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STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

| | |
|---------------------------------|--------|
| Water Line (Sized as Shown) | 12" WL |
| 11¼ Degree Bend | ++ |
| 22½ Degree Bend | +X |
| 45 Degree Bend | +X |
| 90 Degree Bend | + |
| Plug | ⊥ |
| Tee | ⊥ |
| Cross | ⊕ |
| Reducer | ▶ |
| Gate Valve | GV |
| Butterfly Valve | BV |
| Tapping Valve | TGV |
| Line Stop | LS |
| Line Stop with Bypass | LS/BP |
| Blow Off | BO |
| Fire Hydrant | FEH |
| Relocate Fire Hydrant | REH |
| Remove Fire Hydrant | REM FH |
| Water Meter | PWM |
| Relocate Water Meter | RWM |
| Remove Water Meter | REM WM |
| Water Pump Station | PST(W) |
| RPZ Backflow Preventer | RPZ |
| DCV Backflow Preventer | PBFP |
| Relocate RPZ Backflow Preventer | RRPZ |
| Relocate DCV Backflow Preventer | RBFP |

PROPOSED SEWER SYMBOLS

| | |
|--|---------|
| Gravity Sewer Line (Sized as Shown) | 12" SS |
| Force Main Sewer Line (Sized as Shown) | 12" FSS |
| Manhole (Sized per Note) | • |
| Sewer Pump Station | PST(SS) |

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

| | |
|--|--------------------|
| Power Pole | ⊙ |
| Telephone Pole | ⊙ |
| Joint Use Pole | ⊙ |
| Telephone Pedestal | TE PED |
| Utility Line by Others (Type as Shown) | PROP O/H POW LINES |
| Trenchless Installation | 12" TL INSTALL |
| Encasement by Open Cut | 24" ENCAS BY OC |
| Encasement | 24" ENCASUREMENT |

| | |
|-------------------|----------|
| Thrust Block | ⊥ |
| Air Release Valve | AR |
| Utility Vault | UV |
| Concrete Pier | CP |
| Steel Pier | SP |
| Plan Note | NOTE |
| Pay Item Note | PAY ITEM |

EXISTING UTILITIES SYMBOLS

| | | | |
|--|--------|---|--------------------|
| Power Pole | • | *Underground Power Line | — |
| Telephone Pole | • | *Underground Telephone Cable | — |
| Joint Use Pole | • | *Underground Telephone Conduit | — |
| Utility Pole | • | *Underground Fiber Optics Telephone Cable | — |
| Utility Pole with Base | □ | *Underground TV Cable | — |
| H-Frame Pole | •— | *Underground Fiber Optics TV Cable | — |
| Power Transmission Line Tower | ⊗ | *Underground Gas Pipeline | — |
| Water Manhole | ⊙ | Aboveground Gas Pipeline | A/G Gas |
| Power Manhole | ⊙ | *Underground Water Line | — |
| Telephone Manhole | ⊙ | Aboveground Water Line | A/G Water |
| Sanitary Sewer Manhole | ⊙ | *Underground Gravity Sanitary Sewer Line | — SS |
| Hand Hole for Cable | ⊗ | Aboveground Gravity Sanitary Sewer Line | A/G Sanitary Sewer |
| Power Transformer | ⊗ | *Underground SS Forced Main Line | — |
| Telephone Pedestal | ⊗ | Underground Unknown Utility Line | — |
| CATV Pedestal | ⊗ | SUE Test Hole | • |
| Gas Valve | ◇ | Water Meter | ⊙ |
| Gas Meter | ◇ | Water Valve | ⊙ |
| Located Miscellaneous Utility Object | ⊙ | Fire Hydrant | ◇ |
| Abandoned According to Utility Records | AATUR | Sanitary Sewer Cleanout | ⊙ |
| End of Information | E.O.I. | | |

*For Existing Utilities
 Utility Line Drawn from Record (Type as Shown) — SS —
 Designated Utility Line (Type as Shown) — SS —

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UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

| | |
|---|--------------------------|
| PROJECT REFERENCE NO. B-5125 | SHEET NO. UC-3 |
| DESIGNED BY: BCH | |
| DRAWN BY: BCH | |
| CHECKED BY: JLT | |
| APPROVED BY: MRB | |
| REVISED: | |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 | |
| TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275 | |

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2012.
2. THE EXISTING WATER AND SEWER LINES BELONG TO THE TOWN OF FRANKLIN.
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

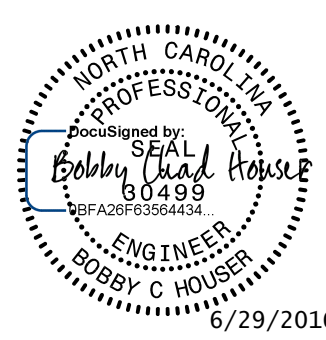

PROJECT SPECIFIC NOTES:

1. ALL TRENCH INSTALLED WATER LINE, 4-INCHES THROUGH 12-INCHES SHALL BE DUCTILE IRON PRESSURE CLASS 350, EXCEPT WHERE NOTED ON THE PLANS.
2. ALL WATER LINE FITTINGS 4-INCHES THROUGH 12- INCHES IN DIAMETER, SHALL BE PRESSURE CLASS 350 DUCTILE IRON RESTRAINED JOINT IN ACCORDANCE WITH ANSI A21.10 / AWWA C110 AND ANSI A21.4 / AWWA C104.
3. ALL AERIAL WATER LINE SHALL BE DUCTILE IRON MINIMUM PRESSURE CLASS 350 UTILIZING RESTRAINED RIGID MECHANICAL JOINT CONNECTIONS.
4. AERIAL WATER LINE UTILIZING MECHANICAL JOINTS SHALL BE TYTON JOINT, HP LOK, TR FLEX, USIFLEX, MJ HARNESS LOK, OR EQUIVALENT.
5. EXPANSION JOINTS SHALL BE INSTALLED IN THE LOCATIONS SHOWN ON THE PLANS AND SHALL BE MANUFACTURED OF DUCTILE IRON CONFORMING TO ANSI/AWWI C153/A21.53.
6. PIPE INSULATION SHALL BE INSTALLED ON ALL AERIAL WATER LINES. INSULATION SHALL BE A MINIMUM OF 2-INCHES THICK AND SHALL HAVE A 22 GAUGE ALUMINUM METAL JACKET.
7. ALL WATER SERVICE LINES SHALL BE CTS POLY SERVICE TUBING.
8. PROVIDE THRUST RESTRAINT ON THE EXISTING WATER LINE WHERE TIE -INS ARE MADE AS NECESSARY.
9. ALL VALVES 12" AND UNDER SHALL BE RESILIENT WEDGE GATE VALVES.

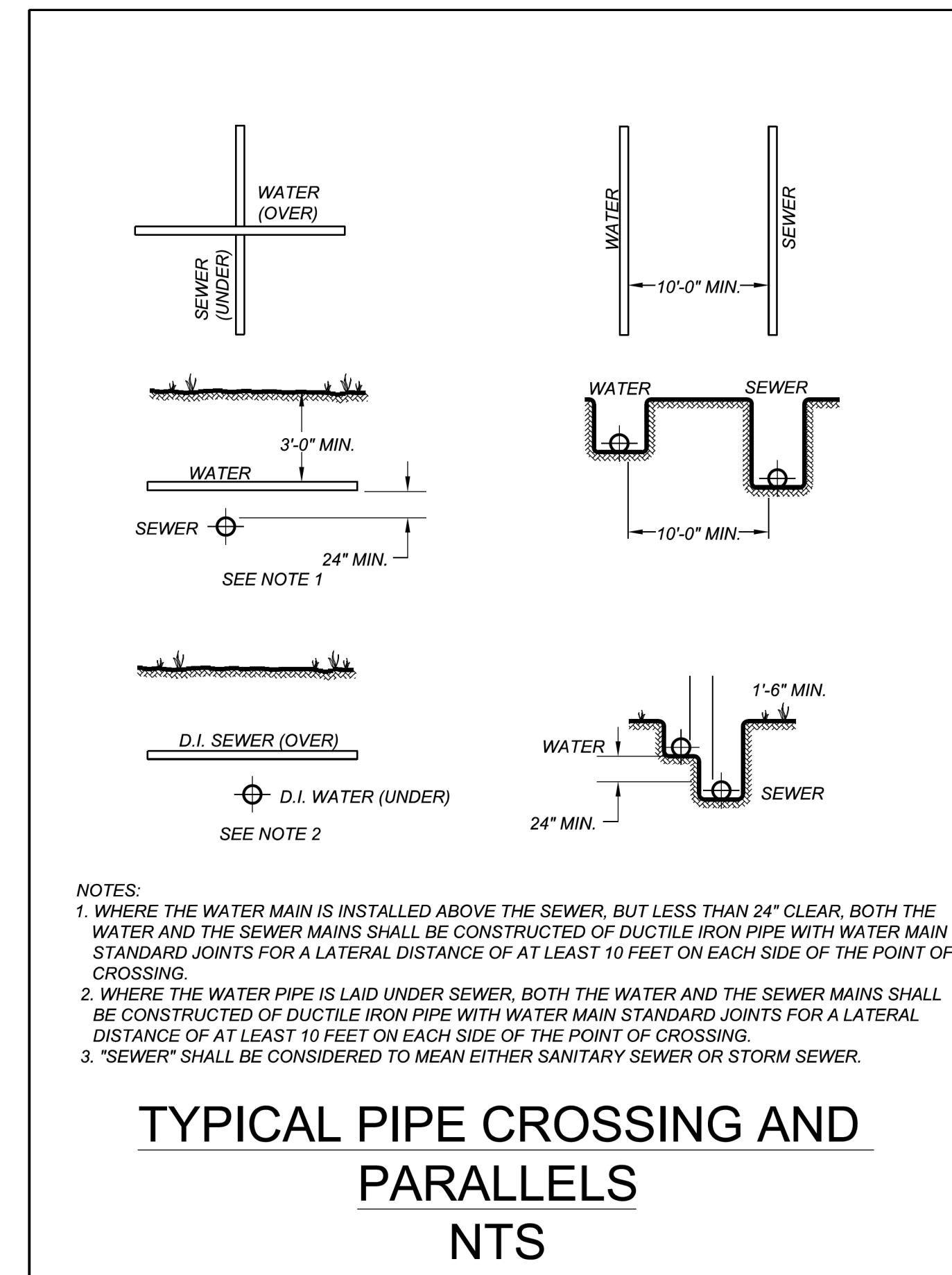
10. ANY BENDS OF PVC WATER PIPE NOT SPECIFICALLY CALLED OUT WITH A 90, 45, 22.5, OR 11.25 DEGREE BEND FITTING, SHALL BE CONSTRUCTED BY A RADIAL BEND OF THE PIPE AS NOTED ON THE PLANS OR IN ACCORDANCE WITH PIPE MANUFACTURER'S SPECIFICATIONS (WHICHEVER IS MORE STRINGENT) - OR A COMBINATION OF BEND FITTINGS AND A RADIAL BEND OF THE PIPE. DEFLECTION OF THE PIPE JOINTS ON PVC PIPE MATERIAL IS NOT AN ACCEPTABLE METHOD OF PIPE BENDING.
11. CONTRACTOR SHALL NOT OPERATE ANY VALVES ON THE EXISTING UTILITY SYSTEMS. CONTRACTOR SHALL CONTACT THE UTILITY OWNER TO CONDUCT STRATEGIC OPERATION OF VALVES FOR SERVICE INTERRUPTION IN ORDER TO PERFORM SPECIFIC WORK.
12. ALL SANITARY GRAVITY SEWER PIPE SHALL BE DUCTILE IRON PRESSURE CLASS 350, EXCEPT WHERE NOTED ON THE PLANS.
13. ALL SANITARY GRAVITY SEWER MANHOLES SHALL HAVE SOLID NON-VENTED COVERS WITH GASKETS FOR WATERTIGHT INSTALLATION.

UTILITY CONSTRUCTION

5/14/99

| | |
|---|---|
| PROJECT REFERENCE NO. | SHEET NO. |
| B-5125 | UC-3A |
| DESIGNED BY: BCH |  |
| DRAWN BY: BCH | |
| CHECKED BY: JLT | |
| APPROVED BY: MRB | |
| REVISED: | 6/29/2016 |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION | |
| UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 | UTILITY CONSTRUCTION PLANS ONLY |
|  TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275 | |

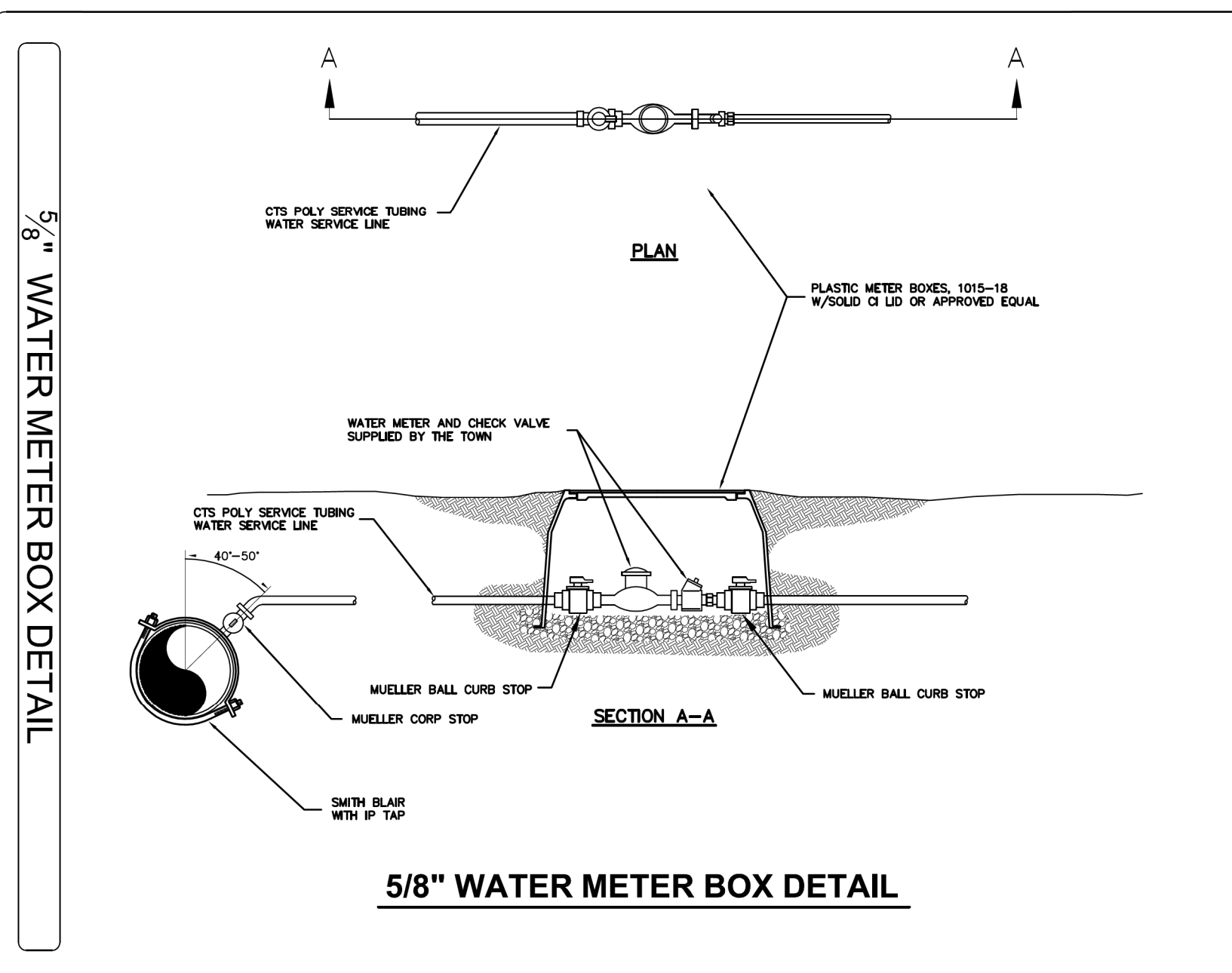
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NOTES:
 1. WHERE THE WATER MAIN IS INSTALLED ABOVE THE SEWER, BUT LESS THAN 24" CLEAR, BOTH THE WATER AND THE SEWER MAINS SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE WITH WATER MAIN STANDARD JOINTS FOR A LATERAL DISTANCE OF AT LEAST 10 FEET ON EACH SIDE OF THE POINT OF CROSSING.
 2. WHERE THE WATER PIPE IS LAID UNDER SEWER, BOTH THE WATER AND THE SEWER MAINS SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE WITH WATER MAIN STANDARD JOINTS FOR A LATERAL DISTANCE OF AT LEAST 10 FEET ON EACH SIDE OF THE POINT OF CROSSING.
 3. "SEWER" SHALL BE CONSIDERED TO MEAN EITHER SANITARY SEWER OR STORM SEWER.

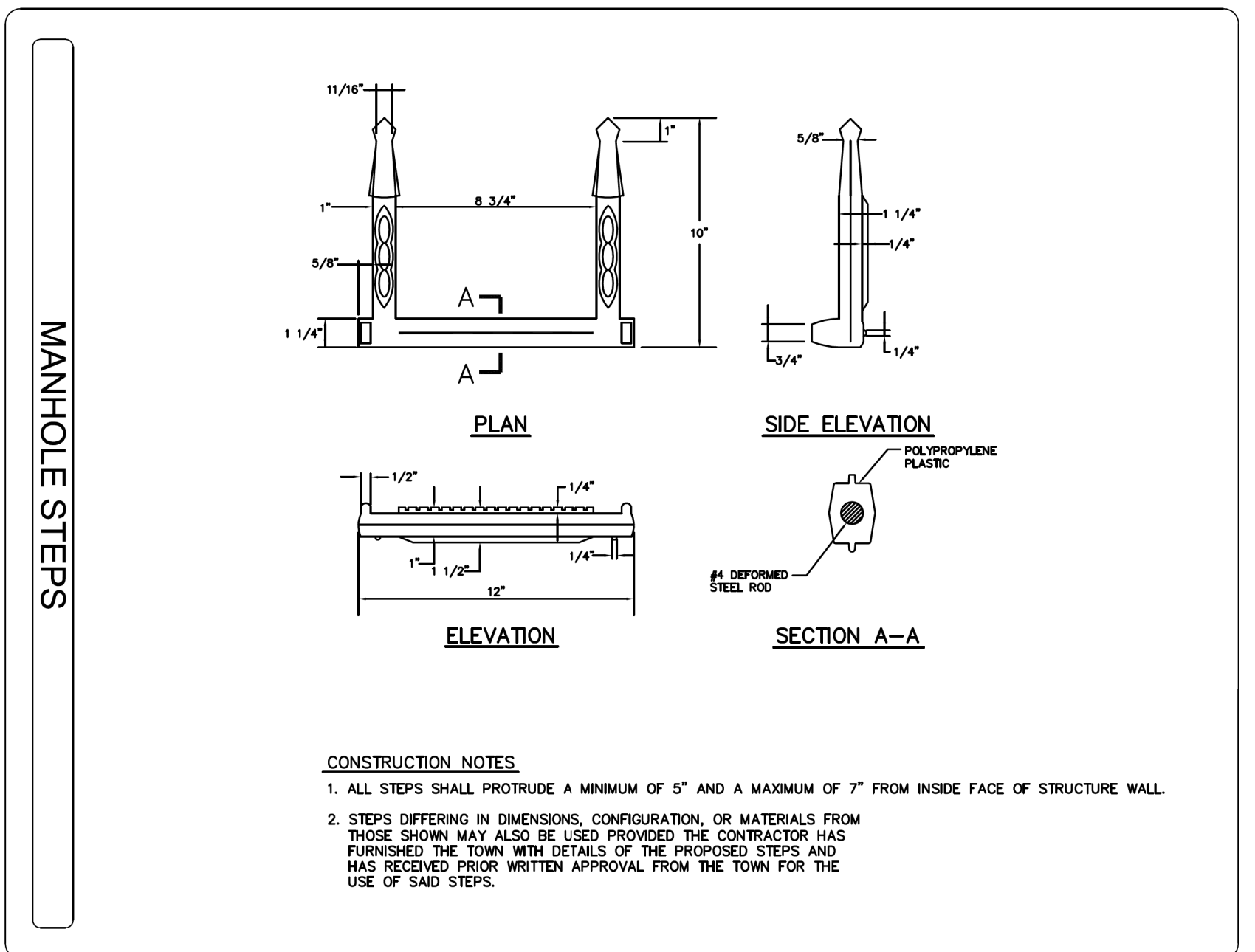
TYPICAL PIPE CROSSING AND PARALLELS NTS

TOWN OF FRANKLIN STANDARD DETAIL - W14

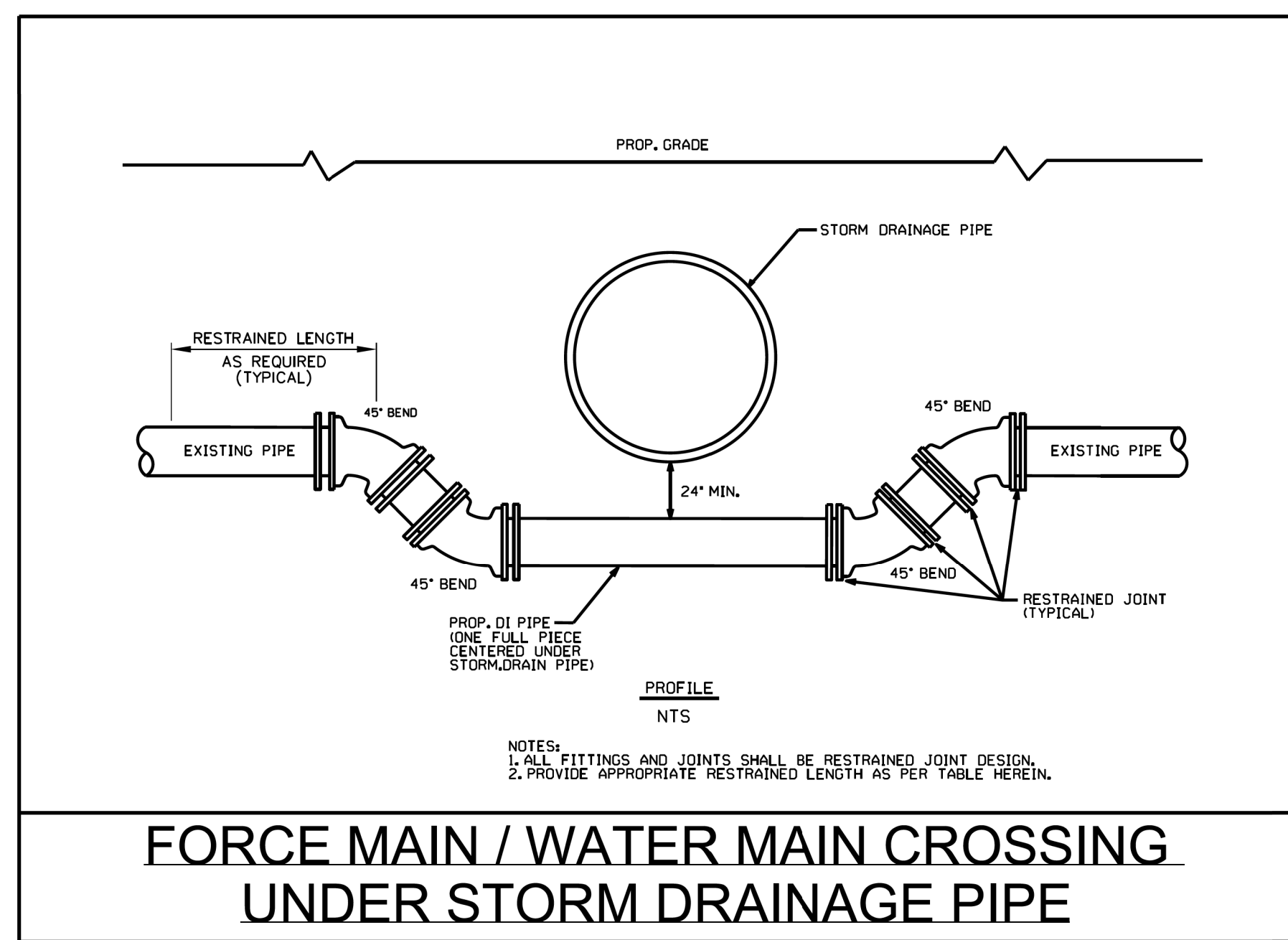


5/8" WATER METER BOX DETAIL

TOWN OF FRANKLIN STANDARD DETAIL - W35

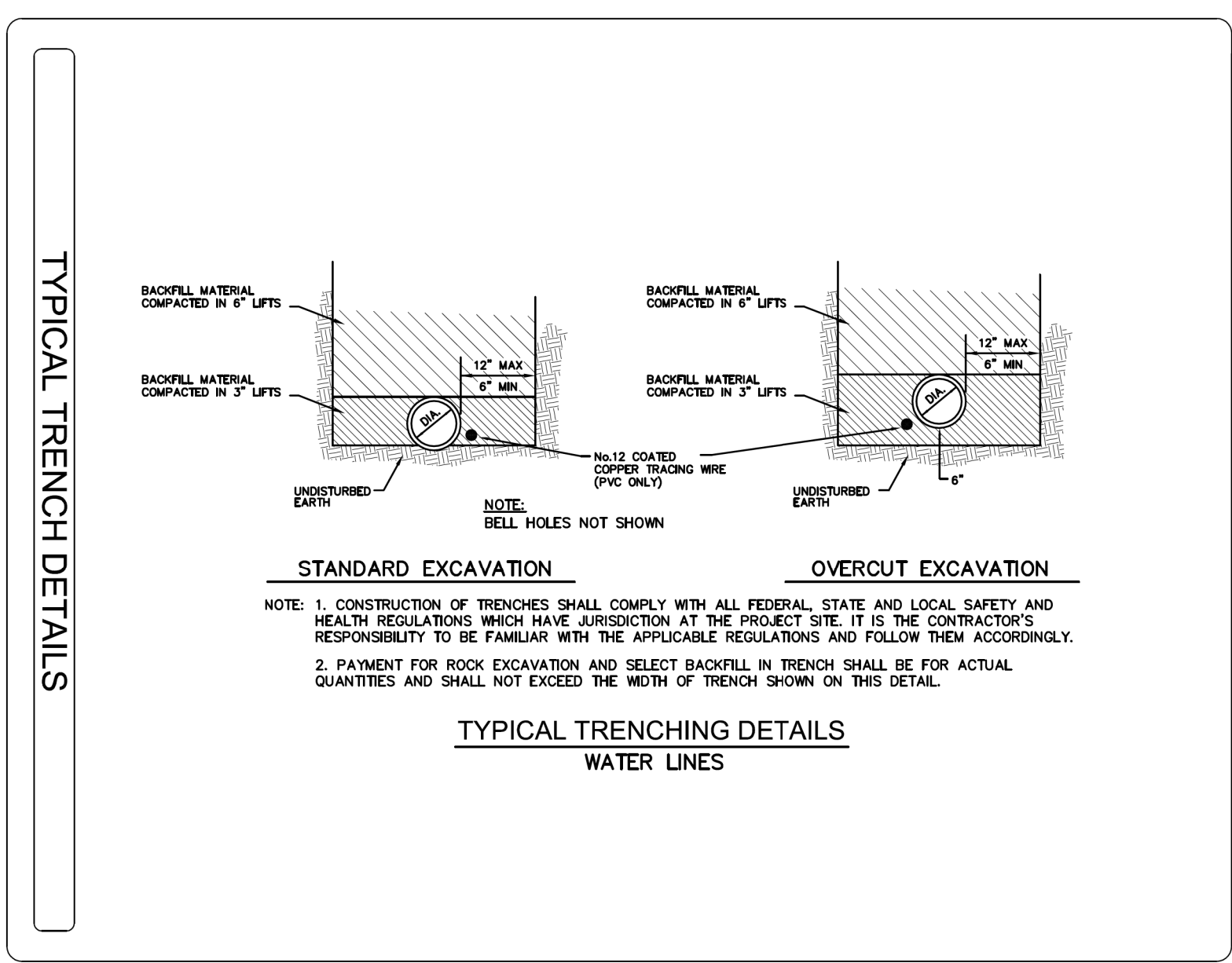


CONSTRUCTION NOTES:
 1. ALL STEPS SHALL PROTRUDE A MINIMUM OF 5" AND A MAXIMUM OF 7" FROM INSIDE FACE OF STRUCTURE WALL.
 2. STEPS DIFFERING IN DIMENSIONS, CONFIGURATION, OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THE CONTRACTOR HAS FURNISHED THE TOWN WITH DETAILS OF THE PROPOSED STEPS AND HAS RECEIVED PRIOR WRITTEN APPROVAL FROM THE TOWN FOR THE USE OF SAID STEPS.



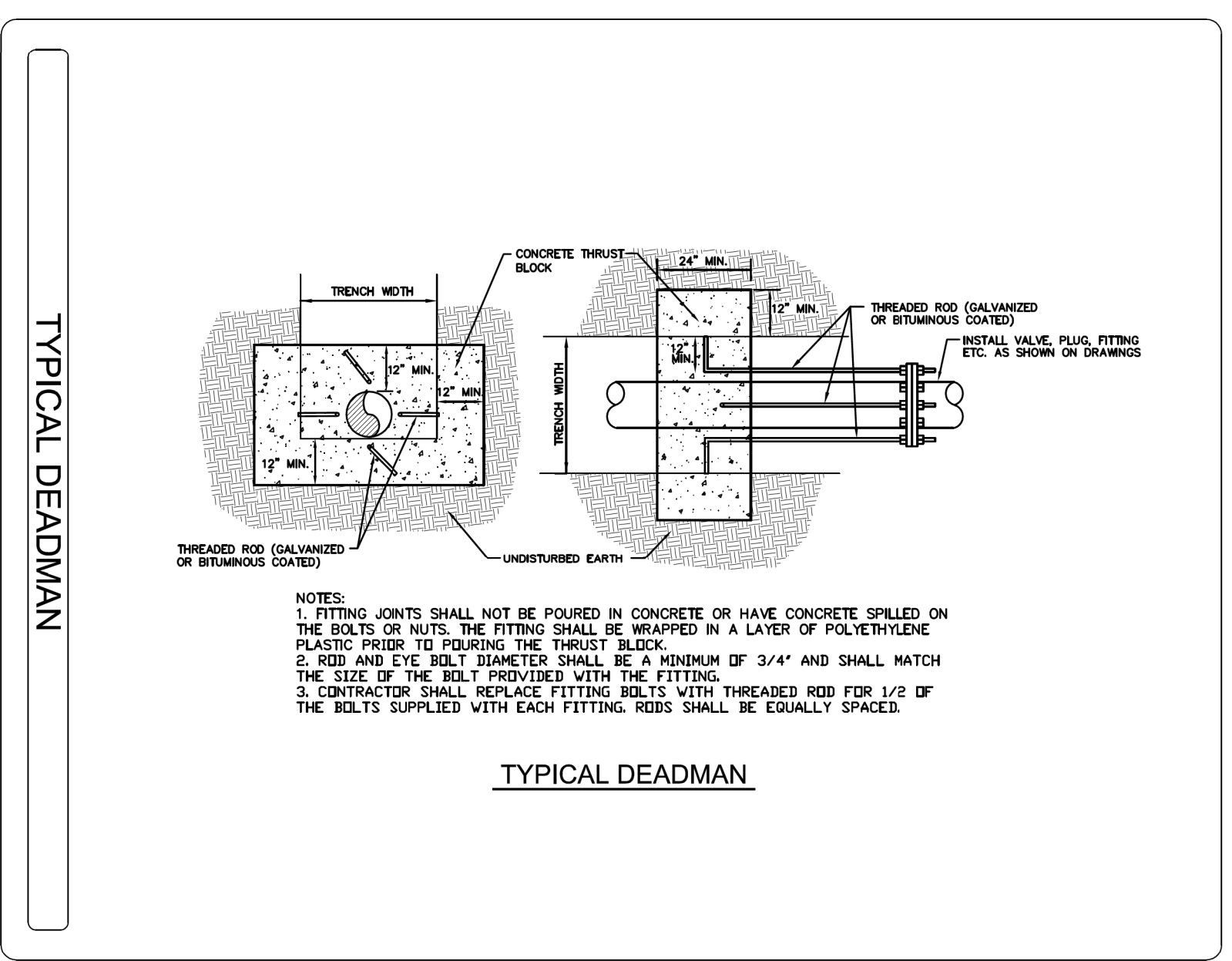
FORCE MAIN / WATER MAIN CROSSING UNDER STORM DRAINAGE PIPE

TOWN OF FRANKLIN STANDARD DETAIL - W7



TYPICAL TRENCHING DETAILS WATER LINES

TOWN OF FRANKLIN STANDARD DETAIL - W3

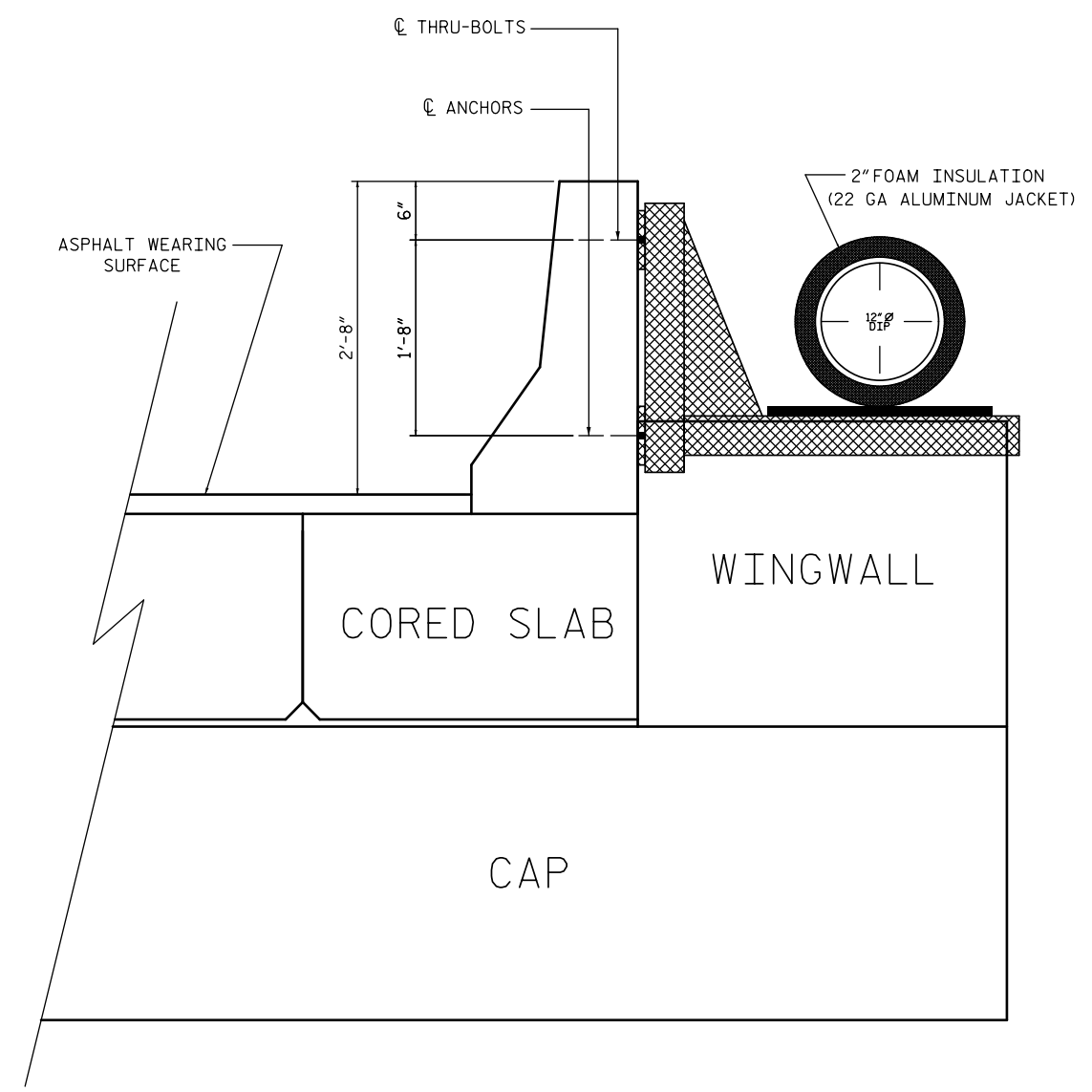


TYPICAL DEADMAN

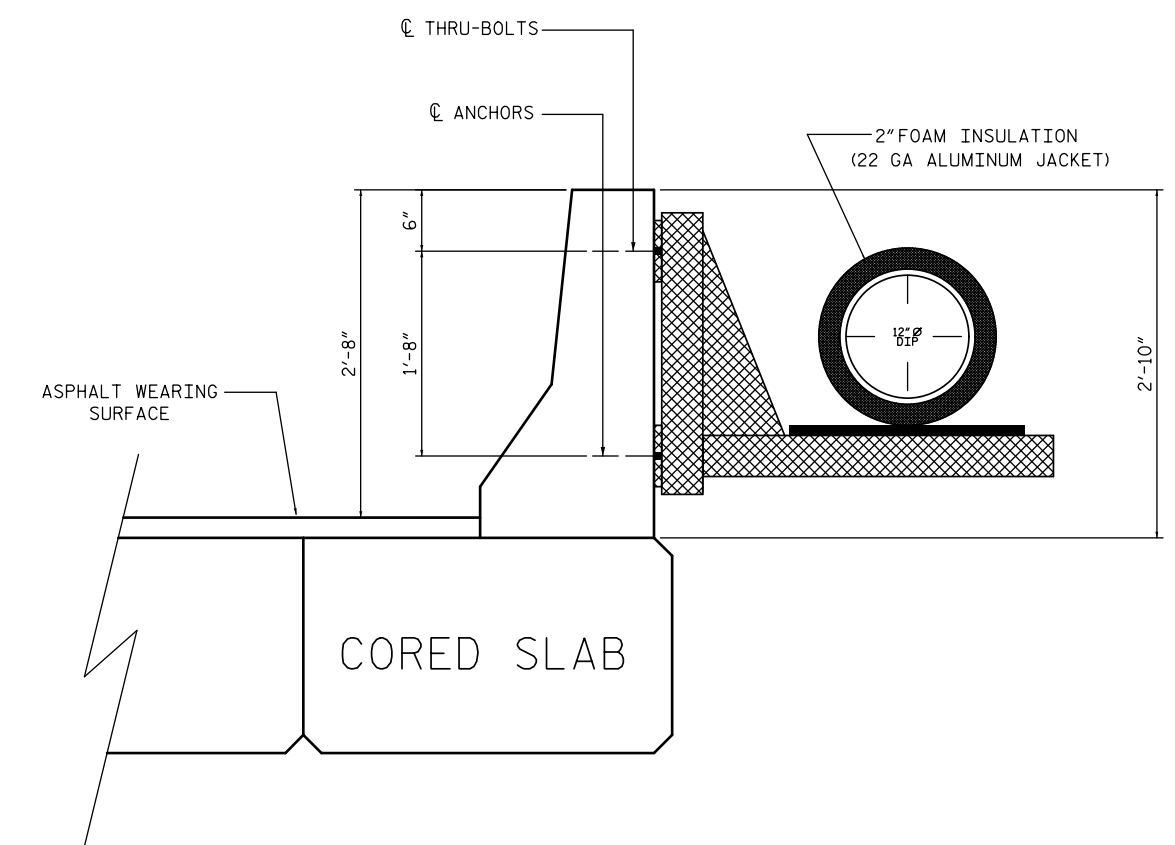
UTILITY DETAILS

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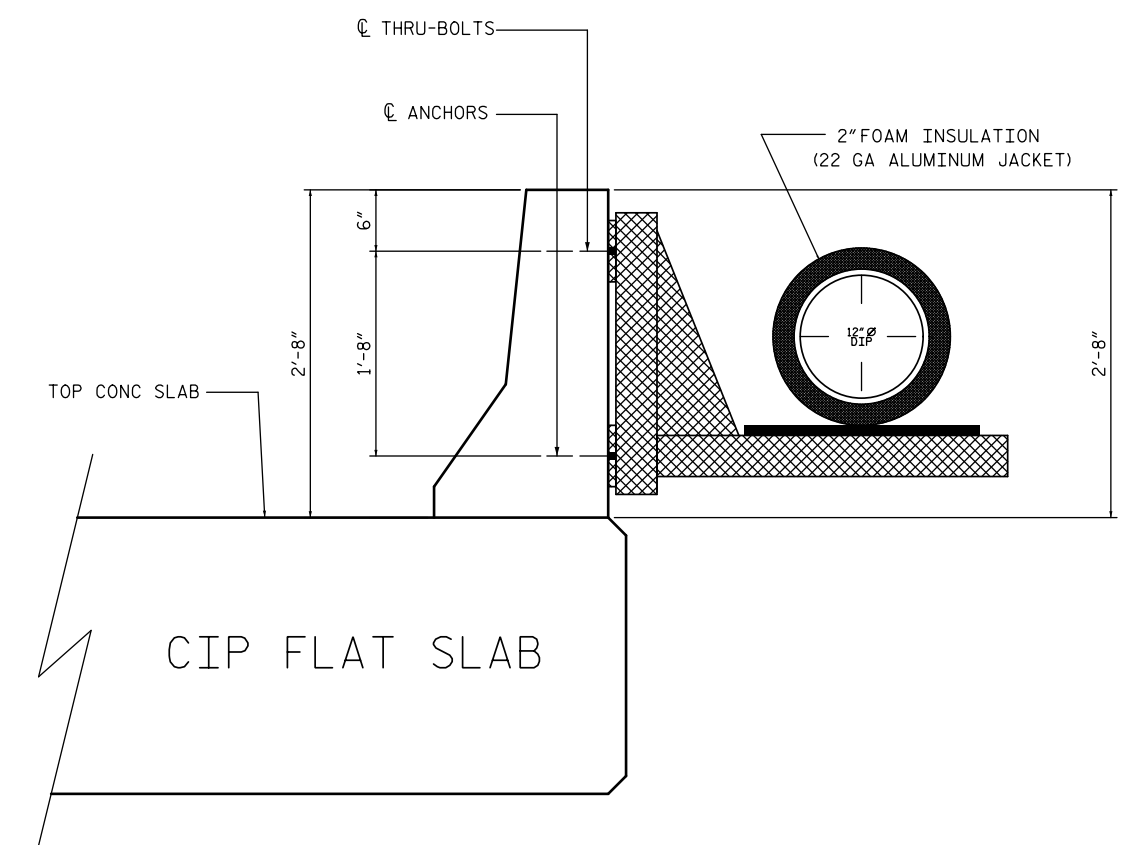
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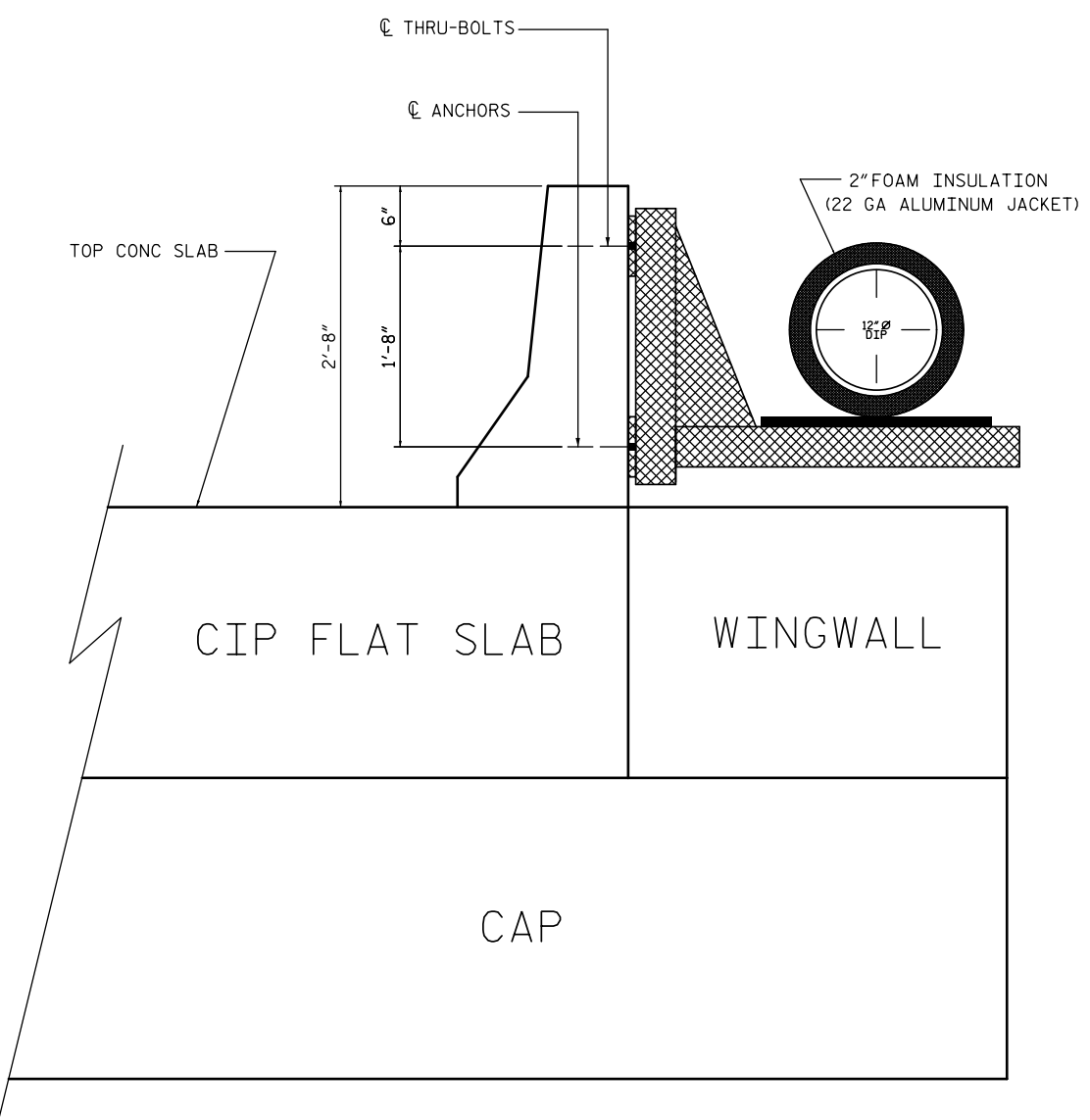
END BENT #1



SPANS 1-4



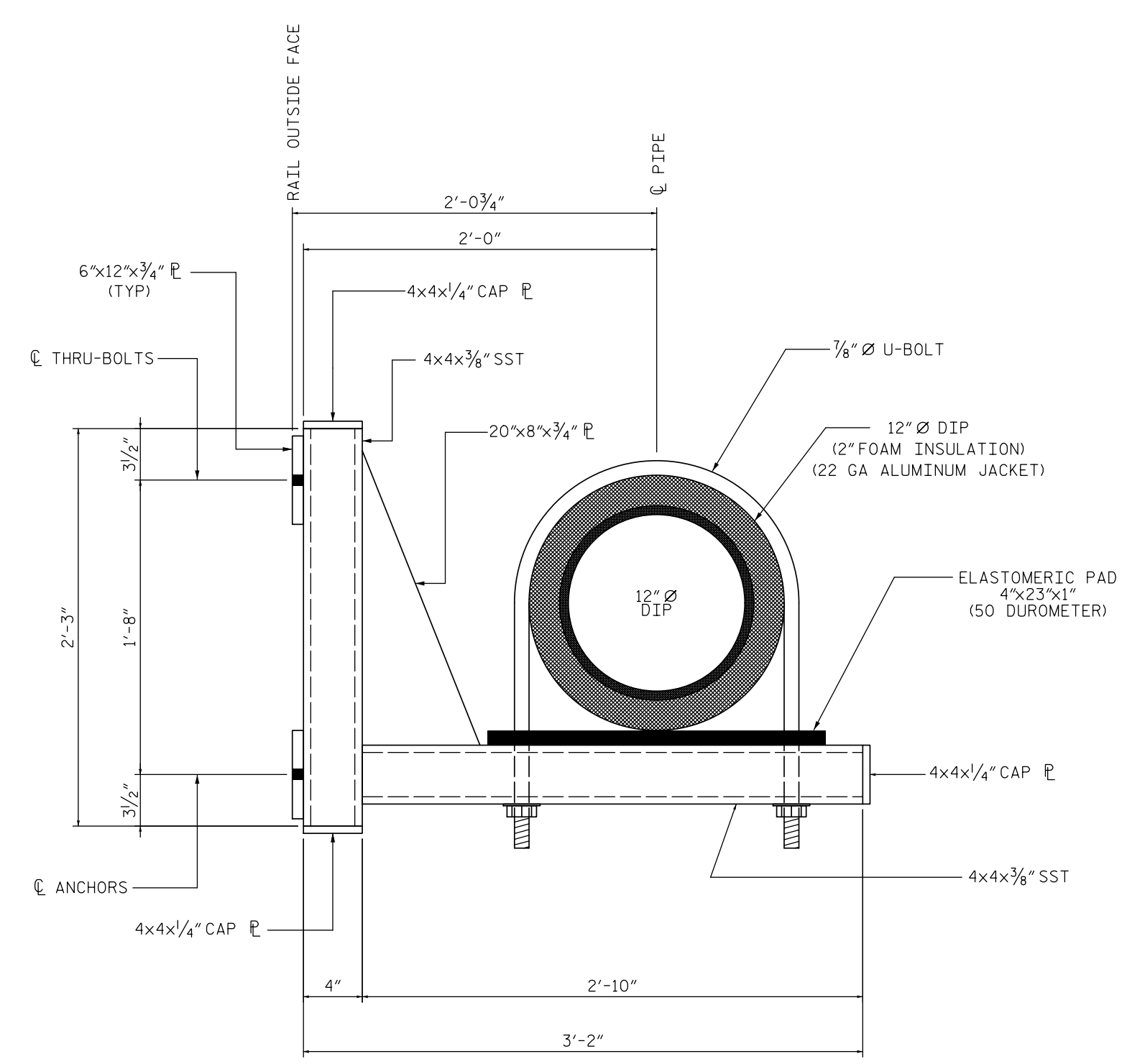
SPAN 5



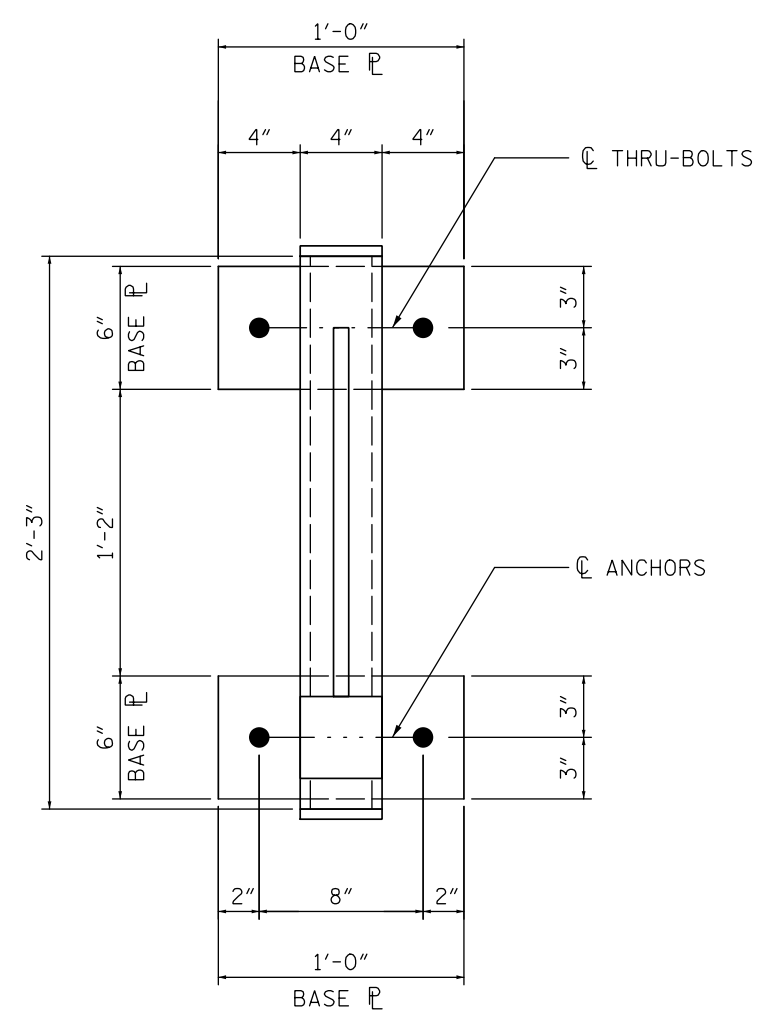
END BENT #2

| | |
|--|---|
| PROJECT REFERENCE NO. | SHEET NO. |
| B-5125 | UC-3C |
| DESIGNED BY: RDE | |
| DRAWN BY: RDE | |
| CHECKED BY: LGF | |
| APPROVED BY: MRB | |
| REVISED: | 6/29/2016 |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION | UTILITY CONSTRUCTION PLANS ONLY |
| UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 | TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH: (704) 476-0003 CORP. LICENSE NO.: C-0275 |

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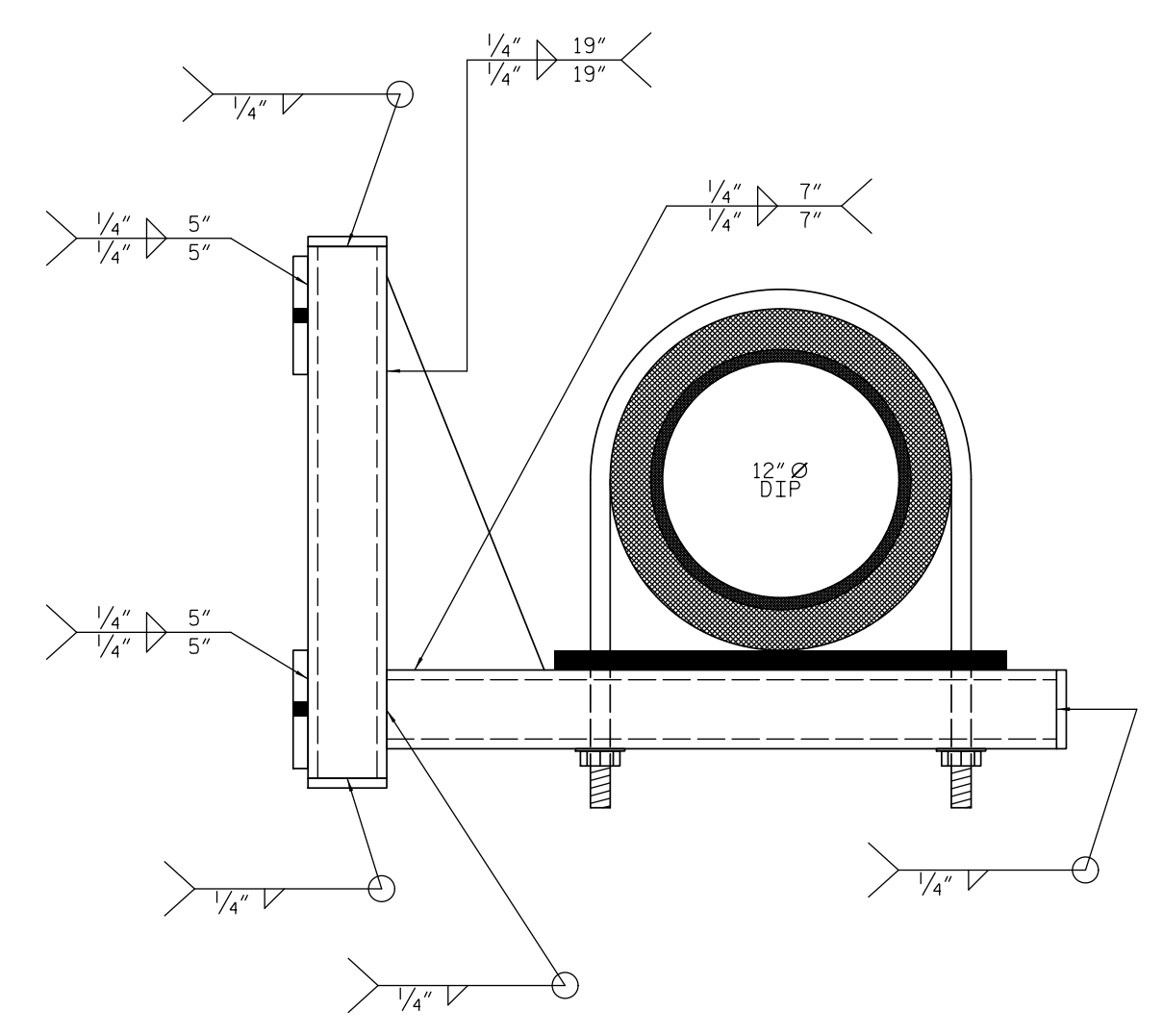


HANGER ASSEMBLY



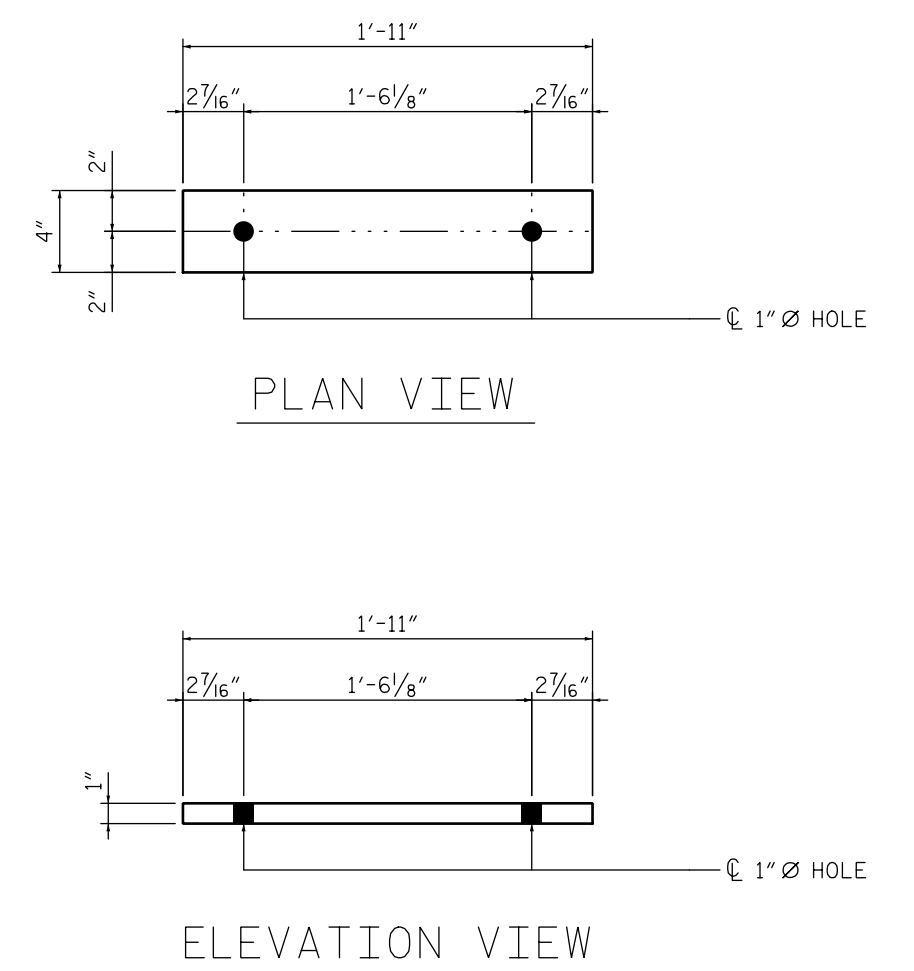
THRU-BOLT/ANCHOR LAYOUT

(2 THRU-BOLTS TOP BASE) (2 ANCHORS BOTTOM BASE)



WELD DETAILS

(1/4" FILLET WELDS) (70ksi ELECTRODE)



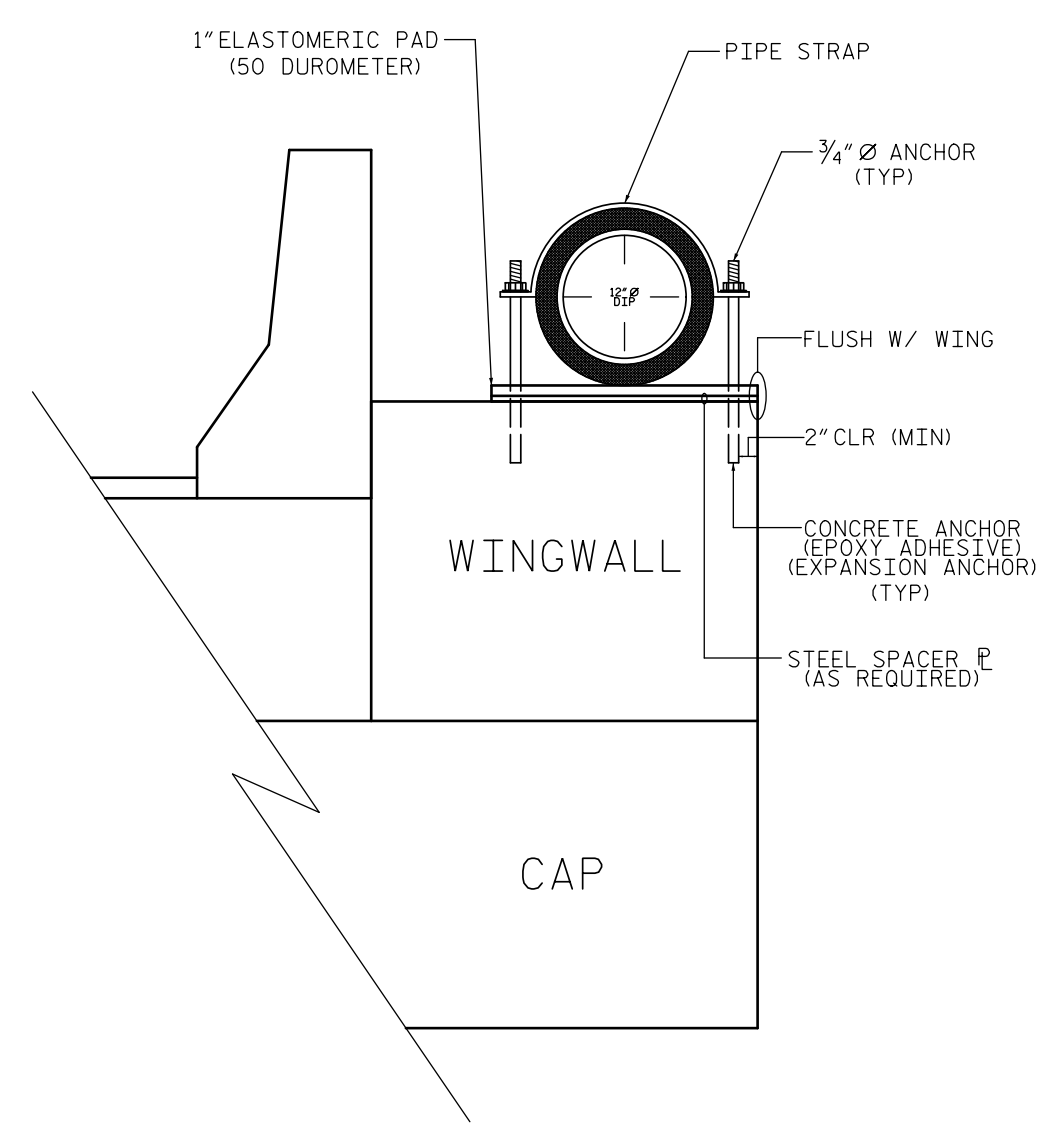
ELASTOMERIC PAD

(TO BE USED WITH HANGER) (50 DUROMETER) (VERIFY DIMENSIONS PRIOR TO FABRICATION)

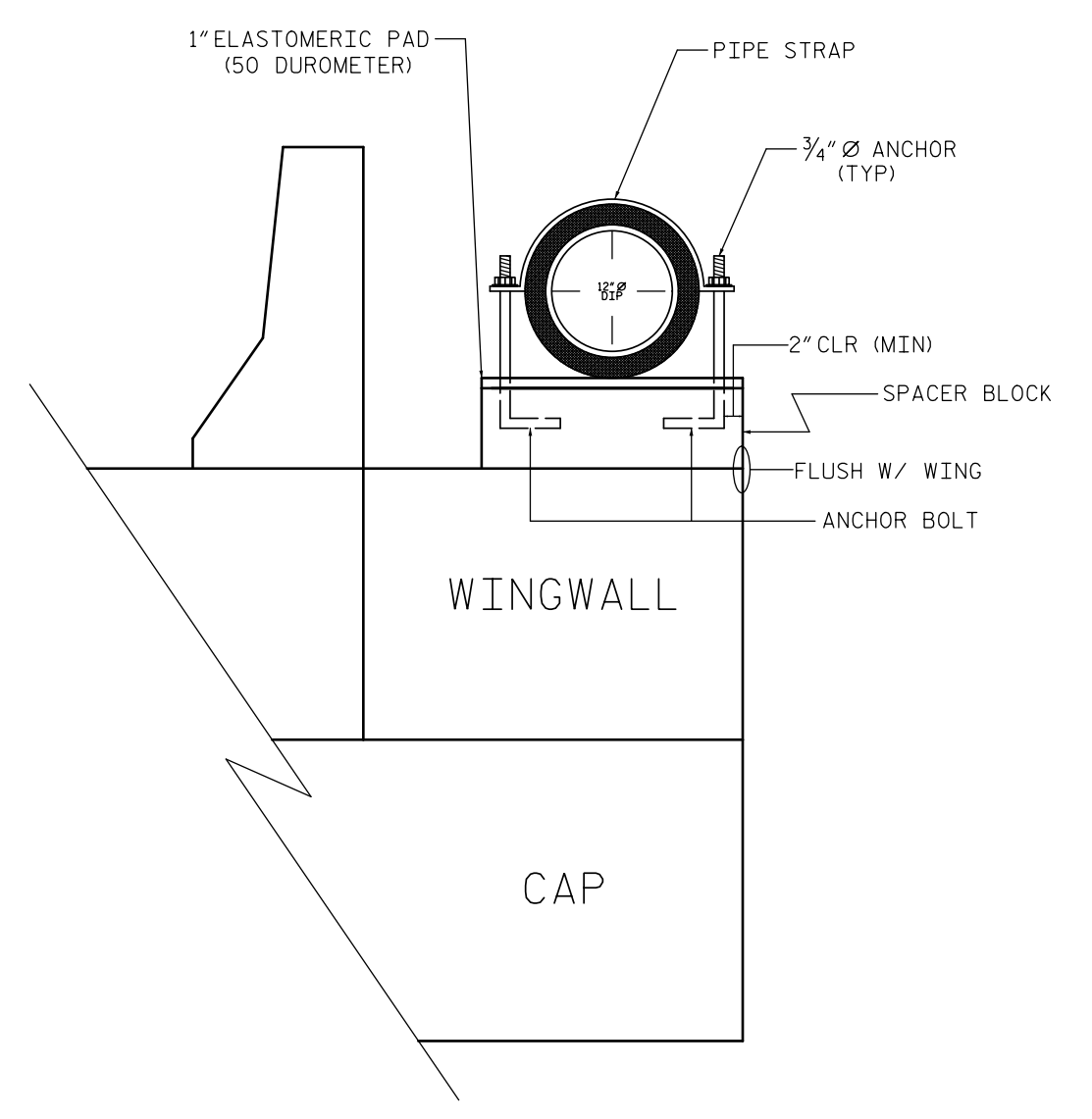
EXISTING BRIDGE WATER LINE ATTACHMENT

5/14/99

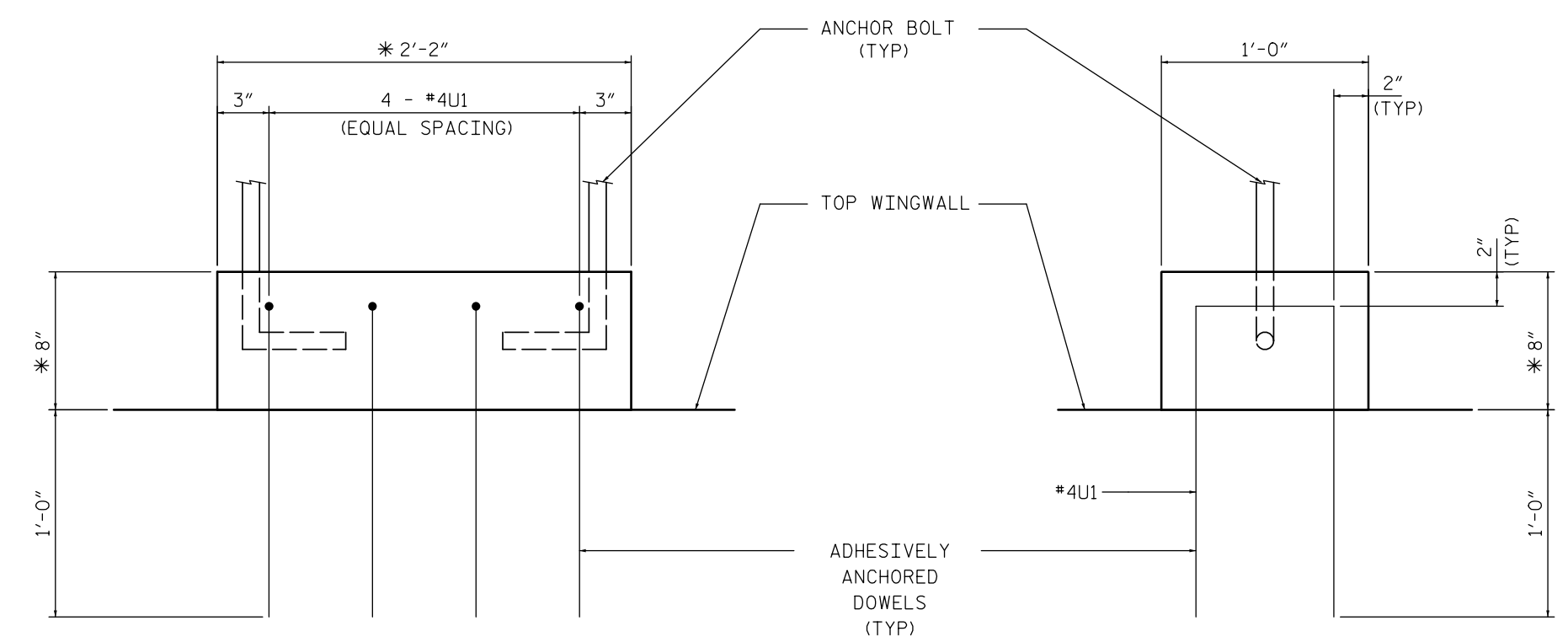
5/14/99



END BENT #1



END BENT #2

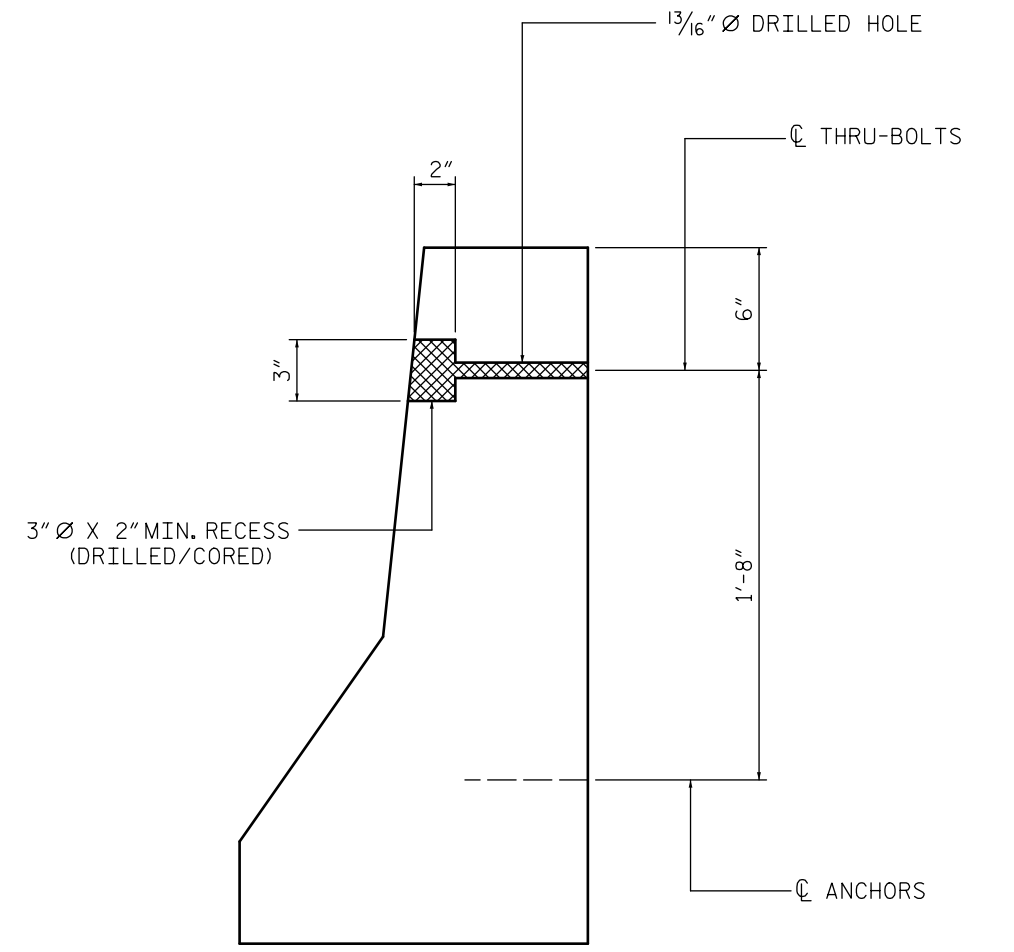


ELEVATION VIEW SIDE VIEW

* ADJUST WATERLINE ALIGNMENT ON WING TO MAINTAIN FLUSHNESS AND TO MAINTAIN MINIMUM SPECIFIED CLEARANCES. VERIFY DIMENSIONS PRIOR TO FABRICATION. DIMENSIONS ABOVE BASED ON APPROXIMATE ASSUMPTIONS.

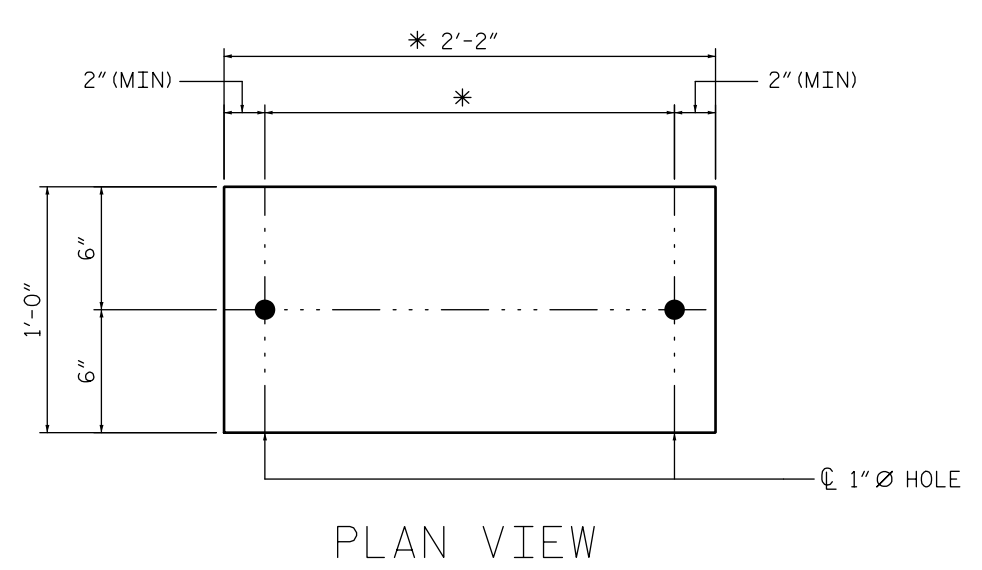
CONCRETE SPACER BLOCK

(TO BE USED ON WINGWALL)



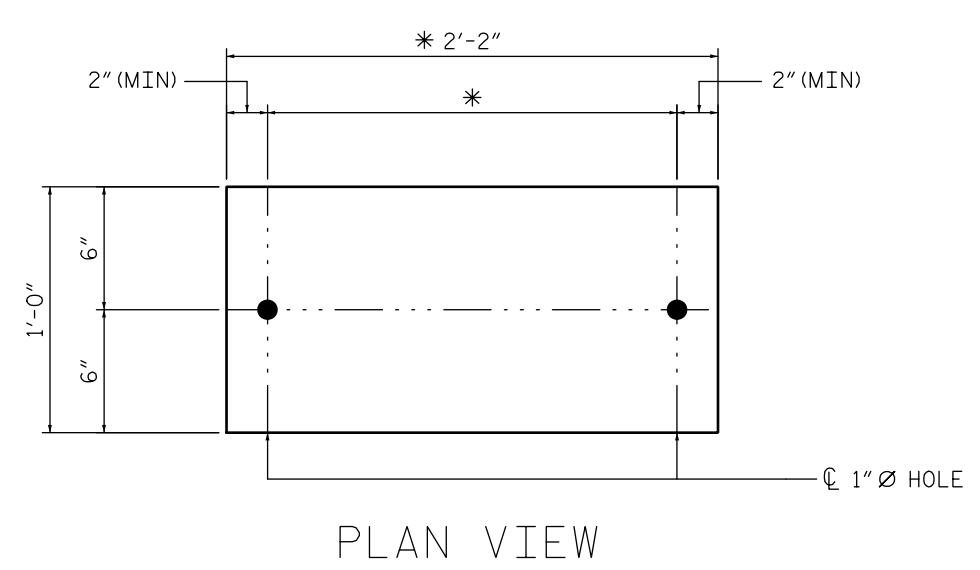
THRU-BOLT RECESS

(GROUTED AFTER WATERLINE INSTALLED)



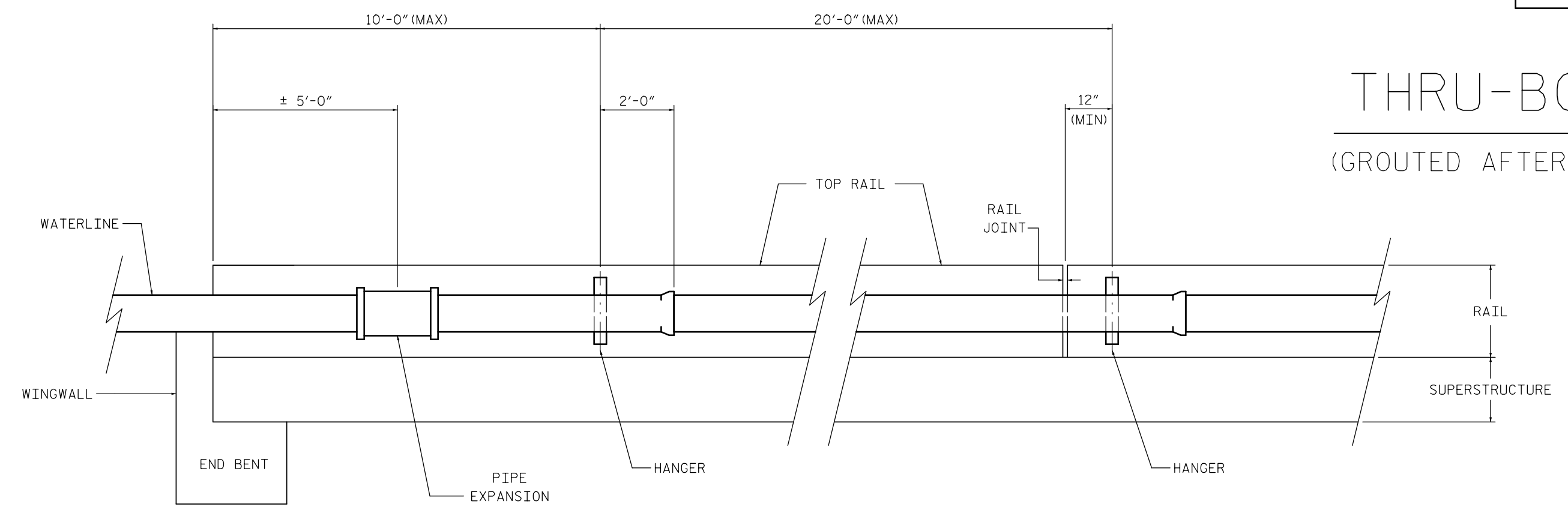
ELASTOMERIC PAD

(TO BE USED ON WINGWALL)
(50 DUROMETER)



STEEL SPACER

(TO BE USED ON WINGWALL)
(MAY BE OMITTED)



HANGER LAYOUT

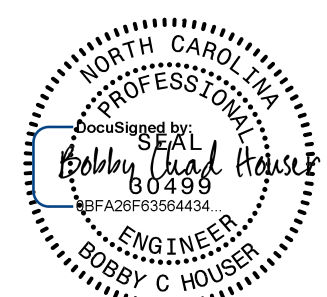

NOTES:

- FOR ATTACHMENT OF WATERLINE TO EXISTING BRIDGE, SEE PROJECT SPECIAL PROVISION FOR UTILITY CONSTRUCTION - 12" WATER LINE BRIDGE ATTACHMENT.
- ALL MEASUREMENTS SHALL BE VERIFIED PRIOR TO BEGINNING WORK AND FABRICATION OF MATERIALS.
- ALL STEEL MATERIALS USED FOR THE WATERLINE ATTACHMENT SYSTEM SHALL BE HOT DIPPED GALVANIZED.
- THE WATERLINE ATTACHMENT HANGERS SHALL NOT BE SPACED GREATER THAN 20'-0".
- THE HARDWARE USED FOR THE HANGER CONCRETE ANCHORS/THRU-BOLTS SHALL BE 3/4" Ø.
- WHEN INSTALLING CONCRETE ANCHORS INTO THE EXISTING CONCRETE BARRIER RAIL, CARE SHALL BE TAKEN IN ORDER TO MAINTAIN 2" MINIMUM CONCRETE COVER.

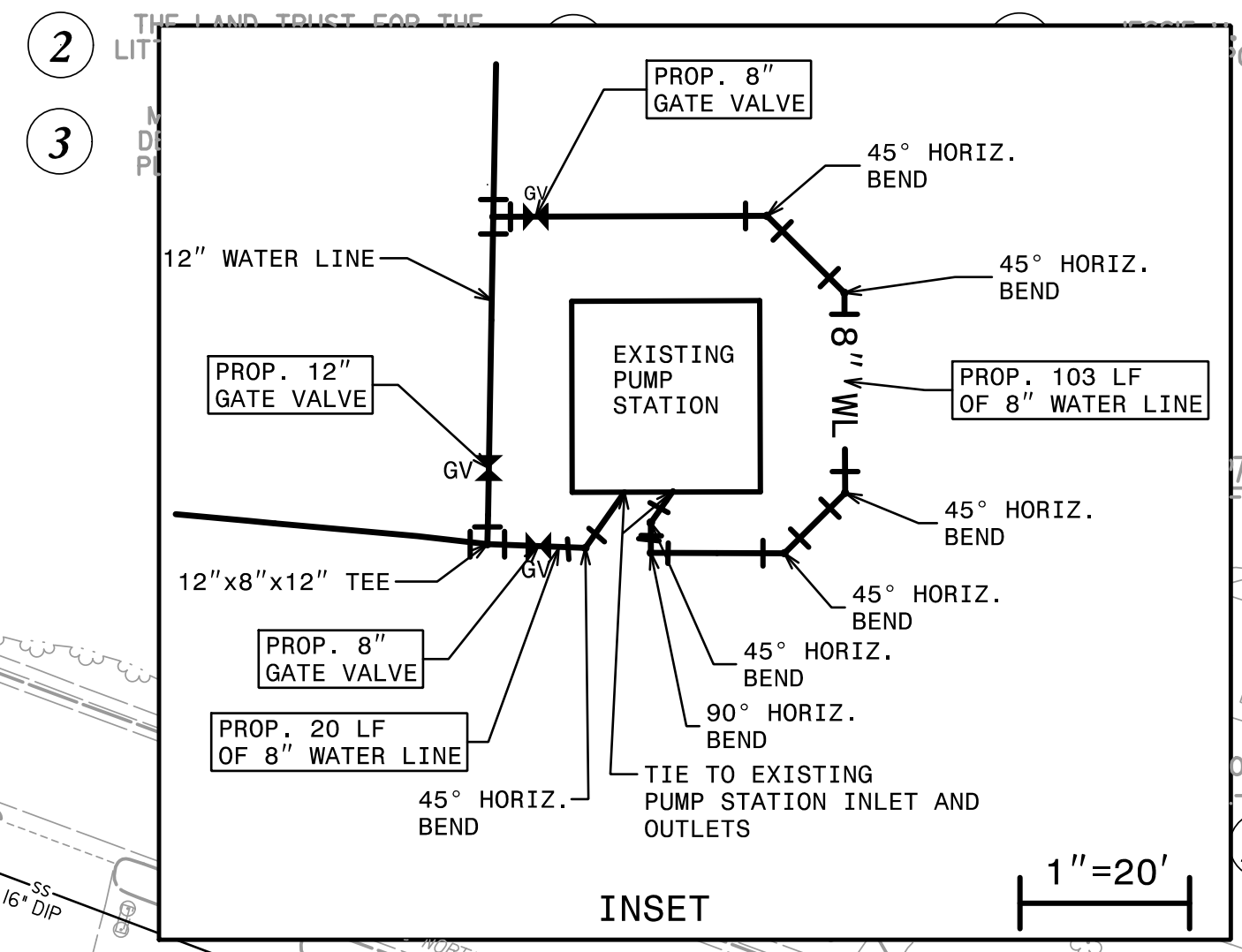
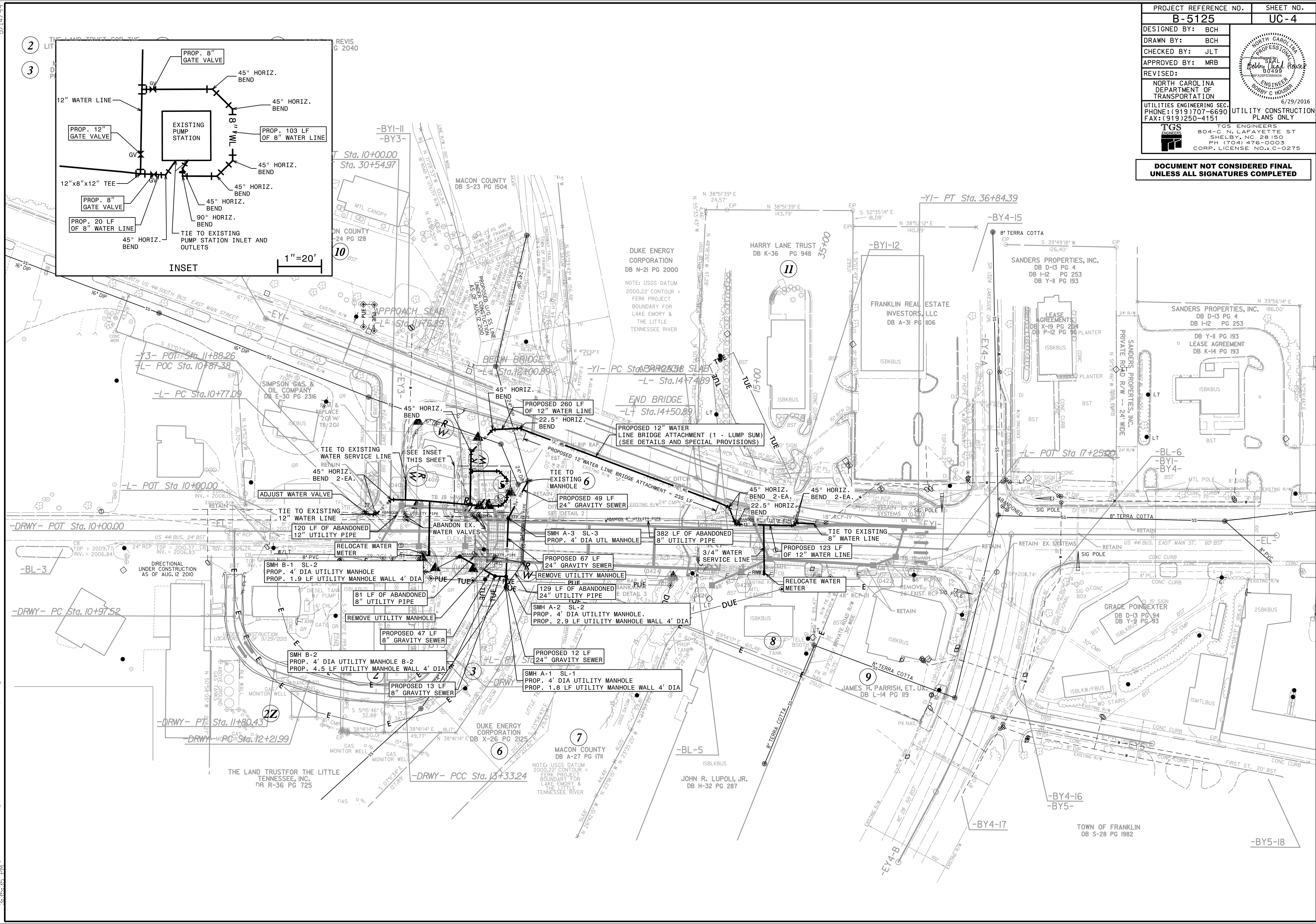
EXISTING BRIDGE WATER LINE ATTACHMENT

| | |
|--|---------------------------|
| PROJECT REFERENCE NO. B-5125 | SHEET NO. UC-3D |
| DESIGNED BY: RDE | |
| DRAWN BY: RDE | |
| CHECKED BY: LGF | |
| APPROVED BY: MRB | |
| REVISED: | |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH: (704) 476-0003 CORP. LICENSE NO.: C-0275 | |

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| | |
|--|---|
| PROJECT REFERENCE NO. | SHEET NO. |
| B-5125 | UC-4 |
| DESIGNED BY: BCH |  |
| DRAWN BY: BCH | |
| CHECKED BY: JLT | |
| APPROVED BY: MRB | |
| REVISED: | |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY | |
|  TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275 | |

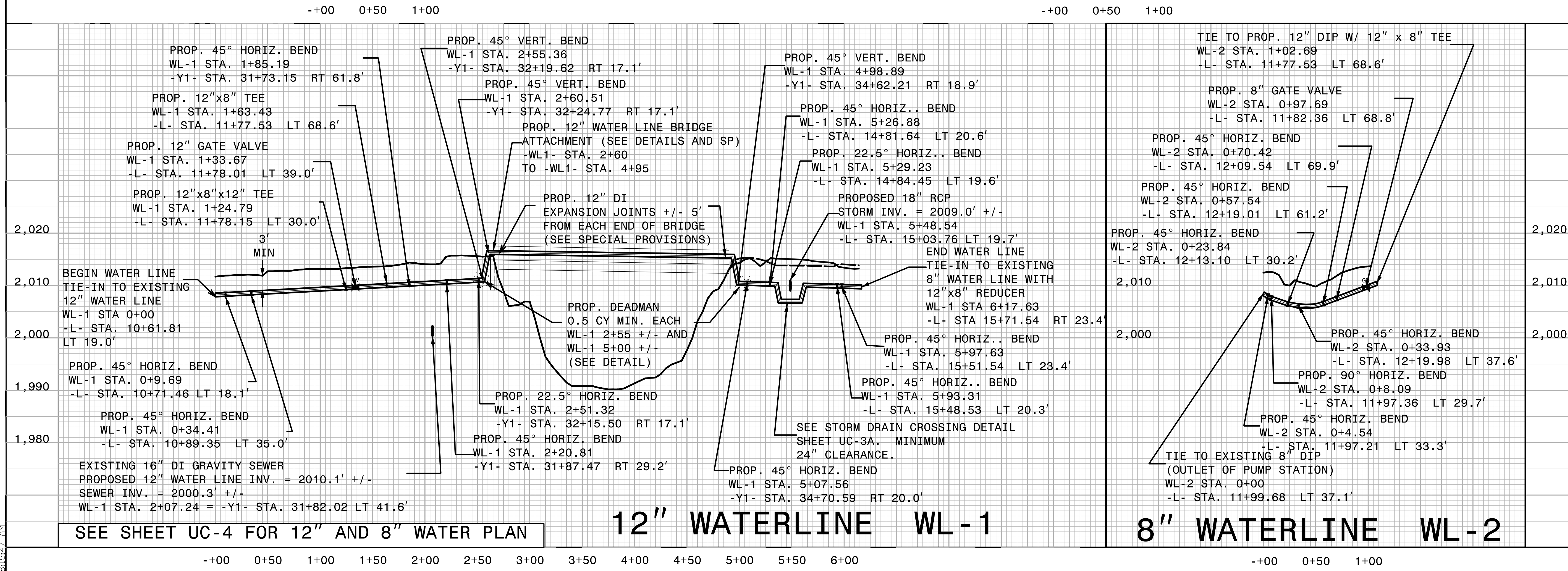
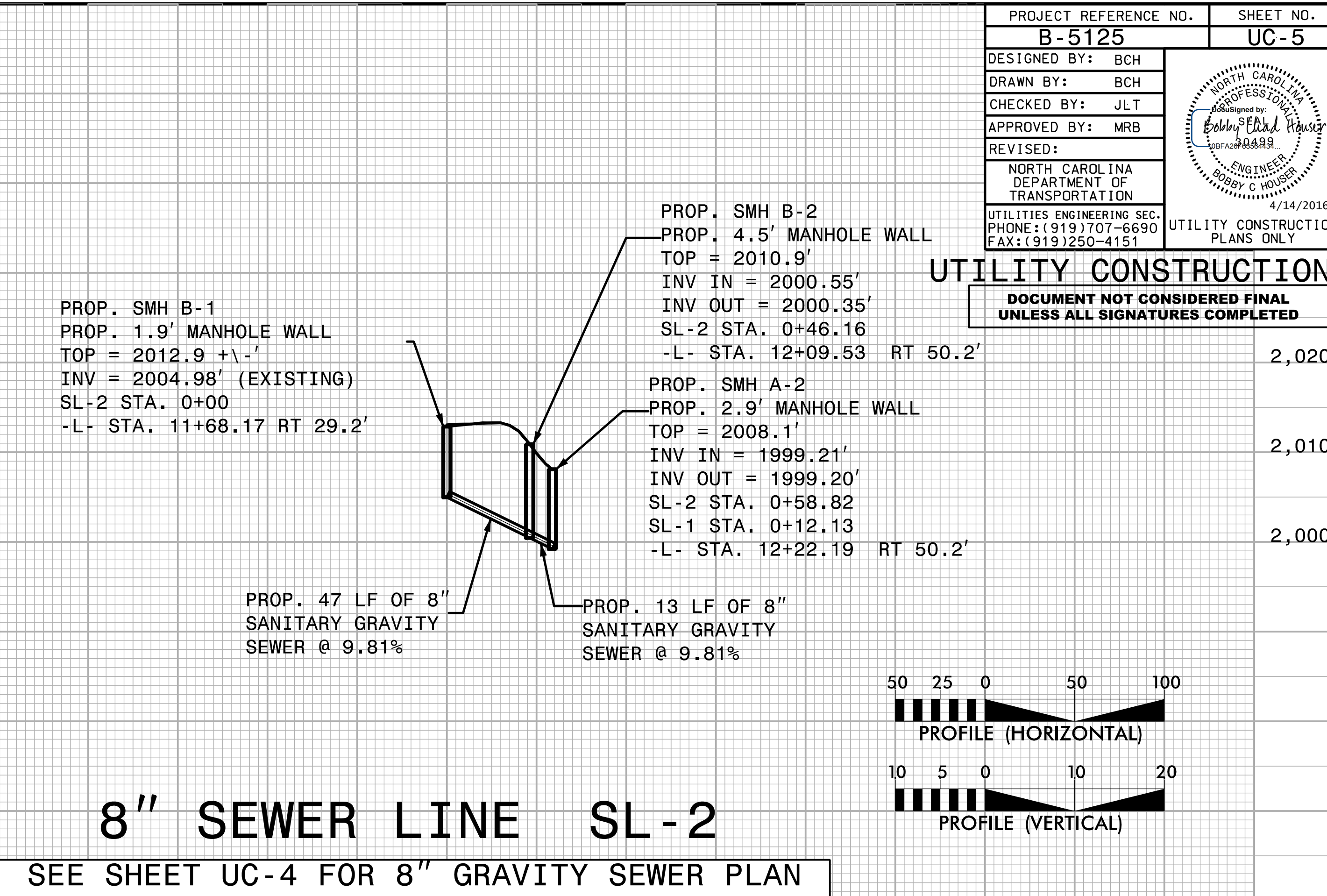
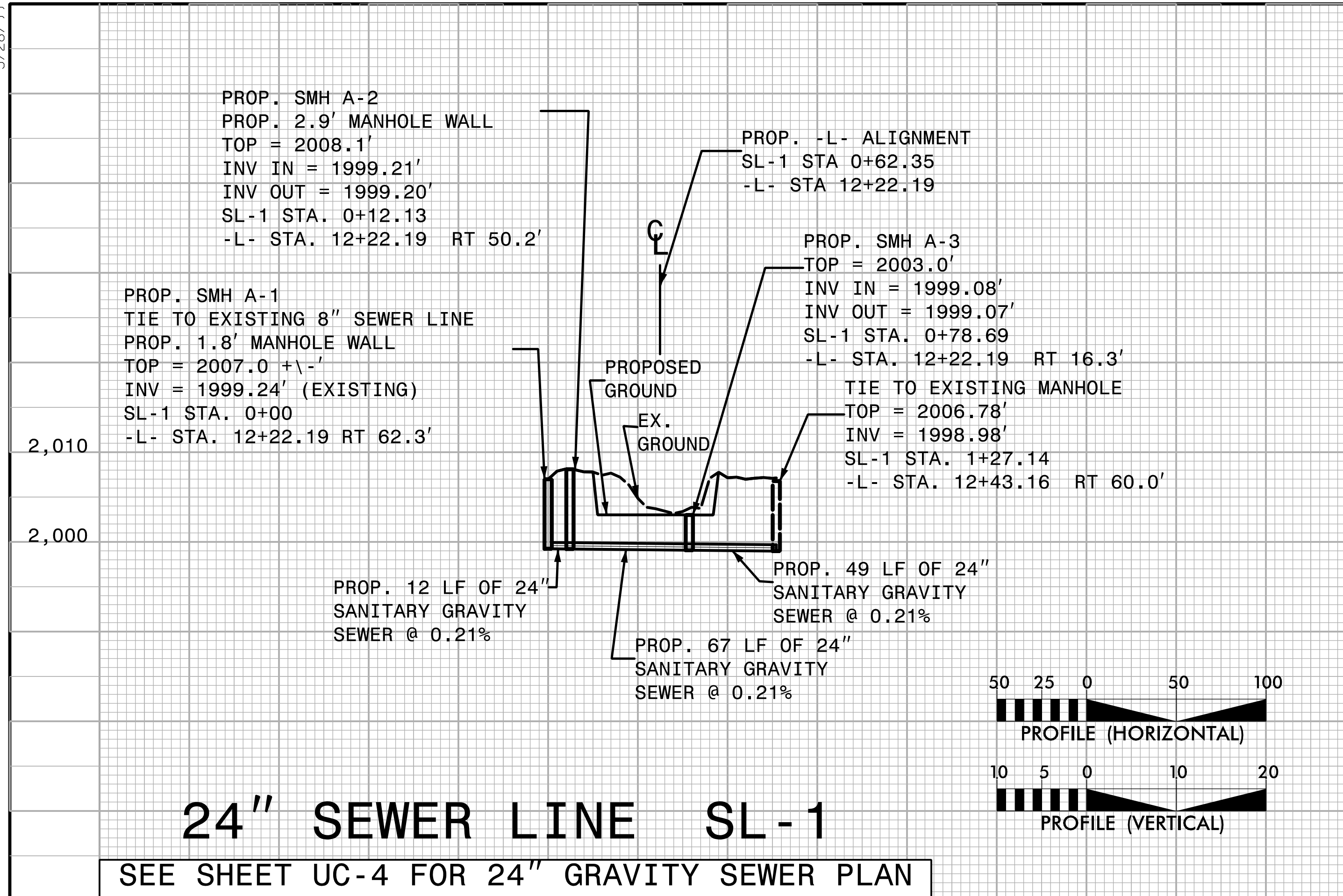
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|--|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| B-5125 | UC-5 |
| DESIGNED BY: BCH | |
| DRAWN BY: BCH | |
| CHECKED BY: JLT | |
| APPROVED BY: MRB | |
| REVISED: | |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY | |



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