

09/08/09

TIP PROJECT: U-6105

CONTRACT: C205095

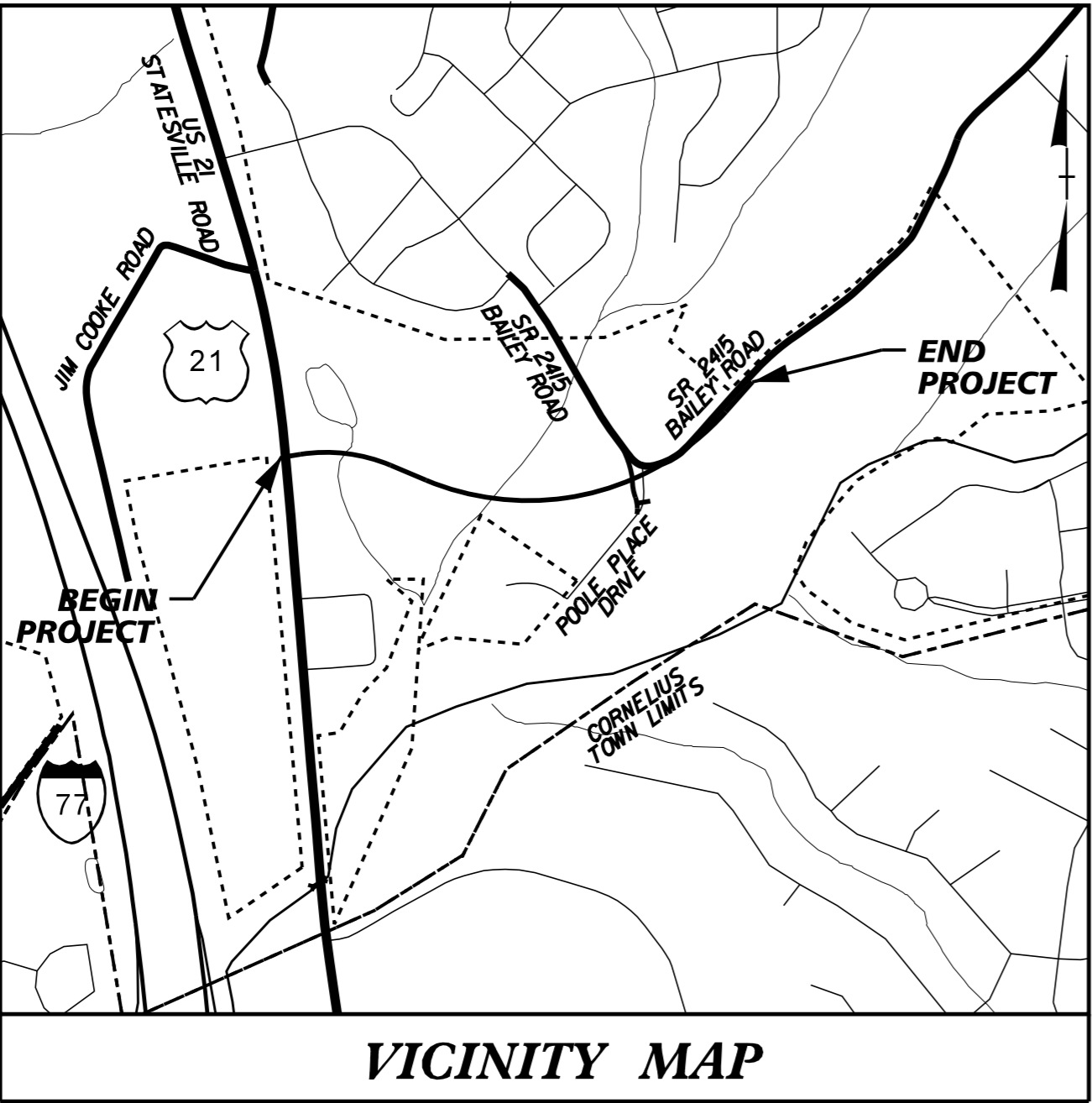
T.I.P. NO.	SHEET NO.
U-6105	UC-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG COUNTY

LOCATION: SR 2415 (BAILEY ROAD) FROM POOLE PLACE DRIVE
TO US 21 (STATESVILLE ROAD) IN CORNELIUS
CONSTRUCT ROADWAY ON NEW LOCATION

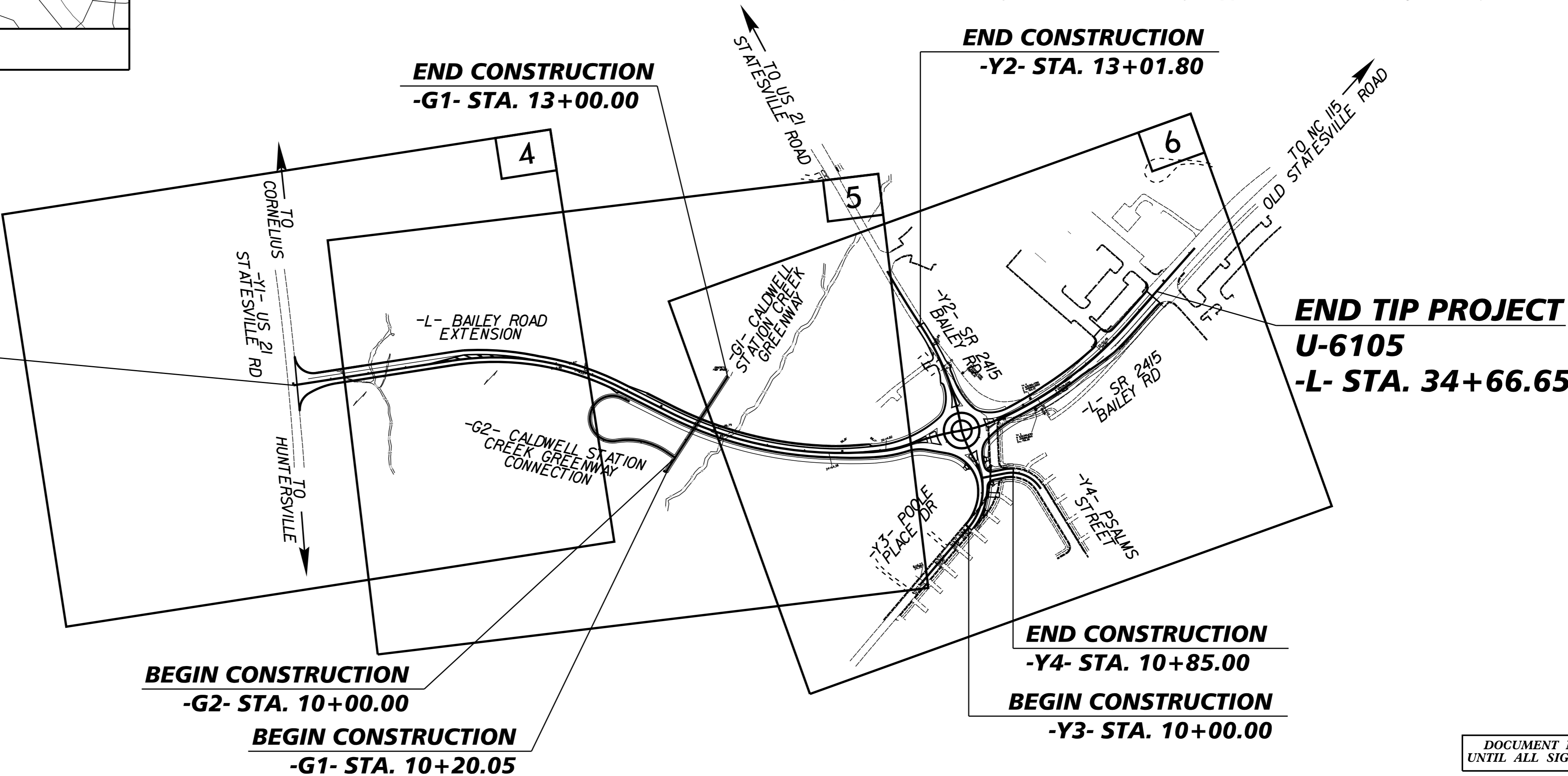
TYPE OF WORK: POTABLE WATER AND GRAVITY SANITARY SEWER RELOCATION



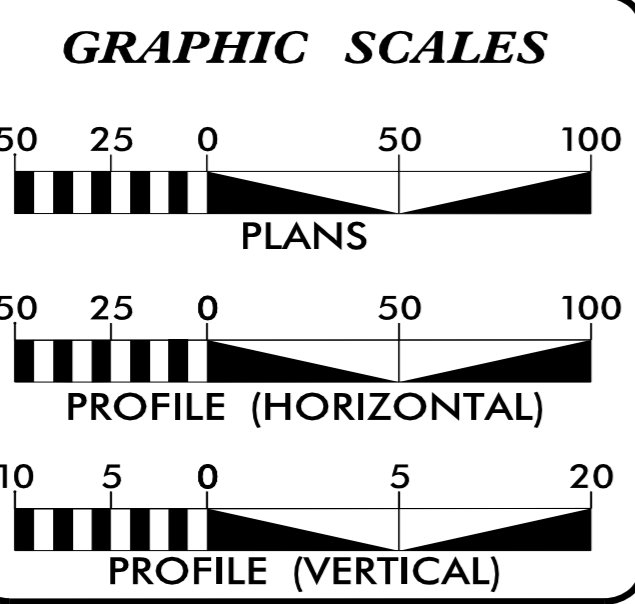
VICINITY MAP

Note: Not to Scale

BEGIN TIP PROJECT
U-6105
-L- STA. 10+00.00



DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED



SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-2A	UTILITY PERMIT
UC-3	UTILITY NOTES
UC-3A THRU UC-3F	UTILITY DETAILS
UC-4 THRU UC-6	UTILITY CONSTRUCTION SHEETS
UC-7	UTILITY PROFILE SHEETS

WATER AND SEWER
OWNERS ON PROJECT

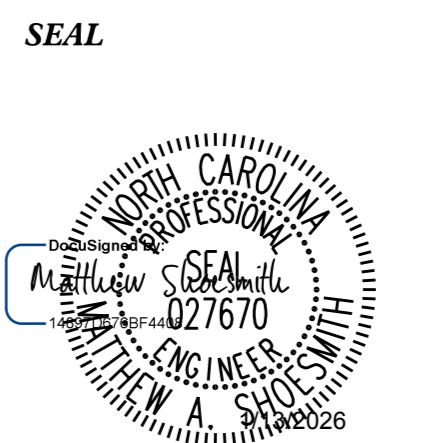
(A) WATER - CHARLOTTE WATER
(C) SANITARY SEWER - CHARLOTTE WATER

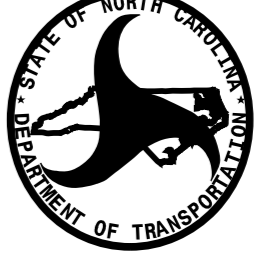
PREPARED IN THE OFFICE OF

Kimley »Horn

NO. LICENSE 447415
100 SOUTH WYOMING STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE (704) 366-1111
FAX (704) 366-1112

MATTHEW SHOESMITH, P.E. UTILITIES PROJECT ENGINEER
SOPHIA JOHNSTON, P.E. UTILITIES DESIGN ENGINEER















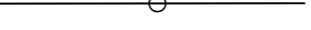
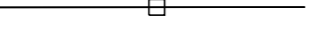

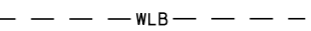
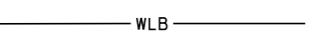






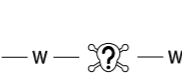
 DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH, NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

Michael Bright UTILITIES REGIONAL ENGINEER
N/A UTILITIES ENGINEER
Amy G. Dupree UTILITIES AREA COORDINATOR
N/A UTILITIES COORDINATOR






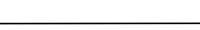

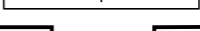



REVISIONS

Note: Not to Scale

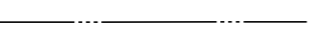
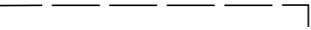

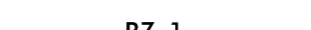
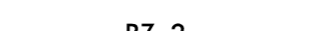






BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin (EIP)	
Computed Property Corner	
Existing Concrete Monument (ECM)	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
Contaminated Site: Known or Potential	

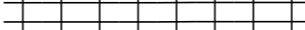

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	
Sign	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	















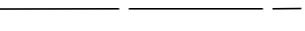

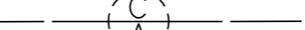


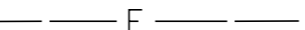
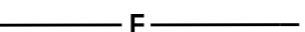




HYDROLOGY:

Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	















RAILROADS:




Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY & PROJECT CONTROL:

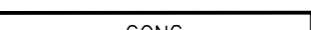


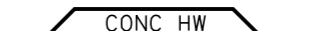


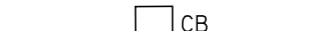


Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Secondary Horiz and Vert Control Point	
Vertical Benchmark	
Existing Right of Way Monument	
Proposed Right of Way Monument (Rebar and Cap)	
Proposed Right of Way Monument (Concrete)	
Existing Permanent Easement Monument	
Proposed Permanent Easement Monument (Rebar and Cap)	
Existing C/A Monument	
Proposed C/A Monument (Rebar and Cap)	
Proposed C/A Monument (Concrete)	
Existing Right of Way Line	
Proposed Right of Way Line	
Existing Control of Access Line	
Proposed Control of Access Line	
Proposed ROW and CA Line	
Existing Easement Line	
Proposed Temporary Construction Easement	
Proposed Temporary Drainage Easement	
Proposed Permanent Drainage Easement	
Proposed Permanent Drainage/Utility Easement	
Proposed Permanent Utility Easement	
Proposed Temporary Utility Easement	
Proposed Aerial Utility Easement	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	
VEGETATION:	
Single Tree	
Single Shrub	
Hedge	

Woods Line	
Orchard	
Vineyard	














EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

















UTILITIES:

* SUE – Subsurface Utility Engineering
LOS – Level of Service – A,B,C or D (Accuracy)

POWER:

Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	
Power Line Tower	
Power Transformer	
U/G Power Cable Hand Hole	
H-Frame Pole	
U/G Power Line Test Hole (SUE – LOS A)*	
U/G Power Line (SUE – LOS B)*	
U/G Power Line (SUE – LOS C)*	
U/G Power Line (SUE – LOS D)*	

TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Test Hole (SUE – LOS A)*	
U/G Telephone Cable (SUE – LOS B)*	
U/G Telephone Cable (SUE – LOS C)*	
U/G Telephone Cable (SUE – LOS D)*	
U/G Telephone Conduit (SUE – LOS B)*	
U/G Telephone Conduit (SUE – LOS C)*	
U/G Telephone Conduit (SUE – LOS D)*	
U/G Fiber Optics Cable (SUE – LOS B)*	
U/G Fiber Optics Cable (SUE – LOS C)*	
U/G Fiber Optics Cable (SUE – LOS D)*	

Kimley»Horn

200 SOUTH TRYON ST, SUITE 200
CHARLOTTE, N.C. 28202










PROJECT REFERENCE NO.

U-6105











SHEET NO.

UC-2








WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line Test Hole (SUE – LOS A)*	
U/G Water Line (SUE – LOS B)*	
U/G Water Line (SUE – LOS C)*	
U/G Water Line (SUE – LOS D)*	
Above Ground Water Line	









TV:

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Test Hole (SUE – LOS A)*	
U/G TV Cable (SUE – LOS B)*	
U/G TV Cable (SUE – LOS C)*	
U/G TV Cable (SUE – LOS D)*	
U/G Fiber Optic Cable (SUE – LOS B)*	
U/G Fiber Optic Cable (SUE – LOS C)*	
U/G Fiber Optic Cable (SUE – LOS D)*	












GAS:

Gas Valve	
Gas Meter	
U/G Gas Line Test Hole (SUE – LOS A)*	
U/G Gas Line (SUE – LOS B)*	
U/G Gas Line (SUE – LOS C)*	
U/G Gas Line (SUE – LOS D)*	
Above Ground Gas Line	

SANITARY SEWER:

Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Force Main Line Test Hole (SUE – LOS A)*	
SS Force Main Line (SUE – LOS B)*	
SS Force Main Line (SUE – LOS C)*	
SS Force Main Line (SUE – LOS D)*	

MISCELLANEOUS:

Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line (SUE – LOS B)*	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
Abandoned According to Utility Records	
End of Information	

5/14/99

REVISIONS

8/27/2025



CHARLOTTE, NORTH CAROLINA

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

PROJECT NAME: NCDOT PROJECT U-6105 BAILEY RD ROUNDABOUT CREEK BASIN McDowell

CLTWater PROJECT NO.: CPM-

PROJECT TYPE: ☐ NEW CONSTRUCTION ☒ RELOCATION ☐ MODIFICATION OF PERMIT NO. OTHER
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) ☒ McDOWELL CR. (NC0036277)
☐ SUGAR CR. (NC0024937) ☐ MALLARD CR. (NC0030210) ☐ ROCKY CR. (NC0036269)

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

ORIGIN OF WASTEWATER ☒ 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:

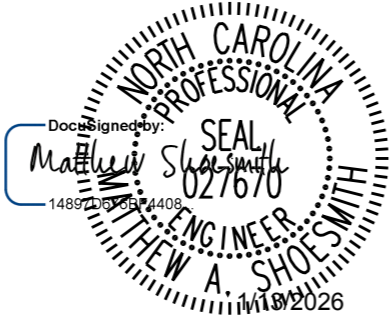
IF A PRETREATMENT PERMIT IS REQUIRED, HAS ONE BEEN ISSUED? ☐ YES ☐ NO

HAS ENGINEER DETERMINED THAT DOWNSTREAM SEWERS ARE CAPABLE TO HANDLE THIS FLOW? ☒ 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? ☒ 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. ALTHOUGH CERTAIN PORTIONS OF THIS SUBMITTAL
PACKAGE MAY HAVE BEEN DEVELOPED BY OTHER PROFESSIONALS, INCLUSION OF THESE MATERIALS UNDER MY
SIGNATURE AND SEAL SIGNIFIES THAT I HAVE REVIEWED THIS MATERIAL AND HAVE JUDGED IT TO BE CONSISTENT WITH
THE PROPOSED DESIGN.
NORTH CAROLINA PROFESSIONAL ENGINEER'S SEAL, SIGNATURE, AND DATE:



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: U-6105 BAILEY RD ROUNDABOUT

CLTWater PROJECT NO.:

PROJECT DESCRIPTION: Replace approx. 780 LF of 8" DI PC 350 Water Main and Appurtenances along new Bailey Rd 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. A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF NORTH CAROLINA SHALL SUBMIT A STATEMENT REFLECTING THAT ADEQUATE OBSERVATIONS DURING AND UPON COMPLETION OF CONSTRUCTION INDICATES THAT CONSTRUCTION WAS COMPLETED IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.


PERMIT NO.

APPROVED: DATE

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

Kimley»Horn

200 SOUTH TRYON ST, SUITE 200
CHARLOTTE, N.C. 28202

PROJECT REFERENCE NO.		SHEET NO.
U-6105		UC-2A
DESIGNED BY: MAS		
DRAWN BY: SJJ		
CHECKED BY: MAS		
APPROVED BY: ---		
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		
UTILITY CONSTRUCTION PLANS ONLY		

UTILITY CONSTRUCTION

5/14/99

REVISIONS

8/27/2025

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 UTILITIES BELONG TO CHARLOTTE WATER
3. ALL WATER LINES 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 UTILITY OWNER. 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 OPPROTUNITY 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, 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 OR AT NIGHT 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. ALL NECESSARY LICENSES AND PERMITS SHALL BE OBTAINED BY THE CONTRACTOR AT ITS EXPENSE, UNLESS PREVIOUSLY OBTAINED BY THE OWNER AND PROVIDED AT THE PRECONSTRUCTION CONFERENCE.
2. 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.
3. 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 &/OR PROFILE BY THE UTILITY OWNER PRIOR TO CONSTRUCTION.
4. CONTRACTOR SHALL COORDINATE ALL WORK WITH UTILITY OWNER AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION, OR AS OTHERWISE SPECIFIED HEREIN.
5. UNLESS OTHERWISE INDICATED, ALL PROFILE ELEVATIONS ARE ALONG THE PIPE CENTERLINE.
6. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS AND TENNANTS AT LEAST 7 DAYS PRIOR TO CONSTRUCTION THAT CONSTRUCTION ACTIVITY WILL TAKE PLACE IN THEIR AREA.
7. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS FOR ALL UTILITY CONSTRUCTION PRIOR TO PLACING THE PIPELINE(S) IN SERVICE
8. 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.
9. MINIMUM PIPE COVER FOR DISTRIBUTION WATER MAINS SHALL BE 3 FEET.
10. 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.
11. 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.
12. CONTRACTOR TO REFER TO CHARLOTTE WATER STANDARD DETAILS, FOUND ON [HTTPS://WWW.CHARLOTTENC.GOV/WATER/COMMERCIAL-DEVELOPMENT/DEVELOPMENT-DESIGN-STANDARDS/LATEST-DESIGN-MANUAL](https://www.charlottenc.gov/water/commercial-development/development-design-standards/latest-design-manual)

Kimley»Horn

200 SOUTH TRYON ST, SUITE 200
CHARLOTTE, N.C. 28202

PROJECT REFERENCE NO.

U-6105

SHEET NO.

UC-3

DESIGNED BY: MAS

DRAWN BY: SJJ

CHECKED BY: MAS

APPROVED BY: ---

REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

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

UTILITY CONSTRUCTION
PLANS ONLY



UTILITY CONSTRUCTION

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 FACILTITIES 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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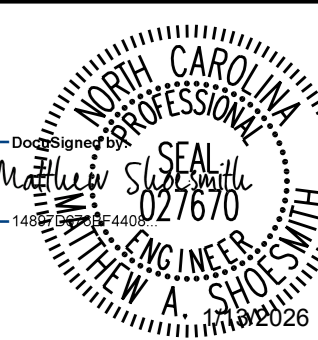
200 SOUTH TRYON ST, SUITE 200
CHARLOTTE, N.C. 28202

PROJECT REFERENCE NO. U-6105
SHEET NO. UC-3A

DESIGNED BY: MAS
DRAWN BY: SJJ
CHECKED BY: MAS
APPROVED BY: ---

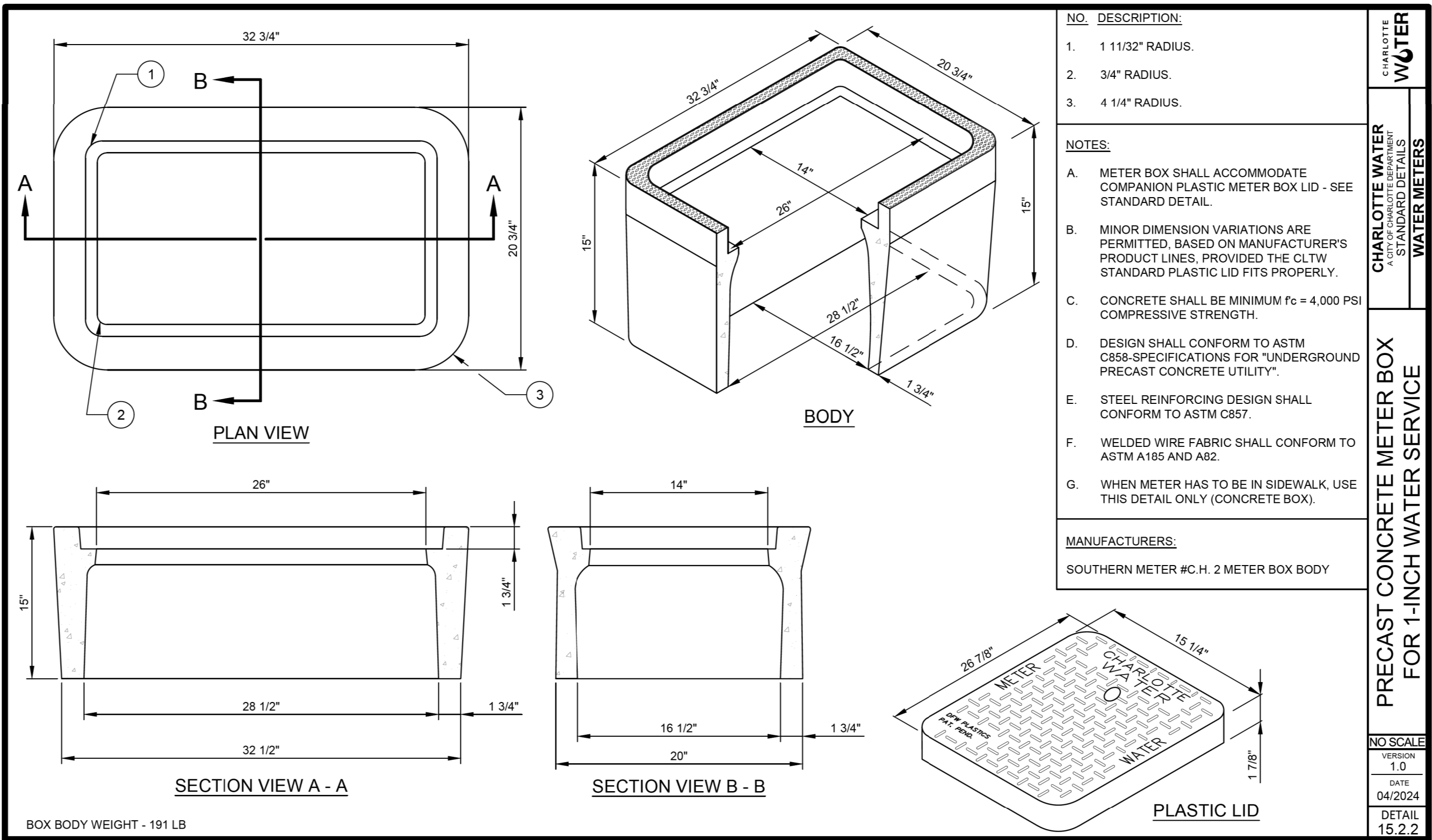
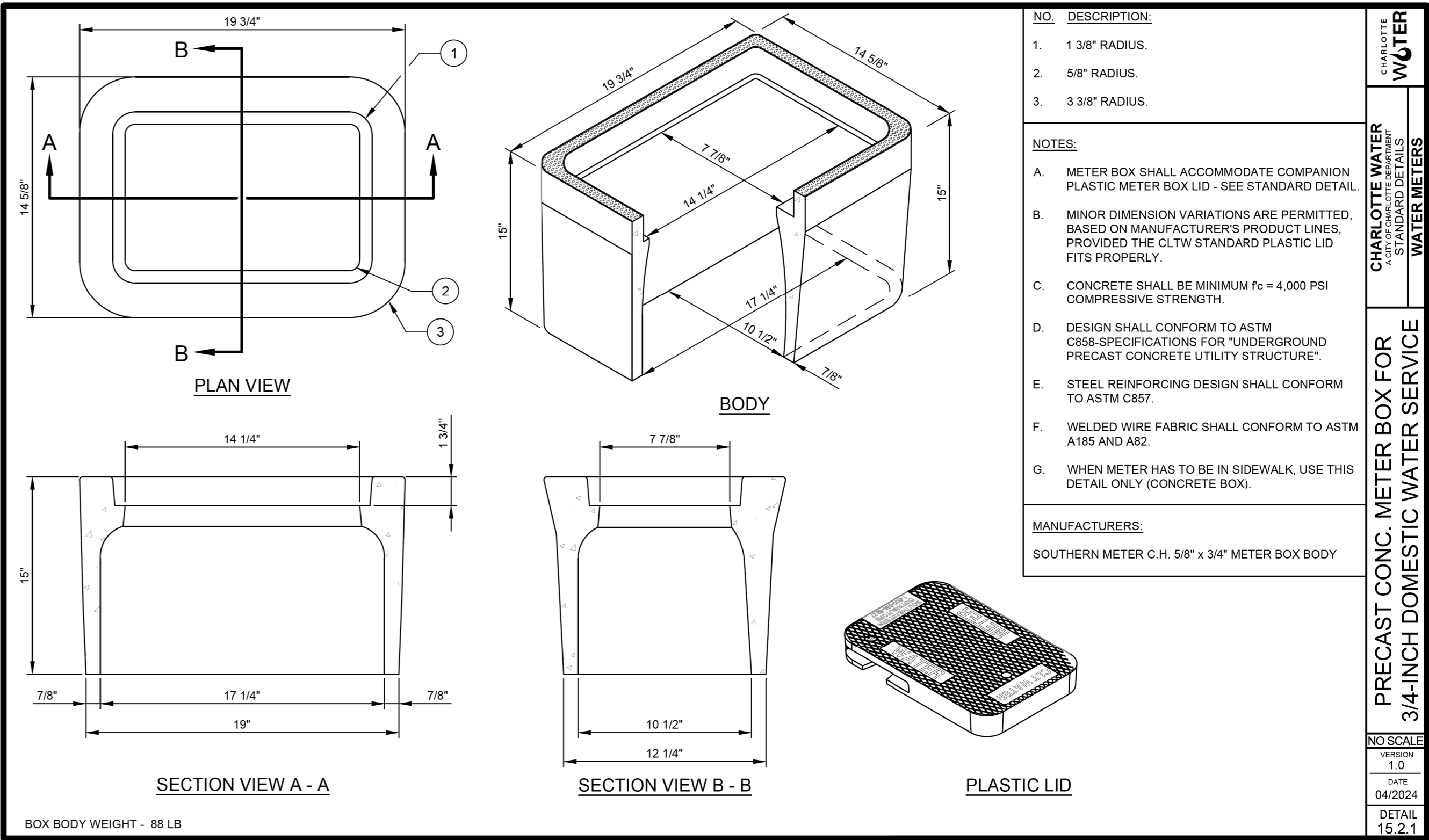
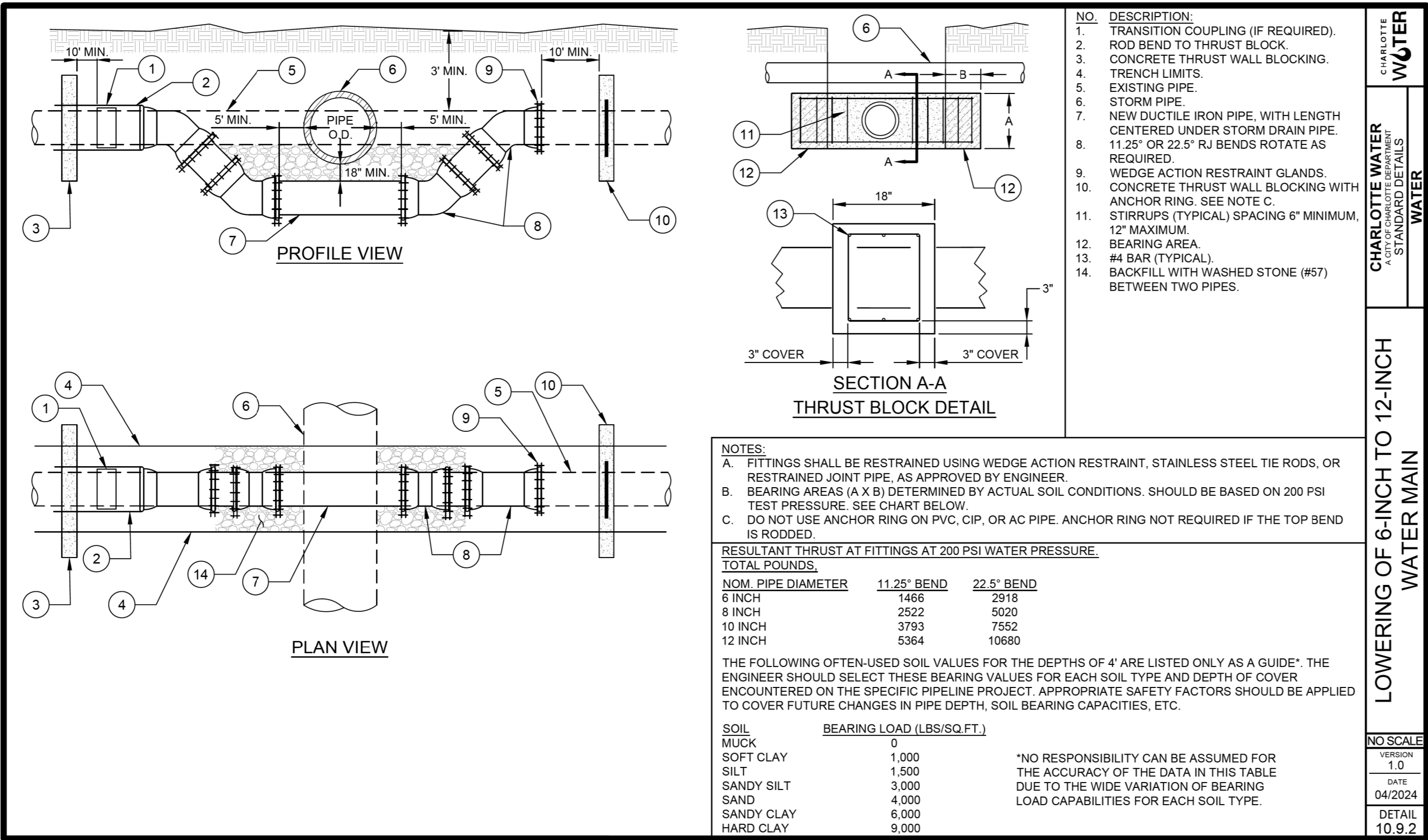
REVISED:
NORTH CAROLINA
DEPARTMENT OF
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UTILITIES ENGINEERING SEC.
PHONE: (919) 707-6690
FAX: (919) 250-4151



UTILITY CONSTRUCTION
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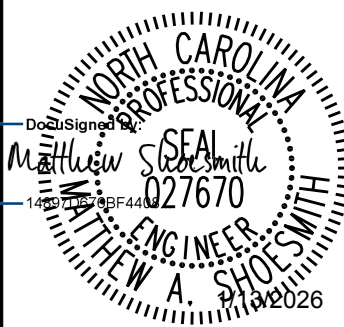
UTILITY CONSTRUCTION



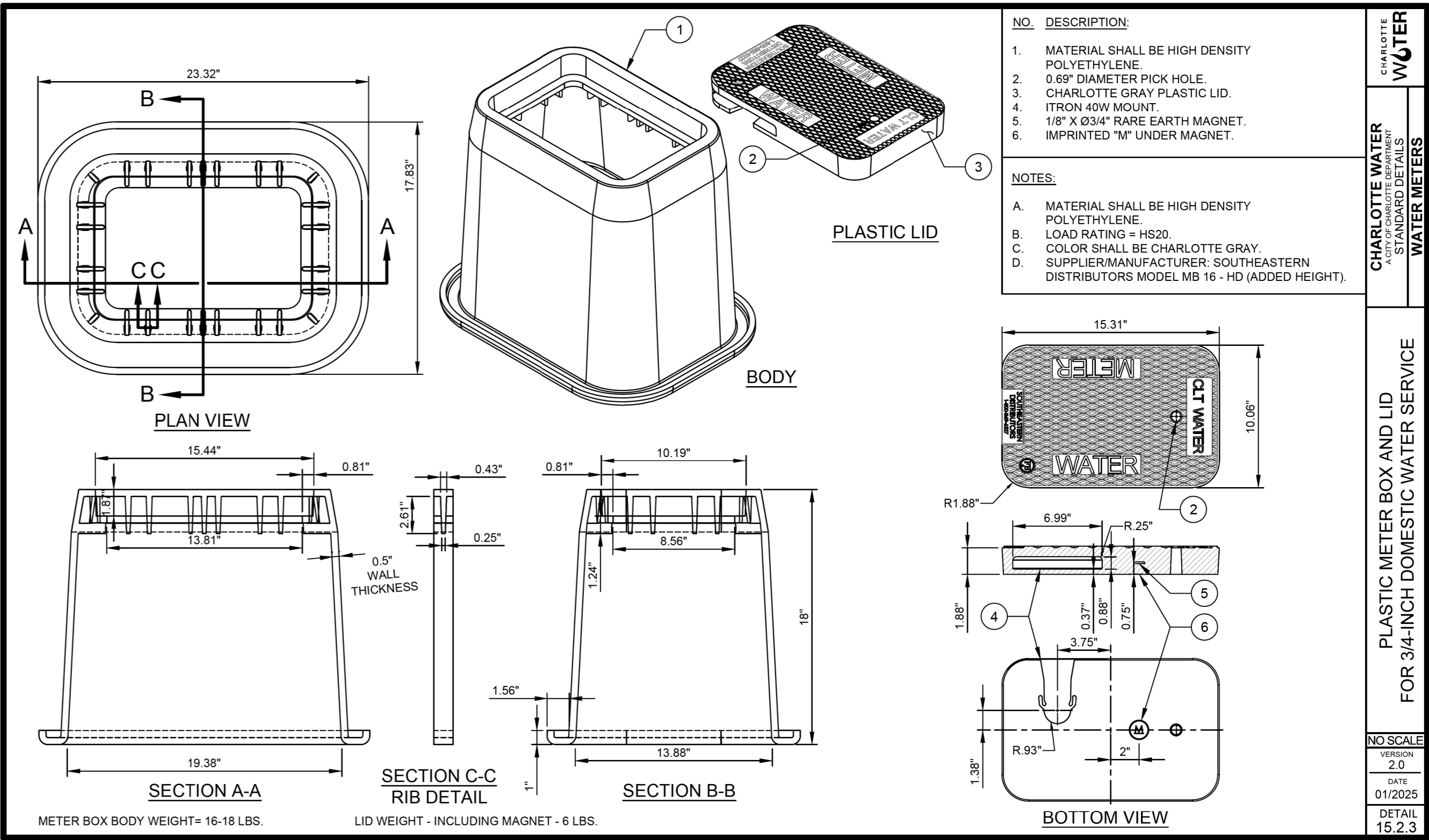
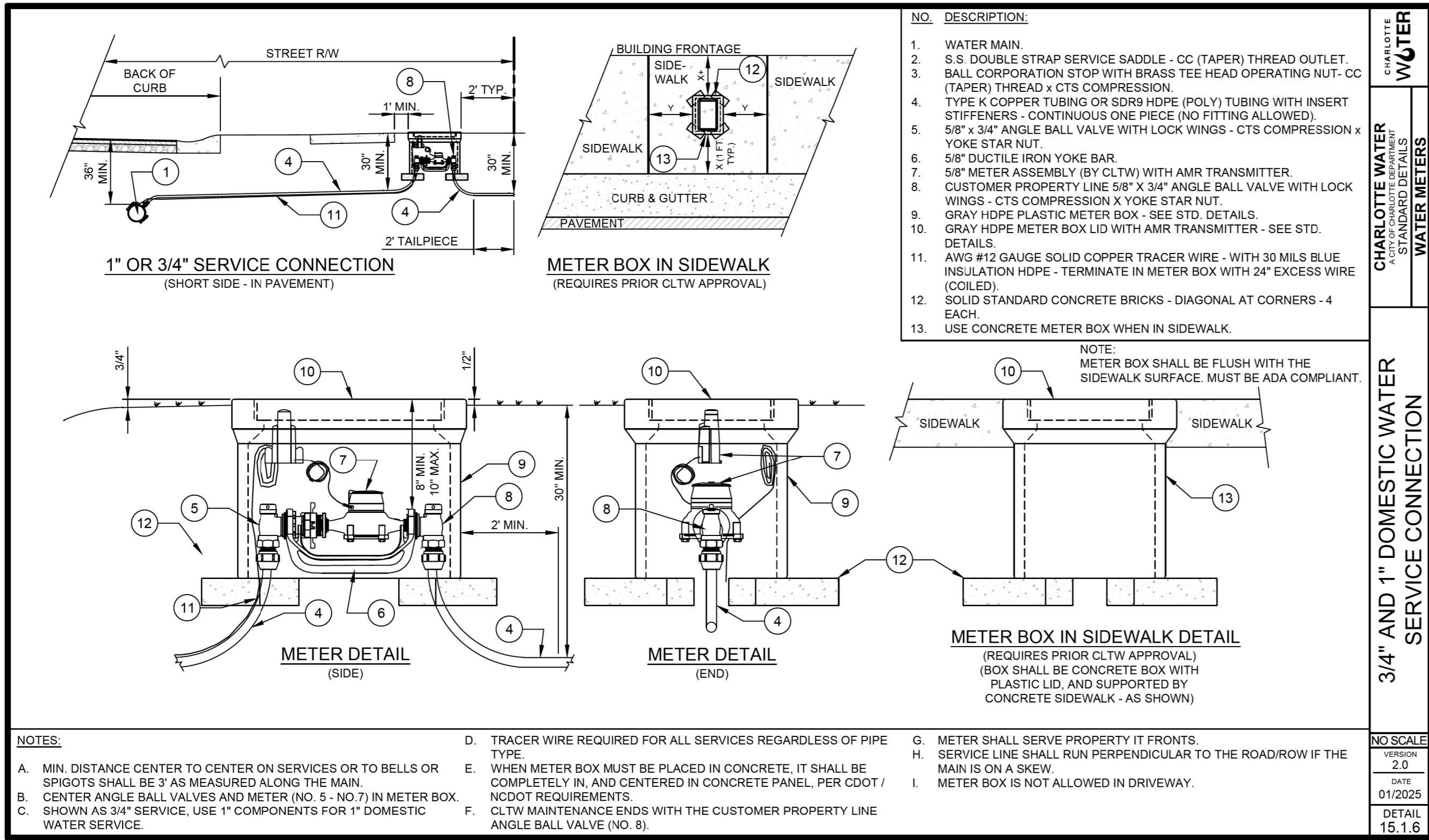
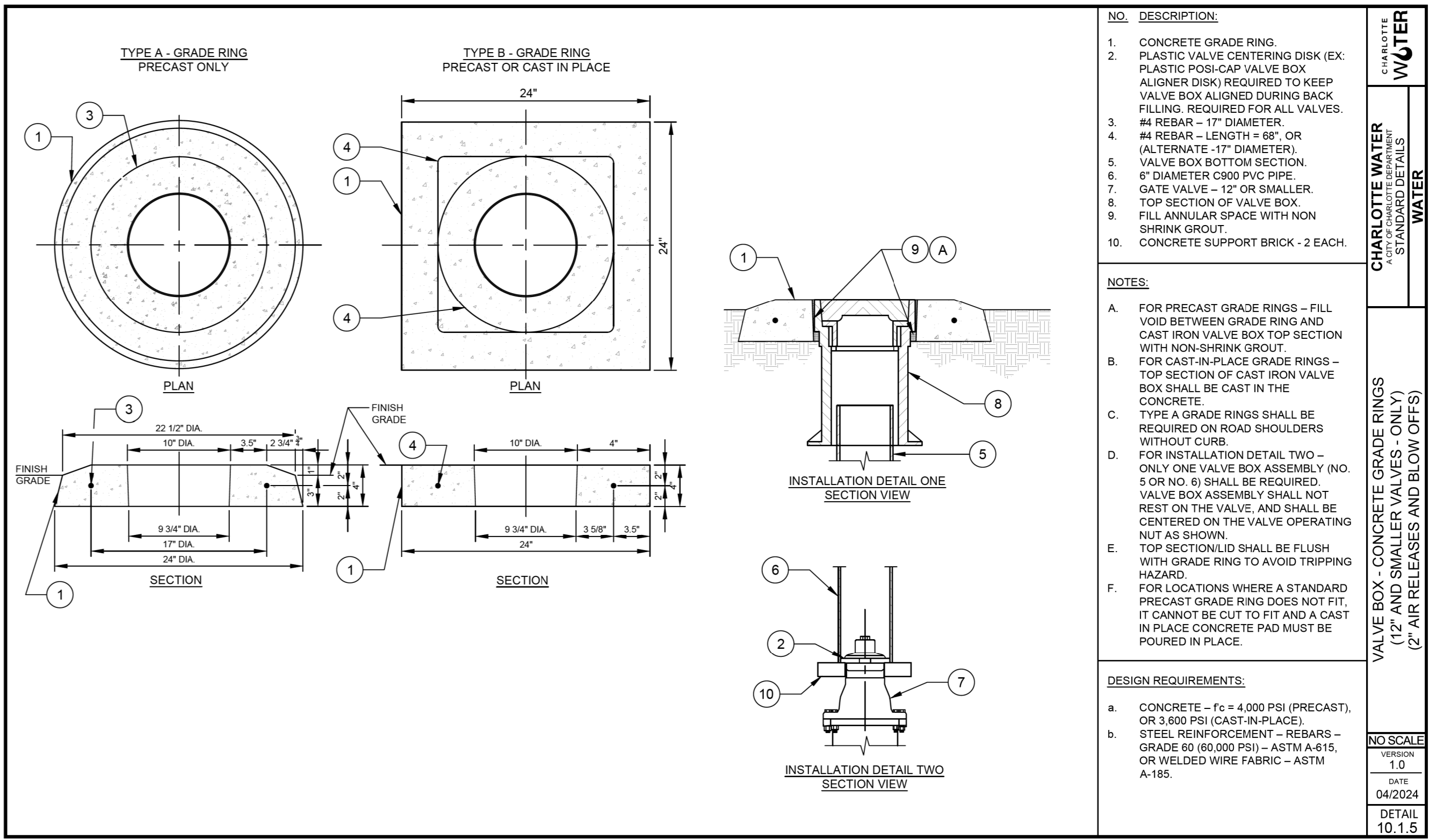
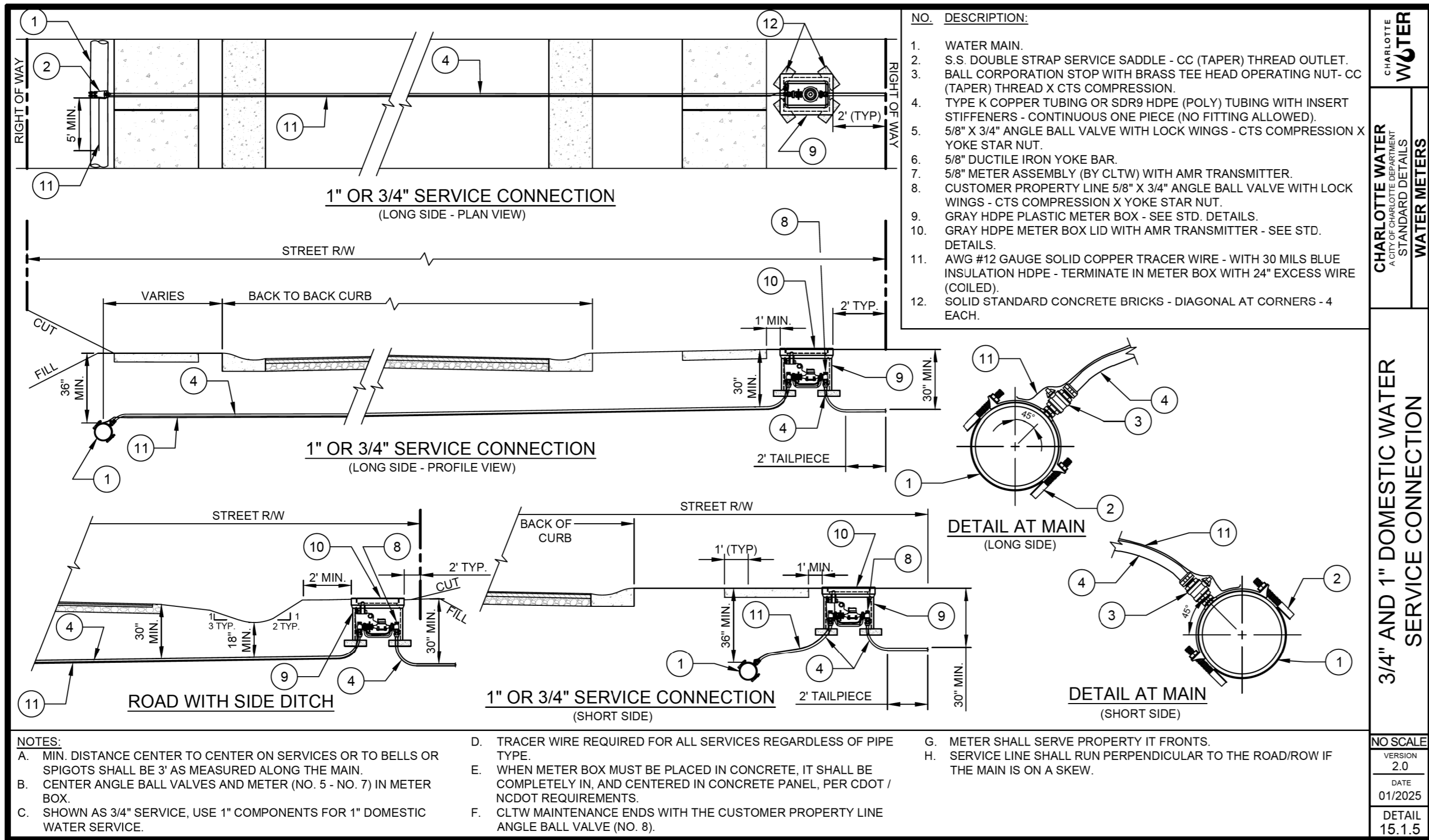
VALVE BOX ASSEMBLY INSTALLATION- 12" AND SMALLER VALVES	CHARLOTTE WATER A CITY OF CHARLOTTE DEPARTMENT STANDARD DETAILS		CHARLOTTE WATER
	WATER		
NO SCALE	VERSION 1.0	DATE 04/2024	DETAIL 15 1.3

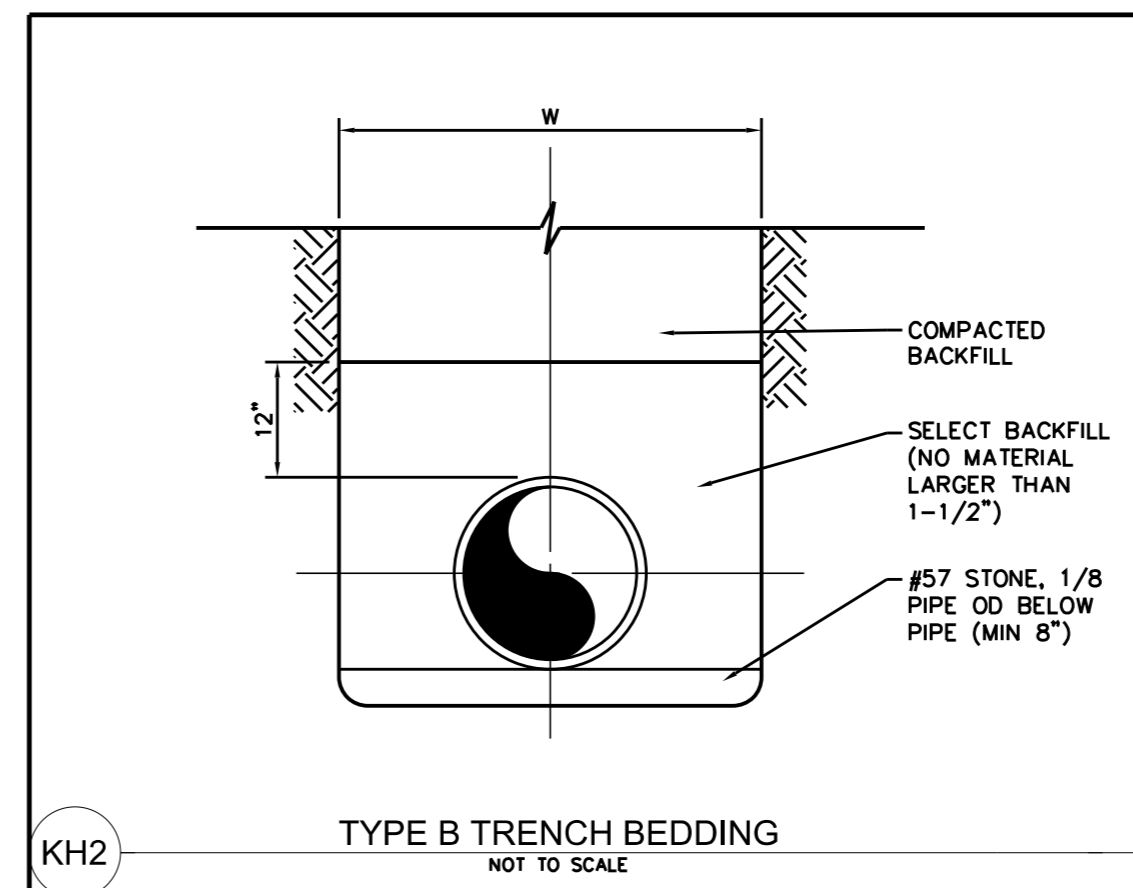
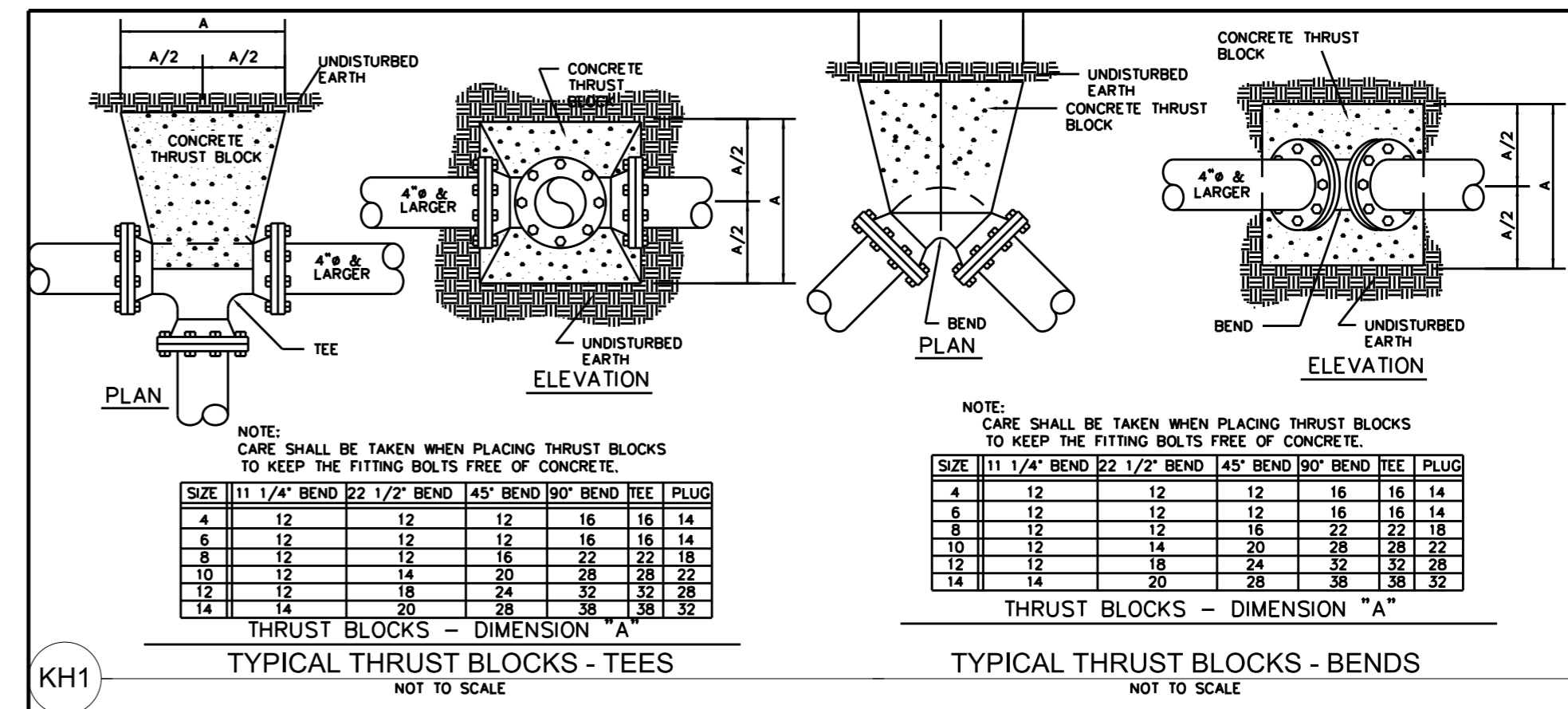
Kimley»Horn

200 SOUTH TRYON ST, SUITE 200
CHARLOTTE, N.C. 28202

PROJECT REFERENCE NO.		SHEET NO.
U-6105		UC-3C
DESIGNED BY:	MAS	
DRAWN BY:	SJJ	
CHECKED BY:	MAS	
APPROVED BY:	---	
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION





TRENCH EXCAVATION LIMITS		
INTERNAL DIAMETER OF PIPE	W	
	MAX	W=MIN
4"-6"	3'-9"	2'-0"
8"-10"	4'-9"	2'-2"
12"	5'-9"	0.0+2'
14"-16"	4'-2"	0.0+2'
18"	4'-4"	0.0+2'
20"-21"	4'-8"	0.0+2'
24"	4'-11"	0.0+2'
27"	5'-9"	0.0+2'
30"	6'-7"	0.0+2'
36"	7'-4"	0.0+2'
42"	8'-2"	0.0+2'
48"	8'-9"	0.0+2'
54"	9'-4"	0.0+2'
60"	9'-10"	0.0+2'
72"	11'-0"	0.0+2'
78"	11'-8"	0.0+2'
84"	12'-0"	0.0+2'
90"	12'-6"	0.0+2'
96"	13'-0"	0.0+2'
108"	14'-0"	0.0+2'
DEPTH OF CUT	S	
	MAXIMUM PAVEMENT REPLACEMENT WIDTH	
0-6'	S=W/4	
>6'-8'	S=W/3	
>8'-10'	S=W/2	
>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
TRENCH SIDE SLOPES SHALL
BE IN ACCORDANCE WITH OSHA
REQUIREMENTS.

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

5/14/99

REVISIONS

8/27/2025

Kimley»Horn

200 SOUTH TRYON ST, SUITE 200
CHARLOTTE, N.C. 28202

PROJECT REFERENCE NO.
U-6105

SHEET NO.
UC-3E

DESIGNED BY: MAS

DRAWN BY: SJJ

CHECKED BY: MAS

APPROVED BY: ---

REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

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

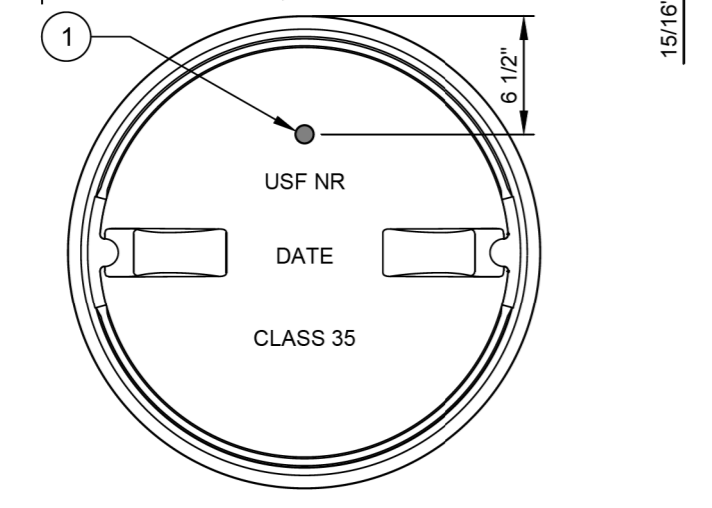
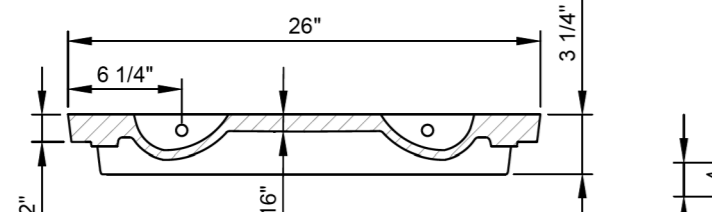
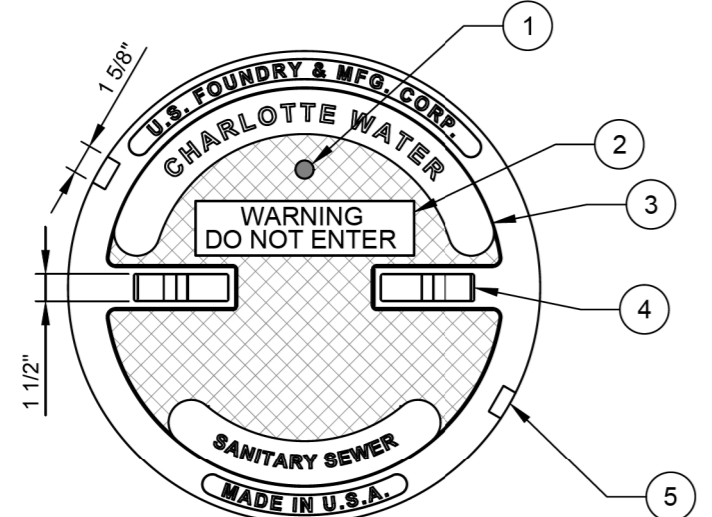
FAX: (919) 250-4151

UTILITY CONSTRUCTION
PLANS ONLY



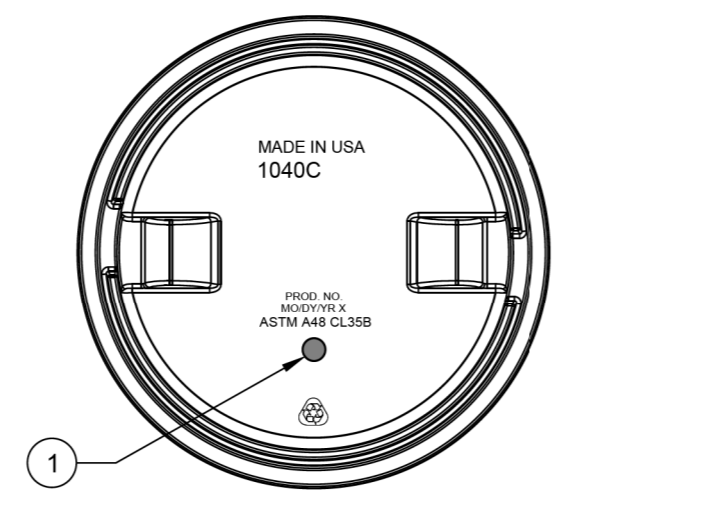
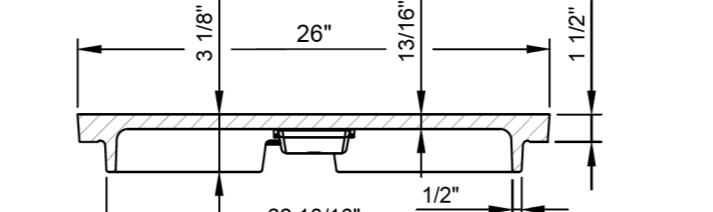
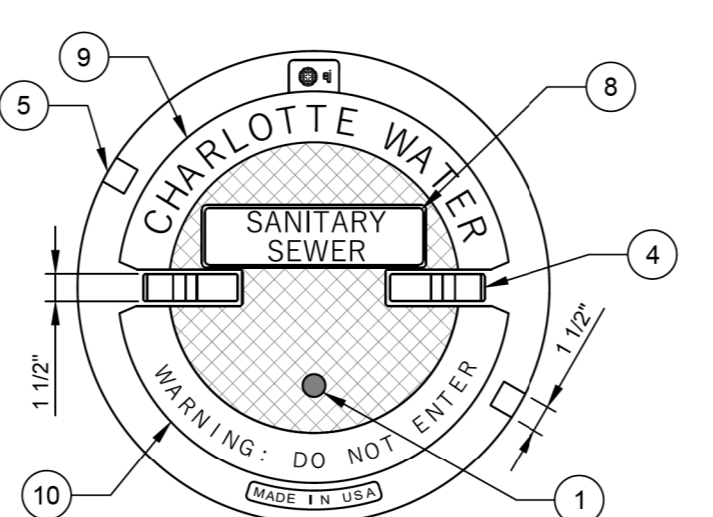
UTILITY CONSTRUCTION
PLANS ONLY

U.S. FOUNDRY & MFG. CORP.



WEIGHT - 150 LB. MIN., 0% MINUS TOLERANCE

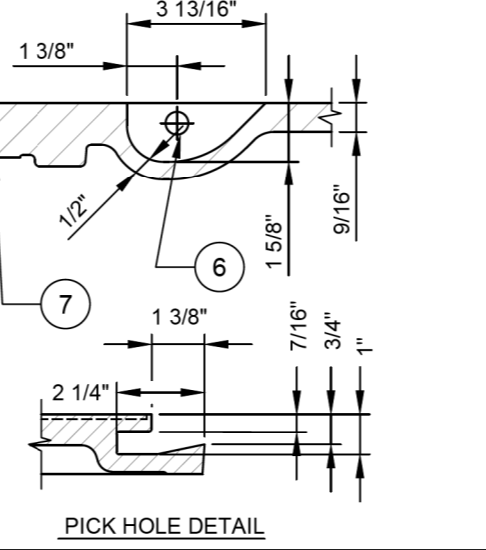
EJ (EJ GROUP, INC.)



WEIGHT - 145 LB. MIN., 0% MINUS TOLERANCE

- NO. DESCRIPTION:
1. 1 INCH DIAMETER VENT HOLE.
 1. 1 INCH ARIAL TEXT.
 - 5/8" ARIAL STYLE TEXT.
 - (2) - LIFTING BARS.
 - (2) - NON PENETRATING PICK HOLES.
 - 5/8" TYPE 304 S.S. ROD.
 - MACHINED SURFACE.
 - 1 INCH SHARP FACE GOTHIC TEXT.
 - 1 1/4" SHARP FACE GOTHIC TEXT.
 - 3/4" SHARP FACE GOTHIC TEXT.

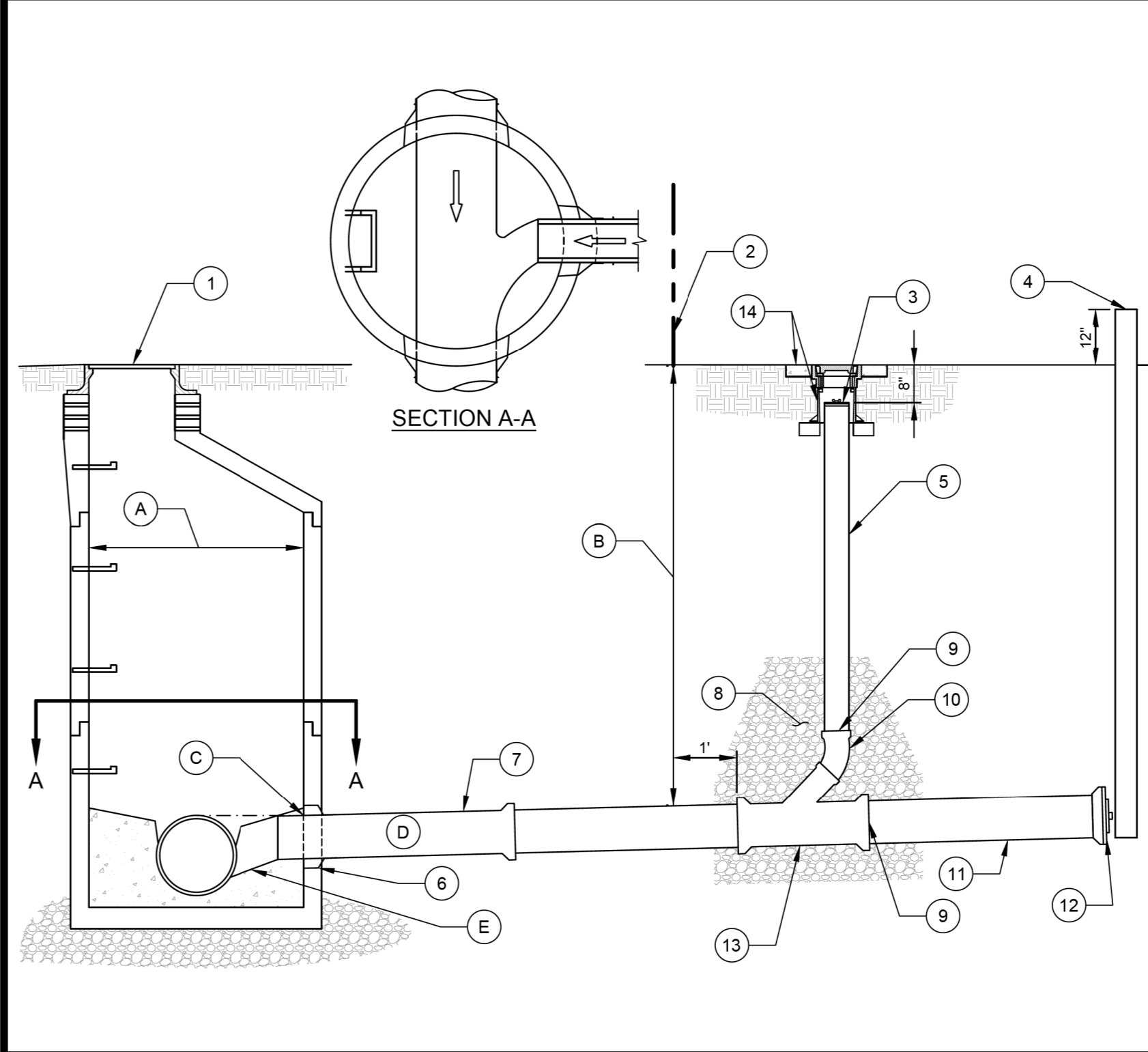
- NOTES:
- LOAD RATING - HEAVY DUTY.
 - MATERIAL - ASTM A48 - CLASS 35 GRAY IRON.
 - COATING - UNDIPPED.
 - COVER SHALL CONFORM TO DIMENSION AND WEIGHT REQUIREMENTS.
 - COVER SHALL NOT BE OUT OF ROUND.



CHARLOTTE WATER
STANDARD DETAILS
WATER

CHARLOTTE WATER
STANDARD DETAILS
GRAVITY SEWER

TYPE 1 MANHOLE COVER
24-INCHES DIAMETER (CLEAR OPENING)
VENTED ONE VENT HOLE, NO GASKET, NO CAM LOCK
NO SCALE
VERSION 1.0
DATE 04/2024
DETAIL 11.3.5



- NO. DESCRIPTION:
- EXISTING OR PROPOSED MANHOLE CLTW STANDARD CAST IRON FRAME AND COVER.
 - PROPERTY LINE, ROAD R/W OR CLTW EASEMENT LINE.
 - GRIPPER (END OF PIPE- TYPE) PLUG SHALL BE SCH 40 FIPT ADAPTER WITH SCREW CAP.
 - 4" X 4" PRESSURE TREATED LUMBER POST.
 - 4" OR 6" SCH 40 PVC VERTICAL STANDPIPE.
 - MANHOLE/PIPE BOOT ON PRECAST MANHOLES AND CONCRETE COLLARS ON BRICK OR BLOCK MANHOLES.
 - 4" OR 6" DIP, OR 4" OR 6" DR 18 PVC.
 - #57 STONE EMBEDMENT.
 - IPS (SCH 40 PVC) TRANSITION GASKET.
 - 4" OR 6" SXB 45" BEND (C900 DR18 PVC).
 - 4" OR 6" PVC PIPE TAILPIECE (SCH 40 PVC - LL + 36" MIN.).
 - TEST-KAP OR END-CAP TEST CAP BY CHERNE INDUSTRIES OR APPROVED EQUAL. SCH 40 GLUE ON CAP.
 - 4" X 4" X 4" OR 6" X 6" X 6" 45" ALL BELL WYE (C900 DR18 PVC).
 - VALVE BOX ASSEMBLY (TYP.), FOR 6" CLEANOUTS AND CONCRETE PAD. VALVE BOX TO BE REPLACED WITH US FOUNDRY MODEL 7610 COVER, EJ CORP #15702, OR APPROVED EQUAL.

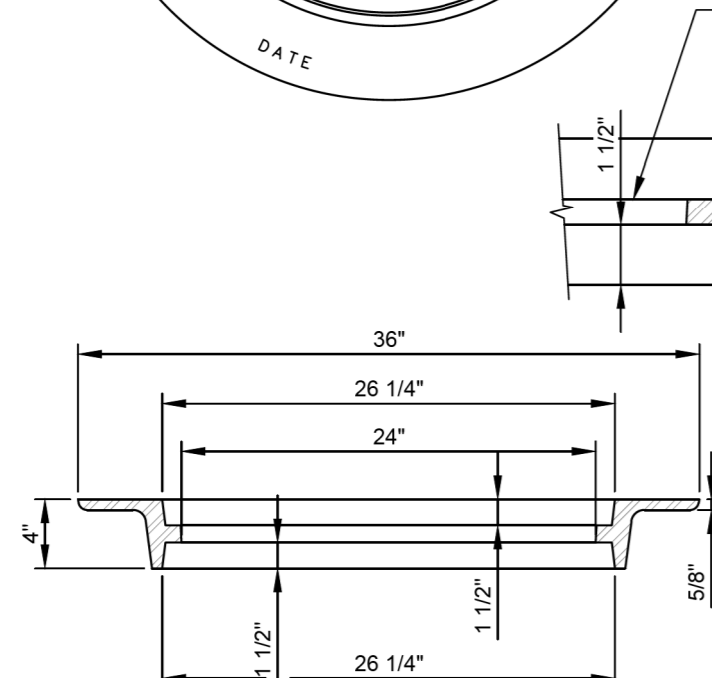
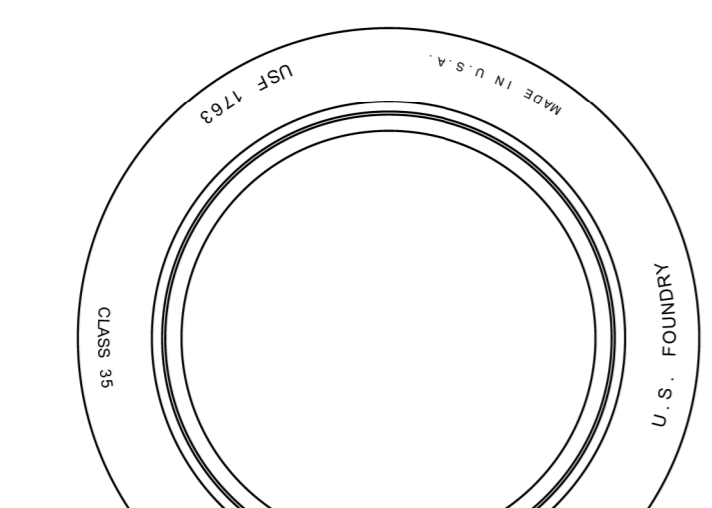
- NOTES:
- 4" MIN. DIAMETER (5" MIN. DIAMETER FOR INSIDE DROP).
 - MINIMUM DEPTH OF COVER AT PROPERTY LINE SHALL BE 4". UNLESS GREATER DEPTH IS REQUIRED TO SERVE THE BUILDING. MINIMUM DEPTH AT SIDE DITCH SHALL BE 2' 5".
 - MATCH CROWNS UNLESS THE LATERAL IS THE SAME DIAMETER AS THE MAIN LINE PIPE. THEN A DROP OF 0.2" BETWEEN INVERTS WILL BE PROVIDED.
 - MINIMUM PIPE SLOPES: 4" PIPE IS 1.50% AND 6" PIPE IS 1.25%. MAXIMUM SLOPE FOR ALL PIPE SHALL BE 10%.
 - CONCRETE THROUGH TO BE CUT TO DIRECT FLOW FROM PIPE CONNECTION TO EFFLUENT PIPE.
 - TRACER WIRE INSTALLED PER CLTW TRACER WIRE DETAIL AS APPLICABLE.
 - CUT LETTER "S" IN CURB WHERE PIPE CROSSING UNDER CURB AND PAINT WITH GREEN PAINT. IF NO CURB, PAINT "S" IN P.V.M.T.
 - TYPE 3 GRANULAR BEDDING REQUIRED IF GROUNDWATER, ROCK, OR UNSTABLE SOIL IS ENCOUNTERED.

CHARLOTTE WATER
STANDARD DETAILS
WATER

CHARLOTTE WATER
STANDARD DETAILS
GRAVITY SEWER

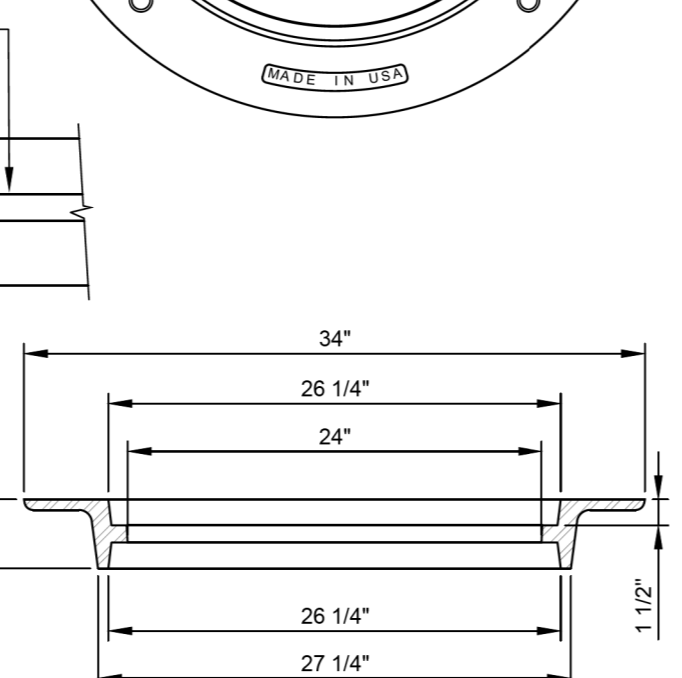
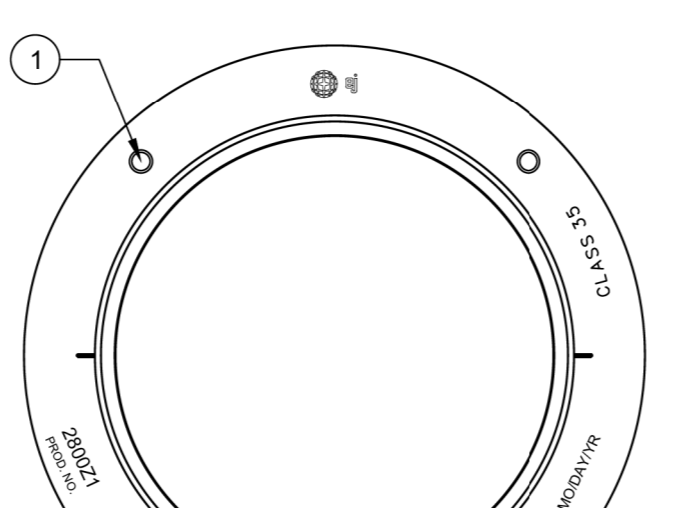
4" AND 6" SANITARY SEWER LATERAL CONNECTIONS
TO MANHOLES - ON DR 25 PVC SEWER MAINS
NO SCALE
VERSION 1.0
DATE 04/2024
DETAIL 11.1.4

U.S. FOUNDRY & MFG. CORP.



WEIGHT - 150 LB. MIN., 0% MINUS TOLERANCE

EJ (EJ GROUP, INC.)



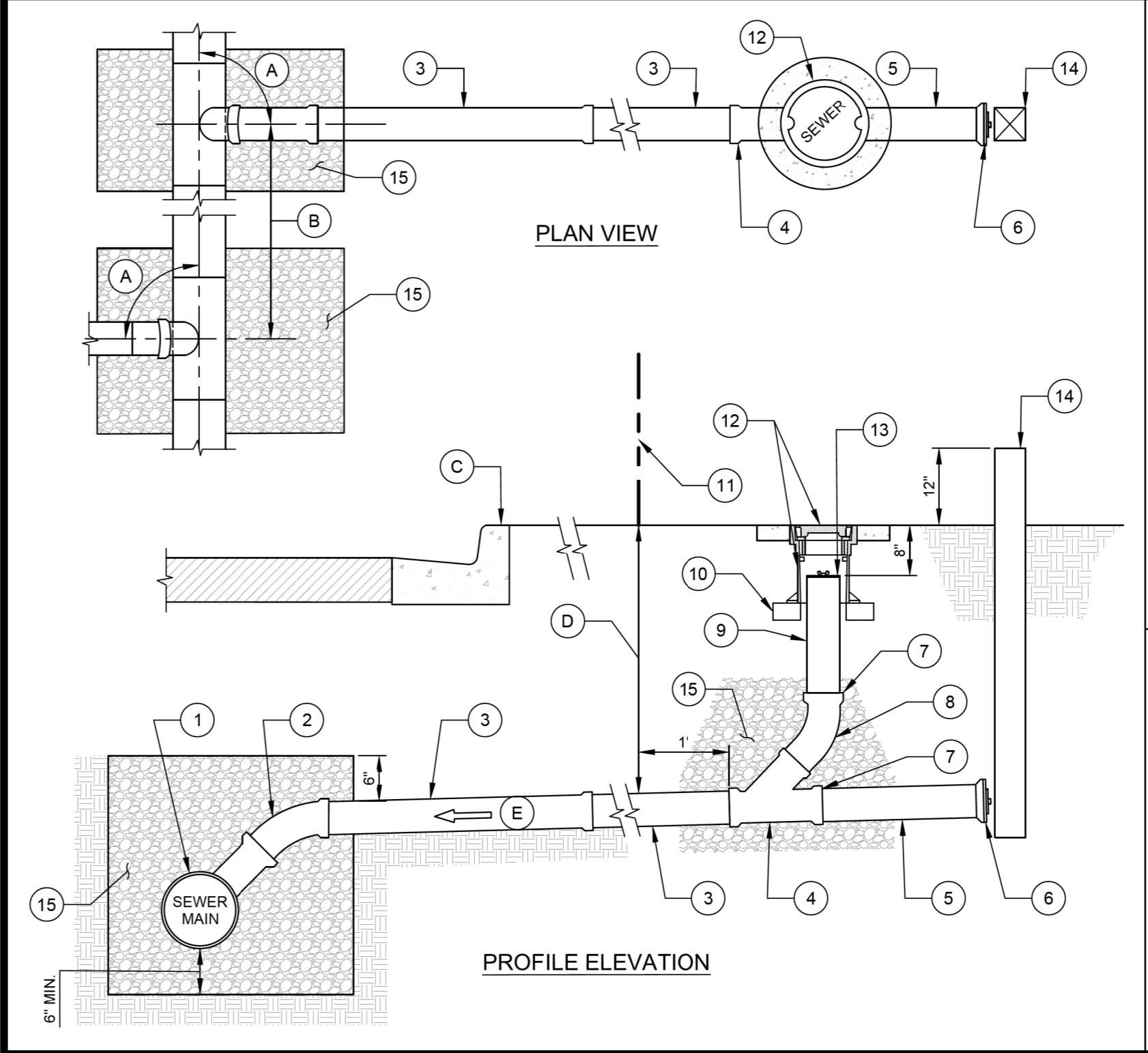
WEIGHT - 121 LB. MIN., 0% MINUS TOLERANCE

- NO. DESCRIPTION:
- (4)-1 INCH DIAMETER ANCHOR HOLES ON A 31" DIAMETER B.C.D.
 - MACHINED SURFACE.
 - FRAME.
- NOTES:
- LOAD RATING - HEAVY DUTY.
 - MATERIAL - ASTM A48 - CLASS 35 GRAY IRON.
 - COATING - UNDIPPED.
 - FRAME SHALL CONFORM TO DIMENSION AND WEIGHT REQUIREMENTS.
 - FRAME SHALL NOT BE OUT OF ROUND.

CHARLOTTE WATER
STANDARD DETAILS
WATER

CHARLOTTE WATER
STANDARD DETAILS
GRAVITY SEWER

TYPE C MANHOLE FRAME
24-INCHES DIAMETER (CLEAR OPENING)
4-INCHES TALL - INVERTED (CAST IN)
NO SCALE
VERSION 1.0
DATE 04/2024
DETAIL 11.3.2



- NO. DESCRIPTION:
- RUN x 4" OR 6" ALL BELL TEE (C900 DR18 PVC OR DIP).
 - 22 1/2" OR 45" BEND - SPIGOT X BELL - (C900 DR18 PVC OR DIP).
 - C900 DR18 PVC/PIPE OR DIP.
 - 4" X 4" X 4" OR 6" X 6" X 6" 45" ALL BELL WYE (C900 DR18 PVC).
 - 4" OR 6" PVC PIPE TAILPIECE (SCH 40 PVC - LL + 36" MIN.).
 - TEST-KAP OR END-CAP TEST CAP BY CHERNE INDUSTRIES OR APPROVED EQUAL. SCH 40 GLUE ON CAP.
 - IPS (SCH 40) TRANSITION GASKET.
 - 4" OR 6" SXB 45" BEND (C900 DR18 PVC).
 - 4" OR 6" SCH 40 PVC VERTICAL STANDPIPE.
 - 2 STANDARD CONCRETE BRICKS.
 - PROPERTY LINE, ROAD R/W OR CLTW EASEMENT LINE.
 - SEWER VALVE BOX TOP SECTION, SEWER COVER, AND CONCRETE PAD. PAINT COVER WITH 2 COATS EPOXY ENAMEL-GREEN. FOR 6" CLEANOUTS, VALVE BOX TO BE REPLACED WITH US FOUNDRY MODEL 7610 COVER, EJ CORP #15702, OR APPROVED EQUAL.
 - GRIPPER (END OF PIPE- TYPE) PLUG SHALL BE SCH 40 FIPT ADAPTER WITH SCREW CAP.
 - 4" X 4" PRESSURE TREATED LUMBER POST.
 - #57 STONE EMBEDMENT.

- NOTES:
- SEWER CONNECTION SHALL BE CONSTRUCTED 90° TO MAIN (ANGLED CONNECTIONS NOT PERMITTED) AND SHALL TYPICALLY BE PERPENDICULAR TO ROADWAY.
 - MINIMUM SPACING BETWEEN CONNECTIONS SHALL BE 7'.
 - CUT LETTER "S" IN CURB WHERE PIPE CROSSING UNDER CURB AND PAINT WITH GREEN PAINT. IF NO CURB, PAINT LETTER "S" IN PAVEMENT.
 - MINIMUM DEPTH OF COVER AT PROPERTY LINE SHALL BE 4". UNLESS GREATER DEPTH IS REQUIRED TO SERVE THE BUILDING. MINIMUM DEPTH AT SIDE DITCH SHALL BE 2' 5".
 - MINIMUM SLOPE SHALL BE 1.5% FOR 4" PIPE AND 1.25% FOR 6" PIPE.
 - ALL FITTINGS 12" AND SMALLER SHALL BE MOLDED FITTINGS. FITTINGS LARGER THAN 12" MAY BE MOLDED OR FABRICATED PVC.
 - TYPE 3 GRANULAR BEDDING REQUIRED IF GROUNDWATER, ROCK, OR UNSTABLE SOIL IS ENCOUNTERED.

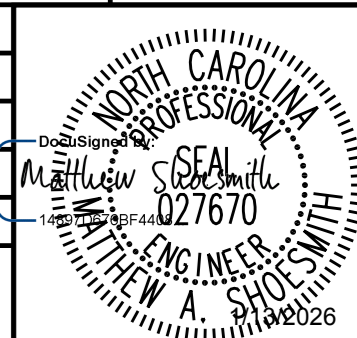
CHARLOTTE WATER
STANDARD DETAILS
WATER

CHARLOTTE WATER
STANDARD DETAILS
GRAVITY SEWER

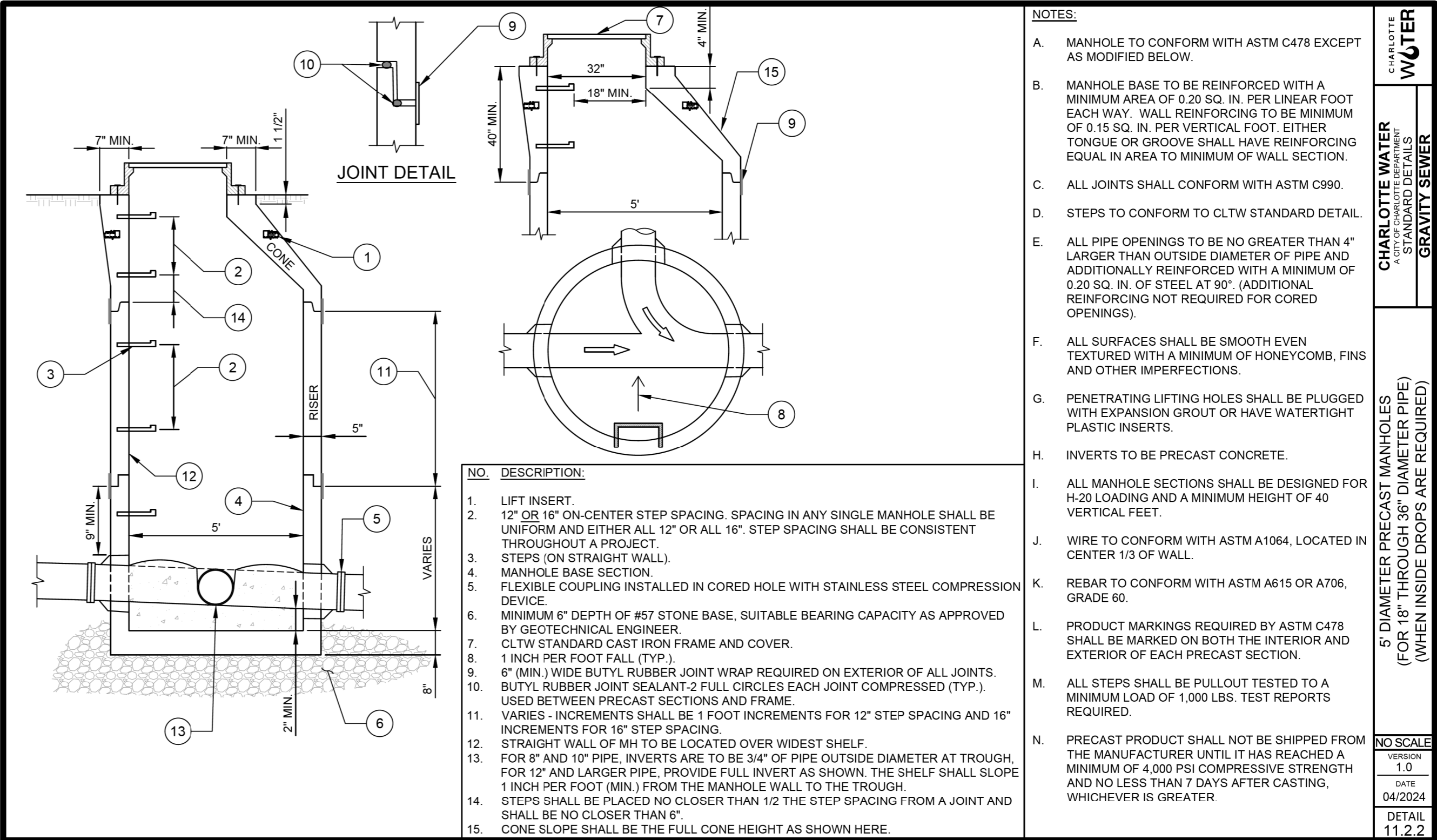
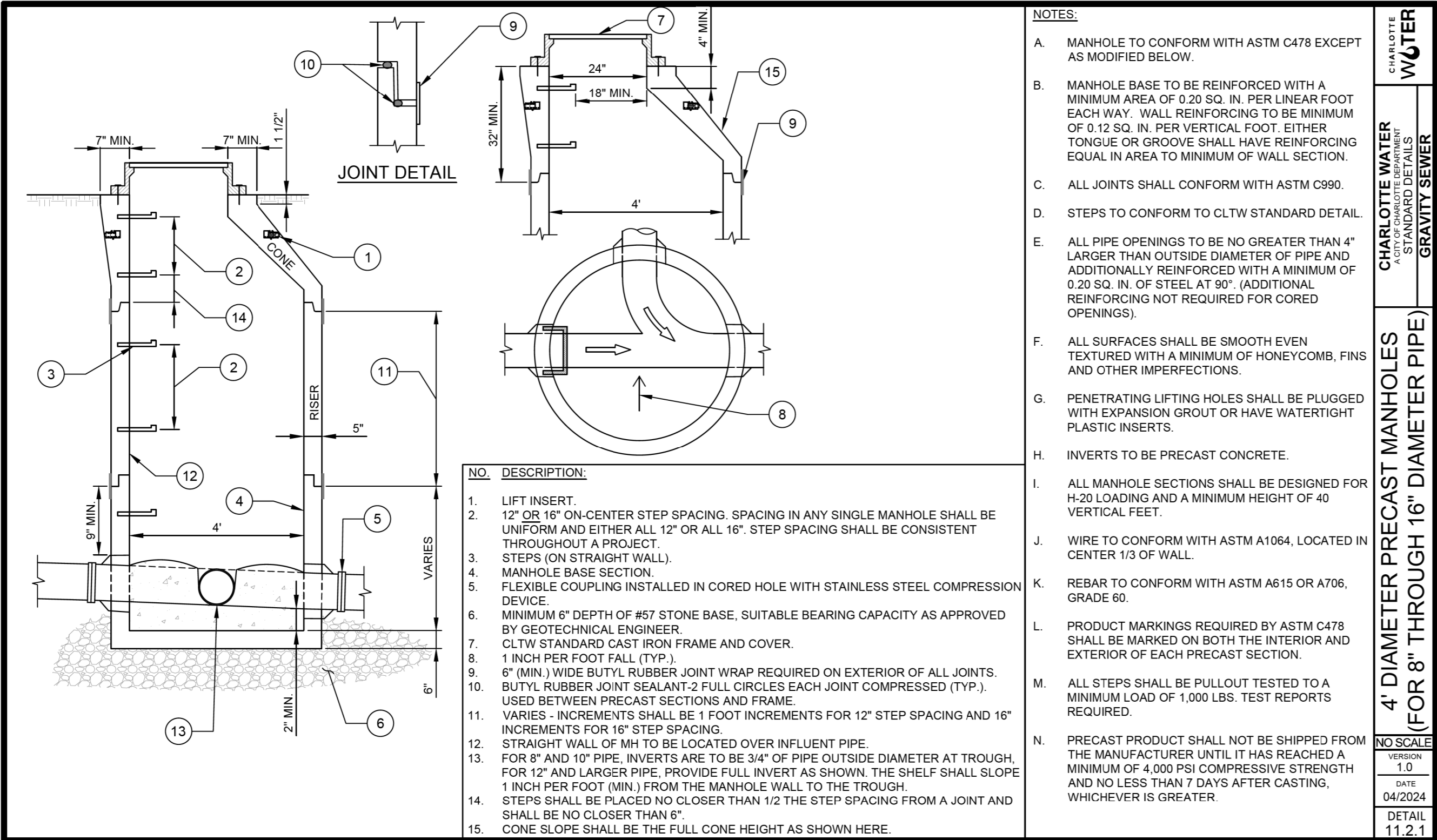
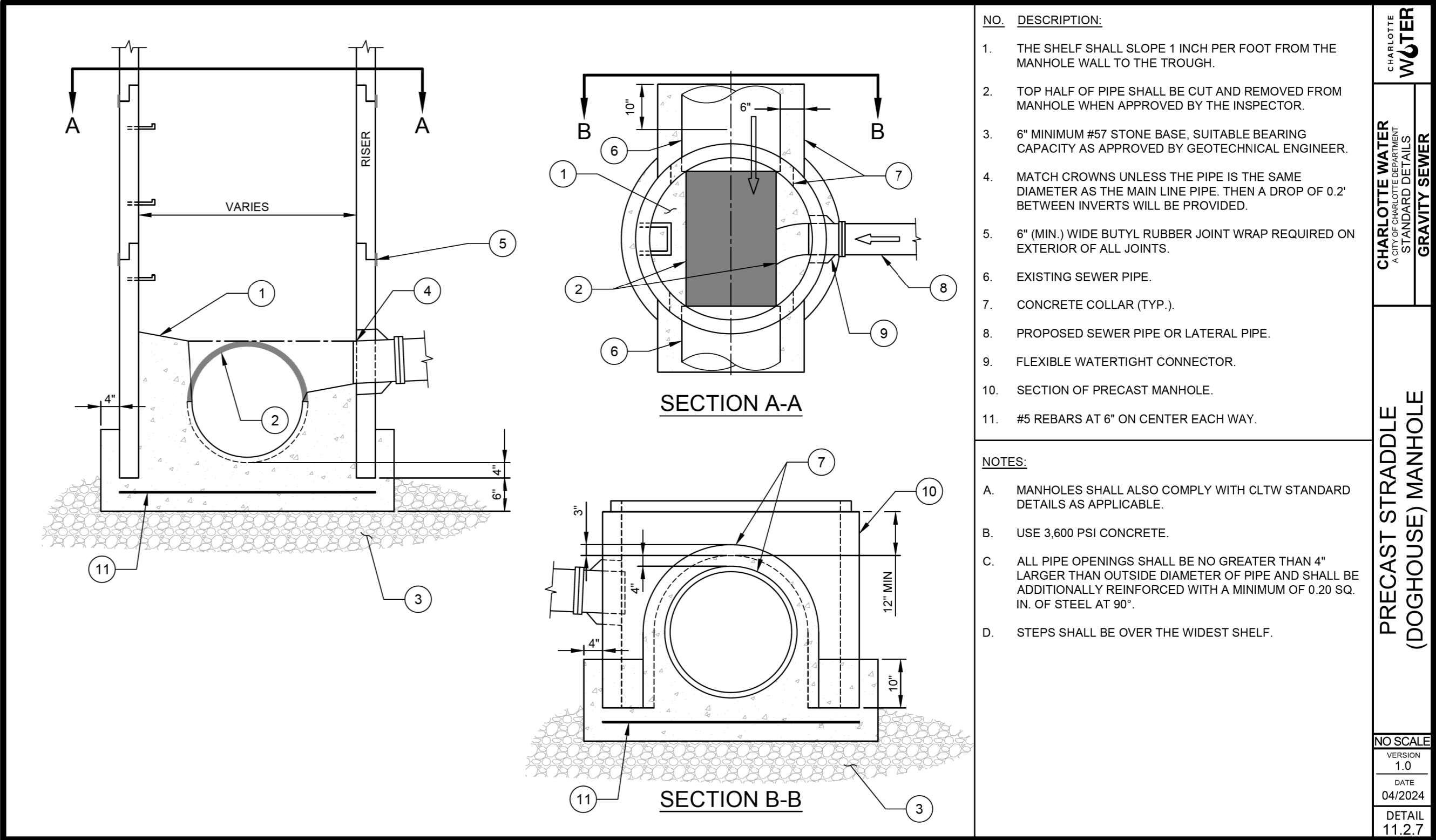
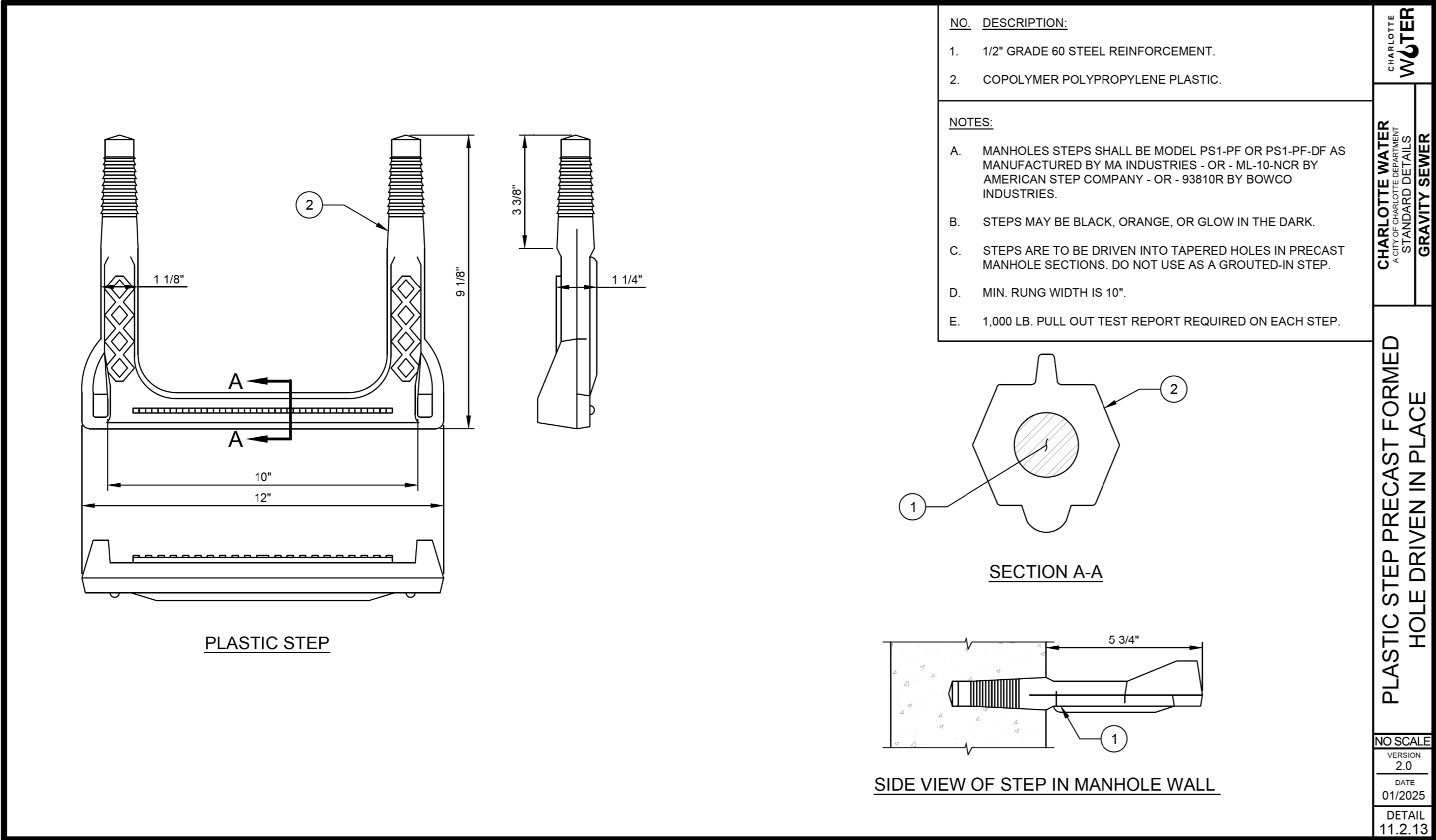
4" AND 6" SERVICE LATERAL TEE ON NEW
8" AND LARGER DR 25 PVC SEWER MAIN
NO SCALE
VERSION 1.0
DATE 04/2024
DETAIL 11.1.2

Kimley»Horn

200 SOUTH TRYON ST, SUITE 200
CHARLOTTE, N.C. 28202

PROJECT REFERENCE NO.		SHEET NO.
U-6105		UC-3F
DESIGNED BY: MAS		
DRAWN BY: SJJ		
CHECKED BY: MAS		
APPROVED BY: ---		
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC.		
PHONE: (919) 707-6690		
FAX: (919) 250-4151		

UTILITY CONSTRUCTION



PROJECT REFERENCE NO.

U-6105

SHEET NO.

UC-4

DESIGNED BY: MAS

DRAWN BY: SJJ

CHECKED BY: MAS

APPROVED BY: ---

REVISED:

NORTH CAROLINA
PROFESSIONAL
ENGINEER
Matthew A. Spivey
027670
12/2026

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TRANSPORTATION

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UTILITY CONSTRUCTION
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UTILITY CONSTRUCTION

NOTE: NO UTILITY CONSTRUCTION TO OCCUR ON THIS PAGE

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PROJECT REFERENCE NO.

U-6105

SHEET NO.

UC-5

DESIGNED BY: MAS

DRAWN BY: SJJ

CHECKED BY: MAS

APPROVED BY: ---

REVISED:

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Matthew S. Johnson

027670

Matthew A. Spots Smith

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UTILITIES ENGINEERING SEC.

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Kimley»Horn

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PROJECT REFERENCE NO.		SHEET NO.
U-6105		UC-6
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APPROVED BY: ---		
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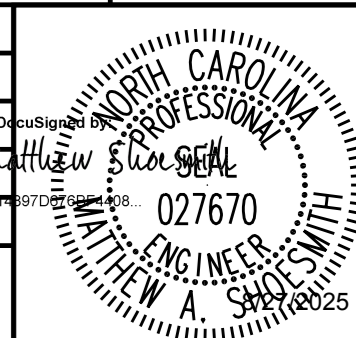

- 8 OUR TOWNS OF NORTH MECKLENBURG-SOUTH
IREDELL HABITAT FOR HUMANITY, INC
DB 20962 PG 772
PB 52 PG 511
- 13 JAMES MUMBY
DAVID CROCKETT
DB 26494 PG 119
PB 49 PG 823
- 14 CHRISTINE A. MASON
DB 24315 PG 323
PB 49 PG 823

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8/27/2025

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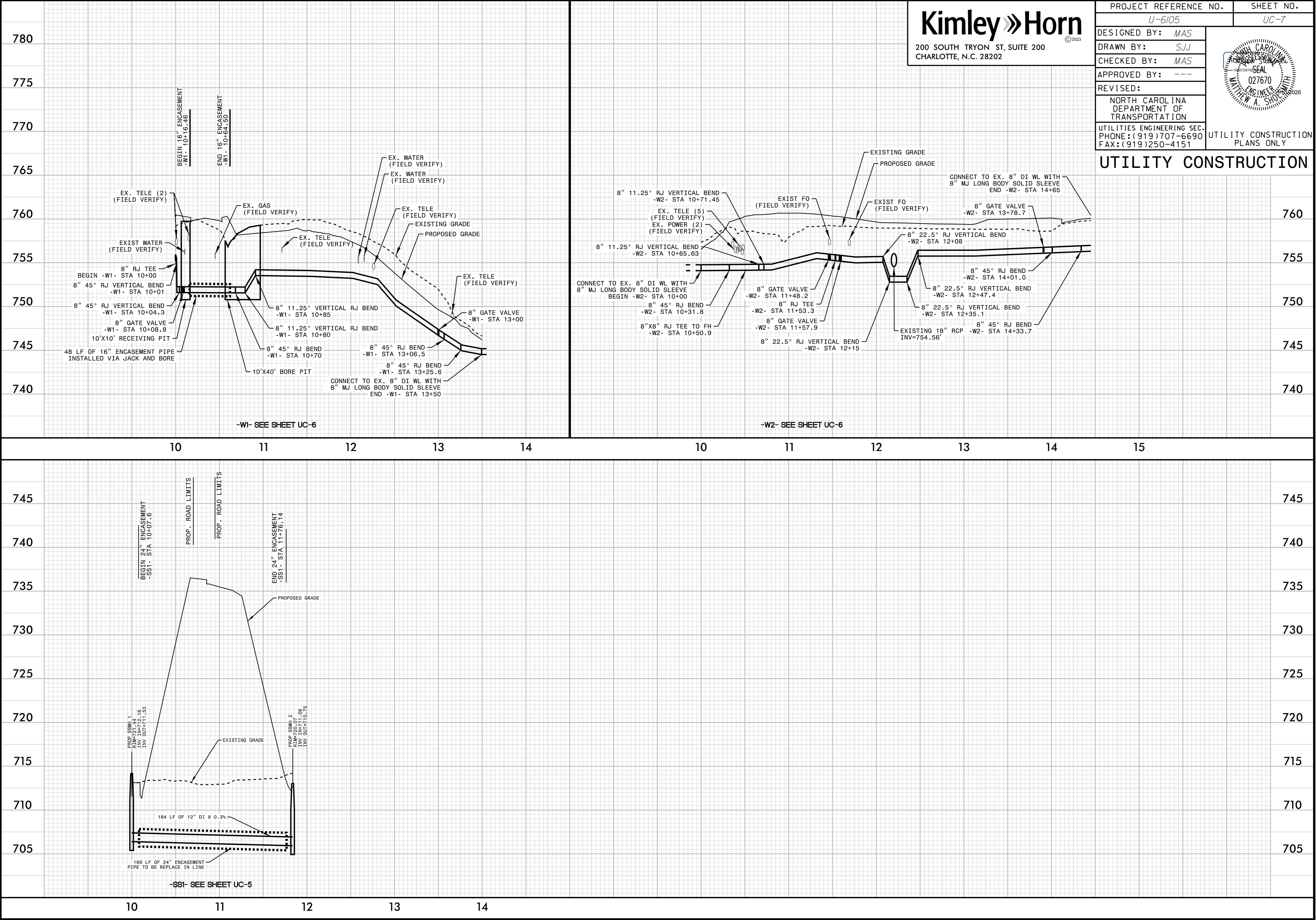


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