

09/28/15

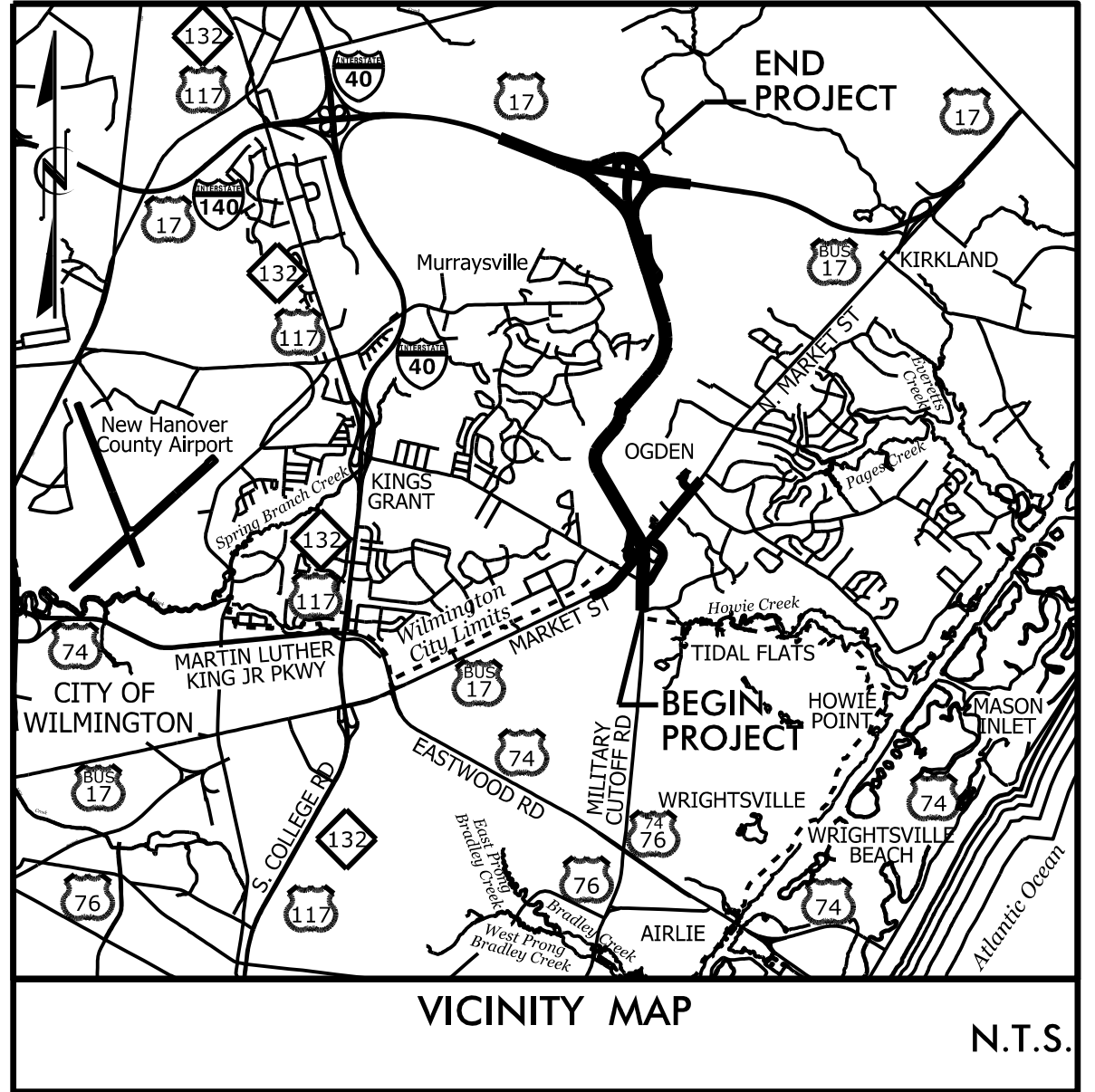
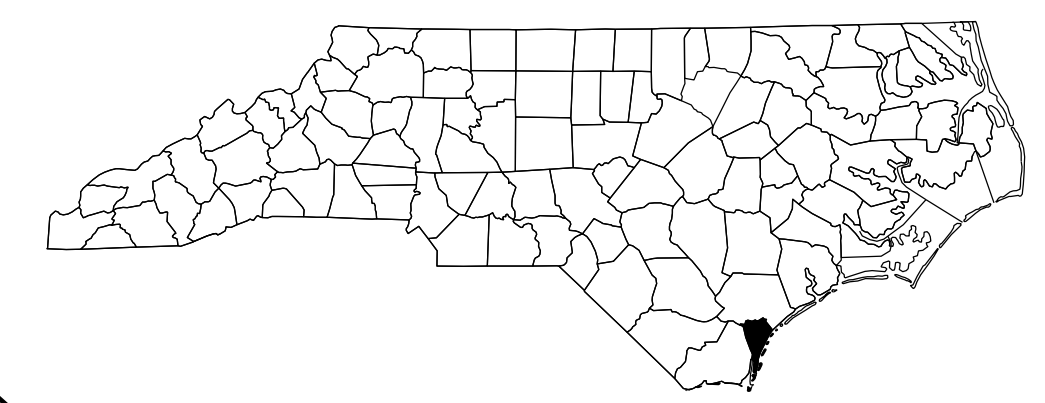
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | U-4751 | 1 | 34 |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 40191.1.2 | | PE | |

UTILITY CONSTRUCTION PLANS

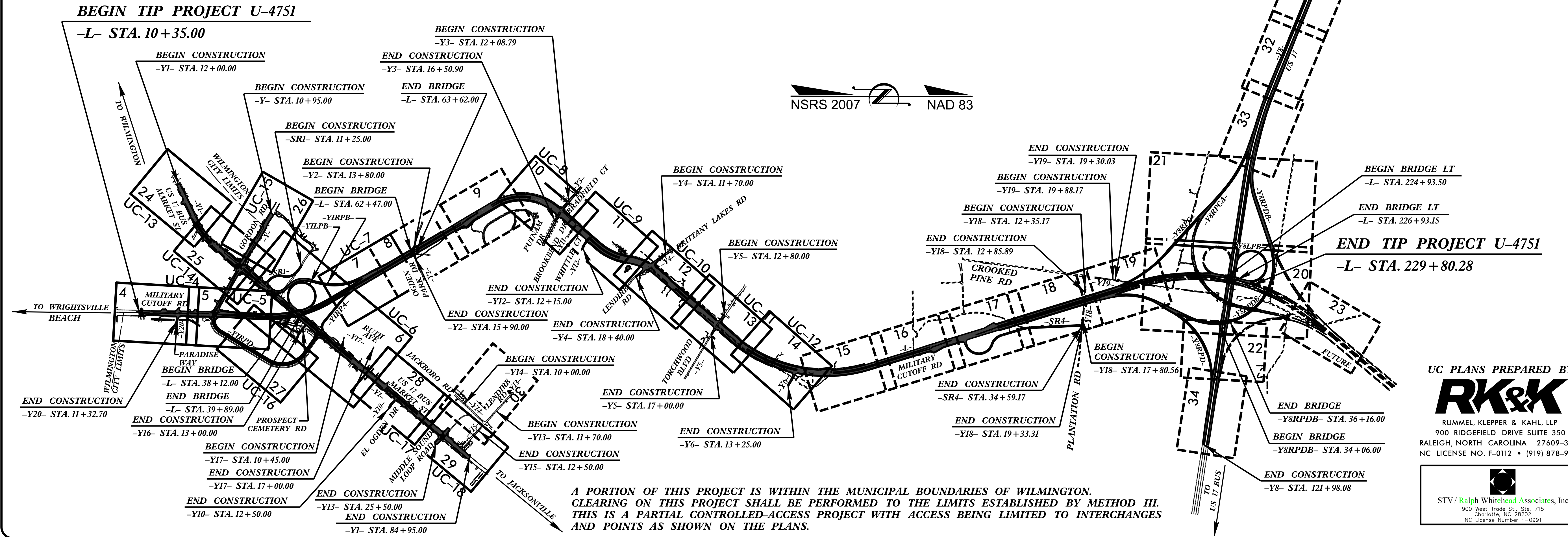
NEW HANOVER COUNTY

LOCATION: SR 1409 (MILITARY CUTOFF ROAD) TO US 17 IN WILMINGTON
TYPE OF WORK: RELOCATION OF WATER AND SANITARY SEWER LINES



INDICATES OMITTED SHEETS NO WATER AND SANITARY SEWER CONFLICTS SHEET 30 IS OMITTED IN THIS SET AS IT IS PROJECT U-4751A

TIP PROJECT: U-4751

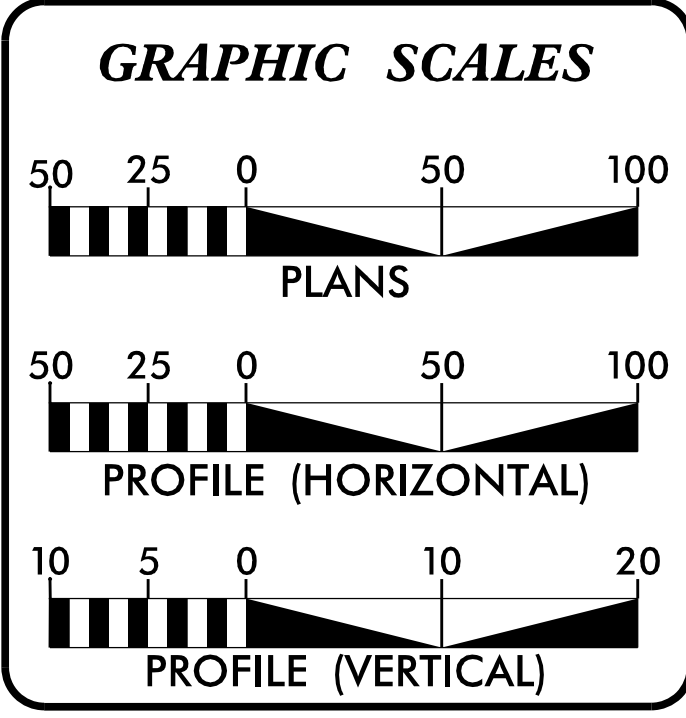


UC PLANS PREPARED BY:
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

STV/Ralph Whitehead Associates, Inc.
900 West Trade St., Ste. 715
Charlotte, NC 28202
NC License Number F-0991

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF WILMINGTON. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III. THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES AND POINTS AS SHOWN ON THE PLANS.

CONTRACT:



DESIGN DATA

| | |
|----------------------|------------------|
| ADT 2016 = | 22,600 |
| ADT 2036 = | 47,800 |
| K = | 12% |
| D = | 60% |
| T = | 7%* |
| V = | 50 MPH |
| * (TTST=3%+ DUAL 4%) | |
| FUNC CLASS = | ARTERIAL/FREEWAY |
| STATEWIDE TIER | |

SHEET INDEX

| | | |
|-------|---------------|----------------|
| UC-1 | TITLE SHEET | |
| UC-2 | SYMBOLS | |
| UC-3 | PROJECT NOTES | |
| UC-3a | THRU UC-3e | DETAILS |
| UC-4 | THRU UC-18 | PLAN SHEETS |
| UC-19 | THRU UC-29 | PROFILE SHEETS |

UTILITY OWNER:
CAPE FEAR PUBLIC UTILITY AUTHORITY

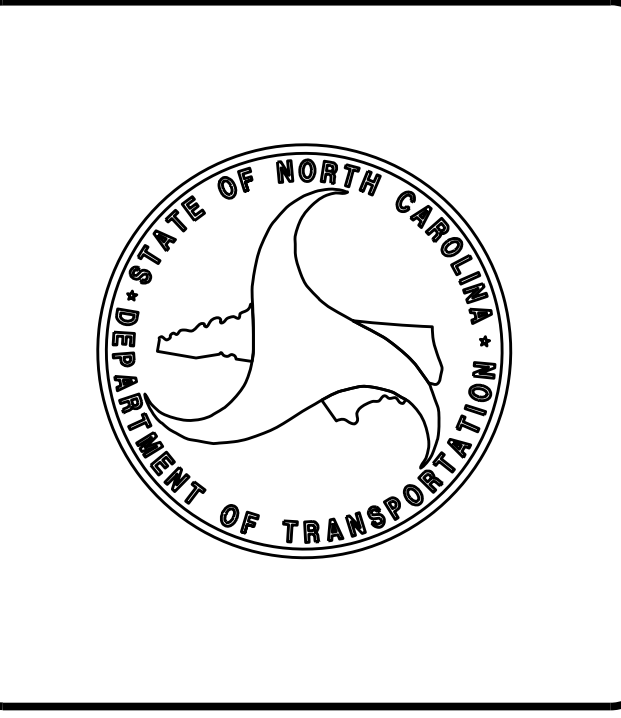
NCDOT CONTACT: GARY LOVERING, PE
Project Engineer, Roadway Design

PLANS PREPARED FOR THE NCDOT BY:
STV/RALPH WHITEHEAD ASSOCIATES, INC.
900 West Trade St., Ste. 715, Charlotte NC, 28202
NC License Number F-0991

| | |
|---|---|
| 2012 STANDARD SPECIFICATIONS | |
| RIGHT OF WAY DATE: APRIL 17, 2015 | KIT A. PERSIANI, PE PROJECT ENGINEER |
| LETTING DATE: OCTOBER 17, 2017 | SEAN C. STEPHENS, EI PROJECT DESIGNER |

UTILITY ENGINEER

DocuSigned by:
Bryan Badley
SIGNATURE



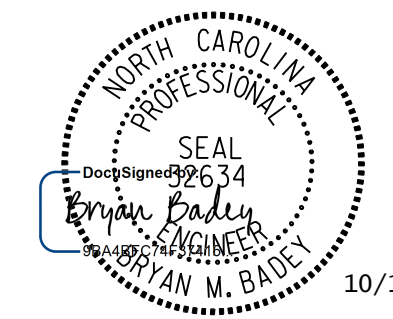
PRE-FDI PLANS
10/17/2017

5/14/99

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROJECT REFERENCE NO. U-4751 SHEET NO. UC-2



UTILITY CONSTRUCTION PLANS

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROPOSED WATER SYMBOLS

| | |
|---------------------------------|--------|
| Water Line (Sized as Shown) | 12" WL |
| 11¼ Degree Bend | +† |
| 22½ Degree Bend | +X |
| 45 Degree Bend | +X |
| 90 Degree Bend | +† |
| Plug | ⊥ |
| Tee | †† |
| Cross | ††† |
| Reducer | ▶ |
| Gate Valve | GV |
| Butterfly Valve | BV |
| Tapping Valve | TGV |
| Line Stop | LS |
| Line Stop with Bypass | LS/BP |
| Blow Off | BO |
| Fire Hydrant | PFH |
| Relocate Fire Hydrant | RFH |
| Remove Fire Hydrant | REM FH |
| Water Meter | PWM |
| Relocate Water Meter | RWM |
| Remove Water Meter | REM WM |
| Water Pump Station | PST(W) |
| RPZ Backflow Preventer | PRPZ |
| DCV Backflow Preventer | PBFP |
| Relocate RPZ Backflow Preventer | RRPZ |
| Relocate DCV Backflow Preventer | RBFP |

PROPOSED SEWER SYMBOLS

| | |
|--|---------|
| Gravity Sewer Line (Sized as Shown) | 12" SS |
| Force Main Sewer Line (Sized as Shown) | 12" FSS |
| Manhole (Sized per Note) | • |
| Sewer Pump Station | PST(SS) |

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

| | |
|--|--------------------|
| Power Pole | o |
| Telephone Pole | o- |
| Joint Use Pole | o- |
| Telephone Pedestal | TE PED |
| Utility Line by Others (Type as Shown) | PROP O/H POW LINES |
| Trenchless Installation | 12" TL INSTALL |
| Encasement by Open Cut | 24" ENCAS BY OC |
| Encasement | 24" ENCASEMENT |

| | |
|-------------------|----------|
| Thrust Block | I |
| Air Release Valve | AR |
| Utility Vault | UV |
| Concrete Pier | CP |
| Steel Pier | SP |
| Plan Note | NOTE |
| Pay Item Note | PAY ITEM |

EXISTING UTILITIES SYMBOLS

| | | | |
|--|--------|---|--------------------|
| Power Pole | • | *Underground Power Line | P |
| Telephone Pole | •- | *Underground Telephone Cable | T |
| Joint Use Pole | •- | *Underground Telephone Conduit | TC |
| Utility Pole | • | *Underground Fiber Optics Telephone Cable | TFO |
| Utility Pole with Base | □ | *Underground TV Cable | TV |
| H-Frame Pole | •—• | *Underground Fiber Optics TV Cable | TV FO |
| Power Transmission Line Tower | ⊠ | *Underground Gas Pipeline | G |
| Water Manhole | ⊙ | Aboveground Gas Pipeline | A/G Gas |
| Power Manhole | ⊙ | *Underground Water Line | W |
| Telephone Manhole | ⊙ | Aboveground Water Line | A/G Water |
| Sanitary Sewer Manhole | ⊙ | *Underground Gravity Sanitary Sewer Line | SS |
| Hand Hole for Cable | ⊠ | Aboveground Gravity Sanitary Sewer Line | A/G Sanitary Sewer |
| Power Transformer | ⊠ | *Underground SS Forced Main Line | FSS |
| Telephone Pedestal | ⊠ | Underground Unknown Utility Line | UTIL |
| CATV Pedestal | ⊠ | SUE Test Hole | • |
| Gas Valve | ◇ | Water Meter | ⊙ |
| Gas Meter | ◇ | Water Valve | ⊙ |
| Located Miscellaneous Utility Object | ⊙ | Fire Hydrant | ◇ |
| Abandoned According to Utility Records | AATUR | Sanitary Sewer Cleanout | ⊙ |
| End of Information | E.O.I. | | |

*For Existing Utilities
 Utility Line Drawn from Record (Type as Shown) ————
 Designated Utility Line (Type as Shown) - - - - -

PLANS PREPARED BY :
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 RUMMEL, KLEPPER & KAHL, LLP
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
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5/14/99

UTILITY CONSTRUCTION

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 2012 AND CAPE FEAR PUBLIC UTILITY AUTHORITY TECHNICAL STANDARDS REVISION NUMBER 1.04 DATED OCTOBER 11, 2010.
2. THE EXISTING UTILITIES BELONG TO CAPE FEAR PUBLIC UTILITY AUTHORITY.
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES. 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. 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 ONE WEEK PRIOR TO SERVICE INTERRUPTION. 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. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
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, AT NIGHT, AND ON 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. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE PATH DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
2. NITRILE GASKETS SHALL BE USED IF PETROLEUM CONTAMINATED SOILS ARE FOUND.
3. IF HDPE PIPE IS INSTALLED BY DIRECTIONAL DRILL. IT SHALL BE FILLED WITH WATER AND NOT BE CONNECTED TO ANY OTHER PIPE OR FITTINGS FOR ONE WEEK FROM THE TIME OF INSTALLATION.

| | |
|--|--------------------------|
| PROJECT REFERENCE NO. <i>U-4751</i> | SHEET NO. <i>UC-3</i> |
|--|--------------------------|



10/17/2017

UTILITY CONSTRUCTION PLANS

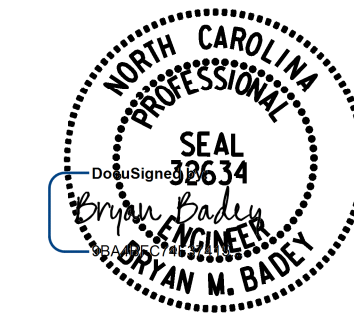
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

PLANS PREPARED BY :



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NC LICENSE NO. F-0112 • (919) 878-9560

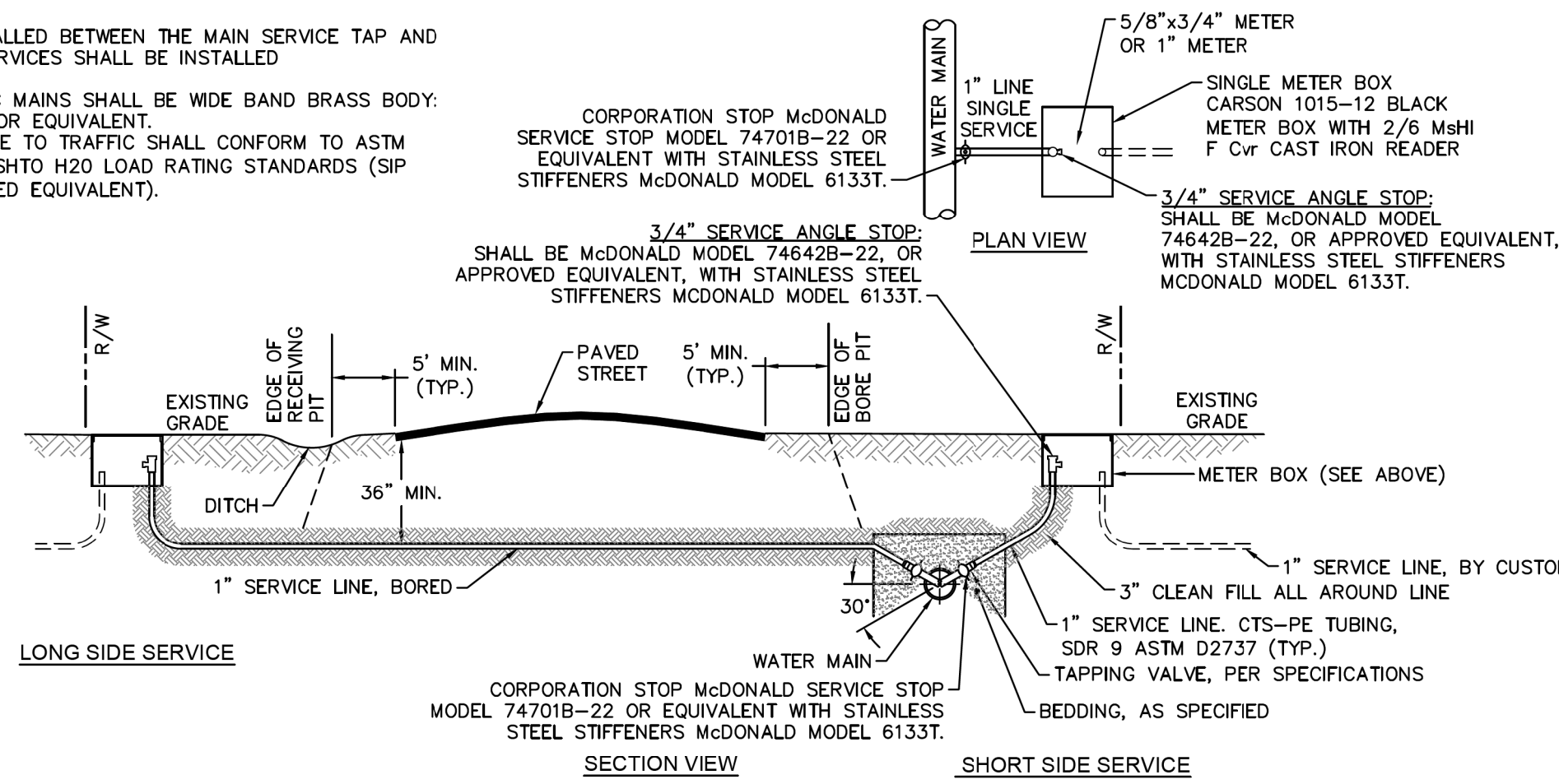
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UTILITY CONSTRUCTION PLANS
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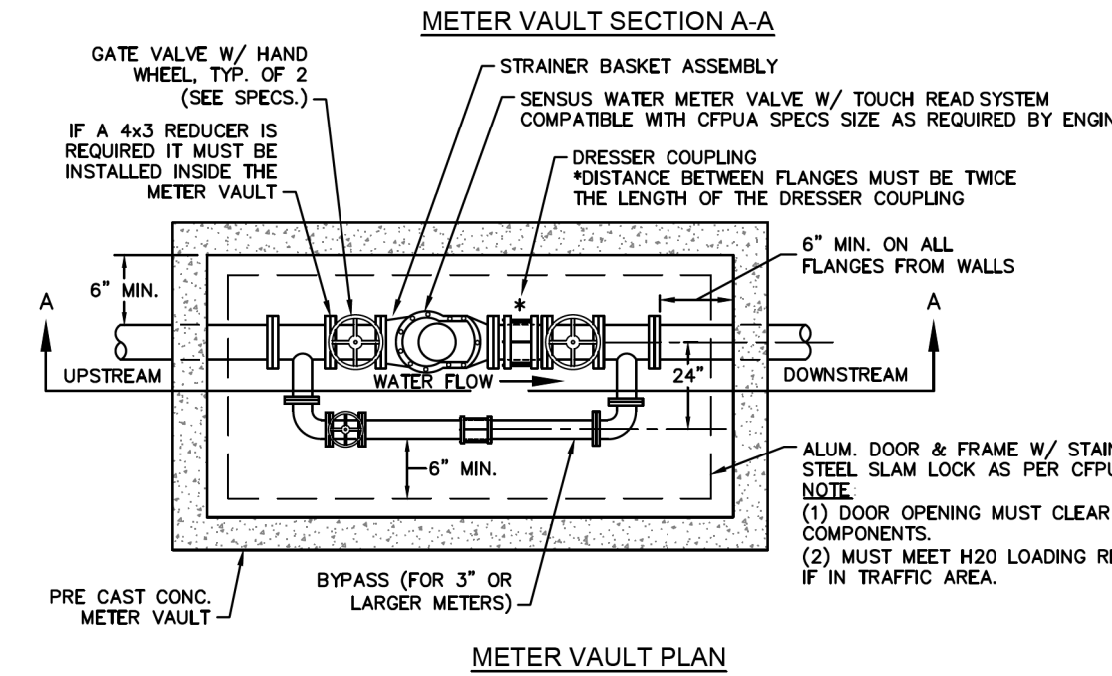
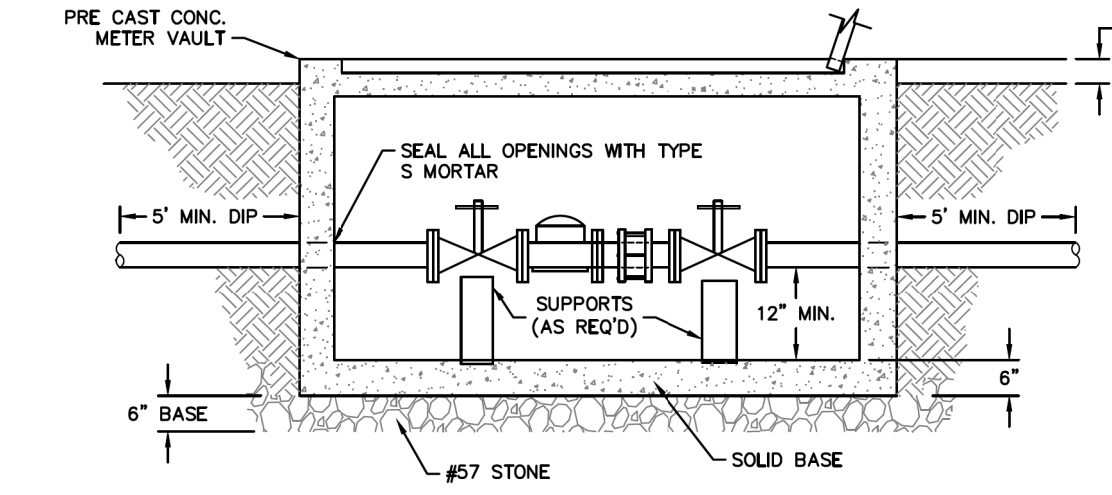
NOTES:

1. NO JOINT SHALL BE INSTALLED BETWEEN THE MAIN SERVICE TAP AND THE METER STOP. ALL SERVICES SHALL BE INSTALLED PERPENDICULAR TO MAIN.
2. SERVICE SADDLES ON PVC MAINS SHALL BE WIDE BAND BRASS BODY: SADDLE McDONALD 3801 OR EQUIVALENT.
3. METER BOXES SUSCEPTIBLE TO TRAFFIC SHALL CONFORM TO ASTM A48, CLASS 30B AND AASHTO H20 LOAD RATING STANDARDS (SIP MODEL 4242, OR APPROVED EQUIVALENT).

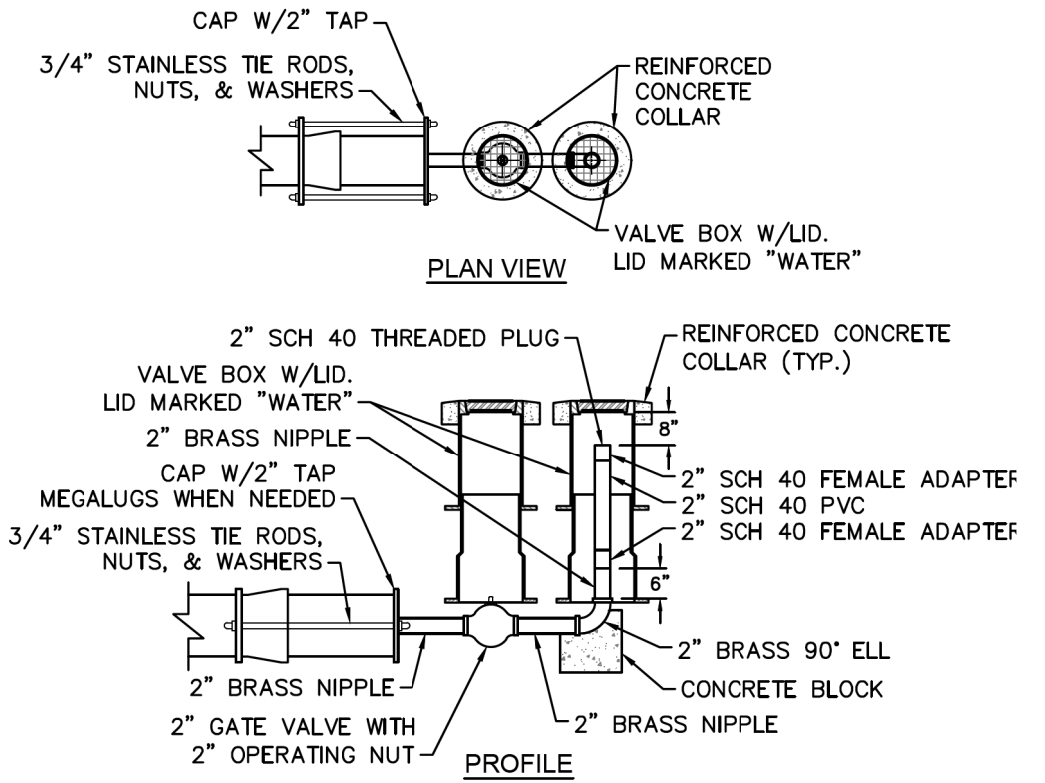


NOTE:
TYPICAL WATER SERVICE CONNECTION FOR RESIDENTIAL SINGLE FAMILY HOME ON CFPWA WATER SYSTEM

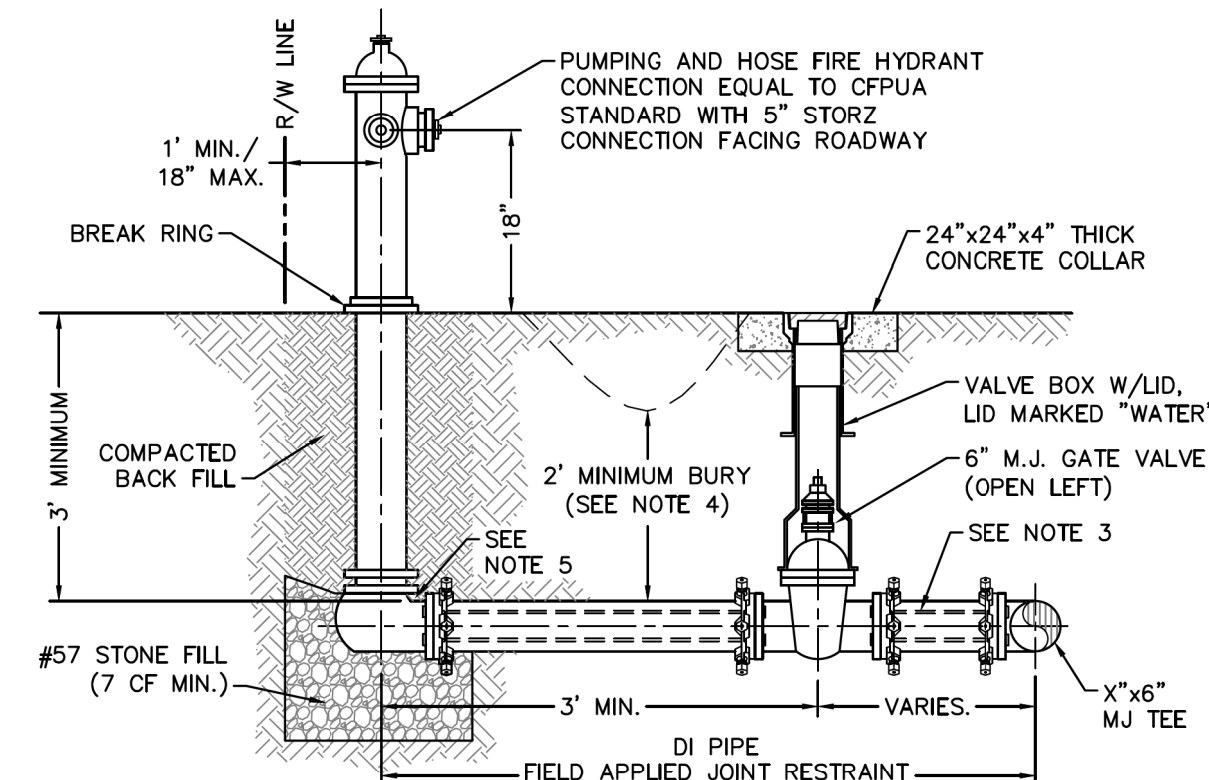
WD-18 SINGLE SERVICE CONNECTION
NOT TO SCALE



WD-1 WATER METER VAULT
NOT TO SCALE



WD-5 2\"/>



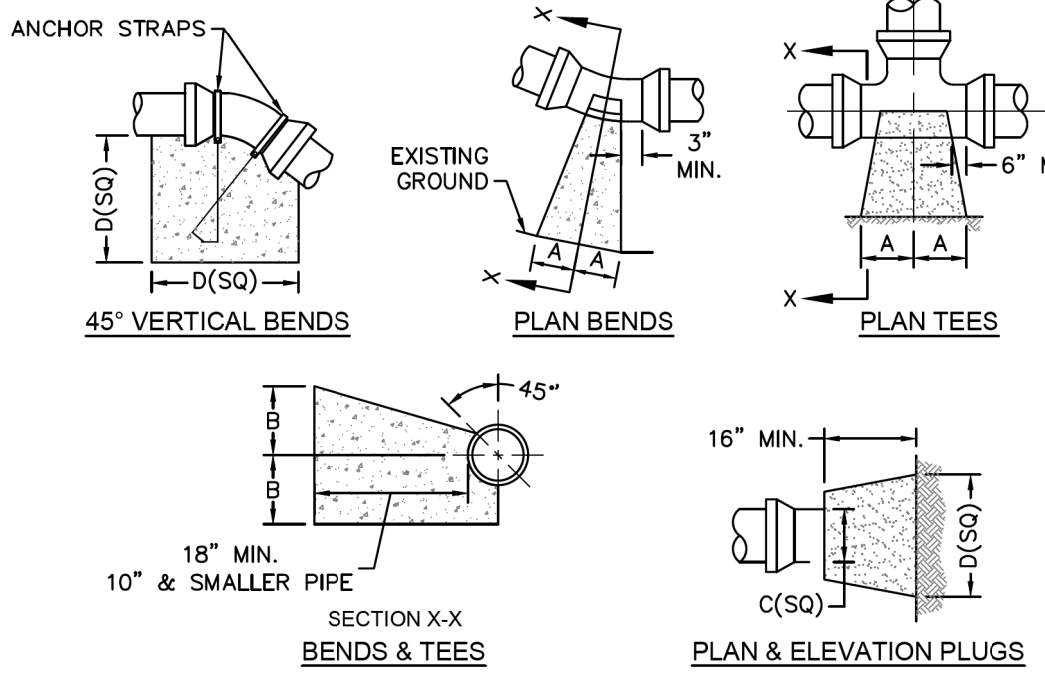
- NOTES:**
1. JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI PIPE AS MANUFACTURED BY EBAA IRON, SIGMA, STAR PIPE PRODUCTS OR APPROVED EQUAL.
 2. WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 3/16 STAINLESS STEEL WARESS AND FASTENERS.
 3. CONTINUOUS 3/16 STAINLESS STEEL RODS (TEE TO VALVE AND VALVE TO HYDRANT) MAY BE USED WITH COR-BLUE M J T-BOLT AND GASKET KITS, AS AN ALTERNATIVE.
 4. HYDRANT AND VALVE SHALL BE PLACED OUTSIDE DITCH LIMITS.
 5. WEEP HOLES OPEN AND UNBLOCKED TO DRAIN.

WD-10 FIRE HYDRANT ASSEMBLY
NOT TO SCALE

CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:

1. SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
2. WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE AT RIGHT-OF-WAY LINE. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE AT RIGHT-OF-WAY LINE.
3. ALL SERVICES TYING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF CLASS 50, DIP, WITH PROTECTO 401 CERAMIC EPOXY LINING.
4. MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
5. NO FLEXIBLE COUPLINGS SHALL BE USED.
6. ALL STAINLESS STEEL FASTENERS SHALL BE 316.
7. CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.

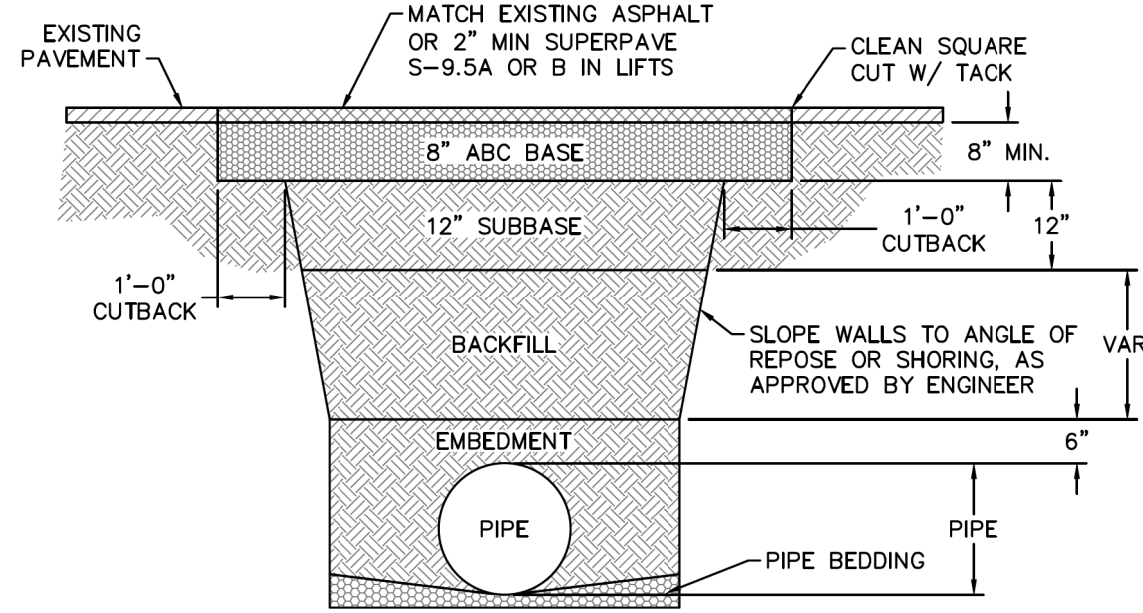
WD-19 STANDARD NOTES
(REQUIRED ON ALL PLAN AND PROFILE SHEETS)



| SIZE | 90 BENDS | | 45 BENDS | | 22-1/2 BENDS | | TEES/PLUGS | | 45 VERT. BENDS |
|------|----------|-----|----------|-----|--------------|-----|------------|-----|----------------|
| | A | B | A | B | A | B | A | B | |
| 3" | 8" | 6" | 5" | 6" | 3" | 7" | 6" | 8" | 27" |
| 4" | 8" | 9" | 5" | 8" | 3" | 11" | 6" | 9" | 28" |
| 6" | 14" | 11" | 9" | 9" | 8" | 8" | 12" | 9" | 36" |
| 8" | 16" | 16" | 12" | 12" | 10" | 13" | 14" | 13" | 42" |
| 10" | 18" | 22" | 15" | 14" | 14" | 18" | 18" | 15" | 50" |
| 12" | 20" | 28" | 18" | 17" | 16" | 19" | 22" | 18" | 62" |
| 14" | 26" | 29" | 21" | 19" | 18" | 18" | 26" | 20" | 72" |
| 16" | 33" | 29" | 25" | 21" | 20" | 21" | 32" | 21" | 83" |
| 18" | 40" | 30" | 28" | 24" | 22" | 23" | 36" | 24" | 88" |

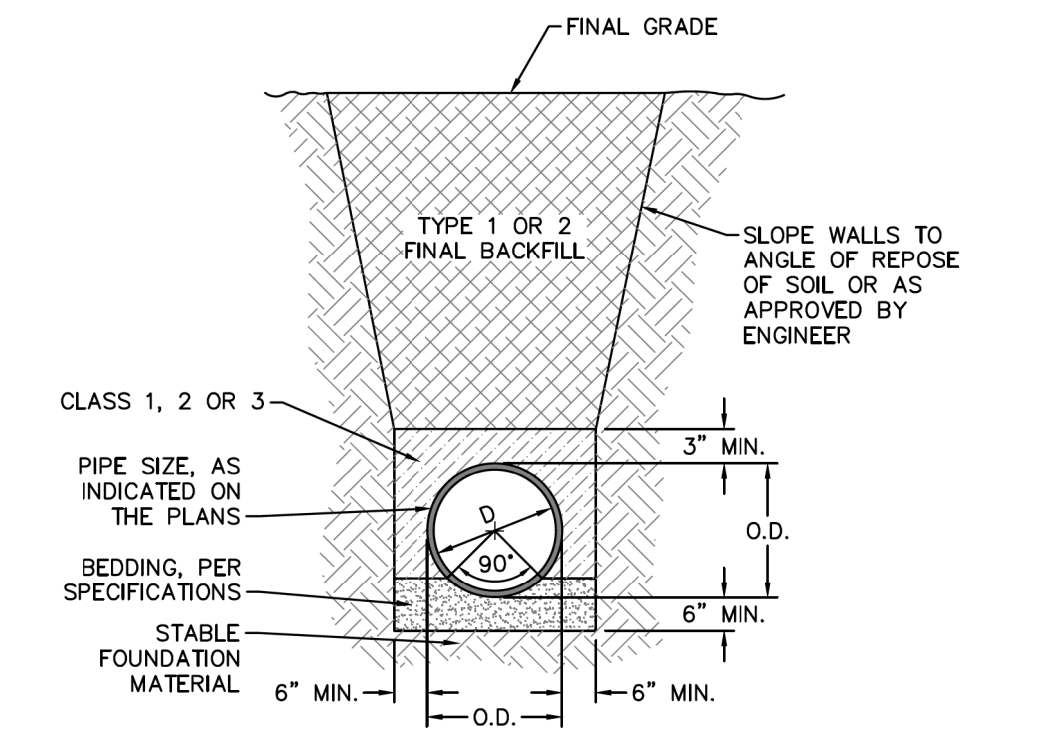
- NOTES:**
1. BASED ON 160 PSI TEST PRESSURE AND 2000 PSF SOIL BEARING CAPACITY.
 2. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND.
 3. USE MEG-A-LUG (PREFERRED) IN LIEU OF BLOCKING AND RODDING.

WD-4 THRUST BLOCK DETAIL
NOT TO SCALE



- NOTES:**
1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
 2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
 3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.
 4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS.
 5. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK). HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.
 6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
 7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.
 8. 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.

WD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED
NOT TO SCALE



WD-13 TYPICAL TRENCH DETAIL
NOT TO SCALE

THE DETAILS SHOWN HEREON SUPERCEDE CFPWA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

- GENERAL NOTES:**
1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
 2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
 3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
 4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
 5. THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

CFPWA WATER DISTRIBUTION SYSTEM

STANDARD DETAILS

CAPE FEAR PUBLIC UTILITY AUTHORITY
235 GOVERNMENT CENTER DRIVE
WILMINGTON, NC 28403
OFFICE: (910)332-8560

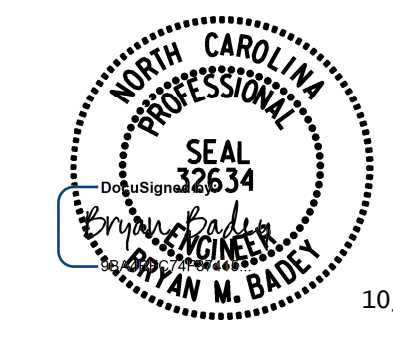
Stewardship. Sustainability. Service.

PLANS PREPARED BY :

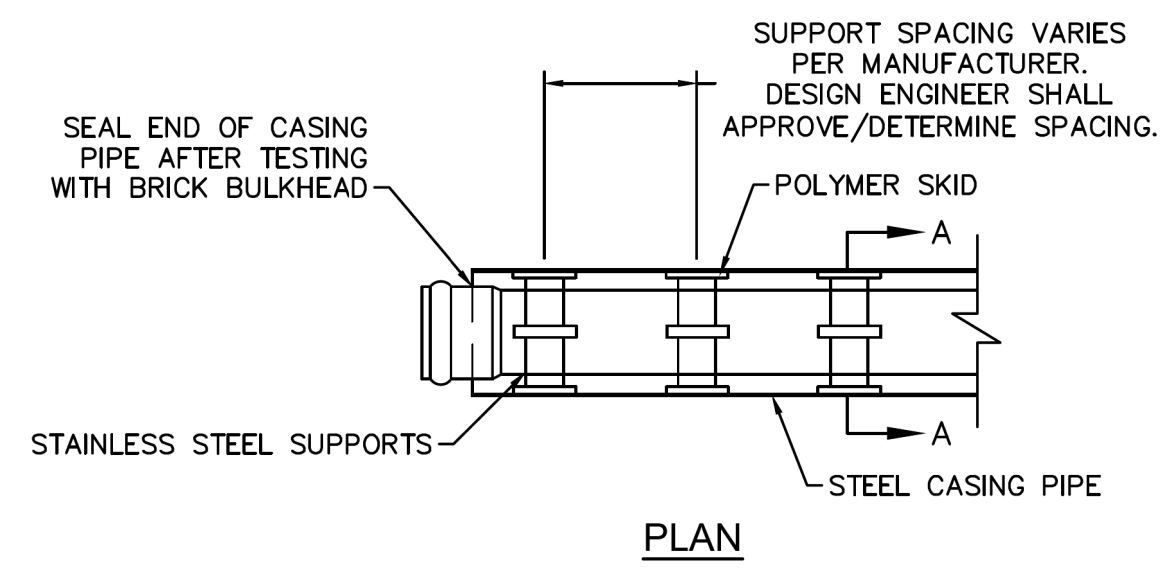
RK&K

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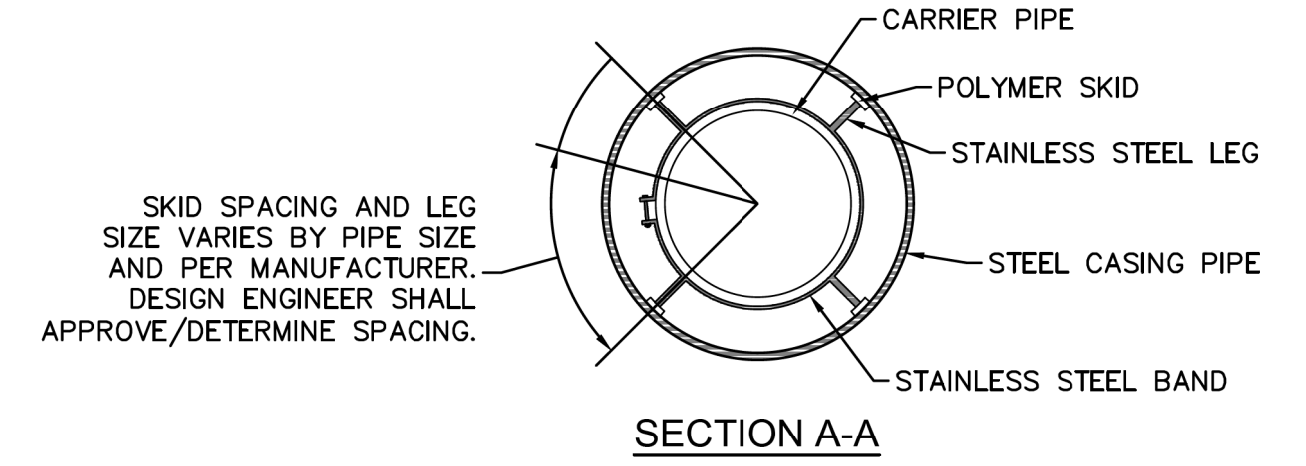
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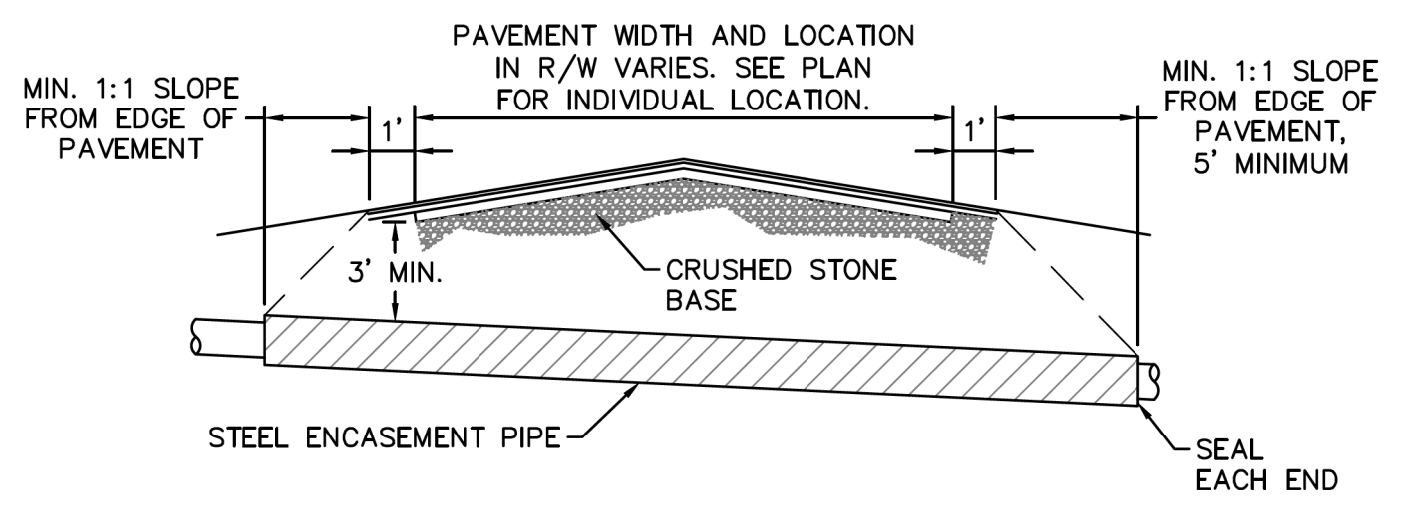
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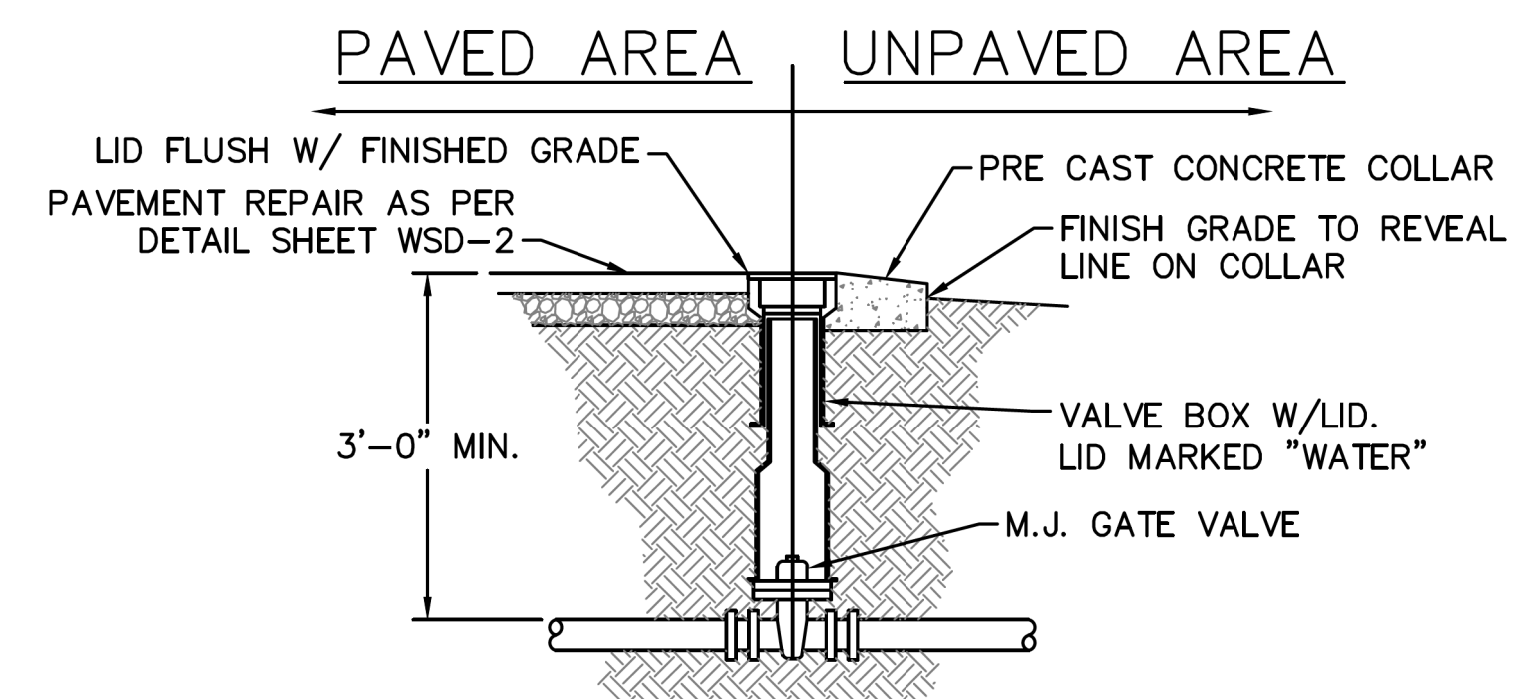
PIPE CASING SUPPORT DETAIL
NOTE: PIPE SUPPORT TO BE PLACED TO PROVIDE PROPER SUPPORT, ALIGNMENT, AND GRADE AS SPECIFIED. CONTINUOUS SUPPORTS MAY BE USED AS ALTERNATIVE. OIL, GREASE, OR PETROLEUM PRODUCT MAY NOT BE USED AS LUBRICANT.



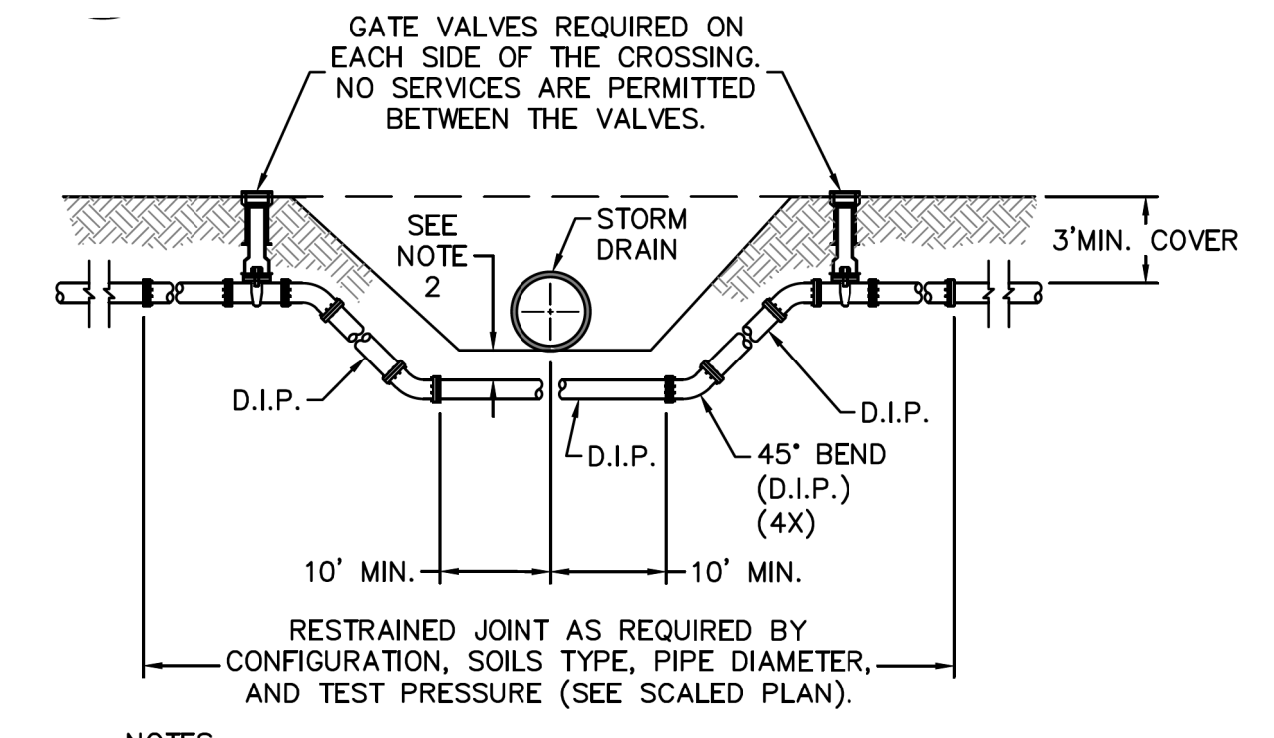
PIPE CASING SUPPORT DETAIL
NOTE: SKID SPACING AND LEG SIZE VARIES BY PIPE SIZE AND PER MANUFACTURER. DESIGN ENGINEER SHALL APPROVE/DETERMINE SPACING.



TYPICAL BORING/JACKING DETAIL
NOTES:
1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.



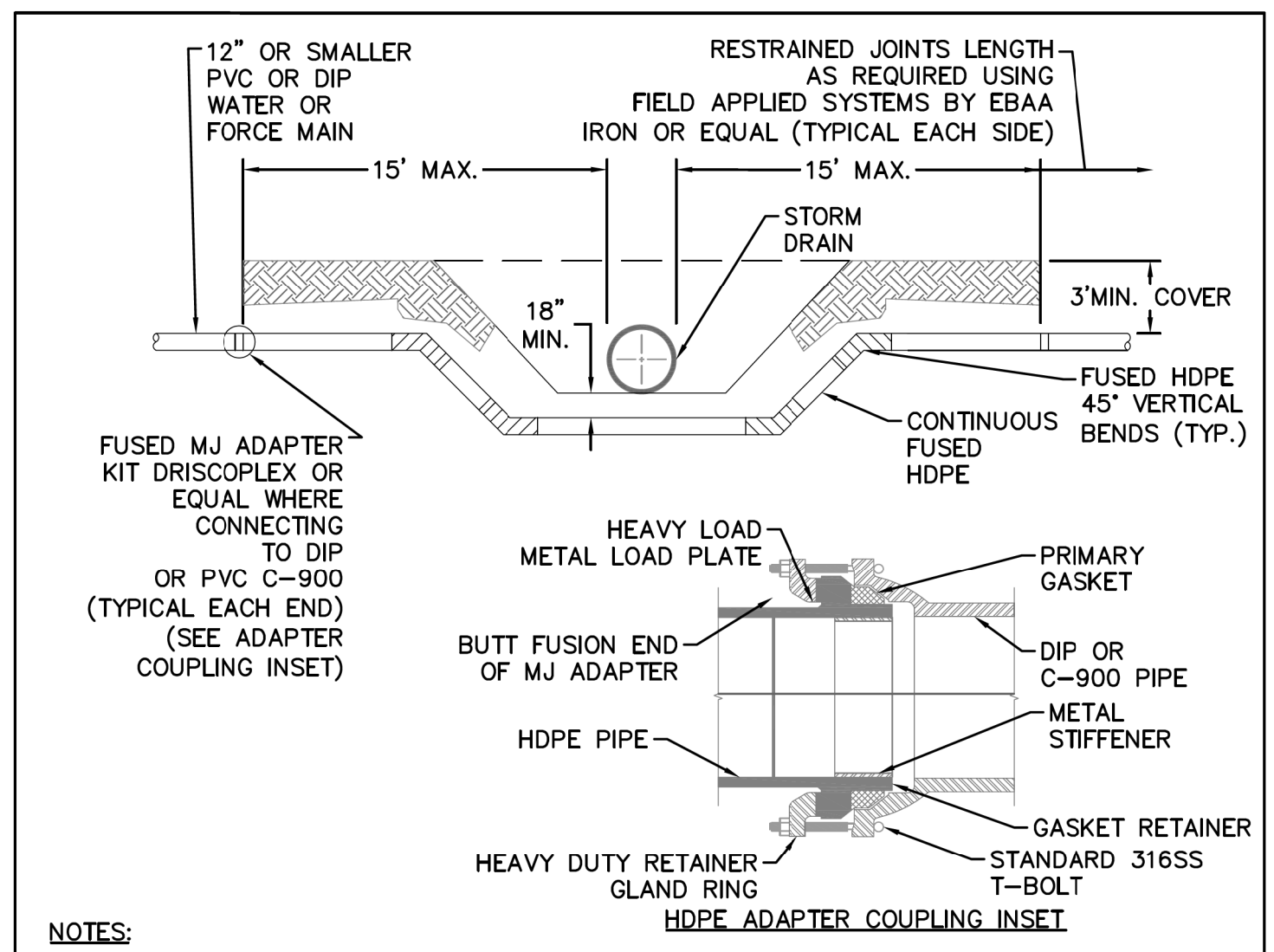
VALVE DETAIL
NOT TO SCALE



WATER MAIN DITCH AND STORM DRAIN CROSSING
NOTES:
1. USE PRESSURE CLASS 350 DIP, UNLESS SPECIFIED OTHERWISE.
2. MINIMUM DEPTH REQUIRED, UNLESS SPECIFIED OTHERWISE BY CFPUA:
a. IN DOT R/W, 36" MIN. TYPICAL, OR 24" MIN. WHEN CROSSING A DITCH LINE.
b. ALL OTHER LOCATIONS, 30" MIN.
c. WHEN STORM DRAIN INVERT IS BURIED AT OR BELOW ABOVE DEPTHS, 18" MIN. CLEARANCE IS REQUIRED.

WD-2
NOT TO SCALE

BELOW IS THE ALTERNATE INSTALLATION METHOD PROVIDED FOR WATERMAIN AND STORM DRAINAGE CROSSINGS TO BE DECIDED BY CONTRACTOR



ALTERNATE INSTALLATION METHOD
NOTES:
1. MAY BE USED AS AN ALTERNATIVE TO CFPUA STANDARD DETAIL WD-2/SD-18 (STORM CROSSING) WITH APPROVAL BY CFPUA. SHALL NOT BE USED FOR DITCH CROSSINGS.
2. NO SERVICE CONNECTIONS, VALVES, TEES, ADDITIONAL FITTINGS OR APPURTENANCES SHALL BE INSTALLED ON HDPE.
3. 45° VERTICAL BENDS MAY BE ELIMINATED IF OFFSET CAN BE ACHIEVED BY DEFLECTING PIPE WITHIN MANUFACTURER'S MAXIMUM BENDING RADIUS.
4. HDPE SHALL BE A MINIMUM OF DR-11 (200 PSI), DIPS, PE 4710, BLUE POTABLE WATER MAINS AND GREEN SEWER FORCE MAINS. INSTALLATIONS IN PUBLIC RIGHT-OF-WAY ARE SUBJECT TO NC DOT REQUIREMENTS, WHICH MAY INCLUDE USE OF DR-9 HDPE.
5. 45° VERTICAL BENDS MAY BE FUSED BY SUPPLIER PRIOR TO DELIVERY TO SITE. IF THE ASSEMBLY IS FUSED ONSITE, IT MUST BE PRESSURE TESTED.

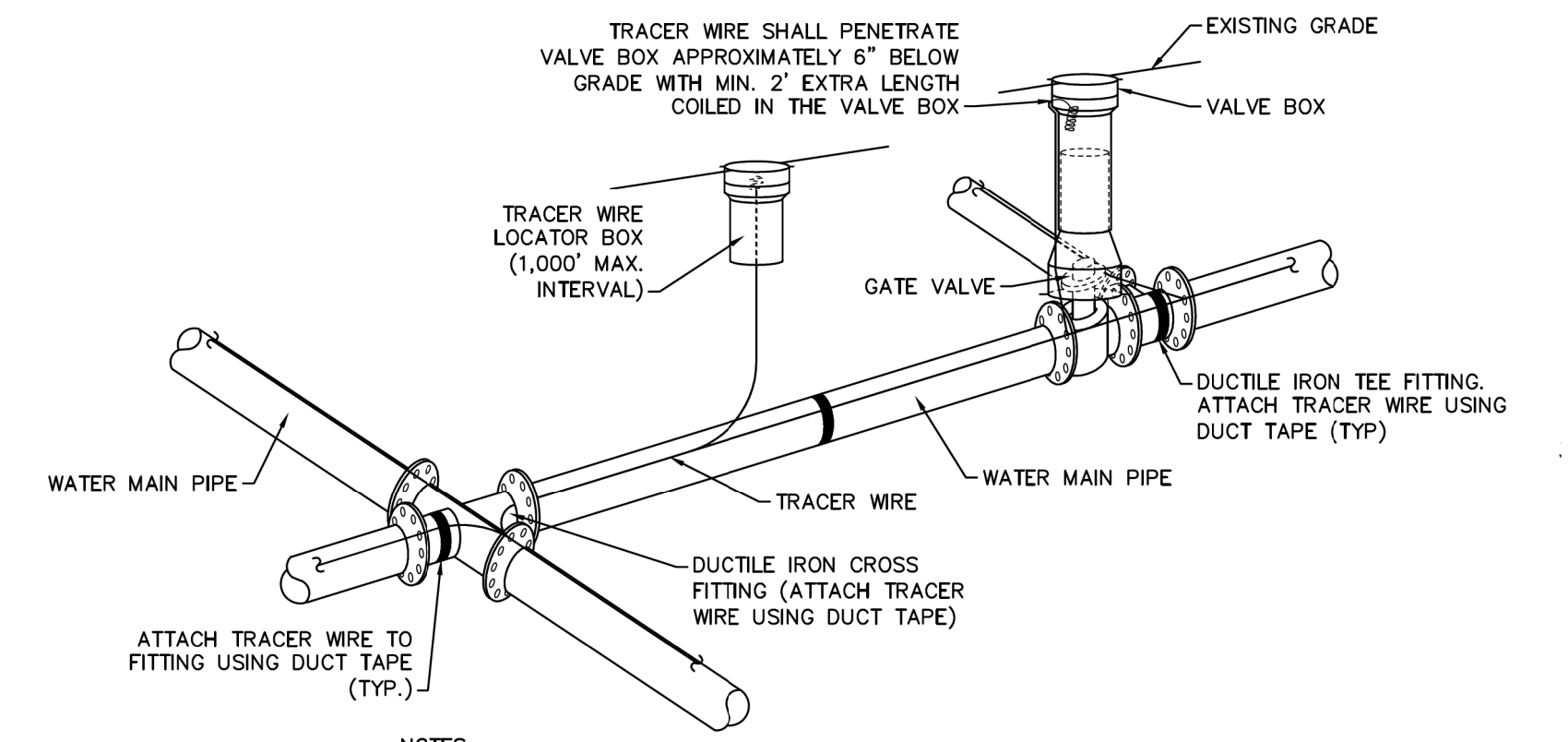
IF NO REVISION IS SHOWN, THIS DETAIL REMAINS AS ORIGINALLY PROVIDED BY CFPUA.

| REV. | DESCRIPTION: | DATE: |
|------|--------------|-------|
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| | | |
|--|---|-----------------------------|
| DETAIL: STORM DRAIN CROSSING USING HDPE PIPE | CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560 Stewardship. Sustainability. Service. | DETAIL NO: SD-26 |
| SCALE: NOT TO SCALE | | CFPUA DETAIL DATE: 08/17/17 |
| CFPUA REV. No: 1 | | |

GENERAL NOTES:
1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
5. THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04



TRACER WIRE DETAIL
NOTES:
1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION.
2. WIRE SHALL BE STRAPPED TO ALL PVC WATER MAIN PIPING WITH DUCT TAPE AT 12 FOOT INTERVALS ALONG THE PIPE.
3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS WITH DUCT TAPE.
4. ALL SPLICES IN THE WIRE SHALL BE MADE WITH 3M DBR DIRECT BURY SPLICE KIT AN UNDERGROUND RATED, WATERTIGHT, AND APPROVED SPLICE CONNECTOR OR APPROVED EQUAL.

WD-17
NOT TO SCALE

CFPUA WATER DISTRIBUTION SYSTEM

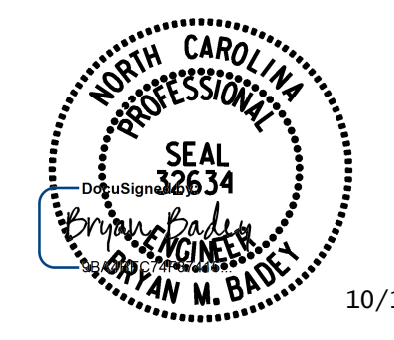
STANDARD DETAILS

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|---|
| CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560 Stewardship. Sustainability. Service. |
|---|

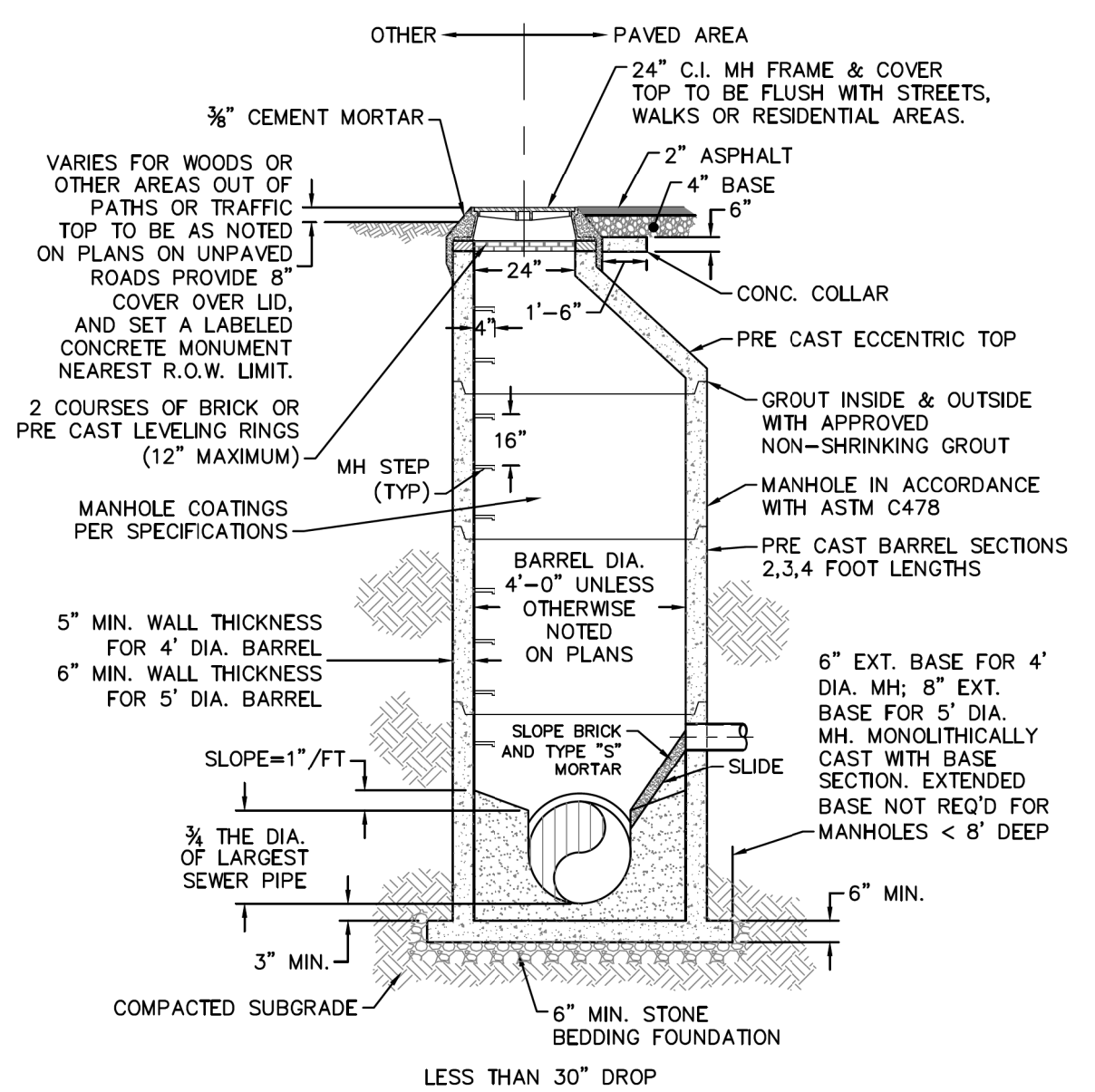
PLANS PREPARED BY :

RUMMEL, KLEPPER & KAHL, LLP
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 NC LICENSE NO. F-0112 • (919) 878-9560

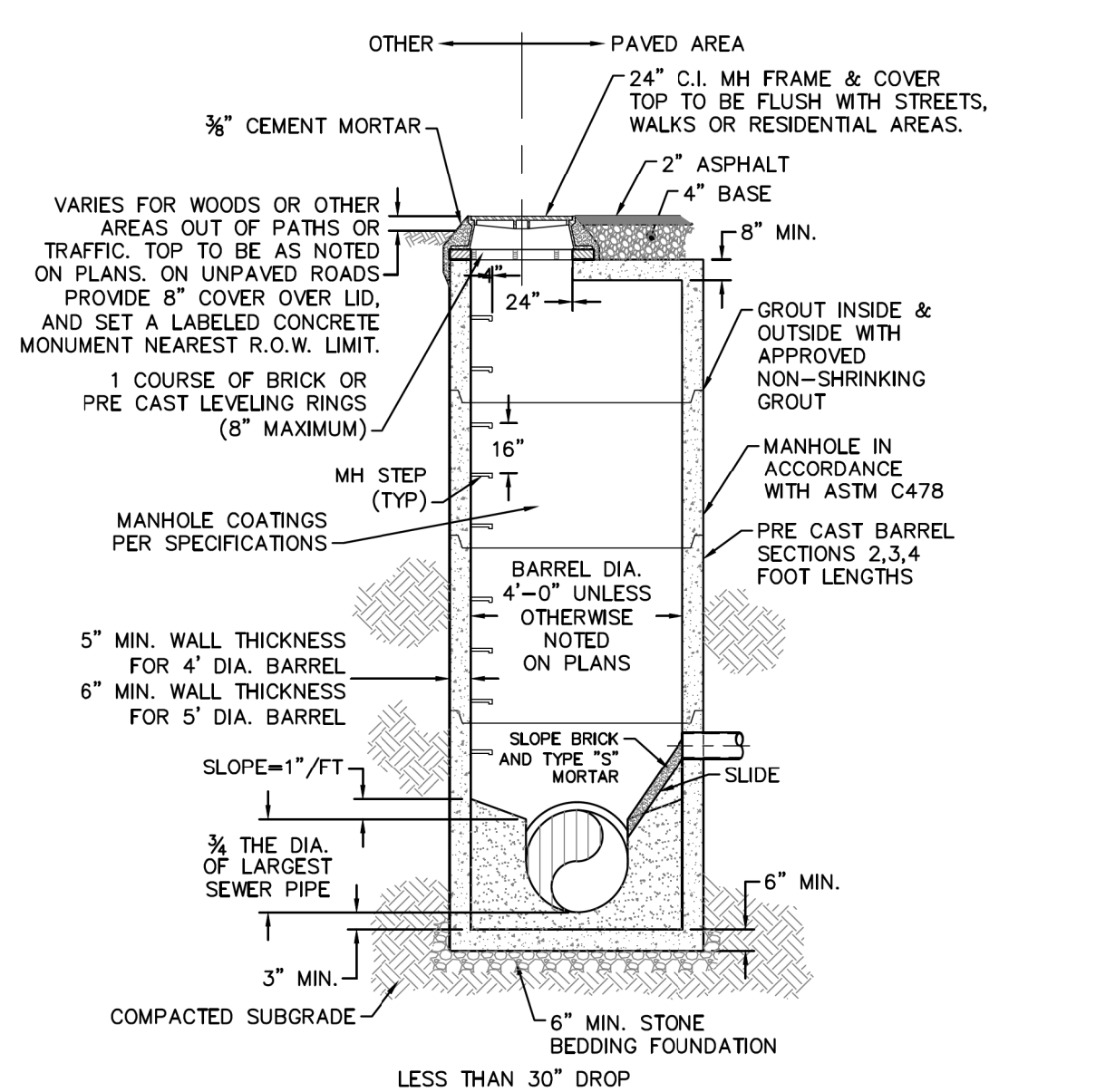
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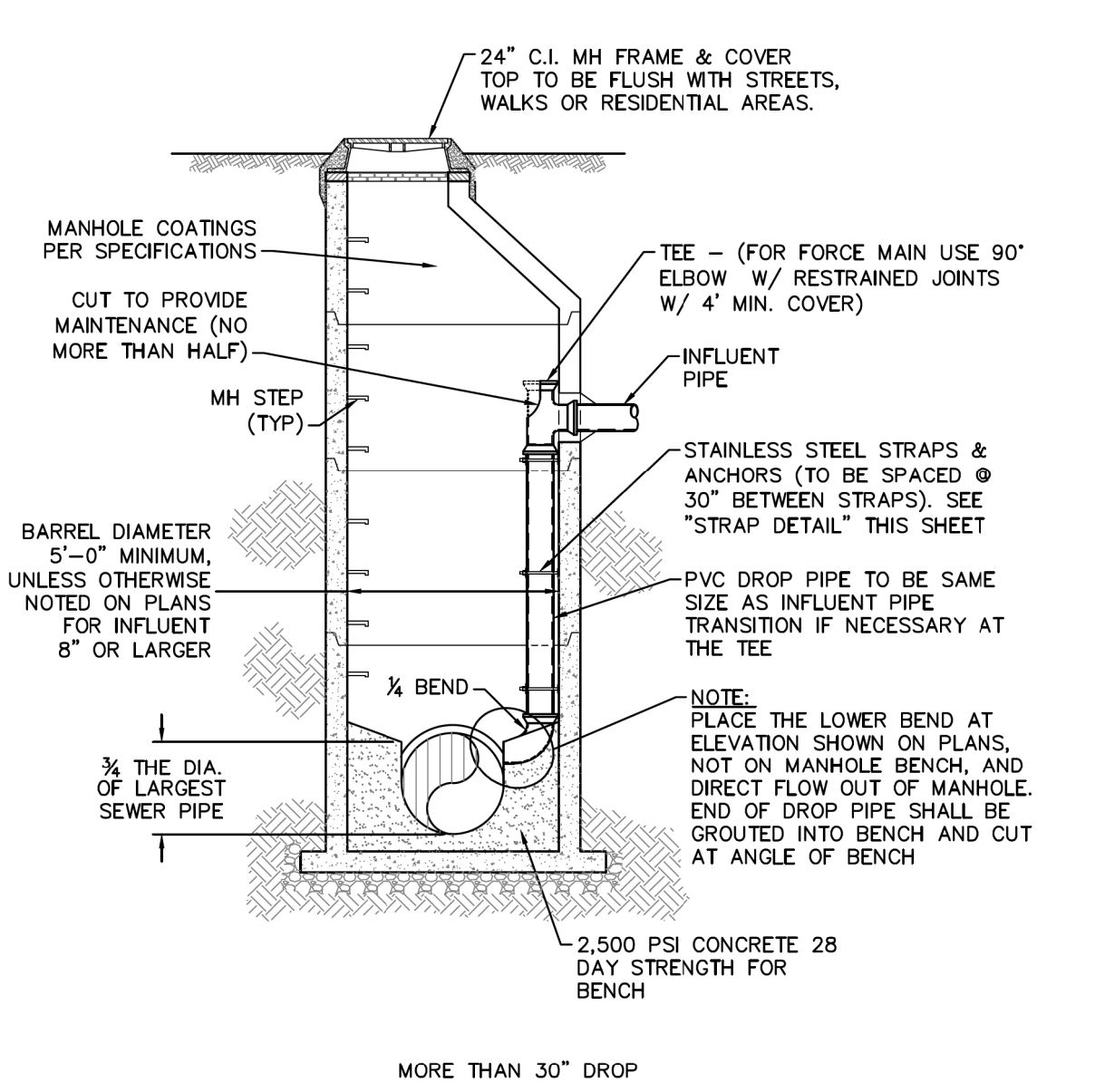
UTILITY CONSTRUCTION PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



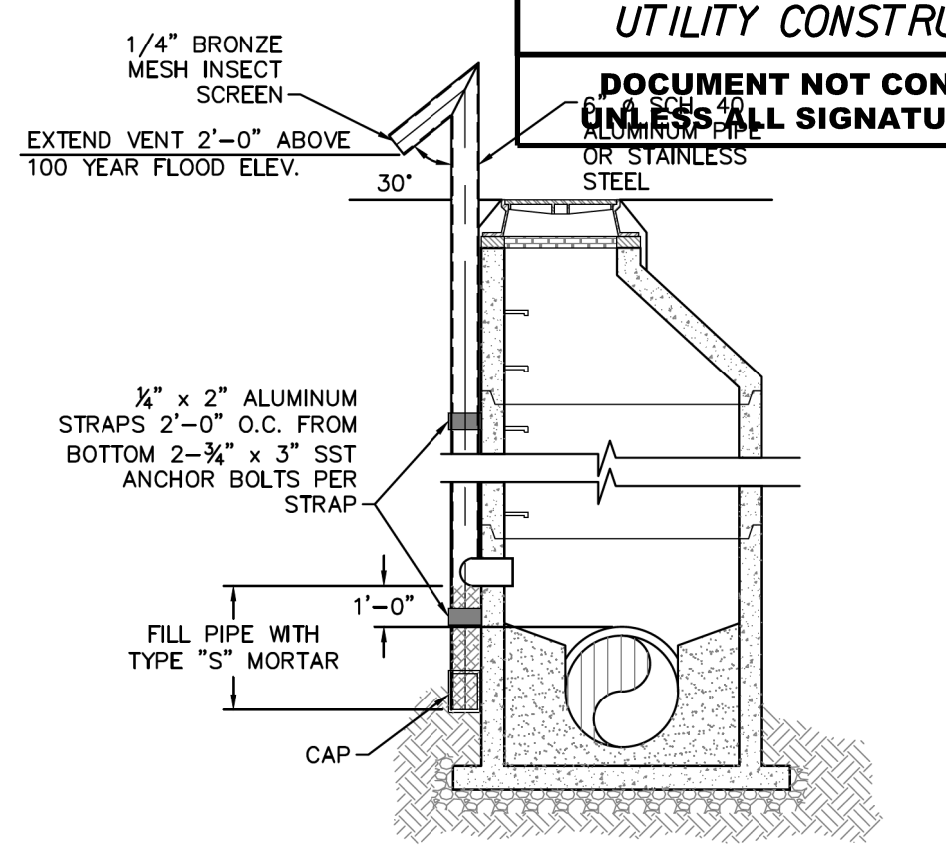
SD-1 PRECAST CONCRETE OFFSET MANHOLE TYPICAL
NOT TO SCALE



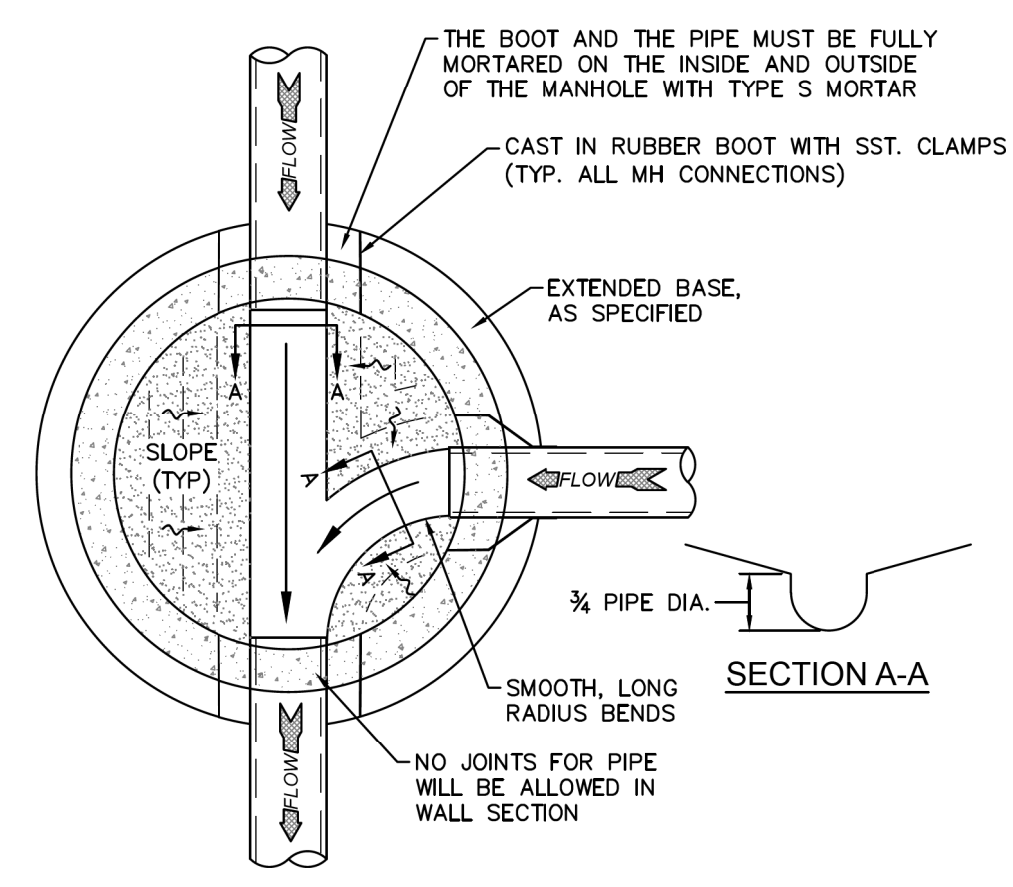
SD-2 PRECAST CONCRETE FLAT TOP MANHOLE TYPICAL
NOT TO SCALE



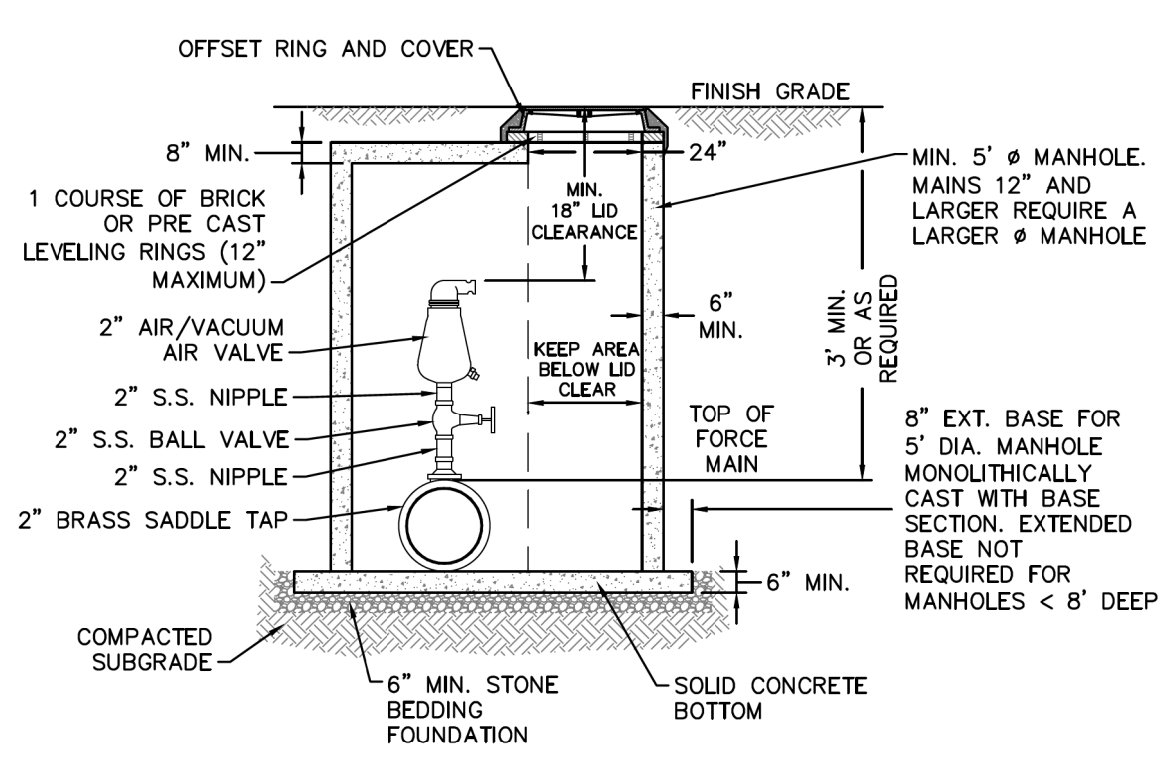
SD-3 DROP MANHOLE
NOT TO SCALE



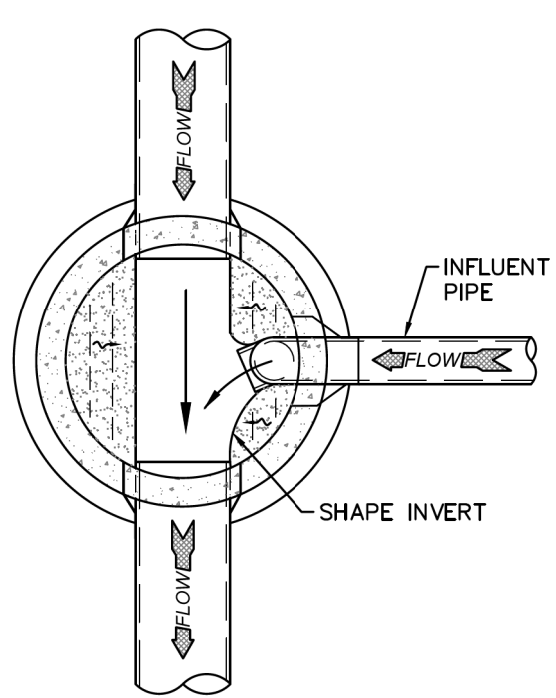
SD-4 STANDARD VENT MANHOLE
NOT TO SCALE



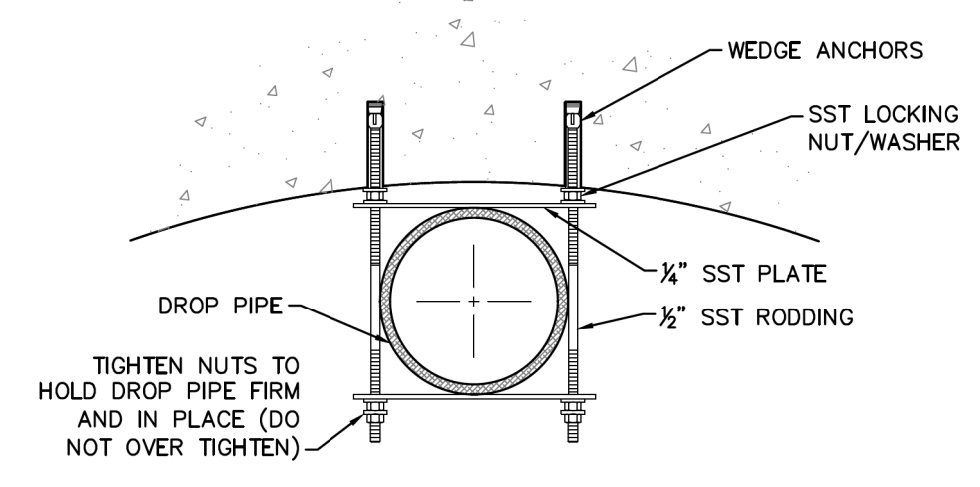
SD-5 MANHOLE FLOOR PLAN
NOT TO SCALE



SD-6 AIR/VACUUM AND AIR RELEASE COMBINATION VALVE
NOT TO SCALE



SD-7 DROP MANHOLE FLOOR PLAN
NOT TO SCALE



SD-8 STRAP DETAIL
NOT TO SCALE

- CAPE FEAR PUBLIC UTILITY AUTHORITY STANDARD NOTES:**
- SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.
 - WATER AND SEWER SERVICES SHALL BE PERPENDICULAR TO MAIN AND TERMINATE AT RIGHT-OF-WAY LINE. SEWER SERVICES IN CUL-DE-SACS ARE REQUIRED TO BE PERPENDICULAR, OR MUST ORIGINATE IN END OF LINE MANHOLE AND TERMINATE AT RIGHT-OF-WAY LINE.
 - ALL SERVICES TYING INTO DUCTILE IRON MAINS SHALL BE CONSTRUCTED OF CLASS 50, DIP, WITH PROTECTO 401 CERAMIC EPOXY LINING.
 - MINIMUM 10' UTILITIES EASEMENT PROVIDED ALONG THE FRONTAGE OF ALL LOTS AND AS SHOWN FOR NEW DEVELOPMENTS.
 - NO FLEXIBLE COUPLINGS SHALL BE USED.
 - ALL STAINLESS STEEL FASTENERS SHALL BE 316.
 - CLEANOUTS SHALL BE LOCATED A MINIMUM OF 12 FEET FROM ALL PROPERTY CORNERS. WATER METER BOXES ARE TO BE A MINIMUM OF 5 FEET FROM THE PROPERTY CORNER.

SD-9 STANDARD NOTES
(REQUIRED ON ALL PLAN AND PROFILE SHEETS)

- GENERAL NOTES:**
- NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
 - THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
 - THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
 - THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
 - THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

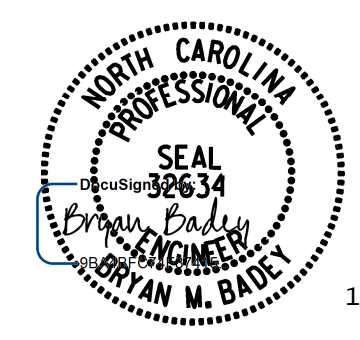
THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

CFPUA SANITARY SEWER

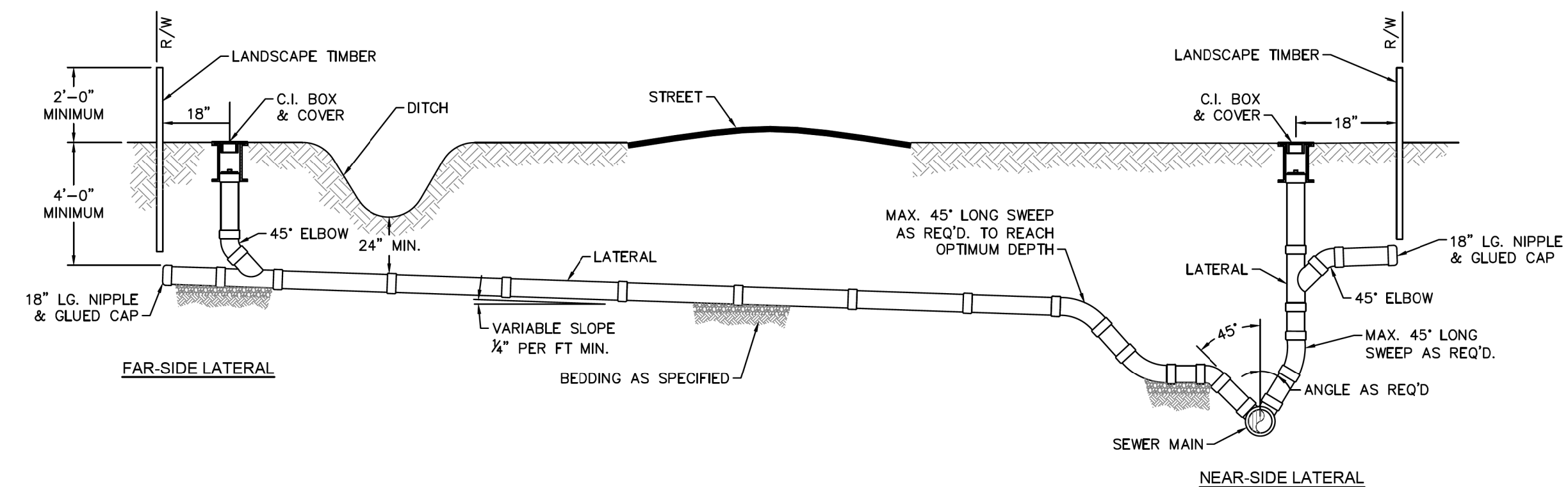
STANDARD DETAILS

CAPE FEAR PUBLIC UTILITY AUTHORITY
 235 GOVERNMENT CENTER DRIVE
 WILMINGTON, NC 28403
 OFFICE: (910)332-6560

PLANS PREPARED BY :
RK&K
 RUMMEL, KLEPPER & KAHL, LLP
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 NC LICENSE NO. F-0112 (919) 878-9560

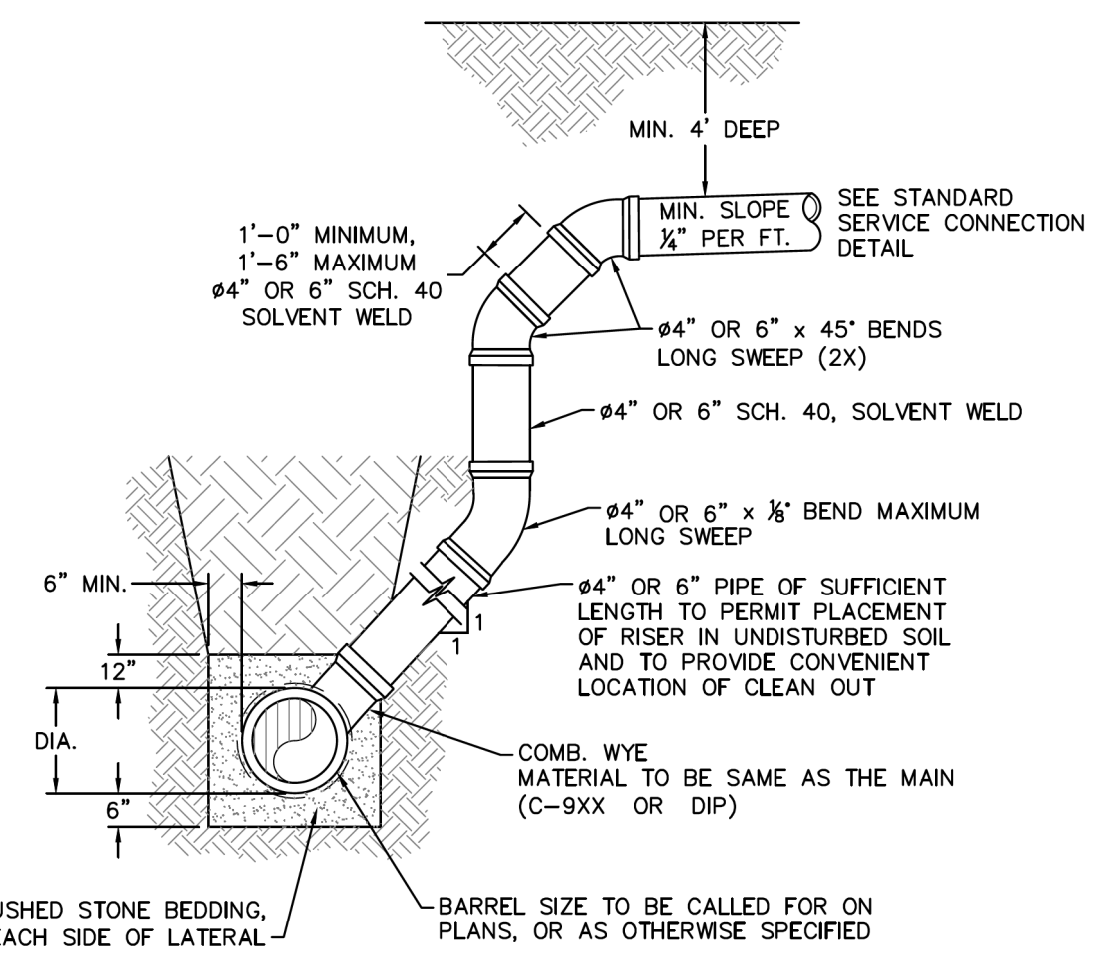


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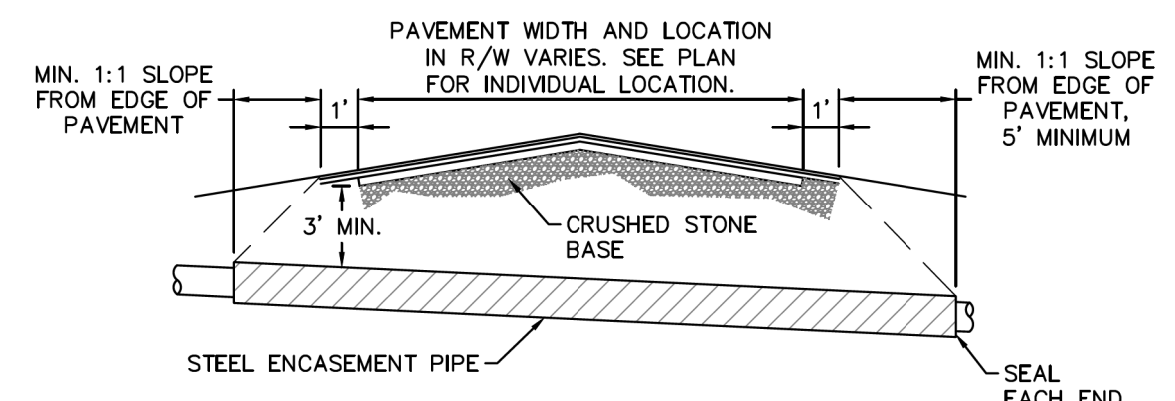
NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN WITH RIGHT-OF-WAY RESTRICTIONS

SD-19 STANDARD SERVICE CONNECTION TO SANITARY SEWER NOT TO SCALE



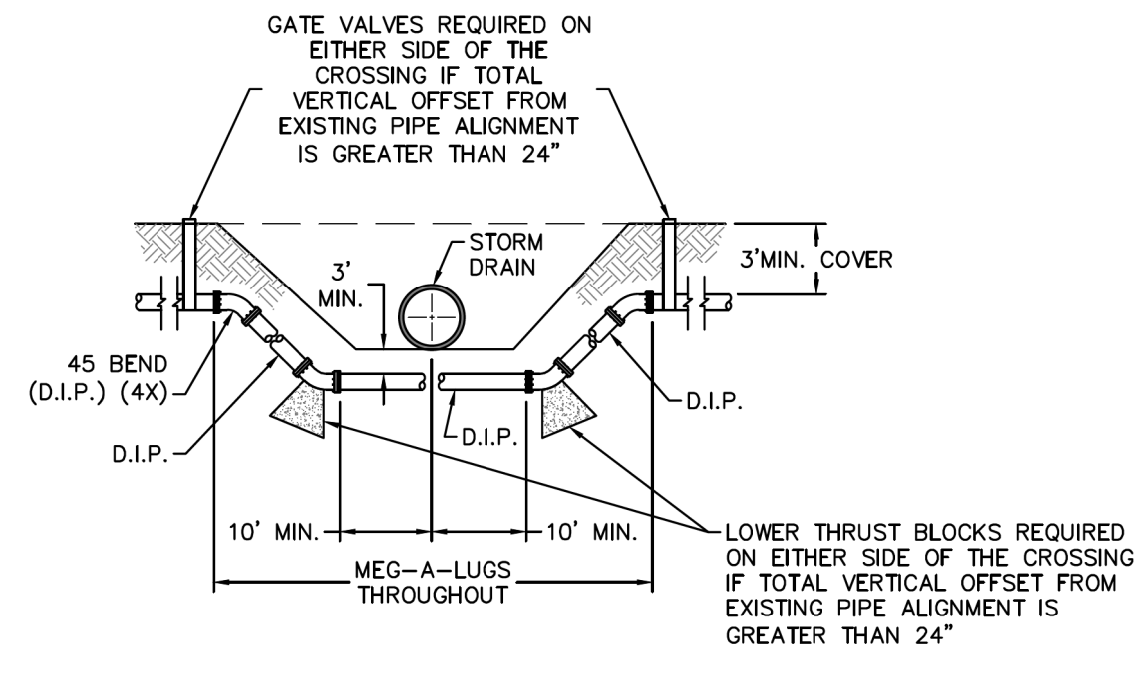
NOTES:
1. SPECIAL CARE SHALL BE TAKEN DURING BACKFILL OPERATIONS. THE RISER SHALL BE PLUMB AND TRUE AT ALL TIMES, AND REST ON FIRM, STABLE FOUNDATION.
2. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

SD-12 DEEP SERVICE LATERAL NOT TO SCALE



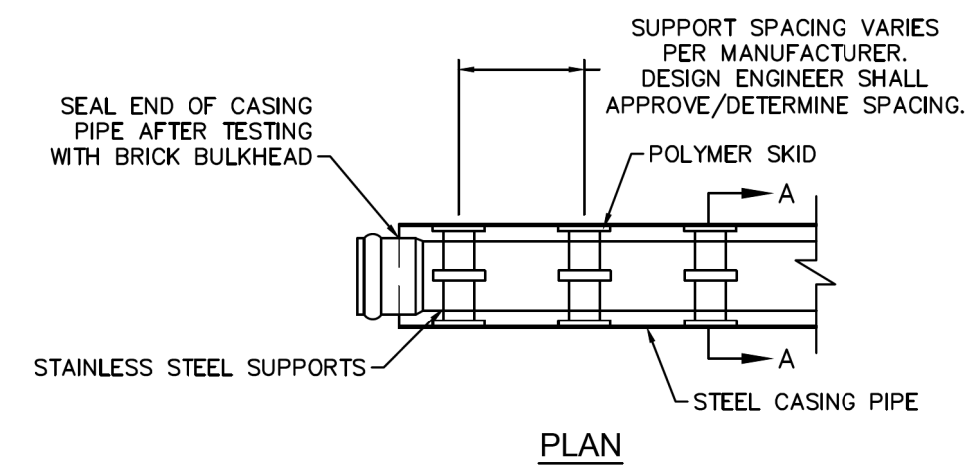
NOTES:
1. CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
2. TRACER WIRE SHALL BE CONTINUED THROUGH CASING.

SD-16 TYPICAL BORING/JACKING DETAIL NOT TO SCALE



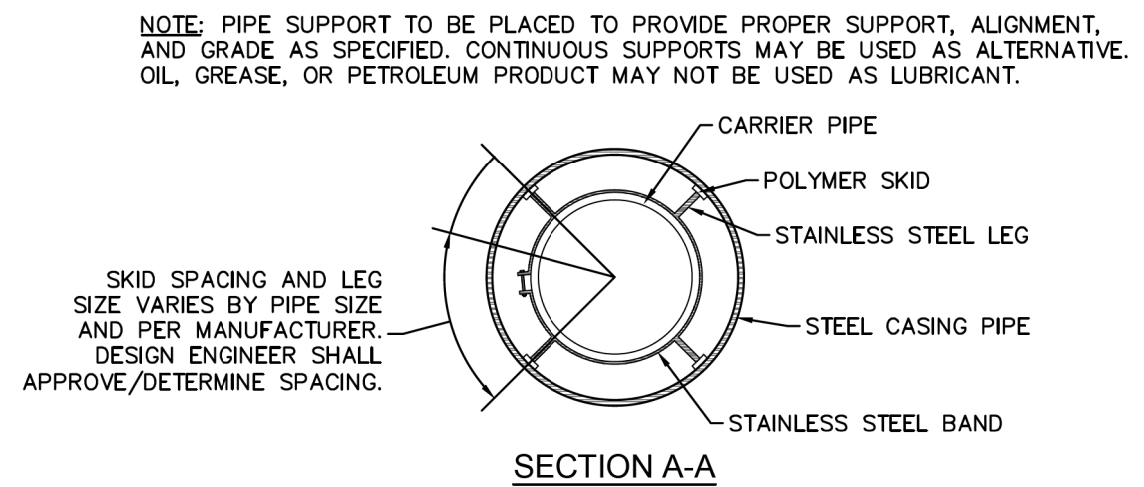
NOTE: USE D.I.P. (CL50 OR BETTER)

SD-18 FORCE MAIN DITCH AND STORM DRAIN CROSSING NOT TO SCALE



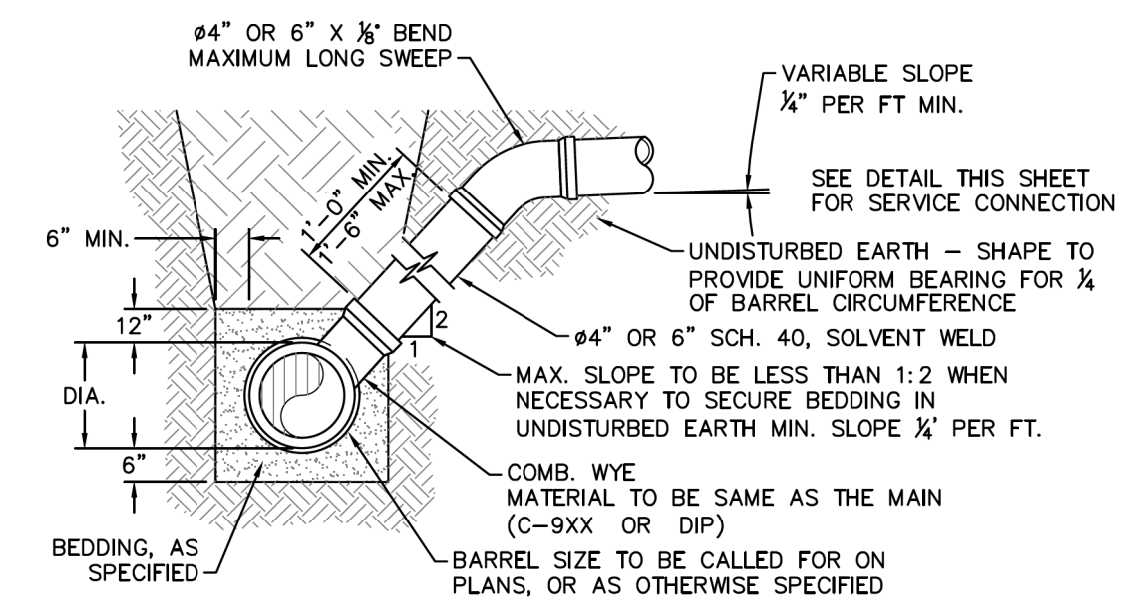
NOTES:
1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
3. 8-INCH OF ABC BASE MATERIAL SHALL BE USED ON CITY STREETS.
4. BACKFILL AND BASE MATERIALS SHALL BE COMPACTED 12" MINIMUM LIFTS.
5. SOIL SHALL BE COMPACTED BY A MECHANIZED TAMPER (I.E. JUMPING JACK), HOWEVER, VIBRATORY ROLLERS > 18" WIDTH MAY BE USED FOR LARGER EXCAVATIONS. THE PLATE TAMP METHOD SHALL NOT BE USED.
6. ALL APPROVED CASTINGS SHALL BE SET FLUSH TO GRADE AND SUPPORTED IF APPLICABLE.
7. ABC BASE AND SUBBASE COMPACTED TO 98% AND BACKFILL AND EMBEDMENT COMPACTED TO 90% AS DETERMINED BY THE MODIFIED PROCTOR AASHTO METHOD T-99.
8. 1-FOOT CUTBACKS OF ASPHALT SHALL BE PREPARED ON UNDISTURBED SOIL. MINIMUM ASPHALT DENSITY IS 90%.
(FOR PRIVATE ROADS AND PAVED AREAS; CONTRACTOR TO MEET MIN. REQUIREMENTS AS DEFINED BY RIGHT-OF-WAY OWNER FOR PUBLIC ROAD REPAIRS)

SD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED NOT TO SCALE



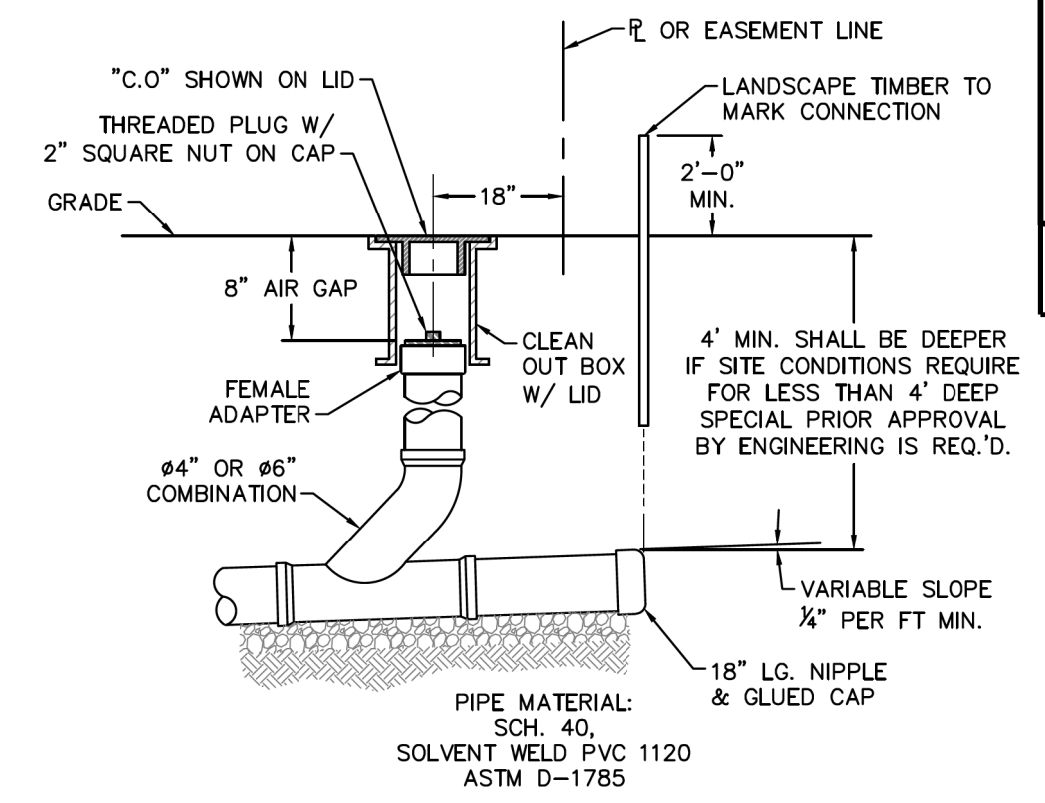
NOTE: ALL STAINLESS STEEL PARTS TO BE 316 SST.

SD-17 PIPE CASING SUPPORT DETAIL NOT TO SCALE



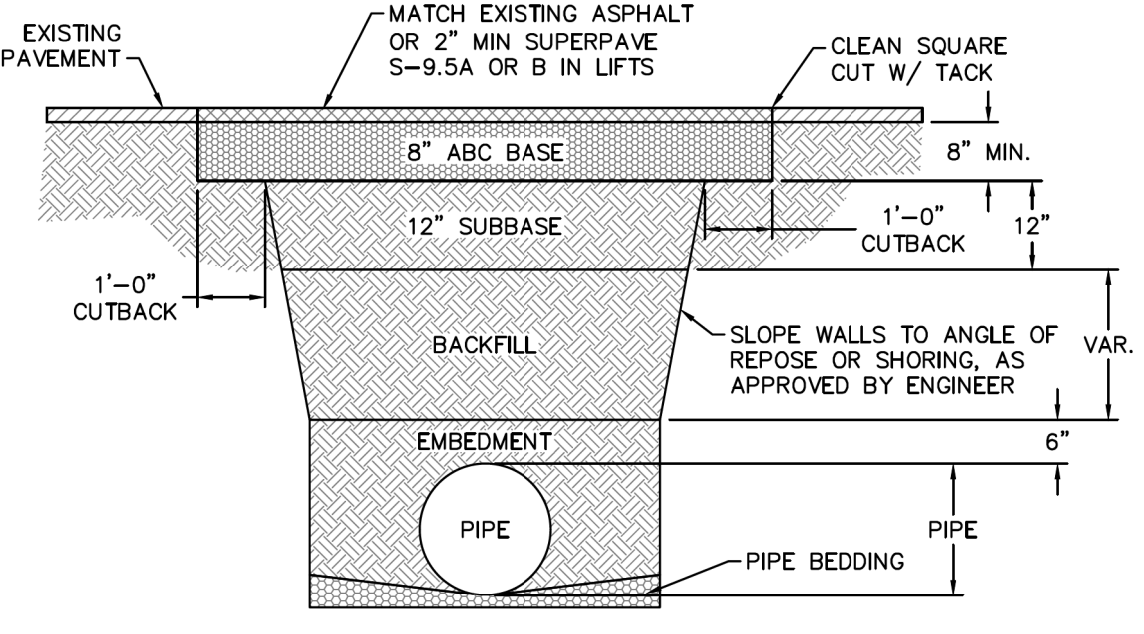
NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

SD-10 STANDARD SERVICE LATERAL NOT TO SCALE



NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

SD-11 SERVICE CONNECTION AND CLEAN-OUT NOT TO SCALE



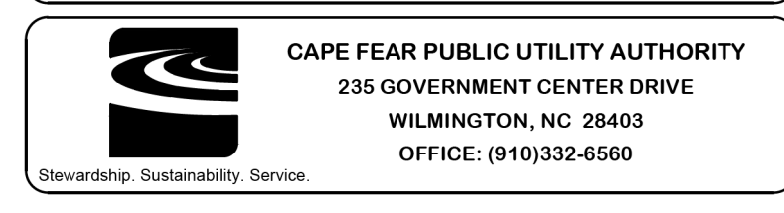
SD-15 TYPICAL TRENCH DETAIL NOT TO SCALE

GENERAL NOTES:
1. NO EXCAVATED MATERIAL SHALL BE PLACED IN ANY STREAM, DITCH OR DRAINAGE-WAY.
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE ANY CONSTRUCTION BEGINS.
3. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES WHILE CONSTRUCTION IS IN PROGRESS.
4. THE CONTRACTOR IS RESPONSIBLE FOR STABILIZATION OF ALL DISTURBED AREAS.
5. THE CONTRACTOR IS RESPONSIBLE FOR LAY DOWN AND STOCKPILE AREAS (TO ARRANGE AND ENSURE COMPLIANCE WITH ALL LOCAL AND STATE REGULATIONS).

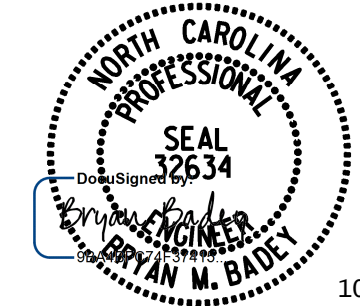
THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04

CFPUA SANITARY SEWER

STANDARD DETAILS



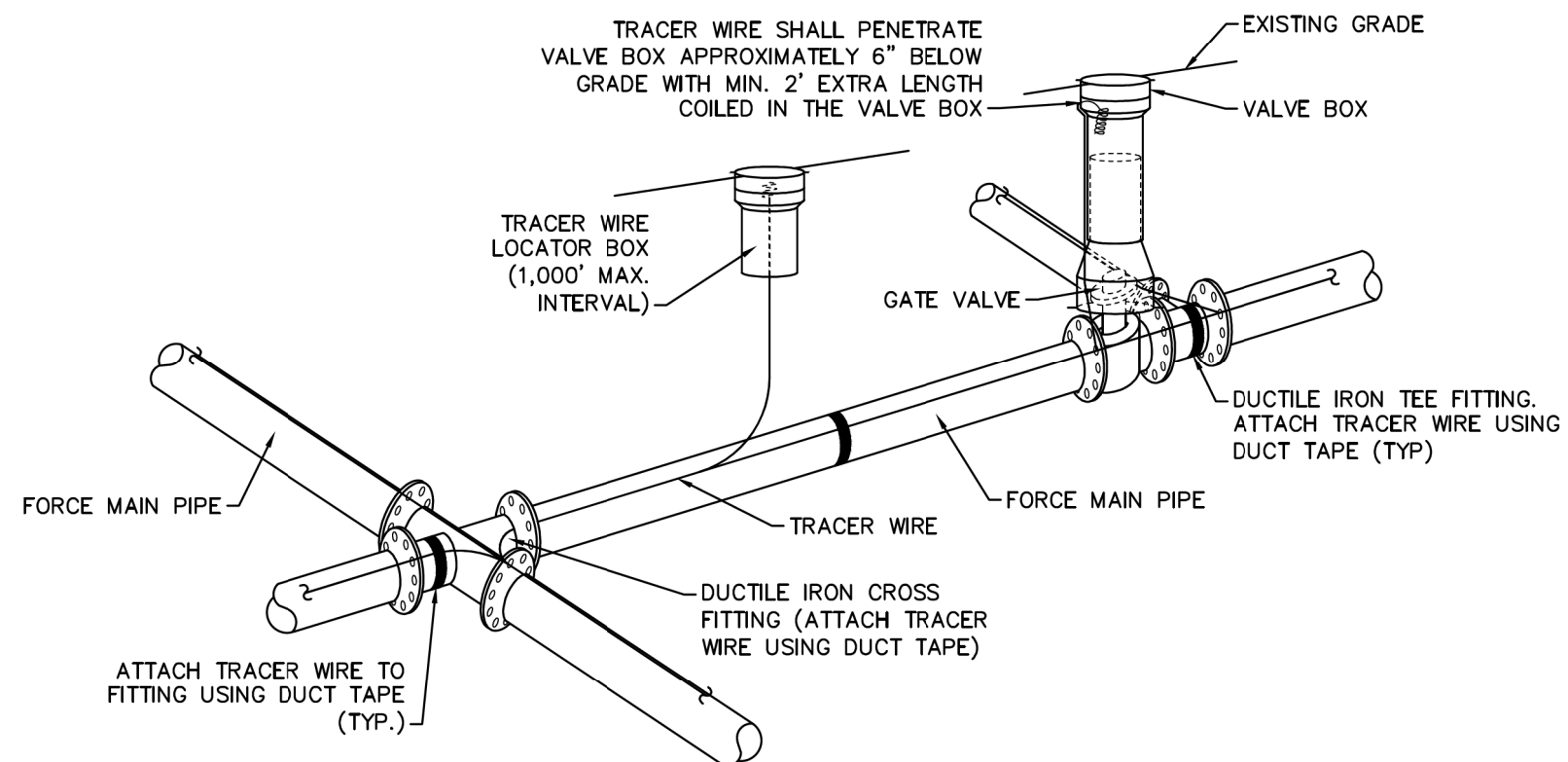
PLANS PREPARED BY:
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560



10/17/2017

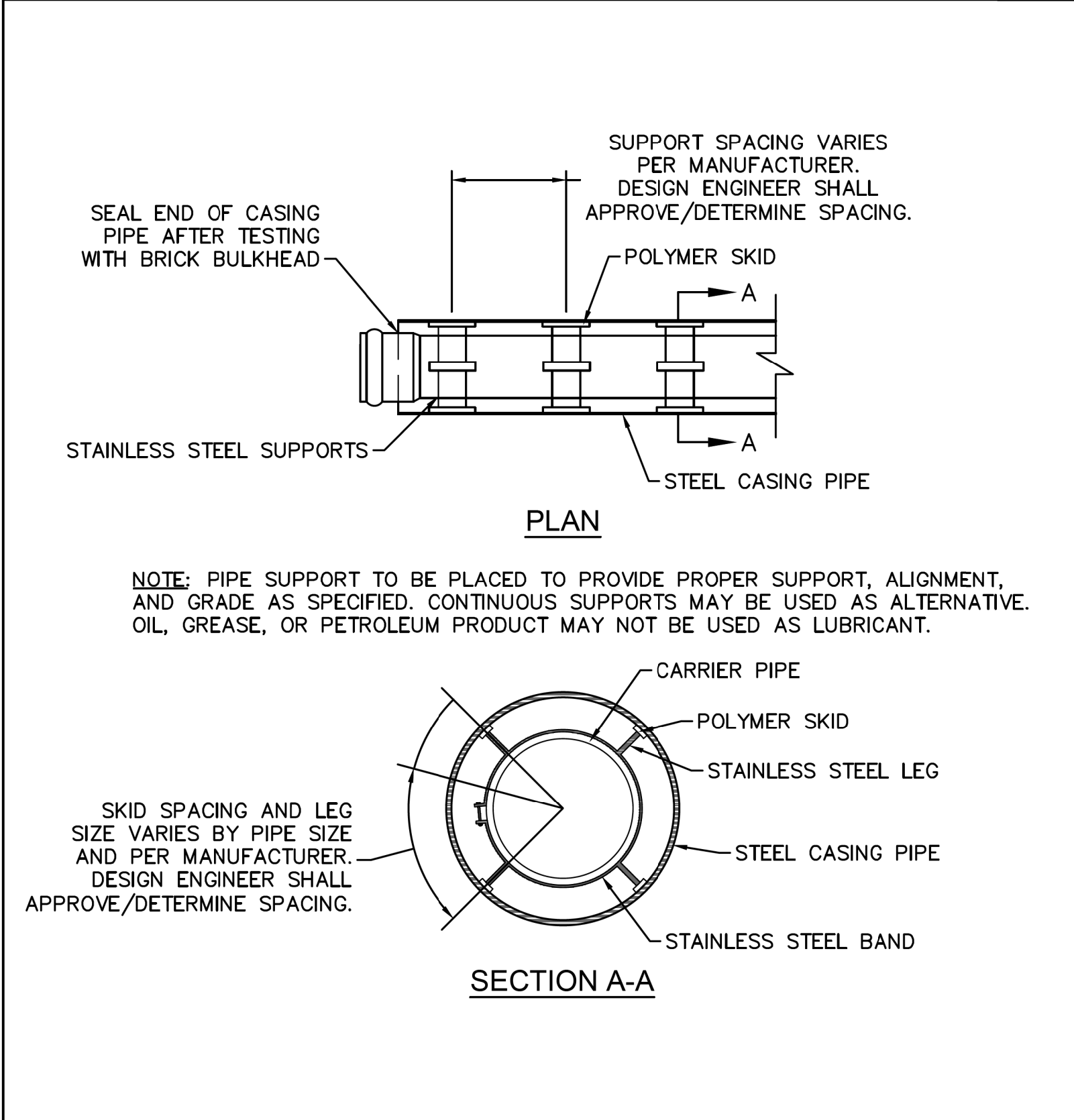
UTILITY CONSTRUCTION PLANS

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- NOTES:**
1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION.
 2. WIRE SHALL BE STRAPPED TO ALL PVC FORCE MAIN PIPING WITH DUCT TAPE AT 12 FOOT INTERVALS ALONG THE PIPE.
 3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS WITH DUCT TAPE.
 4. ALL SPLICES IN THE WIRE SHALL BE MADE WITH 3M DBR DIRECT BURY SPLICE KIT AN UNDERGROUND RATED, WATERTIGHT, AND APPROVED SPLICE CONNECTOR OR APPROVED EQUAL.

SD-21 TRACER WIRE DETAIL
NOT TO SCALE



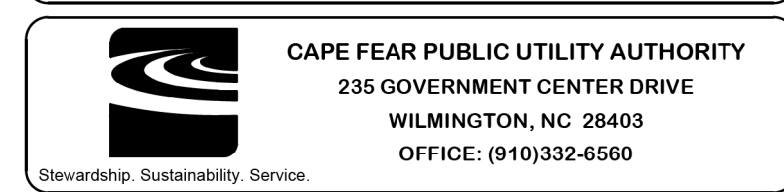
NOTE: PIPE SUPPORT TO BE PLACED TO PROVIDE PROPER SUPPORT, ALIGNMENT, AND GRADE AS SPECIFIED. CONTINUOUS SUPPORTS MAY BE USED AS ALTERNATIVE. OIL, GREASE, OR PETROLEUM PRODUCT MAY NOT BE USED AS LUBRICANT.

IF NO REVISION IS SHOWN, THIS DETAIL REMAINS AS ORIGINALLY PROVIDED BY CFPWA.

| REV: | DESCRIPTION: | DATE: |
|------|--------------|-------|
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|---------------------------------------|---|--------------------------------|---------------------------|
| DETAIL: PIPE CASING SUPPORT DETAIL | CAPE FEAR PUBLIC UTILITY AUTHORITY 235 GOVERNMENT CENTER DRIVE WILMINGTON, NC 28403 OFFICE: (910)332-6560 Stewardship. Sustainability. Service. | DETAIL NO: SD-17 | |
| SCALE: NOT TO SCALE | | CFPWA DETAIL DATE: 02/10/14 | SHEET NO: SSD-2 |
| CFPUA REV. No: 1 | | | |

STANDARD DETAILS



PLANS PREPARED BY :

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 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 NC LICENSE NO. F-0112 • (919) 878-9560

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 6520 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

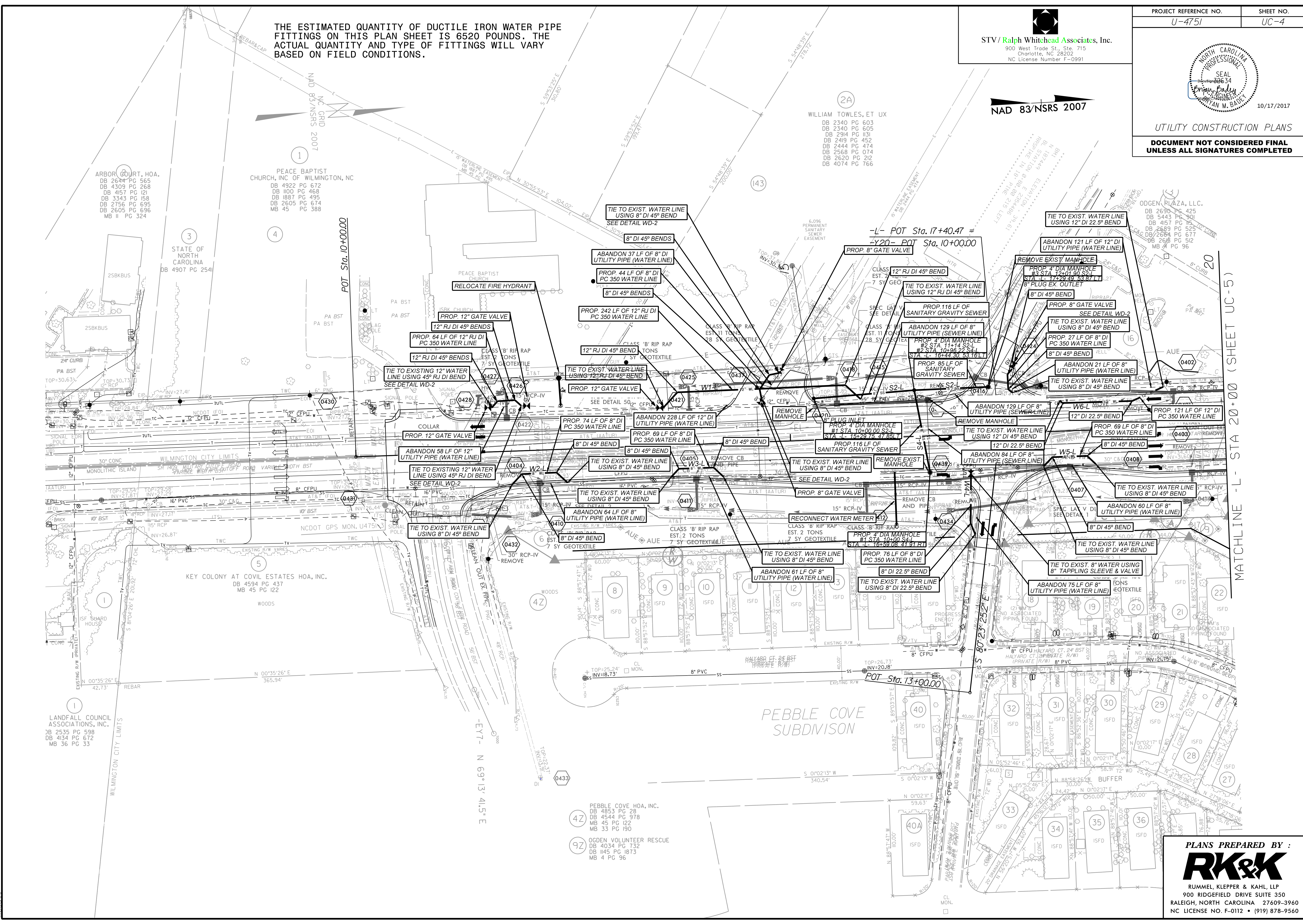
STV/Ralph Whitehead Associates, Inc.
900 West Trade St., Ste. 715
Charlotte, NC 28202
NC License Number F-0991

| | |
|-----------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| U-4751 | UC-4 |

NORTH CAROLINA PROFESSIONAL SEAL
Brian M. Bady
10/17/2017

UTILITY CONSTRUCTION PLANS

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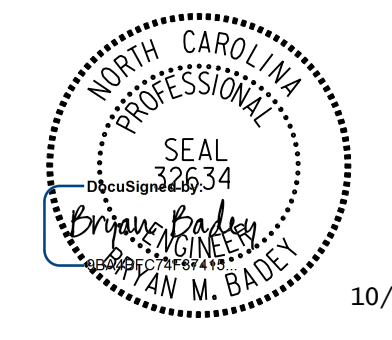
10/17/2017
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MATCHLINE - L - STA 20+00 (SHEET UC-5)

PLANS PREPARED BY :

RK&K

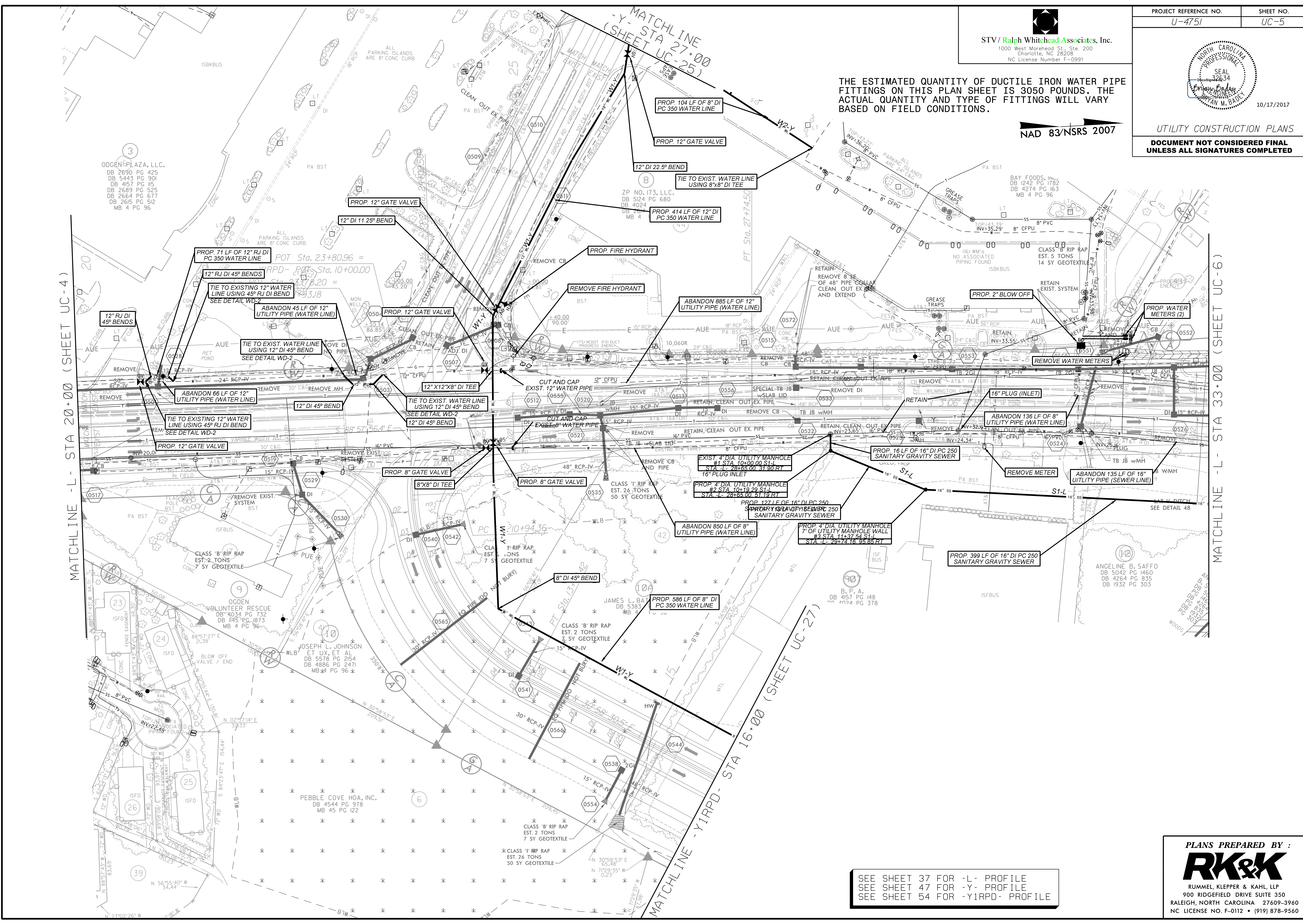
RUMMEL, KLEPPER & KAHL, LLP
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 3050 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

NAD 83/NSRS 2007

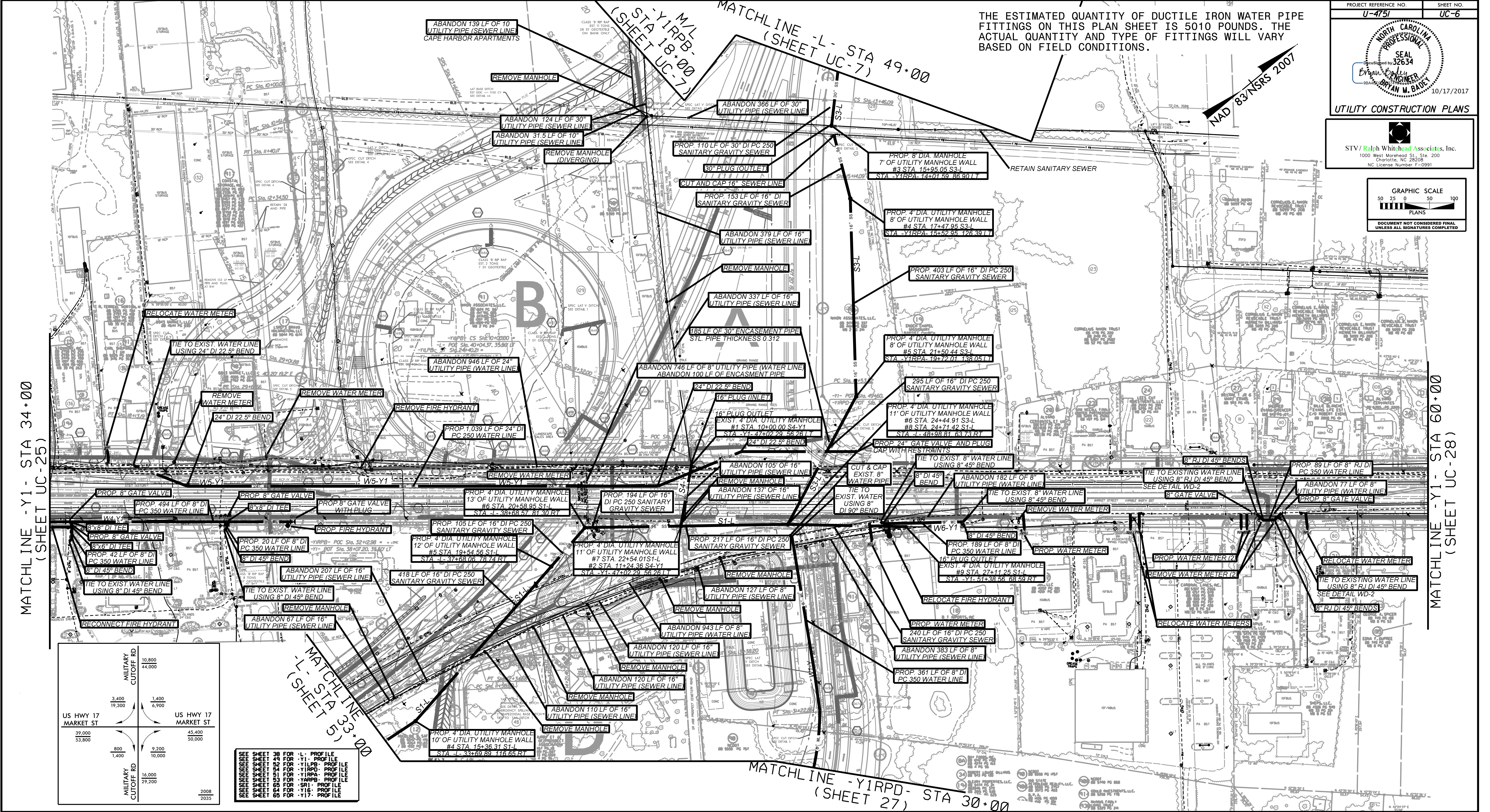


MATCHLINE - L- STA 20+00 (SHEET UC-4)

MATCHLINE - L- STA 33+00 (SHEET UC-6)

SEE SHEET 37 FOR -L- PROFILE
 SEE SHEET 47 FOR -Y- PROFILE
 SEE SHEET 54 FOR -YIRPD- PROFILE

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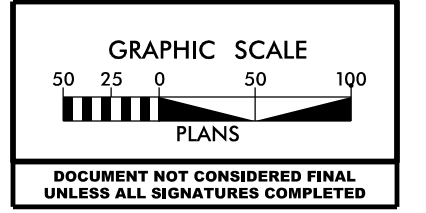
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 5010 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

PROJECT REFERENCE NO. U-4751 SHEET NO. UC-6

SEAL
 32634
 NORTH CAROLINA PROFESSIONAL ENGINEER
 BRYAN M. BADE
 10/17/2017

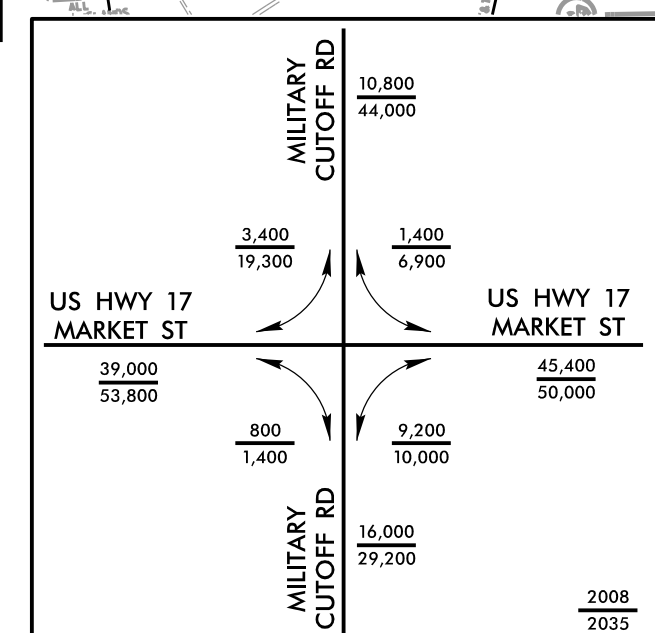
UTILITY CONSTRUCTION PLANS

STV/Ralph Whithead Associates, Inc.
 1000 West Morehead St., Ste. 200
 Charlotte, NC 28208
 NC License Number E-0391



MATCHLINE -Y1- STA 34+00
 (SHEET UC-25)

MATCHLINE -Y1- STA 60+00
 (SHEET UC-28)

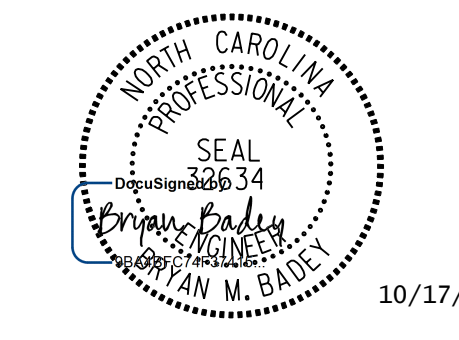


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| SEE SHEET 38 FOR -L- PROFILE |
| SEE SHEET 49 FOR -Y1- PROFILE |
| SEE SHEET 52 FOR -Y1RPD- PROFILE |
| SEE SHEET 54 FOR -Y1RPD- PROFILE |
| SEE SHEET 51 FOR -Y1RPA- PROFILE |
| SEE SHEET 53 FOR -Y1RPA- PROFILE |
| SEE SHEET 55 FOR -Y1RPA- PROFILE |
| SEE SHEET 56 FOR -Y1RPA- PROFILE |
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| SEE SHEET 66 FOR -Y1RPA- PROFILE |

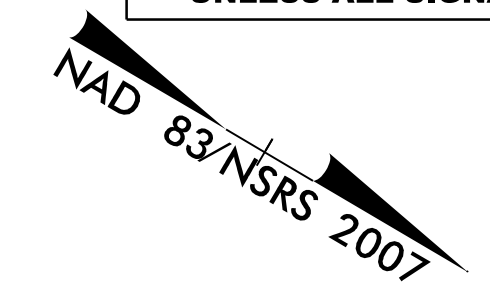
MATCHLINE -Y1RPD- STA 30+00
 (SHEET 27)

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

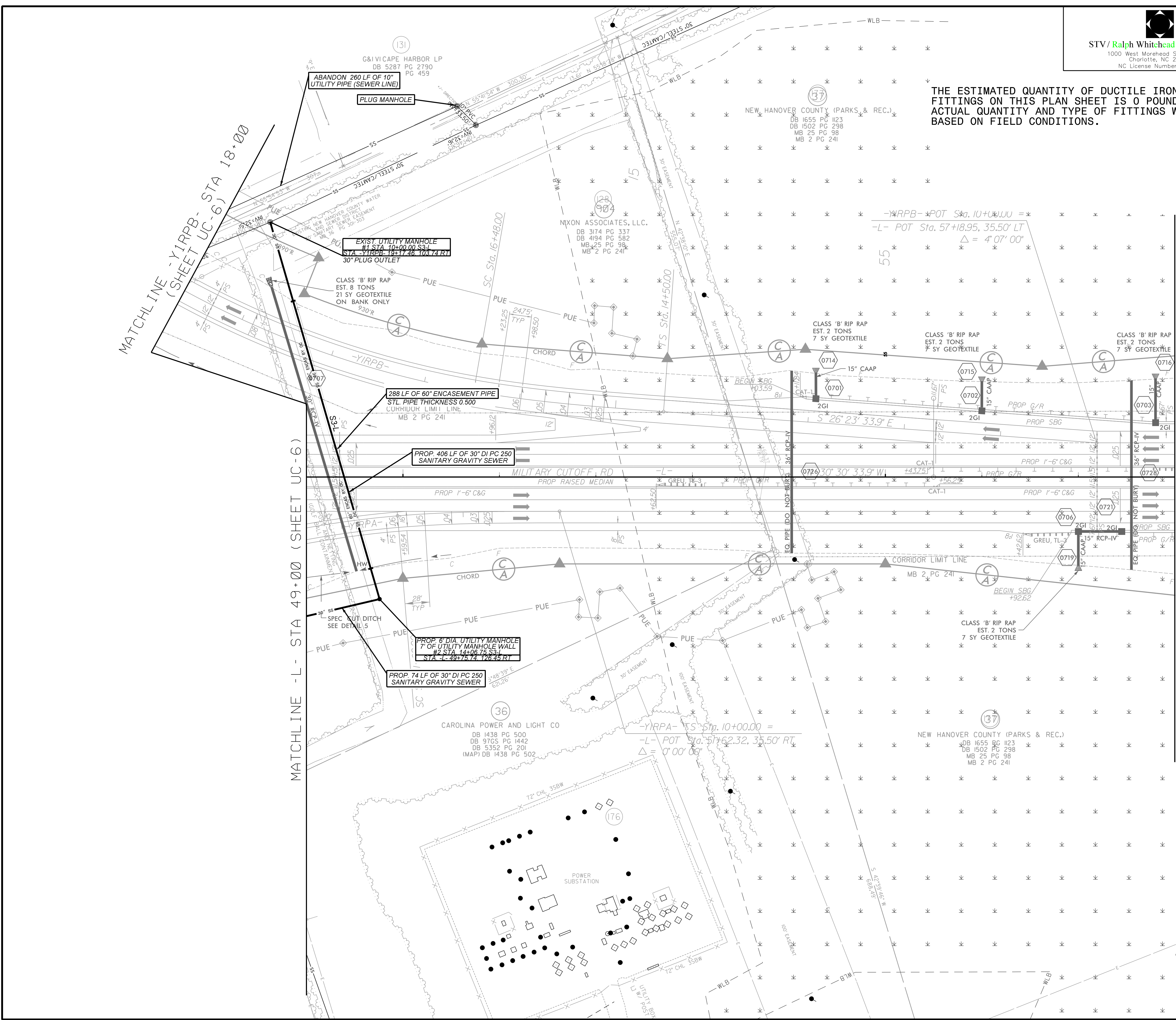
PROJECT REFERENCE NO. U-4751
SHEET NO. UC-7



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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 0 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

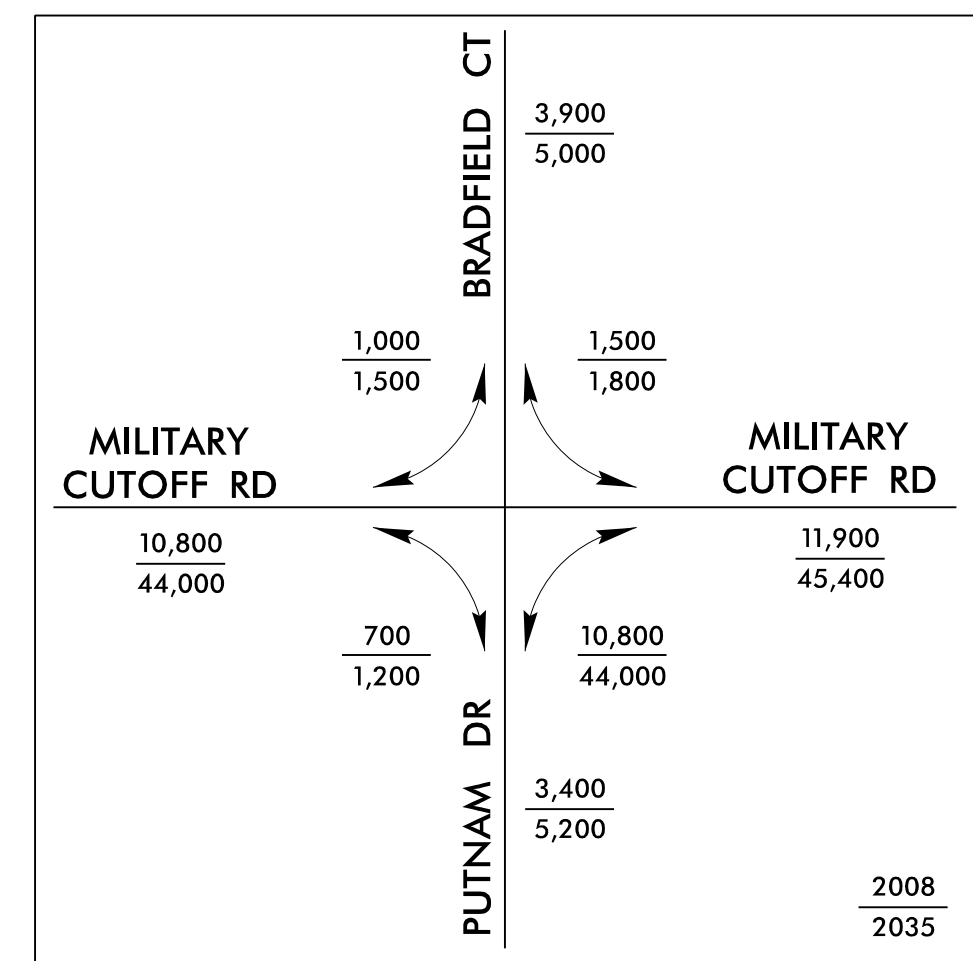


MATCHLINE - YIRPB- STA 18+00
(SHEET UC-6)

MATCHLINE - L- STA 49+00 (SHEET UC-6)

MATCHLINE - L- STA 58+00

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RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560



THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1240 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

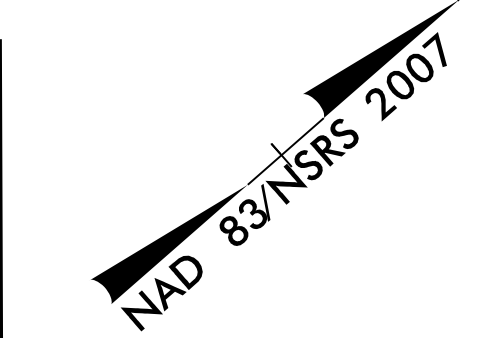
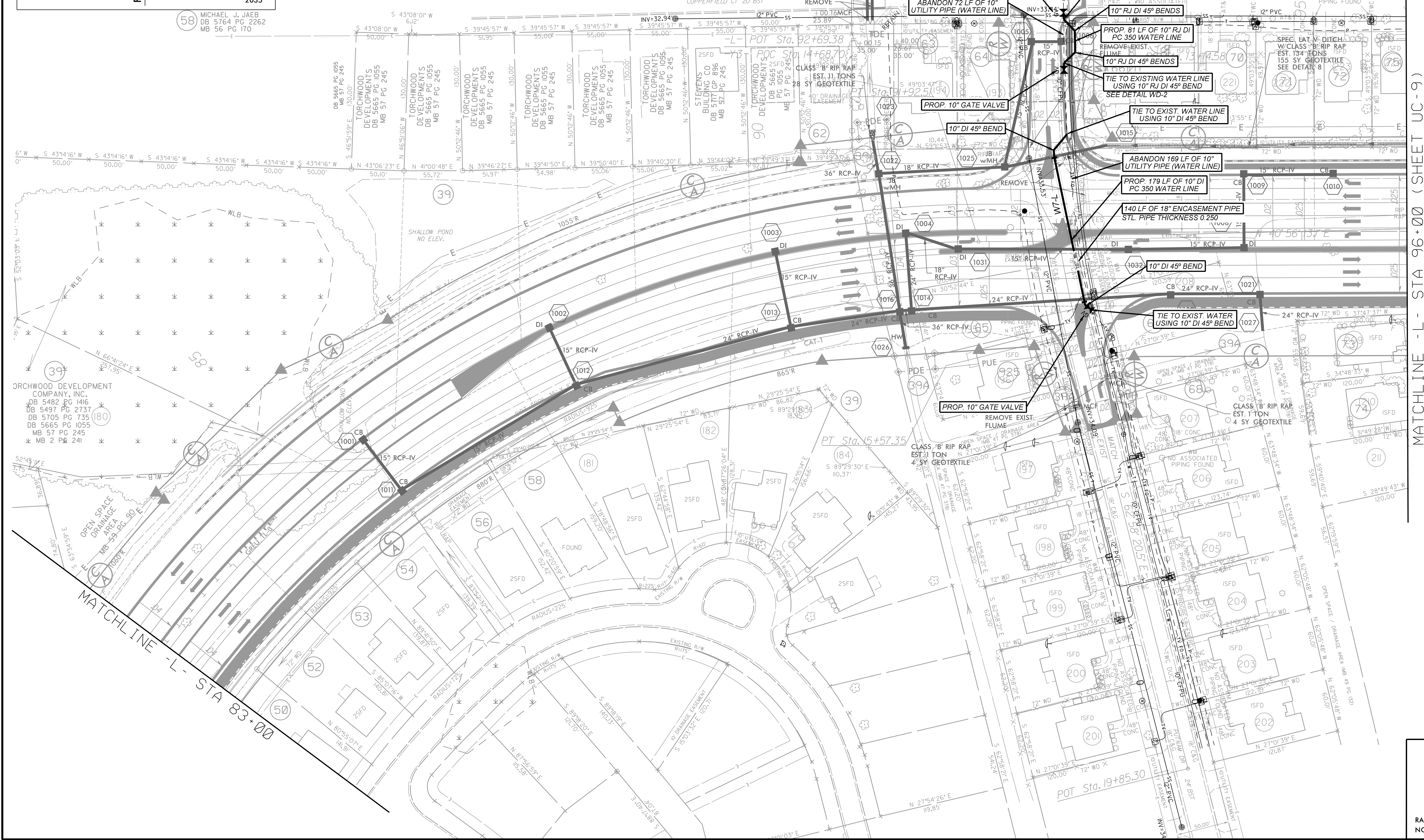
- 39 TORCHWOOD DEVELOPMENT COMPANY DB 5644 PG 1291 MB 55 PG 165
- 67 NCDOT DB 5878 PG 165 MB 48 PG 61
- 73 CINDY B. GASKINS DB 5696 PG 1672 MB 45 PG 206
- 62 CHRISTOPHER MCCONNELL AND REBECCA MCCONNELL DB 5839 PG 2910
- 68 STEVEN A. KING DB 5841 PG 1962 MB 48 PG 61
- 74 MARY RADER HEINDENRICH, WIDOW DB 5718 PG 978 MB 45 PG 206
- 63 SHAWN BELSCHNER DB 5051 PG 1822 MB 48 PG 61
- 69 RYAN D BIRTLES DB 5501 PG 595 MB 48 PG 61
- 75 KIMBERLY D. MALDONADO DB 5811 PG 1422 MB 46 PG 248
- 64 ROGER A WOOD DB 5432 PG 1118 MB 48 PG 61
- 70 DENNIS G STOKLEY DB 5064 PG 2518 MB 46 PG 248
- 925 NCDOT DB 5168 PG 1727 MB 48 PG 61
- 65 NCDOT DB 5878 PG 165 MB 48 PG 61
- 71 SARA ROBIN TOOTHMAN DB 5802 PG 2059 MB 46 PG 248
- 66 ELIZABETH A WRIGHT DB 5284 PG 1338 MB 48 PG 61
- 72 TASHA L COLEY DB 5477 PG 2963 MB 46 PG 248
- 39A SAVANA LAND COMPANY, LLC DB 4885 PG 1359 MB 59 PG 164-165

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO. U-4751 SHEET NO. UC-8

UTILITY CONSTRUCTION PLANS

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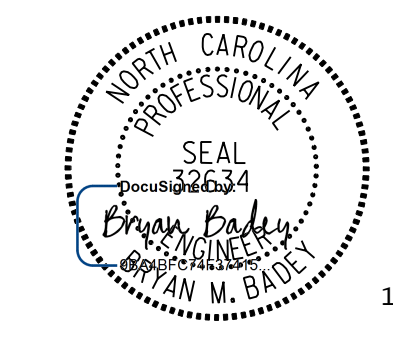
MATCHLINE - L - STA 96+00 (SHEET UC - 9)

MATCHLINE - L - STA 83+00

PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560



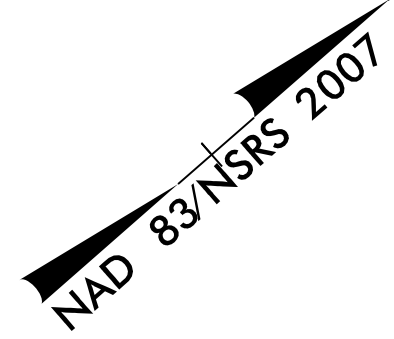
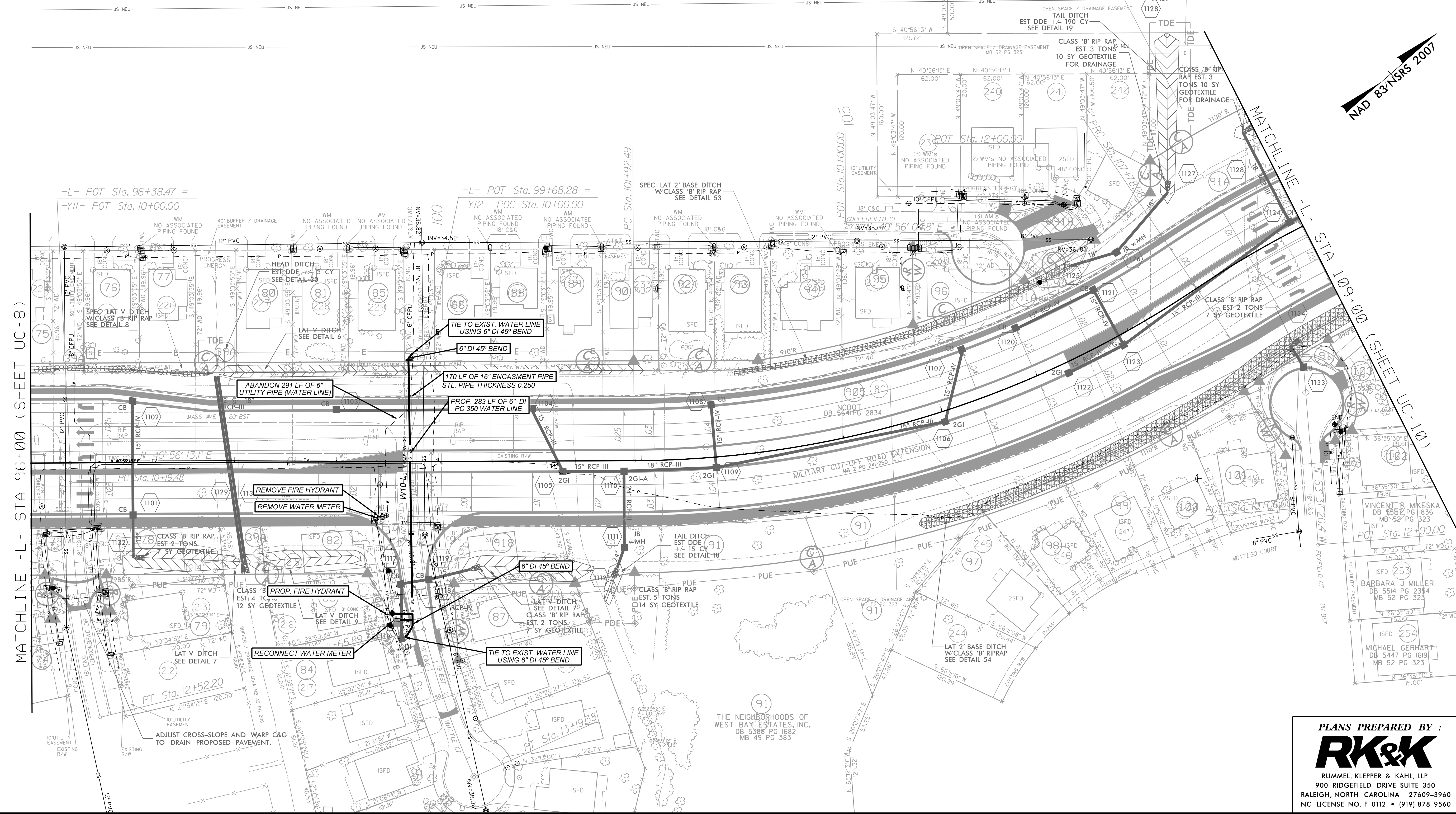
10/17/2017

UTILITY CONSTRUCTION PLANS

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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 300 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

- JOY B. GASKINS
DB 5696 PG 1672
MB 45 PG 206
- MARY RADER
INDENRICH, WIDOW
DB 5718 PG 978
MB 45 PG 206
- ABERLY D. MALDONADO
DB 5811 PG 1422
MB 46 PG 248
- ROBERT STROUD JR.
DB 5207 PG 1831
MB 46 PG 248
- WILLY M. BANKS
DB 5716 PG 38
MB 46 PG 248
- EDWARD E. BENTON, SR.
DB 4930 PG 2279
MB 45 PG 206
- MARY ELLEN DOSS
DB 4895 PG 386
MB 44 PG 194
- DANA L. BRITTLE
DB 4768 PG 861
MB 46 PG 248
- JOYCE E. KAYLOR
DB 5490 PG 2146
MB 46 PG 248
- CHERIHUNT STAMM
DB 5655 PG 187
MB 45 PG 206
- NOAH S. BOATRIGHT
DB 5127 PG 1126
MB 47 PG 206
- KENNETH R. CURLEY
DB 4515 PG 745
MB 44 PG 194
- ROBERT HARRISON
DB 5490 PG 2146
MB 46 PG 248
- WESLEY R. SLAYTON
DB 5181 PG 458
MB 46 PG 248
- THOMAS P. MACNEISH
DB 4395 PG 827
MB 44 PG 194
- FRANKLIN H. PHILLIPS III
DB 5379 PG 2473
MB 46 PG 248
- MATTHEW M. HAYDEN
DB 4701 PG 665
MB 46 PG 248
- AMERICAN RESIDENTIAL LEASING COMPANY, LLC
DB 5786 PG 1180
MB 52 PG 323
- DANIEL W. PATTERSON
DB 4942 PG 1864
MB 46 PG 248
- JOSEPH M. VADINO
DB 4872 PG 698
MB 47 PG 380
- JEREMY AKIN
DB 5444 PG 1484
MB 52 PG 323
- BONITA ROWLEY, WIDOW
DB 5450 PG 1884
MB 52 PG 323
- DERRICK SAUL
DB 5452 PG 1614
MB 52 PG 323
- CHARLES S. LINDSEY
DB 5468 PG 2497
MB 52 PG 323
- CARRIE L. CHEATHAM
DB 5472 PG 678
MB 52 PG 323
- AMERICAN RESIDENTIAL LEASING COMPANY, LLC
DB 5751 PG 2050
MB 52 PG 323
- TIMOTHY L. ALLENSWORTH
DB 5478 PG 375
MB 52 PG 323
- SANTOS MURGUIA III
DB 5888 PG 2965
MB 52 PG 323
- LESLIE HOWARD PARRIS
DB 5762 PG 553
MB 52 PG 323
- CHRISTOPHER M. SMITH
DB 5485 PG 970
MB 52 PG 323
- NCDOT
DB 5641 PG 2834
- SAVANA LAND COMPANY, LLC
DB 4885 PG 1389
MB 59 PG 164-165



MATCHLINE - L - STA 96+00 (SHEET UC-8)

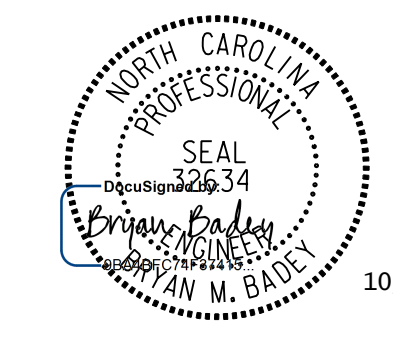
MATCHLINE - L - STA 109+00 (SHEET UC-10)

PLANS PREPARED BY :
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900 RIDGEBLVD DRIVE SUITE 350
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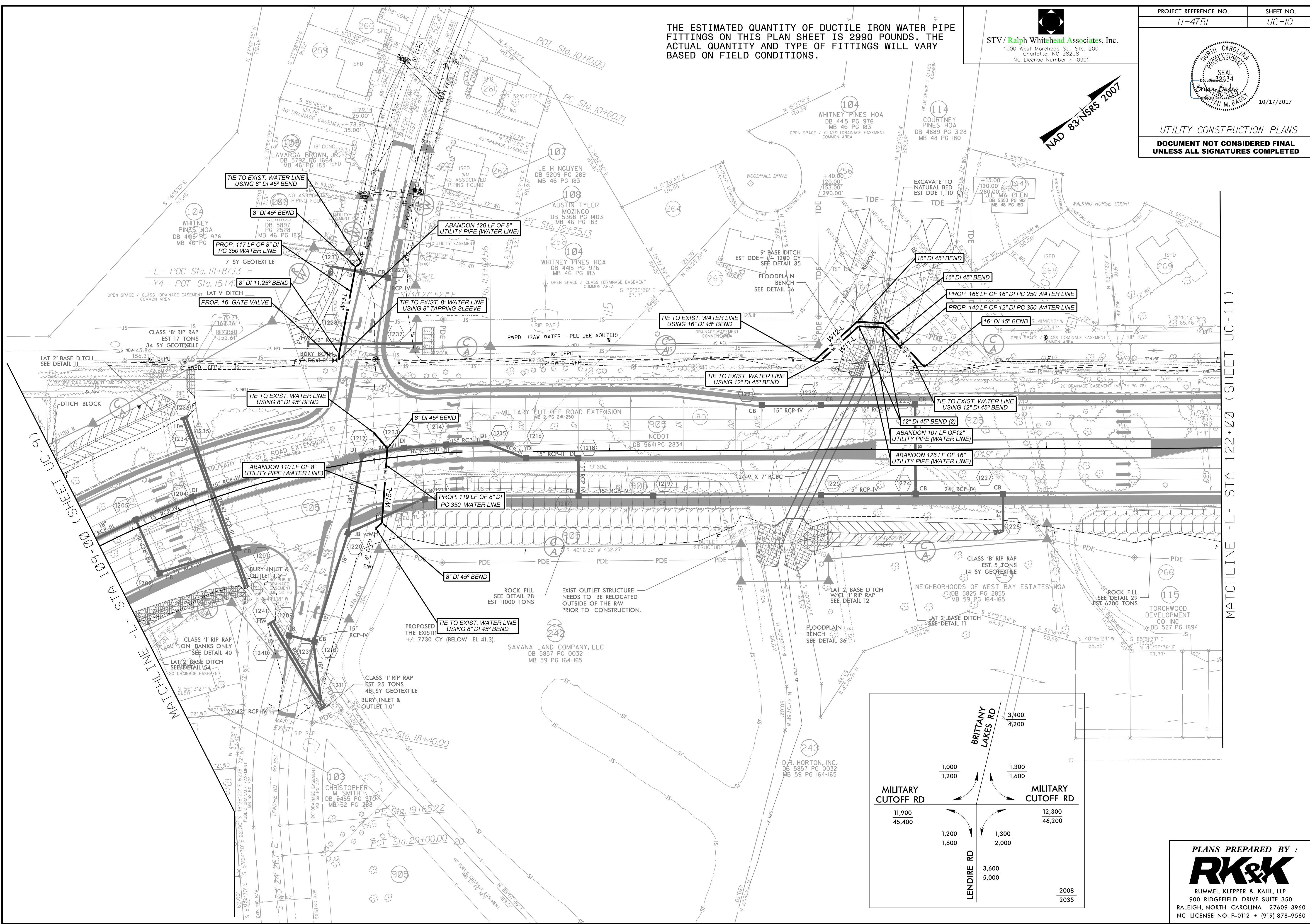
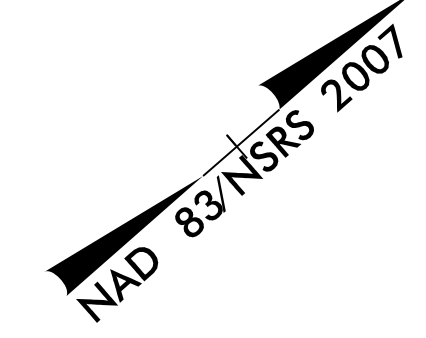
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 2990 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

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NC License Number F-0991

PROJECT REFERENCE NO. U-4751 SHEET NO. UC-10



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MATCHLINE - L - STA 122+00 (SHEET UC-9)

MATCHLINE - L - STA 122+00 (SHEET UC-11)

| | | | |
|--------------------|-------------------|-------|--------------------|
| | BRITANNY LAKES RD | | |
| | 1,000 | 1,300 | |
| | 1,200 | 1,600 | |
| MILITARY CUTOFF RD | | | MILITARY CUTOFF RD |
| 11,900 | | | 12,300 |
| 45,400 | | | 46,200 |
| | LENDIRE RD | | |
| | 1,200 | 1,300 | |
| | 1,600 | 2,000 | |
| | 3,600 | 5,000 | |
| | | | 2008 |
| | | | 2035 |

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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 4920 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

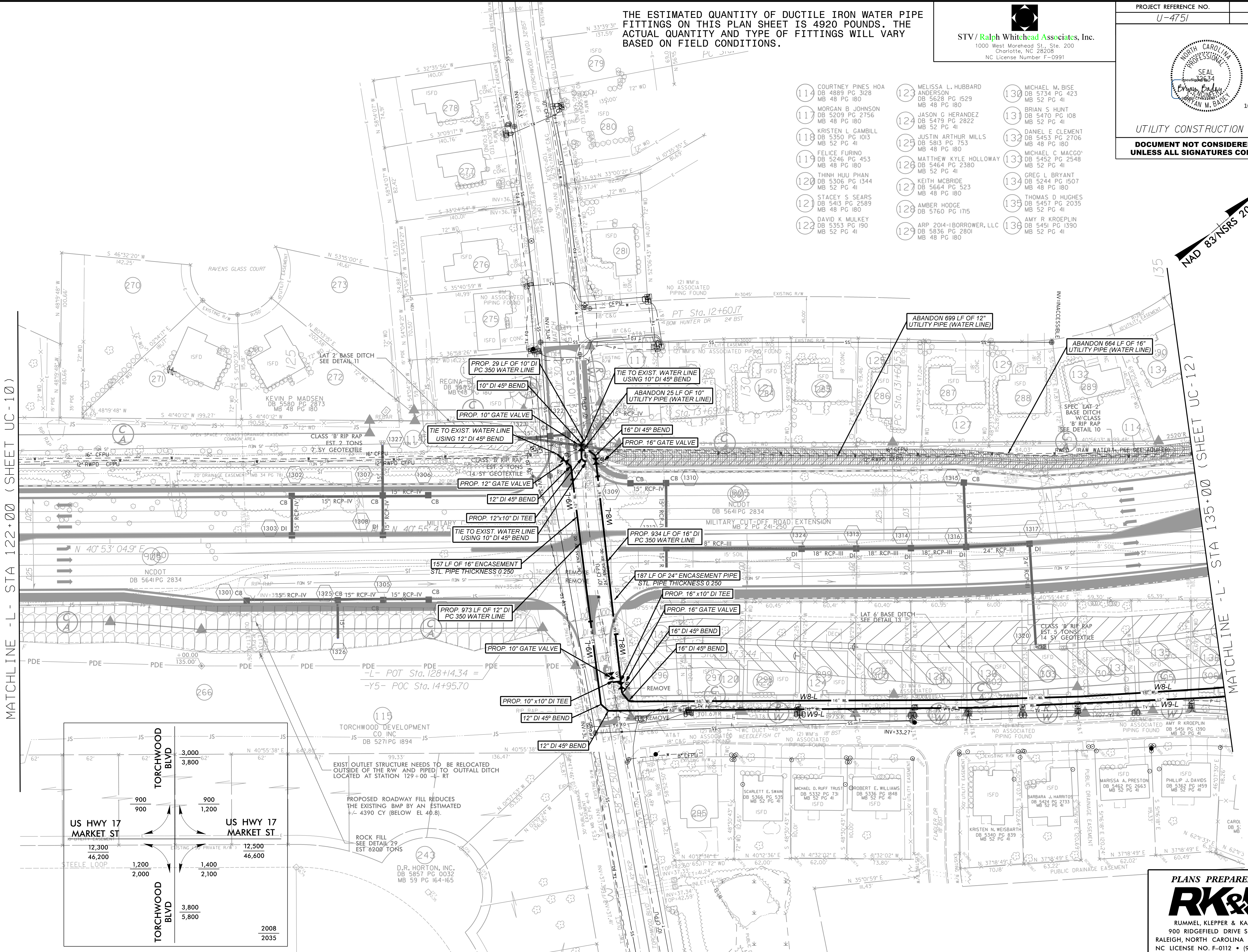
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| | |
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| PROJECT REFERENCE NO. U-4751 | SHEET NO. UC-11 |
|---------------------------------|--------------------|

UTILITY CONSTRUCTION PLANS
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- 114 COURTNEY PINES HOA
DB 4889 PG 3128
MB 48 PG 180
- 117 MORGAN B JOHNSON
DB 5209 PG 2756
MB 48 PG 180
- 118 KRISTEN L GAMBILL
DB 5350 PG 1013
MB 52 PG 41
- 119 FELICE FURINO
DB 5246 PG 453
MB 48 PG 180
- 120 THINH HUU PHAN
DB 5306 PG 1344
MB 52 PG 41
- 121 STACEY S SEARS
DB 5413 PG 2589
MB 48 PG 180
- 122 DAVID K MULKEY
DB 5353 PG 190
MB 52 PG 41
- 123 MELISSA L. HUBBARD
ANDERSON
DB 5628 PG 1529
MB 48 PG 180
- 124 JASON G HERANDEZ
DB 5479 PG 2822
MB 52 PG 41
- 125 JUSTIN ARTHUR MILLS
DB 5813 PG 753
MB 48 PG 180
- 126 MATTHEW KYLE HOLLOWAY
DB 5464 PG 2380
MB 52 PG 41
- 127 KEITH MCBRIDE
DB 5664 PG 523
MB 48 PG 180
- 128 AMBER HODGE
DB 5760 PG 1715
- 129 ARP 2014-1BORROWER, LLC
DB 5836 PG 2801
MB 48 PG 180
- 130 MICHAEL M. BISE
DB 5734 PG 423
MB 52 PG 41
- 131 BRIAN S HUNT
DB 5470 PG 108
MB 52 PG 41
- 132 DANIEL E CLEMENT
DB 5453 PG 2706
MB 48 PG 180
- 133 MICHAEL C MACCO
DB 5452 PG 2548
MB 52 PG 41
- 134 GREG L BRYANT
DB 5244 PG 1507
MB 48 PG 180
- 135 THOMAS D HUGHES
DB 5457 PG 2035
MB 52 PG 41
- 136 AMY R KROEPLIN
DB 5451 PG 1390
MB 52 PG 41



MATCHLINE -L- STA 122+00 (SHEET UC-10)

MATCHLINE -L- STA 135+00 (SHEET UC-12)

| | | |
|---------------------|--------|--------|
| TORCHWOOD BLVD | 3,000 | 3,800 |
| | 900 | 1,200 |
| US HWY 17 MARKET ST | 12,300 | 46,200 |
| | 1,200 | 2,000 |
| TORCHWOOD BLVD | 3,800 | 5,800 |
| | 900 | 1,400 |

EXIST OUTLET STRUCTURE NEEDS TO BE RELOCATED OUTSIDE OF THE RW AND PIPED TO OUTFALL DITCH LOCATED AT STATION 129+00 -L- RT

PROPOSED ROADWAY FILL REDUCES THE EXISTING BMP BY AN ESTIMATED 4390 CY (BELOW EL 40.8)

ROCK FILL SEE DETAIL 29 EST 6208 TONS

D.R. HORTON, INC.
DB 5857 PG 0032
MB 59 PG 164-165

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

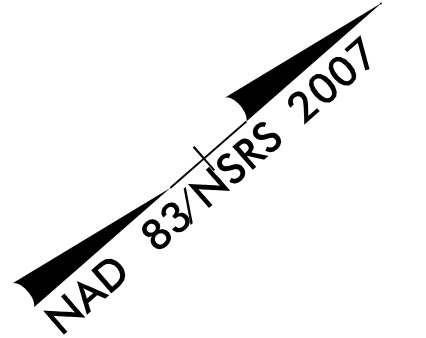
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 3330 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

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Charlotte, NC 28208
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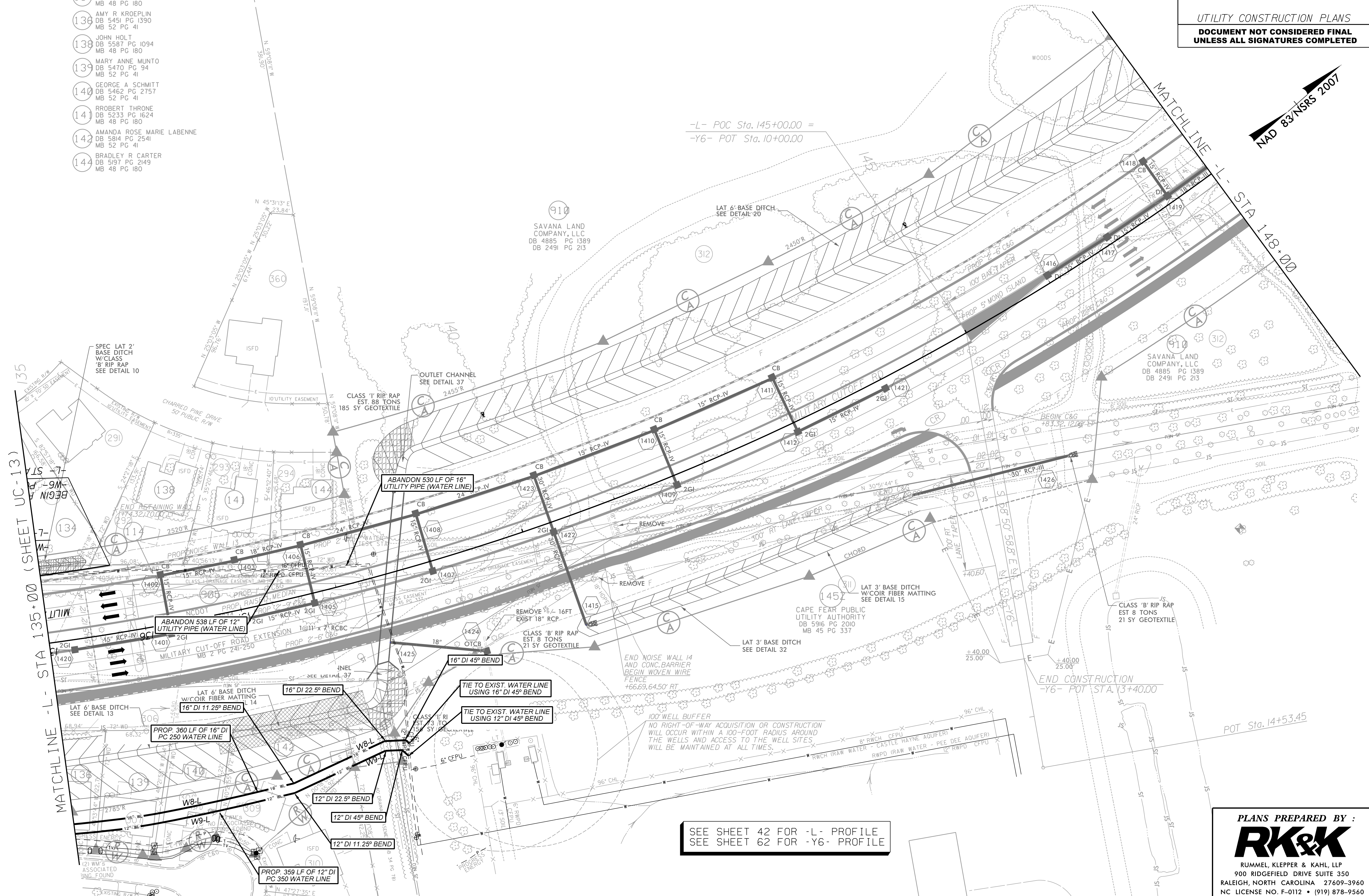
PROJECT REFERENCE NO. U-4751 SHEET NO. UC-12



UTILITY CONSTRUCTION PLANS
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- 114 COURTNEY PINES HOA
DB 4889 PG 3128
MB 48 PG 180
- 134 GREG L BRYANT
DB 5244 PG 1507
MB 48 PG 180
- 136 AMY R KROEPLIN
DB 5451 PG 1390
MB 52 PG 41
- 138 JOHN HOLT
DB 5587 PG 1094
MB 48 PG 180
- 139 MARY ANNE MUNTO
DB 5470 PG 94
MB 52 PG 41
- 140 GEORGE A SCHMITT
DB 5462 PG 2757
MB 52 PG 41
- 141 RROBERT THRONE
DB 5233 PG 1624
MB 48 PG 180
- 142 AMANDA ROSE MARIE LABENNE
DB 5814 PG 2541
MB 52 PG 41
- 144 BRADLEY R CARTER
DB 5197 PG 2149
MB 48 PG 180



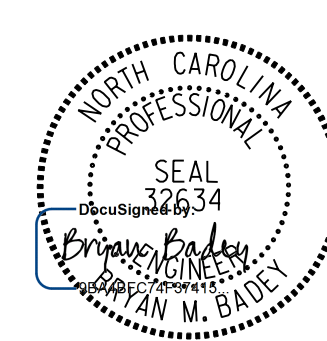
SEE SHEET 42 FOR -L- PROFILE
SEE SHEET 62 FOR -Y6- PROFILE

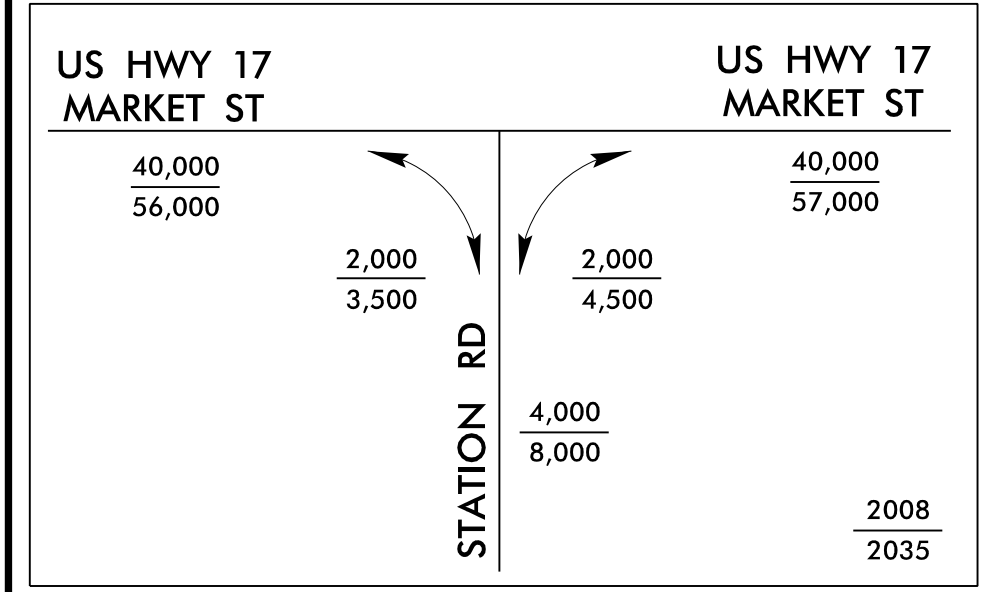
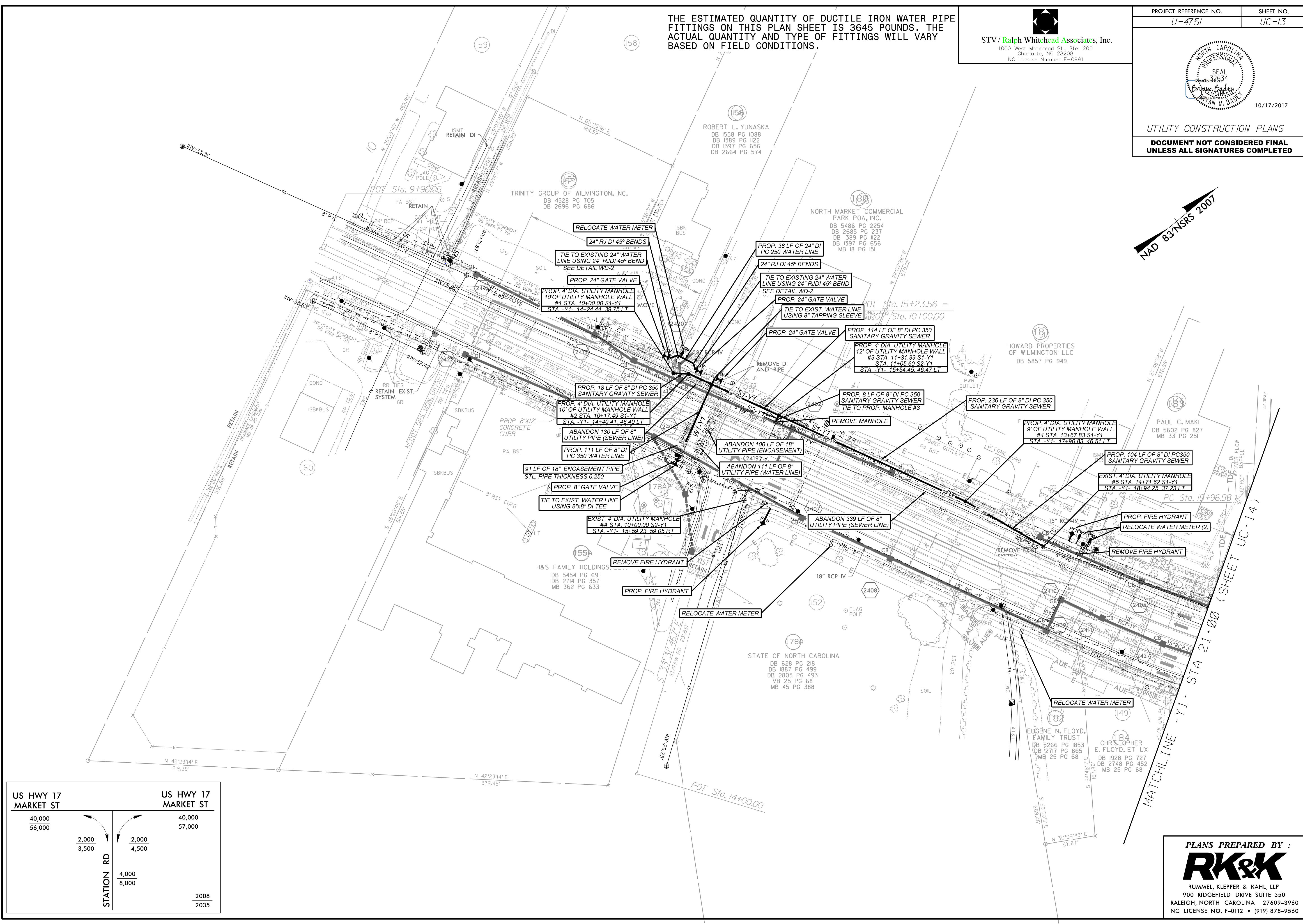
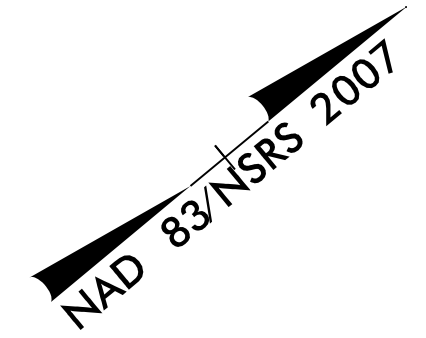
PLANS PREPARED BY :
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RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEBLVD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 3645 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

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 Charlotte, NC 28208
 NC License Number F-0991

| | |
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| PROJECT REFERENCE NO. U-4751 | SHEET NO. UC-13 |
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 10/17/2017
UTILITY CONSTRUCTION PLANS
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 900 RIDGFIELD DRIVE SUITE 350
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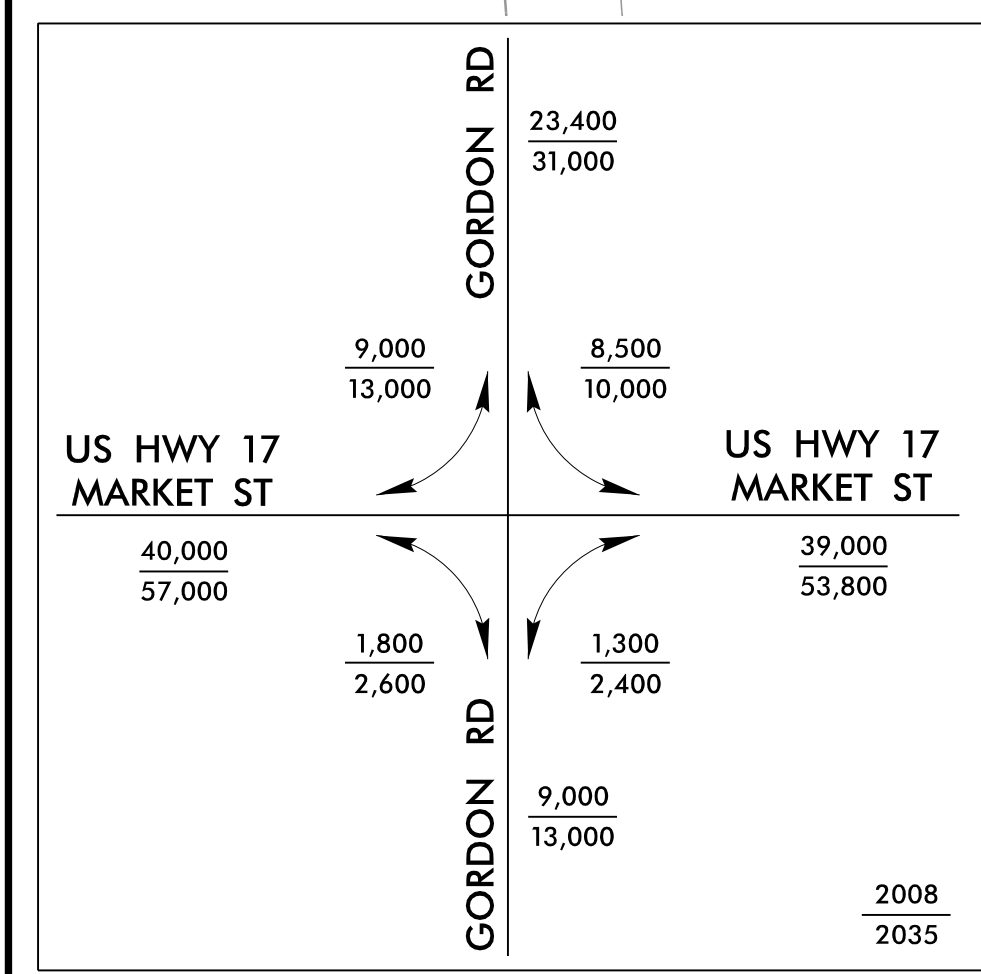
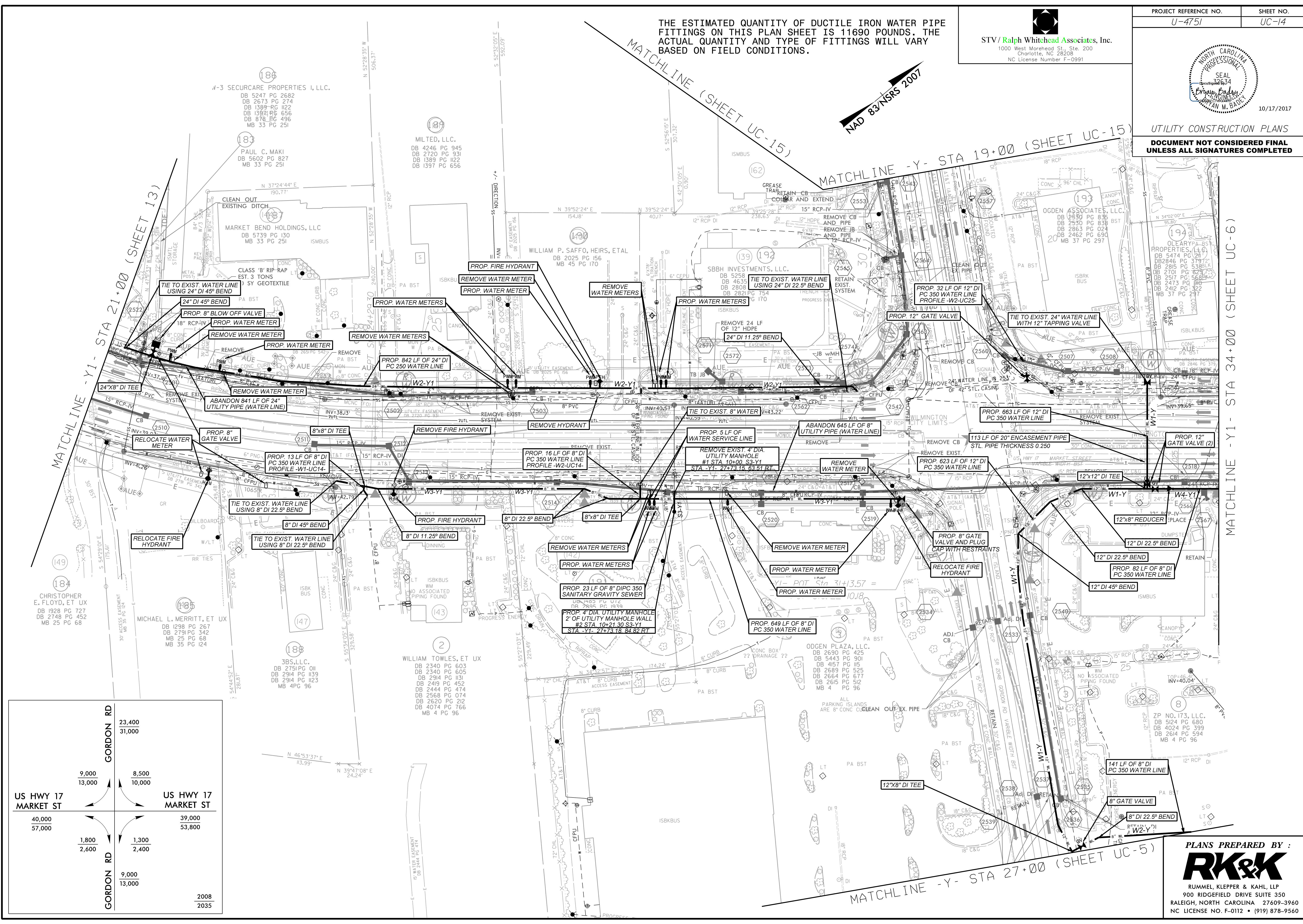
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 11690 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

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Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO. U-4751 SHEET NO. UC-14



UTILITY CONSTRUCTION PLANS
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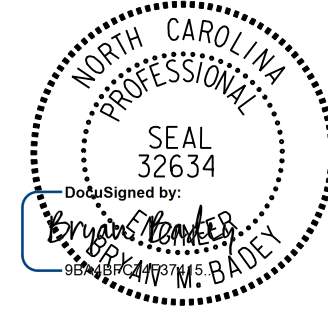


PLANS PREPARED BY:
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RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEBLVD DRIVE SUITE 350
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NC LICENSE NO. F-0112 • (919) 878-9560

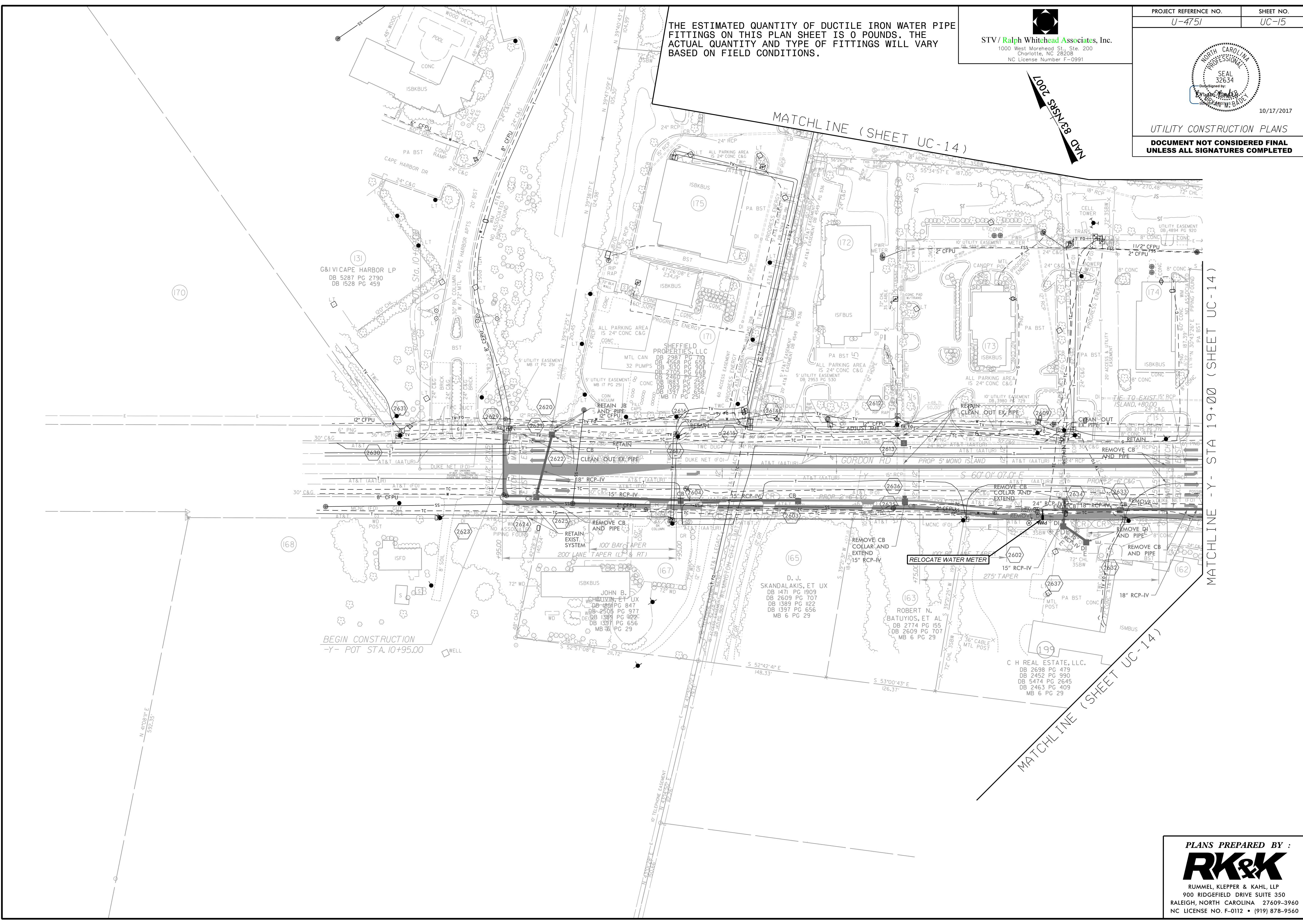
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 0 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.


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 Charlotte, NC 28208
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| | |
|---------------------------------|--------------------|
| PROJECT REFERENCE NO. U-4751 | SHEET NO. UC-15 |
|---------------------------------|--------------------|


 SEAL 32634
 Eric Thomas
 PROFESSIONAL ENGINEER
 10/17/2017

UTILITY CONSTRUCTION PLANS
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MATCHLINE - Y - STA 19+00 (SHEET UC-14)

MATCHLINE (SHEET UC-14)

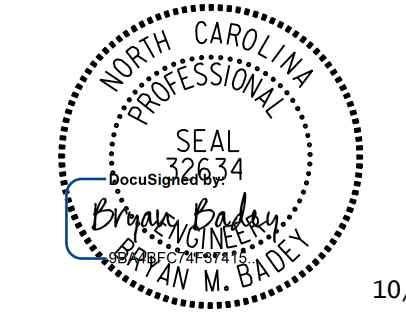
PLANS PREPARED BY :

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 900 RIDGEFIELD DRIVE SUITE 350
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 220 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

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Charlotte, NC 28208
NC License Number F-0991

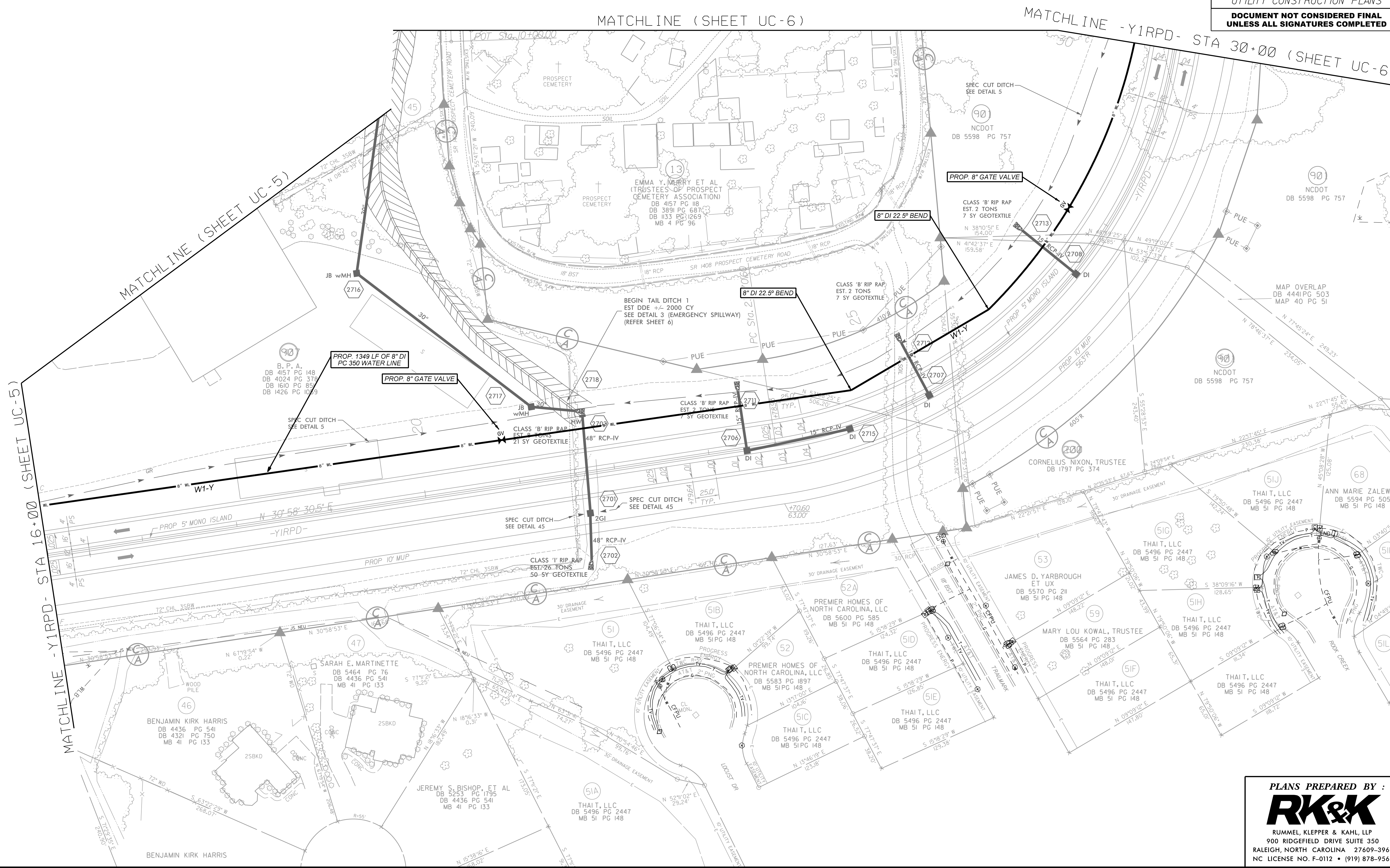
PROJECT REFERENCE NO. U-4751 SHEET NO. UC-16



10/17/2017

UTILITY CONSTRUCTION PLANS

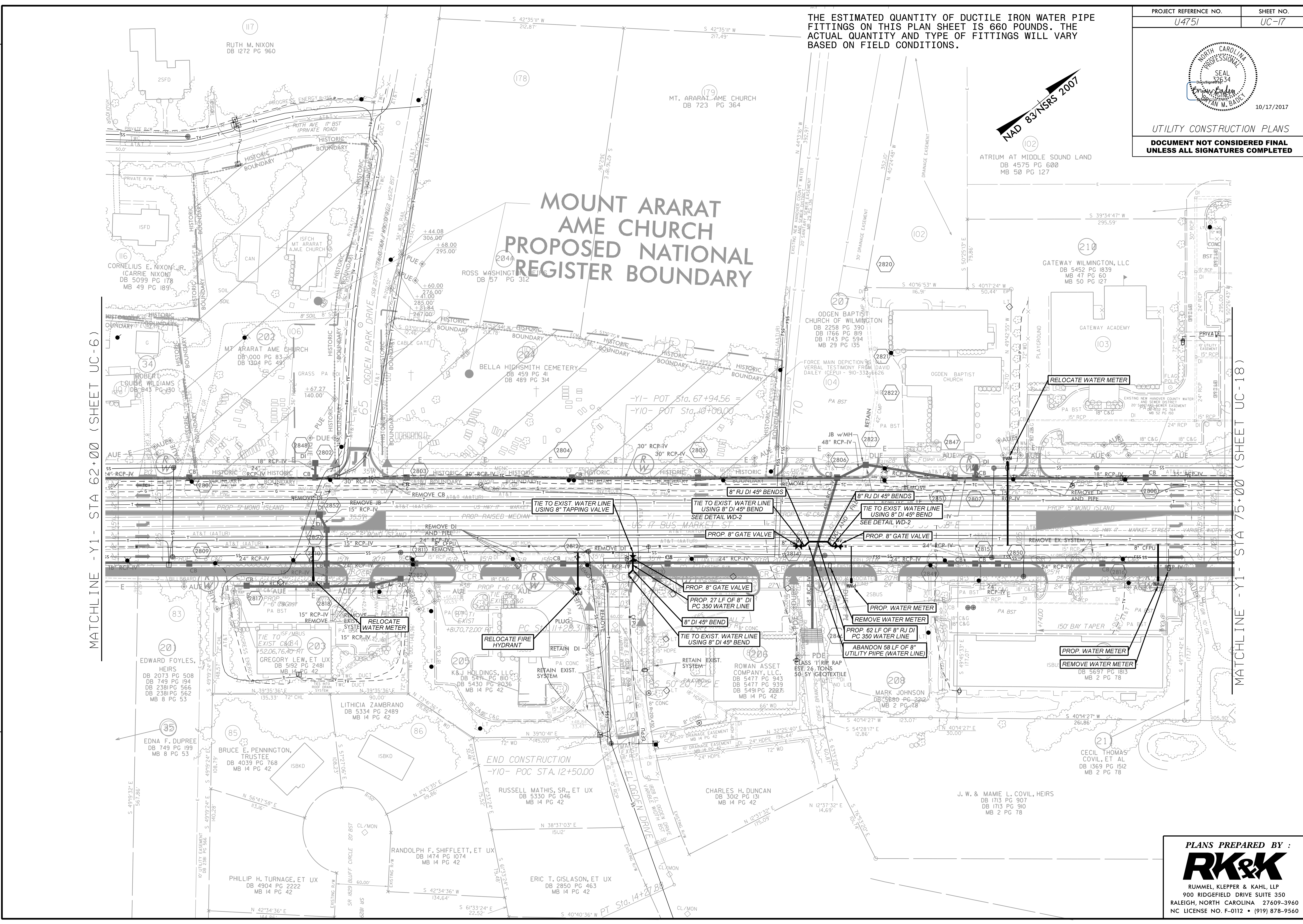
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 660 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

| | |
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| PROJECT REFERENCE NO. U4751 | SHEET NO. UC-17 |
| | |
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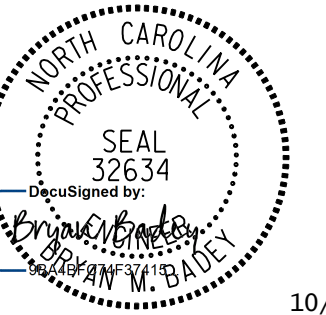
PLANS PREPARED BY :

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 900 RIDGEFIELD DRIVE SUITE 350
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1110 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

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NC License Number F-0991

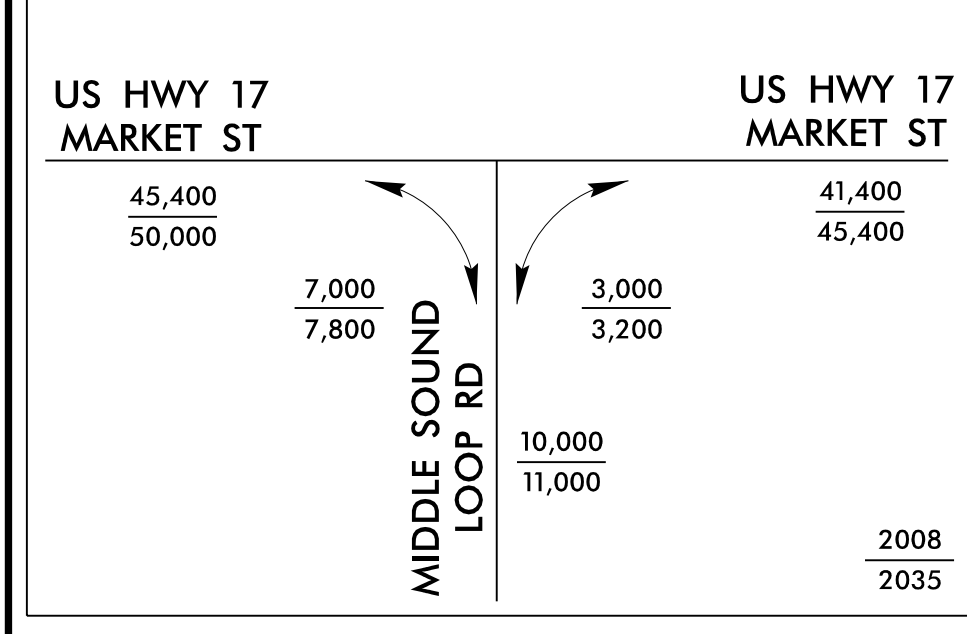
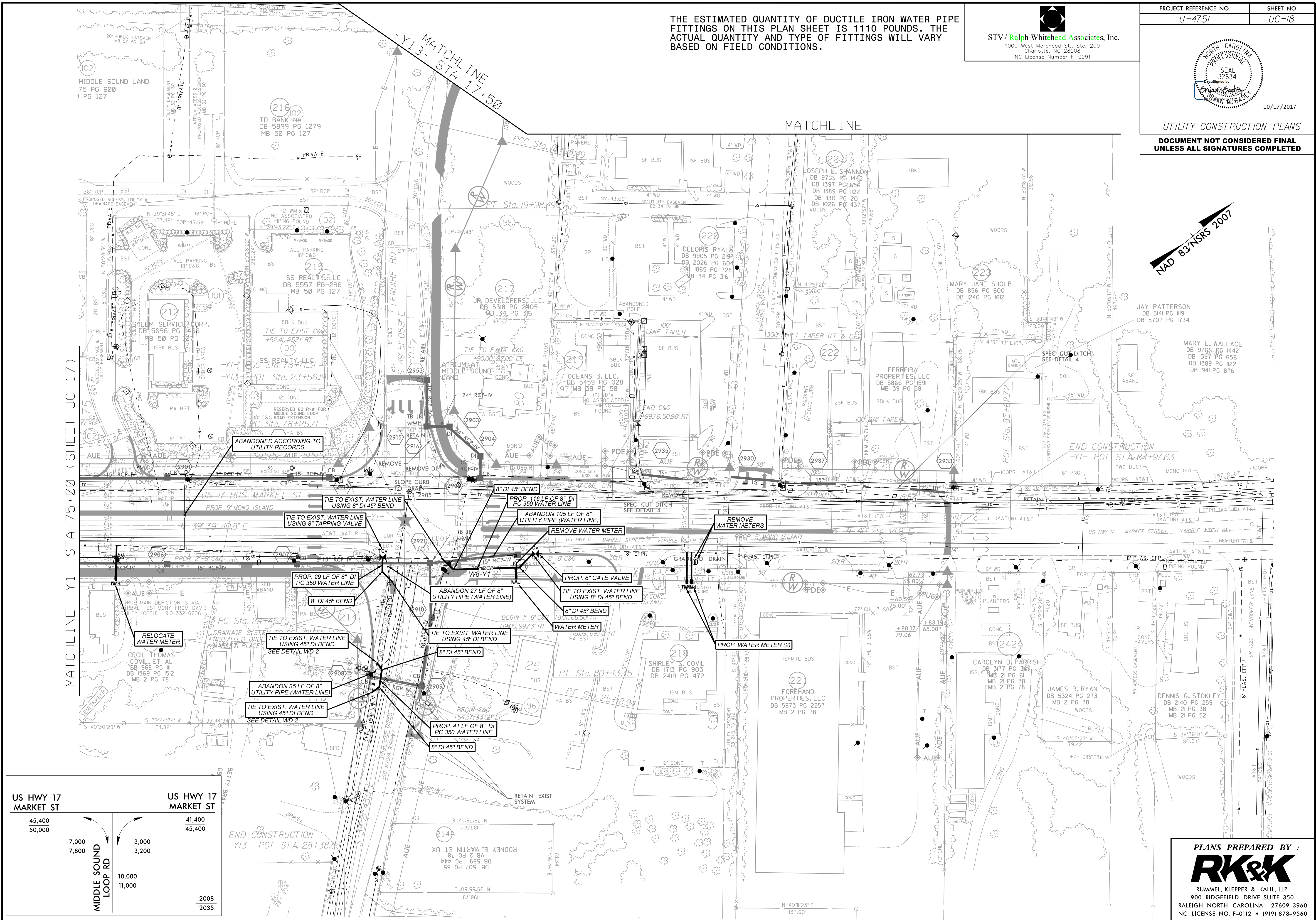
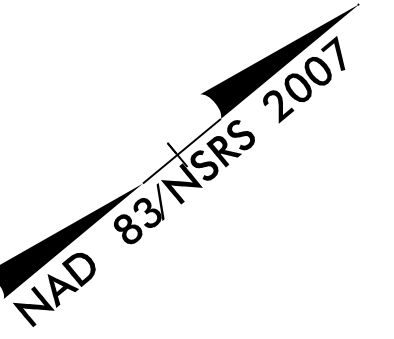
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10/17/2017

UTILITY CONSTRUCTION PLANS

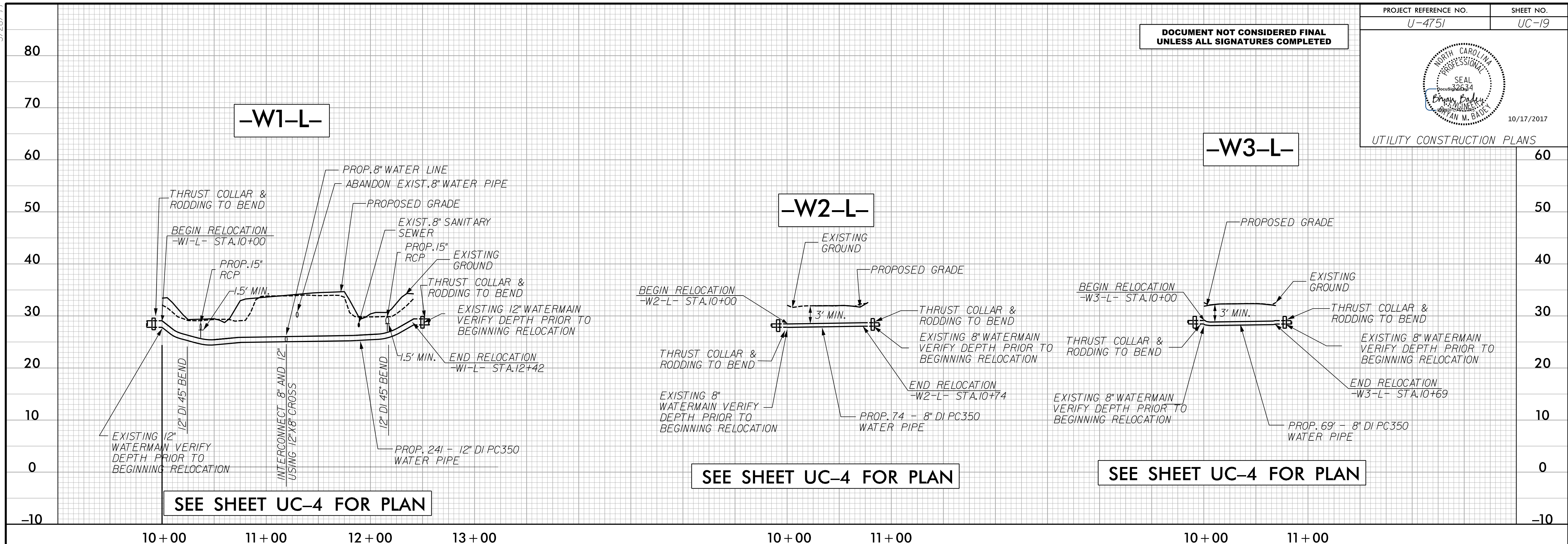
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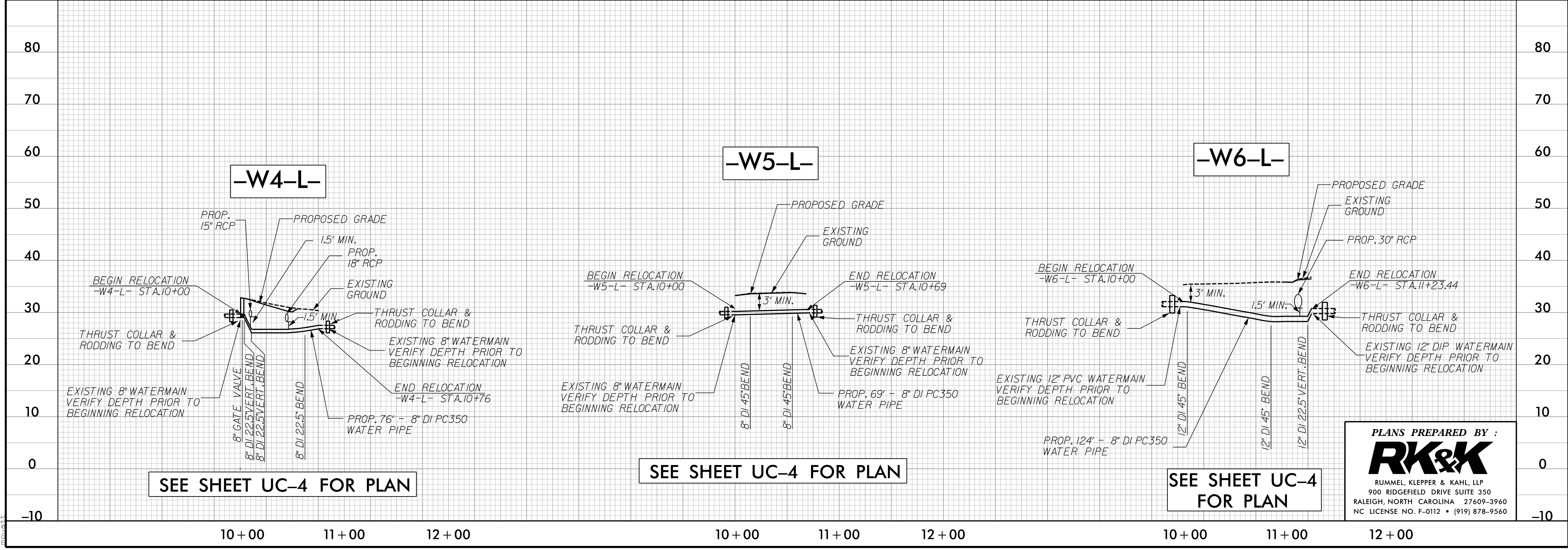
PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
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5/28/2017

| | |
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| PROJECT REFERENCE NO. U-4751 | SHEET NO. UC-19 |
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| UTILITY CONSTRUCTION PLANS | |



10/17/2017
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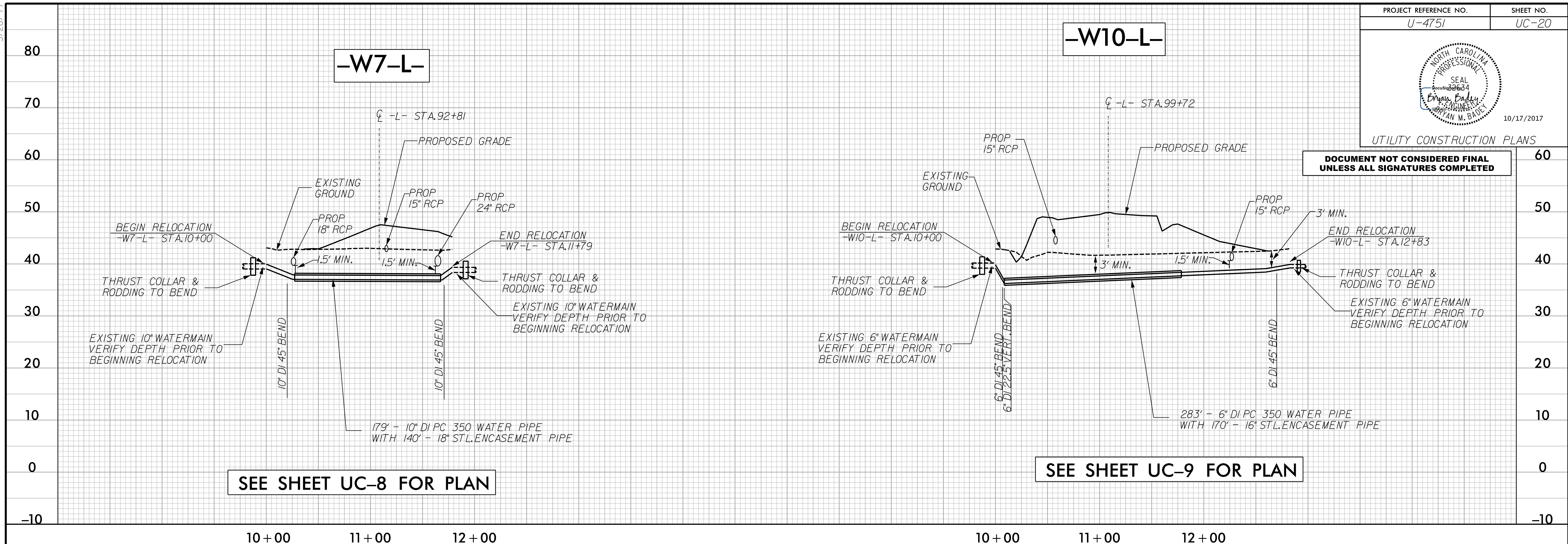
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RALEIGH, NORTH CAROLINA 27609-3960
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5/28/99

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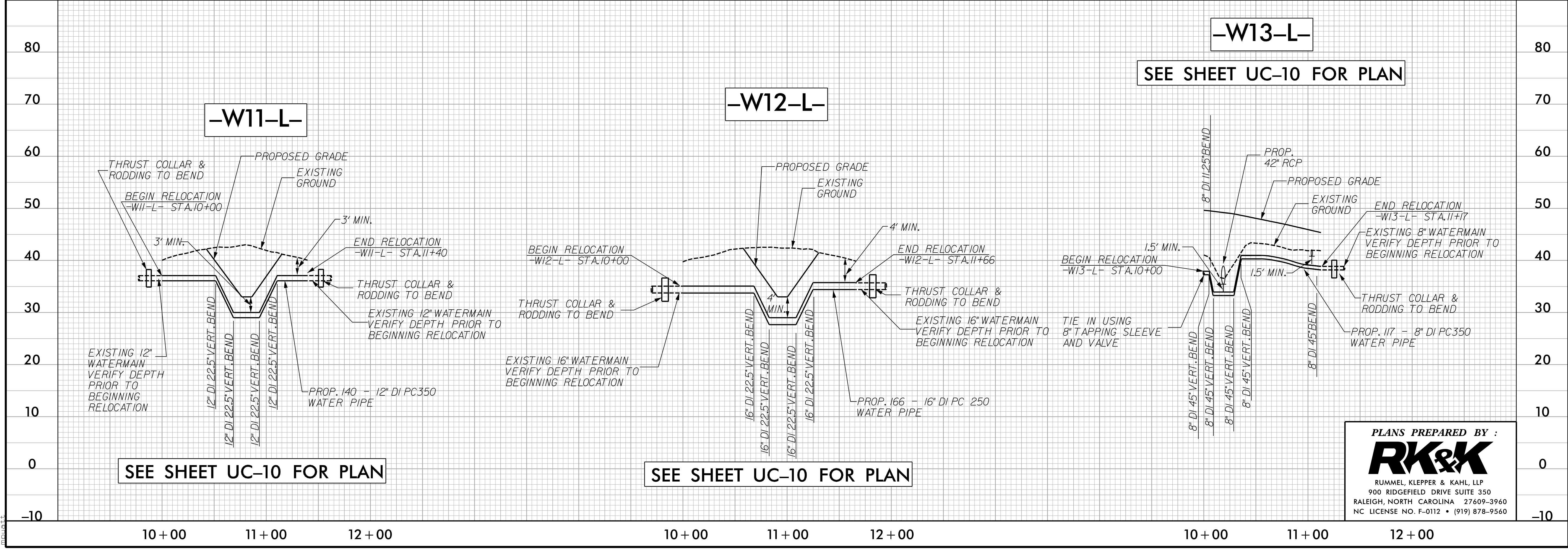
10/17/2017
 UTILITY CONSTRUCTION PLANS

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SEE SHEET UC-8 FOR PLAN

SEE SHEET UC-9 FOR PLAN



SEE SHEET UC-10 FOR PLAN

SEE SHEET UC-10 FOR PLAN

SEE SHEET UC-10 FOR PLAN

PLANS PREPARED BY :

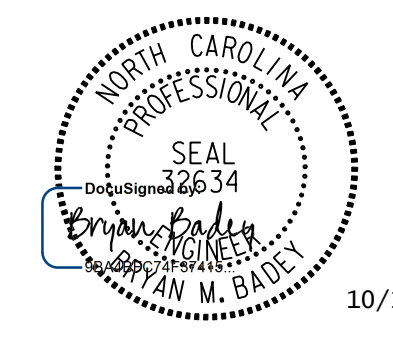
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 900 RIDGEFIELD DRIVE SUITE 350
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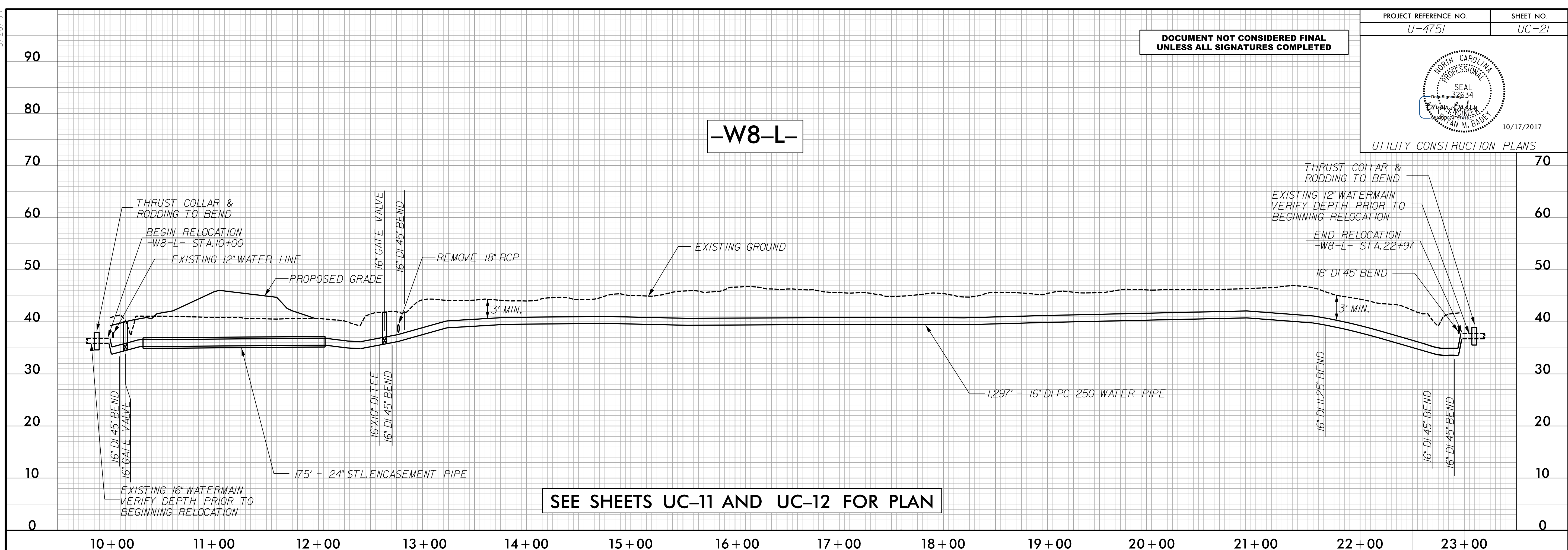
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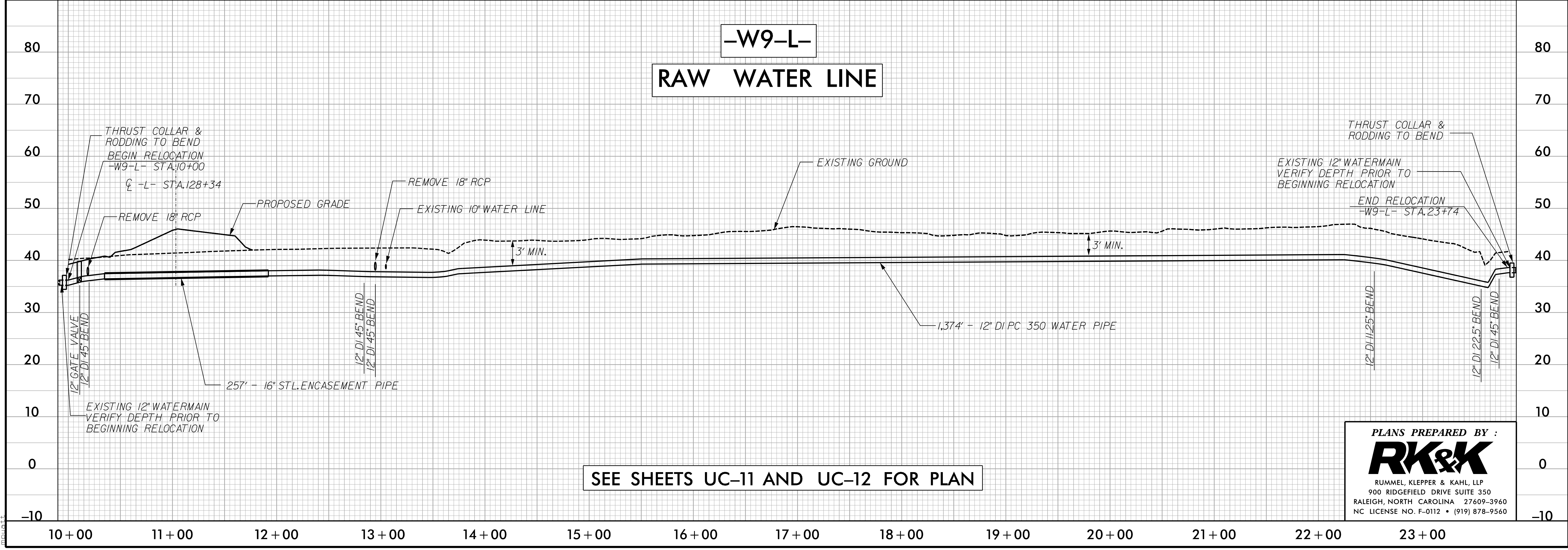
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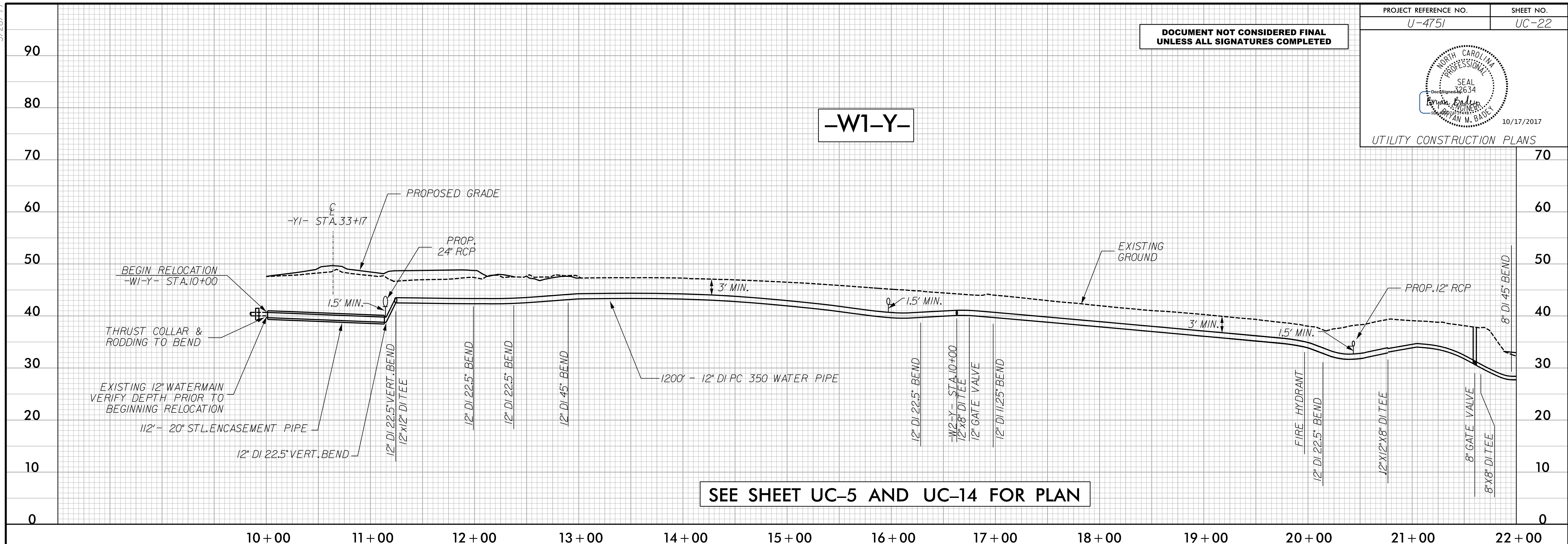
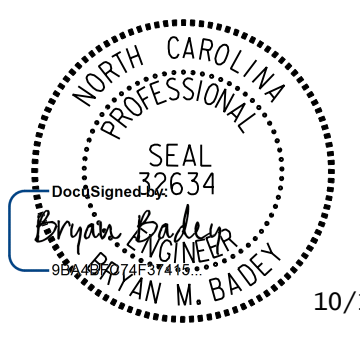
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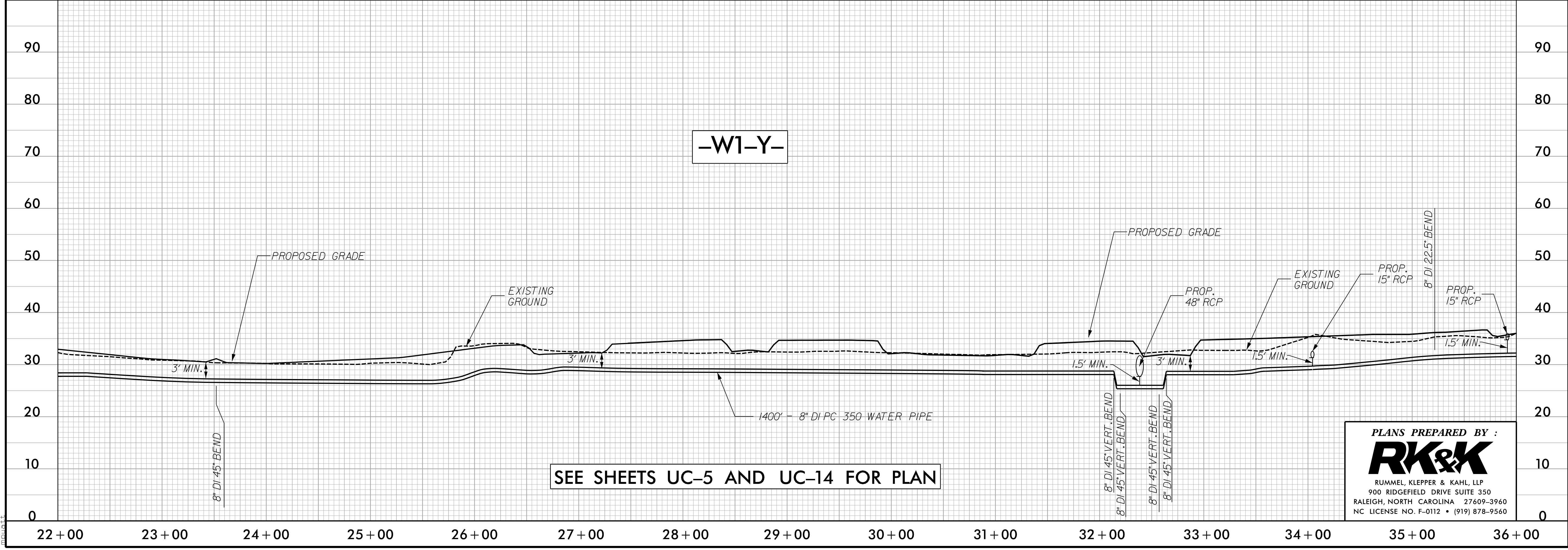
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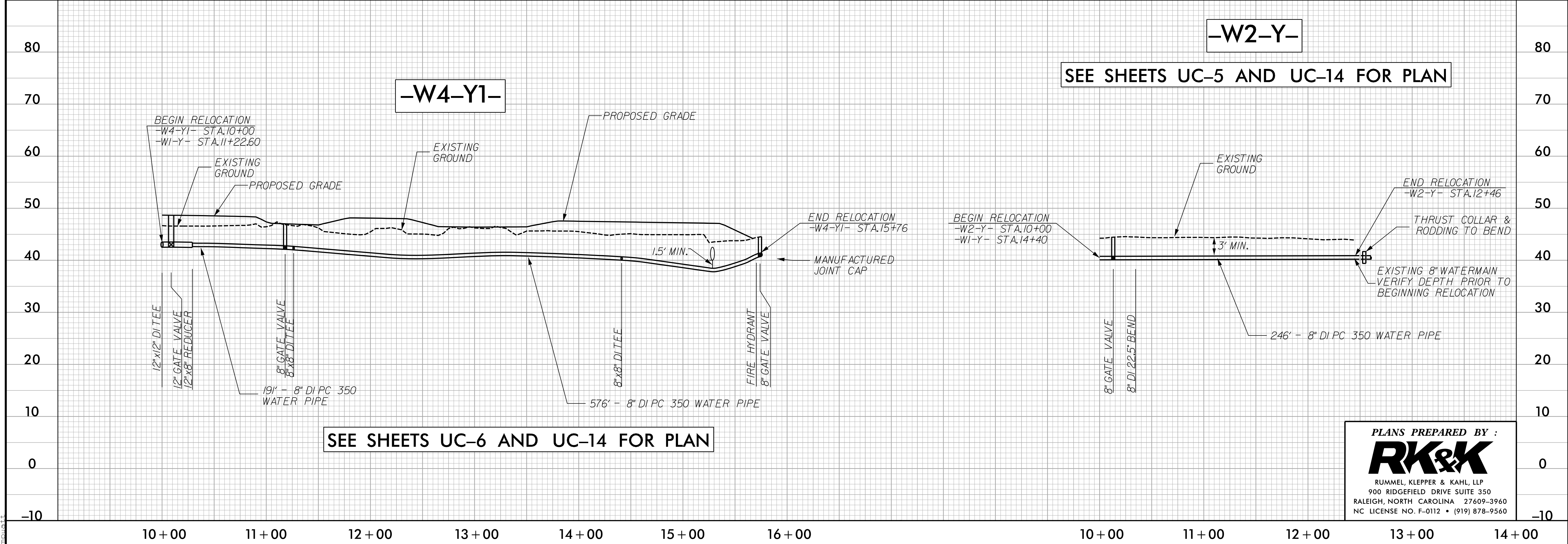
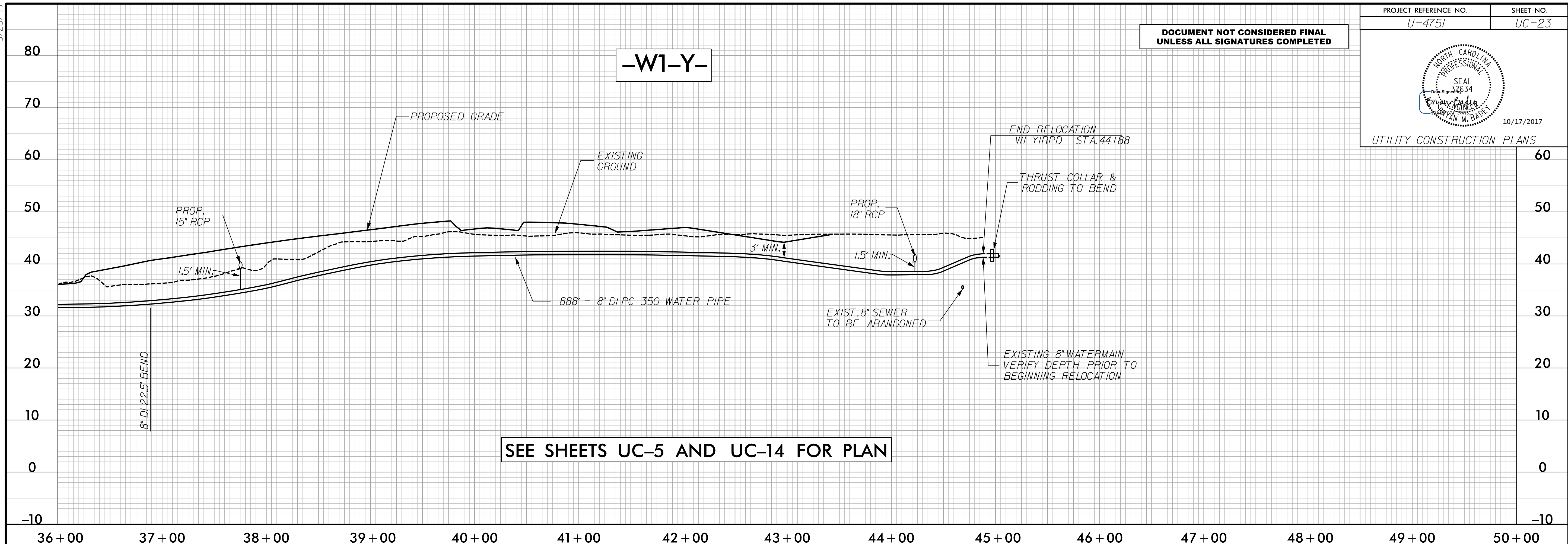
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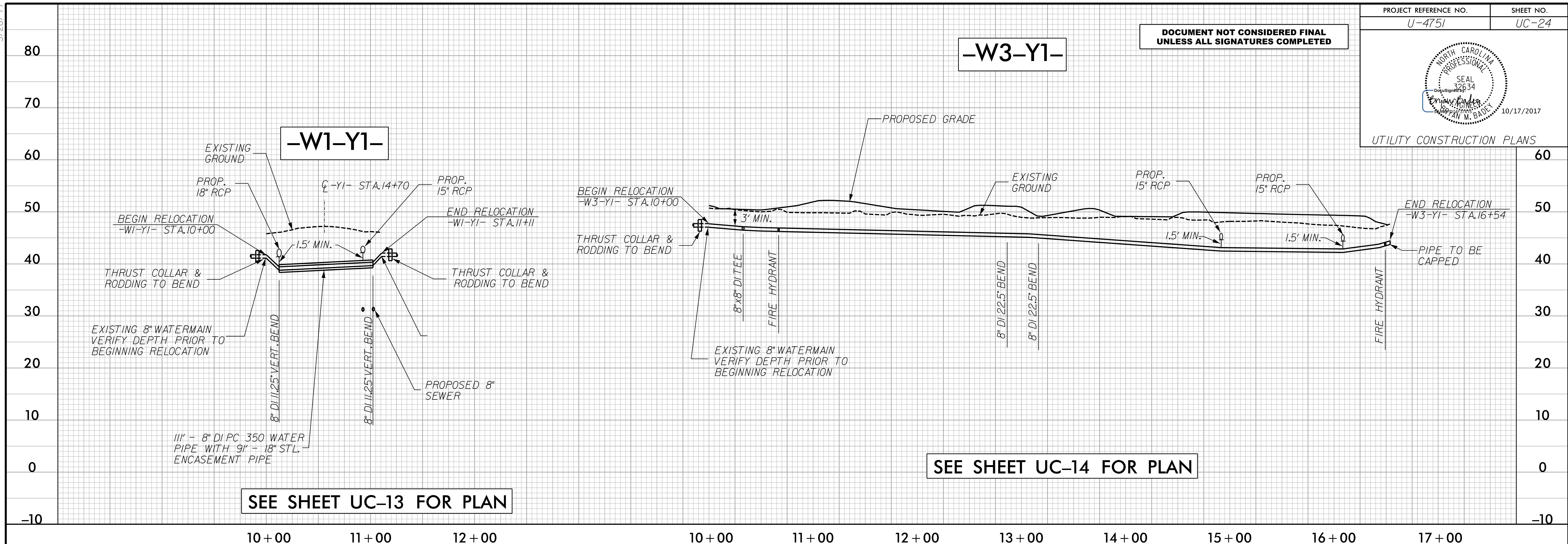
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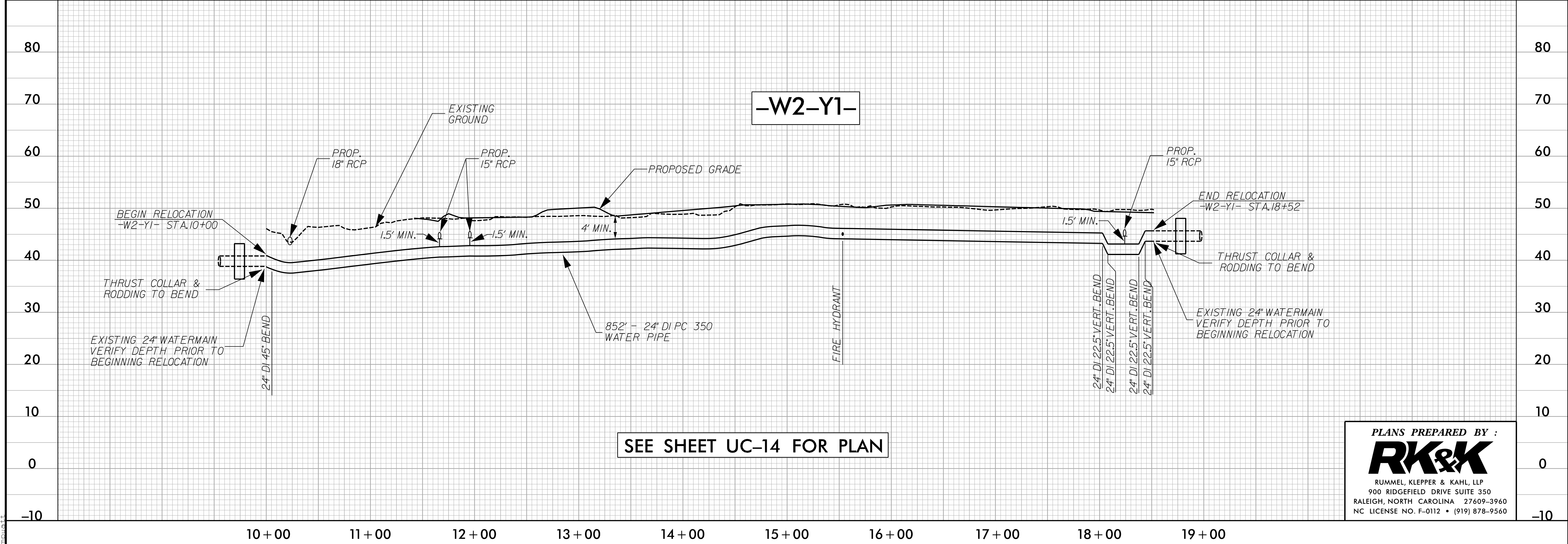
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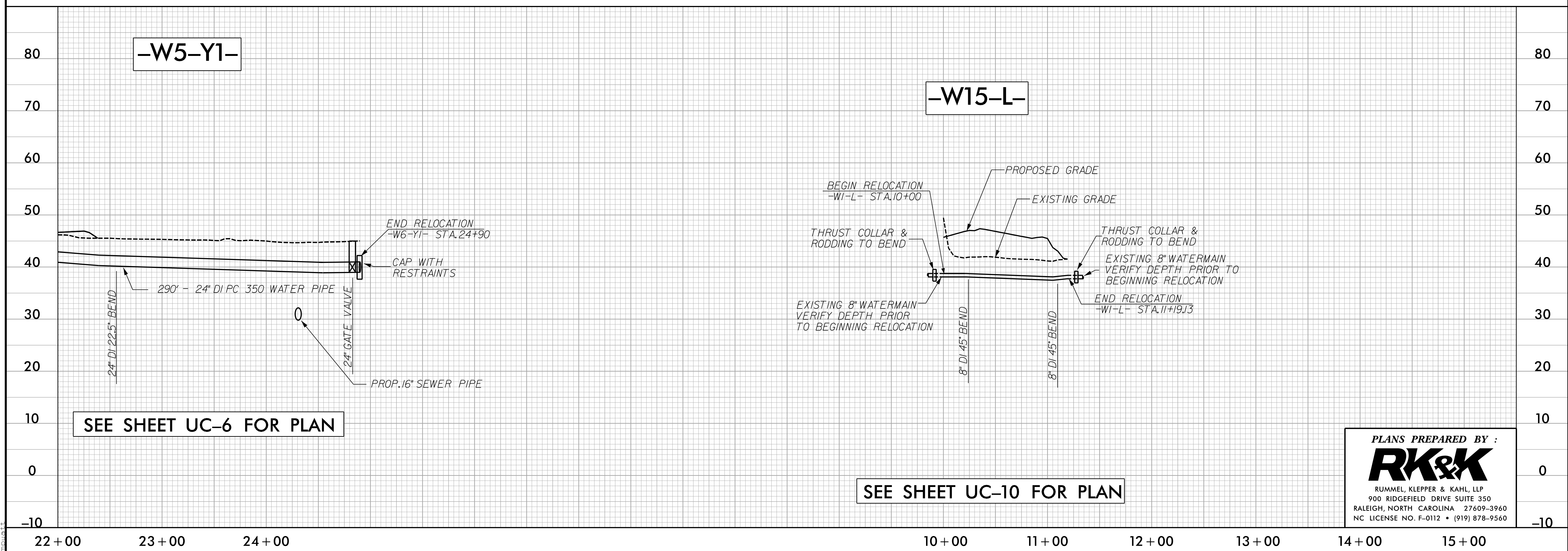
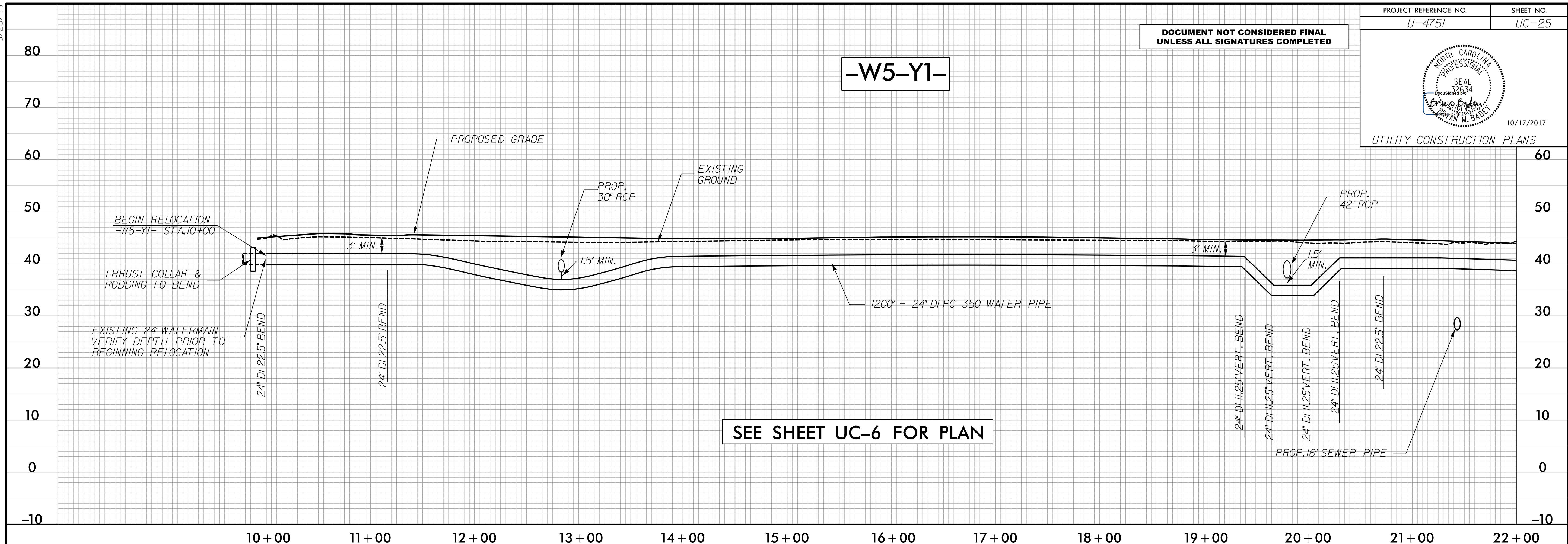
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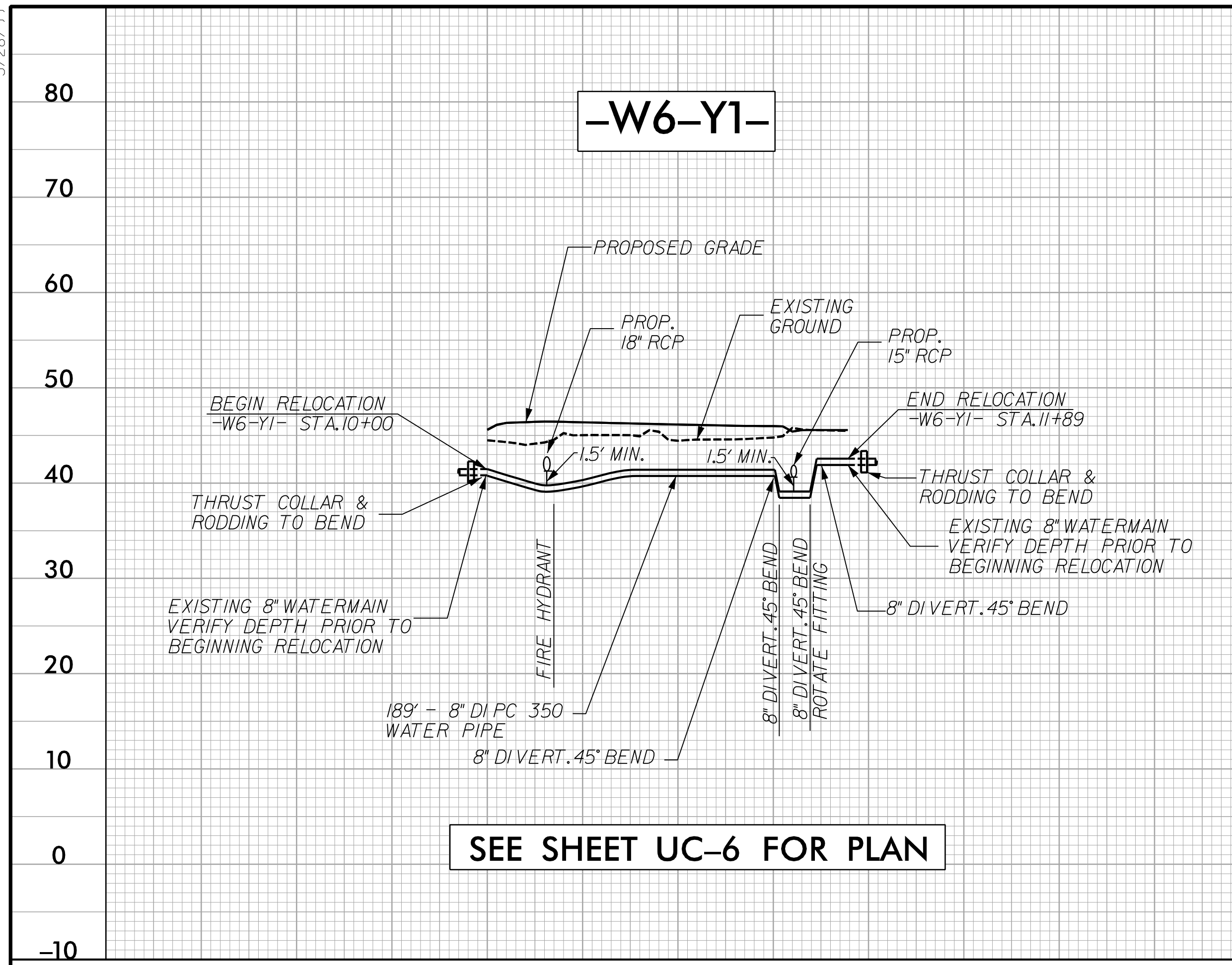
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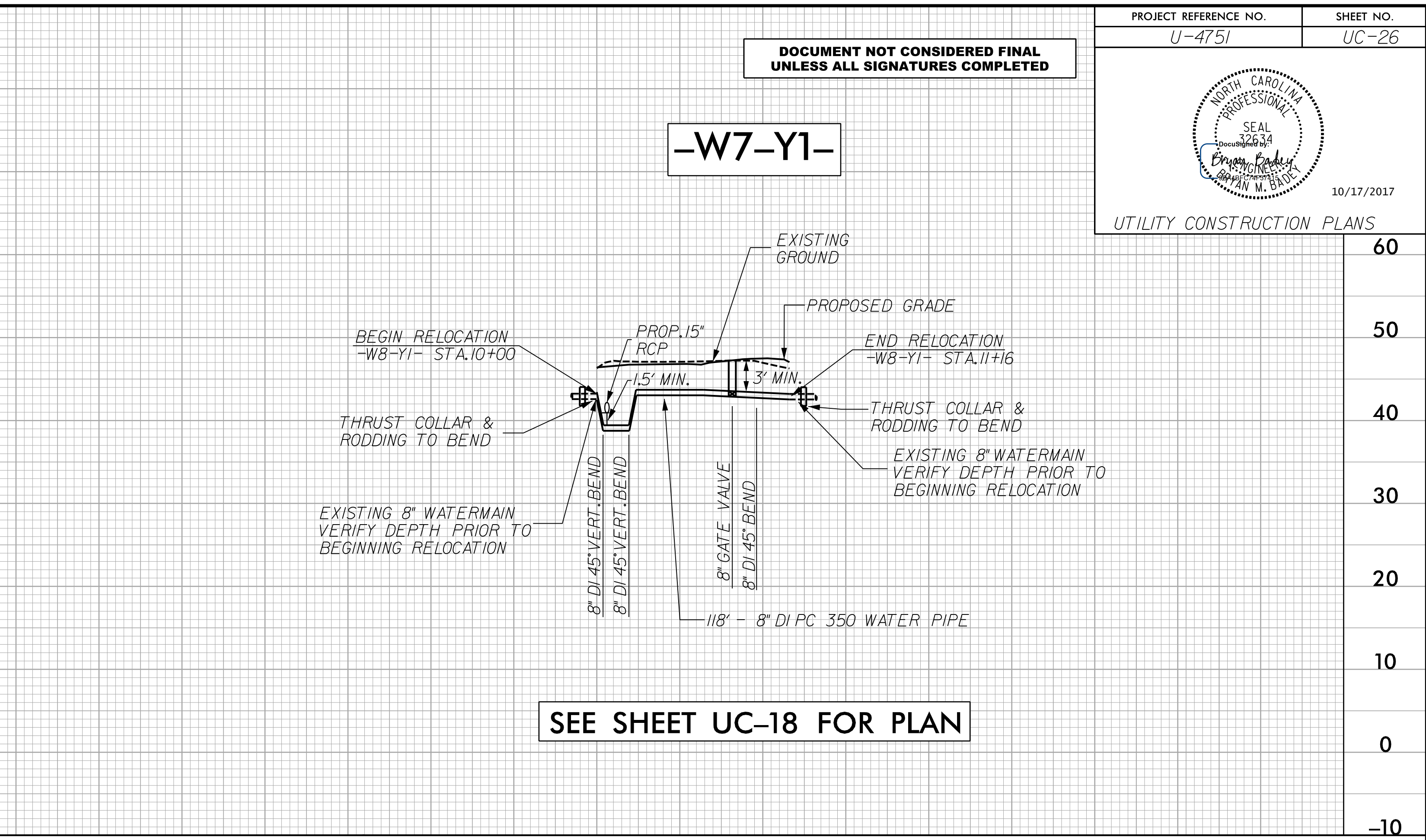
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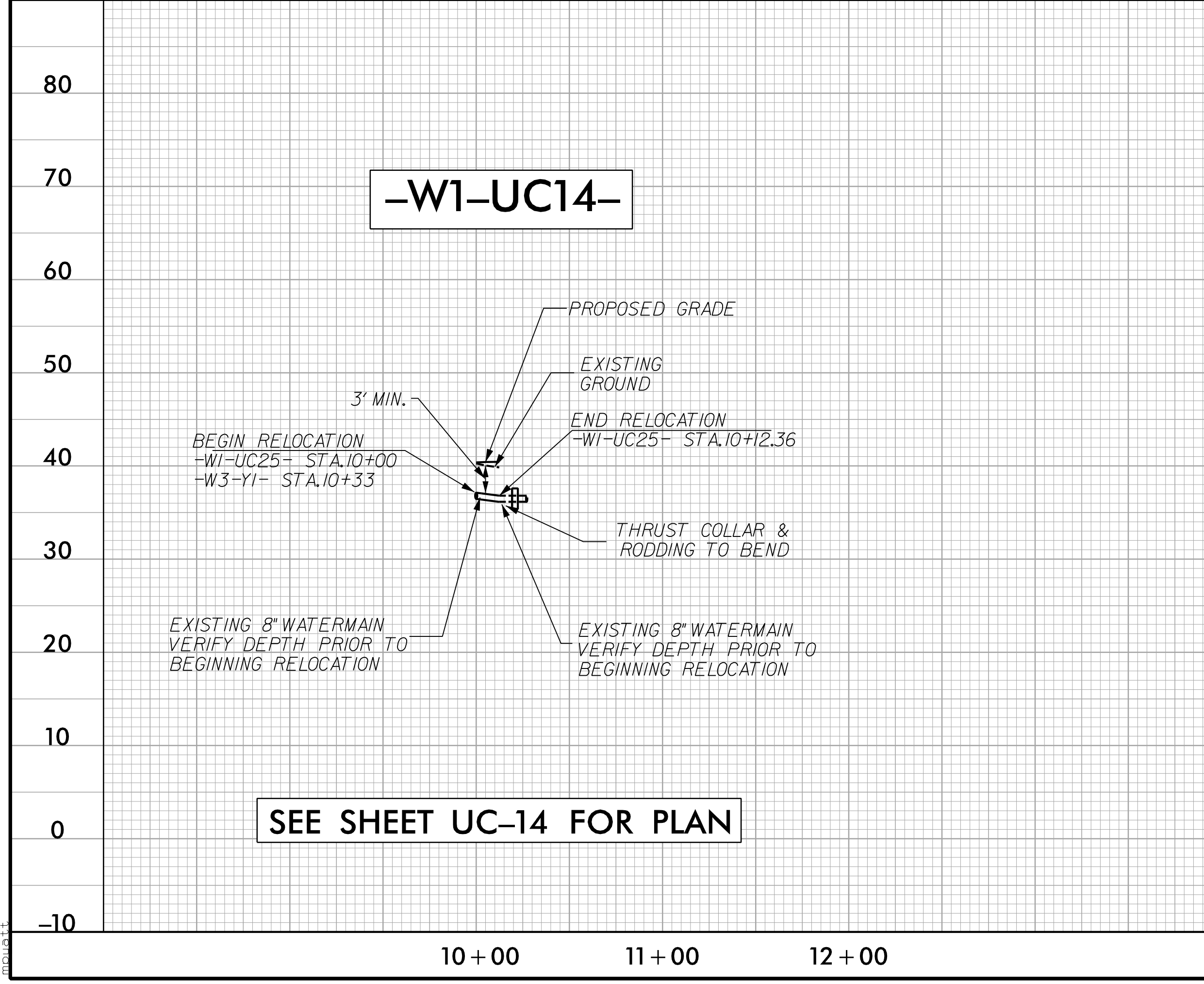
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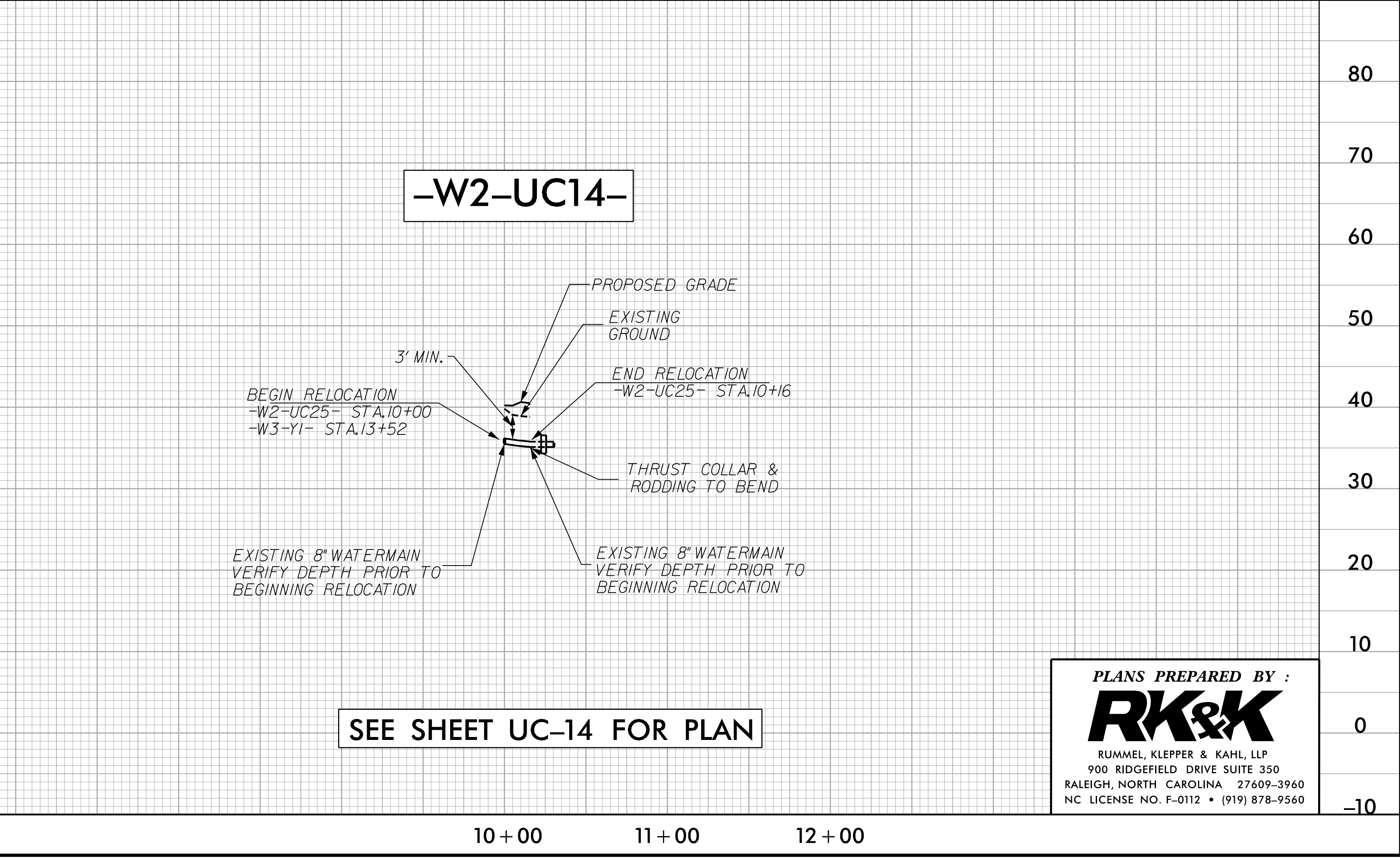
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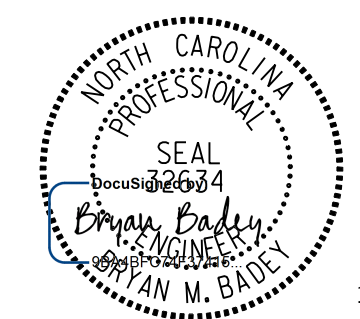
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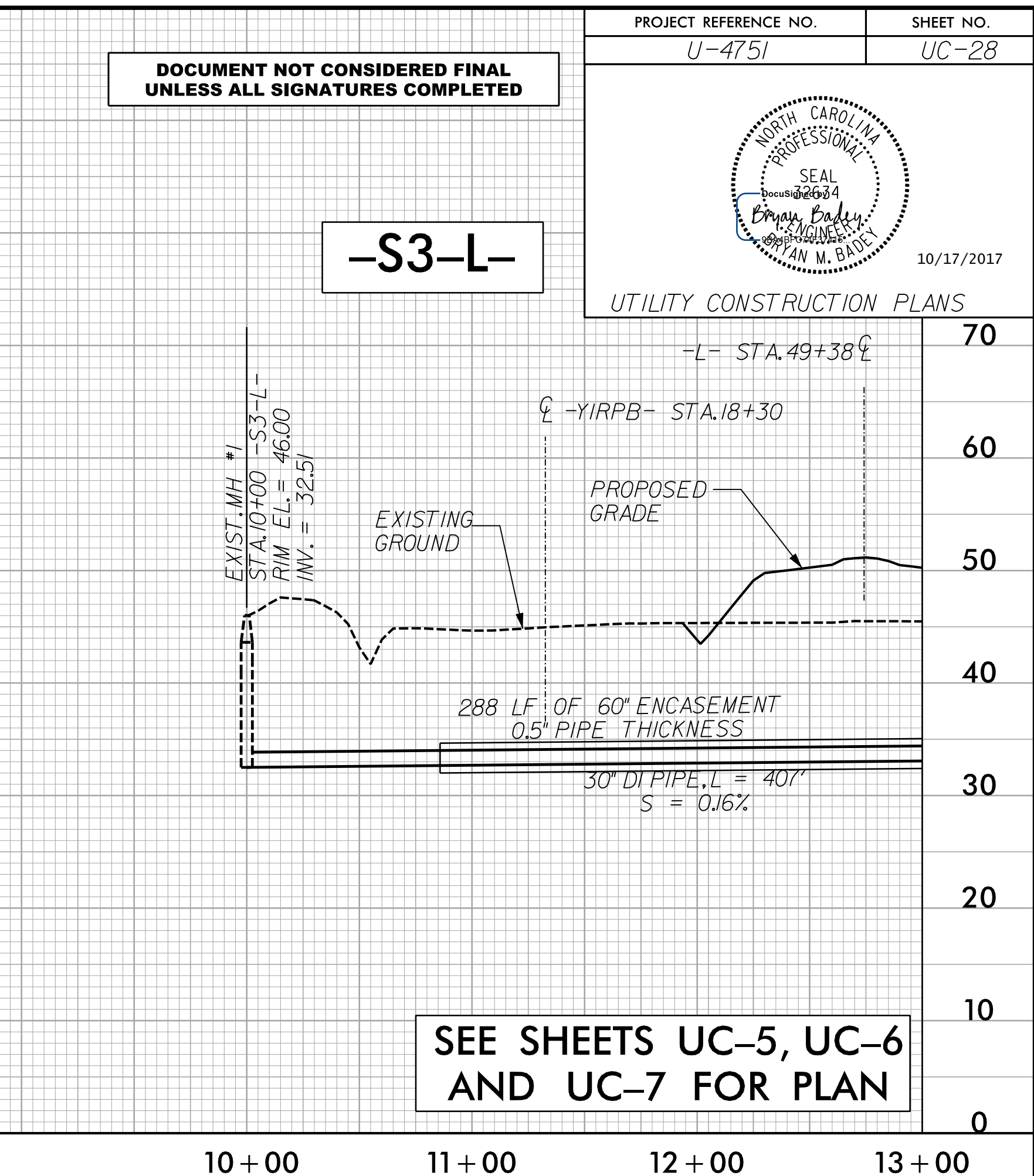
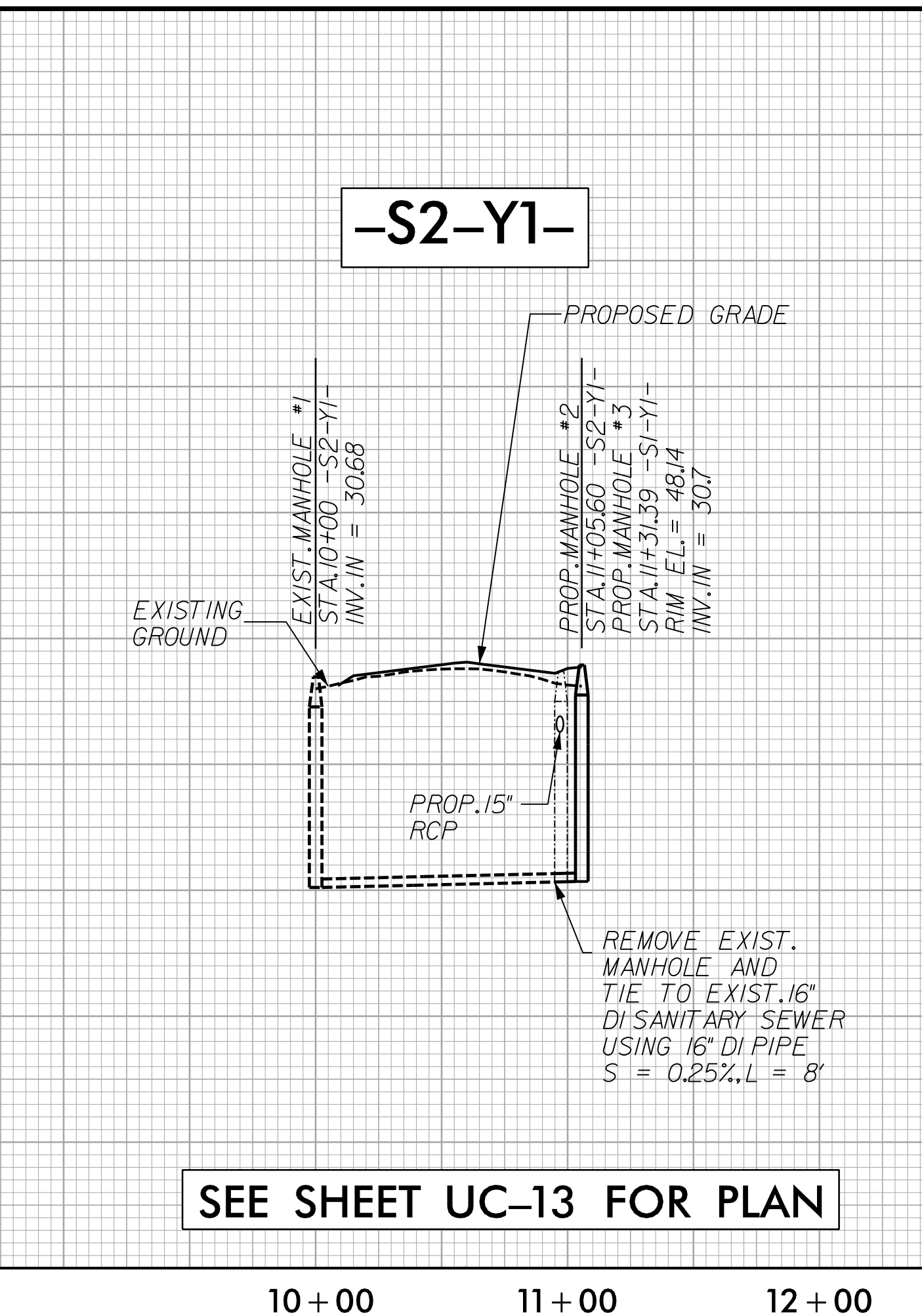
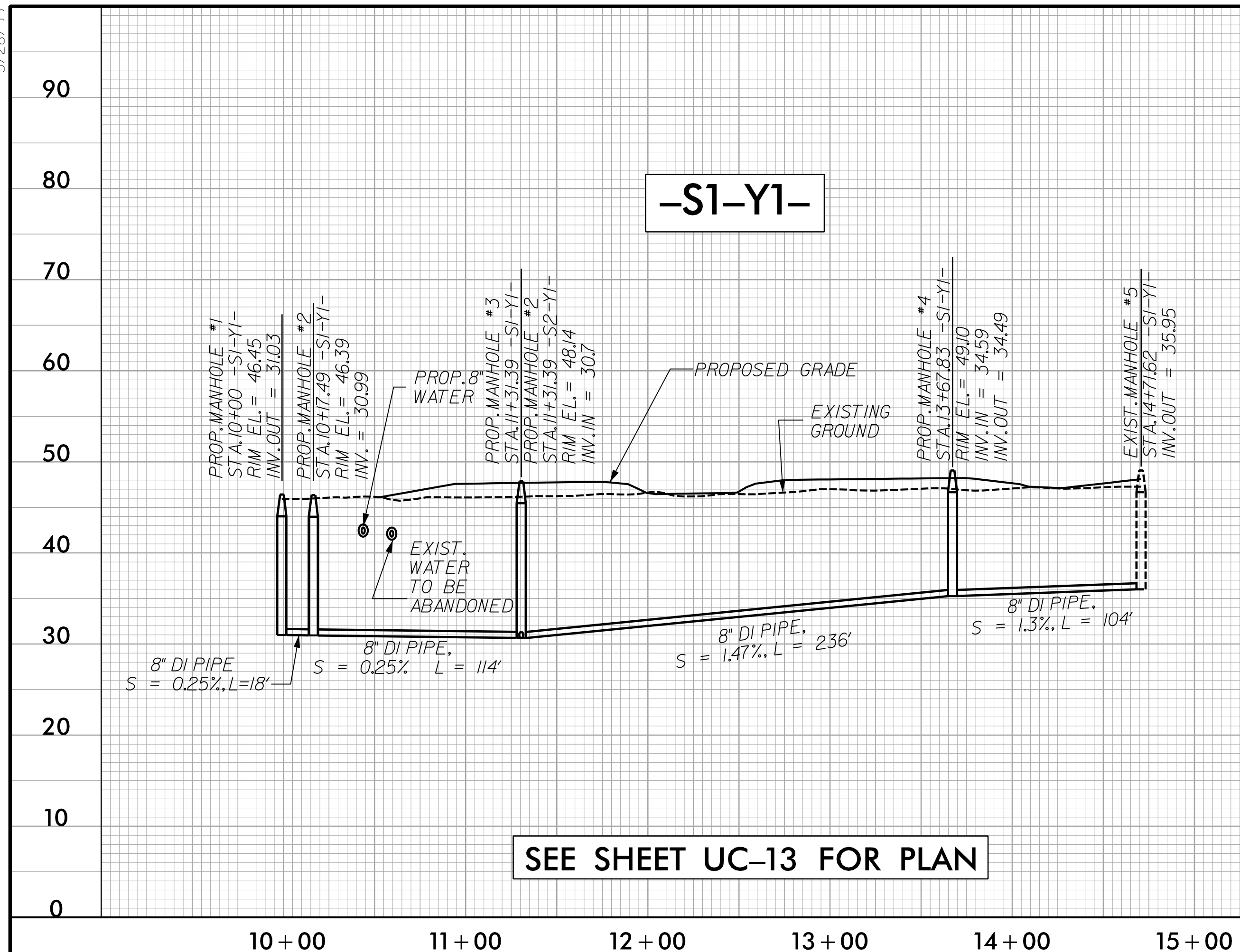
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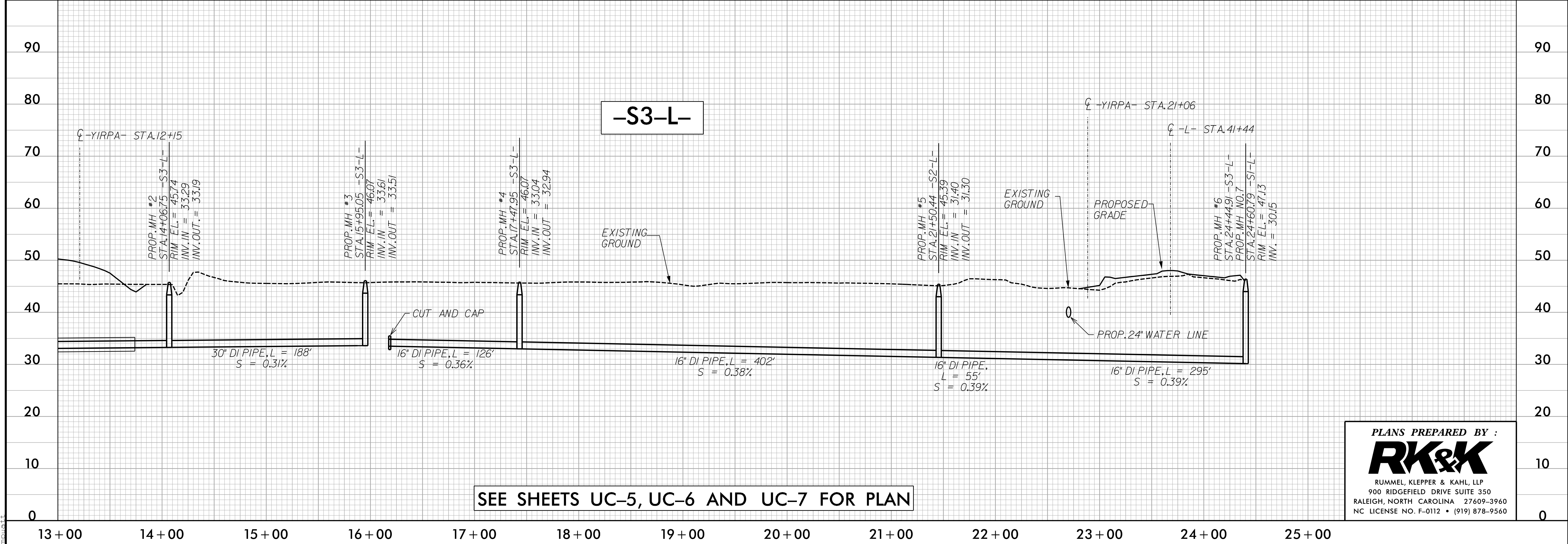

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SEE SHEETS UC-5, UC-6
AND UC-7 FOR PLAN



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