STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

T.I.P. NO. SHEET NO. U-6003 UC-1

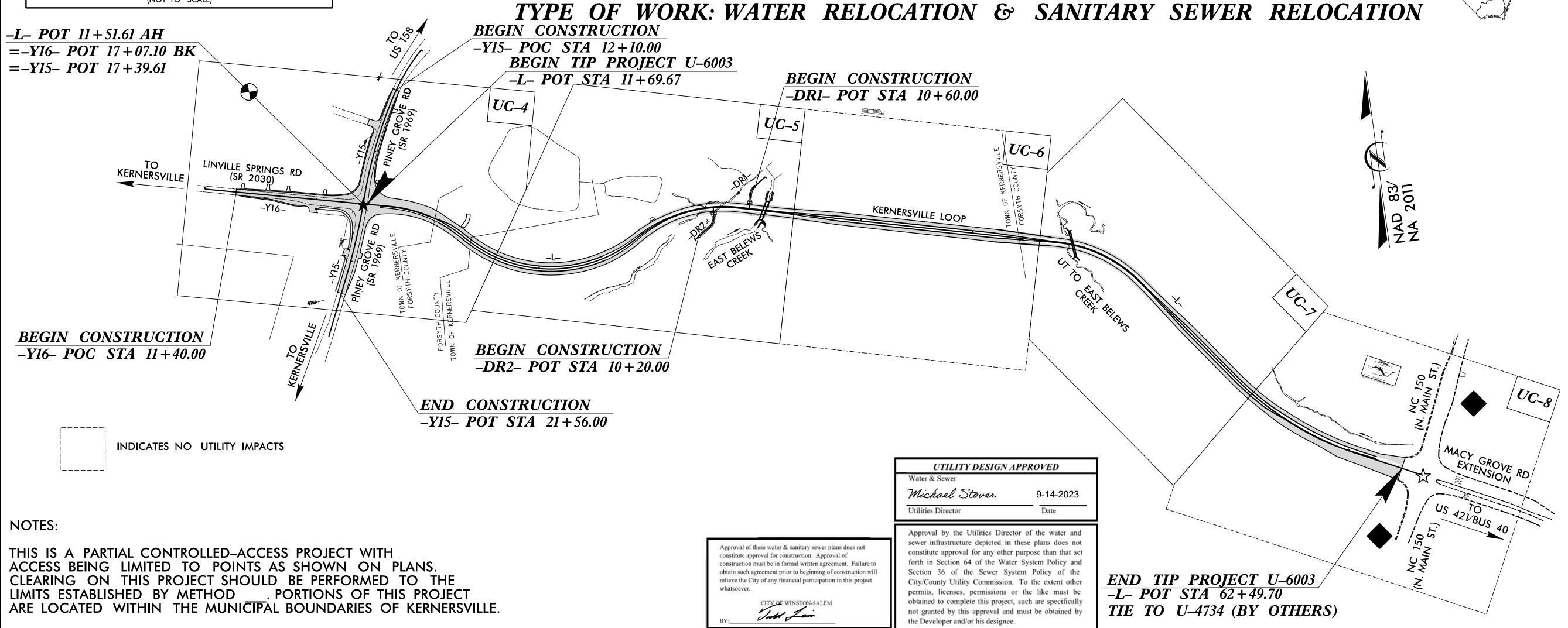
UNLESS ALL SIGNATURES COMPLETED

FINAL UC PLANS

# UTILITY CONSTRUCTION PLANS FORSYTH COUNTY

LOCATION: KERNERSVILLE - KERNERSVILLE LOOP FROM SR 1969 (PINEY GROVE RD) TO NC 150 (N. MAIN ST.)

TYPE OF WORK: WATER RELOCATION & SANITARY SEWER RELOCATION



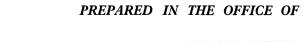
# GRAPHIC SCALES PROFILE (HORIZONTAL) PROFILE (VERTICAL)

# INDEX OF SHEETS

SHEET NO.: **DESCRIPTION:** TITLE SHEET *UC-1 UC-2* UTILITY SYMBOLOGY **NOTES** UC-3A**DETAILS** UC-4 THRU UC-8 UTILITY CONSTRUCTION SHEETS UTILITY PROFILES *UC-9* 

# WATER AND SEWER OWNERS ON PROJECT

(A) WINSTON-SALEM AND FORSYTH COUNTY UTILITY COMMISSION





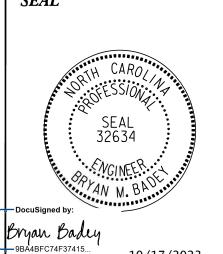
8601 SIX FORKS ROAD FORUM 1, SUITE 700 NC LICENSE NO. F-0112 1-888-521-4455 OR 919-878-9560

**DIVISION OF HIGHWAYS** 

HOWARD WOODALL, P.E. MANAGER

BRYAN BADEY, P.E. MARIKO PYATT, P.E.

PROJECT MANAGER **ENGINEER** 



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

Josh McMahan

UTILITIES REGIONAL ENGINEER UTILITIES ENGINEER UTILITIES AREA COORDINATOR UTILITIES COORDINATOR

Louis Porter

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

# UTILITIES PLAN SHEET SYMBOLS

(Type as Shown)

(Type as Shown)

Designated Utility Line

# PROPOSED WATER SYMBOLS

# Water Line (Sized as Shown) ..... Plug ····· Butterfly Valve ..... Tapping Valve ..... Line Stop with Bypass ..... Fire Hydrant Relocate Fire Hydrant ····· 🐃 Remove Fire Hydrant ...... REM FH Water Meter ······ Relocate Water Meter ······ Remove Water Meter .......REM WM Water Pump Station ····· PS(W) RPZ Backflow Preventer PRPZ DCV Backflow Preventer ..... Relocate RPZ Backflow Preventer RPZ Relocate DCV Backflow Preventer ..... PROPOSED SEWER SYMBOLS Gravity Sewer Line (Sized as Shown) Force Main Sewer Line (Sized as Shown) (Sized per Note) Sewer Pump Station · · · · · · PS(SS)

# PROPOSED MISCELLANOUS UTILITIES SYMBOLS

Thrust Block ······

Telephone Pole ······	-0-	Air Release Valve ·····	AR • • • • • • • • • • • • • • • • • • •
Joint Use Pole ······	<b>-</b> \$-	Utility Vault	UV
Telephone Pedestal ······	TEL PED	Concrete Pier ······	CP
Utility Line by Others (Type as Shown)	PROP O/H POW LINES	Steel Pier	···· SP
Trenchless Installation	12" TL INSTALL	Plan Note ·····	· •
Encasement by Open Cut ·····	24" ENCAS BY OC	Pay Item Note	
Encasement ······	24" ENCASEMENT		PAY ITEM
Underground Conduit ······	EXISTING	UTILITIES SYMBOLS	
Power Pole ·····	•	*Underground Power Line·······	Р
Telephone Pole ······		*Underground Telephone Cable ·····—	т
Joint Use Pole ······	<b>-</b>	*Underground Telephone Conduit ·····-—	тс
Utility Pole	•	*Underground Fiber Optics Telephone Cable —	т го
Utility Pole with Base		*Underground TV Cable ·····—	TV
H-Frame Pole······	•—•	*Underground Fiber Optics TV Cable ·····-	TV F0
Power Transmission Line Tower		*Underground Gas Pipeline ·····-—	c
Water Manhole ······	₩	Aboveground Gas Pipeline ·····-—	A/G Gas
Power Manhole ·····	®	*Underground Water Line······—	w
Telephone Manhole ······	$^{\odot}$	Aboveground Water Line······—	A/G Water
Sanitary Sewer Manhole	⊕	*Underground Gravity Sanitary Sewer Line —	ss
Hand Hole for Cable ······	HH	Aboveground Gravity Sanitary Sewer Line —	A/G Sanitary Sewer
Power Transformer ······		*Underground SS Forced Main Line	FSS
Telephone Pedestal ······	T	Underground Unknown Utility Line ·····—	
CATV Pedestal······		SUE Test Hole ·······	
Gas Valve ·····	<b>♦</b>	Water Meter $\Box$	
Gas Meter ······	<b>♦</b>	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	w		P: (919) 878-9560



# **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 UTILITIES BELONG TO WINSTON-SALEM AND FORYSTH COUNTY UTILITY COMMISSION. THE CONTACT PERSON IS TODD LEWIS, 336-747-6842.
- 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.
- 10. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
- 11. THE CONTRACTOR IS SOLELY
  RESPONSIBLE FOR SITE SAFETY ASSOCIATED
  WITH THE WORK UNDER THIS PROJECT AND
  FOR COMPLIANCE WITH ALL FEDERAL, STATE,
  AND LOCAL HEALTH AND SAFETY LAWS,
  CODES, REGULATIONS, AND ORDINANCES
  INCLUDING BUT NOT LIMITED TO THOSE
  CURRENTLY MANDATED BY THE OCCUPATIONAL
  SAFETY AND HEALTH ADMINISTRATION (OSHA).
- 12. ALL EROSION CONTROL DEVICES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MOST CURRENT STANDARDS OF THE LAND QUALITY SECTION OF THE NCDEQ.
- 13. ALL WORK MUST CARRY A ONE-YEAR WARRANTY TO COVER ALL DEFECTS IN MATERIALS AND WORKMANSHIP.

- 14. 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 THERAFTER) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMNEDATIONS OR THE LOCAL CROSS-CONNECTION CONTROL PROGRAM. WHICHER IS MORE STRINGENT.
- 15. AS OF JULY 1, 2011 ALL METERS SHALL BE PURCHASED THROUGH THE CITY/COUNTY UTILITIES DIVISION. CONTRACTORS AND DEVELOPERS CAN PURCHASE METERS AT THE UTILITIES BUSINESS OFFICE OFF THE LOBBY OF THE STUART MUNICIPAL BUILDING, 100 E. FIRST STREET.
- 16. ANY UPGRADES OR WORK BEYOND THE LIMITS CURRENTLY SHOWN ON THE PLANS SHALL BE DISCUSSED AND AGREED TO AS EXTRA WORK PRIOR TO ADDITIONAL WORK BEING STARTED.

# PROJECT SPECIFIC NOTES:

- 1. CONTRACTOR SHALL ABANDON EXISTING WATER MAIN IN PLACE EXCEPT WHERE REMOVAL IS REQUIRED FOR PROPOSED WORK OR WHERE NOTED. WITHIN THE RIGHT-OF-WAY OF NCDOT MAINTAINED ROADS, CONTRACTOR SHALL FILL ABANDONED WATER MAINS WITH FLOWABLE FILL. ABANDON EXISTING WATER MAINS PER NCDOT 2018 STANDARD SPECIFICATION SECTION 1530.
- 2. EXISTING WATER MAIN SHALL REMAIN IN SERVICE UNTIL PROPOSED WATER MAIN HAS BEEN TESTED, DISINFECTED, AND APPROVED.
- 3. ALL WATER AND SANITARY SEWER CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS OF THE CITY OF WINSTON-SALEM STANDARD SPECIFICATIONS FOR WATER & SEWER LINE CONSTRUCTION.
- 4. FOR ALL WATER SERVICES TO BE
  DISTURBED BY CONSTRUCTION, CONTRACTOR
  SHALL REPLACE WATER METER BOXES WHICH
  DO NOT MEET THE REQUIREMENTS OF THE
  CAST IRON METER BOX FOR 5/8" AND 1"
  METERS DETAIL (C-49), AS DIRECTED BY
  THE ENGINEER. TO DETERMINE COMPLIANCE
  OF THE WATER METER BOXES, CONTRACTOR
  SHALL EXPOSE, IN THE PRESENCE OF THE
  ENGINEER, EACH WATER METER BOX.
  CONTRACTOR SHALL LOCATE NEW WATER METER
  BOX 1" WATER CONNECTION DETAIL (C-47).

PROJECT REFERENCE NO. SHEET NO.

U-6003

DESIGNED BY:

DRAWN BY:

CHECKED BY:

APPROVED BY:

REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

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

SHEET NO.

SHEET NO.

SHEET NO.

SHEET NO.

SHEET NO.

Docusion of the CAROLINA CAROLINA BALAGA

DESAGRAGA

DOCUSION OF AN M. BALAGA

DESAGRAGA

DESAGRAGA

DESAGRAGA

DESAGRAGA

DOCUSION OF AN M. BALAGA

DESAGRAGA

DESAGRAGA

DESAGRAGA

DOCUSION OF AN M. BALAGA

DESAGRAGA

DESAGRAGA

DESAGRAGA

DESAGRAGA

DOCUSION OF AN M. BALAGA

DESAGRAGA

DESAGRAG

UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

- 5. WATER VALVES ABANDONED IN PLACE SHALL BE ABANDONED IN THE CLOSED POSITION.
- 6. PROVIDE CONCRETE THRUST BLOCKS AT ALL WATER MAIN BENDS, TEES, AND CAPS UNLESS OTHERWISE NOTED.
- 7. TEMPORARY BYPASS PUMPING OF FLOW IN SOME EXISTING SEWER LINES WILL BE REQUIRED WHEN INSTALLING NEW SEWER LINES AND WHEN TYING PROPOSED MANHOLES INTO EXISTING SEWER LINES. SEE DIVISION 15, SECTION 1520-3-A-1 OF THE NCDOT STANDARD SPECIFICATIONS. COST FOR TEMPORARY BYPASS PUMPING SHALL BE INCIDENTAL TO THE CONTRACT.
- 8. THE CONTRACTOR SHALL COORDINATE WITH THE WINSTON-SALEM / FORSYTH COUNTY UTILITIES STAFF CONCERNING THE TIMING AND SCHEDULE OF REQUIRED SHUT-DOWNS OF ANY EXISTING WATER OR SEWER MAINS.

# LIST OF STANDARD DRAWINGS

- C-9 BEDDING REQUIREMENTS
- C-10 4' PRECAST REINFORCED CONCRETE MANHOLE
- C-13 MANHOLE BUILT OVER EXISTING LINE
- C-17 FLEXIBLE MANHOLE CONNECTOR
- C-18 MANHOLE RING & COVER (TYPE 1)
- C-19 MANHOLE RING & COVER (TYPE 2)
- C-21 POLYPROPYLENE MANHOLE STEP
- C-22 4" SEWER CONNECTION
- C-41 HYDRANT AND VALVE INSTALLATION
- C-46 1" WATER CONNECTION
- C-43 THRUST BLOCK HORIZONTAL BENDS
- C-44 THRUST BLOCK VERTICAL BENDS
- C-49 CAST IRON METER BOX FOR 5/8" & 1" METERS



gineering\UC\Proj\U6ØØ3\_ut\_notes\_UC3\_psh.dgn bbaden

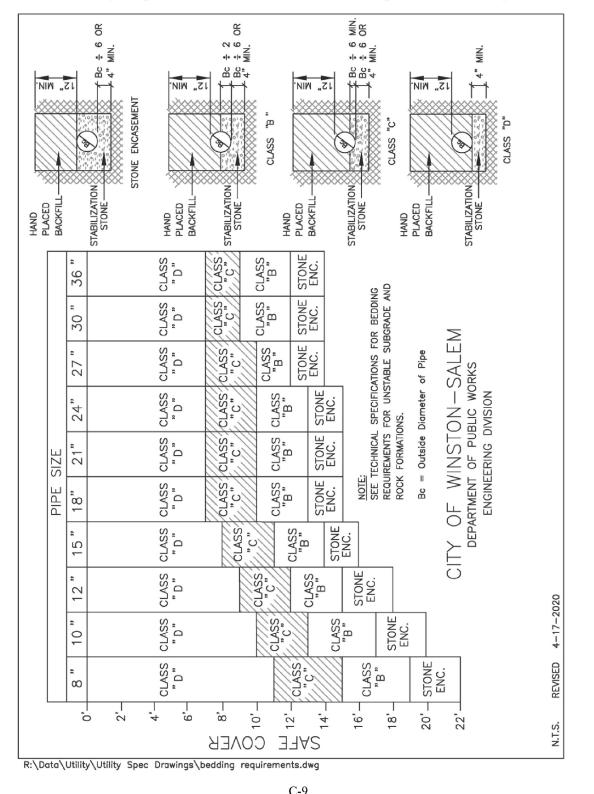
# DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE	NO.	SHEET NO.
U-6003		UC-3A
DESIGNED BY:	CAROLINA CAROLINA	
DRAWN BY:		
CHECKED BY:		cuSignedSby:∆L
APPROVED BY:	Bis	32634
REVISED:	9B/	A4BFCZ4F37415
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	****	9/5/2023
UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 FAX: (919)250-4151	UTILI	TY CONSTRUCTION PLANS ONLY

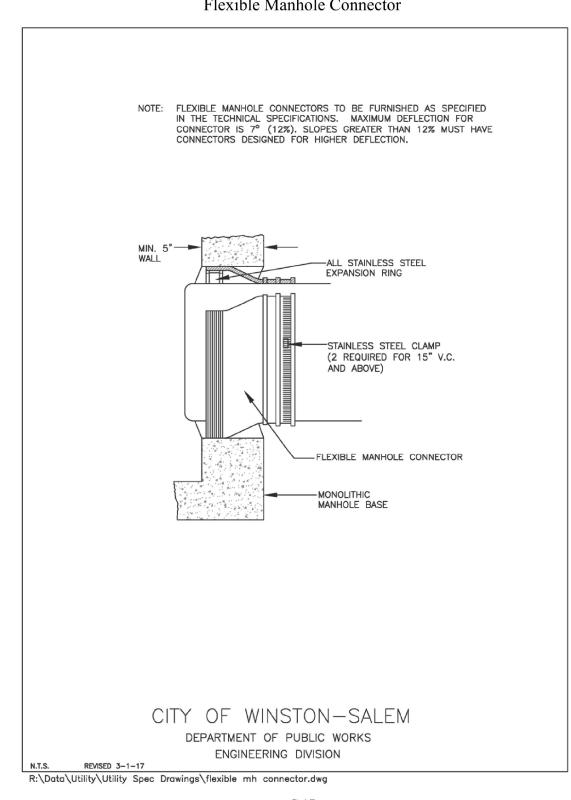
UTILITY CONSTRUCTION

# PROJECT TYPICAL DETAILS

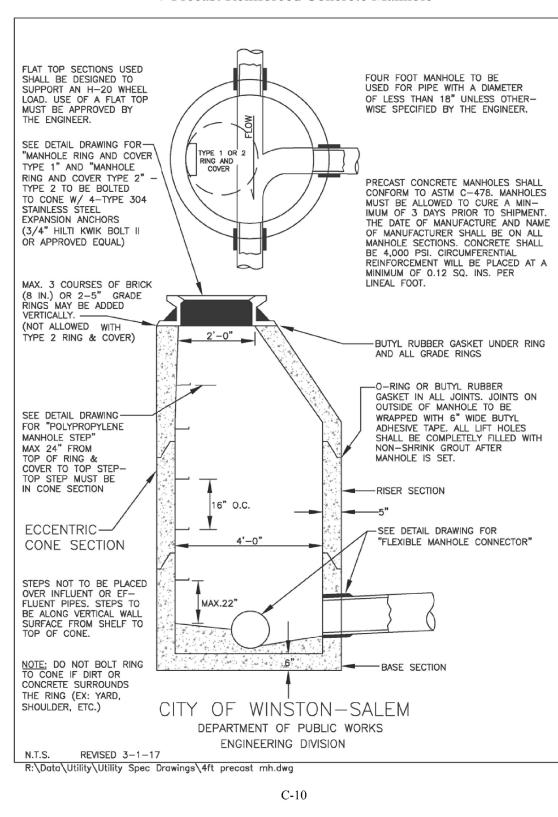
### Bedding Requirements & Safe Cover for VC Pipe on Stable Subgrade



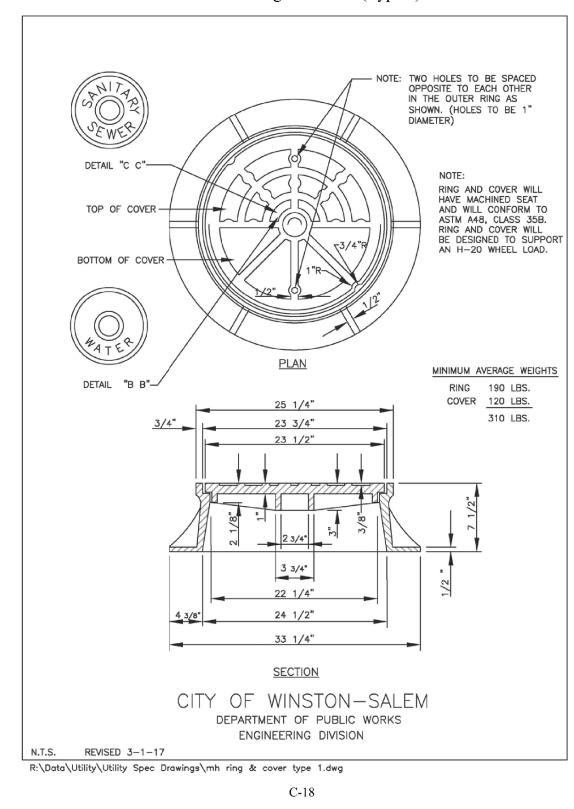
## Flexible Manhole Connector



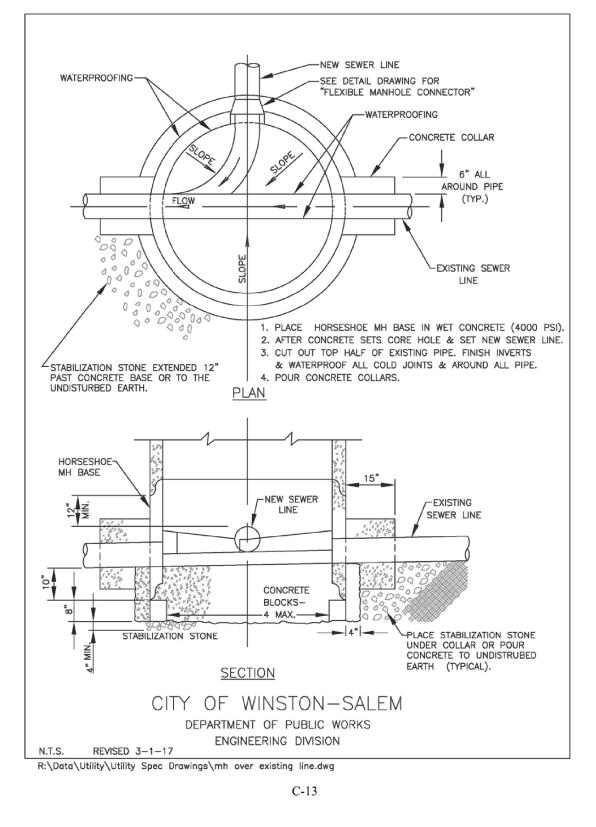
### 4' Precast Reinforced Concrete Manhole



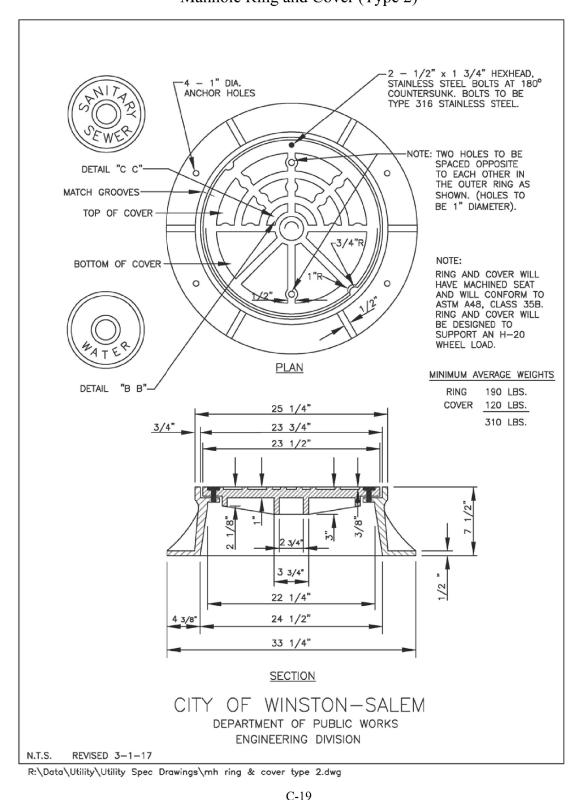
### Manhole Ring and Cover (Type 1)



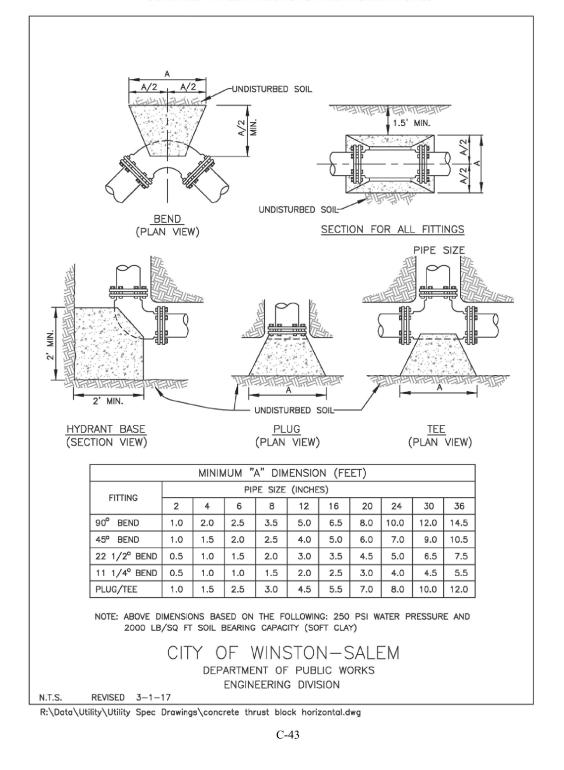
### Manhole Built Over Existing Line



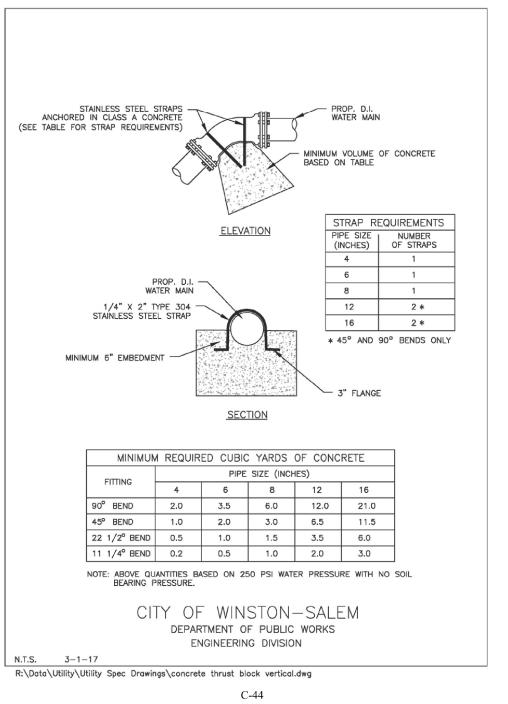
### Manhole Ring and Cover (Type 2)



### Concrete Thrust Blocks for Horizontal Bends



### Concrete Thrust Blocks w/ Anchors for Top Vertical Bends



P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com

es\Engineering\U\\Froj\UbWW3\_ut\_dti\_U\3a\_ps| bbadeu

# PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO. SHEET NO.

U-6003

DESIGNED BY:

DRAWN BY:

CHECKED BY:

APPROVED BY:

REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

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

SHEET NO.

UC-3B

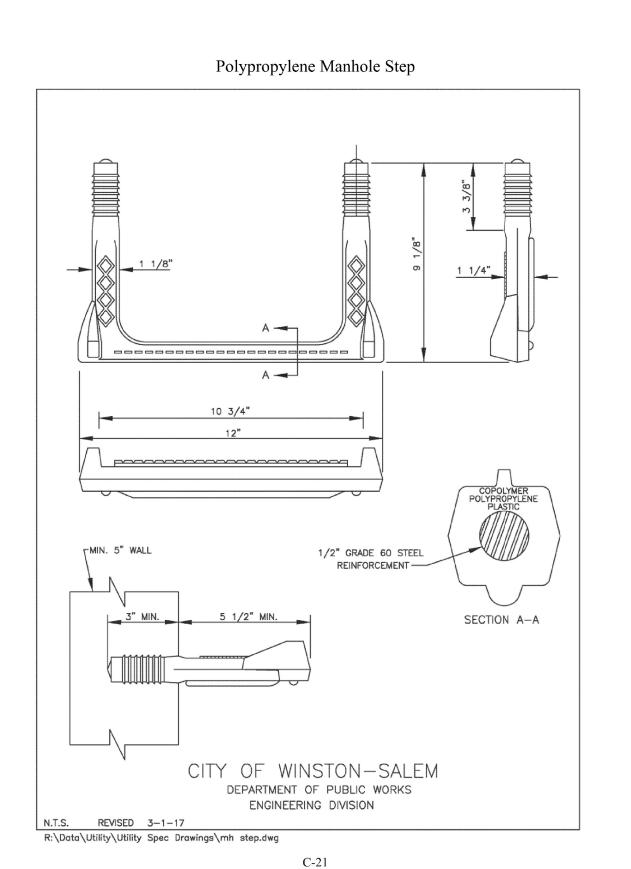
CAROLINA
Docusigned SEAL
BYIM DAMY

975/2023

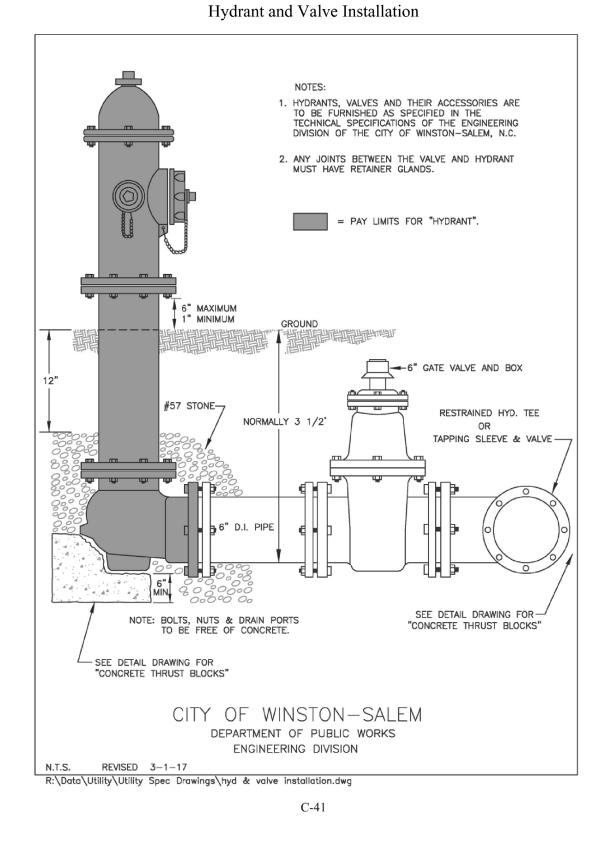
UTILITY CONSTRUCTION
PLANS ONLY

# UTILITY CONSTRUCTION

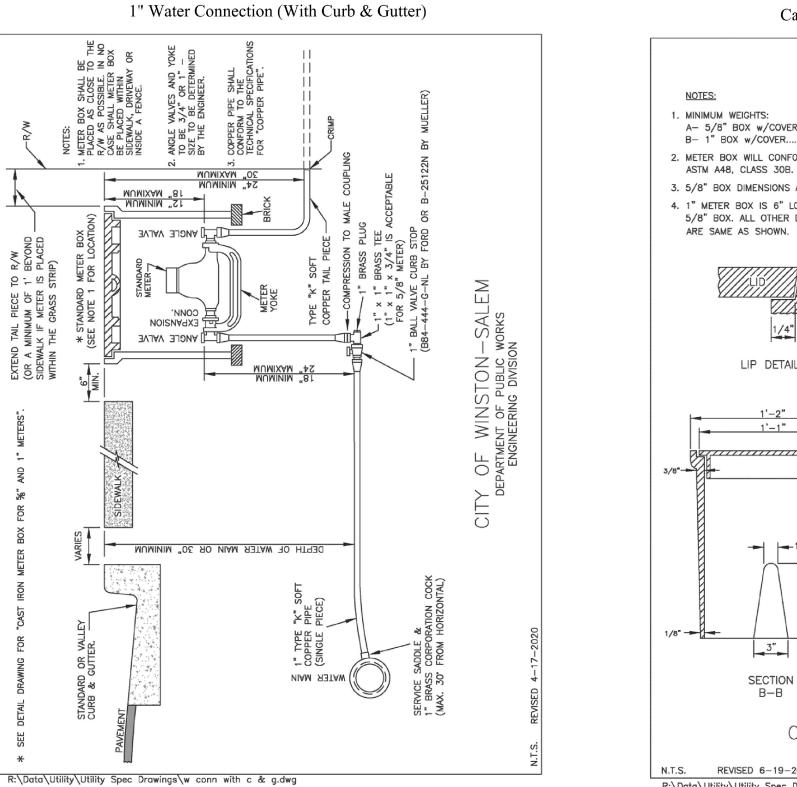
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



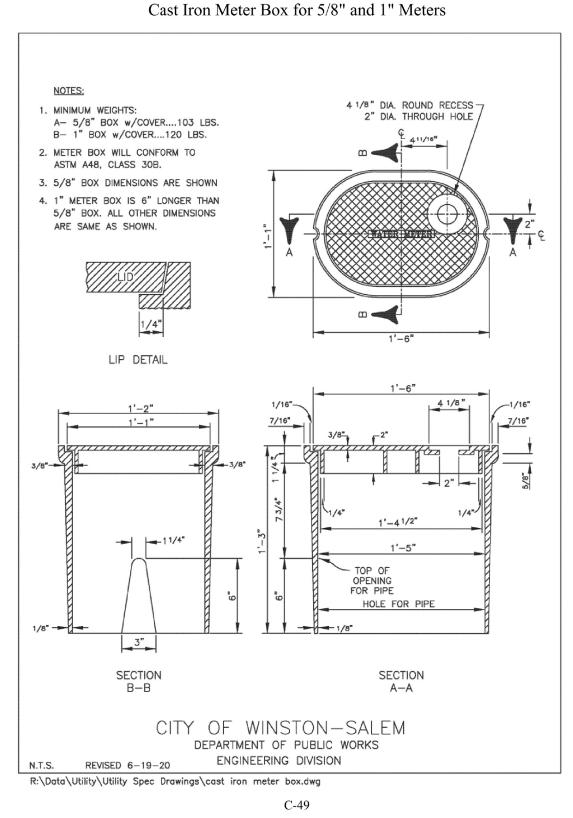
# NOTE: TO CONTRACTOR MAY BE ROUGED TO BY ME AND STREET TO BY AS POSSIBLE. IN NO CASE SHALL CLEANOUT BE PLACED TO CONTRACTOR MAY BE ROUGED TO ANY AS TO STREET BUILDS. TO STREET BUILDS. TO CONTRACTOR MAY BE ROUGED TO ANY AS TO STREET BUILDS. TO STREET BUILDS

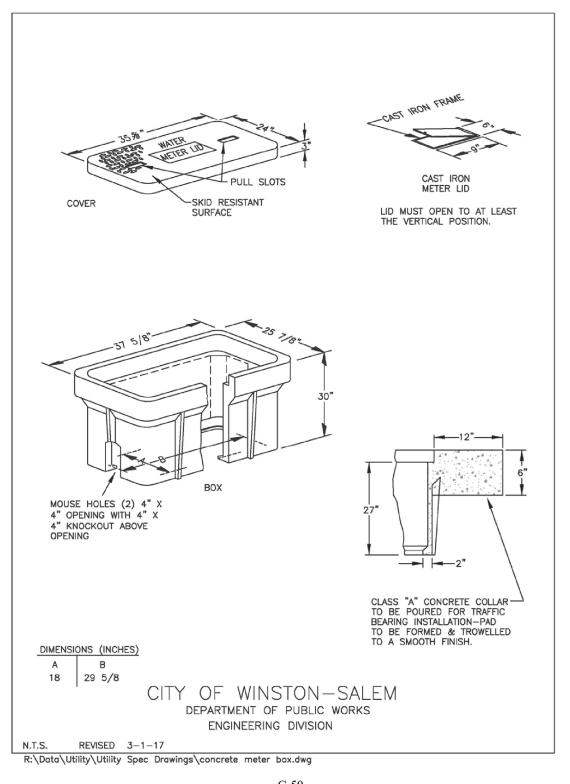


### Polymer Concrete Meter Box for 1 1/2" and 2" Meters



C-46





P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

