

09/05/2025

TIP PROJECT: I-5715

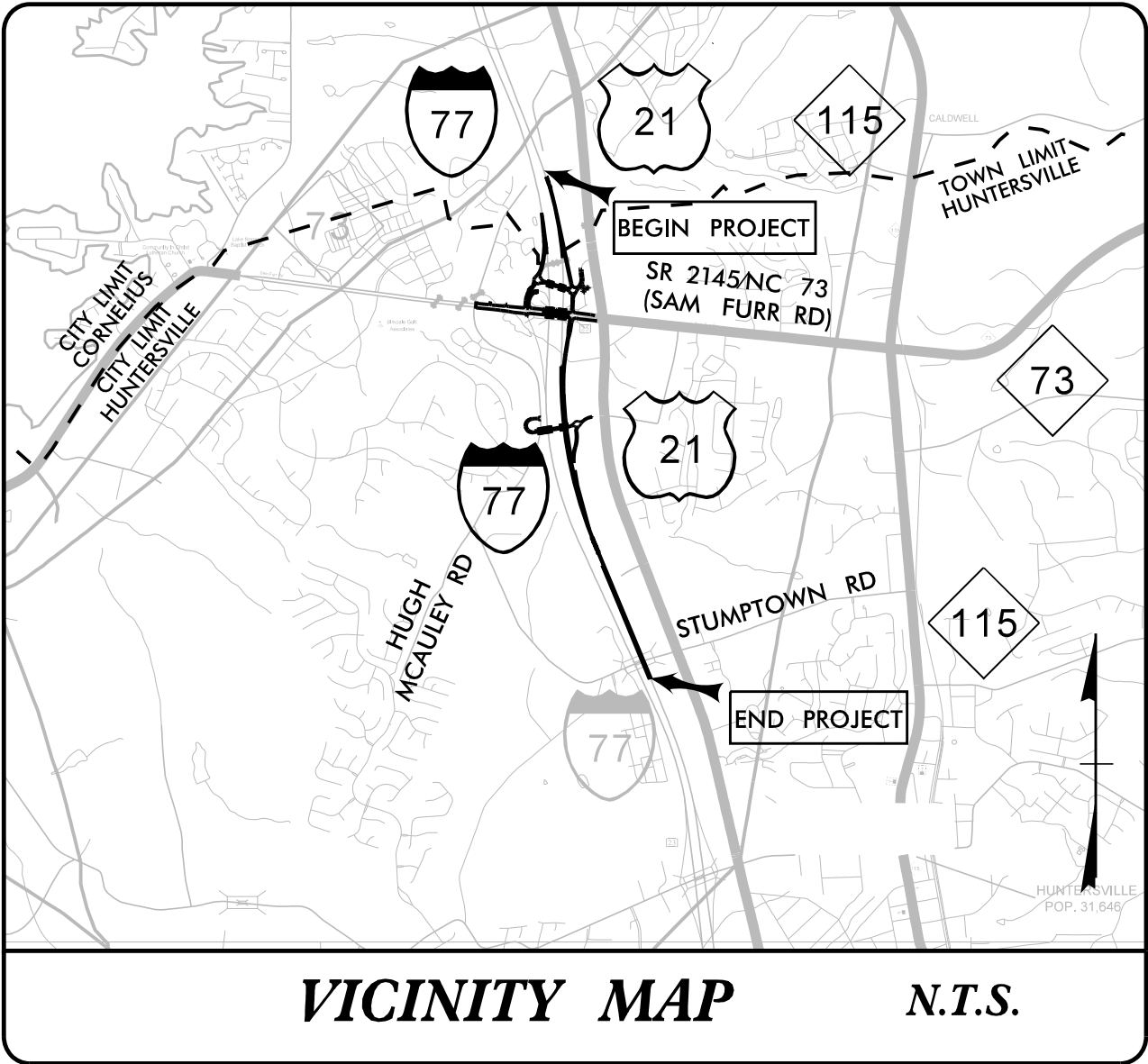
T.I.P. NO.	SHEET NO.
I-5715	UC-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

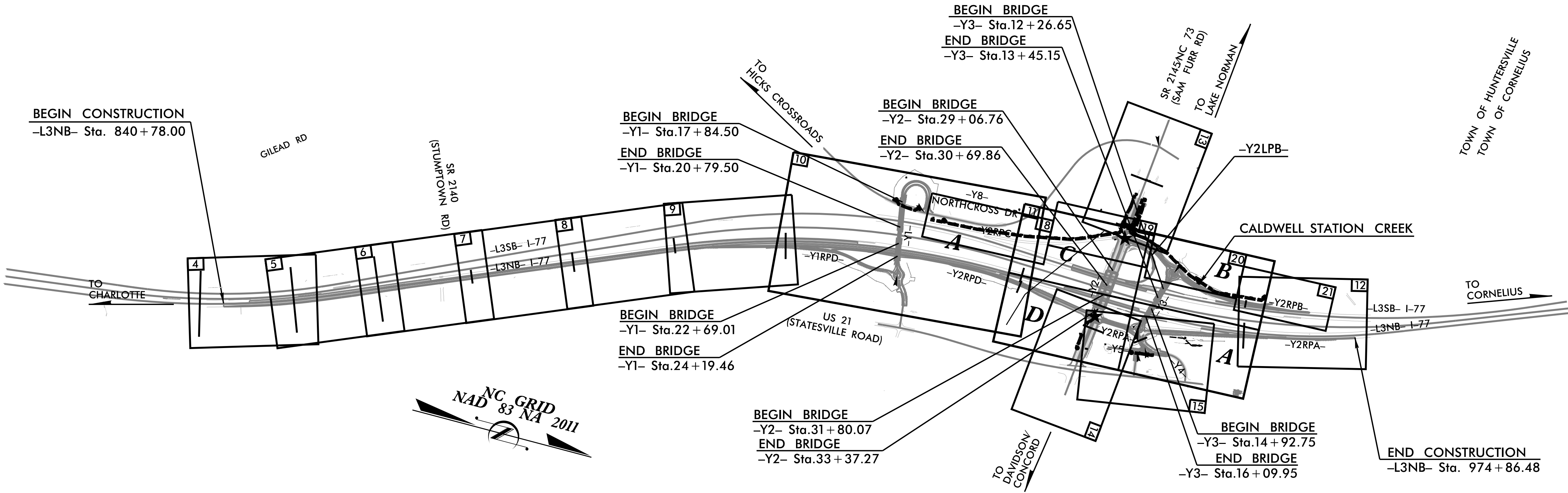
UTILITY CONSTRUCTION PLANS
MECKLENBURG COUNTY

LOCATION: I-77 FROM SOUTH OF FR-2140 TO NORTH OF NC-73 &
SR-2145/NC-73 BETWEEN NORTHCROSS DR & US-21

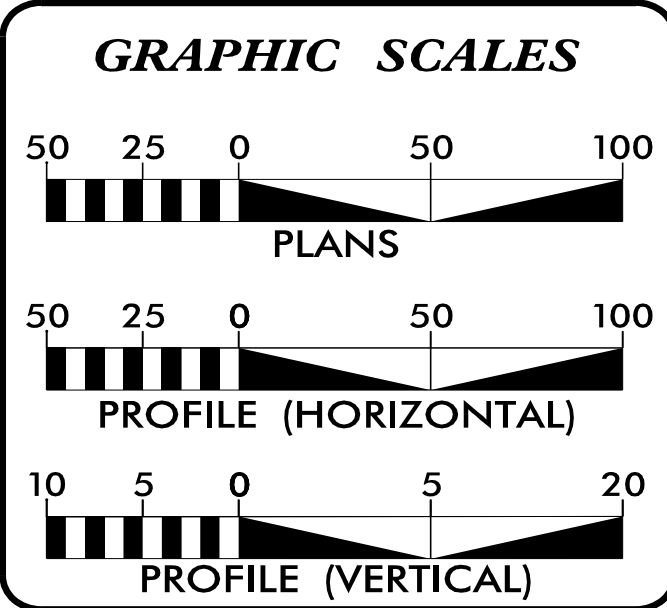
TYPE OF WORK: UTILITY CONSTRUCTION - WATER AND SEWER RELOCATIONS



UC PLANS



DOCUMENT NOT CONSIDERED FINAL
UNTIL ALL SIGNATURES ARE COMPLETED



SHEET NO.:

- UC-1
- UC-2
- UC-2A
- UC-3
- UC-3A THRU UC-3H
- UC-4 THRU UC-15
- UC-16 THRU UC-21

INDEX OF SHEETS
DESCRIPTION:

- TITLE SHEET
- UTILITY PERMITS
- UTILITY SYMBOLOGY
- UTILITY NOTES
- UTILITY DETAILS
- UTILITY CONSTRUCTION SHEETS
- UTILITY PROFILE SHEETS

WATER AND SEWER
OWNERS ON PROJECT

- (1) WATER - CHARLOTTE WATER
- (2) SANITARY SEWER - CHARLOTTE WATER

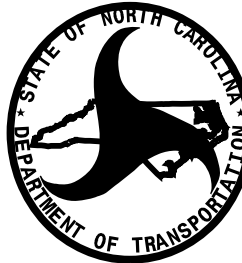
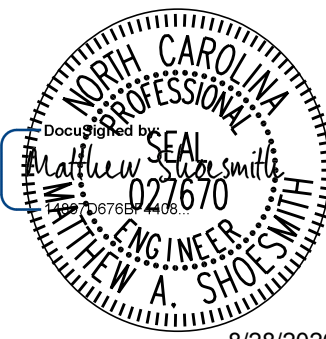
PREPARED IN THE OFFICE OF

Kimley»Horn

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

Matthew Shoesmith, P.E. CONSULTANT CONTACT #1
Sophia Johnston, P.E. CONSULTANT CONTACT #2

SEAL



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

Bo Hemphill, P.E. EASTERN UTILITIES MANAGER
Nabil Hamdan REGIONAL UTILITIES ENGINEER
Deauntre M. Riley SENIOR UTILITIES ENGINEER
Jonathan Ratcliff UTILITIES AREA COORDINATOR



CHARLOTTE, NORTH CAROLINA

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

PROJECT NAME: NCDOT PROJECT I-5715 CREEK BASIN McDowell

CLTWater PROJECT NO.: CPM-60-25-271

PROJECT TYPE: ☐ NEW CONSTRUCTION ☒ 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)	☒ 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

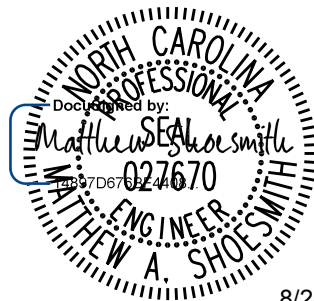
TELEPHONE (704) 333-5131

PROFESSIONAL ENGINEER'S CERTIFICATION

I, MATTHEW SHOESMITH, ATTEST THAT THIS APPLICATION FOR I-5715 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 _____ 8/28/2026

PLANT FLOW ALLOCATION RECORDED BY: _____

PERMIT APPROVED BY: _____
CHARLES M. BLISS, P.E., CHIEF ENGINEER

APPLICATION FOR PERMIT FOR WATER MAIN EXTENSION

PROJECT NAME: NCDOT PROJECT I-5715

CLTWater PROJECT NO.: CPM-60-25-271

PROJECT DESCRIPTION: Replace approx. 600 LF of 8" DI PC 350 Water Main and
Appurtenances and 830 LF of 12" DI PC 350 Water Main and
Appurtenances, along new I-77 ramp.
New installation approx. 4840 LF of 36" DI PC 350 Water Main and
Appurtenances, along new I-77 ramp.

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 _____

CHARLES M. BLISS, P.E., CHIEF ENGINEER
CHARLOTTE WATER
5100 BROOKSHIRE BLV

PREPARED BY: Kimley»Horn  421 FAYETTEVILLE STREET, SUITE 600 RALEIGH, NC 27601	PROJECT REFERENCE NO.		SHEET NO.
	1-5715		UC-2
DESIGNED BY: MAS			
DRAWN BY: SCA			
CHECKED BY: SJJ			
APPROVED BY: MAS			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY	



K:\CHL\PR\A\1036264 - I-5715\Utilities\Eng\neer\ng\UC\Pro\280_020_I-5715_UC_02_SYM.dgn

8/27/2026

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

PROJECT REFERENCE NO.	SHEET NO.
I-5715	UC-2A

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	----->
Property Monument	□ EDM
Parcel/Sequence Number	⑫3
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	-○-
Proposed Chain Link Fence	-□-
Proposed Barbed Wire Fence	-◇-
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-
Existing Historic Property Boundary	-HPB-

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	○ S
Well	○ W
Small Mine	✂
Foundation	□
Area Outline	□
Cemetery	□ †
Building	□
School	□
Church	□
Dam	-----

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	-----JS-----
Buffer Zone 1	-----BZ 1-----
Buffer Zone 2	-----BZ 2-----
Flow Arrow	----->-----
Disappearing Stream	----->-----
Spring	○-----
Wetland	-----↓-----
Proposed Lateral, Tail, Head Ditch	-----<-----
False Sump	-----<-----

RAILROADS:

Standard Gauge	-----CSX TRANSPORTATION-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----+-----
RR Dismantled	-----+-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----R/W-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----R/W-----▲
Proposed Right of Way Line with Concrete or Granite R/W Marker	-----R/W-----▲
Proposed Control of Access Line with Concrete C/A Marker	-----C/A-----
Existing Control of Access	-----C/A-----
Proposed Control of Access	-----C/A-----
Existing Easement Line	-----E-----
Proposed Temporary Construction Easement	-----E-----
Proposed Temporary Drainage Easement	-----TDE-----
Proposed Permanent Drainage Easement	-----PDE-----
Proposed Permanent Drainage / Utility Easement	-----DUE-----
Proposed Permanent Utility Easement	-----PUE-----
Proposed Temporary Utility Easement	-----TUE-----
Proposed Aerial Utility Easement	-----AUE-----
Proposed Permanent Easement with Iron Pin and Cap Marker	-----◆-----

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----C-----
Proposed Slope Stakes Fill	-----F-----
Proposed Curb Ramp	-----CR-----
Existing Metal Guardrail	-----T-----
Proposed Guardrail	-----T-----
Existing Cable Guiderail	-----□-----
Proposed Cable Guiderail	-----□-----
Equality Symbol	-----
Pavement Removal	-----X-----

VEGETATION:

Single Tree	☼
Single Shrub	☼
Hedge	-----
Woods Line	-----

Orchard	☼☼☼☼
Vineyard	□ Vineyard

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----CONC-----
Bridge Wing Wall, Head Wall and End Wall	-----CONC WW-----
MINOR:	
Head and End Wall	-----CONC HW-----
Pipe Culvert	-----
Footbridge	----->-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○ S
Storm Sewer	-----S-----

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

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.*)	-----T-----
U/G Telephone Cable LOS C (S.U.E.*)	-----T-----
U/G Telephone Cable LOS D (S.U.E.*)	-----T-----
U/G Telephone Conduit LOS B (S.U.E.*)	-----TC-----
U/G Telephone Conduit LOS C (S.U.E.*)	-----TC-----
U/G Telephone Conduit LOS D (S.U.E.*)	-----TC-----
U/G Fiber Optics Cable LOS B (S.U.E.*)	-----T FO-----
U/G Fiber Optics Cable LOS C (S.U.E.*)	-----T FO-----
U/G Fiber Optics Cable LOS D (S.U.E.*)	-----T FO-----

WATER:

Water Manhole	Ⓟ
Water Meter	○
Water Valve	⊗
Water Hydrant	Ⓟ
U/G Water Line LOS B (S.U.E.*)	-----W-----
U/G Water Line LOS C (S.U.E.*)	-----W-----
U/G Water Line LOS D (S.U.E.*)	-----W-----
Above Ground Water Line	-----A/G Water-----

TV:

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

GAS:

Gas Valve	◇
Gas Meter	◇
U/G Gas Line LOS B (S.U.E.*)	-----G-----
U/G Gas Line LOS C (S.U.E.*)	-----G-----
U/G Gas Line LOS D (S.U.E.*)	-----G-----
Above Ground Gas Line	-----A/G Gas-----

SANITARY SEWER:

Sanitary Sewer Manhole	Ⓟ
Sanitary Sewer Cleanout	Ⓟ
U/G Sanitary Sewer Line	-----SS-----
Above Ground Sanitary Sewer	-----A/G Sanitary Sewer-----
SS Forced Main Line LOS B (S.U.E.*)	-----FSS-----
SS Forced Main Line LOS C (S.U.E.*)	-----FSS-----
SS Forced Main Line LOS D (S.U.E.*)	-----FSS-----

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	Ⓟ
Utility Unknown U/G Line LOS B (S.U.E.*)	-----?UTL-----
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	AATUR
End of Information	E.O.I.

5/14/99

5/14/99

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

PROJECT REFERENCE NO.
I-5715

SHEET NO.
UC-3A

DESIGNED BY: MAS

DRAWN BY: SCA

CHECKED BY: SJJ

APPROVED BY: MAS

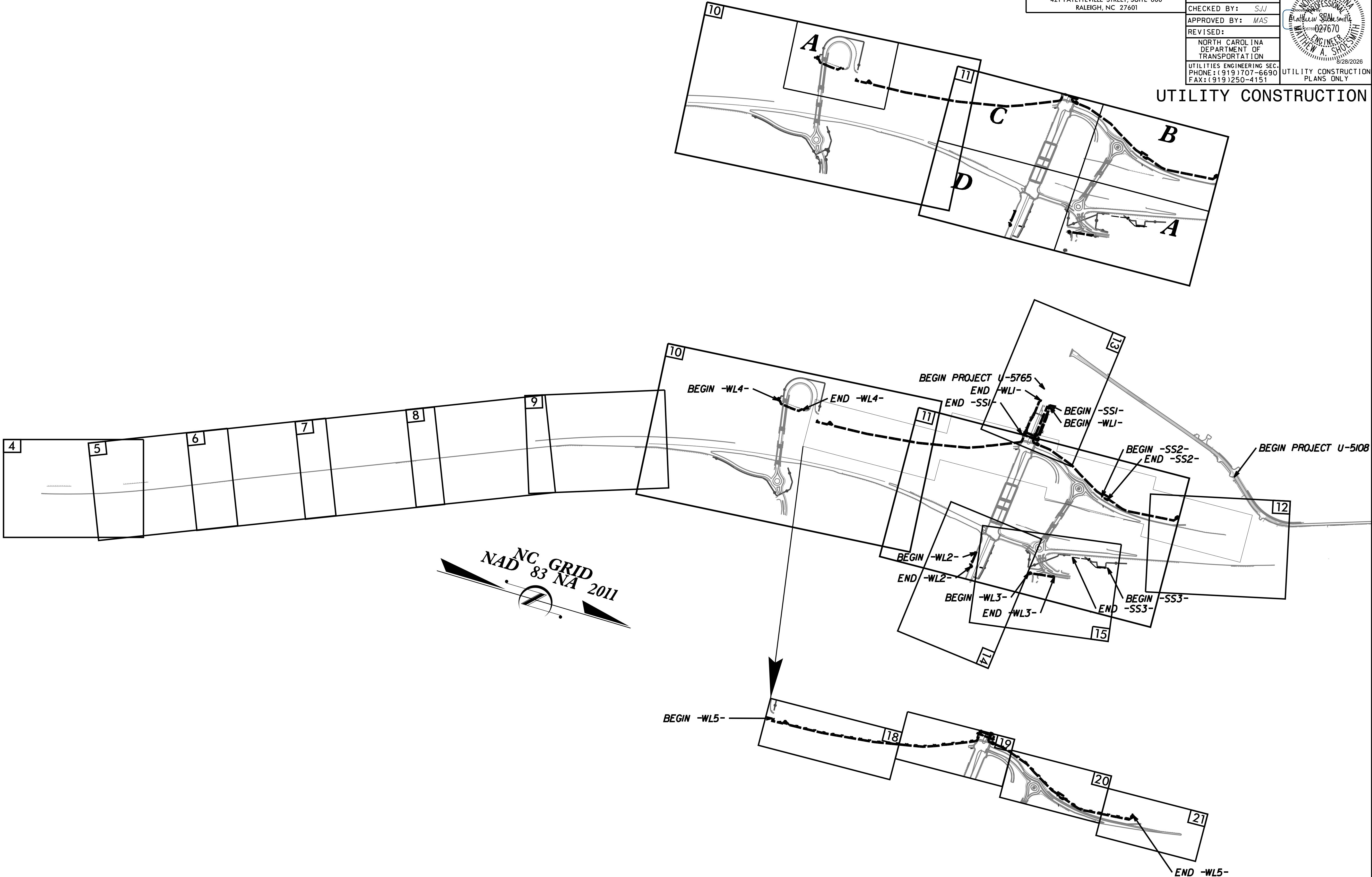
REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

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

REGISTERED PROFESSIONAL ENGINEER
Matthew S. Smith
No. 027670
Matthew A. Shoemaker
No. 027670
2/28/2026

UTILITY CONSTRUCTION
PLANS ONLY



PREPARED BY:

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

PROJECT REFERENCE NO.

1-5715

SHEET NO.

UC-3C

DESIGNED BY:

MAS

DRAWN BY:

SCA

CHECKED BY:

SJJ

APPROVED BY:

MAS

REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

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

UTILITY CONSTRUCTION
PLANS ONLY

NORTH CAROLINA
PROFESSIONAL
ENGINEER
Matthew S. Smith
027670
JAN 2018

2/28/2026

UTILITY CONSTRUCTION

PIPE DIAMETER (IN)	MINIMUM DEPTH (FT)
30	5.0
36	5.0
42	5.5
48	5.5
54	5.5
60	5.5
64	5.5

NO. DESCRIPTION:

1. RUN X 8" SWIVEL OR RMJ OUTLET TEE.

2. 8" 90° BEND (RMJ).

3. 8" RMJ GATE VALVE WITH FOSTER ADAPTOR.

4. 8" RJ DIP.

5. 8" RMJ GATE VALVE AT FH WITH FOSTER ADAPTOR.

6. HIGH VELOCITY FIRE HYDRANT, 6" BOC OR 4" BACK OF DITCH CENTERLINE FIRE HYDRANT SHALL BE PAINTED OSHA SAFETY BLUE. PUMP NOZZLES SHALL BE PARALLEL TO THE ROADWAY / CURB.

7. VALVE BOX ASSEMBLY. SEE STANDARD DETAIL.

8. CONCRETE HYDRANT COLLAR. CAST IN PLACE. 30" DIAMETER BY 8" THICK. REINFORCE WITH #4 REBARS.

9. MINIMUM 9 CUBIC FEET OF #57 WASHED STONE PROPORTIONALLY AROUND FH SHOE. DO NOT COVER WEEP HOLE. ENCAPSULATE WASHED STONE WITH FILTER FABRIC.

10. 8" X 16" SOLID CONCRETE BLOCK.

11. FOSTER ADAPTER.

12. #4 REBARS.

NOTES:

A. ALL PIPE AND FITTINGS TO BE RESTRAINED JOINT DIP WITH FACTORY RESTRAINED JOINT FITTINGS OR NJ FITTINGS WITH WEDGE ACTION RESTRAINT.

B. REFERENCE STANDARD DETAIL FOR AWG. #12 GAUGE SOLID COPPER TRACER WIRE WITH BLUE 30 MILS HDPE INSULATION.

C. SEE CONSTRUCTION PLANS FOR LOCATION OF HYDRANTS.

D. AIR RELEASE HYDRANTS SHALL BE INSTALLED AT ALL HIGH POINTS AS DIRECTED BY THE ENGINEER.

E. EXTENSION KITS REQUIRE THE APPROVAL OF THE ENGINEER. HYDRANT EXTENSION KITS SHALL BE LIMITED TO 1 EACH PER HYDRANT. DO NOT CAST THE CONCRETE COLLAR ON THE EXTENSION JOINT.

CHARLOTTE WATER
UTILITY CONSTRUCTION
STANDARD DETAILS
WATER

8-INCH MANUAL AIR RELEASE AND FH FOR 30-INCH THROUGH 64-INCH DIAMETER MAINS

NO SCALE
VERSION 1.0
DATE 04/2024
DETAIL 10.3.3

SECTION A - A

SECTION B - B

RING DETAIL

NO. DESCRIPTION:

1. FIRE HYDRANT.

2. KUPFERLE #9700-Y HYDRANT AUTO FLUSHER (YELLOW) (INCLUDING #8-19).

3. 6 MILS HDPE PLASTIC FILM (54" X 54") - SEE NOTE C.

4. 16" X 16" X 2" PATIO PAVERS - CONCRETE - 8 EA - SEE NOTE C.

5. HYDRANT STORZ NOZZLE W/RED OUT-OF-SERVICE RING (O.D. = 12.5", I.D. = 7.0", t = 0.05").

6. CAMPBELL BLU-KROME 1/4" PROOF COIL CHAIN 5 LF.

7. LOCKING NOZZLE COLLAR - KUPFERLE #9708-Y WITH PADLOCK.

8. 2 1/2" FIRE HYDRANT NOZZLE COUPLING.

9. KUPFERLE ADAPTER.

10. 2" THREADED NIPPLE.

11. 2" X 2" X 2" TEE FIP THREAD.

12. PLUG/TAP.

13. WATER SAMPLE VALVE.

14. BRASS WATER SAMPLING BIBB.

15. 2" SOLENOID CONTROL VALVE; P-220 SERIES.

16. MANUAL FLOW CONTROL KNOB.

17. HUNTER DIGITAL PROGRAMMABLE CONTROLLER WITH 9 VOLT LITHIUM BATTERY.

18. 2" FIP OUTLET (MAY BE HARD PIPED FOR DISCHARGE).

19. REMOVABLE DIFFUSER PLATE WITH 4 BOLTS/NUTS.

20. PADLOCK (PROVIDED BY CLTW).

NOTES:

A. AUTO FLUSHER IS INTENDED FOR WARM WEATHER USE. ASSEMBLY SHOULD BE REMOVED DURING COLD WEATHER MONTHS TO AVOID DAMAGE DUE TO FREEZING.

B. MANUAL FLUSHING REQUIRED TO MAINTAIN WATER QUALITY DURING COLD WEATHER MONTHS.

C. SHOWN AS TEMPORARY APPLICATION - IF PERMANENT INSTALLATION - REPLACE NO. 3 AND NO. 4 WITH CAST IN PLACE CONCRETE PAD - MIN. 4" X 4" X 4" THICK WITH WIRE REINFORCEMENT. FLUSH WITH FINISH GRADE.

CHARLOTTE WATER
UTILITY CONSTRUCTION
STANDARD DETAILS
WATER

AUTOMATIC FLUSHER-HYDRANT

NO SCALE
VERSION 1.0
DATE 04/2024
DETAIL 10.3.1

1. FIRE PROTECTION

2. FIRE PROTECTION (MUDDY WATER) (NOT FOR PUBLIC WATER TRUCK USE)

3. AIR RELEASE / BLOW-OFF (NOT FOR FIRE DEPARTMENT OR PUBLIC WATER TRUCK USE)

4. REUSE / RECLAIM (NOT FOR FIRE DEPARTMENT OR PUBLIC WATER TRUCK USE)

5. PRIVATE (THROUGH WATER METER)

6. PRIVATE (VIA METER AND BOOSTER PUMP)

7. PRIVATE (8" & SMALLER OR LIMITED SUPPLY)

8. PRIVATE (2" OUTLET VARD HYDRANT)

CLTW / CPD COLOR LEGEND

COLOR	SHADE
OSHA SAFETY YELLOW	YELLOW
OSHA SAFETY BLUE	BLUE
OSHA SAFETY RED	RED
OSHA SAFETY GREEN	GREEN
OSHA SAFETY WHITE	WHITE

CLTW AND CHARLOTTE FIRE DEPARTMENT STANDARDS COLOR SCHEME FOR CLTW 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	OSHA SAFETY BLUE	OSHA SAFETY BLUE	NOT PAINTED	OSHA SAFETY BLUE	OSHA SAFETY BLUE
4 - REUSE / RECLAIM	OSHA SAFETY PURPLE	OSHA SAFETY PURPLE	NOT PAINTED	OSHA SAFETY PURPLE	OSHA SAFETY PURPLE

PRIVATE FIRE HYDRANTS (NOT FOR PUBLIC WATER TRUCK USE)

CLASSIFICATION	BARREL	TOP / BONNET	STORZ PUMPER NOZZLE	IRON PUMPER NOZZLE	IRON HOSE NOZZLE
5 - PRIVATE THROUGH-WATER METER	OSHA SAFETY YELLOW	NOT PAINTED	NOT PAINTED	OSHA SAFETY GREEN	OSHA SAFETY GREEN
6 - PRIVATE V/M METER AND FIRE BOOSTER PUMP	OSHA SAFETY YELLOW	NOT PAINTED	NOT PAINTED	OSHA SAFETY WHITE	OSHA SAFETY WHITE
7 - PRIVATE (8-INCH AND SMALLER MAIN OR LIMITED SUPPLY)	OSHA SAFETY YELLOW	OSHA SAFETY YELLOW	NOT PAINTED	OSHA SAFETY BLUE	OSHA SAFETY BLUE
8 - PRIVATE (2-INCH OUTLET VARD HYDRANT)	OSHA SAFETY RED	OSHA SAFETY RED	N/A	N/A	OSHA SAFETY RED

CLTW / CPD COLOR LEGEND

COLOR	SHADE
OSHA SAFETY YELLOW	YELLOW
OSHA SAFETY BLUE	BLUE
OSHA SAFETY RED	RED
OSHA SAFETY GREEN	GREEN
OSHA SAFETY WHITE	WHITE

CLTW / CPD COLOR LEGEND

COLOR	SHADE
OSHA SAFETY YELLOW	YELLOW
OSHA SAFETY BLUE	BLUE
OSHA SAFETY RED	RED
OSHA SAFETY GREEN	GREEN
OSHA SAFETY WHITE	WHITE

CLTW / CPD COLOR LEGEND

COLOR	SHADE
OSHA SAFETY YELLOW	YELLOW
OSHA SAFETY BLUE	BLUE
OSHA SAFETY RED	RED
OSHA SAFETY GREEN	GREEN
OSHA SAFETY WHITE	WHITE

CLTW / CPD COLOR LEGEND

COLOR	SHADE
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Kimley»Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

DESIGNED BY: MAS

DRAWN BY: SCA

CHECKED BY: SJJ

APPROVED BY: MAS

REVISED:

NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

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

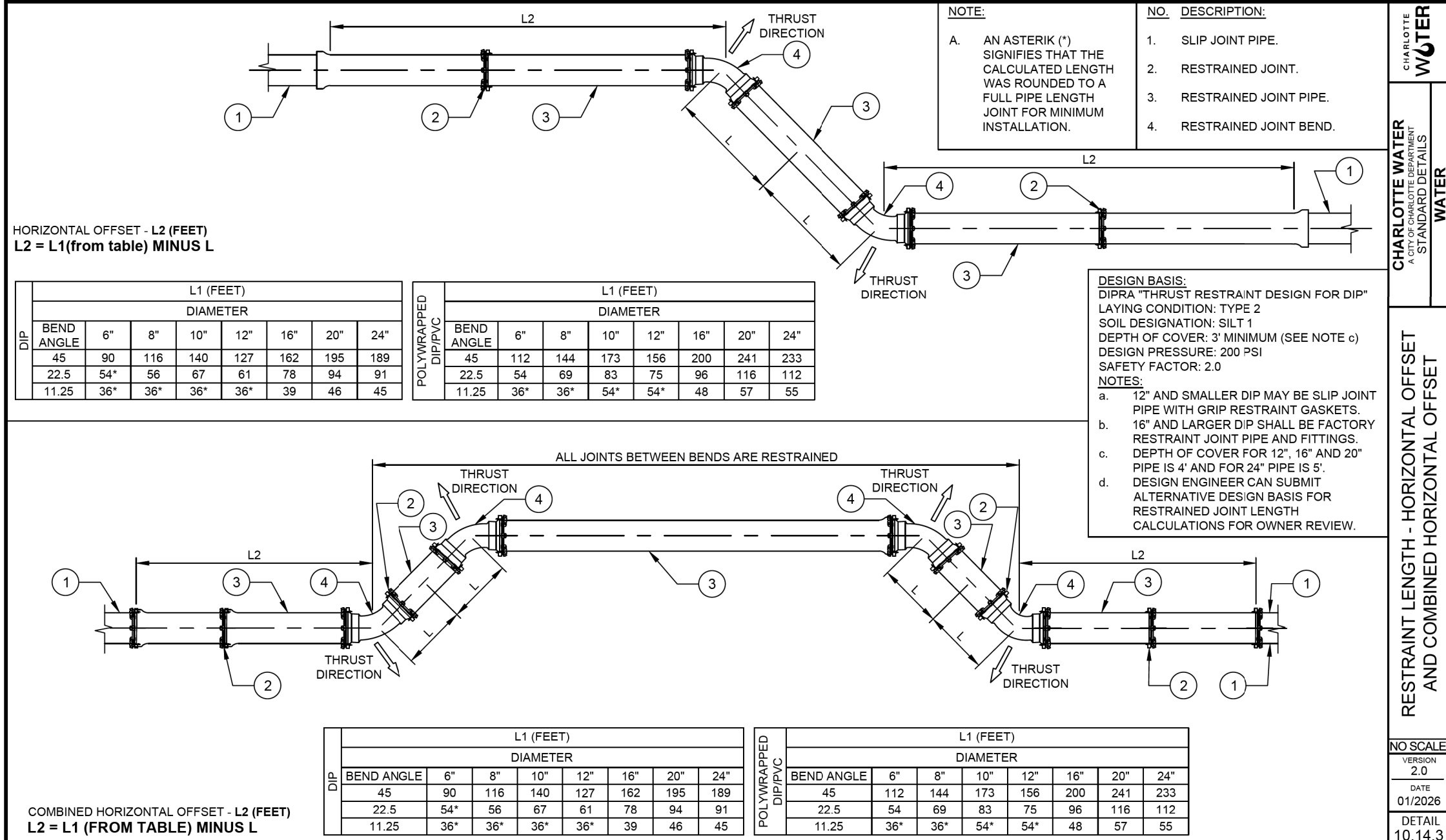
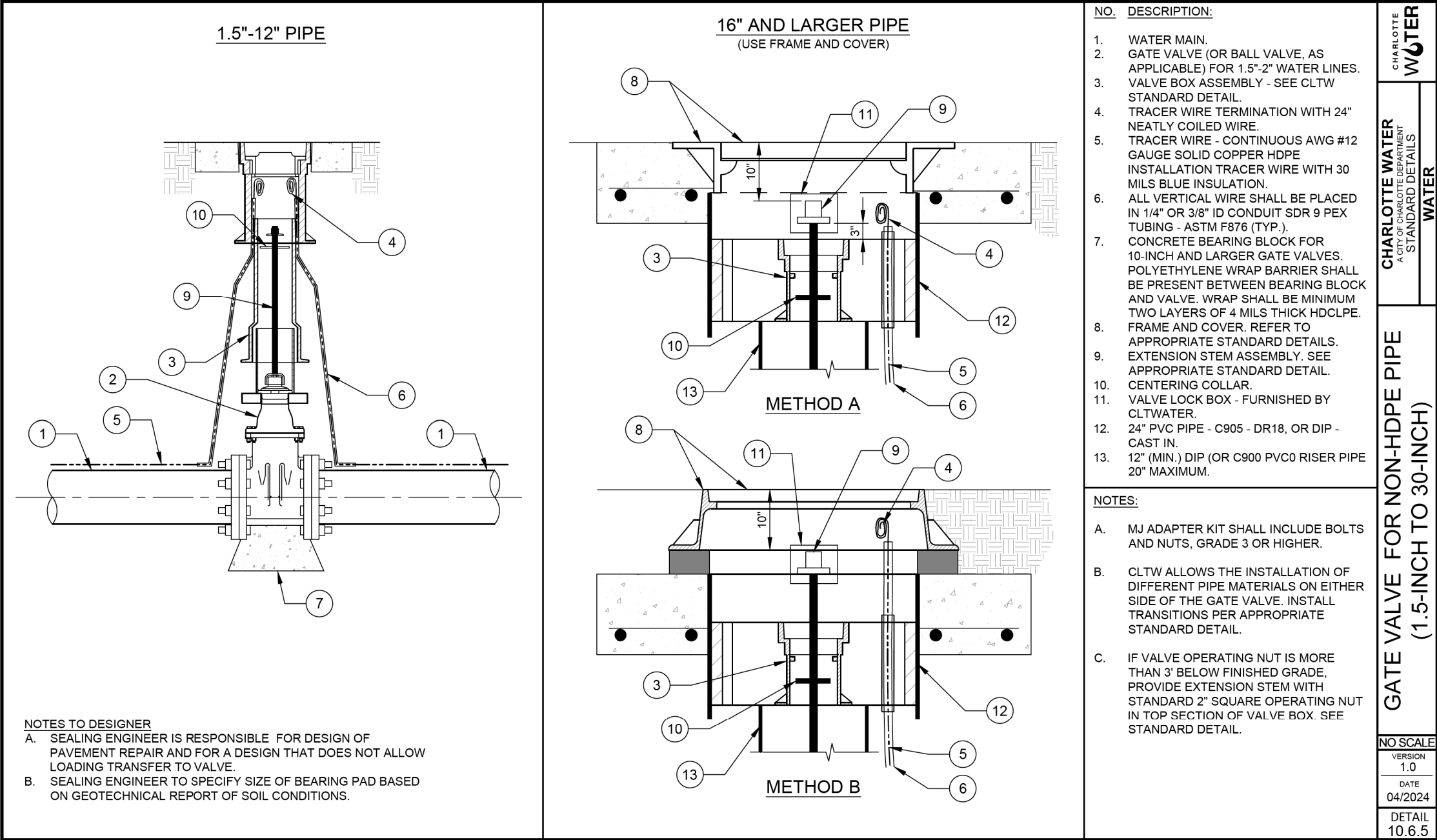
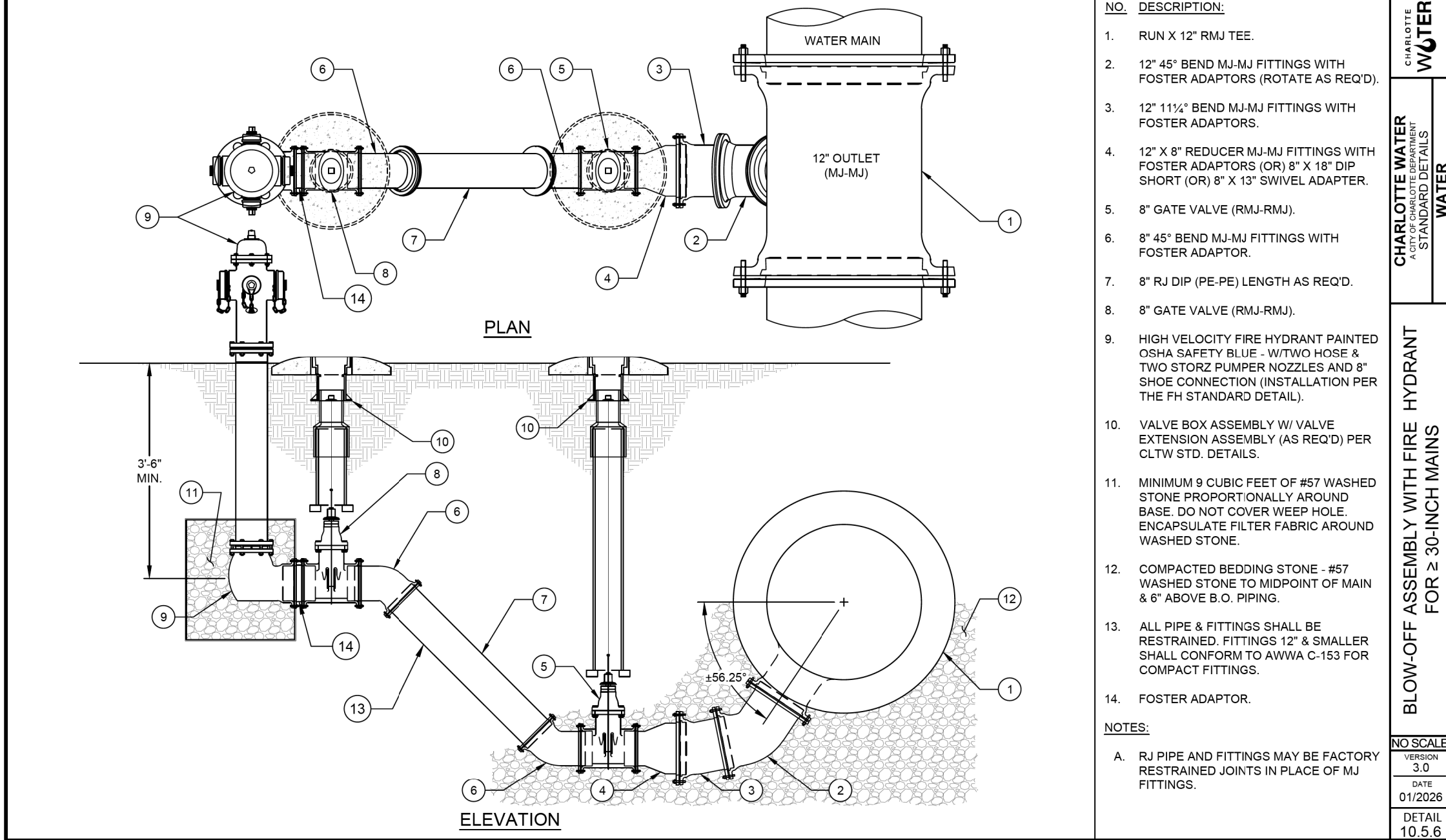
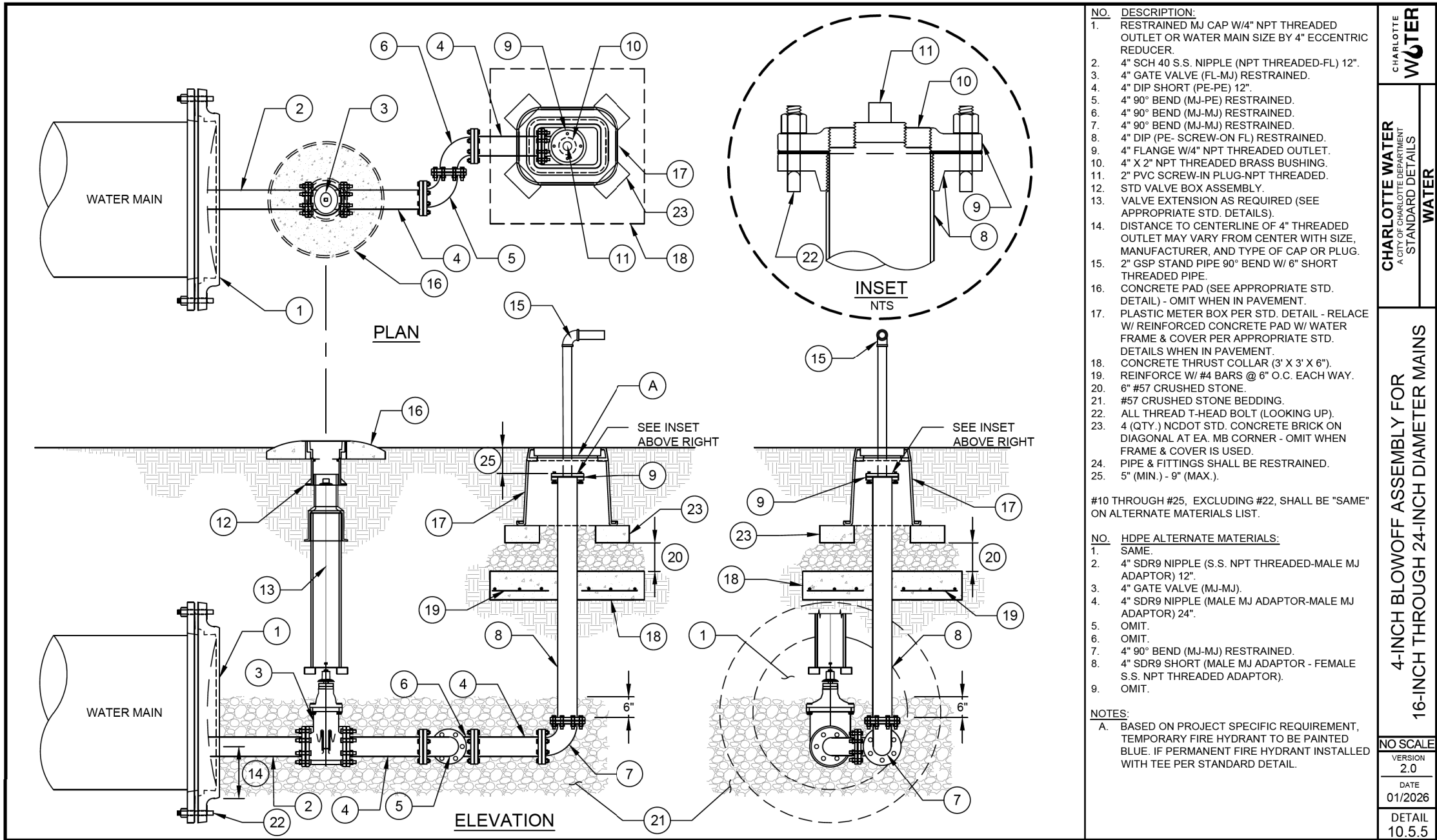
PROJECT REFERENCE NO.
I-5715

SHEET NO.
UC-3E

NORTH CAROLINA
PROFESSIONAL
ENGINEER
Matthew A. Sholes
027670
02/28/2026

UTILITY CONSTRUCTION
PLANS ONLY

UTILITY CONSTRUCTION





PREPARED BY:
Kimley»Horn
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RALEIGH, NC 27601

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PROFESSIONAL ENGINEER
Matthew S. Smith
027670
NEW A. SPOLES
2/28/2026

UTILITY CONSTRUCTION

1. CLTW STANDARD FRAME AND COVER.
2. CONCRETE - 3,600 PSI.
3. NEW ASPHALT OVERLAY.
4. OLD PAVEMENT.
5. COMPACTED SUBGRADE.
6. MANHOLE CONE.
7. USE MIN. 12" BRICK PAVERS FOR ADJUSTMENT WITH 1/4" MORTAR JOINTS.
8. FILL ALL VOIDS SOLID WITH MORTAR.
9. 4 ANCHOR BOLTS TO ANCHOR FRAME TO SOLID BRICK, BLOCK OR CONCRETE. SET FRAME ON 2 RINGS OF BUTYL RUBBER MASTIC ROPE.

NOTES:

A. FOR TYPICAL MANHOLES, REMOVE AND REPLACE ANCHOR NUTS AND WASHERS. REMOVE OLD BUTYL RUBBER MASTIC AS APPROVED.

B. MANHOLE ADJUSTMENTS WILL BE COMPLETED AT LEAST 36 HOURS BEFORE RESURFACING.

C. 18" MINIMUM WIDTH OF EXCAVATION AROUND MANHOLE.

D. DISTURBED AREAS AROUND STRUCTURE ADJUSTMENTS ARE TO BE TAMPED AND FILLED WITH 3,600 PSI "HIGH EARLY" PORTLAND CEMENT CONCRETE.

E. MORTAR USED TO ADJUST STRUCTURES IS TO COMPLY WITH THE N.C. DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

F. BRICK PAVERS USED TO ADJUST STRUCTURES MUST HAVE A MINIMUM THICKNESS OF 1/2 INCH AND A COMPRESSIVE STRENGTH OF AT LEAST 6,000 PSI.

G. WOODEN WEDGES DRIVEN INSIDE THE BASE OF THE MANHOLE RING SHALL BE UTILIZED TO PREVENT THE STRUCTURE FROM SETTLING BEFORE CONCRETE AND MORTAR SET.

H. THE BRICK PAVERS WILL BE LAID ON A FULL MORTAR BED SO THAT THE LONGEST DIMENSION OF THE BRICK WILL BE PERPENDICULAR TO THE MANHOLE STRUCTURE WALL. ALL VOIDS BETWEEN PAVERS SHALL BE FILLED WITH MORTAR.

I. NO MORE THAN A 3/8 INCH JOINT WILL BE ALLOWED BETWEEN THE BRICK.

J. ALL DAMAGED OR DETERIORATED STRUCTURE WALL ARE TO BE REPORTED TO THE INSPECTOR OTHERWISE CONTRACTOR ASSUMES RESPONSIBILITY FOR STRUCTURE FAILURE.

K. IF THE SUM OF PREVIOUS ADJUSTMENTS PLUS THE NEW ONE ARE EQUAL OR GREATER THAN A STANDARD BRICK COURSE. OLD MORTAR AND SHIMS SHALL BE REMOVED DOWN TO THE PREVIOUS FULL BRICK COURSE AND A NEW STANDARD BRICK LAYER SHALL BE INSTALLED.

L. ALL CONCRETE SHALL BE VIBRATED IN ACCORDANCE WITH N.C. DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.

M. CONCRETE ON MANHOLE TO BE POURED TO THE BOTTOM OF THE FIRST FULL COURSE OF BRICK OR 10" MINIMUM.

NO SCALE
DATE 04/2024
DETAIL 11.3.11

WATER
GRAVITY SEWER

CHARLOTTE WATER
A CITY AND COUNTY DEPARTMENT
OF UTILITIES

RESURFACING VERTICAL FRAME AND
COVER ADJUSTMENT FOR PAVEMENT

1. NON-CORROSIVE FASTENER FOR TRACER WIRE (TYP.) 1/2" MAX. FROM TOP OF CONE.
2. #12 GAUGE SOLID COPPER TRACER WIRES WITH 30 MILS GREEN HDPE INSULATION (TYP.).
3. SEWER LATERAL.
4. GRAVITY SEWER MAIN.
5. SEWER SADDLE TAP.
6. VALVE BOX ASSEMBLY (SEE CLTW STD. DETAIL).
7. NO SPLICE.
8. SEWER MANHOLE.
9. 6" WIDE BUTYL RUBBER JOINT SEALANT.
10. 1/4" OR 3/8" SDR9 PEX TUBING CONDUIT.
11. ANODE.
12. NOTCH CUT INTO CONCRETE.
13. 1" PVC CONDUIT.
14. MULTIPLE TRACER WIRES.
15. 6" WIDE BUTYL RUBBER JOINT WRAP.

NOTES FOR GRAVITY SEWER MAIN (SECTION VIEW):

A. ALL VERTICAL WIRES AT MANHOLES SHALL BE PLACED IN 1 INCH ID PVC ELECTRICAL CONDUIT. EXTEND CONDUIT UP AND TURN INTO NOTCH. TURN IN CONDUIT 12" BELOW GRADE FOR ALL MANHOLES. NEED 12" SO THE CONDUIT IS NOT IN ASPHALT IN ROADWAYS.

B. 12" MAX. DEEP NOTCH INTO CONCRETE (SIDE OF MANHOLE). ADD NOTCH IN TOP OF CONE FOR WIRE BETWEEN FRAME AND CONE. COVER NOTCH AND CONDUIT WITH 6" WIDE BUTYL RUBBER JOINT WRAP.

C. COIL AND SECURE WIRE TO FASTENER. LEAVE ENOUGH FREE WIRE TO EXTEND A MIN. OF 24".

D. WRAP EACH TRACER WIRE WIRE AROUND OUTSIDE OF MANHOLE (NO SPLICE).

E. TRACER WIRE SHALL BE AWG #12 GAUGE SOLID COPPER WITH 30 MILS GREEN HDPE INSULATION.

F. FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 15', THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY AFFIXED TO THE PIPE AT 10' INTERVALS USING ZIP TIES OR DUCT TAPE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 15', THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE AND PLACED AT A DEPTH OF 4" DIRECTLY ABOVE THE SEWER PIPE. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OR CUTS IN THE TRACER WIRE OR INSULATION SHALL BE PERMITTED.

G. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, THE TRACER WIRE SHALL NOT BE PLACED BETWEEN THE SADDLE AND MAIN.

H. SPLICES IN THE PRIMARY TRACER WIRE ALONG THE SEWER MAIN SHALL INCLUDE 2' OF SLACK WIRE ON EACH SIDE OF EACH SPLICE.

I. FOR INSTALLING A NEW LATERAL ON AN EXISTING MAIN WITH TRACER WIRE, ONLY SPLICE TO EXISTING WIRE WITH 2' OF SLACK ON NEW LATERAL.

NOTES FOR SERVICE CONNECTION (SECTION VIEW):

K. SPLICE TO PRIMARY MAIN TRACER WIRE FOR SERVICE LATERAL. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE WHERE SPLICES ARE NECESSITATED IN THE WIRE. THE SPLICES SHALL BE SECURELY BONDED TOGETHER WITH AN APPROVED INDUSTRIAL CONNECTOR TO PROVIDE ELECTRICAL CONTINUITY. CONNECTOR SHALL BE COPPER AND INSULATION SHALL BE REPAIRED TO SEAL OUT MOISTURE AND CORROSION AND SHALL BE INSTALLED IN A MANNER SO AS TO PREVENT ANY UNINSULATED WIRE EXPOSURE. (SEE CLTW STD. DETAIL).

L. FASTEN TRACER WIRE TO PIPE WITH ZIP TIES OR DUCT TAPE AROUND THE CIRCUMFERENCE OF PIPE AT 10' INTERVALS (TYP.).

M. ALL VERTICAL WIRE AT CLEANOUTS SHALL BE PLACED IN 1/4" OR 3/8" ID CONDUIT SDR 9 PEX TUBING - ASTM F876 (TYP.).

N. EXTEND CONDUIT TO JUST ABOVE CLEANOUT PLUG. PROVIDE 34" NEATLY COILED WIRE IN BOX.

O. THE CLEANOUT AT THE RIGHT OF WAY AND OR EASEMENT SHALL SERVE AS THE TEST PORT.

P. SPLICED CONNECTIONS SHALL BE ALLOWED BETWEEN THE PRIMARY MAIN LINE TRACER WIRE AND THE LATERAL TRACER WIRE.

Q. FOR NEW SEWER TAPS ON EXISTING MAINS VOID OF ANY TRACER WIRE, PROVIDE AN ANODE FOR THE TRACING WIRE. TERMINATION AT THE POINT OF THE NEW TAP ON THE EXISTING SEWER MAIN. PLACE ANODE AT BOTTOM EDGE OF TRENCH AWAY FROM MAIN & LATERAL.

R. PRIOR TO ACCEPTANCE (POST PUNCH LIST) EACH WIRE SEGMENT SHALL PASS A CONDUCTIVITY TEST, WITNESSED BY THE ENGINEER OR ENGINEER'S REPRESENTATIVE.

NOTES FOR GRAVITY SEWER MAIN (PLAN VIEW):

S. NOTCH ON TOP OF CONE (BETWEEN CONE AND FRAME) FOR TRACER WIRES.

T. MULTIPLE COILED AND SECURED WIRES.

U. FASTEN TRACER WIRE TO PIPE WITH ZIP TIES OR DUCT TAPE AROUND THE CIRCUMFERENCE OF PIPE OR AT 10' INTERVALS (TYP.).

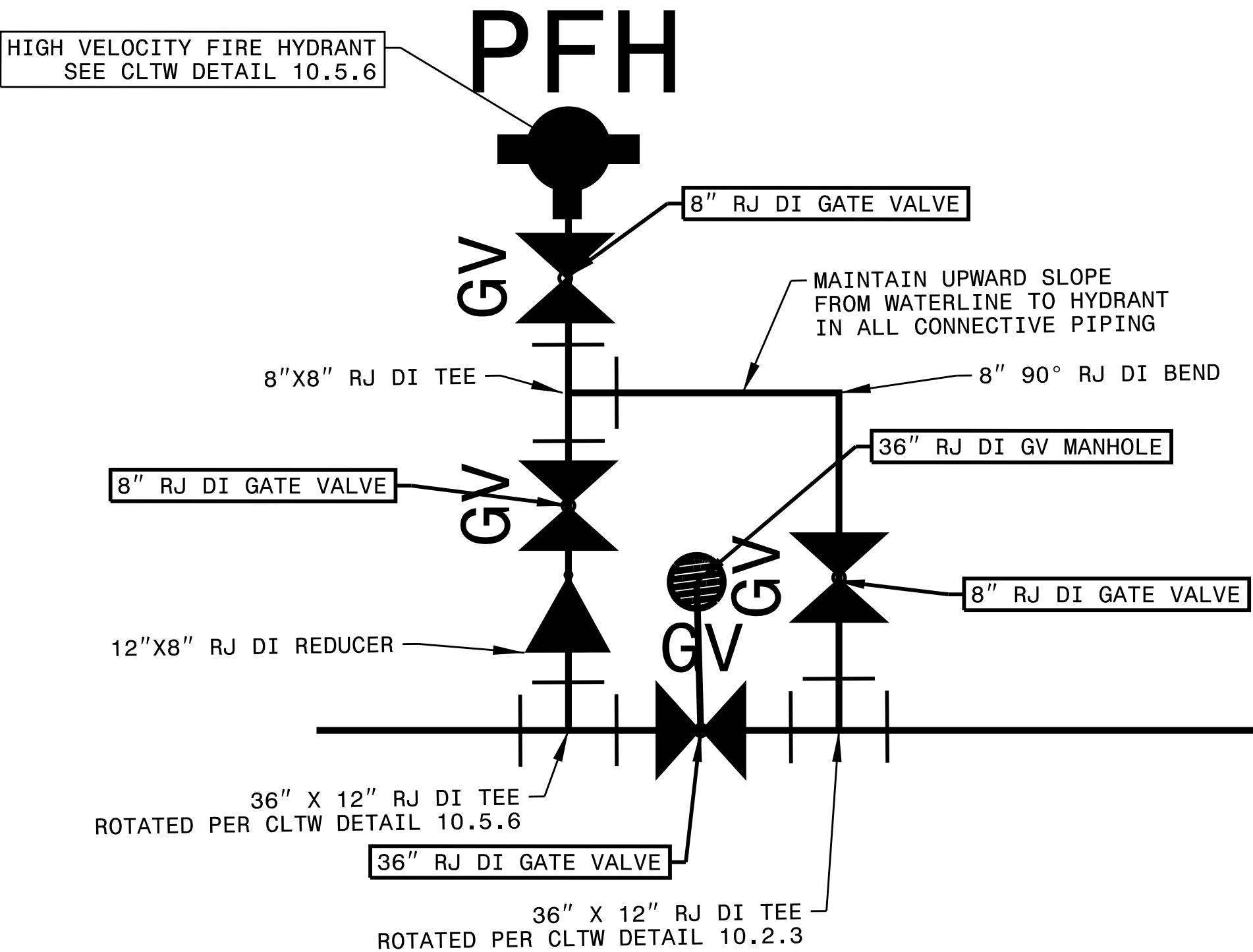
V. WRAP TRACER WIRE AROUND OUTSIDE OF MANHOLE.

NO SCALE
DATE 04/2024
DETAIL 11.5.2

WATER
GRAVITY SEWER

CHARLOTTE WATER
A CITY AND COUNTY DEPARTMENT
OF UTILITIES

TRACER WIRE - GRAVITY SEWER



DETAIL 1



5/14/93

5/14/93

PREPARED BY:

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© 2020
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12/28/2026

UTILITY CONSTRUCTION
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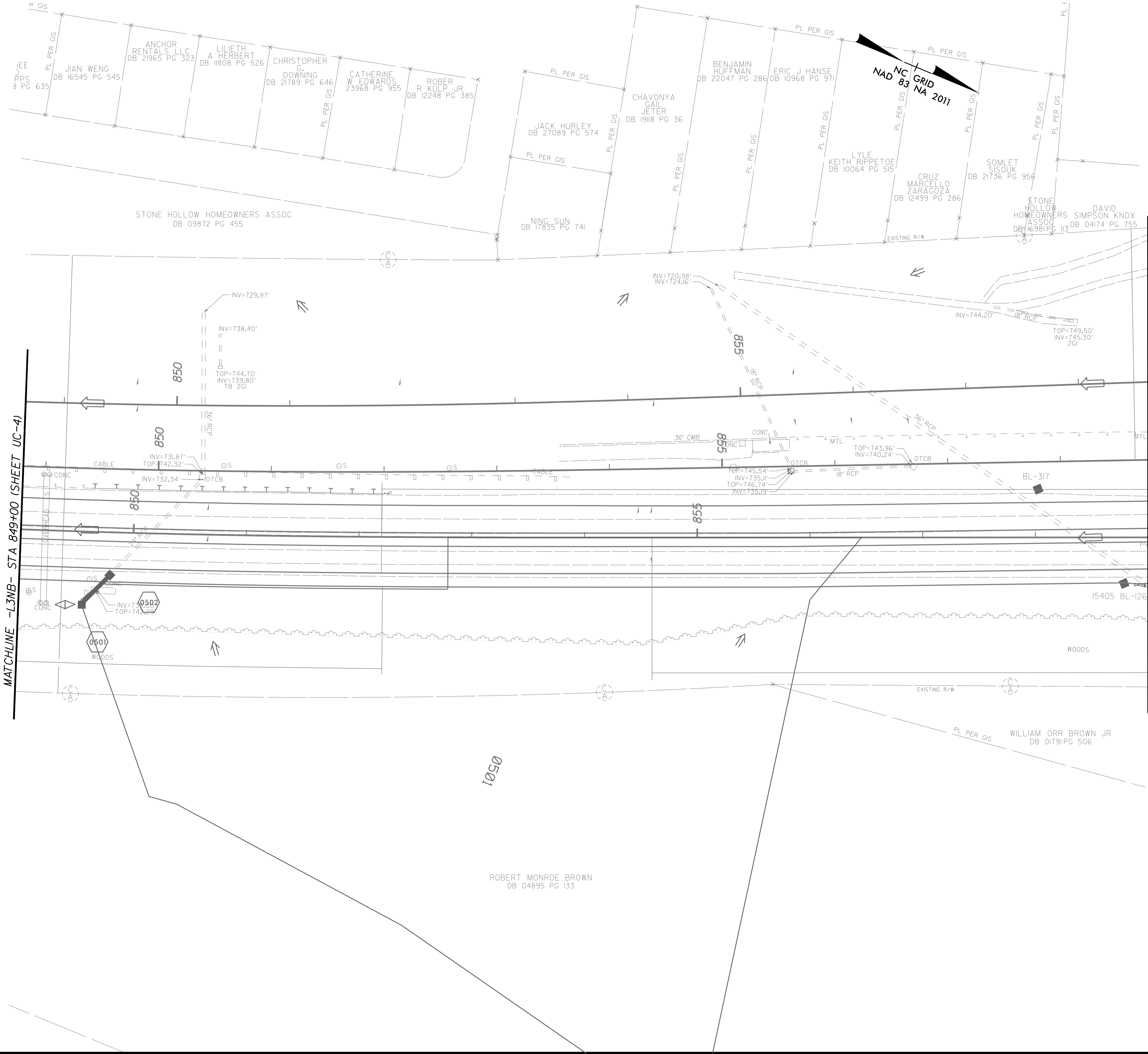
UTILITY CONSTRUCTION

NO UTILITY CONSTRUCTION ON THIS SHEET

5/14/99

5/14/99

NO UTILITY CONSTRUCTION ON THIS SHEET



PREPARED BY:
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PROJECT REFERENCE NO.
I-5715

SHEET NO.
UC-5

DESIGNED BY: MAS

DRAWN BY: SCA

CHECKED BY: SJJ

APPROVED BY: MAS

REVISED:

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DEPARTMENT OF
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NORTH CAROLINA
PROFESSIONAL
ENGINEER
JAMES A. SHOLESMITH
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8/28/2026

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5/14/99

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PROJECT REFERENCE NO.
I-5715

SHEET NO.
UC-7

DESIGNED BY: MAS

DRAWN BY: SCA

CHECKED BY: SJJ

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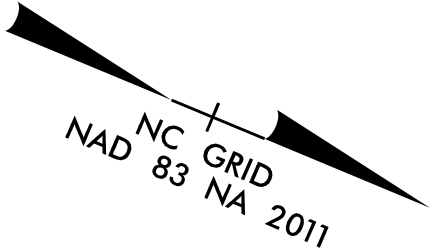
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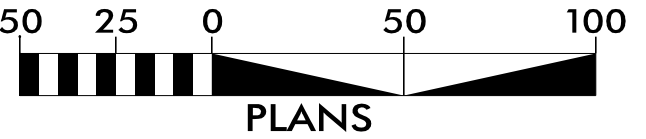
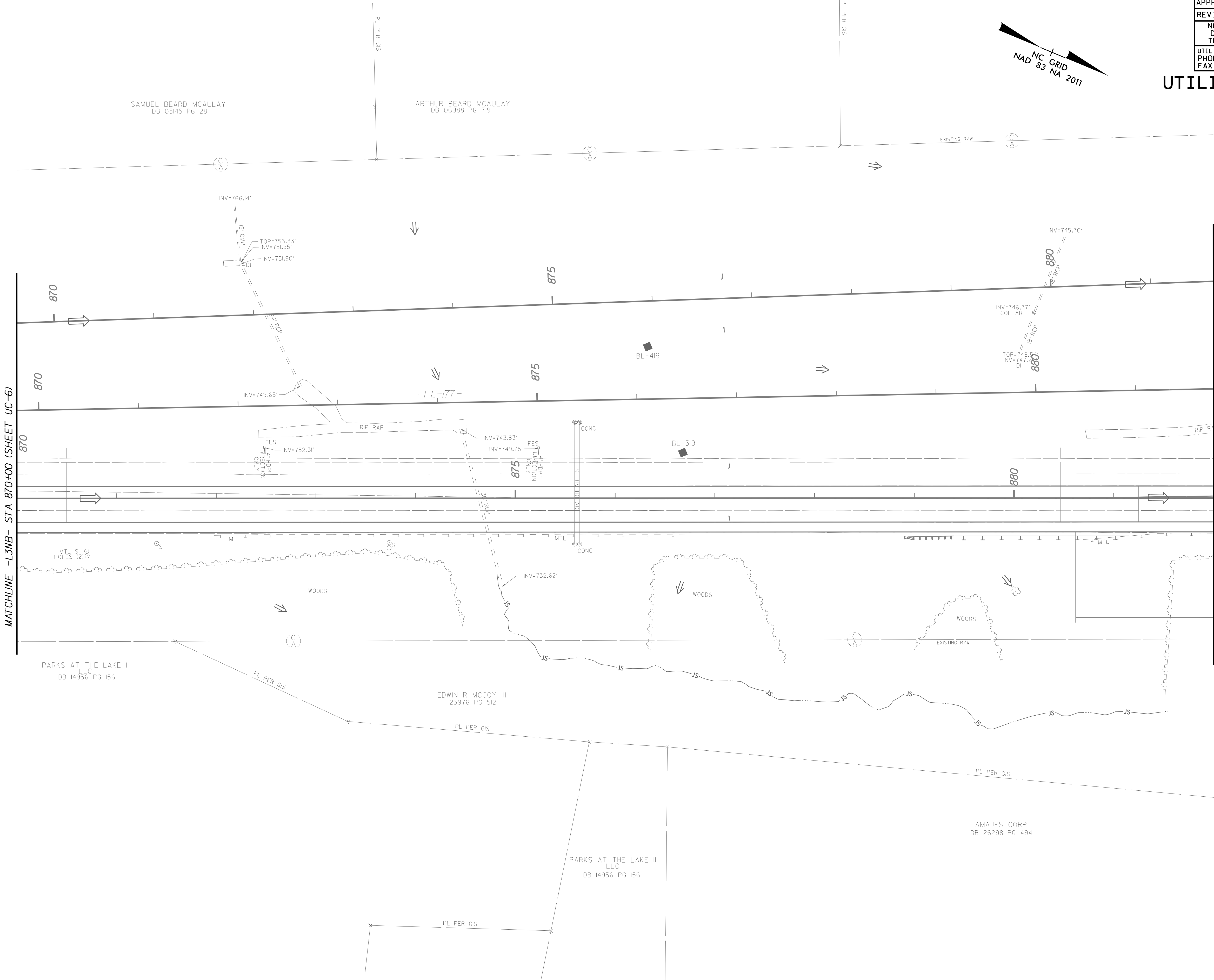
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PROJECT REFERENCE NO.
I-5715

SHEET NO.
UC-8

DESIGNED BY: MAS

DRAWN BY: SCA

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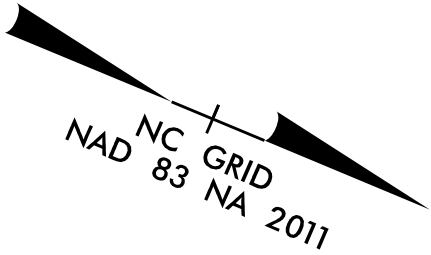
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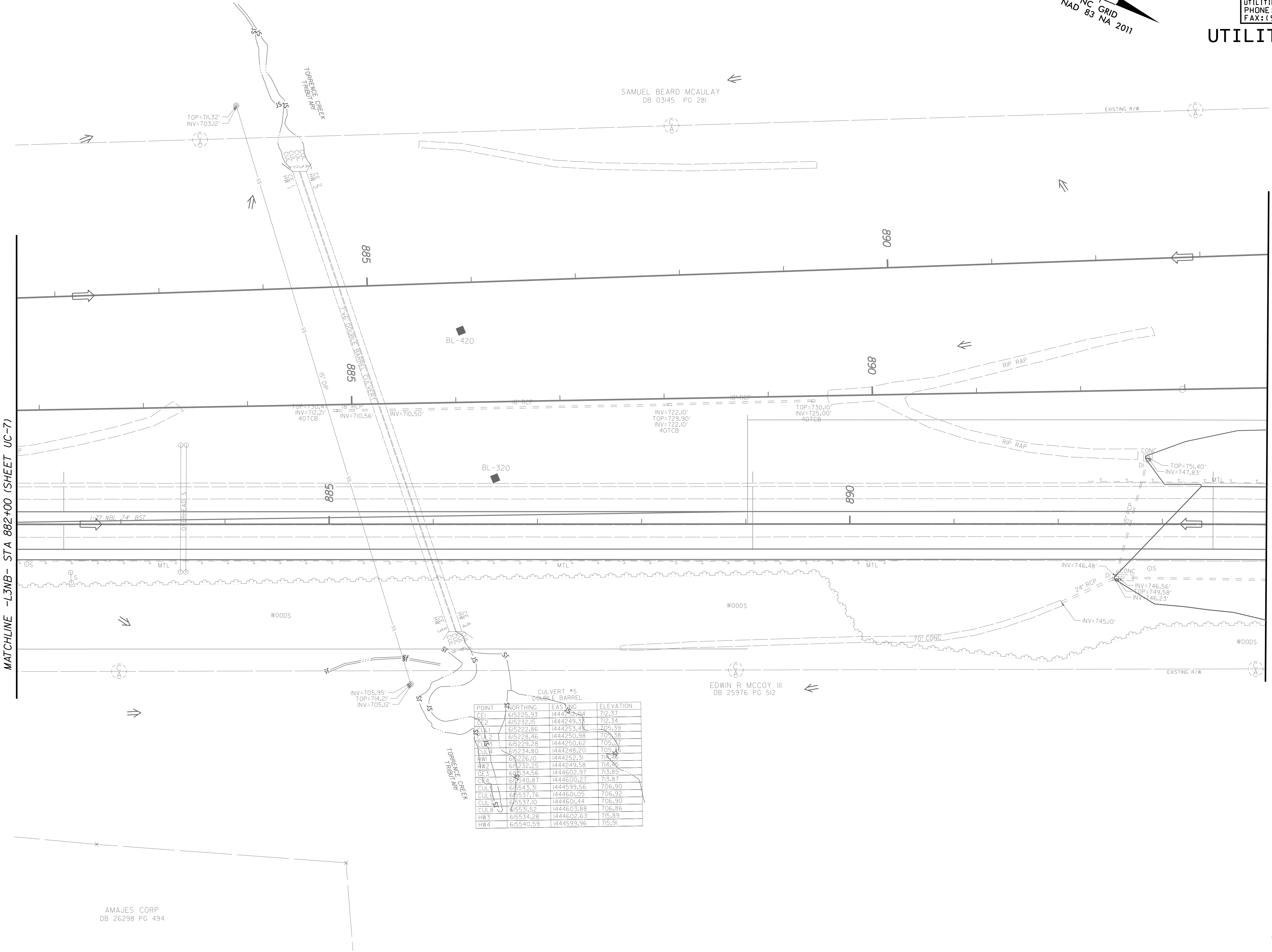
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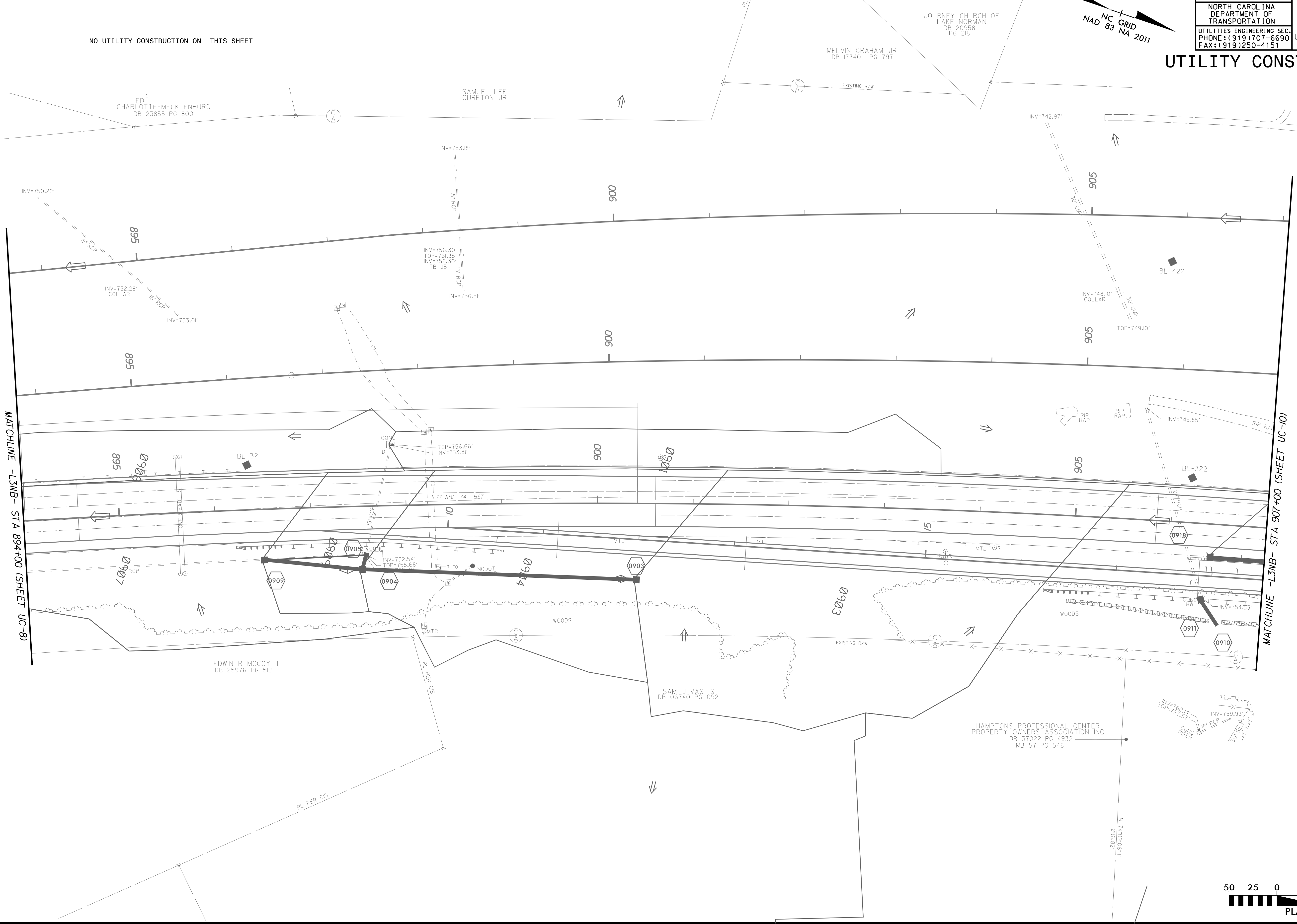


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PROJECT REFERENCE NO.
I-5715

SHEET NO.
UC-9

DESIGNED BY:	MAS
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CHECKED BY:	SJJ
APPROVED BY:	MAS
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REGISTERED PROFESSIONAL ENGINEER
Matthew S. Smith
027670
Matthew A. Shoemaker
027670
9/28/2026

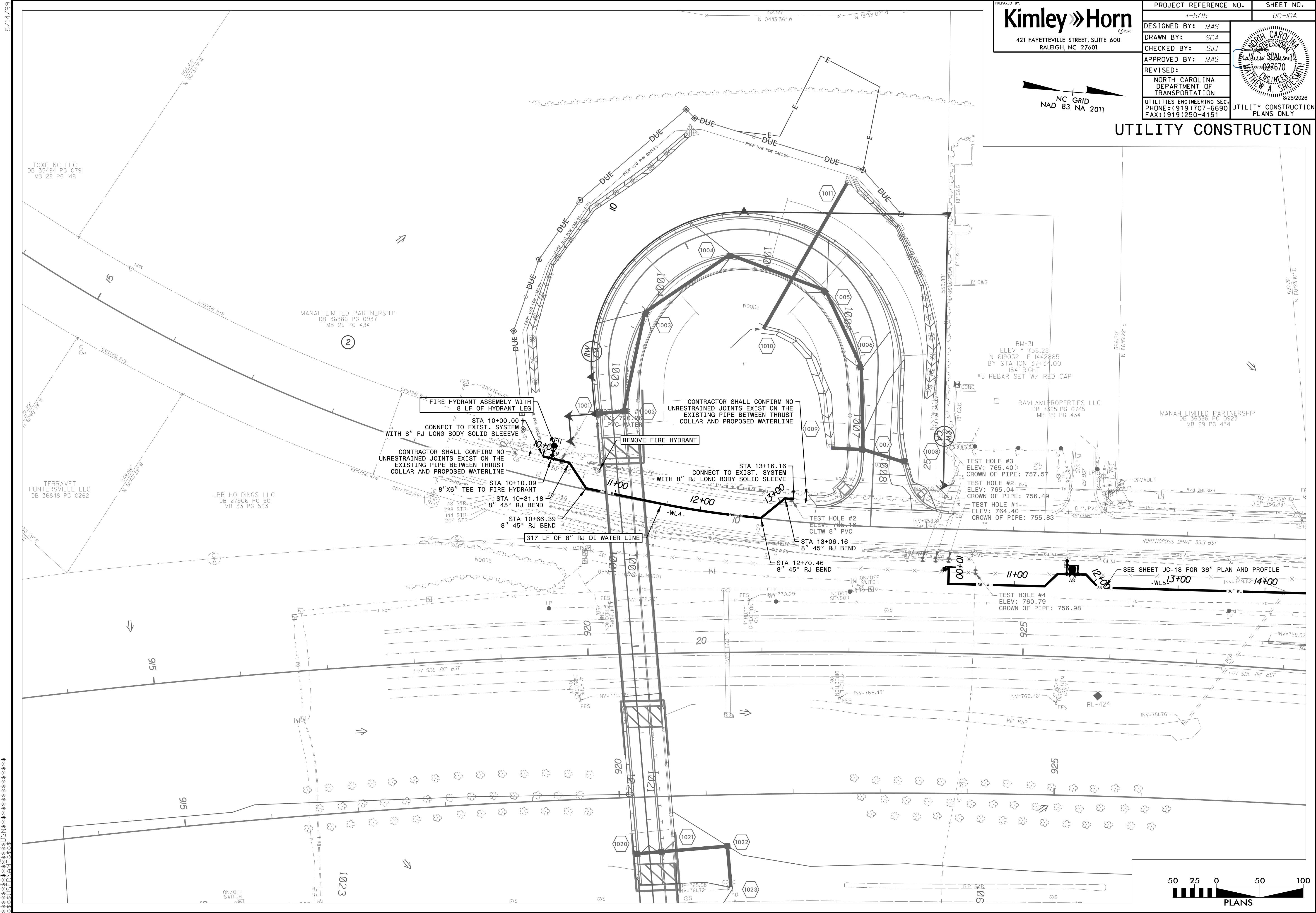


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5/14/2023

EXISTING UTILITIES SHOWN FOR INFORMATION ONLY



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PROJECT REFERENCE NO.
I-5715

SHEET NO.
UC-10A

DESIGNED BY: MAS

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APPROVED BY: MAS

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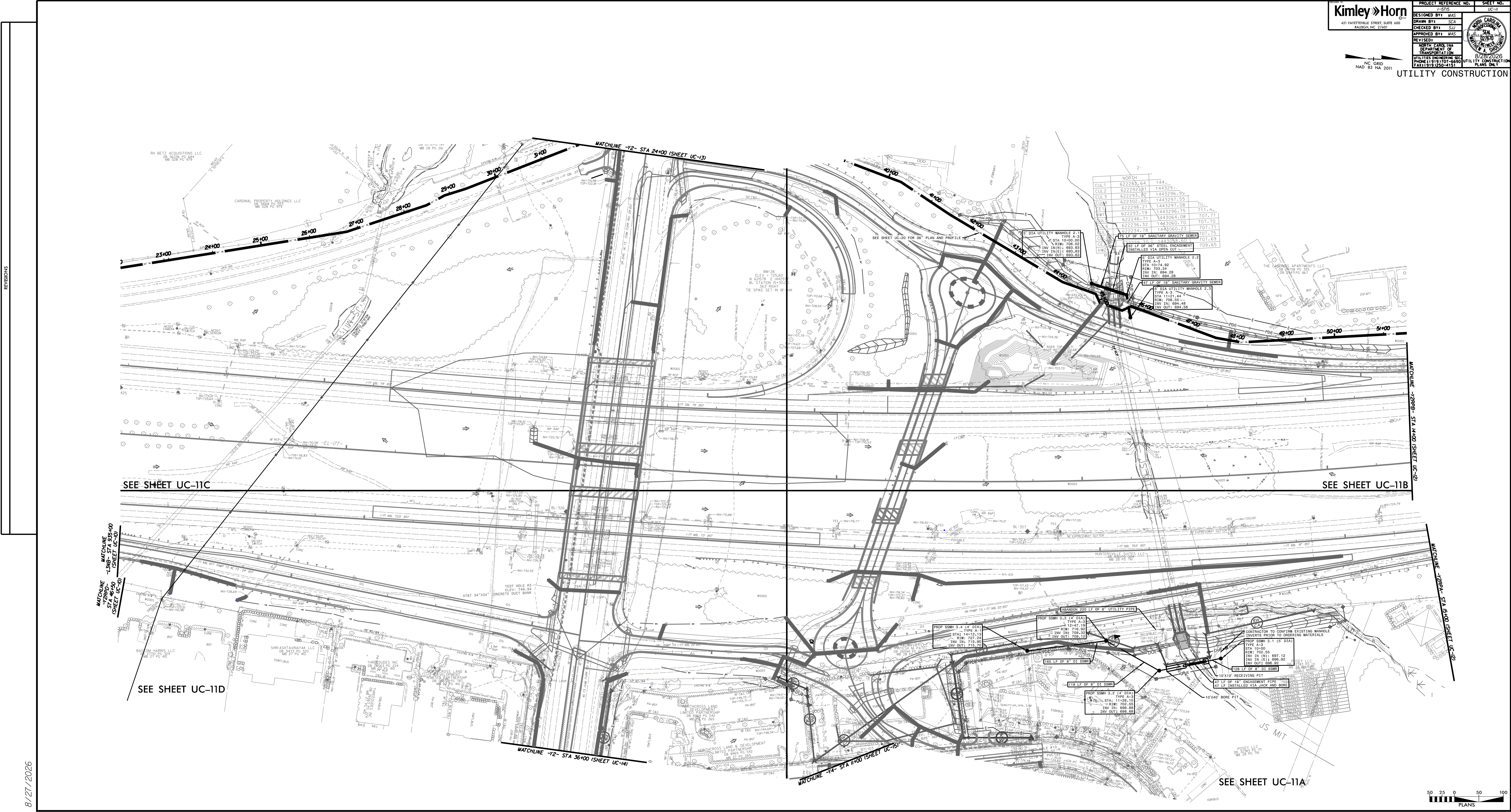
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UTILITY CONSTRUCTION





Kimley-Horn
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KANSAS CITY, MO 64111

PROJECT REFERENCE NO. 1-575
SHEET NO. UC-11

DESIGNED BY: MAS	CHECKED BY: MAS
DRAWN BY: MAS	APPROVED BY: MAS
REVIEWED BY: MAS	REVISIONS:

STATE OF MISSOURI
DEPARTMENT OF
TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION OF UTILITIES
DIVISION OF CONSTRUCTION

DATE: 01/20/2020
BY: J. L. HARRIS
FAX: 816/221-1111

UTILITY CONSTRUCTION

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NAD 83 NA 2011

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PREPARED BY:
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PROJECT REFERENCE NO.
I-5715

SHEET NO.
UC-11A

DESIGNED BY: MAS

DRAWN BY: SCA

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APPROVED BY: MAS

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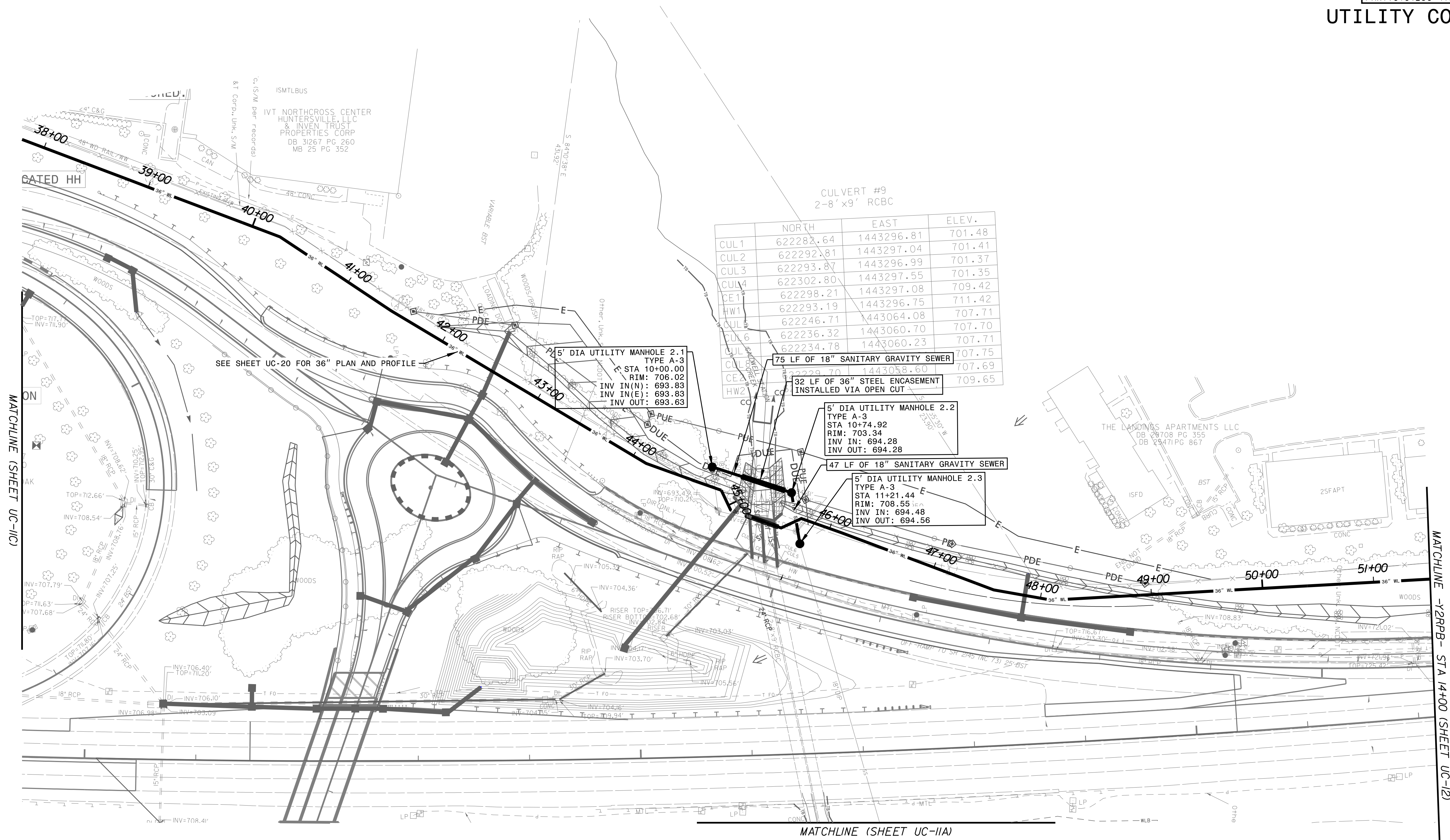
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PROJECT REFERENCE NO.
I-5715

SHEET NO.
UC-11C

DESIGNED BY: MAS

DRAWN BY: SCA

CHECKED BY: SJJ

APPROVED BY: MAS

REVISED:

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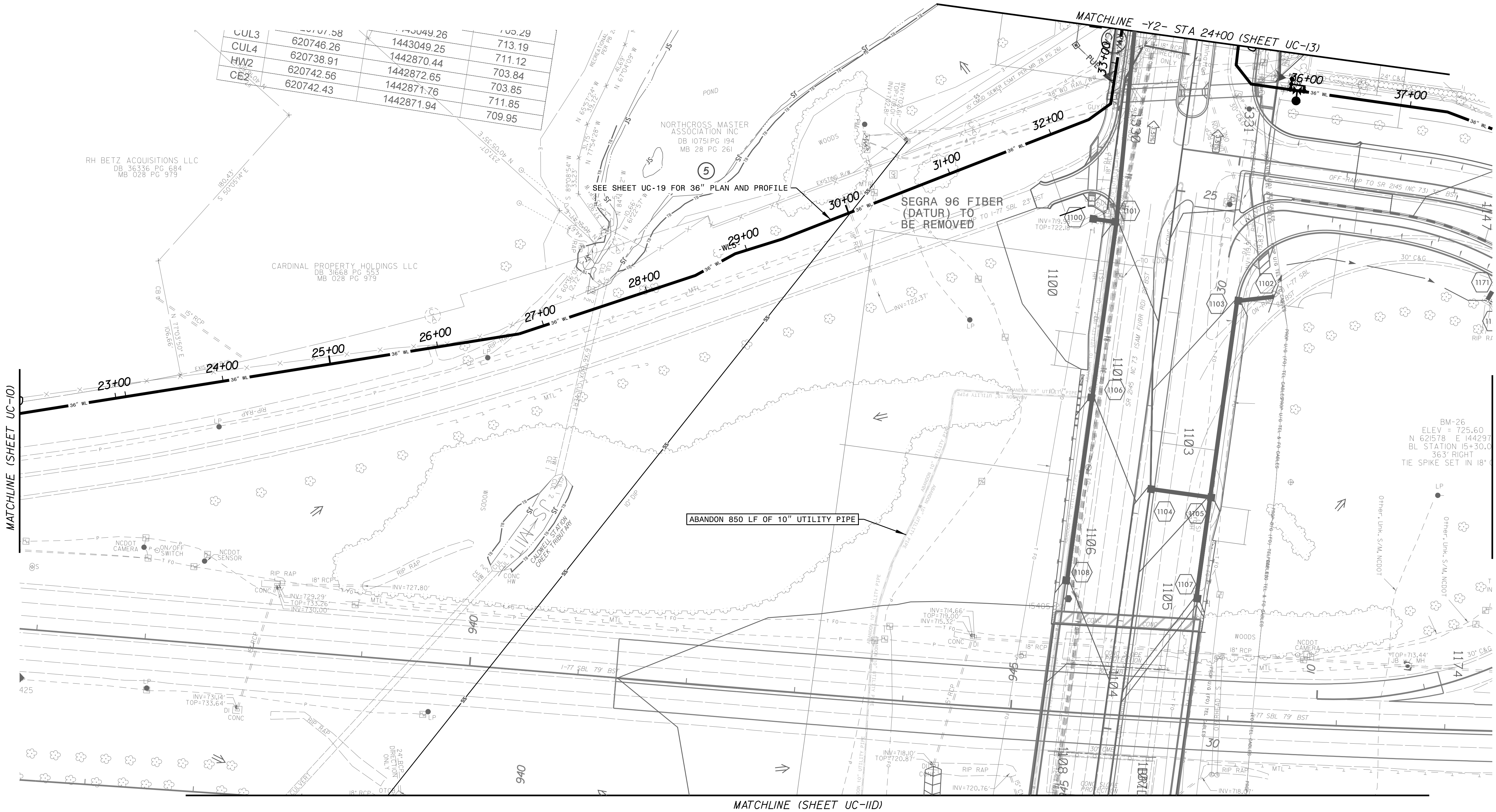
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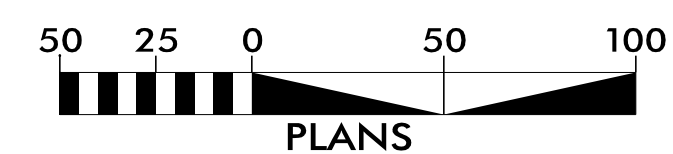
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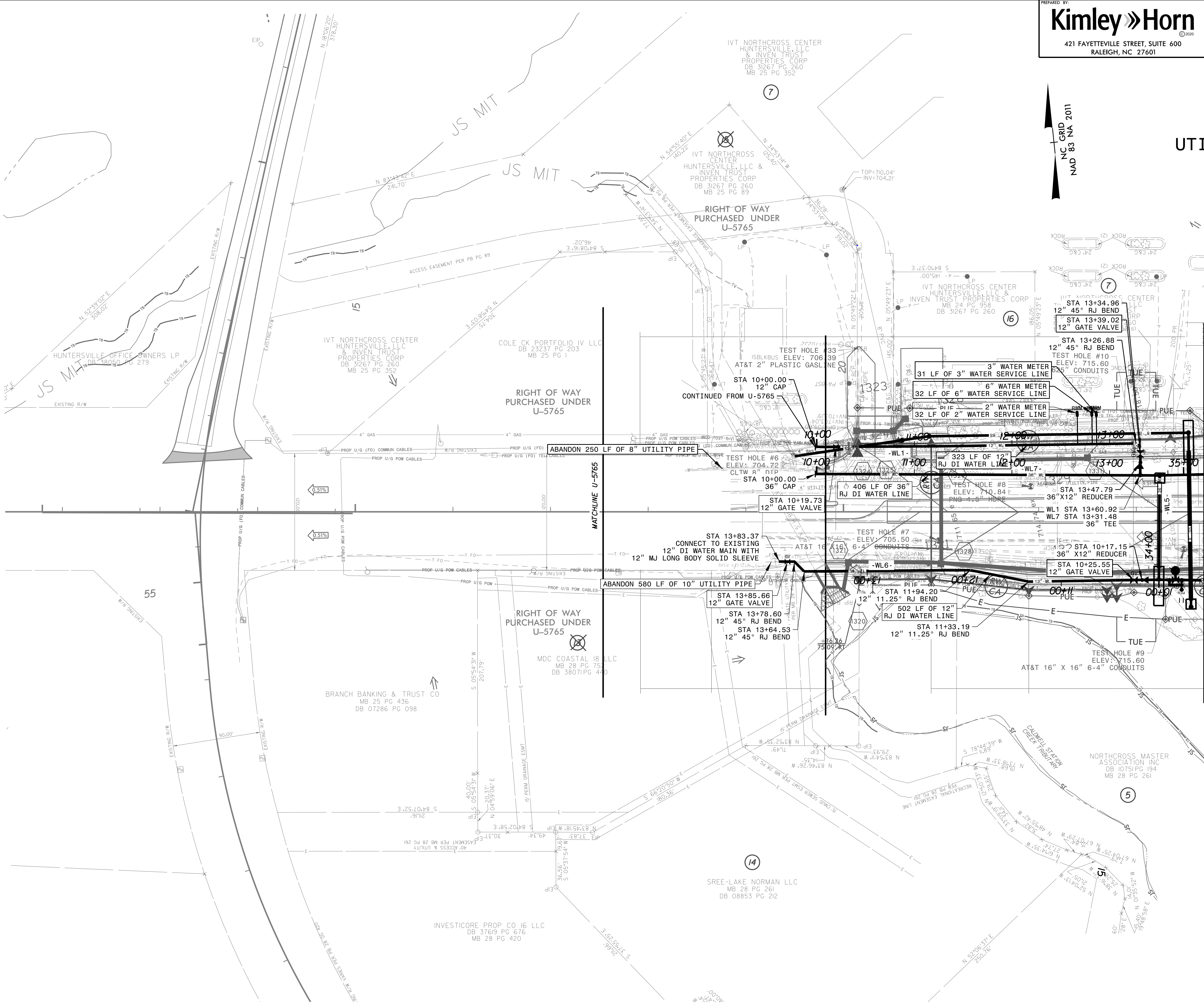






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UTILITY CONSTRUCTION



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PROJECT REFERENCE NO.

1-5715

SHEET NO.

UC-13

DESIGNED BY:

MAS

DRAWN BY:

SCA

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SJJ

APPROVED BY:

MAS

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UTILITY CONSTRUCTION
PLANS ONLY

SEAL

Matthew S. Smith

027670

1456

PROFESSIONAL ENGINEER

THOMAS A. SMITH

027670

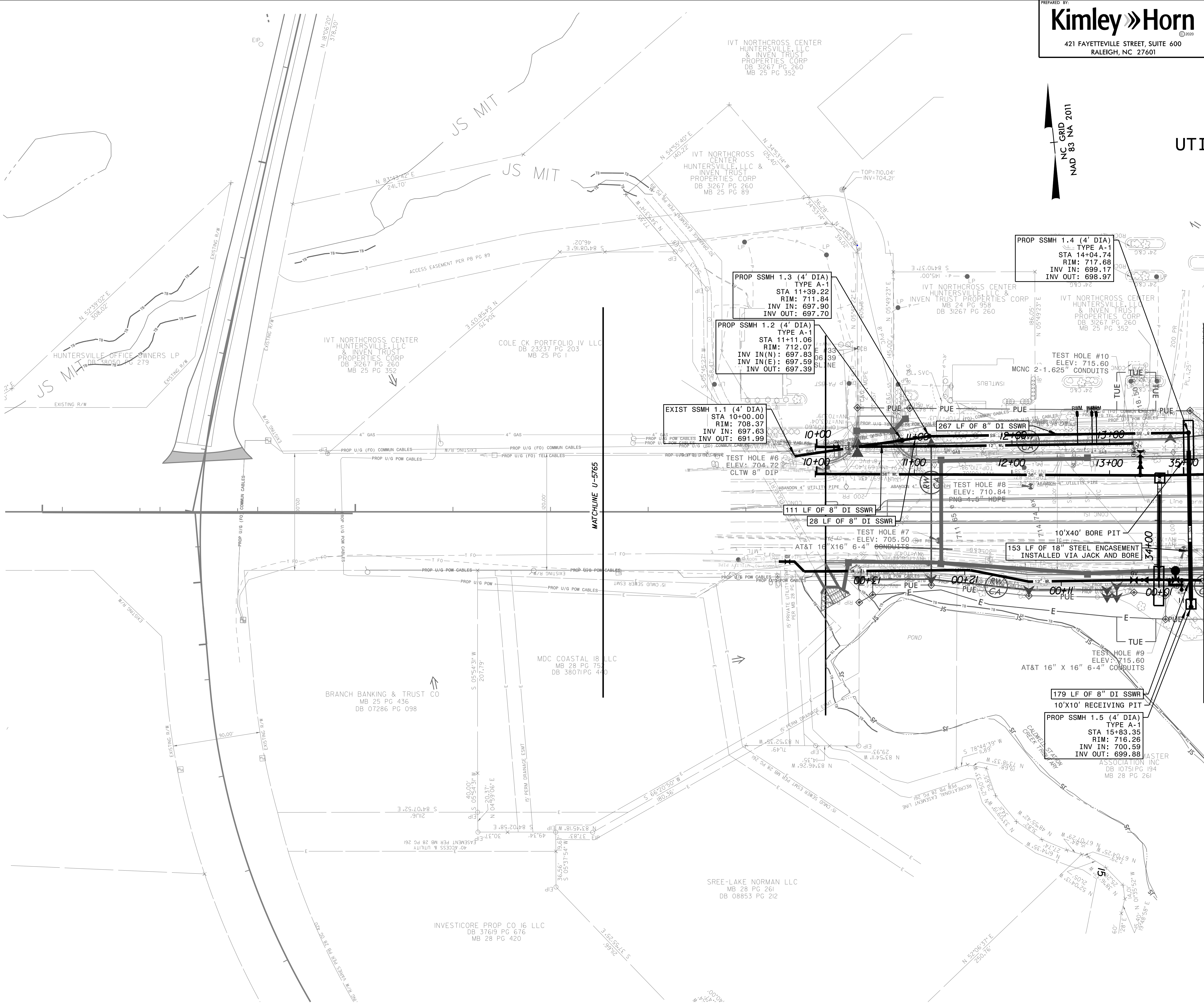
1456

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I-5715		UC-13A
DESIGNED BY: MAS		
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UTILITY CONSTRUCTION



5/14/2011

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PROJECT REFERENCE NO.
1-5715

SHEET NO.
UC-14

DESIGNED BY: MAS

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