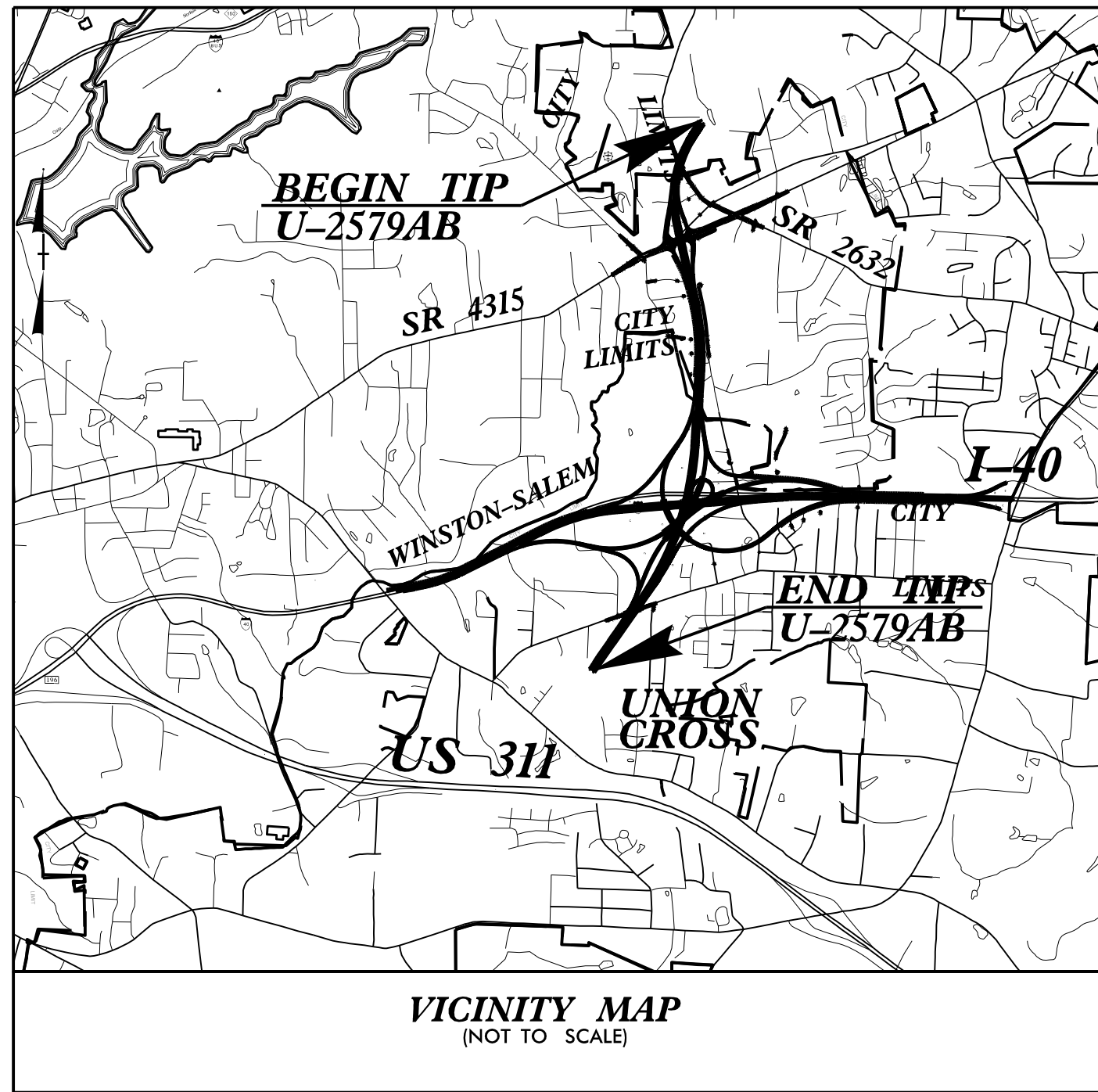


09_08/2019

TIP PROJECT: U-2579AB

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
U-2579AB	UC-1



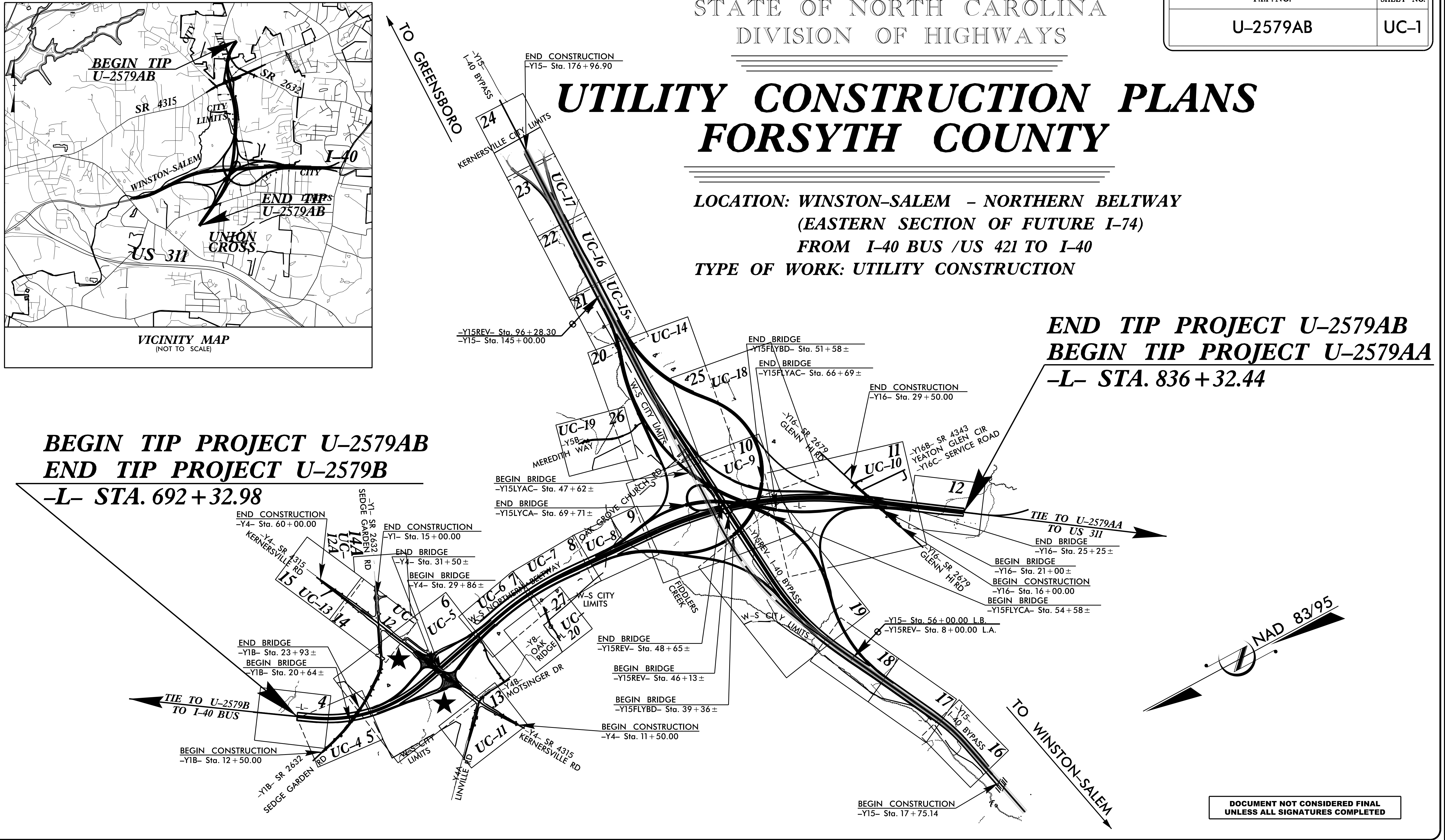
UTILITY CONSTRUCTION PLANS FORSYTH COUNTY

**LOCATION: WINSTON-SALEM - NORTHERN BELTWAY
(EASTERN SECTION OF FUTURE I-74)
FROM I-40 BUS /US 421 TO I-40**

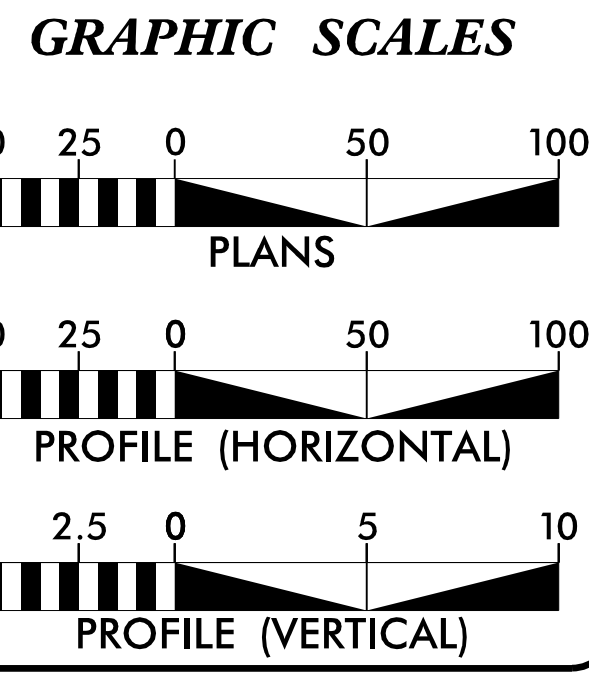
TYPE OF WORK: UTILITY CONSTRUCTION

**END TIP PROJECT U-2579AB
BEGIN TIP PROJECT U-2579AA
-L- STA. 836 + 32.44**

**BEGIN TIP PROJECT U-2579AB
END TIP PROJECT U-2579B
-L- STA. 692 + 32.98**



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INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A THRU UC-3H	DETAILS
UC-4 THRU UC-20	UTILITY CONSTRUCTION SHEETS
UC-21 THRU UC-32	PROFILE SHEETS

WATER AND SEWER OWNERS ON PROJECT

A) WATER - WINSTON-SALEM / FORSYTH CO. UTILITIES
B) SEWER - WINSTON-SALEM / FORSYTH CO. UTILITIES

PREPARED IN THE OFFICE OF:

DAVIS • MARTIN • POWELL
ENGINEERS & SURVEYORS

6415 OLD PLANK RD., HIGH POINT, NC 27605
PHONE: (336)896-4421 FAX: (336)896-4459
WWW.DMP-INC.COM LICENSE: F-0245

Andy Larrick, P.E. CONSULTANT CONTACT #1
Steve McKee, P.E. CONSULTANT CONTACT #2
Ralph Lowe CONSULTANT CONTACT #3

SEAL

7/13/2021

**DIVISION OF HIGHWAYS
UTILITIES UNIT**

1555 MAIL SERVICE CENTER
RALEIGH, NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

(Vacant) CENTRAL UTILITIES MANAGER
Ali Koucheki, P.E. REGIONAL UTILITIES ENGINEER
Jon Loughry SENIOR UTILITIES ENGINEER
Dayton Martin REGIONAL UTILITY COORDINATOR
Tanga Sampson SENIOR UTILITY COORDINATOR

\$\$\$\$\$ SYSTEM\$\$\$\$\$
\$\$\$\$\$ USER\$\$\$\$\$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11 1/4 Degree Bend	
22 1/2 Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	
Force Main Sewer Line (Sized as Shown)	
Manhole (Sized per Note)	
Sewer Pump Station	

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	
Trenchless Installation	
Encasement by Open Cut	
Encasement	

Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

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	
Power Manhole		*Underground Water Line	
Telephone Manhole		Aboveground Water Line	
Sanitary Sewer Manhole		*Underground Gravity Sanitary Sewer Line	
Hand Hole for Cable		Aboveground Gravity Sanitary Sewer Line	
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		Sanitary Sewer Cleanout	
End of Information			

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

5/14/99
REV: 2/1/2012

5/14/99

REVISIONS

UTILITY CONSTRUCTION

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 2018.
2. THE EXISTING WATER AND SEWER UTILITIES BELONG TO WINSTON-SALEM / FORSYTH COUNTY UTILITIES, UNLESS OTHERWISE NOTED.
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, 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 QUALITY, 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. UNLESS OTHERWISE NOTED: PIPE FOR PROPOSED WATER MAINS 4" THRU 16" DIAMETER SHALL BE DUCTILE IRON, PC 350. PIPE FOR PROPOSED WATER MAINS 18" THRU 36" DIAMETER SHALL BE DUCTILE IRON, PC 250. PIPE FOR PROPOSED SANITARY SEWER SHALL BE DUCTILE IRON, MINIMUM THICKNESS CLASS 50.
2. WATER LINE VALVES SHALL BE RESILIENT-SEAT GATE VALVES CONFORMING TO ANSI/AWWA C509 OR ANSI/AWWA C515, AND SHALL BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI.
3. THE INTERIOR OF PROPOSED SANITARY SEWER LINES SHALL BE LINED WITH A MINIMUM OF 40 MILS OF CORROSION- RESISTANT CERAMIC EPOXY COATING AS DESCRIBED IN THE UC PROJECT SPECIAL PROVISIONS. ALL BELLS AND SPIGOTS FOR SANITARY SEWER PIPE MUST BE LINED WITH A MINIMUM OF 8 MILS OF JOINT COMPOUND.
4. TEMPORARY BYPASS PUMPING OF FLOW IN SOME EXISTING SEWER LINES WILL BE REQUIRED WHEN INSTALLING NEW SEWER LINES IN THE SAME HORIZONTAL ALIGNMENT AS THE EXISTING SEWER LINES, AND WHEN TYING PROPOSED MH'S INTO EXISTING SEWER LINES. SEE DIVISION 15, SECTION 1520-3-A-1 OF THE NCDOT STANDARD SPECIFICATIONS, AND CITY OF WINSTON-SALEM REQUIREMENTS OUTLINED IN THE UTILITY CONSTRUCTION PROJECT SPECIAL PROVISIONS. COSTS FOR TEMPORARY BYPASS PUMPING SHALL BE INCIDENTAL TO THE CONTRACT.
5. THE EXISTING 36" WATER MAIN ALONG -Y16- (GLENN HI ROAD, SR 2679), AS SHOWN ON SHEET UC-10, IS A CRITICAL WATER TRANSMISSION MAIN THAT CANNOT BE OUT OF SERVICE DURING PERIODS OF HIGHER WATER USAGE. NO SHUT-DOWNS OF THE 36" WATER MAIN WILL BE ALLOWED BETWEEN MAY 1ST AND SEPTEMBER 30TH, WHEN WATER USAGE RATES ARE TYPICALLY HIGHER THAN OTHER TIMES OF THE YEAR. ANY SHUT-DOWNS OF THE 36" WATER MAIN WILL BE ONLY AS ALLOWED BY THE WINSTON-SALEM / FORSYTH COUNTY UTILITIES (CITY). THE CONTRACTOR SHALL COORDINATE THE WORK WITH THE CITY AS NECESSARY, AND SHUT-DOWNS SHALL BE PERFORMED OVERNIGHT. SHUT-DOWNS OF THE 36" WATER MAIN WILL BE LIMITED TO EIGHT (8) HOURS, OR AS DIRECTED BY CITY STAFF. THE CONTRACTOR SHALL HAVE SUFFICIENT CREWS, EQUIPMENT, AND VARIETY OF MATERIALS ON HAND AND AVAILABLE TO HANDLE ANY POTENTIAL FIELD ADJUSTMENTS, AND FOR ALL WORK TO BE COMPLETED WITHIN THE ALLOTTED TIMEFRAME. THE CONTRACTOR SHALL CONTACT THE CITY AT LEAST TWO (2) WEEKS IN ADVANCE OF ANY WORK INVOLVING SHUT-DOWNS OF THE 36" WATER MAIN.

6. THE CONTRACTOR SHALL PROVIDE TEMPORARY WATER SERVICE TO CUSTOMERS WHEN EXISTING WATER MAINS HAVE TO BE SHUT DOWN FOR MORE THAN 8 HOURS, OR AS DIRECTED BY THE ENGINEER.
7. THE CONTRACTOR SHALL COORDINATE WITH WINSTON-SALEM / FORSYTH COUNTY UTILITIES STAFF CONCERNING THE TIMING AND SCHEDULE OF REQUIRED SHUT-DOWNS OF ANY EXISTING WATER OR SEWER MAINS.
8. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE TRENCHLESS INSTALLATIONS DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
9. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SEWER LATERALS AND/OR CLEANOUTS AS DIRECTED BY THE ENGINEER. THE NECESSARY QUANTITIES HAVE BEEN ADDED TO THE CONTRACT TO FACILITATE THIS PROCEDURE.

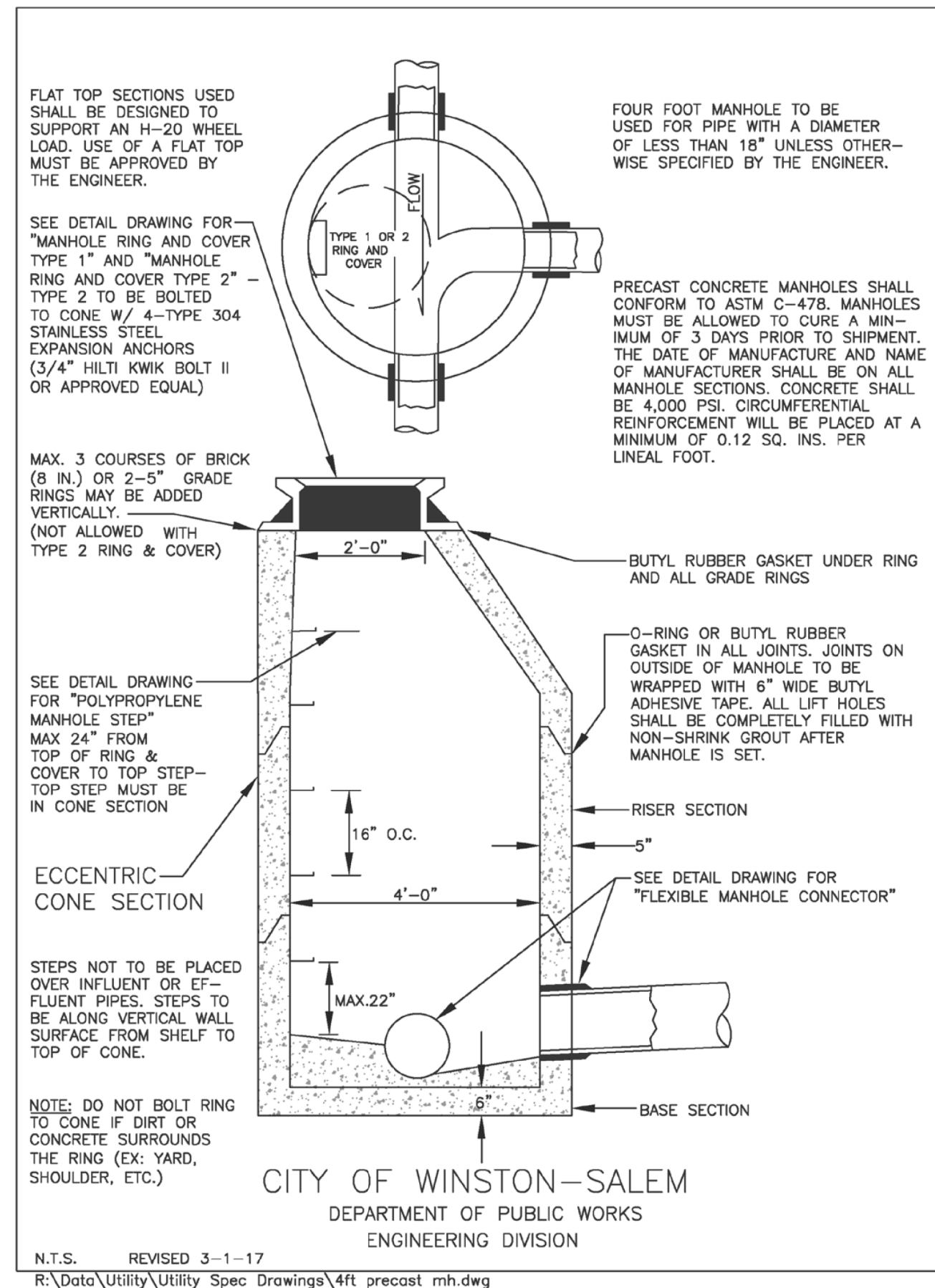
PROJECT REFERENCE NO. U-2579AB	SHEET NO. UC-3
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	10/16/2021
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

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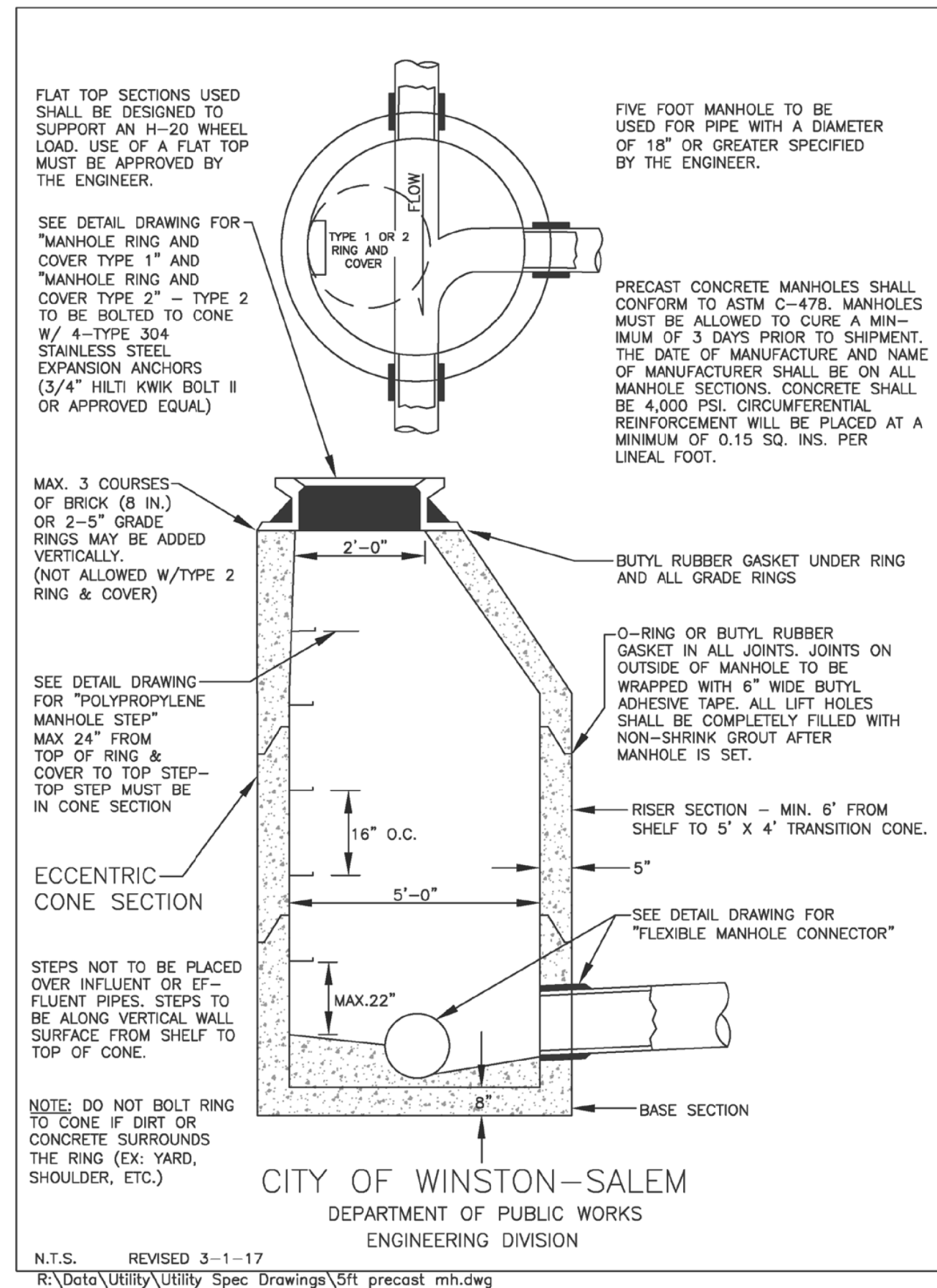
5/14/99

4' Precast Reinforced Concrete Manhole



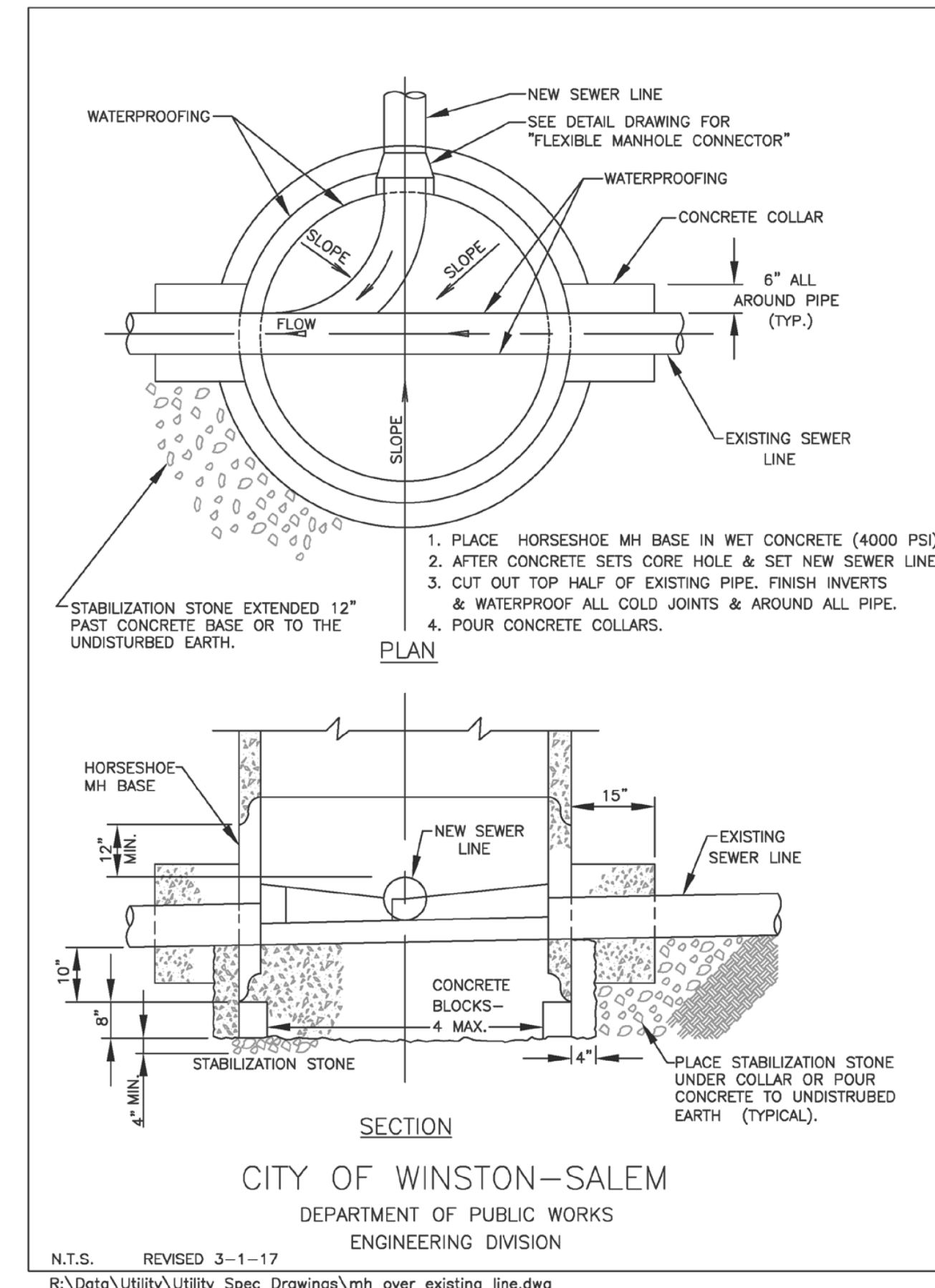
C-10

5' Precast Reinforced Concrete Manhole



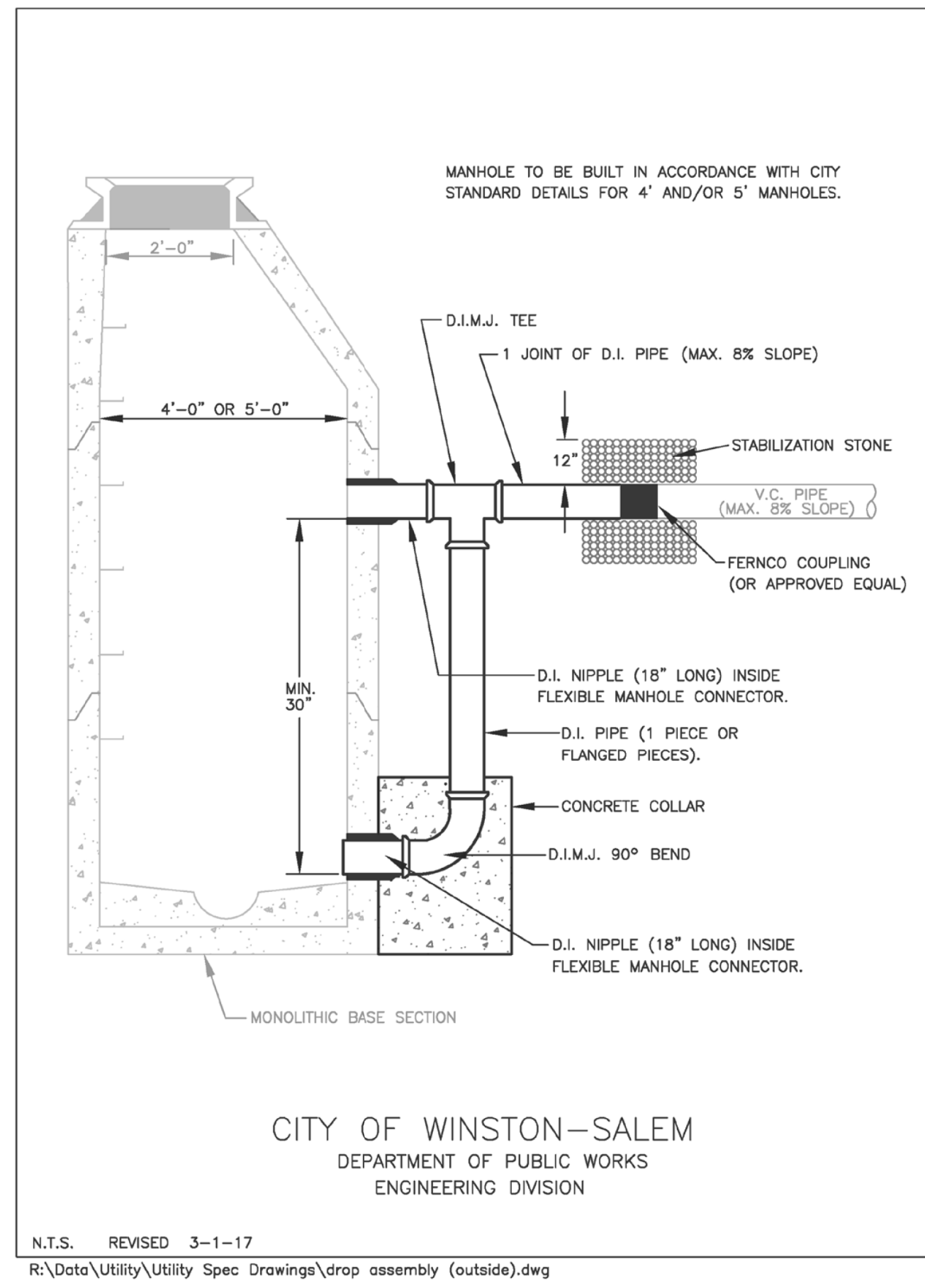
C-11

Manhole Built Over Existing Line



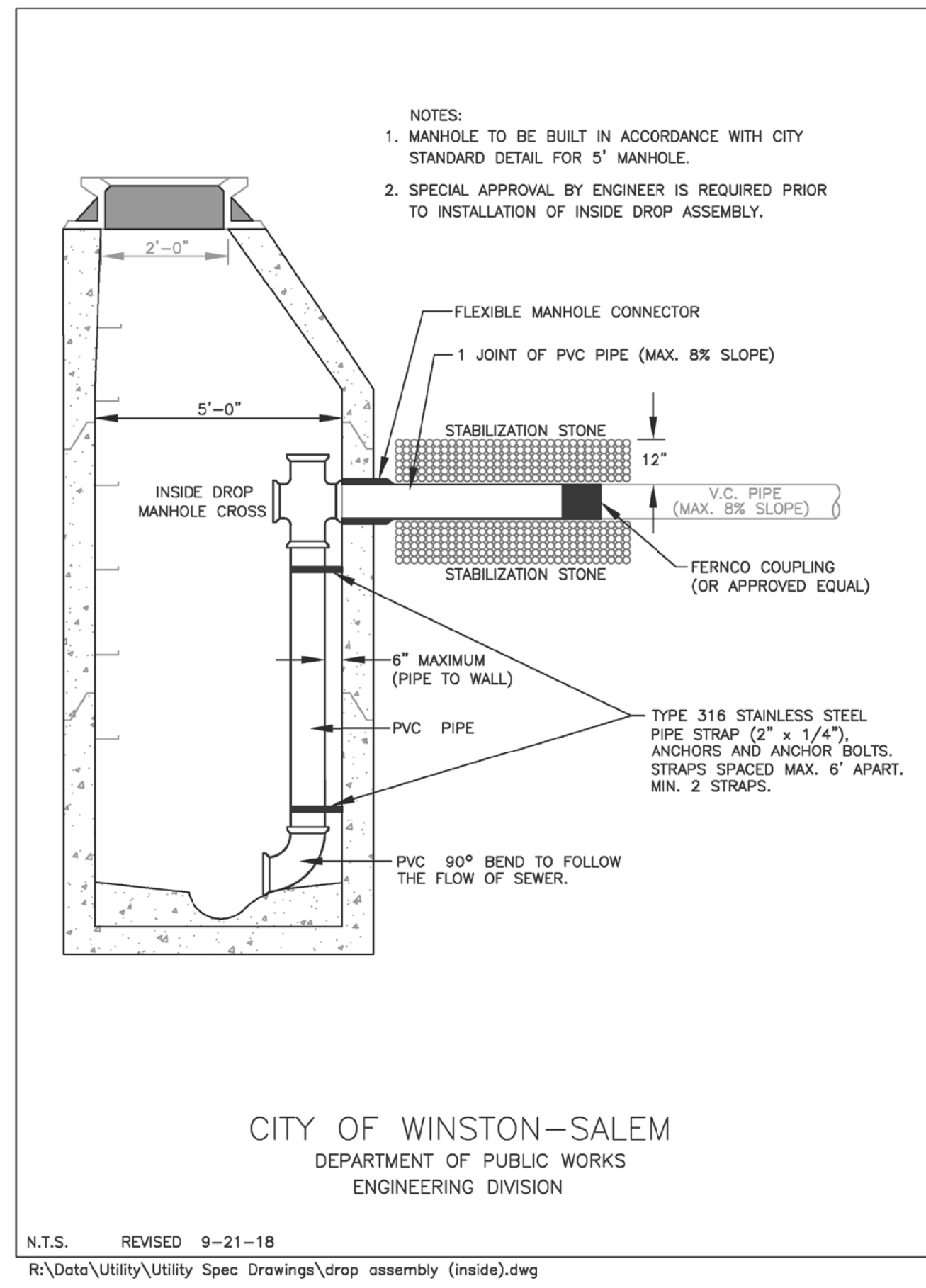
C-13

Drop Assembly (Outside)



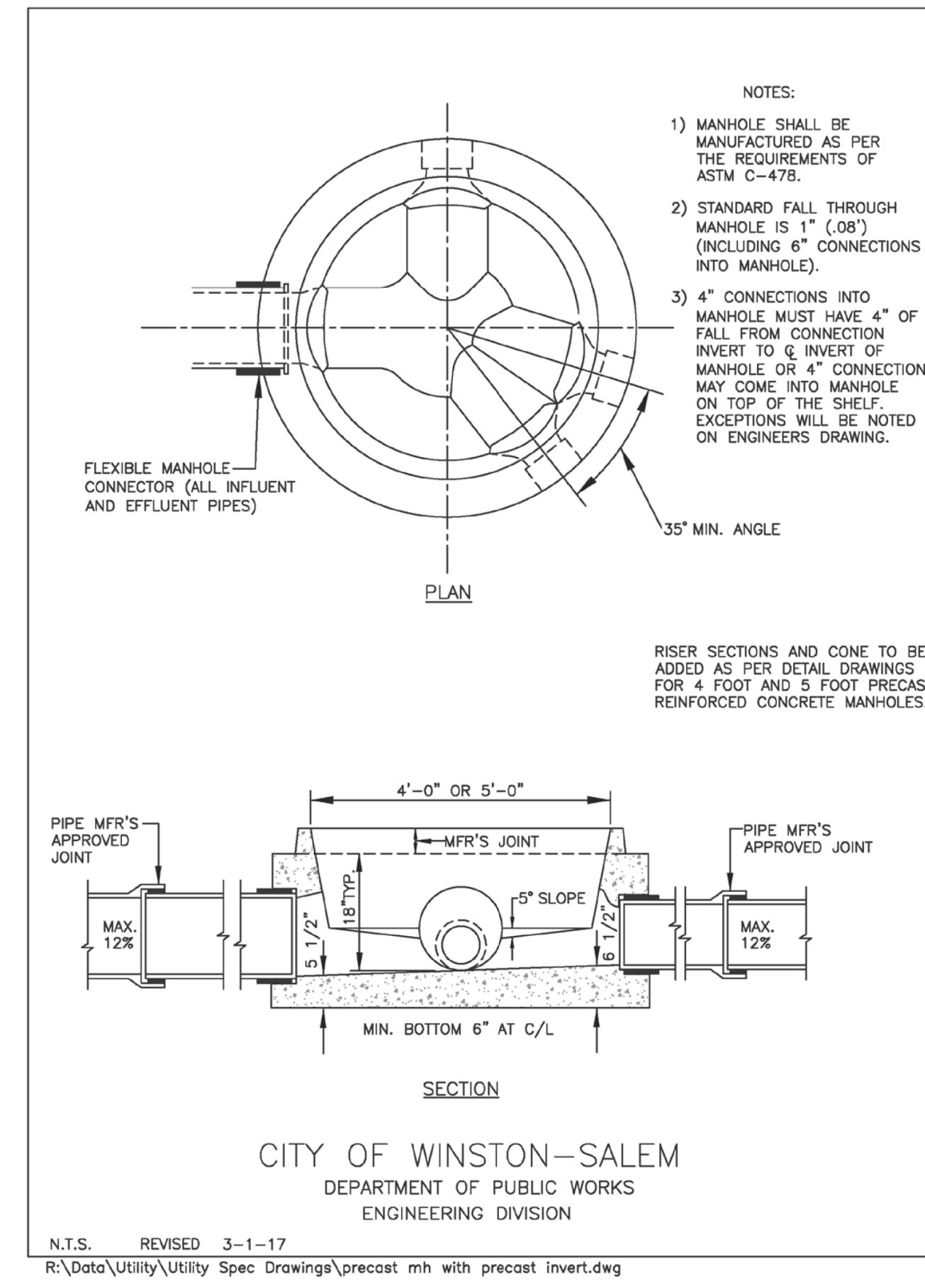
C-14

Drop Assembly (Inside)



C-15

Precast Reinforced Concrete Manhole with Precast Invert



C-16

PROJECT REFERENCE NO. U-2579AB	SHEET NO. UC-3A
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
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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FROM CITY OF WINSTON-SALEM, NC TECHNICAL SPECIFICATIONS AND DETAIL DRAWINGS FOR WATER LINE AND SANITARY SEWER LINE CONSTRUCTION, INDEX OF DETAIL DRAWINGS:

SECTION C - Water and Sanitary Sewer Detail Drawings

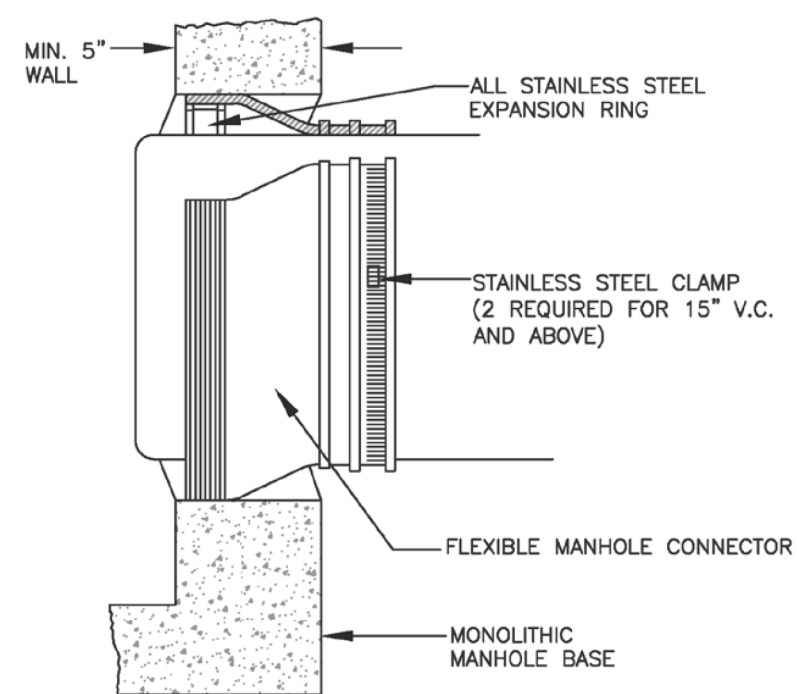
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5/14/99

REVISIONS

Flexible Manhole Connector

NOTE: FLEXIBLE MANHOLE CONNECTORS TO BE FURNISHED AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS. MAXIMUM DEFLECTION FOR CONNECTOR IS 7% (12%). SLOPES GREATER THAN 12% MUST HAVE CONNECTORS DESIGNED FOR HIGHER DEFLECTION.

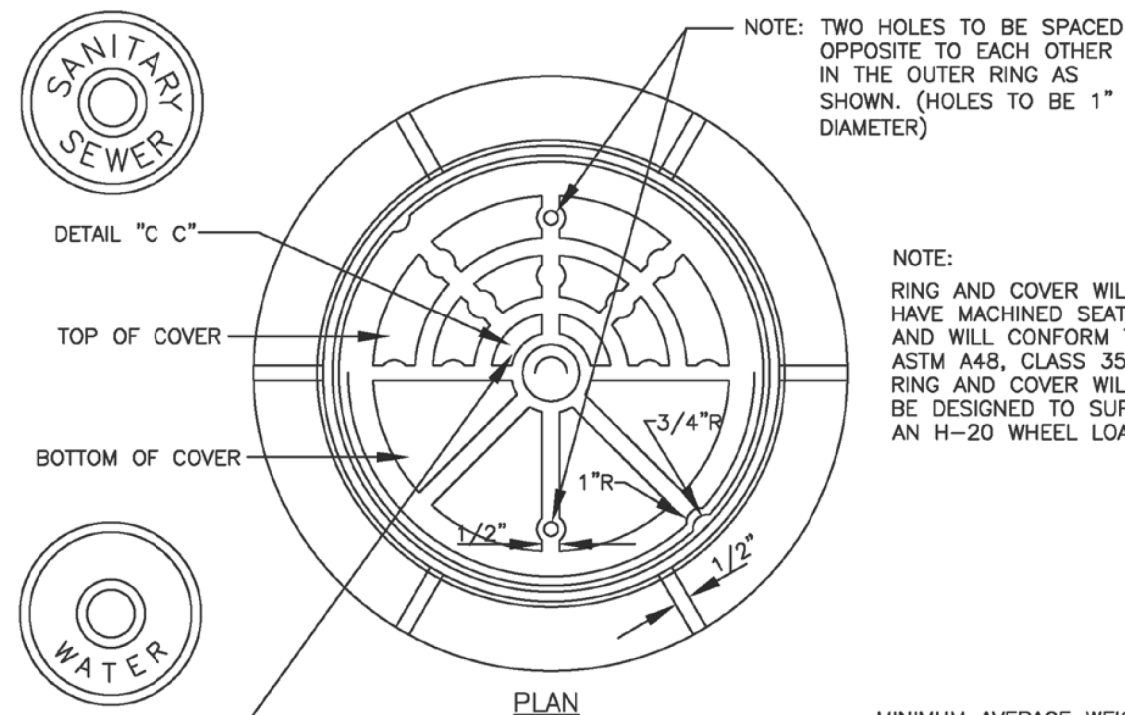


CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
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C-17

Manhole Ring and Cover (Type 1)



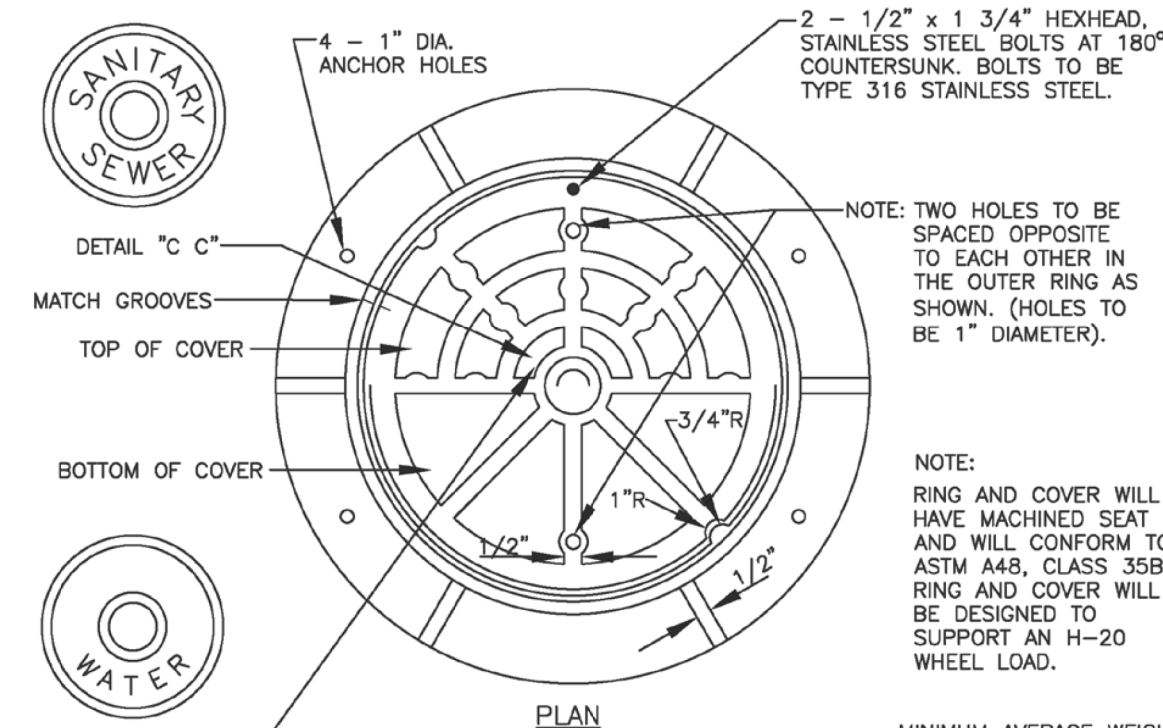
MINIMUM AVERAGE WEIGHTS
RING 190 LBS.
COVER 120 LBS.
310 LBS.

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
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C-18

Manhole Ring and Cover (Type 2)



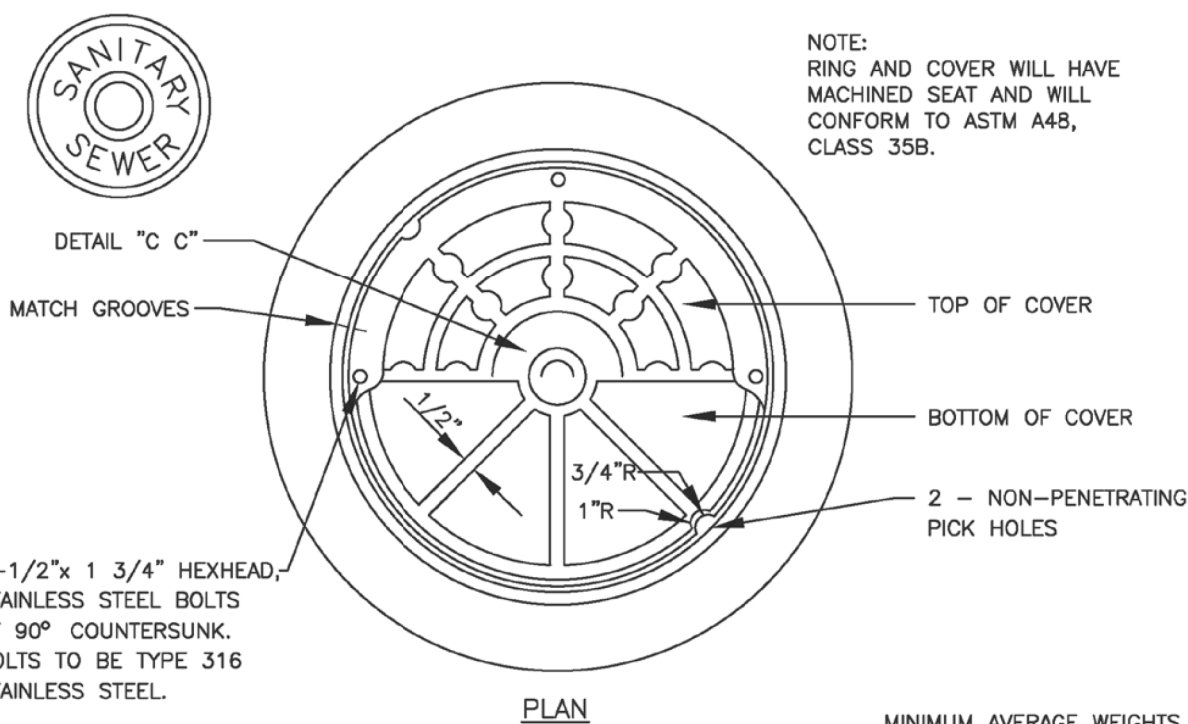
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RING 190 LBS.
COVER 120 LBS.
310 LBS.

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ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
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C-19

Manhole Ring and Cover (Type 3)



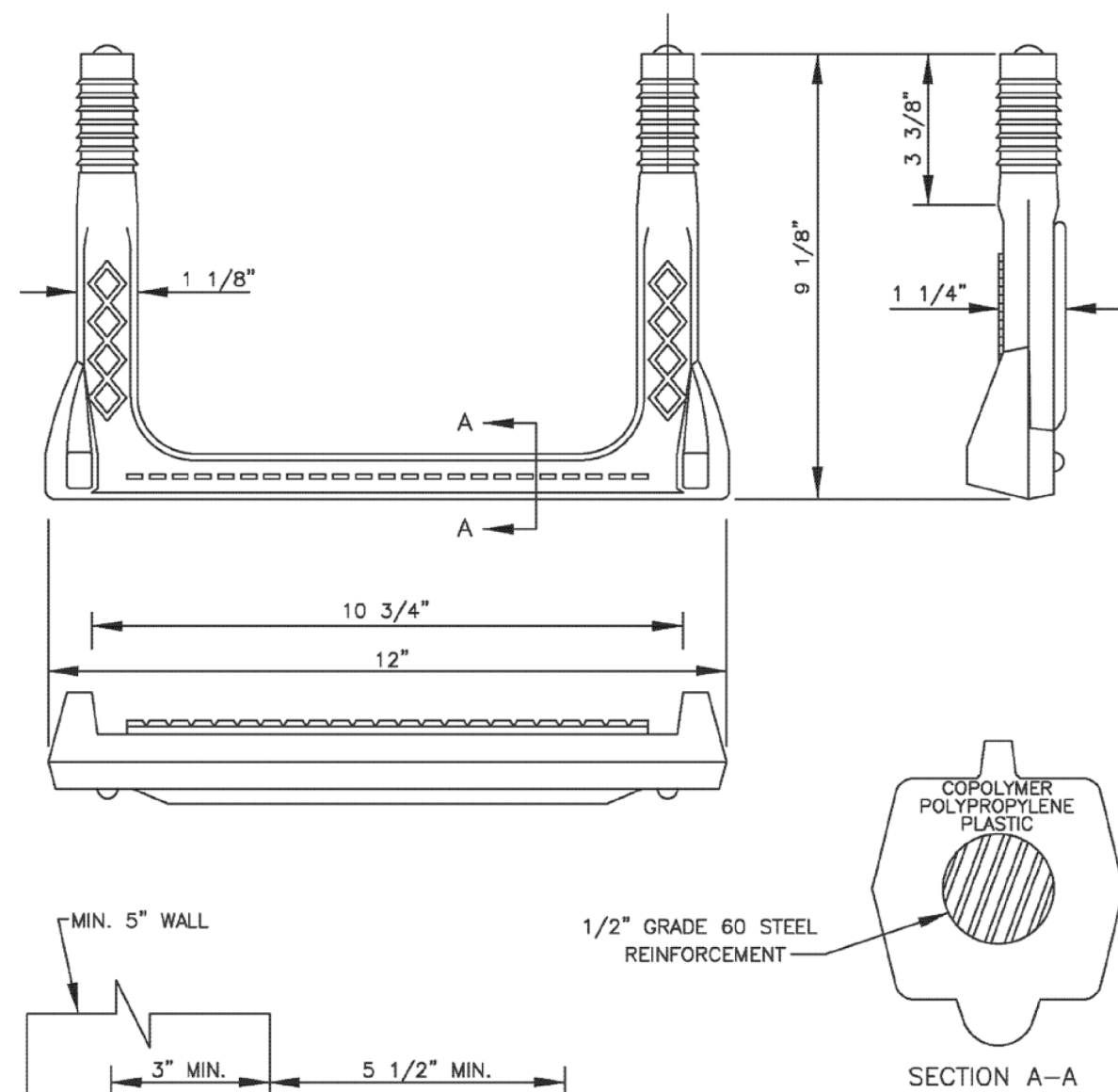
MINIMUM AVERAGE WEIGHTS
RING 136 LBS.
COVER 120 LBS.
256 LBS.

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
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C-20

Polypropylene Manhole Step

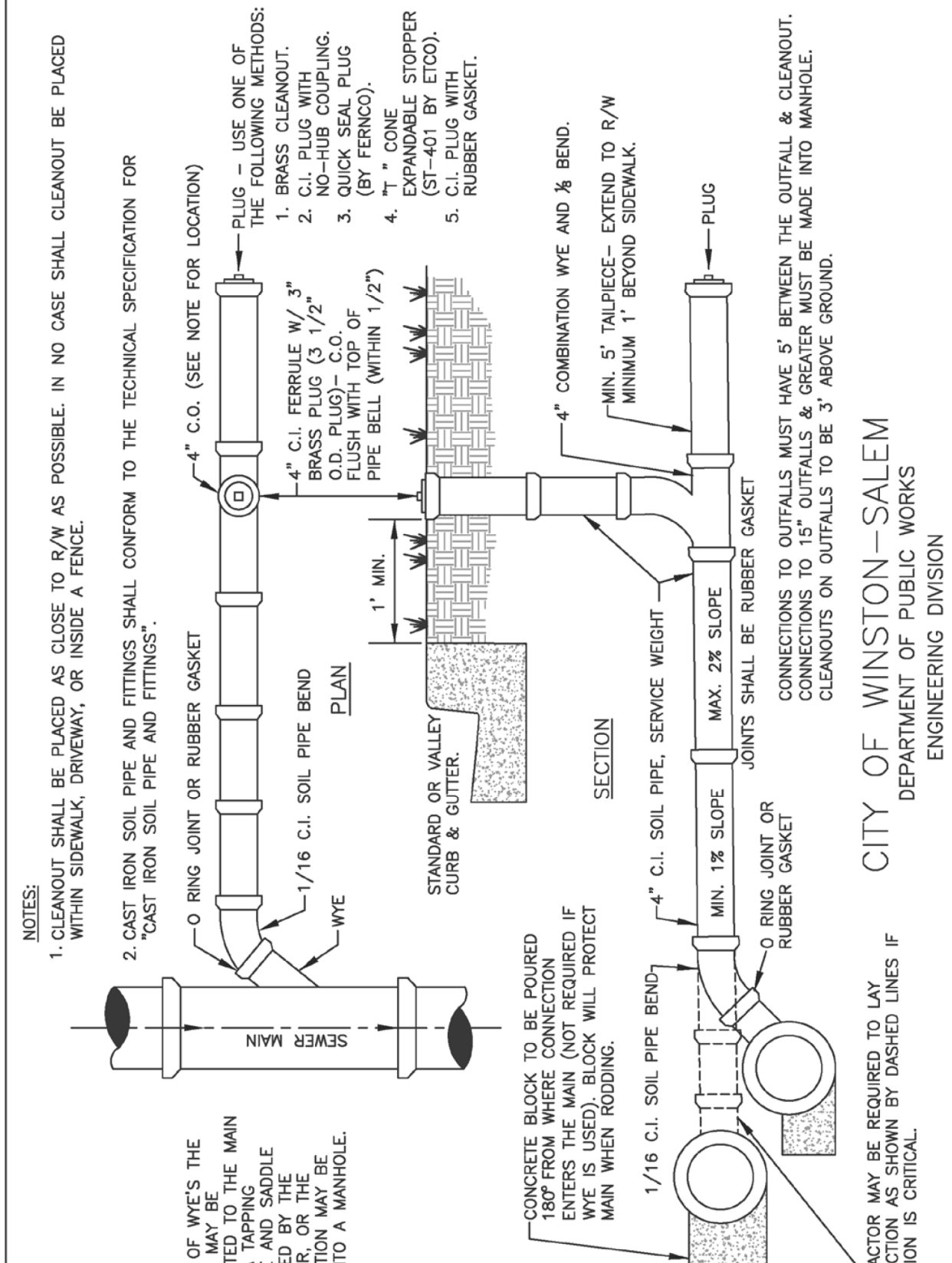


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N.T.S. REVISED 3-1-17
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C-21

4" Sewer Connection



CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

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C-22

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	UC-3B
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
7/13/2021	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

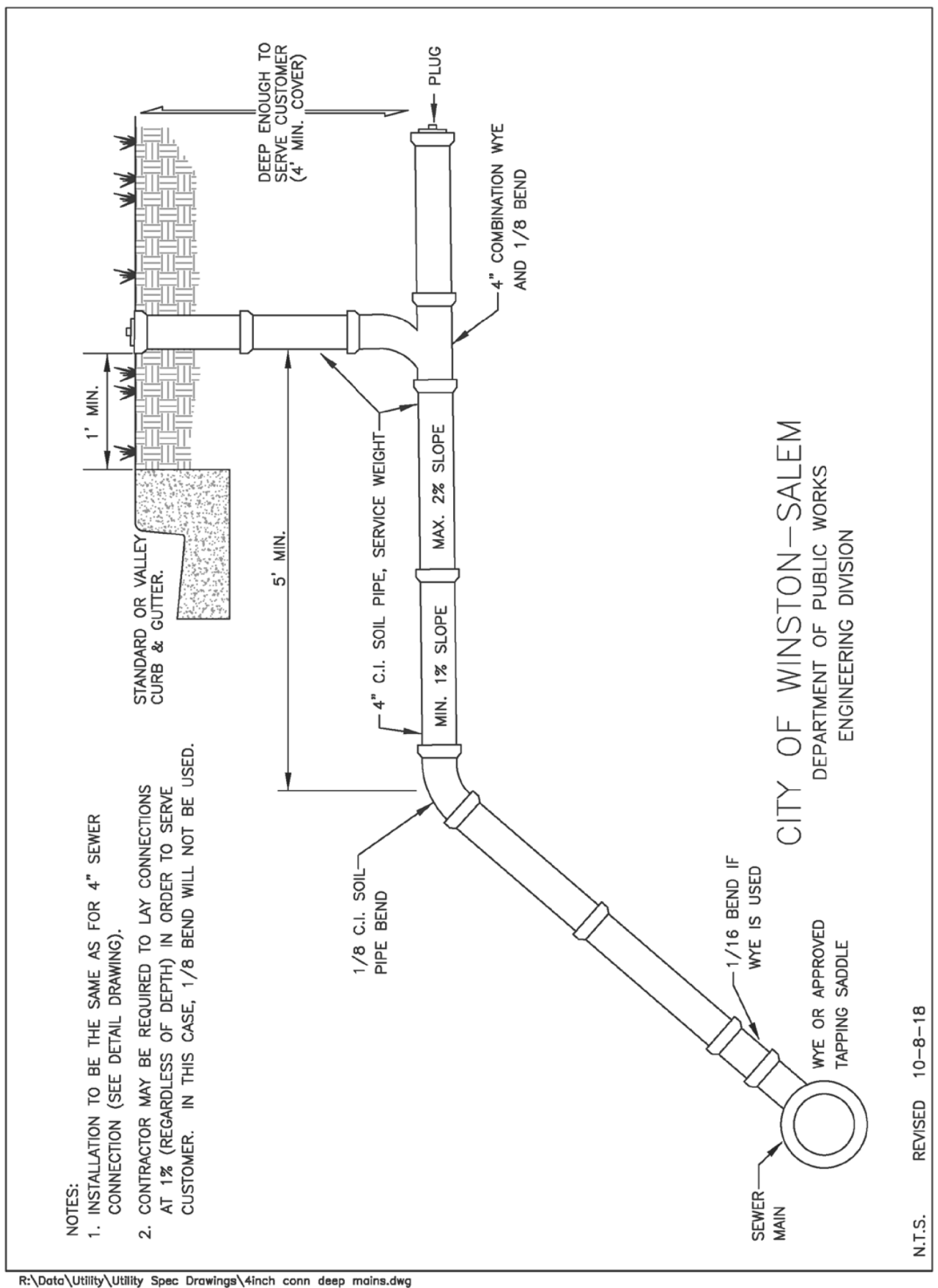
UTILITY CONSTRUCTION

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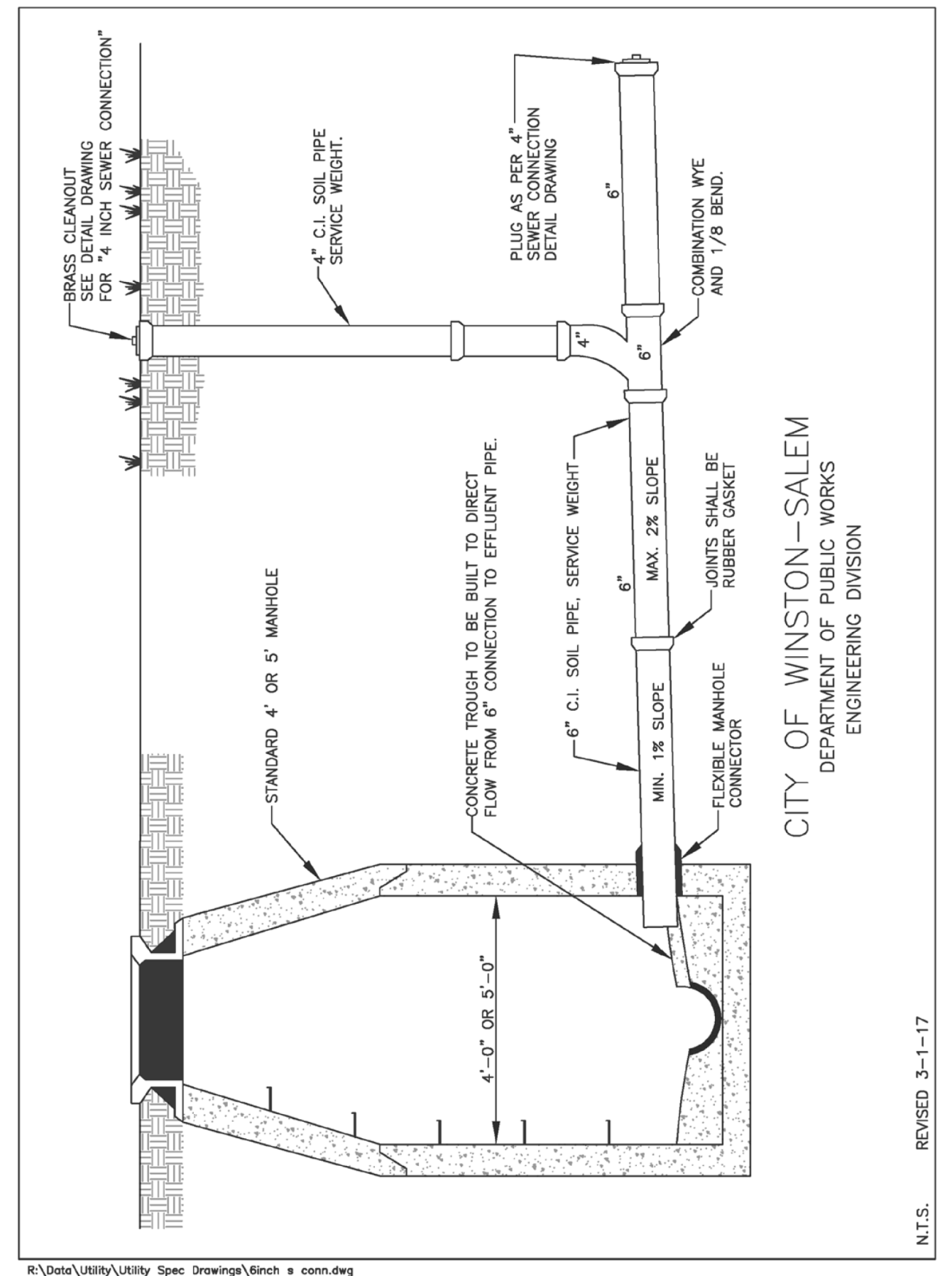
REVISIONS

4" Sewer Connection for Deep Mains



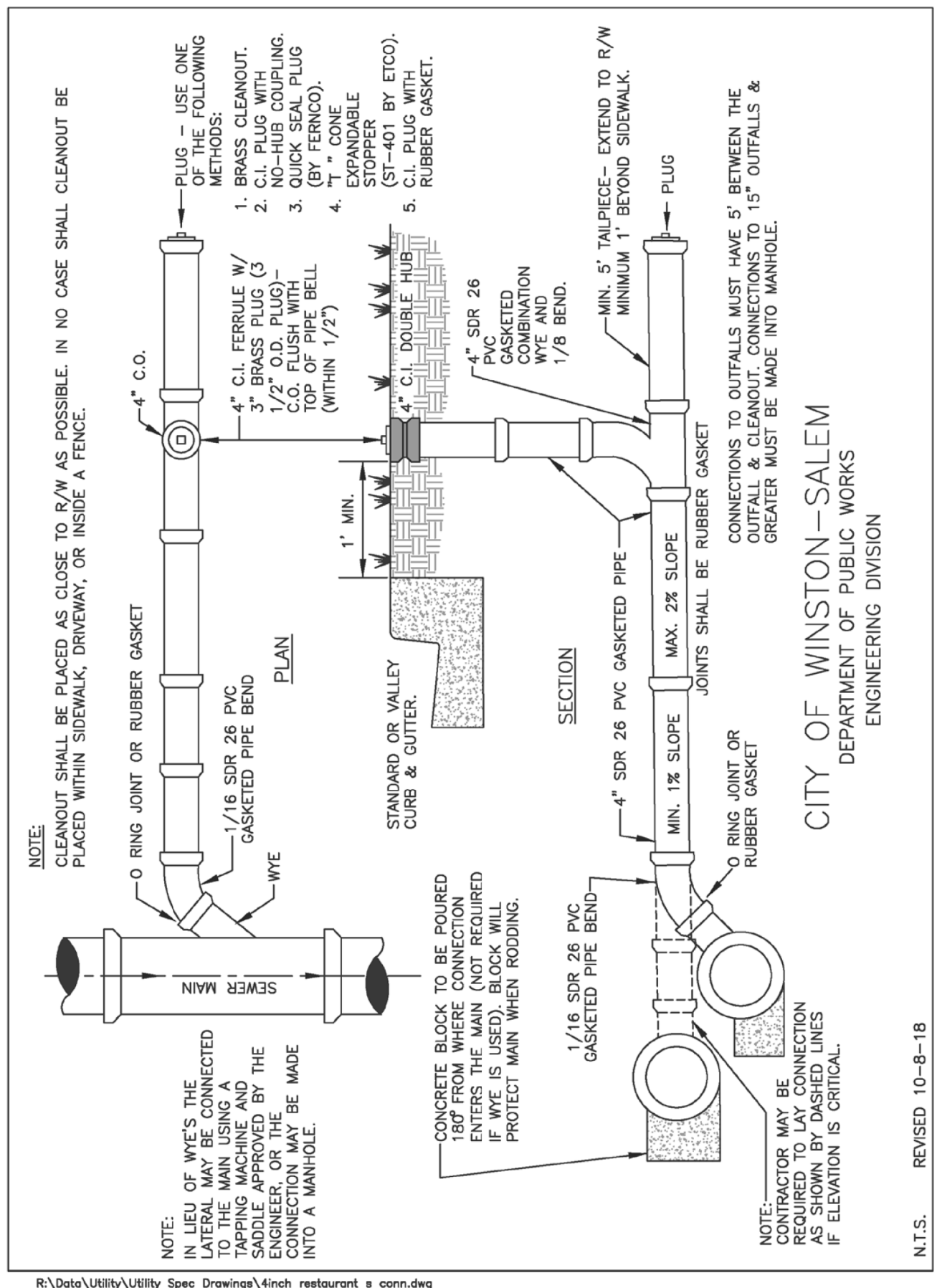
C-23

6" Sewer Connection



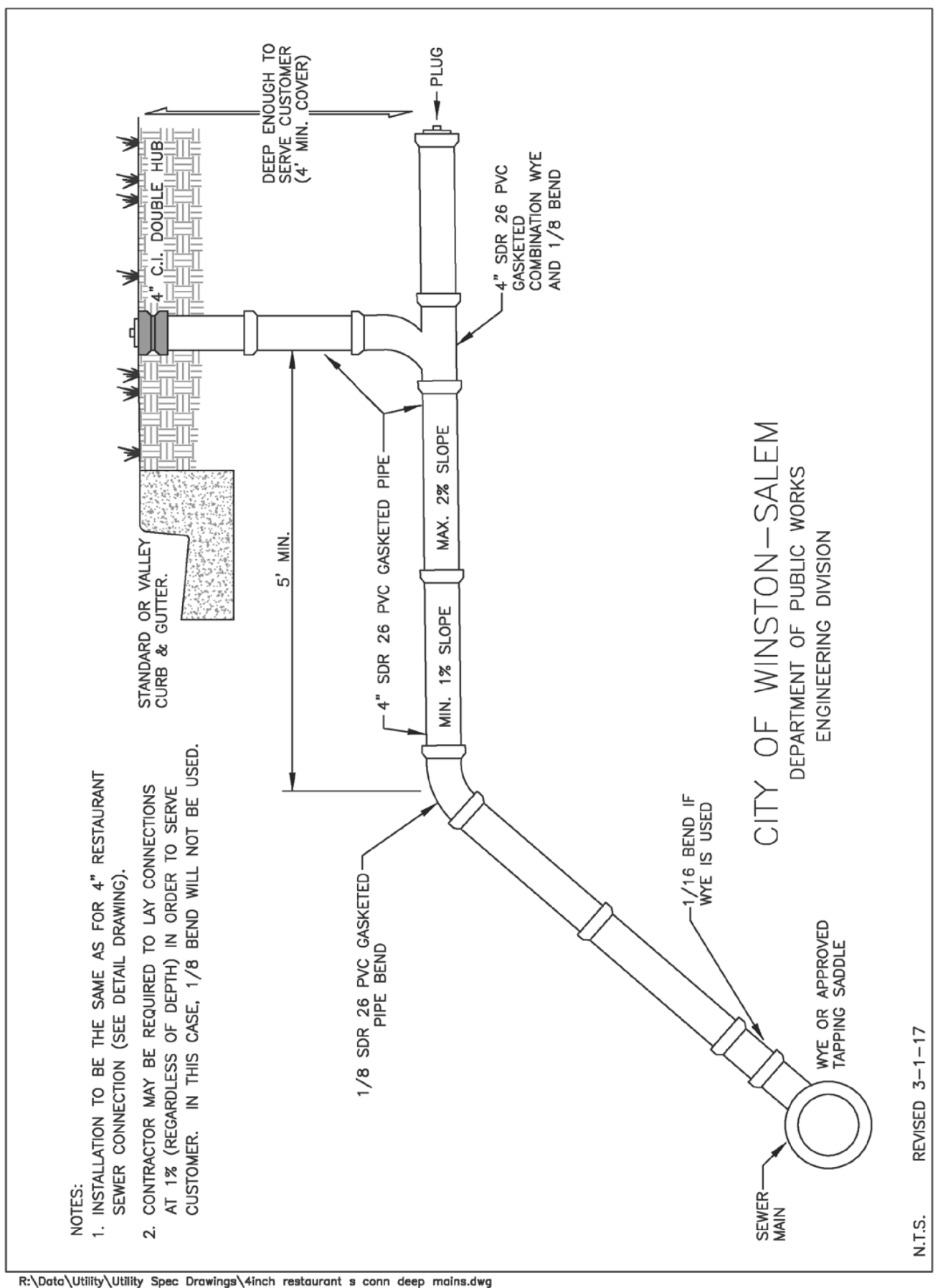
C-24

4" Restaurant Sewer Connection



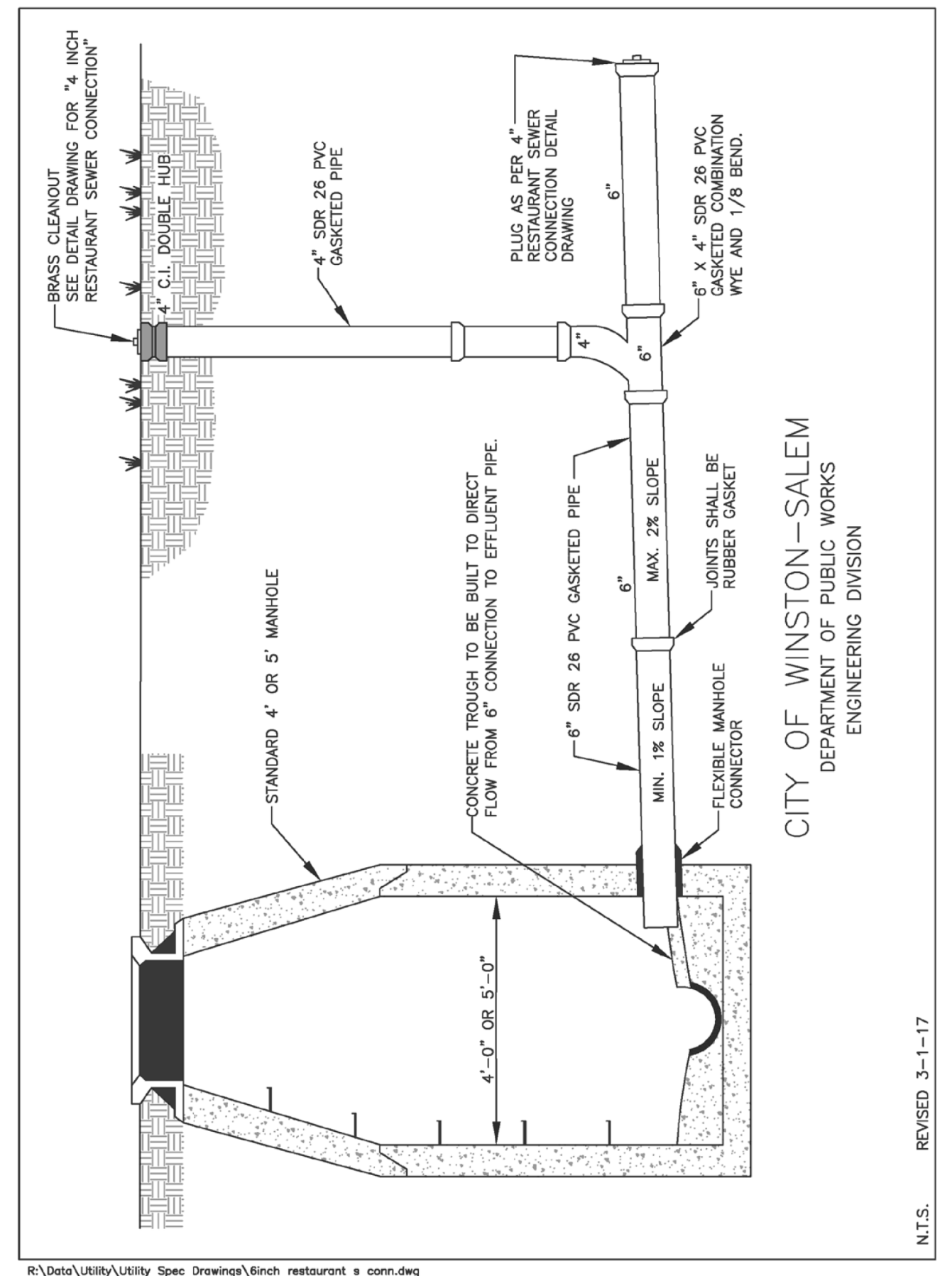
C-25

4" Restaurant Sewer Connection for Deep Mains



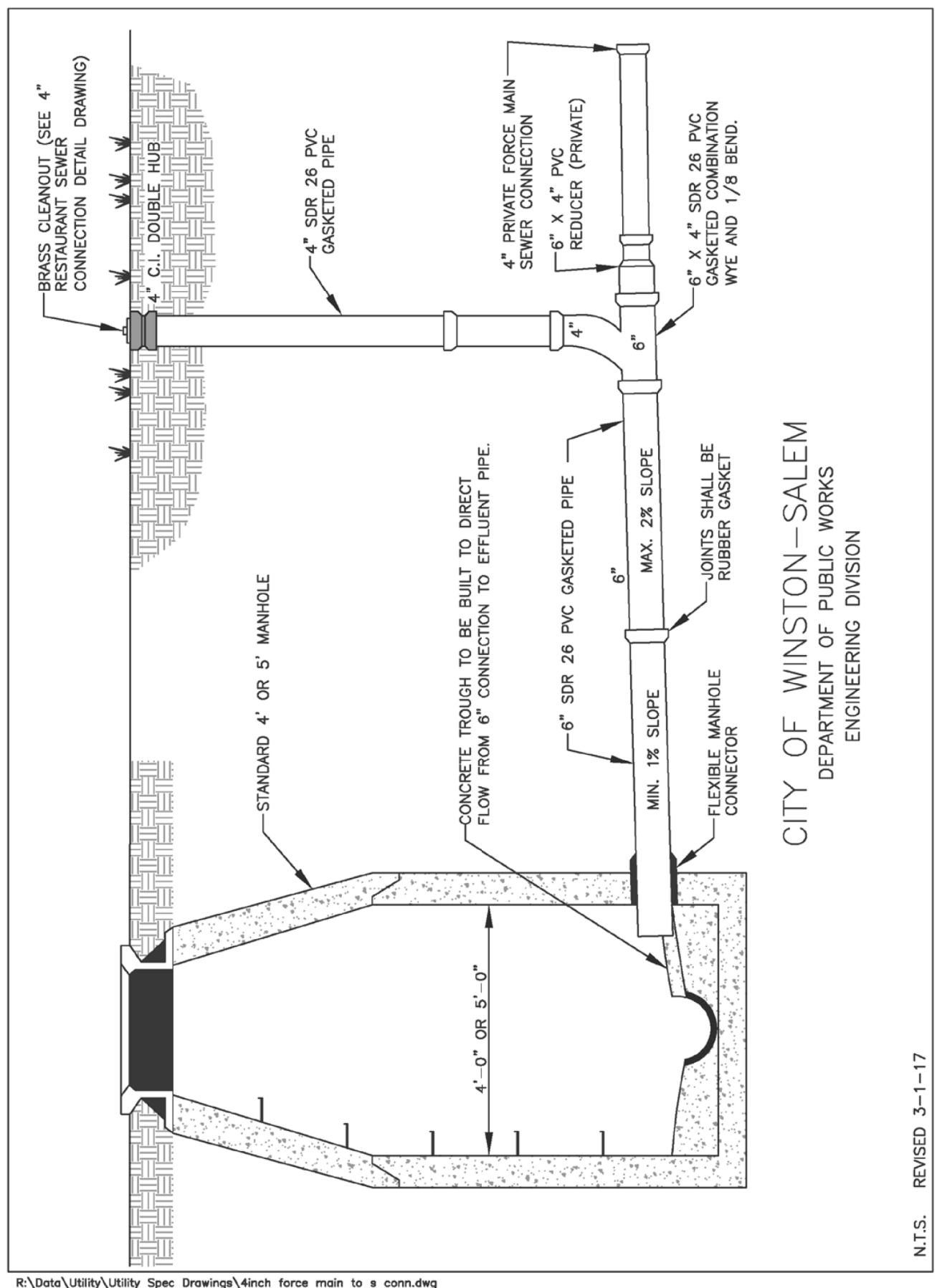
C-26

6" Restaurant Sewer Connection



C-27

4" Private Force Main Sewer Connection



C-28

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	UC-3C
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	7/13/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

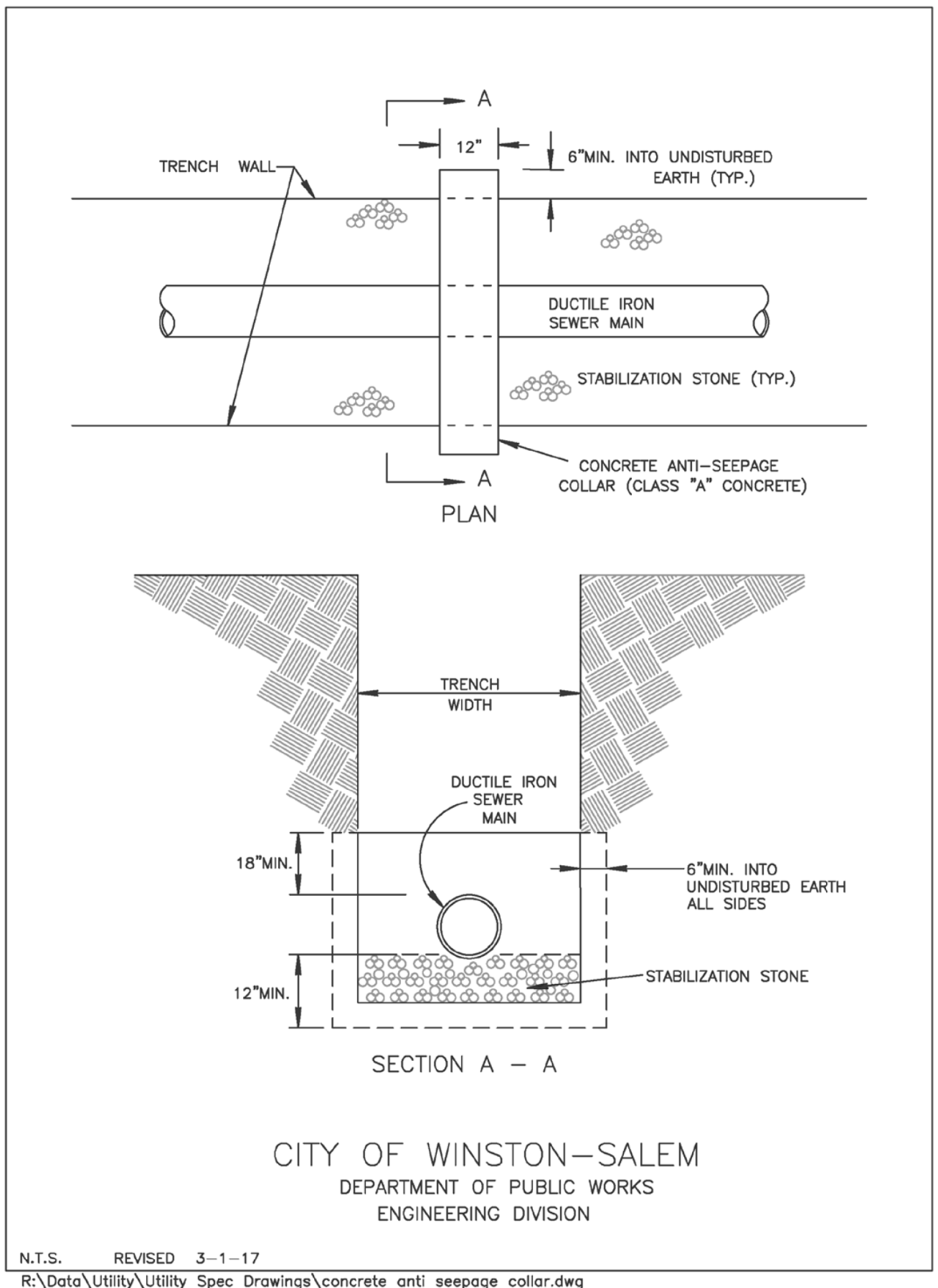
UTILITY CONSTRUCTION

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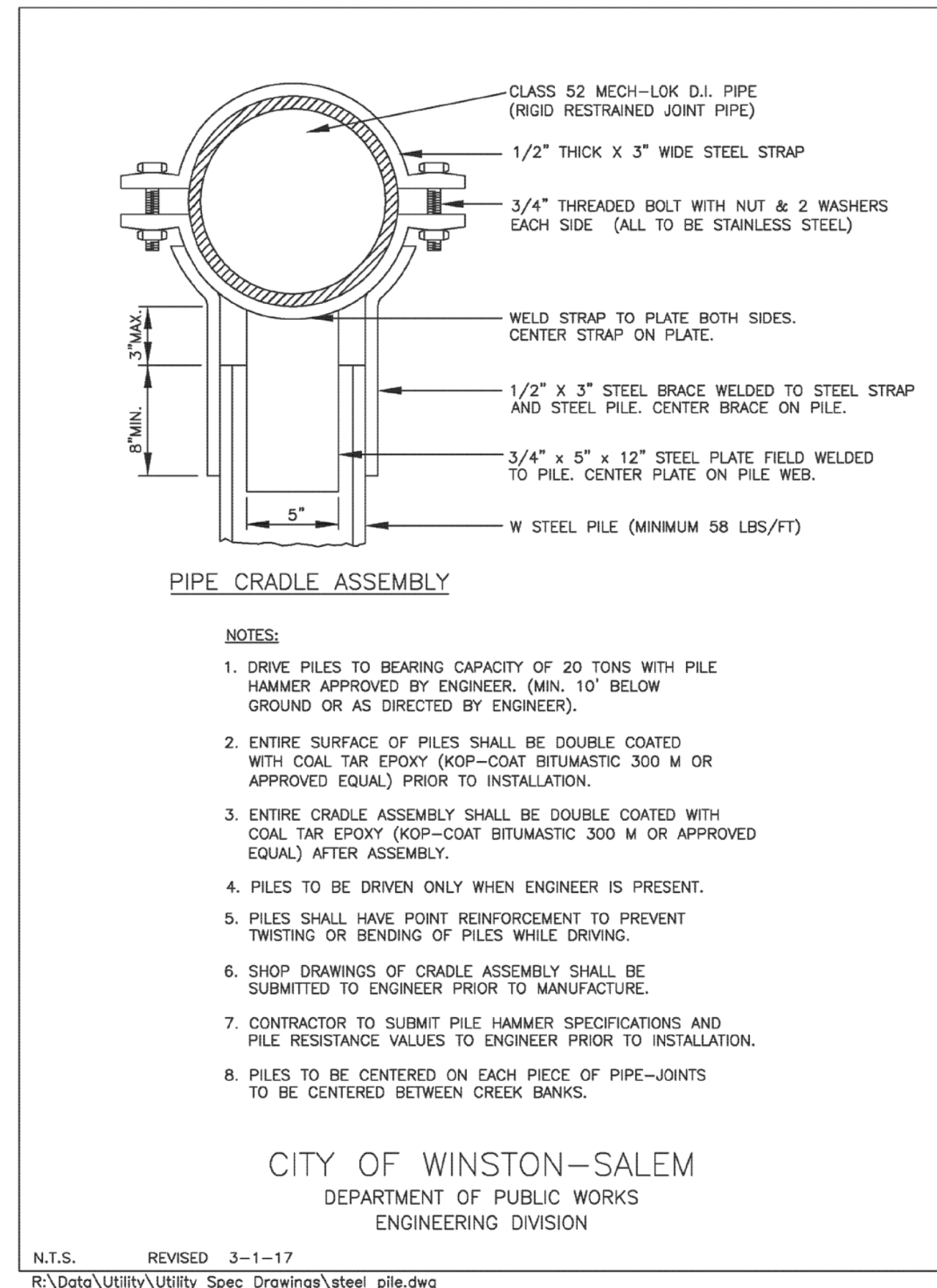
REVISIONS

Concrete Anti-Seepage Collar



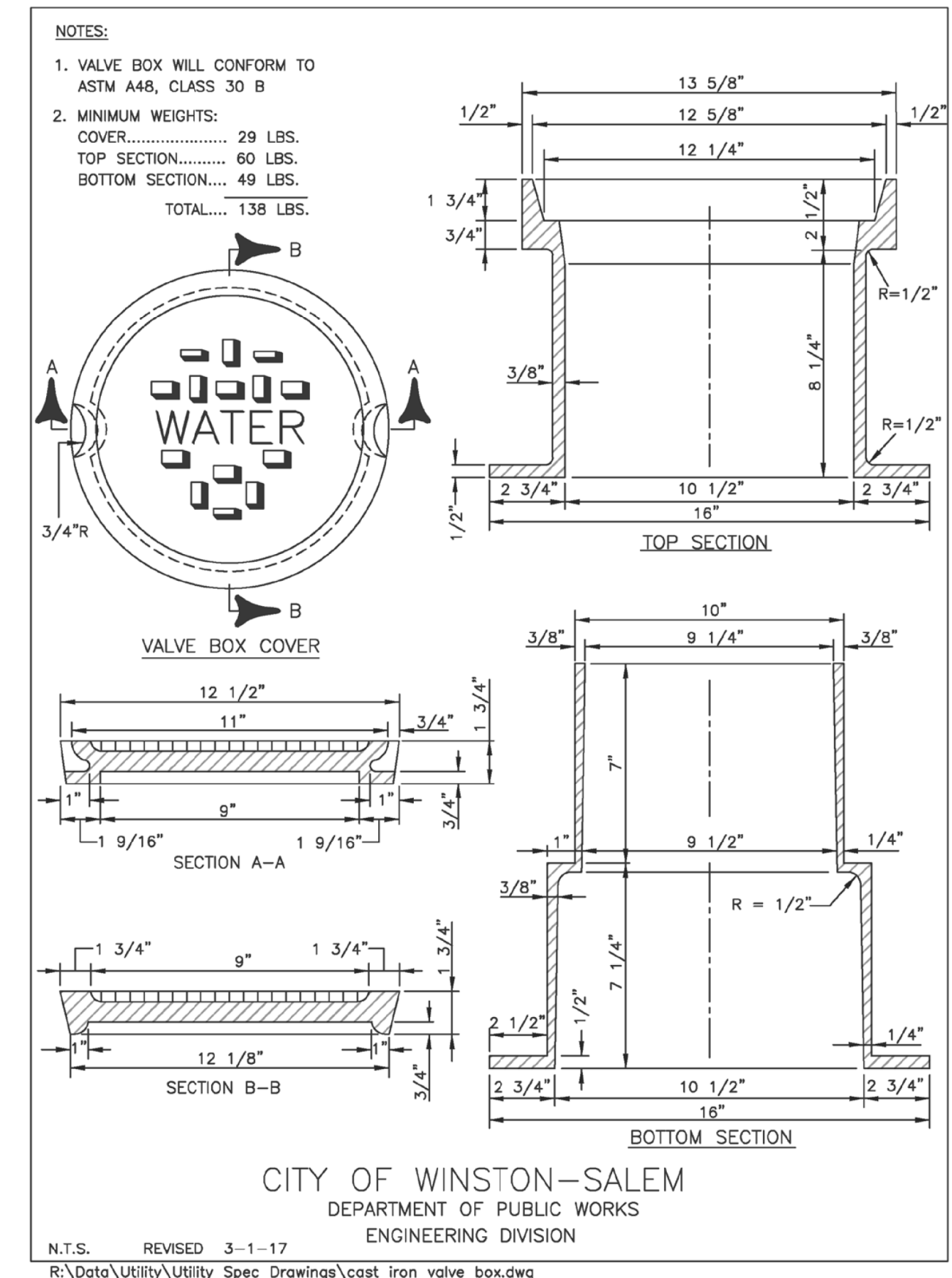
C-29

Steel Pile Detail



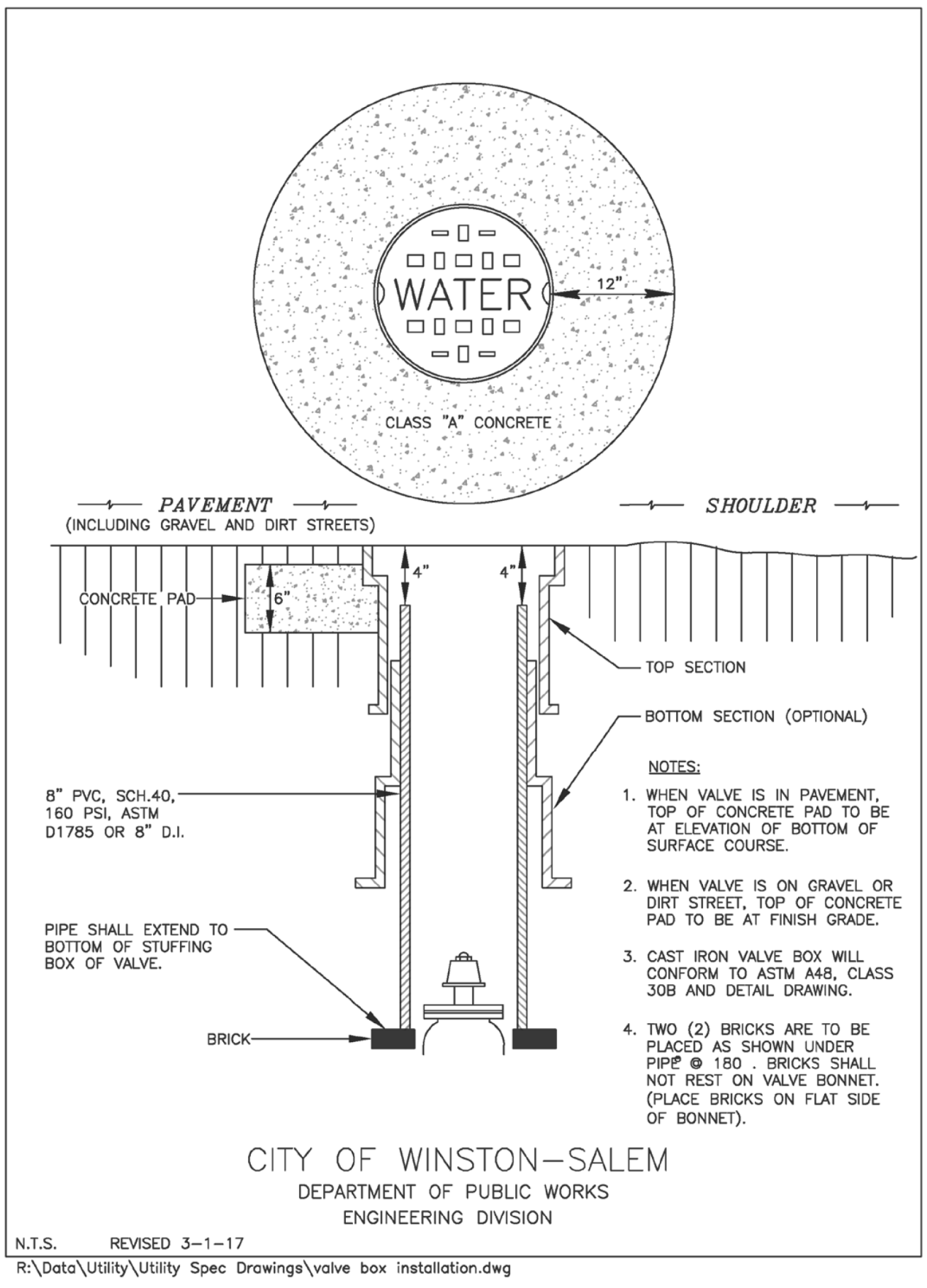
C-30

Cast Iron Valve Box



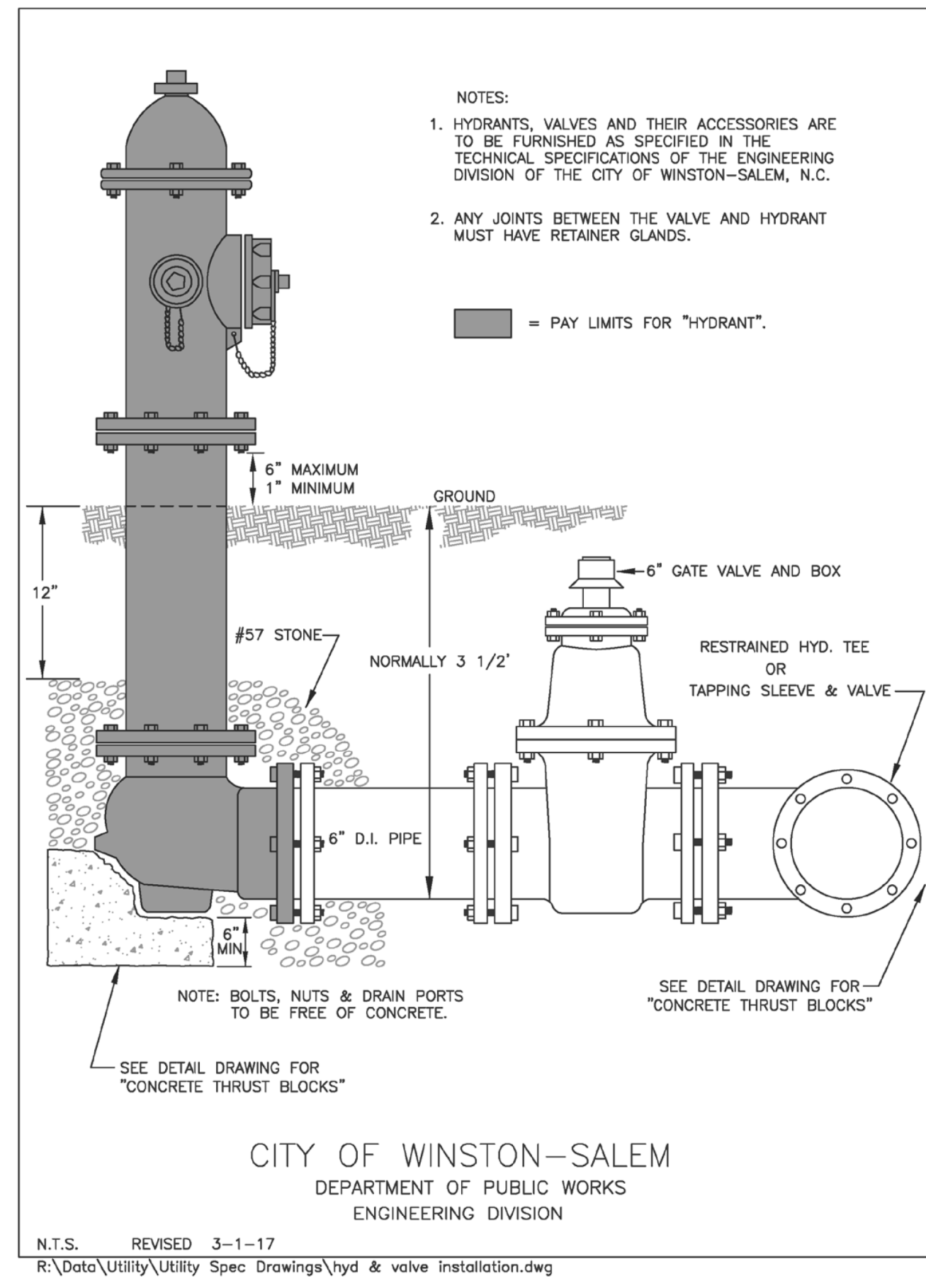
C-39

Valve Box Installation



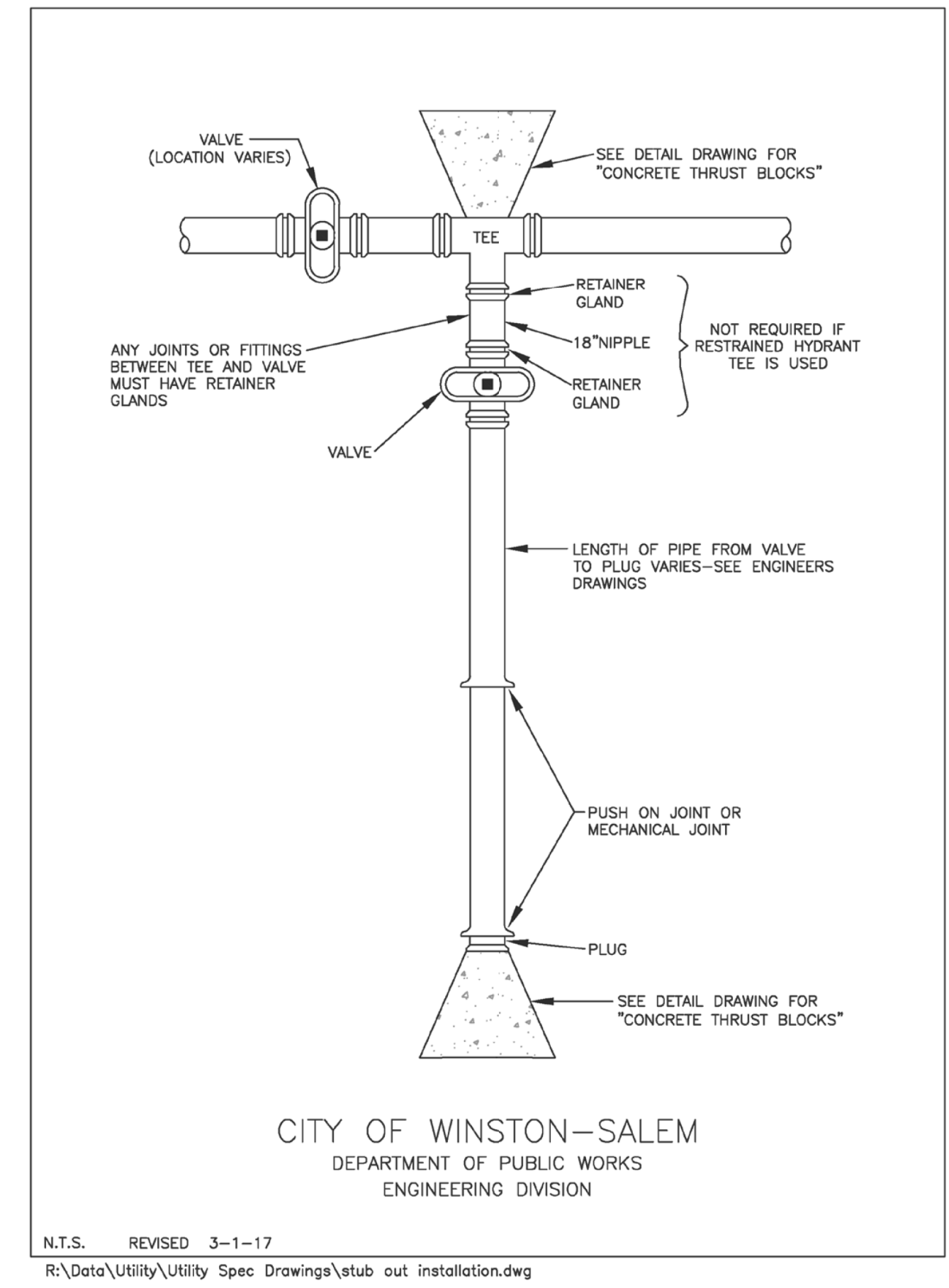
C-40

Hydrant and Valve Installation



C-41

Stub Out Installation



C-42

PROJECT REFERENCE NO. U-2579AB	SHEET NO. UC-3D
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 7/13/2021 ANDREW P. LARRICK PROFESSIONAL ENGINEER LICENSE NO. 26457 STATE OF NORTH CAROLINA UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/14/19

REVISIONS

Concrete Thrust Blocks for Horizontal Bends

FITTING	PIPE SIZE (INCHES)											
	2	4	6	8	12	16	20	24	30	36		
90° BEND	1.0	2.0	2.5	3.5	5.0	6.5	8.0	10.0	12.0	14.5		
45° BEND	1.0	1.5	2.0	2.5	4.0	5.0	6.0	7.0	9.0	10.5		
22 1/2° BEND	0.5	1.0	1.5	2.0	3.0	3.5	4.5	5.0	6.5	7.5		
11 1/4° BEND	0.5	1.0	1.0	1.5	2.0	2.5	3.0	4.0	4.5	5.5		
PLUG/TEE	1.0	1.5	2.5	3.0	4.5	5.5	7.0	8.0	10.0	12.0		

NOTE: ABOVE DIMENSIONS BASED ON THE FOLLOWING: 250 PSI WATER PRESSURE AND 2000 LB/SQ FT SOIL BEARING CAPACITY (SOFT CLAY)

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N.T.S. REVISED 3-1-17
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C-43

Concrete Thrust Blocks w/ Anchors for Top Vertical Bends

PIPE SIZE (INCHES)	NUMBER OF STRAPS
6	1
8	1
12	2*
16	2*

* 45° AND 90° BENDS ONLY

FITTING	PIPE SIZE (INCHES)				
	4	6	8	12	16
90° BEND	2.0	3.5	6.0	12.0	21.0
45° BEND	1.0	2.0	3.0	6.5	11.5
22 1/2° BEND	0.5	1.0	1.5	3.5	6.0
11 1/4° BEND	0.2	0.5	1.0	2.0	3.0

NOTE: ABOVE QUANTITIES BASED ON 250 PSI WATER PRESSURE WITH NO SOIL BEARING PRESSURE.

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ENGINEERING DIVISION

N.T.S. 3-1-17
R:\Data\Utility\Utility Spec Drawings\concrete thrust block vertical.dwg

C-44

Blow-Off Assembly

PIPE SIZE	CORP. COCK SIZE
2"	3/4"
4"	1"
6"	1 1/2"
8"	2"

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\blow off assembly.dwg

C-45

PROJECT REFERENCE NO. U-2579AB	SHEET NO. UC-3E
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION
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1" Water Connection (With Curb & Gutter)

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N.T.S. REVISED 4-17-2020
R:\Data\Utility\Utility Spec Drawings\w conn with c & g.dwg

C-46

1" Water Connection (Without Curb & Gutter)

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DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 4-17-2020
R:\Data\Utility\Utility Spec Drawings\w conn without c & g.dwg

C-47

3/4" Water Connection (Non-Single Family)

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DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 4-17-2020
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C-48

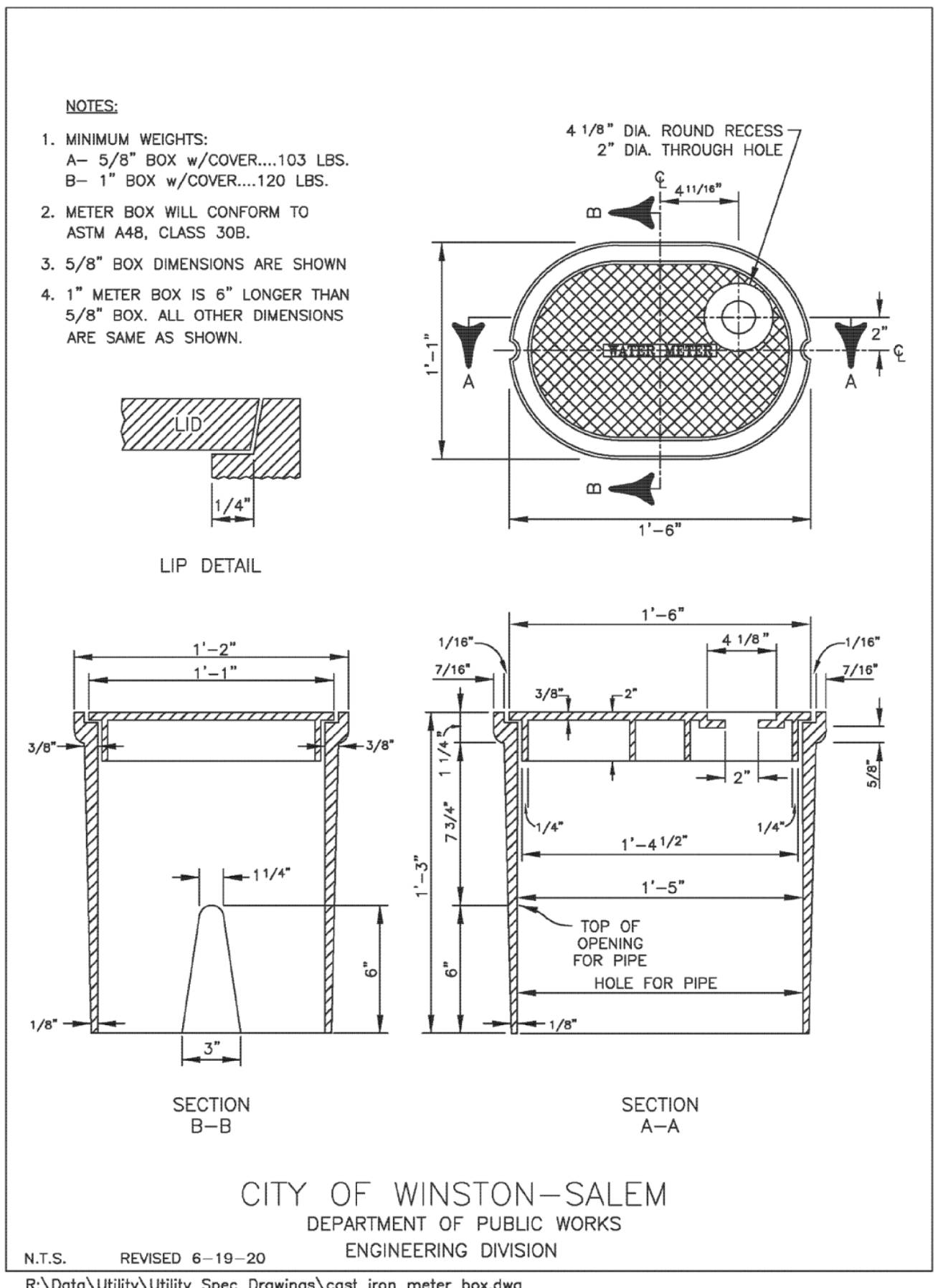
UTILITY CONSTRUCTION PLANS PREPARED BY:
DAVIS • MARTIN • POWELL
ENGINEERS & SURVEYORS

8415 OLD PLANK RD., HIGH POINT, NC 27265
PHONE: (336) 886-4821 FAX: (336) 886-4458
WWW.DMP-INC.COM LICENSE: F-0245

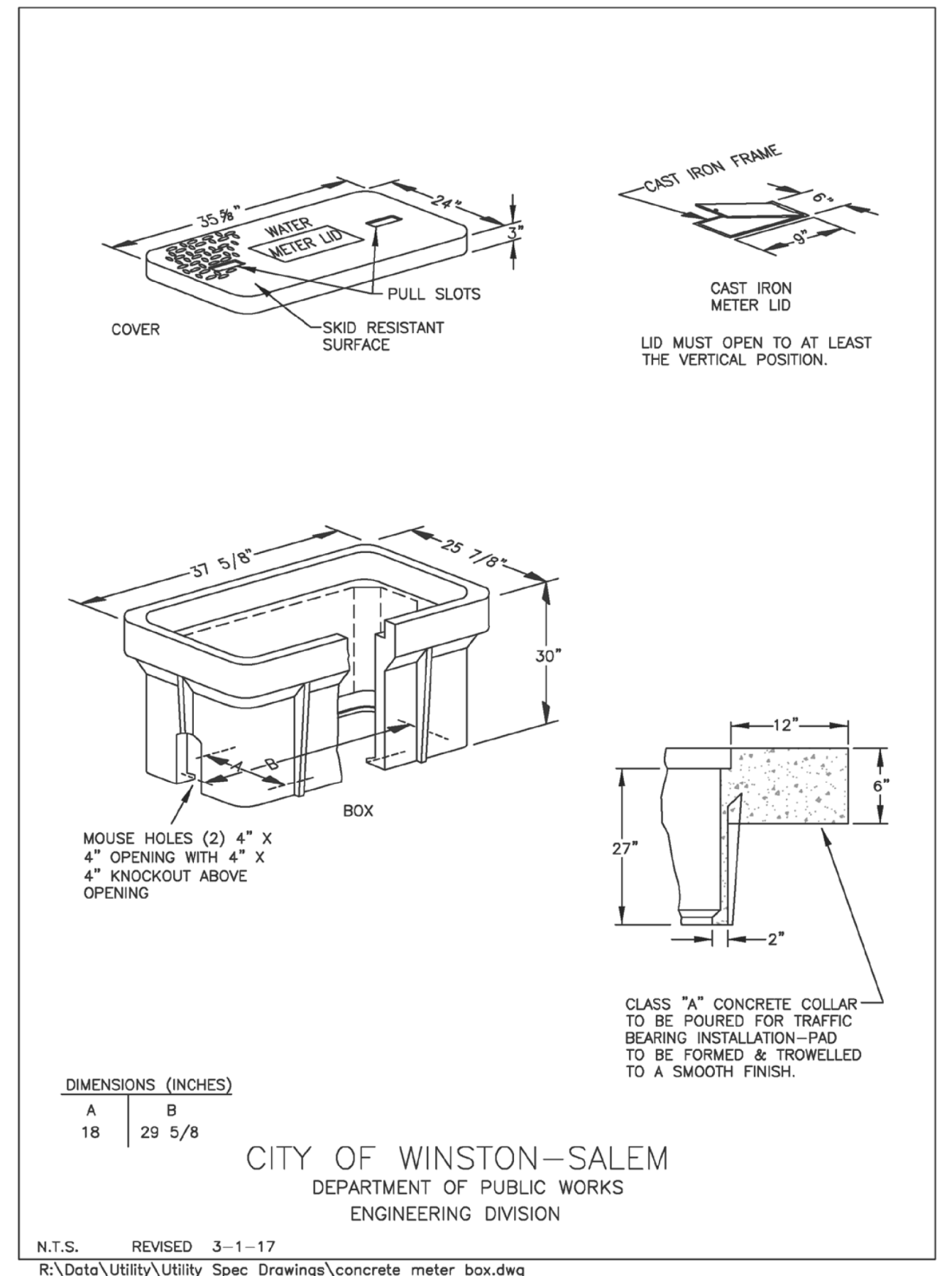
5/14/99

REVISIONS

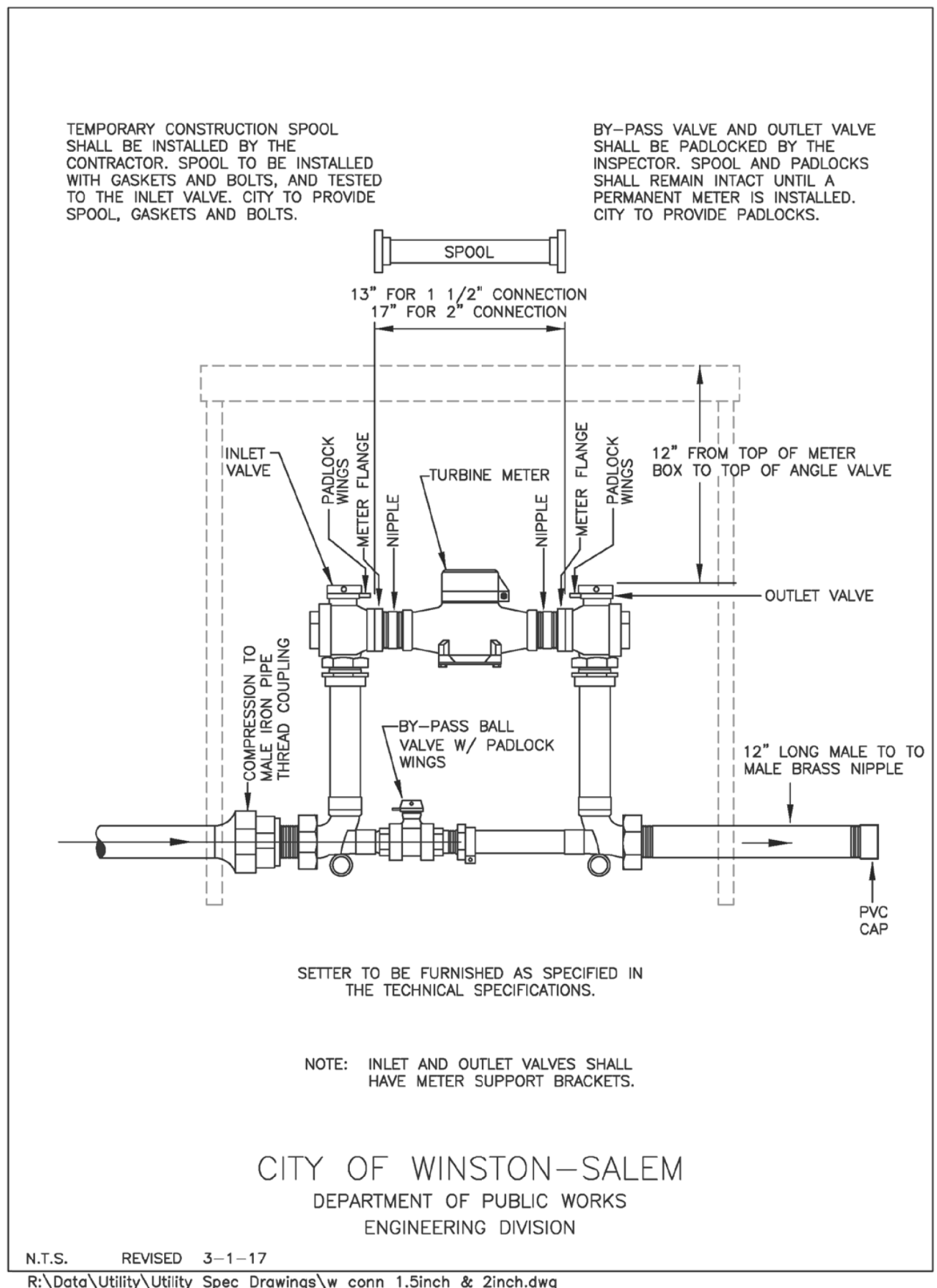
Cast Iron Meter Box for 5/8" and 1" Meters



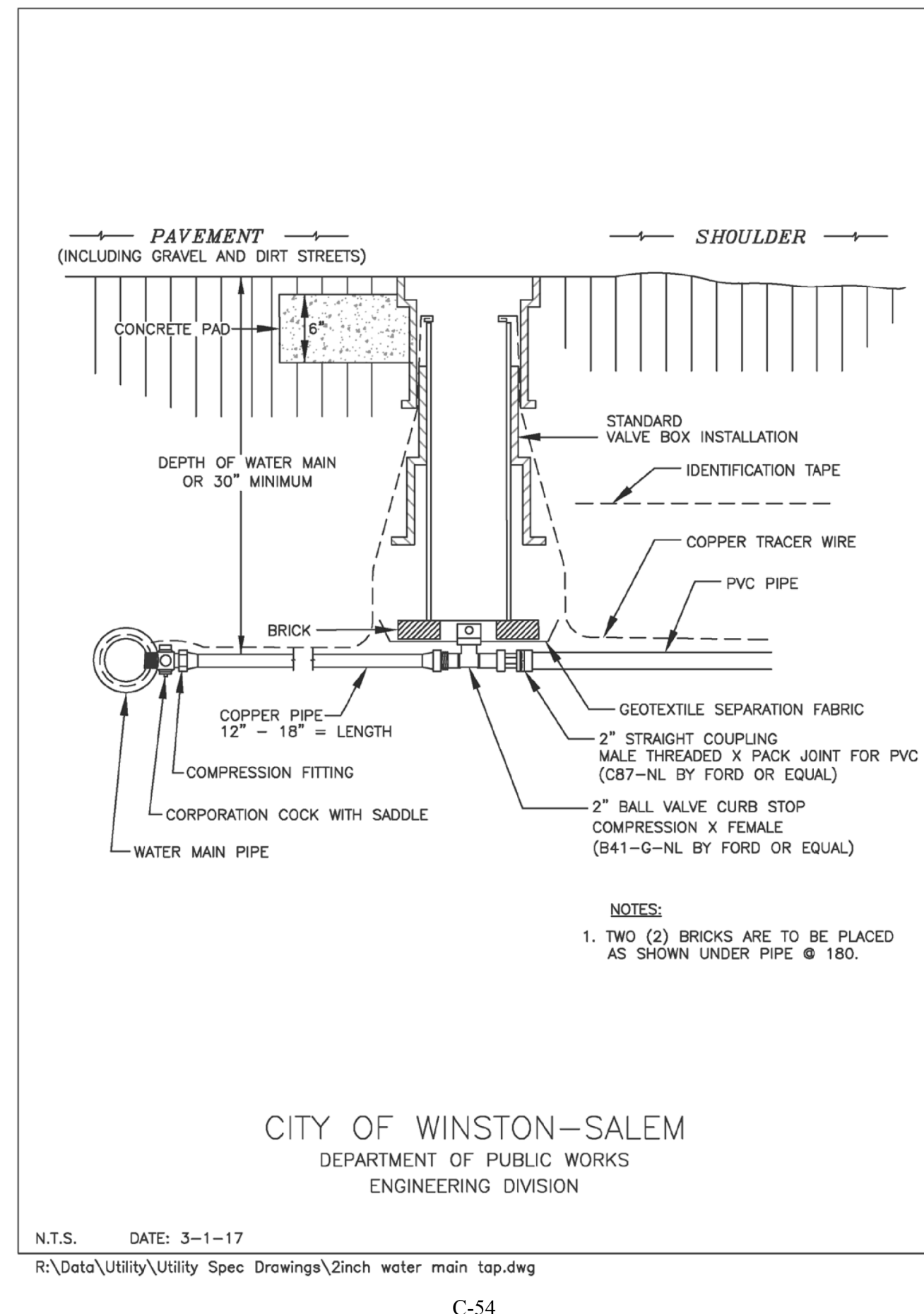
Polymer Concrete Meter Box for 1 1/2" and 2" Meters



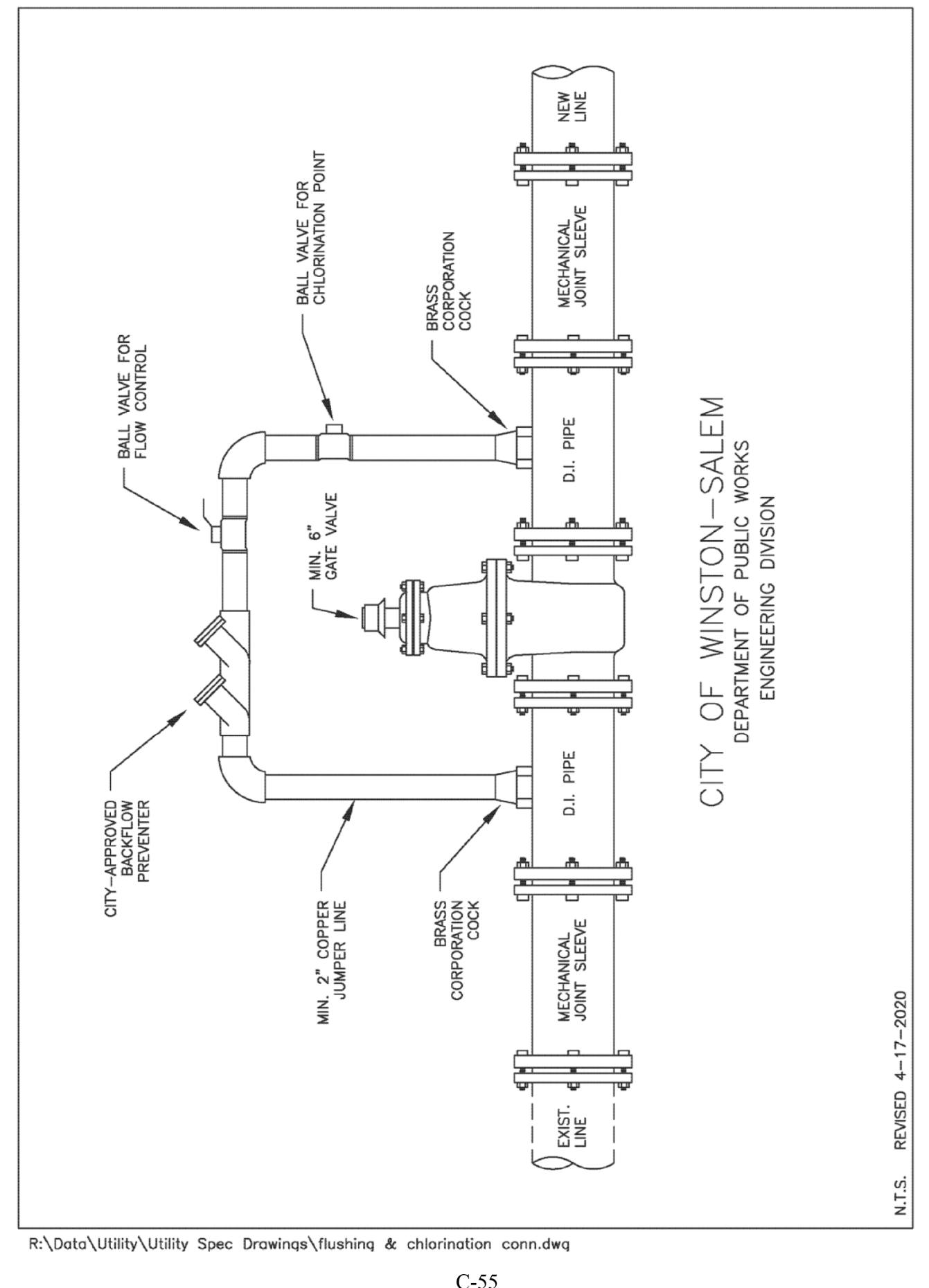
1 1/2" and 2" Water Connection



2" Water Main Tap to 6" or Larger Water Main



Flushing and Chlorination Connection for Water Main Extensions

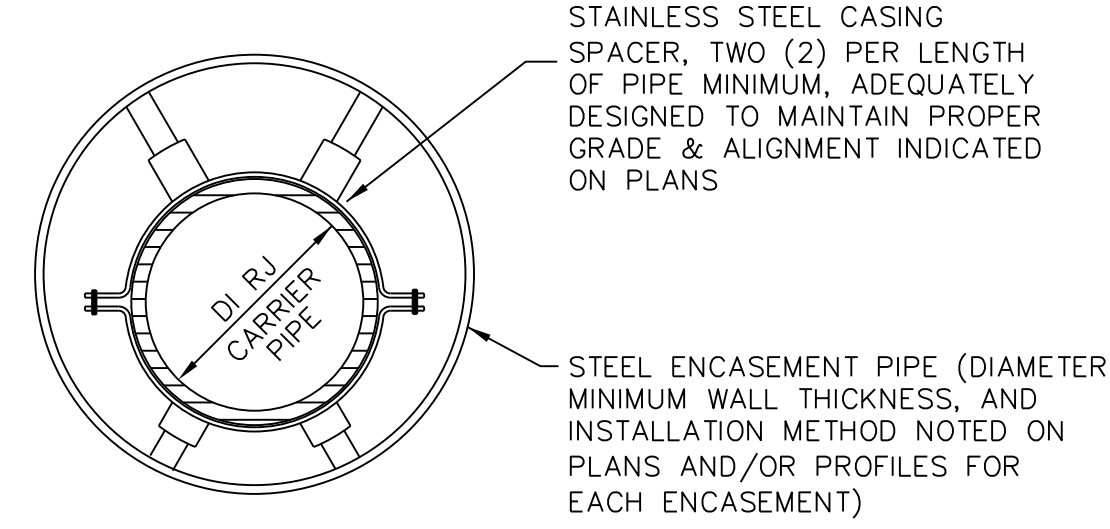
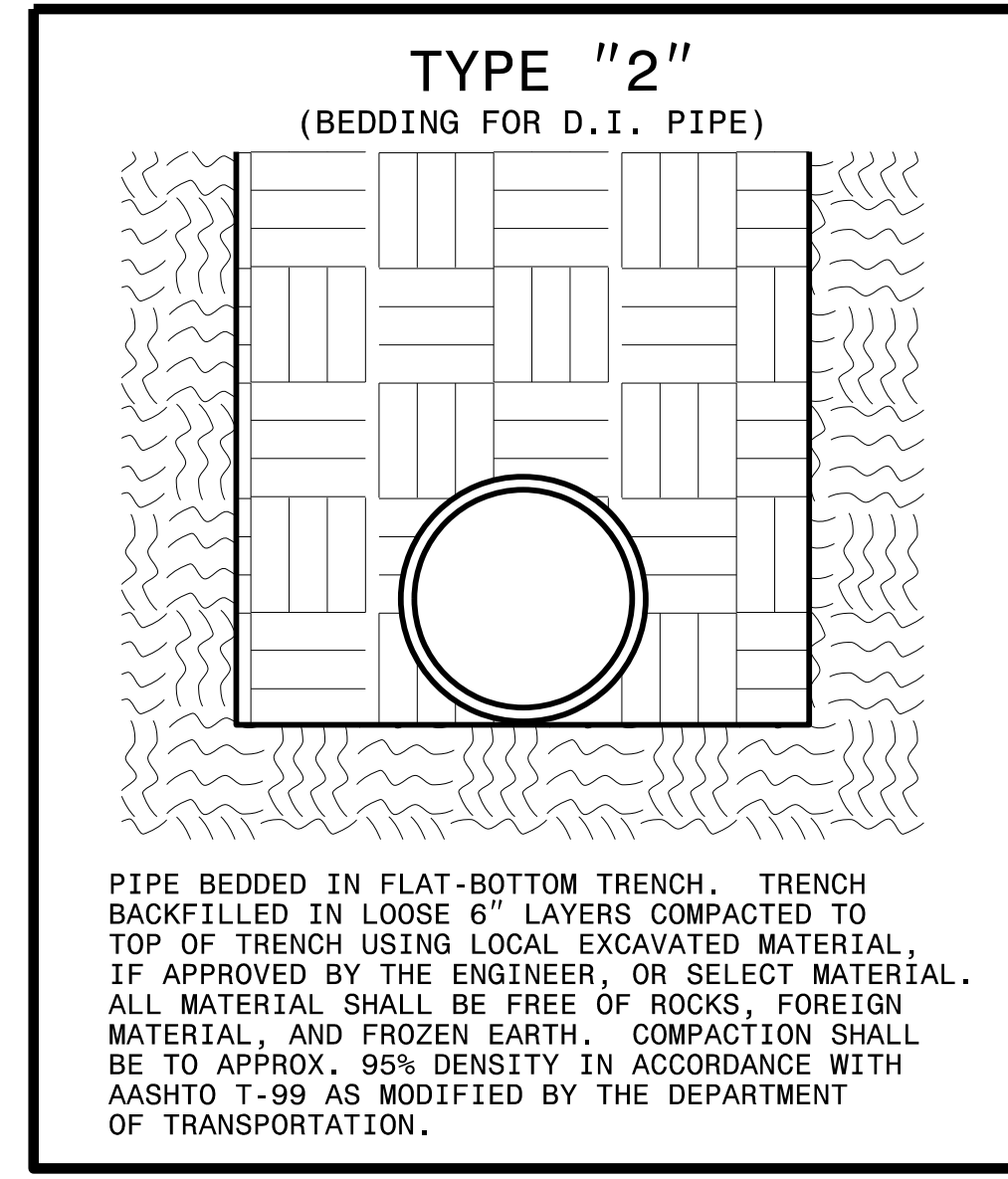


PROJECT REFERENCE NO. U-2579AB	SHEET NO. UC-3F
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION

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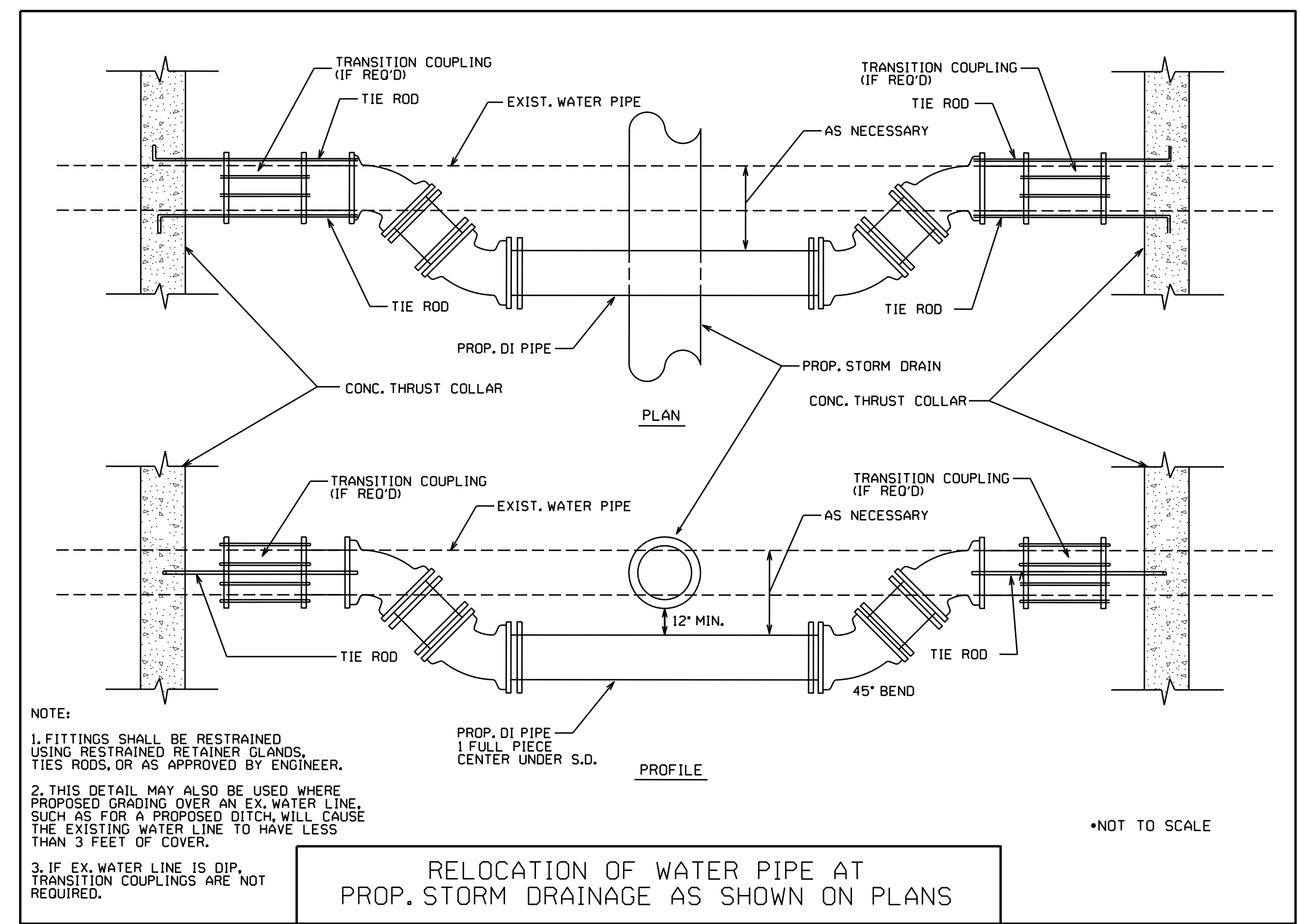


- NOTES:
1. ENCLOSE ENDS WITH BRICK MASONRY.
 2. PROVIDE 2" WEEP HOLE AT LOW END OF ENCASEMENT.
 3. SEE 2018 NCDOT STANDARD SPECIFICATIONS, DIVISION 15, SECTIONS 1540 AND 1550, FOR OTHER REQUIREMENTS.

TYPICAL ENCASEMENT PIPE SECTION
N.T.S.

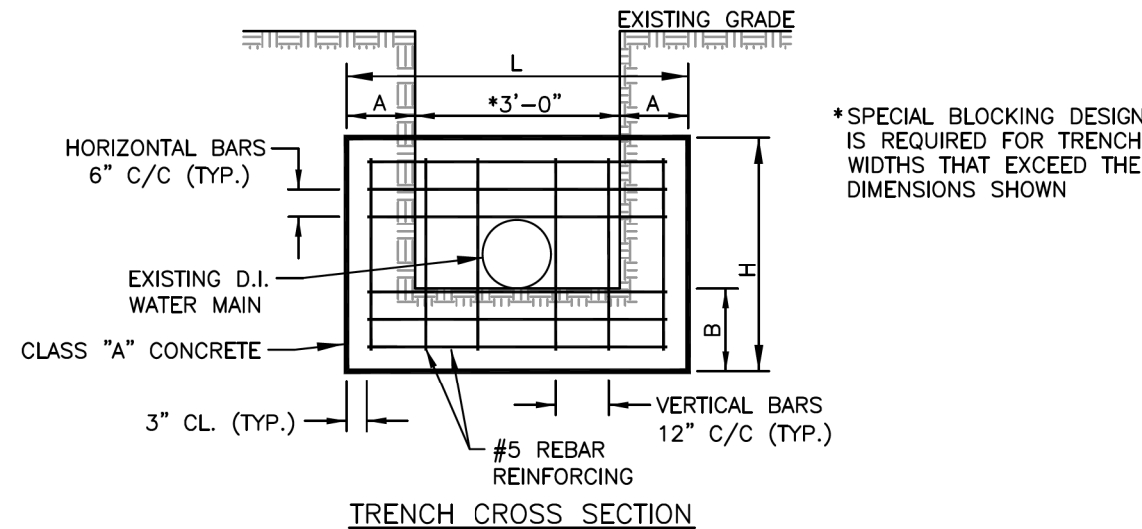
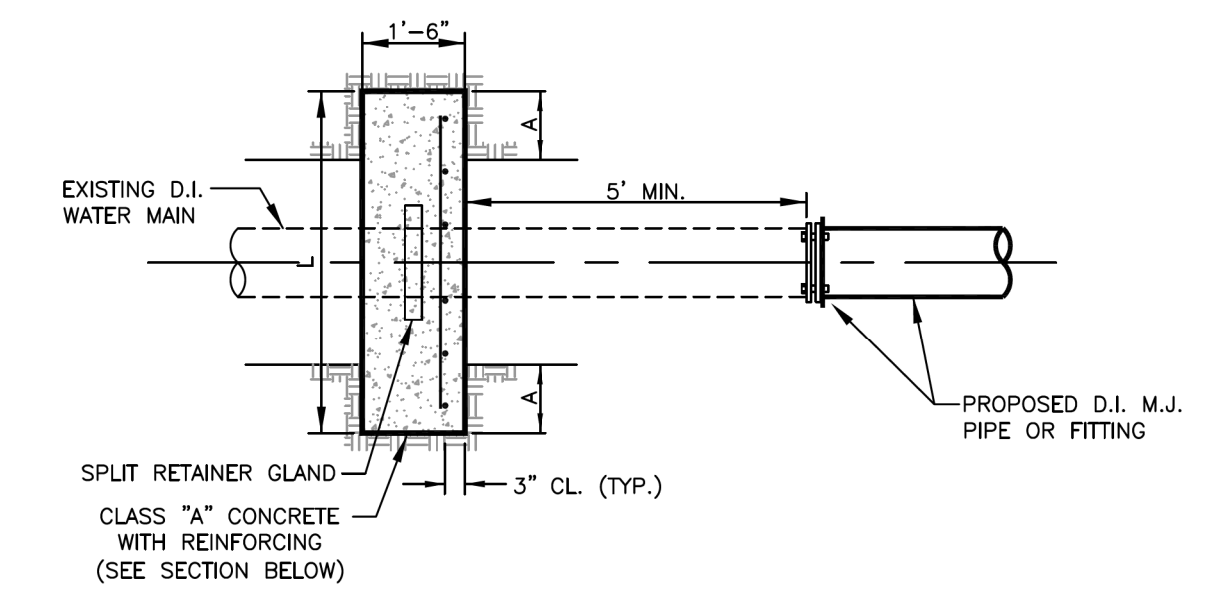
MAXIMUM TRENCH WIDTH AT TOP OF PIPE			
NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		

REVISIONS



RELOCATION OF WATER PIPE AT PROP. STORM DRAINAGE AS SHOWN ON PLANS

THRUST COLLAR FOR EXISTING PIPE



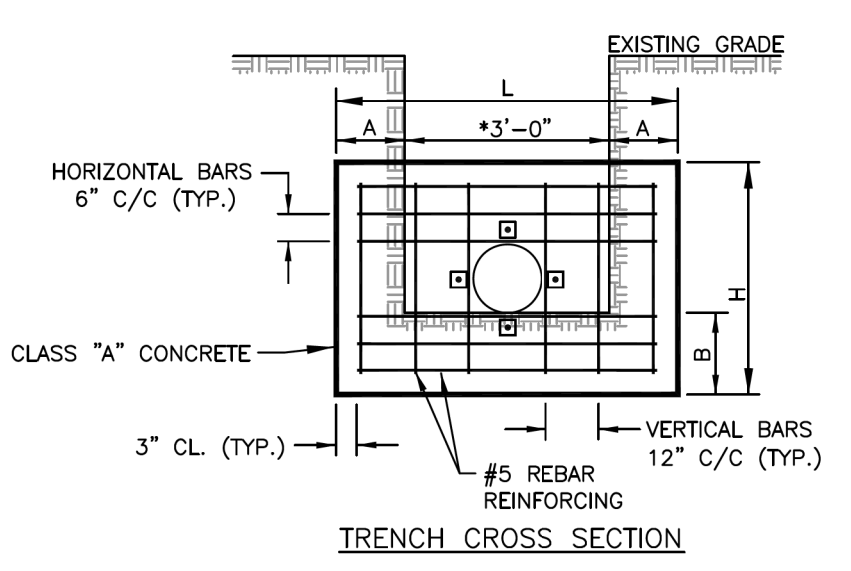
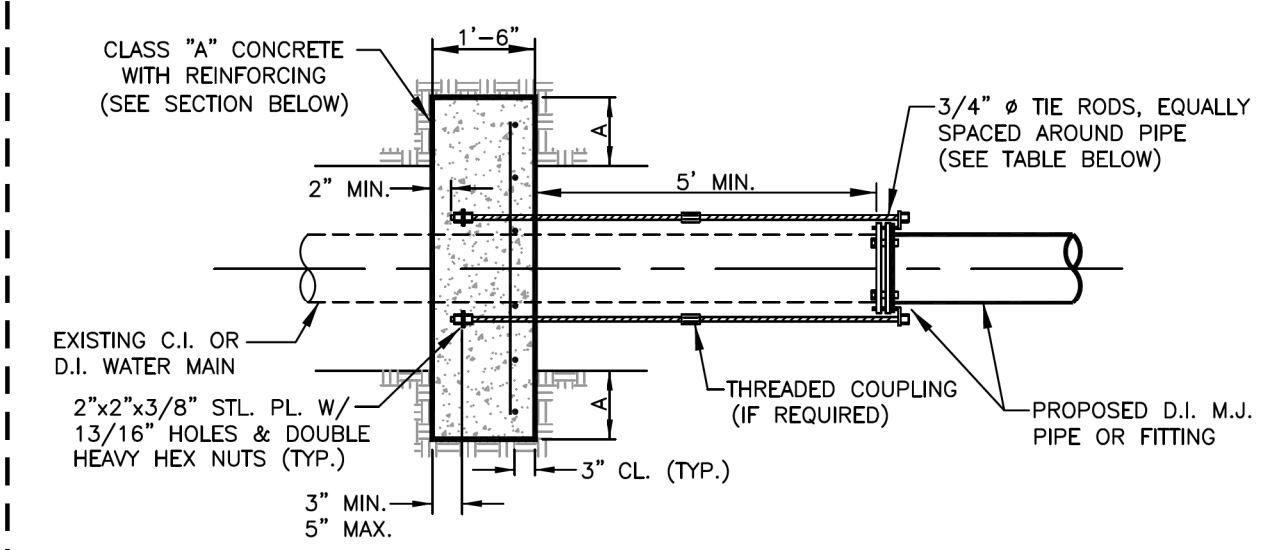
- NOTES:
1. CONCRETE SHALL BE PLACED AND CURED THREE DAYS PRIOR TO REMOVING EXISTING PIPE OR FITTINGS.
 2. INSTALL POLYETHYLENE WRAP AROUND EXISTING PIPE PRIOR TO POURING CONCRETE.
 3. MAINTAIN 2" CLEAR BETWEEN ALL REBARS AND PIPE.
 4. CONCRETE TO BE KEED IN TO UNDISTURBED SOIL ADJACENT TO TRENCH WALL AND BOTTOM.
 5. DESIGN BASED ON MIN. SOIL BEARING OF 2000 PSF. SOFT SOIL CONDITIONS MAY REQUIRE SPECIAL DESIGN.

PIPE SIZE (INCHES)	CONCRETE DIMENSIONS (FT)			
	H	L	A	B
6	2.5	5	1	1
8	2.5	5	1	1
12	4	6	1.5	1
16	4	9	3	1
20	5	10	3.5	1
24	5.5	12	4.5	1

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DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. 5-21-18
R:\Data\Utility\Utility Spec Drawings\thrust_restraint.dwg

THRUST HARNESS FOR EXISTING PIPE



PIPE SIZE (INCHES)	# OF RODS REQUIRED			
	H	L	A	B
6				2
8				2
12				4
16				6
20				8
24				12

- NOTES:
1. CONCRETE SHALL BE PLACED AND CURED THREE DAYS PRIOR TO REMOVING EXISTING PIPE OR FITTINGS.
 2. INSTALL POLYETHYLENE WRAP AROUND EXISTING PIPE PRIOR TO POURING CONCRETE.
 3. MAINTAIN 2" CLEAR BETWEEN ALL REBARS AND PIPE.
 4. CONCRETE TO BE KEED IN TO UNDISTURBED SOIL ADJACENT TO TRENCH WALL AND BOTTOM.
 5. DESIGN BASED ON MIN. SOIL BEARING OF 2000 PSF. SOFT SOIL CONDITIONS MAY REQUIRE SPECIAL DESIGN.

PIPE SIZE (INCHES)	CONCRETE DIMENSIONS (FT)			
	H	L	A	B
6	2.5	5	1	1
8	2.5	5	1	1
12	4	6	1.5	1
16	4	9	3	1
20	5	10	3.5	1
24	5.5	12	4.5	1

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. 5-21-18
R:\Data\Utility\Utility Spec Drawings\thrust_restraint.dwg

PROJECT REFERENCE NO. U2579AB	SHEET NO. UC-3G
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION

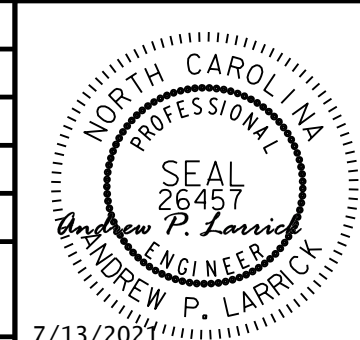
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY CONSTRUCTION PLANS PREPARED BY:

DAVIS • MARTIN • POWELL
ENGINEERS & SURVEYORS

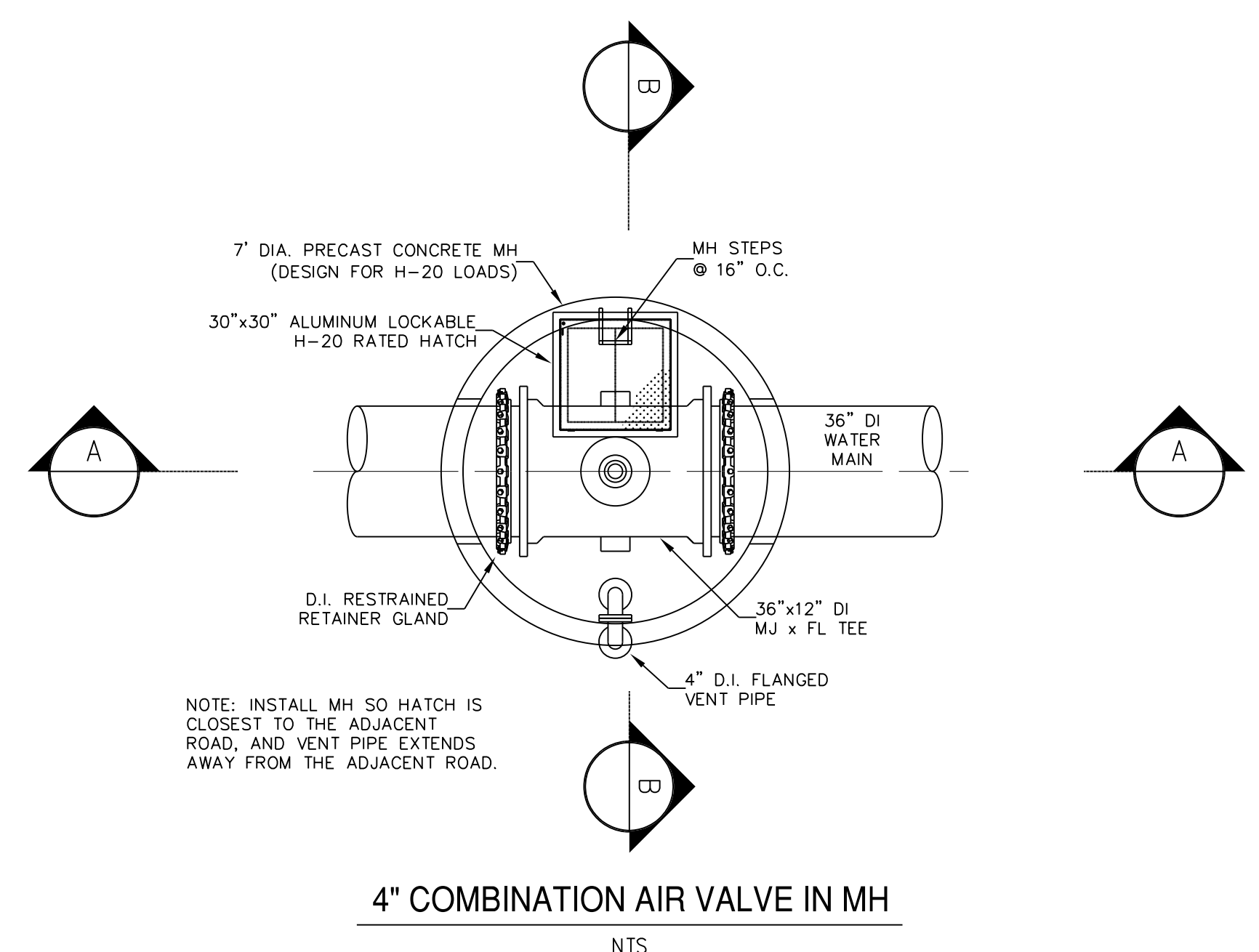
6415 OLD PLANK RD., HIGH POINT, NC 27285
PHONE: (336) 886-4821 FAX: (336) 886-4458
WWW.DMP-INC.COM LICENSE: F-0245

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	UC-3H
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	7/13/2021
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

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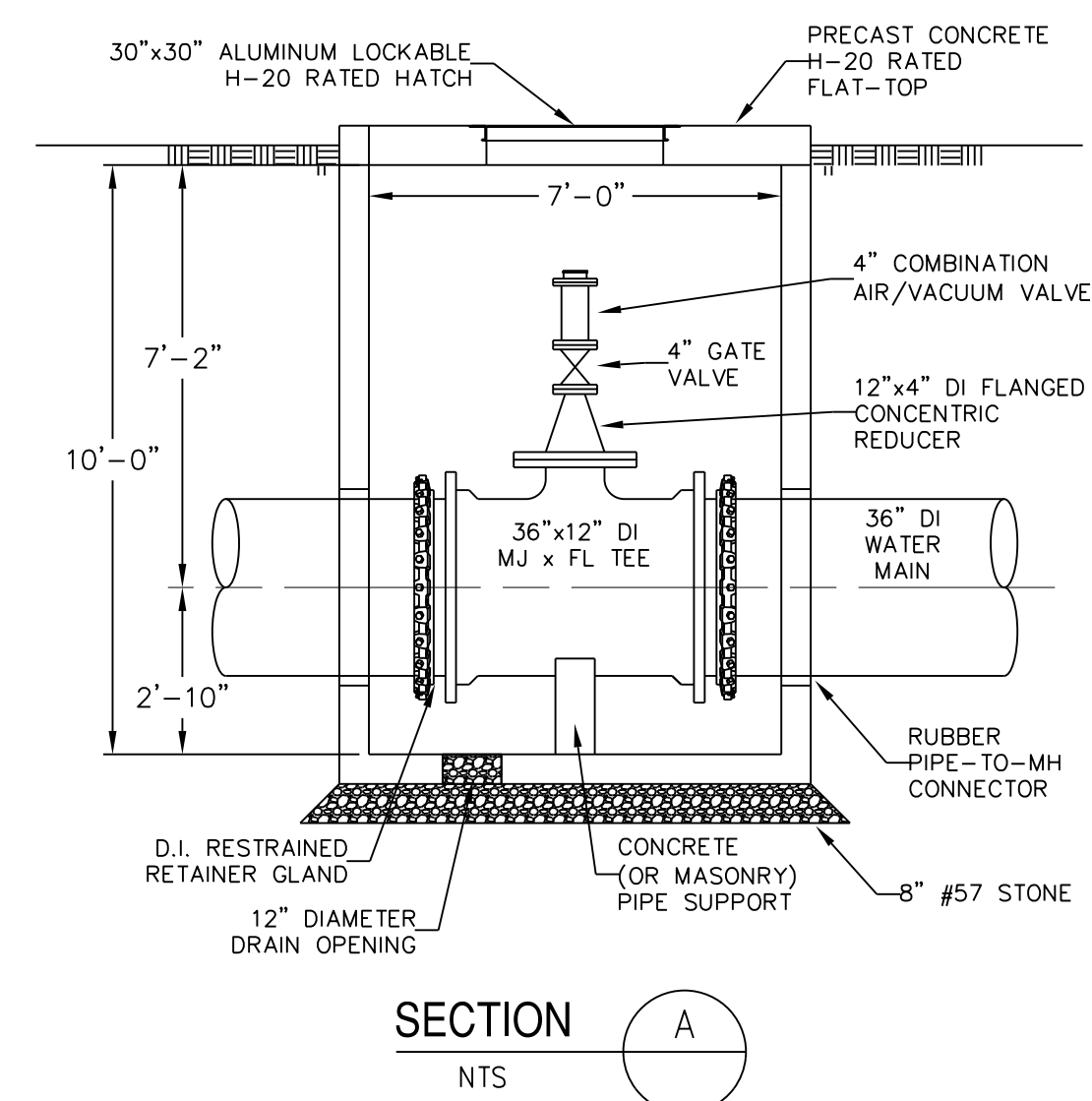
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NOTE: INSTALL MH SO HATCH IS CLOSEST TO THE ADJACENT ROAD, AND VENT PIPE EXTENDS AWAY FROM THE ADJACENT ROAD.

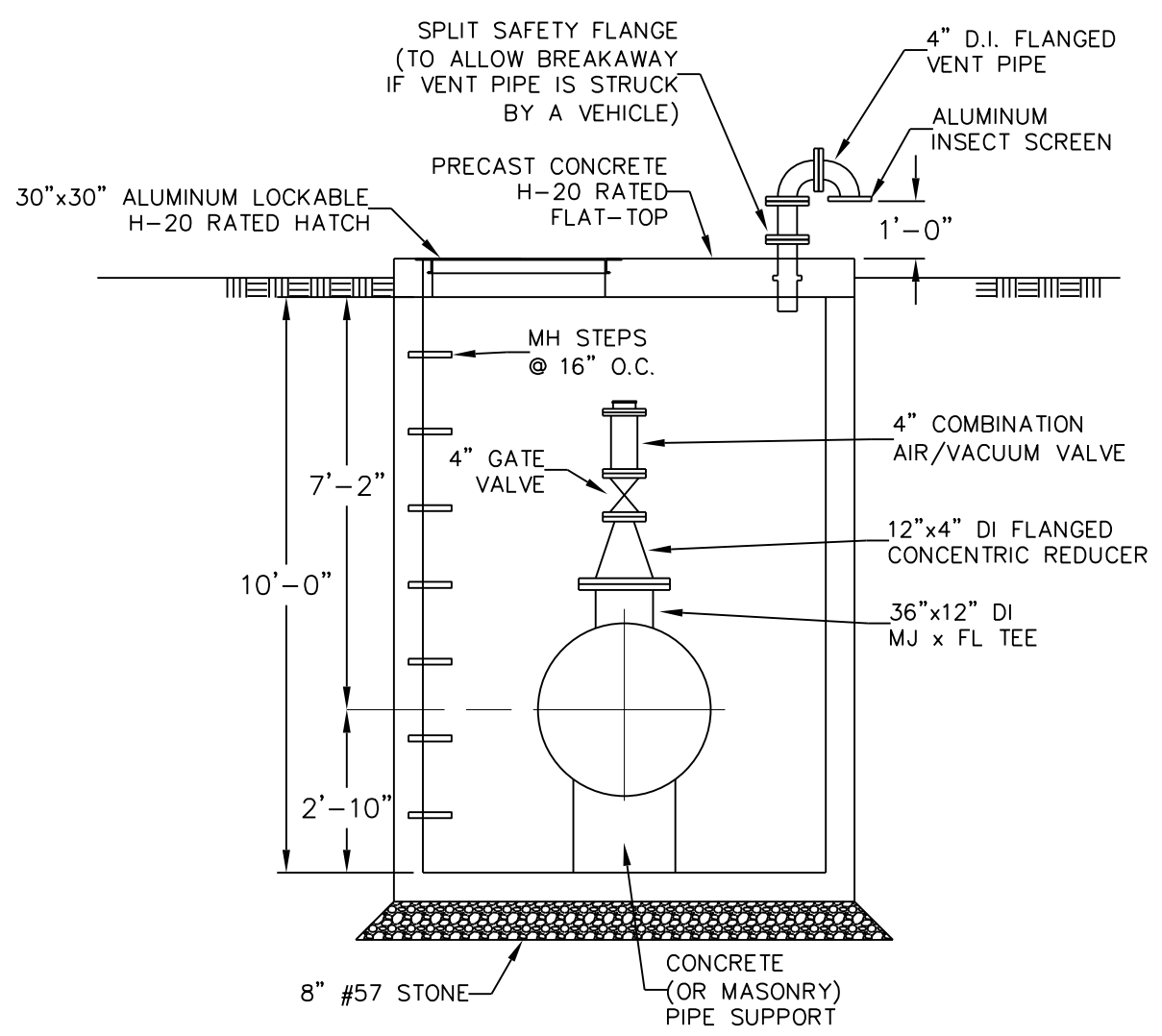
4" COMBINATION AIR VALVE IN MH

NTS



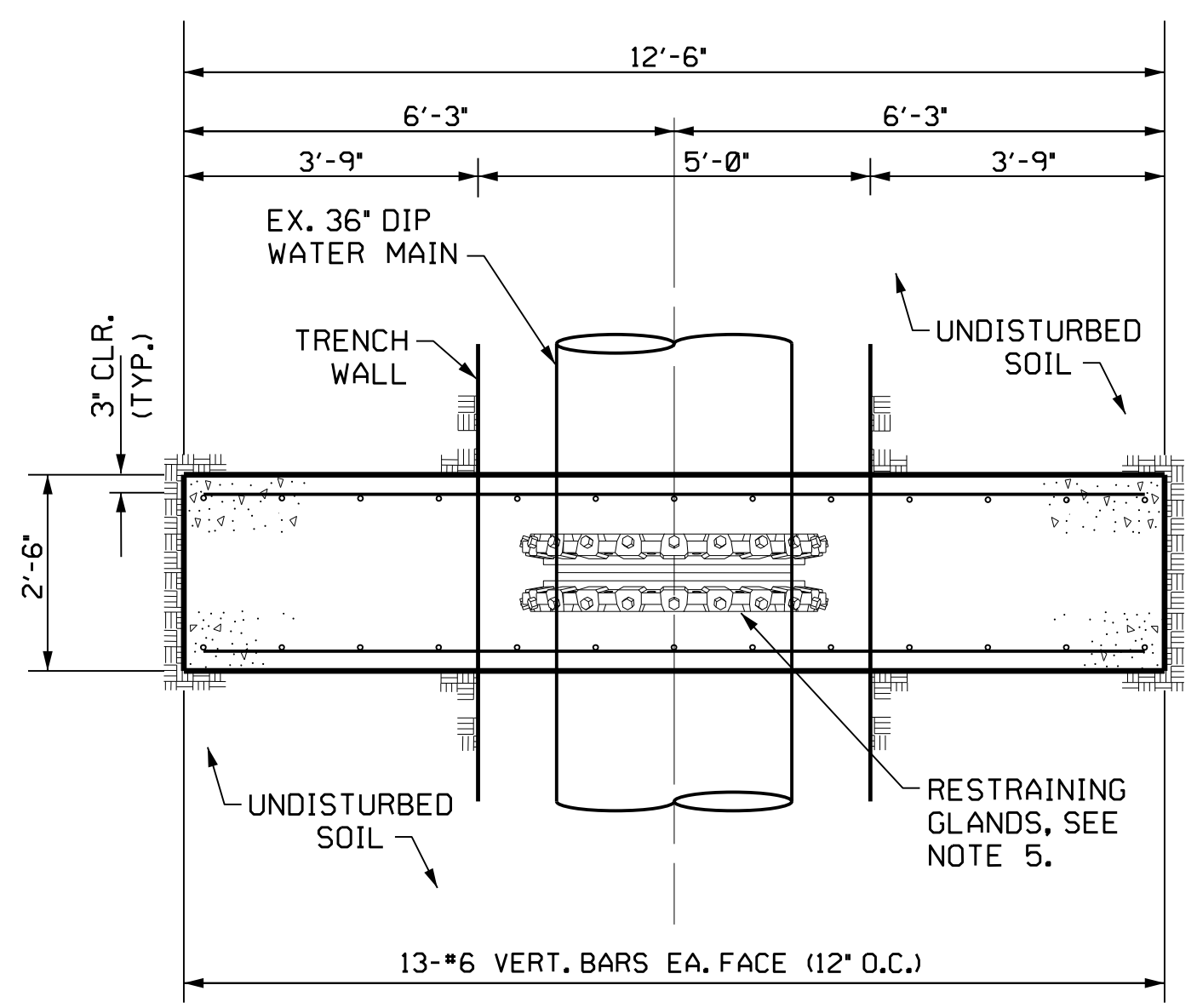
SECTION A

NTS

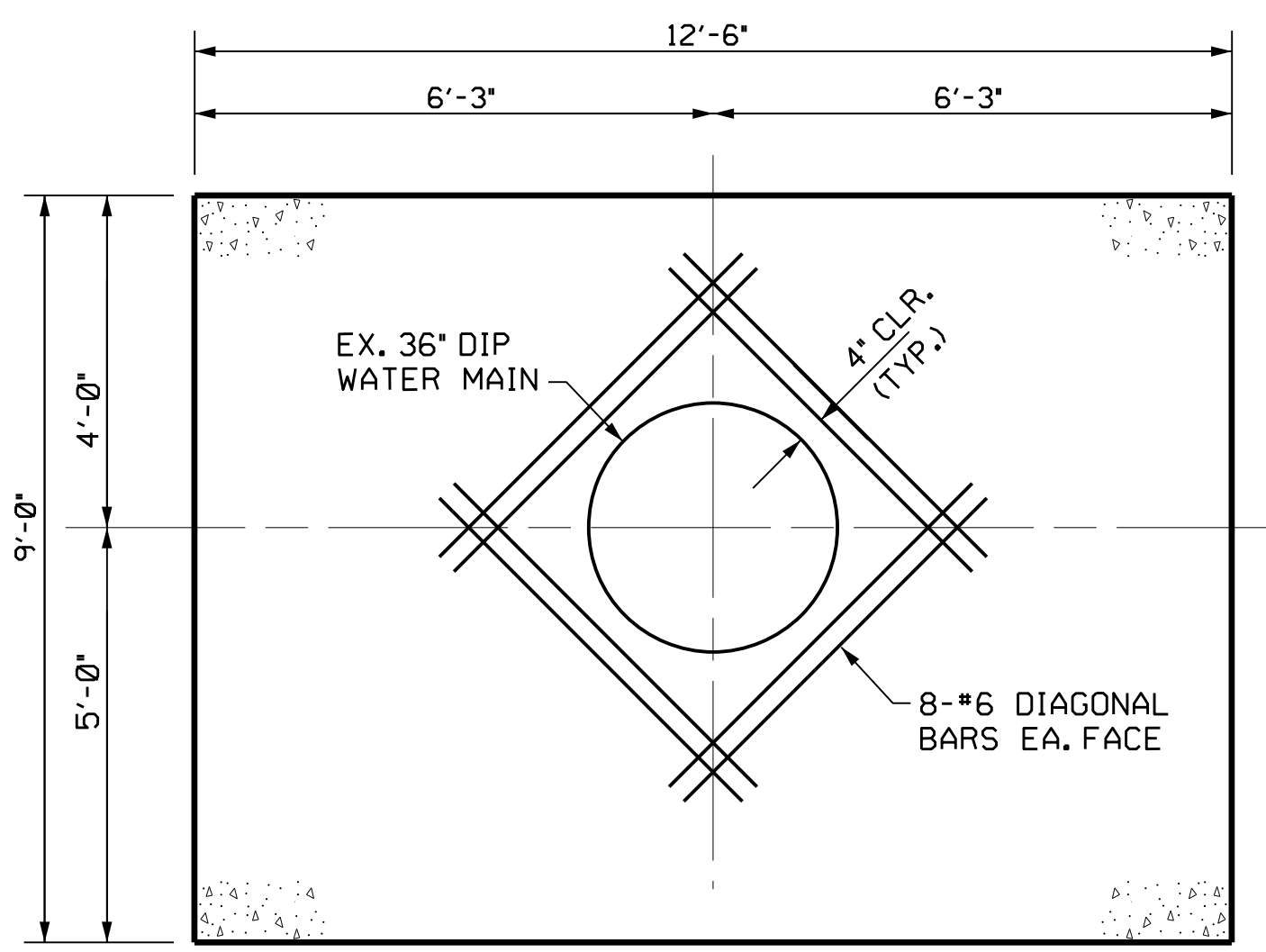


SECTION B

NTS

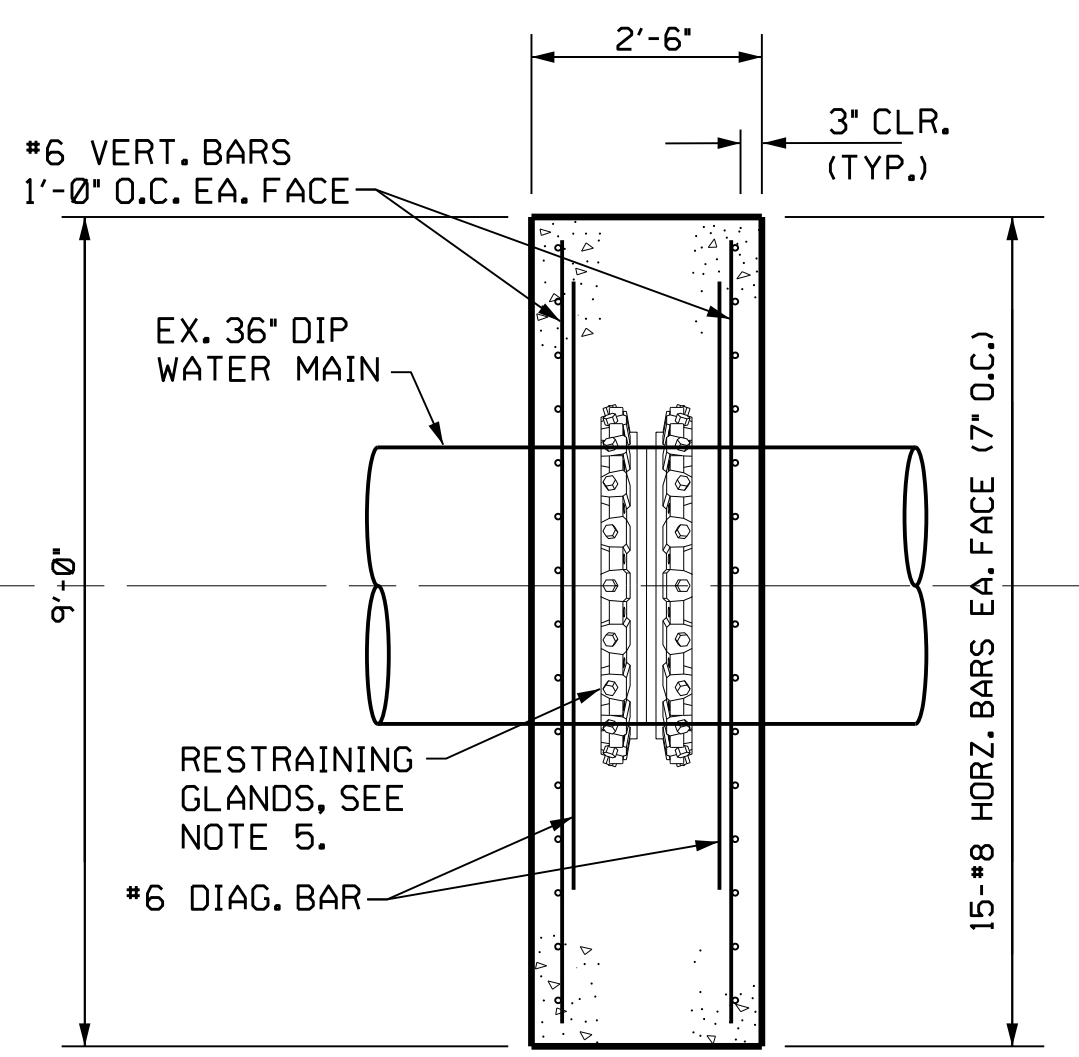


PLAN VIEW



ELEVATION VIEW

(HORIZ. & VERT. BARS NOT SHOWN FOR CLARITY)



END SECTION VIEW

NOTES:

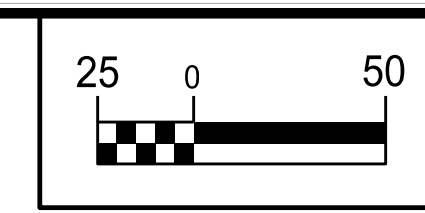
1. CONCRETE FOR THRUST COLLAR SHALL BE MIN. 3,000 PSI CLASS A, NON-AIR ENTRAINED. REINFORCING STEEL FOR THRUST WALL SHALL BE GRADE 60.
2. DESIGN IS BASED ON TEST PRESSURE OF 200 PSI WITH A SAFETY FACTOR = 1.25 AND ASSUMED SOIL BEARING CAPACITY OF 2,500 LBS/SF.
3. DIAGONAL BARS SHALL BE PLACED INSIDE VERTICAL BARS AS SHOWN. DIAGONAL BARS SHALL BE 5'-2" LONG.
4. THRUST COLLAR SHALL BE ORIENTATED APPROXIMATELY AT THE CENTER OF PIPE JOINT.
5. TWO (2) OPPOSING SPLIT RESTRAINING GLANDS BOLTED TOGETHER WITH STAINLESS STEEL BOLTS. GRIPPING WEDGES SHALL BE TORQUED TO MANUFACTURERS SPECIFICATIONS. RESTRAINING GLANDS SHALL BE WRAPPED WITH POLYETHELENE AND SECURED PRIOR TO POURING CONCRETE.
6. ANY PROPOSED MODIFICATIONS TO THIS DETAIL, BASED ON THE FIELD CONDITIONS, MUST BE APPROVED BY THE ENGINEER OR THE CITY'S FIELD INSPECTOR.

CONCRETE THRUST COLLAR FOR 36" DIAMETER D.I. WATER PIPE

(NOT TO SCALE)

REVISIONS

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NAD 83/95

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	UC-4
DESIGNED BY: DMP	
DRAWN BY:	
CHECKED BY: DMP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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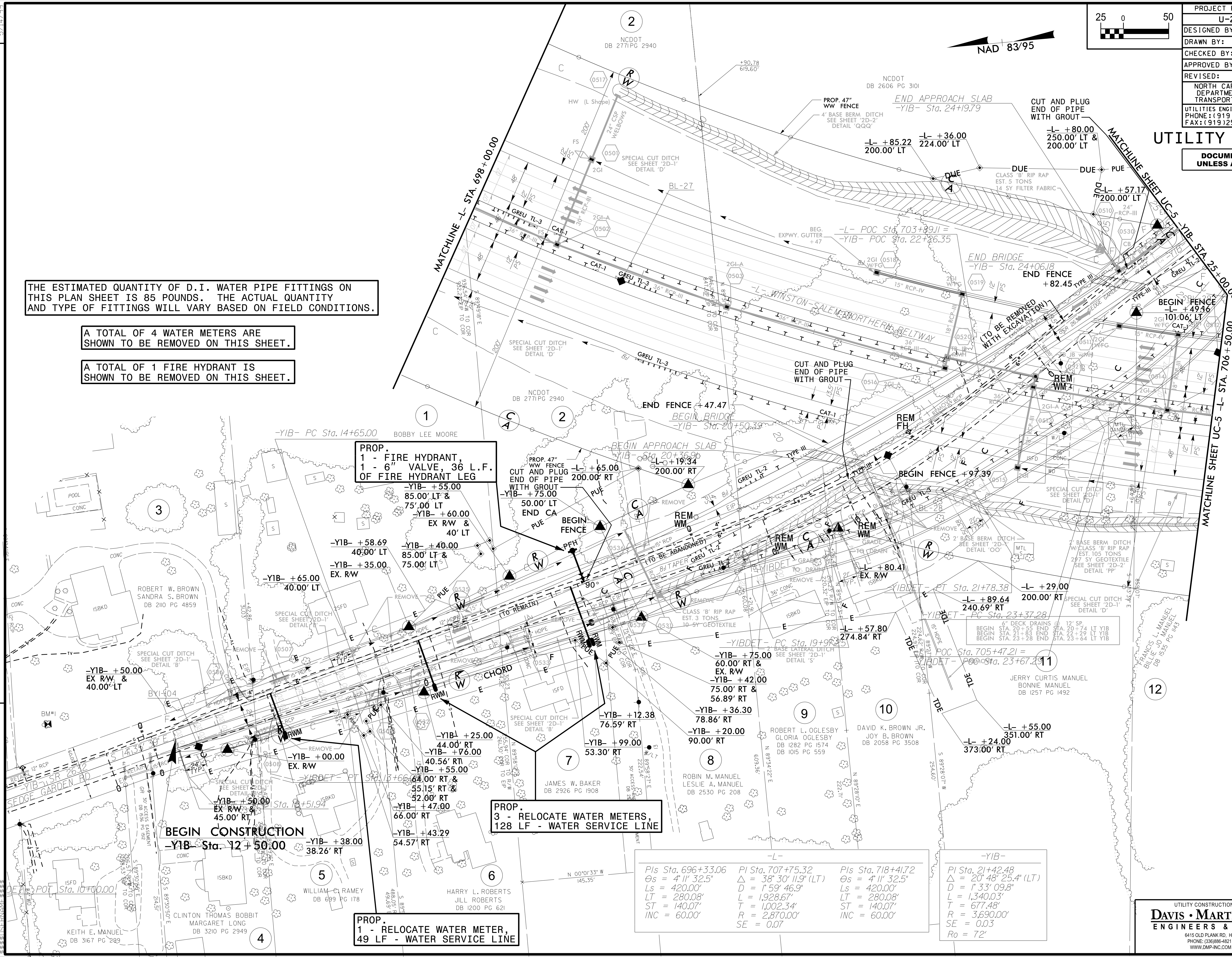
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THE ESTIMATED QUANTITY OF D.I. WATER PIPE FITTINGS ON THIS PLAN SHEET IS 85 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

A TOTAL OF 4 WATER METERS ARE SHOWN TO BE REMOVED ON THIS SHEET.

A TOTAL OF 1 FIRE HYDRANT IS SHOWN TO BE REMOVED ON THIS SHEET.

REVISIONS



PROP. 1 - FIRE HYDRANT, 1 - 6" VALVE, 36 L.F. OF FIRE HYDRANT LEG
 -YIB- +55.00
 85.00' LT & 75.00' LT
 -YIB- +60.00 EX RW & 40' LT

PROP. 3 - RELOCATE WATER METERS, 128 LF - WATER SERVICE LINE

PROP. 1 - RELOCATE WATER METER, 49 LF - WATER SERVICE LINE

Pls Sta. 696+33.06 $\Theta_s = 4' 11" 32.5"$ $L_s = 420.00'$ $LT = 280.08'$ $ST = 140.07'$ $INC = 60.00'$	Pls Sta. 707+75.32 $\Delta = 38' 30" 11.9" (LT)$ $D = 1' 59" 46.9"$ $L = 1,928.67'$ $T = 1,002.34'$ $R = 2,870.00'$ $SE = 0.07$	Pls Sta. 718+41.72 $\Theta_s = 4' 11" 32.5"$ $L_s = 420.00'$ $LT = 280.08'$ $ST = 140.07'$ $INC = 60.00'$	-YIB- Pls Sta. 21+42.48 $\Delta = 20' 48" 25.4" (LT)$ $D = 1' 33" 09.8"$ $LT = 1,340.03'$ $T = 677.48'$ $R = 3,690.00'$ $SE = 0.03$ $Ro = 72'$
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