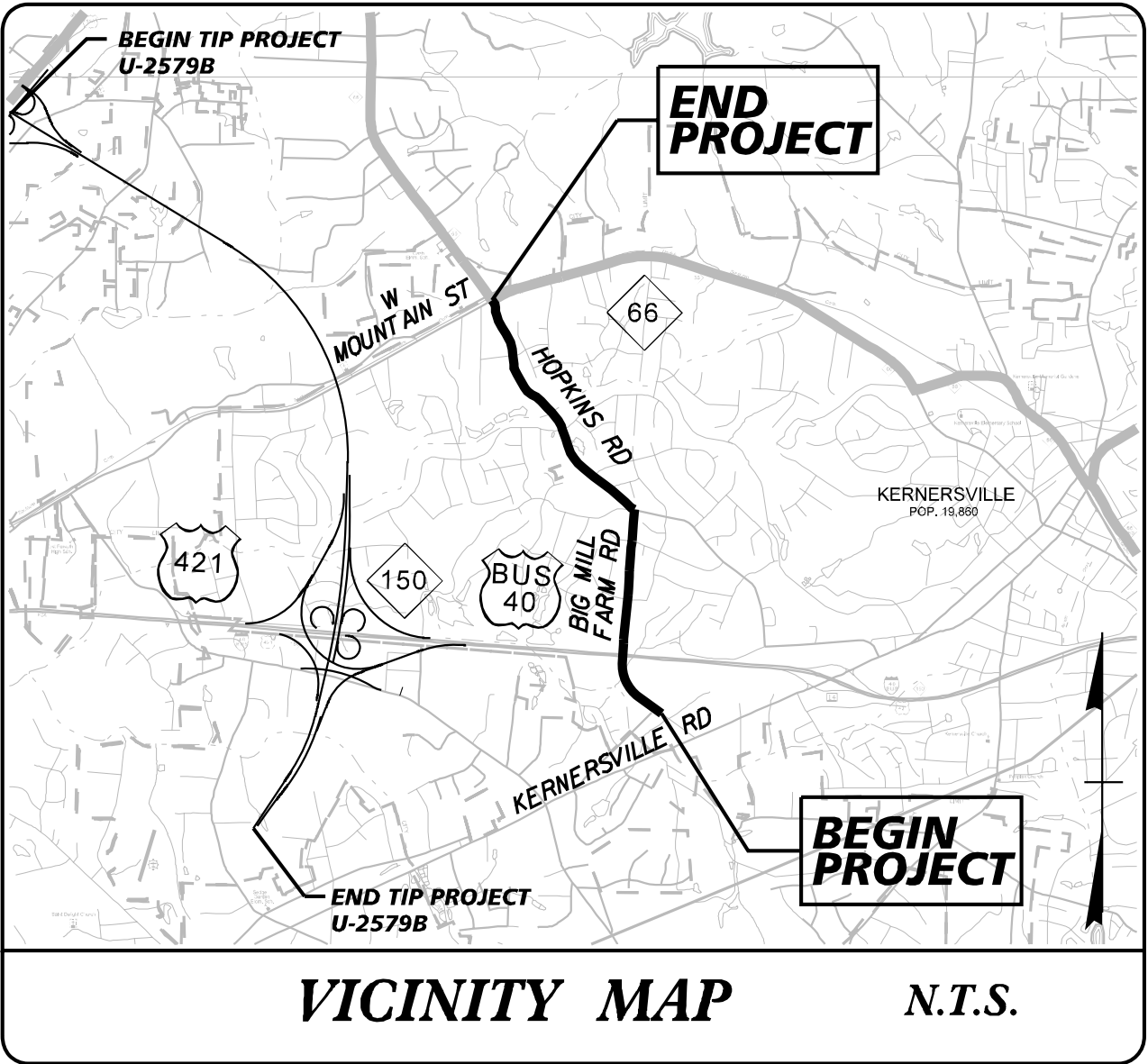


05/20/2025 09:59

TIP PROJECT: U-5760



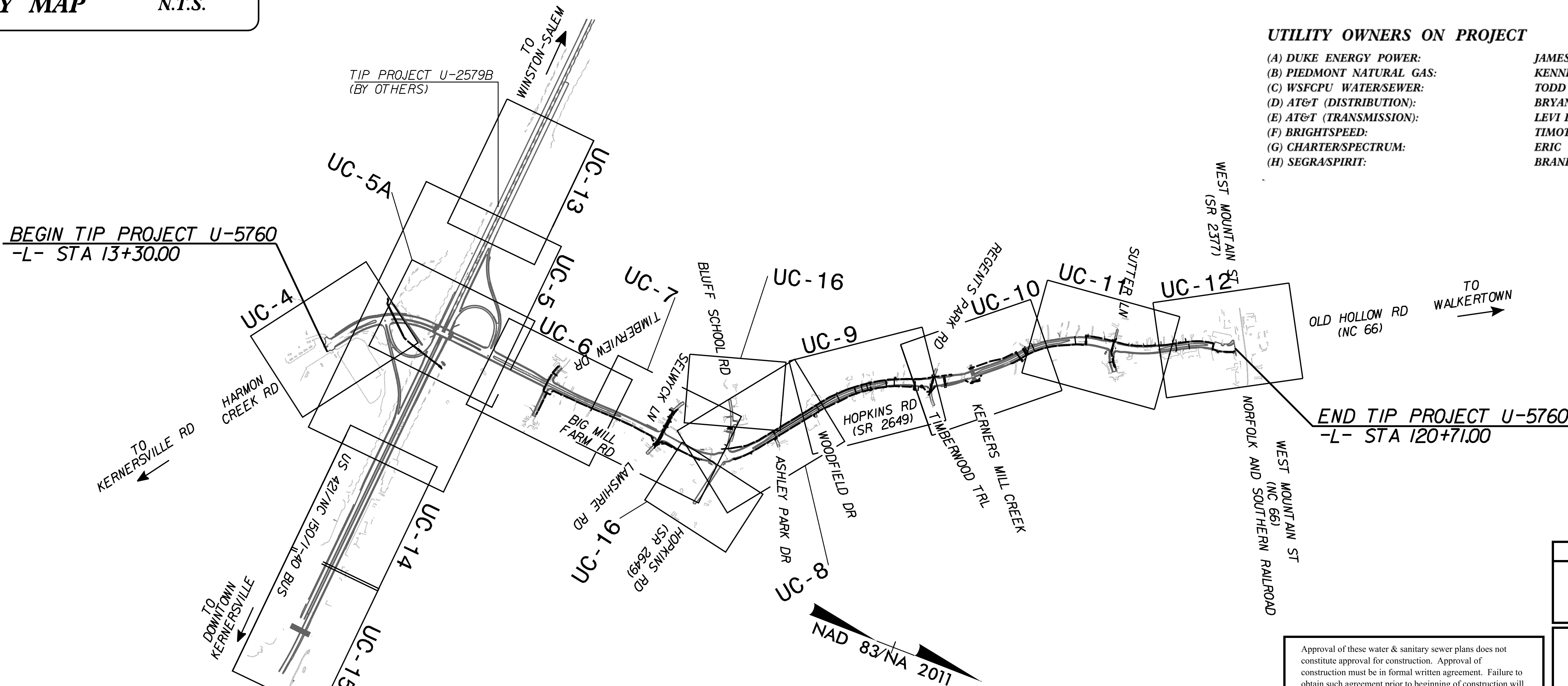
UC PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
FORSYTH COUNTY

LOCATION: HOPKINS ROAD/BIG MILL FARM ROAD IN KERNERSVILLE FROM
SOUTH OF US 421/1-40 BUS/NC 150 TO NC 66 (W MOUNTAIN ST)

TYPE OF WORK: POTABLE WATER AND SANITARY SEWER RELOCATION



UTILITY OWNERS ON PROJECT

(A) DUKE ENERGY POWER:	JAMES CARLTON	919-278-2500
(B) PIEDMONT NATURAL GAS:	KENNETH STATE	336-941-0103
(C) WSFCPU WATERSEWER:	TODD LEWIS	336-747-6842
(D) AT&T (DISTRIBUTION):	BRYAN MCBREARTY	864-345-2541
(E) AT&T (TRANSMISSION):	LEVI KENDRICK	706-781-8316
(F) BRIGHTSPEED:	TIMOTHY NUNLEY	276-340-7392
(G) CHARTERSPECTRUM:	ERIC FRANCIN	910-742-6362
(H) SEGRASPIRIT:	BRANDON WHITTON	804-402-2104

UTILITY DESIGN APPROVED

Water & Sewer Signed by: Derek Stroud 8/8/2025
Utilities Director Date

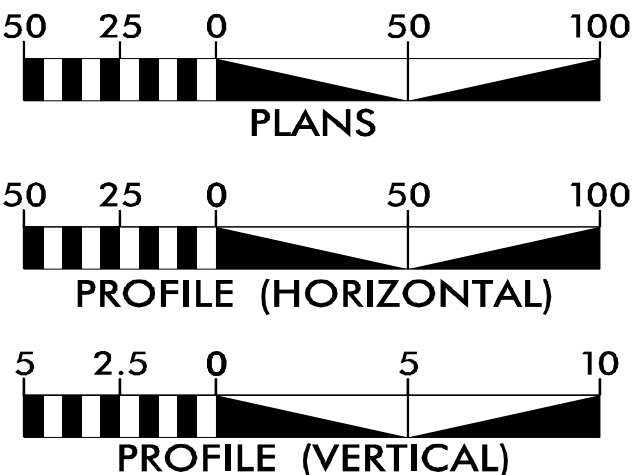
Approval of these water & sanitary sewer plans does not constitute approval for construction. Approval of construction must be in formal written agreement. Failure to obtain such agreement prior to beginning of construction will relieve the City of any financial participation in this project whatsoever.

CITY OF WINSTON-SALEM
Signed by: Todd Lewis
BY: _____

Approval by the Utilities Director of the water and sewer infrastructure depicted in these plans does not constitute approval for any other purpose than that set forth in Section 64 of the Water System Policy and Section 36 of the Sewer System Policy of the City/County Utility Commission. To the extent other permits, licenses, permissions or the like must be obtained to complete this project, such are specifically not granted by this approval and must be obtained by the Developer and/or his designee.

DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED

GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	UTILITY NOTES
UC-3A THRU UC-3G	UTILITY DETAILS
UC-4 THRU UC-16	UTILITY CONSTRUCTION SHEETS
UC-17 THRU UC-21	UTILITY PROFILE SHEETS

WATER AND SEWER
OWNERS ON PROJECT

(A) WATER - WINSTON-SALEM/
FORSYTH COUNTY UTILITIES
(C) SANITARY SEWER - WINSTON-SALEM/
FORSYTH COUNTY UTILITIES

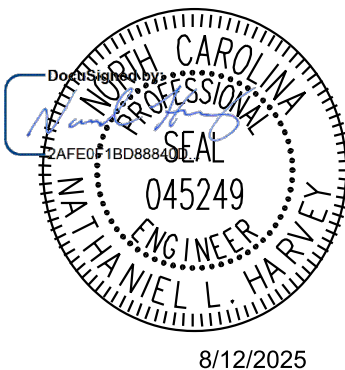
PREPARED IN THE OFFICE OF

Kimley»Horn

NC LICENSE #F-0102
300 MORRIS STREET, SUITE 200
RALEIGH, NORTH CAROLINA 27701
PHONE: (919) 877-2000

Nate Harvey, PE CONSULTANT CONTACT #1
Jack Bajerski, EI CONSULTANT CONTACT #2

SEAL



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

Joshua A McMahan DIVISION 9 UTILITY ENGINEER
R. David Trantham DIVISION 9 ASSISTANT UTILITY ENGINEER

5/14/99

8/6/2025

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROJECT REFERENCE NO.

U-5760

SHEET NO.

UC-2

DESIGNED BY: NLH

DRAWN BY: JNB

CHECKED BY: NDR

APPROVED BY: NLH

REVISED:

Kimley»Horn

300 MORRIS STREET, SUITE 200

DURHAM, NC 27701

©2025

Seal

045249

8/12/2025

NORTH CAROLINA

DEPARTMENT OF

TRANSPORTATION

UTILITIES ENGINEERING SEC.

PHONE: (919) 707-6690

FAX: (919) 250-4151

UTILITY CONSTRUCTION

PLANS ONLY

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	12" WL
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
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	PFH
Relocate Fire Hydrant	RFH
Remove Fire Hydrant	REM FH
Water Meter	PWM
Relocate Water Meter	RWM
Remove Water Meter	REM WM
Water Pump Station	PS(W)
RPZ Backflow Preventer	PRPZ
DCV Backflow Preventer	PBFP
Relocate RPZ Backflow Preventer	RRPZ
Relocate DCV Backflow Preventer	PBFP

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	PS(SS)

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	TEL 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" ENCASEMENT

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	AATUR
End of Information	E.O.I.

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

*Underground Power Line	P
*Underground Telephone Cable	T
*Underground Telephone Conduit	TC
*Underground Fiber Optics Telephone Cable	T FO
*Underground TV Cable	TV
*Underground Fiber Optics TV Cable	TV FO
*Underground Gas Pipeline	G
Aboveground Gas Pipeline	A/G Gas
*Underground Water Line	W
Aboveground Water Line	A/G Water
*Underground Gravity Sanitary Sewer Line	SS
Aboveground Gravity Sanitary Sewer Line	A/G Sanitary Sewer
*Underground SS Forced Main Line	FSS
Underground Unknown Utility Line	UUL
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

GENERAL UTILITY 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 2024 AND THE CITY OF WINSTON-SALEM'S "TECHNICAL SPECIFICATIONS AND DETAIL DRAWINGS FOR WATER LINE AND SANITARY SEWER LINE CONSTRUCTION" DATED JULY 2020.
2. THE EXISTING UTILITIES BELONG TO WINSTON-SALEM/FORSYTH COUNTY UTILITIES.
3. ALL WATER LINE 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 ENVIRONMENTAL AND NATURAL 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 AND 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 A MINIMUM OF ONE WEEK PRIOR TO SERVICE INTERRUPTIONS AND TESTING. 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 ADDITONAL 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, AS DIRECTED BY THE ENGINEER.
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. DEVIATION FROM THESE PLANS AND NOTES WITHOUT THE PRIOR WRITTEN CONSENT OF THE UTILITY OWNER OR THEIR REPRESENTATIVE OR THE ENGINEER MAY BE CAUSE FOR THE WORK TO BE UNACCEPTABLE.
2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY FIELD CONDITIONS BE ENCOUNTERED THAT VARY FROM THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS. ANY NECESSARY FIELD REVISIONS ARE SUBJECT TO REVIEW & APPROVAL OF AN AMENDED PLAN AND/OR PROFILE BY THE UTILITY OWNER PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE ALL WORK WITH UTILITY OWNER AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION, OR AS OTHERWISE SPECIFIED HEREIN.
4. USE DETAIL 5/UC-3F FOR BEDDING AND BACKFILL OF ALL PVC SANITARY SEWER.
5. PIPE ALIGNMENT SHOWN IS BASED ON STANDARD DUCTILE IRON MECHANICAL JOINT FITTINGS. JOINT DEFLECTIONS SHALL NOT EXCEED 75 PERCENT OF MANUFACTURER'S RECOMMENDED DEFLECTION. CONTRACTOR SHALL ADJUST PIPELINE ALIGNMENT AND DEFLECT JOINTS AS NECESSARY TO ACCOMMODATE THE STANDARD BENDS SHOWN.
6. MINIMUM PIPE COVER FOR DISTRIBUTION WATER MAINS AND SANITARY GRAVITY SEWERS AND FORCE MAINS SHALL BE 3 FEET.
7. ALL PRESSURIZED FITTINGS SHALL BE DUCTILE IRON RESTRAINED MECHANICAL JOINT WITH PRESSURE RATING EQUAL TO OR HIGHER THAN HOST PIPE, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
8. ALL MECHANICAL JOINTS SHALL BE FITTED WITH WEDGE-TYPE MECHANICAL RESTRAINT ACCESSORY KITS DESIGNED FOR THE INTENDED USE AND MATERIAL, AS APPROVED BY UTILITY OWNER.
9. ALL SANITARY SEWER PIPING AND FITTINGS SHALL BE CERAMIC EPOXY LINED DUCTILE IRON (SEE UC SPECIAL PROVISIONS). ALL WATER PIPING AND FITTINGS SHALL BE CEMENT MORTAR LINED PC350 DUCTILE IRON.
10. CROSS-CONNECTION CONTROL PROTECTION DEVICES ARE REQUIRED BASED ON DEGREE OF HEALTH HAZARD INVOLVED AS LISTED IN APPENDIX B OF THE RULES GOVERNING PUBLIC WATER SYSTEMS OF NORTH CAROLINA. THESE GUIDELINES ARE THE MINIMUM REQUIREMENTS. THE DEVICES SHALL MEET AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) STANDARDS OR BE ON THE UNIVERSITY OF SOUTHERN CALIFORNIA APPROVAL LIST. THE DEVICES SHALL BE INSTALLED AND TESTED (BOTH INITIAL AND PERIODIC TESTING THEREAFTER) IN ACCORDANCE WITH THE MANUFACTURERS'S RECOMMENDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM, WHICHEVER IS MORE STRINGENT.

Kimley»Horn

300 MORRIS STREET, SUITE 200
DURHAM, NC 27701

PROJECT REFERENCE NO.

U-5760

SHEET NO.

UC-3

DESIGNED BY: NLH

DRAWN BY: JNB

CHECKED BY: NDR

APPROVED BY: NLH

REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

UTILITIES ENGINEERING SEC.
PHONE: (919) 707-6690
FAX: (919) 250-4151

UTILITY CONSTRUCTION
PLANS ONLY

045249

08/12/2025

SEAL

PROFESSIONAL ENGINEER

THOMAS L. HARLEY

UTILITY CONSTRUCTION

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE ENGINEER WITH A SET OF SURVEY RECORD (AS-BUILT) DRAWINGS PREPARED BY A NORTH CAROLINA REGISTERED LAND SURVEYOR CERTIFYING THE ACCURACY OF THE SURVEY HORIZONTAL AND VERTICAL LOCATIONS TO ONE TENTH (0.10) OF A FOOT, SURVEY SHALL BE TIED TO THE NORTH CAROLINA STATE PLANS COORDINATE SYSTEM (NAD83 FEET) HORIZONTALLY, AND ELEVATIONS SHALL BE TIED TO THE NOTH CAROLINA STATE PLANE COORDINATE SYSTEM (NAD83 FEET) HORIZONTALLY, AND ELEVATIONS SHALL BE NORTH AMERICAN CERTICAL DATUM (NAVD88). SURVEY POINT INFORMATION SHALL BE PROVIDED IN AN ELECTRONIC FORMAT FILE OR AN ASCII POINT TEXT FILE [X-Y-Z COORDINATED].

THESE DRAWINGS SHALL AT A MINIMUM SHOW THE FINAL ELEVATIONS AND HORIZONTAL LOCATIONS FOR THE FOLLOWING:

ALL RELOCATION, INCLUDING VAULTS, BELOW GRADE FITTINGS, VALVES, WATER METER AND BACKFLOW PREVENTION DEVICES ALONG THE WATER LINE ALIGNMENT. CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A LETTER CERTIFYING THE ACCURACY OF THE AS-BUILT DRAWINGS.

CONSTRUCTION SEQUENCE:

1. FOR EACH WATER LINE AND SANITARY GRAVITY SEWER RELOCATION, THE CONTRACTOR SHALL PROVIDE THE OWNER WITH A DETAILED INSTALLATION, TESTING, CONNECTION, AND SERVICE INTERRUPTRION PLAN FOR APPROVAL AT LEAST SEVEN (7) DAYS PRIOR TO THE RELOCATION. AT A MINIMUM, EACH PLAN SHALL ADDRESS THE FOLLOWING:

A. SEQUENCE OF CONSTRUCTION OPERATIONS, INCLUDING BYPASS PLAN, SEALED BY A PROPOSESSIONAL ENGINEER LICENSED IN NORTH CAROLINA, IF BYPASS IS TO BE IMPLEMENTED.

B. PROCEDURE FOR FLUSHING, TESTING, AND DISINFECTION OF ALL AFFECTED PIPING, VALVES, AND STRUCTURES, AS REQUIRED BY THE OWNER.

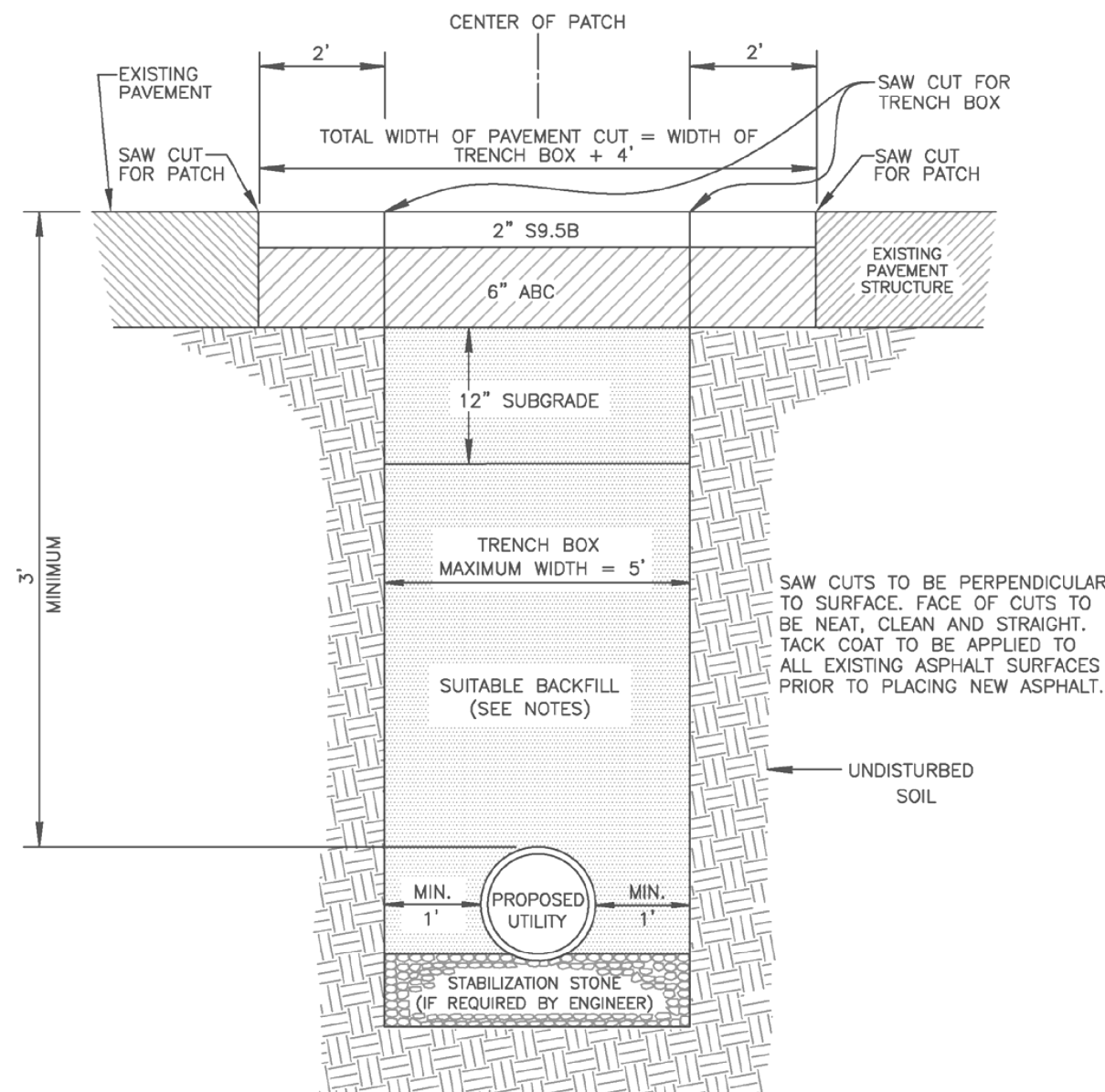
C. PHASING AND SCHEDULE FOR ALL CONNECTIONS, INCLUDING PLANNED SERVICE OUTAGES, DURATION, AND CONTINGENCY PLAN.

2. NO INTERRUPTION OF SERVICE WILL BE PERMITTED UNTIL THE FOREGOING PLAN HAS BEEN APPROVED BY THE OWNER. THE OWNER'S PERSONNEL SHALL OPERATE THE OWNER'S EXISTING FACITLITIES INVOLVED IN THE INTERRUPTIONS OF SERVICE.

3. WRITTEN WATER SERVICE INTERRUPTION NOTICES SHALL BE PROVIDED TO ALL AFFECTED CUSTOMERS AT LEAST 72 HOURS PRIOR TO EACH PLANNED INTERRUPTION.

8/6/2025

Concrete Pavement and Driveway Repair



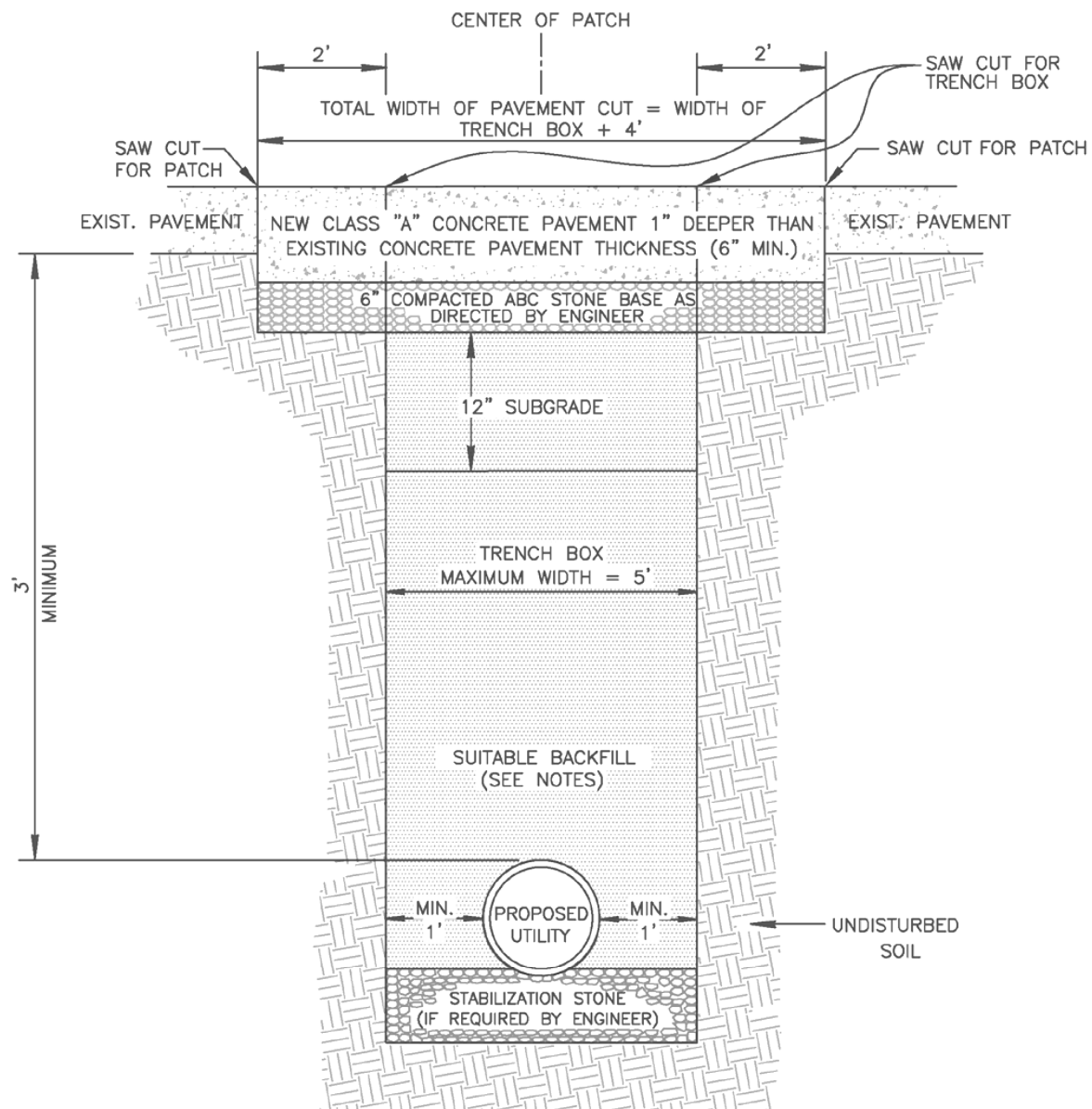
THE SUITABLE BACKFILL SHALL BE MADE IN 6" LAYERS AND SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD DENSITY (ASHTO METHOD T-99). EACH LAYER MUST BE THOROUGHLY TAMPED BY A MECHANICAL TAMP BEFORE THE NEXT LAYER IS PLACED. ALL ASPHALT PAVEMENT REPLACED SHALL BE IN ACCORDANCE WITH THE MOST CURRENT N.C.D.O.T. STANDARD SPECIFICATIONS. STONE BASE DENSITY AND SUBGRADE DENSITY SHALL BE 100%.

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\asphalt dw repair.dwg

C-2

C-3

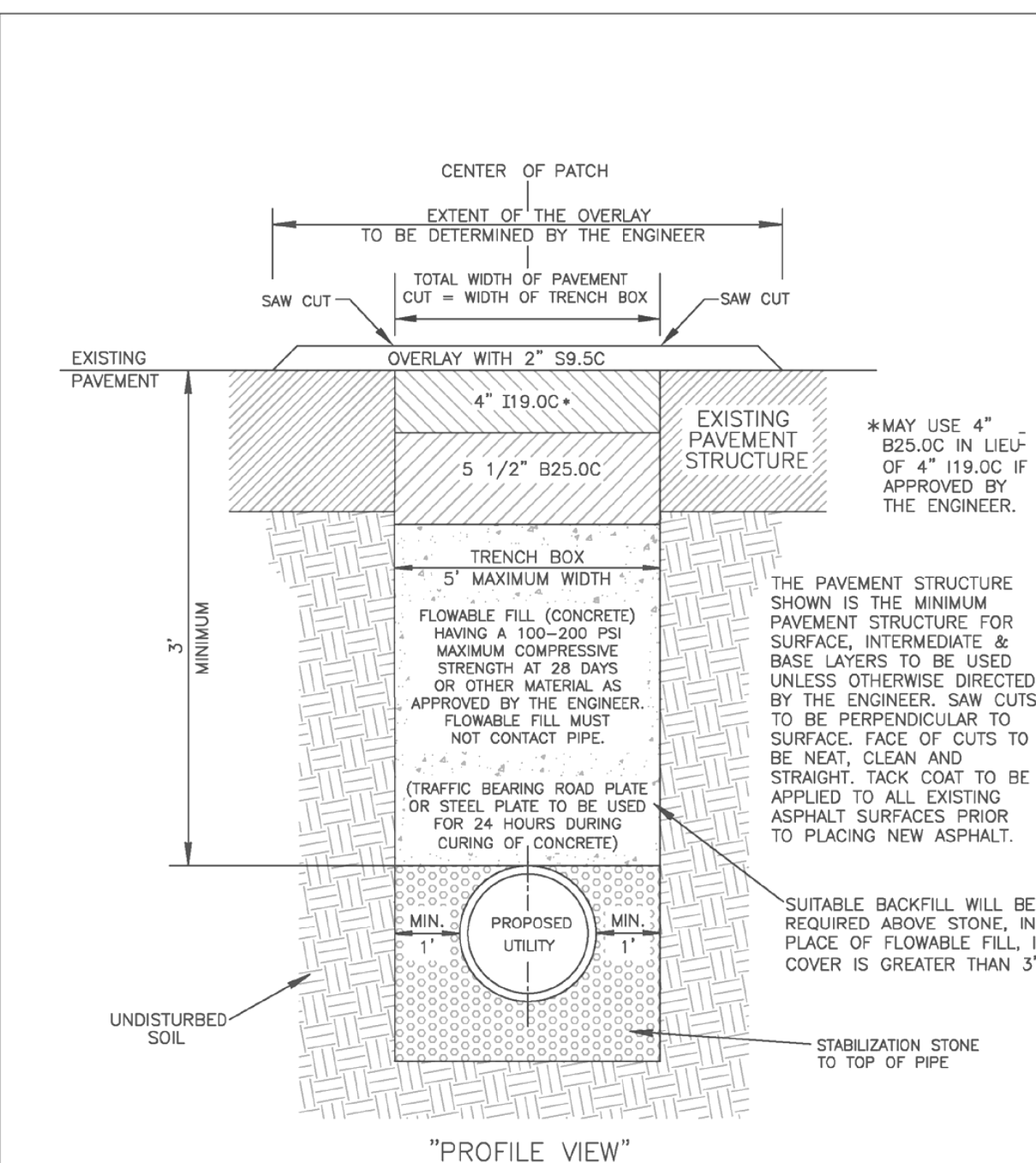


THE SUITABLE BACKFILL SHALL BE MADE IN 6" LAYERS AND SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD DENSITY (AASHTO METHOD T-99). EACH LAYER MUST BE THOROUGHLY TAMPED BY A MECHANICAL TAMP BEFORE THE NEXT LAYER IS PLACED. STONE BASE AND SUBGRADE DENSITY SHALL BE 100%.

N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\concrete pavement & dw repair.dwg

C-4

Mill and Patch Method - Option D (For State Maintained Roads)



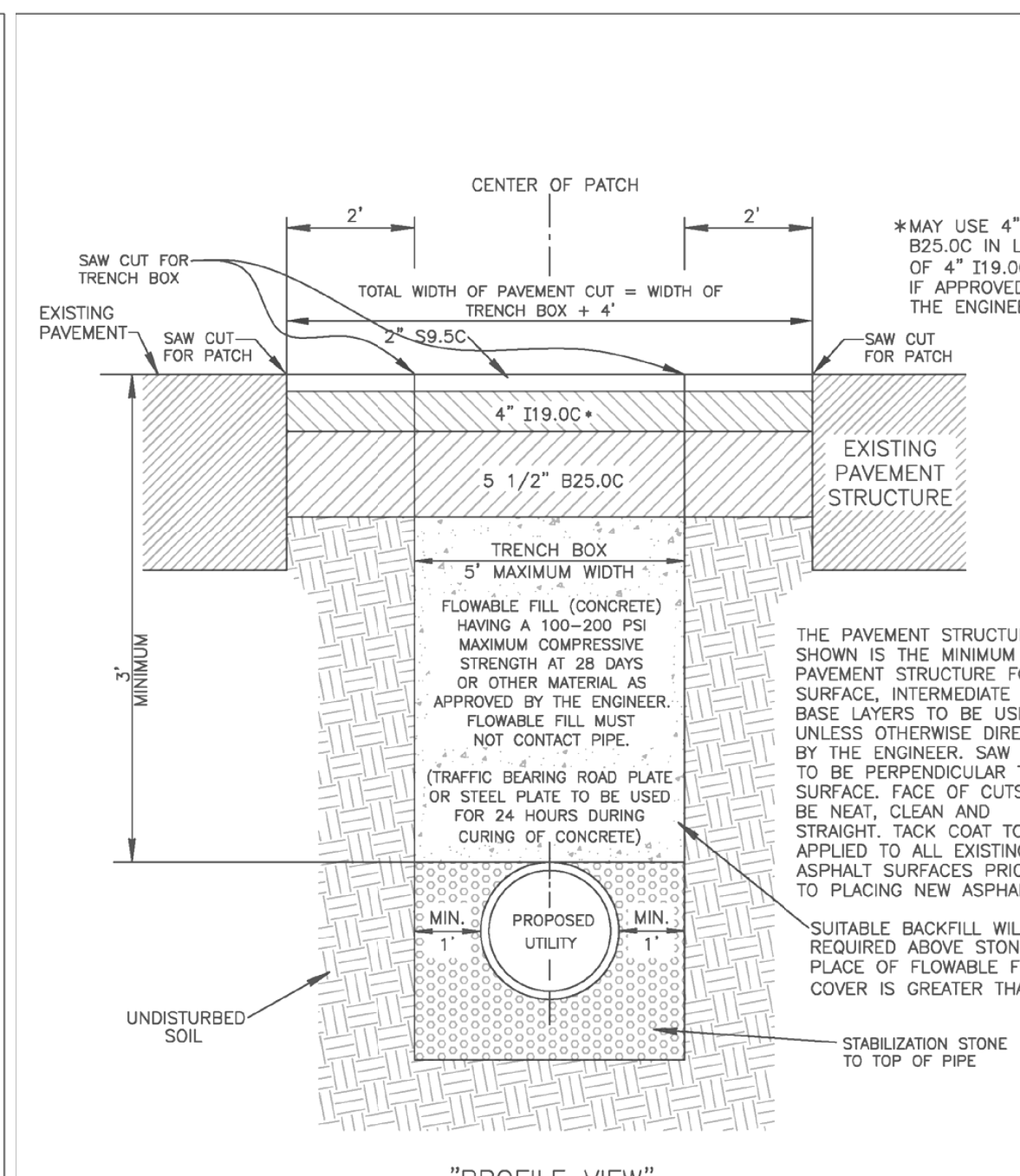
NOTE: THE SUITABLE BACKFILL SHALL BE MADE IN 6" LAYERS AND SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD DENSITY (ASHTO METHOD T-99). EACH LAYER MUST BE THOROUGHLY TAMPED BY A MECHANICAL TAMP BEFORE THE NEXT LAYER IS PLACED. ALL ASPHALT PAVEMENT REPLACED SHALL BE IN ACCORDANCE WITH THE MOST CURRENT N.C.D.O.T. STANDARD SPECIFICATIONS.

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 2-11-20
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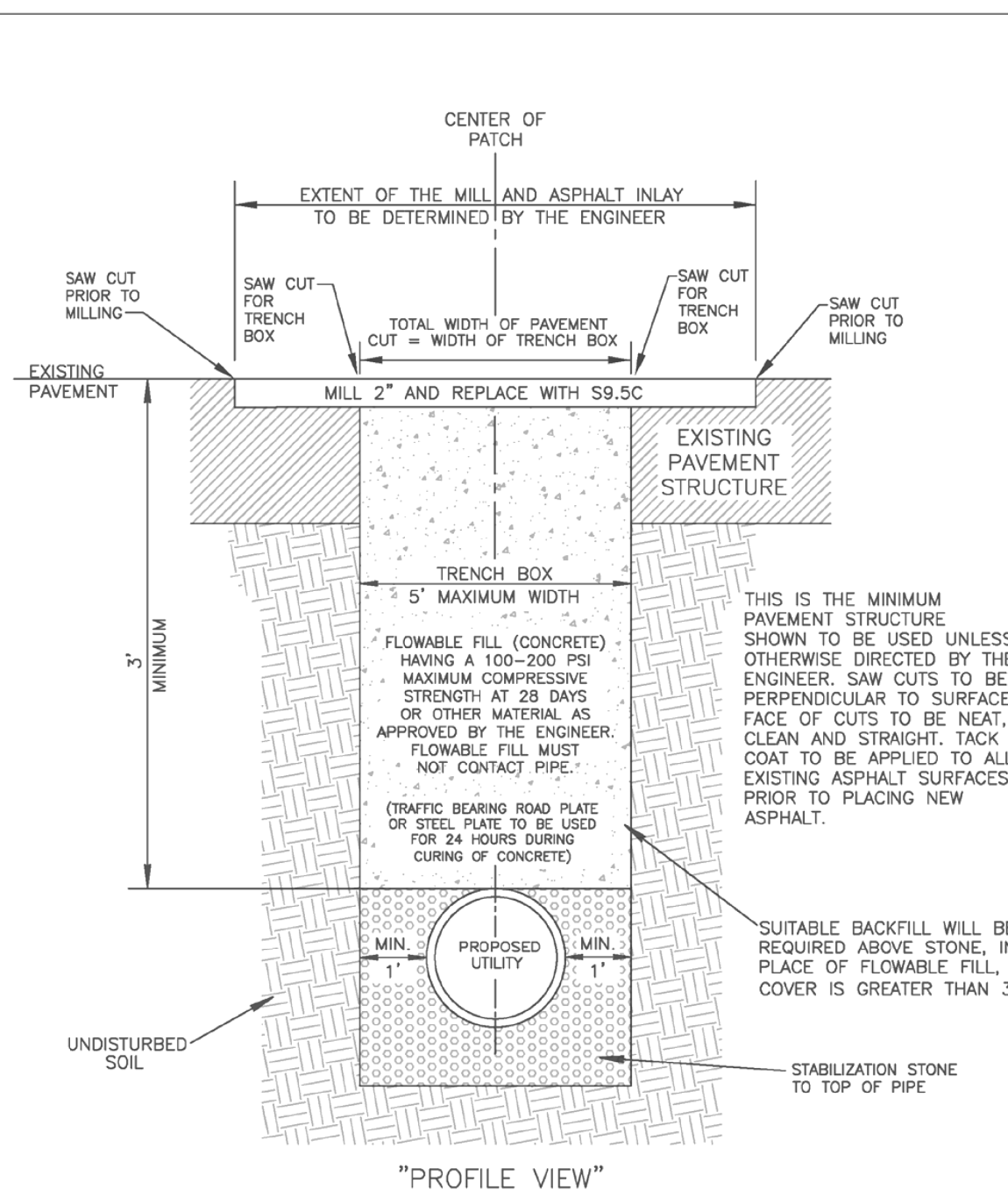
C-5

C-6

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS

N.T.S. REVISED 2-11-20
R:\Data\Utility\Utility Spec Drawings\saw cut & patch.dwg

C-2

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS

T.S. REVISED 2-11-20
\\Data\Utility\Utility Spec Drawings\mill & patch option D.dwg

C-8

PROJECT REFERENCE NO.

SHEET NO.

U-5760

UC-3A

DESIGNED BY: NLH

DRAWN BY: JNB

CHECKED BY: **NDR**

APPROVED BY: NLH

REVISÉ:

NORTH CAROLINA

DEPARTMENT OF
TRANSPORTATION

UTILITIES ENGINEERING SEC

PHONE: (919) 707-6690
FAX: (919) 250-4151

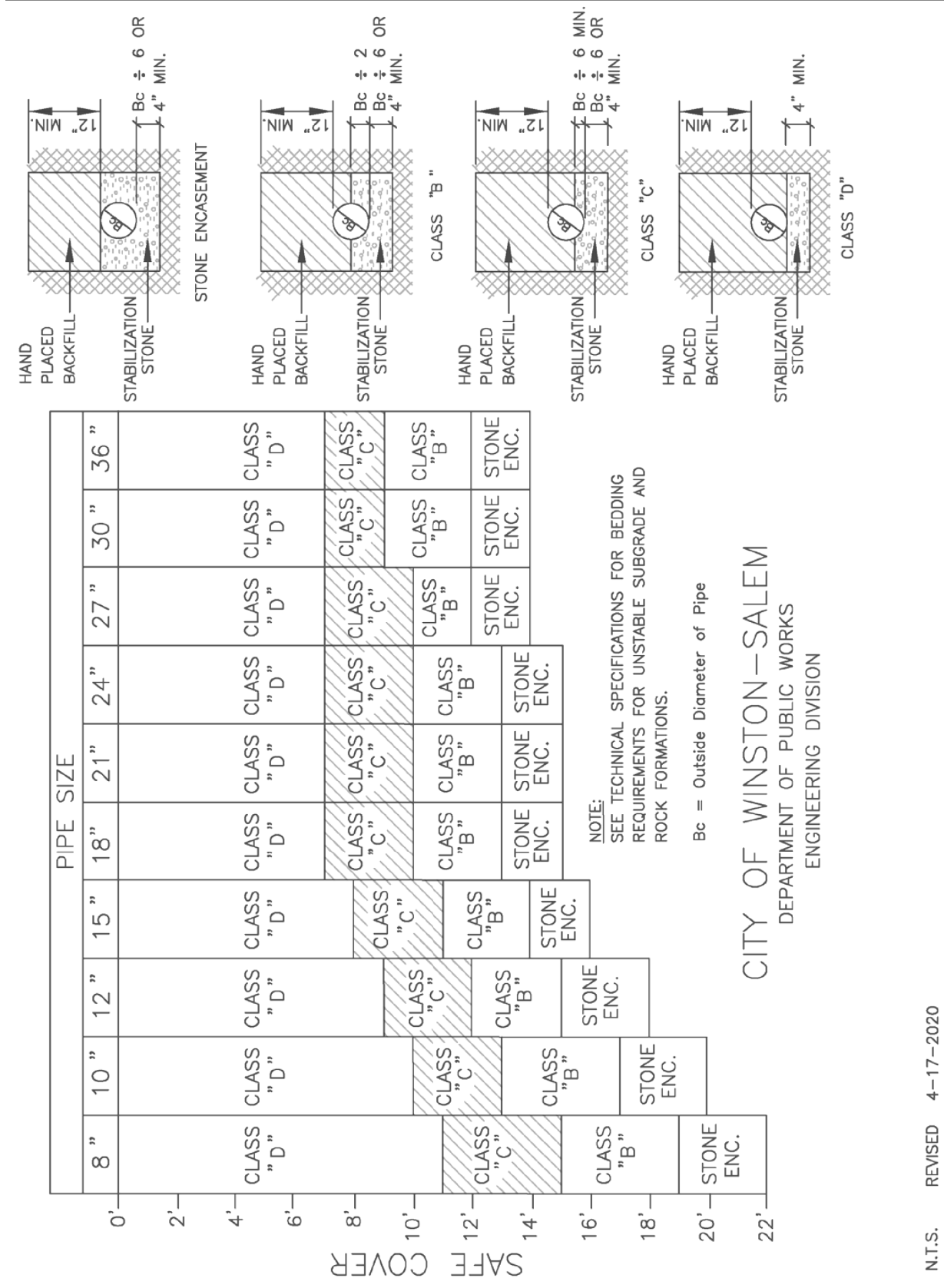
STANDARD DETAILS
DESIGNED BY
WINSTON-SALEM/
FORSYTH COUNTY
UTILITIES

UTILITY CONSTRUCTION
PLANS ONLY

UTILITY CONSTRUCTION

5/14/99

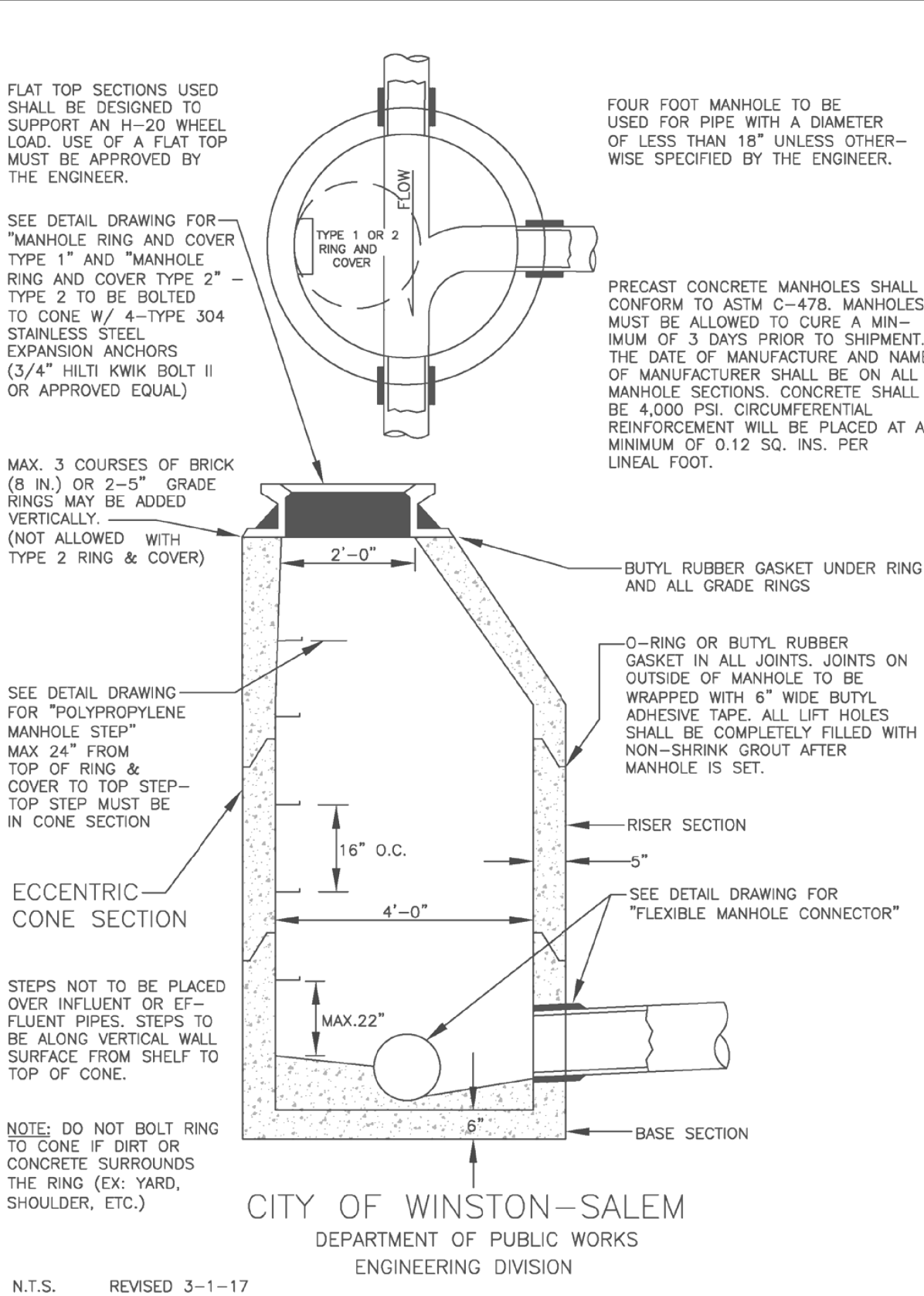
Bedding Requirements & Safe Cover for VC Pipe on Stable Subgrade



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C-9

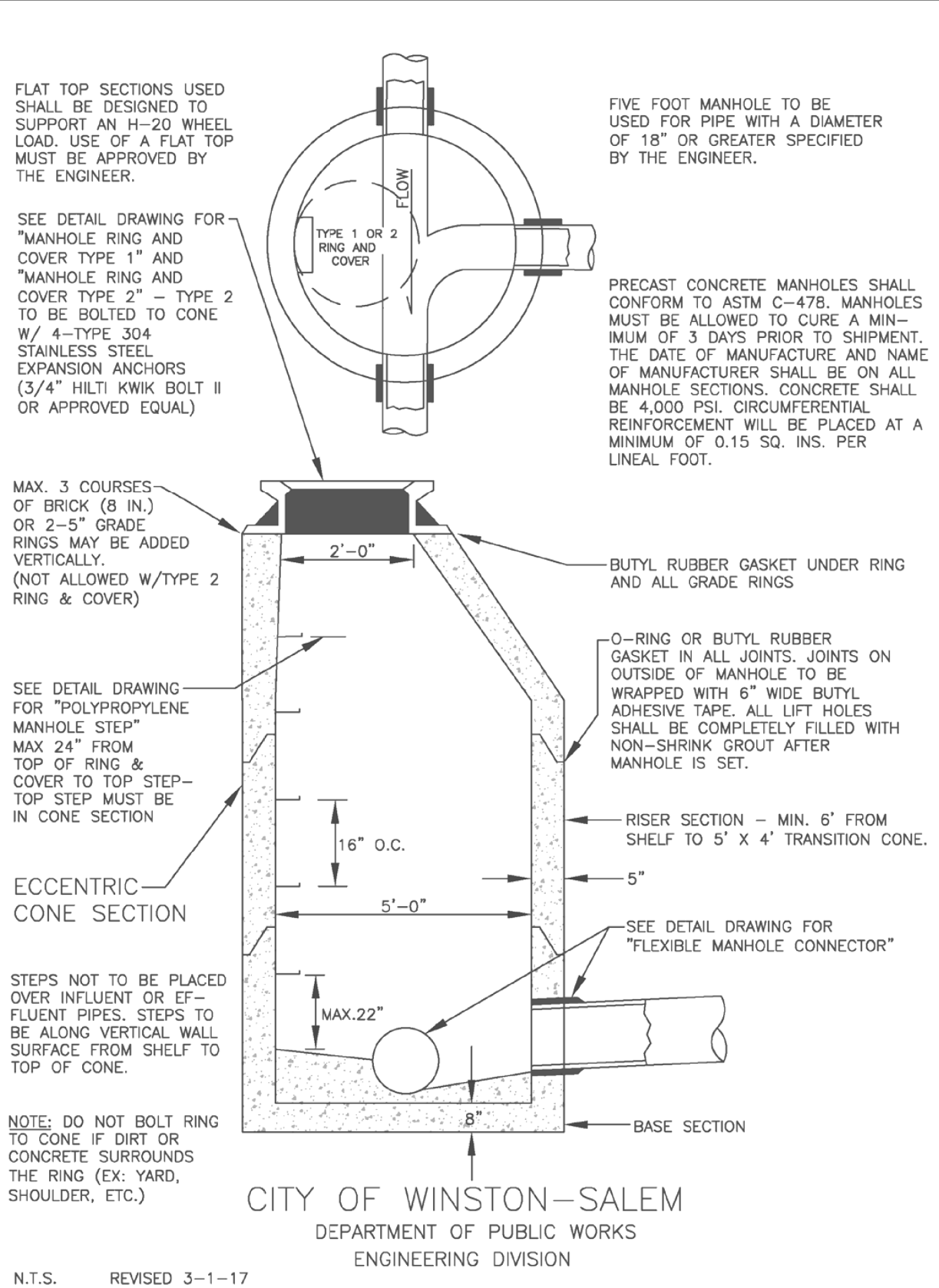
4' Precast Reinforced Concrete Manhole



R:\Data\Utility\Utility Spec Drawings\4ft precast mh.dwg

C-10

5' Precast Reinforced Concrete Manhole



R:\Data\Utility\Utility Spec Drawings\5ft precast mh.dwg

C-11

Kimley»Horn

300 MORRIS STREET, SUITE 200
DURHAM, NC 27701

PROJECT REFERENCE NO.

U-5760

SHEET NO.

UC-3B

DESIGNED BY: NLH

DRAWN BY: JNB

CHECKED BY: NDR

APPROVED BY: NLH

REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

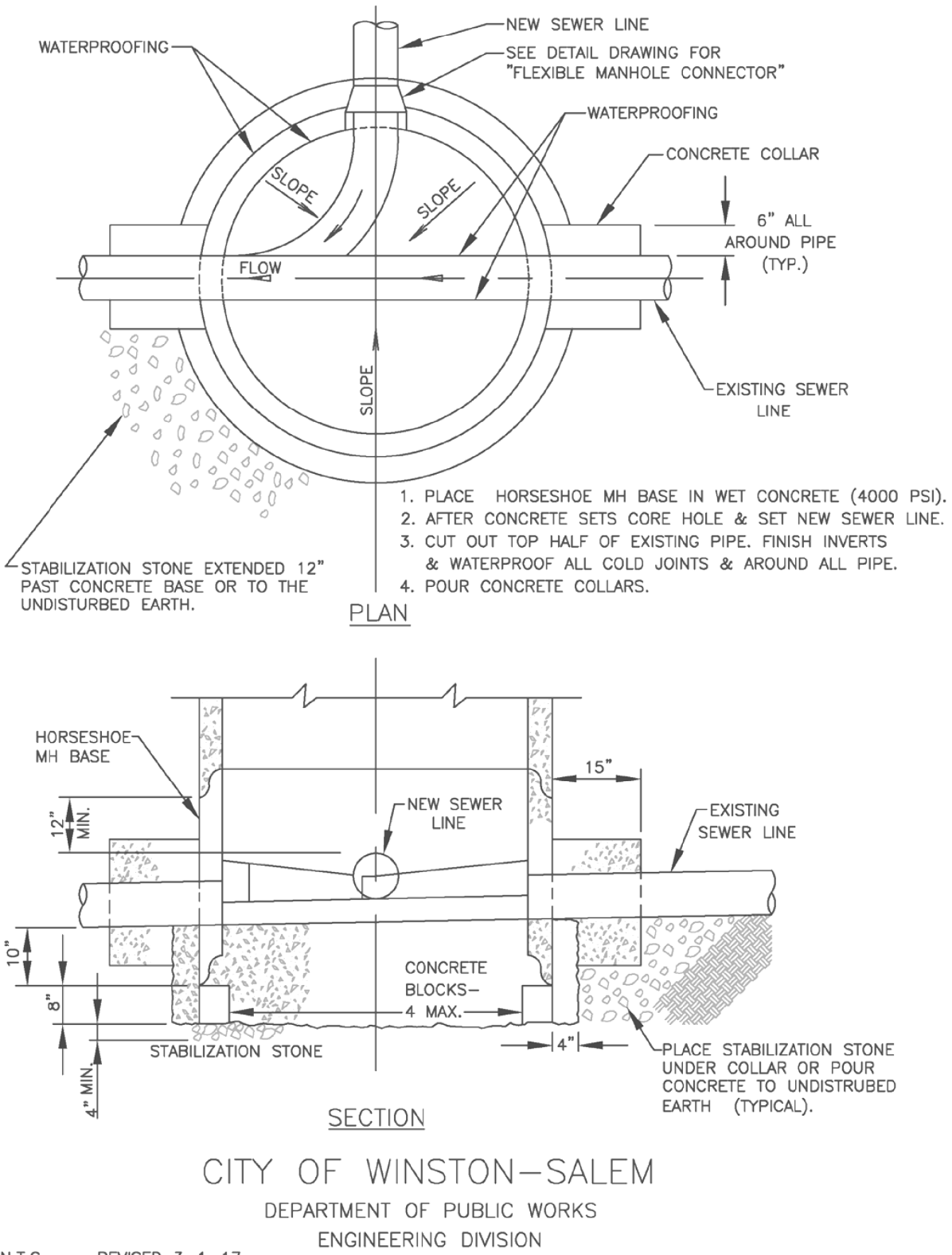
UTILITIES ENGINEERING SEC.
PHONE: (919) 707-6690
FAX: (919) 250-4151

STANDARD DETAILS
DESIGNED BY
WINSTON-SALEM/
FORSYTH COUNTY
UTILITIES

UTILITY CONSTRUCTION
PLANS ONLY

UTILITY CONSTRUCTION

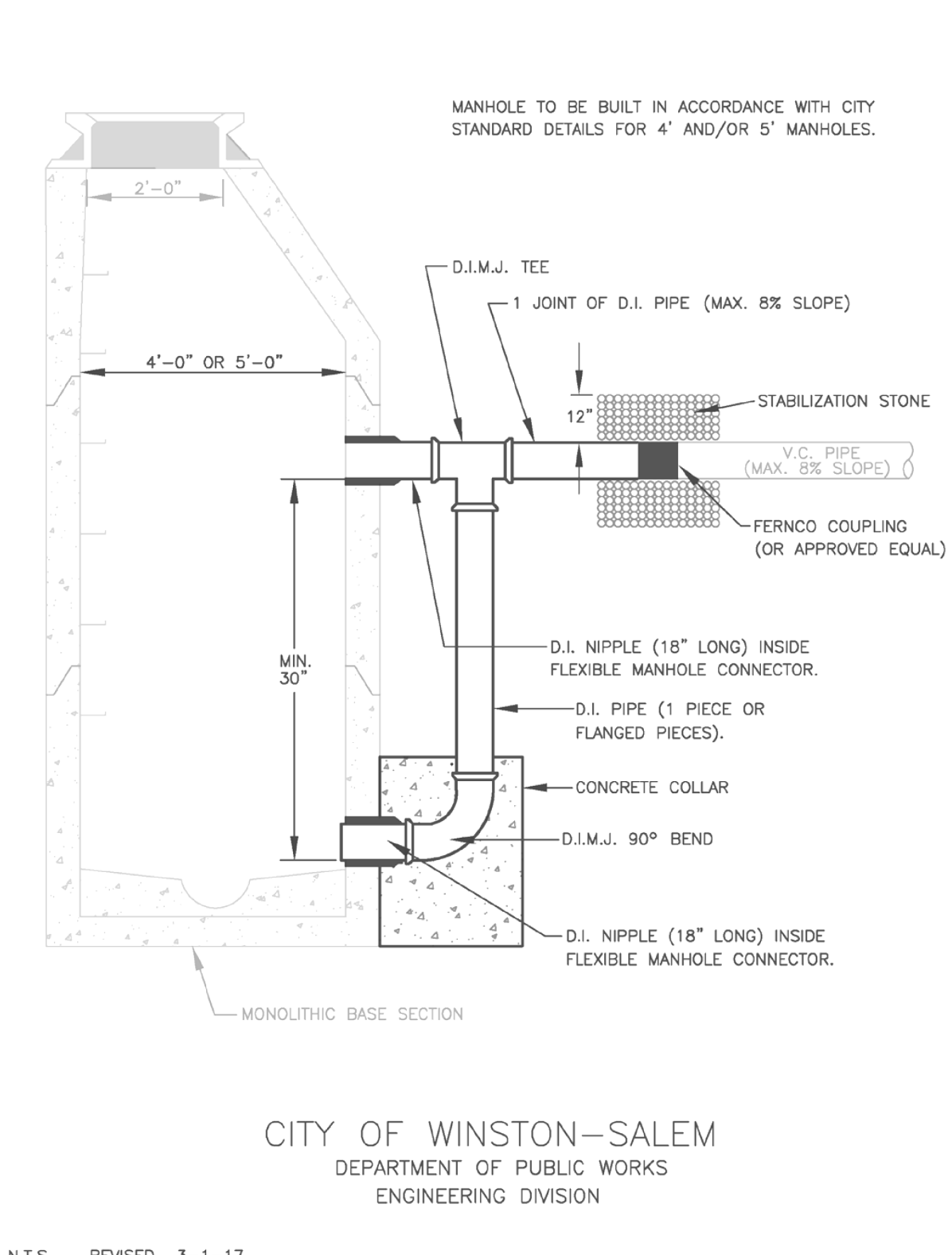
Manhole Built Over Existing Line



R:\Data\Utility\Utility Spec Drawings\mh over existing line.dwg

C-13

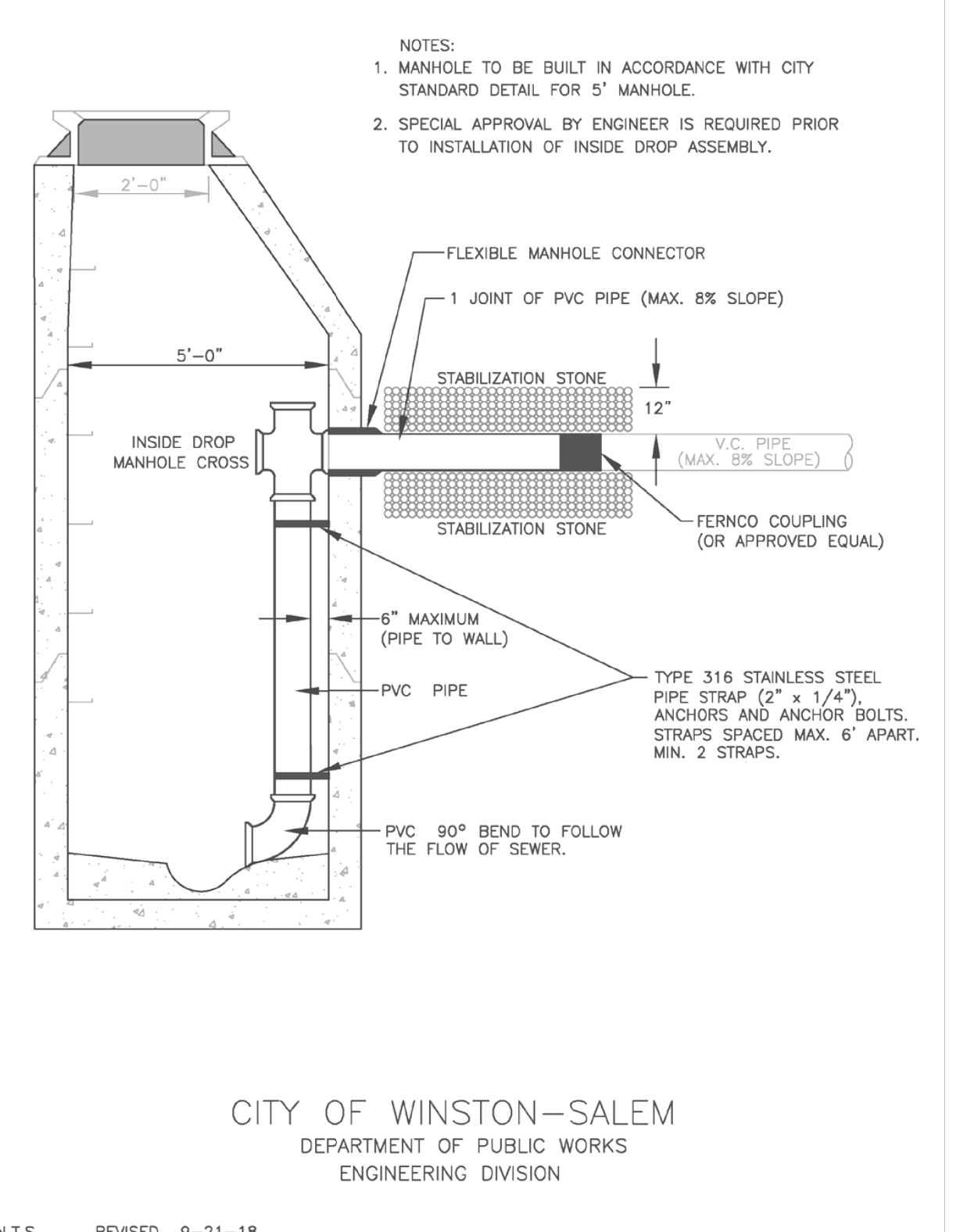
Drop Assembly (Outside)



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C-14

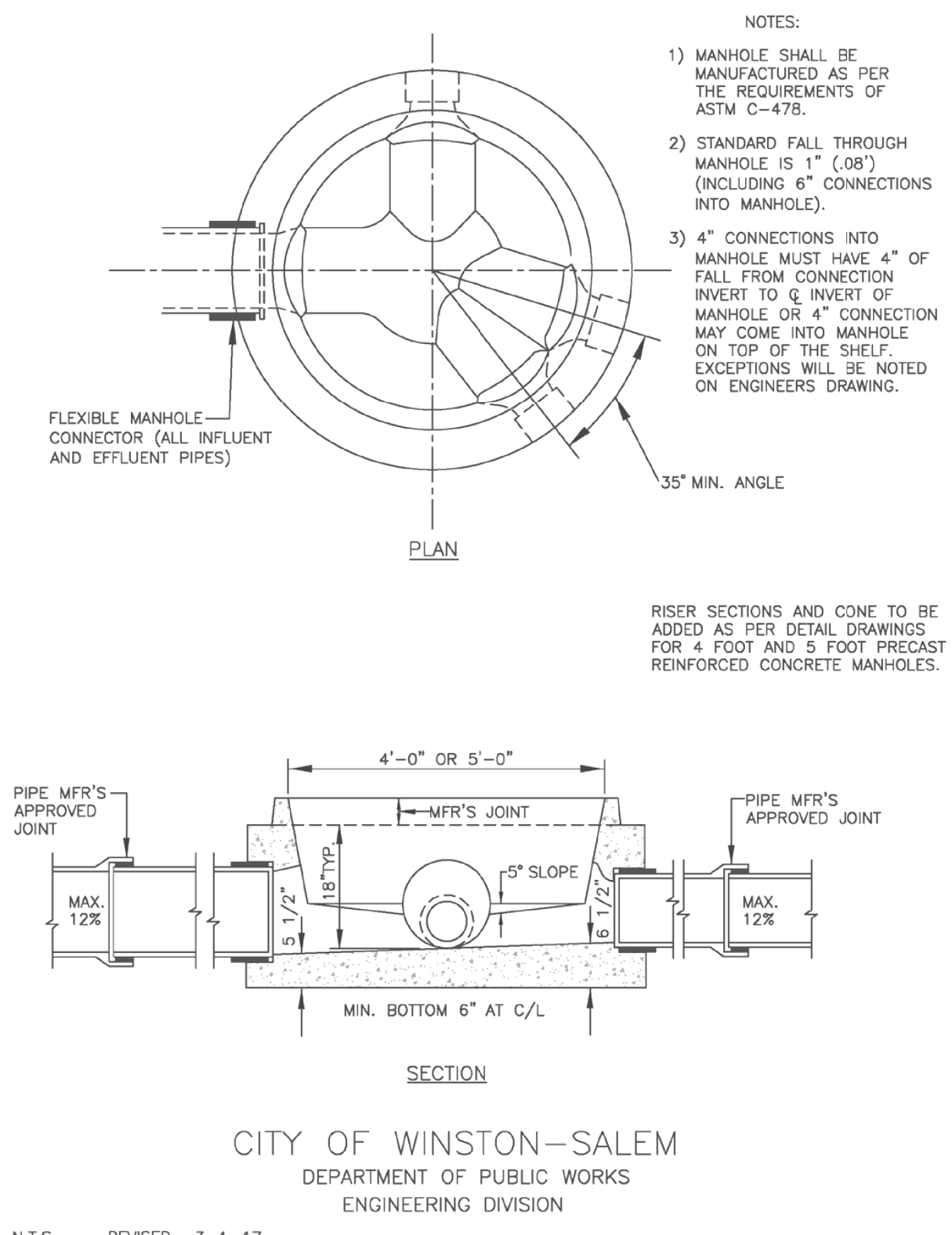
Drop Assembly (Inside)



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C-15

Precast Reinforced Concrete Manhole with Precast Invert

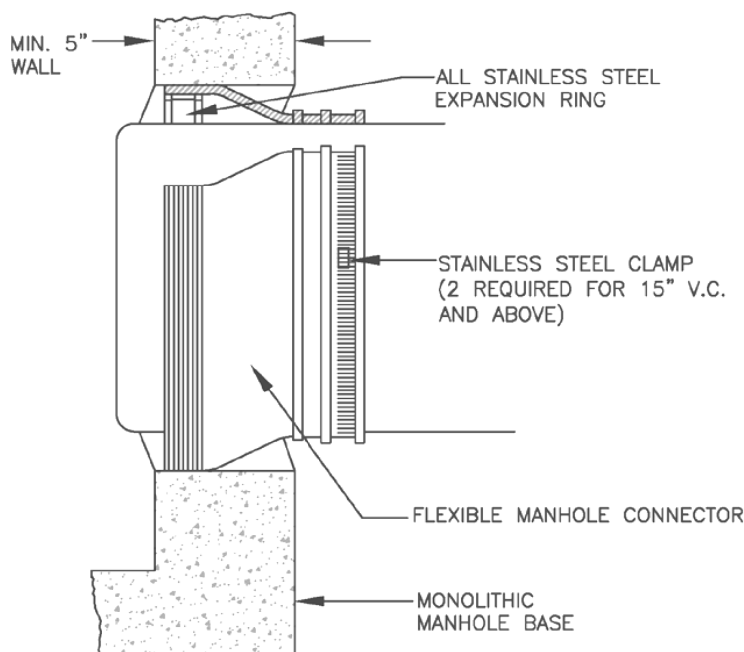


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C-16

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.

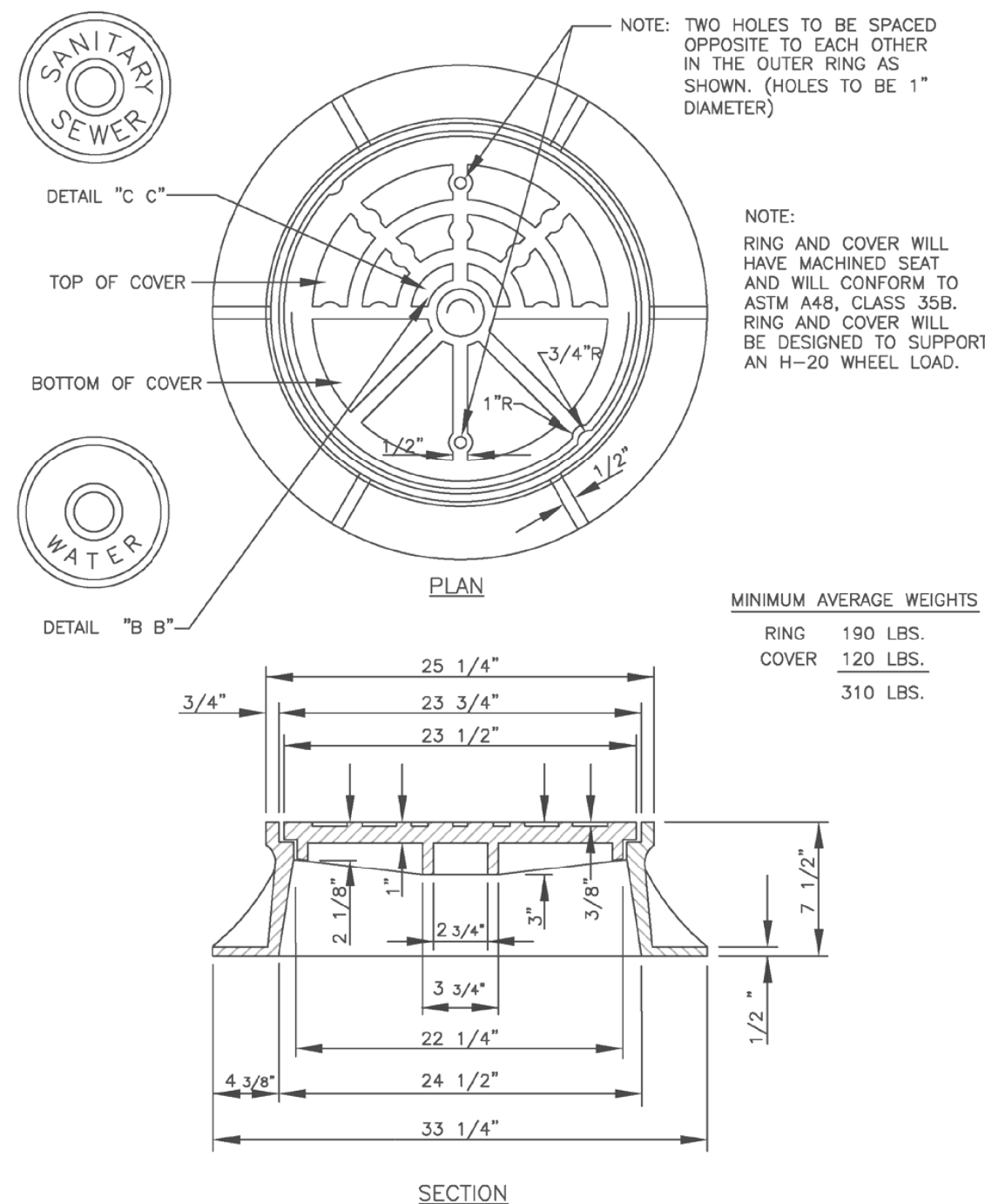


CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\flexible mh connector.dwg

C-17

Manhole Ring and Cover (Type 1)

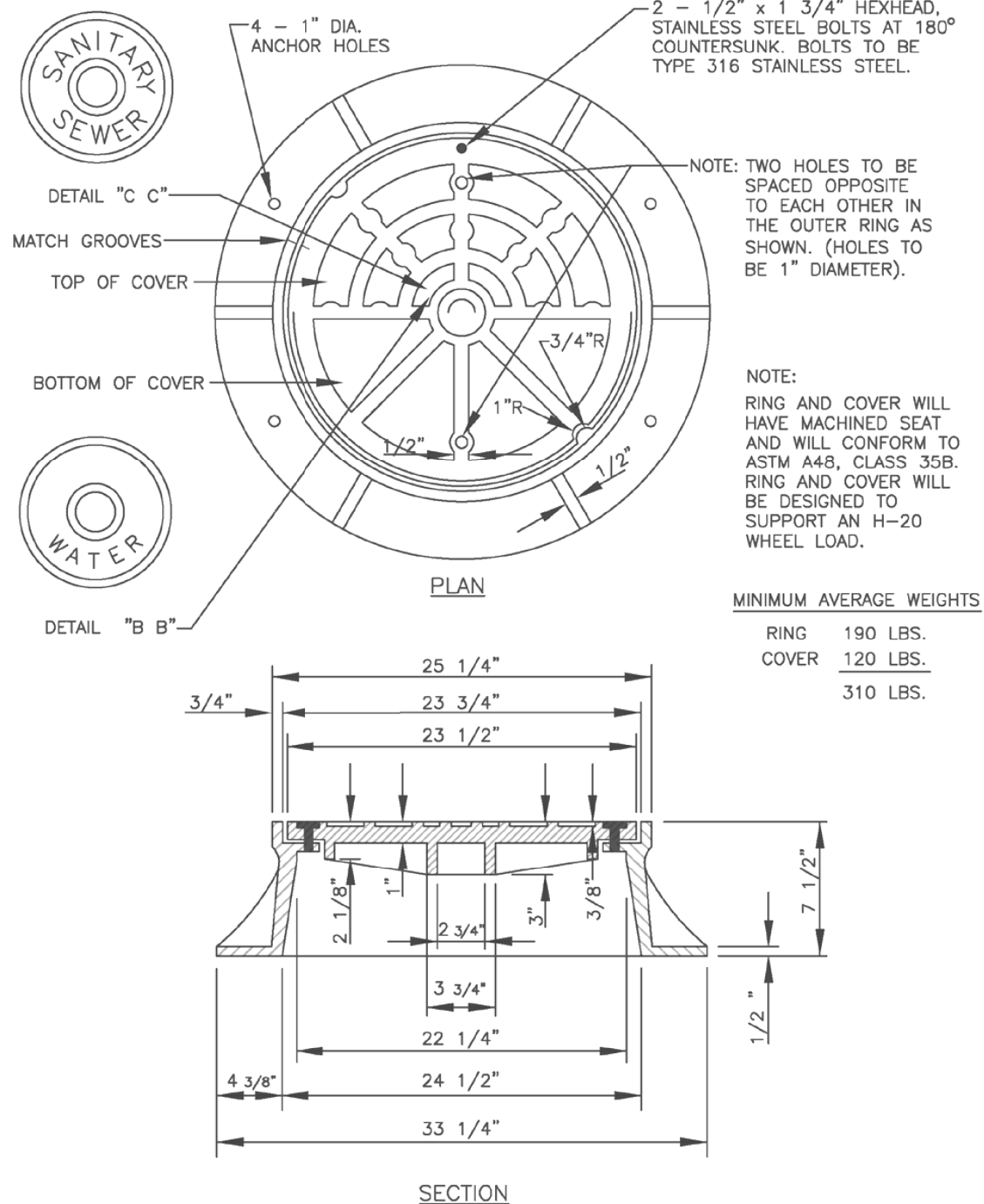


CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\mh ring & cover type 1.dwg

C-18

Manhole Ring and Cover (Type 2)



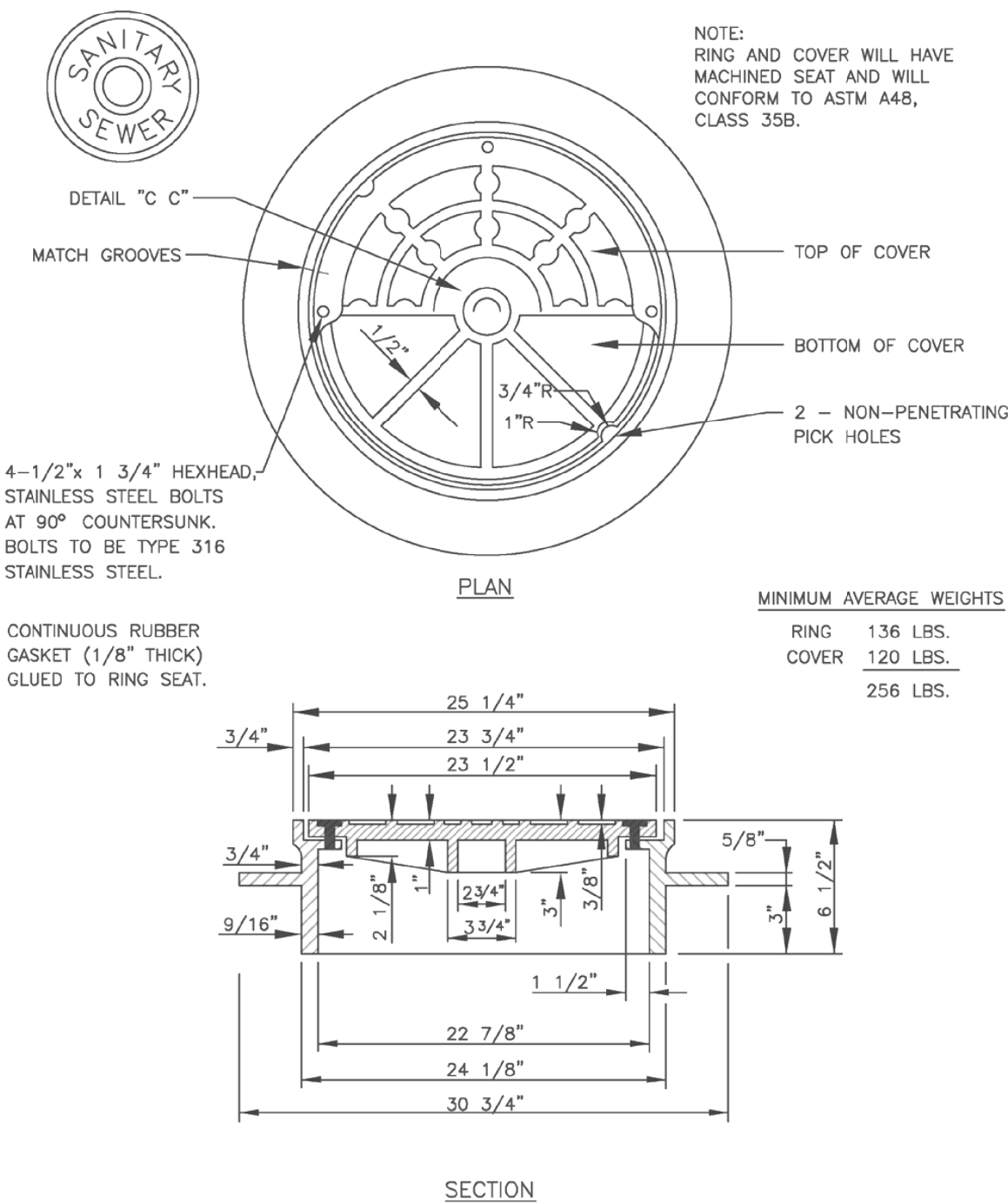
CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

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

R:\Data\Utility\Utility Spec Drawings\mh ring & cover type 2.dwg

C-19

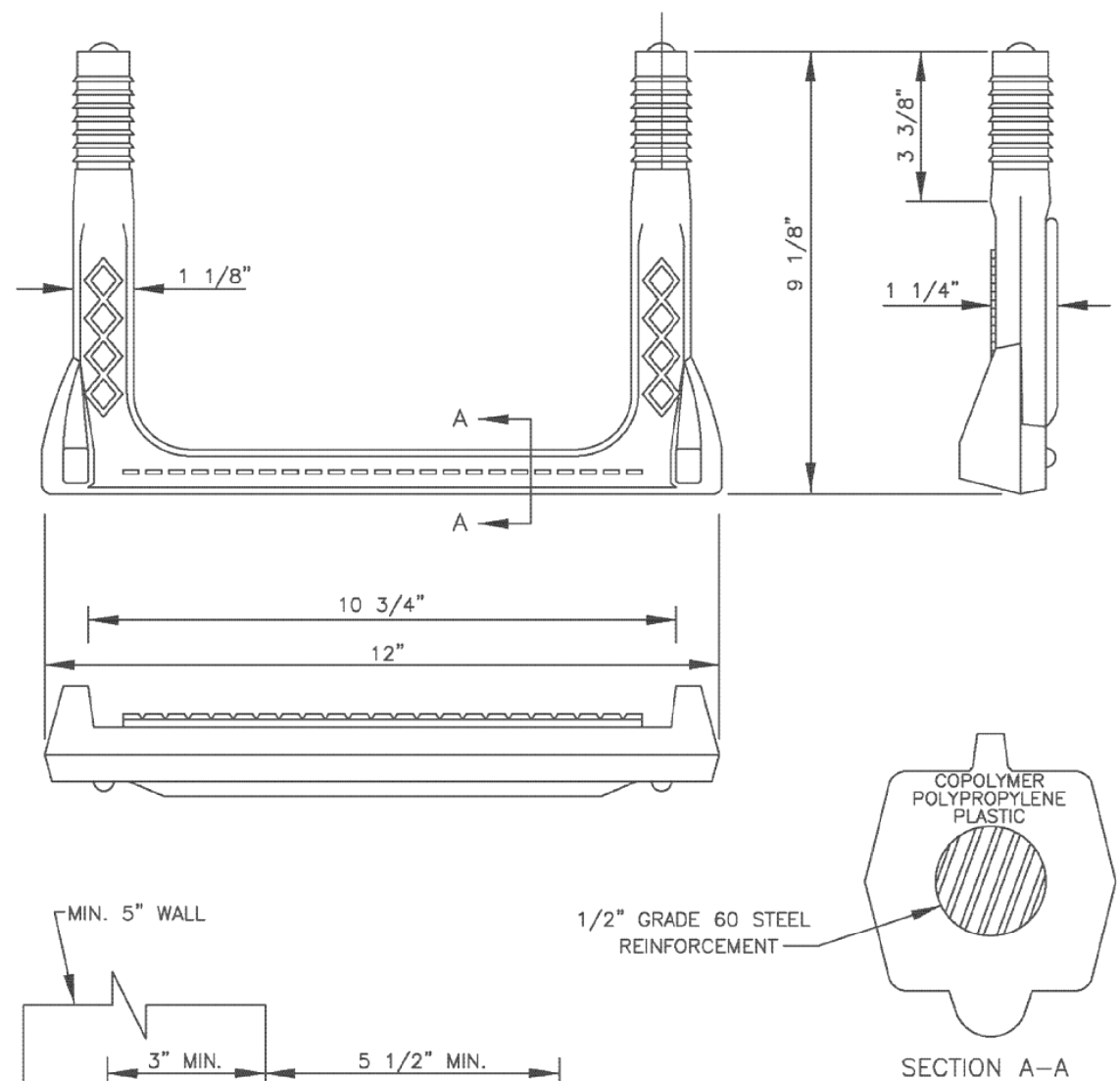
Manhole Ring and Cover (Type 3)



N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\mh ring & cover type 3.dwg

C-20

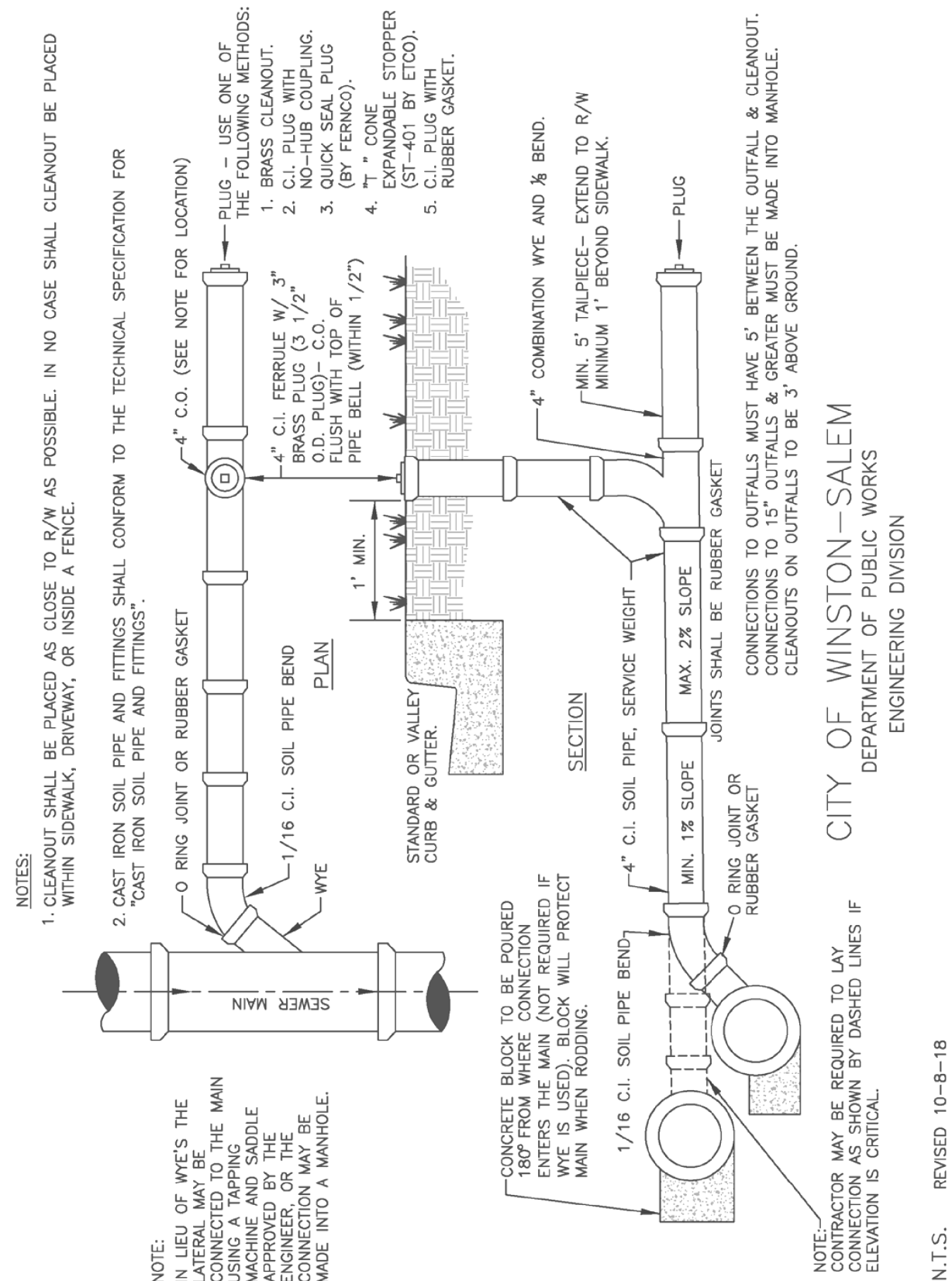
Polypropylene Manhole Step



N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\mh step.dwg

C-21

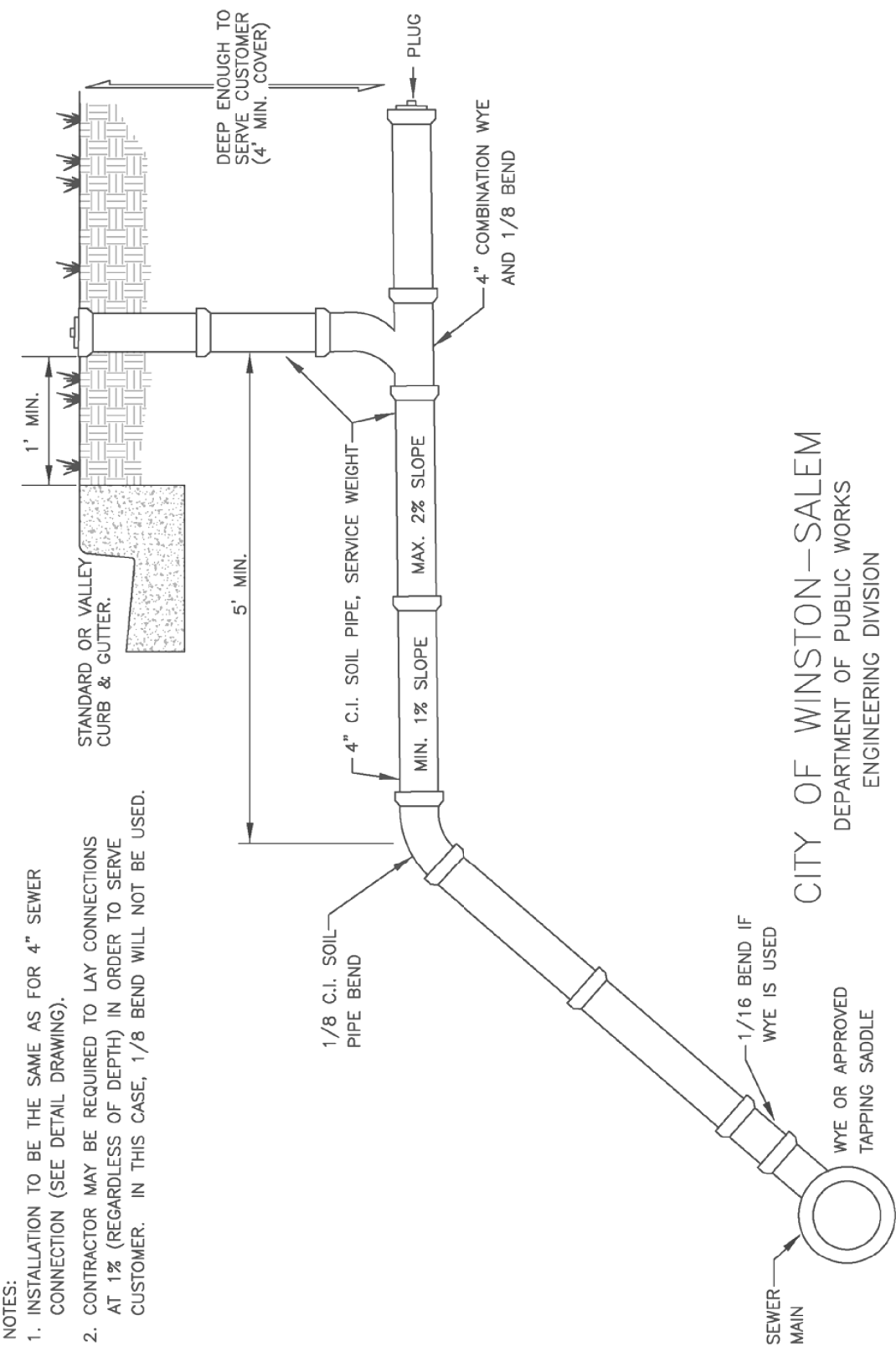
4" Sewer Connection



N.T.S. REVISED 10-8-18

C-22

4" Sewer Connection for Deep Mains



R:\Data\Utility\Utility Spec Drawings\4inch conn deep mains.dwg

C-23

300 MORRIS STREET, SUITE 200
DURHAM, NC 27701

PROJECT REFERENCE NO.		SHEET NO.	
U-5760		UC-3C	
DESIGNED BY:	NLH	STANDARD DETAILS DESIGNED BY WINSTON-SALEM/ FORSYTH COUNTY UTILITIES	UTILITY CONSTRUCTION PLANS ONLY
DRAWN BY:	JNB		
CHECKED BY:	NDR		
APPROVED BY:	NLH		
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151			

UTILITY CONSTRUCTION

STANDARD DETAILS
DESIGNED BY
WINSTON-SALEM/
FORSYTH COUNTY
UTILITIES

UTILITY CONSTRUCTION
PLANS ONLY

5/14/99

PROJECT REFERENCE NO.

SHEET NO.

U-5760

UC-3D

DESIGNED BY: NLH

DRAWN BY: JNB

CHECKED BY: NDR

APPROVED BY: NLH

REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

UTILITIES ENGINEERING SEC.
PHONE: (919) 707-6690
FAX: (919) 250-4151

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Kimley»Horn

300 MORRIS STREET, SUITE 200
DURHAM, NC 27701

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UTILITY CONSTRUCTION

6" Sewer Connection

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\6inch a conn.dwg

Concrete Anti-Seepage Collar

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\concrete anti seepage collar.dwg

Cast Iron Valve Box

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\cast iron valve box.dwg

Valve Box Installation

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\valve box installation.dwg

Hydrant and Valve Installation

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\hyd & valve installation.dwg

Stub Out Installation

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

N.T.S. REVISED 3-1-17
R:\Data\Utility\Utility Spec Drawings\stub out installation.dwg

Concrete Thrust Blocks for Horizontal Bends

CITY OF WINSTON-SALEM
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

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

FITTING	MINIMUM "A" DIMENSION (FEET)											
	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		