

See Sheet UC-2 For Conventional Symbols

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-5907	UC-1

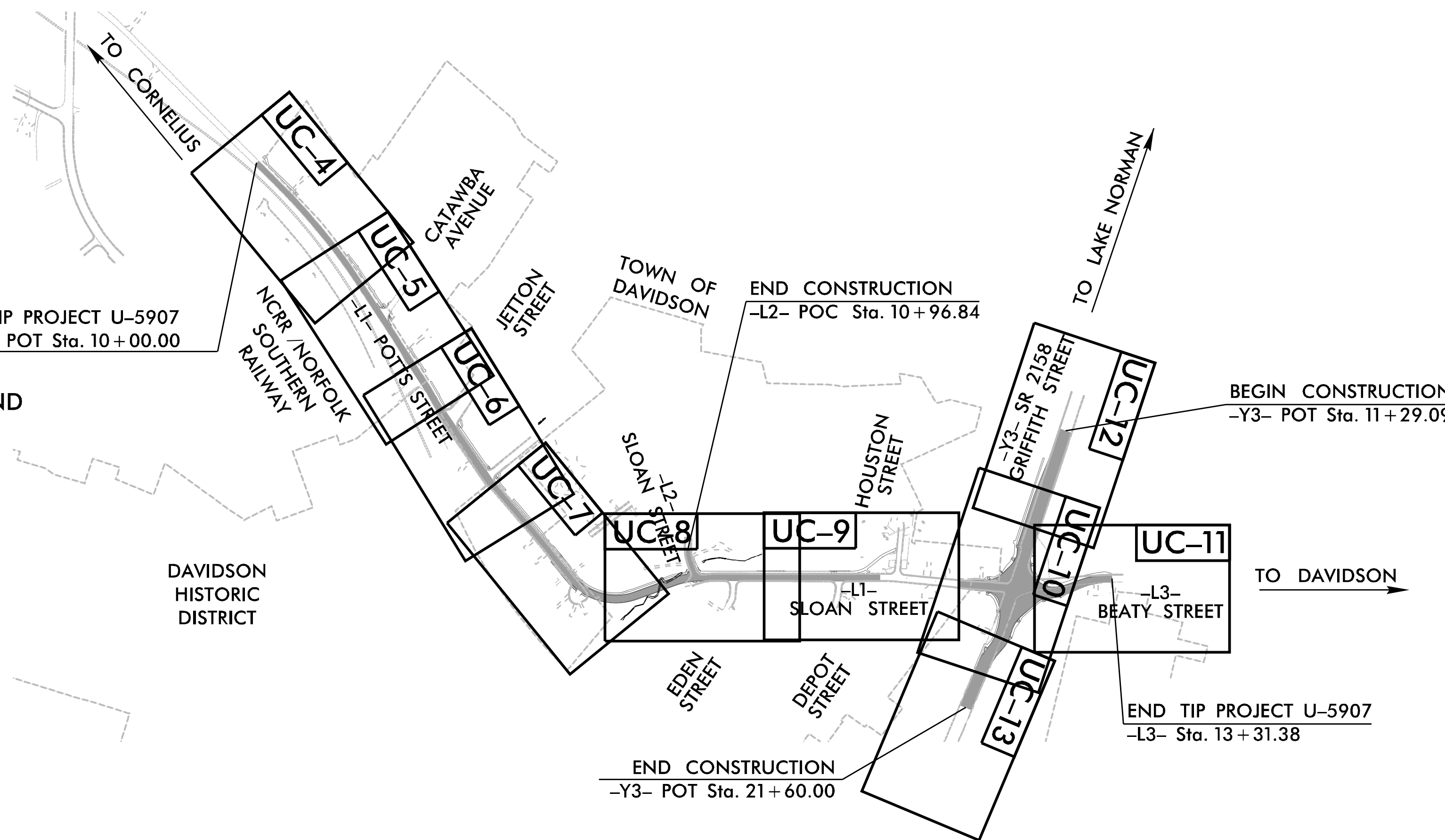
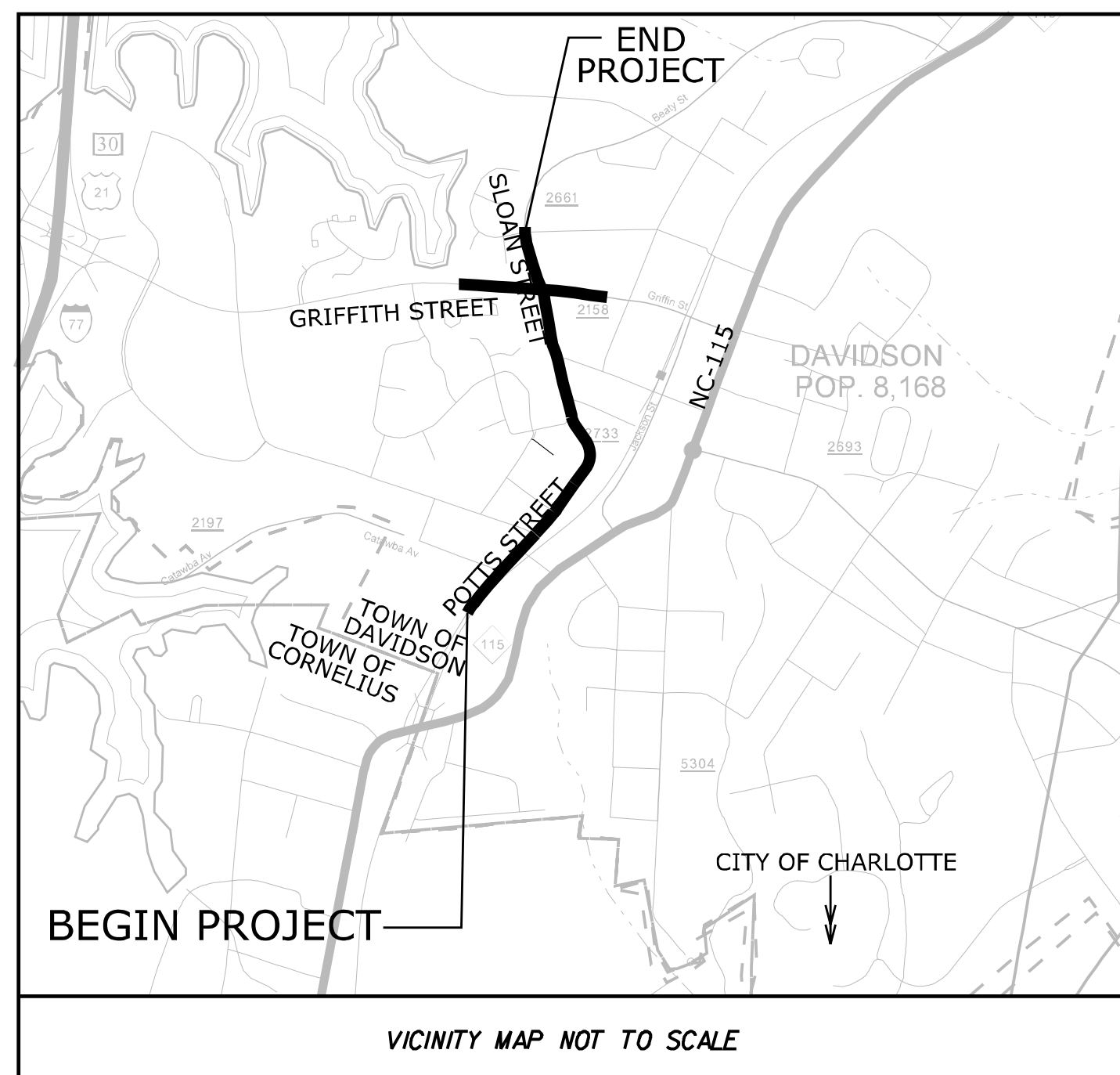
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UNLESS ALL SIGNATURES COMPLETED

**MECKLENBURG COUNTY**

LOCATION: POTTS-SLOAN-BEATTY CONNECTOR (NC-115)

TYPE OF WORK: WATER AND SEWER MAIN RELOCATIONS

\*NOTE TO CONTRACTOR: ALL WATER MAINS SHALL BE RESTRAINED JOINT DI PIPE.

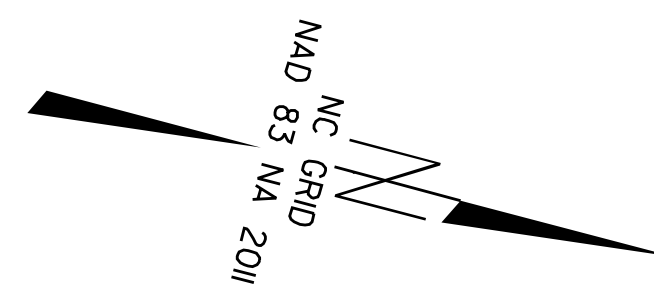


A PORTION OF THIS PROJECT IS LOCATED WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWNS OF DAVIDSON AND CORNELIUS

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

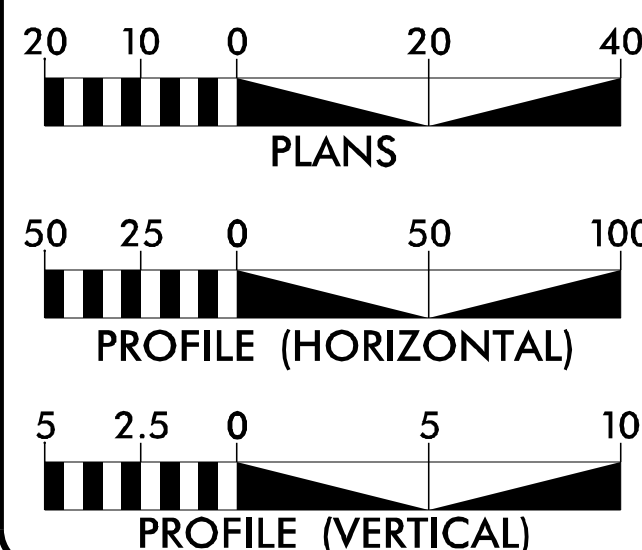
OWNER:	CONTACT INFORMATION
	CHUCK BLISS, P.E. (704) 336-1012 CBLISS@CI.CHARLOTTE.NC.US
PROJECT ENGINEER:	MATTHEW SHOESMITH, P.E. (704) 954-7490 MATTHEW.SHOESMITH@KIMLEY-HORN.COM 200 SOUTH TRYON STREET, SUITE 200 CHARLOTTE, NORTH CAROLINA 28202



TIP PROJECT: U-5907

CONTRACT:

GRAPHIC SCALES



INDEX OF SHEETS

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UC-2A	PERMIT SHEET
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UC-4 THRU UC-13	UTILITY CONSTRUCTION PLAN
UC-14 THRU UC-15	UTILITY CONSTRUCTION PROFILE

UTILITY OWNERS

WATER - CHARLOTTE WATER  
SEWER - CHARLOTTE WATER

PLANS PREPARED FOR  
THE NCDOT BY:

2018 STANDARD SPECIFICATIONS

**Kimley Horn**

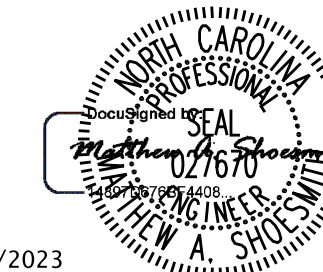
NC LICENSE #20102  
200 SOUTH TRYON STREET, SUITE 200  
CHARLOTTE, NORTH CAROLINA 28202  
PHONE: (704) 333-5131

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

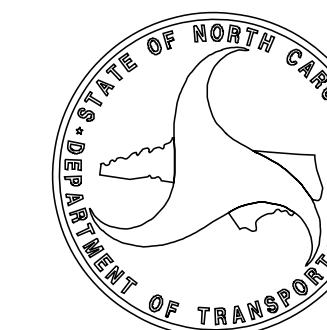
SOPHIA J. JOHNSTON, E.I.  
CONSULTANT CONTACT #2

SEAN EPPERSON, P.E.  
NCDOT CONTACT

SEAL



7/17/2023



# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

## CONVENTIONAL PLAN SHEET SYMBOLS

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

### BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Computed Property Corner	
Property Monument	
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:

Secondary Horiz and Vert Control Point	
Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Exist Permanent Easement Pin and Cap	
New Permanent Easement Pin and Cap	
Vertical Benchmark	
Existing Right of Way Marker	
Existing Right of Way Line	
New Right of Way Line	
New Right of Way Line with Pin and Cap	
New Right of Way Line with Concrete or Granite R/W Marker	
New Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
New Control of Access	
Existing Easement Line	
New Temporary Construction Easement	
New Temporary Drainage Easement	
New Permanent Drainage Easement	
New Permanent Drainage / Utility Easement	
New Permanent Utility Easement	
New Temporary Utility Easement	
New 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	

*Note: Not to Scale*

*\*S.U.E. = Subsurface Utility Engineering*

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:

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 LOS B (S.U.E.*)	
U/G Power Line LOS C (S.U.E.*)	
U/G Power Line LOS D (S.U.E.*)	

### TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Cable LOS B (S.U.E.*)	
U/G Telephone Cable LOS C (S.U.E.*)	
U/G Telephone Cable LOS D (S.U.E.*)	
U/G Telephone Conduit LOS B (S.U.E.*)	
U/G Telephone Conduit LOS C (S.U.E.*)	
U/G Telephone Conduit LOS D (S.U.E.*)	
U/G Fiber Optics Cable LOS B (S.U.E.*)	
U/G Fiber Optics Cable LOS C (S.U.E.*)	
U/G Fiber Optics Cable LOS D (S.U.E.*)	

### WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line LOS B (S.U.E.*)	
U/G Water Line LOS C (S.U.E.*)	
U/G Water Line LOS D (S.U.E.*)	
Above Ground Water Line	

### TV:

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Cable LOS B (S.U.E.*)	
U/G TV Cable LOS C (S.U.E.*)	
U/G TV Cable LOS D (S.U.E.*)	
U/G Fiber Optic Cable LOS B (S.U.E.*)	
U/G Fiber Optic Cable LOS C (S.U.E.*)	
U/G Fiber Optic Cable LOS D (S.U.E.*)	

### GAS:

Gas Valve	
Gas Meter	
U/G Gas Line LOS B (S.U.E.*)	
U/G Gas Line LOS C (S.U.E.*)	
U/G Gas Line LOS D (S.U.E.*)	
Above Ground Gas Line	
SANITARY SEWER:	
Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Forced Main Line LOS B (S.U.E.*)	
SS Forced Main Line LOS C (S.U.E.*)	
SS Forced Main Line LOS D (S.U.E.*)	

### MISCELLANEOUS:

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

REVISIONS



5/14/99



CHARLOTTE, NORTH CAROLINA

Kimley Horn logo, project reference no. U-5907, sheet no. UC-2A, and utility construction plans only stamp.

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

PROJECT NAME: NCDOT PROJECT U-5907 CREEK BASIN MCDOWELL
POTTS-SLOAN-BEATTY CONNECTOR (NC-115)
MECKLENBURG COUNTY
CLTWater PROJECT NO.: CPM-60-25-227
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)
NATURE OF WASTEWATER: % 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 & ASSOCIATES, INC.
200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
TELEPHONE 704-954-7490

APPLICATION FOR PERMIT FOR WATER MAIN EXTENSION

PROJECT NAME: NCDOT PROJECT U-5907
POTTS-SLOAN-BEATTY CONNECTOR (NC-115)
MECKLENBURG COUNTY
CLTWater PROJECT NO.: CPM-60-25-227
PROJECT DESCRIPTION: REPLACE APPROX. 1,265 LF OF 6" DI PC 350, 16 LF OF 8" DI PC 350, AND 784 LF OF 16" DI PC 350 WATER MAIN AND APPURTENANCES
DESIGNED BY: FIRM: KIMLEY-HORN & ASSOCIATES, INC.
ENGINEER: MATTHEW A. SHOESMITH, P.E.
ADDRESS: 200 SOUTH TRYON STREET, SUITE 200
CHARLOTTE, NORTH CAROLINA 28202
PHONE: 704-954-7490
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
100 BROOKSHIRE BLV

PROFESSIONAL ENGINEER'S CERTIFICATION
I, MATTHEW A. SHOESMITH, P.E., ATTEST THAT THIS APPLICATION FOR MCDOWELL CREEK 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



REVISIONS

7/17/2023



5/14/99

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.

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 CHUCK BLISS OF CHARLOTTE WATER AT (704) 336-1012 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.



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

PROJECT REFERENCE NO.	SHEET NO.
U-5907	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:

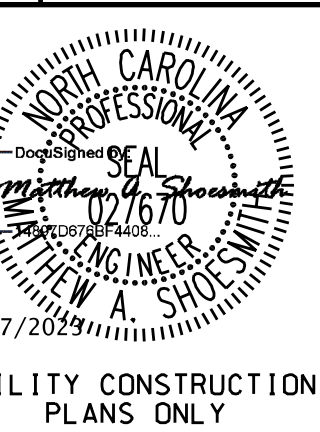
1. FOR EACH WATER LINE AND SEWER LINE RELOCATION, THE CONTRACTOR SHALL PROVIDE THE UTILITY OWNER WITH A DETAILED INSTALLATION, CONNECTION, AND SERVICE INTERRUPTION PLAN FOR APPROVAL AT LEAST SEVEN (7) DAYS PRIOR TO THE RELOCATION. AT A MINIMUM, EACH PLAN SHALL ADDRESS THE FOLLOWING:
  - A. SEQUENCE OF 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 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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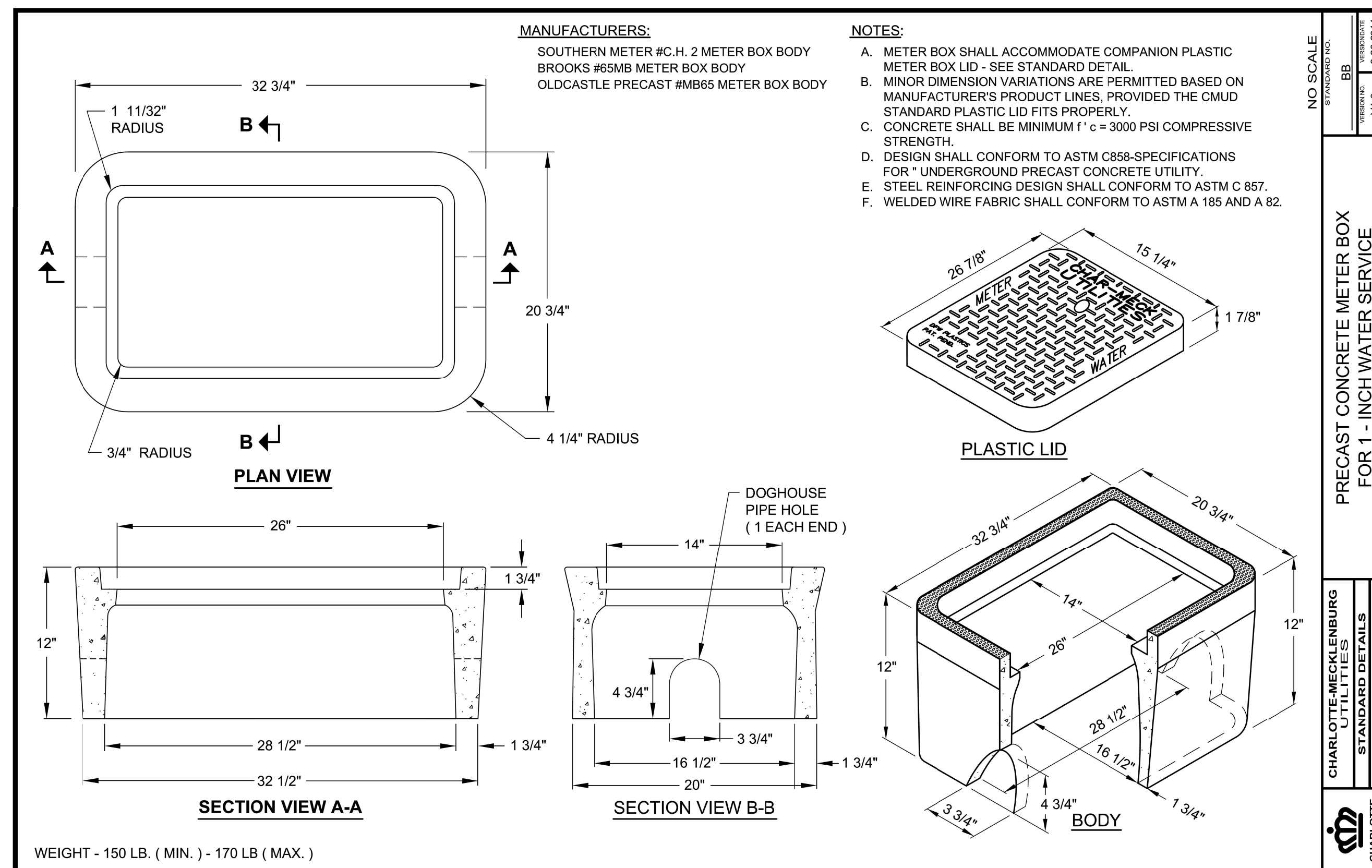
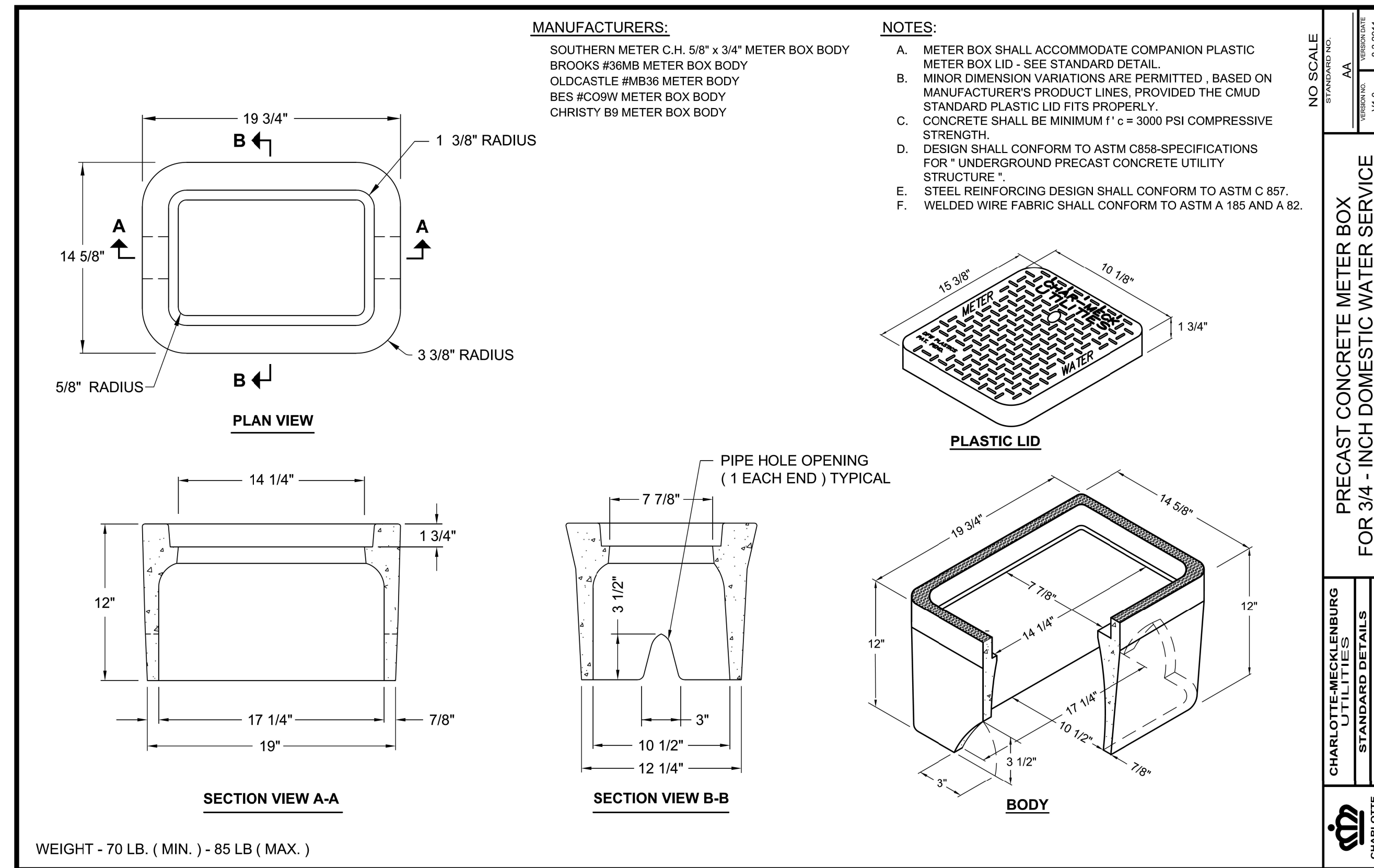
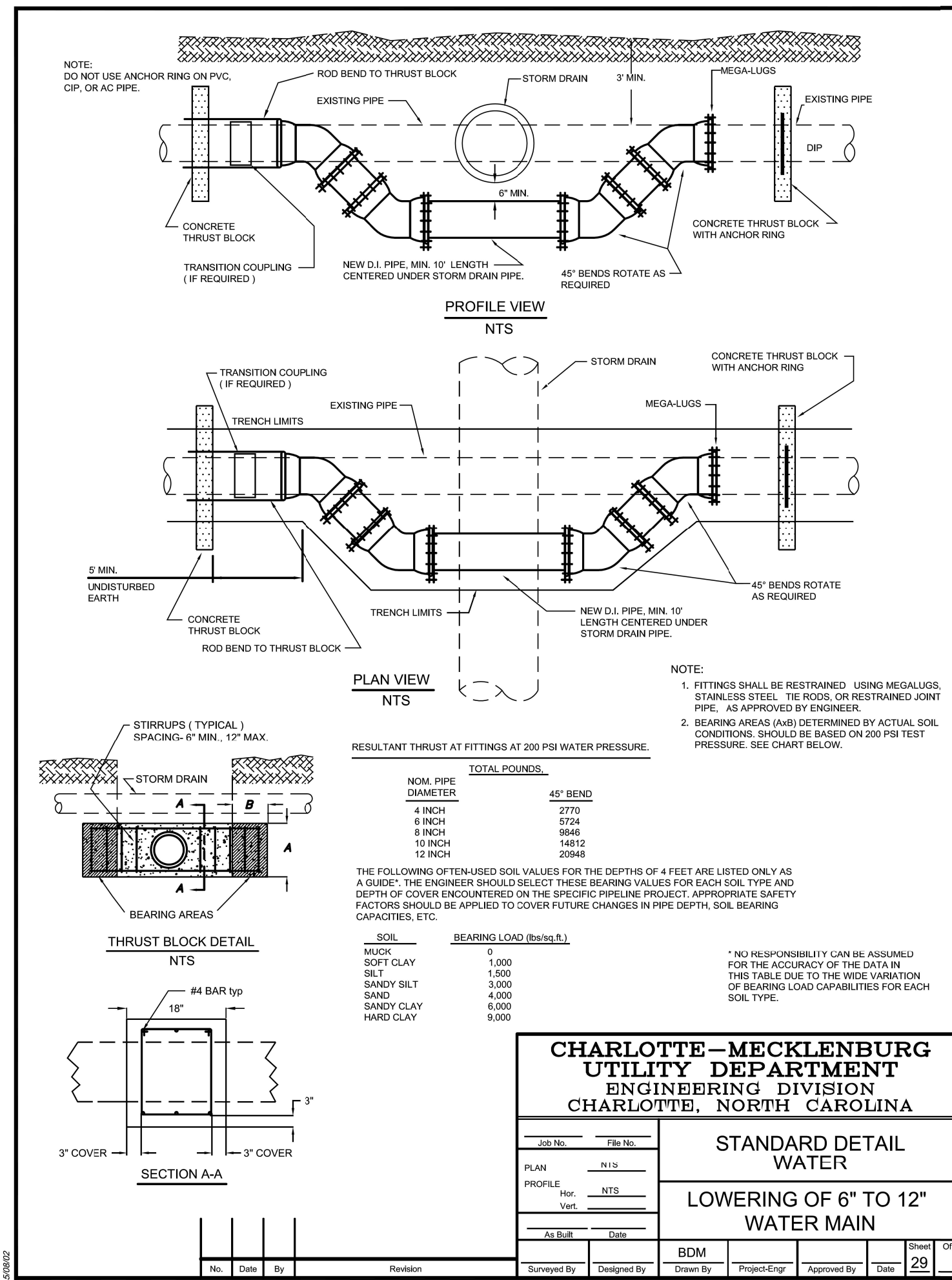
DESIGNED BY: MAS  
DRAWN BY: SJJ  
CHECKED BY: MAS  
APPROVED BY: ---  
REVISED:  
NORTH CAROLINA  
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TRANSPORTATION  
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PHONE: (919) 707-6690  
FAX: (919) 250-4151



7/17/2023  
UTILITY CONSTRUCTION  
PLANS ONLY

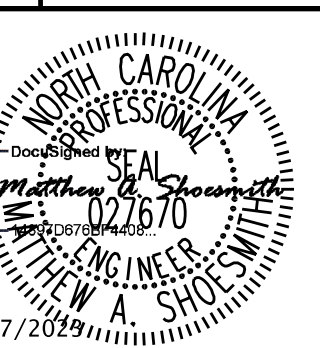
**UTILITY CONSTRUCTION**

REVISIONS





DESIGNED BY: MAS  
DRAWN BY: SJJ  
CHECKED BY: MAS  
APPROVED BY: ---  
REVISOR: ---  
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
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FAX: (919) 250-4151



UTILITY CONSTRUCTION PLANS ONLY

**UTILITY CONSTRUCTION**

5/14/99

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**NO. DESCRIPTION**

- END OF LINE GATE VALVE (MJ X MJ)
- PIPE (P x P) - REMOVE BELL - LENGTH = 12 FT - 19 FT
- WEDGE ACTION THRUST RESTRAINT GLAND
- CONCRETE WALL BLOCK (FC = 3600 PSI MIN) 6 FT X 4 FT X WIDTH (W)
- REBARS - GRADE 60 PER ASTM A616 - 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" RED BRASS NIPPLE SCH 40 (MNPT X MNPT) - LENGTH AS REQUIRED
- 2" GALVANIZED MALLEABLE IRON COUPLING (FNPT X FNPT)
- STANDARD VALVE BOX ASSEMBLY - SEE DETAIL
- AWG #12 GAUGE COPPER TRACER WIRE - WITH BLUE INSULATION (30ML BLUE INSULATION) 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
- PLYWOOD FORM
- HDPE ADHESIVE TAPE OR HDPE ZIP LOCK TIES
- CAST IRON SOIL PIPE (L = 15') OR VALVE BOX BOTTOM SECTION

**NOTES:**

- 12" 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 DETAILS.
- ALTERNATE DETAIL "A" (USING A REVERSED BELL) MAY BE USED IN LIEU OF DETAIL "A".

**NO. ALTERNATE DESCRIPTION**

WHEN USING 2-INCH HDPE (POLY) 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" INCH MINIMUM.
- 2" SDR 9 HDPE (POLY) - IPS PIPE (MNPT X MNPT) - LENGTH AS REQUIRED.

SOIL TYPE	BEARING CAPACITY (PSF)
HARD CLAY	9,000
SANDY CLAY	7,000
SAND	4,000
SANDY SILT	2,000
SILT	1,500
SOFT CLAY	1,000
MUCK	250

TYPE	LENGTH (INCHES)	NUMBER REQUIRED	TOTAL REBAR LENGTH (FT)	TOTAL REBAR WEIGHT (LB)
VERTICAL	38	6	64	96
HORIZONTAL	62	8	64	131
HORIZONTAL	34	2	64	171
DIAGONAL	30	4	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 RISER PIPE, CONTRACTOR WILL REMOVE AND RESET 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.
- ALL CONCRETE SHALL BE VIBRATED IN ACCORDANCE WITH N.C. DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.
- 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.

**NO. DESCRIPTION**

- TYPE I ADJUSTMENT RISER.
- VALVE BOX - TOP SECTION.
- 18" x 18" 3/8" 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 I - ADJUSTMENT RISER TOP VIEW**

**TYPE I - ADJUSTMENT RISER SECTION VIEW**

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 1/2"	20
6"	4"	1 1/2"	22.5
7"	5"	2 1/2"	26
8"	6"	3 1/2"	27
10"	8"	5 1/2"	32

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 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.

**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 3-0" 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.



PROJECT REFERENCE NO.	U-5907	SHEET NO.	UC-3C
DESIGNED BY:	MAS		
DRAWN BY:	SJJ		
CHECKED BY:	MAS		
APPROVED BY:	---		
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		7/17/2023	
UTILITIES ENGINEERING SECTION PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY	

## UTILITY CONSTRUCTION

REVISIONS

**1" OR 3/4" SERVICE CONNECTION**  
(LONG SIDE - PLAN VIEW)

**1" OR 3/4" SERVICE CONNECTION**  
(LONG SIDE - PROFILE VIEW)

**ROAD WITH SIDE DITCH**

**1" OR 3/4" SERVICE CONNECTION**  
(SHORT SIDE)

**DETAIL AT MAIN**  
(LONG SIDE)

**DETAIL AT MAIN**  
(SHORT SIDE)

NO.	DESCRIPTION
1	WATER MAIN
2	DOUBLE STRAP SERVICE SADDLE - CC (TAPER) THREAD OUTLET
3	BALL CORPORATION STOP - CC (TAPER) THREAD x CTS COMPRESSION
4	TYPE K COPPER TUBING OR SDR9 HDPE (POLY) TUBING WITH INSERT STIFFENERS
5	5/8" x 3/4" ANGLE BALL VALVE WITH LOCK WINGS - CTS COMPRESSION x YOKE STAR NUT
6	5/8" DUCTILE IRON YOKE BAR
7	5/8" METER ASSEMBLY (BY CMUD) WITH AMR TRANSMITTER
8	5/8" x 3/4" BRASS 90° YOKE STAR NUT x CTS COMPRESSION CONNECTOR
9	CONCRETE METER BOX - SEE STD. DETAILS
10	HDPE METER BOX LID WITH AMR TRANSMITTER BRACKETS
11	AWG #12 GAUGE COPPER TRACER WIRE (THWN) - WITH BLUE INSULATION - TERMINATE IN METER BOX WITH 24" EXCESS WIRE (COILED)
12	SOLID STANDARD CONCRETE BRICKS - DIAGONAL AT CORNERS - 4 EACH.

**NOTE:**

A. MIN. DISTANCE CENTER TO CENTER ON SERVICES OR TO BELLS OR SPIGOTS SHALL BE 3'-0" AS MEASURED ALONG THE MAIN.  
 B. CENTER ANGLE BALL VALVE - 90° CONNECTOR (5) - (8) IN METER BOX.  
 C. SHOWN AS 3/4" SERVICE, USE 1" COMPONENTS FOR 1" DOMESTIC WATER SERVICE.  
 D. TRACER WIRE IS NOT REQUIRED WITH ALL COPPER TUBING SERVICE.  
 E. WHEN METER BOX MUST BE PLACED IN CONCRETE, IT SHALL BE COMPLETELY IN, AND CENTERED IN CONCRETE PANEL, PER CDOT / NCDOT REQUIREMENTS.  
 F. CMUD MAINTENANCE ENDS WITH 90° CONNECTOR (8).

**TYPE A - GRADE RING**  
PRECAST ONLY

**TYPE B - GRADE RING**  
PRECAST OR CAST IN PLACE

**TYPE I - FOOTING - TOP SECTION**  
PRECAST ONLY

**TYPE II - FOOTING - BOTTOM SECTION**  
PRECAST ONLY

**INSTALLATION DETAIL ONE**  
SECTION VIEW

**INSTALLATION DETAIL TWO**  
SECTION VIEW

**DESIGN REQUIREMENTS**

- CONCRETE -  $f_c = 4000$  PSI (PRECAST), OR 3600 PSI (CAST-IN-PLACE)
- STEEL REINFORCEMENT - REBARS - GRADE 60 (60,000 PSI) - ASTM A-615, OR WELDED WIRE FABRIC - ASTM A-185
- NON WOVEN GEOTEXTILE FABRIC - CARTRIDGE MILLS #FX-40RS, MIRAFI #140N, OR APPROVED EQUAL.

**NOTES:**

- FOR PRECAST GRADE RINGS - FILL VOID BETWEEN GRADE RING AND CAST IRON VALVE BOX TOP SECTION WITH NON-SHRINK GROUT
- FOR CAST-IN-PLACE GRADE RINGS - TOP SECTION OF CAST IRON VALVE BOX SHALL BE CAST IN THE CONCRETE
- TYPE A GRADE RINGS SHALL BE REQUIRED ON ROAD SHOULDERS WITHOUT CURB.
- TYPE I FOOTINGS SHALL BE REQUIRED IN NEW CONSTRUCTION WHEN THE CAST IRON VALVE BOX IS LOCATED DIRECTLY IN THE ASPHALT
- TYPE II FOOTINGS SHALL BE REQUIRED AT ALL VALVE INSTALLATIONS
- FOR INSTALLATION DETAIL TWO - ONLY ONE VALVE BOX ASSEMBLY (PART #9) SHALL BE REQUIRED. FOOTINGS SHALL NOT REST ON THE VALVE, AND SHALL BE CENTERED ON THE VALVE OPERATING NUT AS SHOWN.

**NO. DESCRIPTION**

- CONCRETE GRADE RING.
- CONCRETE FOOTING.
- NON WOVEN GEOTEXTILE FABRIC X 2 EACH.
- SUIT IN FABRIC - 8 INCHES LONG, ROTATE 90 DEGREES IN SECOND LAYER OF FABRIC.
- #4 REBAR - 17-INCH DIAMETER.
- #4 REBAR - LENGTH = 56 INCHES, OR (ALTERNATE - 14-INCH DIAMETER).
- #4 REBAR - 12-INCH DIAMETER.
- #4 REBAR - 8-INCH DIAMETER.
- VALVE BOX ASSEMBLY - (SHOWN LEFT TO RIGHT) - VALVE BOX BOTTOM SECTION, OR 6-INCH DIAMETER C590 PVC PIPE, OR 6-INCH DIAMETER SDR 26 PVC PIPE.
- VALVE - 12-INCH OR SMALLER.
- TOP SECTION OF VALVE BOX.

**1" OR 3/4" SERVICE CONNECTION**  
(SHORT SIDE - IN PAVEMENT)

**METER BOX IN SIDEWALK**  
(REQUIRES PRIOR CMU APPROVAL)

**METER DETAIL**  
(SIDE)

**METER DETAIL**  
(END)

**METER BOX IN SIDEWALK DETAIL**  
(REQUIRES PRIOR CMU APPROVAL)  
(BOX SHALL BE SUPPORTED BY CONCRETE SIDEWALK - AS SHOWN)

NO.	DESCRIPTION
1	WATER MAIN
2	DOUBLE STRAP SERVICE SADDLE - CC (TAPER) THREAD OUTLET
3	BALL CORPORATION STOP - CC (TAPER) THREAD x CTS COMPRESSION
4	TYPE K COPPER TUBING OR SDR9 HDPE (POLY) TUBING WITH INSERT STIFFENERS
5	5/8" x 3/4" ANGLE BALL VALVE WITH LOCK WINGS - CTS COMPRESSION x YOKE STAR NUT
6	5/8" DUCTILE IRON YOKE BAR
7	5/8" METER ASSEMBLY (BY CMUD) WITH AMR TRANSMITTER
8	5/8" x 3/4" BRASS 90° YOKE STAR NUT x CTS COMPRESSION CONNECTOR
9	CONCRETE METER BOX - SEE STD. DETAILS
10	HDPE METER BOX LID WITH AMR TRANSMITTER BRACKET
11	AWG #12 GAUGE COPPER TRACER WIRE (THWN) - WITH BLUE INSULATION - TERMINATE IN METER BOX WITH 24" EXCESS WIRE (COILED)
12	SOLID STANDARD CONCRETE BRICKS - DIAGONAL AT CORNERS - 4 EACH.

**NOTE:**

A. MIN. DISTANCE CENTER TO CENTER ON SERVICES OR TO BELLS OR SPIGOTS SHALL BE 3'-0" AS MEASURED ALONG THE MAIN.  
 B. CENTER ANGLE BALL VALVE - 90° CONNECTOR (5) - (8) IN METER BOX.  
 C. SHOWN AS 3/4" SERVICE, USE 1" COMPONENTS FOR 1" DOMESTIC WATER SERVICE.  
 D. TRACER WIRE IS NOT REQUIRED WITH ALL COPPER TUBING SERVICE.  
 E. WHEN METER BOX MUST BE PLACED IN CONCRETE, IT SHALL BE COMPLETELY IN, AND CENTERED IN CONCRETE PANEL, PER CDOT / NCDOT REQUIREMENTS.  
 F. CMUD MAINTENANCE ENDS WITH 90° CONNECTOR (8).

**METER BOX BOX**

**LID**

**BODY**

**SECTION A-A**

**SECTION C-C RIB DETAIL**

**SECTION B-B**

**BOTTOM VIEW**

**NOTES:**

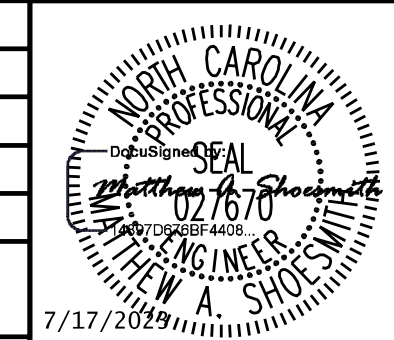
- MATERIAL SHALL BE HIGH DENSITY POLYETHYLENE.
- LOAD RATING = HS20.
- COLOR SHALL BE CHARLOTTE GRAY.
- SUPPLIER / MANUFACTURER: SOUTHEASTERN DISTRIBUTORS MODEL MB 16 - HD.

METER BOX BODY WEIGHT = 13.50 LBS.

LID WEIGHT - INCLUDING REBARS = 5.30 LBS.



PROJECT REFERENCE NO.	U-5907
SHEET NO.	UC-3D
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APPROVED BY:	---
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
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UTILITY CONSTRUCTION PLANS ONLY

## UTILITY CONSTRUCTION

### 3/4 - INCH SERVICE LID

# DFW 36C - RSGSM - LID  
WEIGHT - INCLUDING REBARS - 6.50 LBS.

### 1 - INCH SERVICE LID

# 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

NOTE: CARE SHALL BE TAKEN WHEN PLACING THRUST BLOCKS TO KEEP THE FITTING BOLTS FREE OF CONCRETE.

SIZE	11"	1/4" BEND	22"	1/2" BEND	45"	BEND	90"	BEND	TEE	PLUG
4	12	12	12	12	16	16	14			
6	12	12	12	12	16	16	14			
8	12	12	12	16	22	22	18			
10	12	12	14	14	28	28	22			
12	12	12	18	24	32	32	28			
14	14	14	28	38	38	32	32			

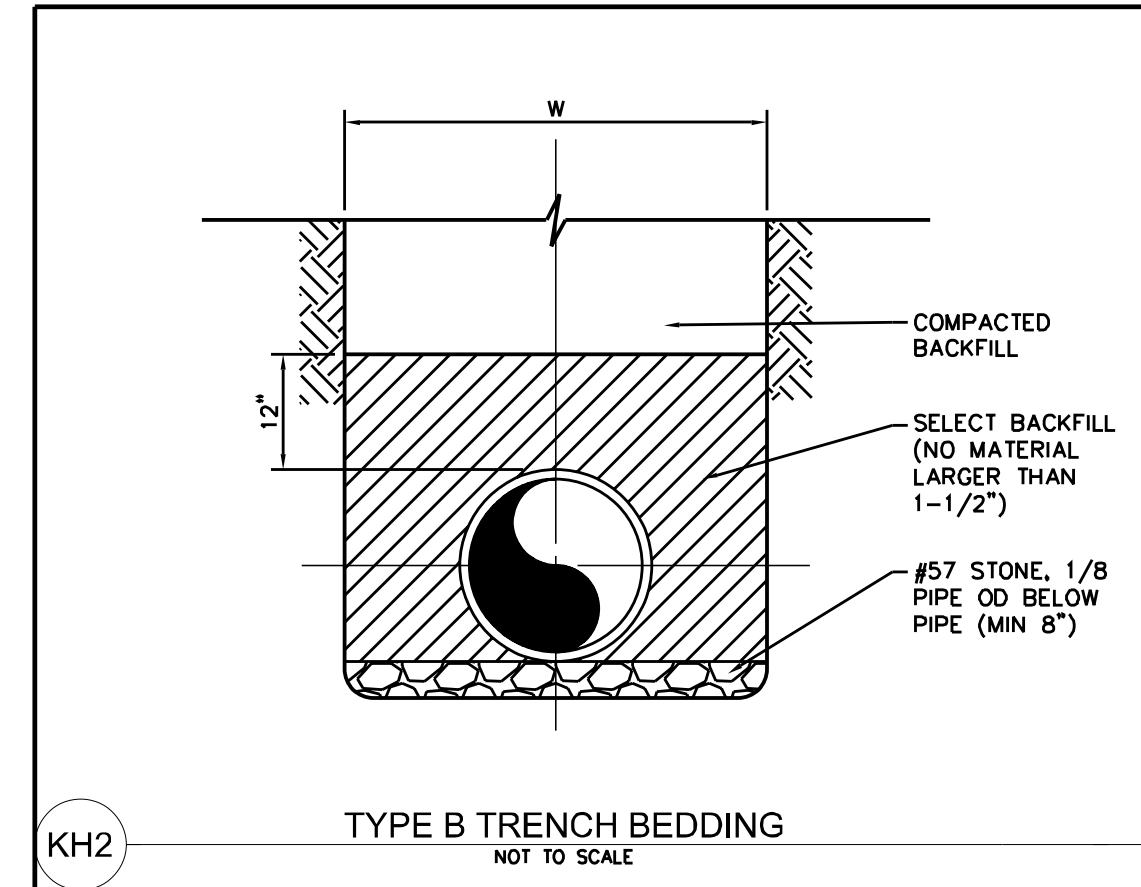
NOTE: CARE SHALL BE TAKEN WHEN PLACING THRUST BLOCKS TO KEEP THE FITTING BOLTS FREE OF CONCRETE.

SIZE	11"	1/4" BEND	22"	1/2" BEND	45"	BEND	90"	BEND	TEE	PLUG
4	12	12	12	12	16	16	14			
6	12	12	12	12	16	16	14			
8	12	12	12	16	22	22	18			
10	12	12	14	14	28	28	22			
12	12	12	18	24	32	32	28			
14	14	14	28	38	38	32	32			

### TRENCH EXCAVATION LIMITS

INTERNAL DIAMETER OF PIPE	WIDTH OF TRENCH	
	MAX	W=MIN
4-6	3'-0"	2'-0"
8-10	3'-0"	2'-2"
12	3'-0"	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'-0"	O.D.+2'
30	6'-0"	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'

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



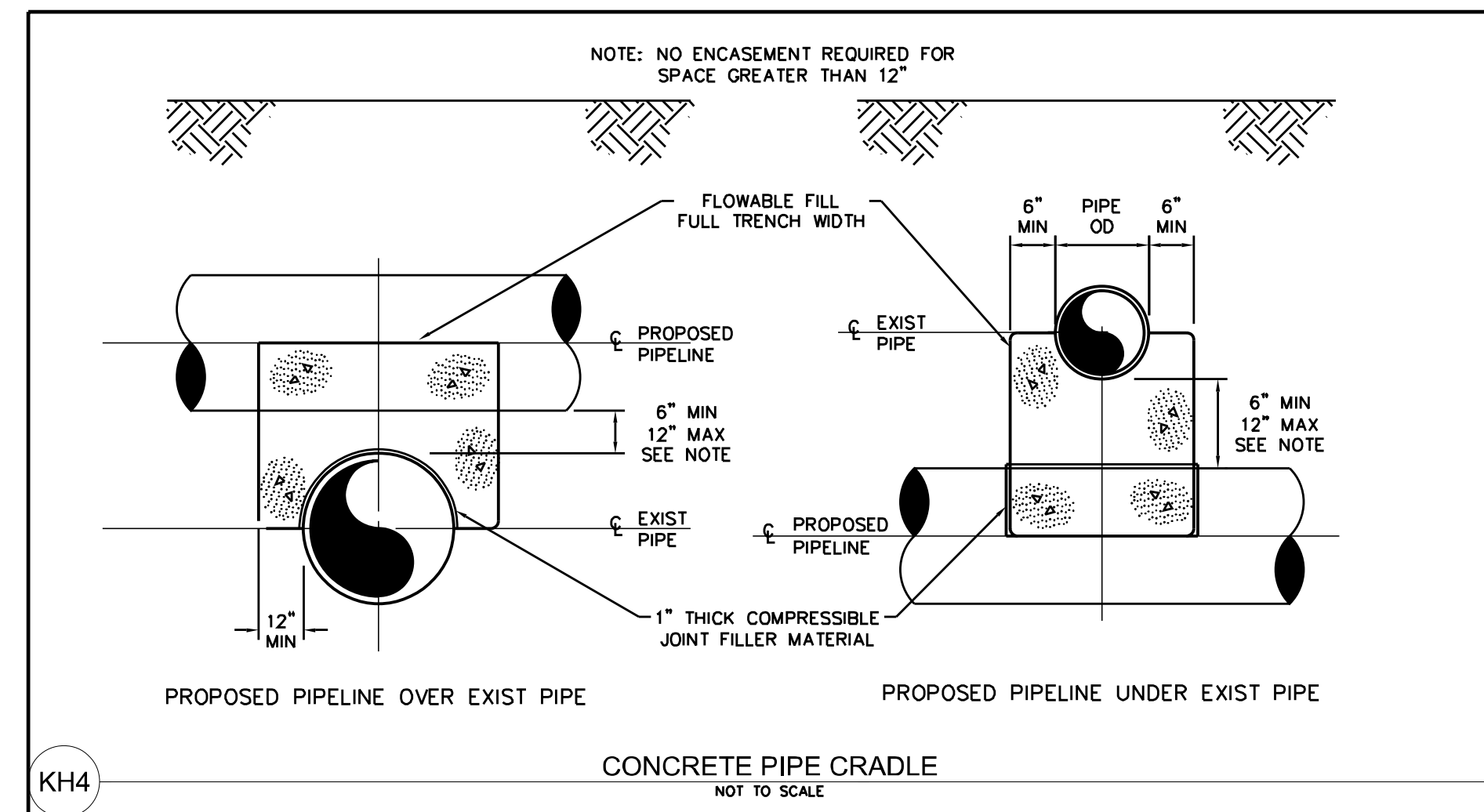
### CMUD PUBLIC FIRE HYDRANTS

### PRIVATE FIRE HYDRANTS

COLOR	HATCH TYPE
OSHA SAFETY YELLOW	[Hatching]
OSHA SAFETY BLUE	[Hatching]
OSHA SAFETY PURPLE	[Hatching]
OSHA SAFETY RED	[Hatching]
OSHA SAFETY GREEN	[Hatching]
OSHA SAFETY WHITE	[Hatching]

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

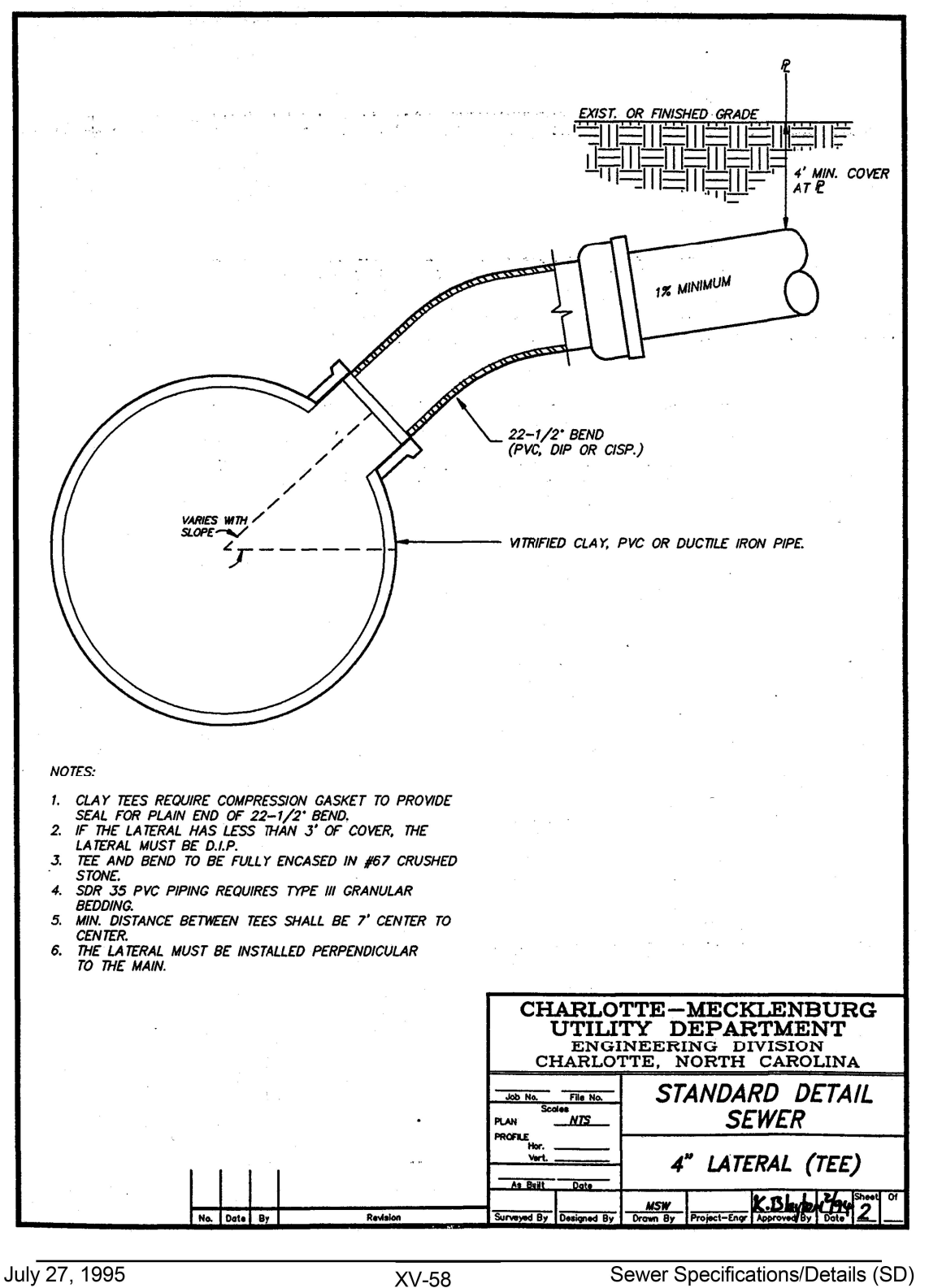
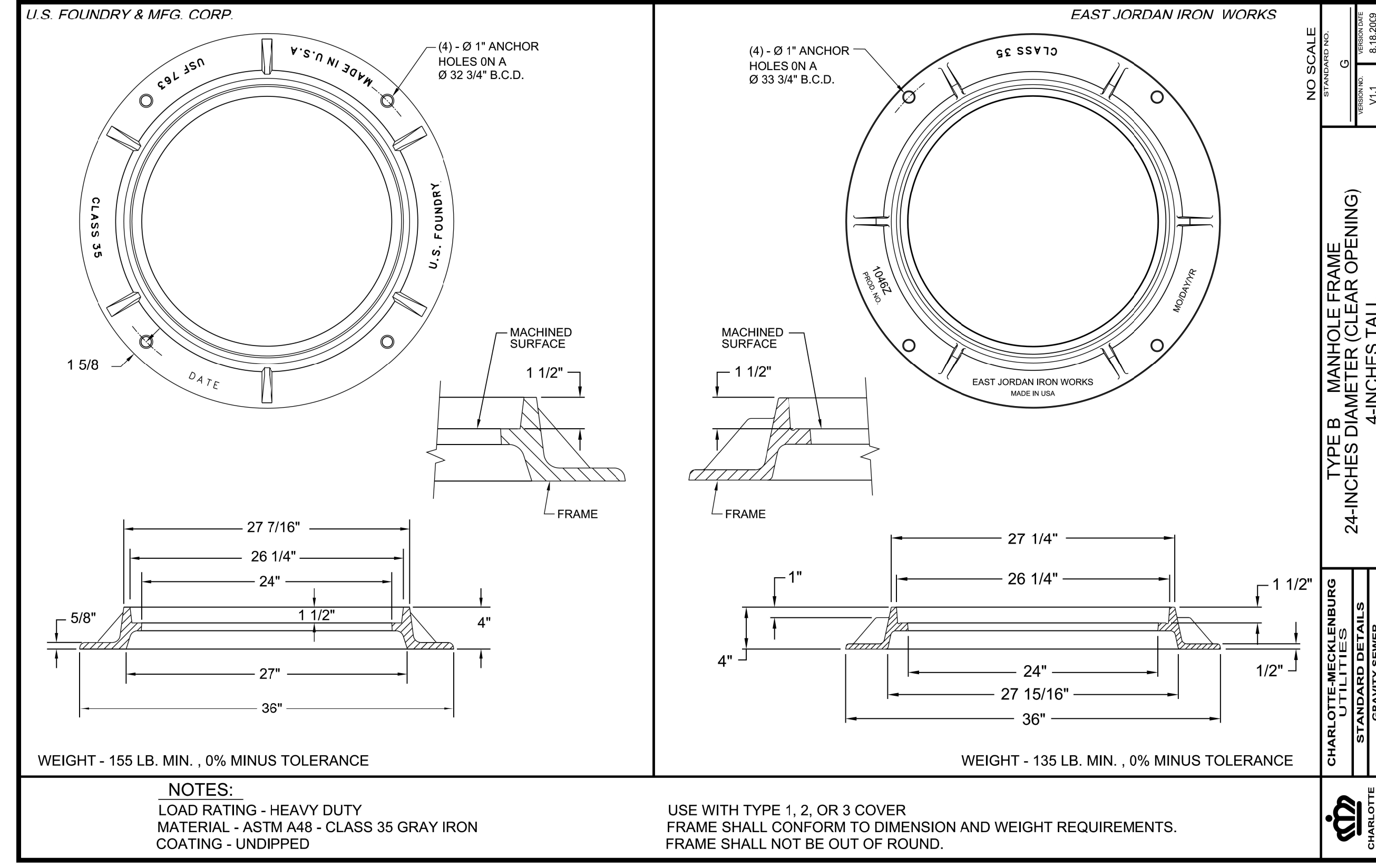
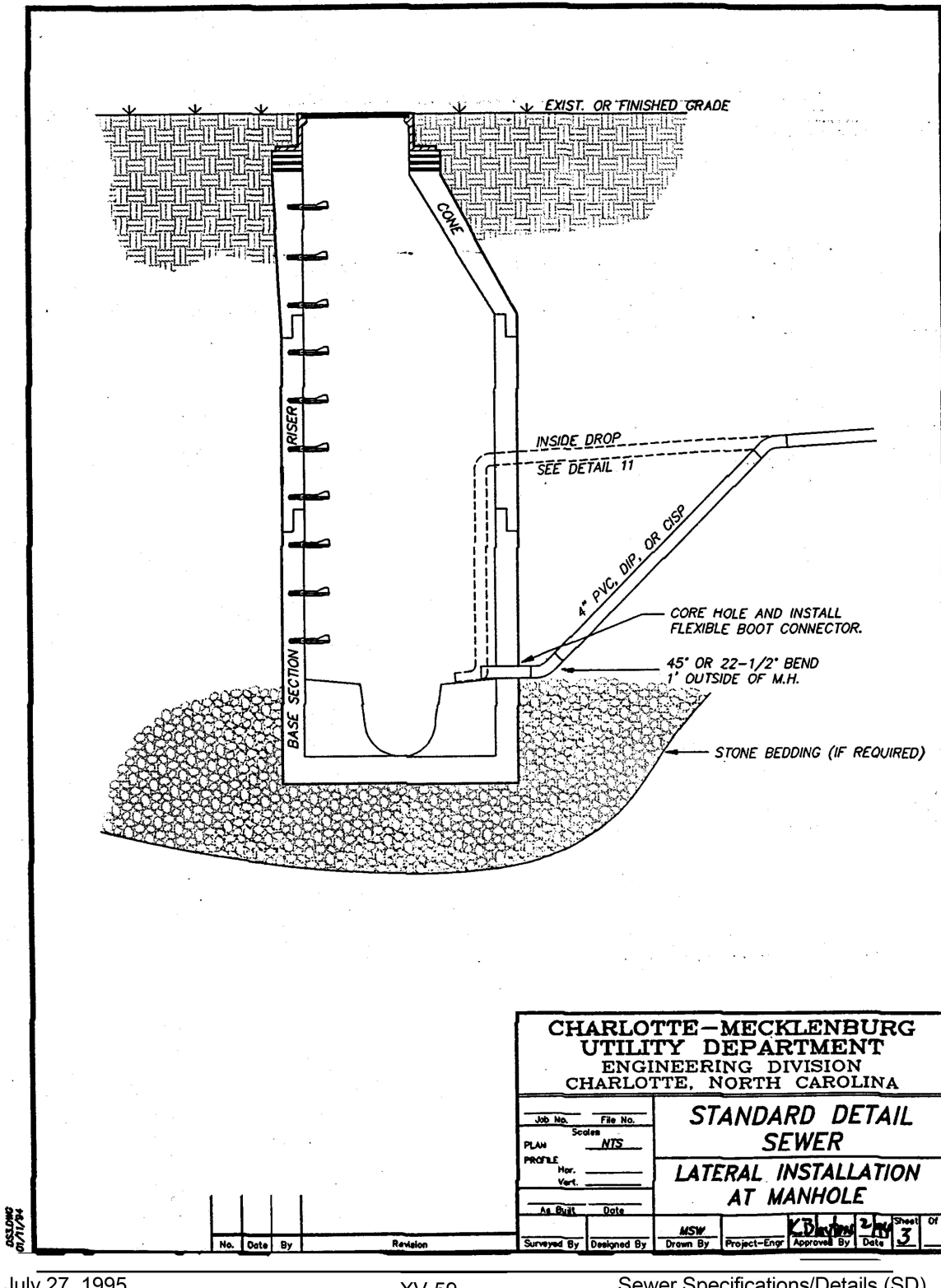
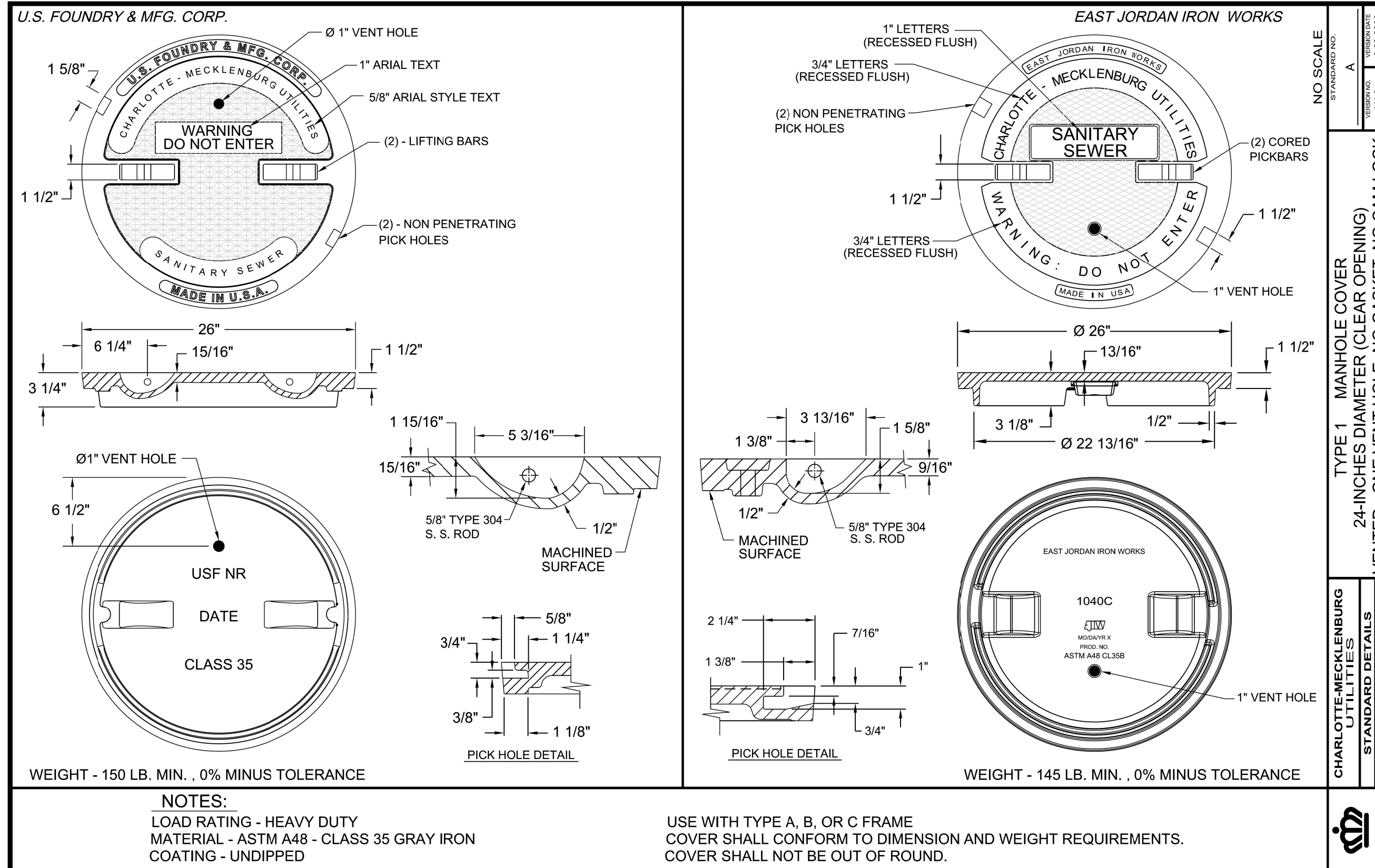
CLASSIFICATION	FLOW CAPACITY (GPM AT 20 PSI RESIDUAL)	BARREL	TOP / BONNET	PUMPER NOZZLE	HOSE NOZZLE
CLASS AA	1500 OR GREATER	CHROME YELLOW	LIGHT BLUE	LIGHT BLUE	LIGHT BLUE
CLASS A	1000 TO 1499	CHROME YELLOW	GREEN	GREEN	GREEN
CLASS B	500 TO 999	CHROME YELLOW	ORANGE	ORANGE	ORANGE
CLASS C	LESS TO 500	CHROME YELLOW	RED	RED	RED



REVISIONS



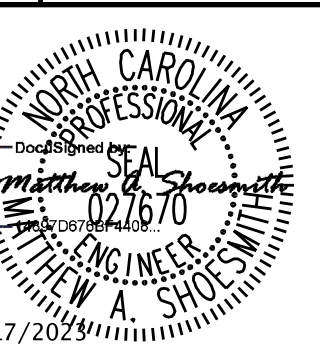
PROJECT REFERENCE NO.	U-5907	SHEET NO.	UC-3E
DESIGNED BY:	MAS		
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APPROVED BY:	---		
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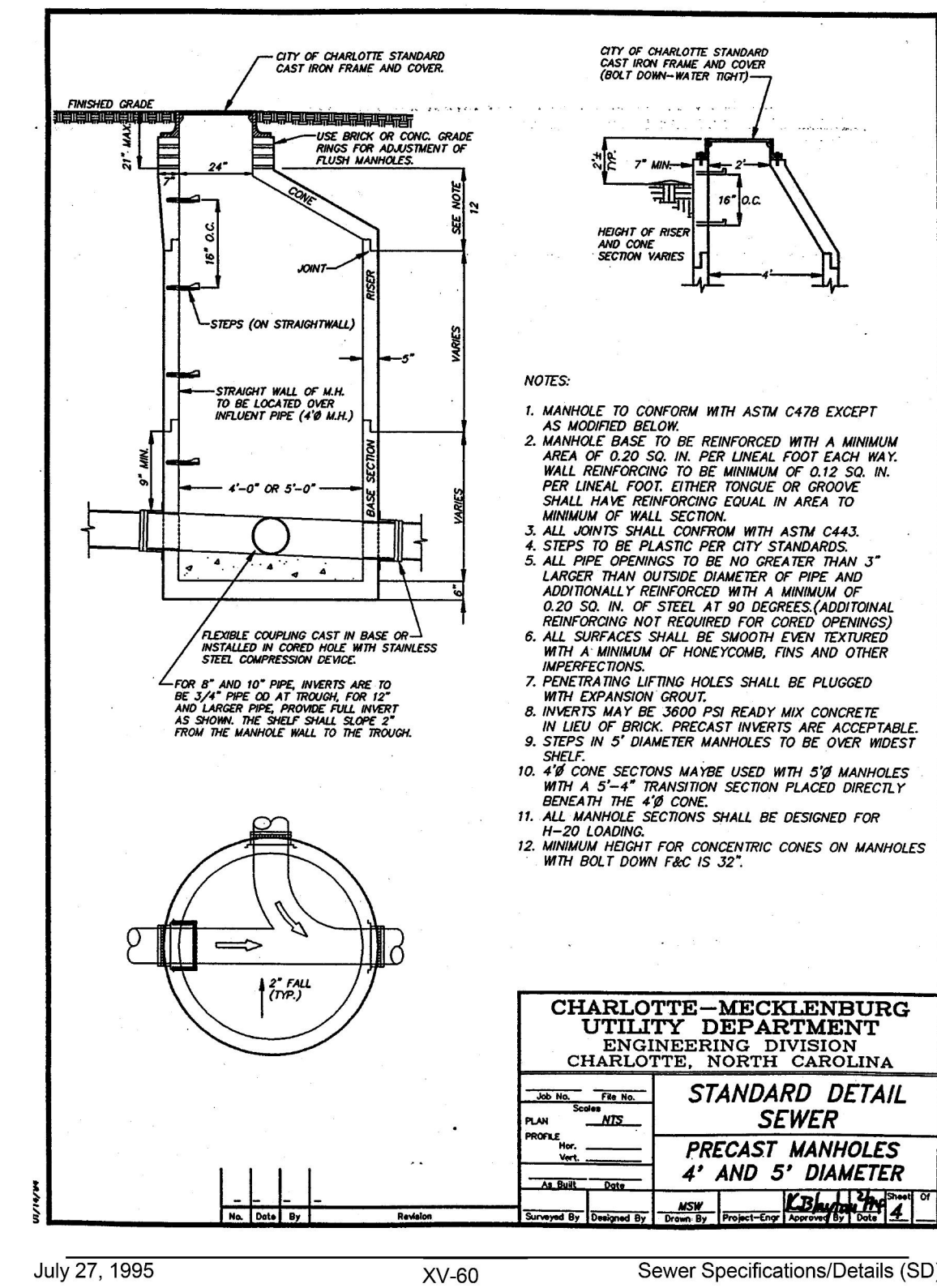
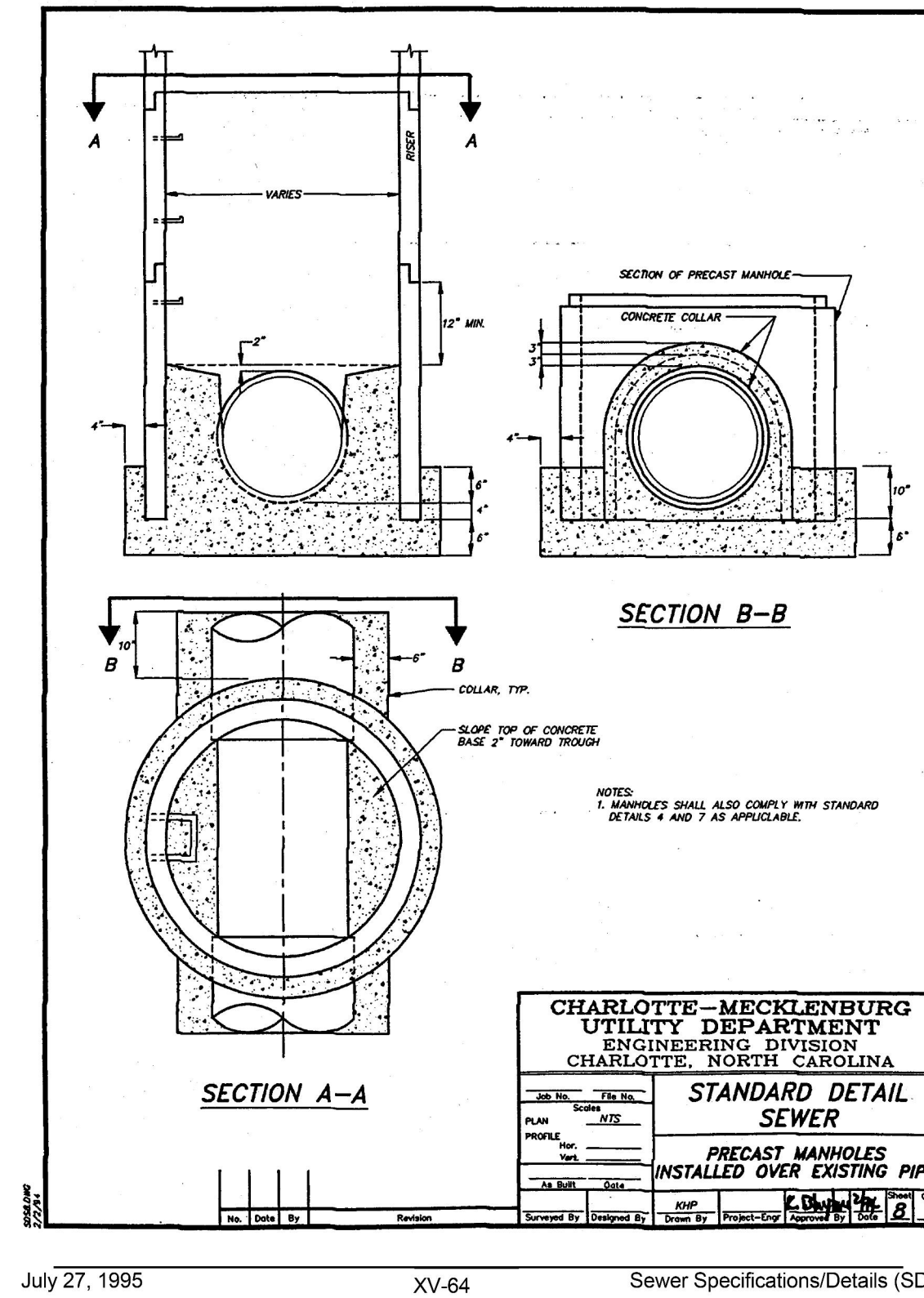
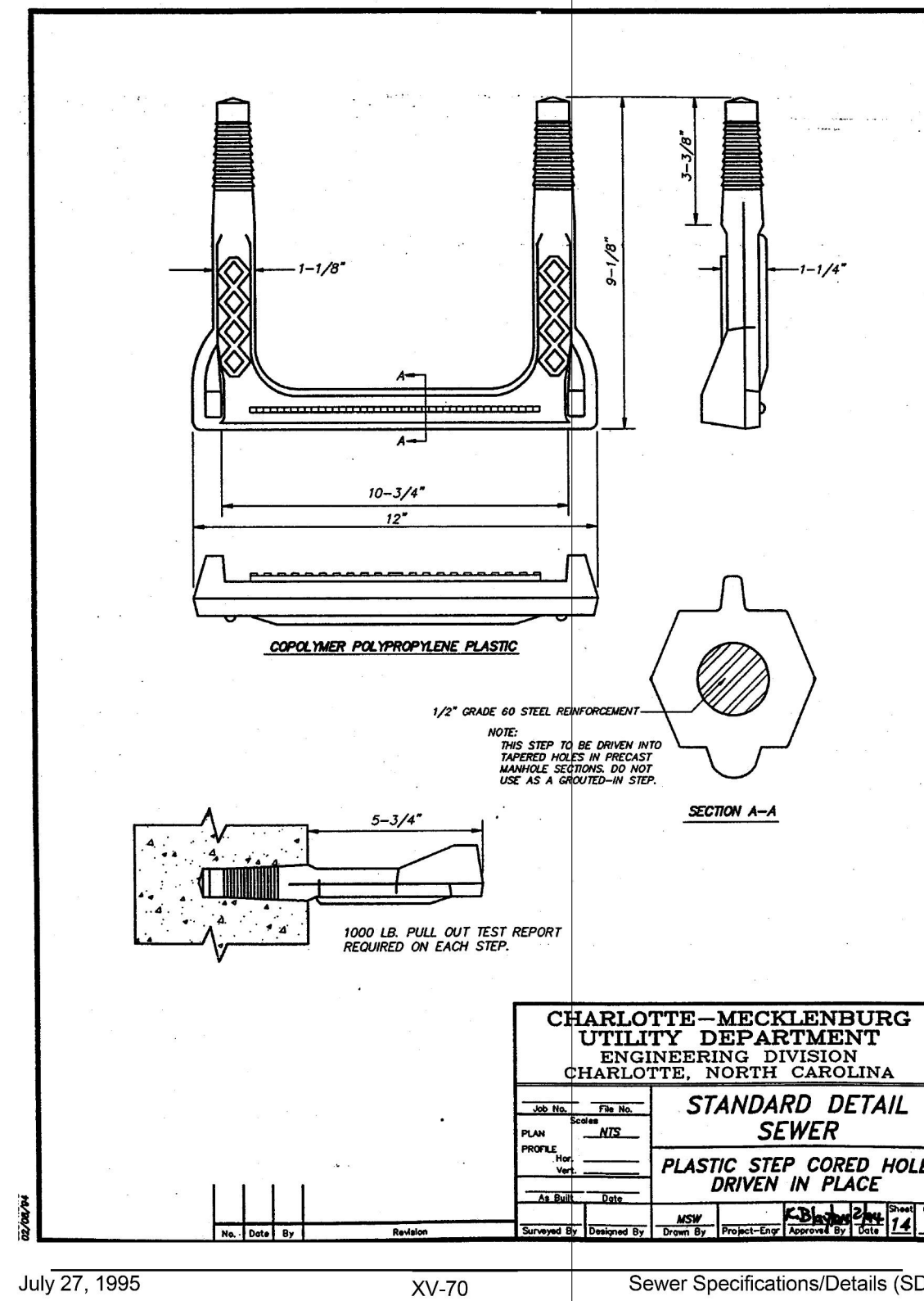


DESIGNED BY: MAS  
DRAWN BY: SJJ  
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7/17/2023  
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- NOTES:
1. MANHOLE TO CONFORM WITH ASTM C478 EXCEPT AS MODIFIED BELOW.
  2. MANHOLE BASE TO BE REINFORCED WITH A MINIMUM AREA OF 0.20 SQ. IN. PER LINEAL 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 IMPROPERIES.
  7. PENETRATING LIFTING HOLES SHALL BE PLOWED WITH EXPANSION GROUTS.
  8. INVERTS MAY BE 3000 PSI READY MIX CONCRETE IN LIEU OF BRICK. PRECAST INVERTS ARE ACCEPTABLE.
  9. STEPS IN 4" DIAMETER MANHOLES TO BE OVER WIDEST SHELF.
  10. 4" & 8" CONE SECTIONS MAYBE USED WITH 5" MANHOLES WITH A 5"-4" TRANSITION SECTION PLACED DIRECTLY BELOW THE 4" CONE.
  11. ALL MANHOLE SECTIONS SHALL BE DESIGNED FOR 14-20' LOADING.
  12. MINIMUM HEIGHT FOR CONCENTRIC CONES ON MANHOLES WITH BOLT DOWN FAC IS 32'.



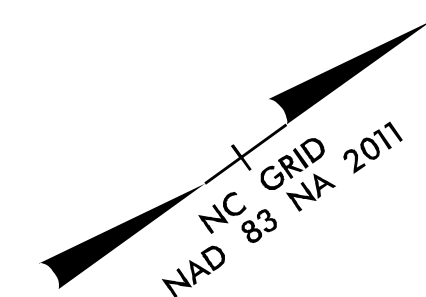
5/14/99

7/17/2023

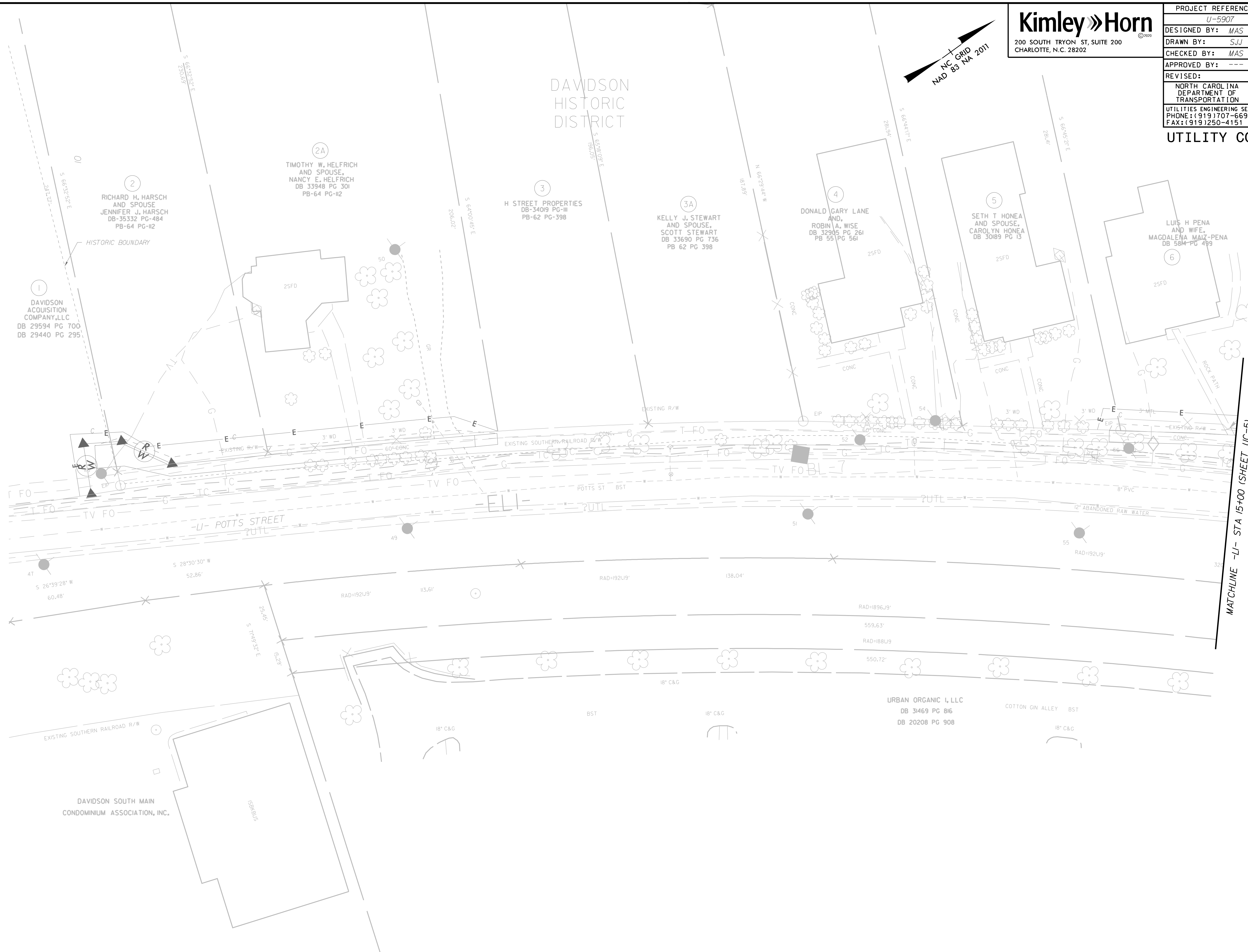
# Kimley»Horn

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

PROJECT REFERENCE NO.	SHEET NO.
U-5907	UC-4
DESIGNED BY: MAS	
DRAWN BY: SJJ	
CHECKED BY: MAS	
APPROVED BY: ---	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	7/17/2023
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY



## DAVIDSON HISTORIC DISTRICT



REVISIONS

MATCHLINE -LJ- STA 15+00 (SHEET UC-5)

① DAVIDSON ACQUISITION COMPANY, LLC  
DB 29594 PG 700  
DB 29440 PG 295

② RICHARD H. HARSCH AND SPOUSE  
JENNIFER J. HARSCH  
DB-35332 PG-484  
PB-64 PG-112

②A TIMOTHY W. HELFRICH AND SPOUSE,  
NANCY E. HELFRICH  
DB 33948 PG 301  
PB-64 PG-112

③ H STREET PROPERTIES  
DB-34019 PG-III  
PB-62 PG-398

③A KELLY J. STEWART AND SPOUSE,  
SCOTT STEWART  
DB 33690 PG 736  
PB 62 PG 398

④ DONALD GARY LANE AND,  
ROBIN A. WISE  
DB 32905 PG 261  
PB 55 PG 561

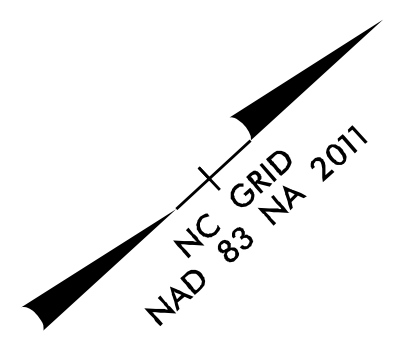
⑤ SETH T HONEA AND SPOUSE,  
CAROLYN HONEA  
DB 30189 PG 13

⑥ LUIS H. PENA AND WIFE,  
MAGDALENA MAIZ-PENA  
DB 584 PG 499

URBAN ORGANIC I, LLC  
DB 31469 PG 816  
DB 20208 PG 908

DAVIDSON SOUTH MAIN CONDOMINIUM ASSOCIATION, INC.

DAVIDSON  
HISTORIC  
DISTRICT

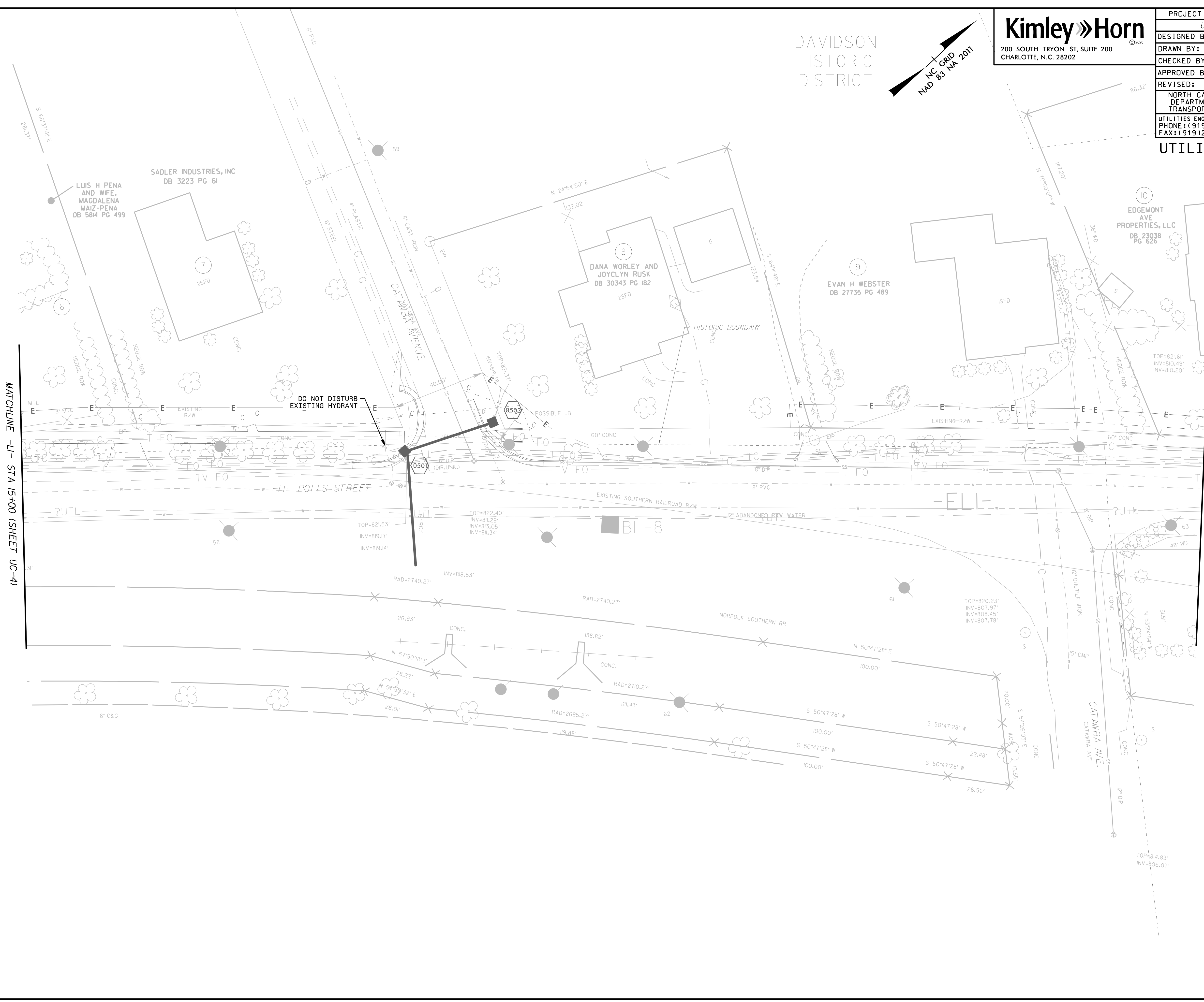


**Kimley»Horn**

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

PROJECT REFERENCE NO.	UC-5907	SHEET NO.	UC-5
DESIGNED BY:	MAS		
DRAWN BY:	SJJ		
CHECKED BY:	MAS		
APPROVED BY:	---		
REVISED:	---		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		7/17/2023	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY	

**UTILITY CONSTRUCTION**



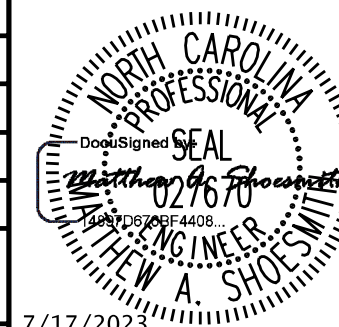
REVISIONS

MATCHLINE -LI- STA 15+00 (SHEET UC-4)

MATCHLINE -LI- STA 20+00 (SHEET UC-6)

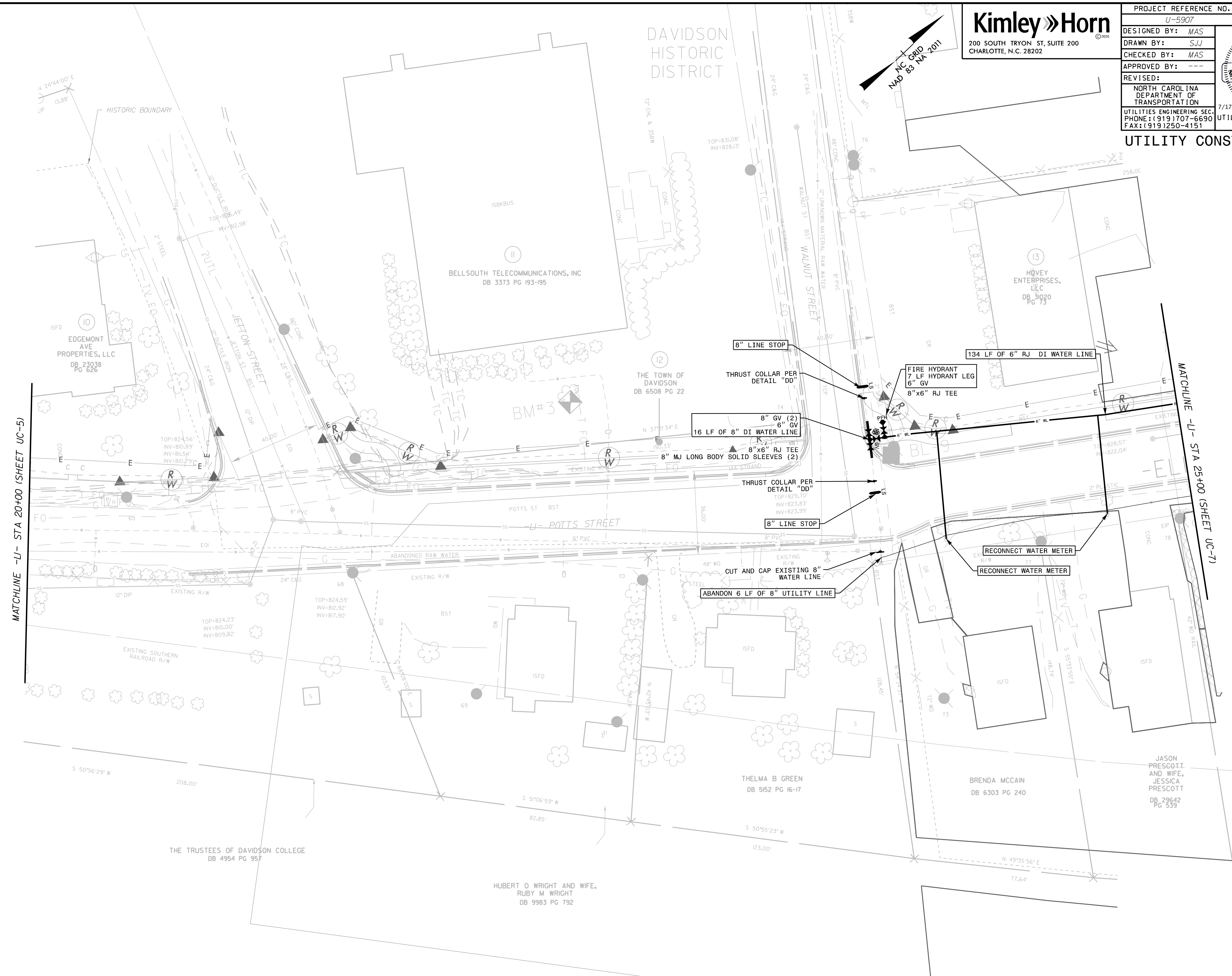


PROJECT REFERENCE NO.	UC-6
DESIGNED BY:	MAS
DRAWN BY:	SJJ
CHECKED BY:	MAS
APPROVED BY:	---
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
7/17/2023	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY



## UTILITY CONSTRUCTION

REVISIONS

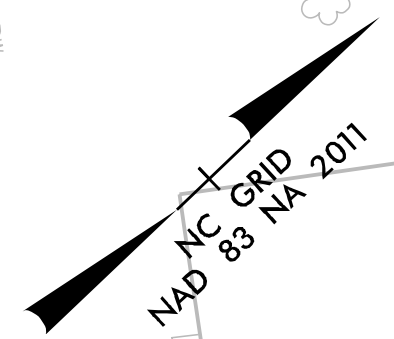


MATCHLINE -LJ- STA 20+00 (SHEET UC-5)

MATCHLINE -LJ- STA 25+00 (SHEET UC-7)

HISTORIC BOUNDARY

DAVIDSON HISTORIC DISTRICT



10  
EDGEMONT AVE PROPERTIES, LLC  
DB 23038 PG 626

BELLSOUTH TELECOMMUNICATIONS, INC  
DB 3373 PG 193-195

12  
THE TOWN OF DAVIDSON  
DB 6508 PG 22

13  
HOVEY ENTERPRISES, LLC  
DB 31020 PG 73

8" LINE STOP

134 LF OF 6" RJ DI WATER LINE

FIRE HYDRANT  
7 LF HYDRANT LEG  
6" GV  
8"x6" RJ TEE

8" GV (2)  
6" GV  
16 LF OF 8" DI WATER LINE

8"x6" RJ TEE  
8" MJ LONG BODY SOLID SLEEVES (2)

THRUST COLLAR PER DETAIL "DD"

8" LINE STOP

ABANDON 6 LF OF 8" UTILITY LINE

RECONNECT WATER METER

RECONNECT WATER METER

CUT AND CAP EXISTING 8" WATER LINE

ABANDON 6 LF OF 8" UTILITY LINE

THELMA B GREEN  
DB 5152 PG 16-17

BRENDA MCCAIN  
DB 6303 PG 240

JASON PRESCOTT AND WIFE, JESSICA PRESCOTT  
DB 29642 PG 233

THE TRUSTEES OF DAVIDSON COLLEGE  
DB 4954 PG 957

HUBERT O WRIGHT AND WIFE, RUBY M WRIGHT  
DB 9983 PG 792

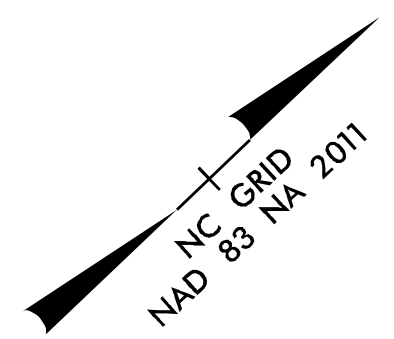


5/14/99

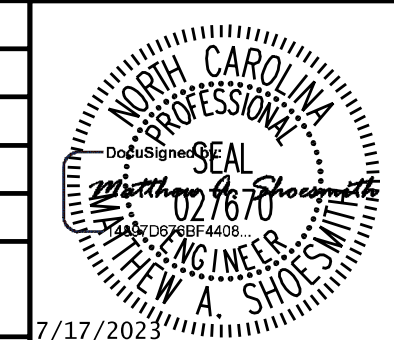
7/17/2023

# Kimley Horn

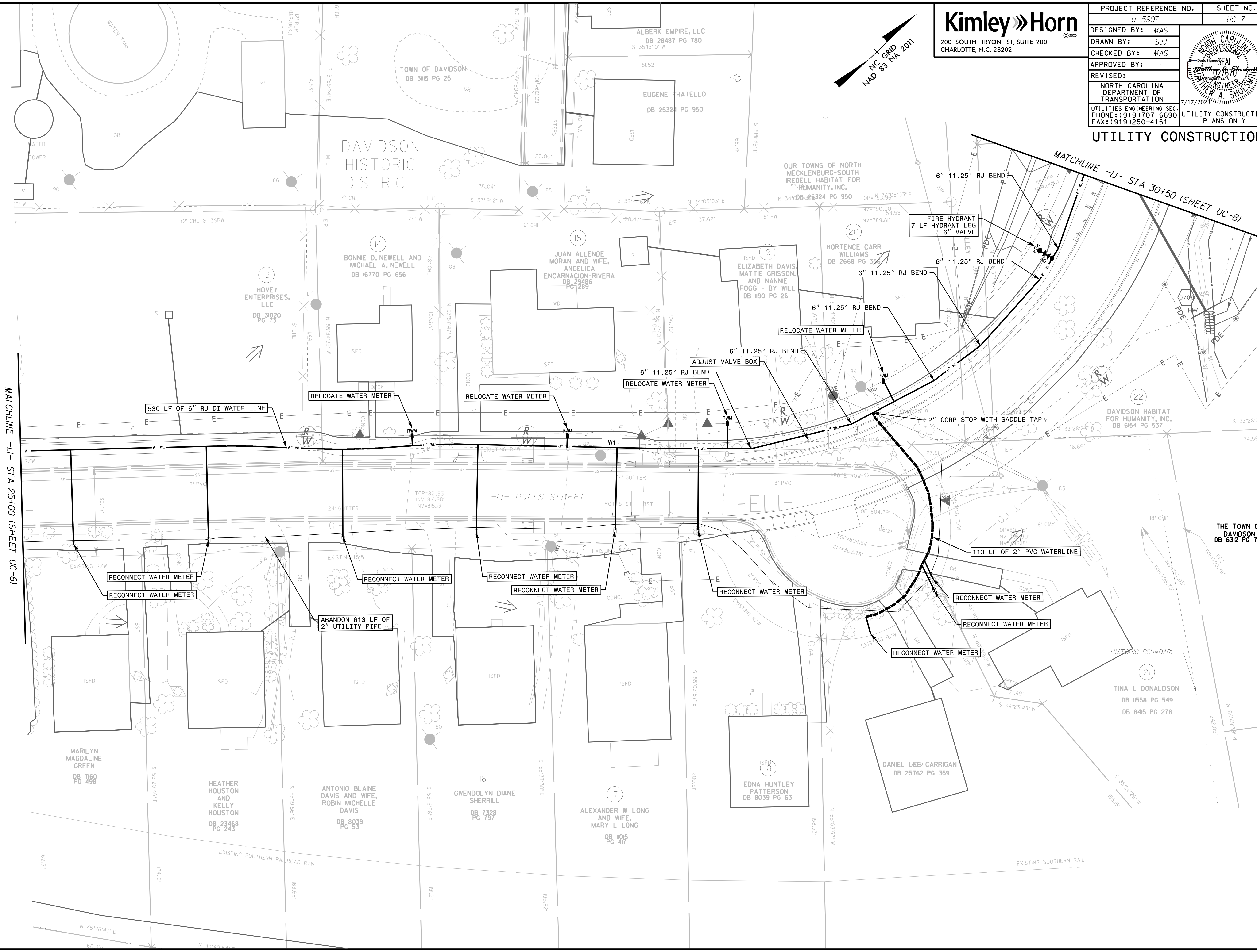
200 SOUTH TRYON ST, SUITE 200  
CHARLOTTE, N.C. 28202



PROJECT REFERENCE NO.	UC-7
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



REVISIONS

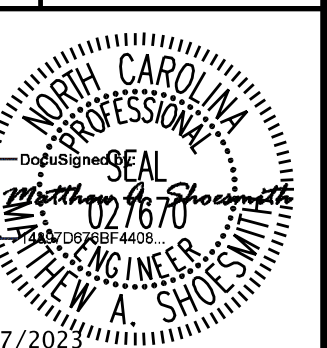
MATCHLINE -LI- STA 25+00 (SHEET UC-6)

MATCHLINE -LI- STA 30+50 (SHEET UC-8)

THE TOWN OF DAVIDSON DB 6312 PG 713



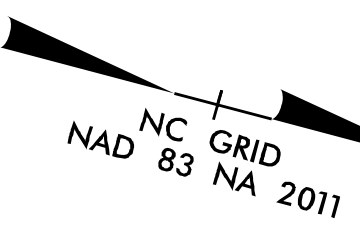
DESIGNED BY: MAS  
DRAWN BY: SJJ  
CHECKED BY: MAS  
APPROVED BY: ---  
REVISED:



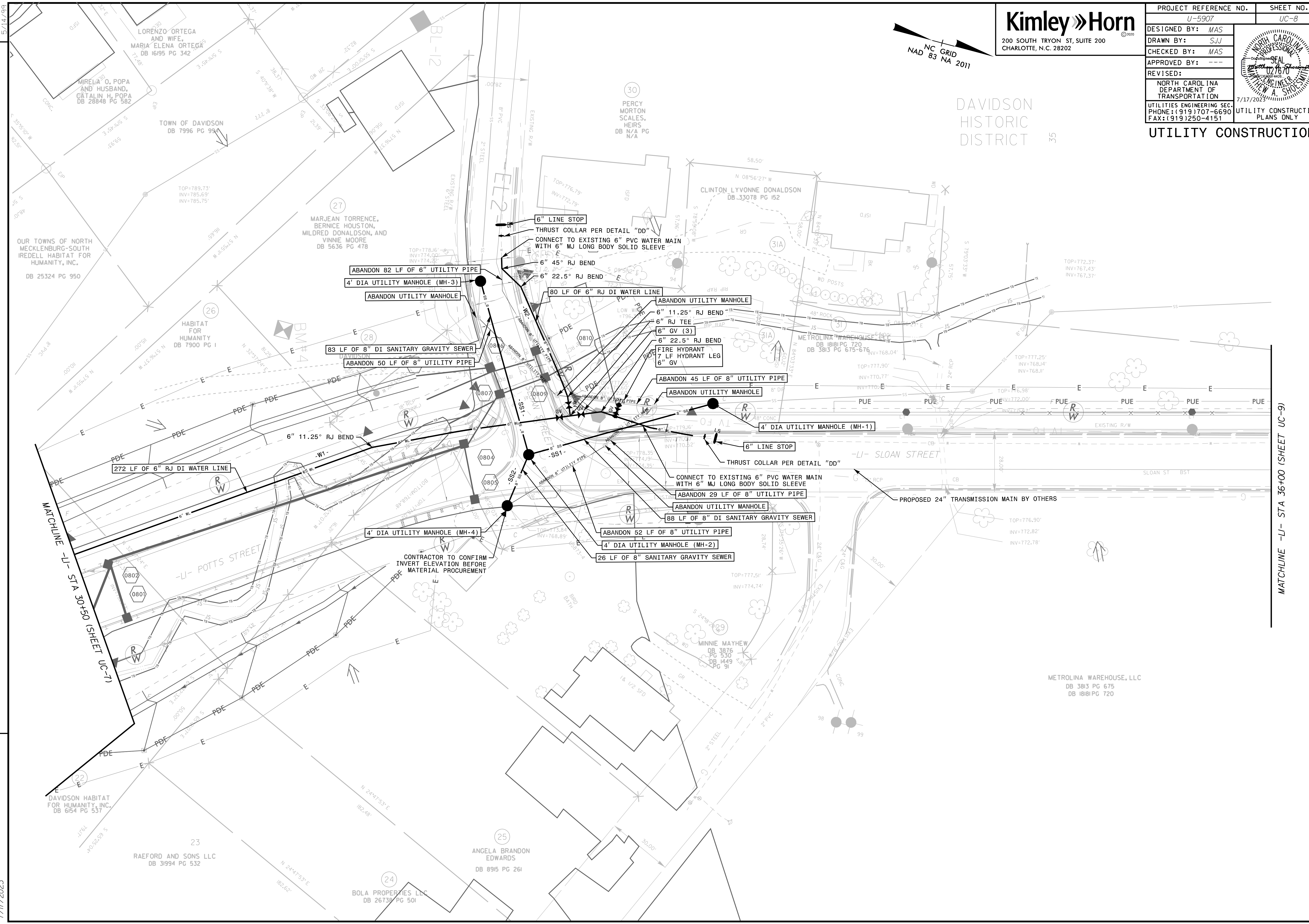
NORTH CAROLINA  
DEPARTMENT OF  
TRANSPORTATION  
7/17/2023  
UTILITY ENGINEERING SEC.  
PHONE: (919) 707-6690  
FAX: (919) 250-4151

UTILITY CONSTRUCTION  
PLANS ONLY

UTILITY CONSTRUCTION



DAVIDSON  
HISTORIC  
DISTRICT 35



REVISIONS

MATCHLINE - LI - STA 30+50.0 (SHEET UC-7)

MATCHLINE - LI - STA 36+00 (SHEET UC-9)

7/17/2023