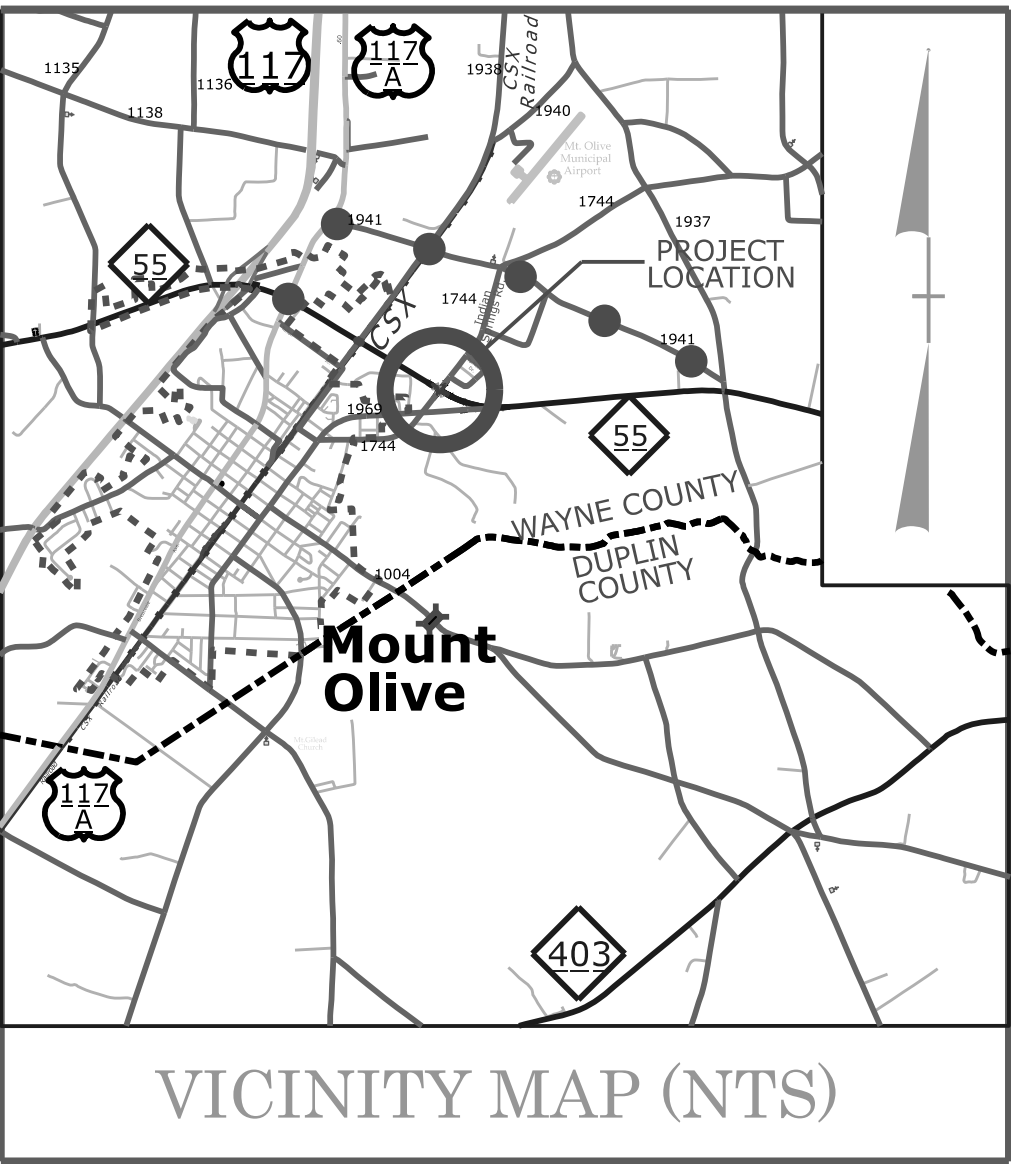


TIP PROJECT: HN-0033



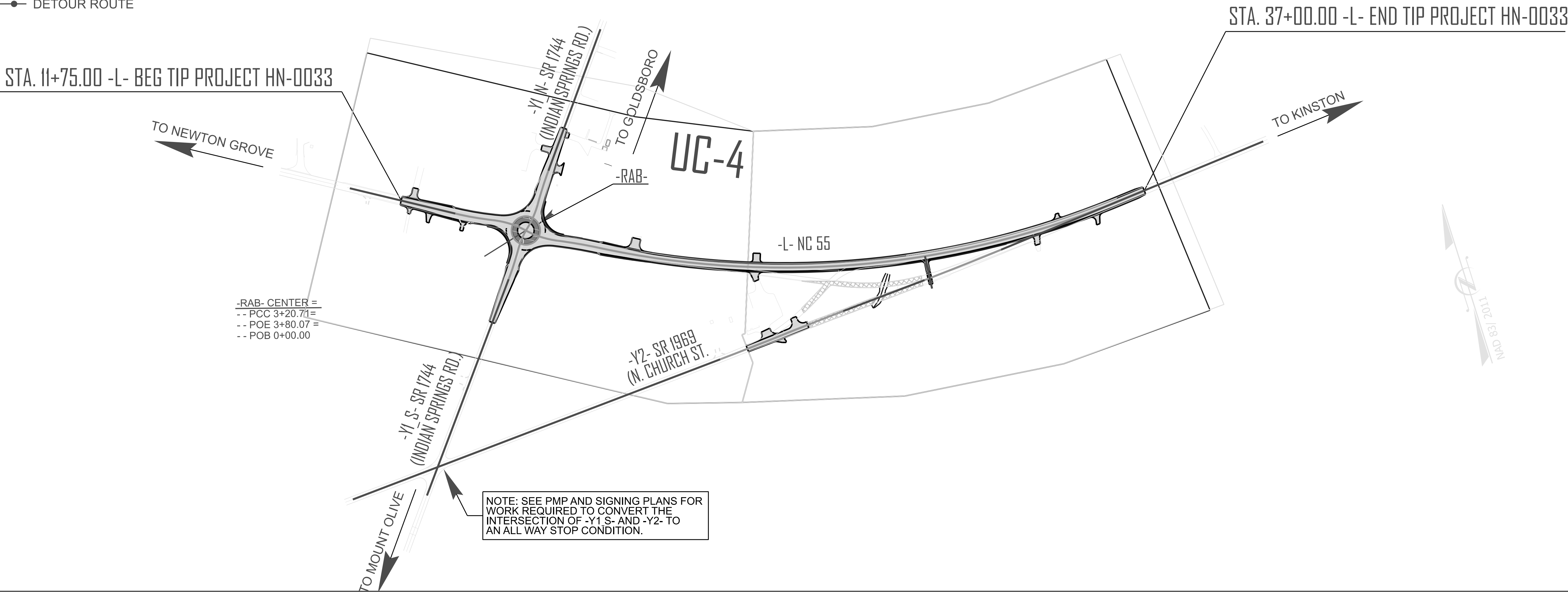
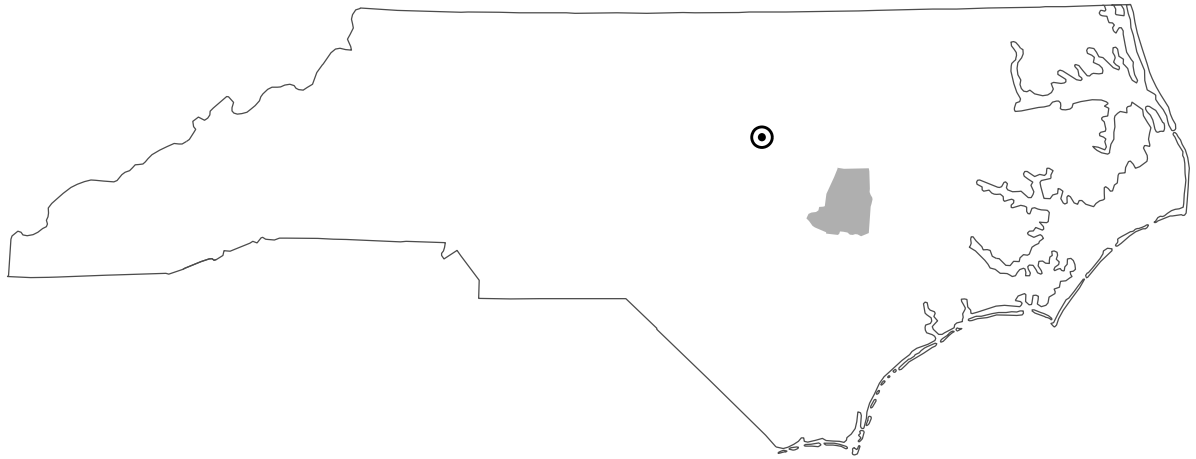
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
WAYNE COUNTY

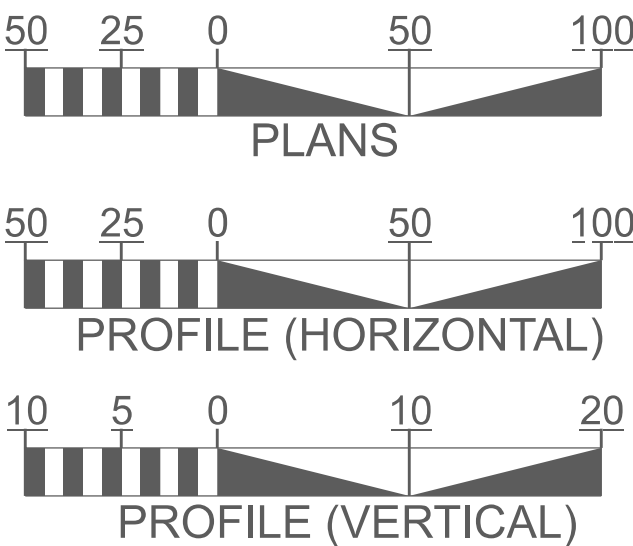
LOCATION: *NC 55 AND SR 1744 (OLD SEVEN SPRINGS ROAD
/INDIAN SPRINGS ROAD) INTERSECTION IN MOUNT OLIVE
CONSTRUCT ROUNDABOUT.*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING*

T.I.P. NO.	SHEET NO.
HN-0033	UC-1



GRAPHIC SCALES



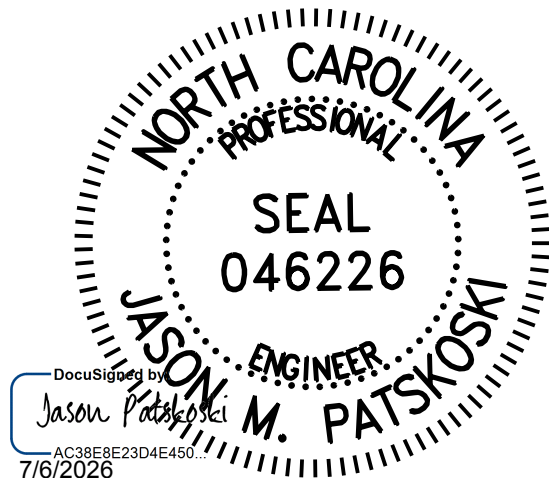
INDEX OF SHEETS

SHEET NO.:	DESCRIPTION
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	UTILITY NOTES
UC-3A	UTILITY DETAILS
UC-3B	UTILITY DETAILS
UC-4	SITE UTILITY PLAN AND PROFILE

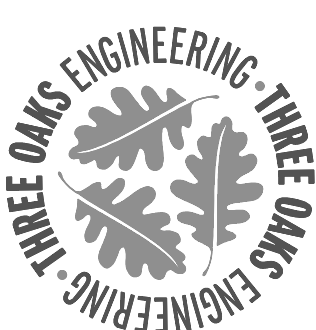
WATER OWNERS ON
PROJECT

(A) WATER - TOWN OF MT. OLIVE

SEAL



PREPARED IN THE OFFICE OF



NC Firm License No: F-1334
324 Blackwell Street
Suite 1200
Durham, NC 27701
919.732.1300

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MARK CLARKE, PE DIVISION ENGINEER
JAKE GREEN DIVISION PROJECT ENGINEER
LONNY SLEEPER DIVISION UTILITIES ENGINEER
JIMMY G. SHARPE DIVISION UTILITIES COORDINATOR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ 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 Method	
Encasement	

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

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)	

HN-0033

UC-2

UTILITY CONSTRUCTION
PLANS ONLY

DESIGNED BY: EW

DRAWN BY: EW

CHECKED BY: JP

APPROVED BY:

REVISED:

03/07/25

UTILITY NOTES HN-0033

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 2024.
2. THE EXISTING WATERLINE UTILITY BELONG TO THE TOWN OF MT. OLIVE WATER DEPARTMENT.
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.
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. NOTIFY THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. THE UTILITY OWNER SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF ANY FLUSHING, CHLORINATION, TAPPING, AND ACCEPTANCE TESTING (SOROME APPLINS 919-740-6592). A PRECONSTRUCTION MEETING SHALL TAKE PLACE AND INCLUDE THE RESIDENT ENGINEER AND UTILITY OWNER. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.
6. 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.

7. 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.
8. 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.
9. 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.
10. 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.
11. NO WATER WORK SHALL BE COVERED UNTIL INSPECTED BY AN NCDOT INSPECTOR OR THE OWNER'S 3RD PARTY INSPECTOR. ALL MEANINGFUL WORK SHALL BE WITNESSED BY AN INSPECTOR AND DOCUMENTED AS TO PROPER INSTALLATION.
12. THE CONTRACTOR SHALL COLLECT GPS DATA SHOWING THE AS BUILT LOCATIONS OF NEW FEATURES INCLUDING COUPLINGS, BENDS, ETC.

PROJECT SPECIFIC NOTES:

1. PROPOSED WATER LINE FROM -WL- LINE STATION 00+00 TO -WL- LINE STATION 05+84 SHALL BE 6-INCH C900 DR18 PVC PIPE WITH BELL RESTRAINT HARNESSSES. ALL JOINTS SHALL BE FULLY RESTRAINED.
2. THE PLANS CALL FOR ALL PIPES TO BE OPEN CUT. SHOULD THE CONTRACTOR CHOOSE TO INSTALL VIA TRENCHLESS INSTALLATION, CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
3. CONTRACTOR SHALL NOT MAKE CONNECTION TO EXISTING WATER MAIN UNTIL NEW WATER MAIN HAS BEEN SUCCESSFULLY TESTED AND DISINFECTED. THE WATERLINE BEING RELOCATED IS A DEAD END LINE THAT WILL RESULT IN A SERVICE INTERRUPTION DURING THE CHANGEOVER. CONTRACTOR SHALL MINIMIZE THE TIME SERVICE IS UNAVAILABLE TO THE GREATEST EXTENT PRACTICABLE.

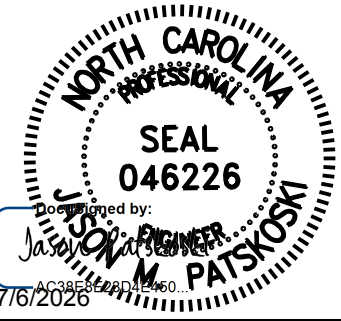
LIST OF STANDARD DRAWINGS

1515.01 WATER METER

HN-0033

UC-3

UTILITY CONSTRUCTION
PLANS ONLY



DESIGNED BY: EW

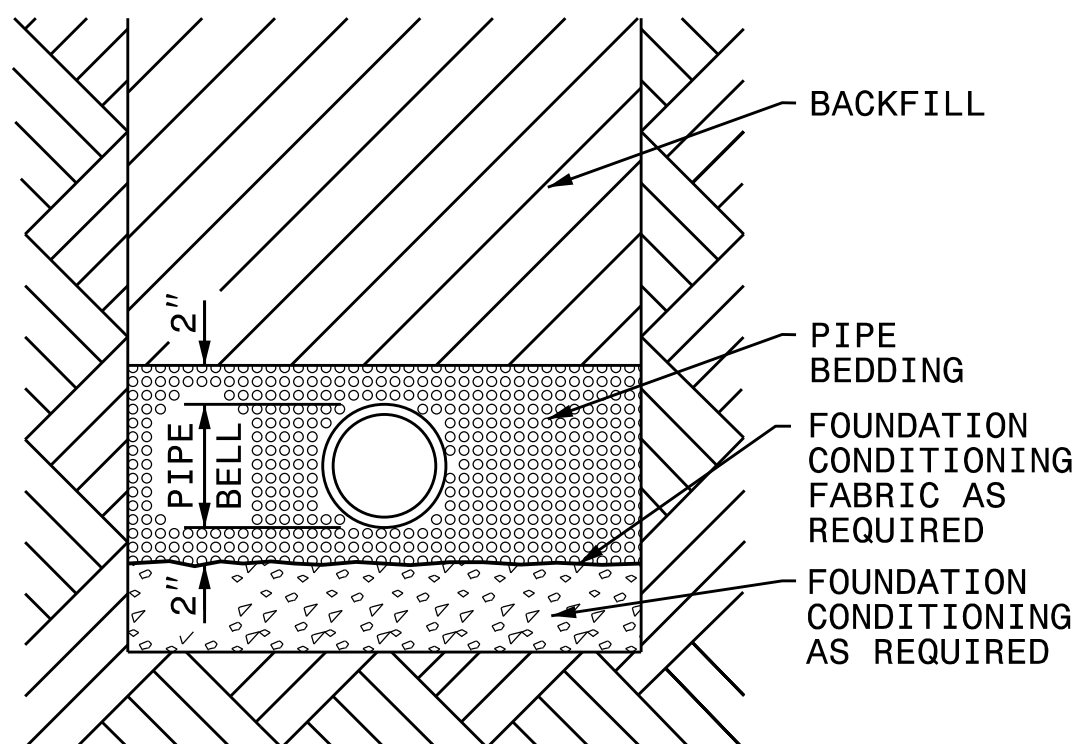
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CHECKED BY: JP

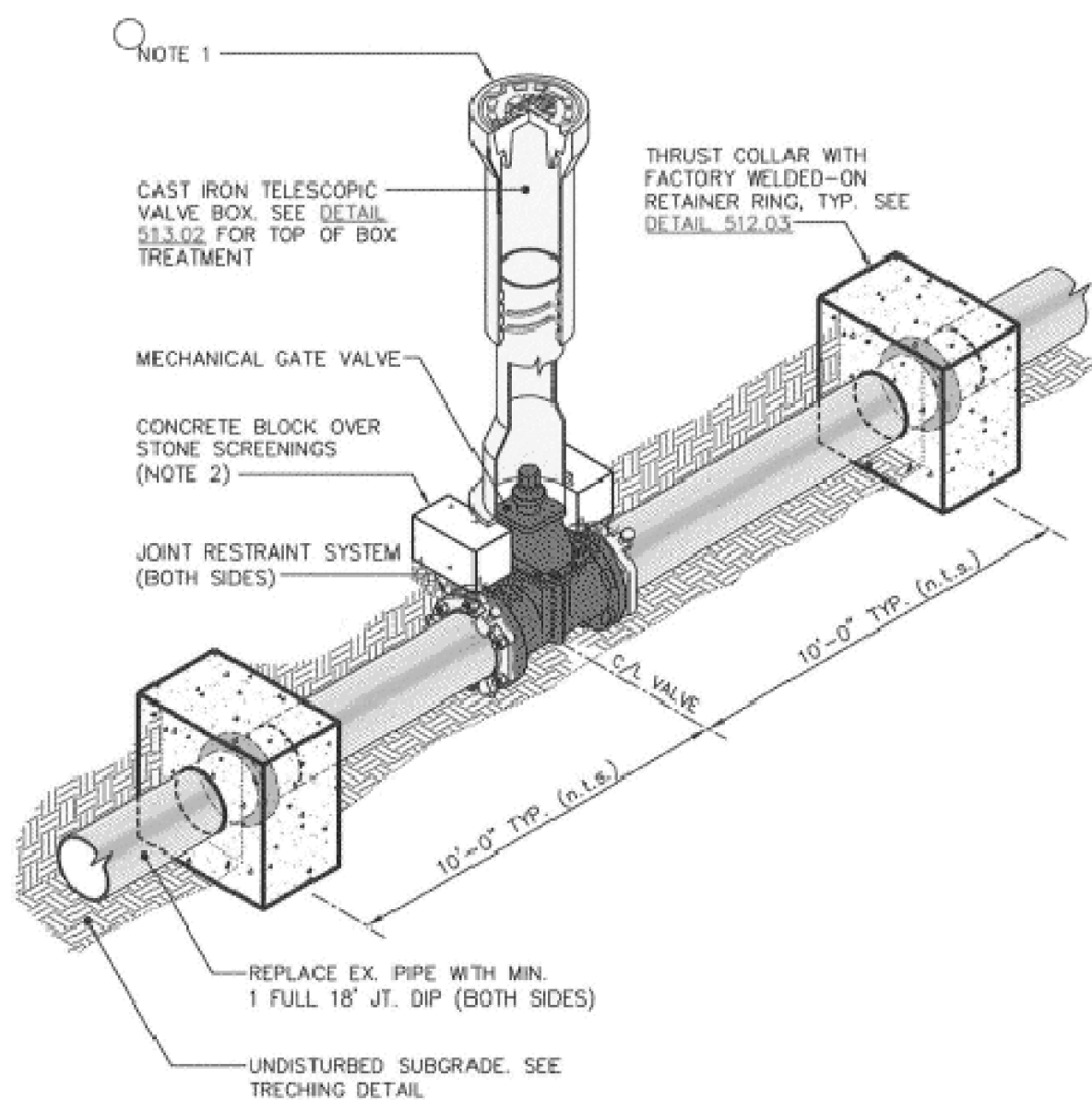
APPROVED BY:

REVISED:

TRENCH DETAIL



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:

1. See valve box **4" - 12" GATE VALVE WATER VALVE BOX INSTALLATION**
2. Concrete blocks supporting valve box shall not rest directly on valve bonnet!

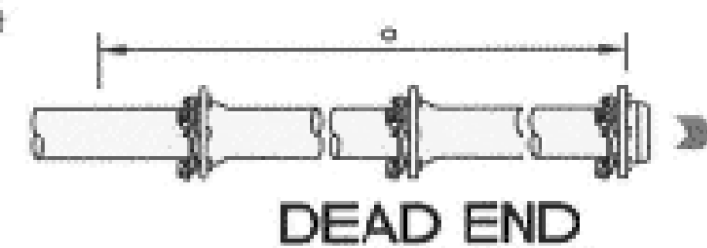
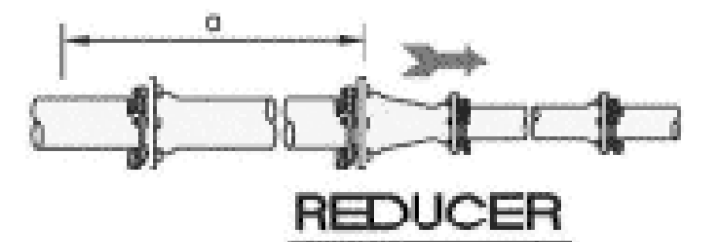
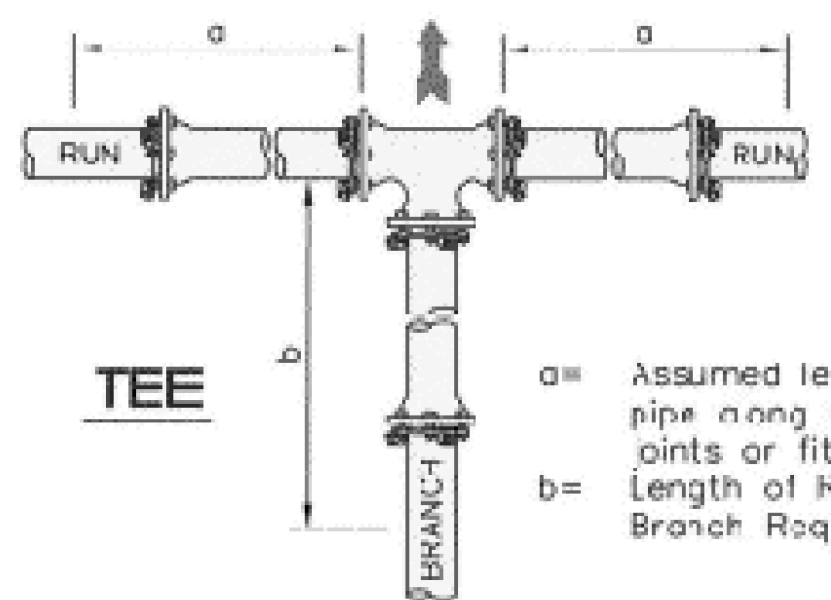
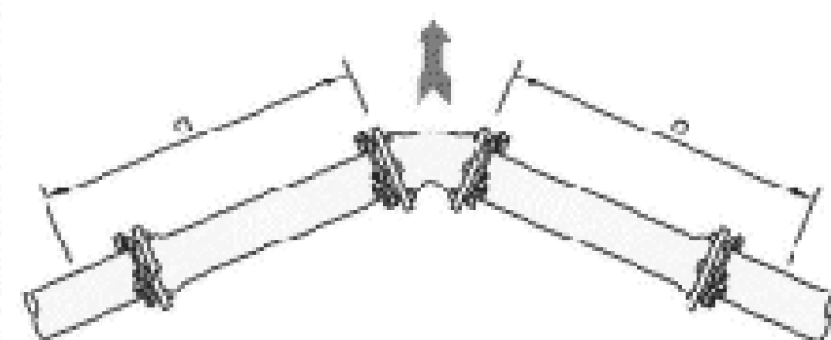
FOR 4" - 12" GATE VALVE
ASSEMBLY

UTILITY NOTES HN-0033

Minimum Restraint Length Chart (for Fittings) <i>See Note 4</i>														
Tee								Horizontal Bend				Reducer		Dead End
Nominal Size	a							a				a		a
	t (branch)											Smaller Line Size	Restraint Length	Restraint Length
6"	9'	1'	13'	-	-	-	-	3'	5'	10'	23'	4"	16'	31'
8"	9'	1'	8'	23'	-	-	-	3'	6'	13'	30'	6"	17'	41'
12"	9'	1'	1'	14'	40'	-	-	5'	9'	18'	45'	8"	31'	59'
16"	9'	1'	1'	5'	34'	58'	-	5'	11'	23'	55'	12"	33'	76'
24"	9'	1'	1'	1'	20'	48'	91'	8'	16'	33'	79'	16"	60'	110'
<i>See Note 1</i>												<i>See Note 2</i>		

Table Design Assumptions

Restrained pipe:	DIP
Soil Type:	CL
Safety Factor:	1.5:1 (covers most installations)
Trench Bury:	Pipe bedding in 4" of loose soil with backfill lightly consolidated to top of pipe.
Bury Depth:	3 ft.
Test Pressure:	200 psi



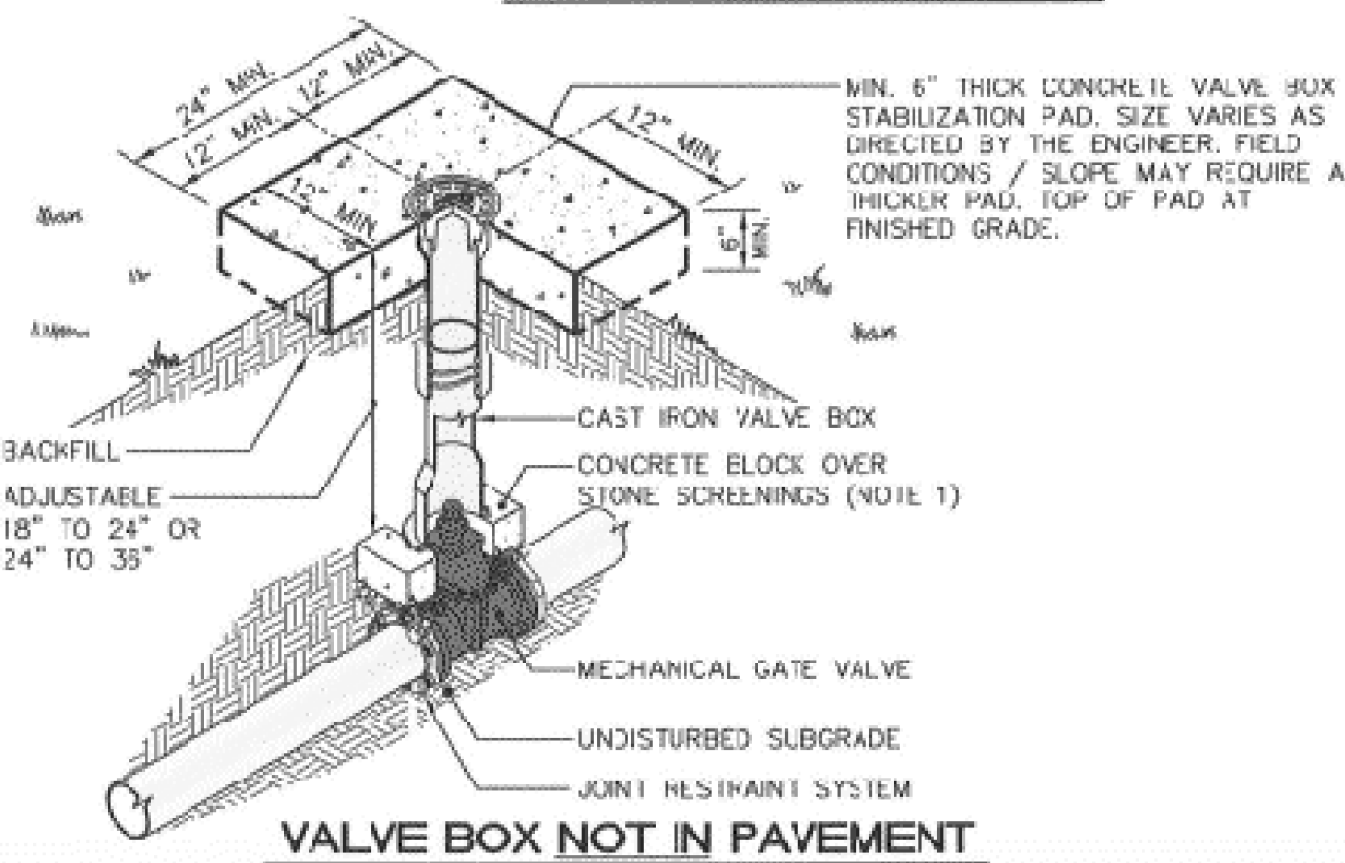
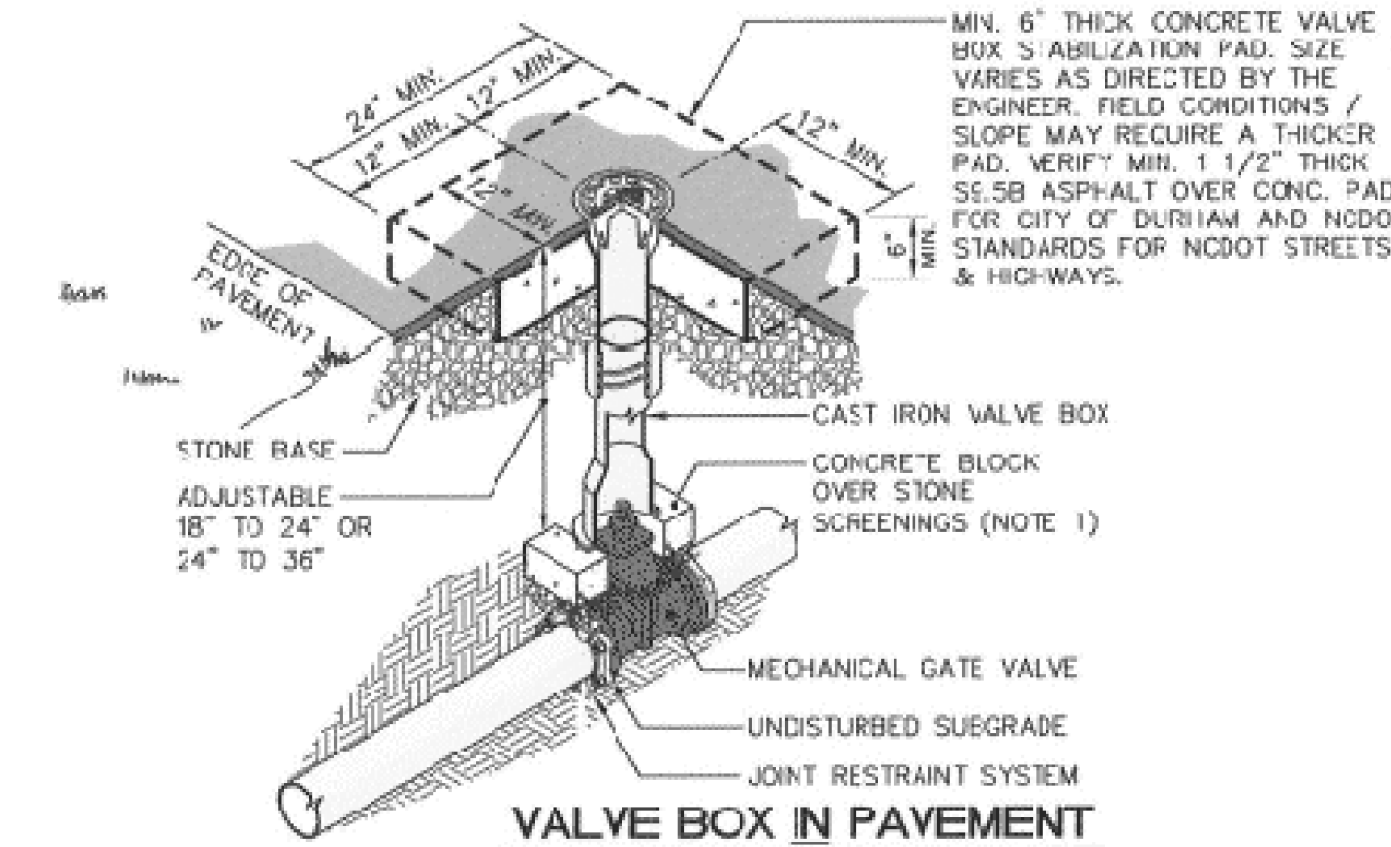
a= Assumed length of solid pipe along run without joints or fittings.
b= Length of Restrained Branch Required

NOTES:

1. If the length of the solid pipe on either side of the tee or the diameters on any leg of the tee varies, this table does not apply and the restraint length must be calculated.
2. If the diameter of the smaller pipe is anything other than what is shown, restraint length must be calculated.
3. If any of the assumptions vary from what is shown in the table, the restraint length must be calculated.
4. Minimum restraint length to be verified by the design engineer for each project.
5. Thrust restraint data shown in Table is based on DIPRA (Ductile Iron Pipe Research Association) guidelines.

FITTING RESTRAINT LENGTH CHART

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		



NOTES:

1. Concrete blocks supporting valve box shall not rest directly on valve bonnet!

4" - 12" GATE VALVE WATER VALVE BOX INSTALLATION



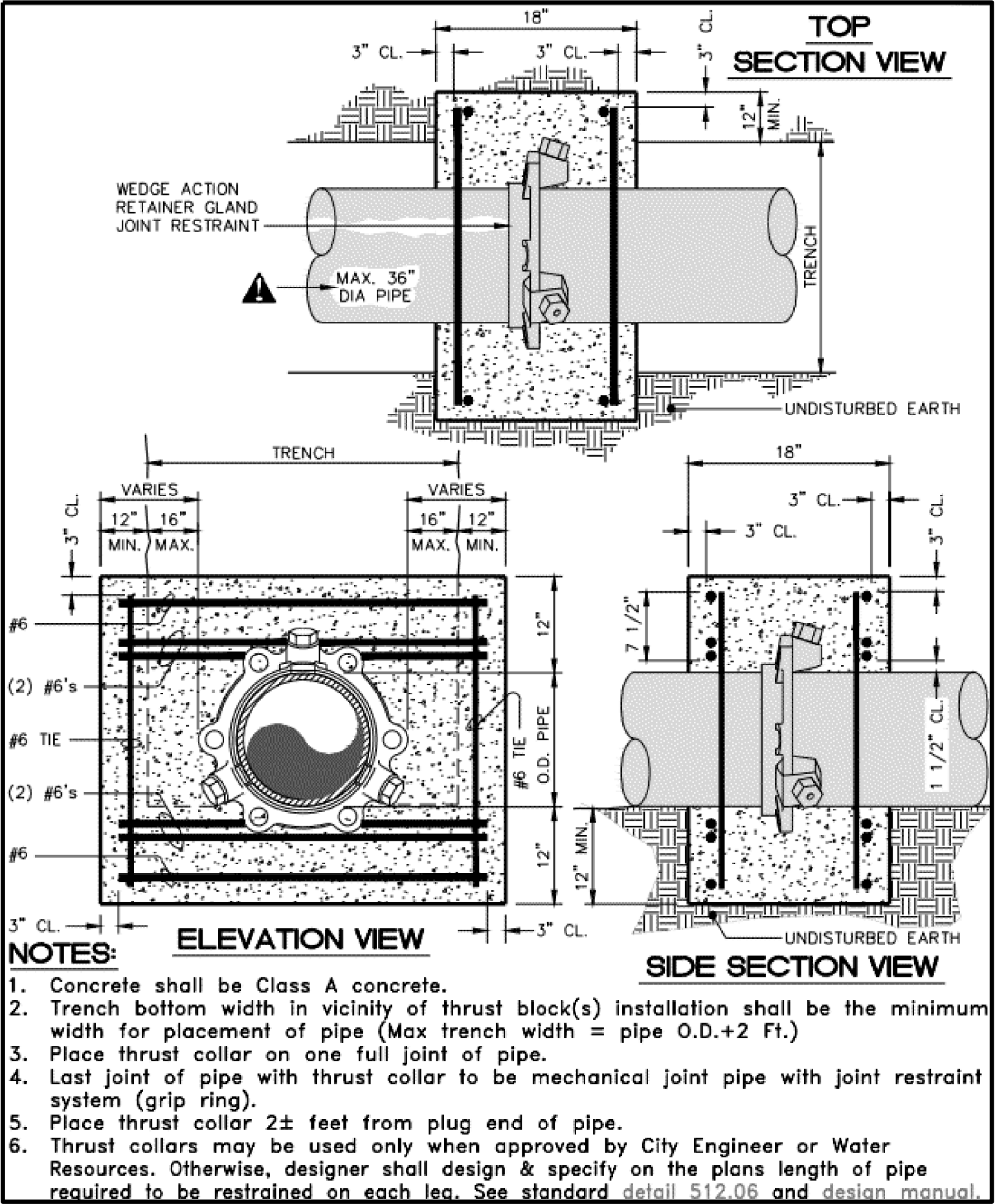
DESIGNED BY: EW

DRAWN BY: EW

CHECKED BY: JP

APPROVED BY:

REVISÉ:



THRUST COLLAR -
CONCRETE

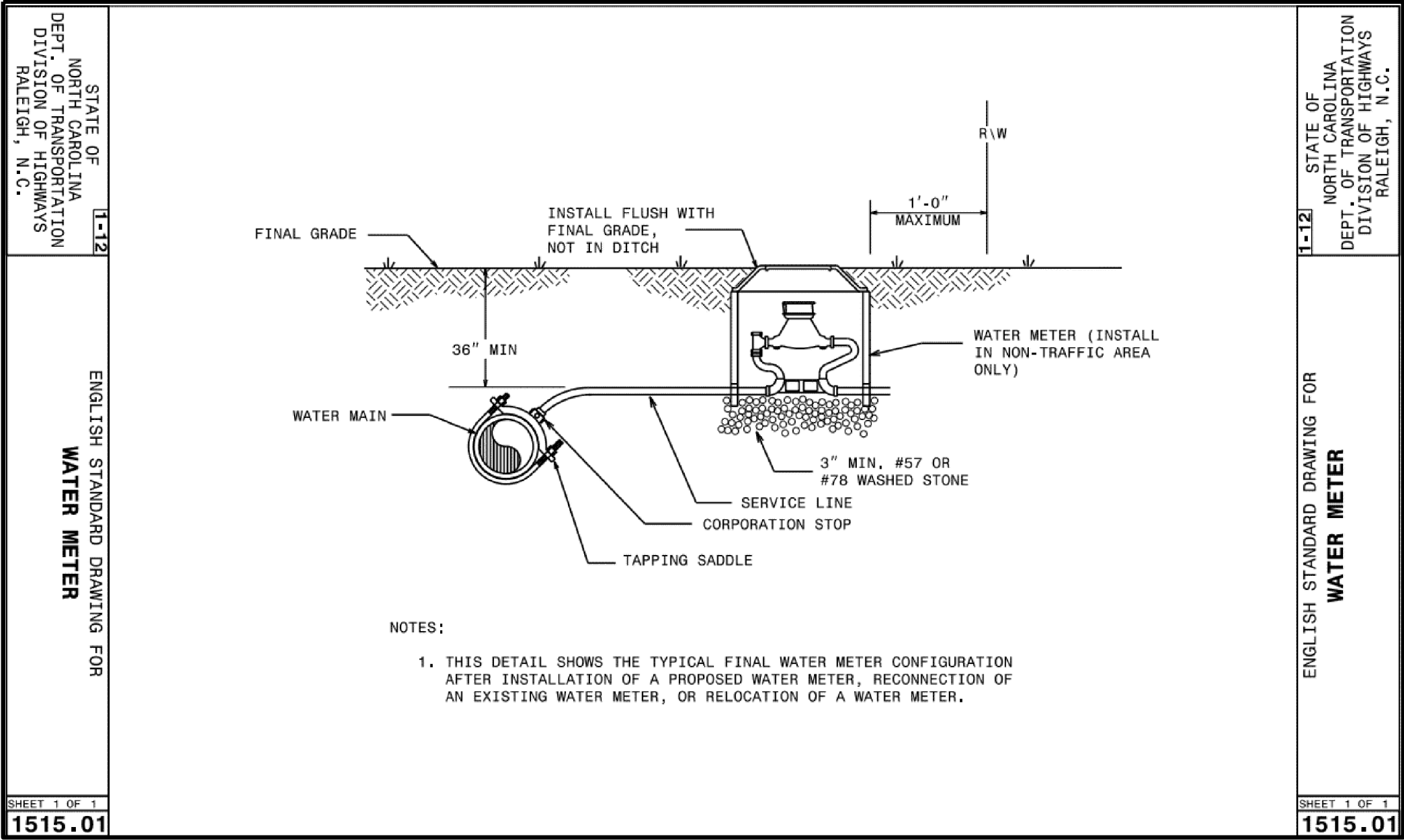
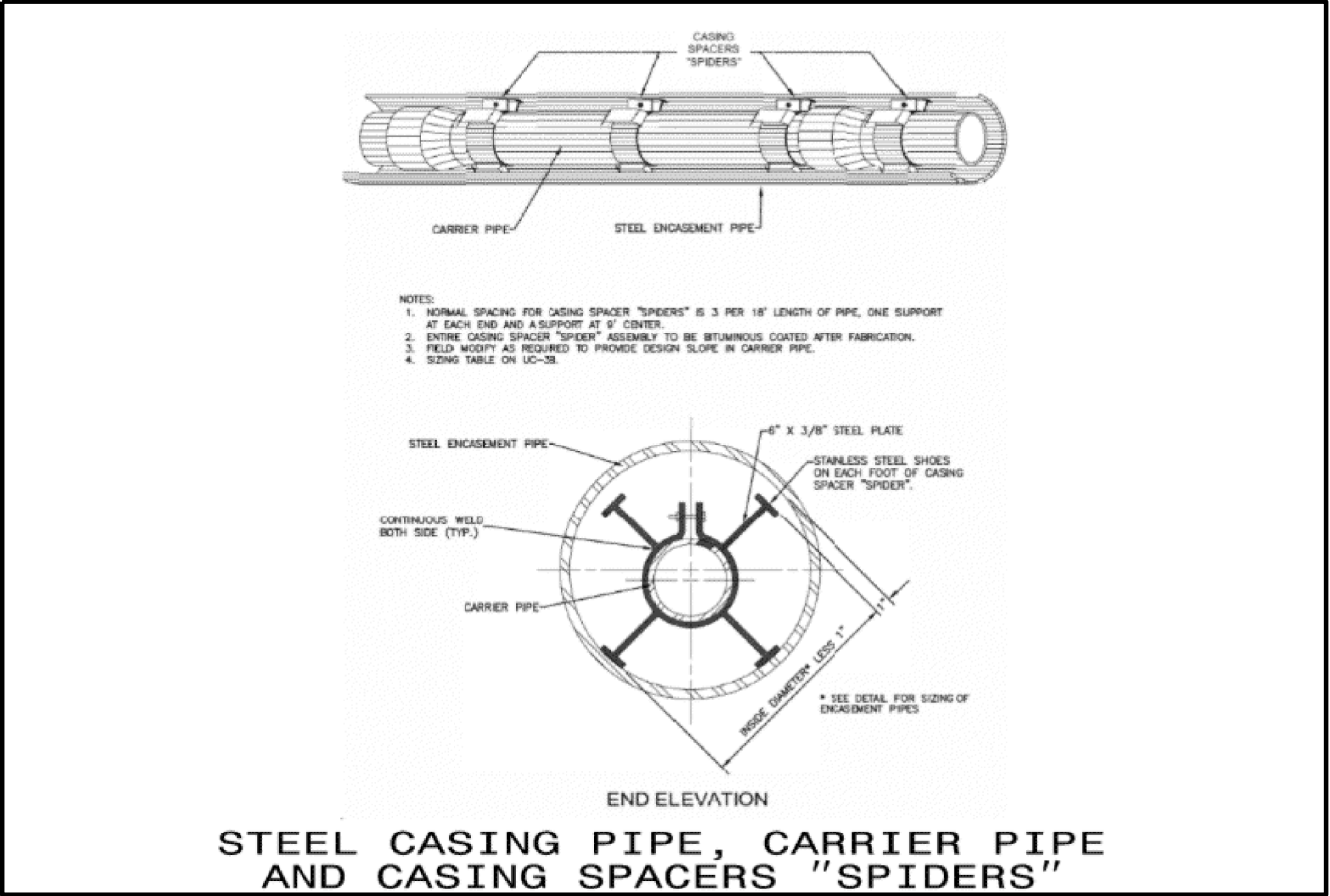
UTILITY NOTES HN-0033

#	PART DESCRIPTION
1	NRS GATE VALVE WITH RESILIENT SEATS
2	DIP CLASS 350 90° BEND (FLANGED)
3	COMPOUND WATER METER
4	DIP CLASS 350 TEE WITH 2" BRONZE TAPPING PLUG
5	COMPRESSION FITTING
6	DIP CLASS 350 NIPPLE (FLANGED) LENGTH VARIES
7	DIP CLASS 350 (FLANGED x PE)
8	SOLID CONCRETE BLOCK OR ADJUSTABLE PIPE SUPPORTS W/ 8x8x16 SOLID CMU BLOCK
9	PRECAST CONCRETE VAULT (SEE CHART FOR SIZE)
10	CITY OF DURHAM 2 PIECE ALUMINUM DOOR, CENTER OVER METER
11	4" PVC DRAIN TO CATCH BASIN OR DAYLIGHT
12	STEPS @ 12" O/C
13	DIP CLASS 350 TEE
14	STRAINER

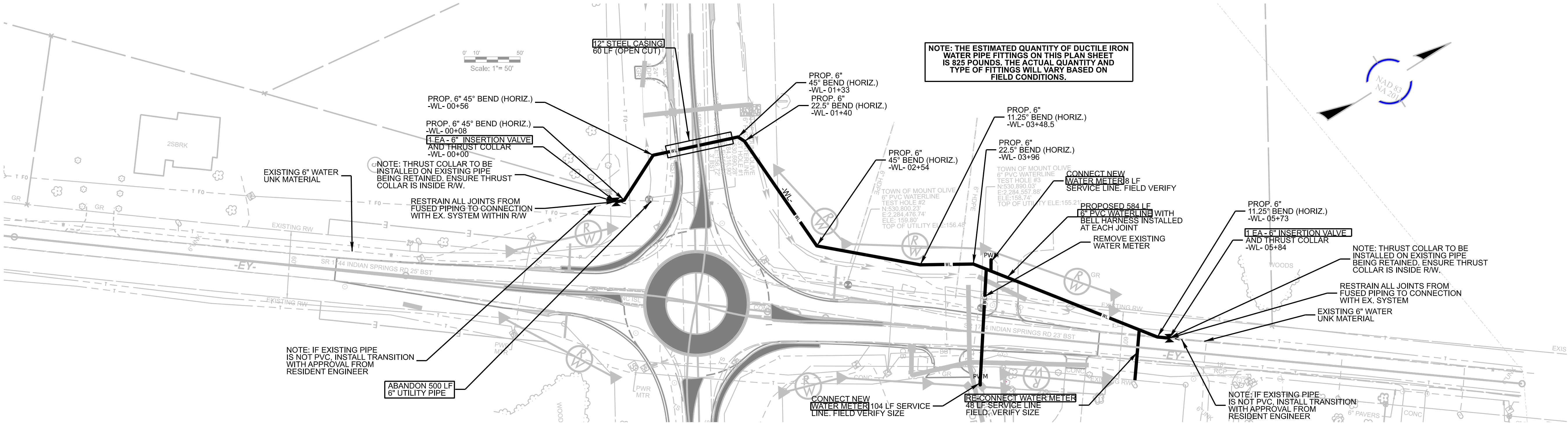
NOTES:

- Pipes, bends, tees, and gate valves are the same size as the meter size. (i.e. 6" meter has 6" pipe, 6" 90° bends, 6"x6" tees and 6" gate valves.)
- All dimensions are based upon standard sizes for pipes, bends, tees, gate valves and meters. Strainer sizes vary depending on manufacturer. Dimension "g" is based upon Neptune strainers. If another manufacturer is being used this dimension will vary and the meter installation may not fit into the vault box shown. This should be checked before ordering the vault box. Coordinate with city of Durham water & sewer maintenance division.
- Dimension "h" is for standard meters. Dimension "h(i)" is for compound meters.
- Use appropriate size plate flange on the tee with a 2" bronze tapping plug.
- Use only meters, strainers and gate valves approved by the City of Durham, see pre-approved product list.
- For 3" meter vaults use the standard single hatch-type aluminum door, centered over the meter. For 4", 6" and 8" meter vaults use 5'x5' standard city of Durham access doors. (See detail no. 515.04).
- Drill lid for AMR antenna & epoxy AMR into lid.
- Sizing of 3" and larger water meters must be submitted by a Professional Engineer as part of the construction drawings review.

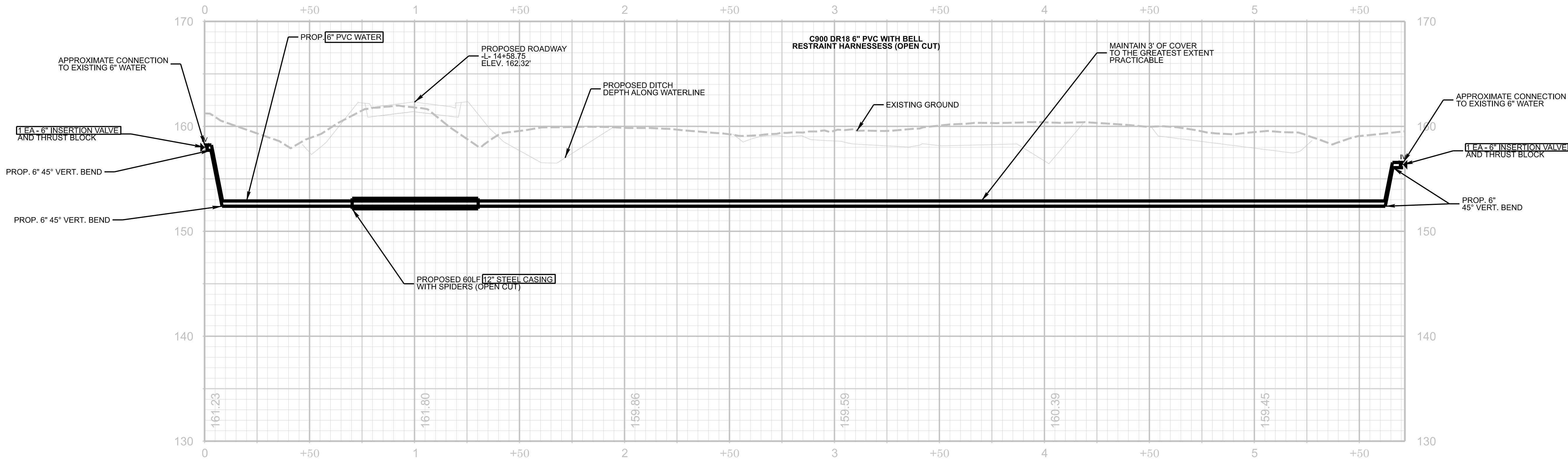
STANDARD & COMPOUND WATER
METER INSTALLATION (3" - 8")



03/07/25



-WL-



HN-0033

UC-4

UTILITY CONSTRUCTION
PLANS ONLY



DESIGNED BY: EW
DRAWN BY: EW
CHECKED BY: JP
APPROVED BY:
REVISED: