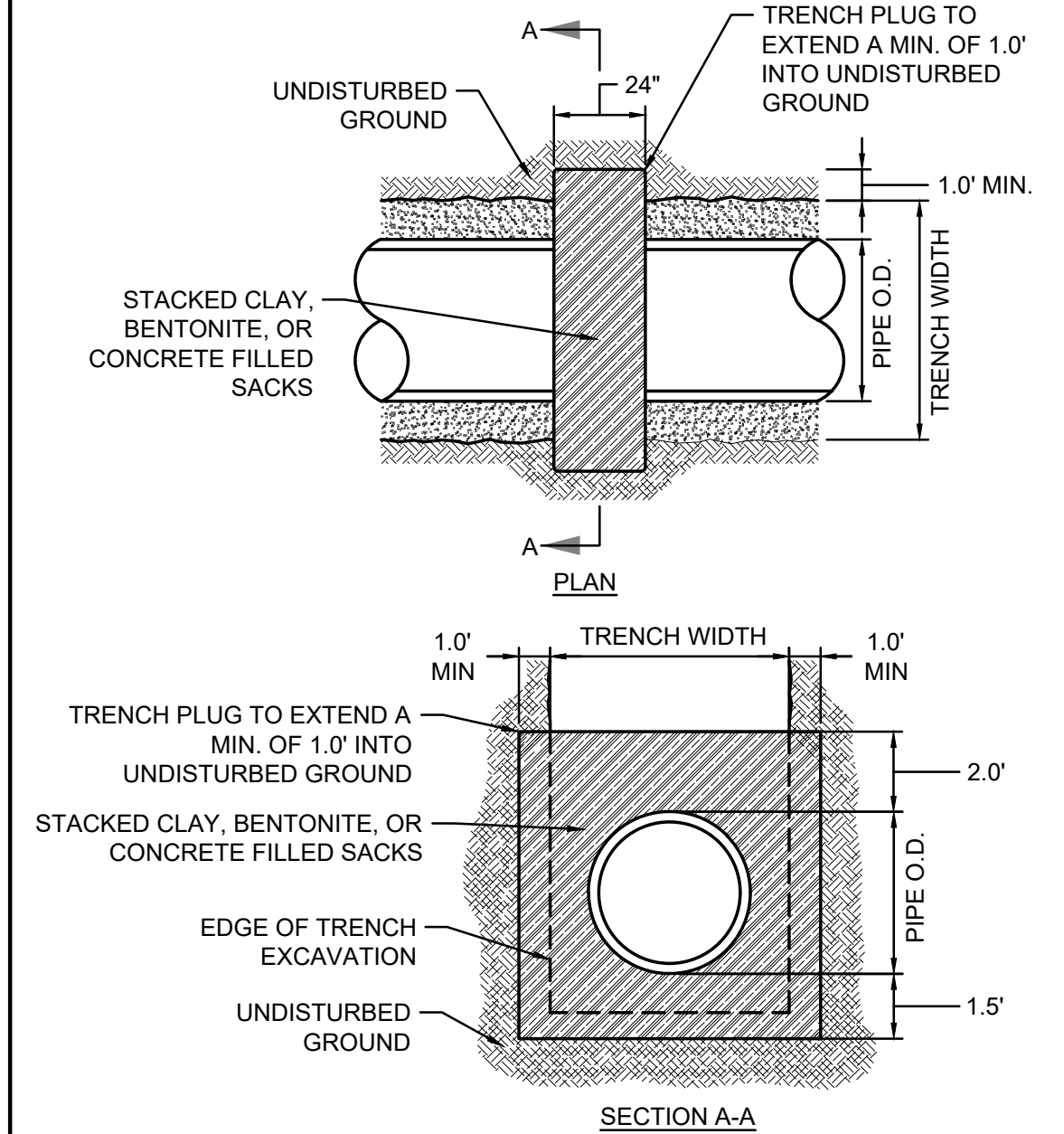


B3 SEWER ACCESS POINT DETAIL

ACCESS POINT NOTES:

1. WATER SUPPLY: EACH TERMINATION POINT (TAP) REQUIRES A ROADWAY TRACER WIRE FOR WATER, ACCOMPANIED BY AN ANODE. AT EVERY FIRE HYDRANT, THERE WILL BE AN ABOVE-GROUND TRACER BOX, ELIMINATING THE NEED FOR ADDITIONAL ROADWAY BOXES.
2. GAS LINES: INSTALL A ROADWAY BOX AT EACH CONNECTION POINT TO THE EXISTING MAIN, ALONG WITH AN ANODE. ADDITIONALLY, PLACE A ROADWAY BOX ALONG THE NEW MAIN WITH A MAXIMUM SPACING OF 1000 FEET.
3. SEWER SYSTEM: ENSURE THERE IS AN ACCESS POINT AT EACH SEWER MANHOLE (SMH).

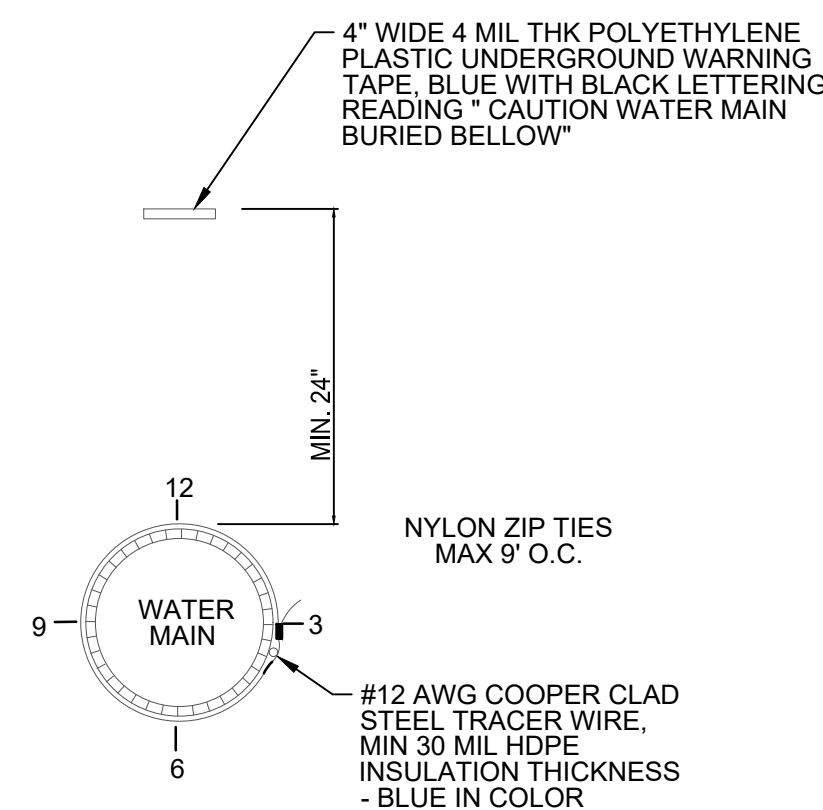
A4 ACCESS POINT NOTES



B4 TRENCH PLUG DETAIL

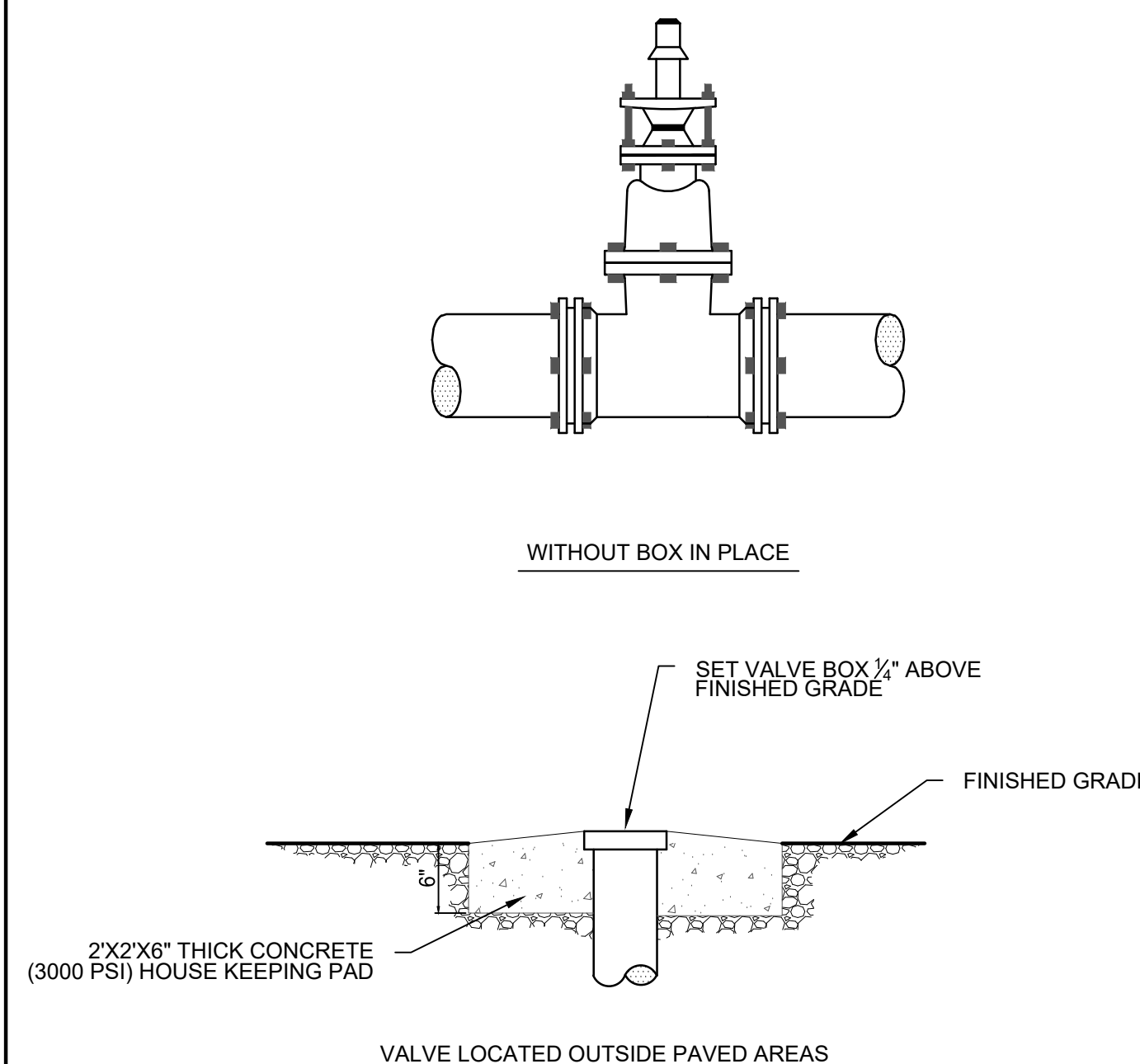
TRACE WIRE NOTES:

1. THE TRACE WIRE SHALL HAVE THE FOLLOWING QUALITIES:
 - a. OPEN TRENCH APPLICATION: # 12 AWG COPPER CLAD STEEL; HIGH STRENGTH WITH A MINIMUM 450 LB. BREAK LOAD; MINIMUM 30 MIL THICK HDPE INSULATION.
 - b. DIRECTIONAL DRILLING/BORING: #12 AWG COPPER CLAD STEEL; EXTRA HIGH STRENGTH WITH A MINIMUM 1,150 BREAK LOAD; MINIMUM 30 MIL THICK HDPE INSULATION.
 - c. PIPE BURSTING/SLIP LINING: 7 X #7 STRANDED COPPER CLAD STEEL ; EXTREME STRENGTH WITH A MINIMUM 4,700 LB. BREAK LOAD; MINIMUM 50 MIL THICK HDPE INSULATION.
2. THE HDPE INSULATION SHALL BE INTENDED FOR DIRECT BURY INSTALLATION. COLOR CODED PER THE APWA STANDARD FOR THE SPECIFIC UTILITY BEING MARKED - BLUE FOR WATER DISTRIBUTION PIPING.
3. THE TRACE WIRE SHALL BE ATTACHED TO THE WATER MAIN WITH NYLON ZIP TIES AT A MAXIMUM SPACING BETWEEN TIES OF 9 FEET. THE TRACE WIRE SHALL BE LOCATED BETWEEN THE 3 AND 5 O'CLOCK POSITION ON THE MAIN WHEN LOOKING EITHER NORTH OR WEST ALONG THE RUN OF PIPE.
4. ALL MAINLINE TRACE WIRES MUST BE INTERCONNECTED AT INTERSECTIONS, AT MAIN LINE TEES AND MAINLINE CROSSES.
5. DIRECT BURY WIRE CONNECTORS SHALL BE LOCKABLE LUG CONNECTORS; DIELECTRIC SILICON FILLED; AND, SHALL BE INSTALLED SUCH THAT **NO BARE WIRE IS EXPOSED**.
6. NON LOCKING FRICTION FIT, TWIST OR TAPED CONNECTORS **ARE PROHIBITED**.
7. ALL TRACE WIRE TERMINATION POINTS MUST UTILIZE AN APPROVED TRACE WIRE ACCESS BOX, SPECIFICALLY MANUFACTURED FOR THIS PURPOSE. LOOSE WIRE IS NOT ACCEPTABLE.
8. TRACE WIRE SYSTEMS MUST BE INSTALLED AS A SINGLE CONTINUOUS WIRE, EXCEPT WHERE USING APPROVED CONNECTORS. NO LOOPING OR COILING OF WIRE IS ALLOWED.
9. TRACE WIRE MUST BE PROPERLY GROUNDING AT ALL DEAD ENDS AND AS NOTED IN THE STANDARD DETAILS AND/OR CONSTRUCTION DRAWINGS. GROUNDING SHALL BE ACHIEVED USING A DRIVE-IN MAGNESIUM GROUNDING ANODE ROD (MINIMUM 1.5 LB.) WITH A 20 LINEAL FOOT, #12 AWG COPPER CLAD, HDPE (RED) INSULATED LEAD ATTACHED TO THE ANODE.
10. AT DEAD ENDS THE GROUNDING ANODE SHALL BE INSTALLED IN A 180° DIRECTION OPPOSITE THE TRACE WIRE, AT THE MAXIMUM POSSIBLE DISTANCE.
11. WHEN GROUNDING THE TRACE WIRE IN AREAS WHERE THE TRACE WIRE IS CONTINUOUS, INSTALL THE GROUNDING ANODE DIRECTLY BENEATH AND IN-LINE WITH THE TRACE WIRE. DO NOT COIL EXCESS WIRE.



D1 WATER MAIN TRACE WIRE/LOCATOR DETAILS

- NOTE:**
1. AREAS OVER EXCAVATED TO INSTALL THE VALVE SHALL BE FILLED WITH CRUSHED STONE (SIZE #7). THE STONE SHALL BE RAMMED UNDER AND AROUND THE VALVE AND PIPING.
 2. THE VALVE BOX SHALL NOT COME IN CONTACT WITH ANY PART OF THE VALVE.
 3. BACKFILL WITHIN 4 FEET AROUND THE VALVE BOX SHALL BE HAND PLACED AND TAMPED.
 4. VALVE BOXES SHALL BE GRAY IRON CLASS 30B SCREW TYPE.



D3 DETAIL OF VALVE SETTING



TABLE 1 - THRUST BLOCK DATA FOR HORIZONTAL FITTINGS

| PIPE DIA. (INCHES) | 90° BEND | | 45° BEND | | 22.5° BEND | | 11.25° BEND | | TEE OR PLUG | |
|-----------------------|----------|-----------|----------|-----------|------------|-----------|-------------|-----------|-------------|-----------|
| | T (lbs.) | EA (s.f.) | T (lbs.) | EA (s.f.) | T (lbs.) | EA (s.f.) | T (lbs.) | EA (s.f.) | T (lbs.) | EA (s.f.) |
| 4 & UNDER | 2,560 | 1.54 | 1,386 | 0.83 | 707 | 0.42 | 355 | 0.21 | 1,811 | 1.09 |
| 6 | 5,288 | 3.17 | 2,862 | 1.72 | 1,459 | 0.88 | 733 | 0.44 | 3,739 | 2.24 |
| 8 | 9,098 | 5.46 | 4,924 | 2.95 | 2,511 | 1.51 | 1,262 | 0.76 | 6,433 | 3.86 |
| 10 | 13,686 | 8.21 | 7,407 | 4.44 | 3,776 | 2.27 | 1,898 | 1.14 | 9,677 | 5.81 |
| 12 | 19,354 | 11.61 | 10,475 | 6.29 | 5,340 | 3.20 | 2,683 | 1.61 | 13,685 | 8.21 |
| 14 | 26,001 | 15.60 | 14,072 | 8.44 | 7,174 | 4.30 | 3,605 | 2.16 | 18,385 | 11.03 |
| 16 | 33,629 | 20.18 | 18,200 | 10.92 | 9,279 | 5.57 | 4,662 | 2.80 | 23,779 | 14.27 |
| 18 | 42,236 | 25.34 | 22,858 | 13.71 | 11,653 | 6.99 | 5,855 | 3.51 | 29,865 | 17.92 |
| 20 | 51,823 | 31.09 | 28,047 | 16.83 | 14,298 | 8.58 | 7,184 | 4.31 | 36,644 | 21.99 |
| 24 | 73,934 | 44.36 | 40,013 | 24.01 | 20,399 | 12.24 | 10,249 | 6.15 | 52,279 | 31.37 |

TABLE BASED UPON A TEST PRESSURE OF 100 PSI
 T = POUNDS OF THRUST
 P = RESISTING SOIL PRESSURE (ASSUMED TO BE 2500 PSF)
 S.F. = SAFETY FACTOR (1.5)
 EA = MINIMUM END AREA OF THRUST BLOCK; EA = 1.5 T/P

TABLE 2 - THRUST BLOCK - END AREA DIMENSIONS

| PIPE DIA. (INCHES) | 90° BEND | | 45° BEND | | 22.5° BEND | | 11.25° BEND | | TEE OR PLUG | |
|-----------------------|----------|----|----------|----|------------|----|-------------|----|-------------|----|
| | A | B | A | B | A | B | A | B | A | B |
| 4 & UNDER | 23 | 10 | 12 | 10 | 8 | 8 | 7 | 5 | 16 | 10 |
| 6 | 33 | 14 | 18 | 14 | 11 | 12 | 8 | 8 | 24 | 14 |
| 8 | 44 | 18 | 24 | 18 | 14 | 16 | 11 | 10 | 31 | 18 |
| 10 | 52 | 23 | 28 | 23 | 17 | 20 | 13 | 13 | 37 | 23 |
| 12 | 62 | 27 | 34 | 27 | 20 | 24 | 16 | 15 | 44 | 27 |
| 14 | 71 | 32 | 38 | 32 | 23 | 28 | 18 | 18 | 50 | 32 |
| 16 | 81 | 36 | 44 | 36 | 26 | 32 | 21 | 20 | 58 | 36 |
| 18 | 90 | 41 | 49 | 41 | 28 | 36 | 22 | 23 | 63 | 41 |
| 20 | 100 | 45 | 54 | 45 | 31 | 40 | 25 | 25 | 71 | 45 |
| 24 | 119 | 54 | 65 | 54 | 37 | 48 | 30 | 30 | 84 | 54 |

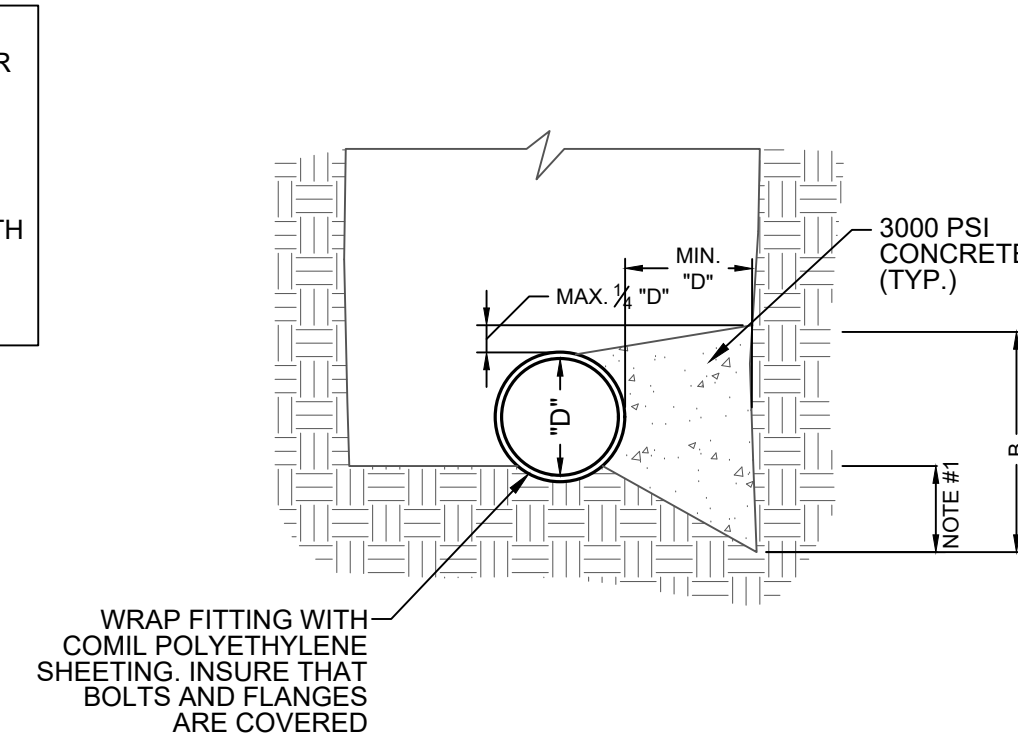
TABLE BASED UPON A TEST PRESSURE OF 100 PSI

TABLE 3 - ADJUSTMENT FACTORS

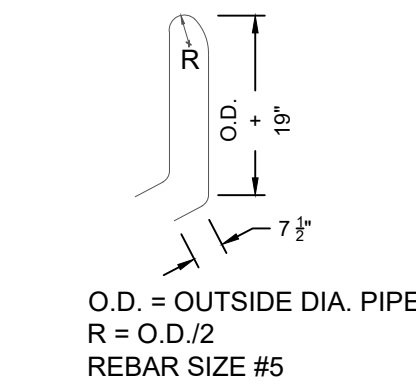
| TEST PRESSURE | ADJ. FACTOR |
|---------------|-------------|
| 100 psi | 1.00 |
| 125 psi | 1.12 |
| 150 psi | 1.22 |
| 175 psi | 1.32 |
| 200 psi | 1.42 |

THRUST BLOCK NOTES:

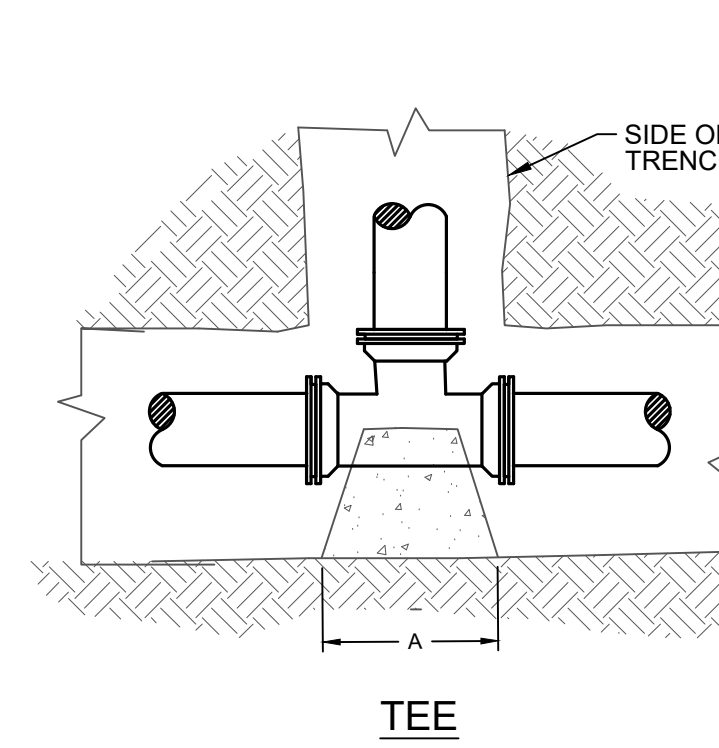
- DIMENSION FOR 90°, 45°, 22 1/2° BEND AND TEES OR PLUGS EQUAL TO "D"; FOR 11 1/2° BEND DIMENSION EQUAL TO 1/2 "D"
- THE THRUST BLOCK SHALL BEAR ON UNDISTURBED SOIL. REMOVE ANY LOOSE MATERIAL TO EXPOSE UNDISTURBED SOIL.
- KEEP CONCRETE 3 INCHES CLEAR OF FITTING FLANGES.
- SIDES OF THRUST BLOCK SHALL BE FORMED USING SUITABLE MATERIAL. EARTH "DAMS" ARE NOT ACCEPTABLE.
- WHEN THE TEST PRESSURE VARIES FROM 100 PSI; A AND B SHALL; BE ADJUSTED BY VALUES NOTES IN TABLE 3.



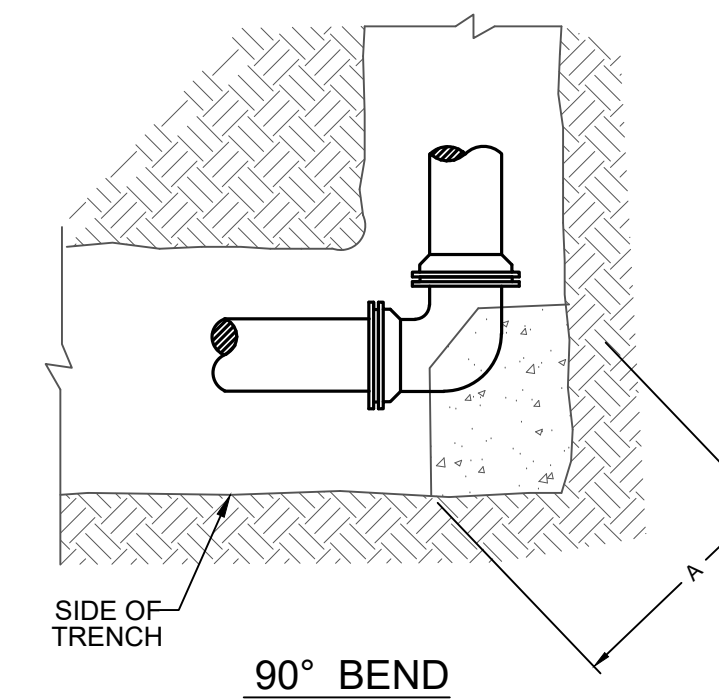
TYP. SECTION



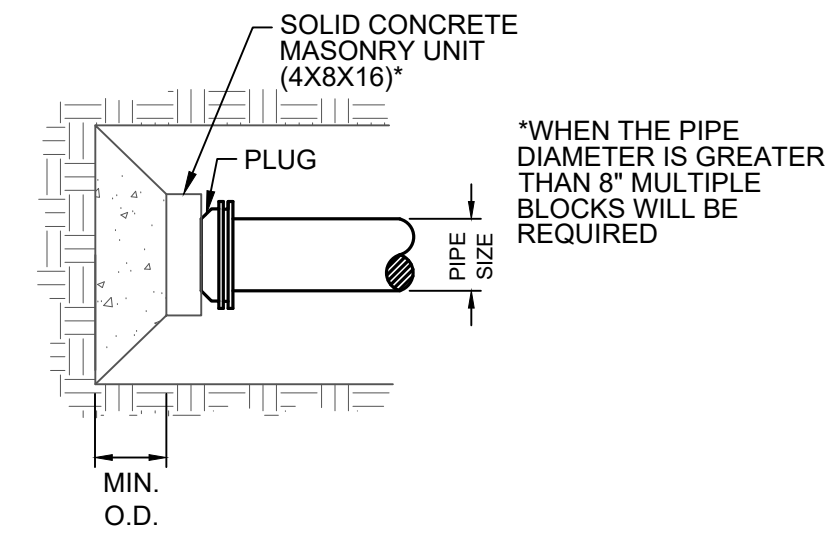
REBAR STRAP BENDING DIAGRAM



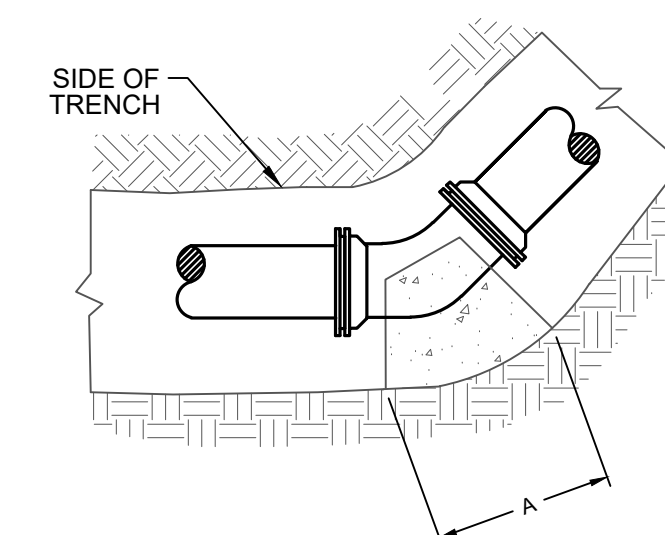
TEE



90° BEND

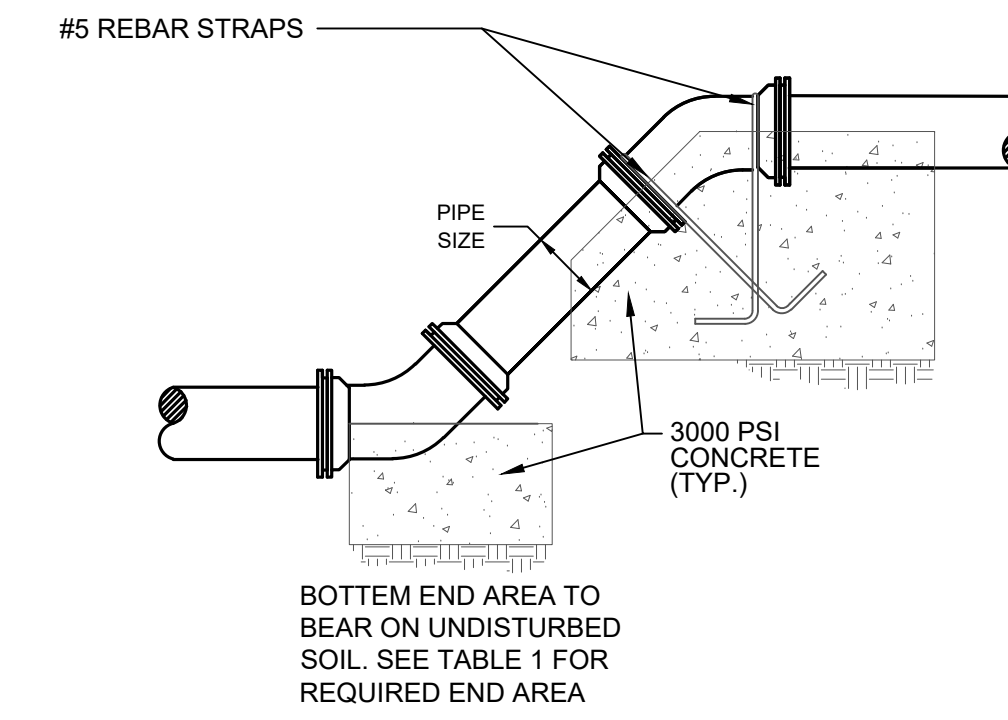


PLUG



45° - 22 1/2° - 11 1/4° BENDS

- NOTES:
- THRUST BLOCK MUST HAVE SUFFICIENT MASS TO RESIST UPLIFT. SEE TABLE 4 FOR VOLUME OF CONCRETE.
 - REQUIRED VERTICAL OFFSET THRUST BLOCKS TYPICAL FOR 45°, 22 1/2°, AND 11 1/2° BENDS.
 - WRAP ALL PIPE AND FITTING THAT WILL COME IN CONTACT WITH CONCRETE IN 6 MIL POLYETHYLENE SHEETING.
 - THRUST BASED UPON 100 PSI INCREASE VOLUME OF CONCRETE BY:
ADJ. FACTOR = (TEST PRESSURE/100)



THRUST BLOCKING FOR VERTICAL OFFSET USING 45°, 22.5°, OR 11.25° BENDS*

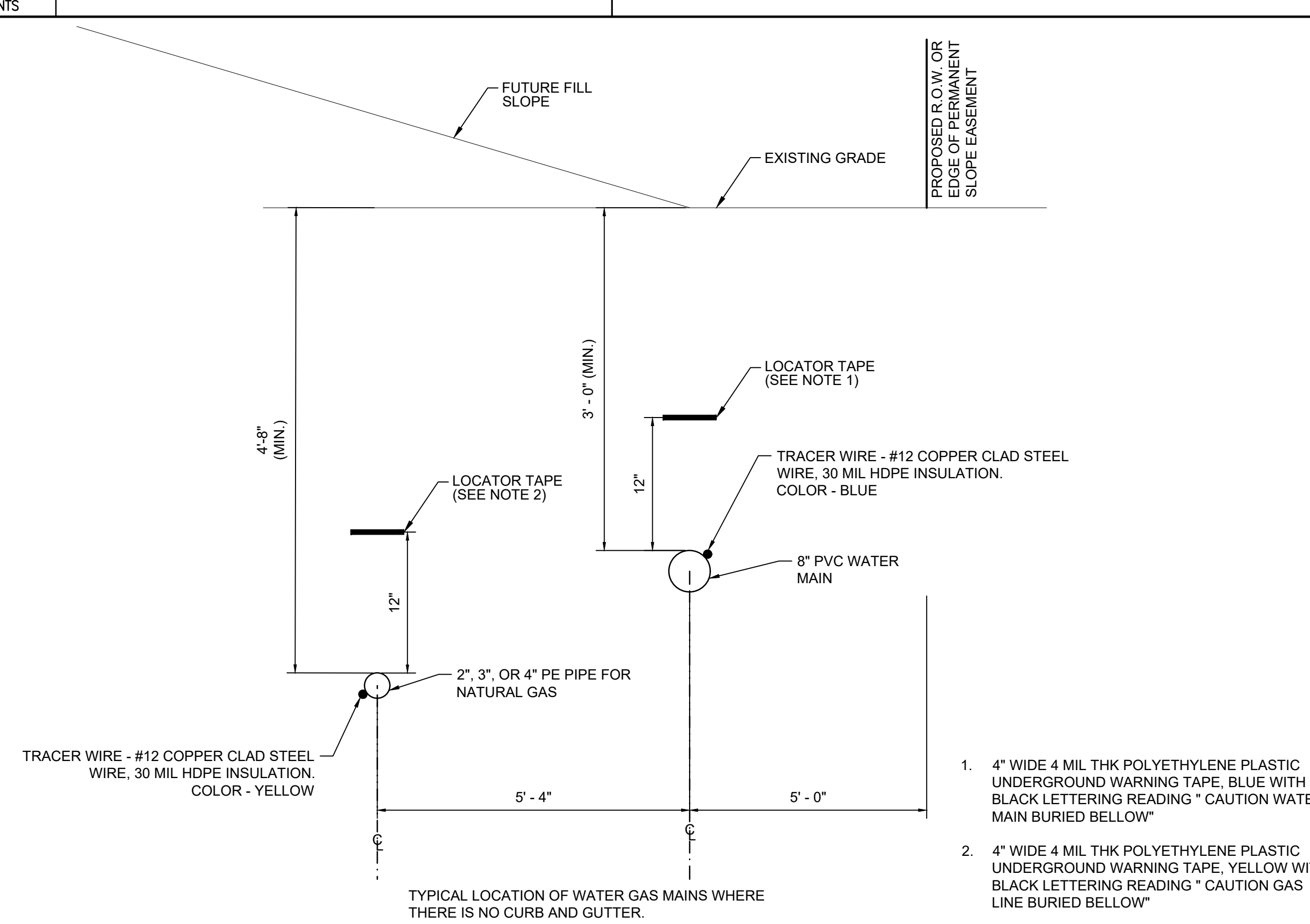
TABLE 4 - THRUST BLOCK DATA FOR VERTICAL BENDS ORIENTATED DOWNWARD

| PIPE DIA. (INCHES) | 90° BEND | | 45° BEND | | 22.5° BEND | | 11.25° BEND | |
|-----------------------|----------|---------------------------|----------|---------------------------|------------|---------------------------|-------------|---------------------------|
| | T (lbs.) | VOLUME OF CONCRETE (c.y.) | T (lbs.) | VOLUME OF CONCRETE (c.y.) | T (lbs.) | VOLUME OF CONCRETE (c.y.) | T (lbs.) | VOLUME OF CONCRETE (c.y.) |
| 4 & UNDER | 2,560 | 0.5 | 1,386 | 0.50 | 707 | 0.20 | 355 | 0.10 |
| 6 | 5,288 | 1.1 | 2,862 | 1.00 | 1,459 | 0.50 | 733 | 0.20 |
| 8 | 9,098 | 1.8 | 4,924 | 1.70 | 2,511 | 0.80 | 1,262 | 0.40 |
| 10 | 13,686 | 2.8 | 7,407 | 2.50 | 3,776 | 1.30 | 1,898 | 0.60 |
| 12 | 19,354 | 3.9 | 10,475 | 3.50 | 5,340 | 1.80 | 2,683 | 0.90 |
| 14 | 26,001 | 5.3 | 14,072 | 4.70 | 7,174 | 2.40 | 3,605 | 1.20 |
| 16 | 33,629 | 6.8 | 18,200 | 6.10 | 9,279 | 3.10 | 4,662 | 1.60 |
| 18 | 42,236 | 8.6 | 22,858 | 7.70 | 11,653 | 3.90 | 5,855 | 2.00 |
| 20 | 51,823 | 10.5 | 28,047 | 9.40 | 14,298 | 4.80 | 7,184 | 2.40 |
| 24 | 73,934 | 15.0 | 40,013 | 13.50 | 20,399 | 6.90 | 10,249 | 3.50 |

THE THRUST PRODUCES AN UPLIFT FORCE THE WEIGHT OF THE THRUST BLOCK PROVIDES THE RESISTANCE

* THE VERTICAL THRUST BLOCK DETAILS ARE PROVIDED FOR REFERENCE ONLY. FOR THIS PROJECT, VERTICAL OFFSETS IN THE WATER LINE WILL BE RESTRAINED AGAINST THRUST FORCES THROUGH THE USE OF RESTRAINED JOINTS. THE LIMITS WITHIN WHICH JOINT RESTRAINTS SHALL BE REQUIRED ARE LABELED ON THE PROFILE VIEW.

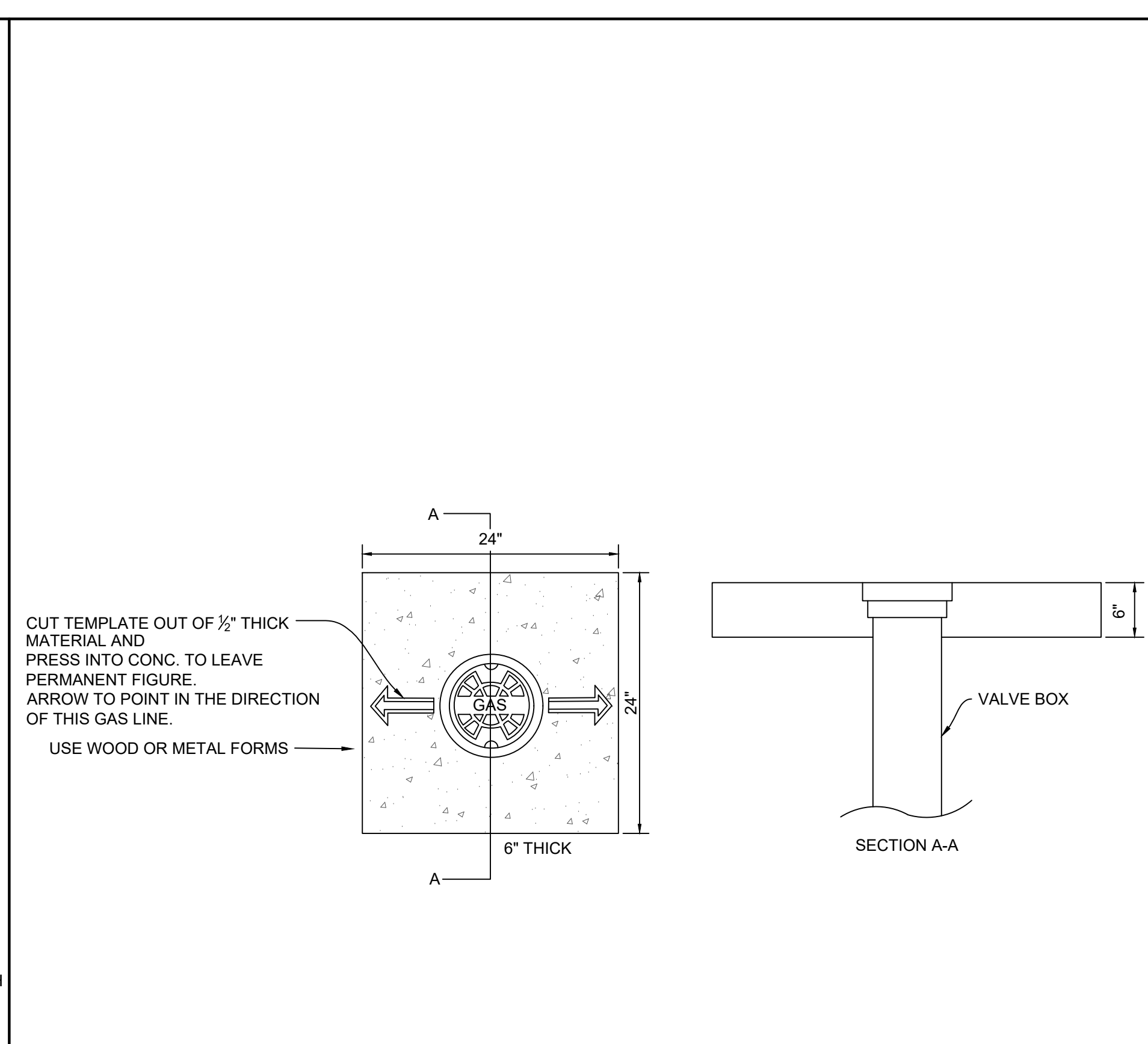
B1 THRUST BLOCKING DETAILS



- 4" WIDE 4 MIL THK POLYETHYLENE PLASTIC UNDERGROUND WARNING TAPE, BLUE WITH BLACK LETTERING READING "CAUTION WATER MAIN BURIED BELOW"
- 4" WIDE 4 MIL THK POLYETHYLENE PLASTIC UNDERGROUND WARNING TAPE, YELLOW WITH BLACK LETTERING READING "CAUTION GAS LINE BURIED BELOW"

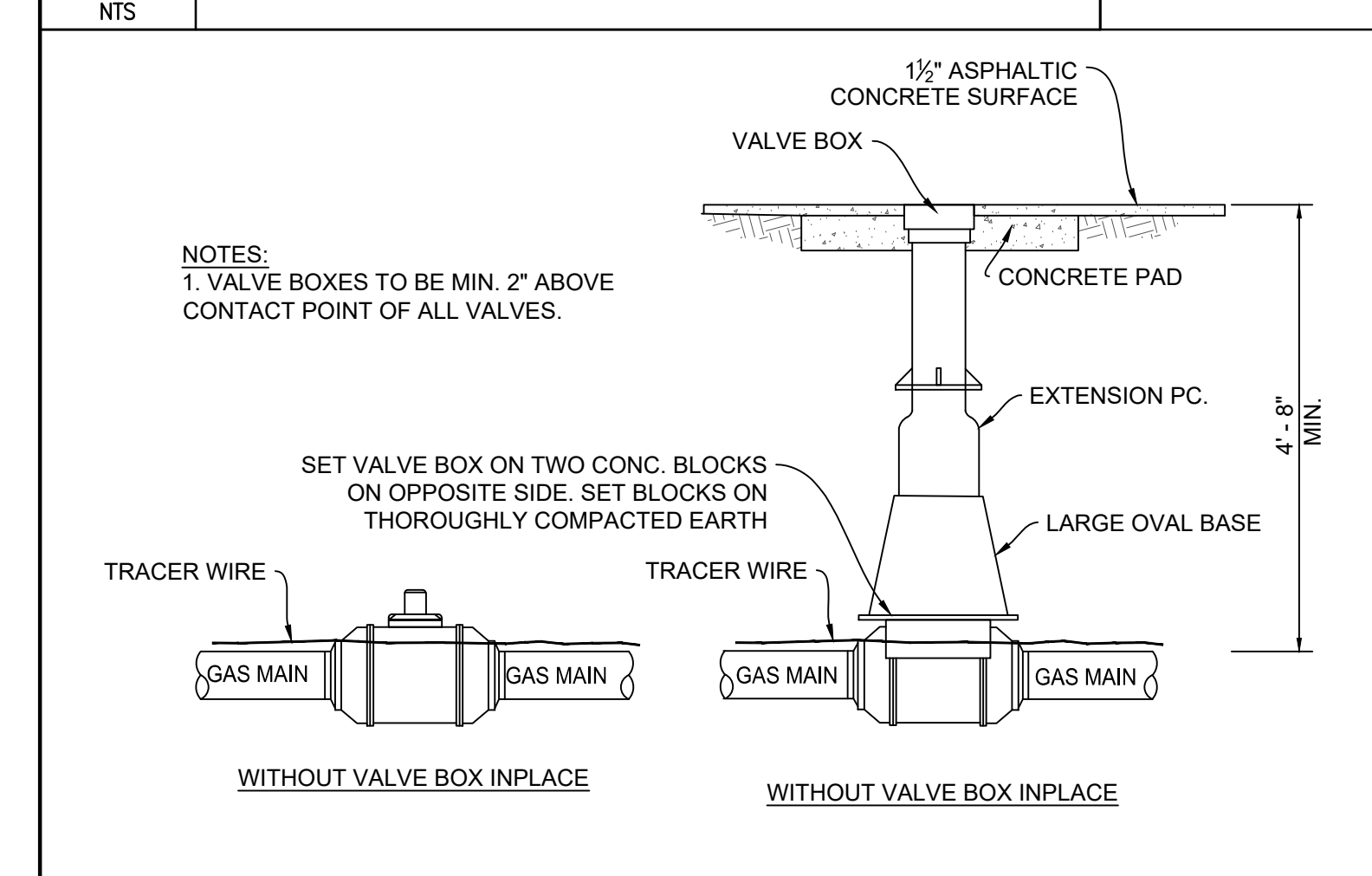
D1 LOCATION OF WATER AND GAS MAINS IN AREAS WITHOUT CURB AND GUTTER

D3 GAS VALVE BOX DETAIL



D3 GAS VALVE BOX DETAIL

C5 MAIN LINE VALVE MARKER DETAIL



D5 VALVE SETTING DETAIL



| PROJECT NO. | DATE |
|-------------|--------------|
| 21458 | JUNE 6, 2024 |
| DRAWN | CHECKED |
| TIC | JMB |