STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

October 19, 2017

Addendum No. 2
RE: Contract # C203980
WBS # 40191.3.2
STATE FUNDED
New Hanover County (U-4751)
SR-1409 (MILITARY CUTOFF ROAD EXTENSION) FROM SR-1409 TO US-17 IN WILMINGTON

November 21, 2017 Letting

To Whom It May Concern:

Reference is made to the plans and proposal form furnished to you on this project.

The following revisions have been made to the Roadway plans:

Sheet No.	Revisions
Title Sheet	Revised to reflect the change in the letting date.
1A	Revised to include the Utility Construction sheet numbers
UC-1 thru UC-29	New Sheets to include the Utility Construction Plans

Please void the Title Sheet and Sheet 1A in your plans and staple the revised Title Sheet and Sheet 1A thereto. Please add the new Utility Construction sheets after Sheet No. SCP-52.

The following revisions have been made to the Structure plans:

Sheet No.	Revisions
Title Sheet	Revised to reflect the change in the letting date.
S2-3	Revised the quantities in the column for Class A Concrete in the "Total Bill of Material"
NW-1 thru NW-8 and NW-10 and NW-13	Revised to correct the quantity of "Architectural Surface Treatment" in the "Bill Of Material" on each sheet

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
CONTRACT STANDARDS AND DEVELOPMENT
1591 MAIL SERVICE CENTER
RALEIGH, NC 27699-1591

Telephone: (919) 707-6900
Fax: (919) 250-4127
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
1020 BIRCH RIDGE DR.
RALEIGH, NC 27610

Please void the above listed sheets in your plans and staple the revised sheets thereto.

The following revisions have been made to the proposal:

Page No.	Revisions
Proposal Cover	Note added that reads "Includes Addendum No. 2 Dated 10-19-2017".
Table of Contents	Revised to show the addition of the project special provision entitled "Intermediate Contract Time Number 8 And Liquidated Damages:
G-1	Revised the availability date within the project special provisions entitled "Contract Time and Liquidated Damages" and "Intermediate Contract Time Number 1 and Liquidated Damages"
G-5	Added new project special provision entitled "Intermediate Contract Time Number 8 and Liquidated Damages"
G-7	Revised the Utility Construction line #'s within the project special provision entitled "Specialty Items". Updated the base index price for Diesel fuel within the project special provision entitled "Fuel Price Adjustment"
G-8	Revised the percentages within the project special provision entitled "Schedule Of Estimated Completion Progress"
R-21	Revised to update the base index price for asphalt binder within the project special provision entitled "Price Adjustment- Asphalt Binder For Plant Mix"
UC-1 thru UC-3	New pages to add the project special provisions for "Utility Construction"

Please void the above listed pages in your proposal and staple the revised pages thereto.

On the item sheets the following pay items have been revised, added or deleted:

Item	Description	Old Quantity	New Quantity
225-5325600000-E-1510	6" Water Line	72 LF	**DELETED**
226-5325800000-E-1510	8" Water Line	4,929 LF	5,295 LF
227-5326000000-E-1510	10" Water Line	276 LF	268 LF
228-5326200000-E-1510	12" Water Line	2,965 LF	3,212 LF
229-5326600000-E-1510	16" Water Line	1,360 LF	1,498 LF
231-5546000000-E-1515	8" Valve	11 EA	17 EA
233-5558000000-E-1515	12" Valve	12 EA	11 EA

Item	Description	Old Quantity	New Quantity
234-5571800000-E-1515	8" Tapping Valve	1 EA	5 EA
235-5643100000-E-1515	¾" Water Meter	23 EA	25 EA
236-5648000000-N-1515	Relocate Water Meter	15 EA	35 EA
237-5649000000-N-1515	Reconnect Water Meter	1 EA	2 EA
240-5691300000-E-1520	8" Sanitary Gravity Sewer	406 LF	802 LF
241-5691600000-E-1520	16" Sanitary Gravity Sewer	3,265 LF	3,046 LF
242-5775000000-E-1525	4' Diameter Utility Manhole	13 EA	21 EA
243-5776000000-E-1525	5' Diameter Utility Manhole	3 EA	**DELETED**
244-5781000000-E-1525	Utility Manhole Wall, 4' Diameter	101 LF	57 LF
245-5782000000-E-1525	Utility Manhole Wall, 5' Diameter	26 LF	7 LF
246-5801000000-E-1530	Abandon 8" Utility Pipe	4,627 LF	5,652 LF
247-5802000000-E-1530	Abandon 10" Utility Pipe	241 LF	496 LF
248-5804000000-E-1530	Abandon 12" Utility Pipe	1,734 LF	2,760 LF
249-5810000000-E-1530	Abandon 16" Utility Pipe	1,970 LF	2,937 LF
253-5815000000-N-1530	Remove Water Meter	25 EA	36 EA
254-581550000-N-1530	Remove Fire Hydrant	7 EA	8 EA
255-5828000000-N-1530	Remove Utility Manhole	10 EA	11EA
256-5835700000-E-1540	16" Encasement Pipe	350 LF	327 LF
258-5835900000-E-1540	20" Encasement Pipe	370 LF	113 LF
259-5836000000-E-1540	24" Encasement Pipe	255 LF	189 LF
406-5606000000-E-1515	2" Blow Off	**NEW ITEM**	1 EA
407-577800000-E-1525	8' Diameter Utility Manhole	**NEW ITEM**	1 EA
408-5784000000-E-1525	Utility Manhole Wall, 8' Diameter	**NEW ITEM**	7 LF

Item	Description	Old Quantity	New Quantity
409-5836200000-E-1540	30" Encasement Pipe	**NEW ITEM**	185 LF
410-5814000000-E-1530	Abandon 30" Utility Pipe	**NEW ITEM**	490 LF
411-5835000000-E-1540	60" Encasement Pipe	**NEW ITEM**	288 LF
412-5692000000-E-1520	30" Sanitary Gravity Sewer	**NEW ITEM**	590 LF
413-5777000000-E-1525	6' Diameter Utility Manhole	**NEW ITEM**	1 EA
414-5783000000-E-1525	Utility Manhole Wall, 6' Diameter	**NEW ITEM**	7 LF
415-5800000000-E-1530	Abandon 6" Utility Pipe	**NEW ITEM**	291 LF
416-5558600000-E-1515	16" Valve	**NEW ITEM**	2 EA
417-5329000000-E-1515	Ductile Iron Water Pipe Fittings	**NEW ITEM**	25,095 LB
418-5559400000-E-1515	24" Valve	**NEW ITEM**	2 EA
419-557200000-E-1515	12" Tapping Valve	**NEW ITEM**	1 EA
420-5606800000-E-1515	8" Blow Off	**NEW ITEM**	1 EA
373-8847000000-E-SP	Architectural Surface Treatment	143,574 SF	285,348 SF
390-8182000000-E-420	Class A Concrete (Bridge)	979.5 CY	1,054.6 CY

The contract will be prepared accordingly.

Please ensure that you download and begin with the new EBS file listed for the November 21, 2017 letting. The Expedite Addendum File has been updated to reflect the above noted revisions. Please download the Expedite Addendum File and follow the instructions for applying the addendum. **Bid Express will not accept your bid unless the new EBS file associated with the November 21, 2017 letting is used and the EBS addendum file has been applied.**

Sincerely,

DocuSigned by:
Ronald E. Davenport, Jr.
F81B6038A47A442...

Ronald. E. Davenport, Jr., PE
State Contract Officer

RED/jag

Attachments

cc: Mr. Lamar Sylvester, PE
Ms. Karen Collette, PE
Mr. Chris Werner, PE
Mr. Jon Weathersbee, PE
Mr. Ken Kennedy, PE
Mr. Mitchell Dixon
Project File (2)
Mr. Ray Arnold, PE
Ms. Theresa Canales, PE
Mr. Mike Gwyn
Ms. Lori Strickland
Ms. Jaci Kincaid
Ms. Penny Higgins

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH, N.C.

PROPOSAL

INCLUDES ADDENDUM No.2 DATED 10-19-2017
INCLUDES ADDENDUM No.1 DATED 09-12-2017

DATE AND TIME OF BID OPENING: **November 21, 2017 AT 2:00 PM**

CONTRACT ID	C203980
WBS	40191.3.2

FEDERAL-AID NO.	STATE FUNDED
COUNTY	NEW HANOVER
T.I.P. NO.	U-4751
MILES	4.156
ROUTE NO.	SR 1409
LOCATION	SR-1409 (MILITARY CUTOFF ROAD EXTENSION) FROM SR-1409 TO US-17 IN WILMINGTON.
TYPE OF WORK	GRADING, DRAINAGE, PAVING, RETAINING WALL AND STRUCTURES.

NOTICE:

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS $30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

BIDS WILL BE RECEIVED AS SHOWN BELOW:

THIS IS A <u>ROADWAY & STRUCTURE</u> PROPOSAL

5% BID BOND OR BID DEPOSIT REQUIRED

TABLE OF CONTENTS

PROJECT SPECIAL PROVISIONS

GENERAL

CONTRACT TIME AND LIQUIDATED DAMAGES:

(8-15-00) (Rev. 12-18-07) 108 SP1 G07 A

The date of availability for this contract is **January 2, 2018**, except that Area I (as defined on Sheets TMP-3 and TMP-4) will not be available before November 26, 2018 and except that work in jurisdictional waters and wetlands shall not begin until a meeting between the DOT, Regulatory Agencies, and the Contractor is held as stipulated in the permits contained elsewhere in this proposal. This delay in availability has been considered in determining the contract time for this project.

The completion date for this contract is **April 30, 2022**.

Except where otherwise provided by the contract, observation periods required by the contract will not be a part of the work to be completed by the completion date and/or intermediate contract times stated in the contract. The acceptable completion of the observation periods that extend beyond the final completion date shall be a part of the work covered by the performance and payment bonds.

The liquidated damages for this contract are **Two Hundred Dollars ($ 200.00)** per calendar day. These liquidated damages will not be cumulative with any liquidated damages which may become chargeable under Intermediate Contract Time Number 1.

INTERMEDIATE CONTRACT TIME NUMBER 1 AND LIQUIDATED DAMAGES:

(7-1-95) (Rev. 2-21-12) 108 SP1 G13 A

Except for that work required under the Project Special Provisions entitled *Planting, Reforestation* and/or *Permanent Vegetation Establishment*, included elsewhere in this proposal, the Contractor will be required to complete all work included in this contract and shall place and maintain traffic on same.

The date of availability for this intermediate contract time is **January 2, 2018**.

The completion date for this intermediate contract time is **November 1, 2021**.

The liquidated damages for this intermediate contract time are **Four Thousand Dollars ($ 4,000.00)** per calendar day.

Upon apparent completion of all the work required to be completed by this intermediate date, a final inspection will be held in accordance with Article 105-17 and upon acceptance, the Department will assume responsibility for the maintenance of all work except *Planting, Reforestation* and/or *Permanent Vegetation Establishment*. The Contractor will be responsible for and shall make corrections of all damages to the completed roadway caused by his planting operations, whether occurring prior to or after placing traffic through the project.

INTERMEDIATE CONTRACT TIME NUMBER 6 AND LIQUIDATED DAMAGES:
(2-20-07) (Rev. 6-18-13) 108 SP1 G14 F

The Contractor shall complete the work required of **Area 2, Phase II, Step #3 thru Step #5** as shown on Sheet **TMP-29** and shall place and maintain traffic on same. The date of availability for this intermediate contract time is the date the Contractor elects to begin the work.

The completion date for this intermediate contract time is the date which is **fourteen (14)** consecutive calendar days after and including the date the Contractor begins this work.

The liquidated damages are **Five Thousand Dollars ($5,000.00)** per calendar day.

INTERMEDIATE CONTRACT TIME NUMBER 7 AND LIQUIDATED DAMAGES:
(2-20-07) (Rev. 6-18-13) 108 SP1 G14 F

The Contractor shall complete the work required of **Area 2, Phase II, Step #7 thru Step #9** as shown on Sheet **TMP-30** and shall place and maintain traffic on same. The date of availability for this intermediate contract time is the date the Contractor elects to begin the work.

The completion date for this intermediate contract time is the date which is **fourteen (14)** consecutive calendar days after and including the date the Contractor begins this work.

The liquidated damages are **Five Thousand Dollars ($5,000.00)** per calendar day.

INTERMEDIATE CONTRACT TIME NUMBER 8 AND LIQUIDATED DAMAGES:
(2-20-07) (Rev. 6-18-13) 108 SP1 G14 H

The Contractor shall complete the work required of –SR1– (Cape Harbor Drive) as described in **Area 1, Phase II, Step #3** as shown on Sheet **TMP-3** and shall place and maintain traffic on same.

The date of availability for this intermediate contract time is the date the Contractor elects to begin the work.

The completion date for this intermediate contract time is the date which is **fourteen (14)** consecutive calendar days after and including the date the Contractor begins this work.

The liquidated damages are **One Thousand Dollars ($1,000.00)** per calendar day.

PERMANENT VEGETATION ESTABLISHMENT:
(2-16-12) (Rev. 10-15-13) 104 SP1 G16

Establish a permanent stand of the vegetation mixture shown in the contract. During the period between initial vegetation planting and final project acceptance, perform all work necessary to establish permanent vegetation on all erodible areas within the project limits, as well as, in borrow and waste pits. This work shall include erosion control device maintenance and installation, repair seeding and mulching, supplemental seeding and mulching, mowing, and fertilizer topdressing, as directed. All work shall be performed in accordance with the applicable section of the *2012 Standard Specifications*. All work required for initial vegetation planting shall be performed as a part of the work necessary for the completion and acceptance of the Intermediate Contract Time (ICT). Between the time of ICT and Final Project acceptance, or otherwise referred to as the vegetation establishment period, the Department will be responsible for preparing the required National Pollutant Discharge Elimination System (NPDES) inspection records.

SPECIALTY ITEMS:

(7-1-95)(Rev. 1-17-12) 108-6 SP1 G37

Items listed below will be the specialty items for this contract (see Article 108-6 of the *2012 Standard Specifications*).

Line #	Description
118 thru 131	Guardrail
132 thru 146	Fencing
153 thru 175	Signing
193 thru 194; 202 thru 204; 210 thru 218	Long-Life Pavement Markings
219 thru 220	Permanent Pavement Markers
225 thru 259 and 406 thru 420	Utility Construction
260 thru 295 and 297	Erosion Control
296	Reforestation
298 thru 357	Signals/ITS System

FUEL PRICE ADJUSTMENT:

(11-15-05) (Rev. 2-18-14) 109-8 SP1 G43

Revise the *2012 Standard Specifications* as follows:

Page 1-83, Article 109-8, Fuel Price Adjustments, add the following:

The base index price for DIESEL #2 FUEL is **$ 1.9815** per gallon. Where any of the following are included as pay items in the contract, they will be eligible for fuel price adjustment.

The pay items and the fuel factor used in calculating adjustments to be made will be as follows:

Description	Units	Fuel Usage Factor Diesel
Unclassified Excavation	Gal/CY	0.29
Borrow Excavation	Gal/CY	0.29
Class IV Subgrade Stabilization	Gal/Ton	0.55
Aggregate Base Course	Gal/Ton	0.55
Sub-Ballast	Gal/Ton	0.55
Asphalt Concrete Base Course, Type ____	Gal/Ton	2.90
Asphalt Concrete Intermediate Course, Type ____	Gal/Ton	2.90
Asphalt Concrete Surface Course, Type ____	Gal/Ton	2.90
Open-Graded Asphalt Friction Course	Gal/Ton	2.90
Permeable Asphalt Drainage Course, Type ____	Gal/Ton	2.90
Sand Asphalt Surface Course, Type ____	Gal/Ton	2.90
Aggregate for Cement Treated Base Course	Gal/Ton	0.55
Portland Cement for Cement Treated Base Course	Gal/Ton	0.55
__" Portland Cement Concrete Pavement	Gal/SY	0.245
Concrete Shoulders Adjacent to __" Pavement	Gal/SY	0.245

PAYOUT SCHEDULE:

(1-19-10) (Rev. 1-17-12) 108 SP1 G57

Submit an Anticipated Monthly Payout Schedule prior to beginning construction. The Anticipated Monthly Payout Schedule will be used by the Department to monitor funding levels for this project. Include a monthly percentage breakdown (in terms of the total contract amount) of the work anticipated to be completed. The schedule should begin with the date the Contractor plans to begin

construction and end with the anticipated completion date. Submit updates of the Anticipated Monthly Payout Schedule on March 15, June 15, September 15, and December 15 of each calendar year until project acceptance. Submit the original Anticipated Monthly Payout Schedule and all subsequent updates to the Resident Engineer with a copy to the State Construction Engineer at 1 South Wilmington Street, 1543 Mail Service Center, Raleigh, NC 27699-1543.

SCHEDULE OF ESTIMATED COMPLETION PROGRESS:

(7-15-08) (Rev. 5-16-17) 108-2 SP1 G58

The Contractor's attention is directed to the Standard Special Provision entitled *Availability of Funds Termination of Contracts* included elsewhere in this proposal. The Department of Transportation's schedule of estimated completion progress for this project as required by that Standard Special Provision is as follows:

Fiscal Year		Progress (% of Dollar Value)
2018	(7/01/17 - 6/30/18)	**19**% of Total Amount Bid
2019	(7/01/18 - 6/30/19)	**34**% of Total Amount Bid
2020	(7/01/19 - 6/30/20)	**25**% of Total Amount Bid
2021	(7/01/20 - 6/30/21)	**18**% of Total Amount Bid
2022	(7/-1/21 – 6/30/22)	**4**% of Total Amount Bid

The Contractor shall also furnish his own progress schedule in accordance with Article 108-2 of the *2012 Standard Specifications*. Any acceleration of the progress as shown by the Contractor's progress schedule over the progress as shown above shall be subject to the approval of the Engineer.

MINORITY BUSINESS ENTERPRISE AND WOMEN BUSINESS ENTERPRISE:

(10-16-07)(Rev. 1-17-17) 102-15(J) SP1 G66

Description

The purpose of this Special Provision is to carry out the North Carolina Department of Transportation's policy of ensuring nondiscrimination in the award and administration of contracts financed in whole or in part with State funds.

Definitions

Additional MBE/WBE Subcontractors - Any MBE/WBE submitted at the time of bid that will not be used to meet either the MBE or WBE goal. No submittal of a Letter of Intent is required, unless the additional participation is used for banking purposes.

Committed MBE/WBE Subcontractor - Any MBE/WBE submitted at the time of bid that is being used to meet either the MBE or WBE goal by submission of a Letter of Intent. Or any MBE or WBE used as a replacement for a previously committed MBE or WBE firm.

Contract Goals Requirement - The approved MBE and WBE participation at time of award, but not greater than the advertised contract goals for each.

Goal Confirmation Letter - Written documentation from the Department to the bidder confirming the Contractor's approved, committed MBE and WBE participation along with a listing of the committed MBE and WBE firms.

Manufacturer - A firm that operates or maintains a factory or establishment that produces on the premises, the materials or supplies obtained by the Contractor.

The base price index for asphalt binder for plant mix is **$ 364.00** per ton.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on **October 1, 2017**.

HINGED BOLLARDS:

SPI

Furnish and install hinged metal bollards in accordance with the detail in the plans, at locations shown in the plans and as directed by the Engineer.

Provide bollards of a material type to prohibit entry of unauthorized vehicles.

Install bollards plum and true to line in Class "B" concrete footing conforming with all applicable portions of Section 825 and 1000 of the Standard Specifications.

The quantity of hinged metal bollards to be paid for will be the actual number installed and accepted. Such payment will be full compensation for all materials, labor, and equipment necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Hinged Bollards	Each

1'-6" CONCRETE CURB AND GUTTER (Special):

Description

Construct 1'-6" Concrete Curb and Gutter (Special) in accordance with the requirements of Section 846 of the *Standard Specifications* and to the dimensions in accordance with the details in the plans or as directed by the Engineer. Concrete shall be Class B, and the concrete shall be given a light broom finish with the brush marks parallel to the curb line or gutter line. Concrete shall be of a North Carolina Department of Transportation approved mix design dispatched from a currently certified production facility. No concrete shall be placed until the forms and base have been inspected and approved by the Department of Transportation. Curb and gutter placed by machine shall not be placed until the stringline and base have been inspected and approved by the Department of Transportation.

Measurement and Payment

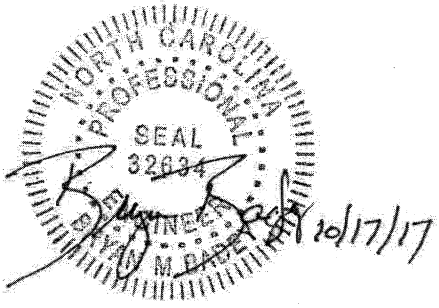
1'-6" Concrete Curb and Gutter (Special) will be measured and paid for in linear feet in accordance with Article 846-4 of the *Standard Specifications*. Such price and payment will be full compensation for all work of constructing curb and gutter, including but not limited to excavating and backfilling, furnishing and placing concrete, include fine grading for the curb and gutter installation and constructing joints.

Payment will be made under:

Project: U-4751 **UC-1** County: New Hanover

PROJECT SPECIAL PROVISIONS
Utility Construction
Cape Fear Public Utility Authority Water and Sewer Relocation
October 17, 2017

Rummel, Klepper & Kahl, LLP
900 Ridgefield Drive, Ste. 350
Raleigh, NC 27609



(Seal)

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

The proposed utility construction shall meet the more conservative requirements of the Cape Fear Public Utility Authority (CFPUA) Standard Specifications latest revision or the NCDOT 2012 "Standard Specifications for Roads and Structures" with amendments noted below.

All fasteners, bolts and harnessing shall be 316 stainless steel.

Revise the NCDOT 2012 Standard Specifications as follows:

Page 10-58, Sub-article 1036-1 General
add the following sentence:

All materials in contact with potable water shall be in conformance with Section 1417 of the Safe Drinking Water Act.

Page 15-1, Sub-article 1500-2 Cooperation with the Utility Owner, paragraph 2:
add the following sentences:

The utility owner is the Cape Fear Public Utility Authority. The contact person is David Dailey and he can be reached by phone at 910.332.6626

The contractor shall coordinate with CFPUA to provide the required notice to customers prior to any shut down of the waterline.

Page 15-2, Sub-article 1500-9 Placing Pipelines into Service
add the following sentence:

Obtain approval from the NCDEQ and CFPUA prior to placing a new water line into service. Use backflow prevention assemblies for temporary connections to isolate new water lines from existing water line.

Page 15-6, Sub-article 1510-3 (B), Testing and Sterilization
change the allowable leakage formula to:

$$W = LD\sqrt{P} \div 148,000$$

Page 15-6, Sub-article 1510-3 (B), Testing and Sterilization, sixth paragraph:
Replace the paragraph with the following:

Sterilize water lines in accordance with Section 1003 of The Rules Governing Public Water supply and AWWA C651 Section 4.4.3, the Continuous Feed Method. Provide a chlorine solution with between 50 parts per million and 100 parts per million in the initial feed. If the chlorine level drops below 10 parts per million during a 24 hour period, then flush, refill with fresh chlorine solution, and repeat for 24 hours. Provide certified bacteriological and contaminant test results from a state-approved or state-certified laboratory. Operate all valves and controls to assure thorough sterilization.

Page 15-6, Sub-article 1510-3 (B), Testing and Sterilization, seventh paragraph:
delete the words "may be performed concurrently or consecutively."
and replace with "shall be performed consecutively."

Page 15-7, sub-article 1515-2 Materials,
replace paragraph beginning "Double check valves..." with the following:

Double Check valves (DCV) and Reduced Pressure Zone principal (RPZ) backflow prevention assemblies shall be listed on the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research list of approved backflow devices.

Page 15-7, Article 1510-4 MEASUREMENT AND PAYMENT, add the following paragraph after line 7:

The quantity of *Ductile Iron Water Pipe Fittings* will be measured and paid per pound based on the published weights for ductile iron fittings, exclusive of the weights of any accessories, as listed in the "DI Fittings Weight Chart" located at the NCDOT Utilities web site. If the Contractor elects to use compact ductile iron water pipe fittings, measurement will be based on the weight of standard size ductile iron water pipe fittings. Any fitting not listed will be measured based on the published weights for ductile iron fittings listed in ANSI/AWWA C-110/A21.10. This is limited to pressure pipe 4 inches or larger.

Page 15-7, Article 1510-4 MEASUREMENT AND PAYMENT, add the following pay item:

Pay Item	**Pay Unit**
Ductile Iron Water Pipe Fittings	Pound

Page 15-9, Article 1515-4 MEASUREMENT AND PAYMENT, line 28, delete "fittings".
{this applies to both water AND sewer DI pipe fittings, do not omit unless there is gravity sewer only}

Page 15-11, Sub-article 1520-3(A)(2) Testing, line 5,
replace the second paragraph with the following:

Test all 24" and smaller gravity sewer lines for leakage using infiltration, exfiltration, or air test. Perform visual inspection using cameras on gravity sewer mains and services. Perform line and grade testing and deflection testing on all gravity sewer lines.

Page 15-13, Article 1520-4 MEASUREMENT AND PAYMENT, add the following paragraph after line 2:

The quantity of *Ductile Iron Sewer Pipe Fittings* will be measured and paid per pound based on the published weights for ductile iron fittings, exclusive of the weights of any accessories, as listed in the "DI Fittings Weight Chart" located at the NCDOT Utilities web site. If the Contractor elects to use compact ductile iron sewer pipe fittings, measurement will be based on the weight of standard size ductile iron sewer pipe fittings. Any fitting not listed will be measured based on the published weights for ductile iron fittings listed in ANSI/AWWA C-110/A21.10. This is limited to pressure pipe 4 inches or larger.

Page 15-13, Article 1510-4 MEASUREMENT AND PAYMENT, add the following pay item:

Pay Item	**Pay Unit**
Ductile Iron Sewer Pipe Fittings	Pound

County : New Hanover

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			ROADWAY ITEMS			
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	0000400000-N	801	CONSTRUCTION SURVEYING	Lump Sum	L.S.	
0003	0001000000-E	200	CLEARING & GRUBBING .. ACRE(S)	Lump Sum	L.S.	
0004	0008000000-E	200	SUPPLEMENTARY CLEARING & GRUBBING	5 ACR		
0005	0022000000-E	225	UNCLASSIFIED EXCAVATION	100,000 CY		
0006	0029000000-N	SP	REINFORCED BRIDGE APPROACH FILL, STATION ********** (225+92.26 -L-)	Lump Sum	L.S.	
0007	0029000000-N	SP	REINFORCED BRIDGE APPROACH FILL, STATION ********** (35+12.05 -Y8- RPDB)	Lump Sum	L.S.	
0008	0029000000-N	SP	REINFORCED BRIDGE APPROACH FILL, STATION ********** (62+99.10 -L-)	Lump Sum	L.S.	
0009	0036000000-E	225	UNDERCUT EXCAVATION	150,000 CY		
0010	0106000000-E	230	BORROW EXCAVATION	2,310,000 CY		
0011	0127000000-N	SP	EMBANKMENT SETTLEMENT GAUGES	14 EA		
0012	0134000000-E	240	DRAINAGE DITCH EXCAVATION	41,460 CY		
0013	0156000000-E	250	REMOVAL OF EXISTING ASPHALT PAVEMENT	26,400 SY		
0014	0177000000-E	250	BREAKING OF EXISTING ASPHALT PAVEMENT	7,800 SY		
0015	0192000000-N	260	PROOF ROLLING	90 HR		
0016	0195000000-E	265	SELECT GRANULAR MATERIAL	49,000 CY		
0017	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION	42,800 SY		
0018	0220000000-E	SP	ROCK EMBANKMENTS	11,750 TON		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0019	0222000000-E	SP	GEOTEXTILE FOR ROCK EMBANK-MENTS	1,930 SY		
0020	0223000000-E	275	ROCK PLATING	660 SY		
0021	0225000000-E	SP	REINFORCED SOIL SLOPES	2,250 SY		
0022	0255000000-E	SP	GENERIC GRADING ITEM HAULING AND DISPOSAL OF PETROLEUM CONTAMINATED SOIL	200 TON		
0023	0318000000-E	300	FOUNDATION CONDITIONING MATE-RIAL, MINOR STRUCTURES	4,810 TON		
0024	0320000000-E	300	FOUNDATION CONDITIONING GEO-TEXTILE	15,120 SY		
0025	0342000000-E	310	**" SIDE DRAIN PIPE (12")	44 LF		
0026	0342000000-E	310	**" SIDE DRAIN PIPE (30")	1,128 LF		
0027	0342000000-E	310	**" SIDE DRAIN PIPE (36")	532 LF		
0028	0343000000-E	310	15" SIDE DRAIN PIPE	4,200 LF		
0029	0344000000-E	310	18" SIDE DRAIN PIPE	652 LF		
0030	0345000000-E	310	24" SIDE DRAIN PIPE	480 LF		
0031	0354000000-E	310	***" RC PIPE CULVERTS, CLASS ***** (24", V)	48 LF		
0032	0354000000-E	310	***" RC PIPE CULVERTS, CLASS ***** (30", V)	272 LF		
0033	0354000000-E	310	***" RC PIPE CULVERTS, CLASS ***** (36", V)	492 LF		
0034	0354000000-E	310	***" RC PIPE CULVERTS, CLASS ***** (42", V)	340 LF		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0035	0448000000-E	310	***** RC PIPE CULVERTS, CLASS IV (12")	248 LF		
0036	0448000000-E	310	***** RC PIPE CULVERTS, CLASS IV (48")	1,196 LF		
0037	0448000000-E	310	***** RC PIPE CULVERTS, CLASS IV (54")	104 LF		
0038	0448000000-E	310	***** RC PIPE CULVERTS, CLASS IV (60")	1,204 LF		
0039	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	17,436 LF		
0040	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	7,016 LF		
0041	0448400000-E	310	24" RC PIPE CULVERTS, CLASS IV	6,148 LF		
0042	0448500000-E	310	30" RC PIPE CULVERTS, CLASS IV	4,348 LF		
0043	0448600000-E	310	36" RC PIPE CULVERTS, CLASS IV	4,644 LF		
0044	0448700000-E	310	42" RC PIPE CULVERTS, CLASS IV	1,844 LF		
0045	0546000000-E	310	** CAA PIPE CULVERTS, ***** THICK (15", 0.064")	1,608 LF		
0046	0546000000-E	310	** CAA PIPE CULVERTS, ***** THICK (18", 0.064")	48 LF		
0047	0564000000-E	310	** CAA PIPE ELBOWS, ***** THICK (15", 0.064")	12 EA		
0048	0564000000-E	310	** CAA PIPE ELBOWS, ***** THICK (18", 0.064")	2 EA		
0049	0995000000-E	340	PIPE REMOVAL	11,789 LF		
0050	0996000000-N	350	PIPE CLEAN-OUT	42 EA		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0051	1011000000-N	500	FINE GRADING	Lump Sum	L.S.	
0052	1077000000-E	SP	#57 STONE	570 TON		
0053	1099500000-E	505	SHALLOW UNDERCUT	500 CY		
0054	1099700000-E	505	CLASS IV SUBGRADE STABILIZATION	950 TON		
0055	1111000000-E	SP	CLASS IV AGGREGATE STABILIZATION	10,000 TON		
0056	1121000000-E	520	AGGREGATE BASE COURSE	141,000 TON		
0057	1220000000-E	545	INCIDENTAL STONE BASE	300 TON		
0058	1275000000-E	600	PRIME COAT	110,323 GAL		
0059	1297000000-E	607	MILLING ASPHALT PAVEMENT, ***" DEPTH (1-1/2")	102,500 SY		
0060	1330000000-E	607	INCIDENTAL MILLING	3,220 SY		
0061	1489000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0B	7,060 TON		
0062	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	25,220 TON		
0063	1498000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B	12,990 TON		
0064	1503000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	65,520 TON		
0065	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	19,130 TON		
0066	1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	57,730 TON		
0067	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	9,775 TON		
0068	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	250 TON		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0069	1840000000-E	665	MILLED RUMBLE STRIPS (ASPHALT CONCRETE)	34,160 LF		
0070	2022000000-E	815	SUBDRAIN EXCAVATION	336 CY		
0071	2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	1,000 SY		
0072	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	168 CY		
0073	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	1,000 LF		
0074	2070000000-N	815	SUBDRAIN PIPE OUTLET	2 EA		
0075	2077000000-E	815	6" OUTLET PIPE	12 LF		
0076	2190000000-N	828	TEMPORARY STEEL PLATE COVERS FOR MASONRY DRAINAGE STRUCTURE	19 EA		
0077	2209000000-E	838	ENDWALLS	90.9 CY		
0078	2220000000-E	838	REINFORCED ENDWALLS	43.6 CY		
0079	2253000000-E	840	PIPE COLLARS	12.72 CY		
0080	2264000000-E	840	PIPE PLUGS	0.188 CY		
0081	2275000000-E	SP	FLOWABLE FILL	5 CY		
0082	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	475 EA		
0083	2297000000-E	840	MASONRY DRAINAGE STRUCTURES	9.5 CY		
0084	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	219 LF		
0085	2364000000-N	840	FRAME WITH TWO GRATES, STD 840.16	76 EA		
0086	2364200000-N	840	FRAME WITH TWO GRATES, STD 840.20	31 EA		
0087	2365000000-N	840	FRAME WITH TWO GRATES, STD 840.22	24 EA		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0088	2366000000-N	840	FRAME WITH TWO GRATES, STD 840.24	4 EA		
0089	2367000000-N	840	FRAME WITH TWO GRATES, STD 840.29	24 EA		
0090	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	52 EA		
0091	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	116 EA		
0092	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	111 EA		
0093	2396000000-N	840	FRAME WITH COVER, STD 840.54	33 EA		
0094	2440000000-N	852	CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN	1 EA		
0095	2451000000-N	852	CONCRETE TRANSITIONAL SECTION FOR DROP INLET	60 EA		
0096	2462000000-E	SP	*** SLUICE GATE (8")	1 EA		
0097	2535000000-E	846	***X *** CONCRETE CURB (8" X 12")	190 LF		
0098	2538000000-E	846	**'-** CONCRETE CURB & GUTTER (2'-0")	1,380 LF		
0099	2538000000-E	846	**'-** CONCRETE CURB & GUTTER (2'-9")	5,070 LF		
0100	2542000000-E	846	1'-6" CONCRETE CURB & GUTTER	19,160 LF		
0101	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	46,560 LF		
0102	2556000000-E	846	SHOULDER BERM GUTTER	4,500 LF		
0103	2580000000-E	846	CONCRETE VALLEY GUTTER	405 LF		
0104	2591000000-E	848	4" CONCRETE SIDEWALK	5,470 SY		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0105	2605000000-N	848	CONCRETE CURB RAMP	110 EA		
0106	2612000000-E	848	6" CONCRETE DRIVEWAY	720 SY		
0107	2655000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)	9,730 SY		
0108	2703000000-E	854	CONCRETE BARRIER, TYPE ******* (T)	230 LF		
0109	2724000000-E	857	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED	13,029 LF		
0110	2752000000-E	SP	GENERIC PAVING ITEM 1'-6" CONCRETE CURB & GUTTER (SPECIAL)	583 LF		
0111	2759000000-N	SP	GENERIC PAVING ITEM CONCRETE FLUME	2 EA		
0112	2759000000-N	SP	GENERIC PAVING ITEM EMERGENGY VEHICLE ACCESS	1 EA		
0113	2759000000-N	SP	GENERIC PAVING ITEM HINGED BOLLARDS	3 EA		
0114	2800000000-N	858	ADJUSTMENT OF CATCH BASINS	3 EA		
0115	2815000000-N	858	ADJUSTMENT OF DROP INLETS	2 EA		
0116	2830000000-N	858	ADJUSTMENT OF MANHOLES	13 EA		
0117	2845000000-N	858	ADJUSTMENT OF METER BOXES OR VALVE BOXES	8 EA		
0118	3000000000-N	SP	IMPACT ATTENUATOR UNIT, TYPE 350	7 EA		
0119	3030000000-E	862	STEEL BM GUARDRAIL	10,737.5 LF		
0120	3105000000-N	862	STEEL BM GUARDRAIL TERMINAL SECTIONS	4 EA		
0121	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	10 EA		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0122	3210000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE CAT-1	18 EA		
0123	3287000000-N	SP	GUARDRAIL END UNITS, TYPE TL-3	27 EA		
0124	3317000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE B-77	25 EA		
0125	3360000000-E	863	REMOVE EXISTING GUARDRAIL	496 LF		
0126	3365000000-E	863	REMOVE EXISTING GUIDERAIL	682 LF		
0127	3380000000-E	862	TEMPORARY STEEL BM GUARDRAIL	575 LF		
0128	3389150000-N	SP	TEMPORARY GUARDRAIL END UNITS, TYPE ***** (TL-3)	4 EA		
0129	3389400000-E	865	DOUBLE FACED CABLE GUIDERAIL	2,350 LF		
0130	3389500000-N	865	ADDITIONAL GUIDERAIL POSTS	10 EA		
0131	3389600000-N	865	CABLE GUIDERAIL ANCHOR UNITS	6 EA		
0132	3503000000-E	866	WOVEN WIRE FENCE, 47" FABRIC	24,730 LF		
0133	3509000000-E	866	4" TIMBER FENCE POSTS, 7'-6" LONG	1,580 EA		
0134	3515000000-E	866	5" TIMBER FENCE POSTS, 8'-0" LONG	341 EA		
0135	3533000000-E	866	CHAIN LINK FENCE, **" FABRIC (72")	4,636 LF		
0136	3536000000-E	866	CHAIN LINK FENCE, 48" FABRIC	17,565 LF		
0137	3539000000-E	866	METAL LINE POSTS FOR **" CHAIN LINK FENCE (72")	389 EA		
0138	3542000000-E	866	METAL LINE POSTS FOR 48" CHAIN LINK FENCE	1,472 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0139	3545000000-E	866	METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (72")	25 EA		
0140	3548000000-E	866	METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE	106 EA		
0141	3551000000-E	866	METAL GATE POSTS FOR **" CHAIN LINK FENCE, SINGLE GATE (48")	2 EA		
0142	3554000000-E	866	METAL GATE POSTS FOR **" CHAIN LINK FENCE, DOUBLE GATE (72")	4 EA		
0143	3557000000-E	866	ADDITIONAL BARBED WIRE	1,000 LF		
0144	3564000000-E	866	SINGLE GATES, **" HIGH, **' WIDE, **' OPENING (48", 12', 12')	1 EA		
0145	3565000000-E	866	DOUBLE GATES, **" HIGH, **' WIDE, **' OPENING (72", 12', 24')	2 EA		
0146	3572000000-E	867	CHAIN LINK FENCE RESET	915 LF		
0147	3575000000-E	SP	GENERIC FENCING ITEM HANDRAIL ON RETAINING WALL	102 LF		
0148	3628000000-E	876	RIP RAP, CLASS I	1,225 TON		
0149	3635000000-E	876	RIP RAP, CLASS II	210 TON		
0150	3642000000-E	876	RIP RAP, CLASS A	550 TON		
0151	3649000000-E	876	RIP RAP, CLASS B	1,860 TON		
0152	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	7,310 SY		
0153	4048000000-E	902	REINFORCED CONCRETE SIGN FOUNDATIONS	17 CY		
0154	4054000000-E	902	PLAIN CONCRETE SIGN FOUNDATIONS	2 CY		
0155	4057000000-E	SP	OVERHEAD FOOTING	165 CY		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0156	4060000000-E	903	SUPPORTS, BREAKAWAY STEEL BEAM	18,086 LB		
0157	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	5,185 LF		
0158	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (167+50 -L-)	Lump Sum	L.S.	
0159	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (23+50 -Y8- RPDB)	Lump Sum	L.S.	
0160	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (40+50 -L- LT)	Lump Sum	L.S.	
0161	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (42+50 -Y1-)	Lump Sum	L.S.	
0162	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (50+50 -Y1- LT)	Lump Sum	L.S.	
0163	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (55+50 -L- LT)	Lump Sum	L.S.	
0164	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (82+00 -L- LT)	Lump Sum	L.S.	
0165	4082100000-N	SP	SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (93+50 -Y8- LT)	Lump Sum	L.S.	
0166	4096000000-N	904	SIGN ERECTION, TYPE D	3 EA		
0167	4102000000-N	904	SIGN ERECTION, TYPE E	256 EA		
0168	4108000000-N	904	SIGN ERECTION, TYPE F	30 EA		
0169	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)	19 EA		
0170	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)	8 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0171	4116100000-N	904	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (D)	9 EA		
0172	4149000000-N	907	DISPOSAL OF SIGN SYSTEM, OVER-HEAD	1 EA		
0173	4152000000-N	907	DISPOSAL OF SIGN SYSTEM, STEEL BEAM	2 EA		
0174	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	69 EA		
0175	4192000000-N	907	DISPOSAL OF SUPPORT, U-CHANNEL	11 EA		
0176	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	722 SF		
0177	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	384 SF		
0178	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	73 SF		
0179	4415000000-N	1115	FLASHING ARROW BOARD	2 EA		
0180	4422000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM)	60 DAY		
0181	4430000000-N	1130	DRUMS	680 EA		
0182	4435000000-N	1135	CONES	50 EA		
0183	4445000000-E	1145	BARRICADES (TYPE III)	840 LF		
0184	4455000000-N	1150	FLAGGER	300 DAY		
0185	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	5 EA		
0186	4470000000-N	1160	RESET TEMPORARY CRASH CUSHION	4 EA		
0187	4485000000-E	1170	PORTABLE CONCRETE BARRIER	16,150 LF		
0188	4500000000-E	1170	RESET PORTABLE CONCRETE BAR-RIER	3,900 LF		
0189	4510000000-N	SP	LAW ENFORCEMENT	180 HR		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0190	4516000000-N	1180	SKINNY DRUM	150 EA		
0191	4600000000-N	SP	GENERIC TRAFFIC CONTROL ITEM SEQUENTIAL FLASHING WARNING LIGHTS	40 EA		
0192	4650000000-N	1251	TEMPORARY RAISED PAVEMENT MARKERS	1,270 EA		
0193	4721000000-E	1205	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)	44 EA		
0194	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	316 EA		
0195	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	57,725 LF		
0196	4815000000-E	1205	PAINT PAVEMENT MARKING LINES (6")	98,550 LF		
0197	4820000000-E	1205	PAINT PAVEMENT MARKING LINES (8")	800 LF		
0198	4825000000-E	1205	PAINT PAVEMENT MARKING LINES (12")	3,800 LF		
0199	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	330 LF		
0200	4840000000-N	1205	PAINT PAVEMENT MARKING CHARAC-TER	20 EA		
0201	4845000000-N	1205	PAINT PAVEMENT MARKING SYMBOL	27 EA		
0202	4847000000-E	1205	POLYUREA PAVEMENT MARKING LINES (4", **********) (HIGHLY REFLECTIVE ELEMENTS)	1,176 LF		
0203	4847100000-E	1205	POLYUREA PAVEMENT MARKING LINES (6", **********) (HIGHLY REFLECTIVE ELEMENTS)	1,228 LF		
0204	4847110000-E	1205	POLYUREA PAVEMENT MARKING LINES (8", **********) (HIGHLY REFLECTIVE ELEMENTS)	97 LF		
0205	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	42,175 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0206	4855000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (6")	36,585 LF		
0207	4860000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (8")	3,000 LF		
0208	4870000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (24")	250 LF		
0209	4875000000-N	1205	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS	33 EA		
0210	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM THERMOPLASTIC PAVEMENT MARKING LINES, 12", 120 MILS (HRM)	2,378 LF		
0211	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM THERMOPLASTIC PAVEMENT MARKING LINES, 12", 90 MILS (HRM)	8,120 LF		
0212	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM THERMOPLASTIC PAVEMENT MARKING LINES, 24", 120 MILS (HRM)	3,573 LF		
0213	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM THERMOPLASTIC PAVEMENT MARKING LINES, 4", 120 MILS (HRM)	42,925 LF		
0214	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM THERMOPLASTIC PAVEMENT MARKING LINES, 4", 90 MILS (HRM)	60,163 LF		
0215	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM THERMOPLASTIC PAVEMENT MARKING LINES, 6", 120 MILS (HRM)	10,729 LF		
0216	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM THERMOPLASTIC PAVEMENT MARKING LINES, 6", 90 MILS (HRM)	69,462 LF		
0217	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM THERMOPLASTIC PAVEMENT MARKING LINES, 8", 120 MILS (HRM)	2,946 LF		
0218	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM THERMOPLASTIC PAVEMENT MARKING LINES, 8", 90 MILS (HRM)	12,077 LF		
0219	4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	55 EA		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0220	4905000000-N	1253	SNOWPLOWABLE PAVEMENT MARKERS	3,615 EA		
0221	4915000000-E	1264	7' U-CHANNEL POSTS	12 EA		
0222	4935000000-N	1267	FLEXIBLE DELINEATORS (CRYSTAL)	138 EA		
0223	4940000000-N	1267	FLEXIBLE DELINEATORS (YELLOW)	52 EA		
0224	4955000000-N	1264	OBJECT MARKERS (END OF ROAD)	12 EA		
0226	5325800000-E	1510	8" WATER LINE	5,295 LF		
0227	5326000000-E	1510	10" WATER LINE	268 LF		
0228	5326200000-E	1510	12" WATER LINE	3,212 LF		
0229	5326600000-E	1510	16" WATER LINE	1,498 LF		
0230	5327400000-E	1510	24" WATER LINE	1,881 LF		
0231	5546000000-E	1515	8" VALVE	17 EA		
0232	5552000000-E	1515	10" VALVE	3 EA		
0233	5558000000-E	1515	12" VALVE	11 EA		
0234	5571800000-E	1515	8" TAPPING VALVE	5 EA		
0235	5643100000-E	1515	3/4" WATER METER	25 EA		
0236	5648000000-N	1515	RELOCATE WATER METER	35 EA		
0237	5649000000-N	1515	RECONNECT WATER METER	2 EA		
0238	5666000000-E	1515	FIRE HYDRANT	7 EA		
0239	5672000000-N	1515	RELOCATE FIRE HYDRANT	4 EA		
0240	5691300000-E	1520	8" SANITARY GRAVITY SEWER	802 LF		
0241	5691600000-E	1520	16" SANITARY GRAVITY SEWER	3,046 LF		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0242	5775000000-E	1525	4' DIA UTILITY MANHOLE	21 EA		
0244	5781000000-E	1525	UTILITY MANHOLE WALL, 4' DIA	57 LF		
0245	5782000000-E	1525	UTILITY MANHOLE WALL, 5' DIA	7 LF		
0246	5801000000-E	1530	ABANDON 8" UTILITY PIPE	5,652 LF		
0247	5802000000-E	1530	ABANDON 10" UTILITY PIPE	496 LF		
0248	5804000000-E	1530	ABANDON 12" UTILITY PIPE	2,760 LF		
0249	5810000000-E	1530	ABANDON 16" UTILITY PIPE	2,937 LF		
0250	5811000000-E	1530	ABANDON 18" UTILITY PIPE	100 LF		
0251	5813000000-E	1530	ABANDON 24" UTILITY PIPE	1,787 LF		
0252	5814000000-E	1530	ABANDON 30" UTILITY PIPE	490 LF		
0253	5815000000-N	1530	REMOVE WATER METER	36 EA		
0254	5815500000-N	1530	REMOVE FIRE HYDRANT	8 EA		
0255	5828000000-N	1530	REMOVE UTILITY MANHOLE	11 EA		
0256	5835700000-E	1540	16" ENCASEMENT PIPE	327 LF		
0257	5835800000-E	1540	18" ENCASEMENT PIPE	231 LF		
0258	5835900000-E	1540	20" ENCASEMENT PIPE	113 LF		
0259	5836000000-E	1540	24" ENCASEMENT PIPE	189 LF		
0260	6000000000-E	1605	TEMPORARY SILT FENCE	241,000 LF		
0261	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	500 TON		
0262	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	37,000 TON		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0263	6012000000-E	1610	SEDIMENT CONTROL STONE	26,500 TON		
0264	6015000000-E	1615	TEMPORARY MULCHING	240 ACR		
0265	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	10,900 LB		
0266	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	55.5 TON		
0267	6024000000-E	1622	TEMPORARY SLOPE DRAINS	30,040 LF		
0268	6029000000-E	SP	SAFETY FENCE	45,000 LF		
0269	6030000000-E	1630	SILT EXCAVATION	40,200 CY		
0270	6036000000-E	1631	MATTING FOR EROSION CONTROL	30,200 SY		
0271	6037000000-E	SP	COIR FIBER MAT	54,550 SY		
0272	6042000000-E	1632	1/4" HARDWARE CLOTH	24,400 LF		
0273	6043000000-E	SP	LOW PERMEABILITY GEOTEXTILE	250 SY		
0274	6045000000-E	SP	**" TEMPORARY PIPE (30")	790 LF		
0275	6045000000-E	SP	**" TEMPORARY PIPE (36")	210 LF		
0276	6046000000-E	1636	TEMPORARY PIPE FOR STREAM CROSSING	50 LF		
0277	6048000000-E	SP	FLOATING TURBIDITY CURTAIN	2,655 SY		
0278	6070000000-N	1639	SPECIAL STILLING BASINS	10 EA		
0279	6071012000-E	SP	COIR FIBER WATTLE	11,720 LF		
0280	6071020000-E	SP	POLYACRYLAMIDE (PAM)	915 LB		
0281	6071030000-E	1640	COIR FIBER BAFFLE	23,700 LF		

County : New Hanover

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0282	6071050000-E	SP	"" SKIMMER (1-1/2")	8 EA		
0283	6071050000-E	SP	"" SKIMMER (2")	1 EA		
0284	6071050000-E	SP	"" SKIMMER (2-1/2")	1 EA		
0285	6071050000-E	SP	"" SKIMMER (3")	1 EA		
0286	6084000000-E	1660	SEEDING & MULCHING	300 ACR		
0287	6087000000-E	1660	MOWING	150 ACR		
0288	6090000000-E	1661	SEED FOR REPAIR SEEDING	2,350 LB		
0289	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	12.5 TON		
0290	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	7,675 LB		
0291	6108000000-E	1665	FERTILIZER TOPDRESSING	230 TON		
0292	6111000000-E	SP	IMPERVIOUS DIKE	1,122 LF		
0293	6114500000-N	1667	SPECIALIZED HAND MOWING	55 MHR		
0294	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	100 EA		
0295	6120000000-E	SP	CULVERT DIVERSION CHANNEL	4,012 CY		
0296	6123000000-E	1670	REFORESTATION	17 ACR		
0297	6132000000-N	SP	GENERIC EROSION CONTROL ITEM CONCRETE WASHOUT STRUCTURE	8 EA		
0298	7048500000-E	1705	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/COUNTDOWN)	26 EA		
0299	7060000000-E	1705	SIGNAL CABLE	26,330 LF		
0300	7120000000-E	1705	VEHICLE SIGNAL HEAD (12", 3 SECTION)	111 EA		

County : New Hanover

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0301	7132000000-E	1705	VEHICLE SIGNAL HEAD (12", 4 SECTION)	27 EA		
0302	7144000000-E	1705	VEHICLE SIGNAL HEAD (12", 5 SECTION)	7 EA		
0303	7204000000-N	1705	LOUVER	9 EA		
0304	7252000000-E	1710	MESSENGER CABLE (1/4")	859 LF		
0305	7264000000-E	1710	MESSENGER CABLE (3/8")	2,520 LF		
0306	7279000000-E	1715	TRACER WIRE	12,238 LF		
0307	7288000000-E	1715	PAVED TRENCHING (**********) (1, 2")	320 LF		
0308	7288000000-E	1715	PAVED TRENCHING (**********) (3, 2")	50 LF		
0309	7300000000-E	1715	UNPAVED TRENCHING (**********) (1, 2")	4,515 LF		
0310	7300000000-E	1715	UNPAVED TRENCHING (**********) (2, 2")	12,658 LF		
0311	7300000000-E	1715	UNPAVED TRENCHING (**********) (3, 2")	20 LF		
0312	7300000000-E	1715	UNPAVED TRENCHING (**********) (4, 2")	60 LF		
0313	7300000000-E	1715	UNPAVED TRENCHING (**********) (5, 2")	60 LF		
0314	7300100000-E	1715	UNPAVED TRENCHING FOR TEMP-ORARY LEAD-IN	2,250 LF		
0315	7301000000-E	1715	DIRECTIONAL DRILL (**********) (1, 2")	1,070 LF		
0316	7301000000-E	1715	DIRECTIONAL DRILL (**********) (2, 2")	2,434 LF		
0317	7301000000-E	1715	DIRECTIONAL DRILL (**********) (3, 2")	3,460 LF		

County : New Hanover

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0318	7324000000-N	1716	JUNCTION BOX (STANDARD SIZE)	81 EA		
0319	7348000000-N	1716	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)	32 EA		
0320	7360000000-N	1720	WOOD POLE	17 EA		
0321	7372000000-N	1721	GUY ASSEMBLY	32 EA		
0322	7408000000-E	1722	1" RISER WITH WEATHERHEAD	7 EA		
0323	7420000000-E	1722	2" RISER WITH WEATHERHEAD	17 EA		
0324	7430000000-N	1722	HEAT SHRINK TUBING RETROFIT KIT	3 EA		
0325	7432000000-E	1722	2" RISER WITH HEAT SHRINK TUBING	5 EA		
0326	7444000000-E	1725	INDUCTIVE LOOP SAWCUT	16,900 LF		
0327	7456000000-E	1726	LEAD-IN CABLE (**********) (14-2)	47,250 LF		
0328	7516000000-E	1730	COMMUNICATIONS CABLE (**FIBER) (12)	4,905 LF		
0329	7516000000-E	1730	COMMUNICATIONS CABLE (**FIBER) (24)	10,726 LF		
0330	7540000000-N	1731	SPLICE ENCLOSURE	9 EA		
0331	7541000000-N	1731	MODIFY SPLICE ENCLOSURE	4 EA		
0332	7552000000-N	1731	INTERCONNECT CENTER	18 EA		
0333	7564000000-N	1732	FIBER-OPTIC TRANSCEIVER, DROP & REPEAT	3 EA		
0334	7575142060-N	SP	MODIFY RADIO INSTALLATION	1 EA		
0335	7575160000-E	1734	REMOVE EXISTING COMMUNICATIONS CABLE	142 LF		

County : New Hanover

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0336	7588000000-N	SP	METAL POLE WITH SINGLE MAST ARM	28 EA		
0337	7613000000-N	SP	SOIL TEST	28 EA		
0338	7614100000-E	SP	DRILLED PIER FOUNDATION	336 CY		
0339	7631000000-N	SP	MAST ARM WITH METAL POLE DESIGN	28 EA		
0340	7636000000-N	1745	SIGN FOR SIGNALS	25 EA		
0341	7642100000-N	1743	TYPE I POST WITH FOUNDATION	5 EA		
0342	7642200000-N	1743	TYPE II PEDESTAL WITH FOUNDATION	20 EA		
0343	7684000000-N	1750	SIGNAL CABINET FOUNDATION	13 EA		
0344	7696000000-N	1751	CONTROLLER WITH CABINET (**********) (2070E BASE MTD)	13 EA		
0345	7696000000-N	1751	CONTROLLER WITH CABINET (**********) (2070E POLE MTD)	1 EA		
0346	7708000000-N	1751	DETECTOR CARD (**********) (2070E)	84 EA		
0347	7901000000-N	1753	CABINET BASE EXTENDER	13 EA		
0348	7960000000-N	SP	METAL POLE FOUNDATION REMOVAL	11 EA		
0349	7972000000-N	SP	METAL POLE REMOVAL	11 EA		
0350	7980000000-N	SP	GENERIC SIGNAL ITEM CARD CAGE	1 EA		
0351	7980000000-N	SP	GENERIC SIGNAL ITEM CCTV CABINET	3 EA		
0352	7980000000-N	SP	GENERIC SIGNAL ITEM CCTV CAMERA ASSEMBLY	4 EA		

County : New Hanover

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0353	7980000000-N	SP	GENERIC SIGNAL ITEM DIGITAL HARDWARE VIDEO DECODER	3 EA		
0354	7980000000-N	SP	GENERIC SIGNAL ITEM ETHERNET EDGE SWITCH	16 EA		
0355	7980000000-N	SP	GENERIC SIGNAL ITEM MANAGED ETHERNET CORE SWITCH	1 EA		
0356	7980000000-N	SP	GENERIC SIGNAL ITEM POWDER COAT FOR SINGLE MAST ARM POLE	2 EA		
0357	7990000000-E	SP	GENERIC SIGNAL ITEM BACKPULL FIBER-OPTIC CABLE	619 LF		
0406	5606000000-E	1515	2" BLOW OFF	1 EA		
0407	5778000000-E	1525	8' DIA UTILITY MANHOLE	1 EA		
0408	5784000000-E	1525	UTILITY MANHOLE WALL, 8' DIA	7 LF		
0409	5836200000-E	1540	30" ENCASEMENT PIPE	185 LF		
0410	5814000000-E	1530	ABANDON 30" UTILITY PIPE	490 LF		
0411	5835000000-E	1540	*"" ENCASEMENT PIPE (60")	288 LF		
0412	5692000000-E	1520	30" SANITARY GRAVITY SEWER	590 LF		
0413	5777000000-E	1525	6' DIA UTILITY MANHOLE	1 EA		
0414	5783000000-E	1525	UTILITY MANHOLE WALL, 6' DIA	7 LF		
0415	5800000000-E	1530	ABANDON 6" UTILITY PIPE	291 LF		
0416	5558600000-E	1515	16" VALVE	2 EA		
0417	5329000000-E	SP	DUCTILE IRON WATER PIPE FITTINGS	25,095 LB		
0418	5559400000-E	1515	24" VALVE	2 EA		
0419	5572200000-E	1515	12" TAPPING VALVE	1 EA		

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0420	5606800000-E	1515	8" BLOW OFF	1 EA		

CULVERT ITEMS

0358	8126000000-N	414	CULVERT EXCAVATION, STA ****** (117+49.00 -L-)	Lump Sum	L.S.	
0359	8126000000-N	414	CULVERT EXCAVATION, STA ****** (138+59.00 -L-)	Lump Sum	L.S.	
0360	8126000000-N	414	CULVERT EXCAVATION, STA ****** (151+41.00 -L-)	Lump Sum	L.S.	
0361	8126000000-N	414	CULVERT EXCAVATION, STA ****** (42+78.00 -Y8RPDB-)	Lump Sum	L.S.	
0362	8133000000-E	414	FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	1,085 TON		
0363	8196000000-E	420	CLASS A CONCRETE (CULVERT)	1,364.3 CY		
0364	8245000000-E	425	REINFORCING STEEL (CULVERT)	209,766 LB		
0365	8804000000-N	SP	GENERIC CULVERT ITEM PLACEMENT OF NATURAL STREAM BED MATERIAL	Lump Sum	L.S.	

WALL ITEMS

0366	8801000000-E	SP	MSE RETAINING WALL NO **** (1)	15,100 SF		
0367	8801000000-E	SP	MSE RETAINING WALL NO **** (2)	13,900 SF		
0368	8801000000-E	SP	MSE RETAINING WALL NO **** (3)	5,200 SF		
0369	8801000000-E	SP	MSE RETAINING WALL NO **** (4)	9,250 SF		

County : New Hanover

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0370	8801000000-E	SP	MSE RETAINING WALL NO **** (5)	1,500 SF		
0371	8801000000-E	SP	MSE RETAINING WALL NO **** (6)	4,250 SF		
0372	8801000000-E	SP	MSE RETAINING WALL NO **** (7)	700 SF		
0373	8847000000-E	SP	GENERIC RETAINING WALL ITEM ARCHITECTURAL SURFACE TREATMENT	285,348 SF		
0374	8847000000-E	SP	GENERIC RETAINING WALL ITEM SOUND BARRIER WALL NO -NW10-	10,701 SF		
0375	8847000000-E	SP	GENERIC RETAINING WALL ITEM SOUND BARRIER WALL NO -NW11-	20,769 SF		
0376	8847000000-E	SP	GENERIC RETAINING WALL ITEM SOUND BARRIER WALL NO -NW13-	44,952 SF		
0377	8847000000-E	SP	GENERIC RETAINING WALL ITEM SOUND BARRIER WALL NO -NW14-	16,142 SF		
0378	8847000000-E	SP	GENERIC RETAINING WALL ITEM SOUND BARRIER WALL NO -NW1A-	4,345 SF		
0379	8847000000-E	SP	GENERIC RETAINING WALL ITEM SOUND BARRIER WALL NO -NW1B-	3,653 SF		
0380	8847000000-E	SP	GENERIC RETAINING WALL ITEM SOUND BARRIER WALL NO -NW6-	11,435 SF		
0381	8847000000-E	SP	GENERIC RETAINING WALL ITEM SOUND BARRIER WALL NO -NW7-	25,447 SF		
0382	8847000000-E	SP	GENERIC RETAINING WALL ITEM SOUND BARRIER WALL NO -NW8-	27,473 SF		
0383	8847000000-E	SP	GENERIC RETAINING WALL ITEM SOUND BARRIER WALL NO -NW9-	5,661 SF		

County : New Hanover

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			STRUCTURE ITEMS			
0384	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT ** AT STATION ********** (1, 225+92.26 -L-)	Lump Sum	L.S.	
0385	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT ** AT STATION ********** (1, 38+94.20 -L-)	Lump Sum	L.S.	
0386	8091000000-N	410	FOUNDATION EXCAVATION FOR BENT ** AT STATION ********** (99+67.11 -Y8-)	Lump Sum	L.S.	
0387	8112730000-N	450	PDA TESTING	5 EA		
0388	8147000000-E	420	REINFORCED CONCRETE DECK SLAB	50,148 SF		
0389	8161000000-E	420	GROOVING BRIDGE FLOORS	49,881 SF		
0390	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	1,054.6 CY		
0391	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (225+92.26 -L-)	Lump Sum	L.S.	
0392	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (38+94.20 -L-)	Lump Sum	L.S.	
0393	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (62+99.10 -L-)	Lump Sum	L.S.	
0394	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (99+67.11 -Y8-)	Lump Sum	L.S.	
0395	8217000000-E	425	REINFORCING STEEL (BRIDGE)	156,969 LB		
0396	8238000000-E	425	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	5,639 LB		
0397	8274000000-E	430	MODIFIED 63" PRESTRESSED CONC GIRDERS	1,817.1 LF		
0398	8277000000-E	430	MODIFIED 72" PRESTRESSED CONC GIRDERS	2,960.2 LF		

County : New Hanover

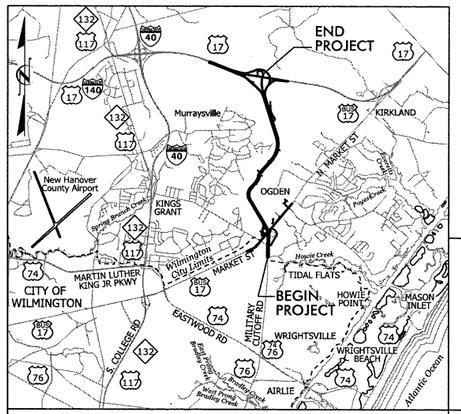
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0399	8328200000-E	SP	PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 12 X 53)	202 EA		
0400	8364000000-E	450	HP12X53 STEEL PILES	12,920 LF		
0401	8393000000-N	450	PILE REDRIVES	76 EA		
0402	8503000000-E	460	CONCRETE BARRIER RAIL	1,607.4 LF		
0403	8531000000-E	462	4" SLOPE PROTECTION	3,610.1 SY		
0404	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum	L.S.	
0405	8706000000-N	SP	EXPANSION JOINT SEALS	Lump Sum	L.S.	

09/08/09

TIP PROJECT: U-4751

CONTRACT: C203980

See Sheet 1A For Index of Sheets
See Sheet 1B For Standard Symbology Sheet



FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

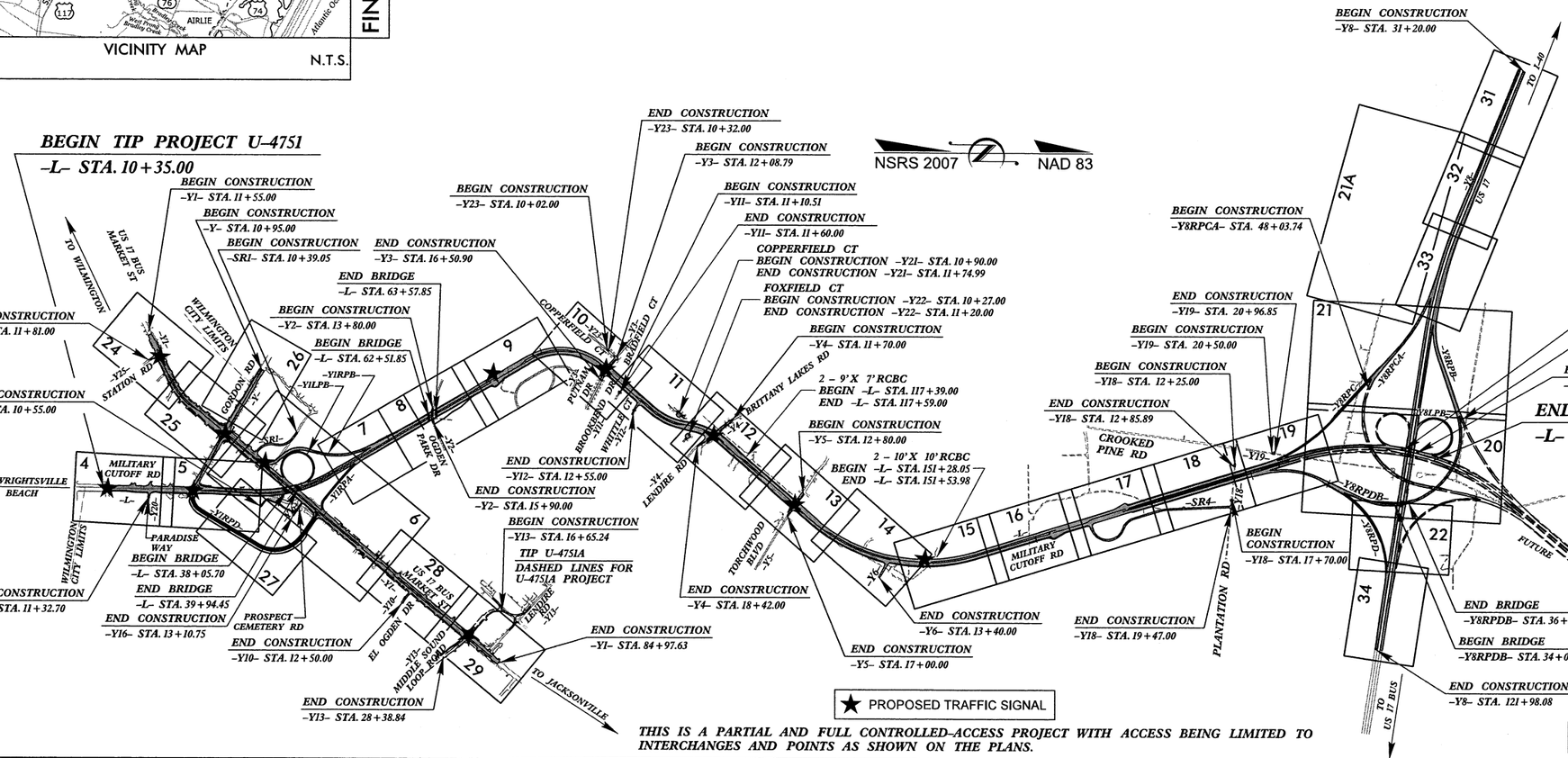
NEW HANOVER COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4751	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
40191.1.2		PE
40191.2.1		R/W
40191.3.2		CONSTRUCTION
40191.2.3		UTIL

LOCATION: SR 1409 (MILITARY CUTOFF ROAD EXTENSION) FROM SR 1409 (MILITARY CUTOFF ROAD) TO US 17 IN WILMINGTON

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, CULVERTS, RETAINING WALLS, SIGNALS, NOISE WALLS, AND SIGNING



THIS IS A PARTIAL AND FULL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES AND POINTS AS SHOWN ON THE PLANS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2017 = 23,900
ADT 2037 = 49,100
K = 12%
D = 60%
T = 7%*
V = 50 MPH
* (TTST=3%+DUAL 4%)
FUNC CLASS = ARTERIAL/FREEWAY
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4751 = 4.053 MILES

LENGTH STRUCTURE TIP PROJECT U-4751 = 0.103 MILES

TOTAL LENGTH OF TIP PROJECT U-4751 = 4.156 MILES

PLANS PREPARED FOR THE NCDOT BY:

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: APRIL 17, 2015

LETTING DATE: NOVEMBER 21, 2017

JOHN N. JOHNSON, PE
PROJECT ENGINEER

SEAN C. STEPHENS, PE
PROJECT DESIGN ENGINEER

GARY LOVERING, PE
PROJECT ENGINEER
NCDOT ROADWAY DESIGN

HYDRAULICS ENGINEERS

NORTH CAROLINA PROFESSIONAL SEAL 029388 ENGINEER EDWARD J VANCE P.E.
SIGNATURE: 9/21/2017

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G DALTON P.E.
9/21/2017

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 043691 ENGINEER SEAN C STEPHENS
Docusigned by: Sean C. Stephens
SIGNATURE: 9/21/2017 P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

R/W PLANS
9/21/2017

8/17/99

INDEX OF SHEETS

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1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-9	SURVEY CONTROL SHEETS
2A-1 THRU 2A-11	TYPICAL SECTIONS
2B-1 THRU 2B-4	STRUCTURE DETAILS
2B-5 THRU 2B-7	INTERSECTION DETAILS
2B-8 THRU 2B-9	ALIGNMENT CURVE DATA SHEETS
2B-10 THRU 2B-11	SHEAR POINT DETAILS
2B-12	TEMPORARY PAVEMENT DETAIL
2C-1 THRU 2C-7	ROADWAY SPECIAL DETAILS
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2C-14 THRU 2C-17	GUARDRAIL INSTATLLATION DETAILS
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2C-22 THRU 2C-26	CURB RAMP DETAILS
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2C-30 THRU 2C-32	DRAINAGE STRUCTURE DETAILS
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2H-1	STOCKPILE CONTAINMENT DETAIL
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3B-1 THRU 3B-4	EARTHWORK, GUARDRAIL, PAVEMENT REMOVAL, GUIDERAIL, SHOULDER BERM GUTTER, AND FENCING SUMMARY SHEETS
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SCP-1 THRU SCP-52	SIGNAL COMMUNICATIONS PLANS
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UO-1 THRU UO-34	UTILITIES BY OTHERS PLANS
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S3-1 THRU S3-36	STRUCTURE PLANS (-L- OVER -Y8)
S4-1 THRU S4-36	STRUCTURE PLANS (-Y8RPDB- OVER -Y8-)
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C2-1 THRU C2-4	CULVERT PLANS
C3-1 THRU C3-7	CULVERT PLANS
C4-1 THRU C4-4	CULVERT PLANS
W-1 THRU W-13	RETAINING WALL PLANS
NW-1 THRU NW-17	NOISE WALL PLANS

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 01-24-2017

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY MODIFIED METHOD III.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS:

WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 900 MM RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE CAPE FEAR PUBLIC UTILITY AUTHORITY, DUKE ENERGY PROGRESS, AT&T, LEVEL 3, CHARTER COMMUNICATIONS, MCNC, SPIRIT COMMUNICATIONS, PIEDMONT NATURAL GAS, TIME WARNER CABLE, AND CENTURY LINK. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS EFF. 01-17-2012
REV. 05-24-2017

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO. TITLE

DIVISION 2 - EARTHWORK
225.01 Guide for Grading Subgrade - Interstate and Freeway
225.02 Guide for Grading Subgrade - Secondary and Local
225.03 Deceleration and Acceleration Lanes
225.04 Method of Obtaining Superelevation - Two Lane Pavement
225.05 Method of Obtaining Superelevation - Divided Highways
225.06 Method of Grading Sight Distance at Intersections
225.07 Grading for False Cut at Grade Separations
225.09 Guide for Shoulder and Ditch Transition at Grade Separations

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
U-4751	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 043891 ENGINEER SEAN C. STEPHENS
10/18/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STANDARD DRAWINGS (CONT.)

DIVISION 3 - PIPE CULVERTS
300.01 Method of Pipe Installation
310.10 Driveway Pipe Construction

DIVISION 4 - MAJOR STRUCTURES
422.10 Reinforced Bridge Approach Fills

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS
560.01 Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02 Method of Shoulder Construction - High Side of Superelevated Curve - Method II (Sheet 2 of 3 is no longer applicable)

DIVISION 6 - ASPHALT BASES AND PAVEMENTS
610.03 Guide for Paving Shoulders Under Bridges - Method III
654.01 Pavement Repairs
665.01 Asphalt Shoulders - Milled Rumble Strips

DIVISION 8 - INCIDENTALS
815.02 Subsurface Drain
838.01 Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11 Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.21 Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.27 Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.45 Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.51 Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.57 Reinforced Brick Endwall - for Single 60" Pipe 90 Skew
838.75 Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80 Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.01 Brick Catch Basin - 12" thru 54" Pipe
840.02 Concrete Catch Basin - 12" thru 54" Pipe
840.03 Frame, Grates and Hood - for Use on Standard Catch Basin
840.04 Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05 Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.14 Concrete Drop Inlet - 12" thru 30" Pipe
840.15 Brick Drop Inlet - 12" thru 30" Pipe
840.16 Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17 Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18 Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.20 Frames and Wide Slot Flat Grates
840.22 Frames and Wide Slot Sag Grates
840.24 Frames and Narrow Slot Sag Grates
840.25 Anchorage for Frames - Brick or Concrete or Precast
840.26 Brick Grated Drop Inlet Type 'A' - 12" thru T2" Pipe
840.27 Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29 Frames and Narrow Slot Flat Grates
840.31 Concrete Junction Box - 12" thru 66" Pipe
840.32 Brick Junction Box - 12" thru 66" Pipe
840.34 Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35 Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45 Precast Drainage Structure
840.46 Traffic Bearing Precast Drainage Structure
840.51 Brick Manhole - 12" thru 36" Pipe
840.52 Precast Manhole - 4', 5' and 6' Diameter
840.53 Precast Manhole with Masonry Base - 12" thru 42" Pipe
840.54 Manhole Frame and Cover
840.66 Drainage Structure Steps
840.71 Concrete and Brick Pipe Plug
840.72 Pipe Collar
846.01 Concrete Curb, Gutter and Curb & Gutter
846.04 Drop Inlet Installation in Shoulder Berm Gutter
848.01 Concrete Sidewalk
848.02 Driveway Turnout - Radius Type
848.03 Driveway Turnout - Drop Curb Type
848.04 Street Turnout
848.05 Curb Ramp - Proposed Curb & Gutter
852.01 Concrete Islands
852.04 Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter
852.05 Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
852.06 Method for Placement of Drop Inlets in Concrete Islands
852.10 Median Construction - with Curb and Gutter
854.02 Double Faced Concrete Barrier - Types 'T', 'T1' and 'T2'
857.01 Precast Reinforced Concrete Barrier - 41" Single Faced
862.04 Anchoring End of Guardrail - B-77 and B-83 Anchor Units
865.01 Cable Guiderail
866.01 Chain Link Fence - 4', 5' and 6' High Fence
866.02 Woven Wire Fence - with Wood Post
876.01 Rip Rap in Channels
876.02 Guide for Rip Rap at Pipe Outlets
876.04 Drainage Ditches with Class 'B' Rip Rap

10/18/2017
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stephsse

09/08/2017

TIP PROJECT: U-4751

CONTRACT:

PRE-FDF| PLANS
10/17/2017

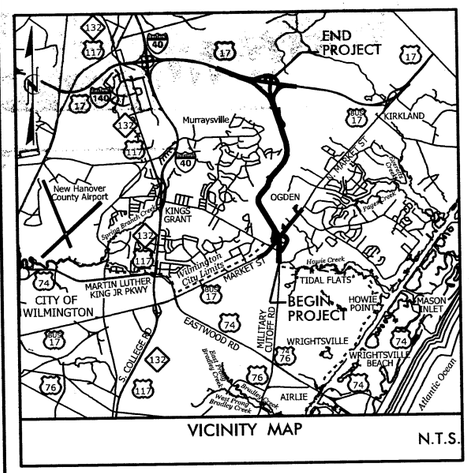
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS

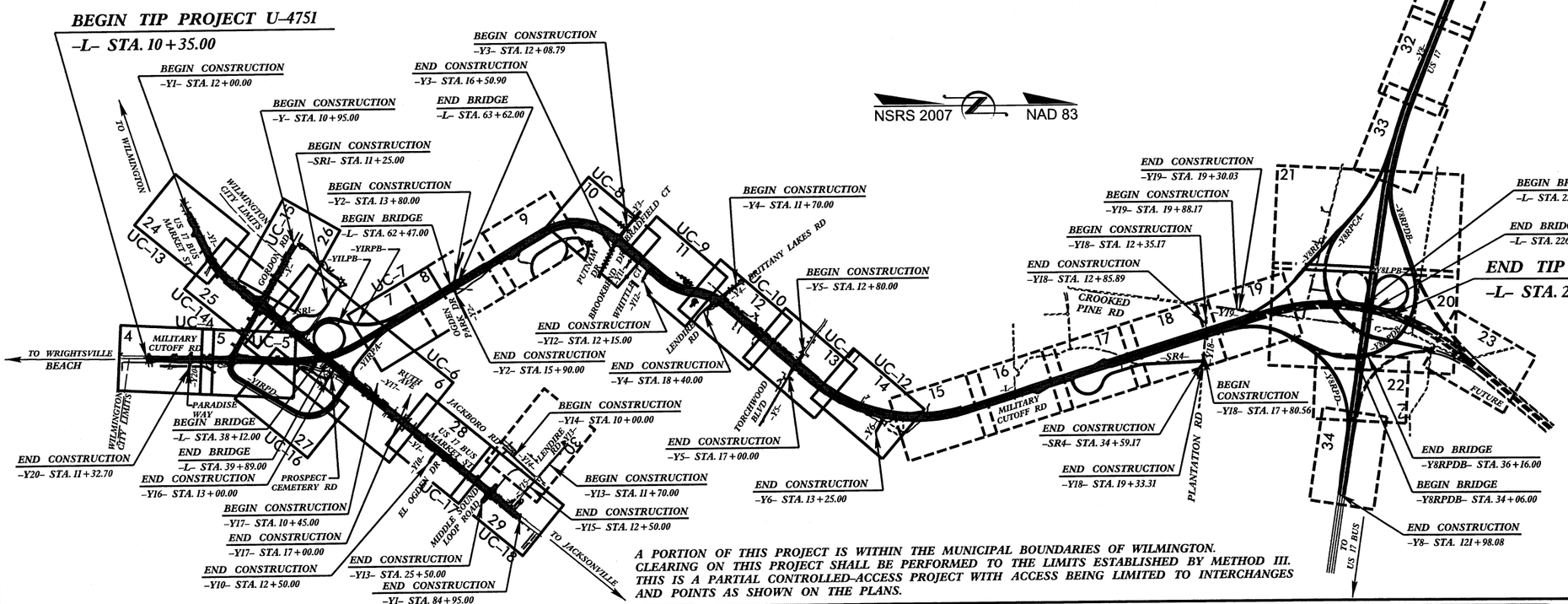
NEW HANOVER COUNTY

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



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



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

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

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

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

LETTING DATE: OCTOBER 17, 2017

KIT A. PERSIANI, PE
PROJECT ENGINEER

SEAN C. STEPHENS, EI
PROJECT DESIGNER

UTILITY ENGINEER

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

DocuSigned by: Bryan Bailey P.E.
SIGNATURE

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

NORTH CAROLINA PROFESSIONAL SEAL 032634 ENGINEER BRYAN M. BADEY 10/17/2017

UTILITY CONSTRUCTION PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown)
- 11¼ Degree Bend
- 22½ Degree Bend
- 45 Degree Bend
- 90 Degree Bend
- Plug
- Tee
- Cross
- Reducer
- Gate Valve
- Butterfly Valve
- Tapping Valve
- Line Stop
- Line Stop with Bypass
- Blow Off
- Fire Hydrant
- Relocate Fire Hydrant
- Remove Fire Hydrant — REM FH
- Water Meter
- Relocate Water Meter
- Remove Water Meter — REM WM
- Water Pump Station — PS(W)
- RPZ Backflow Preventer
- DCV Backflow Preventer
- Relocate RPZ Backflow Preventer
- Relocate DCV Backflow Preventer

PROPOSED SEWER SYMBOLS

- Gravity Sewer Line (Sized as Shown)
- Force Main Sewer Line (Sized as Shown)
- Manhole (Sized per Note)
- Sewer Pump Station — PS(SS)

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal
- 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
- Air Release Valve
- Utility Vault
- Concrete Pier
- Steel Pier
- Plan Note — NOTE
- Pay Item Note — PAY ITEM

EXISTING UTILITIES SYMBOLS

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

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

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

REV: 2/1/2012

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-3

NORTH CAROLINA PROFESSIONAL SEAL 2634 ENGINEER BRIAN M. BADEY
10/17/2017

UTILITY CONSTRUCTION PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 ADDITONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, 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.

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

5/14/99

10/17/2017
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mpiatt

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-3a

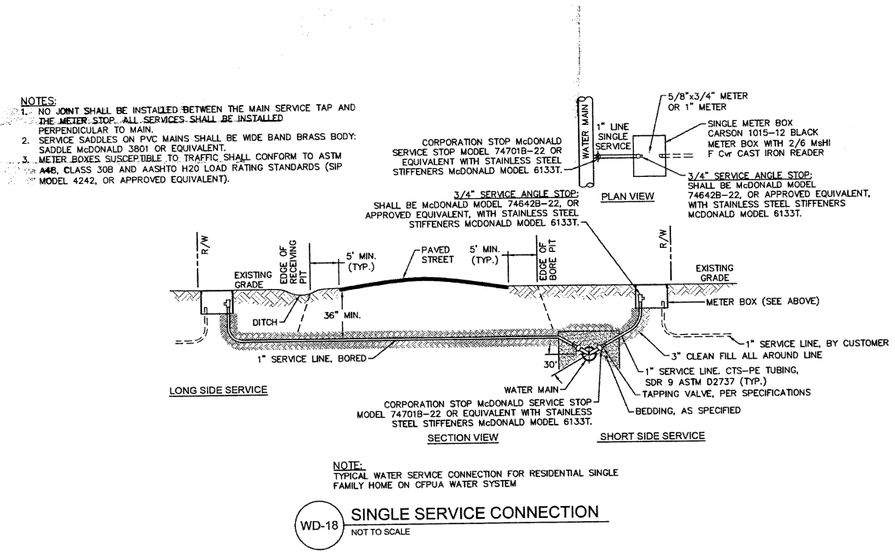
NORTH CAROLINA PROFESSIONAL SEAL 38634 ENGINEER BRYAN M. BADER

10/17/2017

UTILITY CONSTRUCTION PLANS

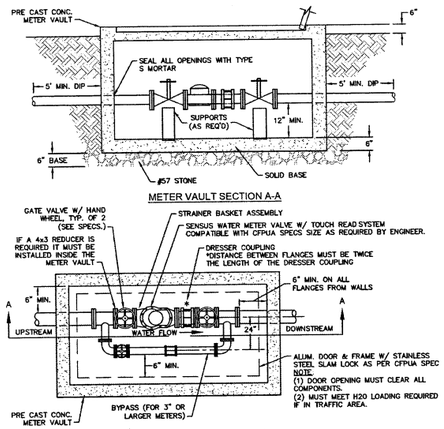
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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).

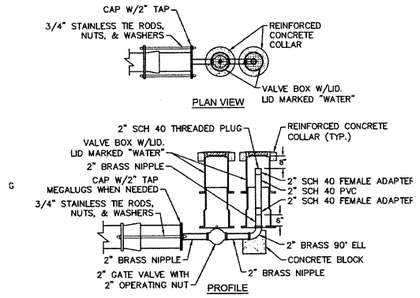


NOTE:
TYPICAL WATER SERVICE CONNECTION FOR RESIDENTIAL SINGLE FAMILY HOME ON CFPUA WATER SYSTEM

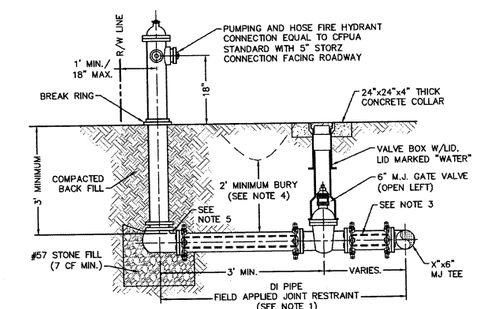
WD-18 SINGLE SERVICE CONNECTION
NOT TO SCALE



WD-1 WATER METER VAULT
NOT TO SCALE



WD-5 2" BLOW-OFF
NOT TO SCALE



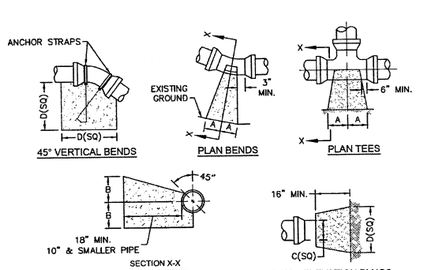
NOTES:
1. JOINT RESTRAINT SYSTEMS SHALL BE WEDGE ACTION STYLE FOR DI PIPE AS MANUFACTURED BY EBAA IRON, SIGMA, STAR PIPE PRODUCTS OR APPROVED EQUAL.
2. WHEN HYDRANT LEGS REQUIRE FULL LENGTH PIPE SECTIONS, OVER BELL RESTRAINT SYSTEM SHALL HAVE 316 STAINLESS STEEL HARNESS AND FASTENERS.
3. CONTINUOUS 316 STAINLESS STEEL RODS (TEE TO VALVE AND VALVE TO HYDRANT) MAY BE USED WITH COR-BLUE MJ 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)



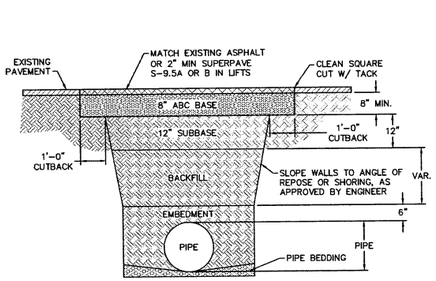
SIZE	90 BENDS A	90 BENDS B	45 BENDS A	45 BENDS B	22-1/2 BENDS A	22-1/2 BENDS B	TEES/PLUGS A	TEES/PLUGS B	45 VERT. BENDS
3"	8"	6"	5"	6"	3"	7"	6"	8"	27"
4"	8"	9"	5"	8"	3"	11"	6"	9"	28"
6"	14"	11"	9"	9"	8"	8"	12"	9"	36"
8"	16"	16"	12"	12"	10"	13"	14"	13"	42"
10"	18"	22"	15"	14"	14"	16"	18"	15"	50"
12"	20"	28"	18"	17"	16"	16"	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

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).

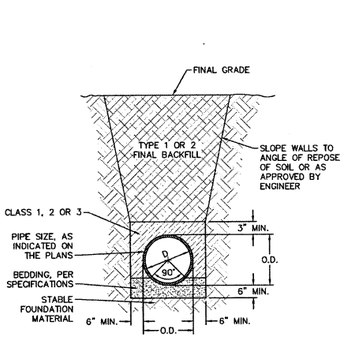
THE DETAILS SHOWN HEREON SUPERCEDE CFPUA WRITTEN TECHNICAL SPECIFICATIONS VERSIONS 1.00 - 1.04



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)

WD-14 PAVEMENT REPAIR WHERE PIPE INSTALLED
NOT TO SCALE



WD-13 TYPICAL TRENCH DETAIL
NOT TO SCALE

CFPUA WATER DISTRIBUTION SYSTEM

STANDARD DETAILS

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

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
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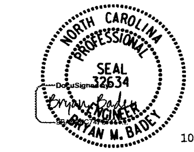
mpratt

8/17/99

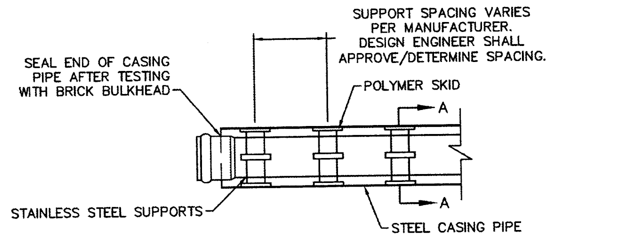
PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-3b



10/17/2017

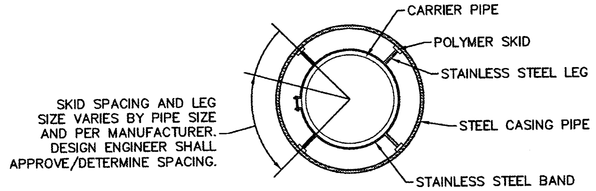
UTILITY CONSTRUCTION PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PLAN

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.

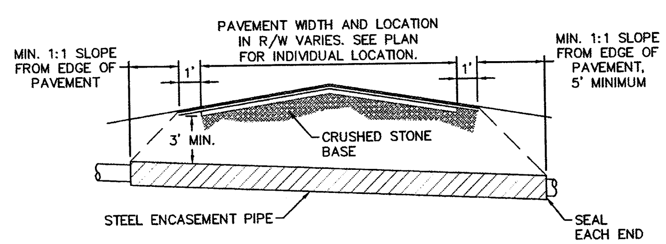


SECTION A-A

NOTE: ALL STAINLESS STEEL PARTS TO BE 316 SST.

WD-15 PIPE CASING SUPPORT DETAIL

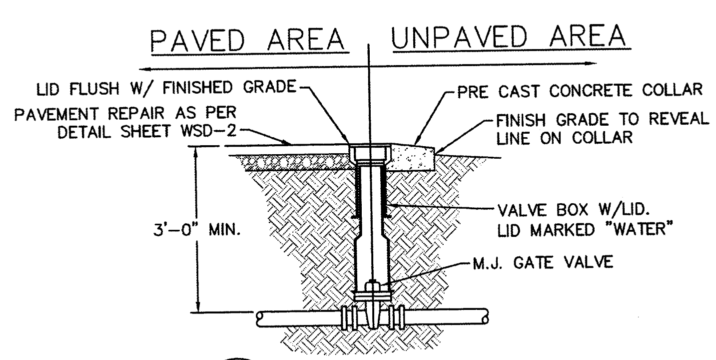
NOT TO SCALE



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.

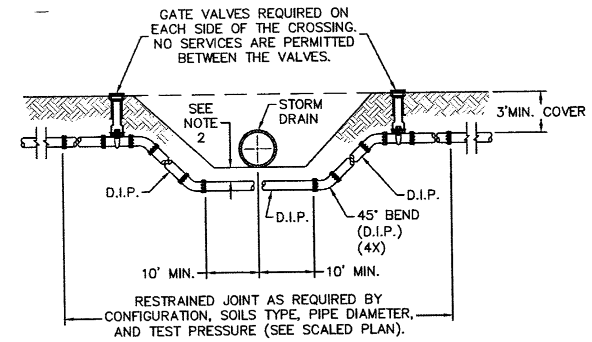
WD-16 TYPICAL BORING/ JACKING DETAIL

NOT TO SCALE



WD-3 VALVE DETAIL

NOT TO SCALE

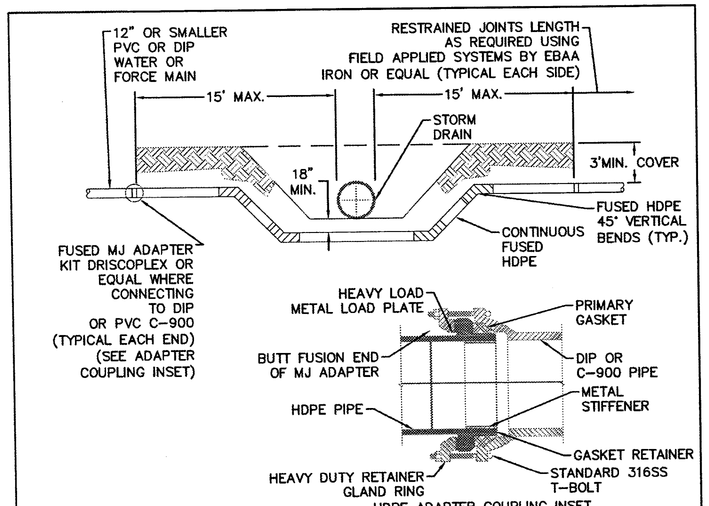


NOTES:
1. USE PRESSURE CLASS 350 DIP, UNLESS SPECIFIED OTHERWISE.
2. MINIMUM DEPTH REQUIRED, UNLESS SPECIFIED OTHERWISE BY CFPUA:
   a. IN DOT R/W, 36" MIN. TYPICAL, OR 24" MIN. WHEN CROSSING A DITCH LINE.
   b. ALL OTHER LOCATIONS, 30" MIN.
   c. WHEN STORM DRAIN INVERT IS BURIED AT OR BELOW ABOVE DEPTHS,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

WD-2 WATER MAIN DITCH AND STORM DRAIN CROSSING

NOT TO SCALE

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



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.

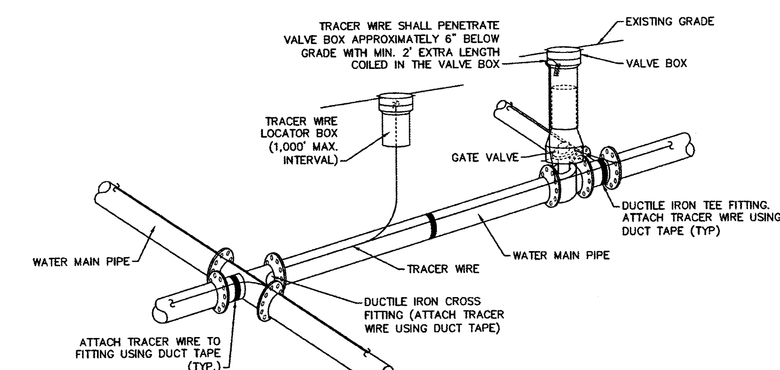
IF NO REVISION IS SHOWN, THIS DETAIL REMAINS AS ORIGINALLY PROVIDED BY CFPUA.

REV:	DESCRIPTION:	DATE:

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		SHEET NO: **SSD-3**
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



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 TRACER WIRE DETAIL

NOT TO SCALE

CFPUA WATER DISTRIBUTION SYSTEM

STANDARD DETAILS

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

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
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8/17/99

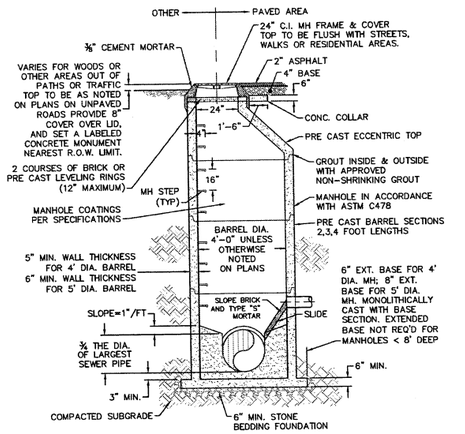
PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-3c

NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRYAN M. BADER

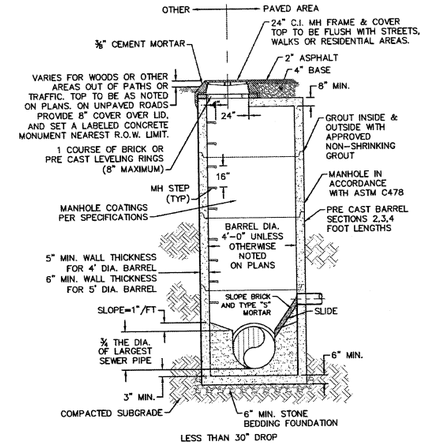
10/17/2017

UTILITY CONSTRUCTION PLANS

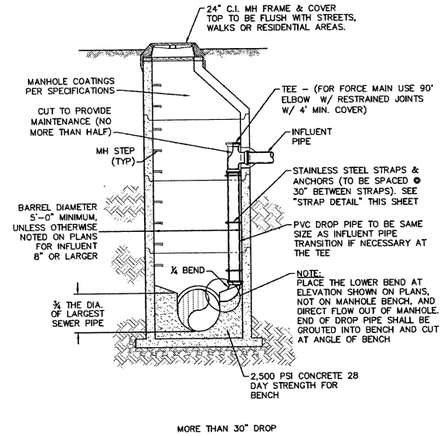
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



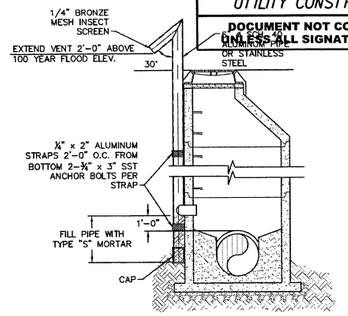
SD-1 PRECAST CONCRETE OFFSET MANHOLE TYPICAL
NOT TO SCALE



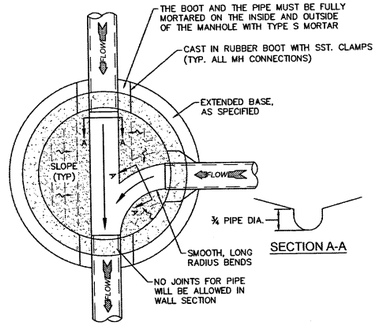
SD-2 PRECAST CONCRETE FLAT TOP MANHOLE TYPICAL
NOT TO SCALE



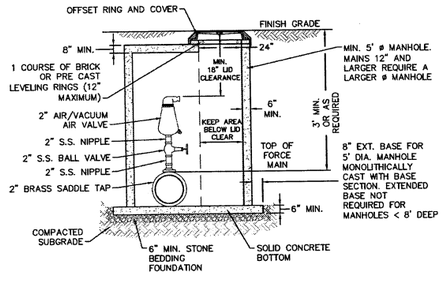
SD-3 DROP MANHOLE
NOT TO SCALE



SD-4 STANDARD VENT MANHOLE
NOT TO SCALE

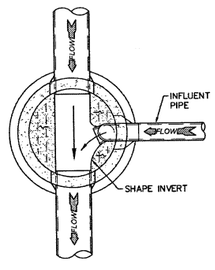


SD-5 MANHOLE FLOOR PLAN
NOT TO SCALE

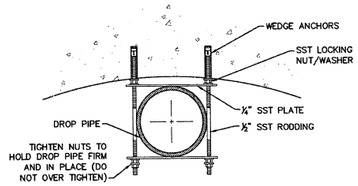


NOTES:
1. CONTRACTOR TO INSTALL VALVE AND MANHOLE AT SUFFICIENT DEPTH TO ALLOW FOR ACCESS.
2. FORCE MAIN TO BE OFFSET IN MANHOLE TO KEEP AREA BELOW LID CLEAR.
3. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.
4. USE CAST IN RUBBER BOOT WITH SST. CLAMPS FOR ALL MH CONNECTIONS, INCLUDING FORCE MAIN.

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



SD-7 DROP MANHOLE FLOOR PLAN
NOT TO SCALE



NOTE: ALL PARTS TO BE 316 SST.

SD-8 STRAP DETAIL
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.

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

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

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

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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8/17/99

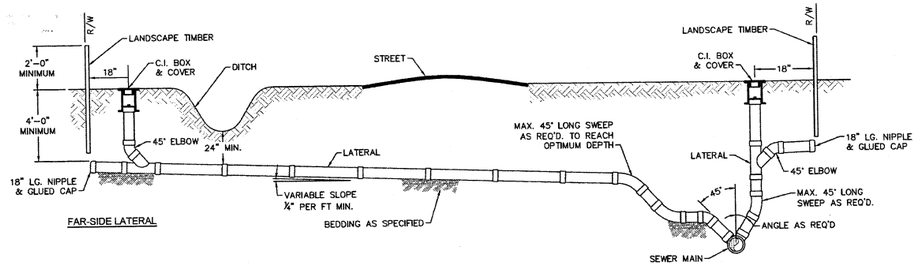
PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-3d

NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRYAN M. BADEY

10/17/2017

UTILITY CONSTRUCTION PLANS

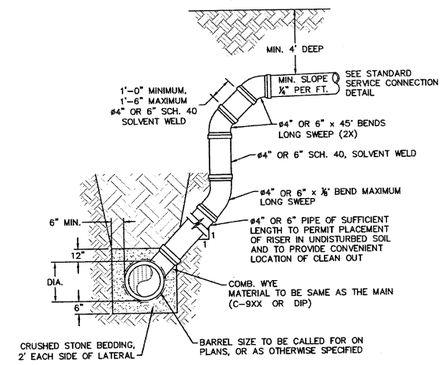
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR TIE-IN TO MAIN

SD-19 STANDARD SERVICE CONNECTION TO SANITARY SEWER

NOT TO SCALE

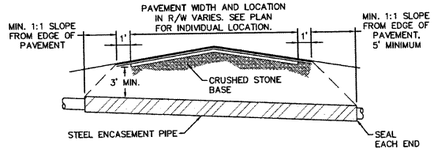


NOTES:
1. SPECIAL CARE SHALL BE TAKEN DURING BACKFILL OPERATIONS. THE RISER SHALL BE PLUMB AND TRUE AT ALL TIMES, AND REST ON FIRM, STABLE FOUNDATION.
2. FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

MAIN DEPTH GREATER THAN 8 FT

SD-12 DEEP SERVICE LATERAL

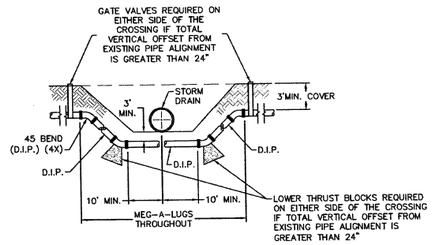
NOT TO SCALE



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

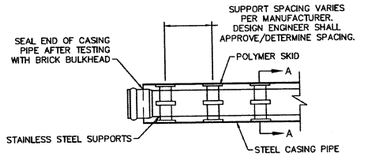
NOT TO SCALE



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

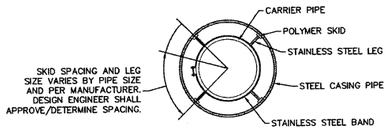
SD-18 FORCE MAIN DITCH AND STORM DRAIN CROSSING

NOT TO SCALE



PLAN

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.

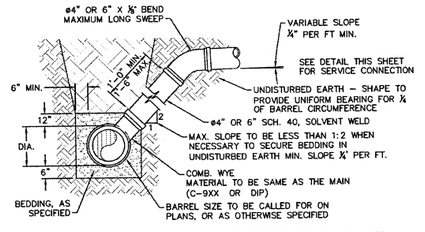


SECTION A-A

NOTE: ALL STAINLESS STEEL PARTS TO BE 316 SST.

SD-17 PIPE CASING SUPPORT DETAIL

NOT TO SCALE

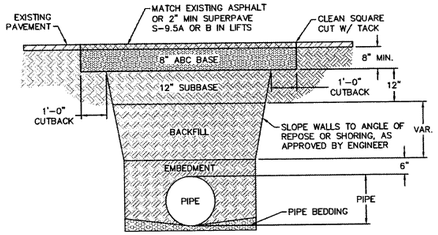


NOTE: FOR PRIVATE 8" SERVICES, MANHOLES ARE REQUIRED FOR CONNECTION TO SYSTEM AND AT THE PROPERTY LINE, WITH REQUIRED EASEMENT.

MAIN DEPTH LESS THAN 8 FT

SD-10 STANDARD SERVICE LATERAL

NOT TO SCALE

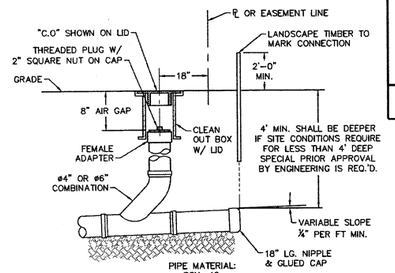


NOTES:
1. BACKFILL SHALL BE SUITABLE MATERIAL THAT IS FREE FROM HEAVY CLAY, GUMBOS, DEBRIS, ORGANICS AND LITTLE TO NO EXCESSIVE MOISTURE.
2. SELECT BACKFILL MAY BE SUBSTITUTED OR REQUIRED BY CITY TO ACHIEVE COMPACTION, (I.E. #57, ABC, CRUSHED LIMESTONE, CLEAN SAND, FLOWABLE FILL, ETC).
3. 8-INCH OF ABC 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

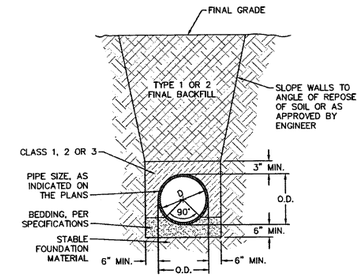
NOT TO SCALE



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

CFPUA SANITARY SEWER

STANDARD DETAILS

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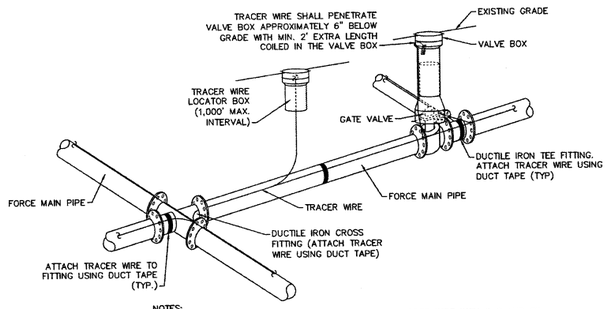
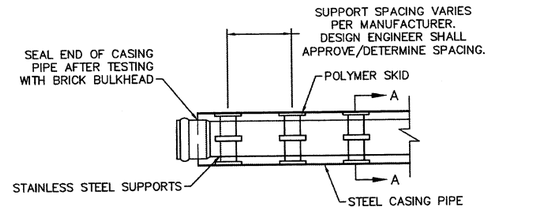
8/17/99



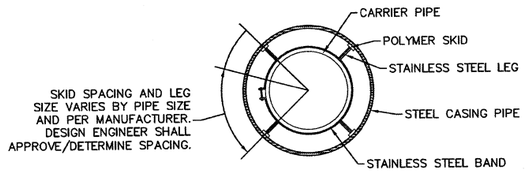
NOTES:
1. TRACER WIRE SHALL BE #10 COPPER SOLID CORE COPPER WIRE WITH GAS AND OIL RESISTANT INSULATION.
2. WIRE SHALL BE STRAPPED TO ALL PVC FORCE MAIN PIPING WITH DUCT TAPE AT 12 FOOT INTERVALS ALONG THE PIPE.
3. SECURE WIRE TO ALL TEE AND CROSS FITTINGS WITH DUCT TAPE.
4. ALL SPLICES IN THE WIRE SHALL 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



PLAN

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.



SECTION A-A

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

REV:	DESCRIPTION:	DATE:

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 / CFPUA REV. No: 1	CFPUA DETAIL DATE: 02/10/14	SHEET NO: SSD-2

PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-3e

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

UTILITY CONSTRUCTION PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STANDARD DETAILS

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

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
R:\Utilities\Rdy_Ut\Proj\Utility Construction\U4751_UC_PSH_UC3E.dgn
mpowell

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 30634 ENGINEER BRYAN M. BAILEY
10/17/2017

NAD 83/NSRS 2007

UTILITY CONSTRUCTION PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-5

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

UTILITY CONSTRUCTION PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 -Y- STA 27+00 (SHEET UC-25)

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

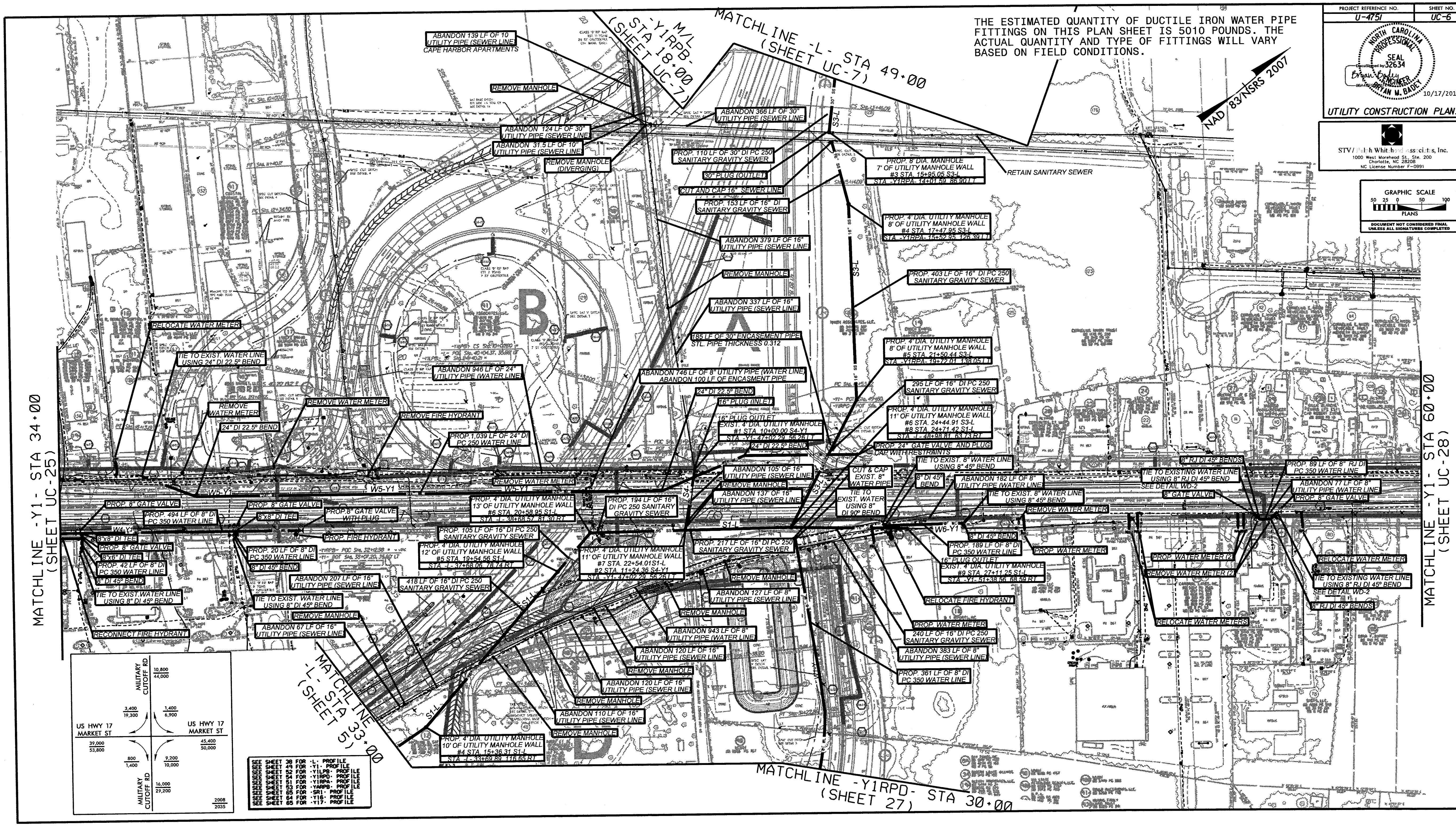
MATCHLINE -L- STA 33+00 (SHEET UC-6)

MATCHLINE -Y1RPD- STA 16+00 (SHEET UC-27)

PROP. 104 LF OF 8" DI PC 350 WATER LINE
PROP. 12" GATE VALVE
12" DI 22.5° BEND
TIE TO EXIST. WATER LINE USING 8"x8" DI TEE
PROP. 414 LF OF 12" DI PC 350 WATER LINE
PROP. 12" GATE VALVE
12" DI 11.25° BEND
PROP. 71 LF OF 12" RJ DI PC 350 WATER LINE
12" RJ DI 45° BENDS
TIE TO EXISTING 12" WATER LINE USING 45° RJ DI BEND SEE DETAIL WD-2
ABANDON 45 LF OF 12" UTILITY PIPE (WATER LINE)
12" RJ DI 45° BENDS
TIE TO EXIST. WATER LINE USING 12" DI 45° BEND SEE DETAIL WD-2
ABANDON 66 LF OF 12" UTILITY PIPE (WATER LINE)
TIE TO EXISTING 12" WATER LINE USING 45° RJ DI BEND SEE DETAIL WD-2
PROP. 12" GATE VALVE
12" DI 45° BEND
PROP. 8" GATE VALVE
8"x8" DI TEE
PROP. FIRE HYDRANT
REMOVE FIRE HYDRANT
PROP. 12" GATE VALVE
12"x12"x8" DI TEE
TIE TO EXIST. WATER LINE USING 12" DI 45° BEND SEE DETAIL WD-2
12" DI 45° BEND
CUT AND CAP EXIST. 12" WATER PIPE
CUT AND CAP EXIST. 8" WATER PIPE
PROP. 8" GATE VALVE
ABANDON 885 LF OF 12" UTILITY PIPE (WATER LINE)
EXIST. 4' DIA. UTILITY MANHOLE #1 STA. 10+00.00 S1-L STA. -L- 28+65.00 37.90 RT
16" PLUG INLET
PROP. 4' DIA. UTILITY MANHOLE #2 STA. 10+19.28 S1-L STA. -L- 28+65.00 51.19 RT
PROP. 127 LF OF 16" DI PC 250 SANITARY GRAVITY SEWER
ABANDON 850 LF OF 8" UTILITY PIPE (WATER LINE)
PROP. 4' DIA. UTILITY MANHOLE 7 OF UTILITY MANHOLE WALL #3 STA. 11+37.94 S1-L STA. -L- 28+74.16 98.58 RT
PROP. 586 LF OF 8" DI PC 350 WATER LINE
PROP. 2" BLOW OFF
PROP. WATER METERS (2)
REMOVE WATER METERS
16" PLUG (INLET)
ABANDON 136 LF OF 8" UTILITY PIPE (WATER LINE)
PROP. 16 LF OF 16" DI PC 250 SANITARY GRAVITY SEWER
REMOVE METER
ABANDON 135 LF OF 16" UTILITY PIPE (SEWER LINE)
PROP. 399 LF OF 16" DI PC 250 SANITARY GRAVITY SEWER
CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE
CLASS 'I' RIP RAP EST. 26 TONS 50 SY GEOTEXTILE
CLASS 'B' RIP RAP EST. 5 TONS 14 SY GEOTEXTILE

SEE SHEET 37 FOR -L- PROFILE
SEE SHEET 47 FOR -Y- PROFILE
SEE SHEET 54 FOR -Y1RPD- PROFILE

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.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License Number F-0991

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

NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRIAN M. BAILEY

10/17/2017

UTILITY CONSTRUCTION PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2007

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

ABANDON 260 LF OF 10" UTILITY PIPE (SEWER LINE)

PLUG MANHOLE

EXIST. UTILITY MANHOLE #1 STA. 10+00.00 S3-I STA. -YIRPB- 19+17.48 103.74 RT 30" PLUG OUTLET

CLASS 'B' RIP RAP EST. 8 TONS 21 SY GEOTEXTILE ON BANK ONLY

288 LF OF 60" ENCASEMENT PIPE STL. PIPE THICKNESS 0.500

PROP. 406 LF OF 30" DI PC 250 SANITARY GRAVITY SEWER

PROP. 6' DIA. UTILITY MANHOLE 7' OF UTILITY MANHOLE WALL #2 STA. 14+06.75 S3-I STA. -L- 49+75.74 126.45 RT

PROP. 74 LF OF 30" DI PC 250 SANITARY GRAVITY SEWER

CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE

CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE

CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE

CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE

-YIRPB- POT Sta. 10+00.00 =
-L- POT Sta. 57+18.95, 35.50' LT
Δ = 4° 07' 00"

-YIAPA- POT Sta. 10+00.00 =
-L- POT Sta. 57+62.32, 35.50' RT
Δ = 4° 07' 00"

G&I VICARE HARBOR LP
DB 5287 PG 2790
PG 459

NEW HANOVER COUNTY (PARKS & REC.)
DB 1655 PG 123
DB 1502 PG 298
MB 25 PG 98
MB 2 PG 241

NIXON ASSOCIATES, LLC.
DB 3174 PG 337
DB 4194 PG 582
MB 25 PG 98
MB 2 PG 241

CAROLINA POWER AND LIGHT CO
DB 1438 PG 500
DB 9705 PG 1442
DB 5352 PG 201
(MAP) DB 1438 PG 502

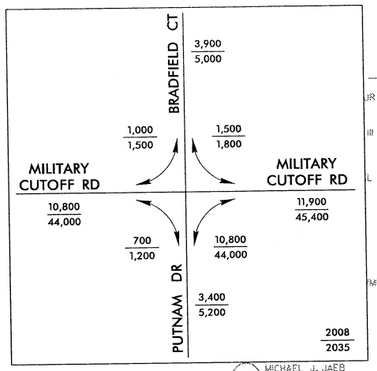
POWER SUBSTATION

MILITARY CUTOFF RD

CORRIDOR LIMIT LINE MB 2 PG 241

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 1240 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



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

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

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

UTILITY CONSTRUCTION PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2007

STA 96+00 (SHEET UC-9)

MATCHLINE -L- STA 83+00

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

PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-9

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

NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRYAN M. BADEY

10/17/2017

UTILITY CONSTRUCTION PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.

JDY B. DASKINS
5696 PG 1672
45 PG 206

ARY RADER
INDENRICH, WIDOW
5718 PG 978
45 PG 206

ABERLY D. MALDONADO
5811 PG 1422
46 PG 248

ROBERT STROUD JR
5207 PG 1831
46 PG 248

ILLY M. BANKS
5716 PG 38
46 PG 248

(78) EDWARD E BENTON, SR DB 4930 PG 2279 MB 45 PG 206

(79) MARY ELLEN DOSS DB 4895 PG 386 MB 45 PG 206 MB 44 PG 194

(80) DANA L BRITTLE DB 4768 PG 861 MB 46 PG 248

(81) JOYCE E KAYLOR DB 5490 PG 2146 MB 46 PG 248

(82) CHERIHUNT STAMM DB 5655 PG 1187 MB 45 PG 206

(83) NOAH S BOATRIGHT DB 5127 PG 1126 MB 47 PG 206 MB 44 PG 194

(84) KENNETH R CURLEY DB 4515 PG 745 MB 44 PG 194 MB 45 PG 206

(85) ROBERT HARRISON DB 5490 PG 2146 MB 46 PG 248

(86) WESLEY R SLAYTON DB 5181 PG 458 MB 46 PG 248

(87) THOMAS P MACNEISH DB 4395 PG 827 MB 44 PG 194 MB 45 PG 206

(88) FRANKLIN H PHILLIPS III DB 5379 PG 2473 MB 46 PG 248

(89) MATTHEW M HAYDEN DB 4701 PG 665 MB 46 PG 248

(90) AMERICAN RESIDENTIAL LEASING COMPANY, LLC DB 5786 PG 1180 MB 52 PG 323

(92) DANIEL W PATTERSON DB 4942 PG 1864 MB 46 PG 248

(93) JOSEPH M VADINO DB 4872 PG 698 MB 47 PG 380 MB 46 PG 248

(94) JEREMY AKIN DB 5444 PG 1484 MB 52 PG 323

(95) BONITA ROWLEY, WIDOW DB 5450 PG 1884 MB 52 PG 323

(96) DERRICK SAUL DB 5452 PG 1614 MB 52 PG 323

(97) CHARLES S LINDSEY DB 5468 PG 2497 MB 52 PG 323

(98) CARRIE L CHEATHAM DB 5472 PG 678 MB 52 PG 323

(99) AMERICAN RESIDENTIAL LEASING COMPANY, LLC DB 5751 PG 2050 MB 52 PG 323

(100) TIMOTHY L ALLENSWORTH DB 5478 PG 375 MB 52 PG 323

(101) SANTOS MURGUIA III DB 5888 PG 2965 MB 52 PG 323

(102) LESLIE HOWARD PARRIS DB 5762 PG 553 MB 52 PG 323

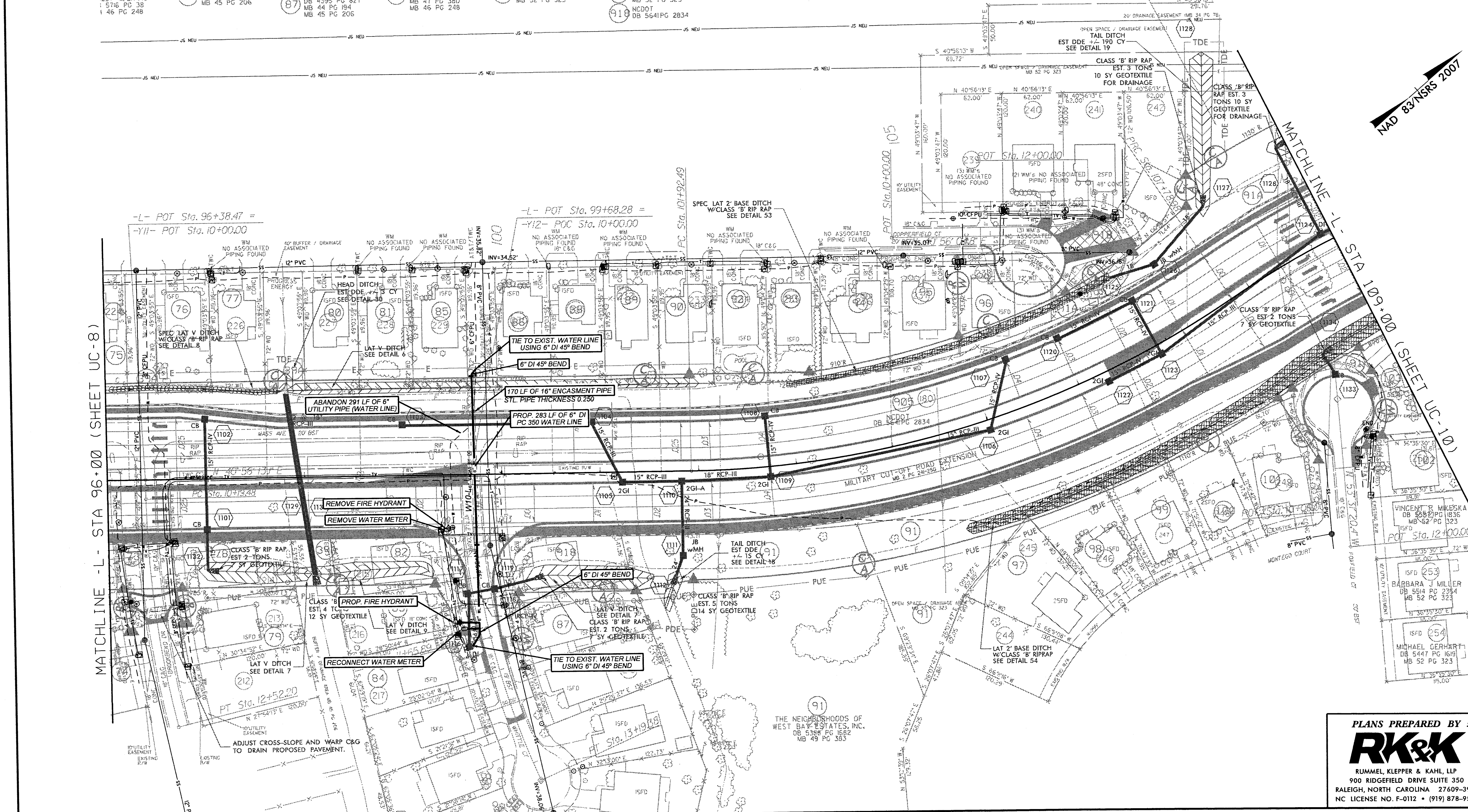
(103) CHRISTOPHER M SMITH DB 5485 PG 970 MB 52 PG 323

(91B) NCDOT DB 5641 PG 2834

(91A)

(91B)

(39A) SAVANA LAND COMPANY, LLC DB 4885 PG 1389 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 2990 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.	SHEET NO.
U-4751	UC-10

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

NAD 83/NSRS 2007

UTILITY CONSTRUCTION PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -L- STA 109+00 (SHEET UC-9)

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

TIE TO EXIST. WATER LINE USING 8" DI 45° BEND
8" DI 45° BEND
PROP. 117 LF OF 8" DI PC 350 WATER LINE
7 SY GEOTEXTILE
ABANDON 120 LF OF 8" UTILITY PIPE (WATER LINE)
8" DI 11.25° BEND
PROP. 16" GATE VALVE
TIE TO EXIST. 8" WATER LINE USING 8" TAPPING SLEEVE
TIE TO EXIST. WATER LINE USING 8" DI 45° BEND
8" DI 45° BEND
ABANDON 110 LF OF 8" UTILITY PIPE (WATER LINE)
PROP. 119 LF OF 8" DI PC 350 WATER LINE
8" DI 45° BEND
TIE TO EXIST. WATER LINE USING 8" DI 45° BEND
PROPOSED THE EXISTI +/- 7730 CY (BELOW EL 41.3).
ROCK FILL SEE DETAIL 28 EST 11000 TONS
EXIST OUTLET STRUCTURE NEEDS TO BE RELOCATED OUTSIDE OF THE R/W PRIOR TO CONSTRUCTION.
TIE TO EXIST. WATER LINE USING 16" DI 45° BEND
TIE TO EXIST. WATER LINE USING 12" DI 45° BEND
16" DI 45° BEND
16" DI 45° BEND
PROP. 166 LF OF 16" DI PC 250 WATER LINE
PROP. 140 LF OF 12" DI PC 350 WATER LINE
16" DI 45° BEND
TIE TO EXIST. WATER LINE USING 12" DI 45° BEND
12" DI 45° BEND (2)
ABANDON 107 LF OF12" UTILITY PIPE (WATER LINE)
ABANDON 126 LF OF 16" UTILITY PIPE (WATER LINE)
EXCAVATE TO NATURAL BED EST DDE 1,110 CY
9' BASE DITCH EST DDE= +/- 1200 CY SEE DETAIL 35
FLOODPLAIN BENCH SEE DETAIL 36
LAT 2' BASE DITCH SEE DETAIL 11
LAT 2' BASE DITCH W/CL 'I' RIP RAP SEE DETAIL 12
FLOODPLAIN BENCH SEE DETAIL 36
CLASS 'B' RIP RAP EST. 5 TONS 14 SY GEOTEXTILE
ROCK FILL SEE DETAIL 29 EST. 6200 TONS
CLASS 'B' RIP RAP EST 17 TONS 34 SY GEOTEXTILE
LAT 2' BASE DITCH SEE DETAIL 11
CLASS 'I' RIP RAP ON BANKS ONLY SEE DETAIL 40
LAT 2' BASE DITCH SEE DETAIL 54
CLASS 'I' RIP RAP EST. 25 TONS 48 SY GEOTEXTILE
BURY INLET & OUTLET 1.0'
BURY INLET & OUTLET 1.0'
DITCH BLOCK
MILITARY CUT-OFF ROAD EXTENSION
RWPD IRAW WATER - PEE DEE AQUIFER
SAVANA LAND COMPANY, LLC DB 5857 PG 0032 MB 59 PG 164-165
D.R. HORTON, INC. DB 5857 PG 0032 MB 59 PG 164-165
NEIGHBORHOODS OF WEST BAY ESTATES HOA DB 5825 PG 2855 MB 59 PG 164-165
TORCHWOOD DEVELOPMENT CO INC. DB 5271 PG 1894
CHRISTOPHER M. SMITH DB 5485 PG 0701 MB 52 PG 283
NCDOT DB 5641 PG 2834
WHITNEY PINES HOA DB 4415 PG 976 MB 46 PG 183
LAVARGA BROWN JR. DB 5792 PG 1664 MB 46 PG 183
LE H NGUYEN DB 5209 PG 269 MB 46 PG 183
AUSTIN TYLER MOZINGO DB 5368 PG 1403 MB 46 PG 183
COURTNEY PINES HOA DB 4089 PG 3128 MB 48 PG 180
MA CHEN DB 5363 PG 812 MB 48 PG 180
WOODHALL DRIVE
WALKING HORSE COURT
BRITTANY LAKES RD
MILITARY CUTOFF RD
LENDIRE RD
3,400 / 4,200
1,000 / 1,200
1,300 / 1,600
11,900 / 45,400
12,300 / 46,200
1,200 / 1,600
1,300 / 2,000
3,600 / 5,000
2008 / 2035

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

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

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

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

UTILITY CONSTRUCTION PLANS

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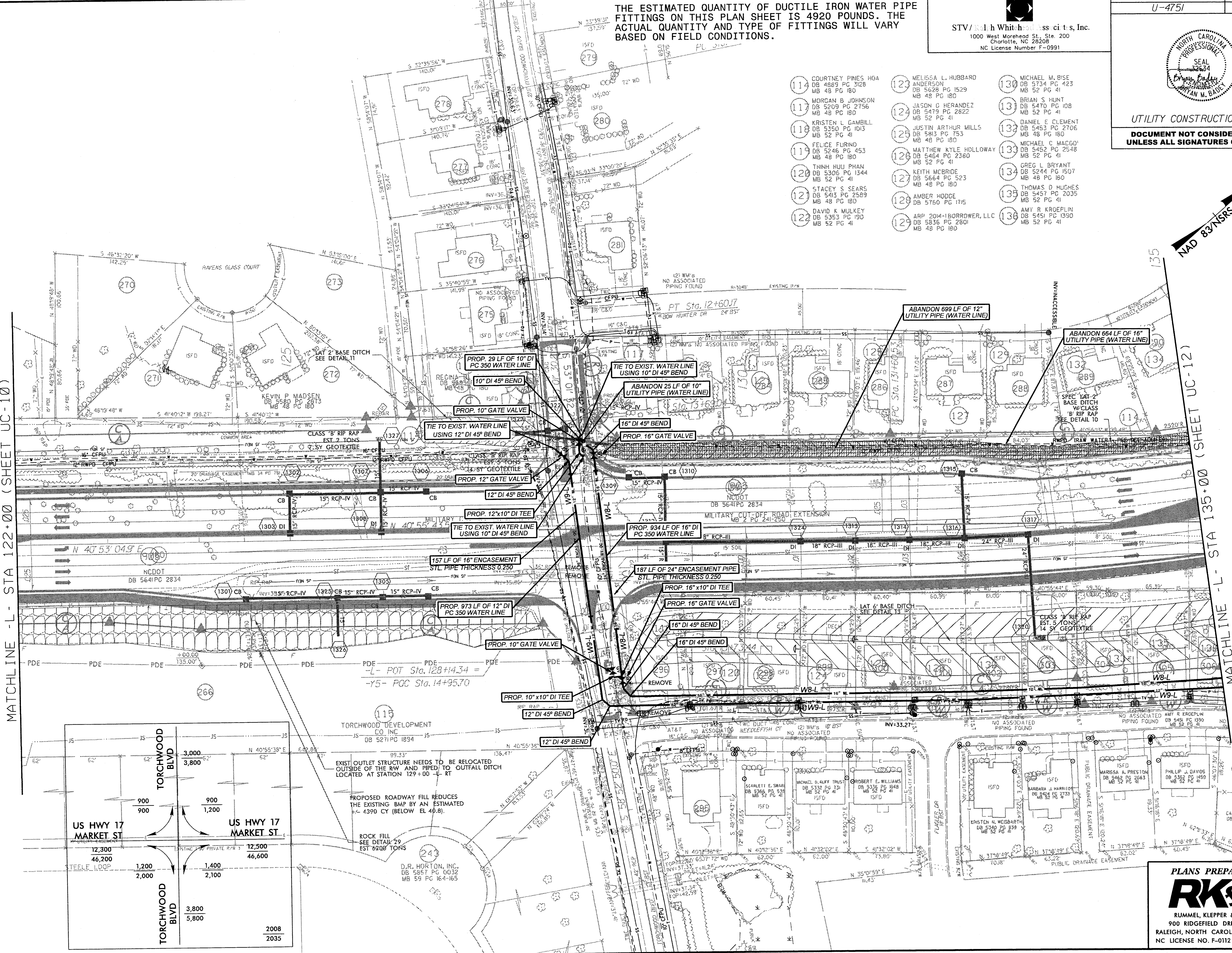
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 4920 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

114	COURTNEY PINES HOA DB 4889 PG 3128 MB 49 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 C. 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 2360 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. MACGO' 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. KROEFLIN DB 5451 PG 1390 MB 52 PG 41



NAD 83/NSRS 2007
MATCHLINE -L- STA 122+00 (SHEET UC-10)
MATCHLINE -L- STA 135+00 (SHEET UC-12)
ABANDON 699 LF OF 12" UTILITY PIPE (WATER LINE)
ABANDON 664 LF OF 16" UTILITY PIPE (WATER LINE)
PROP. 29 LF OF 10" DI PC 350 WATER LINE
10" DI 45º BEND
TIE TO EXIST. WATER LINE USING 10" DI 45º BEND
ABANDON 25 LF OF 10" UTILITY PIPE (WATER LINE)
PROP. 10" GATE VALVE
16" DI 45º BEND
TIE TO EXIST. WATER LINE USING 12" DI 45º BEND
PROP. 16" GATE VALVE
PROP. 12" GATE VALVE
12" DI 45º BEND
PROP. 12"x10" DI TEE
TIE TO EXIST. WATER LINE USING 10" DI 45º BEND
PROP. 934 LF OF 16" DI PC 350 WATER LINE
157 LF OF 16" ENCASEMENT STL PIPE THICKNESS 0.250
187 LF OF 24" ENCASEMENT PIPE STL PIPE THICKNESS 0.250
PROP. 16"x10" DI TEE
PROP. 16" GATE VALVE
PROP. 973 LF OF 12" DI PC 350 WATER LINE
16" DI 45º BEND
16" DI 45º BEND
PROP. 10" GATE VALVE
PROP. 10"x10" DI TEE
12" DI 45º BEND
12" DI 45º BEND
MILITARY CUT-OFF ROAD EXTENSION
NCDOT DB 5641 PG 2834
TORCHWOOD DEVELOPMENT CO INC DB 5271 PG 1894
D.R. HORTON, INC. DB 5857 PG 0032 MB 59 PG 164-165
KEVIN P. MADSEN DB 5580 PG 2613 MB 48 PG 180
RAVENS GLASS COURT
EXIST OUTLET STRUCTURE NEEDS TO BE RELOCATED OUTSIDE OF THE R/W 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
-L- POT Sta. 128+14.34 = -Y5- POC Sta. 14+95.70
PT Sta. 12+60.17
LAT 2' BASE DITCH SEE DETAIL 11
LAT 6' BASE DITCH SEE DETAIL 13
SPEC. LAT 2' BASE DITCH W/CLASS 'B' RIP RAP SEE DETAIL 10
CLASS 'B' RIP RAP EST. 5 TONS 14 SY GEOTEXTILE
W8-L
W9-L
TORCHWOOD BLVD
US HWY 17 MARKET ST
STEELE LOOP
3,000
3,800
900
900
900
1,200
12,300
46,200
12,500
46,600
1,200
2,000
1,400
2,100
3,800
5,800
2008
2035

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.

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

PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-12

NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRYAN M. BADEY

DocuSigned by: Bryan Badey

10/17/2017

UTILITY CONSTRUCTION PLANS

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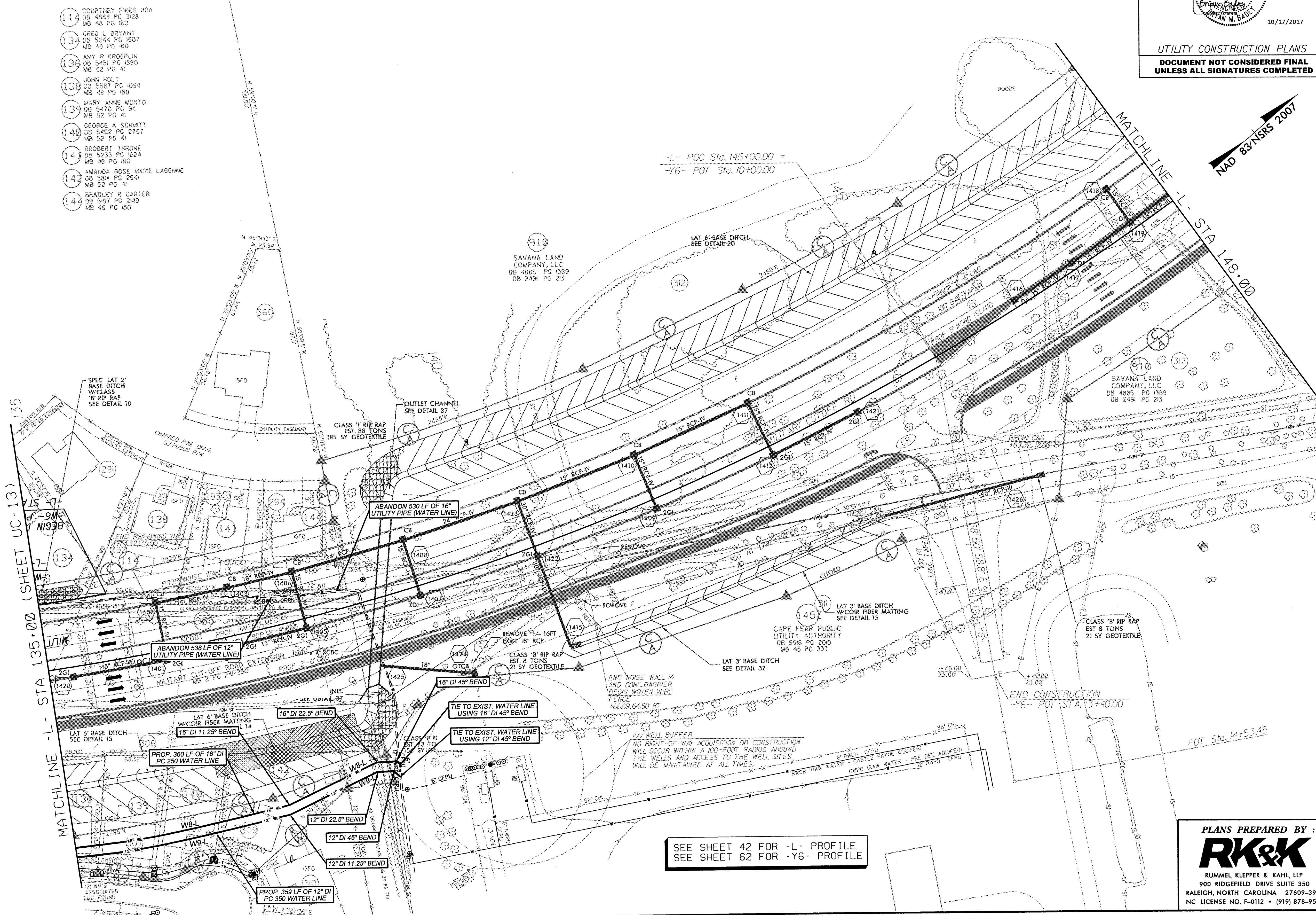

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 3645 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

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

PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-13

NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRIAN M. BADEY

10/17/2017

UTILITY CONSTRUCTION PLANS

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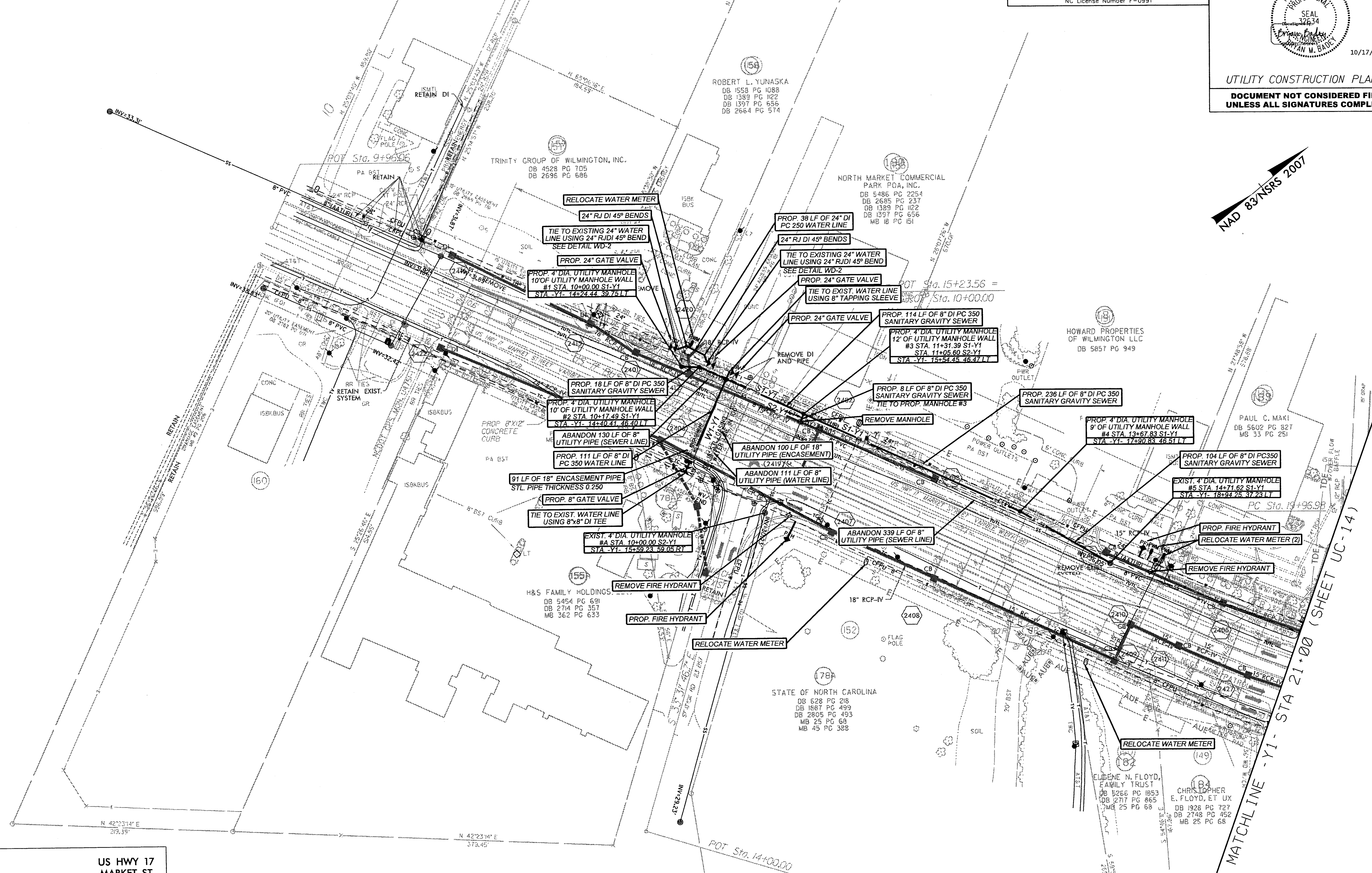

NAD 83/NSRS 2007
ROBERT L. YUNASKA
DB 1558 PG 1088
DB 1389 PG 1122
DB 1397 PG 656
DB 2664 PG 574
TRINITY GROUP OF WILMINGTON, INC.
DB 4528 PG 705
DB 2696 PG 686
NORTH MARKET COMMERCIAL PARK POA, INC.
DB 5486 PG 2254
DB 2685 PG 237
DB 1389 PG 1122
DB 1397 PG 656
MB 18 PG 151
HOWARD PROPERTIES OF WILMINGTON LLC
DB 5857 PG 949
PAUL C. MAKI
DB 5602 PG 827
MB 33 PG 251
H&S FAMILY HOLDINGS
DB 5454 PG 691
DB 2714 PG 357
MB 362 PG 633
STATE OF NORTH CAROLINA
DB 628 PG 218
DB 1687 PG 499
DB 2805 PG 493
MB 25 PG 68
MB 45 PG 388
EUGENE N. FLOYD, FAMILY TRUST
DB 5266 PG 1853
DB 2717 PG 865
MB 25 PG 68
CHRISTOPHER E. FLOYD, ET UX
DB 1928 PG 727
DB 2748 PG 452
MB 25 PG 68
POT Sta. 9+96.06
POT Sta. 15+23.56 = POT Sta. 10+00.00
POT Sta. 14+00.00
PC Sta. 19+96.98
MATCHLINE -Y1- STA 21+00 (SHEET UC-14)
RELOCATE WATER METER
24" RJ DI 45º BENDS
TIE TO EXISTING 24" WATER LINE USING 24" RJDI 45º BEND SEE DETAIL WD-2
PROP. 24" GATE VALVE
PROP. 4' DIA. UTILITY MANHOLE 10'OF UTILITY MANHOLE WALL #1 STA. 10+00.00 S1-Y1 STA -Y1- 14+24.44 39.75 LT
PROP. 38 LF OF 24" DI PC 250 WATER LINE
24" RJ DI 45º BENDS
TIE TO EXISTING 24" WATER LINE USING 24" RJDI 45º BEND SEE DETAIL WD-2
PROP. 24" GATE VALVE
TIE TO EXIST. WATER LINE USING 8" TAPPING SLEEVE
PROP. 24" GATE VALVE
PROP. 114 LF OF 8" DI PC 350 SANITARY GRAVITY SEWER
PROP. 4' DIA. UTILITY MANHOLE 12' OF UTILITY MANHOLE WALL #3 STA. 11+31.39 S1-Y1 STA. 11+05.60 S2-Y1 STA -Y1- 15+54.45 46.47 LT
REMOVE DI AND PIPE
PROP. 18 LF OF 8" DI PC 350 SANITARY GRAVITY SEWER
PROP. 4' DIA. UTILITY MANHOLE 10' OF UTILITY MANHOLE WALL #2 STA. 10+17.49 S1-Y1 STA -Y1- 14+40.41 46.40 LT
PROP. 8 LF OF 8" DI PC 350 SANITARY GRAVITY SEWER TIE TO PROP. MANHOLE #3
PROP. 236 LF OF 8" DI PC 350 SANITARY GRAVITY SEWER
REMOVE MANHOLE
ABANDON 130 LF OF 8" UTILITY PIPE (SEWER LINE)
ABANDON 100 LF OF 18" UTILITY PIPE (ENCASEMENT)
PROP. 111 LF OF 8" DI PC 350 WATER LINE
ABANDON 111 LF OF 8" UTILITY PIPE (WATER LINE)
91 LF OF 18" ENCASEMENT PIPE STL. PIPE THICKNESS 0.250
PROP. 8" GATE VALVE
TIE TO EXIST. WATER LINE USING 8"x8" DI TEE
EXIST. 4' DIA. UTILITY MANHOLE #A STA. 10+00.00 S2-Y1 STA -Y1- 15+59.23 59.05 RT
ABANDON 339 LF OF 8" UTILITY PIPE (SEWER LINE)
PROP. 4' DIA. UTILITY MANHOLE 9' OF UTILITY MANHOLE WALL #4 STA. 13+67.83 S1-Y1 STA -Y1- 17+90.83 46.51 LT
PROP. 104 LF OF 8" DI PC350 SANITARY GRAVITY SEWER
EXIST. 4' DIA. UTILITY MANHOLE #5 STA. 14+71.62 S1-Y1 STA -Y1- 18+94.25 37.23 LT
PROP. FIRE HYDRANT
RELOCATE WATER METER (2)
REMOVE FIRE HYDRANT
REMOVE FIRE HYDRANT
PROP. FIRE HYDRANT
RELOCATE WATER METER
RELOCATE WATER METER
RETAIN EXIST. SYSTEM
PROP. 8"X12" CONCRETE CURB
N 42°23'14" E 373.45'

US HWY 17 MARKET ST		US HWY 17 MARKET ST
40,000 / 56,000		40,000 / 57,000
2,000 / 3,500	STATION RD	2,000 / 4,500
	4,000 / 8,000	
		2008 / 2035

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

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

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

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

UTILITY CONSTRUCTION PLANS

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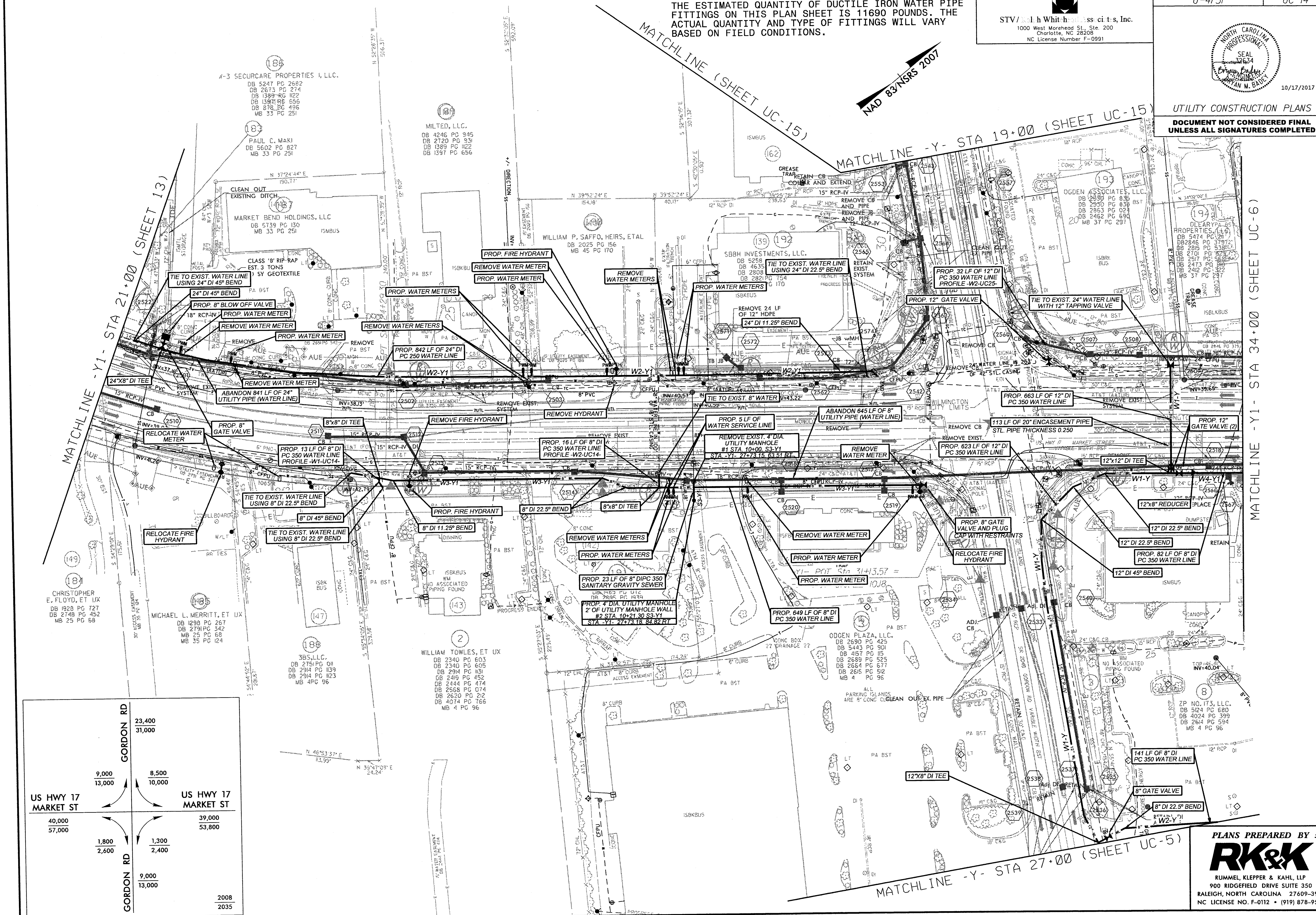
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 11690 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



MATCHLINE (SHEET UC-15)
NAD 83/NSRS 2007
MATCHLINE -Y- STA 19+00 (SHEET UC-15)
MATCHLINE -Y1- STA 21+00 (SHEET 13)
MATCHLINE -Y1- STA 34+00 (SHEET UC-6)
MATCHLINE -Y- STA 27+00 (SHEET UC-5)
TIE TO EXIST. WATER LINE USING 24" DI 45º BEND
24" DI 45º BEND
PROP. 8" BLOW OFF VALVE
PROP. WATER METER
REMOVE WATER METER
REMOVE WATER METERS
PROP. WATER METERS
PROP. FIRE HYDRANT
PROP. 842 LF OF 24" DI PC 250 WATER LINE
24"X8" DI TEE
ABANDON 841 LF OF 24" UTILITY PIPE (WATER LINE)
REMOVE FIRE HYDRANT
REMOVE HYDRANT
8"x8" DI TEE
PROP. 8" GATE VALVE
RELOCATE WATER METER
PROP. 13 LF OF 8" DI PC 350 WATER LINE PROFILE -W1-UC14-
TIE TO EXIST. WATER LINE USING 8" DI 22.5º BEND
8" DI 45º BEND
RELOCATE FIRE HYDRANT
8" DI 11.25º BEND
8" DI 22.5º BEND
PROP. 16 LF OF 8" DI PC 350 WATER LINE PROFILE -W2-UC14-
TIE TO EXIST. 8" WATER
PROP. 5 LF OF WATER SERVICE LINE
REMOVE EXIST. 4' DIA. UTILITY MANHOLE #1 STA. 10+00 S3-Y1 STA -Y1- 27+73.15 63.51 RT
PROP. 23 LF OF 8" DIPC 350 SANITARY GRAVITY SEWER
PROP. 4' DIA. UTILITY MANHOLE 2' OF UTILITY MANHOLE WALL #2 STA. 10+21.30 S3-Y1 STA -Y1- 27+73.18 84.82 RT
ABANDON 645 LF OF 8" UTILITY PIPE (WATER LINE)
PROP. 649 LF OF 8" DI PC 350 WATER LINE
TIE TO EXIST. WATER LINE USING 24" DI 22.5º BEND
REMOVE 24 LF OF 12" HDPE
24" DI 11.25º BEND
PROP. 32 LF OF 12" DI PC 350 WATER LINE PROFILE -W2-UC25-
PROP. 12" GATE VALVE
TIE TO EXIST. 24" WATER LINE WITH 12" TAPPING VALVE
PROP. 663 LF OF 12" DI PC 350 WATER LINE
113 LF OF 20" ENCASEMENT PIPE STL. PIPE THICKNESS 0.250
PROP. 623 LF OF 12" DI PC 350 WATER LINE
PROP. 12" GATE VALVE (2)
12"x12" DI TEE
12"x8" REDUCER
12" DI 22.5º BEND
PROP. 82 LF OF 8" DI PC 350 WATER LINE
12" DI 45º BEND
PROP. 8" GATE VALVE AND PLUG CAP WITH RESTRAINTS
141 LF OF 8" DI PC 350 WATER LINE
12"X8" DI TEE
8" GATE VALVE
8" DI 22.5º BEND
W2-Y1
W3-Y1
W1-Y
W4-Y1
W2-Y
M-3 SECURCARE PROPERTIES I, LLC
MILTED, LLC
PAUL C. MAKI
MARKET BEND HOLDINGS, LLC
WILLIAM P. SAFFO, HEIRS, ETAL
SBBH INVESTMENTS, LLC.
OGDEN ASSOCIATES, LLC.
OLEARY PROPERTIES, LLC
CHRISTOPHER E. FLOYD, ET UX
MICHAEL L. MERRITT, ET UX
3BS, LLC.
WILLIAM TOWLES, ET UX
OGDEN PLAZA, LLC.
ZP NO. 173, LLC.
GORDON RD
US HWY 17 MARKET ST
23,400 / 31,000
9,000 / 13,000
8,500 / 10,000
40,000 / 57,000
39,000 / 53,800
1,800 / 2,600
1,300 / 2,400
9,000 / 13,000
2008 / 2035

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 0 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

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

PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-15

NORTH CAROLINA PROFESSIONAL SEAL 32634 BRYAN M. BADEY
DocuSigned by:
10/17/2017

UTILITY CONSTRUCTION PLANS

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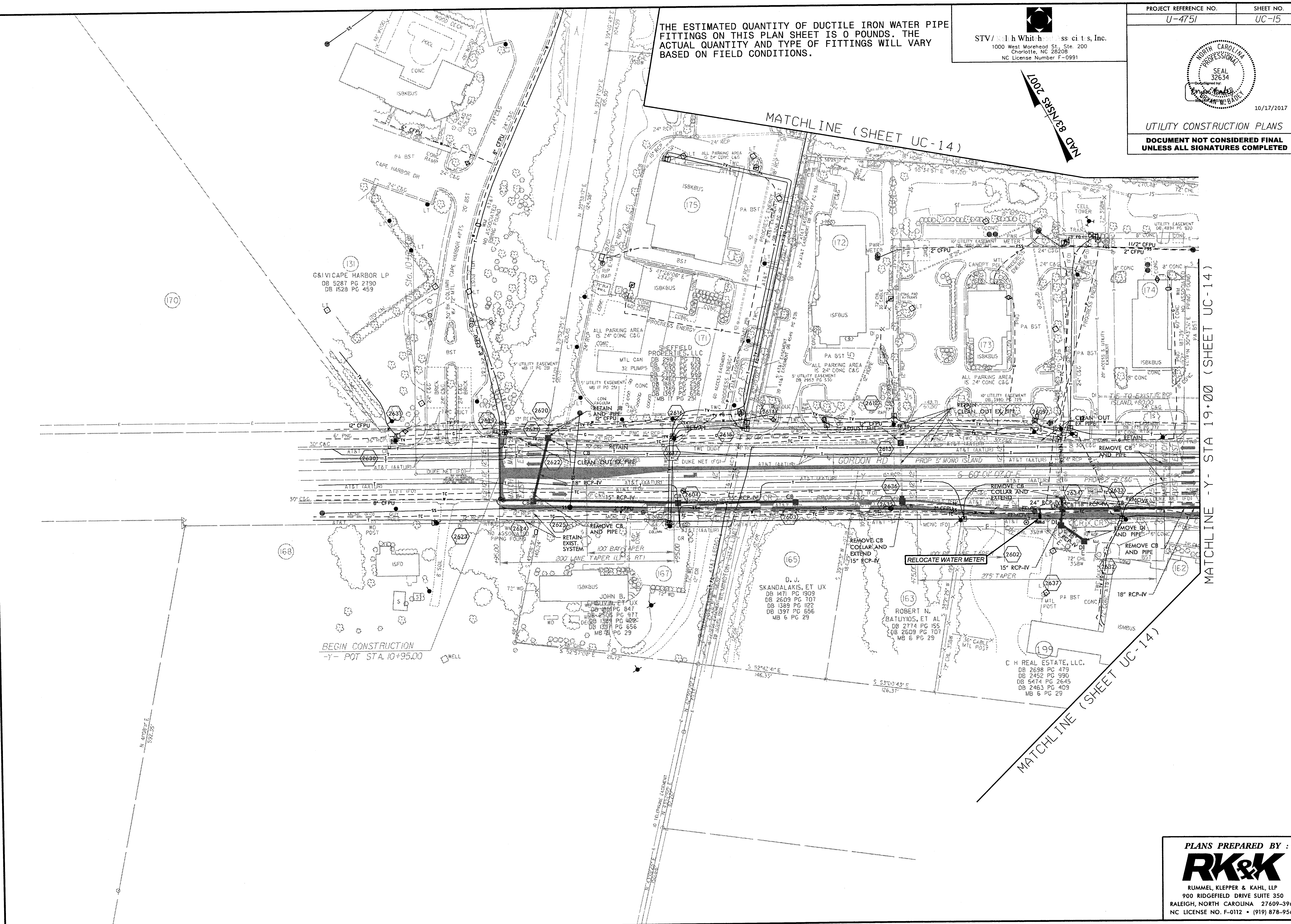

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900 RIDGEFIELD DRIVE SUITE 350
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 220 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

NAD 83/NSRS 2007

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

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

NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRYAN M. BADRY

10/17/2017

UTILITY CONSTRUCTION PLANS

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MATCHLINE (SHEET UC-6)

MATCHLINE -Y1RPD- STA 30+00 (SHEET UC-6)

MATCHLINE (SHEET UC-5)

MATCHLINE -Y1RPD- STA 16+00 (SHEET UC-5)

PROSPECT CEMETERY

EMMA Y. BARRY ET AL (TRUSTEES OF PROSPECT CEMETERY ASSOCIATION) DB 457 PG 118 DB 389 PG 687 DB 133 PG 1269 MB 4 PG 96

SR 1408 PROSPECT CEMETERY ROAD

SPEC CUT DITCH SEE DETAIL 5

NCDOT DB 5598 PG 757

PROP. 8" GATE VALVE

8" DI 22.5° BEND

CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE

BEGIN TAIL DITCH 1 EST DDE +/- 2000 CY SEE DETAIL 3 (EMERGENCY SPILLWAY) (REFER SHEET 6)

PROP. 1349 LF OF 8" DI PC 350 WATER LINE

PROP. 8" GATE VALVE

JB w/MH

B. P. A. DB 457 PG 148 DB 4024 PG 378 DB 1616 PG 85 DB 1426 PG 1089

CLASS 'B' RIP RAP EST. 9 TONS 21 SY GEOTEXTILE

48" RCP-IV

15" RCP-IV

SPEC CUT DITCH SEE DETAIL 45

CLASS 'I' RIP RAP EST. 26 TONS 50 SY GEOTEXTILE

PROP 5' MONO ISLAND

PROP 10' MUP

PROP 3' MONO ISLAND

MAP OVERLAP DB 444 PG 503 MAP 40 PG 51

CORNELIUS NIXON, TRUSTEE DB 1797 PG 374

ANN MARIE ZALEWSKI DB 5594 PG 505 MB 51 PG 148

THAIT, LLC DB 5496 PG 2447 MB 51 PG 148

PREMIER HOMES OF NORTH CAROLINA, LLC DB 5600 PG 585 MB 51 PG 148

PREMIER HOMES OF NORTH CAROLINA, LLC DB 5583 PG 1897 MB 51PG 148

JAMES D. YARBROUGH ET UX DB 5570 PG 211 MB 51 PG 148

MARY LOU KOWAL, TRUSTEE DB 5564 PG 283 MB 51 PG 148

SARAH E. MARTINETTE DB 5464 PG 76 DB 4436 PG 541 MB 41 PG 133

BENJAMIN KIRK HARRIS DB 4436 PG 541 DB 4321 PG 750 MB 41 PG 133

JEREMY S. BISHOP, ET AL DB 5263 PG 1795 DB 4436 PG 541 MB 41 PG 133

BENJAMIN KIRK HARRIS

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

PROJECT REFERENCE NO.	SHEET NO.
U4751	UC-17

NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRYAN M. BADEY

10/17/2017

UTILITY CONSTRUCTION PLANS

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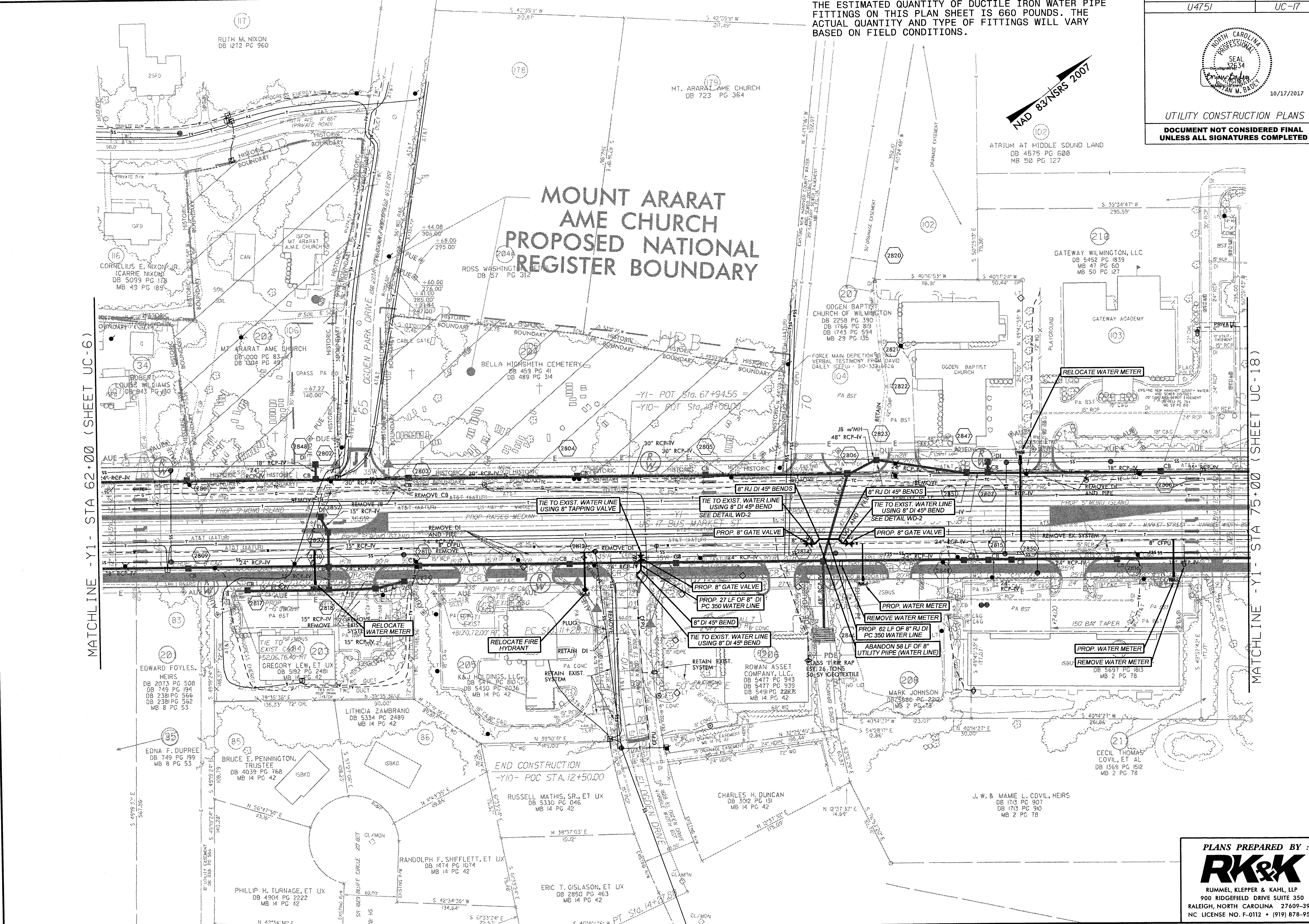
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 660 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.


NAD 83/NSRS 2007
MOUNT ARARAT AME CHURCH PROPOSED NATIONAL REGISTER BOUNDARY
MATCHLINE -Y1- STA 62+00 (SHEET UC-6)
MATCHLINE -Y1- STA 75+00 (SHEET UC-18)
RUTH M. NIXON DB 1272 PG 960
MT. ARARAT AME CHURCH DB 723 PG 364
ATRIUM AT MIDDLE SOUND LAND DB 4575 PG 600 MB 50 PG 127
GATEWAY WILMINGTON, LLC DB 5452 PG 1839 MB 47 PG 60 MB 50 PG 127
GATEWAY ACADEMY
CORNELIUS E. NIXON, JR. (CARRIE NIXON) DB 5099 PG 178 MB 49 PG 189
ROSS WASHINGTON DB 57 PG 312
MT. ARARAT AME CHURCH
BELLA HIGHSMITH CEMETERY DB 459 PG 41 DB 489 PG 314
OGDEN BAPTIST CHURCH OF WILMINGTON DB 2258 PG 390 DB 1766 PG 819 DB 1743 PG 594 MB 29 PG 135
OGDEN BAPTIST CHURCH
OGDEN PARK DRIVE
US 17 BUS MARKET ST
-Y1- POT Sta. 67+94.56 = -Y10- POT Sta. 10+00.00
FORCE MAIN DEPICTION BASED ON VERBAL TESTIMONY FROM DAVID DAILEY (CFPUA) 910-332-6626
RELOCATE WATER METER
TIE TO EXIST. WATER LINE USING 8" TAPPING VALVE
TIE TO EXIST. WATER LINE USING 8" DI 45º BEND
SEE DETAIL WD-2
8" RJ DI 45º BENDS
PROP. 8" GATE VALVE
REMOVE DI AND FIRE
REMOVE EX. SYSTEM
PROP. 27 LF OF 8" DI PC 350 WATER LINE
8" DI 45º BEND
PROP. WATER METER
REMOVE WATER METER
PROP. 62 LF OF 8" RJ DI PC 350 WATER LINE
ABANDON 58 LF OF 8" UTILITY PIPE (WATER LINE)
RELOCATE FIRE HYDRANT
PLUG
RETAIN DI
RETAIN EXIST. SYSTEM
CLASS 'I' RIP RAP EST. 26 TONS 50 SY GEOTEXTILE
150' BAY TAPER
EDWARD FOYLES, HEIRS DB 2073 PG 508 DB 749 PG 194 DB 2381 PG 566 DB 2381 PG 562 MB 8 PG 53
GREGORY LEW, ET UX DB 5192 PG 2481 MB 14 PG 42
K&J HOLDINGS, LLC
ROWAN ASSET COMPANY, LLC. DB 5477 PG 943 DB 5477 PG 939 DB 5491 PG 2285 MB 14 PG 42
MARK JOHNSON
LITHICIA ZAMBRANO DB 5334 PG 2489 MB 14 PG 42
EDNA F. DUPREE DB 749 PG 199 MB 8 PG 53
BRUCE E. PENNINGTON, TRUSTEE DB 4039 PG 760 MB 14 PG 42
END CONSTRUCTION -Y10- POC STA. 12+50.00
RUSSELL MATHIS, SR., ET UX DB 5330 PG 046 MB 14 PG 42
CHARLES H. DUNCAN DB 3012 PG 131 MB 14 PG 42
J. W. & MAMIE L. COVIL, HEIRS DB 1713 PG 907 DB 1713 PG 910 MB 2 PG 78
CECIL THOMAS COVIL, ET AL DB 1369 PG 1512 MB 2 PG 78
RANDOLPH F. SHIFFLETT, ET UX DB 1474 PG 1074 MB 14 PG 42
PHILLIP H. TURNAGE, ET UX DB 4904 PG 2222 MB 14 PG 42
ERIC T. GISLASON, ET UX DB 2850 PG 463 MB 14 PG 42
OGDEN DRIVE

REVISIONS

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 1110 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

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

PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-18

NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER (Signed by) BRADLEY W. BAILEY

10/17/2017

UTILITY CONSTRUCTION PLANS

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MATCHLINE -Y13- STA 17+50

MATCHLINE

MATCHLINE -Y1- STA 75+00 (SHEET UC-17)

NAD 83/NSRS 2007

ABANDONED ACCORDING TO UTILITY RECORDS

TIE TO EXIST. WATER LINE USING 8" DI 45° BEND

TIE TO EXIST. WATER LINE USING 8" TAPPING VALVE

PROP. 29 LF OF 8" DI PC 350 WATER LINE

8" DI 45° BEND

RELOCATE WATER METER

TIE TO EXIST. WATER LINE USING 45° DI BEND SEE DETAIL WD-2

ABANDON 35 LF OF 8" UTILITY PIPE (WATER LINE)

TIE TO EXIST. WATER LINE USING 45° DI BEND SEE DETAIL WD-2

PROP. 41 LF OF 8" DI PC 350 WATER LINE

8" DI 45° BEND

PROP. 116 LF OF 8" DI PC 350 WATER LINE

ABANDON 105 LF OF 8" UTILITY PIPE (WATER LINE)

REMOVE WATER METER

ABANDON 27 LF OF 8" UTILITY PIPE (WATER LINE)

TIE TO EXIST. WATER LINE USING 45° DI BEND

8" DI 45° BEND

WATER METER

PROP. 8" GATE VALVE

TIE TO EXIST. WATER LINE USING 8" DI 45° BEND

8" DI 45° BEND

REMOVE WATER METERS

PROP. WATER METER (2)

RETAIN EXIST. SYSTEM

SPEC. CUT DITCH SEE DETAIL 4

END CONSTRUCTION -Y1- POT STA 22+38.20

END CONSTRUCTION -Y1- POT STA 84+97.63

US HWY 17 MARKET ST			US HWY 17 MARKET ST	
45,400			41,400	
50,000			45,400	
	7,000	3,000		
	7,800	3,200		
MIDDLE SOUND LOOP RD				
	10,000			
	11,000			
				2008
				2035

PLANS PREPARED BY :

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900 RIDGEFIELD DRIVE SUITE 350
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PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-19

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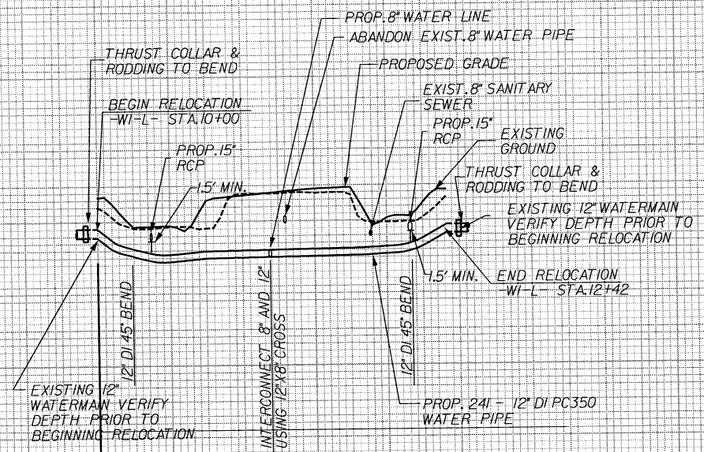
NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRYAN M. BADET

10/17/2017

UTILITY CONSTRUCTION PLANS

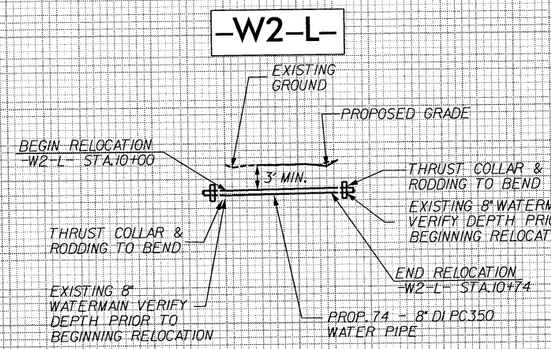
5/28/99

-W1-L-



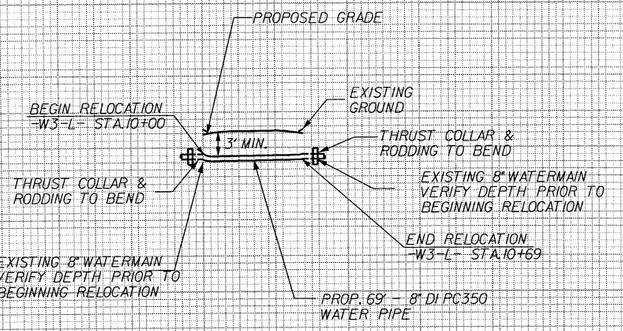
SEE SHEET UC-4 FOR PLAN

-W2-L-



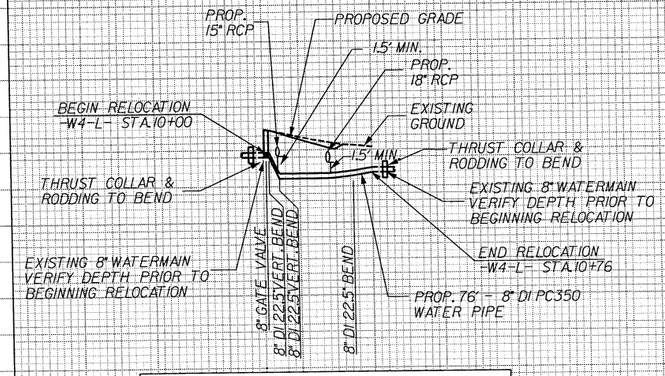
SEE SHEET UC-4 FOR PLAN

-W3-L-



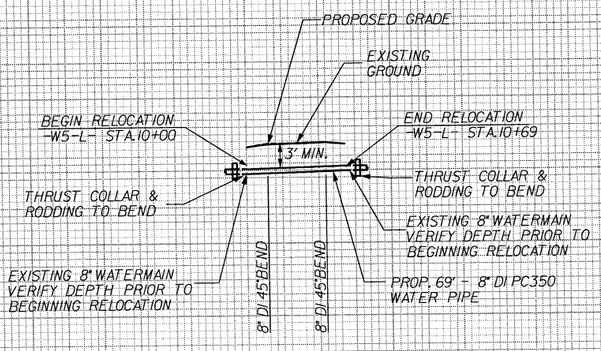
SEE SHEET UC-4 FOR PLAN

-W4-L-



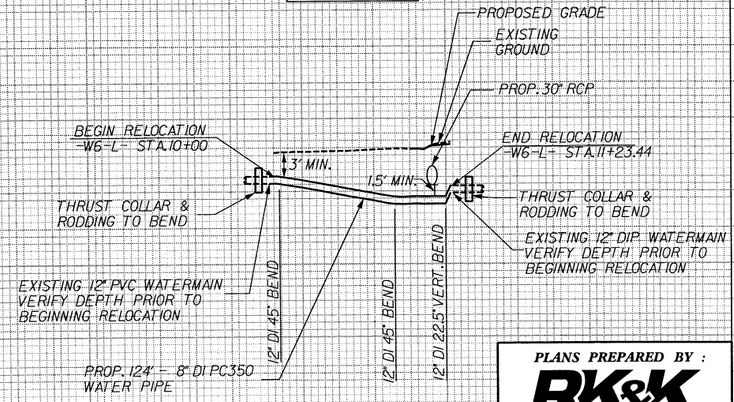
SEE SHEET UC-4 FOR PLAN

-W5-L-



SEE SHEET UC-4 FOR PLAN

-W6-L-



SEE SHEET UC-4 FOR PLAN

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
R:\Utilities\Rdy_Ut\Proj\Utility Construction\U4751_Ut_UC_PFL_19.dgn
mmurray

PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-20

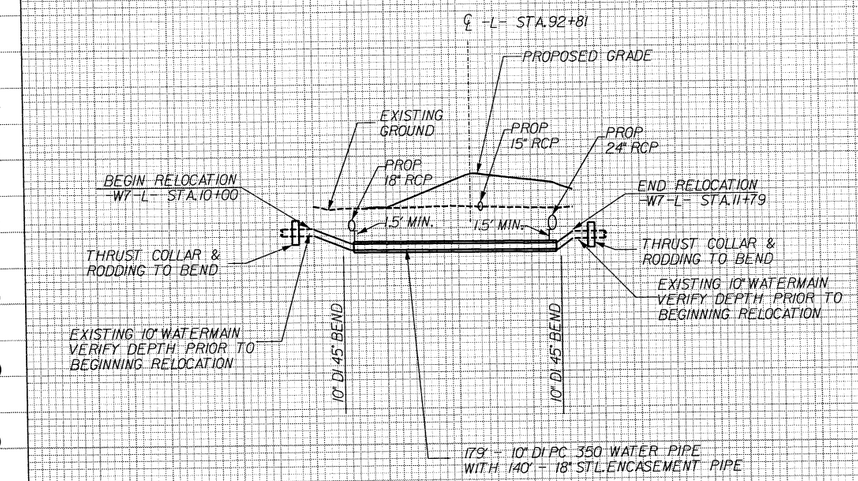
NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRIAN M. BADER
10/17/2017

UTILITY CONSTRUCTION PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

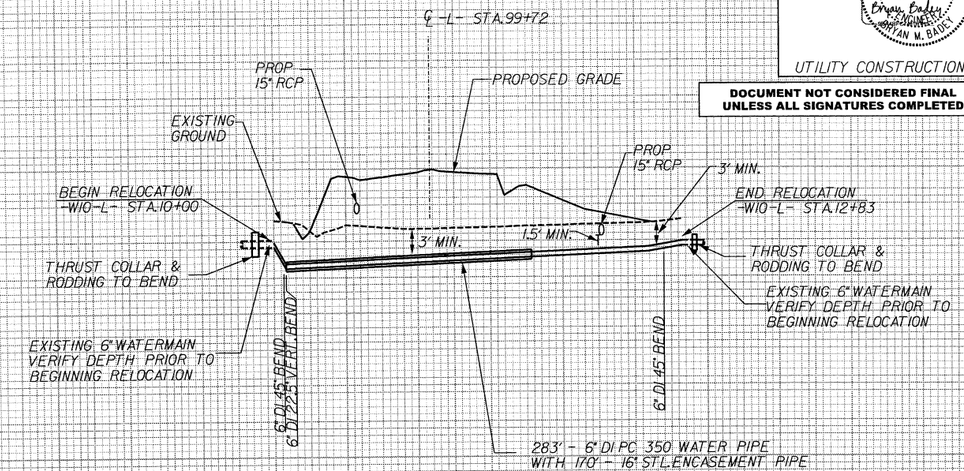
5/28/99

-W7-L-



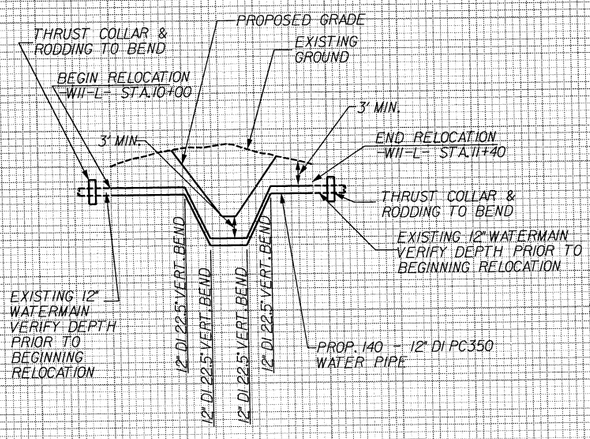
SEE SHEET UC-8 FOR PLAN

-W10-L-



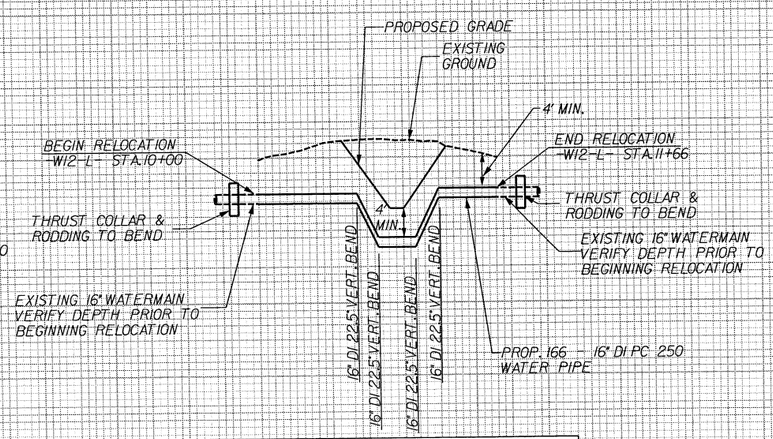
SEE SHEET UC-9 FOR PLAN

-W11-L-



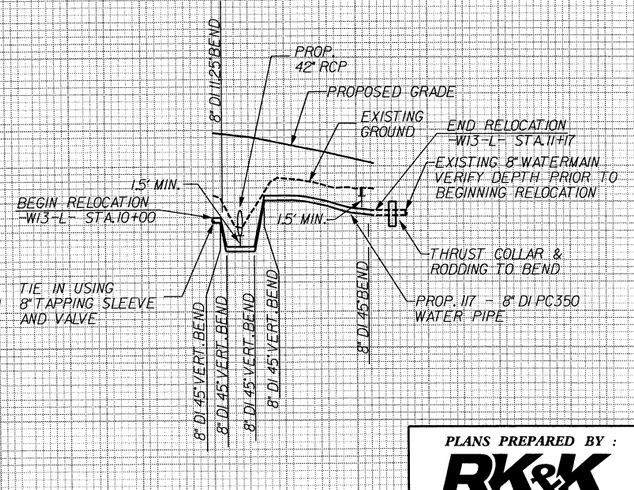
SEE SHEET UC-10 FOR PLAN

-W12-L-



SEE SHEET UC-10 FOR PLAN

-W13-L-



SEE SHEET UC-10 FOR PLAN

PLANS PREPARED BY :
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mbader

PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-21

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NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRYAN M. BAILEY
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UTILITY CONSTRUCTION PLANS

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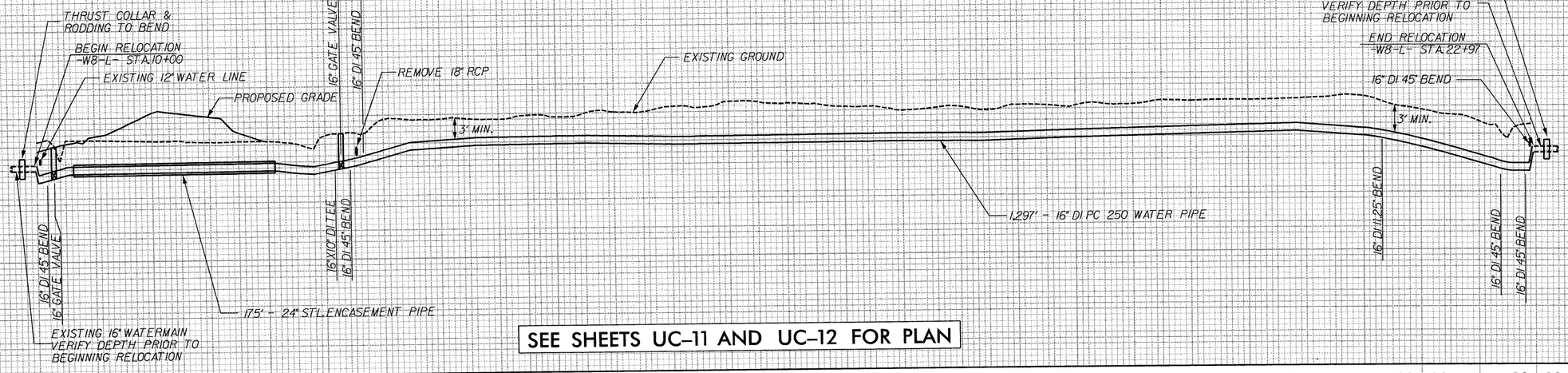
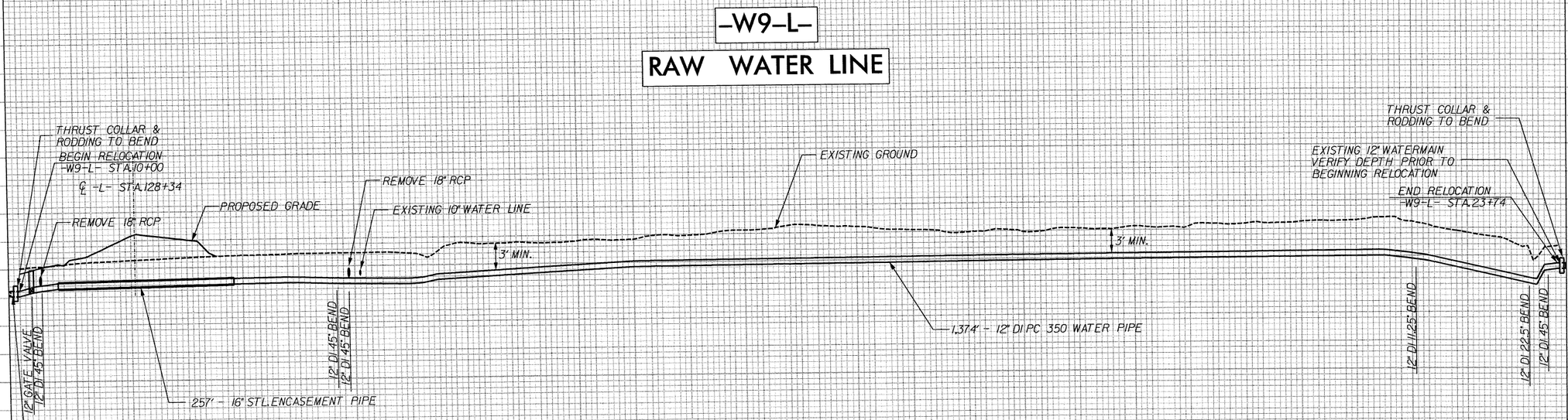
–W8–L–



SEE SHEETS UC–11 AND UC–12 FOR PLAN

–W9–L–

RAW WATER LINE



SEE SHEETS UC–11 AND UC–12 FOR PLAN

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PROJECT REFERENCE NO.	SHEET NO.
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UTILITY CONSTRUCTION PLANS

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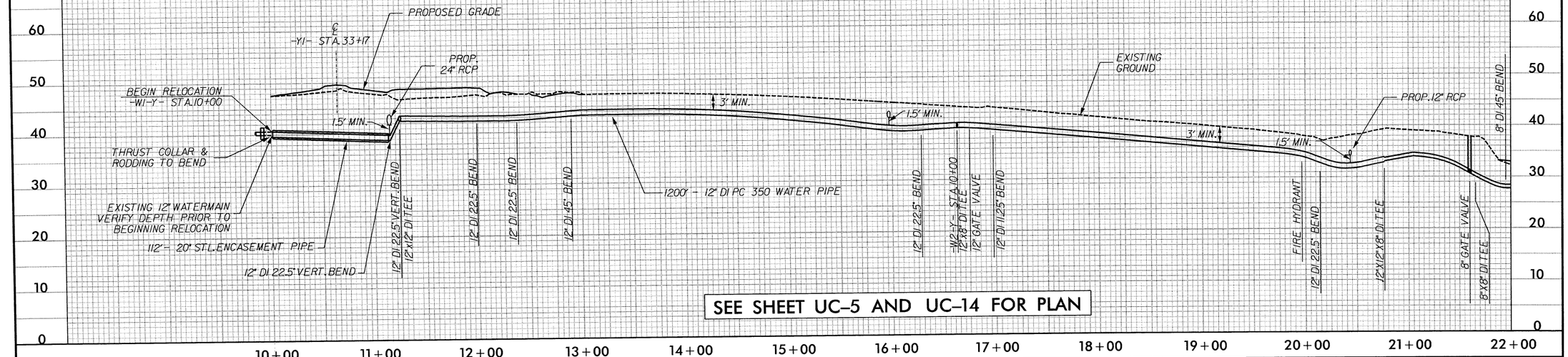
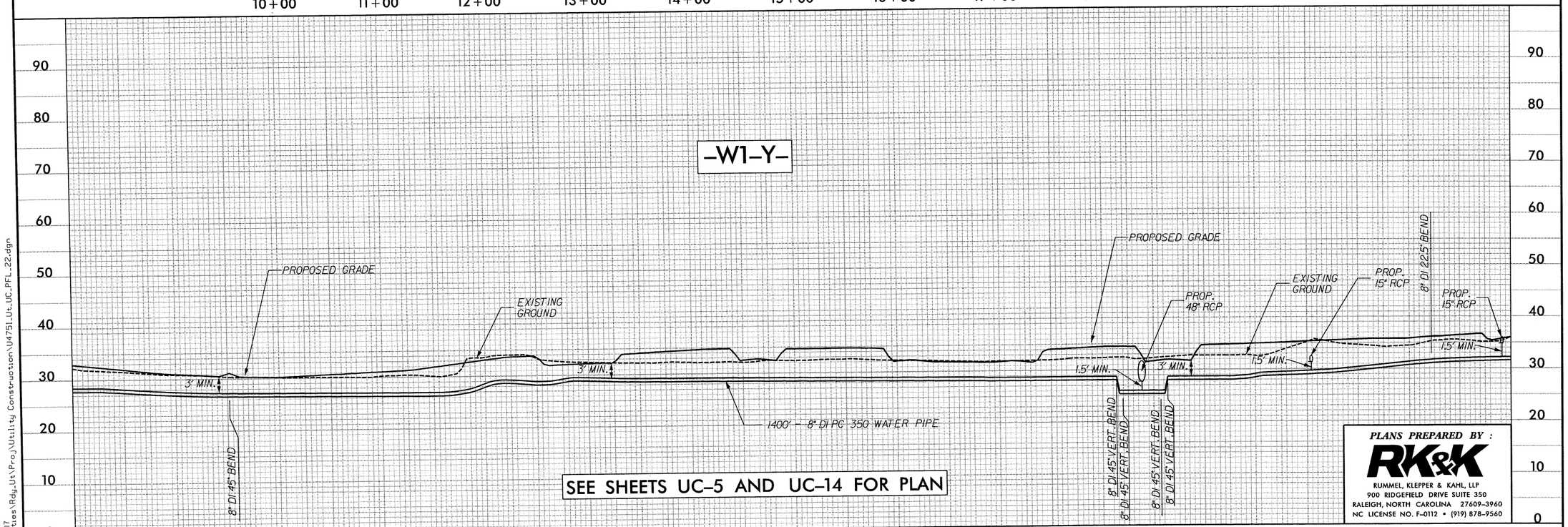
-W1-Y-



SEE SHEET UC-5 AND UC-14 FOR PLAN

-W1-Y-



SEE SHEETS UC-5 AND UC-14 FOR PLAN

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PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-23

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UTILITY CONSTRUCTION PLANS

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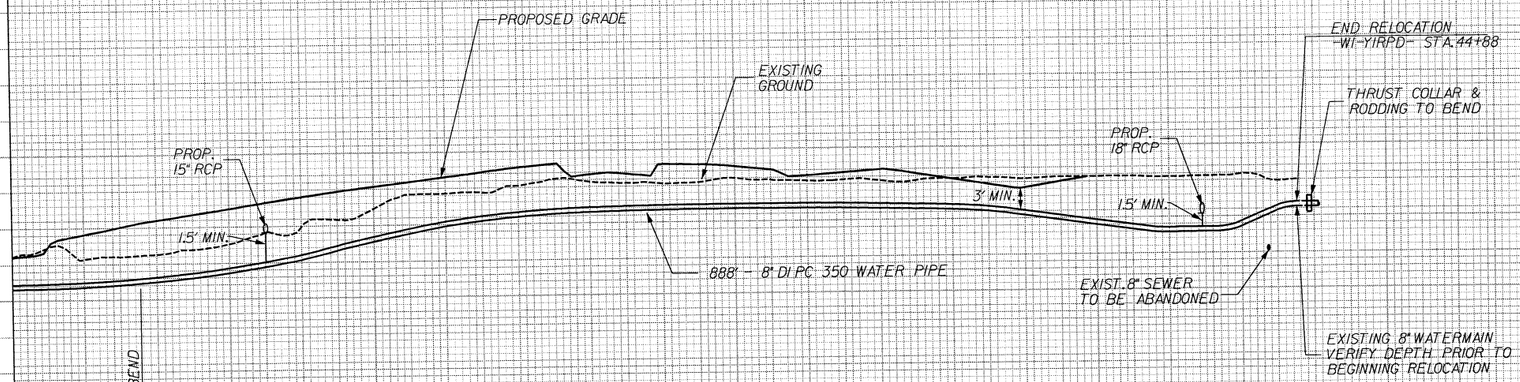
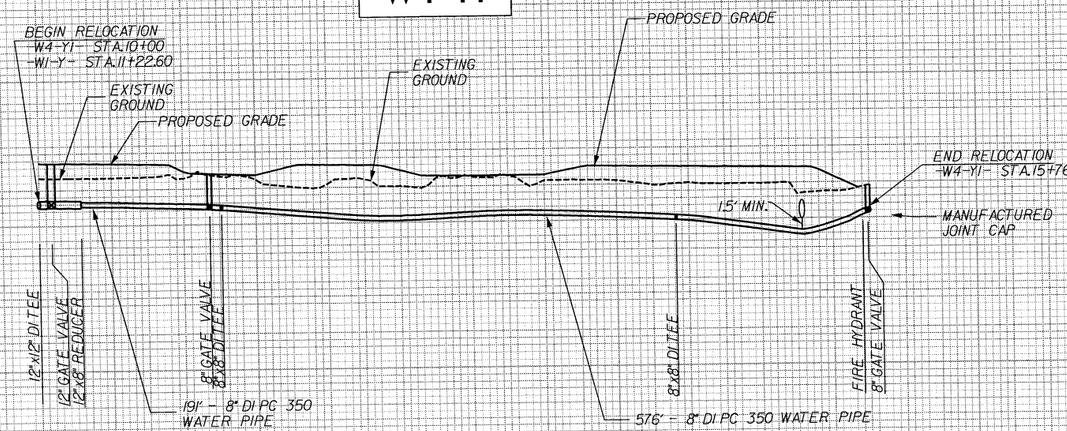
-W1-Y-



SEE SHEETS UC-5 AND UC-14 FOR PLAN

36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00 49+00 50+00

-W4-Y1-

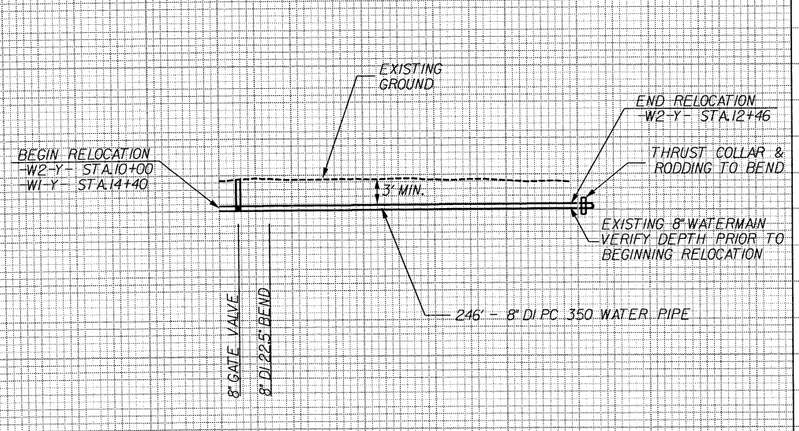


SEE SHEETS UC-6 AND UC-14 FOR PLAN

10+00 11+00 12+00 13+00 14+00 15+00 16+00

-W2-Y-

SEE SHEETS UC-5 AND UC-14 FOR PLAN



10+00 11+00 12+00 13+00 14+00

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PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-24

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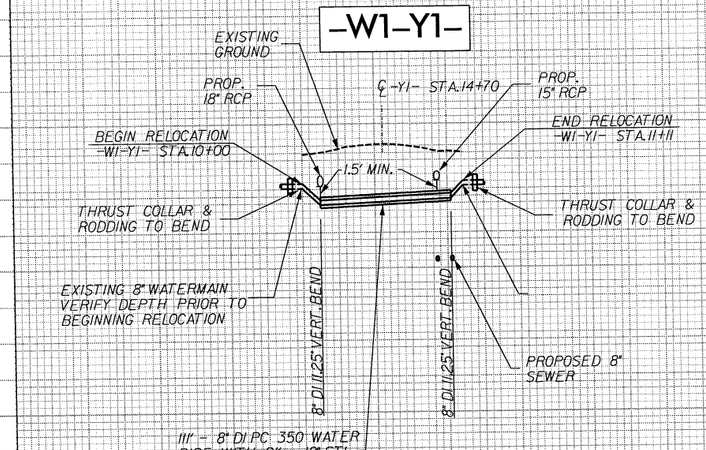
NORTH CAROLINA PROFESSIONAL SEAL 23634 ENGINEER BRYAN W. BADEY — 10/17/2017

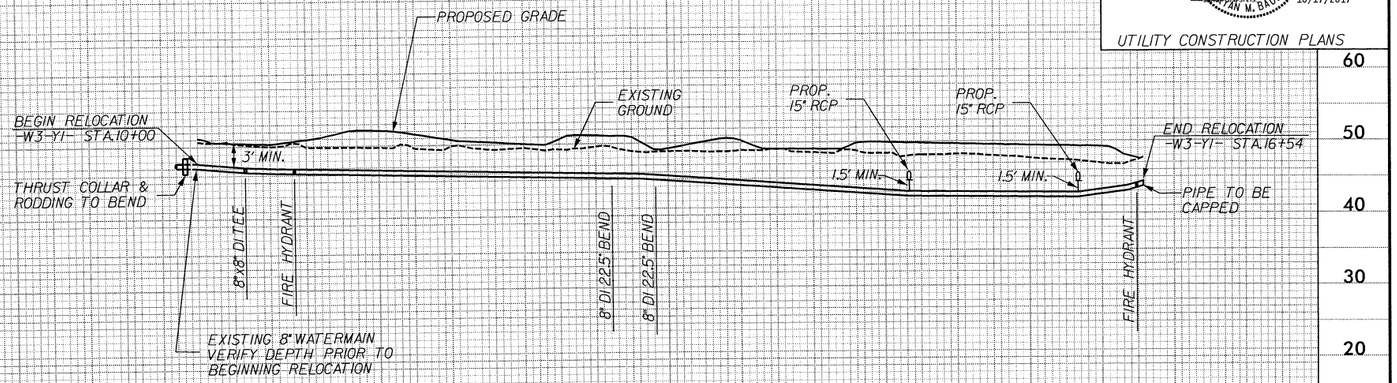
UTILITY CONSTRUCTION PLANS

-W1-Y1-



SEE SHEET UC-13 FOR PLAN

-W3-Y1-



SEE SHEET UC-14 FOR PLAN

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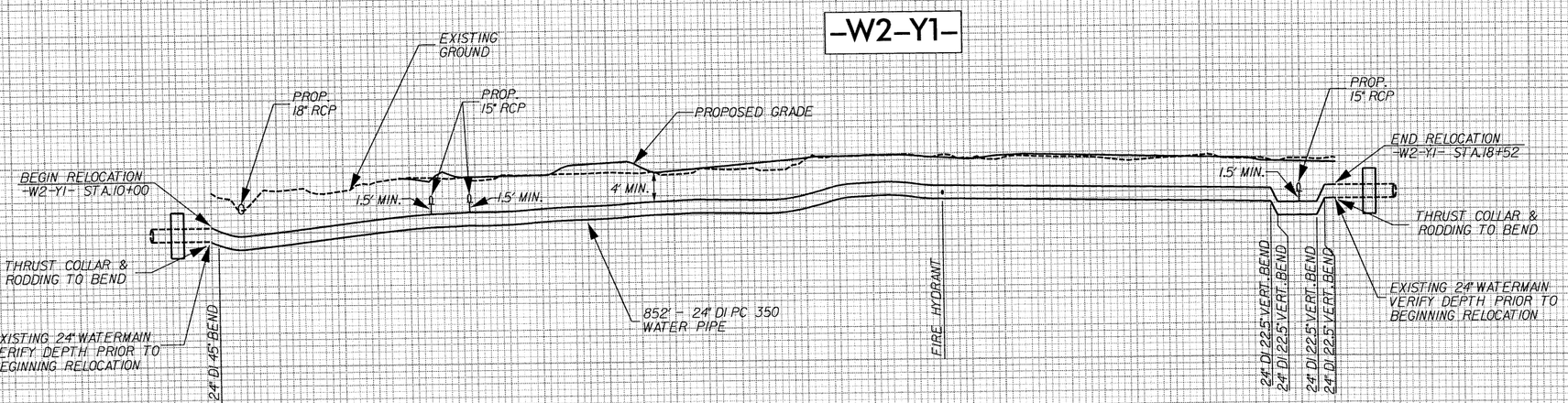
-W2-Y1-



SEE SHEET UC-14 FOR PLAN

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00

80 70 60 50 40 30 20 10 0 -10

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PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-25

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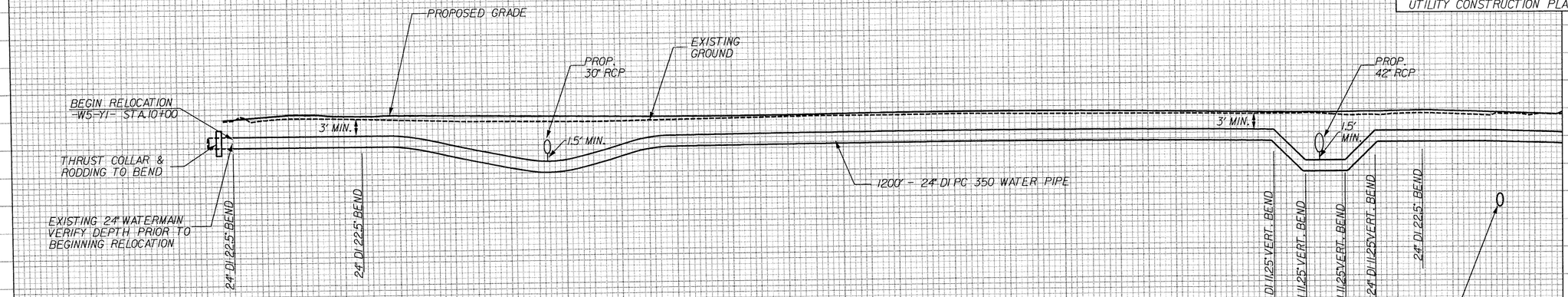
UTILITY CONSTRUCTION PLANS

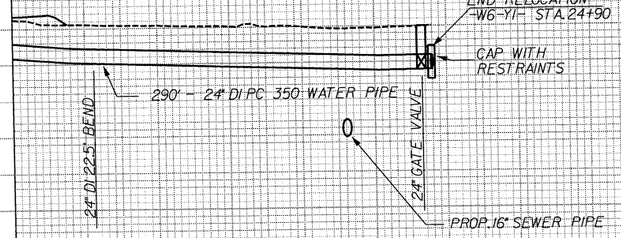
5/28/99

-W5-Y1-



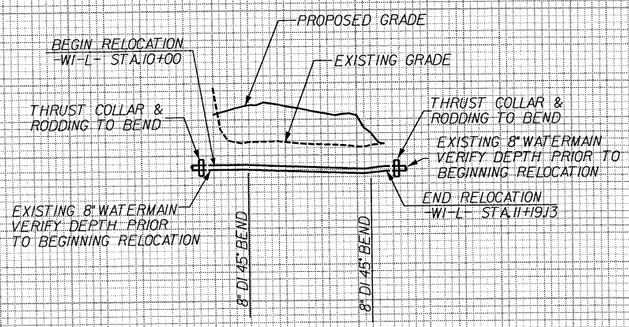
SEE SHEET UC-6 FOR PLAN

-W5-Y1-



SEE SHEET UC-6 FOR PLAN

-W15-L-



SEE SHEET UC-10 FOR PLAN

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PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-26

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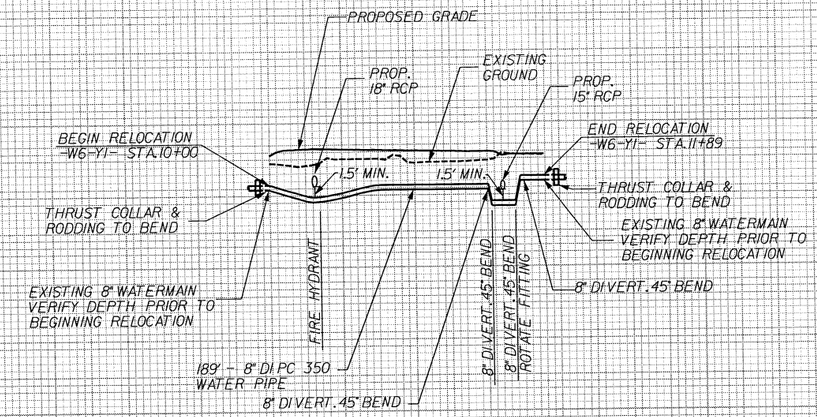
NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRYAN M. BADER

10/17/2017

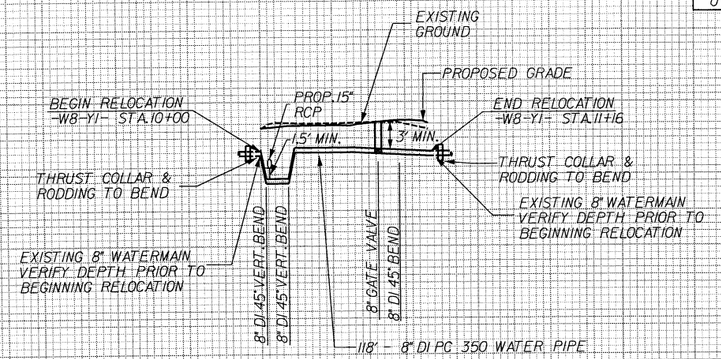
UTILITY CONSTRUCTION PLANS

-W6-Y1-



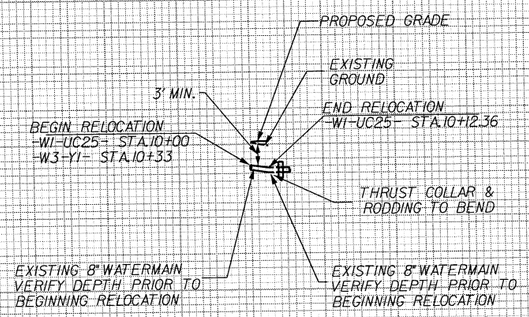
SEE SHEET UC-6 FOR PLAN

-W7-Y1-



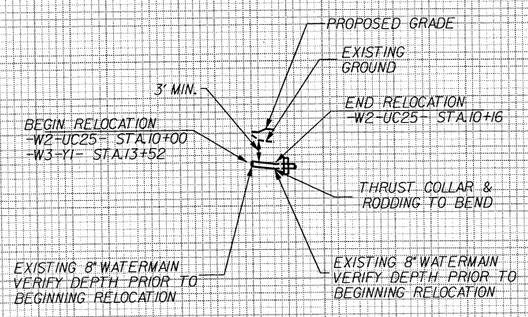
SEE SHEET UC-18 FOR PLAN

-W1-UC14-



SEE SHEET UC-14 FOR PLAN

-W2-UC14-



SEE SHEET UC-14 FOR PLAN

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PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-27

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NORTH CAROLINA PROFESSIONAL SEAL 22514 ENGINEER BRIAN M. BRADY

10/17/2017

UTILITY CONSTRUCTION PLANS

–S1–L–

EXIST. MH #1
STA.10+00 –SI–L–
RIM EL.= 42.56
INV.IN = 23.75
INV.OUT = 23.65

EXIST. MH #2
STA.10+19.29 –SI–L–
RIM EL.= 42.00
INV.IN = 24.4
INV.OUT = 24.5

PROP.MH #3
STA.11+37.54 –SI–L–
RIM EL.= 37.00
INV.IN = 24.86
INV.OUT = 24.76

PROP.MH #4
STA.15+36.31 –SI–L–
RIM EL.= 42.44
INV.IN = 26.56
INV.OUT = 26.46

PROP.MH #5
STA.19+54.56 –SI–L–
RIM EL.= 46.01
INV.IN = 28.33
INV.OUT = 28.23

PROP.MH #6
STA.20+58.95 –SI–L–
RIM EL.= 46.79
INV.IN = 28.64
INV.OUT = 28.54

PROP.MH #7
STA.22+54.01 –SI–L–
PROP.MH #2
11+24.36 –S4.1/1–
RIM EL.= 45.21
INV.IN = 29.13
INV.IN = 29.24
INV.IN = 29.22
INV.OUT = 29.02

EXISTING GROUND
PROPOSED GRADE
EXIST. WATER TO BE ABANDONED
EXIST. WATER TO BE ABANDONED
EXIST. WATER TO BE ABANDONED
PROP. 30" RCP
PROP. 30" RCP
PROP. 42" RCP

16" DI PIPE, S = 0.6%, L = 118'
16" DI PIPE, S = 0.2%, L = 19'
16" DI PIPE, S = 0.4%, L = 399'
16" DI PIPE, S = 0.4%, L = 418'
16" DI PIPE, S = 0.2%, L = 105'
16" DI PIPE, S = 0.2%, L = 194'

EXIST. SEWER TO BE ABANDONED

EXIST. SEWER CONTRACTOR TO VERIFY INVERT PRIOR TO ANY CONSTRUCTION

SEE SHEETS UC–5 AND UC–6 FOR PLAN

–S1–L–

PROP.MH #8
STA.24+71.42 –SI–L–
PROP.MH #6
STA.24+44.42 –S3–L–
RIM EL.= 47.13
INV.IN = 30.16
INV.OUT = 30.05

EXIST. MH #9
STA.27+11.25 –SI–L–
RIM EL.= 46.41
INV.OUT = 36.14

EXISTING GROUND
EXIST. WATER TO BE ABANDONED
PROPOSED GRADE

16" DI PIPE, S = 0.38%, L = 217'
16" DI PIPE, S = 2.49%, L = 240'

SEE SHEETS UC–5 AND UC–6 FOR PLAN

–S2–L–

PROP.MH #1
STA.10+00 –S2–L–
RIM EL.= 31.42
INV.OUT = 26.66

PROP.MH #2
STA.11+14 –S2–L–
STA.10+00 –S4–L–
RIM EL.= 32.87
INV.IN = 24.06
INV.OUT = 24.09

PROP.MH #3
STA.12+01.90 –S2–L–
RIM EL.= 33.85
INV.IN = 27.66

8" DI PIPE, S = 2.3%, L = 114'
8" DI PIPE, S = 4%, L = 88'

SEE SHEET UC–4 FOR PLAN

–S4–L–

PROP.MH #1
STA.10+00 –S4–L–
RIM EL.= 32.77
INV.OUT = 18.52

PROP.MH #2
STA.10+96.22 –S4–L–
STA.11+14 –S2–L–
RIM EL.= 32.87
INV.IN = 24.00

8" DI PIPE, S = 5.8%, L = 95'

SEE SHEET UC–4 FOR PLAN

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PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-28

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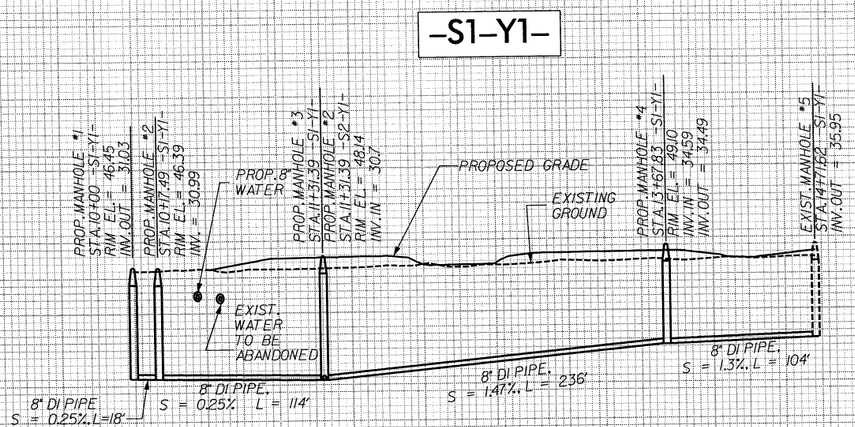
NORTH CAROLINA PROFESSIONAL SEAL 32634 ENGINEER BRYAN M. BAILEY

10/17/2017

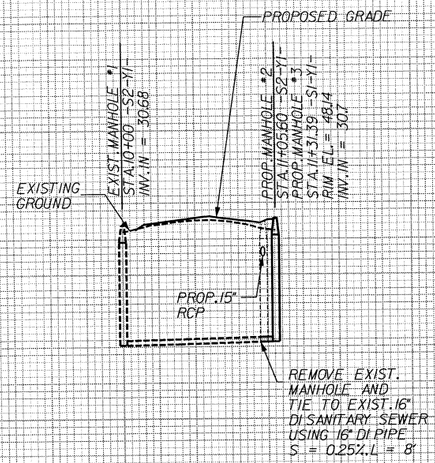
UTILITY CONSTRUCTION PLANS

–S1–Y1–



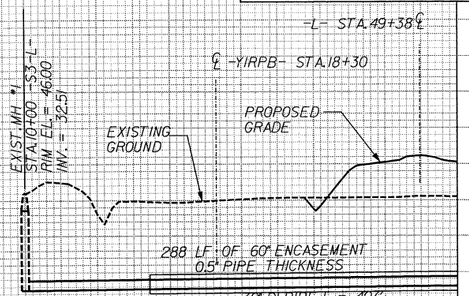
SEE SHEET UC–13 FOR PLAN

–S2–Y1–



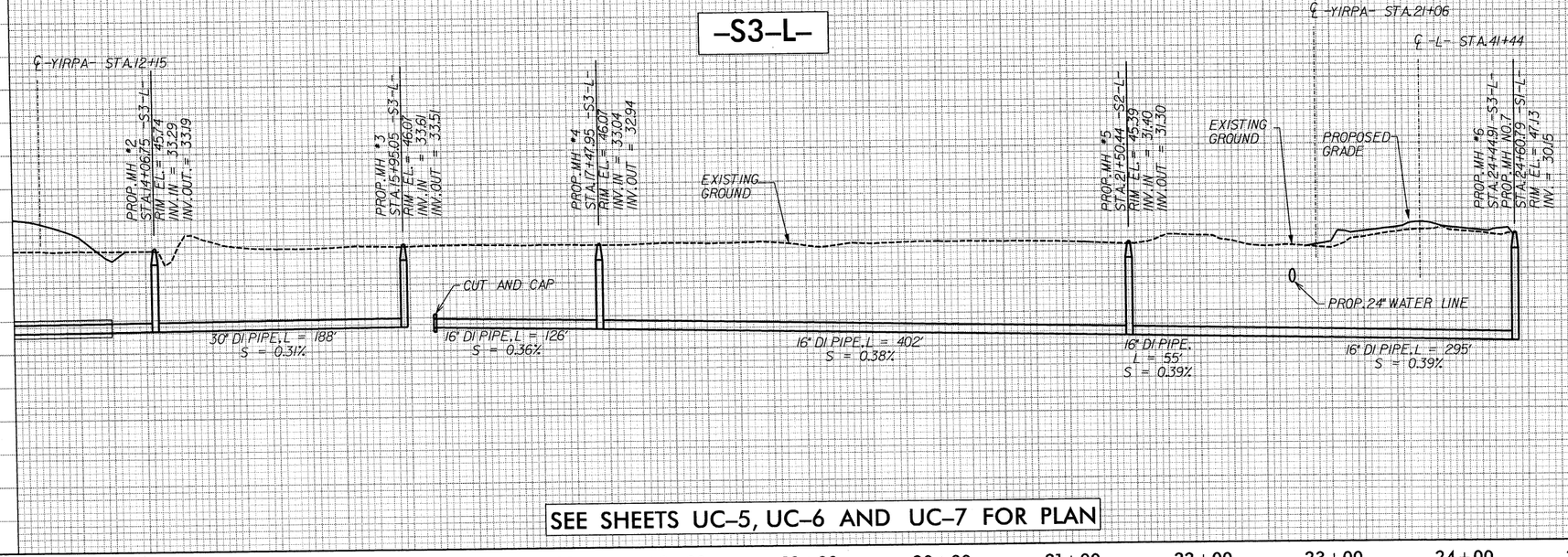
SEE SHEET UC–13 FOR PLAN

–S3–L–



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

–S3–L–



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

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PROJECT REFERENCE NO.	SHEET NO.
U-4751	UC-29

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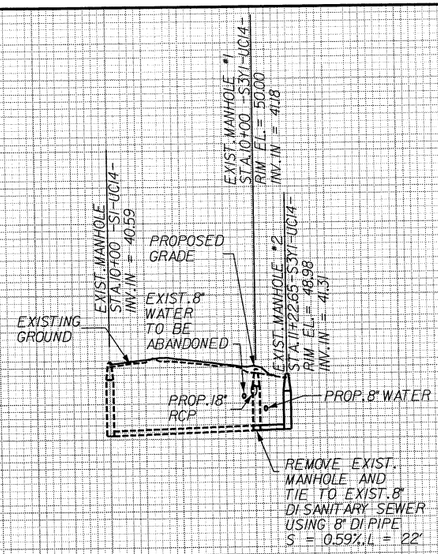
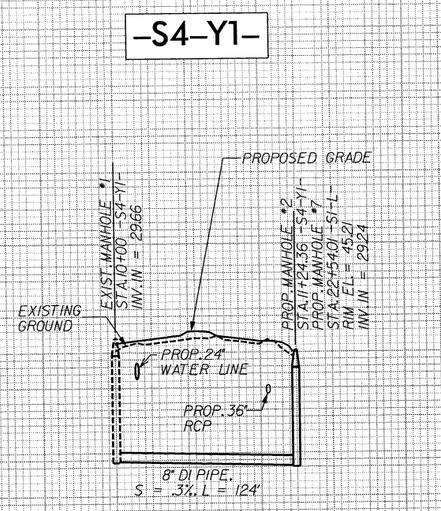
10/17/2017

UTILITY CONSTRUCTION PLANS





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mpiatt

09/08/99

TIP PROJECT: U-4751

CONTRACT: C203980

R/W PLANS
9/25/2017

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NEW HANOVER COUNTY

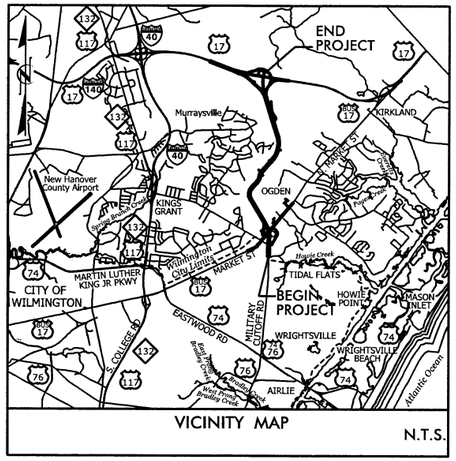
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4751	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
40191.1.2		PE
40191.2.1		R/W
40191.3.2		CONSTRUCTION

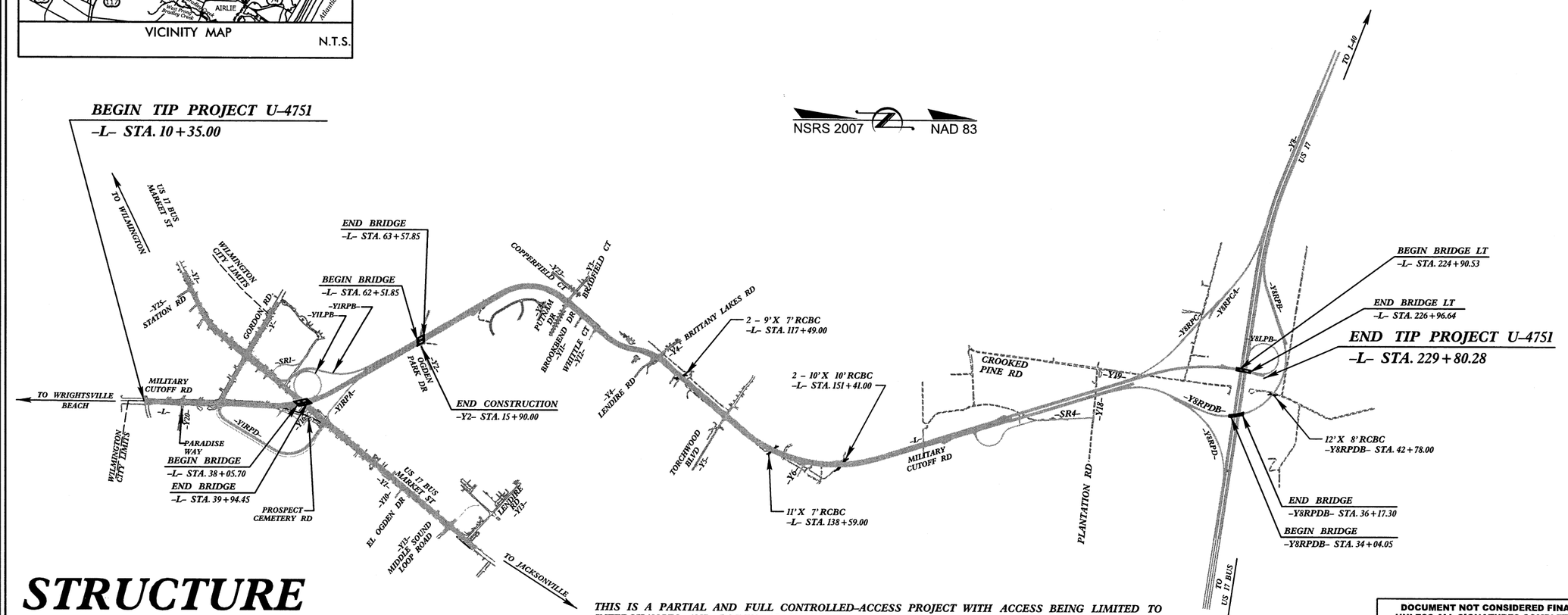
FINAL STRUCTURE PLANS

LOCATION: *SR 1409 (MILITARY CUTOFF ROAD EXTENSION) FROM SR 1409 (MILITARY CUTOFF ROAD) TO US 17 IN WILMINGTON*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, STRUCTURES, CULVERTS, RETAINING WALLS, SIGNALS, NOISE WALLS, AND SIGNING*



NSRS 2007 NAD 83



STRUCTURE

THIS IS A PARTIAL AND FULL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES AND POINTS AS SHOWN ON THE PLANS.

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GRAPHIC SCALES

DESIGN DATA

ADT 2017 = 23,900
ADT 2037 = 49,100
K = 12%
D = 60%
T = 7%*
V = 50 MPH
* (TTST=3%+DUAL 4%)
FUNC CLASS =
ARTERIAL/FREEWAY
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-4751 = 4.053 MILES

LENGTH STRUCTURE TIP PROJECT U-4751 = 0.103 MILES

TOTAL LENGTH OF TIP PROJECT U-4751 = 4.156 MILES

PLANS PREPARED FOR THE NCDOT BY:

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 17, 2015

LETTING DATE:
NOVEMBER 21, 2017

KEVIN G. BAILEY, PE
PROJECT ENGINEER

TONY R. LAWS, PE
PROJECT DESIGN ENGINEER

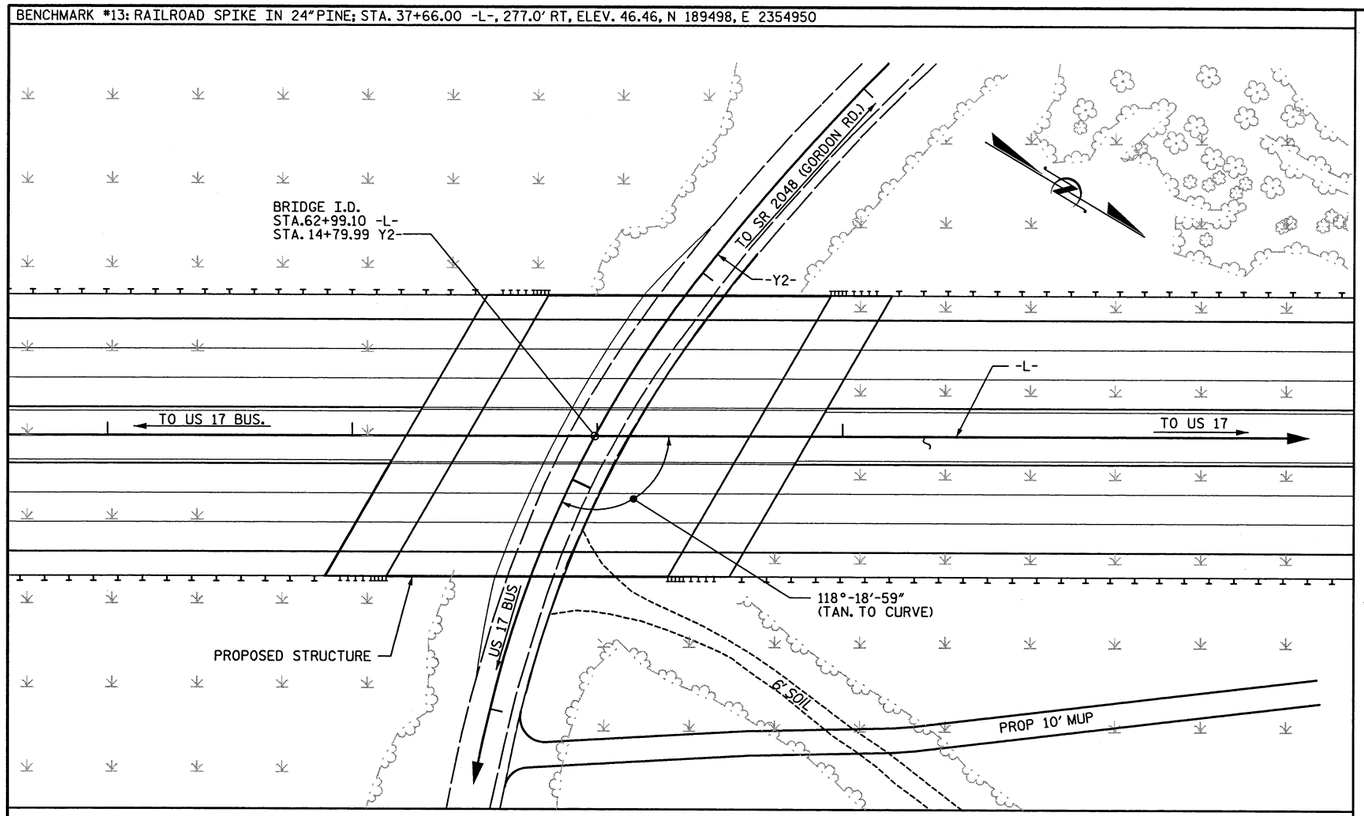
KEVIN FISCHER, PE
PROJECT ENGINEER
NCDOT STRUCTURE DESIGN

STRUCTURAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 28479 ENGINEER KEVIN G. BAILEY
9/26/2017

DocuSigned by: Kevin G. Bailey
4625EECDFTB4401...
SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

GENERAL NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE ELEVATION AND CLEARANCE SHOWN ON THE PLANS AT THE POINT OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR FOUNDATION NOTES, SEE "FOUNDATION LAYOUT" SHEET.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR EMBEDDED CLIPS FOR PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

THE SKEWED END CONDITIONS ARE SUCH THAT THE USE OF 4' WIDE PRESTRESSED CONCRETE DECK PANELS IS NOT POSSIBLE; USE OF 8' WIDE PRESTRESSED CONCRETE DECK PANELS IS NECESSARY.

TOTAL BILL OF MATERIAL

	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 72" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIP. SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS
	EA.	SQ. FT.	SQ. FT.	CU. YD.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	SQ. YD.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		12,252	13,100		LUMP SUM		11	1,110.8					248.8		LUMP SUM	LUMP SUM
END BENT 1				139.2		20,130			18	18	1,440	9		598		
END BENT 2				144.0		19,633			19	19	1,615	9		677		
TOTAL	1	12,252	13,100	283.2	LUMP SUM	39,763	11	1,110.8	37	37	3,055	18	248.8	1,275	LUMP SUM	LUMP SUM

PROJECT NO. U-4751
NEW HANOVER COUNTY
STATION: 62+99.10 -L-
14+79.99 -Y2-
SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28479 KEVIN G. BAILEY
10/17/2017

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 34955 TIMOTHY J. TOWNSEND
10/17/2017

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

LOCATION SKETCH, GENERAL NOTES AND TOTAL BILL OF MATERIAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STV 100 Years
STV ENGINEERS, INC.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-3
1			3			TOTAL SHEETS
2			4			30

STR. #2

DRAWN BY : TJT DATE : 3-17
CHECKED BY : TRL DATE : 5-17
DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE : 3-17

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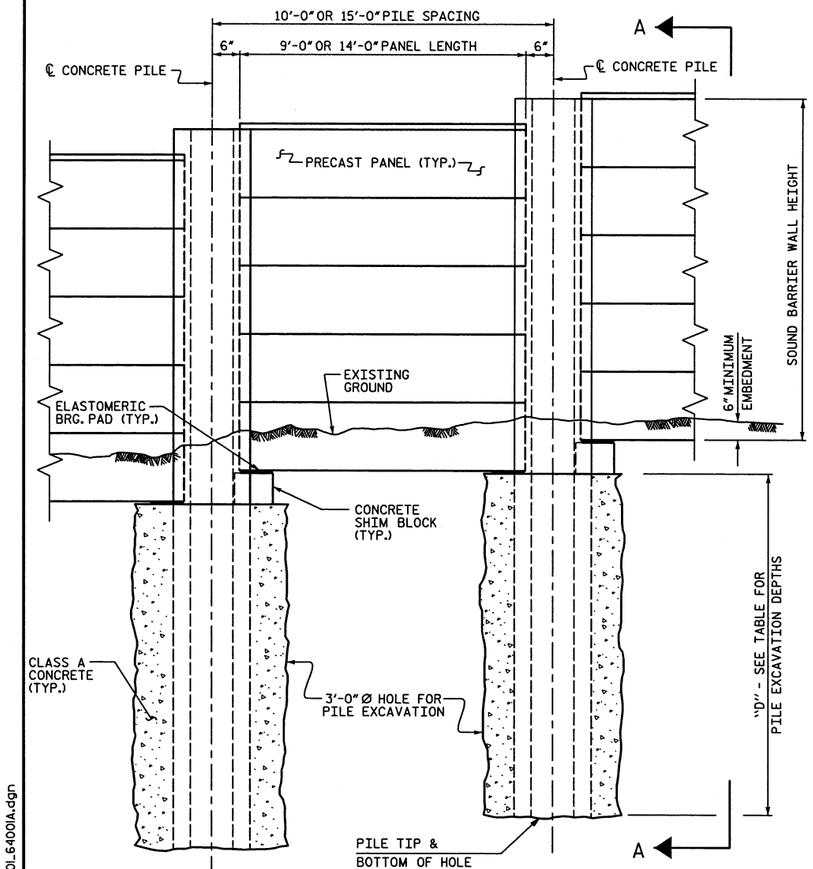
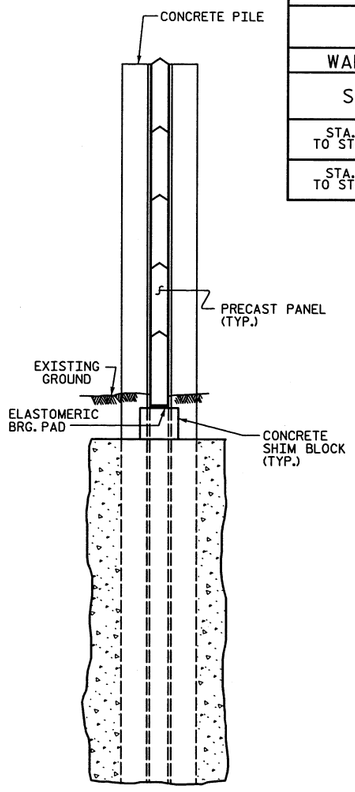


ELEVATION



SECTION A-A

PILE EXCAVATION DEPTHS "D"			
3'-0" Ø HOLE			
WALL -NW1A- (STA. 10+00 TO 14+40 -NW1A-)			
STATION	MAX WALL HEIGHT	PILE SPACING	SHAFT DEPTH
STA. 12+44.93 -L- TO STA. 16+64.93 -L-	11'-0"	15'-0"	13'-0"
STA. 16+74.93 -L- TO STA. 16+84.93 -L-	8'-0"	10'-0"	11'-0"

NOTES:

FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.

CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.

PROVIDE PANELS WITH A FLAT BOTTOM.

VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.

ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.

USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.

FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.

PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC BEARING DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE SHIM BLOCK DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR PRECAST PANEL DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE PILE DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEETS 1 & 2 OF 3.

AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION. SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.

THE ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL MATCH THE APPEARANCE (STONE SIZE AND SHAPE, STONE TEXTURE, PATTERN AND RELIEF) OF NATURAL STONE TO RESEMBLE A DRY STACKED STONE PATTERN WITH FEDERAL STANDARD 595 COLOR # FS30450 STAIN.

EXPOSURE CATEGORY D
PILE REINFORCING STEEL

DESIGN WIND PRESSURE = 62 PSF (0' < H ≤ 14'); 71 PSF (14' < H ≤ 25')			
PILE TYPE I			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 15'	4 - #8 EA. FACE	#3 @ 11" CTS.
15'-0"	H ≤ 15'	4 - #8 EA. FACE	#3 @ 11" CTS.
PILE TYPE II			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 15'	4 - #6 EA. FACE	#3 @ 11" CTS.
15'-0"	H ≤ 15'	4 - #6 EA. FACE	#3 @ 11" CTS.

BILL OF MATERIAL -NW1A-	
SOUND BARRIER WALL	S.F. 4,345
ARCHITECTURAL SURFACE TREATMENT	S.F. 6,994 ⚠
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	

⚠ REVISED ARCHITECTURAL SURFACE TREATMENT QUANTITY

PROJECT NO. U-4751

NEW HANOVER COUNTY

STATION: 12+44.93 -L- = 10+00.00 -NW1A-

DRAWN BY : MBC DATE : 5-17

CHECKED BY : NML DATE : 5-17

DESIGN ENGINEER OF RECORD: J. DICHAK DATE : 5-17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 023081 ENGINEER JOSEPH A. DICHAK 10/10/2017

STV 100 Years

STV ENGINEERS, INC.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SOUND BARRIER WALL
NO. -NW1A-

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	NW-1
1	STV	10-17	3			TOTAL SHEETS
2			4			17

NW1A

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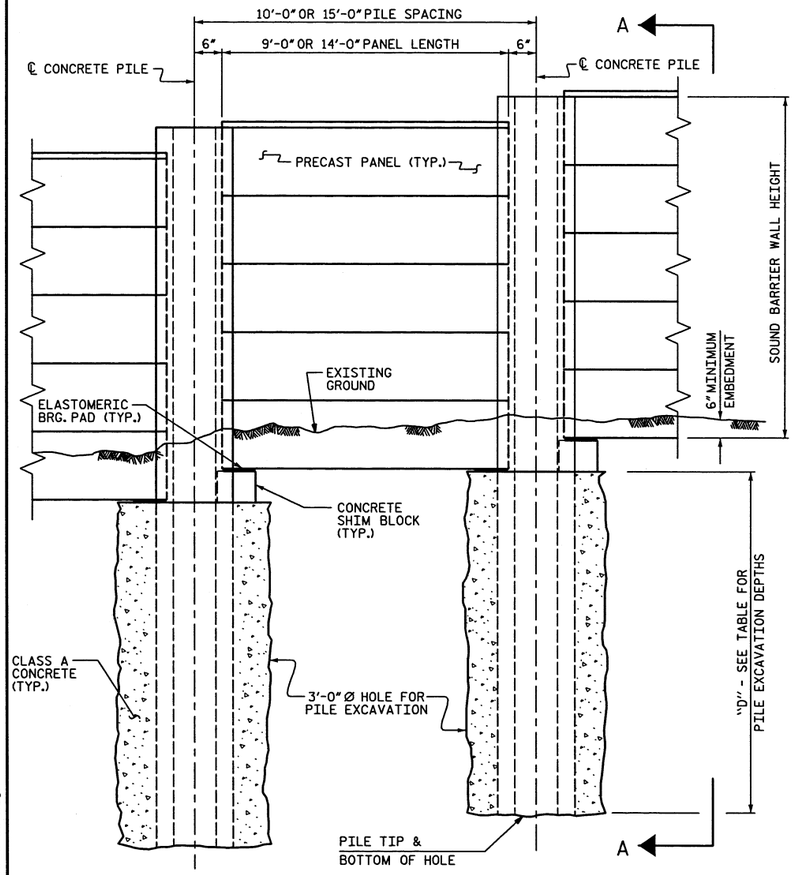
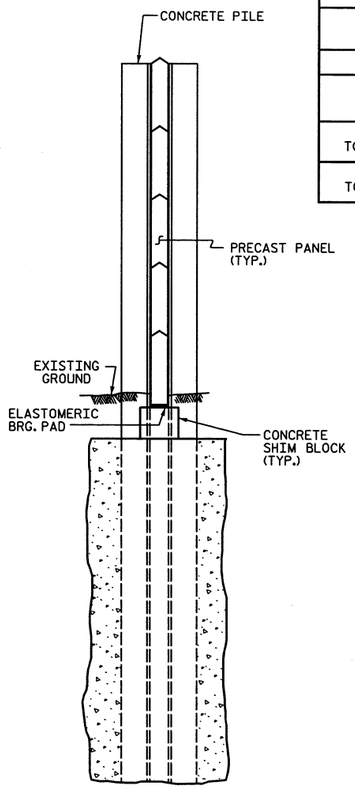


ELEVATION



SECTION A-A

PILE EXCAVATION DEPTHS "D"			
3'-0" Ø HOLE			
WALL -NW1B- (STA. 10+00 TO 14+10 -NW1B-)			
STATION	MAX WALL HEIGHT	PILE SPACING	SHAFT DEPTH
STA. 17+56.65 -L- TO STA. 17+66.65 -L-	8'-0"	10'-0"	11'-0"
STA. 17+76.65 -L- TO STA. 21+38.59 -L-	10'-0"	15'-0"	13'-0"

NOTES:

FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.

CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.

PROVIDE PANELS WITH A FLAT BOTTOM.

VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.

ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.

USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.

FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.

PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC BEARING DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE SHIM BLOCK DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR PRECAST PANEL DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE PILE DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEETS 1 & 2 OF 3.

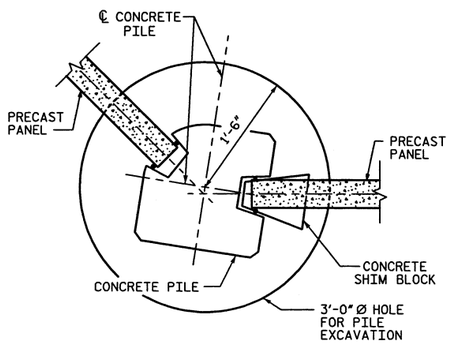
AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION. SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.

THE ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL MATCH THE APPEARANCE (STONE SIZE AND SHAPE, STONE TEXTURE, PATTERN AND RELIEF) OF NATURAL STONE TO RESEMBLE A DRY STACKED STONE PATTERN WITH FEDERAL STANDARD 595 COLOR * FS30450 STAIN.

EXPOSURE CATEGORY D - PILE REINFORCING STEEL

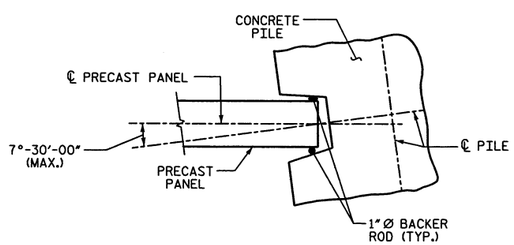
DESIGN WIND PRESSURE = 62 PSF (0' < H ≤ 14'); 71 PSF (14' < H ≤ 25')

PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 15'	4 - #8 EA. FACE	#3 @ 11" CTS.	10'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11" CTS.
15'-0"	H ≤ 15'	4 - #8 EA. FACE	#3 @ 11" CTS.	15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11" CTS.
PILE TYPE II				PILE TYPE III ALT.			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
10'-0"	H ≤ 15'	4 - #6 EA. FACE	#3 @ 11" CTS.	10'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11" CTS.
15'-0"	H ≤ 15'	4 - #6 EA. FACE	#3 @ 11" CTS.	15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11" CTS.



15° TO 45° TURNS
(PILE TYPE III)

TYPICAL WALL TURN DETAILS



PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" MAX. TO ACCOMMODATE WALL TURN.)

BILL OF MATERIAL -NW1B-	
SOUND BARRIER WALL	S.F. 3,653
ARCHITECTURAL SURFACE TREATMENT	S.F. 5,800 ⚠
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	

⚠ REVISED ARCHITECTURAL SURFACE TREATMENT QUANTITY

PROJECT NO. U-4751

NEW HANOVER COUNTY

STATION: 17+56.65 -L- = 10+00.00 -NW1B-

DRAWN BY : MBC DATE : 5-17

CHECKED BY : NML DATE : 5-17

DESIGN ENGINEER OF RECORD: J. DICHAK DATE : 5-17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 023081 ENGINEER JOSEPH A. DICHAK
10/10/2017

STV 100 Years
STV ENGINEERS, INC.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SOUND BARRIER WALL NO. -NW1B-

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	NW-2
1	STV	10-17	3			TOTAL SHEETS
2			4			17

NW1B

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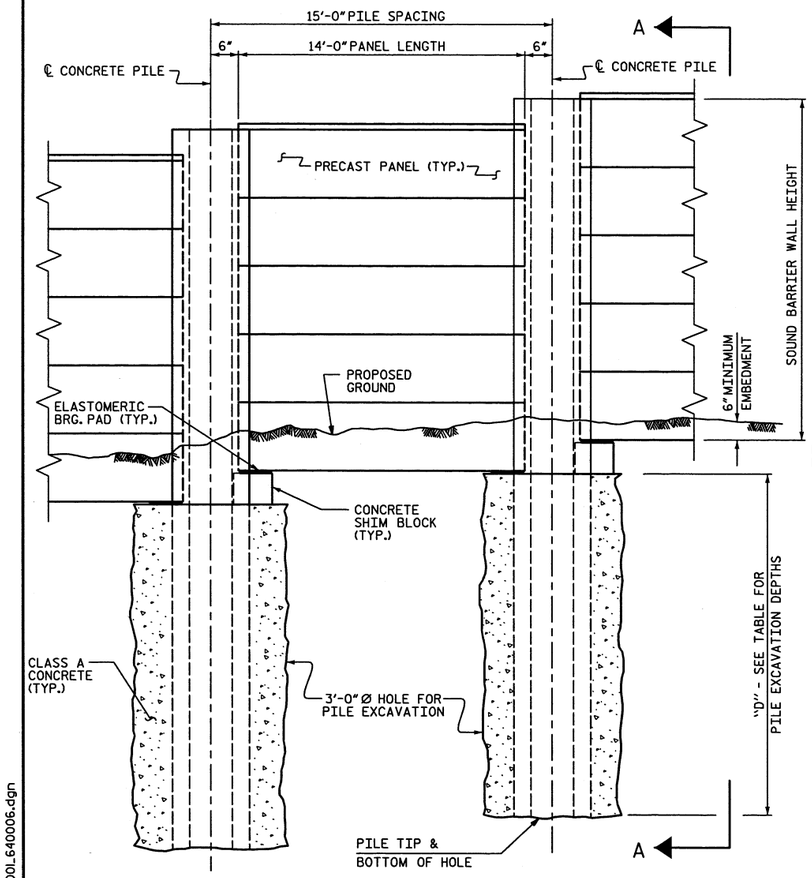
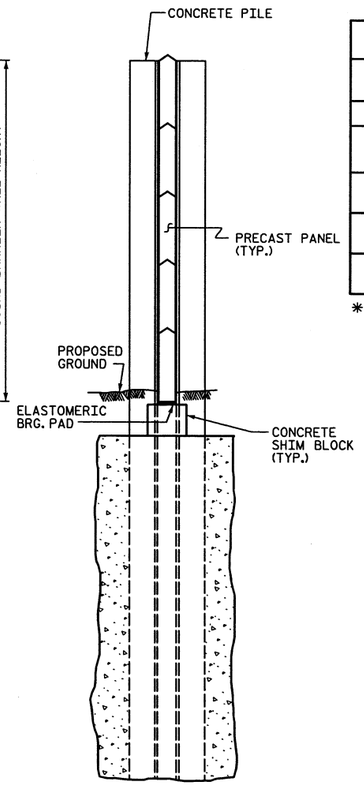


ELEVATION

(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)



SECTION A-A

(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)

PILE EXCAVATION DEPTHS "D"			
3'-0" Ø HOLE			
WALL -NW6- (STA. 10+00 TO 18+85 -NW6-)			
STATION	MAX WALL HEIGHT	PILE SPACING	SHAFT DEPTH
STA. 84+10.42 -L- TO STA. 84+38.53 -L-	12'-0"	15'-0"	13'-6"
STA. 84+52.59 -L- TO STA. 85+65.02 -L-	13'-0"	15'-0"	13'-0"*
STA. 85+79.08 -L- TO STA. 92+26.33 -L-	15'-0"	15'-0"	14'-6"

* PILE EXCAVATION DEPTH ("D") FOR MSE WALL IS MEASURED FROM THE BOTTOM OF THE MSE WALL REINFORCED ZONE.

NOTES:

FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.

CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.

PROVIDE PANELS WITH A FLAT BOTTOM.

VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.

ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.

USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.

FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.

PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC BEARING DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE SHIM BLOCK DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR PRECAST PANEL DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE PILE DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEETS 1 & 2 OF 3.

DUE TO THE SHALLOW GROUNDWATER TABLE, UNSTABLE OR CAVING SOILS ARE ANTICIPATED AND TEMPORARY STEEL CASING OR SLURRY IS ANTICIPATED TO STABILIZE THE PILE EXCAVATIONS IN ACCORDANCE WITH THE REQUIREMENTS IN THE SOUND BARRIER WALL SPECIAL PROVISION.

NOTE THAT SOUND BARRIER WALL PILES LOCATED WITHIN THE MSE WALL BACKFILL MUST BE INSTALLED PRIOR TO MSE WALL CONSTRUCTION. THE EMBEDMENT DEPTH PROVIDED IS MEASURED BELOW THE BASE OF THE MSE WALL AND DOES NOT INCLUDE THE LENGTH THROUGH THE REINFORCED ZONE.

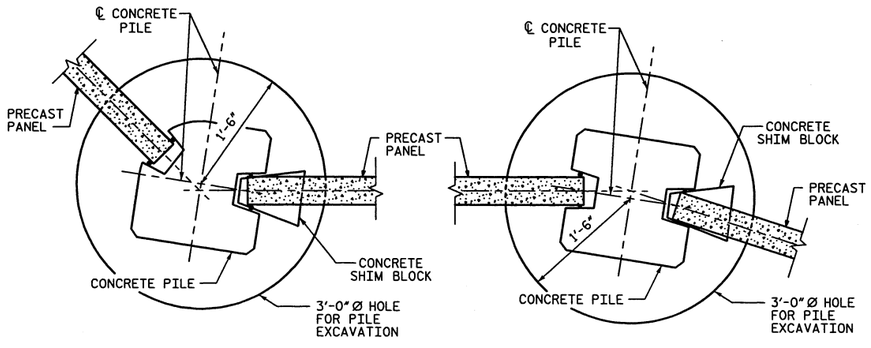
AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION. SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.

THE ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL MATCH THE APPEARANCE (STONE SIZE AND SHAPE, STONE TEXTURE, PATTERN AND RELIEF) OF NATURAL STONE TO RESEMBLE A DRY STACKED STONE PATTERN WITH FEDERAL STANDARD 595 COLOR * FS30450 STAIN.

EXPOSURE CATEGORY D - PILE REINFORCING STEEL

DESIGN WIND PRESSURE = 62 PSF (0'< H ≤ 14'); 71 PSF (14'< H ≤ 25')

PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #8 EA. FACE	#3 @ 11"CTS.	15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11"CTS.
PILE TYPE II				**PILE TYPE III ALT.**			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #6 EA. FACE	#3 @ 11"CTS.	15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11"CTS.

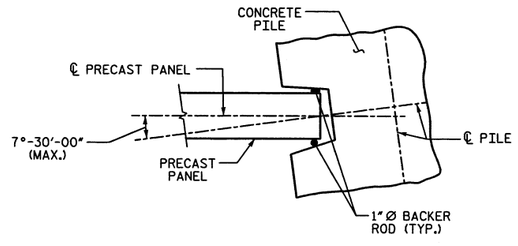


15° TO 45° TURNS (PILE TYPE III)

0° TO 15° TURNS (PILE TYPE I)

TYPICAL WALL TURN DETAILS

BILL OF MATERIAL -NW6-	
SOUND BARRIER WALL	S.F. 11,435
ARCHITECTURAL SURFACE TREATMENT	[S.F. 18,952] ⚠
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	



PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" MAX. TO ACCOMMODATE WALL TURN.)

⚠ REVISED ARCHITECTURAL SURFACE TREATMENT QUANTITY

PROJECT NO. U-4751

NEW HANOVER COUNTY

STATION: 84+10.42 -L- = 10+00.00 -NW6-

DRAWN BY : MBC DATE : 5-17

CHECKED BY : NML DATE : 5-17

DESIGN ENGINEER OF RECORD: J. DICHAK DATE : 5-17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 023081 ENGINEER JOSEPH A. DICHAK
10/10/2017

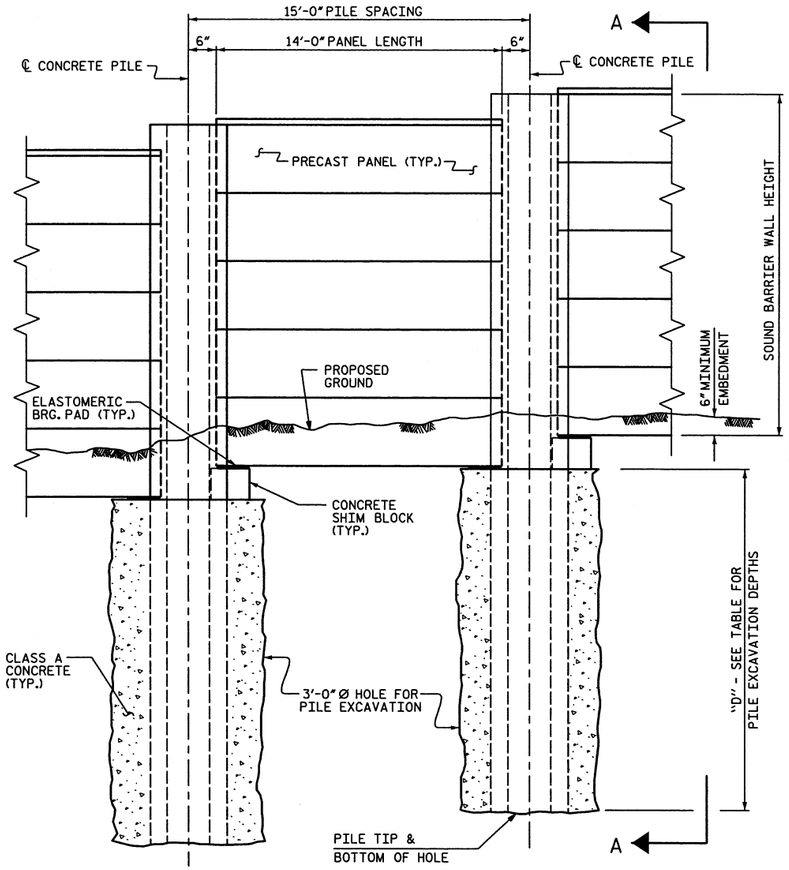
STV 100 Years
STV ENGINEERS, INC.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SOUND BARRIER WALL NO. -NW6-

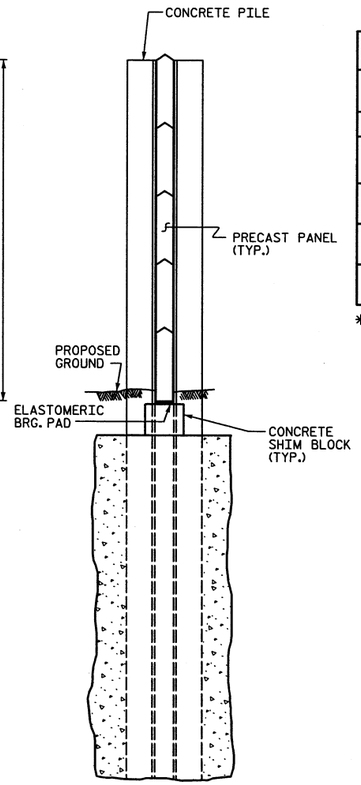
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	NW-3
1	STV	10-17	3			TOTAL SHEETS
2			4			17

NW6



ELEVATION

(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)



SECTION A-A

(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)

PILE EXCAVATION DEPTHS "D"			
3'-0" Ø HOLE			
WALL -NW7- (STA. 10+00 TO 26+65 -NW7-)			
STATION	MAX WALL HEIGHT	PILE SPACING	SHAFT DEPTH
STA. 71+43.97 -L- TO STA. 72+86.92 -L-	13'-0"	15'-0"	14'-6"
STA. 72+97.68 -L- TO STA. 73+84.88 -L-	15'-0"	15'-0"	15'-6"
STA. 73+99.46 -L- TO STA. 88+48.25 -L-	17'-0"	15'-0"	13'-0"*

* PILE EXCAVATION DEPTH ("D") FOR MSE WALL IS MEASURED FROM THE BOTTOM OF THE MSE WALL REINFORCED ZONE.

NOTES:

FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.

CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.

PROVIDE PANELS WITH A FLAT BOTTOM.

VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.

ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.

USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.

FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.

PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC BEARING DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE SHIM BLOCK DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR PRECAST PANEL DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE PILE DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEETS 1 & 2 OF 3.

DUE TO THE SHALLOW GROUNDWATER TABLE, UNSTABLE OR CAVING SOILS ARE ANTICIPATED AND TEMPORARY STEEL CASING OR SLURRY IS ANTICIPATED TO STABILIZE THE PILE EXCAVATIONS IN ACCORDANCE WITH THE REQUIREMENTS IN THE SOUND BARRIER WALL SPECIAL PROVISION.

NOTE THAT SOUND BARRIER WALL PILES LOCATED WITHIN THE MSE WALL BACKFILL MUST BE INSTALLED PRIOR TO MSE WALL CONSTRUCTION. THE EMBEDMENT DEPTH PROVIDED IS MEASURED BELOW THE BASE OF THE MSE WALL AND DOES NOT INCLUDE THE LENGTH THROUGH THE REINFORCED ZONE.

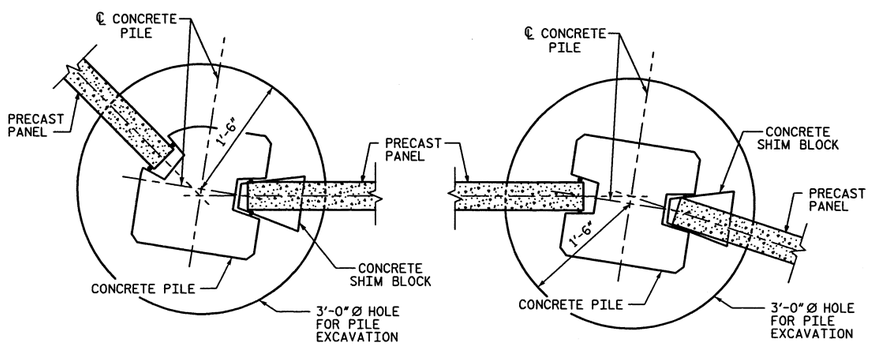
AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION. SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.

THE ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL MATCH THE APPEARANCE (STONE SIZE AND SHAPE, STONE TEXTURE, PATTERN AND RELIEF) OF NATURAL STONE TO RESEMBLE A DRY STACKED STONE PATTERN WITH FEDERAL STANDARD 595 COLOR * FS30450 STAIN.

EXPOSURE CATEGORY D - PILE REINFORCING STEEL

DESIGN WIND PRESSURE = 62 PSF (0' < H ≤ 14'); 71 PSF (14' < H ≤ 25')

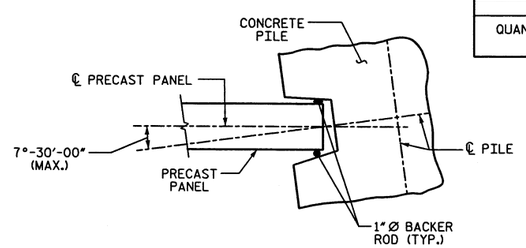
PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #8 EA. FACE	#3 @ 11" CTS.	15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11" CTS.
15'-0"	15' < H ≤ 20'	4 - #10 EA. FACE	#3 @ 10" CTS.	15'-0"	15' < H ≤ 20'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 10" CTS.
PILE TYPE II				**PILE TYPE III ALT.**			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #6 EA. FACE	#3 @ 11" CTS.	15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11" CTS.
15'-0"	15' < H ≤ 20'	4 - #8 EA. FACE	#3 @ 10" CTS.	15'-0"	15' < H ≤ 20'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 10" CTS.



15° TO 45° TURNS (PILE TYPE III)

0° TO 15° TURNS (PILE TYPE I)

TYPICAL WALL TURN DETAILS



PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" MAX. TO ACCOMMODATE WALL TURN.)

BILL OF MATERIAL -NW7-		
SOUND BARRIER WALL	S.F.	25,447
ARCHITECTURAL SURFACE TREATMENT	S.F.	42,764
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.		

⚠ REVISED ARCHITECTURAL SURFACE TREATMENT QUANTITY

PROJECT NO. U-4751

NEW HANOVER COUNTY

STATION: 71+43.97 -L- = 10+00.00 -NW7-

DRAWN BY : MBC DATE : 5-17

CHECKED BY : NML DATE : 5-17

DESIGN ENGINEER OF RECORD: J. DICHAK DATE : 5-17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Digitally signed by JOSEPH A. DICHAK
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 023081 ENGINEER JOSEPH A. DICHAK
10/10/2017

STV 100 Years
STV ENGINEERS, INC.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SOUND BARRIER WALL NO. -NW7-

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	NW-4
1	STV	10-17	3			TOTAL SHEETS
2			4			17

NW7

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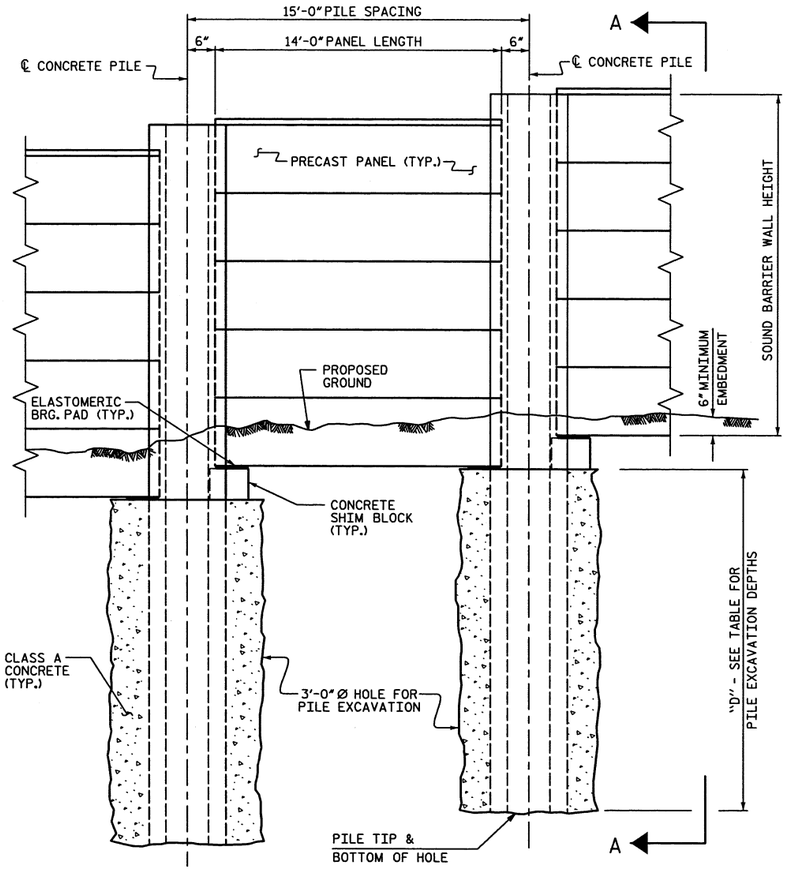
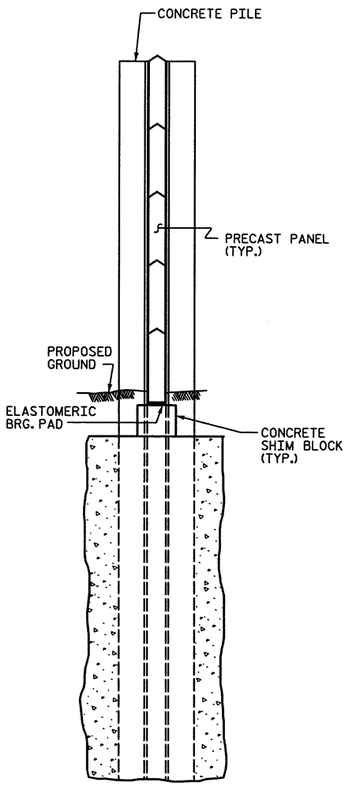


ELEVATION

(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)



SECTION A-A

(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)

PILE EXCAVATION DEPTHS "D"			
3'-0" Ø HOLE			
WALL -NW8- (STA. 10+00 TO 28+75 -NW8-)			
STATION	MAX WALL HEIGHT	PILE SPACING	SHAFT * DEPTH
STA. 92+91.45 -L- TO STA. 93+11.84 -L-	17'-0"	15'-0"	21'-0"
STA. 93+26.65 -L- TO STA. 94+91.71 -L-	14'-0"	15'-0"	19'-0"
STA. 95+06.71 -L- TO STA. 98+80.90 -L-	15'-0"	15'-0"	18'-6"
STA. 98+95.90 -L- TO STA. 102+12.16 -L-	16'-0"	15'-0"	19'-6"
STA. 102+28.21 -L- TO STA. 107+09.28 -L-	16'-0"	15'-0"	20'-0"
STA. 107+25.32 -L- TO STA. 108+58.60 -L-	16'-0"	15'-0"	15'-6"
STA. 108+72.68 -L- TO STA. 111+68.11 -L-	13'-0"	15'-0"	14'-0"

* FOUNDATION EXCAVATION DEPTHS ARE MEASURED FROM 1 FOOT BELOW THE FINSHED GRADE.

NOTES:

FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.

CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.

PROVIDE PANELS WITH A FLAT BOTTOM.

VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.

ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.

USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.

FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.

PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC BEARING DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE SHIM BLOCK DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR PRECAST PANEL DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE PILE DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEETS 1 & 2 OF 3.

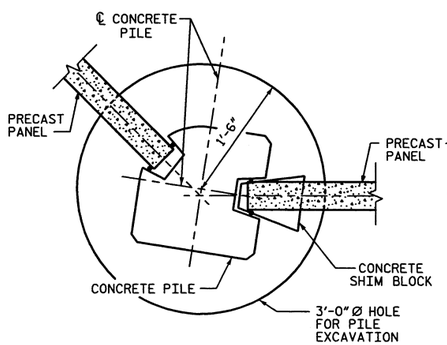
AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION. SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.

THE ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL MATCH THE APPEARANCE (STONE SIZE AND SHAPE, STONE TEXTURE, PATTERN AND RELIEF) OF NATURAL STONE TO RESEMBLE A DRY STACKED STONE PATTERN WITH FEDERAL STANDARD 595 COLOR * FS30450 STAIN.

EXPOSURE CATEGORY D - PILE REINFORCING STEEL

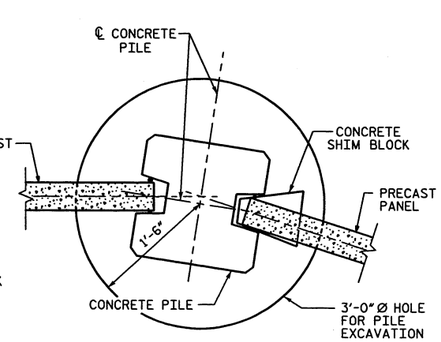
DESIGN WIND PRESSURE = 62 PSF (0'< H ≤ 14'); 71 PSF (14'< H ≤ 25')

PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #8 EA. FACE	#3 @ 11"CTS.	15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11"CTS.
15'-0"	15' < H ≤ 20'	4 - #10 EA. FACE	#3 @ 10"CTS.	15'-0"	15' < H ≤ 20'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 10"CTS.
PILE TYPE II				PILE TYPE III ALT.			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #6 EA. FACE	#3 @ 11"CTS.	15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11"CTS.
15'-0"	15' < H ≤ 20'	4 - #8 EA. FACE	#3 @ 10"CTS.	15'-0"	15' < H ≤ 20'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 10"CTS.



15° TO 45° TURNS

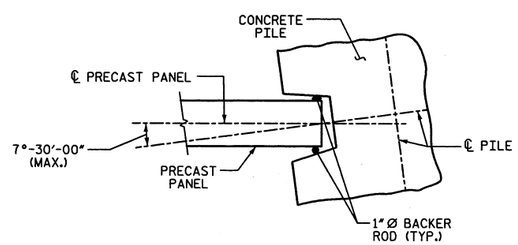
(PILE TYPE III)



0° TO 15° TURNS

(PILE TYPE I)

TYPICAL WALL TURN DETAILS



PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" MAX. TO ACCOMMODATE WALL TURN.)

BILL OF MATERIAL -NW8-	
SOUND BARRIER WALL	S.F. 27,473
ARCHITECTURAL SURFACE TREATMENT	(S.F. 46,042) ⚠
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	

⚠ REVISED ARCHITECTURAL SURFACE TREATMENT QUANTITY

PROJECT NO. U-4751

NEW HANOVER COUNTY

STATION: 92+91.45 -L- = 10+00.00 -NW8-

DRAWN BY : MBC DATE : 5-17

CHECKED BY : NML DATE : 5-17

DESIGN ENGINEER OF RECORD: J. DICHAK DATE : 5-17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 023081 JOSEPH A. DICHAK

10/10/2017

STV 100 Years

STV ENGINEERS, INC. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SOUND BARRIER WALL NO. -NW8-

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	NW-5
1	STV	10-17	3			TOTAL SHEETS
2			4			17

NW8

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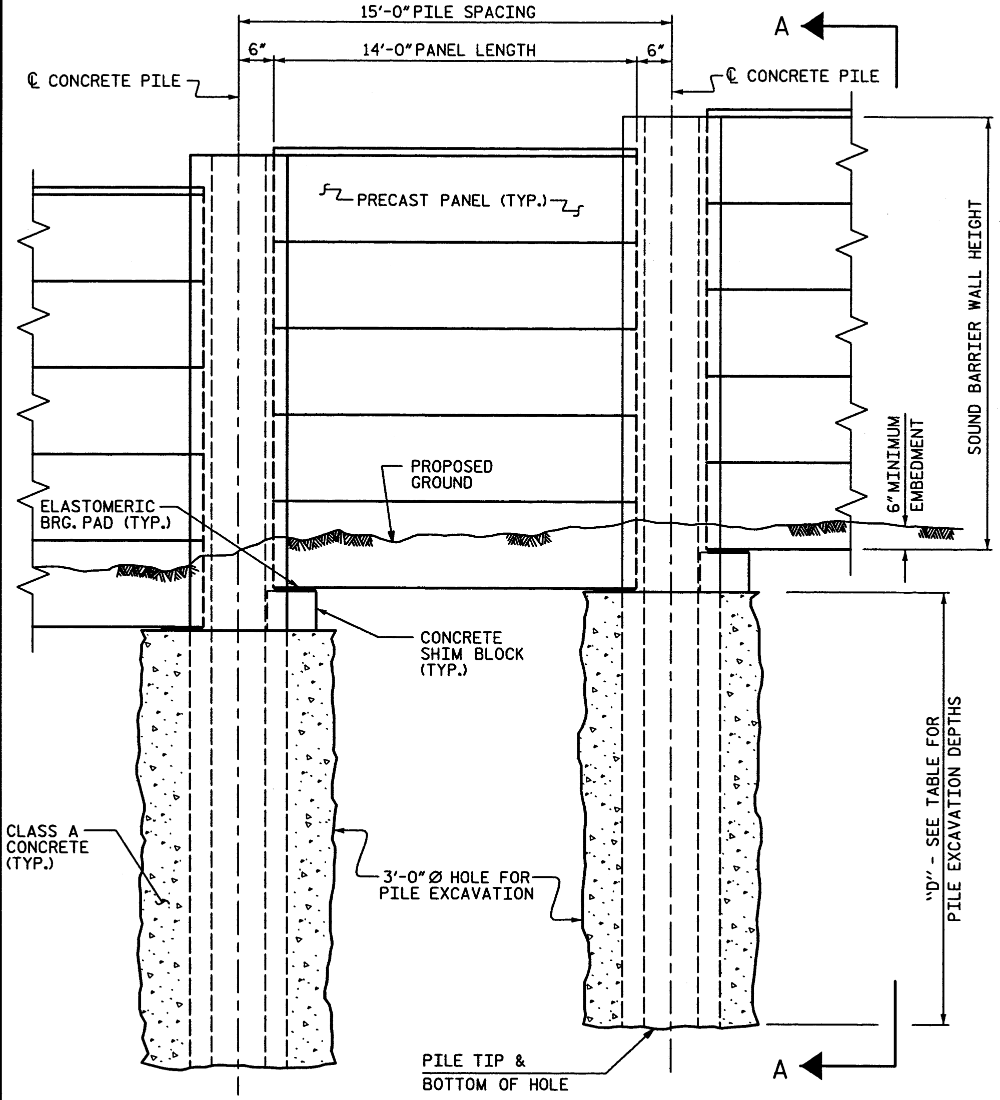
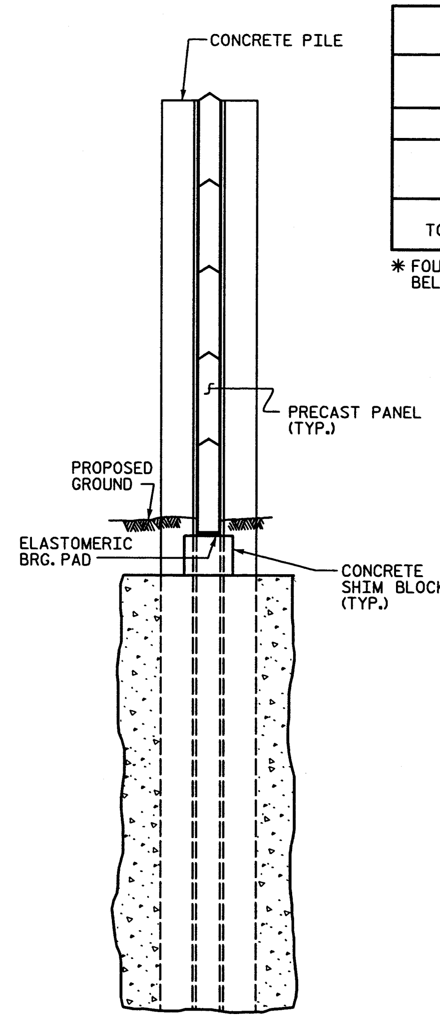


ELEVATION

(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)



SECTION A-A

(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)

PILE EXCAVATION DEPTHS "D"

3'-0" Ø HOLE

WALL -NW9- (STA. 10+00 TO 13+90 -NW9-)

STATION	MAX WALL HEIGHT	PILE SPACING	SHAFT * DEPTH
STA. 93+91.15 -L- TO STA. 97+81.15 -L-	15'-0"	15'-0"	15'-0"

* FOUNDATION EXCAVATION DEPTHS ARE MEASURED FROM 1 FOOT BELOW THE FINSHED GRADE.

NOTES:

FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.

CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.

PROVIDE PANELS WITH A FLAT BOTTOM.

VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.

ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.

USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.

FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.

PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC BEARING DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE SHIM BLOCK DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR PRECAST PANEL DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE PILE DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEETS 1 & 2 OF 3.

AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION. SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.

THE ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL MATCH THE APPEARANCE (STONE SIZE AND SHAPE, STONE TEXTURE, PATTERN AND RELIEF) OF NATURAL STONE TO RESEMBLE A DRY STACKED STONE PATTERN WITH FEDERAL STANDARD 595 COLOR # FS30450 STAIN.

EXPOSURE CATEGORY D - PILE REINFORCING STEEL

DESIGN WIND PRESSURE = 62 PSF (0'< H ≤ 14'); 71 PSF (14'< H ≤ 25')

PILE TYPE I

PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #8 EA. FACE	#3 @ 11" CTS.

PILE TYPE II

PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #6 EA. FACE	#3 @ 11" CTS.

BILL OF MATERIAL -NW9-

SOUND BARRIER WALL	S.F.	5,661
ARCHITECTURAL SURFACE TREATMENT	S.F.	9,450 ⚠1

QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.

⚠1 REVISED ARCHITECTURAL SURFACE TREATMENT QUANTITY

PROJECT NO. U-4751

NEW HANOVER COUNTY

STATION: 93+91.15 -L- = 10+00.00 -NW9-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 023081 JOSEPH A. DICHAK 10/10/2017

STV 100 Years
STV ENGINEERS, INC.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SOUND BARRIER WALL NO. -NW9-

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1	STV	10-17	3		
2			4		

SHEET NO. NW-6
TOTAL SHEETS 17

NW9

DRAWN BY : MBC DATE : 5-17
CHECKED BY : JAD DATE : 5-17
DESIGN ENGINEER OF RECORD: J. DICHAK DATE : 5-17

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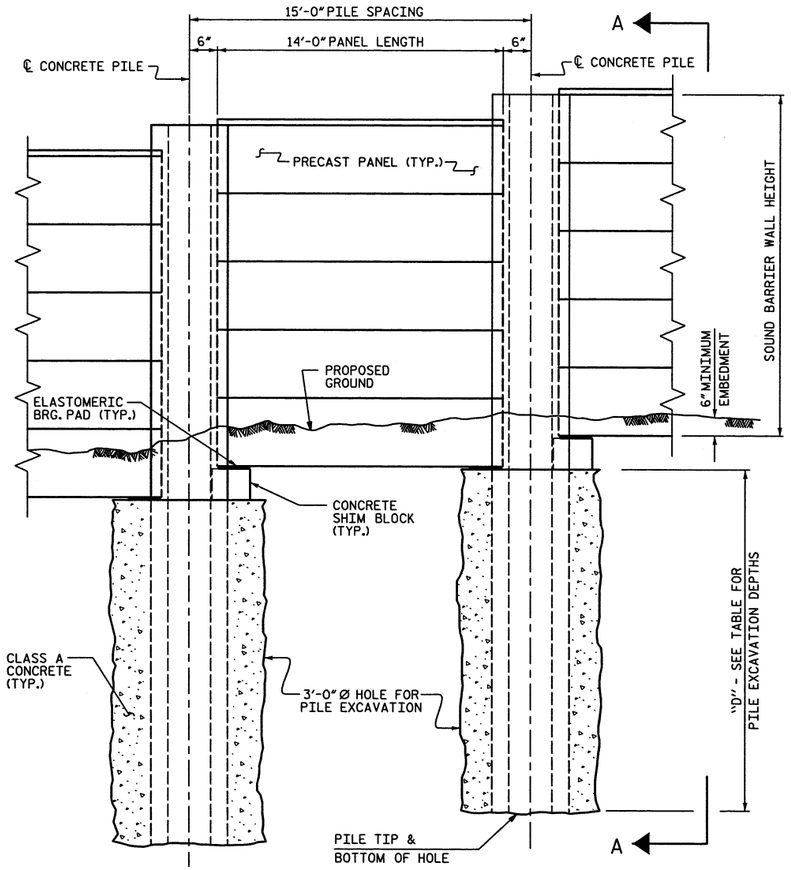
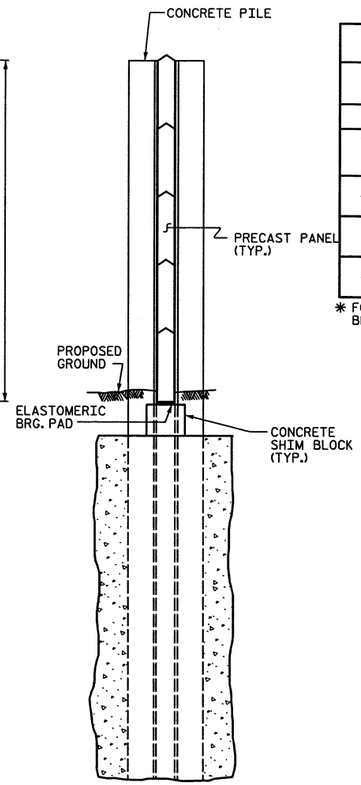


ELEVATION

(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)



SECTION A-A

(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)

PILE EXCAVATION DEPTHS "D"			
3'-0" Ø HOLE			
WALL -NW10- (STA. 10+00 TO 17+95 -NW10-)			
STATION	MAX WALL HEIGHT	PILE SPACING	SHAFT * DEPTH
STA. 100+12.47 -L- TO STA. 100+23.56 -L-	14'-0"	15'-0"	17'-0"
STA. 100+37.35 -L- TO STA. 102+15.79 -L-	14'-0"	15'-0"	15'-0"
STA. 102+29.87-L- TO STA. 107+64.53 -L-	14'-0"	15'-0"	18'-0"

* FOUNDATION EXCAVATION DEPTHS ARE MEASURED FROM 1 FOOT BELOW THE FINSHED GRADE.

NOTES:

FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.

CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.

PROVIDE PANELS WITH A FLAT BOTTOM.

VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.

ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.

USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.

FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.

PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC BEARING DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE SHIM BLOCK DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR PRECAST PANEL DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE PILE DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEETS 1 & 2 OF 3.

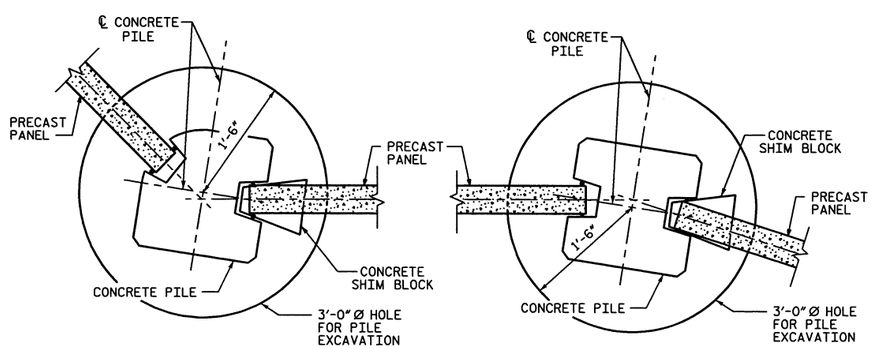
AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION. SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.

THE ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL MATCH THE APPEARANCE (STONE SIZE AND SHAPE, STONE TEXTURE, PATTERN AND RELIEF) OF NATURAL STONE TO RESEMBLE A DRY STACKED STONE PATTERN WITH FEDERAL STANDARD 595 COLOR * FS30450 STAIN.

EXPOSURE CATEGORY D - PILE REINFORCING STEEL

DESIGN WIND PRESSURE = 62 PSF (0' < H ≤ 14'); 71 PSF (14' < H ≤ 25')

PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #8 EA. FACE	#3 @ 11" CTS.	15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11" CTS.
PILE TYPE II				**PILE TYPE III ALT.**			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #6 EA. FACE	#3 @ 11" CTS.	15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11" CTS.

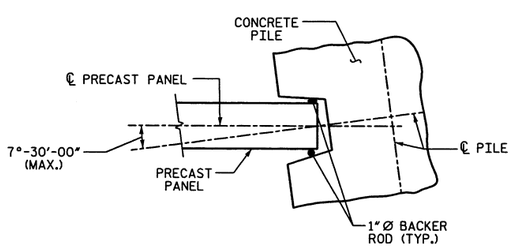


15° TO 45° TURNS (PILE TYPE III)

0° TO 15° TURNS (PILE TYPE I)

TYPICAL WALL TURN DETAILS

BILL OF MATERIAL -NW10-		
SOUND BARRIER WALL	S.F.	10,701
ARCHITECTURAL SURFACE TREATMENT	S.F.	17,794 ⚠
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.		



PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" MAX. TO ACCOMMODATE WALL TURN.)

⚠ REVISED ARCHITECTURAL SURFACE TREATMENT QUANTITY

PROJECT NO. U-4751

NEW HANOVER COUNTY

STATION: 100+12.47 -L- = 10+00.00 -NW10-

DRAWN BY : MBC DATE : 5-17

CHECKED BY : JAD DATE : 5-17

DESIGN ENGINEER OF RECORD: J. DICHAK DATE : 5-17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 023081 JOSEPH A. DICHAK 10/10/2017

STV 100 years

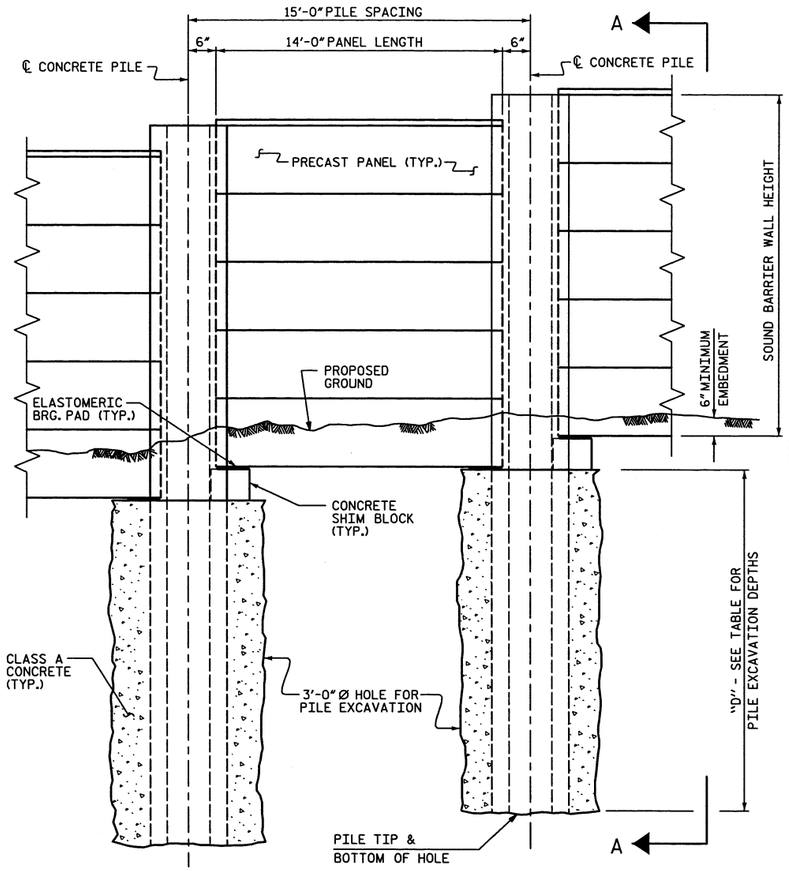
STV ENGINEERS, INC. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SOUND BARRIER WALL NO. -NW10-

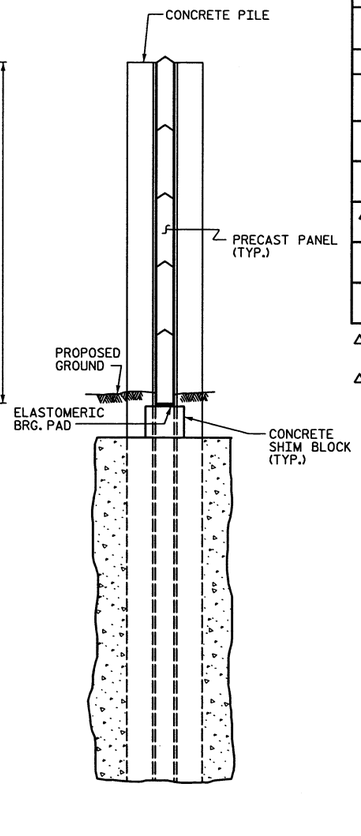
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	NW-7
1	STV	10-17	3			TOTAL SHEETS
2			4			17

NW10



ELEVATION

(DETAIL APPLIES TO 15' PILE SPACING ONLY. FOR 35' PILE SPACING, SEE SHEET 2 OF 2.)
(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)



SECTION A-A

(DETAIL APPLIES TO 15' PILE SPACING ONLY. FOR 35' PILE SPACING, SEE SHEET 2 OF 2.)
(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)

PILE EXCAVATION DEPTHS "D"			
3'-0" Ø HOLE			
WALL -NW11- (STA. 10+00 TO 24+75 -NW11-)			
STATION	MAX WALL HEIGHT	PILE SPACING	SHAFT DEPTH
STA. 112+67.84 -L- TO STA. 113+03.41 -L-	17'-0"	15'-0"	16'-0"
STA. 113+17.34 -L- TO STA. 117+47.96 -L-	16'-0"	15'-0"	15'-0"
△ STA. 117+62.96 -L- TO STA. 117+97.96 -L-	15'-0"	35'-0"	21'-0"
STA. 118+12.96 -L- TO STA. 119+47.96 -L-	14'-0"	15'-0"	15'-0"
STA. 119+62.96 -L- TO STA. 127+27.96 -L-	14'-0"	15'-0"	13'-0"

△ FOR ELEVATION VIEW AND DETAILS FOR 35' PILE SPACING, SEE SHEET 2 OF 2.

△ FOR STEEL PILE, SUPPORT BEAM, ANGLES, AND LAGGING STOP NOTES, SEE "SOUND BARRIER WALL DETAILS" SHEET 3 OF 3.

NOTES:

FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.

CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.

PROVIDE PANELS WITH A FLAT BOTTOM.

VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.

ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.

USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.

FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.

PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC BEARING DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE SHIM BLOCK DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR PRECAST PANEL DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 & 3 OF 3.

FOR CONCRETE PILE DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEETS 1 & 2 OF 3.

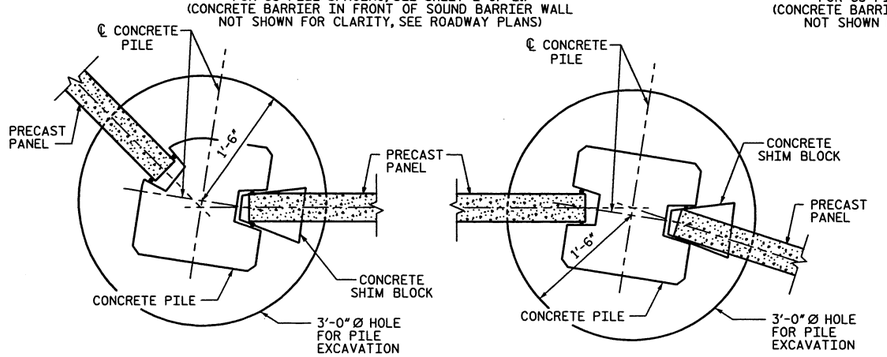
AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION. SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.

THE ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL MATCH THE APPEARANCE (STONE SIZE AND SHAPE, STONE TEXTURE, PATTERN AND RELIEF) OF NATURAL STONE TO RESEMBLE A DRY STACKED STONE PATTERN WITH FEDERAL STANDARD 595 COLOR * FS30450 STAIN.

EXPOSURE CATEGORY D - PILE REINFORCING STEEL

DESIGN WIND PRESSURE = 62 PSF (0'< H ≤ 14'); 71 PSF (14'< H ≤ 25')

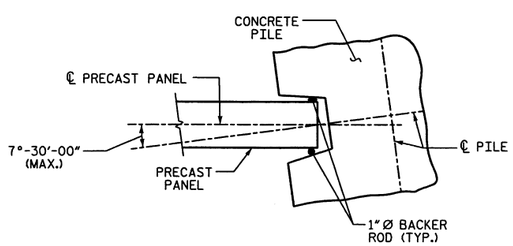
PILE TYPE I				PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #8 EA. FACE	#3 @ 11"CTS.	15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11"CTS.
15'-0"	15' <H≤ 20'	4 - #10 EA. FACE	#3 @ 10"CTS.	15'-0"	15' <H≤ 20'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 10"CTS.
PILE TYPE II				PILE TYPE III ALT.			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES	PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #6 EA. FACE	#3 @ 11"CTS.	15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11"CTS.
15'-0"	15' <H≤ 20'	4 - #8 EA. FACE	#3 @ 10"CTS.	15'-0"	15' <H≤ 20'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 10"CTS.



15° TO 45° TURNS (PILE TYPE III)

0° TO 15° TURNS (PILE TYPE I)

TYPICAL WALL TURN DETAILS



PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" MAX. TO ACCOMMODATE WALL TURN.)

BILL OF MATERIAL -NW11-		
SOUND BARRIER WALL	S.F.	20,769
ARCHITECTURAL SURFACE TREATMENT	S.F.	34,766 △
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.		

△ REVISED ARCHITECTURAL SURFACE TREATMENT QUANTITY

PROJECT NO. U-4751

NEW HANOVER COUNTY

STATION: 112+67.84 -L- = 10+00.00 -NW11-

SHEET 1 OF 2

DRAWN BY : MBC DATE : 5-17
CHECKED BY : JAD DATE : 5-17
DESIGN ENGINEER OF RECORD: J. DICHAK DATE : 5-17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 023081 ENGINEER JOSEPH A. DICHAK
10/10/2017

STV 100 Years
STV ENGINEERS, INC.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SOUND BARRIER WALL NO. -NW11-

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	NW-8
1	STV	10-17	3			TOTAL SHEETS
2			4			17

NW11

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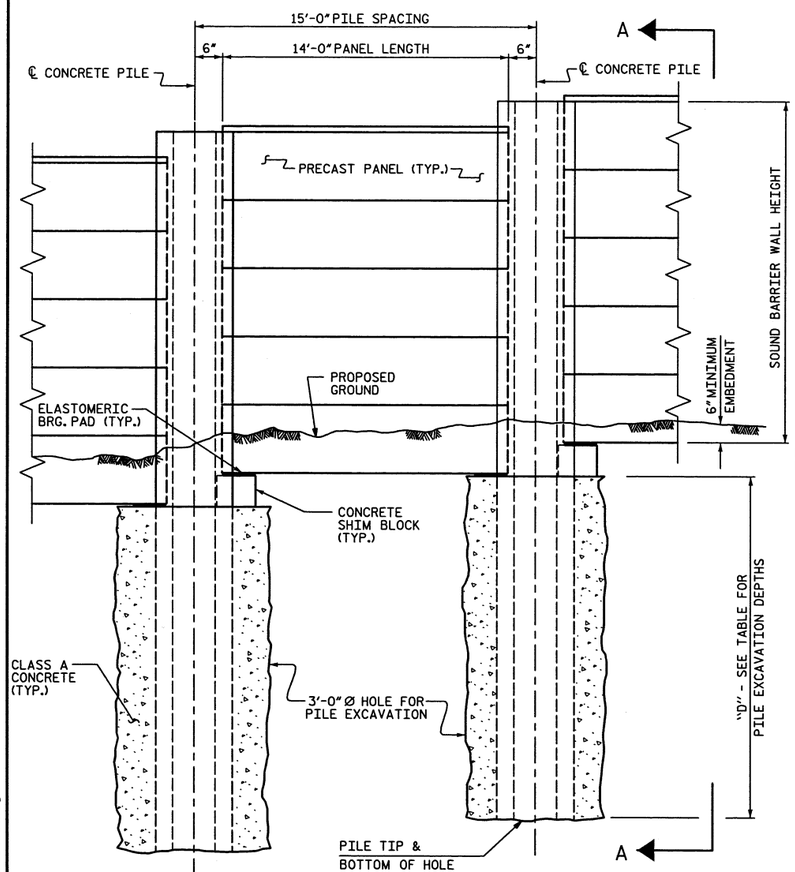
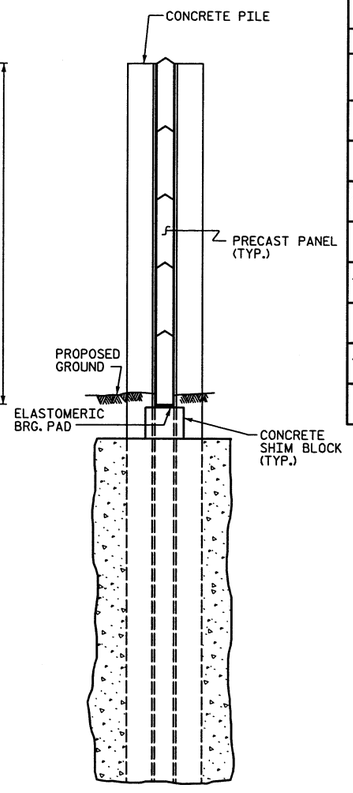


ELEVATION

(DETAIL APPLIES TO 15' PILE SPACING ONLY.
FOR 25' PILE SPACING, SEE SHEET 2 OF 3.
FOR 38' PILE SPACING, SEE SHEET 3 OF 3.)
(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)



SECTION A-A

(DETAIL APPLIES TO 15' PILE SPACING ONLY.
FOR 25' PILE SPACING, SEE SHEET 2 OF 3.
FOR 38' PILE SPACING, SEE SHEET 3 OF 3.)
(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)

PILE EXCAVATION DEPTHS "D"

3'-0" Ø HOLE

WALL -NW13- (STA. 10+00 TO 38+83 -NW13-)

STATION	MAX WALL HEIGHT	PILE SPACING	SHAFT DEPTH
STA. 128+33.75 -L- TO STA. 128+48.67 -L-	17'-0"	15'-0"	16'-6"
STA. 128+62.49 -L-	15'-0"	15'-0"	14'-6"
▲ STA. 128+77.49 -L- TO STA. 135+62.14 -L-	17'-0"	15'-0"	13'-0"
STA. 135+77.52 -L- TO STA. 138+54.36 -L-	16'-0"	15'-0"	13'-6"
△ STA. 138+69.74 -L- TO STA. 138+95.37 -L-	16'-0"	25'-0"	17'-0"
STA. 139+10.75 -L- TO STA. 151+62.26 -L-	16'-0"	15'-0"	13'-6"
△ STA. 151+77.64 -L- TO STA. 152+16.61 -L-	16'-0"	38'-0"	20'-0"
STA. 152+31.99 -L- TO STA. 157+54.98 -L-	16'-0"	15'-0"	13'-6"

△ FOR ELEVATION VIEW AND DETAILS FOR 25' AND 38' PILE SPACINGS, SEE SHEETS 2 AND 3 OF 3.

△ FOR STEEL PILES, SUPPORT BEAM, ANGLES, AND LAGGING STOP NOTES, SEE "SOUND BARRIER WALL DETAILS" SHEET 3 OF 3.

EXPOSURE CATEGORY D - PILE REINFORCING STEEL

DESIGN WIND PRESSURE = 62 PSF (0'< H ≤ 14'); 71 PSF (14'< H ≤ 25')

PILE TYPE I			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #8 EA. FACE	#3 @ 11" CTS.
15'-0"	15' < H ≤ 20'	4 - #10 EA. FACE	#3 @ 10" CTS.
PILE TYPE II			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #6 EA. FACE	#3 @ 11" CTS.
15'-0"	15' < H ≤ 20'	4 - #8 EA. FACE	#3 @ 10" CTS.
PILE TYPE III			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11" CTS.
15'-0"	15' < H ≤ 20'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 10" CTS.
PILE TYPE III ALT.			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	3 - #9 SHORT FACE 4 - #9 LONG FACE	#3 @ 11" CTS.
15'-0"	15' < H ≤ 20'	3 - #11 SHORT FACE 4 - #11 LONG FACE	#3 @ 10" CTS.

NOTES:

FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.

CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.

PROVIDE PANELS WITH A FLAT BOTTOM.

VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.

ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.

USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.

FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.

PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC BEARING DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE SHIM BLOCK DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR PRECAST PANEL DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 & 3 OF 3.

FOR CONCRETE PILE DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEETS 1 & 2 OF 3.

AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION. SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.

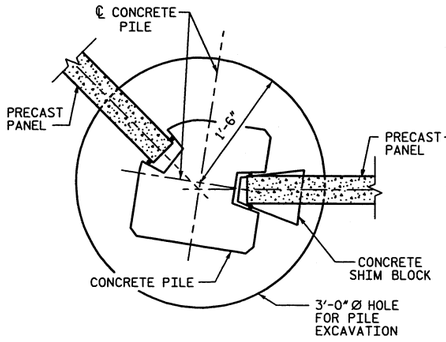
▲ NOTE THAT SOUND BARRIER WALL PILES LOCATED WITHIN THE MSE WALL BACKFILL MUST BE INSTALLED PRIOR TO MSE WALL CONSTRUCTION. THE DEPTHS ARE MEASURED FROM THE BOTTOM OF THE MSE WALL REINFORCED ZONE ASSUMING 2 FEET OF WALL EMBEDMENT AND BASED ON THE DIMENSION SHOWN IN THE ROADWAY CROSS SECTIONS.

THE ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL MATCH THE APPEARANCE (STONE SIZE AND SHAPE, STONE TEXTURE, PATTERN AND RELIEF) OF NATURAL STONE TO RESEMBLE A DRY STACKED STONE PATTERN WITH FEDERAL STANDARD 595 COLOR # FS30450 STAIN.

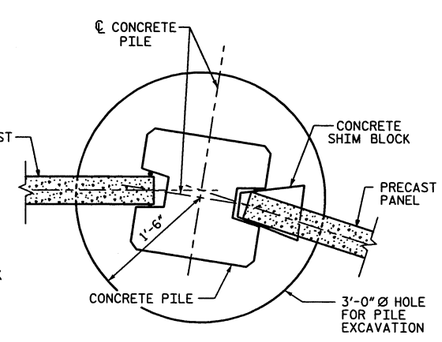
BILL OF MATERIAL -NW13-

SOUND BARRIER WALL	S.F.	44,952
ARCHITECTURAL SURFACE TREATMENT	S.F.	{75,822} ⚠

QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.

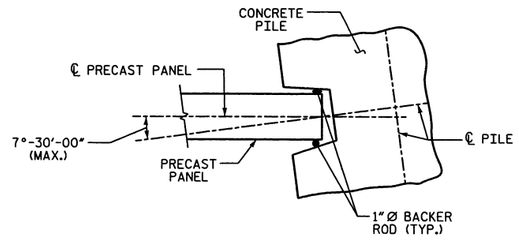


15° TO 45° TURNS
(PILE TYPE III)



0° TO 15° TURNS
(PILE TYPE I)

TYPICAL WALL TURN DETAILS



PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" MAX. TO ACCOMMODATE WALL TURN.)

⚠ REVISED ARCHITECTURAL SURFACE TREATMENT QUANTITY

PROJECT NO. U-4751

NEW HANOVER COUNTY

STATION: 128+33.75 -L- = 10+00.00 -NW13-

SHEET 1 OF 3

DRAWN BY : MBC	DATE : 5-17	DESIGN ENGINEER OF RECORD: J. DICHAK	DATE : 5-17
CHECKED BY : JAD	DATE : 5-17		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 023081 ENGINEER JOSEPH A. DICHAK
10/10/2017

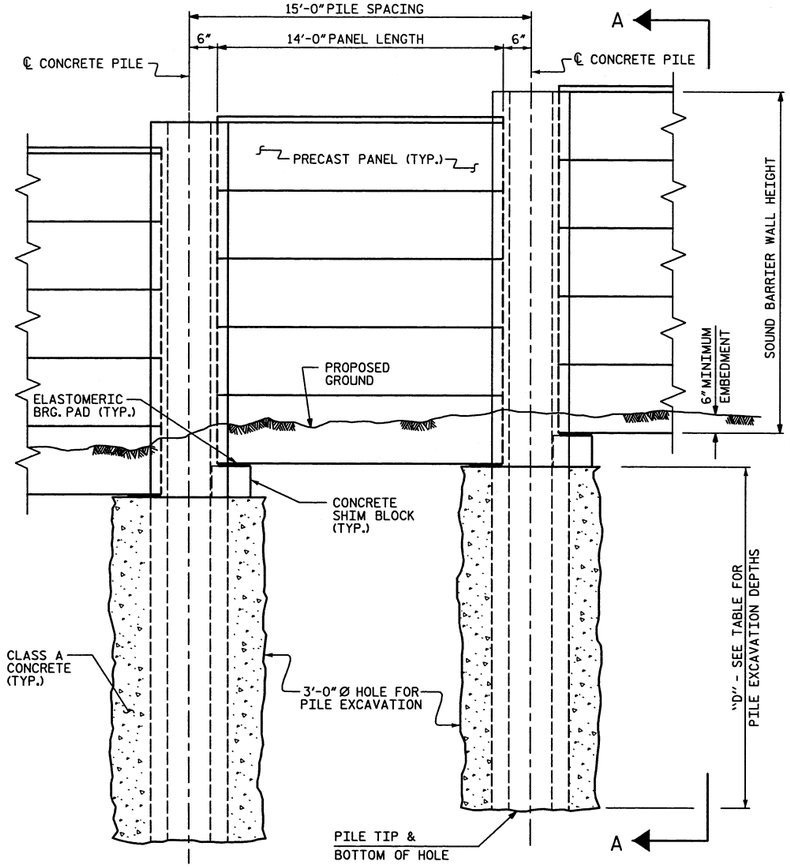
STV 100 Years
STV ENGINEERS, INC.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SOUND BARRIER WALL NO. -NW13-

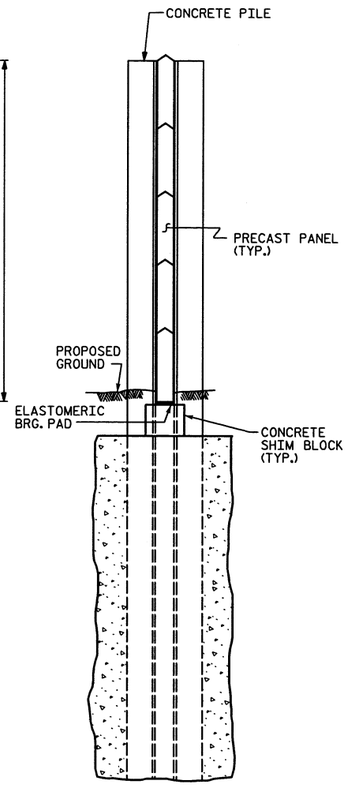
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	NW-10
1	STV	10-17	3			TOTAL SHEETS
2			4			17

NW13



ELEVATION

(DETAIL APPLIES TO 15' PILE SPACING ONLY.
FOR 25' PILE SPACING, SEE SHEET 2 OF 2.)
(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)



SECTION A-A

(DETAIL APPLIES TO 15' PILE SPACING ONLY.
FOR 25' PILE SPACING, SEE SHEET 2 OF 2.)
(CONCRETE BARRIER IN FRONT OF SOUND BARRIER WALL NOT SHOWN FOR CLARITY, SEE ROADWAY PLANS)

PILE EXCAVATION DEPTHS "D"			
3'-0" Ø HOLE			
WALL -NW14- (STA. 10+00 TO 21+65 -NW14-)			
STATION	MAX WALL HEIGHT	PILE SPACING	SHAFT DEPTH
STA. 129+24.09 -L- TO STA. 132+51.84 -L-	17'-0"	15'-0"	16'-0"
STA. 132+66.47 -L- TO STA. 138+08.08 -L-	14'-0"	15'-0"	14'-6"
△ STA. 138+22.72 -L- TO STA. 138+47.12 -L-	13'-0"	25'-0"	17'-0"
STA. 138+61.76 -L- TO STA. 140+66.69 -L-	13'-0"	15'-0"	14'-6"

△ FOR ELEVATION VIEW AND DETAILS FOR 25' PILE SPACING, SEE SHEET 2 OF 2.

△ FOR STEEL PILE, SUPPORT BEAM, ANGLES, AND LAGGING STOP NOTES, SEE "SOUND BARRIER WALL DETAILS" SHEET 3 OF 3.

NOTES:

FOR SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.

CONSTRUCT SOUND BARRIER WALL TO LINES AND GRADES SHOWN ON THE ROADWAY PLANS.

PROVIDE PANELS WITH A FLAT BOTTOM.

VERIFY THE LOCATION OF UNDERGROUND UTILITIES BEFORE DRILLING HOLES TO ENSURE SUFFICIENT CLEARANCE IS AVAILABLE.

ADJUST PILE EXCAVATION ELEVATIONS TO MAINTAIN 6" MINIMUM EMBEDMENT OF THE BOTTOM PANEL.

USE CLASS AA FOR PANELS AND CLASS A CONCRETE PILE EXCAVATION BACKFILL, IN ACCORDANCE WITH ARTICLE 1000-4 OF THE STANDARD SPECIFICATIONS.

FOR SOUND BARRIER WALL STATIONS, OFFSETS, AND WALL ENVELOPE, SEE ROADWAY PLANS.

PLACE 1" Ø BACKER RODS FULL HEIGHT ON EACH SIDE OF THE PRECAST PANELS. SET AND SEAL THE BACKER ROD IN PLACE WITH SEALANT THAT CONFORMS WITH ARTICLE 1028-3 OF THE STANDARD SPECIFICATIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC BEARING DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR CONCRETE SHIM BLOCK DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 OF 3.

FOR PRECAST PANEL DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEET 1 & 3 OF 3.

FOR CONCRETE PILE DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEETS 1 & 2 OF 3.

AT THE CONTRACTOR'S OPTION, USE CONTINUOUS FLIGHT AUGER PILES IN LIEU OF PILE EXCAVATION FOR SOUND BARRIER WALL FOUNDATION. SEE "CONTINUOUS FLIGHT AUGER PILES FOR SOUND BARRIER WALLS" SPECIAL PROVISION.

THE ARCHITECTURAL CONCRETE SURFACE TREATMENT SHALL MATCH THE APPEARANCE (STONE SIZE AND SHAPE, STONE TEXTURE, PATTERN AND RELIEF) OF NATURAL STONE TO RESEMBLE A DRY STACKED STONE PATTERN WITH FEDERAL STANDARD 595 COLOR * FS30450 STAIN.

EXPOSURE CATEGORY D - PILE REINFORCING STEEL

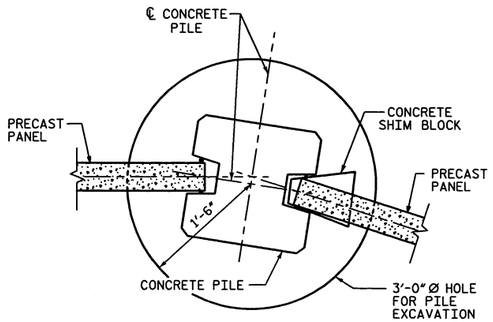
DESIGN WIND PRESSURE = 62 PSF (0' < H ≤ 14'); 71 PSF (14' < H < 25')

PILE TYPE I			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #8 EA. FACE	#3 @ 11" CTS.
15'-0"	15' < H ≤ 20'	4 - #10 EA. FACE	#3 @ 10" CTS.

PILE TYPE II			
PILE SPACING	MAXIMUM WALL HEIGHT (H)	VERTICAL REINFORCING STEEL	TIES
15'-0"	H ≤ 15'	4 - #6 EA. FACE	#3 @ 11" CTS.
15'-0"	15' < H ≤ 20'	4 - #8 EA. FACE	#3 @ 10" CTS.

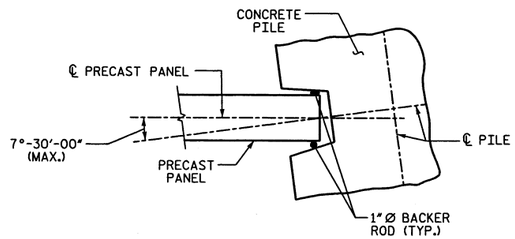
BILL OF MATERIAL -NW14-	
SOUND BARRIER WALL	S.F. 16,142
ARCHITECTURAL SURFACE TREATMENT	S.F. 26,964 ⚠
QUANTITIES PROVIDED ARE APPROXIMATE AND ARE FOR BID PURPOSES ONLY.	

⚠ REVISED ARCHITECTURAL SURFACE TREATMENT QUANTITY



0° TO 15° TURNS
(PILE TYPE I)

TYPICAL WALL TURN DETAILS



PILE ROTATION LIMIT FOR WALL TURN

(ROTATE THE CONCRETE PILE ±7°-30'-00" MAX. TO ACCOMMODATE WALL TURN.)

PROJECT NO. U-4751
NEW HANOVER COUNTY
STATION: 129+24.09 -L- = 10+00.00 -NW14-
SHEET 1 OF 2

DRAWN BY : MBC	DATE : 5-17	DESIGN ENGINEER OF RECORD: J. DICHAK	DATE : 5-17
CHECKED BY : JAD	DATE : 5-17		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 023081 ENGINEER JOSEPH A. DICHAK
10/10/2017

STV 100 years
STV ENGINEERS, INC.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SOUND BARRIER WALL NO. -NW14-

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	NW-13
1	STV	10-17	3			TOTAL SHEETS
2			4			17

NW14

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