

TIP PROJECT: U-5873

CONTRACT:

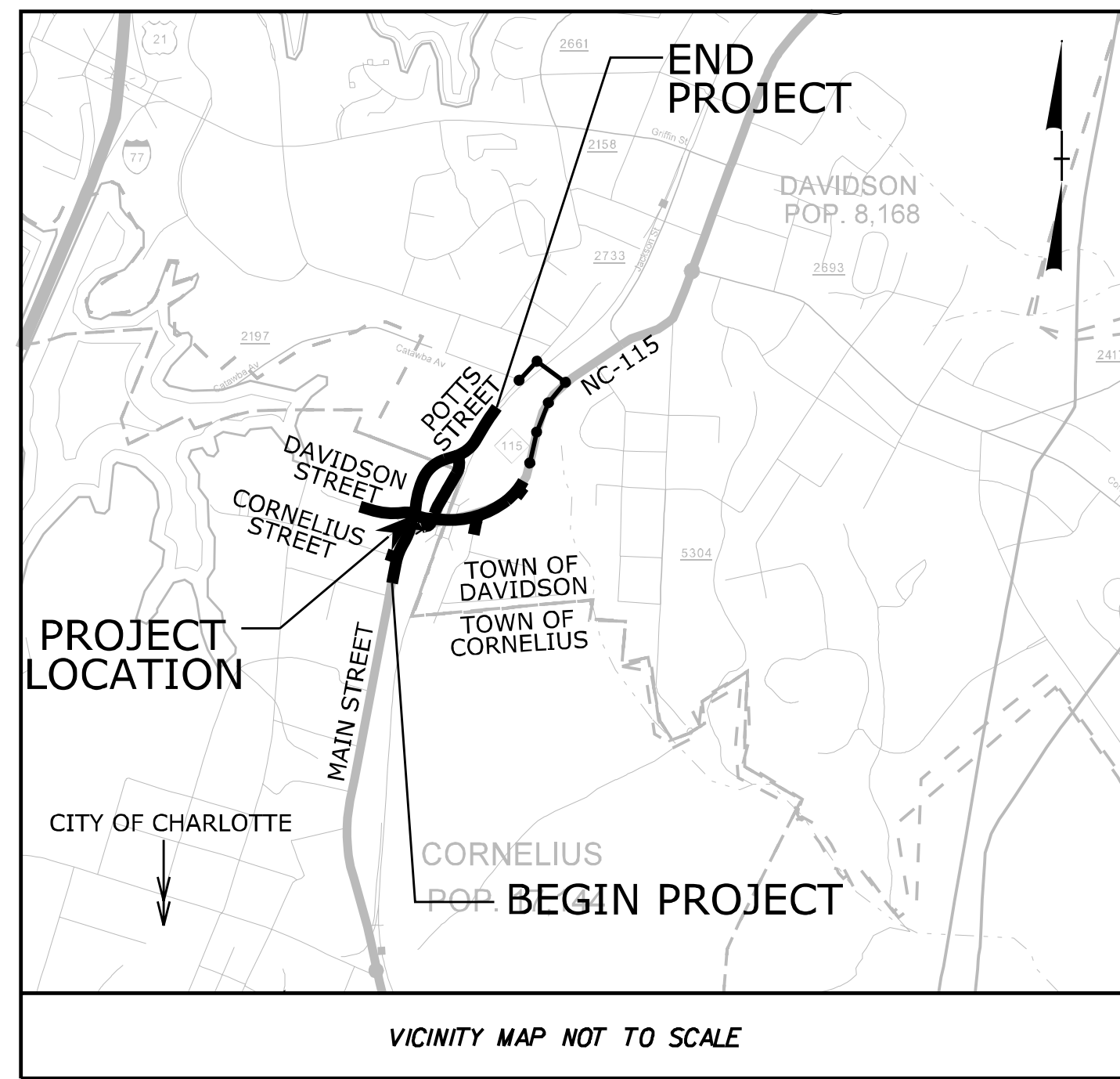
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG COUNTY

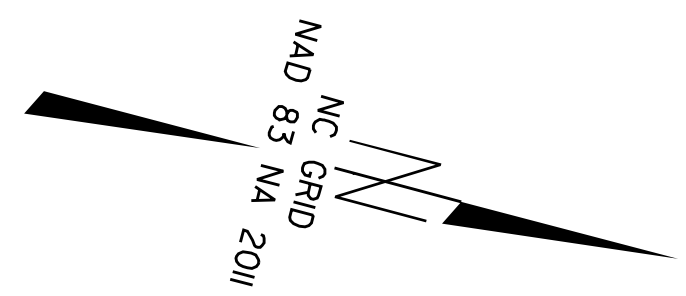
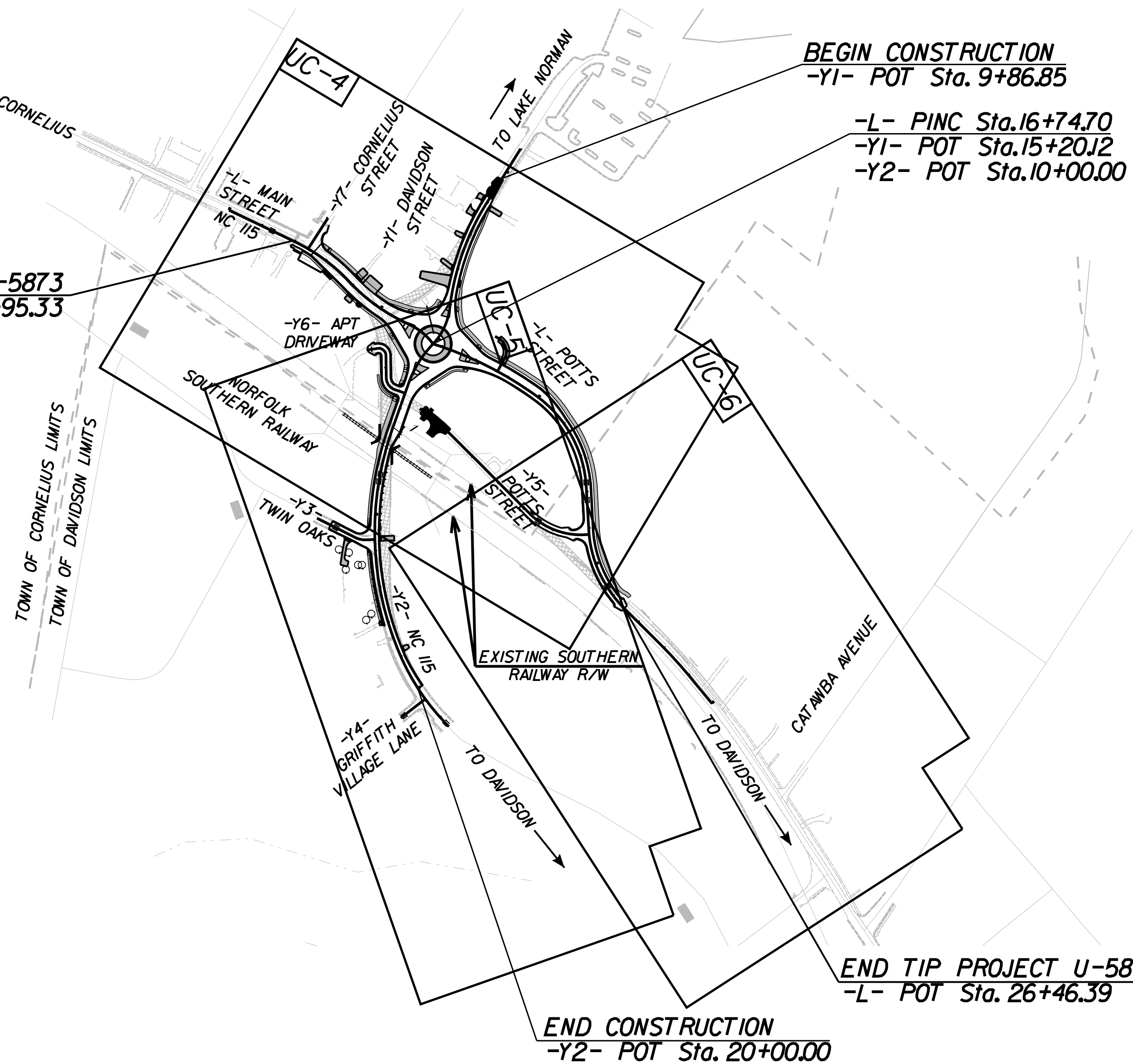
PROJECT REFERENCE NO.	SHEET NO.
U-5873	UC-1

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

LOCATION: INTERSECTION OF NC 115/MAIN STREET AND POTTS STREET
TYPE OF WORK: WATER AND SEWER MAIN RELOCATIONS
*NOTE TO CONTRACTOR: ALL WATER MAINS SHALL BE RESTRAINED JOINT DI PIPE.



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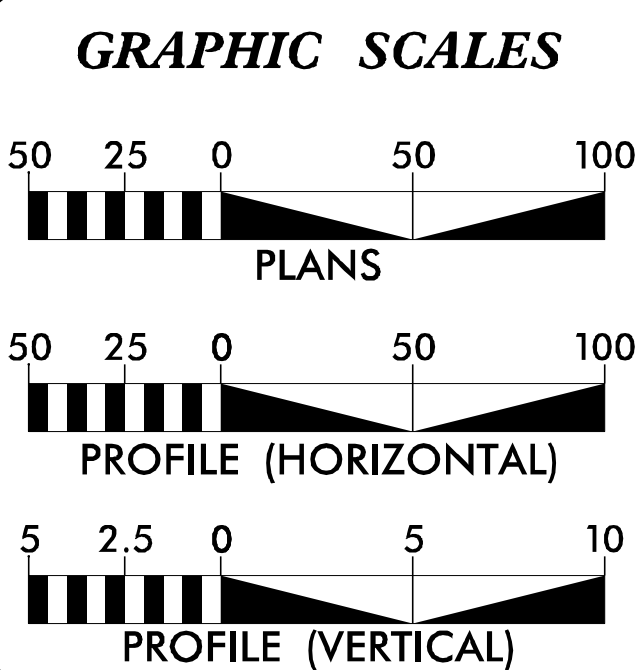


A PORTION OF THIS PROJECT IS LOCATED WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWNS OF DAVIDSON AND CORNELIUS

A PORTION OF THIS PROJECT IS LOCATED WITHIN THE RIGHT-OF-WAY OF NORFOLK SOUTHERN RAILROAD

NCDOT CONTACT:
SEAN EPPERSON, P.E.
NCDOT - DIVISION 10
716 W. MAIN STREET
ALBEMARLE, NC 28001

CONTACT INFORMATION	
OWNER:	CHUCK BLISS, P.E. (704) 995-7518 CBLISS@CI.CHARLOTTE.NC.US
PROJECT ENGINEER:	MATTHEW SHOESMITH, P.E. (704) 954-7490 MATTHEW.SHOESMITH@KIMLEY-HORN.COM 200 SOUTH TRYON STREET, SUITE 200 CHARLOTTE, NORTH CAROLINA 28202



INDEX OF SHEETS	
SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	NCDOT SYMBOLOLOGY
UC-2A	PERMIT SHEET
UC-3	GENERAL NOTES
UC-3A THRU UC-3F	STANDARD DETAILS
UC-4 THRU UC-6	UTILITY CONSTRUCTION PLAN
UC-7 THRU UC-8	UTILITY CONSTRUCTION PROFILE

UTILITY OWNERS
WATER - CHARLOTTE WATER
SEWER - CHARLOTTE WATER

PLANS PREPARED FOR
THE NCDOT BY:
2018 STANDARD SPECIFICATIONS

Kimley»Horn
NC LICENSE #P-0102
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: (704) 333-5131

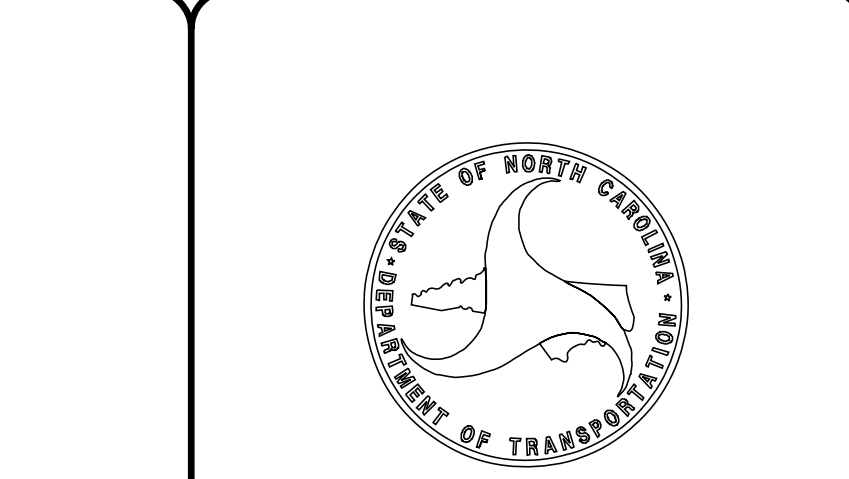
MATTHEW A. SHOESMITH, P.E.
CONSULTANT CONTACT #1

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SEAN EPPERSON, P.E.
NCDOT CONTACT

SEAL

8/25/2023



\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$



CHARLOTTE, NORTH CAROLINA

Kimley Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

Table with project reference no. U-5873, sheet no. UC-2A, and professional engineer seal for Matthew A. Shoemith.

UTILITY CONSTRUCTION

APPLICATION FOR NON-DISCHARGE PERMIT
GRAVITY SEWER MAIN EXTENSION
CHARLOTTE WATER

PROJECT NAME: NCDOT PROJECT U-5803 POTTS-MAIN CREEK BASIN McDowell

CLTWater PROJECT NO.: CPM-60-25-226

PROJECT TYPE: [] NEW CONSTRUCTION [X] RELOCATION [] MODIFICATION OF PERMIT NO.

VOLUME OF WASTEWATER GENERATED BY THIS PROJECT: 0 GALLONS PER DAY BASED ON 190 GAL/DAY/SINGLE FAMILY HOUSEHOLD X HOUSEHOLDS OR 135 GAL/DAY/MULTI-FAMILY UNIT X UNITS OR IS BASED ON

WASTEWATER TREATMENT PLANT RECEIVING WASTEWATER: [] McALPINE CR. (NC0024970) [] IRWIN CR. (NC0024945) [X] McDOWELL CR. (NC0036277) [] SUGAR CR. (NC0024937) [] MALLARD CR. (NC0030210) [] ROCKY CR. (NC0036269)

NATURE OF WASTEWATER 100% DOMESTIC % INDUSTRIAL % COMMERCIAL % OTHER

ORIGIN OF WASTEWATER [X] SUBDIVISION [] COMMERCIAL [] SCHOOL [] INDUSTRIAL [] APARTMENTS/CONDO'S [] OTHER

LIST ANY PARAMETER AND ITS CONCENTRATION THAT WILL BE GREATER THAN NORMAL DOMESTIC LEVELS:

IF WASTEWATER IS NON-DOMESTIC, DESCRIBE LEVEL OF PRETREATMENT:

IF A PRETREATMENT PERMIT IS REQUIRED, HAS ONE BEEN ISSUED? [] YES [] NO

HAS ENGINEER DETERMINED THAT DOWNSTREAM SEWERS ARE CAPABLE TO HANDLE THIS FLOW? [X] YES [] NO

PERMIT NO. FOR SEWERS IMMEDIATELY DOWNSTREAM PIPE DIAMETER OF SEWERS IMMEDIATELY DOWNSTREAM HAS ENGINEER DETERMINED THAT NC DEM AND CLTWater MINIMUM DESIGN STANDARDS ARE MET BY THIS PROJECT? [X] YES [] NO

COMPLETE NAME AND ADDRESS OF ENGINEERING DESIGN FIRM: KIMLEY-HORN AND ASSOCIATES 200 SOUTH TRYON STREET #200 CHARLOTTE, NORTH CAROLINA 28202

TELEPHONE (704) 333-5131

PROFESSIONAL ENGINEER'S CERTIFICATION I, MATTHEW SHOESMITH, ATTEST THAT THIS APPLICATION FOR McDowell Sewer Relocation HAS BEEN REVIEWED BY ME AND IS ACCURATE AND COMPLETE TO THE BEST OF MY KNOWLEDGE. I FURTHER ATTEST THAT TO THE BEST OF MY KNOWLEDGE THE PROPOSED DESIGN HAS BEEN PREPARED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS.



CLTWater PERMIT NO. ISSUED

PLANT FLOW ALLOCATION RECORDED BY:

PERMIT APPROVED BY: JOSEPH C WILSON, P.E., CHIEF ENGINEER

APPLICATION FOR PERMIT FOR WATER MAIN EXTENSION

PROJECT NAME: NCDOT PROJECT U-5803 POTTS-MAIN

CLTWater PROJECT NO.: CPM-60-25-226

PROJECT DESCRIPTION: Replace approx. 313 LF of 6" DI PC 350, 1,182 LF of 8" DI PC 350, and 496 LF of 16" DI PC 350 Water Main and Appurtenances along new Potts-Main Roundabout.

DESIGNED BY: FIRM: KIMLEY-HORN AND ASSOCIATES

ENGINEER: MATTHEW SHOESMITH

ADDRESS: 200 SOUTH TRYON STREET #200 CHARLOTTE, NORTH CAROLINA 28202

PHONE: (704) 333-5131

THIS APPLICATION IS MADE UNDER AND IN FULL ACCORD WITH THE PROVISIONS OF CHAPTER 130A-317 OF THE NORTH CAROLINA GENERAL STATUTES, AND SUCH OTHER STATUTES AS RELATED TO PUBLIC WATER SYSTEMS. CLTWater HAS BEEN GRANTED AUTHORITY TO ISSUE PERMITS FOR EXTENSION OF WATER MAINS PURSUANT TO 15A NCAC 18C.1801. THE APPLICANT AGREES THAT NO SIGNIFICANT CHANGE OR DEVIATION FROM THE PLANS AND SPECIFICATIONS APPROVED BY CLTWater WILL BE MADE WITHOUT THE WRITTEN CONSENT AND APPROVAL OF CLTWater OR ITS AUTHORIZED REPRESENTATIVE.

PERMIT NO. DATE

APPROVED: JOSEPH C WILSON, P.E., CHIEF ENGINEER CHARLOTTE WATER 5100 BROOKSHIRE BLV



5/14/2023

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 CHARLOTTE WATER.
3. ALL WATER LINES SHALL BE INSTALLED IN COMPLIANCE WITH THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES SHALL BE INSTALLED IN COMPLIANCE WITH THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH 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 UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. CONTRACTOR SHALL PROVIDE ACCESS FOR DEPARTMENT PERSONNEL AND 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, AND 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. CONTRACTOR SHALL MAKE INVESTIGATIONS TO DETERMINE EXACT LOCATION, SIZE, AND TYPE OF MATERIAL OF EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND TO AVOID DAMAGE TO EXISTING FACILITIES. CONTRACTOR SHALL REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT NOR OWNER.
7. CONTRACTOR SHALL 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. CONTRACTOR SHALL 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, OR 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 TO INVESTIGATE AND DOCUMENT ON ASBUILTS THE SERVICE LINE MATERIAL FOR BOTH PUBLIC AND PRIVATE SIDE OF WATER METERS. PROMPTLY NOTIFY THE ENGINEER OF ANY LEAD, GALVANIZED STEEL, OR LEAD GOOSENECKS ENCOUNTERED DURING CONSTRUCTION.

PROJECT SPECIFIC NOTES:

1. CONSTRUCTION SHALL BE IN ACCORDANCE WITH CHARLOTTE WATER STANDARD DETAILS AND THE PROJECT SPECIAL PROVISIONS.
2. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY CHARLOTTE WATER REPRESENTATIVE.
3. ALL SHORING SHALL BE IN ACCORDANCE WITH OSHA TRENCHING STANDARDS PART 1926, SUBPART B, AS AMENDED TO DATE.
4. ANY NECESSARY LANE CLOSURES SHALL FOLLOW GUIDELINES OUTLINED IN THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
5. IF THE PROPOSED WATER AND/OR SANITARY SEWER MAIN IS INSTALLED WITHIN 12" IN ANY DIRECTION (VERTICALLY OR HORIZONTALLY) OF A GAS MAIN, THE CONTRACTOR SHALL NOTIFY PIEDMONT NATURAL GAS COMPANY (704-525-5585).
6. THE CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES AS DIRECTED.
7. IF ADDITIONAL WORK SPACE IS NEEDED, AN ENCROACHMENT SHALL BE AGREED UPON BETWEEN CONTRACTOR AND PROPERTY OWNER.
8. THE LOCATION OF EXISTING UTILITIES SHOWN ON THE PLANS IS FOR THE USE OF THE CONTRACTOR IN PROVIDING PROTECTION FOR THE UTILITIES DURING CONSTRUCTION OPERATIONS. NCDOT, DESIGN CONSULTANT, AND/OR AGENT SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY OF LOCATION, SIZE, DEPTH, OR COMPLETENESS OF THE INFORMATION. THE CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
9. CONTRACTOR SHALL SUPPORT AND PROTECT ANY EXISTING UNDERGROUND UTILITIES ENCOUNTERED DURING TRENCH EXCAVATION AND/OR PIPE INSTALLATION.
10. 10-FEET HORIZONTAL SEPARATION OR 18 INCHES VERTICAL SEPARATION SHALL BE MAINTAINED BETWEEN WATER MAINS OVER SEWER MAINS. WHEN WATER MAINS ARE BELOW SEWER MAINS OR MINIMUM SEPARATIONS CANNOT BE MAINTAINED, DUCTILE IRON PIPE SHALL BE USED FOR BOTH MAINS TO 10-FEET ON EITHER SIDE OF THE CROSSING, AND ALL ALONG THE LENGTH OF THE MAINS WHERE THE MINIMUM SEPARATION CANNOT BE MAINTAINED.
11. CHARLOTTE WATER SHALL BE NOTIFIED TWO WEEKS PRIOR TO THE BEGINNING OF WATER AND/OR SANITARY SEWER WORK. CONTACT CHARLOTTE WATER TO PROVIDE NOTIFICATION.
12. WATER AND SEWER LINES SHALL REMAIN ACTIVE DURING CONSTRUCTION.
13. SANITARY SEWER LATERAL LOCATIONS ARE APPROXIMATE AND SUBJECT TO RELOCATION DUE TO FIELD CONDITIONS. ALL 4" SANITARY SEWER LATERALS SHALL HAVE A MIN. 1% SLOPE.
14. ALL PROPOSED WATER LINES, UNLESS OTHERWISE INDICATED ON THE PLANS, SHALL BE RESTRAINED JOINT DUCTILE IRON PIPE PRESSURE CLASS 350. ALL PROPOSED SEWER LINES, UNLESS OTHERWISE INDICATED ON THE PLANS, SHALL BE CEMENTIOUS-LINED PUSH-ON JOINT DUCTILE IRON PIPE PRESSURE CLASS 350.
15. ALL PROPOSED WATER AND SEWER LINES SHALL BE TESTED IN ACCORDANCE WITH CHARLOTTE WATER STANDARD SPECIFICATIONS.
16. CONTRACTOR SHALL MINIMIZE SHUTDOWN TIMES OF WATER AND SEWER FACILITIES, AND COORDINATE WITH CHARLOTTE WATER AND THE LOCAL FIRE DEPARTMENT.
17. UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY, AT&T (COMMUNICATIONS), CHARTER (CATV), PIEDMONT NATURAL GAS, CITY OF CHARLOTTE (WATER AND SEWER), ELECTRICITIES OF NC, SPECTURM, DUKE NET, WINDSTREAM, SEGRA, MCNC, CONTERRA, CENTURY LINK, DOMINION ENERGY (GAS), TDS CONTINUUM (COMMUNICATIONS), ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON PLANS.



421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

PROJECT REFERENCE NO. U-5873	SHEET NO. UC-3
DESIGNED BY: MAS	
DRAWN BY: SJJ	
CHECKED BY: DCS	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

UTILITY CONSTRUCTION

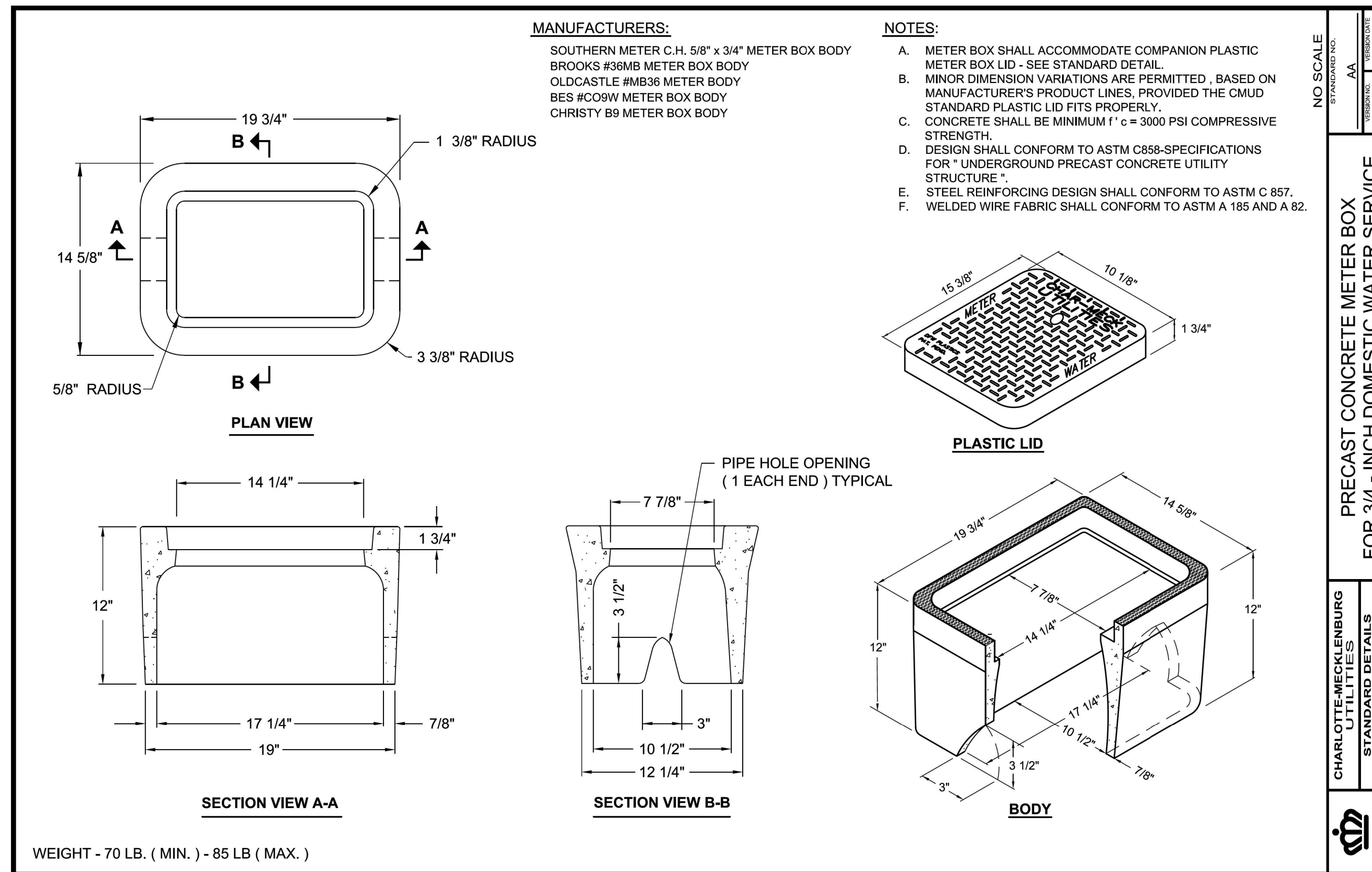
GENERAL SEQUENCE:

1. FOR EACH WATER LINE AND SEWER LINE RELOCATION, THE CONTRACTOR SHALL PROVIDE THE UTILITY OWNER WITH A DETAILED INSTALLATION, CONNECTION, AND SERVICE INTERRUPTION 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.
 - B. PROCEDURE FOR FLUSHING, TESTING, AND DISINFECTION OF ALL AFFECTED PIPING AND VALVES, AS REQUIRED BY THE UTILITY 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 UTILITY OWNER. THE UTILITY OWNER'S PERSONNEL SHALL WITNESS THE OPERATION OF THE UTILITY OWNER'S EXISTING FACILITIES INVOLVED IN THE INTERRUPTIONS OF SERVICE.
3. PLANNED SERVICE CONNECTION INTERRUPTIONS SHALL LAST NO LONGER THAN 8 HOURS UNLESS OTHERWISE APPROVED BY THE UTILITY OWNER. ALL INTERRUPTIONS OF SERVICES SHALL BE COORDINATED WITH AND SCHEDULED AT TIMES ACCEPTABLE TO THE UTILITY OWNER.
4. WRITTEN WATER SERVICE INTERRUPTION NOTICES SHALL BE PROVIDED TO ALL AFFECTED CUSTOMERS AT LEAST 72 HOURS PRIOR TO EACH PLANNED INTERRUPTION.

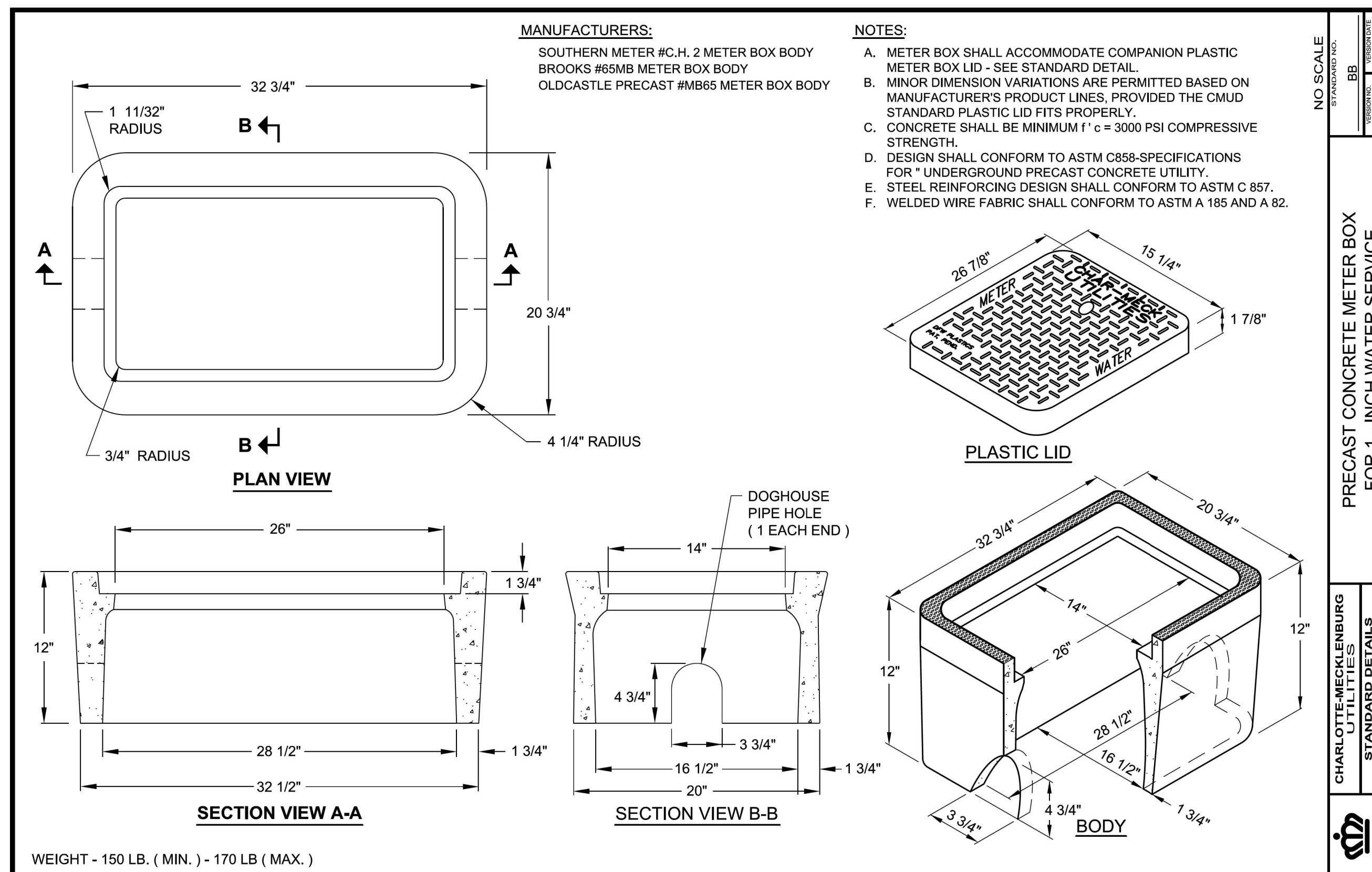




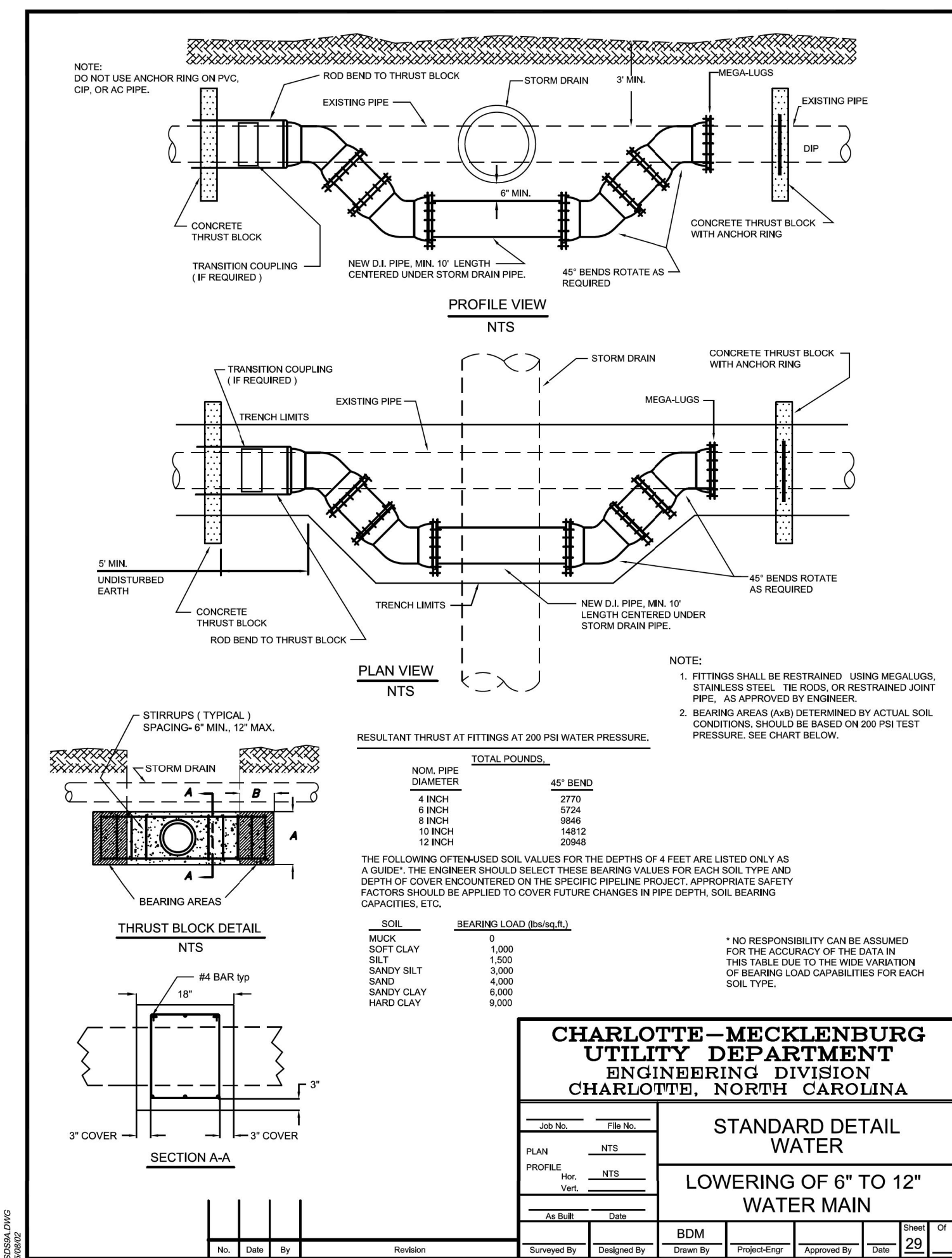
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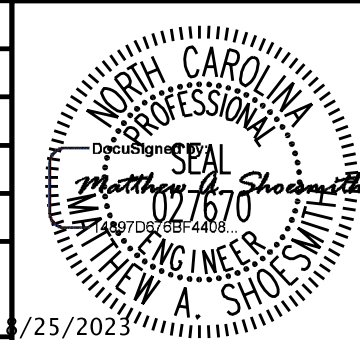


NO SCALE
 STANDARD DETAIL
 PRECAST CONCRETE METER BOX FOR 3/4 - INCH DOMESTIC WATER SERVICE
 CHARLOTTE-MECKLENBURG UTILITIES
 STANDARD DETAILS
 WATER



NO SCALE
 STANDARD DETAIL
 PRECAST CONCRETE METER BOX FOR 1 - INCH WATER SERVICE
 CHARLOTTE-MECKLENBURG UTILITIES
 STANDARD DETAILS
 WATER





UTILITY CONSTRUCTION

NO. DESCRIPTION

- END OF LINE GATE VALVE (MJ x MJ)
- DIP - (PE x PE) - REMOVE BELL - LENGTH = 17 FT - 19 FT
- WEDGE ACTION THRUST RESTRAINT GLAND
- CONCRETE WALL BLOCK (F₂₈ = 3000 PSI MIN) 6 FT x 4 FT x WIDTH (W)
- REBARS - GRADE 60 PER ASTM A615 - SEE REBAR SCHEDULES
- MJ CAP - WITH WEDGE ACTION RESTRAINT GLAND, TAP 2" THREADED OUTLET (FNPT)
- 2" RED BRASS NIPPLE SCH 40 (MNPT x MNPT) - LENGTH = 12 INCH
- 2" RED BRASS 90° BEND (FNPT x FNPT)
- 2" GALVANIZED MALLEABLE IRON COUPLING (FNPT x FNPT)
- STANDARD VALVE BOX ASSEMBLY - SEE DETAIL
- AWG #12 GAUGE COPPER TRACER WIRE - WITH BLUE INSULATION (30 MIL HDPE) TERMINATE WITH 24-INCH EXCESS WIRE (COILED) IN VALVE BOX (TYP.)
- 1" SCH 40 PVC ELECTRICAL CONDUIT - LENGTH AS REQUIRED
- UNDISTURBED SOIL
- HIGH DENSITY CROSS LAMINATED POLYETHYLENE FILM TUBE (HDCLPE) AWWA C105 - 4 MILS EACH x 2 LAYER - 8 MILS TOTAL
- HDPE ADHESIVE TAPE OR HDPE ZIP LOCK TIES
- PLYWOOD FORM
- 2" CAST IRON SOIL PIPE (L = 15') OR VALVE BOX BOTTOM SECTION

NOTES:

- 12" INCH MAINS REQUIRE THIS INSTALLATION.
- 6" INCH MAINS REQUIRE THIS INSTALLATION WHEN SOFT SOILS ARE ENCOUNTERED, OR WHEN REQUIRED BY THE ENGINEER.
- WHEN DIRECTED BY THE ENGINEER, THE CONCRETE WALL BLOCK SIZE MAY BE ADJUSTED, BASED ON ACTUAL SOIL CLASSIFICATION AND PIPE DIAMETER.
- FULLY RESTRAINED JOINT PIPE MAY BE USED IN LIEU OF THIS DETAIL - SEE RESTRAINED JOINT PIPE DETAIL.
- ALTERNATE DETAIL "A" (USING A REVERSED BELL) MAY BE USED IN LIEU OF DETAIL "A".

NO. ALTERNATE DESCRIPTION

WHEN USING 2-INCH HDPE (IPS) BLOW-OFF PIPE WITH STAINLESS STEEL, BRASS OR BRONZE MNPT ENDS, USE THE FOLLOWING PRODUCTS:

- 2" SDR 9 HDPE (POLY) - IPS PIPE (MNPT x MNPT) - LENGTH AS REQUIRED - 12" MINIMUM
- 2" SDR 9 HDPE (POLY) - IPS PIPE (MNPT x MNPT) - LENGTH AS REQUIRED

APPROXIMATE SOIL BEARING CAPACITY (DIPRA)

SOIL TYPE	DESIGN POINT @ (PIPE DIAMETER)	6"	8"	10"	12"
HARD CLAY	9,000				
SANDY CLAY	6,000				
SAND	4,000				
SANDY SILT	3,000				
SILT	1,500				
SOFT CLAY	1,000				
MUCK	0				

REBAR SCHEDULE

TYPE	LENGTH (INCHES)	NUMBER REQUIRED	PIPE DIAMETER (INCHES)	BAR SIZE	TOTAL REBAR LENGTH (FT)	TOTAL REBAR WEIGHT (LB)
VERTICAL	38	6	6"	#6	64	96
HORIZONTAL	62	6	6"	#7	64	131
HORIZONTAL	24	2	10"	#6	64	171
DIAGONAL	30	4	12"	#9	64	218

NO. DESCRIPTION

- CONCRETE PAD - CAST IN PLACE.
- FINAL ASPHALT SURFACE COURSE.
- VALVE BOX COVER.
- TOP SECTION VALVE BOX.
- EXTENSION STEM AS REQUIRED.
- BOTTOM SECTION VALVE BOX.
- 6" PVC PIPE (C900 OR SDR 26).
- STANDARD CONCRETE BRICK - 2 EACH.
- GATE VALVE (OR BALL VALVE, AS APPLICABLE).
- 5" DIA. CAST IRON SOIL PIPE - BELL OF PIPE WILL RECEIVE BOTTOM SECTION OF VALVE BOX.
- EXISTING OR NEW PAVEMENT.
- COMPACTED AGGREGATE BASE COURSE (CABC).
- COMPACTED SUBGRADE.
- AWG #12 GAUGE COPPER TRACER WIRE (THWN) WITH BLUE INSULATION, TERMINATE WITH 24 INCH EXCESS WIRE (COILED) AT METER BOX AND VALVE BOX (TYP.)

NOTES:

- WATER VALVE ADJUSTMENTS WILL BE COMPLETED AT LEAST 36 HOURS BEFORE RESURFACING.
- 12" MINIMUM WIDTH OF EXCAVATION AROUND VALVE BOX.
- DISTURBED AREAS AROUND STRUCTURE ADJUSTMENTS ARE TO BE TAMPED AND FILLED WITH 4000 PSI HIGH EARLY PORTLAND CEMENT CONCRETE.
- ALL DAMAGED OR MISALIGNED VALVE BOXES ARE TO BE REPORTED TO INSPECTOR, OTHERWISE CONTRACTOR ASSUMES RESPONSIBILITY FOR DAMAGE OR MISALIGNMENT.
- IF THE VERTICAL ADJUSTMENT CAUSES LESS THAN ONE INCH OVERLAP BETWEEN TOP SECTION AND BOTTOM SECTION, CONTRACTOR WILL REMOVE AND REPLACE RISER PIPE FROM BOTTOM SECTION TO TOP TO PROVIDE 3 INCHES OF OVERLAP IN TOP SECTION FOR TYPE A OR IF THE VERTICAL ADJUSTMENT CAUSES LESS THAN ONE INCH OVERLAP BETWEEN TOP SECTION AND BOTTOM SECTION, CONTRACTOR WILL REMOVE AND RESET BOTTOM SECTION TO PROVIDE A MINIMUM OF 3 INCHES OVERLAP AT TOP SECTION/BOTTOM SECTION JOINT SECTION & BOTTOM SECTION/RISER PIPE JOINT FOR TYPE B.
- TOP & BOTTOM SECTION TO BE CENTERED OVER NUT, NOT TO BEAR ON VALVE BODY.
- PROVIDE CLEARANCE BETWEEN VALVE BOX/BRICK AND THE VALVE.
- VALVE BOX ASSEMBLY SHALL CONSIST OF NO MORE THAN 3 VERTICAL SECTIONS - 1 TOP SECTION, 1 BOTTOM SECTION AND 1 - PIPE RISER SECTION.

APPROXIMATE SOIL BEARING CAPACITY (DIPRA)

SOIL TYPE	DESIGN POINT @ (PIPE DIAMETER)	6"	8"	10"	12"
HARD CLAY	9,000				
SANDY CLAY	6,000				
SAND	4,000				
SANDY SILT	3,000				
SILT	1,500				
SOFT CLAY	1,000				
MUCK	0				

NO. DESCRIPTION

- TYPE I ADJUSTMENT RISER.
- VALVE BOX - TOP SECTION.
- 18" - 8 SS 3/8" - 16 x 3/8" HEX SET SCREW WITH PERMANENT THREAD LOCK (RED) - LOCITITE # 271, PERMABOND HM128, OR APPROVED EQUAL.
- 1/2" DIA. x 1/16" - FIELD DRILL HOLE.

DRILL DEPTH - 1/16"

TYPE II - ADJUSTMENT RISER

TH - TOTAL HEIGHT	AH - ADJUSTMENT HEIGHT	H	MINIMUM WEIGHT - LBS
< 4 1/2"	< 2 1/2"	NOT APPROVED	NOT APPROVED
4 1/2"	2 1/2"	0	16
5"	3"	1/2"	20
6"	4"	1 1/2"	22.5
7"	5"	2 1/2"	25
8"	6"	3 1/2"	27
10"	8"	5 1/2"	32

TYPE I - ADJUSTMENT RISER

TH - TOTAL HEIGHT	AH - ADJUSTMENT HEIGHT	MIN. WEIGHT - LBS
3"	1"	7
3 1/2"	1 1/2"	9
4"	2"	15
> 4"	NOT APPROVED	N/A

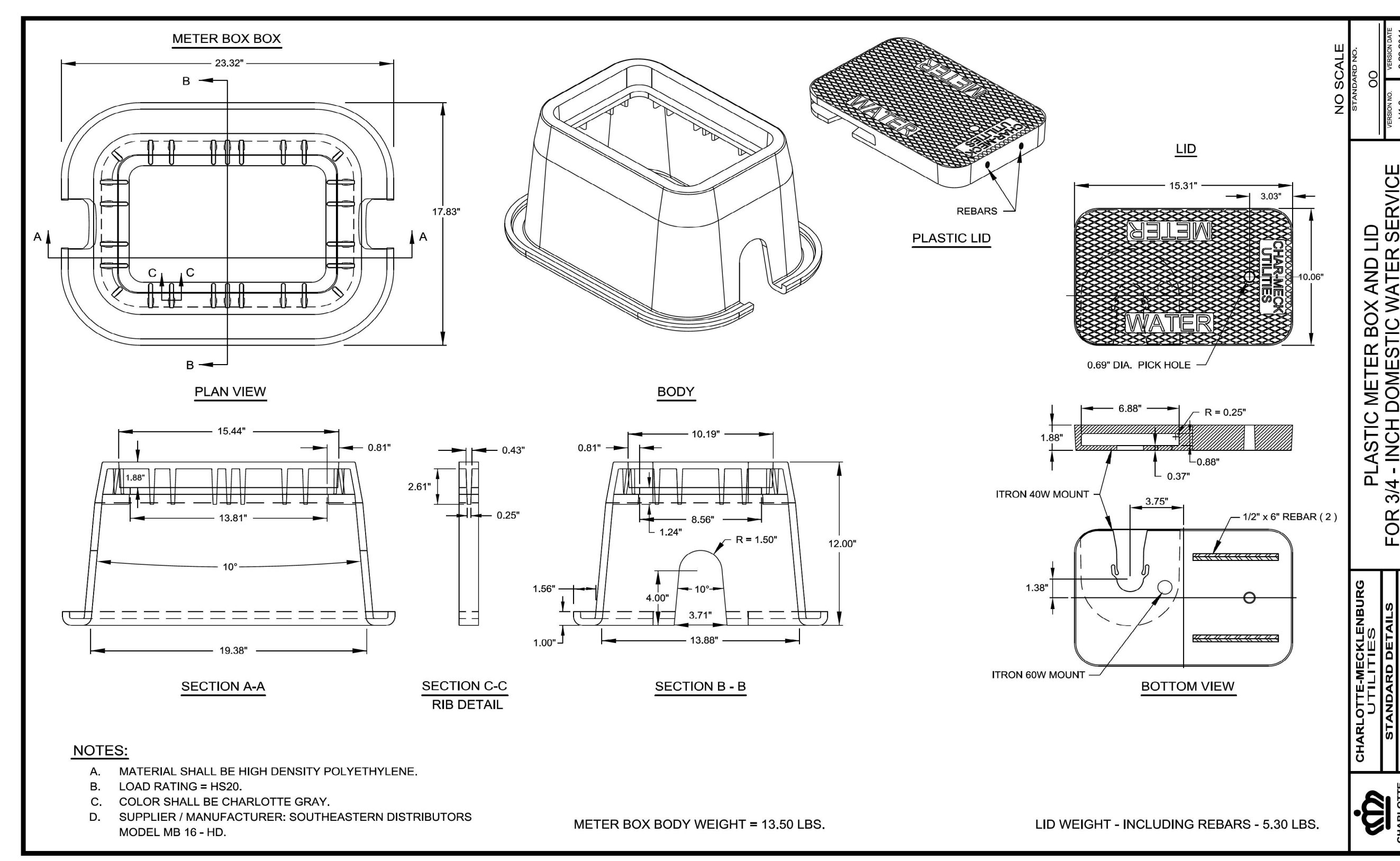
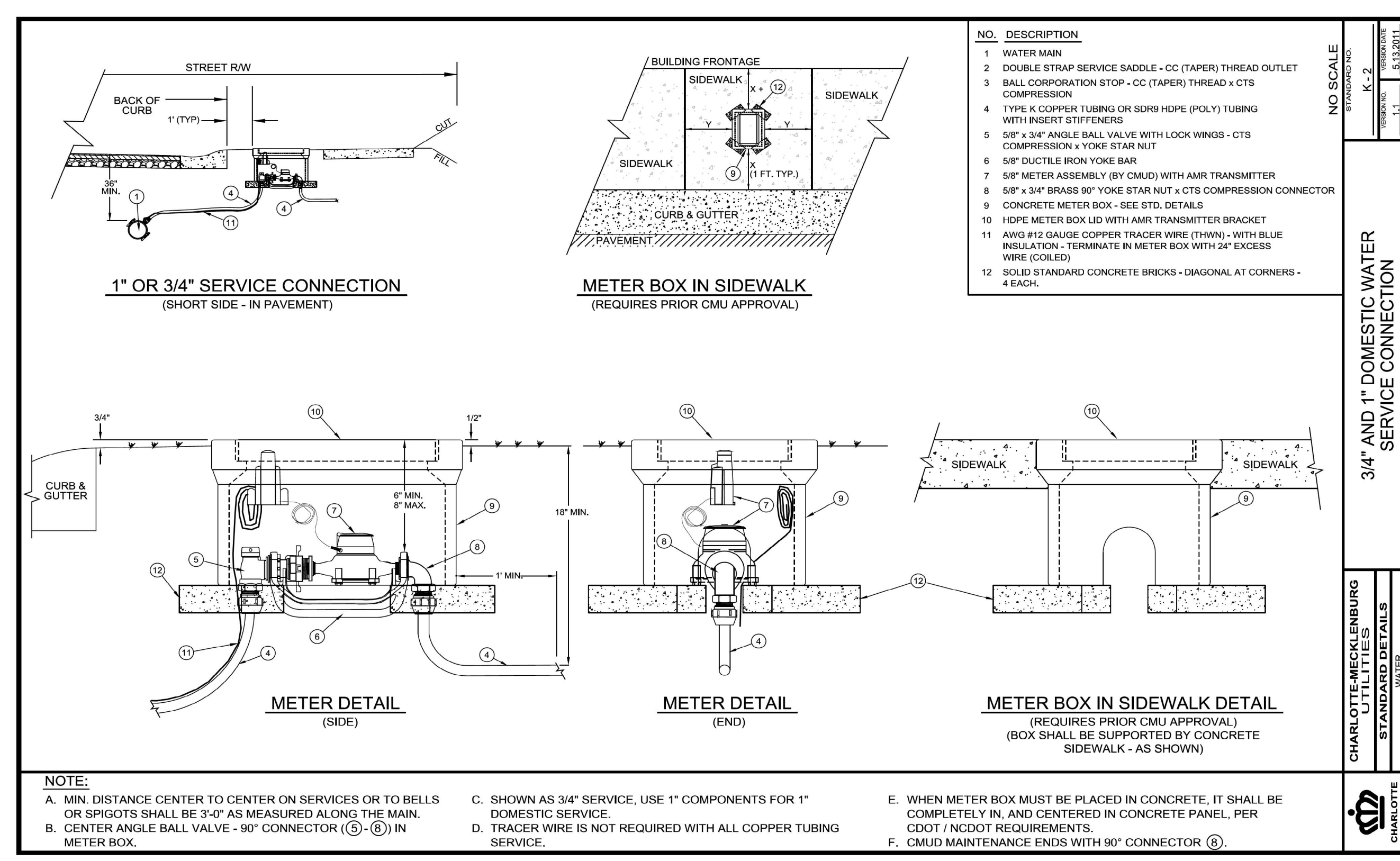
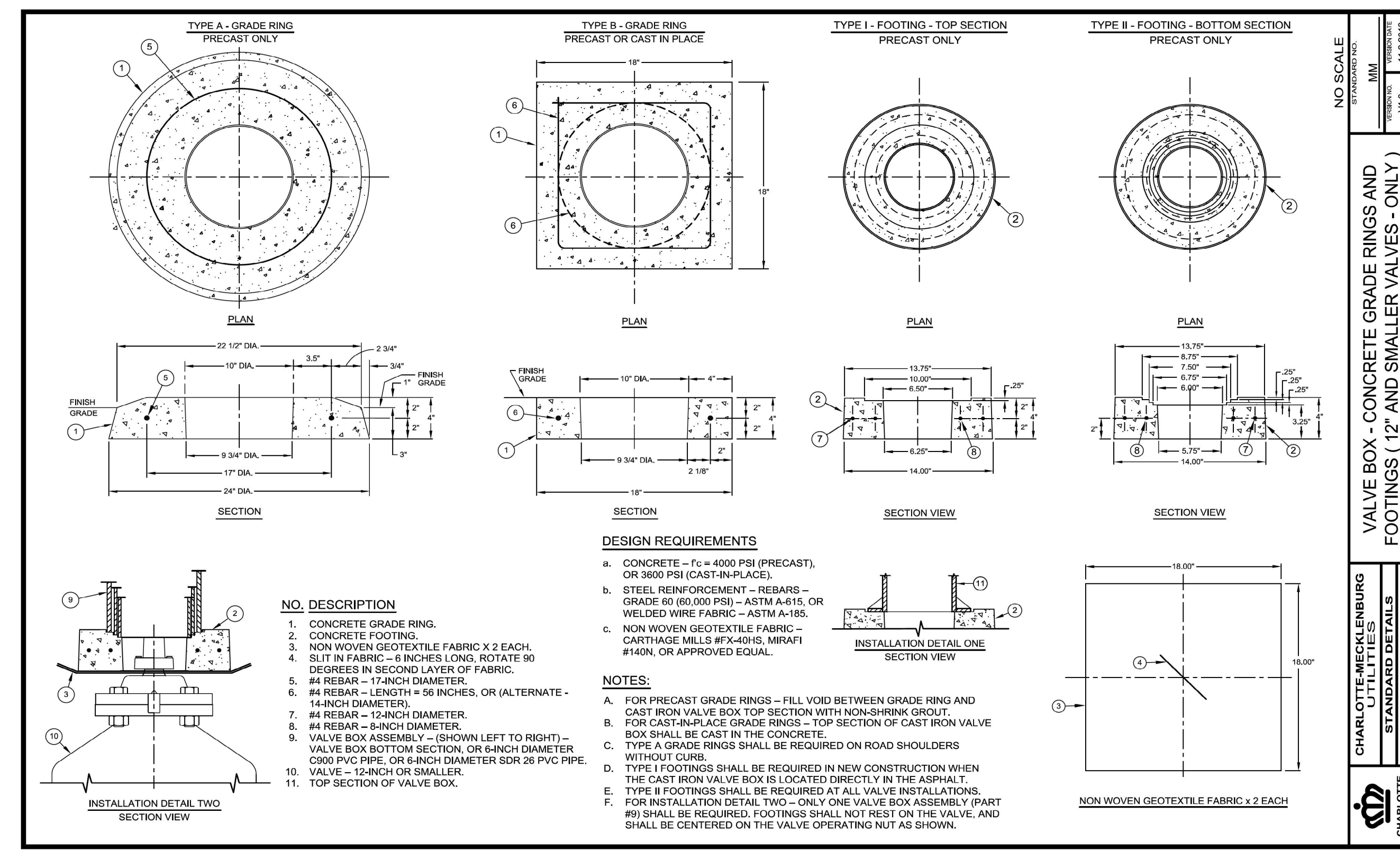
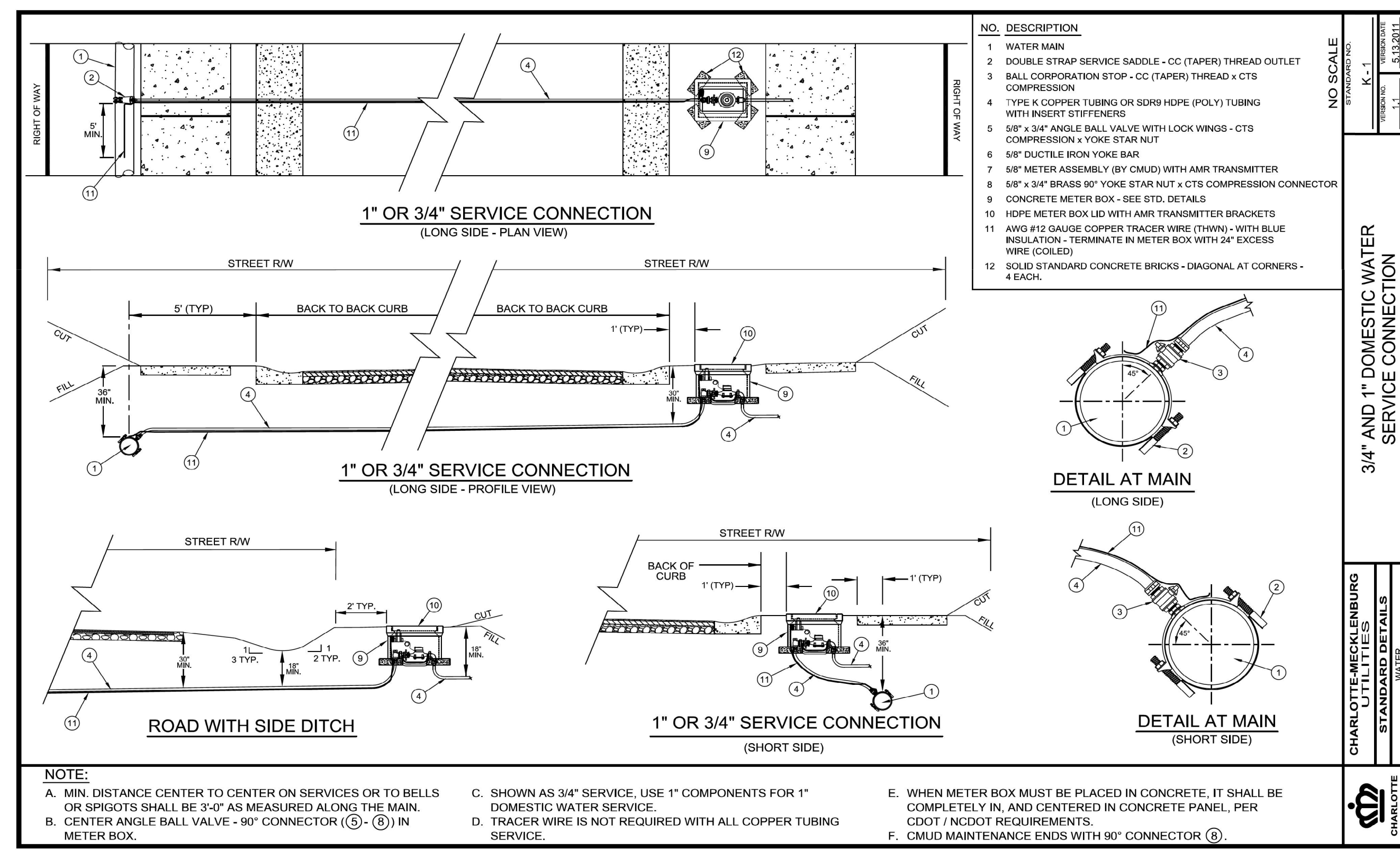
NO. DESCRIPTION

- 18" x 18" PRECAST (OR CAST IN PLACE) CONCRETE PAD OR 24" DIAMETER PRECAST PAD.
- NON - SHRINK GROUT - IN ANNULAR SPACE.
- VALVE BOX COVER.
- TOP SECTION VALVE BOX.
- EXTENSION STEM AS REQUIRED. SEE NOTES.
- BOTTOM SECTION VALVE BOX.
- 6" PVC PIPE (C900 OR SDR 26).
- PRECAST CONCRETE FOOTING - TYPE II - SEE DETAIL.
- GATE VALVE (OR BALL VALVE, AS APPLICABLE).
- 5" DIA. CAST IRON SOIL PIPE - BELL OF PIPE WILL RECEIVE BOTTOM SECTION OF VALVE BOX.
- AWG #12 GAUGE COPPER TRACER WIRE (THWN) WITH BLUE INSULATION, TERMINATE WITH 24 INCH EXCESS WIRE (COILED) AT METER BOX AND VALVE BOX (TYP.).
- 1/4" OR 3/8" ID CONDUIT - SDR 9 PEX TUBING - ASTM F 876.
- CONCRETE (ROADWAY, DRIVEWAY OR SIDEWALK)
- ASPHALT PAVEMENT.
- COMPACTED AGGREGATE BASE COURSE (CABC) OR ASPHALT BASE COURSE.
- COMPACTED SUBGRADE.
- NONWOVEN GEOTEXTILE FABRIC - 15" x 18" - 2 LAYERS - MIRAFI #40N OR CARTRIDGE MILLS # FX - 40HS.
- PRECAST CONCRETE FOOTING - TYPE I - SEE DETAIL.

NOTES:

- CONCRETE FOOTING TO BE CENTERED OVER VALVE NUT, AND SHALL NOT BEAR ON VALVE BODY.
- PROVIDE CLEARANCE BETWEEN VALVE FOOTING AND THE VALVE.
- WHEN OPERATING NUT DEPTH EXCEEDS 3" BELOW FINISHED GRADE, PROVIDE EXTENSION STEM WITH STANDARD 2" SQUARE OPERATING NUT IN TOP SECTION OF VALVE BOX. SEE STANDARD DETAIL.
- VALVE BOX ASSEMBLY SHALL CONSIST OF NO MORE THAN 3 VERTICAL SECTIONS - 1 TOP SECTION, 1 - BOTTOM SECTION, AND 1 - PIPE RISER SECTION.
- CONCRETE PADS SHALL NOT BE USED IN PAVEMENT (CONCRETE OR ASPHALT), SIDEWALKS OR DRIVEWAYS.

UTILITY CONSTRUCTION



NO SCALE

CHARLOTTE-MECKLENBURG UTILITIES WATER

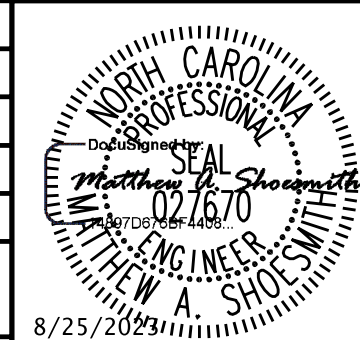
STANDARD DETAILS

WATERSEWER/RECLAIM/WP

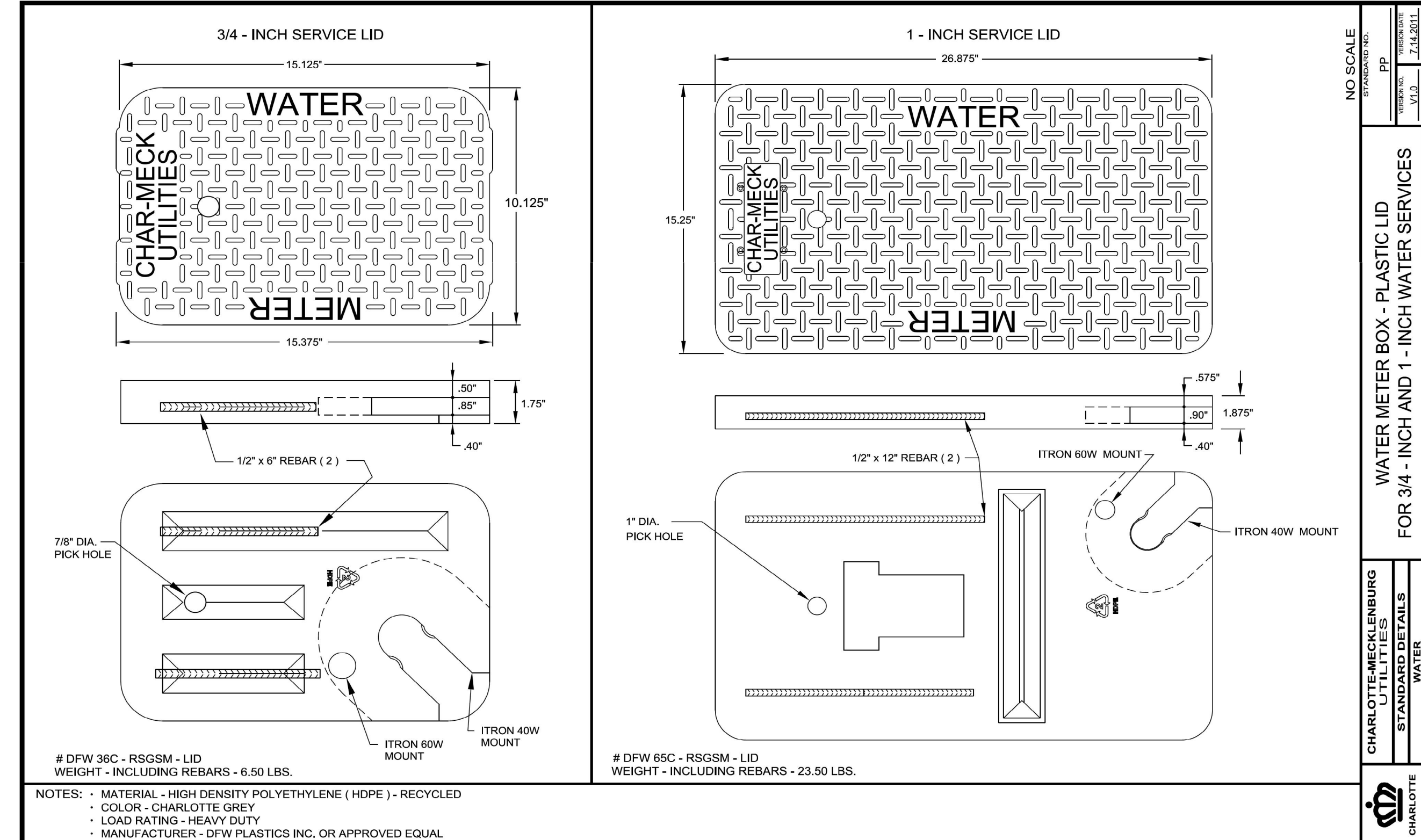
VALVE BOX - CONCRETE GRADE RINGS AND FOOTINGS (12" AND SMALLER VALVES - ONLY)

PLASTIC METER BOX AND LID FOR 3/4 - INCH DOMESTIC WATER SERVICE

50 100



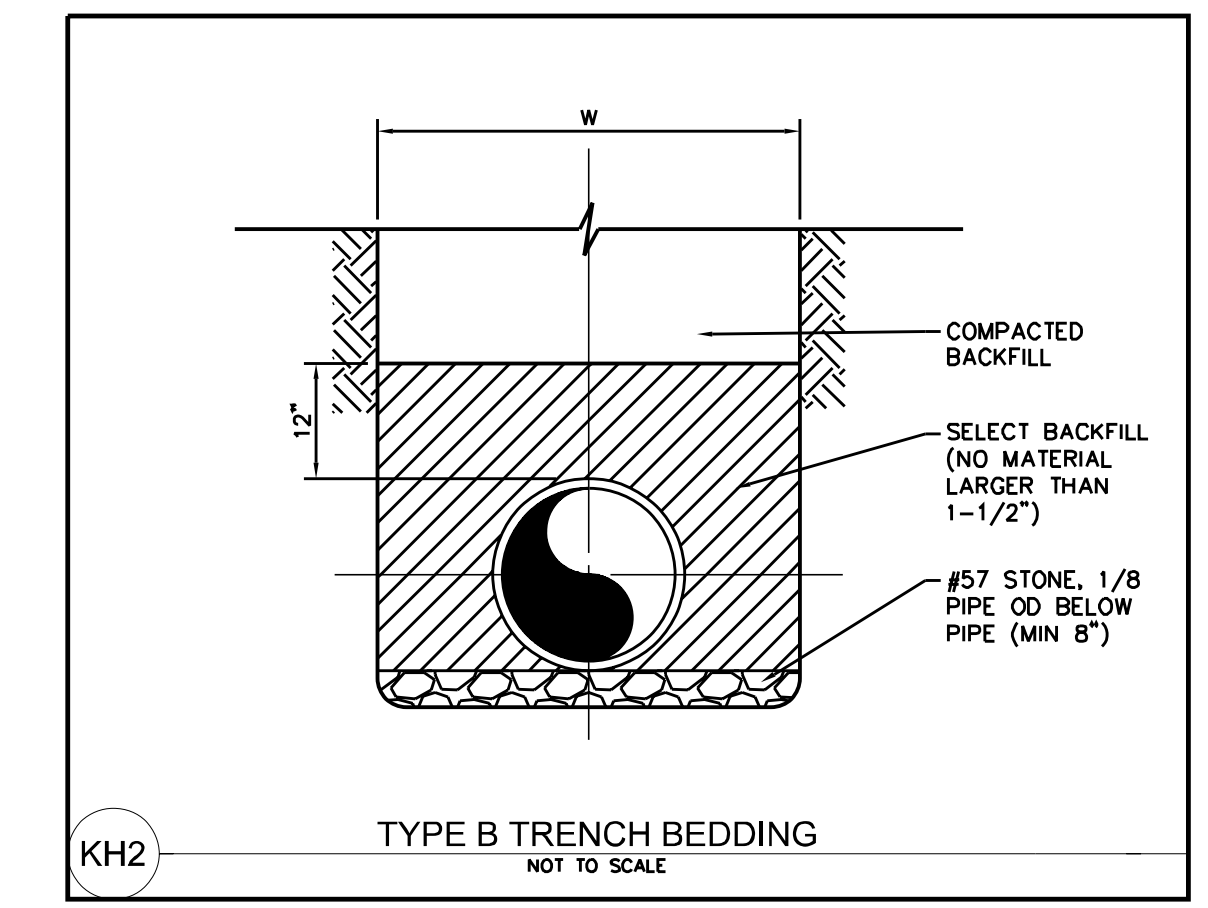
UTILITY CONSTRUCTION



DFW 36C - RSGSM - LID
 WEIGHT - INCLUDING REBARS - 6.50 LBS.
 NOTES: MATERIAL - HIGH DENSITY POLYETHYLENE (HDPE) - RECYCLED
 COLOR - CHARLOTTE GREY
 LOAD RATING - HEAVY DUTY
 MANUFACTURER - DFW PLASTICS INC. OR APPROVED EQUAL

DFW 65C - RSGSM - LID
 WEIGHT - INCLUDING REBARS - 23.50 LBS.
 NOTES: MATERIAL - HIGH DENSITY POLYETHYLENE (HDPE) - RECYCLED
 COLOR - CHARLOTTE GREY
 LOAD RATING - HEAVY DUTY
 MANUFACTURER - DFW PLASTICS INC. OR APPROVED EQUAL

NO SCALE
 WATER METER BOX - PLASTIC LID
 FOR 3/4- INCH AND 1- INCH WATER SERVICES
 CHARLOTTE-MECKLENBURG UTILITIES
 STANDARD DETAILS
 WATER

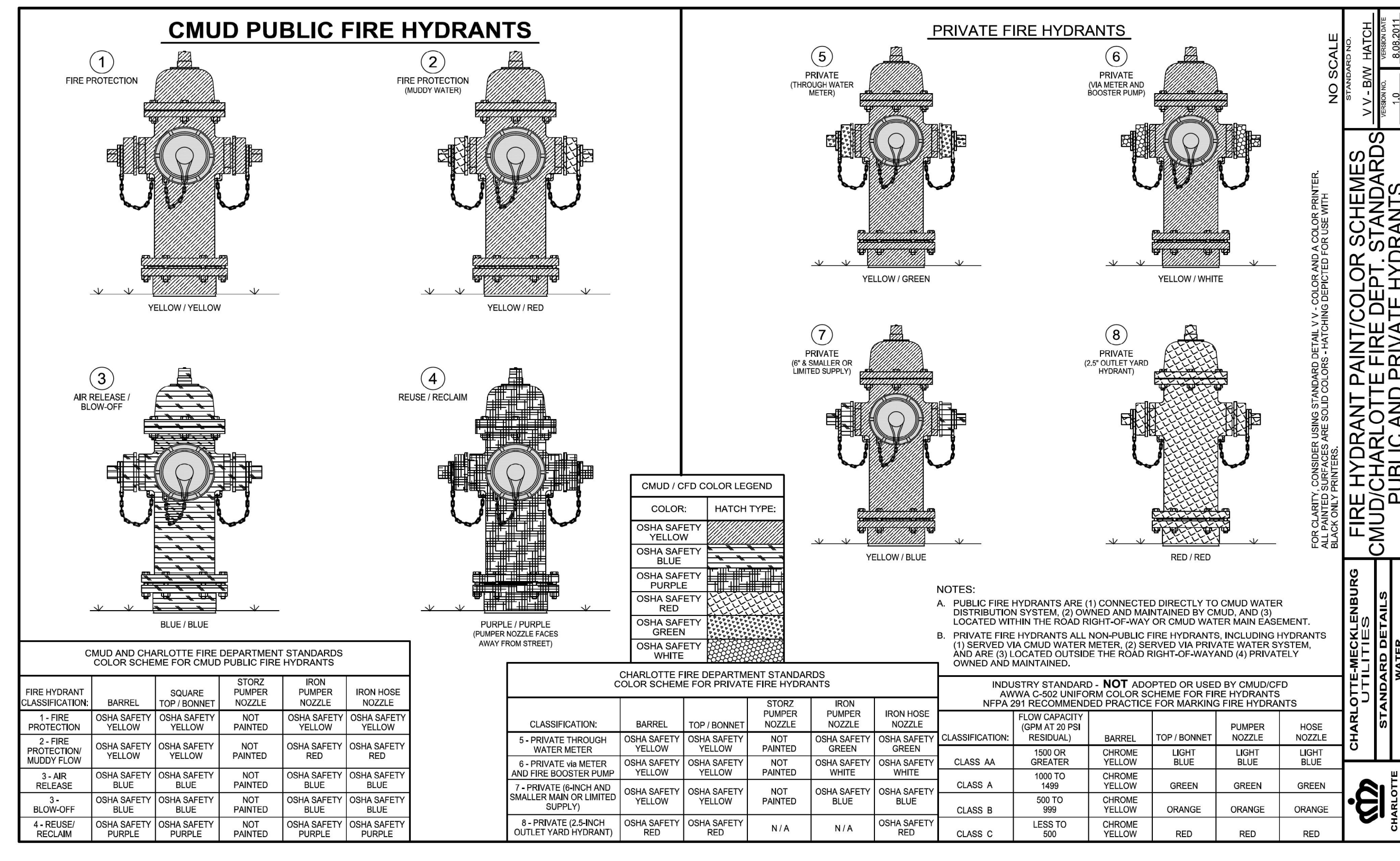


KH2 TYPE B TRENCH BEDDING
 NOT TO SCALE

TRENCH EXCAVATION LIMITS		
INTERNAL DIAMETER OF PIPE	WIDTH OF TRENCH	
	MAX	W-MIN
4'-0"	3'-9"	2'-0"
8'-10"	3'-9"	2'-2"
12"	3'-9"	O.D.+2"
14'-16"	4'-2"	O.D.+2"
18"	4'-4"	O.D.+2"
20'-21"	4'-8"	O.D.+2"
24"	4'-11"	O.D.+2"
27"	5'-9"	O.D.+2"
30"	6'-7"	O.D.+2"
36"	7'-4"	O.D.+2"
42"	8'-2"	O.D.+2"
48"	8'-9"	O.D.+2"
54"	9'-4"	O.D.+2"
60"	9'-10"	O.D.+2"
72"	11'-0"	O.D.+2"
78"	11'-8"	O.D.+2"
84"	12'-0"	O.D.+2"
90"	12'-6"	O.D.+2"
96"	13'-0"	O.D.+2"
108"	14'-0"	O.D.+2"
DEPTH OF CUT	S MAXIMUM PAVEMENT REPLACEMENT WIDTH	
0'-6"	S=W+4	
>6-8"	S=W+8	
>8-10"	S=W+12	
>10-12"	S=W+16	
>12-14"	S=W+20	
>14-16"	S=W+24	
>16-18"	S=W+28	
>18"	S=W+32	

W = TRENCH WIDTH AT BOTTOM OF PIPE. TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.

KH3 TRENCH EXCAVATION LIMITS



CMUD AND CHARLOTTE FIRE DEPARTMENT STANDARDS COLOR SCHEME FOR CMUD PUBLIC FIRE HYDRANTS

FIRE HYDRANT CLASSIFICATION	BARREL	SQUARE TOP / BONNET	STORZ PUMPER NOZZLE	IRON PUMPER NOZZLE	IRON HOSE NOZZLE
1- FIRE PROTECTION	OSHA SAFETY YELLOW	OSHA SAFETY YELLOW	NOT PAINTED	OSHA SAFETY YELLOW	OSHA SAFETY YELLOW
2- FIRE PROTECTION MUDDY FLOW	OSHA SAFETY YELLOW	OSHA SAFETY YELLOW	NOT PAINTED	OSHA SAFETY RED	OSHA SAFETY RED
3- AIR RELEASE / BLOW OFF	OSHA SAFETY BLUE	NOT PAINTED	OSHA SAFETY BLUE	OSHA SAFETY BLUE	OSHA SAFETY BLUE
3- BLOW OFF	OSHA SAFETY BLUE	NOT PAINTED	OSHA SAFETY BLUE	OSHA SAFETY BLUE	OSHA SAFETY BLUE
4- REUSE / RECLAIM	OSHA SAFETY PURPLE	NOT PAINTED	OSHA SAFETY PURPLE	OSHA SAFETY PURPLE	OSHA SAFETY PURPLE

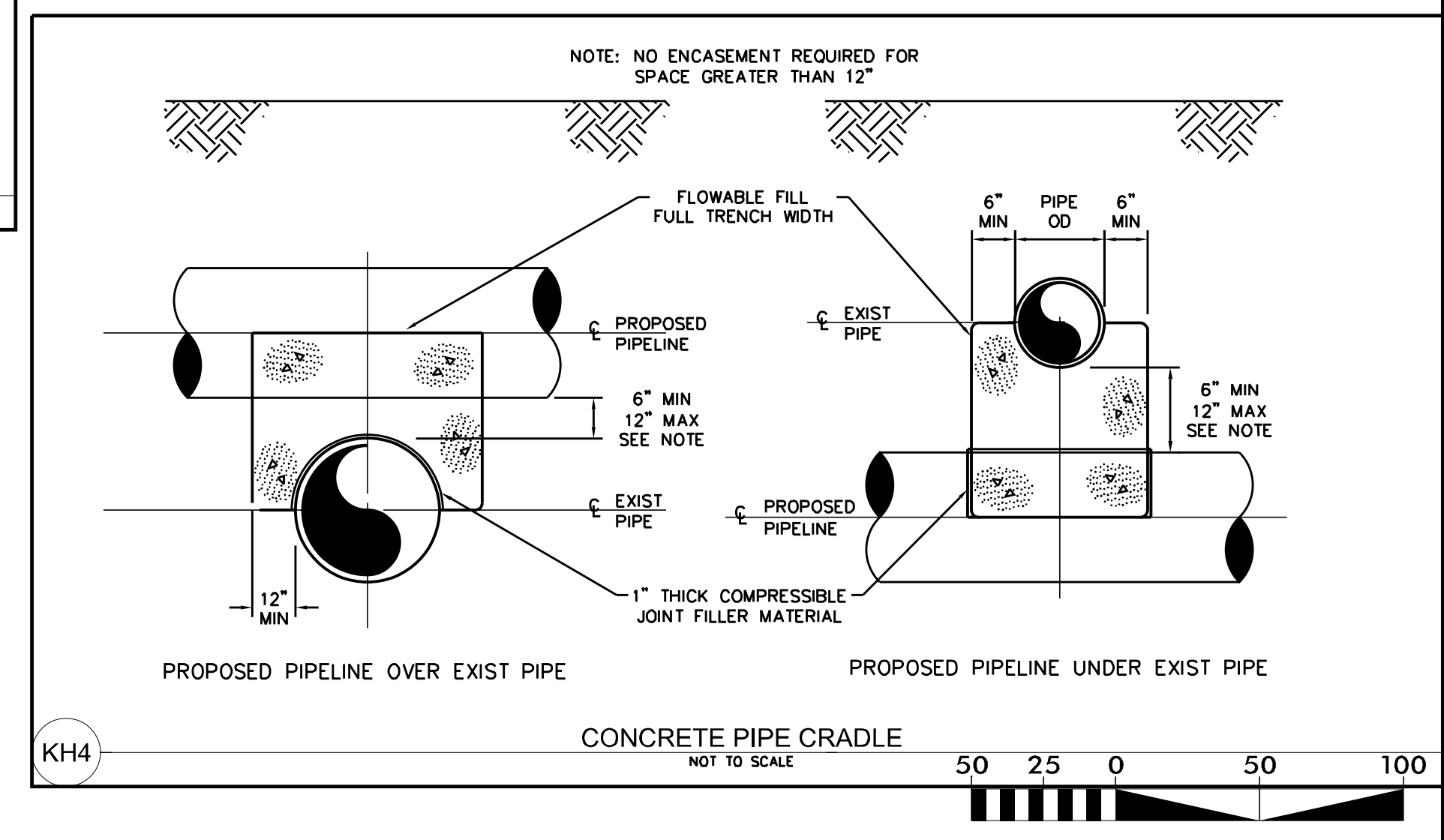
CHARLOTTE FIRE DEPARTMENT STANDARDS COLOR SCHEME FOR PRIVATE FIRE HYDRANTS

CLASSIFICATION	BARREL	TOP / BONNET	STORZ PUMPER NOZZLE	IRON PUMPER NOZZLE	IRON HOSE NOZZLE
5- PRIVATE THROUGH WATER METER	OSHA SAFETY YELLOW	OSHA SAFETY YELLOW	NOT PAINTED	OSHA SAFETY GREEN	OSHA SAFETY GREEN
6- PRIVATE via METER AND FIRE BOOSTER PUMP	OSHA SAFETY YELLOW	NOT PAINTED	OSHA SAFETY WHITE	OSHA SAFETY WHITE	OSHA SAFETY WHITE
7- PRIVATE (6-INCH AND SMALLER MAIN OR LIMITED SUPPLY)	OSHA SAFETY YELLOW	OSHA SAFETY YELLOW	NOT PAINTED	OSHA SAFETY BLUE	OSHA SAFETY BLUE
8- PRIVATE (2.5-INCH OUTLET YARD HYDRANT)	OSHA SAFETY RED	OSHA SAFETY RED	N/A	N/A	OSHA SAFETY RED

INDUSTRY STANDARD - NOT ADOPTED OR USED BY CMUD/CFD AWWA C-202 UNIFORM COLOR SCHEME FOR FIRE HYDRANTS NFPA 291 RECOMMENDED PRACTICE FOR MARKING FIRE HYDRANTS

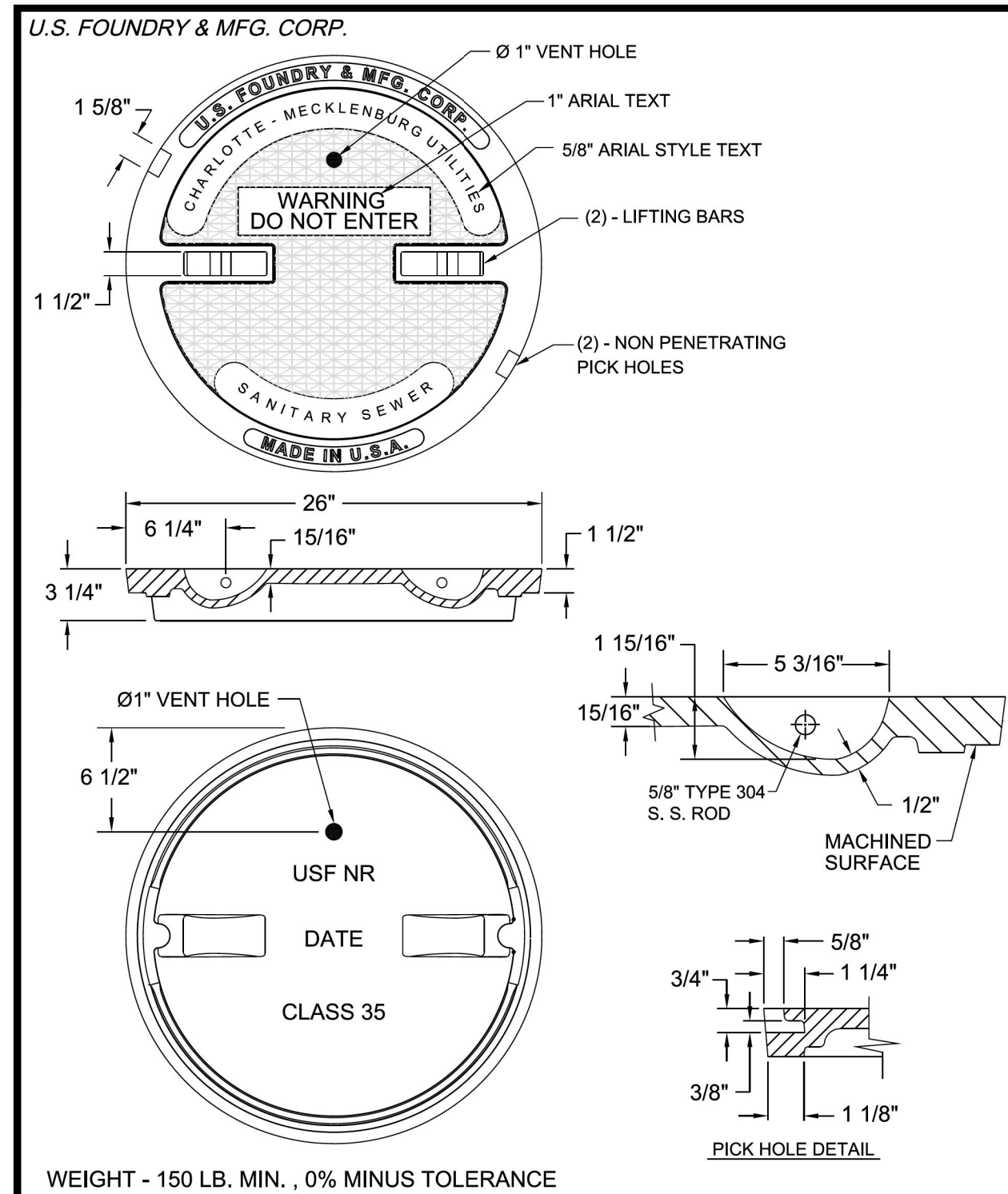
CLASSIFICATION	BARREL	TOP / BONNET	PUMPER NOZZLE	HOSE NOZZLE
CLASS AA	1500 OR GREATER	CHROME YELLOW	LIGHT BLUE	LIGHT BLUE
CLASS A	1000 TO 1499	CHROME YELLOW	GREEN	GREEN
CLASS B	500 TO 999	CHROME YELLOW	ORANGE	ORANGE
CLASS C	LESS TO 500	CHROME YELLOW	RED	RED

NO SCALE
 FIRE HYDRANT PAINT/COLOR SCHEMES
 CMUD/CHARLOTTE FIRE DEPT. STANDARDS
 PUBLIC AND PRIVATE HYDRANTS
 CHARLOTTE-MECKLENBURG UTILITIES
 STANDARD DETAILS
 WATER

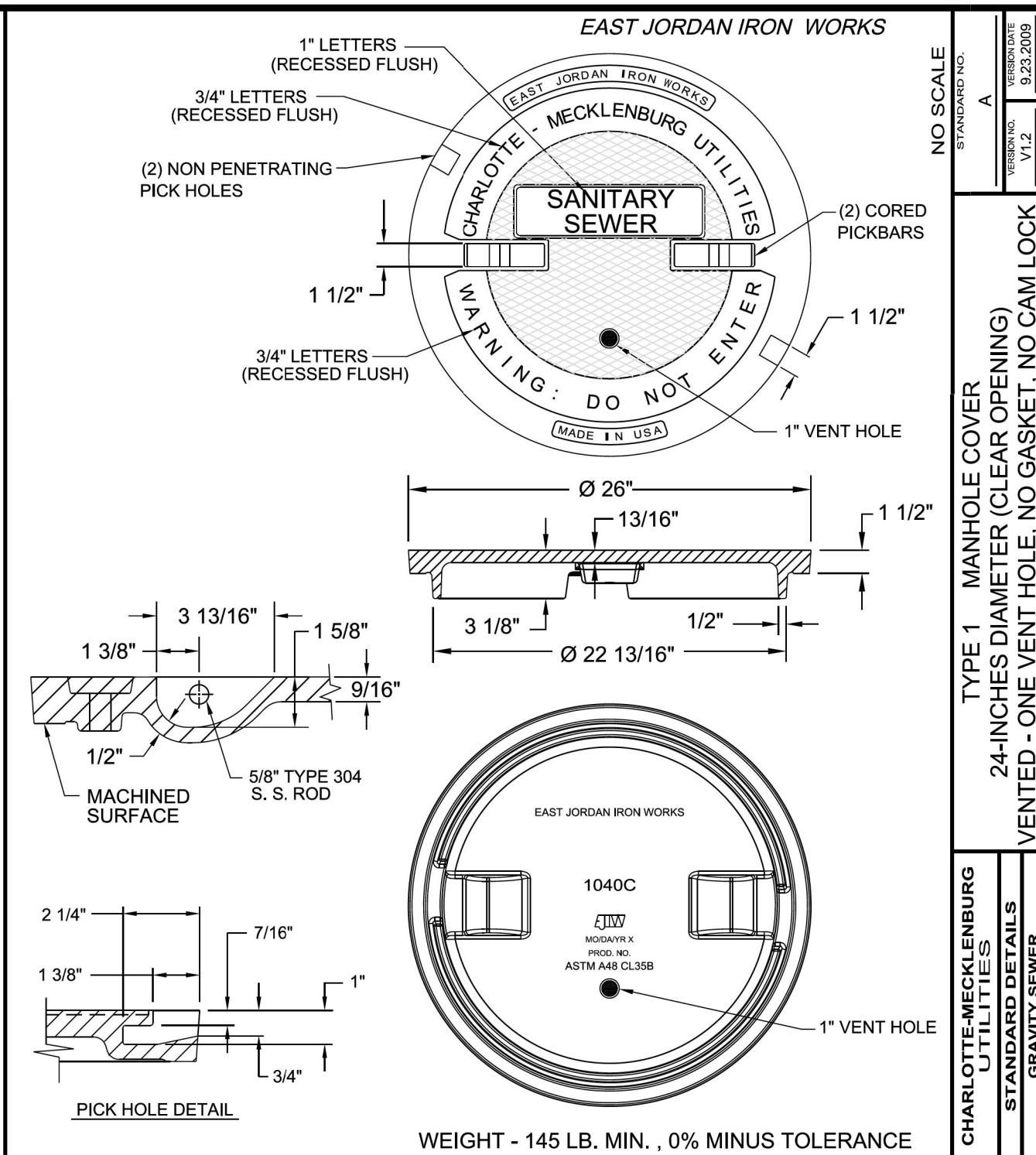


KH4 CONCRETE PIPE CRADLE
 NOT TO SCALE
 50 25 0 50 100

UTILITY CONSTRUCTION

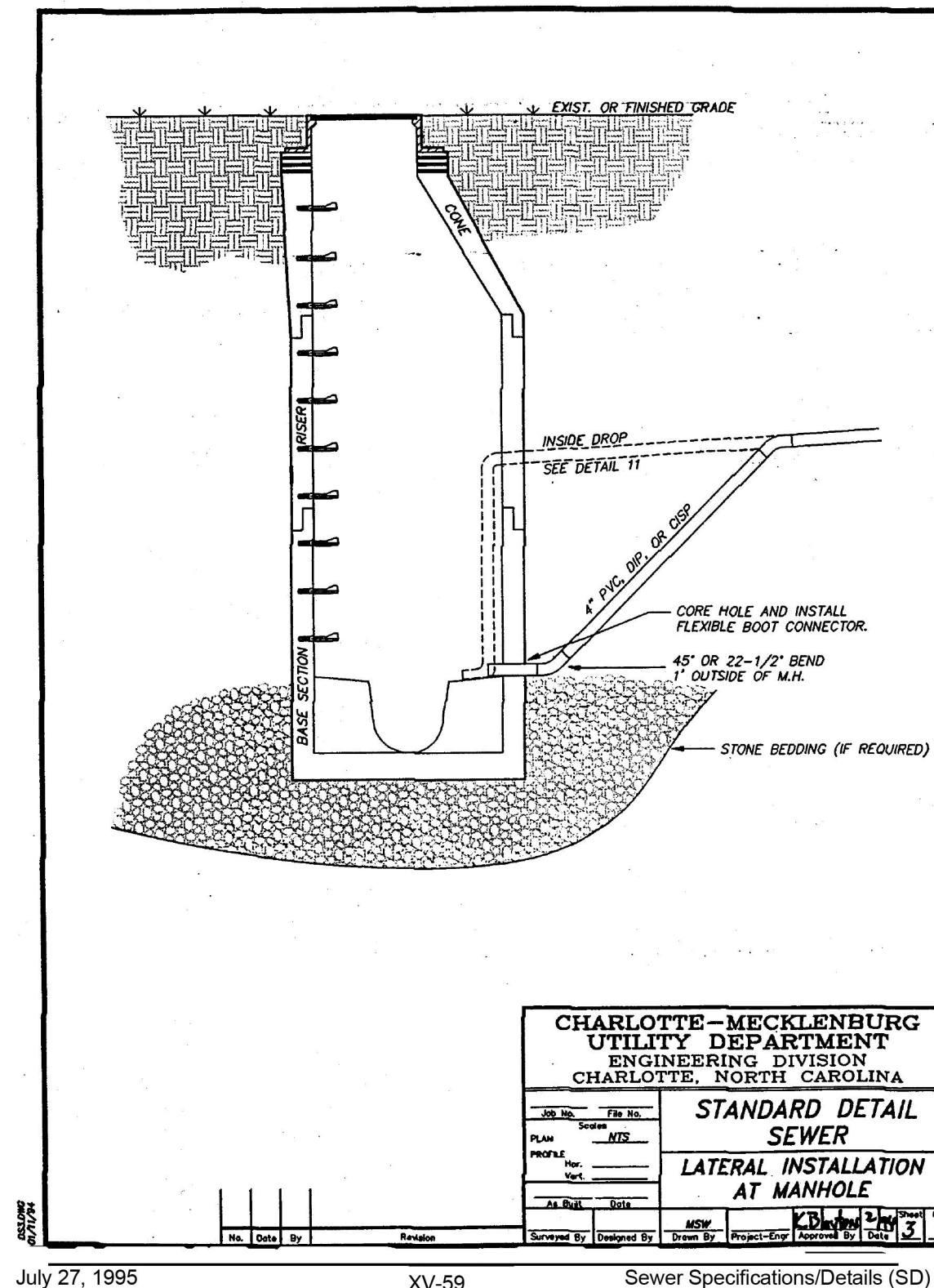


U.S. FOUNDRY & MFG. CORP.
 WEIGHT - 150 LB. MIN., 0% MINUS TOLERANCE
 NOTES:
 LOAD RATING - HEAVY DUTY
 MATERIAL - ASTM A48 - CLASS 35 GRAY IRON
 COATING - UNDIPPED

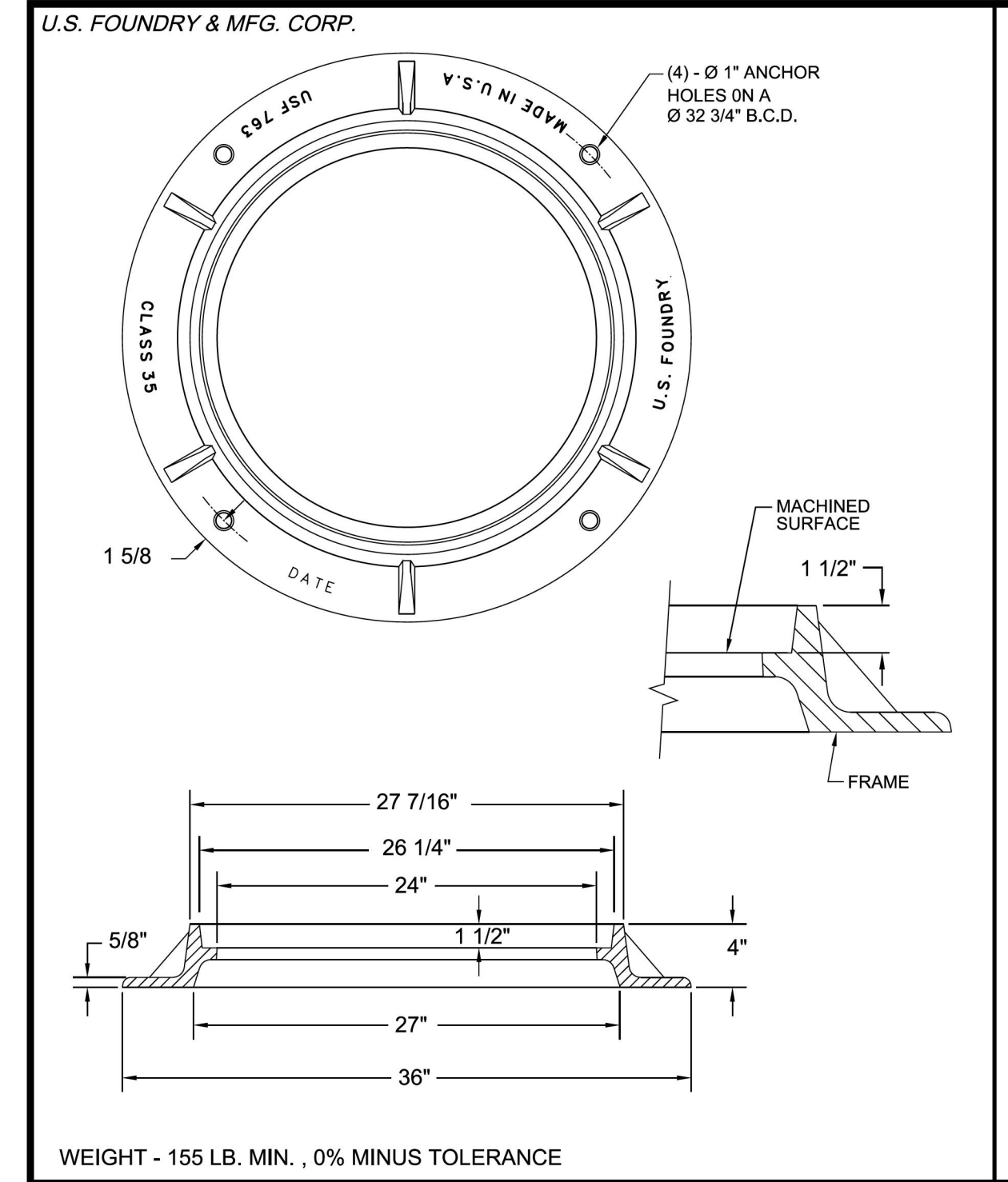


EAST JORDAN IRON WORKS
 WEIGHT - 145 LB. MIN., 0% MINUS TOLERANCE
 USE WITH TYPE A, B, OR C FRAME
 COVER SHALL CONFORM TO DIMENSION AND WEIGHT REQUIREMENTS.
 COVER SHALL NOT BE OUT OF ROUND.

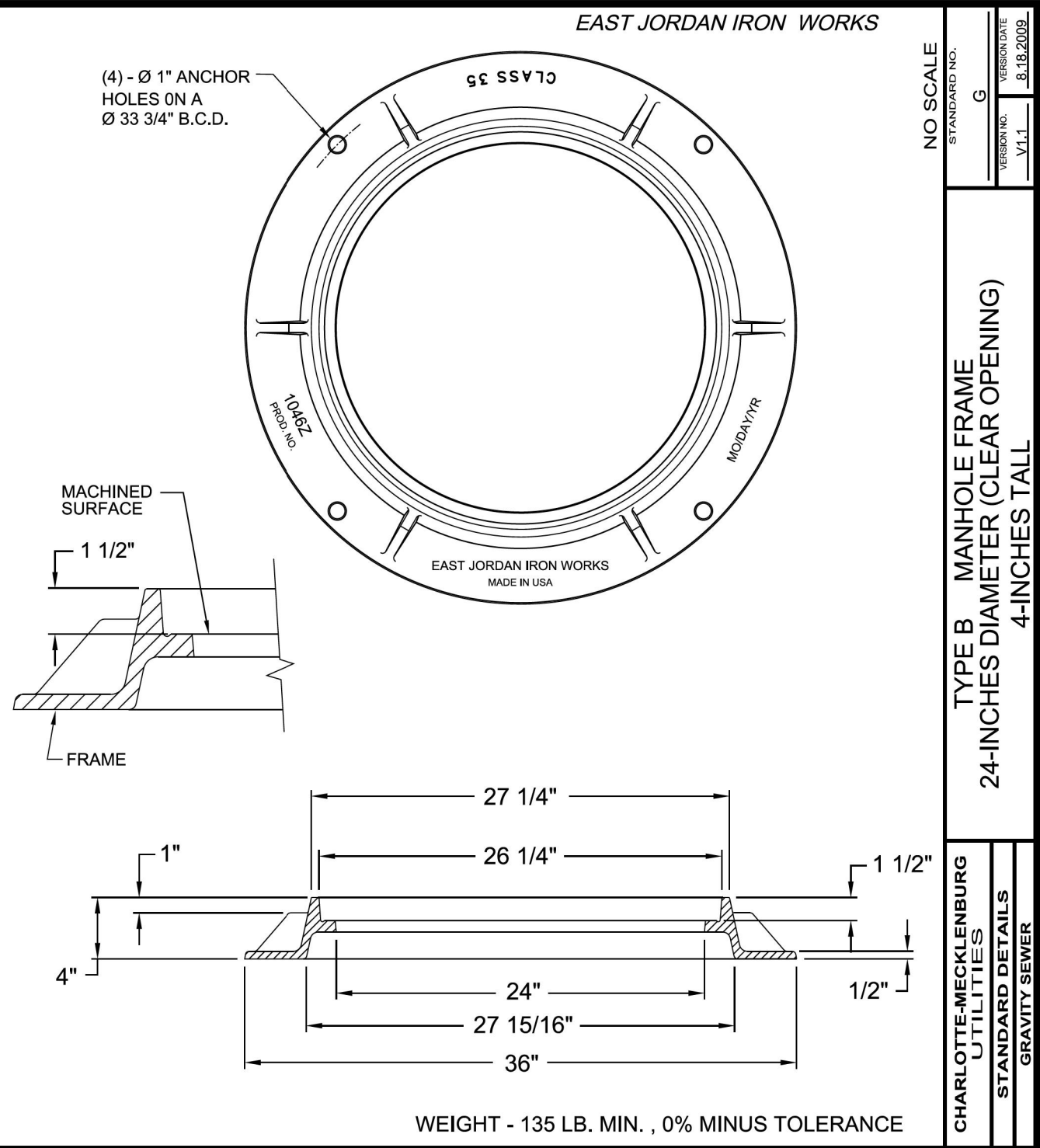
NO SCALE
 STANDARD DETAILS
 GRAVITY SEWER
 CHARLOTTE-MECKLENBURG UTILITY DEPARTMENT
 ENGINEERING DIVISION
 CHARLOTTE, NORTH CAROLINA



July 27, 1995 XV-59 Sewer Specifications/Details (SD)

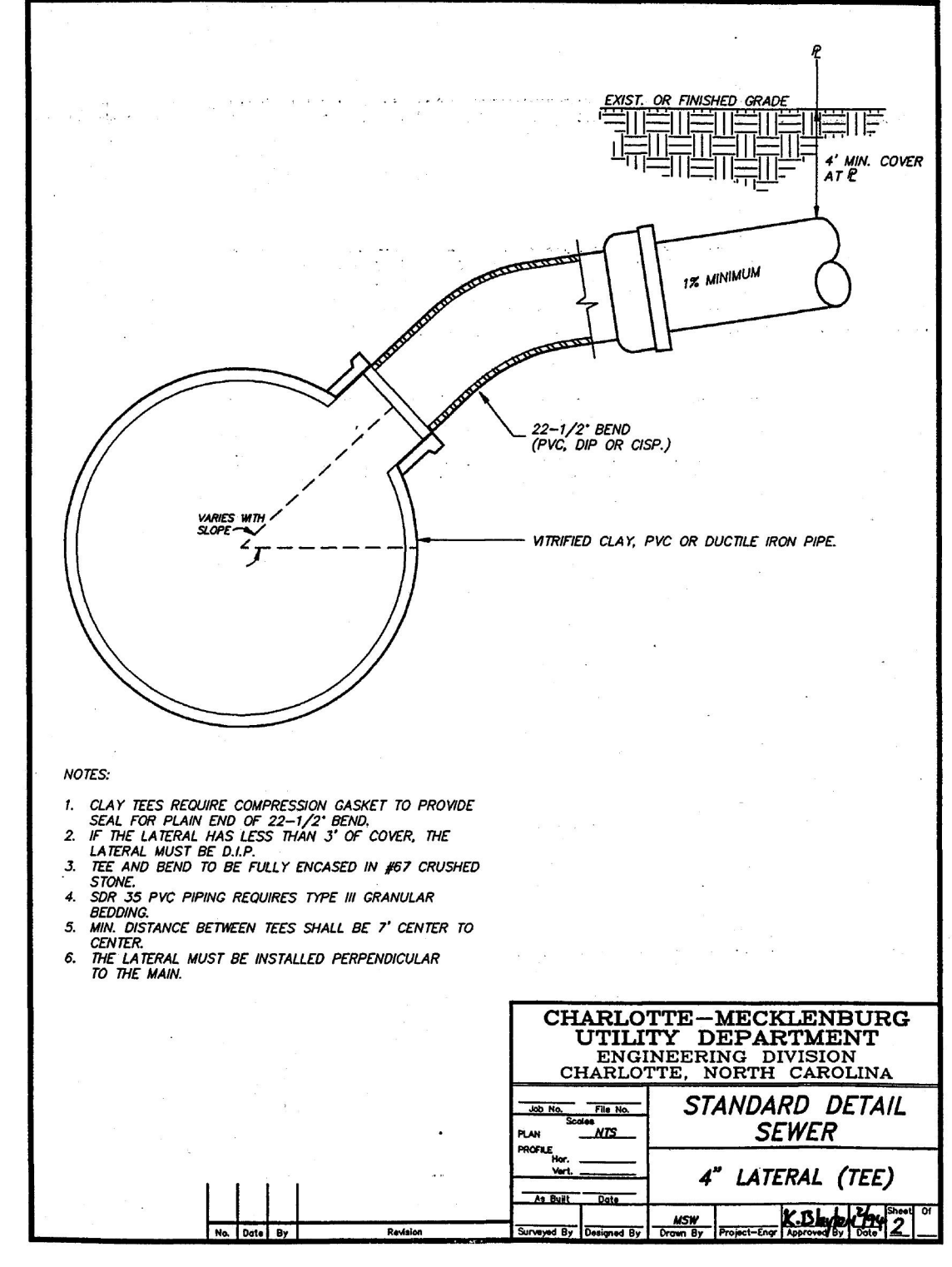


U.S. FOUNDRY & MFG. CORP.
 WEIGHT - 155 LB. MIN., 0% MINUS TOLERANCE
 NOTES:
 LOAD RATING - HEAVY DUTY
 MATERIAL - ASTM A48 - CLASS 35 GRAY IRON
 COATING - UNDIPPED



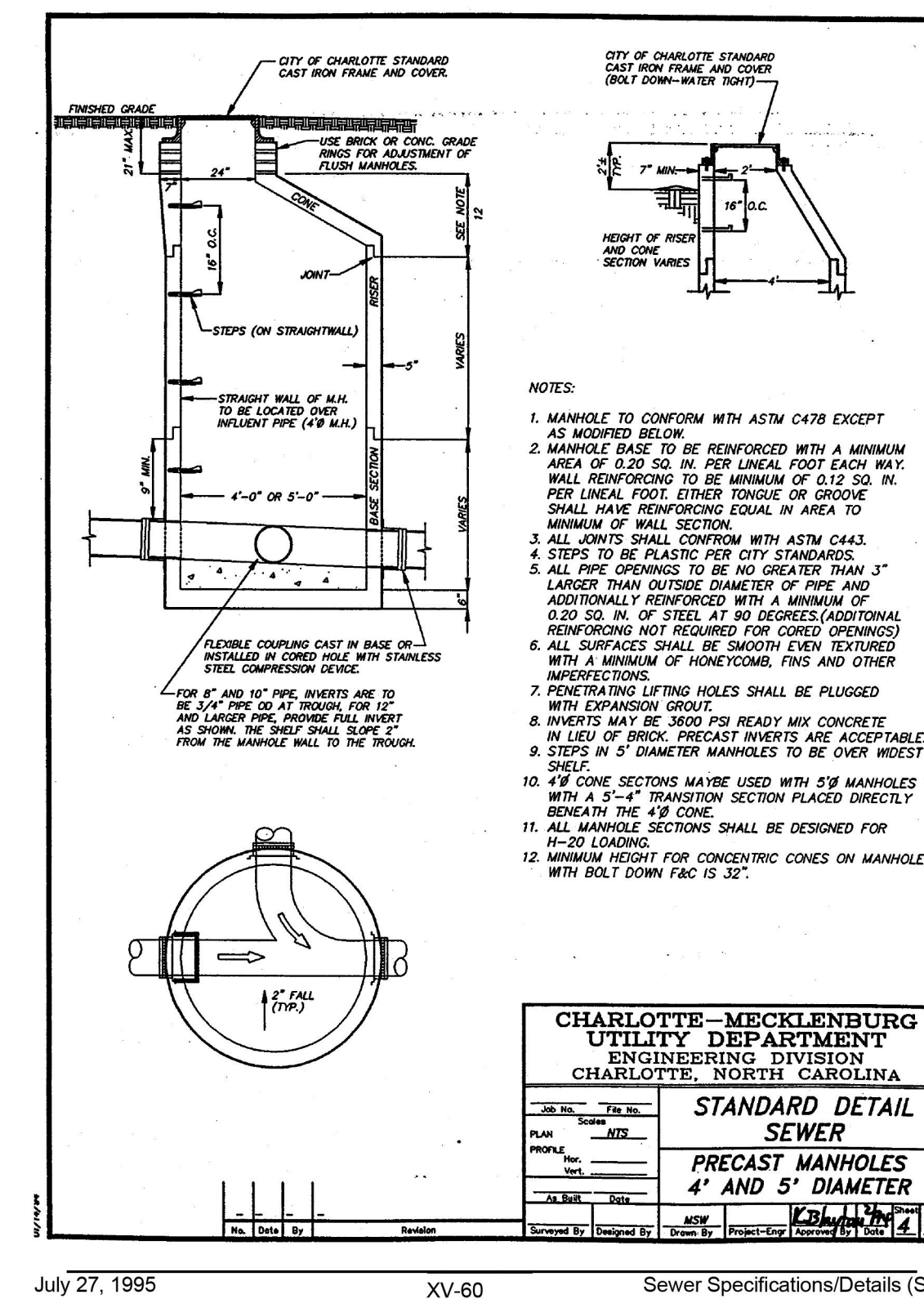
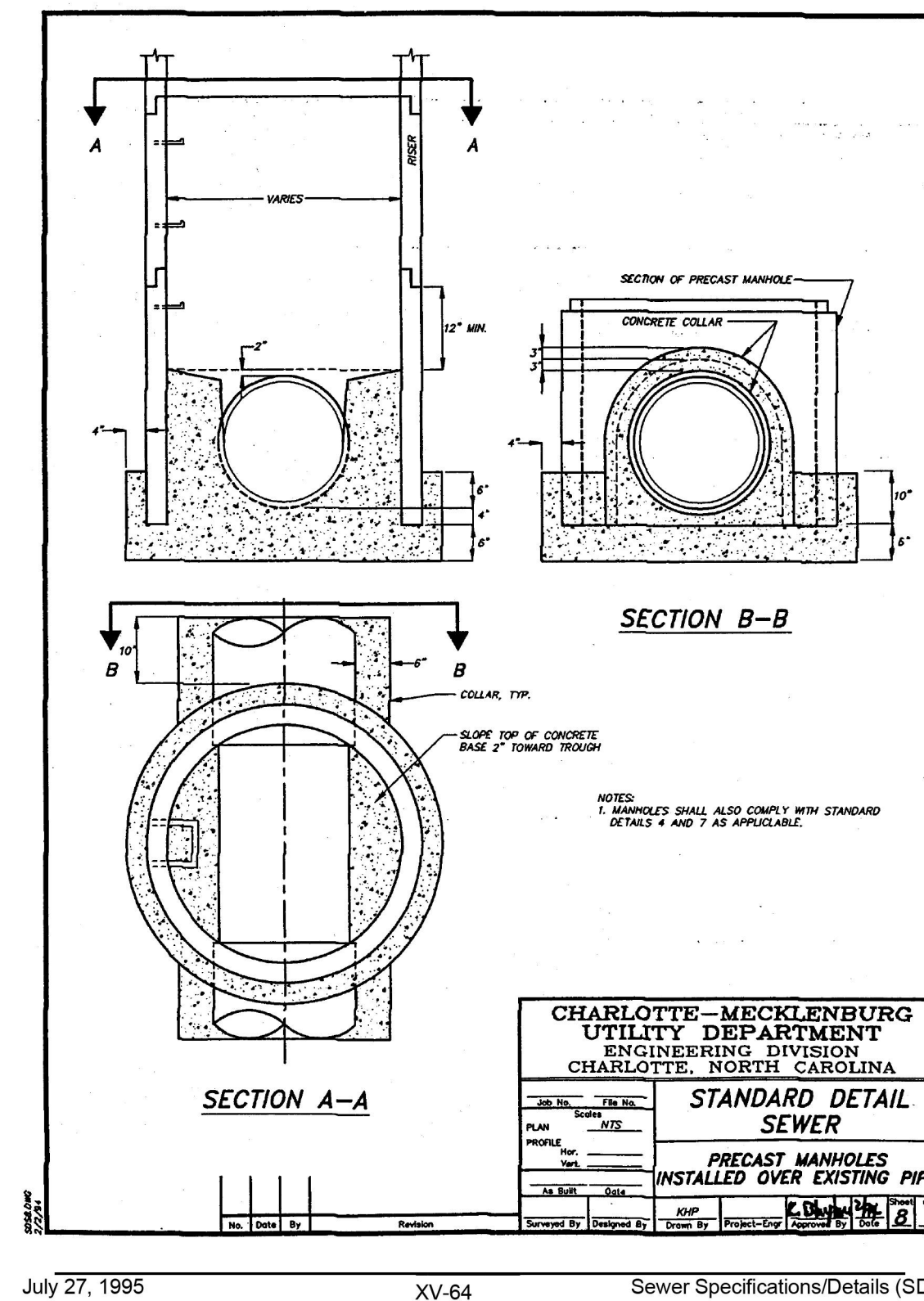
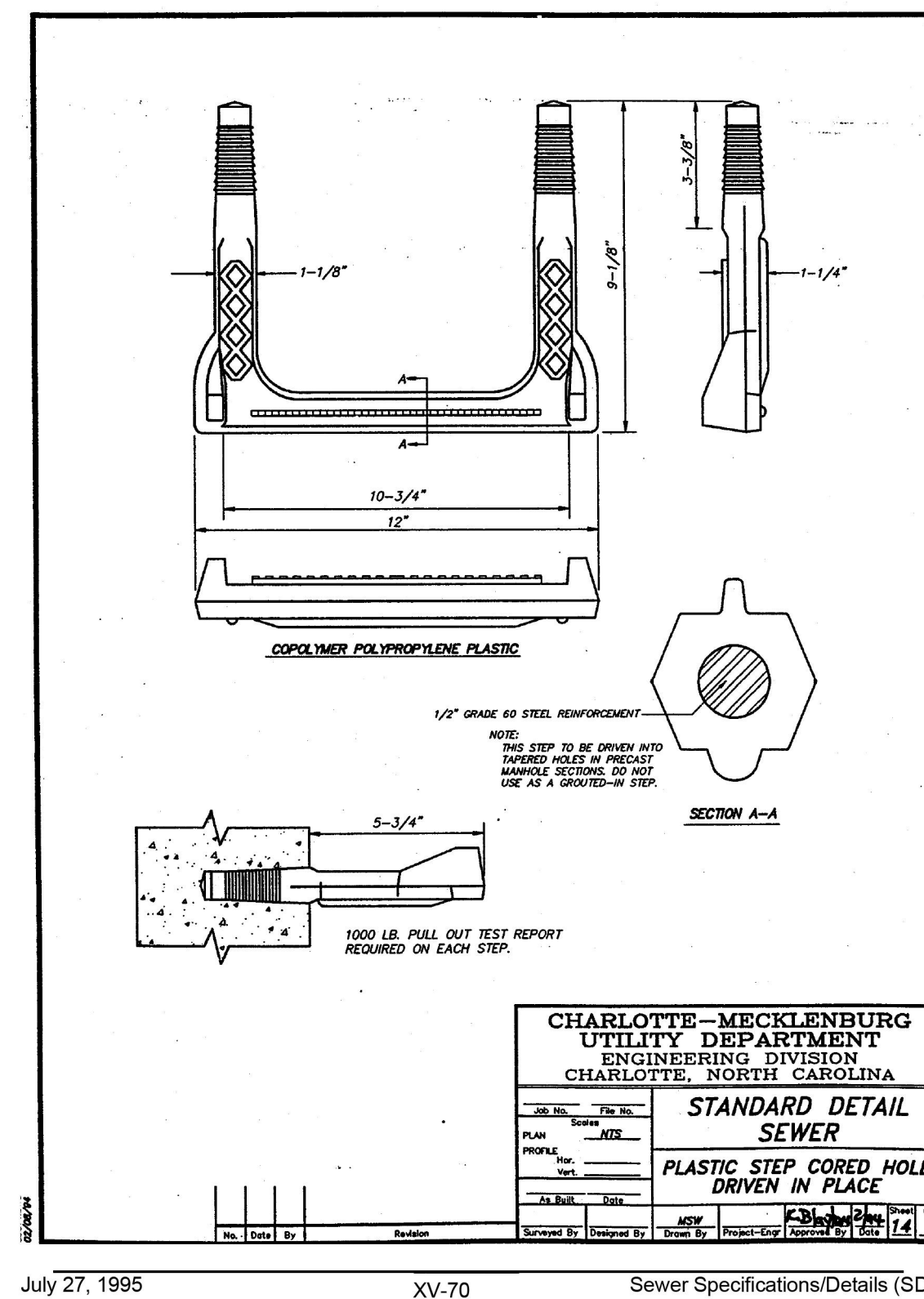
EAST JORDAN IRON WORKS
 WEIGHT - 135 LB. MIN., 0% MINUS TOLERANCE
 USE WITH TYPE 1, 2, OR 3 COVER
 FRAME SHALL CONFORM TO DIMENSION AND WEIGHT REQUIREMENTS.
 FRAME SHALL NOT BE OUT OF ROUND.

NO SCALE
 STANDARD DETAILS
 GRAVITY SEWER
 CHARLOTTE-MECKLENBURG UTILITY DEPARTMENT
 ENGINEERING DIVISION
 CHARLOTTE, NORTH CAROLINA



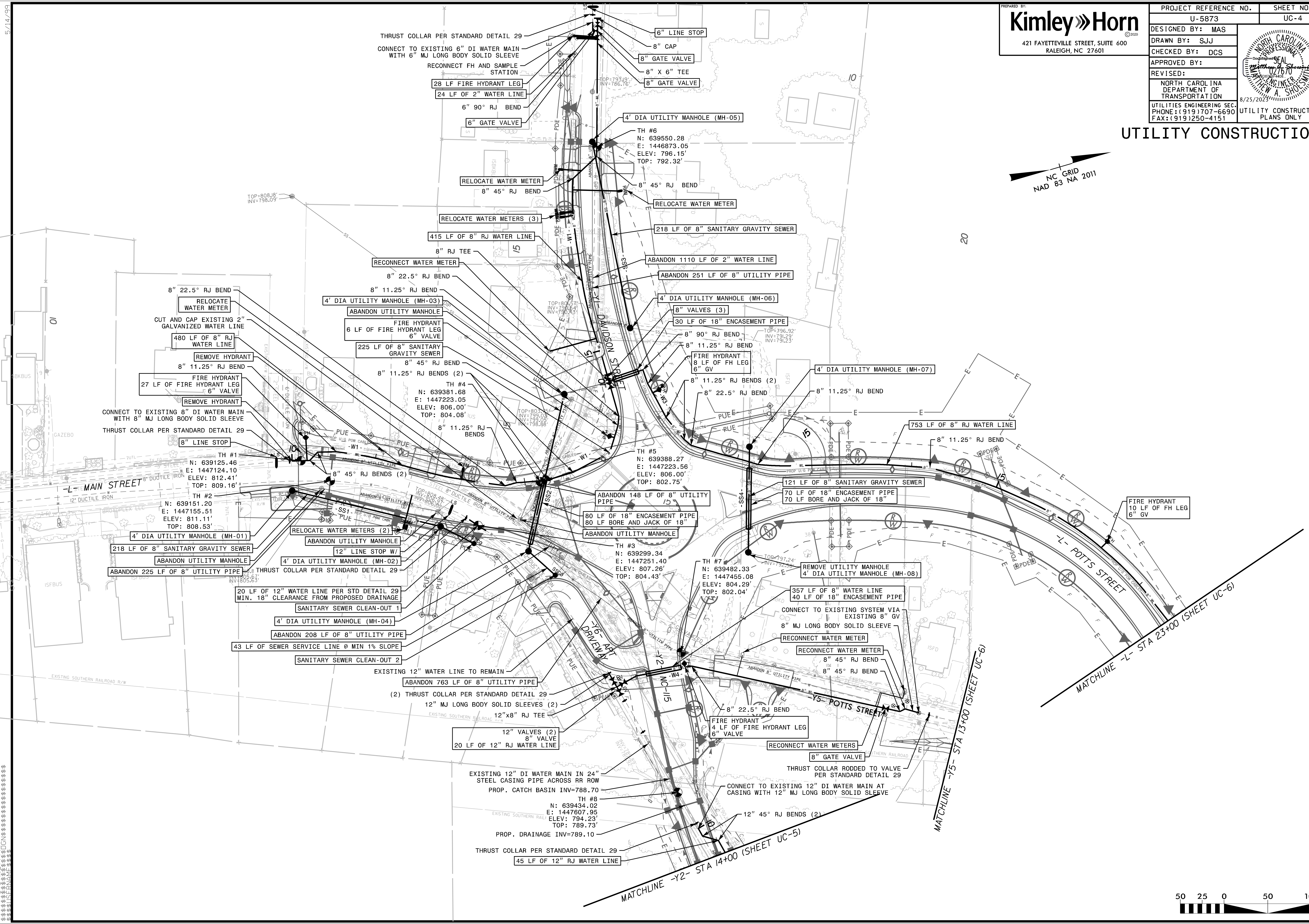
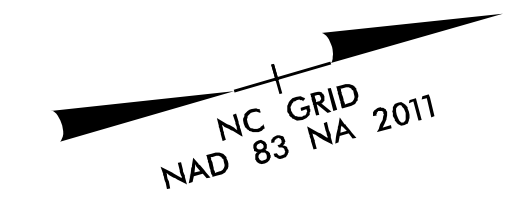
July 27, 1995 XV-58 Sewer Specifications/Details (SD)

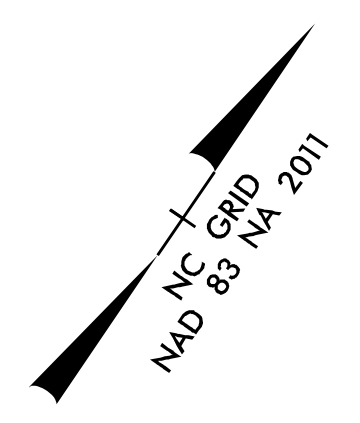
UTILITY CONSTRUCTION



- NOTES:
1. MANHOLE TO CONFORM WITH ASTM C478 EXCEPT AS NOTED BELOW.
 2. MANHOLE BASE TO BE REINFORCED WITH A MINIMUM AREA OF 0.20 SQ. IN. PER LINEAL FOOT EACH WAY. WALL REINFORCING TO BE MINIMUM OF 0.12 SQ. IN. PER LINEAL FOOT. EITHER TONGUE OR GROOVE SHALL HAVE REINFORCING EQUAL IN AREA TO MINIMUM OF WALL SECTION.
 3. ALL JOINTS SHALL CONFORM WITH ASTM C443.
 4. STEPS TO BE PLASTIC PER CITY STANDARDS.
 5. ALL PIPE OPENINGS TO BE NO GREATER THAN 3" LARGER THAN OUTSIDE DIAMETER OF PIPE AND ADDITIONALLY REINFORCED WITH A MINIMUM OF 0.20 SQ. IN. OF STEEL AT 90 DEGREES (ADDITIONAL REINFORCING NOT REQUIRED FOR CORED OPENINGS).
 6. ALL SURFACES SHALL BE SMOOTH EVEN TEXTURED WITH A MINIMUM OF HONEYCOMB, FINS AND OTHER IMPERFECTIONS.
 7. PENETRATING LIFTING HOLES SHALL BE PLUGGED WITH EXPANSION GROUT.
 8. INVERTS MAY BE 3000 PSI READY MIX CONCRETE IN LIEU OF BRICK. PRECAST INVERTS ARE ACCEPTABLE.
 9. STEPS IN 5" DIAMETER MANHOLES TO BE OVER WIDEST SIZE.
 10. 4" CONE SECTIONS MAY BE USED WITH 5" MANHOLES WITH A 5"-4" TRANSITION SECTION PLACED DIRECTLY BENEATH THE 4" CONE.
 11. ALL MANHOLE SECTIONS SHALL BE DESIGNED FOR H-20 LOADING.
 12. MINIMUM HEIGHT FOR CONCENTRIC CONES ON MANHOLES WITH BUILT DOWN FAC IS 3'.

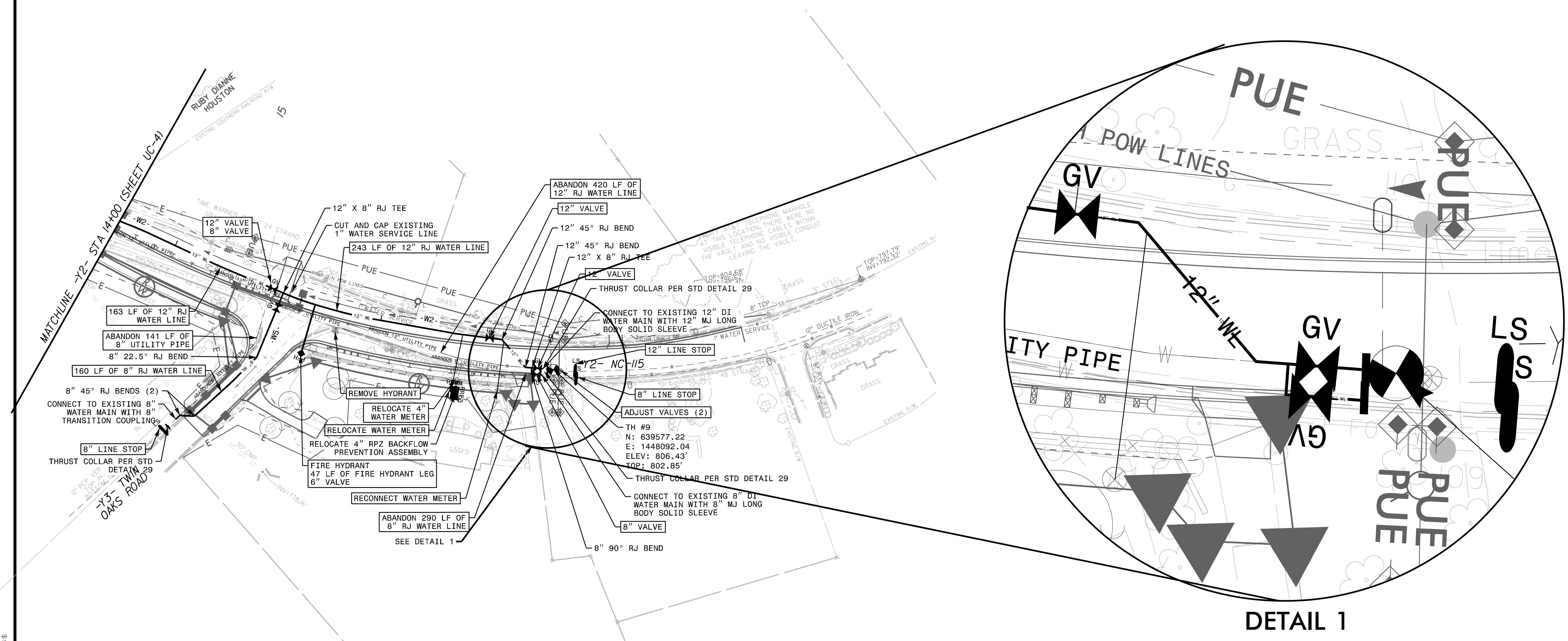
UTILITY CONSTRUCTION

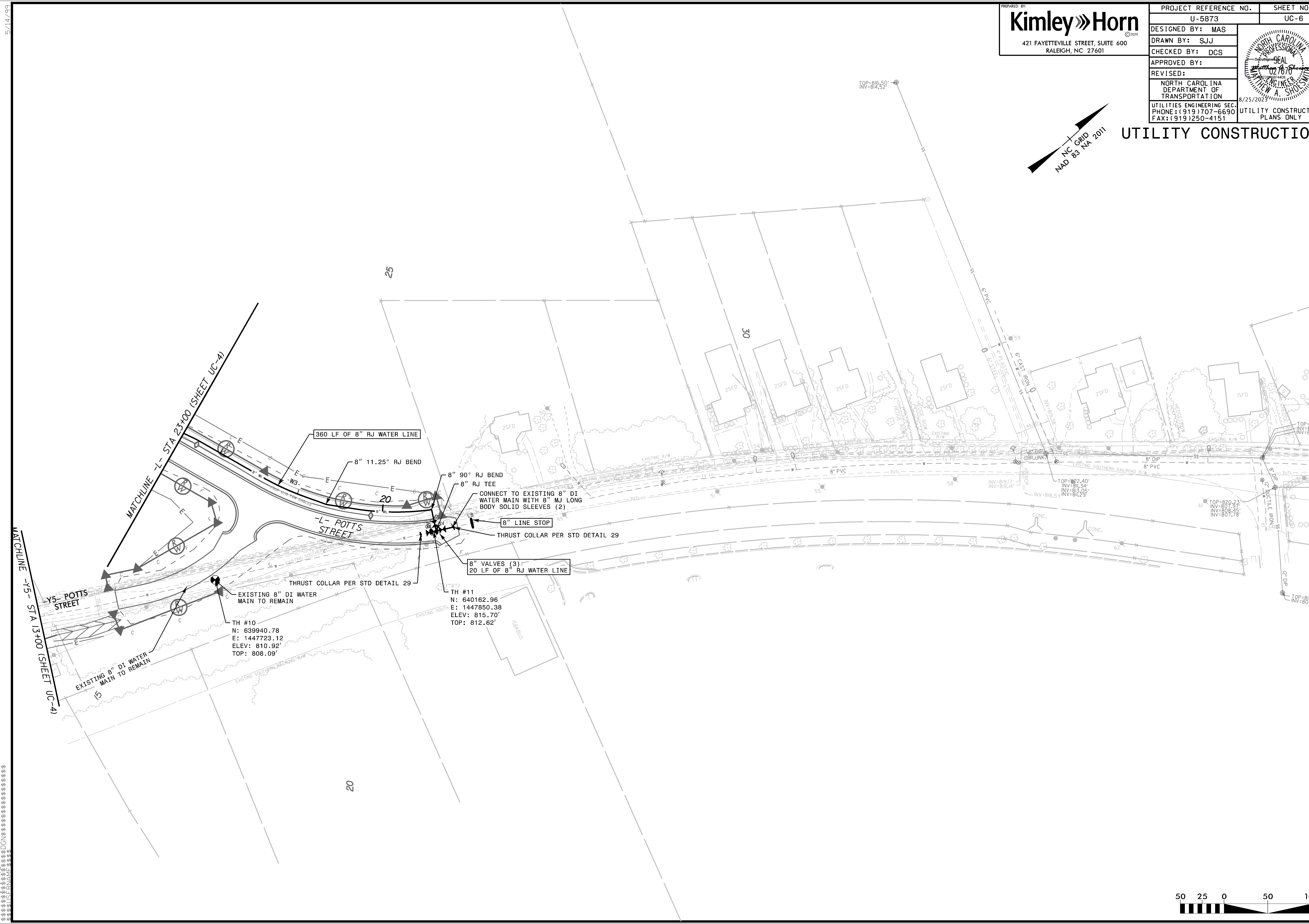
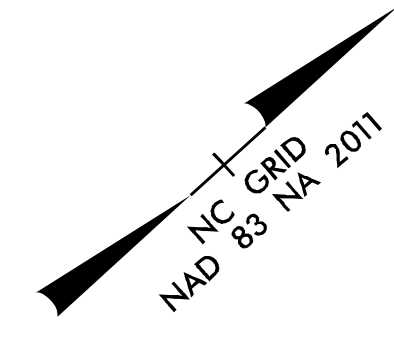




UTILITY CONSTRUCTION


5/14/99



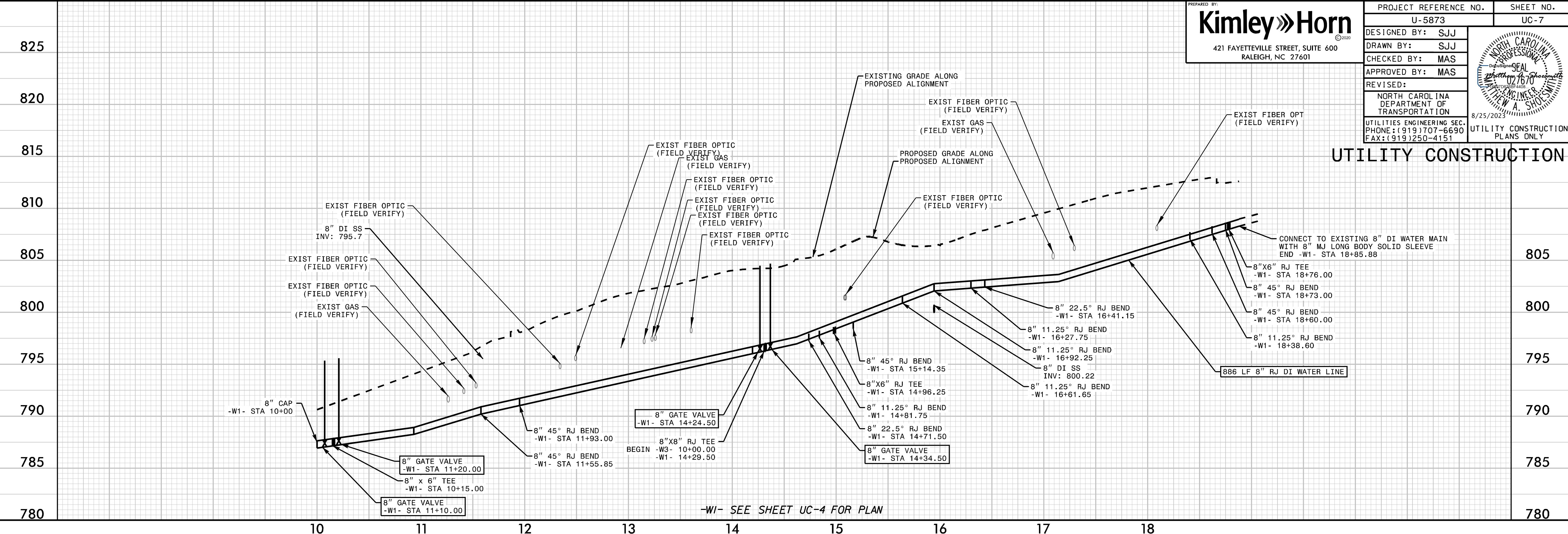


5/14/99
 MATCHLINE -Y5- STA 13+00 (SHEET UC-4)
 MATCHLINE -L- STA 23+00 (SHEET UC-4)

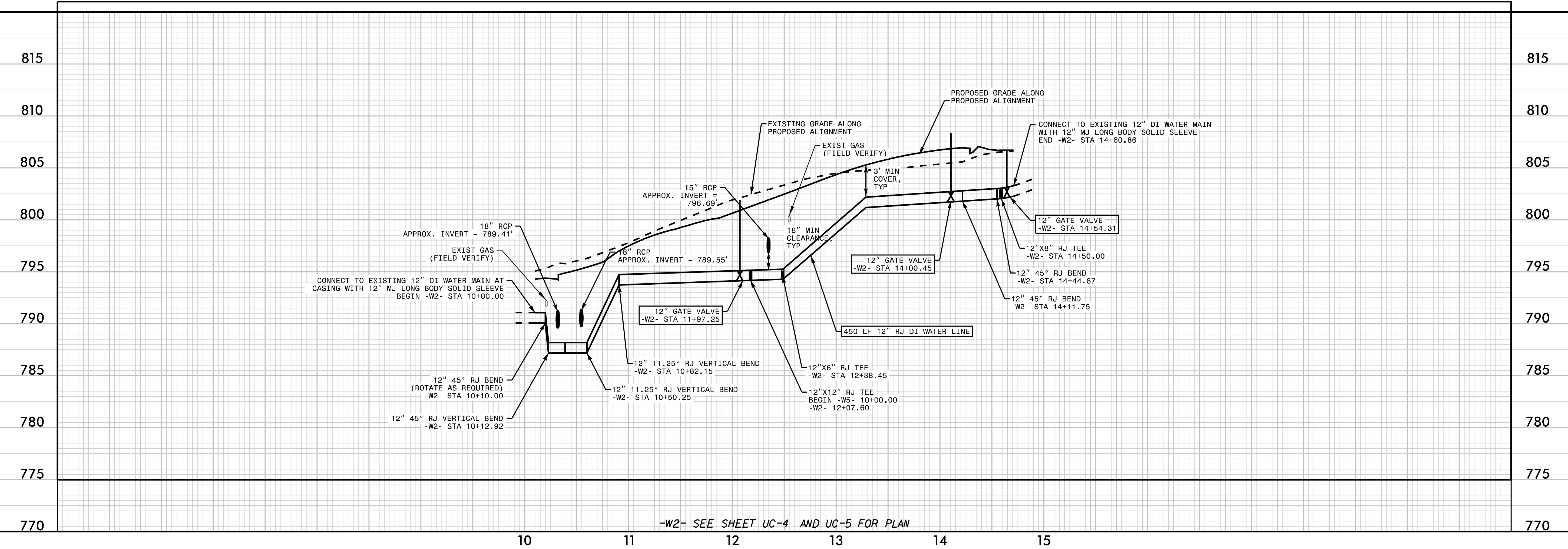
5/14/99

PROJECT REFERENCE NO. U-5873	SHEET NO. UC-7
DESIGNED BY: SJJ	
DRAWN BY: SJJ	
CHECKED BY: MAS	
APPROVED BY: MAS	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 8/25/2023 UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 FAX: (919)250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION



-W1- SEE SHEET UC-4 FOR PLAN

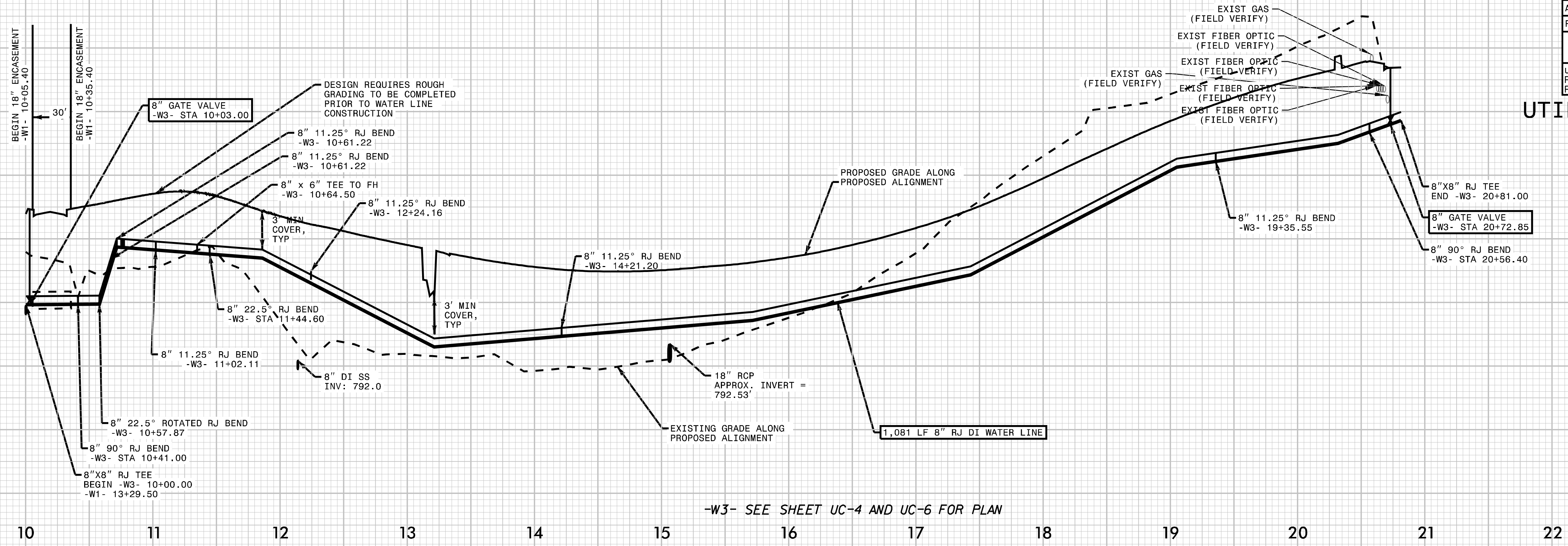


-W2- SEE SHEET UC-4 AND UC-5 FOR PLAN

8/25/2023

5/14/99

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-W3- SEE SHEET UC-4 AND UC-6 FOR PLAN

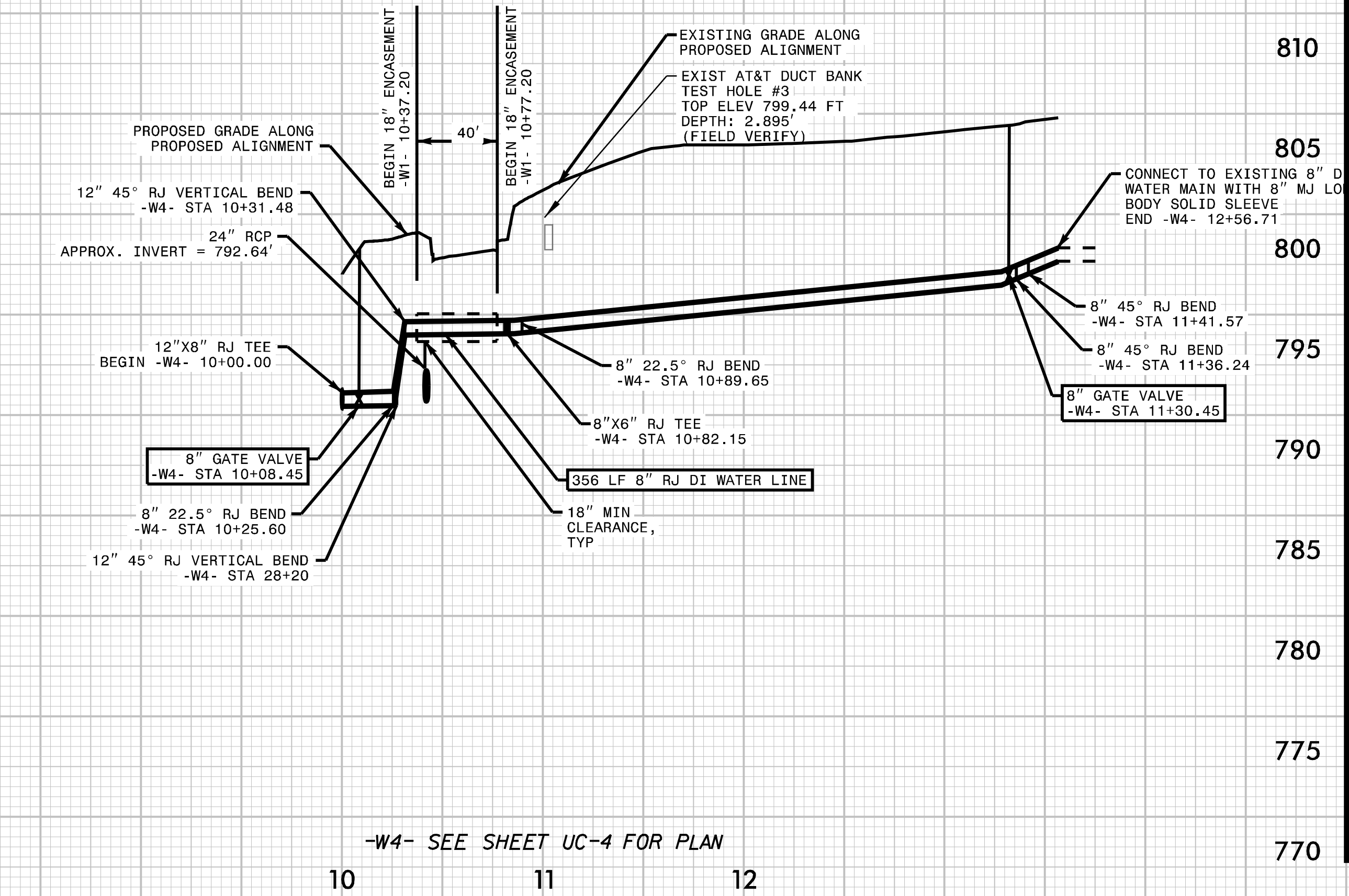
PREPARED BY:
Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

PROJECT REFERENCE NO.	U-5873	SHEET NO.	UC-8
DESIGNED BY:	SJJ		
DRAWN BY:	SJJ		
CHECKED BY:	MAS		
APPROVED BY:	MAS		
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		8/25/2023	
UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 FAX: (919)250-4151		UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION

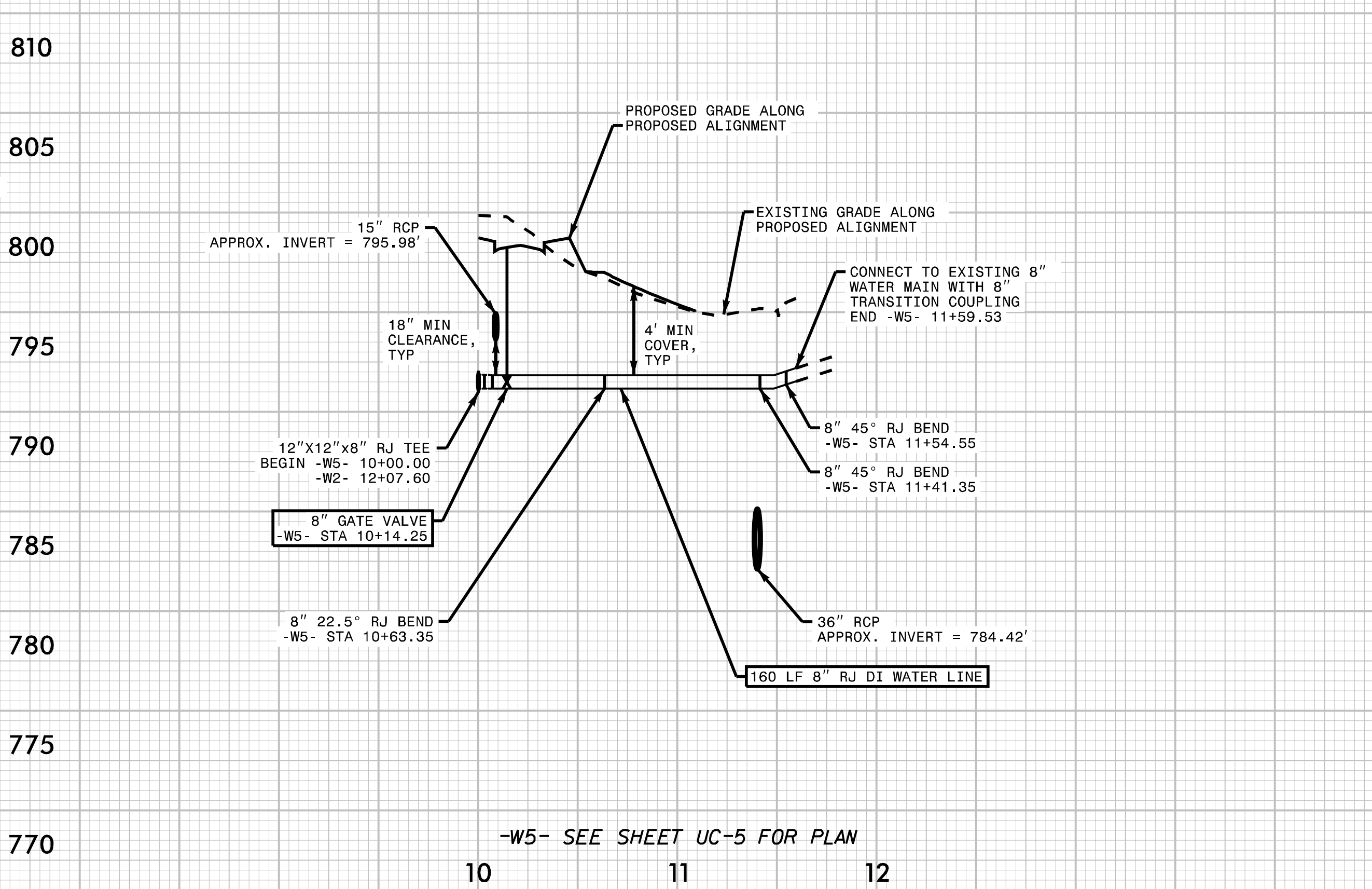
8/25/2023

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-W4- SEE SHEET UC-4 FOR PLAN

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-W5- SEE SHEET UC-5 FOR PLAN

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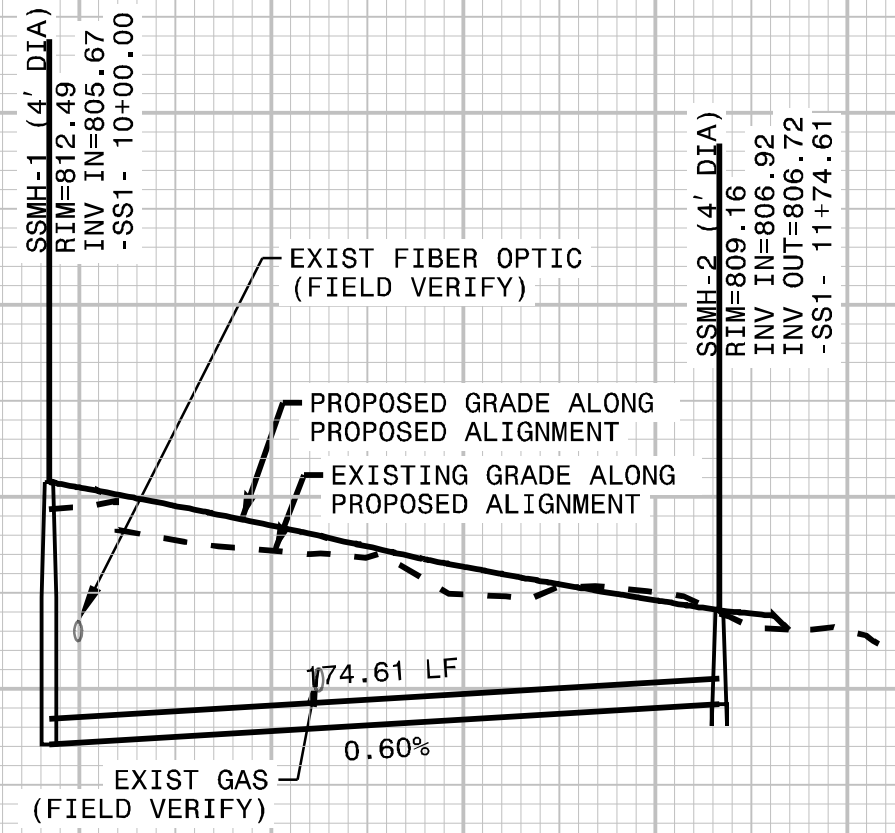
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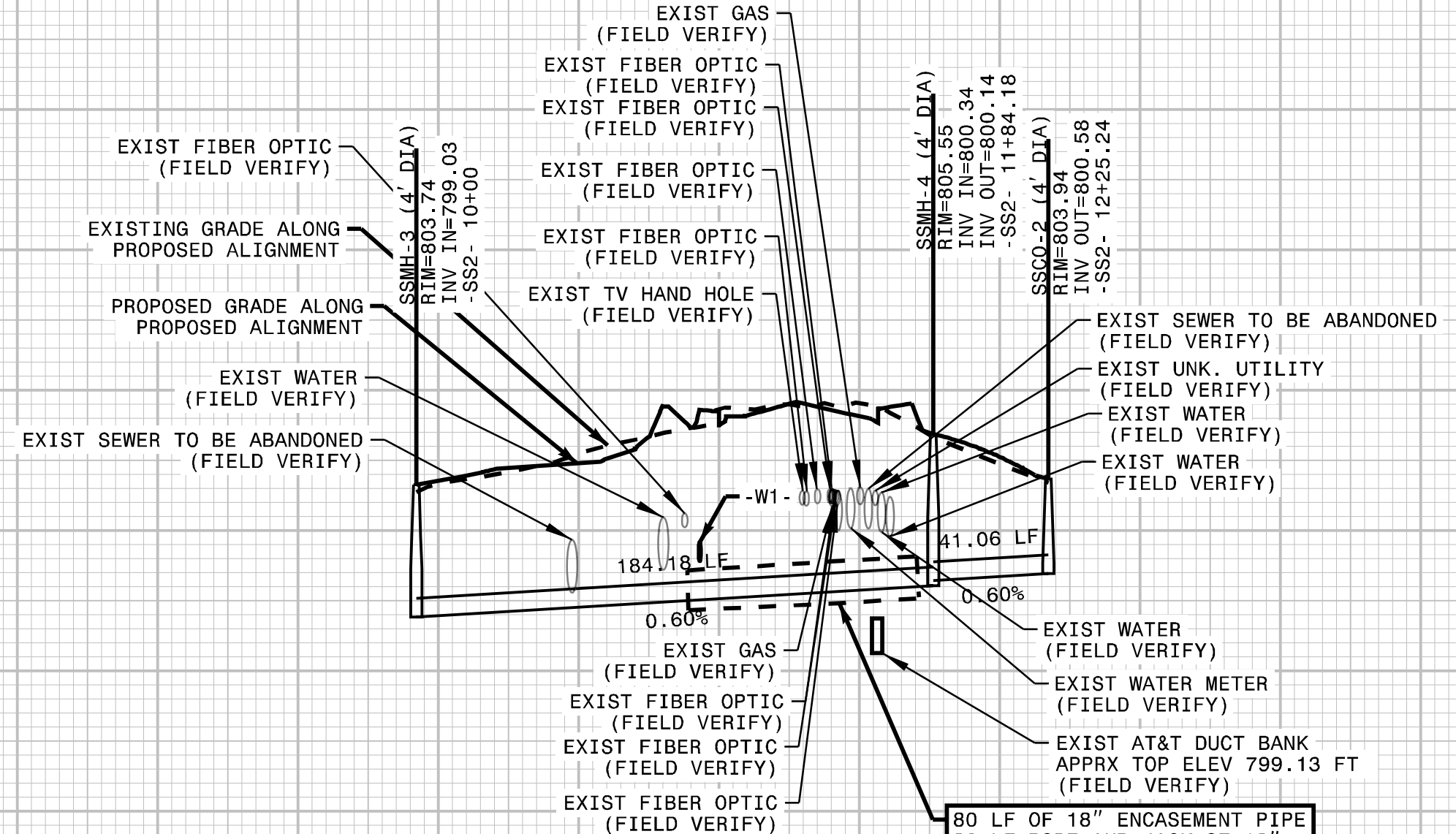
--SSI-- SEE SHEET UC-4 FOR PLAN

10 11 12 13

PREPARED BY:
Kimley»Horn
 421 FAYETTEVILLE STREET, SUITE 600
 RALEIGH, NC 27601

PROJECT REFERENCE NO.	SHEET NO.
U-5873	UC-9
DESIGNED BY: SJJ	
DRAWN BY: SJJ	
CHECKED BY: MAS	
APPROVED BY: MAS	
REVISID:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919)707-6690 FAX: (919)250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION



--SS2-- SEE SHEET UC-4 FOR PLAN

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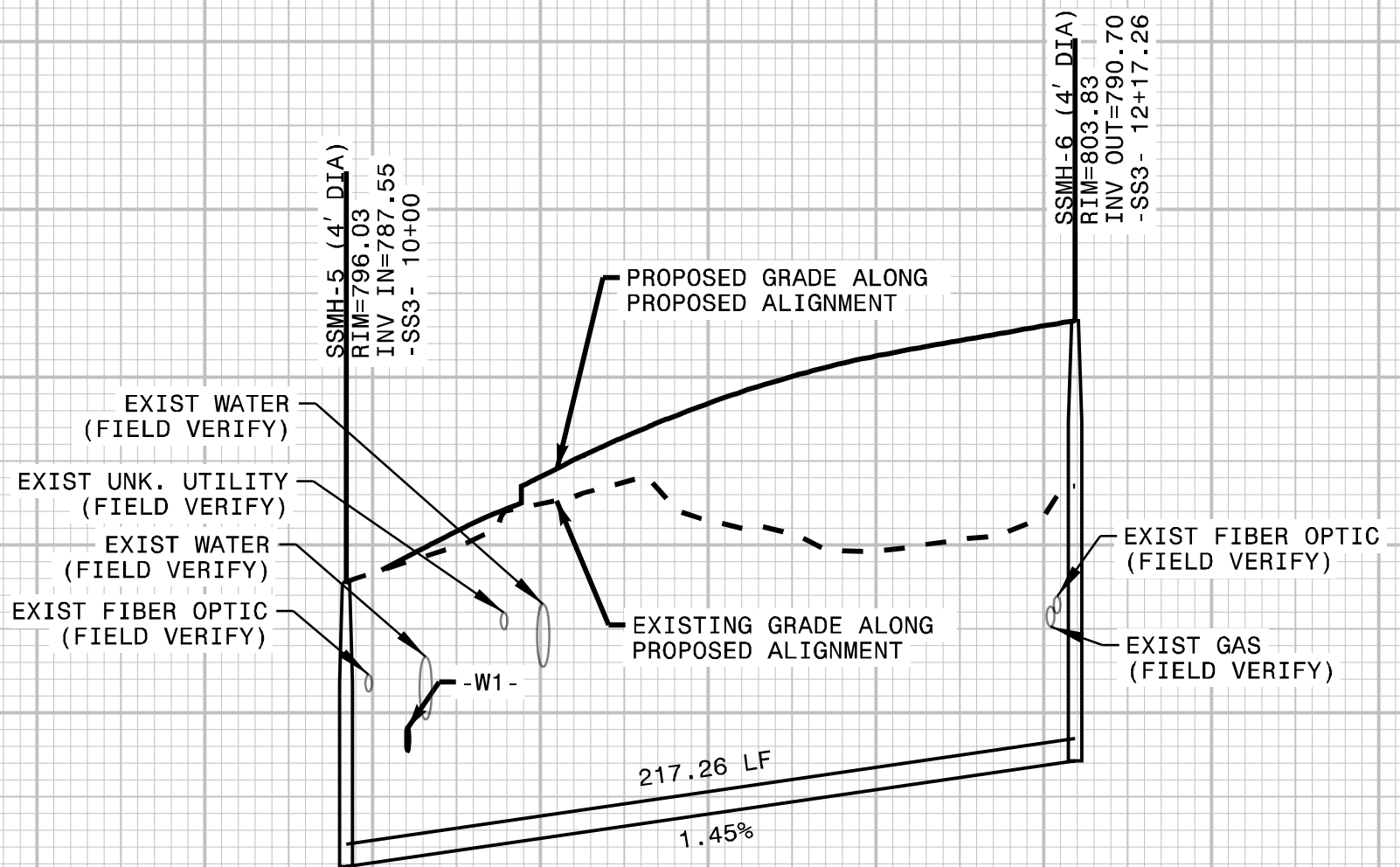
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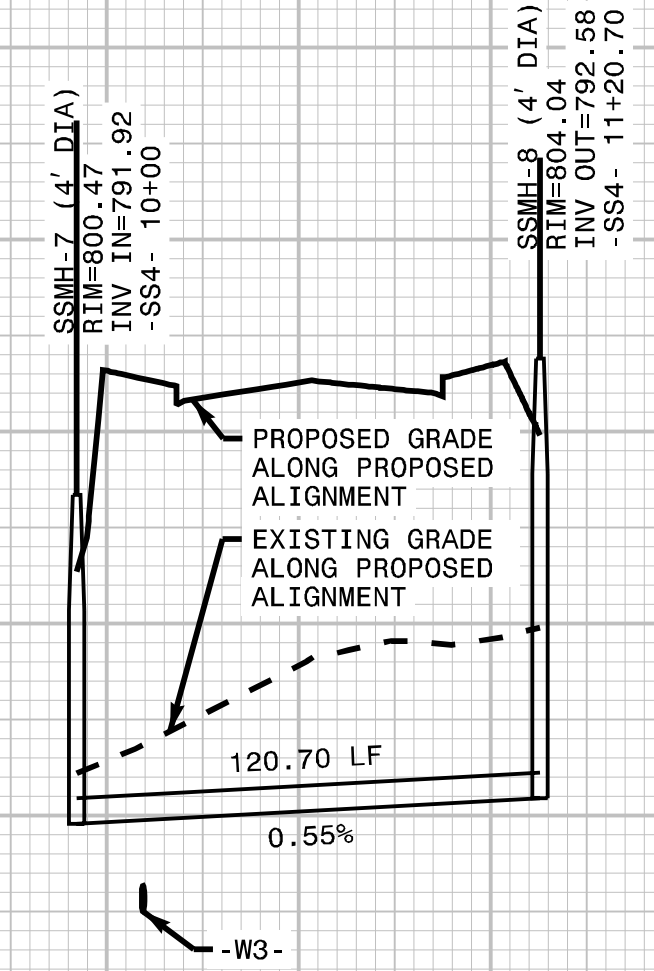
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--SS3-- SEE SHEET UC-4 FOR PLAN

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--SS4-- SEE SHEET UC-4 FOR PLAN

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8/25/2023