

**This electronic collection of documents is provided  
for the convenience of the user  
and is Not a Certified Document –**

**The documents contained herein were originally issued  
and sealed by the individuals whose names and license  
numbers appear on each page, on the dates appearing  
with their signature on that page.**

**This file or an individual page  
shall not be considered a certified document.**

09\_08/2019

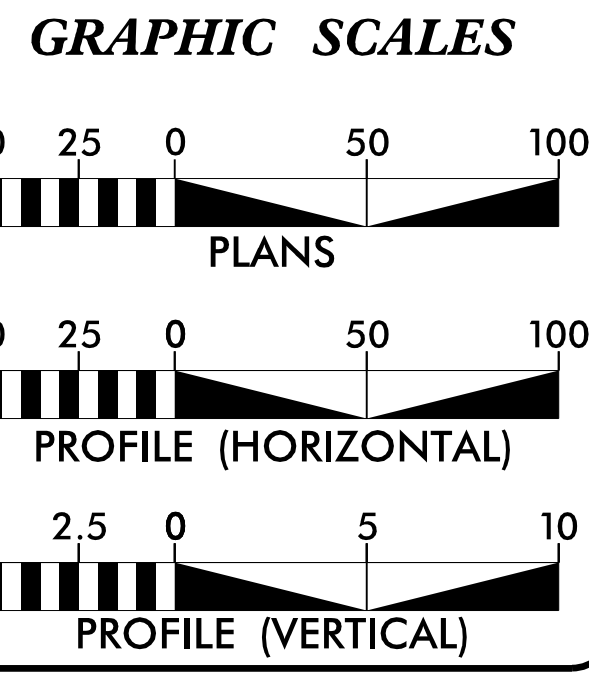
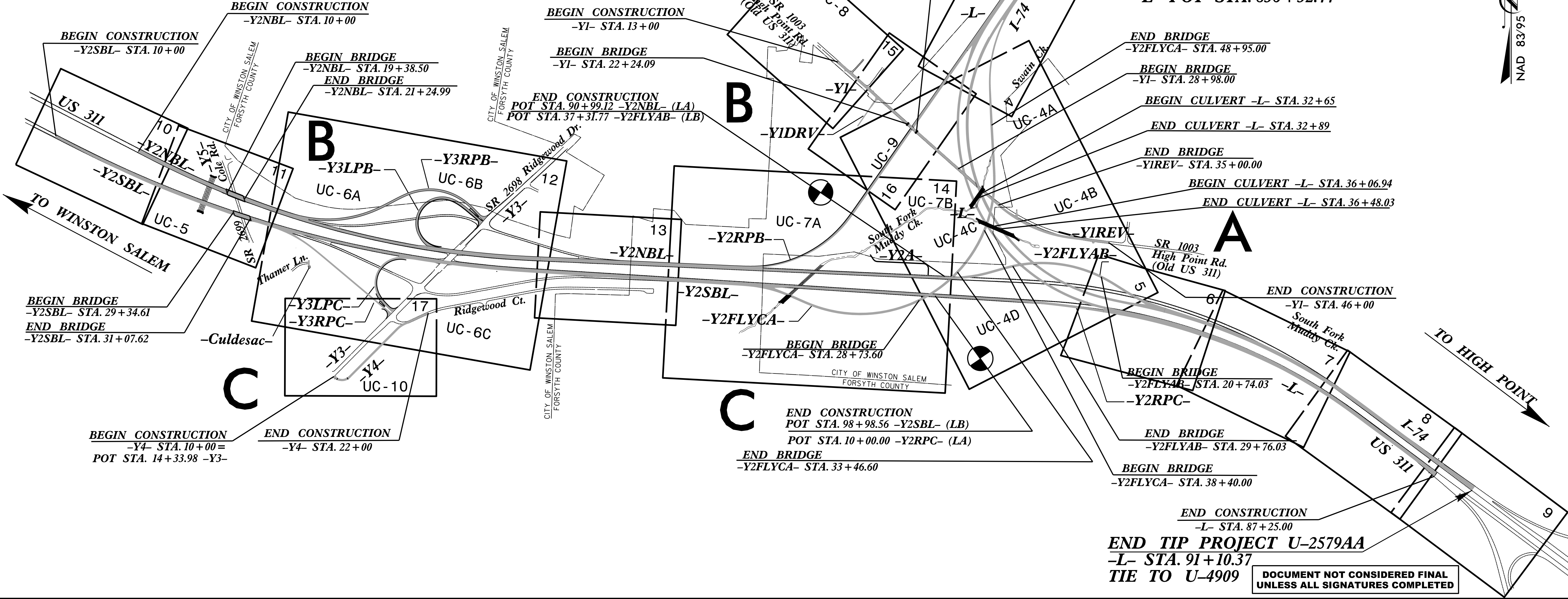
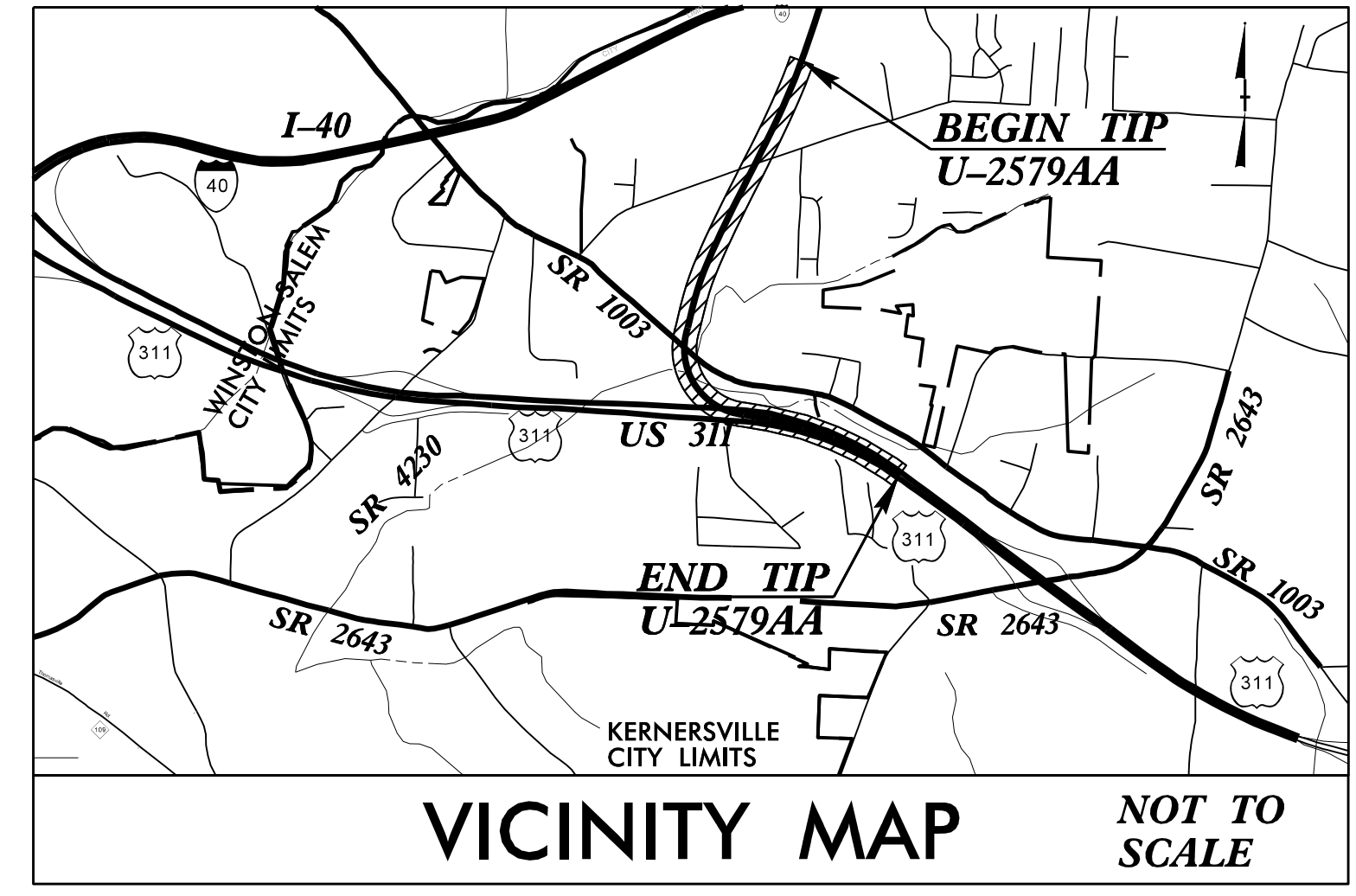
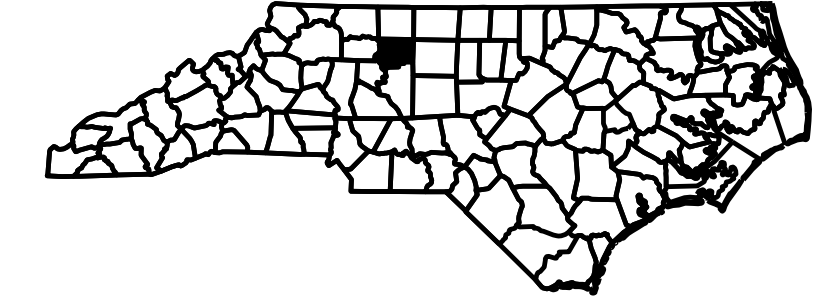
TIP PROJECT: U-2579AA

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

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

# UTILITY CONSTRUCTION PLANS FORSYTH COUNTY

LOCATION: WINSTON-SALEM NORTHERN BELTWAY EASTERN SECTION  
(FUTURE I-74) FROM US 311 TO I-40  
TYPE OF WORK: UTILITY CONSTRUCTION



INDEX OF SHEETS	
SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A THRU UC-3G	DETAILS
UC-4 THRU UC-10	UTILITY CONSTRUCTION SHEETS
UC-11 THRU UC-14	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 27265  
PHONE: (336)886-4821 FAX: (336)886-4458  
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

**DIVISION OF HIGHWAYS UTILITIES UNIT**  
1555 MAIL SERVICE CENTER  
RALEIGH, NC 27699-1555  
PHONE (919) 707-6690  
FAX (919) 250-4151

**Amy York** CENTRAL UTILITIES MANAGER  
**Ali Kouchehi, P.E.** REGIONAL UTILITIES ENGINEER  
**Jon Loughry** SENIOR UTILITIES ENGINEER  
**Dayton Martin** REGIONAL UTILITY COORDINATOR  
**Tanga Sampson** SENIOR UTILITY COORDINATOR

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

\$\$\$\$\$ SYSTEM \$\$\$\$\$\$  
\$\$\$\$\$ DGN \$\$\$\$\$\$  
\$\$\$\$\$ 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	

NOTE  
PAY ITEM

### EXISTING UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Utility Pole	
Utility Pole with Base	
H-Frame Pole	
Power Transmission Line Tower	
Water Manhole	
Power Manhole	
Telephone Manhole	
Sanitary Sewer Manhole	
Hand Hole for Cable	
Power Transformer	
Telephone Pedestal	
CATV Pedestal	
Gas Valve	
Gas Meter	
Located Miscellaneous Utility Object	
Abandoned According to Utility Records	
End of Information	

*Underground Power Line	
*Underground Telephone Cable	
*Underground Telephone Conduit	
*Underground Fiber Optics Telephone Cable	
*Underground TV Cable	
*Underground Fiber Optics TV Cable	
*Underground Gas Pipeline	
Aboveground Gas Pipeline	
*Underground Water Line	
Aboveground Water Line	
*Underground Gravity Sanitary Sewer Line	
Aboveground Gravity Sanitary Sewer Line	
*Underground SS Forced Main Line	
Underground Unknown Utility Line	
SUE Test Hole	
Water Meter	
Water Valve	
Fire Hydrant	
Sanitary Sewer Cleanout	

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

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

5/14/2022

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 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.
6. 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.

7. 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.
8. 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.

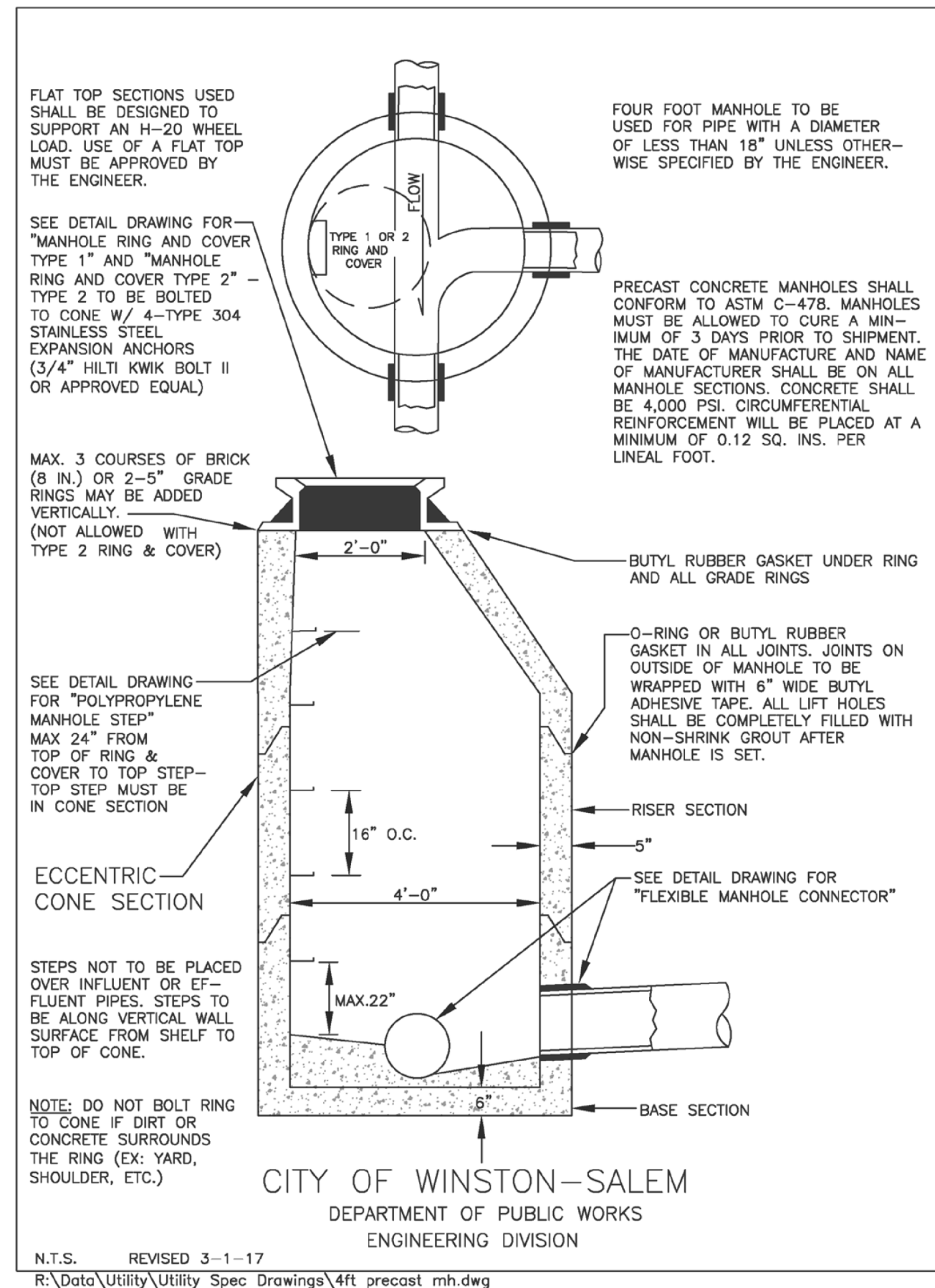
PROJECT REFERENCE NO. U-2579AA	SHEET NO. UC-3
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	5/2/2022
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

## UTILITY CONSTRUCTION

**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

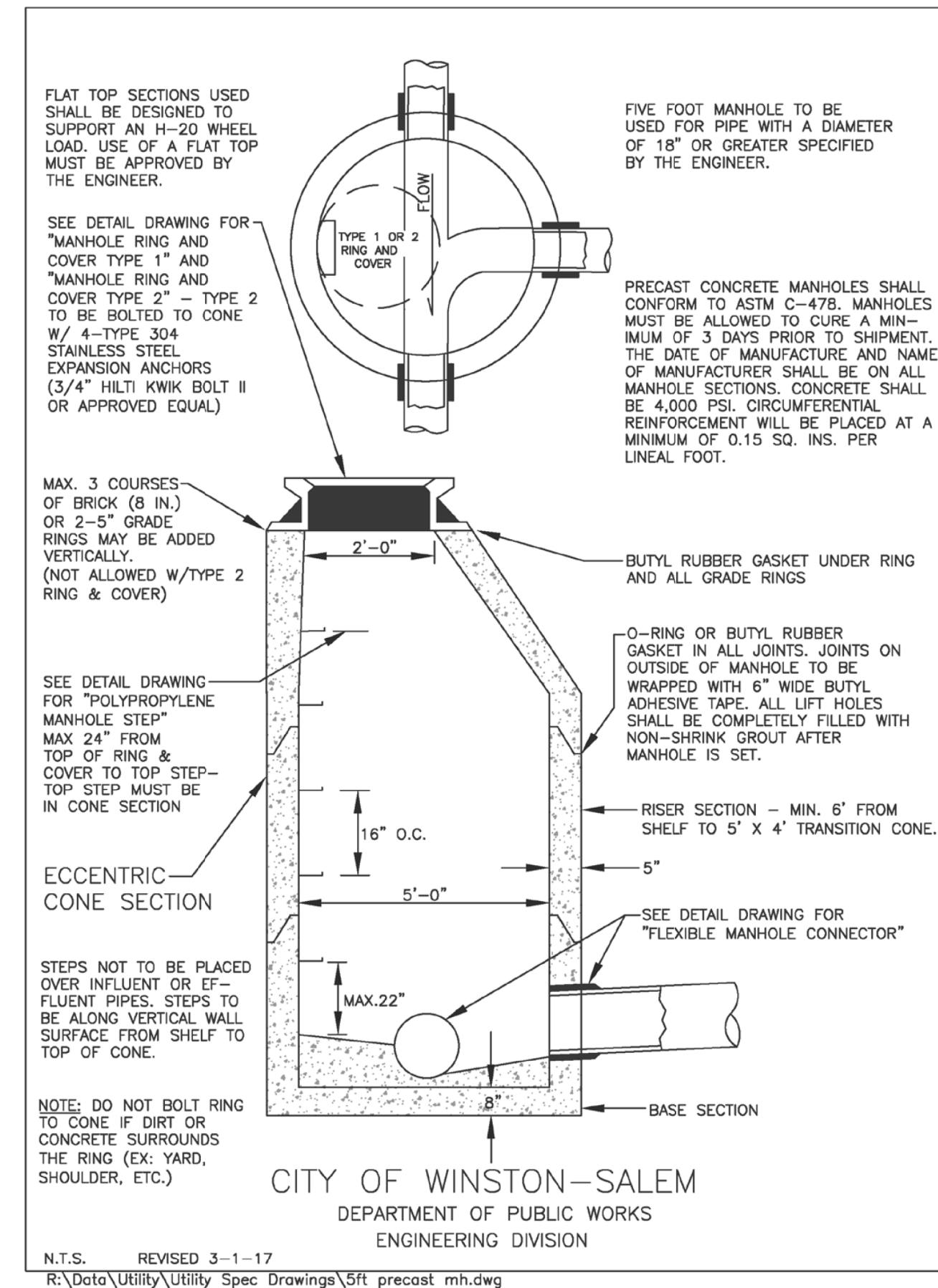
5/14/99

4' Precast Reinforced Concrete Manhole



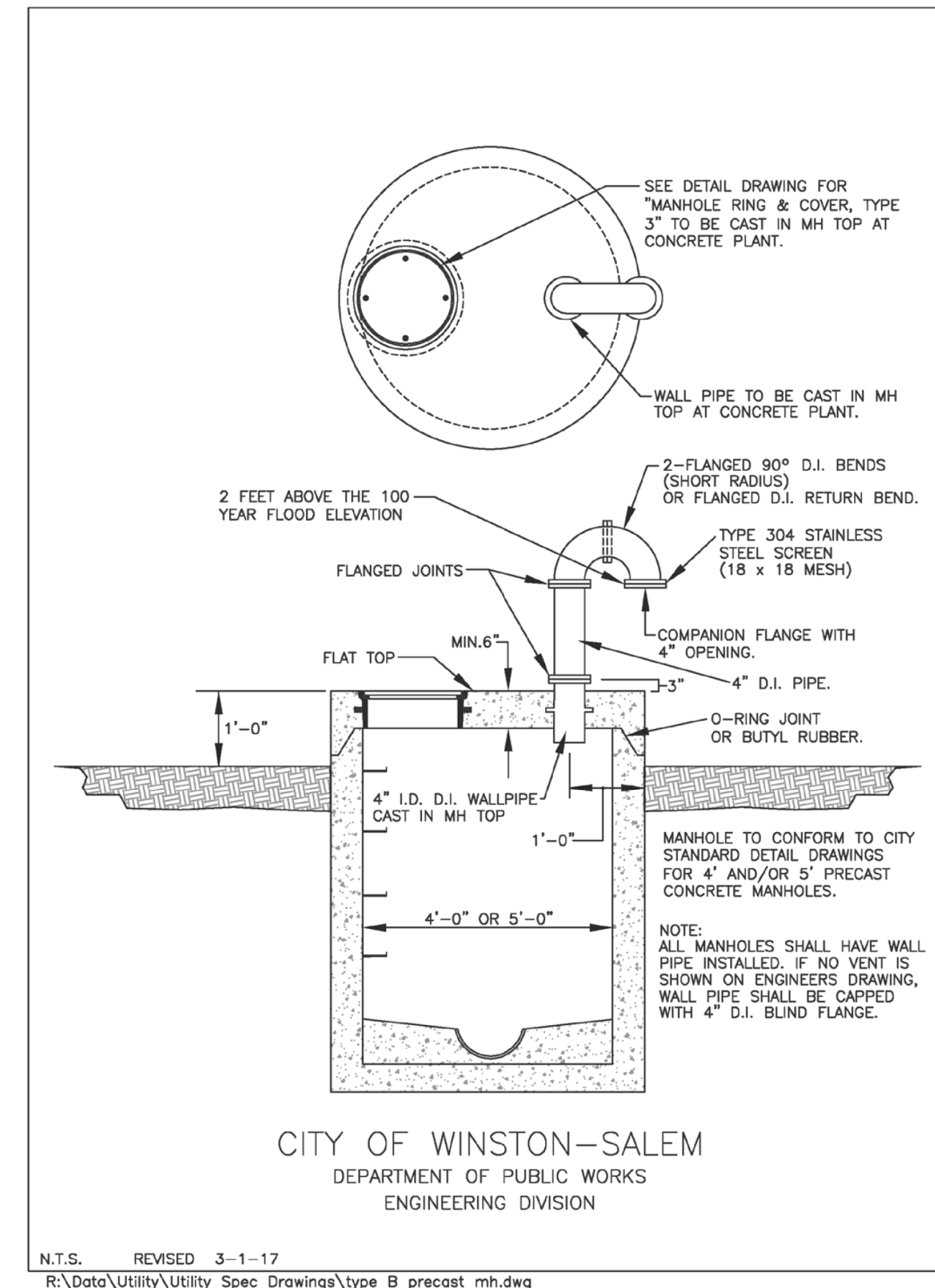
C-10

5' Precast Reinforced Concrete Manhole



C-11

Type "B" 4' and 5' Precast Reinforced Concrete Manhole



C-12

PROJECT REFERENCE NO.	U-2579AA
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	

UTILITY CONSTRUCTION DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

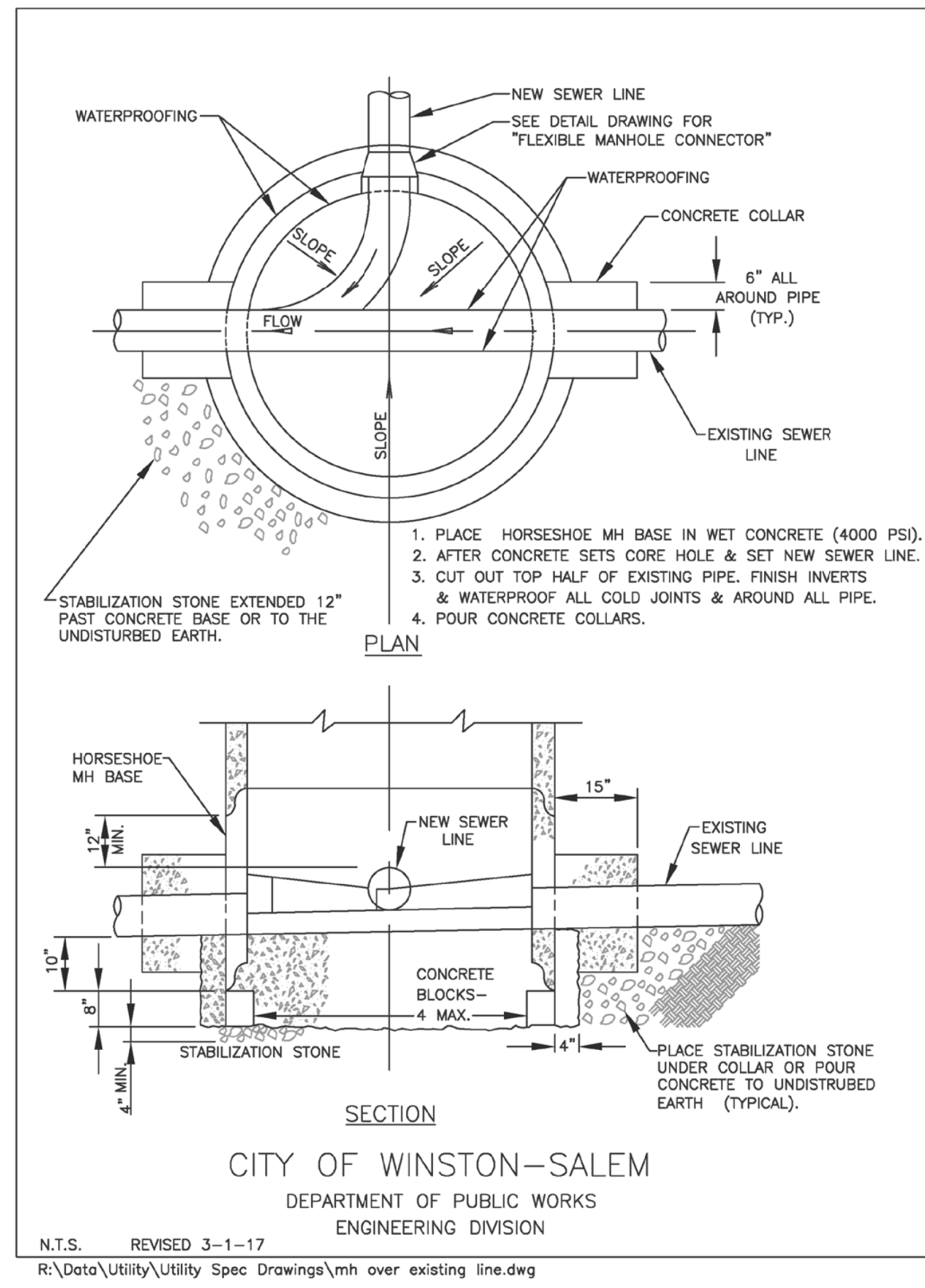
FROM CITY OF WINSTON-SALEM, NC TECHNICAL SPECIFICATIONS AND DETAIL DRAWINGS FOR WATER LINE AND SANITARY SEWER LINE CONSTRUCTION. INDEX OF DETAIL DRAWINGS:

SECTION C - Water and Sanitary Sewer Detail Drawings

Signing Construction Operations.....	C-1
Asphalt Pavement Repair (For Non-State Maintained Roads).....	C-2
Asphalt Driveway Repair.....	C-3
Concrete Pavement and Driveway Repair.....	C-4
Mill and Patch Method - Option A (For State Maintained Roads).....	C-5
Overlay and Patch Method - Option B (For State Maintained Roads).....	C-6
Saw Cut and Patch Method - Option C (For State Maintained Roads).....	C-7
Mill and Patch Method - Option D (For State Maintained Roads).....	C-8
Bedding Requirements & Safe Cover for VC Pipe on Stable Subgrade.....	C-9
4' Precast Reinforced Concrete Manhole.....	C-10
5' Precast Reinforced Concrete Manhole.....	C-11
Type "B" 4' and 5' Precast Reinforced Concrete Manhole.....	C-12
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
Flexible Manhole Connector.....	C-17
Manhole Ring and Cover (Type 1).....	C-18
Manhole Ring and Cover (Type 2).....	C-19
Manhole Ring and Cover (Type 3).....	C-20
Polypropylene Manhole Step.....	C-21
4" Sewer Connection.....	C-22
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
Concrete Anti-Seepage Collar.....	C-29
Steel Pile Detail.....	C-30
Concrete Pier Detail for 10" Max. DI Pipe.....	C-31
Concrete Pier Detail for 12"-16" DI Pipe.....	C-32
Concrete Pier Detail for 18"-24" DI Pipe.....	C-33
Concrete Pier Detail for 30" Pipe.....	C-34
Sanitary Sewer Mains on 18-22% Slope.....	C-35
Manhole Check Valve.....	C-36
Fence Gate.....	C-37
Fencing (Outfalls).....	C-38
Cast Iron Valve Box.....	C-39
Valve Box Installation.....	C-40
Hydrant and Valve Installation.....	C-41
Stub Out Installation.....	C-42
Concrete Thrust Blocks for Horizontal Bends.....	C-43
Concrete Thrust Blocks w/ Anchors for Top Vertical Bends.....	C-44
Blow-Off Assembly.....	C-45
1" Water Connection (With Curb & Gutter).....	C-46
1" Water Connection (Without Curb & Gutter).....	C-47
3/4" Water Connection (Non-Single Family).....	C-48
Cast Iron Meter Box for 5/8" and 1" Meters.....	C-49
Polymer Concrete Meter Box for 1 1/2" and 2" Meters.....	C-50
1 1/2" and 2" Water Connection.....	C-51
Air Release Valve (Section View).....	C-52
Air Release Valve (Profile View).....	C-53
2" Water Main Tap to 6" or Larger Water Main.....	C-54
Flushing and Chlorination Connection for Water Main Extensions.....	C-55

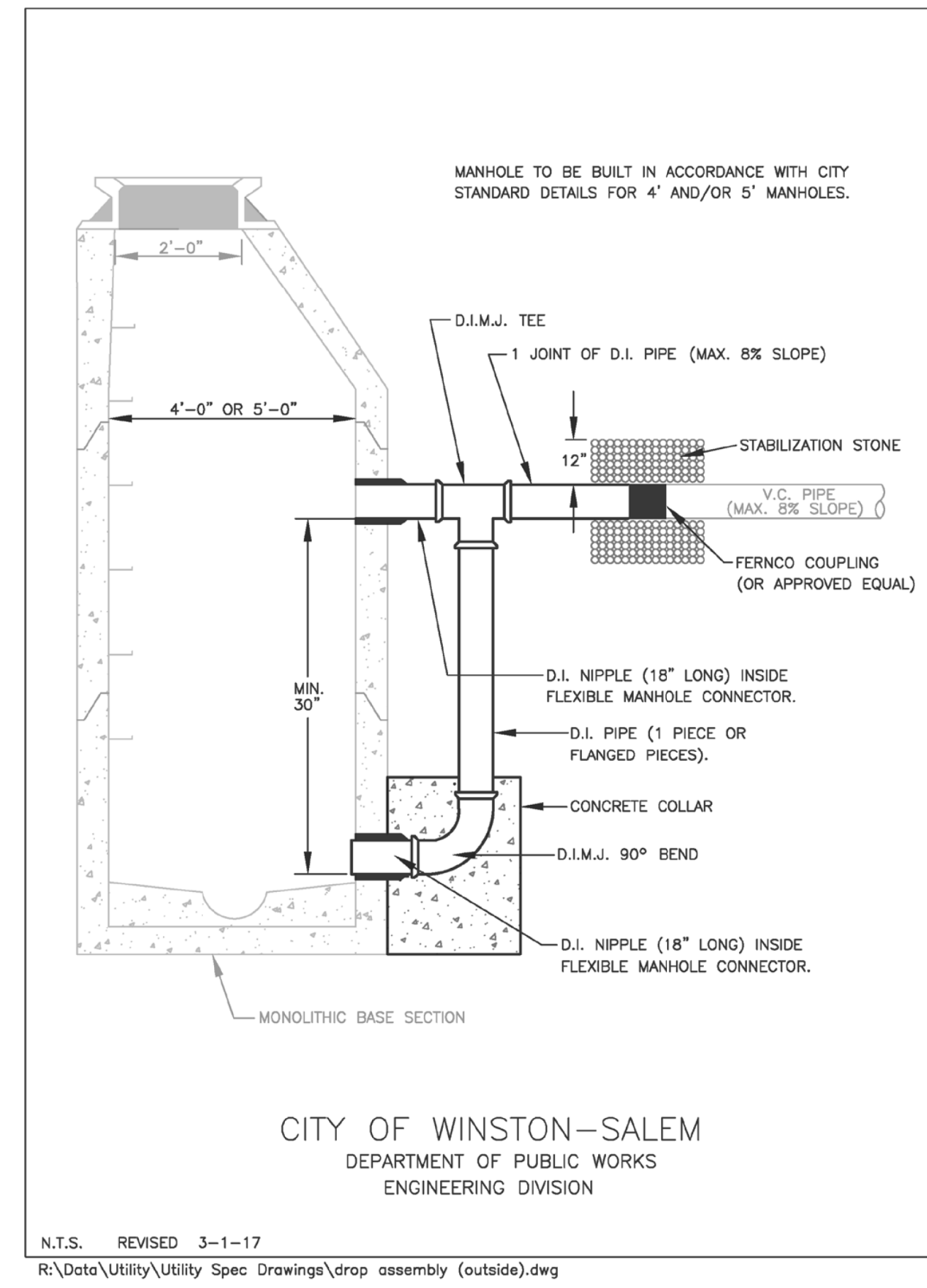
REVISIONS

Manhole Built Over Existing Line



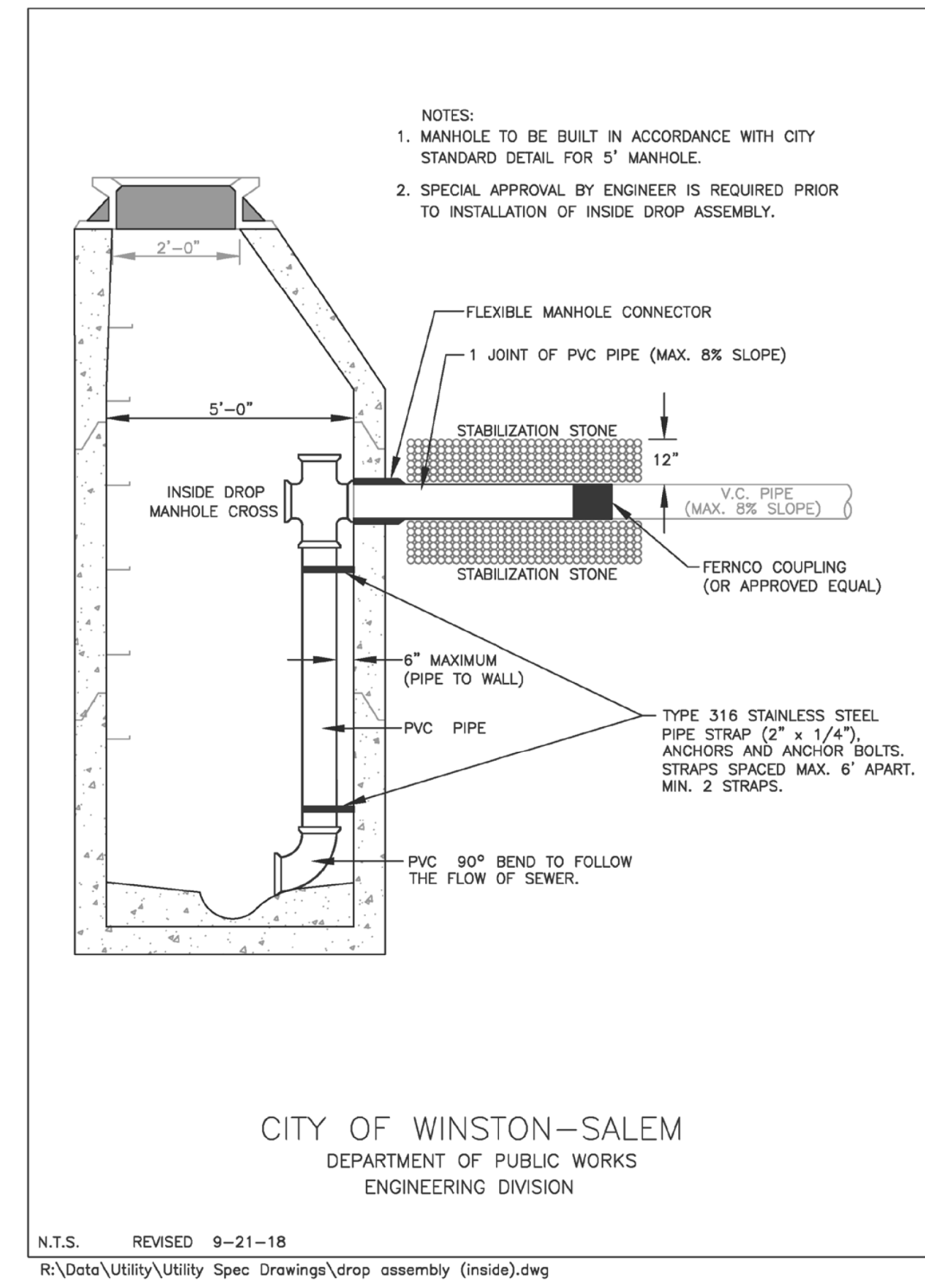
C-13

Drop Assembly (Outside)



C-14

Drop Assembly (Inside)

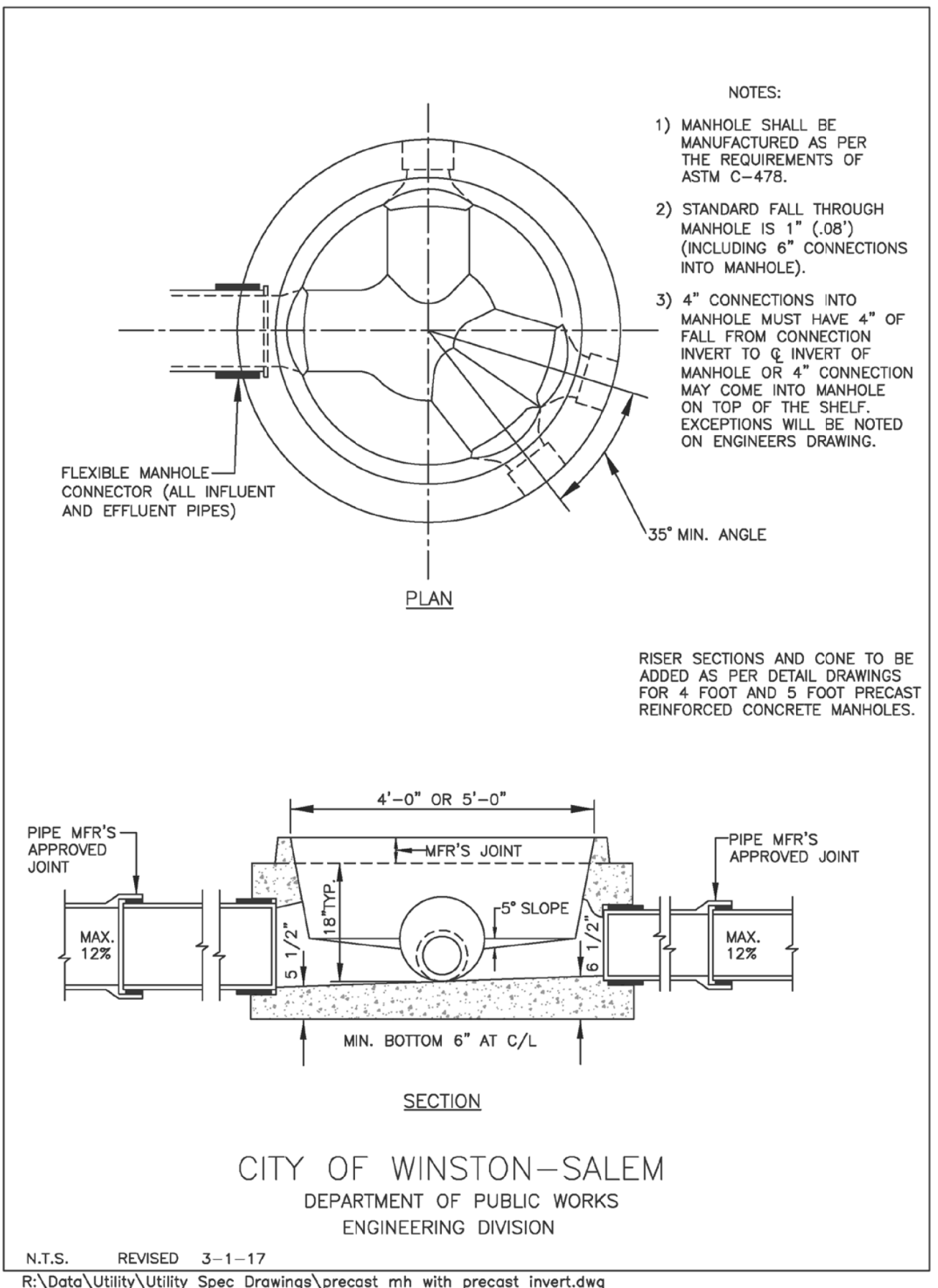


C-15

5/14/99

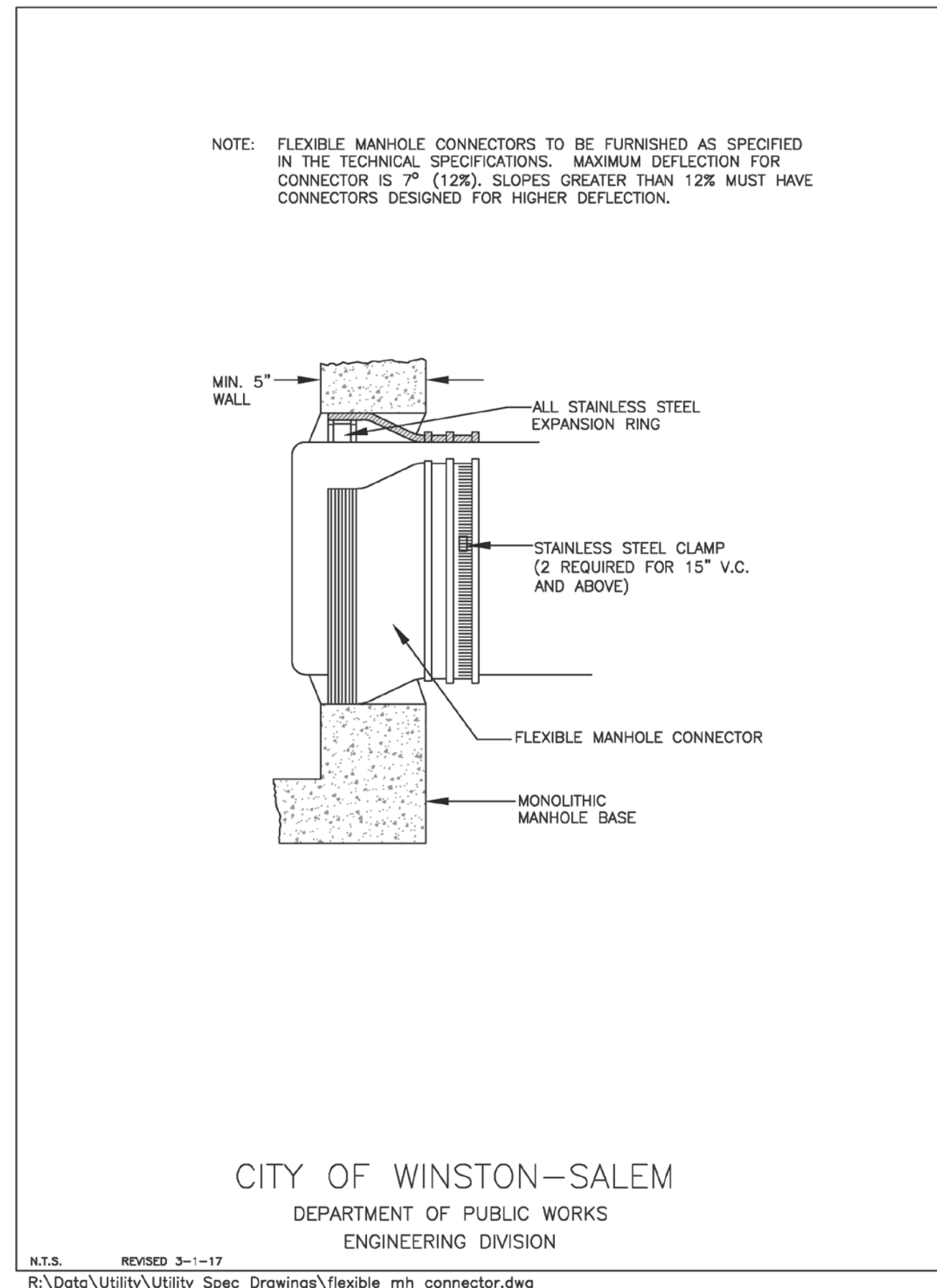
REVISIONS

### Precast Reinforced Concrete Manhole with Precast Invert



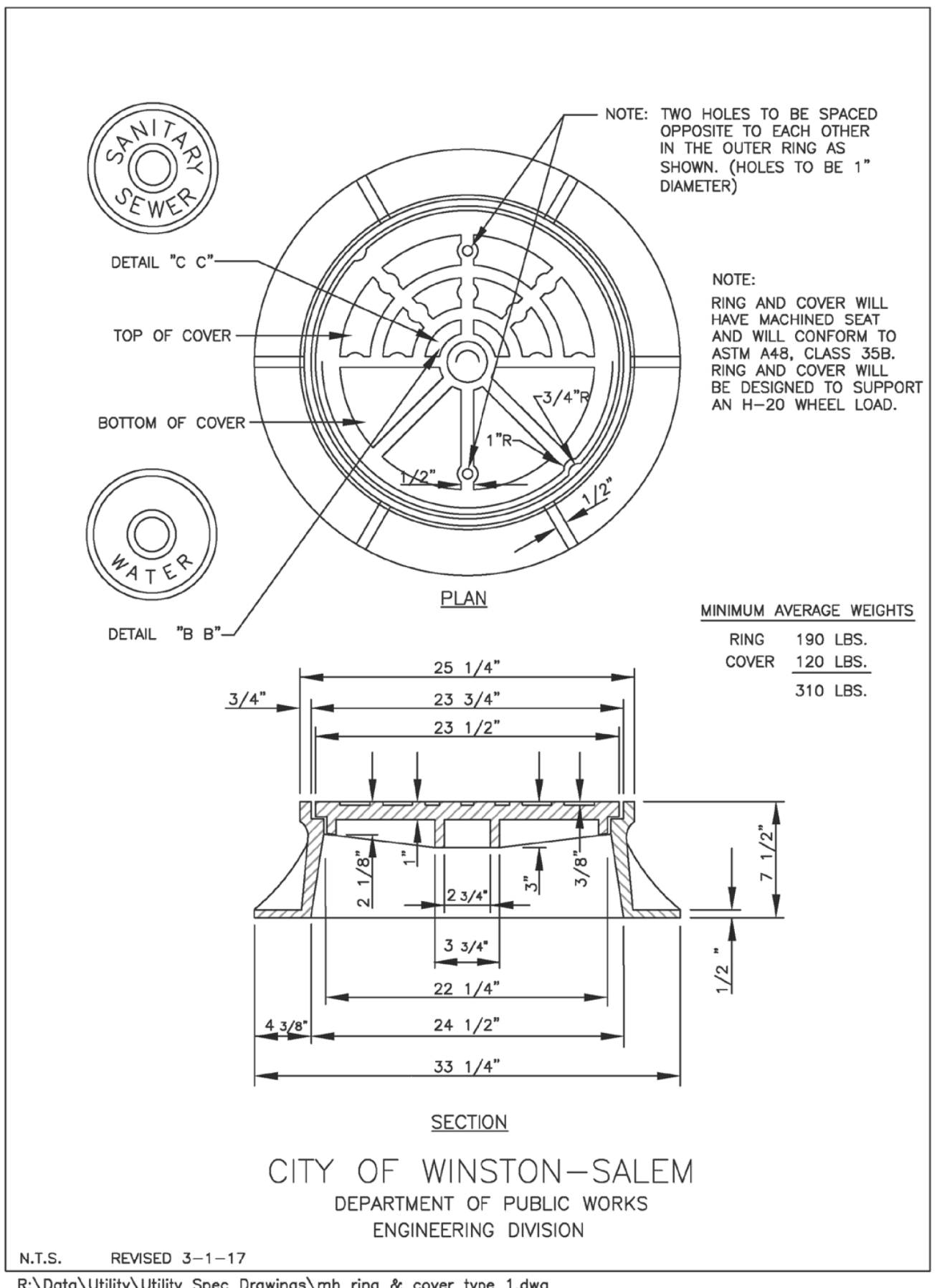
C-16

### Flexible Manhole Connector



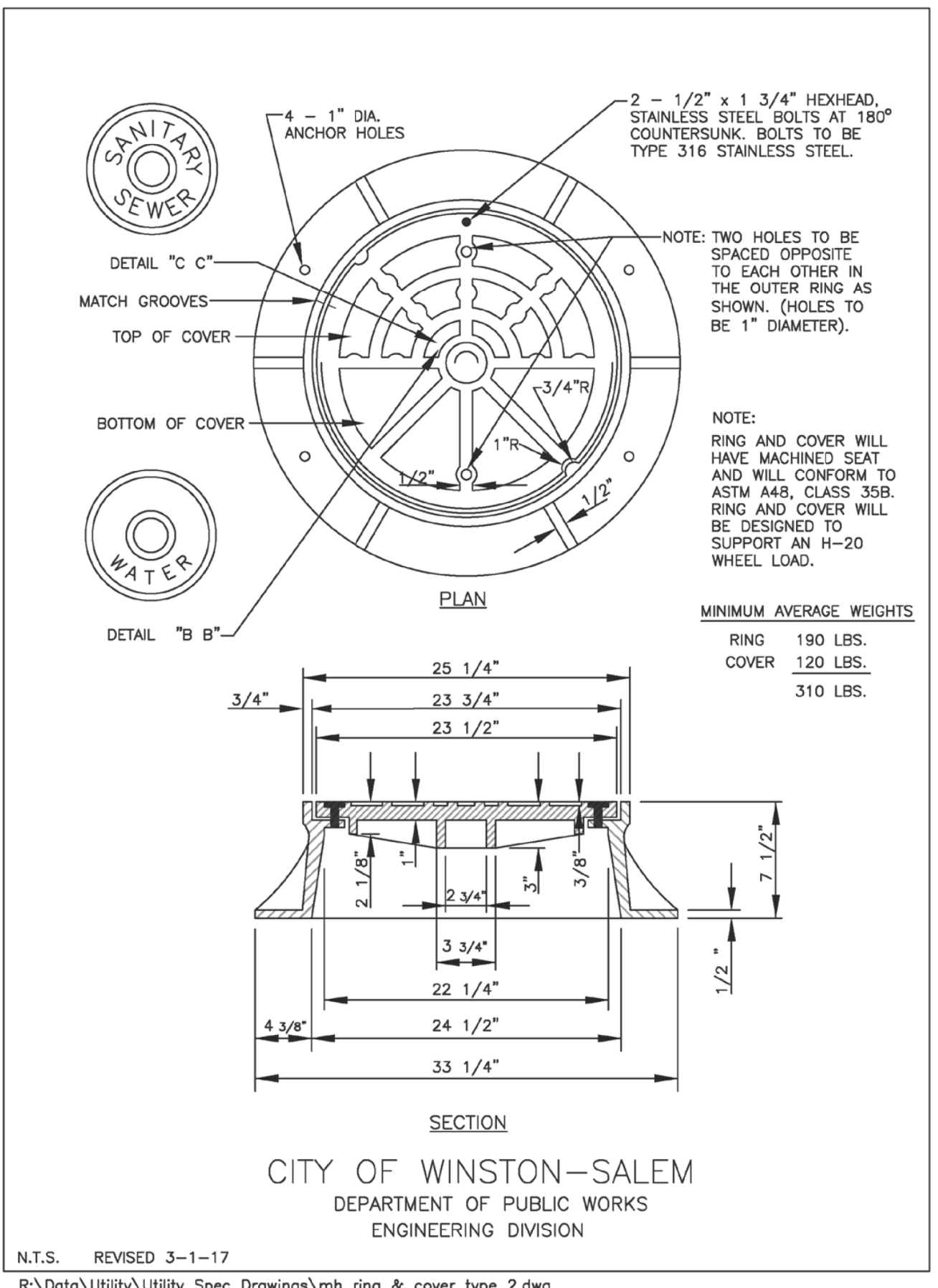
C-17

### Manhole Ring and Cover (Type 1)



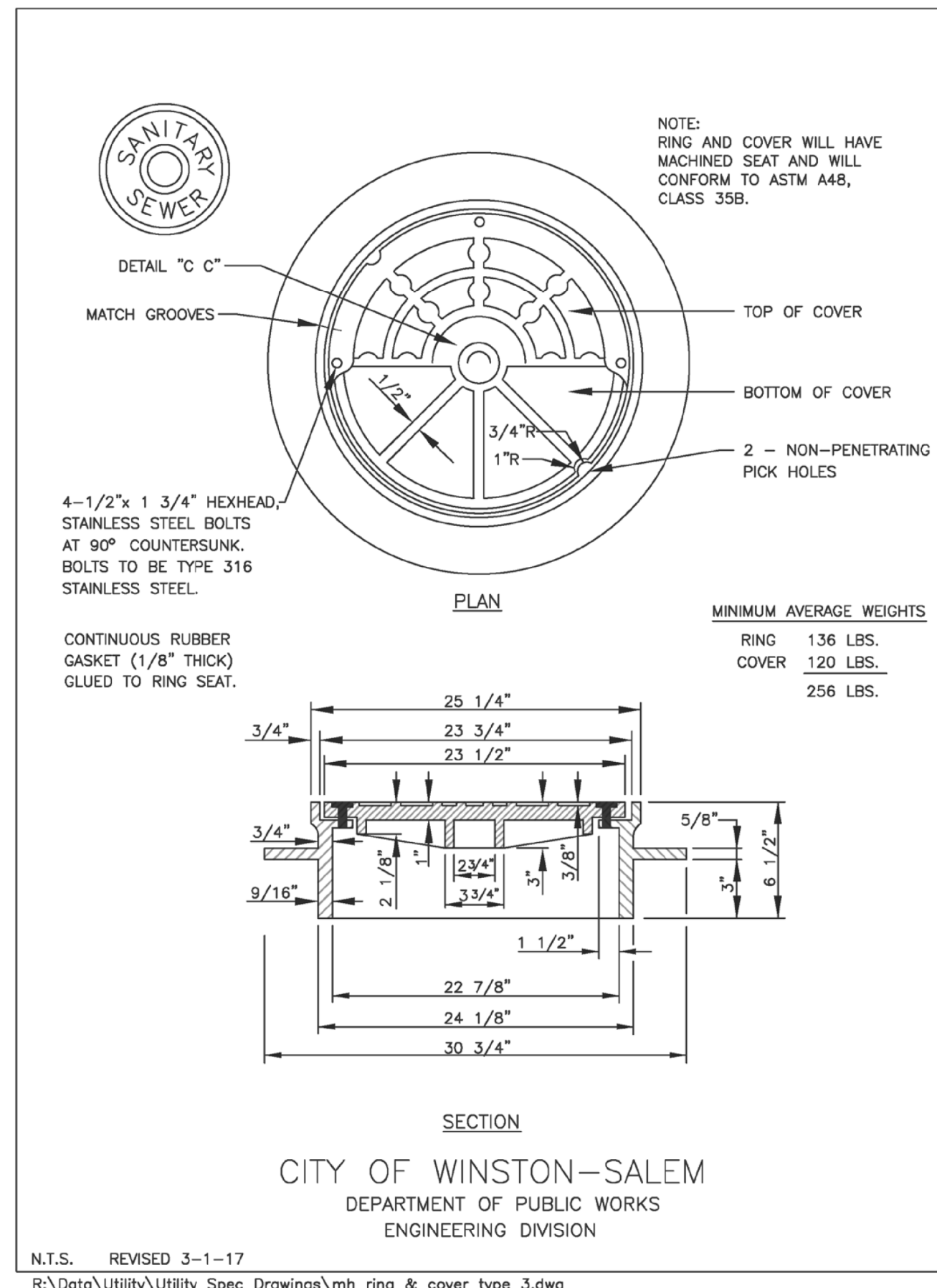
C-18

### Manhole Ring and Cover (Type 2)



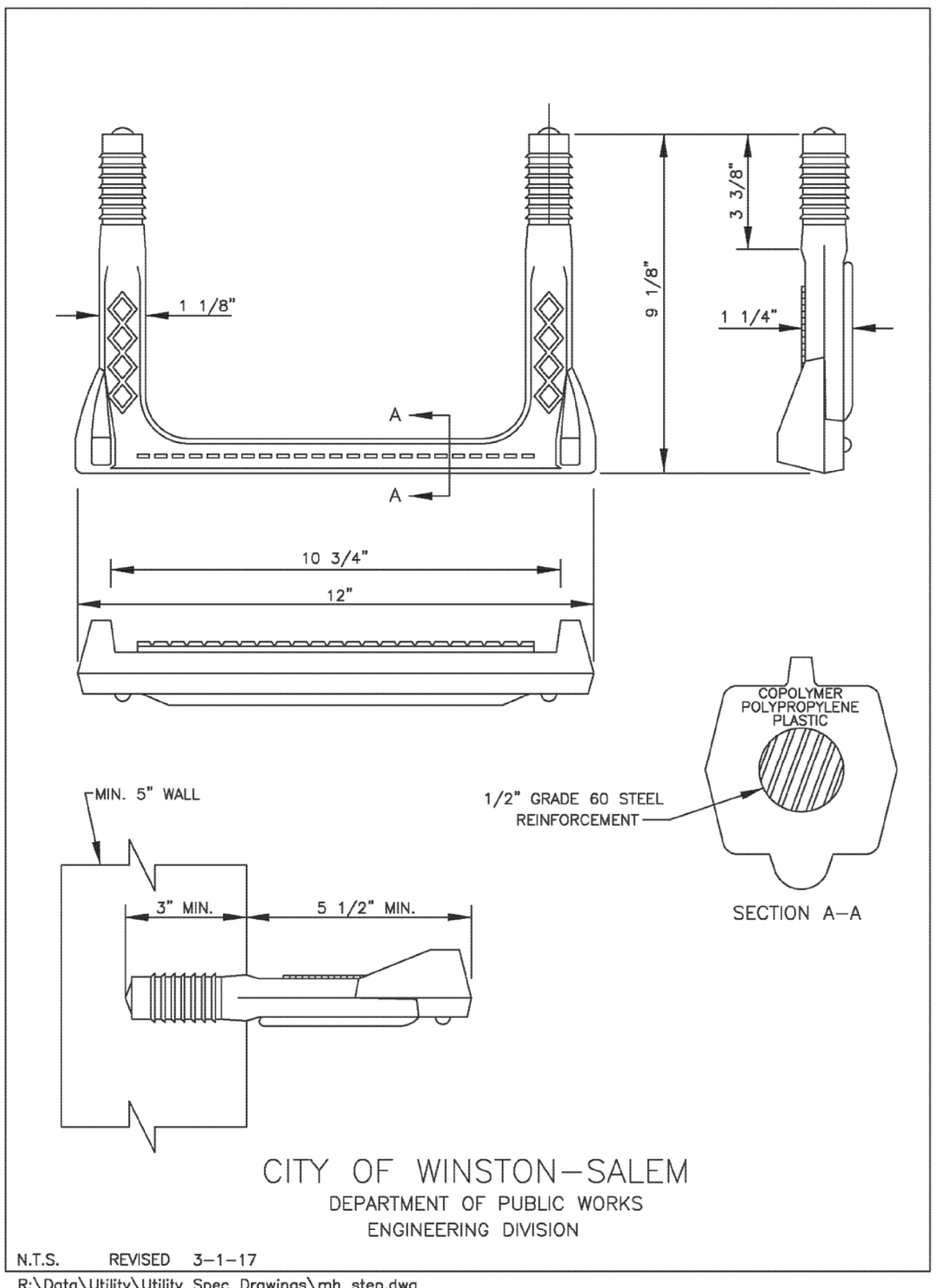
C-19

### Manhole Ring and Cover (Type 3)



C-20

### Polypropylene Manhole Step



C-21

PROJECT REFERENCE NO. U-2579AA	SHEET NO. UC-3B
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	5/2/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

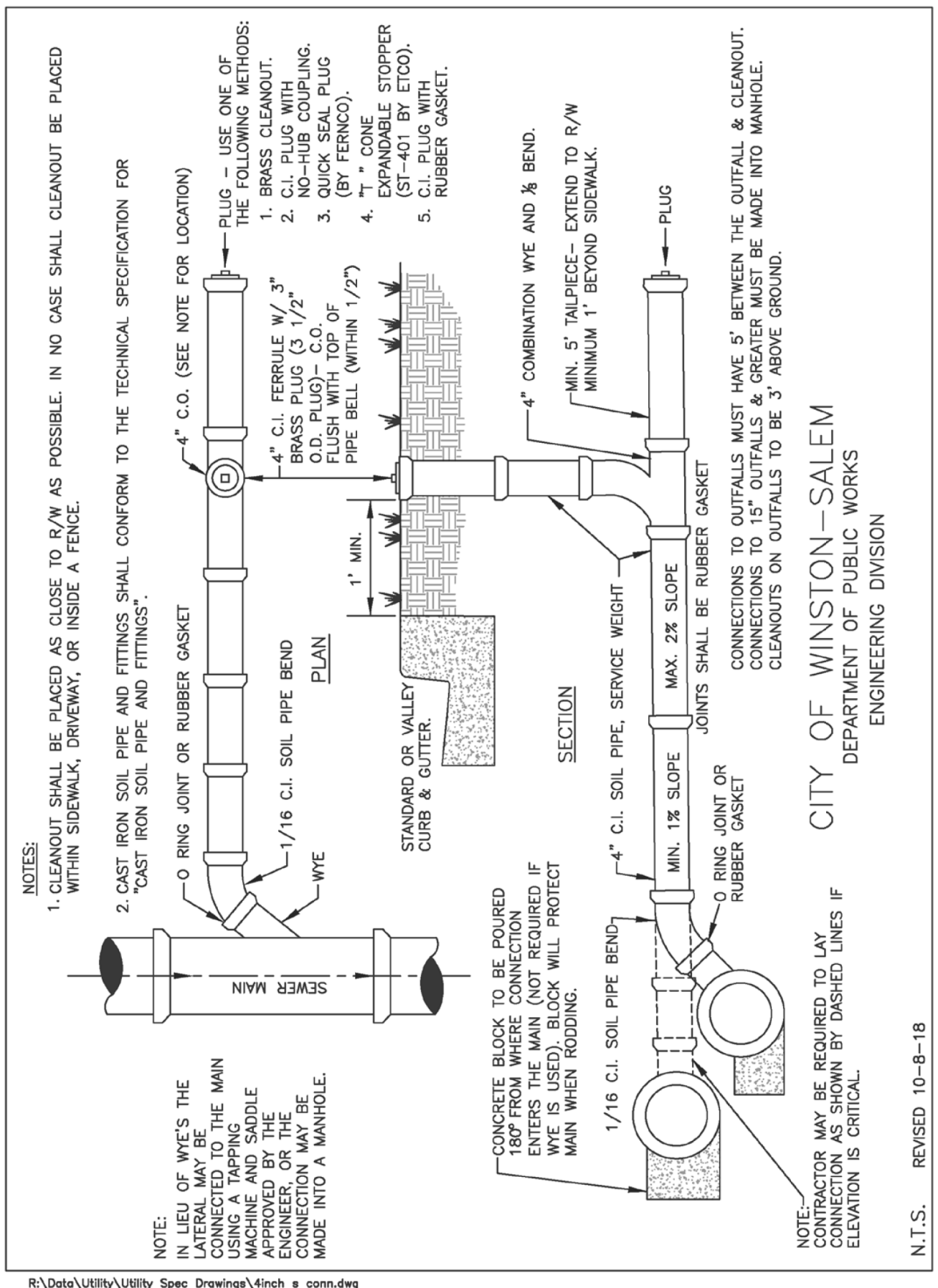
## UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/14/2022

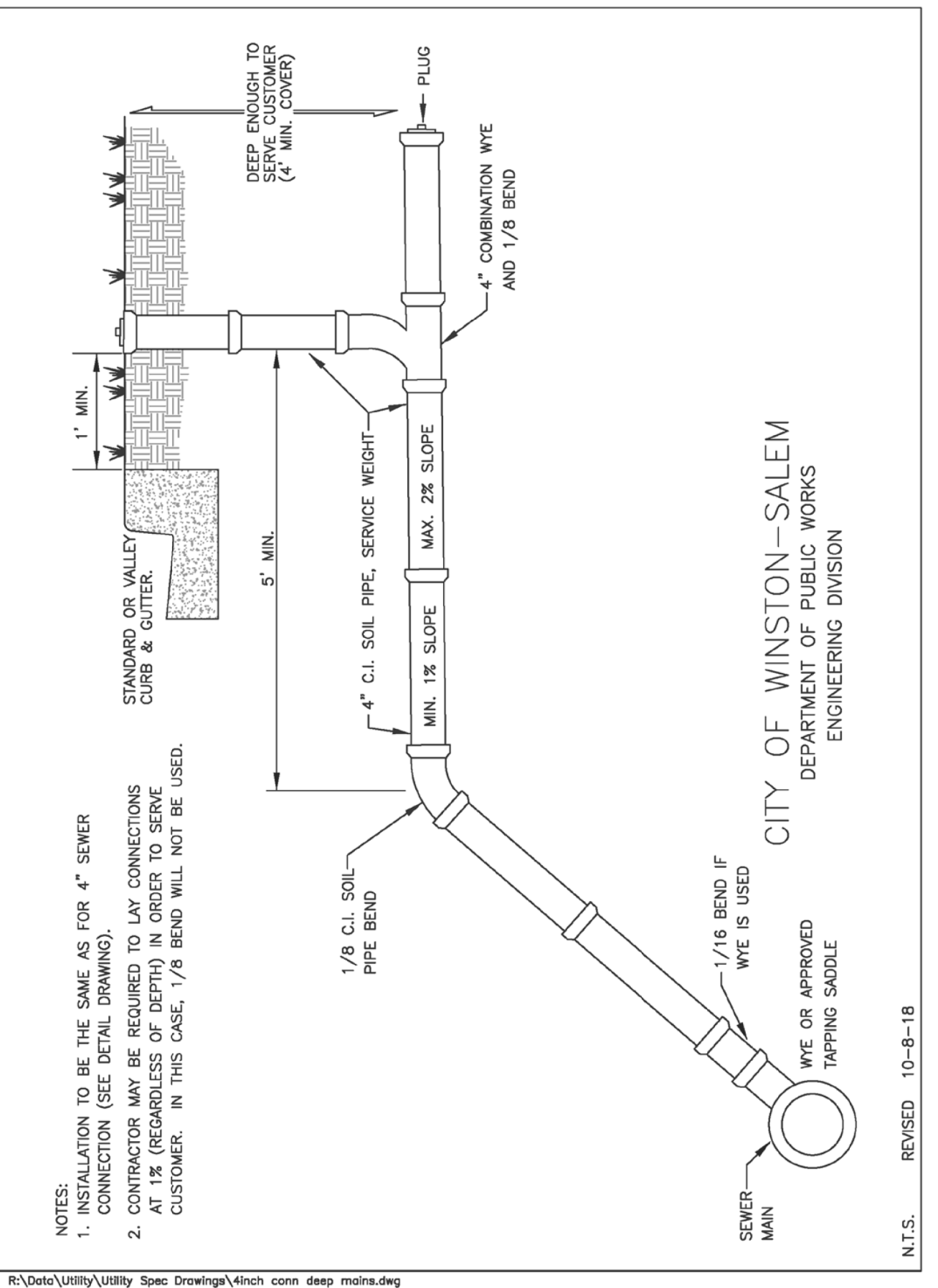
REVISIONS

### 4" Sewer Connection



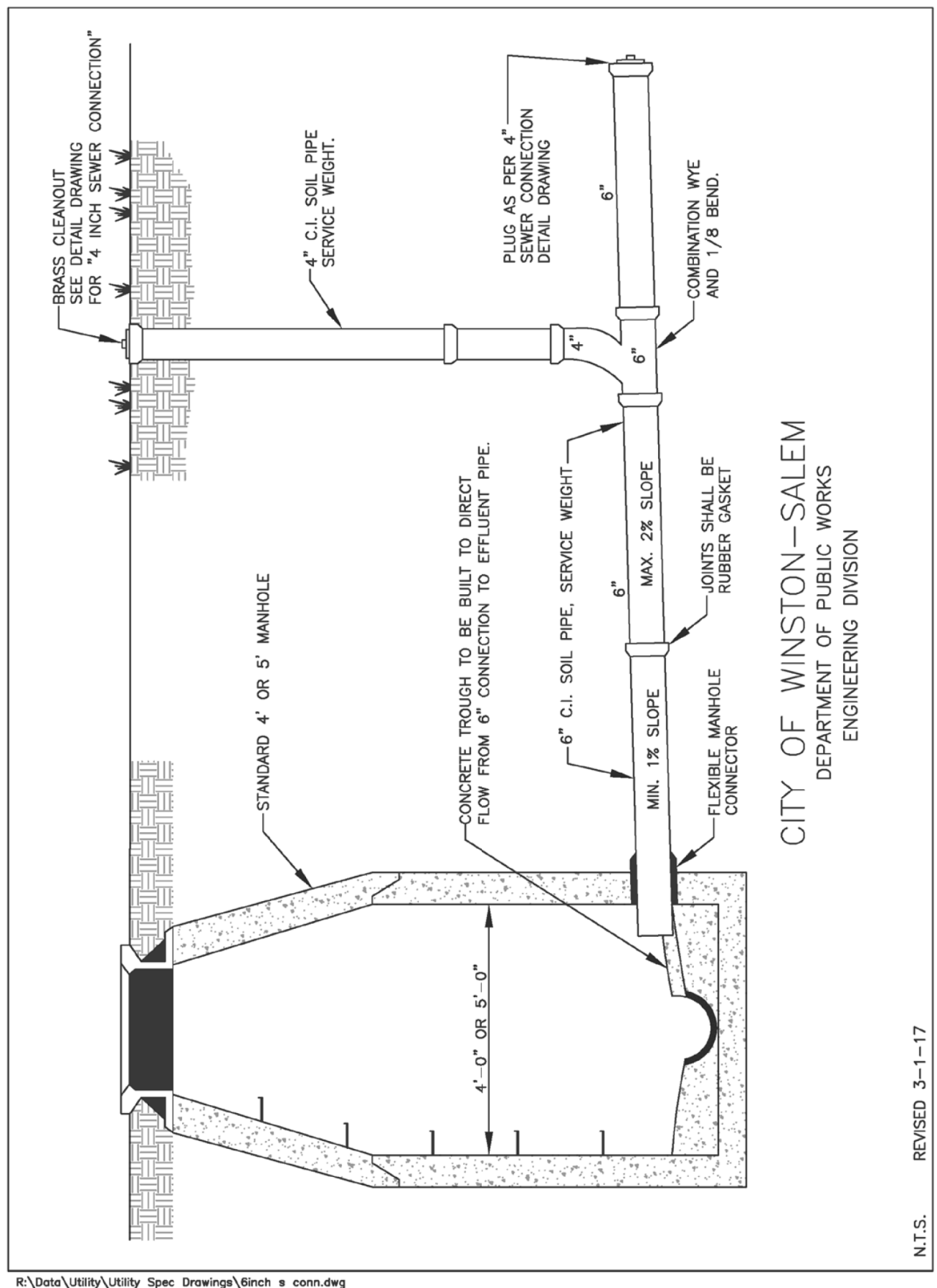
C-22

### 4" Sewer Connection for Deep Mains



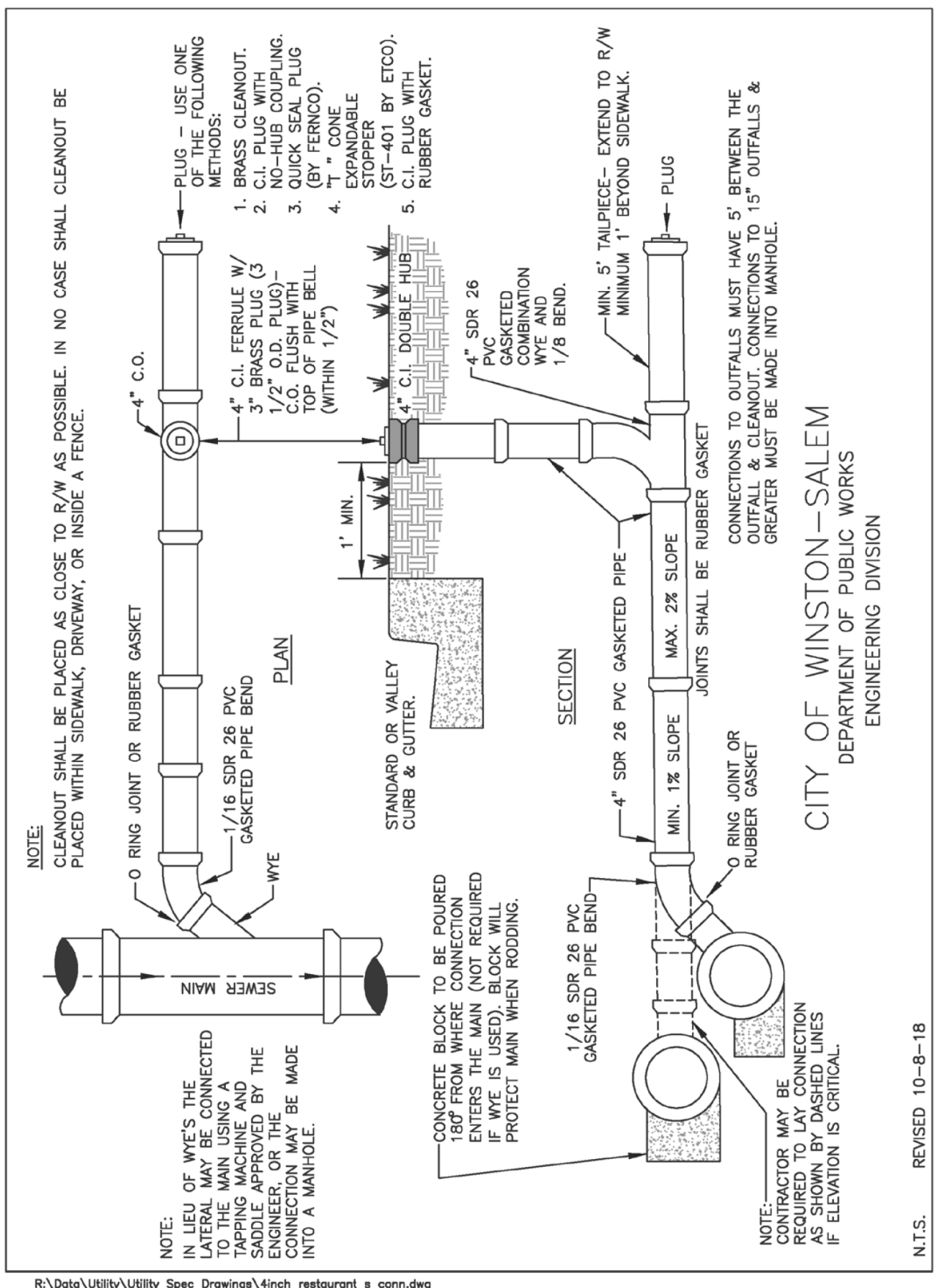
C-23

### 6" Sewer Connection



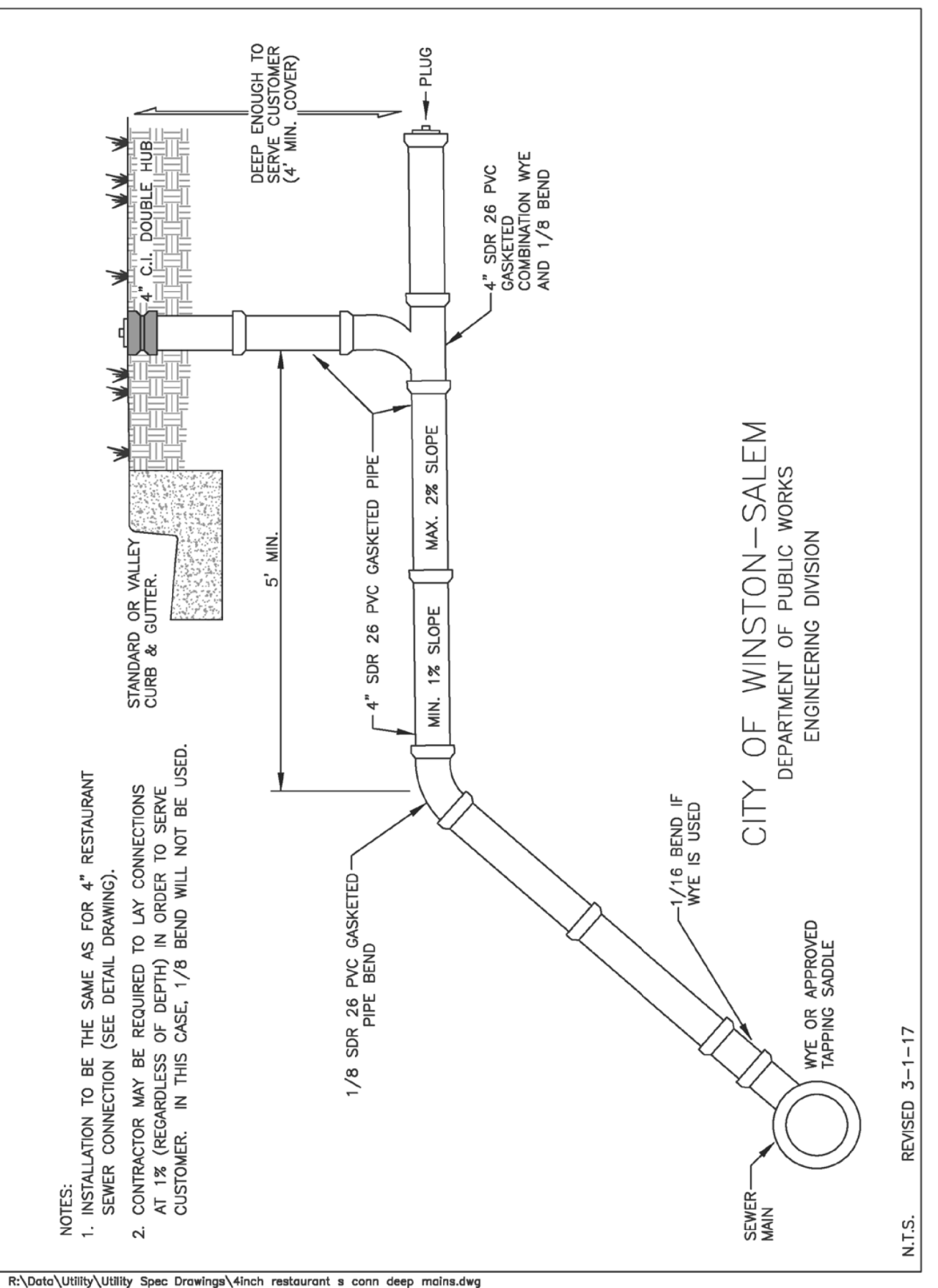
C-24

### 4" Restaurant Sewer Connection



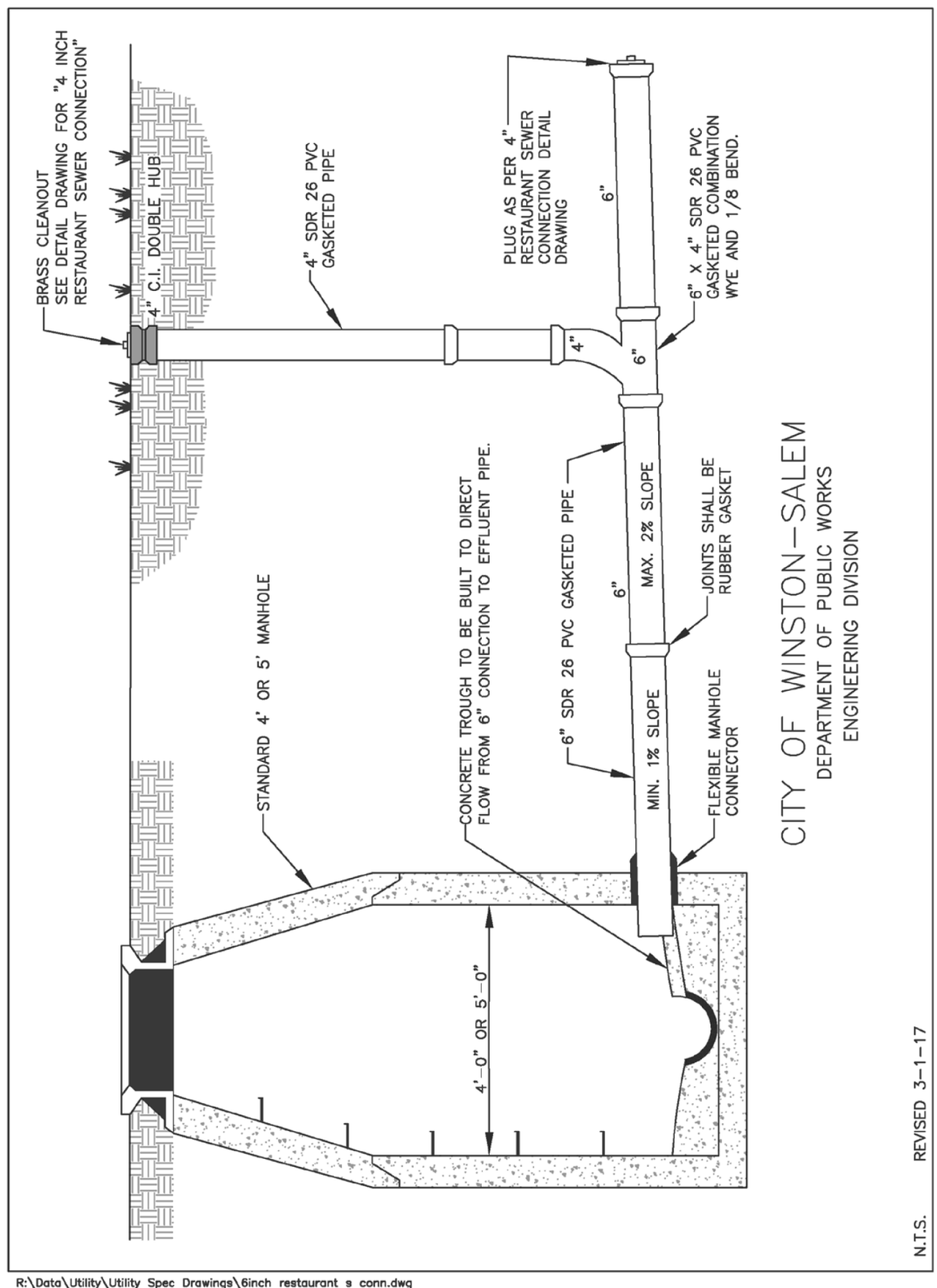
C-25

### 4" Restaurant Sewer Connection for Deep Mains



C-26

### 6" Restaurant Sewer Connection



C-27

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	UC-3C
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	
<b>UTILITY CONSTRUCTION</b> <b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

UTILITY CONSTRUCTION PLANS PREPARED BY:

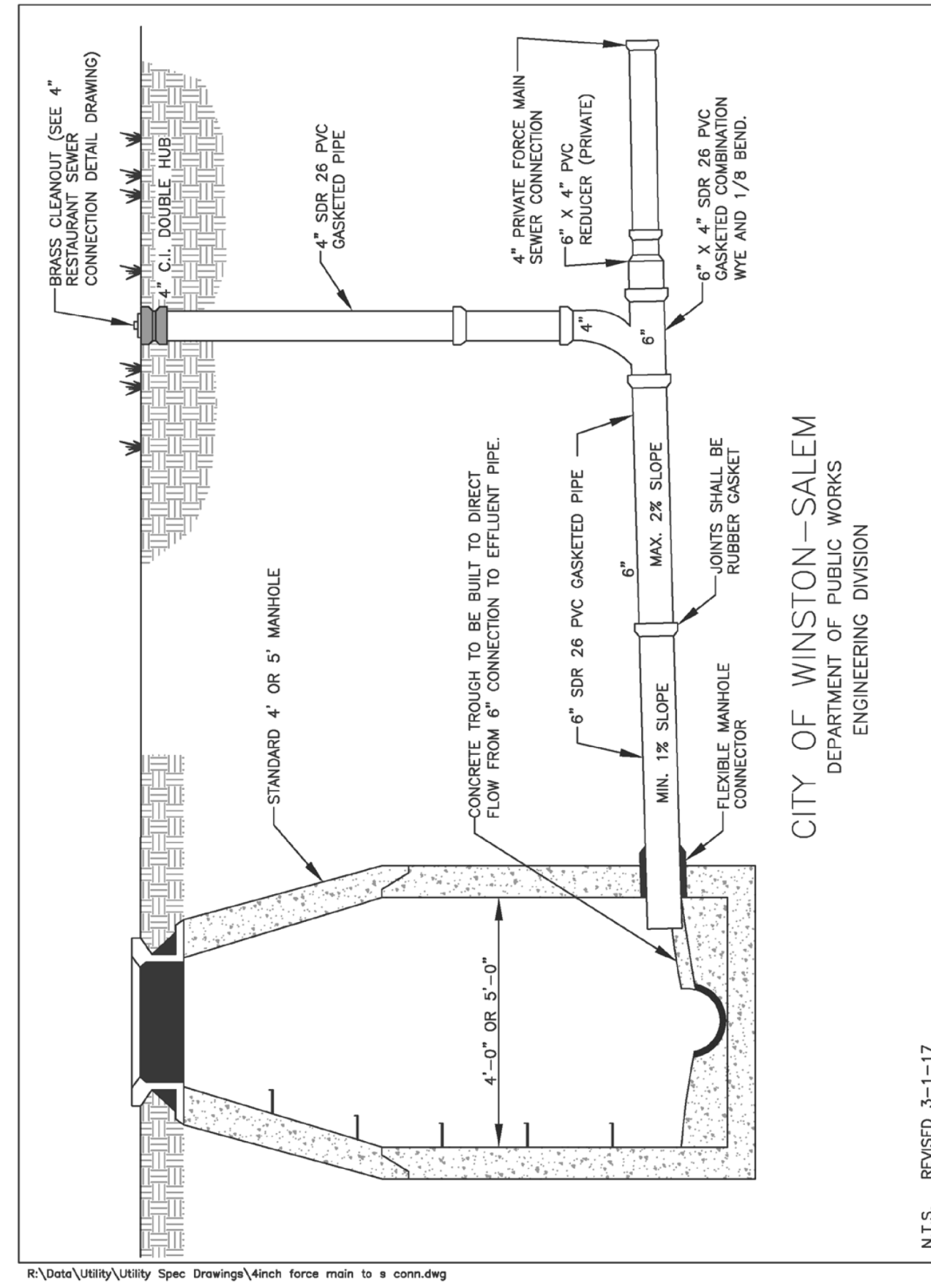
**DAVIS • MARTIN • POWELL**  
**ENGINEERS & SURVEYORS**

6415 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

4" Private Force Main Sewer Connection

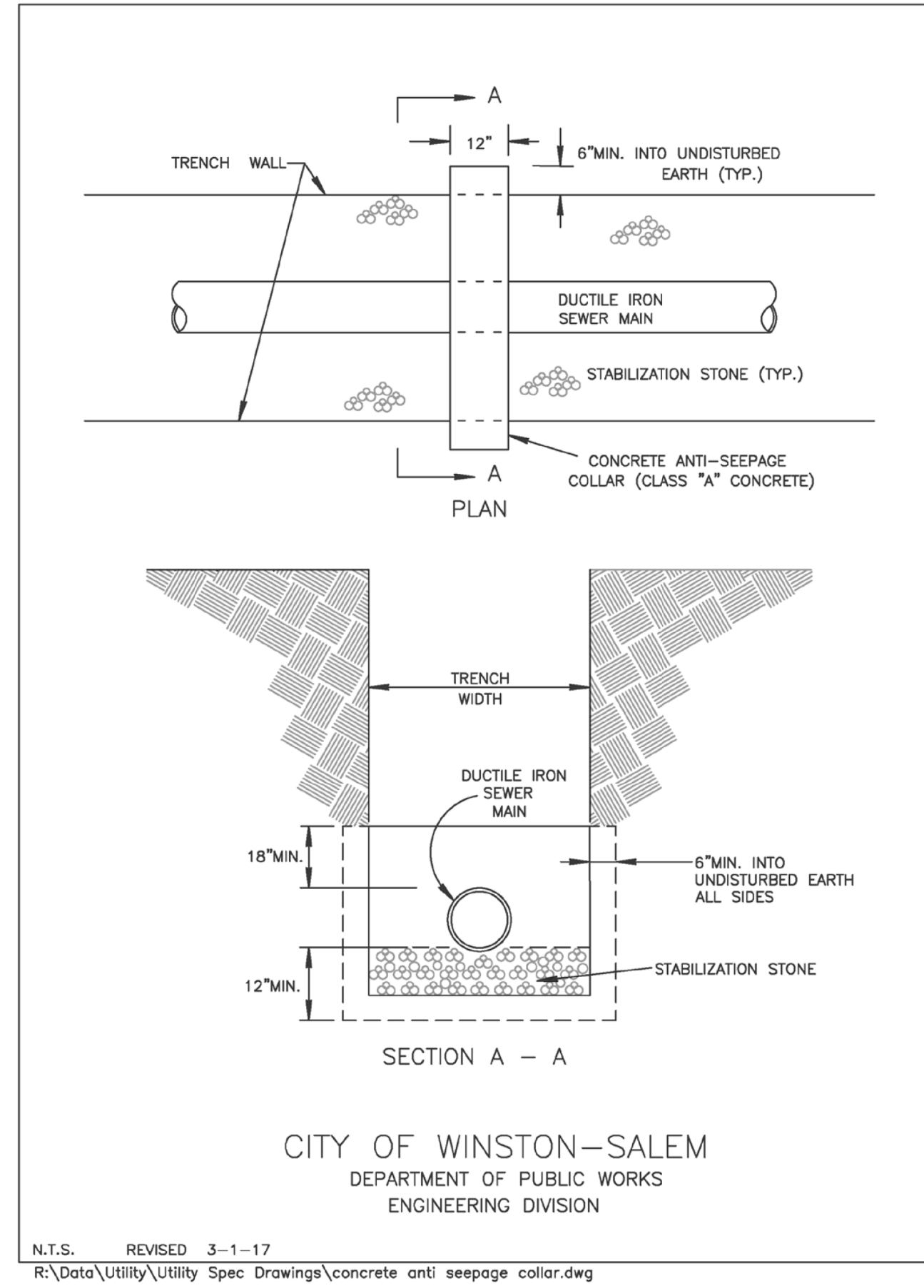


CITY OF WINSTON-SALEM  
DEPARTMENT OF PUBLIC WORKS  
ENGINEERING DIVISION

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

C-28

Concrete Anti-Seepage Collar

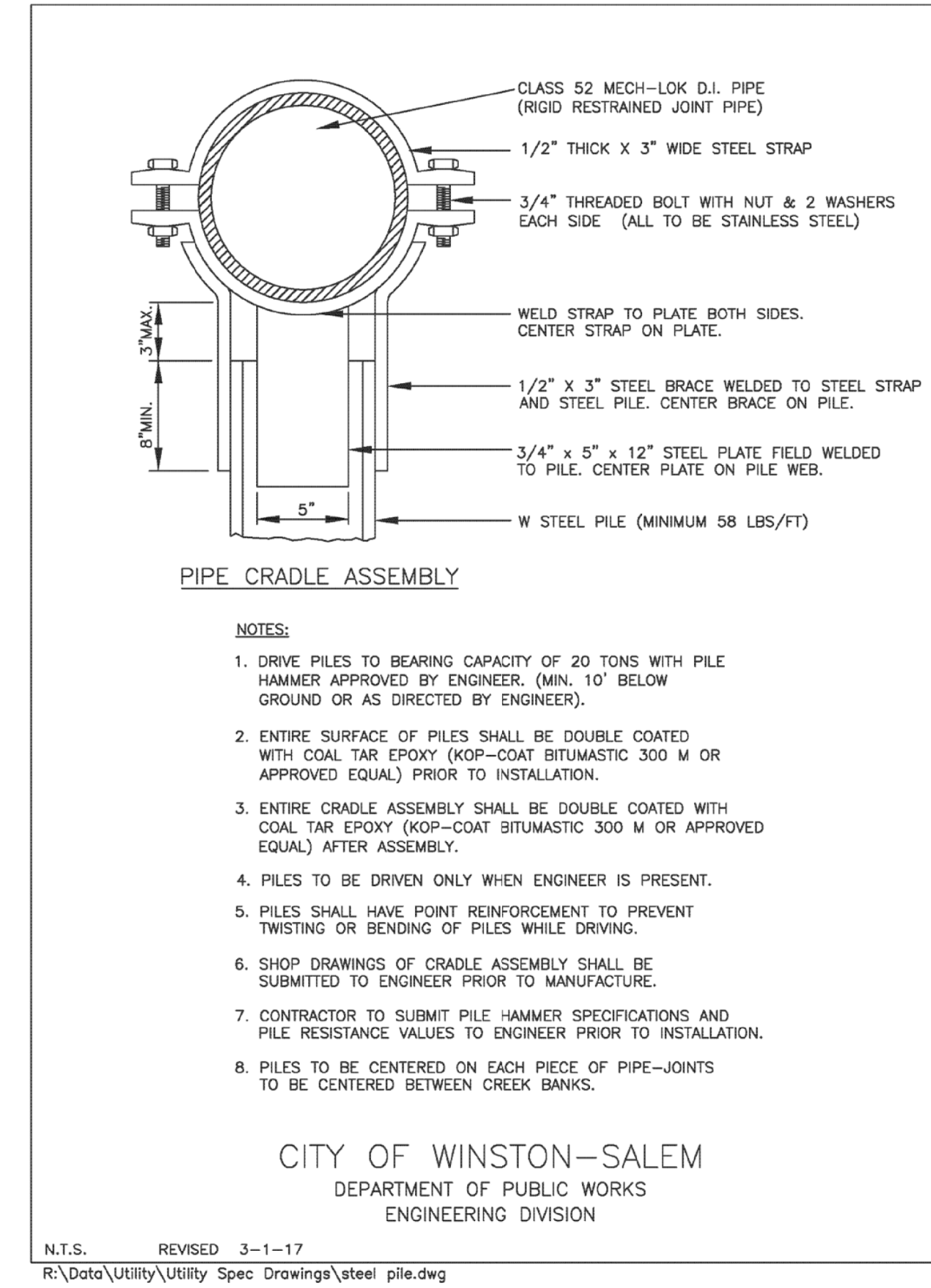


CITY OF WINSTON-SALEM  
DEPARTMENT OF PUBLIC WORKS  
ENGINEERING DIVISION

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

C-29

Steel Pile Detail

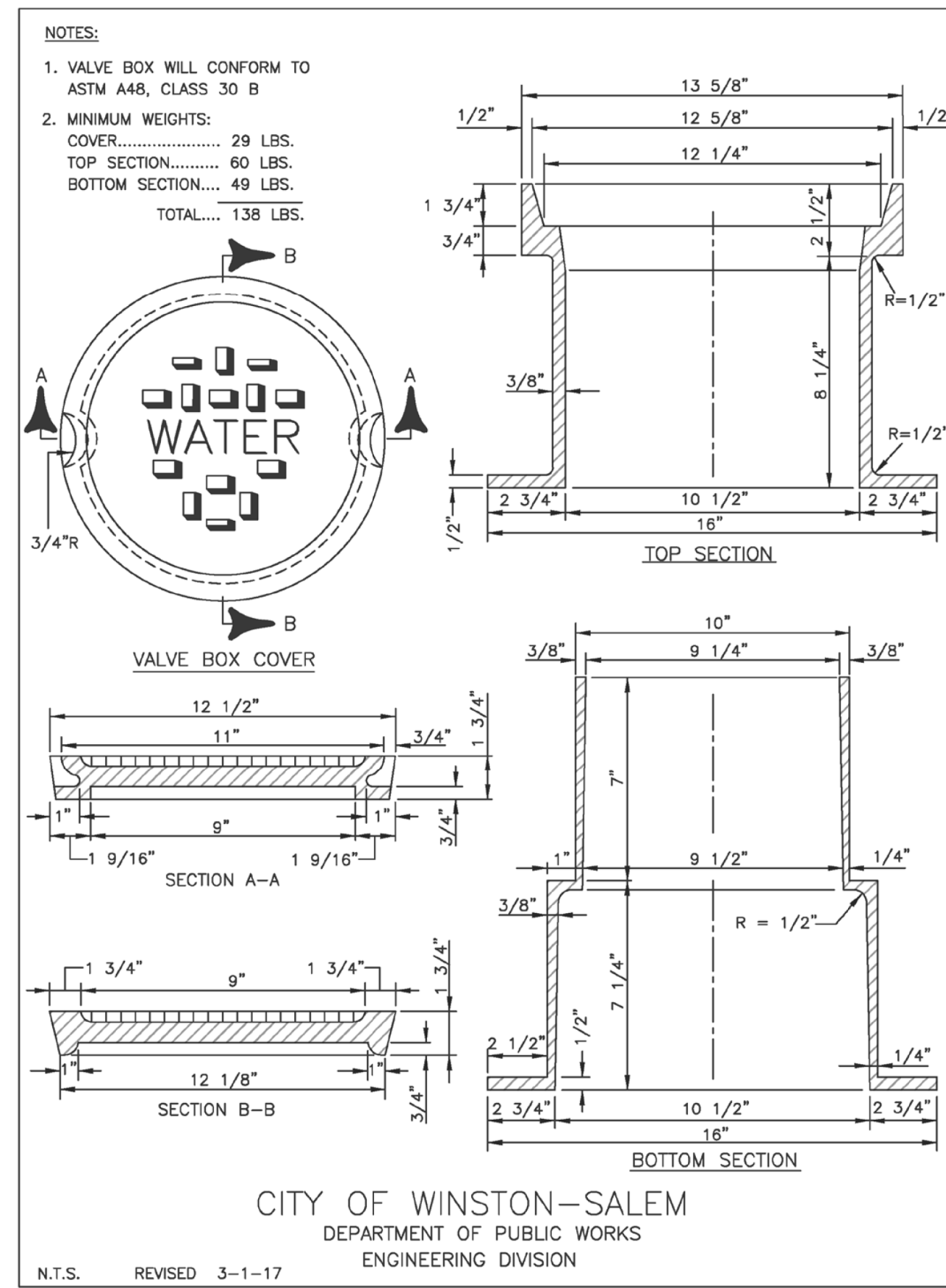


CITY OF WINSTON-SALEM  
DEPARTMENT OF PUBLIC WORKS  
ENGINEERING DIVISION

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

C-30

Cast Iron Valve Box

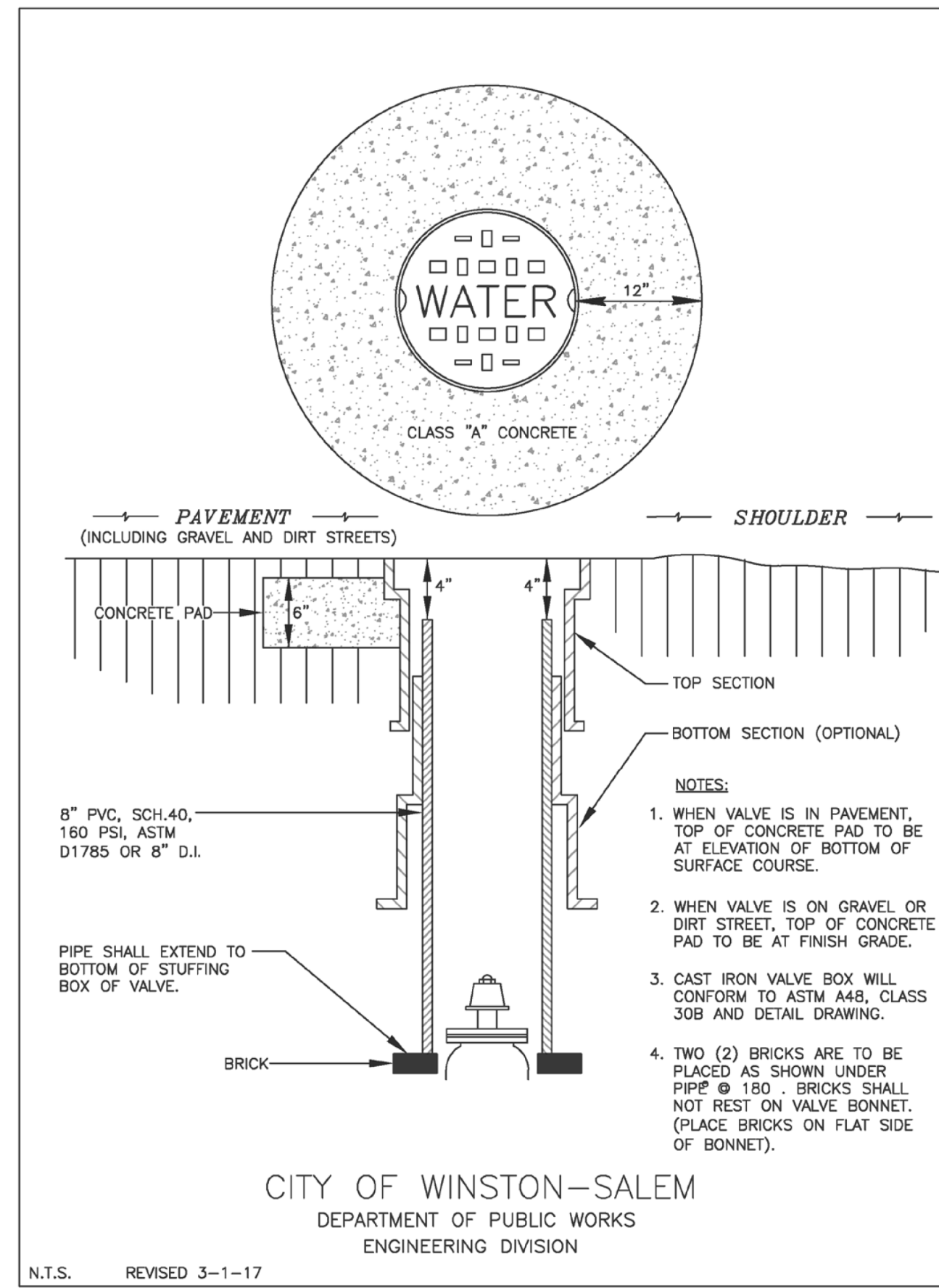


CITY OF WINSTON-SALEM  
DEPARTMENT OF PUBLIC WORKS  
ENGINEERING DIVISION

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

C-39

Valve Box Installation

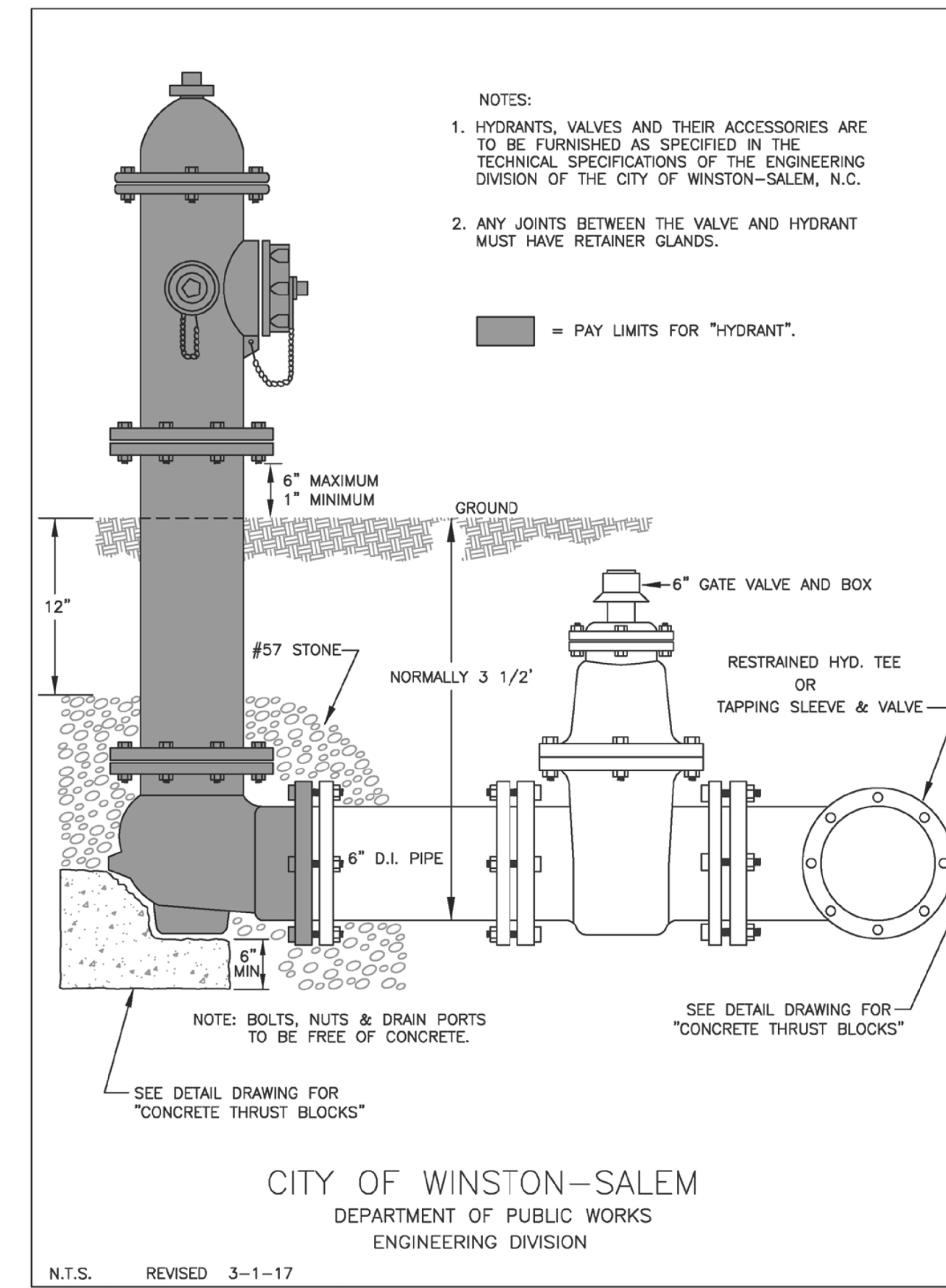


CITY OF WINSTON-SALEM  
DEPARTMENT OF PUBLIC WORKS  
ENGINEERING DIVISION

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

C-40

Hydrant and Valve Installation



CITY OF WINSTON-SALEM  
DEPARTMENT OF PUBLIC WORKS  
ENGINEERING DIVISION

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

C-41

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	UC-3D
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	5/2/2022
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

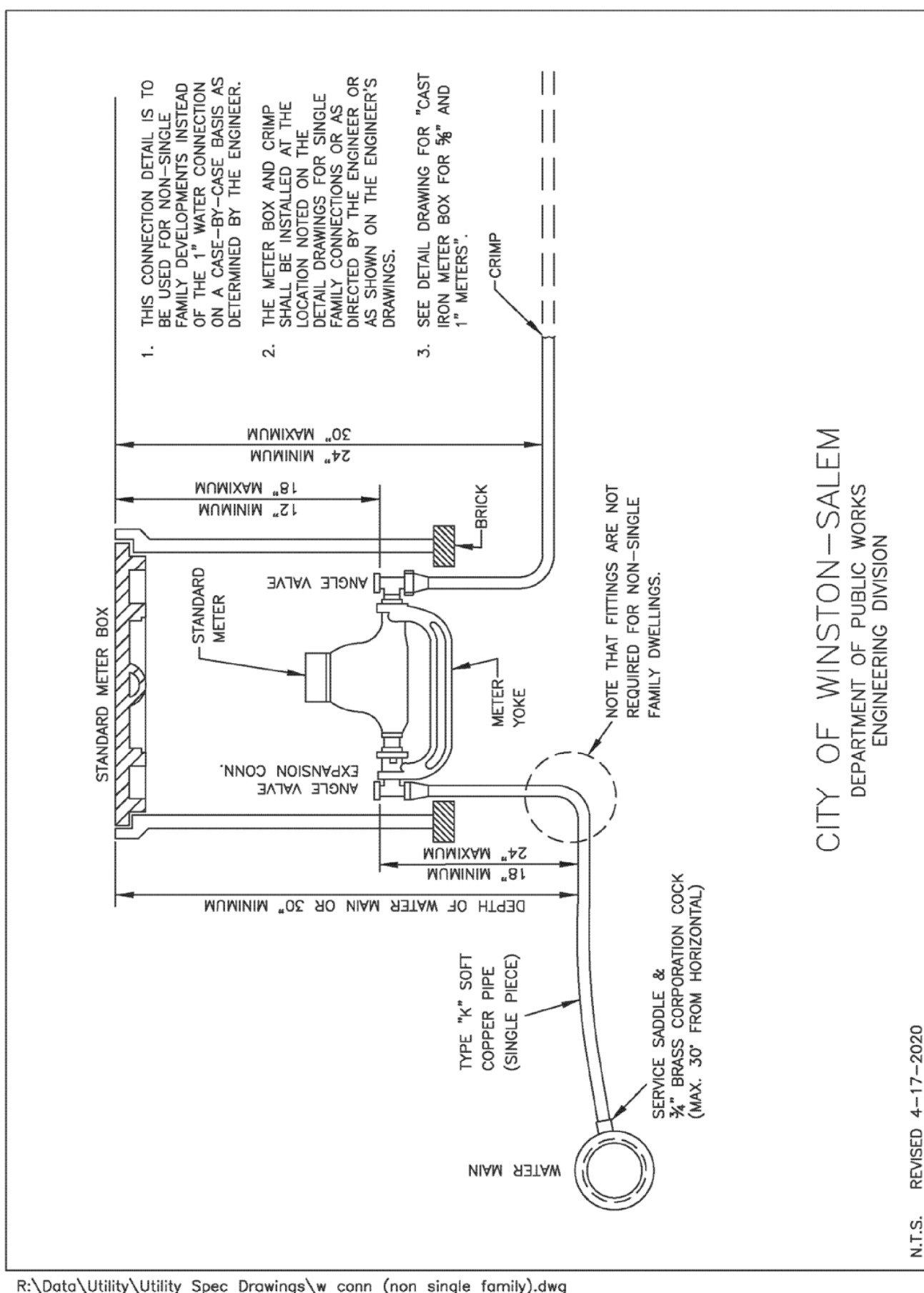




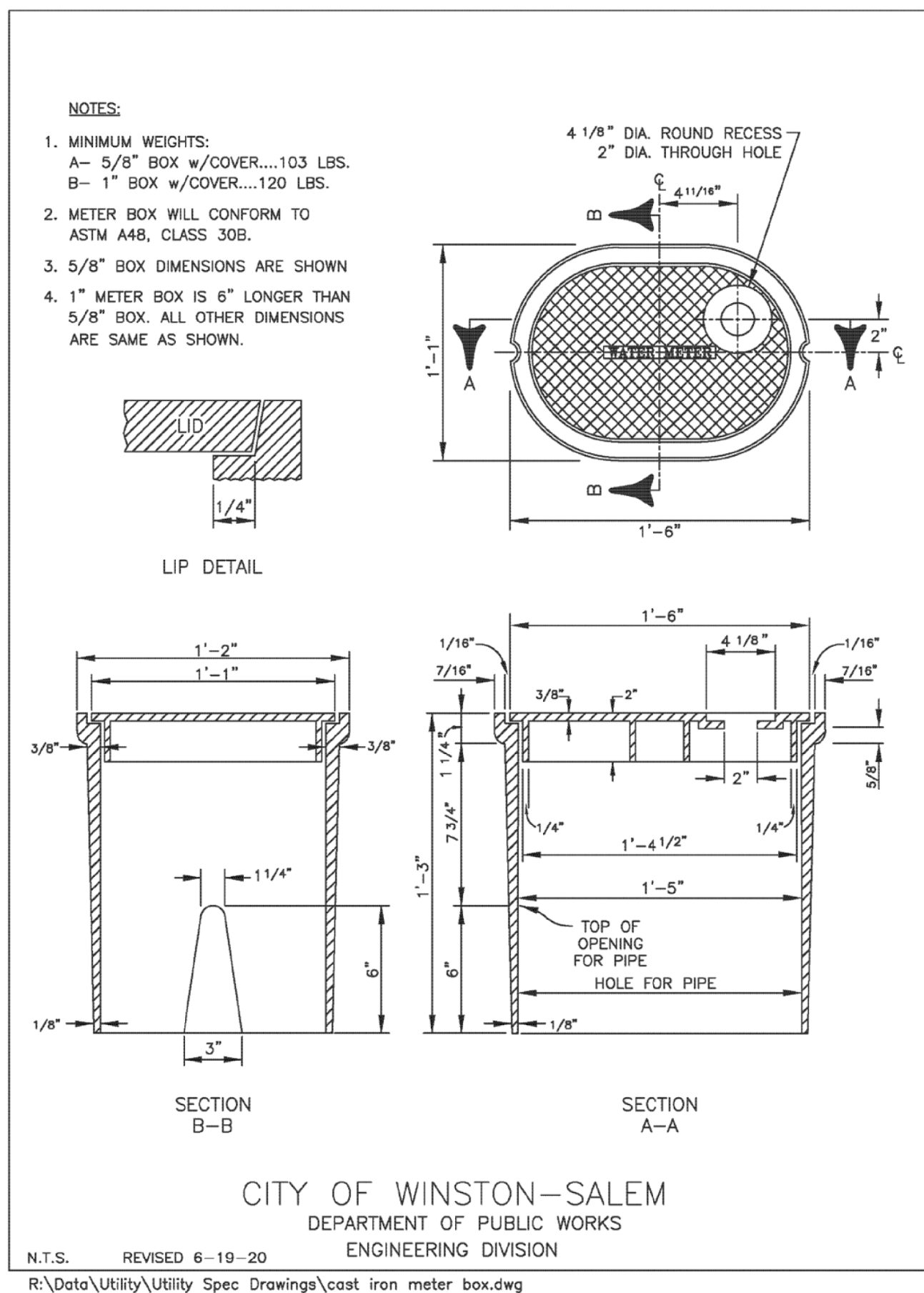
5/14/99

REVISIONS

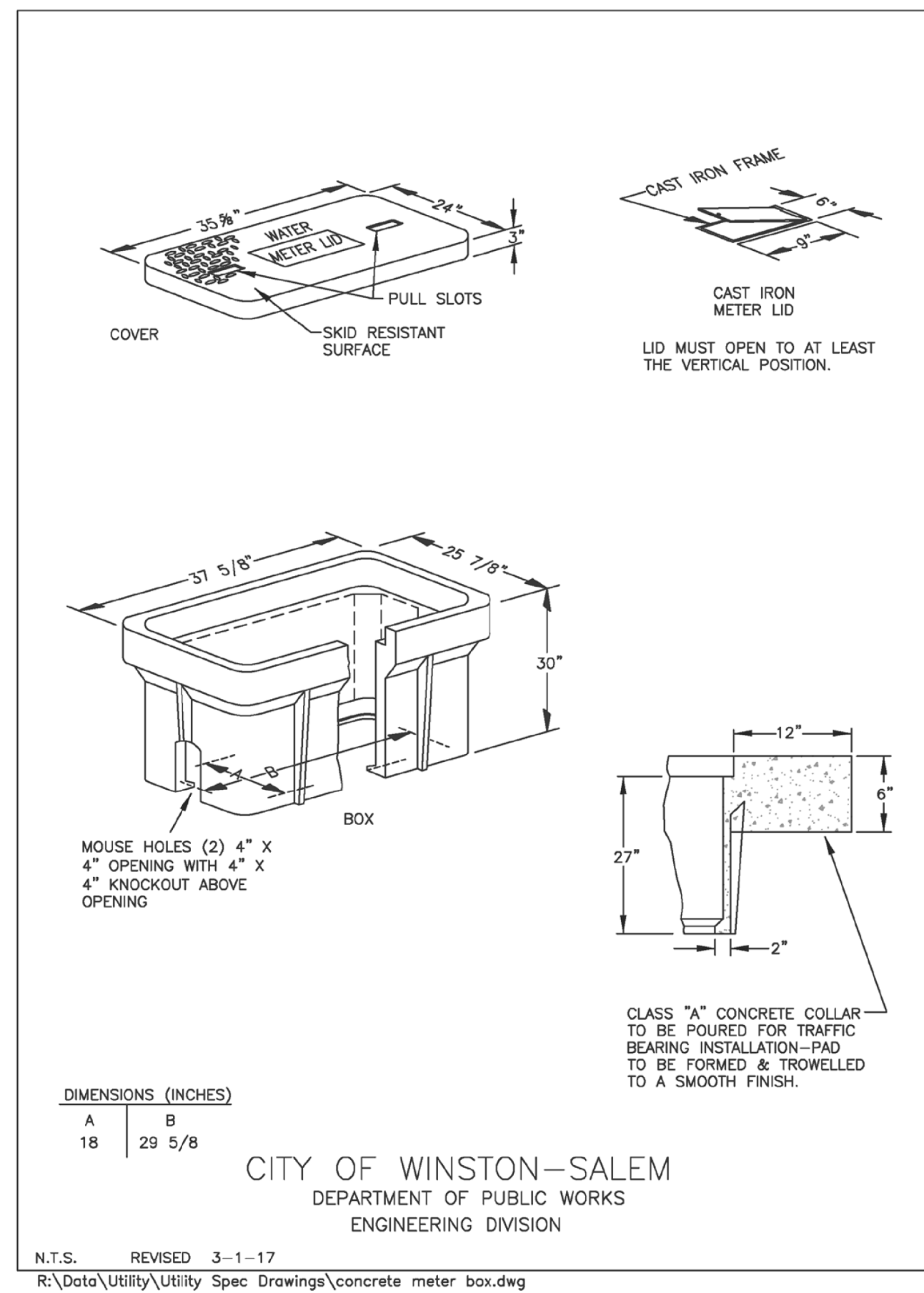
### 3/4" Water Connection (Non-Single Family)



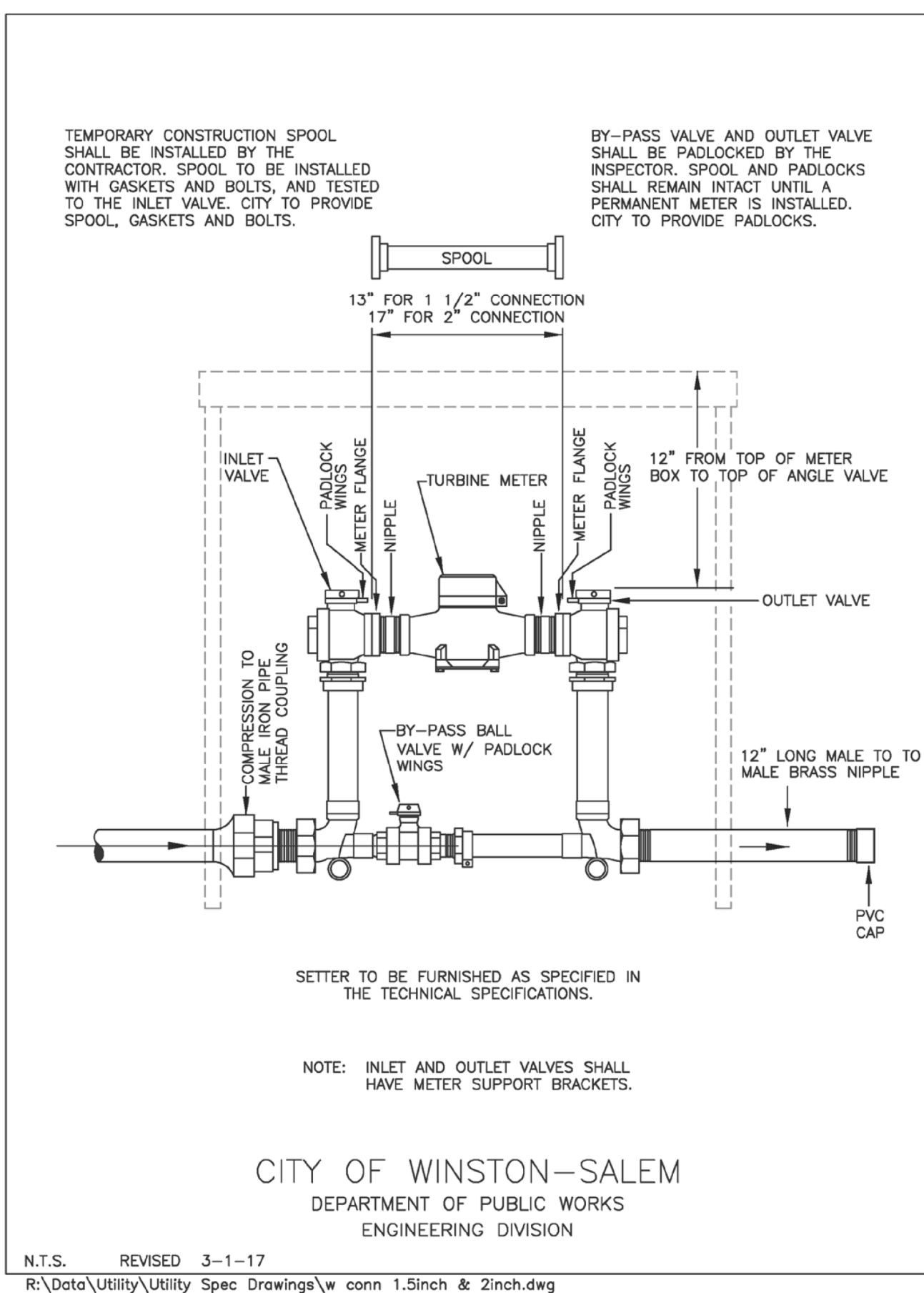
### Cast Iron Meter Box for 5/8" and 1" Meters



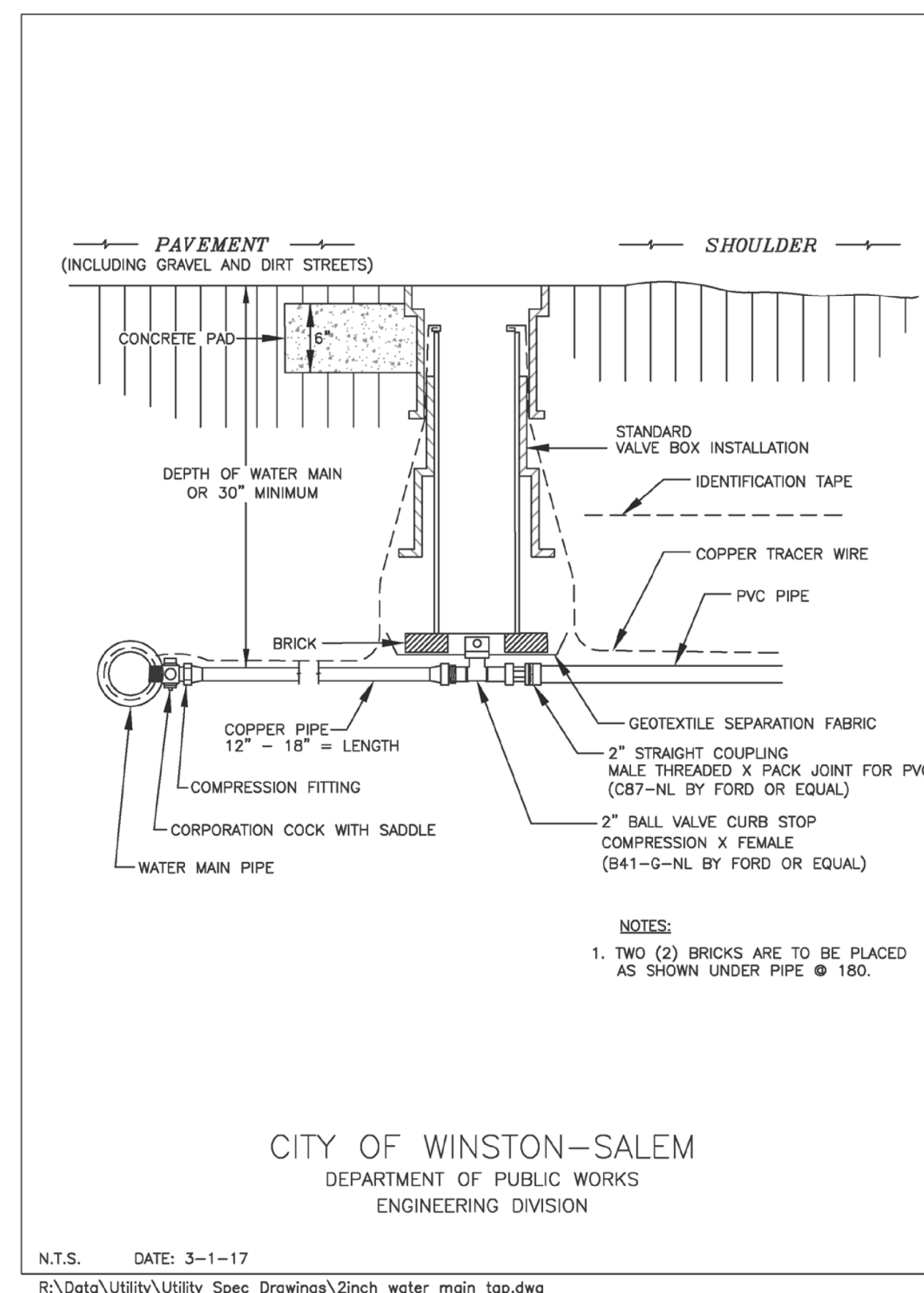
### Polymer Concrete Meter Box for 1 1/2" and 2" Meters



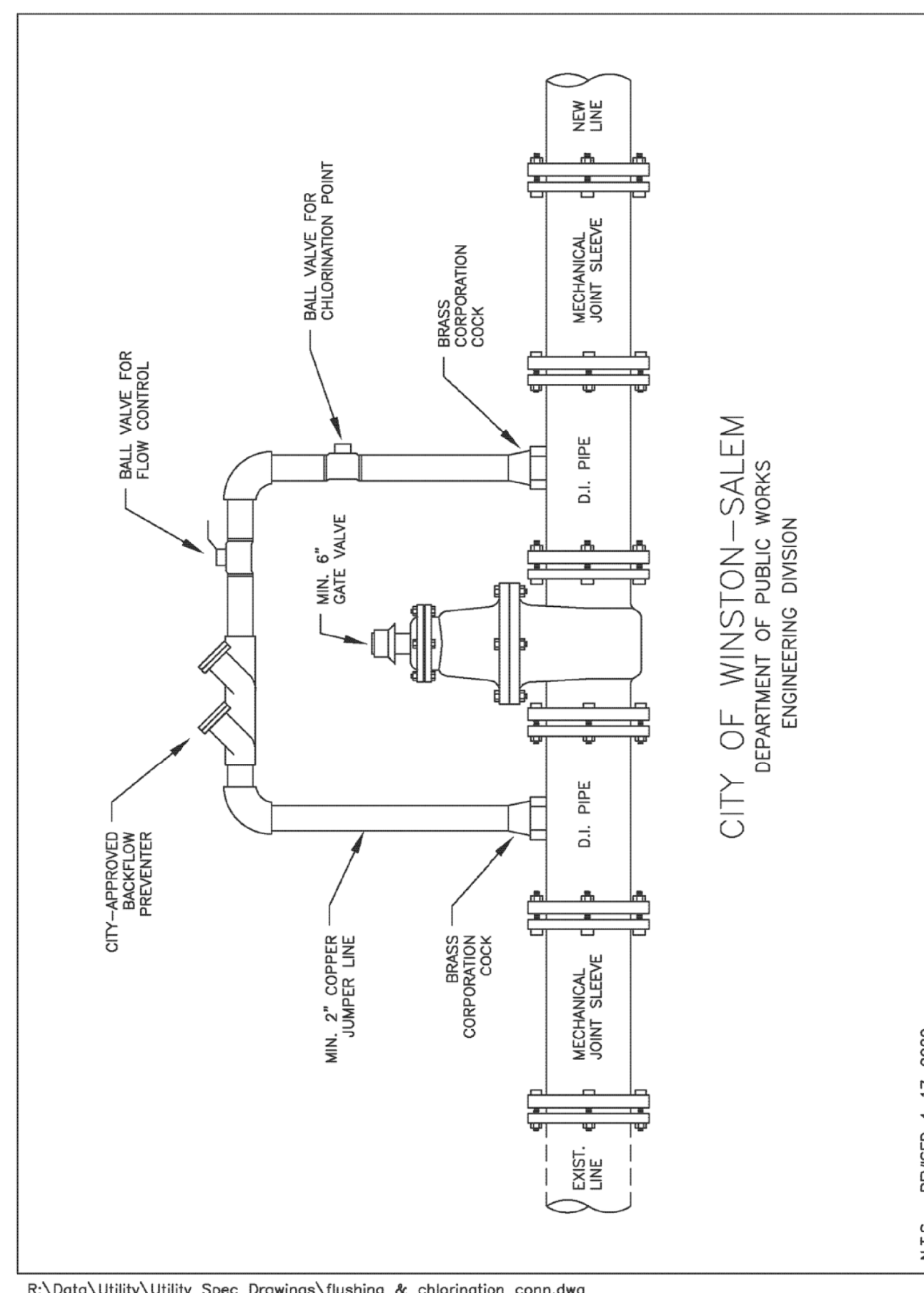
### 1 1/2" and 2" Water Connection



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



### Flushing and Chlorination Connection for Water Main Extensions



PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	UC-3F
DESIGNED BY: APL	
DRAWN BY: RDL	
CHECKED BY: APL	
APPROVED BY:	
REVISED:	5/2/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

## UTILITY CONSTRUCTION

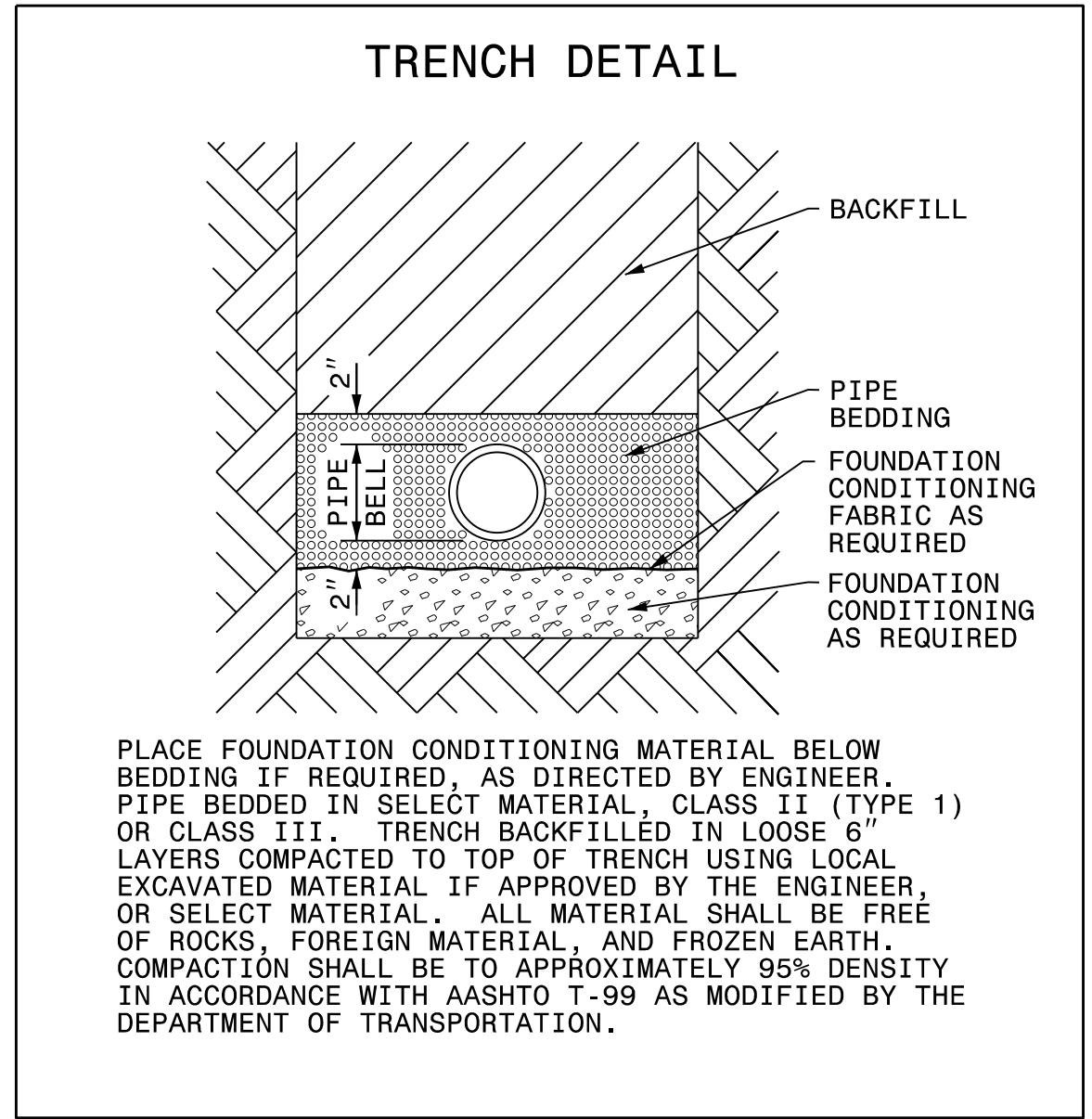
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY CONSTRUCTION PLANS PREPARED BY:

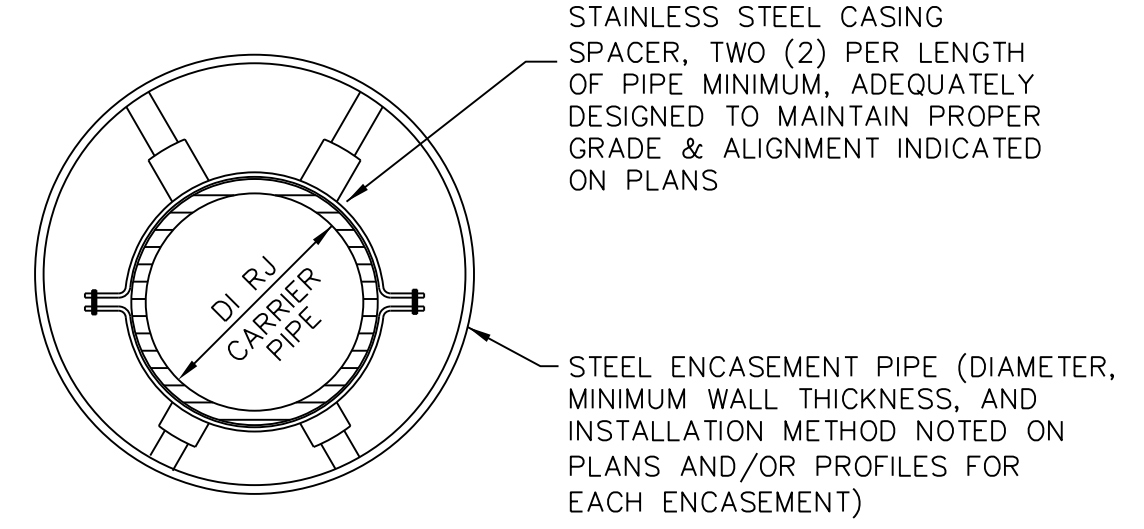
**DAVIS • MARTIN • POWELL**  
ENGINEERS & SURVEYORS

6415 OLD PLANK RD., HIGH POINT, NC 27265  
PHONE: (336) 886-4821 FAX: (336) 886-4458  
WWW.DMP-INC.COM LICENSE: F-0245

5/14/19



PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDED IN SELECT MATERIAL, CLASS II (TYPE 1) OR CLASS III. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

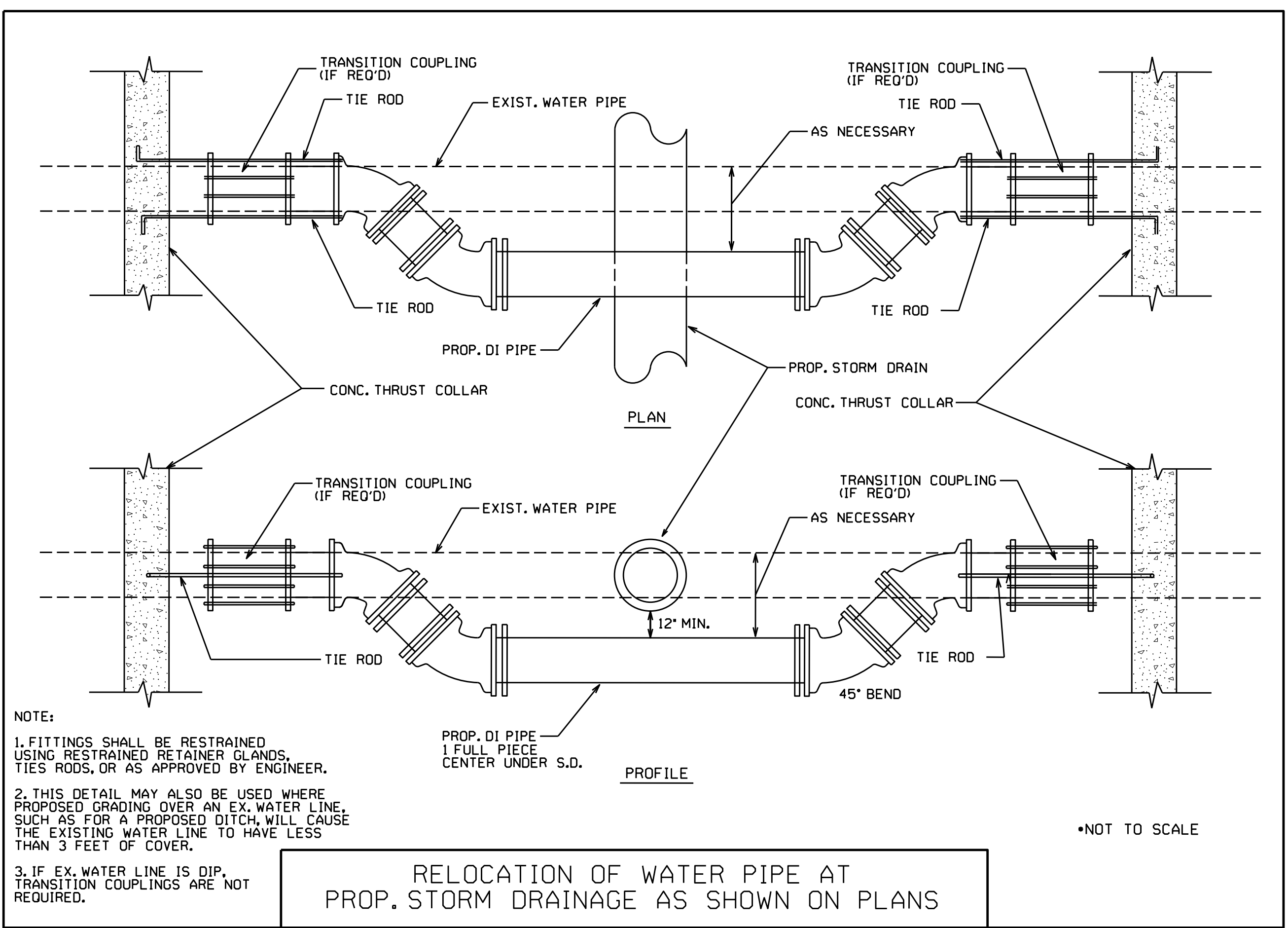


- NOTES:**
- ALL ENCASEMENT PIPES SHALL BE SEALED AT THE ENDS WITH AN APPROVED RUBBER END SEAL TO PREVENT FLOWING WATER OR DEBRIS FROM ENTERING THE SPACE BETWEEN THE ENCASEMENT PIPE AND THE CARRIER PIPE.
  - SEE 2018 NCDOT STANDARD SPECIFICATIONS, DIVISION 15, SECTIONS 1540 AND 1550, FOR OTHER REQUIREMENTS.

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		

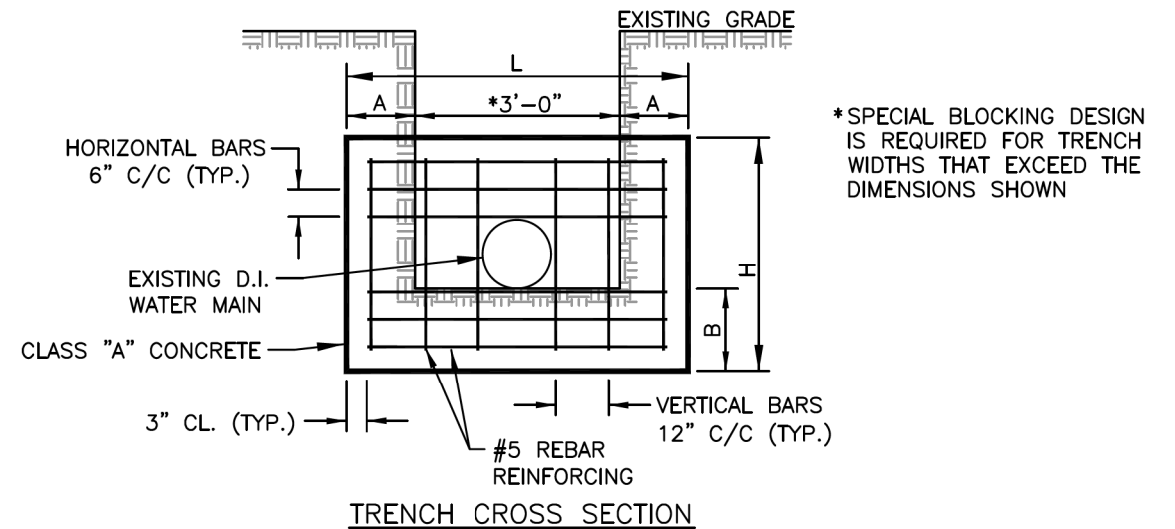
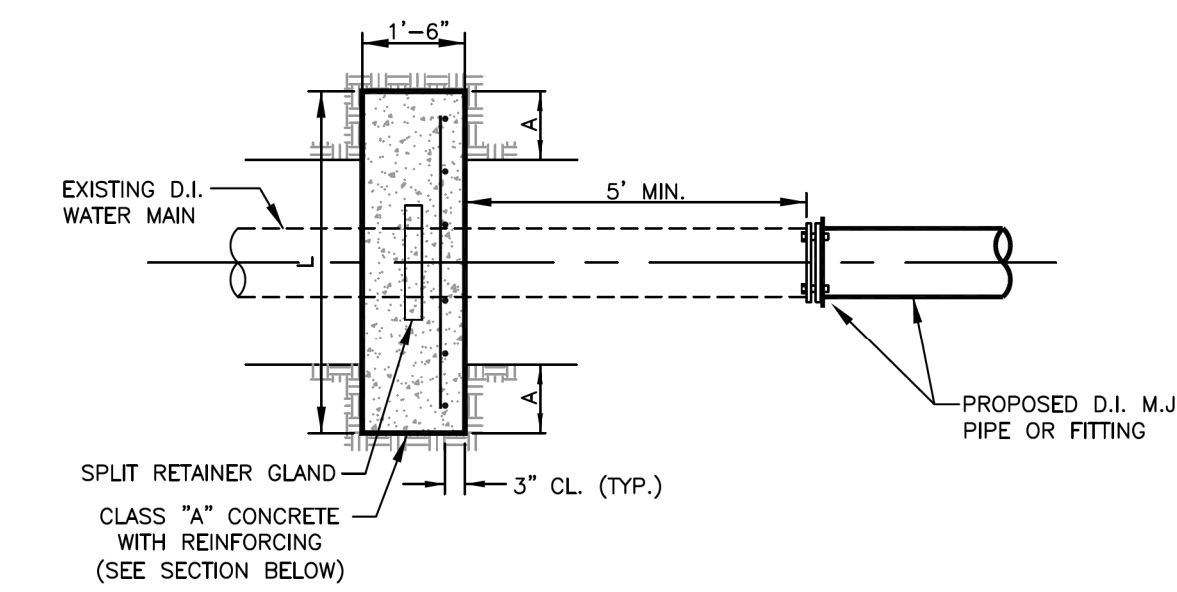
REVISIONS



- NOTE:**
- FITTINGS SHALL BE RESTRAINED USING RESTRAINED RETAINER GLANDS, TIE RODS, OR AS APPROVED BY ENGINEER.
  - THIS DETAIL MAY ALSO BE USED WHERE PROPOSED GRADING OVER AN EX. WATER LINE, SUCH AS FOR A PROPOSED DITCH, WILL CAUSE THE EXISTING WATER LINE TO HAVE LESS THAN 3 FEET OF COVER.
  - IF EX. WATER LINE IS DIP, TRANSITION COUPLINGS ARE NOT REQUIRED.

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

### THRUST COLLAR FOR EXISTING PIPE



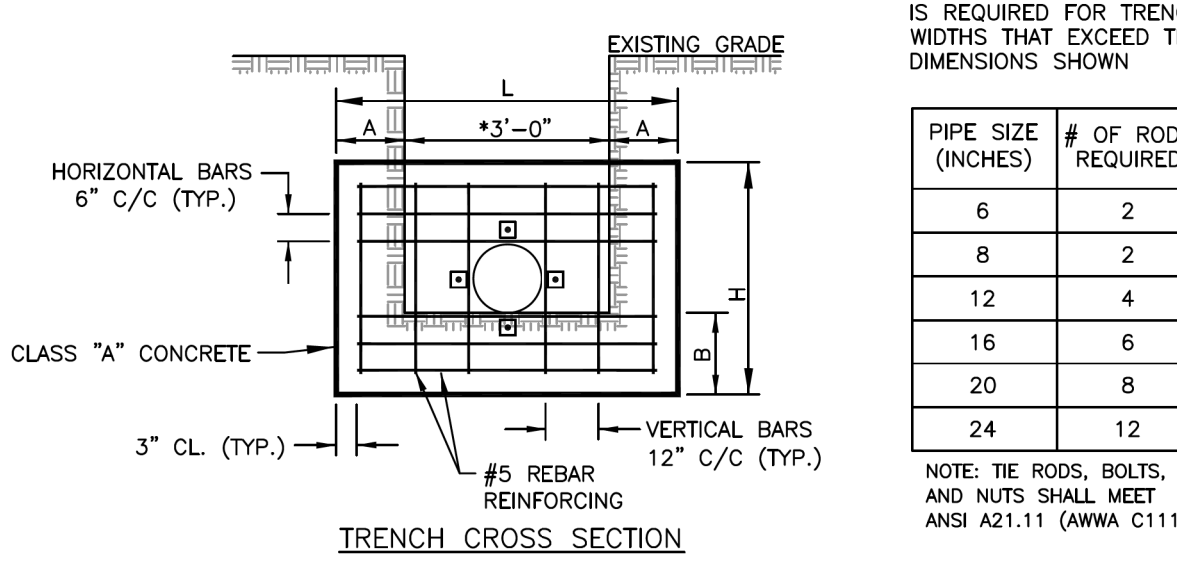
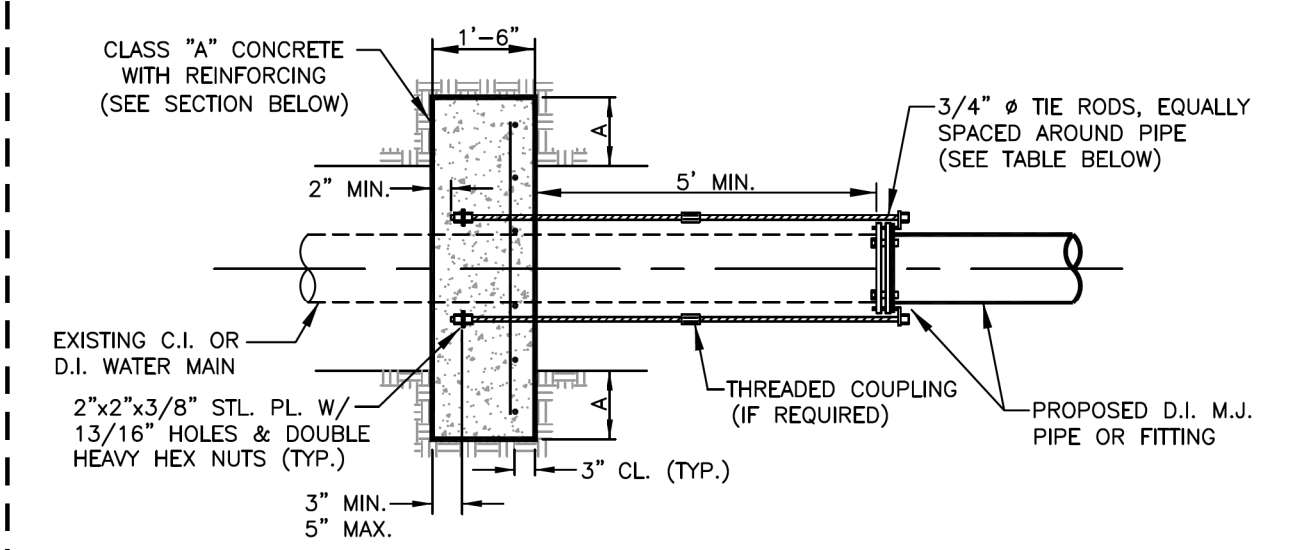
- NOTES:**
- CONCRETE SHALL BE PLACED AND CURED THREE DAYS PRIOR TO REMOVING EXISTING PIPE OR FITTINGS.
  - INSTALL POLYETHYLENE WRAP AROUND EXISTING PIPE PRIOR TO POURING CONCRETE.
  - MAINTAIN 2" CLEAR BETWEEN ALL REBARS AND PIPE.
  - CONCRETE TO BE KEED IN TO UNDISTURBED SOIL ADJACENT TO TRENCH WALL AND BOTTOM.
  - 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

### THRUST HARNESS FOR EXISTING PIPE



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

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

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

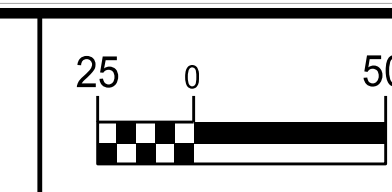
N.T.S. 5-21-18  
R:\Data\Utility\Utility Spec Drawings\thrust\_restraint.dwg

PROJECT REFERENCE NO. <b>U2579AA</b>	SHEET NO. <b>UC-3G</b>
DESIGNED BY: <b>APL</b>	
DRAWN BY: <b>RDL</b>	
CHECKED BY: <b>APL</b>	
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**

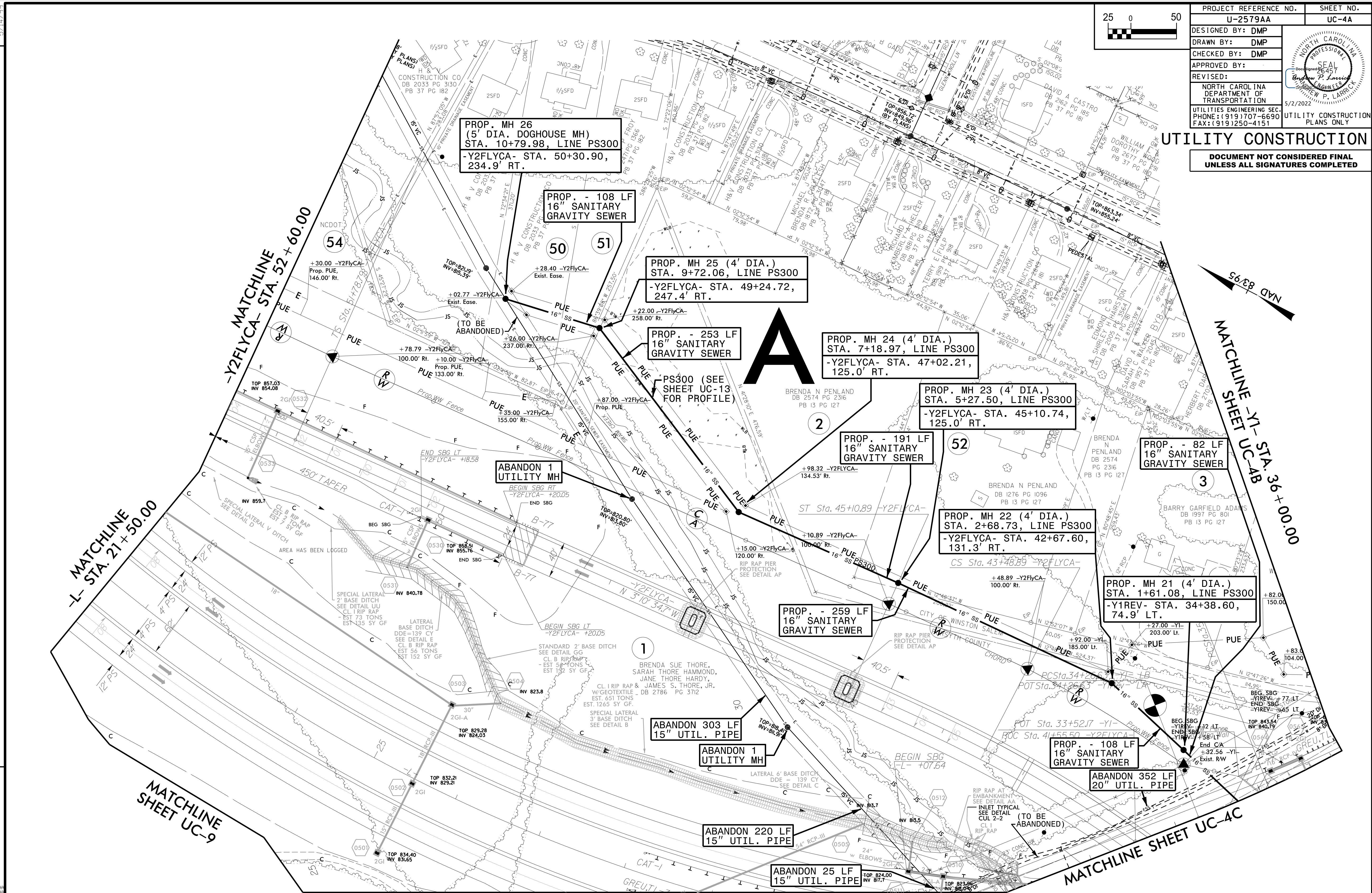
6415 OLD PLANK RD., HIGH POINT, NC 27265  
PHONE: (336) 886-4821 FAX: (336) 886-4458  
WWW.DMP-INC.COM LICENSE: F-0245



PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	UC-4A
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
APPROVED BY:	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 5/2/2022
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



### MATCHLINE SHEET UC-4C

REVISIONS

5/14/23

1. 5/14/23

2. 5/14/23

3. 5/14/23

4. 5/14/23

5. 5/14/23

6. 5/14/23

7. 5/14/23

8. 5/14/23

9. 5/14/23

10. 5/14/23

11. 5/14/23

12. 5/14/23

13. 5/14/23

14. 5/14/23

15. 5/14/23

16. 5/14/23

17. 5/14/23

18. 5/14/23

19. 5/14/23

20. 5/14/23

21. 5/14/23

22. 5/14/23

23. 5/14/23

24. 5/14/23

25. 5/14/23

26. 5/14/23

27. 5/14/23

28. 5/14/23

29. 5/14/23

30. 5/14/23

31. 5/14/23

32. 5/14/23

33. 5/14/23

34. 5/14/23

35. 5/14/23

36. 5/14/23

37. 5/14/23

38. 5/14/23

39. 5/14/23

40. 5/14/23

41. 5/14/23

42. 5/14/23

43. 5/14/23

44. 5/14/23

45. 5/14/23

46. 5/14/23

47. 5/14/23

48. 5/14/23

49. 5/14/23

50. 5/14/23

51. 5/14/23

52. 5/14/23

53. 5/14/23

54. 5/14/23

55. 5/14/23

56. 5/14/23

57. 5/14/23

58. 5/14/23

59. 5/14/23

60. 5/14/23

61. 5/14/23

62. 5/14/23

63. 5/14/23

64. 5/14/23

65. 5/14/23

66. 5/14/23

67. 5/14/23

68. 5/14/23

69. 5/14/23

70. 5/14/23

71. 5/14/23

72. 5/14/23

73. 5/14/23

74. 5/14/23

75. 5/14/23

76. 5/14/23

77. 5/14/23

78. 5/14/23

79. 5/14/23

80. 5/14/23

81. 5/14/23

82. 5/14/23

83. 5/14/23

84. 5/14/23

85. 5/14/23

86. 5/14/23

87. 5/14/23

88. 5/14/23

89. 5/14/23

90. 5/14/23

91. 5/14/23

92. 5/14/23

93. 5/14/23

94. 5/14/23

95. 5/14/23

96. 5/14/23

97. 5/14/23

98. 5/14/23

99. 5/14/23

100. 5/14/23