



PAT McCrory  
Governor

NICHOLAS J. TENNYSON  
Secretary

November 04, 2016

**Addendum No. 1**

RE: Contract ID C203803

WBS # 39010.3.2

STATE FUNDED

**Cabarrus County (U-3440)**

NC-3 From Proposed West Side Bypass To SR-1691 (Loop Road)

In Kannapolis

**November 15, 2016 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 plans:

Sheet No.	Revisions
1A	Revised to indicate the addition of Sheet No. 2C-16
2C-16	New sheet to for detail for "Steel Plate Cover for Drainage Structure
UC-29	New sheet with 42" Sanitary Sewer added
UC-30	New sheet showing details of the new 6' Diameter Utility Manhole
W-5	Revised to include the value for the "maximum factored vertical pressure on foundation material"

Please add new Sheet Nos. UC-29 and UC-30 after existing Sheet No. UC-28. Please add New Sheet No. 2C-16 after existing Sheet No. 2C-15. Please void sheet Nos. 1A and W-5 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. 1 Dated 11-04-2016".
G-6	Added new utility and signal items to the list of specialty items within the project special provision entitled "Specialty Items"
New UC-12 thru UC-14	New pages added to include language concerning the new Sanitary Sewer
TS-16	Revised the pay items under 3.4 Measurement and Payment to reflect the below noted pay item change



Please void the Proposal Cover, Page No. G-6 and Page No. TS-16 in your proposal and staple the revised pages thereto. Please add New Page Nos. UC-12 thru UC-14 after existing Page No. UC-11.

On the item sheets the following pay items have been added, deleted or there quantity was changed:

<u>Item</u>	<u>Description</u>	<u>Old Quantity</u>	<u>New Quantity</u>
264-7300000000-E-1715	Unpaved Trenching (1, 2")	1,550 LF	10,335 LF
265-7300000000-E-1715	Unpaved Trenching (2, 2")	8,785 LF	<b>DELETED</b>
267-7301000000-E-1715	Directional Drill (2, 2") is <b>changed to</b> Directional Drill (1, 2")	4,818 LF	4,818 LF (Unchanged)
279-7481220000-N-SP	Camera With Internal Loop Emulator Processing Unit	4 EA	<b>DELETED</b>
354-5691000000-E-1520	42" Sanitary Gravity Sewer	<b>NEW ITEM</b>	113 LF
355-5777000000-E-1525	6' Diameter Utility Manhole	<b>NEW ITEM</b>	2 EA
356-5783000000-E-1525	Utility Manhole Wall, 6' Diameter	<b>NEW ITEM</b>	18 LF
357-5798000000-E-1530	Abandon 42" Utility Pipe	<b>NEW ITEM</b>	120 LF
358-5828000000-N-1530	Remove Utility Manhole	<b>NEW ITEM</b>	1 EA
359-7481240000-N-SP	Camera Without Internal Loop Emulator Processing Unit	<b>NEW ITEM</b>	4 EA
360-7481260000-N-SP	External Loop Emulator Processing Unit	<b>NEW ITEM</b>	1 EA

The Contractor's bid must be based on this revised pay items and pay item quantities. The contract will be prepared accordingly.

The Expedite File has been updated to reflect these revisions. Please download the Expedite Addendum File and follow the instructions for applying the addendum. Bid Express will not accept your bid unless the addendum has been applied.

Sincerely,

A handwritten signature in black ink, appearing to read "R. A. Garris", enclosed within a thin black rectangular border.

R. A. Garris, PE

Contract Officer

RAG/jag

Attachments

cc: Mr. Lamar Sylvester, PE  
Mr. Louis Mitchell, PE  
Mr. Rodger Rochelle, PE  
Mr. R.E. Davenport, PE  
Mr. Ken Kennedy, PE  
Ms. Lori Strickland  
Ms. Jaci Kincaid  
Project File (2)

Mr. Ray Arnold, PE  
Ms. Theresa Canales, PE  
Mr. Andy Gay, PE  
Mr. Mike Gwyn  
Mr. Mitchell Dixon  
Ms. Marsha Sample  
Ms. Penny Higgins

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

PROPOSAL

**INCLUDES ADDENDUM No. 1 DATED 11-04-16**

DATE AND TIME OF BID OPENING: **NOVEMBER 15, 2016 AT 2:00 PM**

CONTRACT ID      C203803  
WBS                39010.3.2

FEDERAL-AID NO. STATE FUNDED

COUNTY            CABARRUS

T.I.P. NO.        U-3440

MILES             2.646

ROUTE NO.        NC 3

LOCATION           NC-3 FROM PROPOSED WEST SIDE BYPASS TO SR-1691 (LOOP ROAD)  
IN KANNAPOLIS.

TYPE OF WORK    GRADING, DRAINAGE, PAVING, SIGNALS, CULVERTS 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 ROADWAY PROPOSAL**

**5% BID BOND OR BID DEPOSIT REQUIRED**

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**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*).

<b>Line #</b>	<b>Description</b>
111-121, 127	Guardrail
122-126	Fencing
132-140, 185	Signing
160-170, 172-173, 183	Long-Life Pavement Markings
171	Removable Tape
184	Permanent Pavement Markers
186-223, 354-358	Utility Construction
224-255	Erosion Control
256-300, 359-360	Signals/ITS System
331-336	Drilled Piers

**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 \$ **1.5601** 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:

<b>Description</b>	<b>Units</b>	<b>Fuel Usage Factor Diesel</b>
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

Project: U-3440

**UC-12**

County: Cabarrus

PROJECT SPECIAL PROVISIONS

Utility Construction



Technical Services of North Carolina, Inc.  
701 Corporate Center Drive, Suite 475  
Raleigh, NC 27607-5238  
Project Number. 60218986 U-3440  
November 2, 2016



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

**Revise the 2012 Standard Specifications as follows:**

**Page 10-57, Sub-article 1034-4(A) Ductile Iron Pipe, Gravity Flow Sewer Pipe, paragraph 3:**

add the following sentences:

The 42-inch ductile iron pipe shall be Class 350. The interior of the pipe shall be lined with Protecto 401 or approved equal.

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

add the following sentences:

The utility owner is the Water and Sewer Authority of Cabarrus County (WSACC). The contact person is Thomas Hahn, PE and he can be reached by phone at 704-786-1783.

**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 on gravity sewer lines larger than 24". Perform line and grade testing and deflection testing on all gravity sewer lines.

**Owner and Owner's Requirements:**

The existing water mains and sewer mains to be relocated are owned by the Water and Sewer Authority of Cabarrus County (WSACC). The Contractor shall provide access for the owner's representatives to all phases of construction. The owner shall be notified two weeks prior to commencement of any work and one week prior to service interruption.

Project: U-3440

**UC-13**

County: Cabarrus

PROJECT SPECIAL PROVISIONS  
Utility Construction

**Specifications****I. By-Pass Pumping:**

The required replacement of the sanitary sewer for the Interceptor at NC 3 Mooresville Road will require by-pass pumping of the sanitary sewer during construction.

The requirements for the pumps and associated operation shall include, but not be limited to, the following:

1. Bypass pumping system shall be sufficient capacity to pump an average daily flow of 2 mgd and a peak daily flow of 4 mgd.
2. Provide a four (4) hour field verification test, to be witnessed by WSACC, in order to demonstrate the temporary pumping system capabilities before the system is placed into full service.
3. Bypass pumping system shall require operation 24 hours per day, 7 days per week until the construction is complete to the extent that bypass pumping is no longer necessary.
4. Design, install and operate the temporary by-pass pumping system.
5. Provide five (5) references of projects that indicate a specialization in the design and operation of temporary by-pass pumping systems of a similar size and complexity as this project performed by the Contractor or their selected sub-contractor within the last three years.
6. There shall be no interruption of sewage flow throughout the duration of the project. Design, provide, maintain and operate temporary facilities necessary for the bypassing of the sewage flow during construction. The work shall include, but not be limited to, labor, dams, plugs, pumping equipment (both primary and back-up units as required), pipes, and necessary power. Provide equipment necessary to intercept the sewage flow before it reaches work area and discharge the sewage downstream of the work area to the existing sewer system.
7. Maintain sewer flow bypassing around the work area in a manner that will not cause damage or surcharging of the existing sewers.
8. The bypass pumping system shall protect public and private property, water resources, wetlands, and other natural resources from damage, flooding, and discharge of sewage.
9. Contractor shall be responsible for cost of governmental fines, and related cleanup and restoration associated with damage caused by bypass pumping operation and specifically the discharge of sewage outside of the collection system.
10. Submit a detailed by-pass plan. Plan shall include, but not be limited to, the following:
  - a. Describe provisions and precautions to be taken in the handling of the existing wastewater flows. The plan must be specific and complete as outlined below. No construction shall begin until all provisions and requirements have been reviewed by the Engineer

Project: U-3440

**UC-14**

County: Cabarrus

PROJECT SPECIAL PROVISIONS

## Utility Construction

- b. Bypass Pumps:
  - i. Staging areas of the pumps and design plans and computation for access to staging area;
  - ii. Number of bypass pumps on site, capacity, and power requirements;
  - iii. Calculations of the temporary pumps Total Dynamic Head (TDH) indicating static lift, friction losses, and flow velocity;
  - iv. Submit pump curves indicating pump-operating range;
  - v. Pumps shall be fully automatic self-priming that do not require the use of foot valves or vacuum pumps in the priming system. Pumps may be electric or diesel powered. Pumps must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of the sewage flows;
  - vi. Provide the necessary stop / start controls for each pump.
- c. Provide one stand-by pump for each size of the primary pumps to be maintained on site. Back-up pumps shall be on line, isolated from the primary system by a valve. The Back-up pumps shall be located adjacent to the primary pumps and ready for immediate use in the event of a primary pump failure.
- d. Standby power generator size and location. Method of noise control for pump and generator.
- e. A detail plan of the pumps suction and discharge pipes location:
  - i. Calculations for the selection of the bypass pipe size;
  - ii. The number of pipes, size, material, location and method of installation;
  - iii. Method of protecting discharge manhole from erosion and damage;
  - iv. Thrust and restraint pipe support and anchoring and locations;
  - v. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill;
  - vi. Method of plugging existing sewer and types of plugs;
  - vii. Schedule for installation and maintenance of pipes.
- f. Discharge pipe system shall be temporarily constructed of rigid pip with positive restrained joints. Under no circumstances, will aluminum irrigation type piping or glued PVC pipe be allowed. Discharge hose will only be allowed in short sections and with the specific approval of WSACC.
  - a. The cost for the by-pass pump requirement shall include labor for pumps setup, removal, site cleanup, material, equipment, piping, accessories and monitoring necessary for bypass setup to divert the sewage flow.
  - b. The cost shall be included in the cost for the pay item "42-inch Sanitary Gravity Sewer Replacement."



Install the necessary processing and communications equipment in the signal controller cabinet. Make all necessary modifications to install equipment, cabling harnesses, and camera sensor interface panels with surge suppression.

Perform modifications to camera sensor unit gain, sensitivity, and iris limits necessary to complete the installation.

Do not install camera sensor units on signal poles unless approved by the Engineer.

Install the necessary cables from each sensor to the signal controller cabinet along signal cabling routes. Install surge protection and terminate all cable conductors.

Relocate camera sensor units and reconfigure detection zones as necessary according to the plans for construction phases.

Provide at least 8 hours of training on the set up, operation, troubleshooting, and maintenance of the loop emulator detection system to a maximum of ten Department personnel. Arrange for training to be conducted by the manufacturer’s representative at an approved site within the Division responsible for administration of the project. Thirty days before conducting training submit a detailed course curriculum, draft manuals and materials, and resumes. Obtain approval of the submittal before conducting the training. At least one week before beginning training, provide three sets of complete documentation necessary to maintain and operate the system. Do not perform training until installation of loop emulator detection systems is complete.

**3.4. MEASUREMENT AND PAYMENT**

Actual number of site surveys, arranged, conducted, and accepted.

Actual number of cameras without internal loop emulator processing units furnished, installed, and accepted.

Actual number of camera sensor units relocated with detection zones reconfigured installed, and accepted.

Actual number of external loop emulator processing units furnished, installed, and accepted.

No measurement will be made of video imaging loop emulator system support or training, power and video cables, and trenching as these items will be considered incidental to furnishing and installing video imaging loop emulator detection systems.

Payment will be made under:

Site Survey .....	Each
Camera without Internal Loop Emulator Processing Unit.....	Each
External Loop Emulator Processing Unit .....	Each
Relocate Camera Sensor Unit .....	Each

**4. TRAFFIC SIGNAL SUPPORTS**

**4.1. METAL TRAFFIC SIGNAL SUPPORTS – ALL POLES**

**A. General:**

Furnish and install metal strain poles and metal poles with mast arms, grounding systems, and all necessary hardware. The work covered by this special provision includes requirements for the

County: Cabarrus

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
<b>ROADWAY ITEMS</b>						
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 & GRUB- BING	2 ACR		
0005	0015000000-N	205	SEALING ABANDONED WELLS	1 EA		
0006	0029000000-N	SP	REINFORCED BRIDGE APPROACH FILL, STATION ***** (68+25.60 -L- LT)	Lump Sum	L.S.	
0007	0029000000-N	SP	REINFORCED BRIDGE APPROACH FILL, STATION ***** (68+25.60 -L- RT)	Lump Sum	L.S.	
0008	0036000000-E	225	UNDERCUT EXCAVATION	2,500 CY		
0009	0134000000-E	240	DRAINAGE DITCH EXCAVATION	3,680 CY		
0010	0141000000-E	240	BERM DITCH CONSTRUCTION	2,430 LF		
0011	0156000000-E	250	REMOVAL OF EXISTING ASPHALT PAVEMENT	67,160 SY		
0012	0177000000-E	250	BREAKING OF EXISTING ASPHALT PAVEMENT	3,480 SY		
0013	0192000000-N	260	PROOF ROLLING	26 HR		
0014	0195000000-E	265	SELECT GRANULAR MATERIAL	2,500 CY		
0015	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZA- TION	18,000 SY		
0016	0199000000-E	SP	TEMPORARY SHORING	6,250 SF		
0017	0255000000-E	SP	GENERIC GRADING ITEM LANDFILL DEBRIS HAULING AND DISPOSAL	180 TON		

County: Cabarrus

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0018	0255000000-E	SP	GENERIC GRADING ITEM PETROLEUM CONTAMINATED SOIL HAULING AND DISPOSAL	234 TON		
0019	0318000000-E	300	FOUNDATION CONDITIONING MATE- RIAL, MINOR STRUCTURES	2,270 TON		
0020	0320000000-E	300	FOUNDATION CONDITIONING GEO- TEXTILE	13,820 SY		
0021	0335200000-E	305	15" DRAINAGE PIPE	6,684 LF		
0022	0335300000-E	305	18" DRAINAGE PIPE	2,540 LF		
0023	0335400000-E	305	24" DRAINAGE PIPE	4,156 LF		
0024	0335500000-E	305	30" DRAINAGE PIPE	904 LF		
0025	0335600000-E	305	36" DRAINAGE PIPE	2,484 LF		
0026	0335700000-E	305	42" DRAINAGE PIPE	80 LF		
0027	0335800000-E	305	48" DRAINAGE PIPE	476 LF		
0028	0343000000-E	310	15" SIDE DRAIN PIPE	324 LF		
0029	0360000000-E	310	12" RC PIPE CULVERTS, CLASS III	8 LF		
0030	0378000000-E	310	24" RC PIPE CULVERTS, CLASS III	8 LF		
0031	0420000000-E	310	66" RC PIPE CULVERTS, CLASS III	136 LF		
0032	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (48")	60 LF		
0033	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (66")	256 LF		
0034	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	192 LF		

County: Cabarrus

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0035	0576000000-E	310	*** CS PIPE CULVERTS, ***** THICK (36", 0.079")	56 LF		
0036	0576000000-E	310	*** CS PIPE CULVERTS, ***** THICK (48, 0.109")	56 LF		
0037	0582000000-E	310	15" CS PIPE CULVERTS, 0.064" THICK	872 LF		
0038	0588000000-E	310	18" CS PIPE CULVERTS, 0.064" THICK	180 LF		
0039	0594000000-E	310	24" CS PIPE CULVERTS, 0.064" THICK	260 LF		
0040	0600000000-E	310	30" CS PIPE CULVERTS, 0.079" THICK	60 LF		
0041	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (15", 0.064")	7 EA		
0042	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (18", 0.064")	1 EA		
0043	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (24", 0.064")	4 EA		
0044	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (30", 0.079")	1 EA		
0045	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (36", 0.079")	1 EA		
0046	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (48", 0.109")	1 EA		
0047	0973100000-E	330	*** WELDED STEEL PIPE, ***** THICK, GRADE B IN SOIL (36", 0.1094")	112 LF		
0048	0973100000-E	330	*** WELDED STEEL PIPE, ***** THICK, GRADE B IN SOIL (42", 0.1094")	96 LF		

County: Cabarrus

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0049	0973100000-E	330	*** WELDED STEEL PIPE, ***** THICK, GRADE B IN SOIL (66", 0.1094")	48 LF		
0050	0973300000-E	330	*** WELDED STEEL PIPE, ***** THICK, GRADE B NOT IN SOIL (36", 0.1094")	112 LF		
0051	0973300000-E	330	*** WELDED STEEL PIPE, ***** THICK, GRADE B NOT IN SOIL (42", 0.1094")	96 LF		
0052	0973300000-E	330	*** WELDED STEEL PIPE, ***** THICK, GRADE B NOT IN SOIL (66", 0.1094")	48 LF		
0053	0995000000-E	340	PIPE REMOVAL	3,924 LF		
0054	1044000000-E	501	LIME TREATED SOIL (SLURRY METHOD)	35,840 SY		
0055	1066000000-E	501	LIME FOR LIME TREATED SOIL	360 TON		
0056	1099500000-E	505	SHALLOW UNDERCUT	4,000 CY		
0057	1099700000-E	505	CLASS IV SUBGRADE STABILIZA- TION	8,000 TON		
0058	1110000000-E	510	STABILIZER AGGREGATE	500 TON		
0059	1115000000-E	SP	GEOTEXTILE FOR PAVEMENT STA- BILIZATION	6,430 SY		
0060	1176000000-E	542	SOIL CEMENT BASE	53,760 SY		
0061	1187000000-E	542	PORTLAND CEMENT FOR SOIL CE- MENT BASE	1,479 TON		
0062	1209000000-E	543	ASPHALT CURING SEAL	13,440 GAL		
0063	1220000000-E	545	INCIDENTAL STONE BASE	2,000 TON		
0064	1297000000-E	607	MILLING ASPHALT PAVEMENT, ***** DEPTH (3")	6,720 SY		
0065	1330000000-E	607	INCIDENTAL MILLING	2,000 SY		

County: Cabarrus

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0066	1498000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B	26,400	TON	
0067	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	23,800	TON	
0068	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	2,500	TON	
0069	1847000000-E	710	***** PORT CEM CONC PAVEMENT, THROUGH LANES (WITH DOWELS) (6")	400	SY	
0070	1891000000-E	SP	GENERIC PAVING ITEM 12" JOINTED CONCRETE TRUCK APRON (TINTED)	660	SY	
0071	2022000000-E	815	SUBDRAIN EXCAVATION	2,238	CY	
0072	2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	6,660	SY	
0073	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	1,119	CY	
0074	2043000000-E	815	4" PERFORATED SUBDRAIN PIPE	3,360	LF	
0075	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	3,300	LF	
0076	2070000000-N	815	SUBDRAIN PIPE OUTLET	14	EA	
0077	2076000000-E	815	4" OUTLET PIPE	42	LF	
0078	2077000000-E	815	6" OUTLET PIPE	42	LF	
0079	2143000000-E	818	BLOTTING SAND	15	TON	
0080	2190000000-N	828	TEMPORARY STEEL PLATE COVERS FOR MASONRY DRAINAGE STRUCTURE	47	EA	
0081	2209000000-E	838	ENDWALLS	21.7	CY	
0082	2220000000-E	838	REINFORCED ENDWALLS	14.3	CY	
0083	2253000000-E	840	PIPE COLLARS	1.292	CY	

County: Cabarrus

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0084	2264000000-E	840	PIPE PLUGS	0.145 CY		
0085	2275000000-E	SP	FLOWABLE FILL	164 CY		
0086	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	259 EA		
0087	2297000000-E	840	MASONRY DRAINAGE STRUCTURES	21.944 CY		
0088	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	184.6 LF		
0089	2364000000-N	840	FRAME WITH TWO GRATES, STD 840.16	56 EA		
0090	2364200000-N	840	FRAME WITH TWO GRATES, STD 840.20	31 EA		
0091	2366000000-N	840	FRAME WITH TWO GRATES, STD 840.24	14 EA		
0092	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	14 EA		
0093	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	54 EA		
0094	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	70 EA		
0095	2396000000-N	840	FRAME WITH COVER, STD 840.54	7 EA		
0096	2440000000-N	852	CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN	4 EA		
0097	2451000000-N	852	CONCRETE TRANSITIONAL SECTION FOR DROP INLET	35 EA		
0098	2535000000-E	846	***X*** CONCRETE CURB (8" X 12")	290 LF		
0099	2535000000-E	846	***X*** CONCRETE CURB (8" X 18")	270 LF		
0100	2538000000-E	846	***I*** CONCRETE CURB & GUTTER (2'-9")	640 LF		

County: Cabarrus

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0101	2542000000-E	846	1'-6" CONCRETE CURB & GUTTER	19,885	LF	
0102	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	28,750	LF	
0103	2591000000-E	848	4" CONCRETE SIDEWALK	15,700	SY	
0104	2605000000-N	848	CONCRETE CURB RAMP	55	EA	
0105	2612000000-E	848	6" CONCRETE DRIVEWAY	630	SY	
0106	2619000000-E	850	4" CONCRETE PAVED DITCH	290	SY	
0107	2655000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)	3,010	SY	
0108	2759000000-N	SP	GENERIC PAVING ITEM EMERGENCY VEHICLE ACCESS FOR CONCRETE ISLAND	1	EA	
0109	2830000000-N	858	ADJUSTMENT OF MANHOLES	1	EA	
0110	2845000000-N	858	ADJUSTMENT OF METER BOXES OR VALVE BOXES	90	EA	
0111	3030000000-E	862	STEEL BM GUARDRAIL	5,850	LF	
0112	3045000000-E	862	STEEL BM GUARDRAIL, SHOP CURVED	500	LF	
0113	3105000000-N	862	STEEL BM GUARDRAIL TERMINAL SECTIONS	10	EA	
0114	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	10	EA	
0115	3195000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE AT-1	4	EA	
0116	3210000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE CAT-1	13	EA	
0117	3215000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE III	4	EA	
0118	3270000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE 350	19	EA	



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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0119	3317000000-N	862	GUARDRAIL ANCHOR UNITS, TYPE B-77	4 EA		
0120	3345000000-E	864	REMOVE & RESET EXISTING GUARDRAIL	162.5 LF		
0121	3360000000-E	863	REMOVE EXISTING GUARDRAIL	300 LF		
0122	3503000000-E	866	WOVEN WIRE FENCE, 47" FABRIC	600 LF		
0123	3509000000-E	866	4" TIMBER FENCE POSTS, 7'-6" LONG	21 EA		
0124	3515000000-E	866	5" TIMBER FENCE POSTS, 8'-0" LONG	32 EA		
0125	3557000000-E	866	ADDITIONAL BARBED WIRE	100 LF		
0126	3575000000-E	SP	GENERIC FENCING ITEM RETAINING WALL ALUMINUM PICKET FENCE (BLACK POWDER COATED)	1,031 LF		
0127	3595000000-E	869	RELAPPING GUARDRAIL	250 LF		
0128	3628000000-E	876	RIP RAP, CLASS I	1,340 TON		
0129	3635000000-E	876	RIP RAP, CLASS II	50 TON		
0130	3649000000-E	876	RIP RAP, CLASS B	1,256 TON		
0131	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	7,910 SY		
0132	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	5,100 LF		
0133	4096000000-N	904	SIGN ERECTION, TYPE D	13 EA		
0134	4102000000-N	904	SIGN ERECTION, TYPE E	249 EA		
0135	4108000000-N	904	SIGN ERECTION, TYPE F	50 EA		
0136	4116100000-N	904	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (D)	2 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0137	4116100000-N	904	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)	2	EA	
0138	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	121	EA	
0139	4192000000-N	907	DISPOSAL OF SUPPORT, U-CHANNEL	2	EA	
0140	4238000000-N	907	DISPOSAL OF SIGN, D, E OR F	2	EA	
0141	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	1,783	SF	
0142	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	256	SF	
0143	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	484	SF	
0144	4415000000-N	1115	FLASHING ARROW BOARD	2	EA	
0145	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	2	EA	
0146	4422000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM)	120	DAY	
0147	4430000000-N	1130	DRUMS	400	EA	
0148	4435000000-N	1135	CONES	100	EA	
0149	4445000000-E	1145	BARRICADES (TYPE III)	680	LF	
0150	4450000000-N	1150	FLAGGER	3,200	HR	
0151	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	6	EA	
0152	4470000000-N	1160	RESET TEMPORARY CRASH CUSHION	2	EA	
0153	4480000000-N	1165	TMA	2	EA	
0154	4485000000-E	1170	PORTABLE CONCRETE BARRIER	580	LF	
0155	4490000000-E	1170	PORTABLE CONCRETE BARRIER (ANCHORED)	250	LF	

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0156	4500000000-E	1170	RESET PORTABLE CONCRETE BARRIER	300 LF		
0157	4516000000-N	1180	SKINNY DRUM	100 EA		
0158	4520000000-N	1266	TUBULAR MARKERS (FIXED)	40 EA		
0159	4650000000-N	1251	TEMPORARY RAISED PAVEMENT MARKERS	700 EA		
0160	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	14,390 LF		
0161	4686000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)	44,043 LF		
0162	4695000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	5,890 LF		
0163	4697000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)	1,913 LF		
0164	4700000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	1,100 LF		
0165	4710000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)	1,235 LF		
0166	4721000000-E	1205	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)	28 EA		
0167	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	223 EA		
0168	4726100000-E	1205	HEATED-IN-PLACE THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)	74 EA		
0169	4726110000-E	1205	HEATED-IN-PLACE THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	74 EA		
0170	4770000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (II)	325 LF		
0171	4770000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)	1,000 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0172	4800000000-N	1205	COLD APPLIED PLASTIC PAVEMENT MARKING CHARACTER, TYPE ** (II)	1 EA		
0173	4805000000-N	1205	COLD APPLIED PLASTIC PAVEMENT MARKING SYMBOL, TYPE ** (II)	1 EA		
0174	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	94,750 LF		
0175	4820000000-E	1205	PAINT PAVEMENT MARKING LINES (8")	1,770 LF		
0176	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	990 LF		
0177	4840000000-N	1205	PAINT PAVEMENT MARKING CHARACTER	28 EA		
0178	4845000000-N	1205	PAINT PAVEMENT MARKING SYMBOL	121 EA		
0179	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	15,100 LF		
0180	4860000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (8")	580 LF		
0181	4865000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (12")	165 LF		
0182	4870000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (24")	300 LF		
0183	4893000000-E	SP	GENERIC PAVEMENT MARKING ITEM DECORATIVE CROSSWALKS TPPM (THERMOPLASTIC PAVEMENT MARKINGS)	2,440 SF		
0184	4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	2,310 EA		
0185	4915000000-E	1264	7' U-CHANNEL POSTS	6 EA		
0186	5325200000-E	1510	2" WATER LINE	386 LF		
0187	5325600000-E	1510	6" WATER LINE	1,823 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0188	5325800000-E	1510	8" WATER LINE	732	LF	
0189	5326200000-E	1510	12" WATER LINE	13,923	LF	
0190	5327400000-E	1510	24" WATER LINE	141	LF	
0191	5536000000-E	1515	2" VALVE	6	EA	
0192	5540000000-E	1515	6" VALVE	12	EA	
0193	5546000000-E	1515	8" VALVE	4	EA	
0194	5558000000-E	1515	12" VALVE	26	EA	
0195	5559400000-E	1515	24" VALVE	3	EA	
0196	5572200000-E	1515	12" TAPPING VALVE	1	EA	
0197	5589200000-E	1515	2" AIR RELEASE VALVE	16	EA	
0198	5606000000-E	1515	2" BLOW OFF	1	EA	
0199	5606400000-E	1515	4" BLOW OFF	1	EA	
0200	5648000000-N	1515	RELOCATE WATER METER	54	EA	
0201	5666000000-E	1515	FIRE HYDRANT	21	EA	
0202	5672000000-N	1515	RELOCATE FIRE HYDRANT	14	EA	
0203	5691300000-E	1520	8" SANITARY GRAVITY SEWER	7,428	LF	
0204	5691500000-E	1520	12" SANITARY GRAVITY SEWER	260	LF	
0205	5768000000-N	1520	SANITARY SEWER CLEAN-OUT	21	EA	
0206	5775000000-E	1525	4' DIA UTILITY MANHOLE	52	EA	
0207	5776000000-E	1525	5' DIA UTILITY MANHOLE	1	EA	
0208	5781000000-E	1525	UTILITY MANHOLE WALL, 4' DIA	271.1	LF	

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0209	5782000000-E	1525	UTILITY MANHOLE WALL, 5' DIA	1.5 LF		
0210	5801000000-E	1530	ABANDON 8" UTILITY PIPE	10,280 LF		
0211	5802000000-E	1530	ABANDON 10" UTILITY PIPE	47 LF		
0212	5804000000-E	1530	ABANDON 12" UTILITY PIPE	3,832 LF		
0213	5813000000-E	1530	ABANDON 24" UTILITY PIPE	121 LF		
0214	5815000000-N	1530	REMOVE WATER METER	7 EA		
0215	5816000000-N	1530	ABANDON UTILITY MANHOLE	24 EA		
0216	5835800000-E	1540	18" ENCASEMENT PIPE	600 LF		
0217	5836000000-E	1540	24" ENCASEMENT PIPE	285 LF		
0218	5872000000-E	1550	TRENCHLESS INSTALLATION OF 18" IN SOIL	270 LF		
0219	5872010000-E	1550	TRENCHLESS INSTALLATION OF 18" NOT IN SOIL	270 LF		
0220	5872200000-E	1550	TRENCHLESS INSTALLATION OF 24" IN SOIL	143 LF		
0221	5872210000-E	1550	TRENCHLESS INSTALLATION OF 24" NOT IN SOIL	142 LF		
0222	5882000000-N	SP	GENERIC UTILITY ITEM ABANDON WATER VALVE	47 EA		
0223	5882000000-N	SP	GENERIC UTILITY ITEM REMOVE MANHOLE AND AIR RELEASE VALVE	1 EA		
0224	6000000000-E	1605	TEMPORARY SILT FENCE	42,150 LF		
0225	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	1,260 TON		
0226	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	5,225 TON		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0227	6012000000-E	1610	SEDIMENT CONTROL STONE	3,835 TON		
0228	6015000000-E	1615	TEMPORARY MULCHING	62.5 ACR		
0229	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	3,500 LB		
0230	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	19 TON		
0231	6024000000-E	1622	TEMPORARY SLOPE DRAINS	2,450 LF		
0232	6029000000-E	SP	SAFETY FENCE	7,200 LF		
0233	6030000000-E	1630	SILT EXCAVATION	10,000 CY		
0234	6036000000-E	1631	MATTING FOR EROSION CONTROL	81,500 SY		
0235	6037000000-E	SP	COIR FIBER MAT	210 SY		
0236	6038000000-E	SP	PERMANENT SOIL REINFORCEMENT MAT	1,680 SY		
0237	6042000000-E	1632	1/4" HARDWARE CLOTH	10,050 LF		
0238	6045000000-E	SP	*** TEMPORARY PIPE (18")	670 LF		
0239	6069000000-E	1638	STILLING BASINS	98 CY		
0240	6070000000-N	1639	SPECIAL STILLING BASINS	14 EA		
0241	6071010000-E	SP	WATTLE	3,050 LF		
0242	6071012000-E	SP	COIR FIBER WATTLE	2,100 LF		
0243	6071020000-E	SP	POLYACRYLAMIDE (PAM)	2,100 LB		
0244	6071030000-E	1640	COIR FIBER BAFFLE	2,000 LF		
0245	6071050000-E	SP	*** SKIMMER (1-1/2")	15 EA		
0246	6084000000-E	1660	SEEDING & MULCHING	30 ACR		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0247	6087000000-E	1660	MOWING	25	ACR	
0248	6090000000-E	1661	SEED FOR REPAIR SEEDING	650	LB	
0249	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	1.75	TON	
0250	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	1,200	LB	
0251	6108000000-E	1665	FERTILIZER TOPDRESSING	35.75	TON	
0252	6111000000-E	SP	IMPERVIOUS DIKE	270	LF	
0253	6114500000-N	1667	SPECIALIZED HAND MOWING	75	MHR	
0254	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	75	EA	
0255	6132000000-N	SP	GENERIC EROSION CONTROL ITEM CONCRETE WASHOUT STRUCTURE	16	EA	
0256	7048500000-E	1705	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/COUNTDOWN)	16	EA	
0257	7060000000-E	1705	SIGNAL CABLE	7,935	LF	
0258	7120000000-E	1705	VEHICLE SIGNAL HEAD (12", 3 SECTION)	41	EA	
0259	7132000000-E	1705	VEHICLE SIGNAL HEAD (12", 4 SECTION)	2	EA	
0260	7144000000-E	1705	VEHICLE SIGNAL HEAD (12", 5 SECTION)	2	EA	
0261	7252000000-E	1710	MESSENGER CABLE (1/4")	325	LF	
0262	7264000000-E	1710	MESSENGER CABLE (3/8")	1,845	LF	
0263	7279000000-E	1715	TRACER WIRE	13,603	LF	
0264	7300000000-E	1715	UNPAVED TRENCHING (***** (1, 2")	10,335	LF	
0266	7300100000-E	1715	UNPAVED TRENCHING FOR TEMP- ORARY LEAD-IN	615	LF	



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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0267	7301000000-E	1715	DIRECTIONAL DRILL (***** (1, 2"))	4,818 LF		
0268	7301000000-E	1715	DIRECTIONAL DRILL (***** (3, 2"))	320 LF		
0269	7324000000-N	1716	JUNCTION BOX (STANDARD SIZE)	24 EA		
0270	7348000000-N	1716	JUNCTION BOX (OVER-SIZED, HEA- VY DUTY)	44 EA		
0271	7360000000-N	1720	WOOD POLE	8 EA		
0272	7372000000-N	1721	GUY ASSEMBLY	18 EA		
0273	7408000000-E	1722	1" RISER WITH WEATHERHEAD	2 EA		
0274	7420000000-E	1722	2" RISER WITH WEATHERHEAD	10 EA		
0275	7432000000-E	1722	2" RISER WITH HEAT SHRINK TUBING	4 EA		
0276	7444000000-E	1725	INDUCTIVE LOOP SAWCUT	4,710 LF		
0277	7456000000-E	1726	LEAD-IN CABLE (***** (14-2))	12,470 LF		
0278	7481000000-N	SP	SITE SURVEY	1 EA		
0280	7481280000-N	SP	RELOCATE CAMERA SENSOR UNIT	2 EA		
0281	7516000000-E	1730	COMMUNICATIONS CABLE (**FIBER) (12)	165 LF		
0282	7516000000-E	1730	COMMUNICATIONS CABLE (**FIBER) (24)	15,063 LF		
0283	7540000000-N	1731	SPLICE ENCLOSURE	3 EA		
0284	7552000000-N	1731	INTERCONNECT CENTER	3 EA		
0285	7564000000-N	1732	FIBER-OPTIC TRANSCEIVER, DROP & REPEAT	3 EA		
0286	7566000000-N	1733	DELINEATOR MARKER	20 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0287	7575142000-N	1736	900MHZ RADIO	1 EA		
0288	7576000000-N	SP	METAL STRAIN SIGNAL POLE	4 EA		
0289	7588000000-N	SP	METAL POLE WITH SINGLE MAST ARM	4 EA		
0290	7613000000-N	SP	SOIL TEST	8 EA		
0291	7614100000-E	SP	DRILLED PIER FOUNDATION	48 CY		
0292	7631000000-N	SP	MAST ARM WITH METAL POLE DE-SIGN	4 EA		
0293	7636000000-N	1745	SIGN FOR SIGNALS	3 EA		
0294	7642200000-N	1743	TYPE II PEDESTAL WITH FOUNDATION	16 EA		
0295	7684000000-N	1750	SIGNAL CABINET FOUNDATION	2 EA		
0296	7756000000-N	1751	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)	2 EA		
0297	7780000000-N	1751	DETECTOR CARD (TYPE 2070L)	21 EA		
0298	7901000000-N	1753	CABINET BASE EXTENDER	2 EA		
0299	7980000000-N	SP	GENERIC SIGNAL ITEM POWDER COAT FOR SIGNAL PEDESTAL	16 EA		
0300	7980000000-N	SP	GENERIC SIGNAL ITEM POWDER COAT FOR SINGLE MAST ARM POLE	4 EA		

\*\*\*\*\* BEGIN SCHEDULE AA \*\*\*\*\*  
 \*\*\*\*\* ( 2 ALTERNATES ) \*\*\*\*\*

0301	0022000000-E	225	UNCLASSIFIED EXCAVATION	124,000 CY		
<b>AA1</b>						
0302	0106000000-E	230	BORROW EXCAVATION	76,000 CY		
<b>AA1</b>						
0303	1011000000-N	500	FINE GRADING	Lump Sum	L.S.	
<b>AA1</b>						

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0304	1121000000-E	520	AGGREGATE BASE COURSE	51,800		
AA1				TON		
0305	1489000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0B	6,900		
AA1				TON		
0306	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	3,000		
AA1				TON		
*** OR ***						
0307	0022000000-E	225	UNCLASSIFIED EXCAVATION	113,000		
AA2				CY		
0308	0106000000-E	230	BORROW EXCAVATION	80,000		
AA2				CY		
0309	1011000000-N	500	FINE GRADING	Lump Sum	L.S.	
AA2						
0310	1121000000-E	520	AGGREGATE BASE COURSE	340		
AA2				TON		
0311	1489000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0B	25,700		
AA2				TON		
0312	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	3,830		
AA2				TON		
***** END SCHEDULE AA *****						
0354	5691000000-E	1520	***" SANITARY GRAVITY SEWER (42")	113		
				LF		
0355	5777000000-E	1525	6' DIA UTILITY MANHOLE	2		
				EA		
0356	5783000000-E	1525	UTILITY MANHOLE WALL, 6' DIA	18		
				LF		
0357	5798000000-E	1530	ABANDON ***" UTILITY PIPE (42")	120		
				LF		
0358	5828000000-N	1530	REMOVE UTILITY MANHOLE	1		
				EA		
0359	7481240000-N	SP	CAMERA WITHOUT INTERNAL LOOP EMULATOR PROCESSING UNIT	4		
				EA		
0360	7481260000-N	SP	EXTERNAL LOOP EMULATOR PROCESSING UNIT	1		
				EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
<b>CULVERT ITEMS</b>						
0313	8056000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ***** (117+50.00 -L-)	Lump Sum	L.S.	
0314	8056000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ***** (40+60.90 -L-)	Lump Sum	L.S.	
0315	8126000000-N	414	CULVERT EXCAVATION, STA ***** (117+50.00 -L-)	Lump Sum	L.S.	
0316	8126000000-N	414	CULVERT EXCAVATION, STA ***** (40+60.90 -L-)	Lump Sum	L.S.	
0317	8133000000-E	414	FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	653 TON		
0318	8196000000-E	420	CLASS A CONCRETE (CULVERT)	931.7 CY		
0319	8245000000-E	425	REINFORCING STEEL (CULVERT)	109,820 LB		
0320	8804000000-N	SP	GENERIC CULVERT ITEM PLACEMENT OF NATURAL STREAM BED MATERIAL	Lump Sum	L.S.	
<b>WALL ITEMS</b>						
0321	8801000000-E	SP	MSE RETAINING WALL NO **** (2)	970 SF		
0322	8801000000-E	SP	MSE RETAINING WALL NO **** (5)	280 SF		
0323	8802010000-E	SP	SOIL NAIL RETAINING WALLS	9,690 SF		
0324	8802014000-E	SP	SOLDIER PILE RETAINING WALLS	2,015 SF		
0325	8802015100-N	SP	SOIL NAIL VERIFICATION TESTS	2 EA		
0326	8802015110-N	SP	SOIL NAIL PROOF TESTS	26 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0327	8847000000-E	SP	GENERIC RETAINING WALL ITEM CAST IN PLACE (CIP) GRAVITY WALL	605 SF		
<b>STRUCTURE ITEMS</b>						
0328	8017000000-N	SP	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (68+25.60 -L- LT)	Lump Sum	L.S.	
0329	8017000000-N	SP	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (68+25.60 -L- RT)	Lump Sum	L.S.	
0330	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ***** (68+25.60 -L- RT)	Lump Sum	L.S.	
0331	8105540000-E	411	3'-6" DIA DRILLED PIERS IN SOIL	117.5 LF		
0332	8105640000-E	411	3'-6" DIA DRILLED PIERS NOT IN SOIL	152 LF		
0333	8111400000-E	411	PERMANENT STEEL CASING FOR 3'-6" DIA DRILLED PIER	62.3 LF		
0334	8113000000-N	411	SID INSPECTIONS	8 EA		
0335	8114000000-N	411	SPT TESTING	16 EA		
0336	8115000000-N	411	CSL TESTING	4 EA		
0337	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVA- TION AT STATION ***** (68+25.60 -L- LT)	Lump Sum	L.S.	
0338	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVA- TION AT STATION ***** (68+25.60 -L- RT)	Lump Sum	L.S.	
0339	8147000000-E	420	REINFORCED CONCRETE DECK SLAB	10,248 SF		
0340	8161000000-E	420	GROOVING BRIDGE FLOORS	9,860 SF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0341	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	285.8 CY		
0342	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (68+25.60 -L- LT)	Lump Sum	L.S.	
0343	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (68+25.60 -L- RT)	Lump Sum	L.S.	
0344	8217000000-E	425	REINFORCING STEEL (BRIDGE)	57,548 LB		
0345	8238000000-E	425	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	6,886 LB		
0346	8262000000-E	430	45" PRESTRESSED CONCRETE GIR- DERS	1,005.334 LF		
0347	8364000000-E	450	HP12X53 STEEL PILES	615 LF		
0348	8482000000-E	460	THREE BAR METAL RAIL	240.64 LF		
0349	8503000000-E	460	CONCRETE BARRIER RAIL	256.44 LF		
0350	8608000000-E	876	RIP RAP CLASS II (2'-0" THICK)	650 TON		
0351	8622000000-E	876	GEOTEXTILE FOR DRAINAGE	720 SY		
0352	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum	L.S.	
0353	8860000000-N	SP	GENERIC STRUCTURE ITEM ASBESTOS ASSESSMENT	Lump Sum	L.S.	

1014/Nov03/Q1639241.795/D1584042708210/E358

Total Amount Of Bid For Entire Project :

B/17/99

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-7	SURVEY CONTROL SHEETS
2A-1 THRU 2A-8	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-4	INTERSECTION DETAILS
2B-5	OFFSET PROFILES FOR STRUCTURE DESIGN
2C-1	EMERGENCY VEHICLE ACCESS DETAIL
2C-2	TRANSITION FROM 2'-6" CURB & GUTTER TO 4' PAVED SHOULDER
2C-3	EXTRA DEPTH CONCRETE CATCH BASIN
2C-4	2'-9" CONCRETE CURB & GUTTER
2C-5	DETAIL OF 1'-6" TO 2'-9" CURB & GUTTER TRANSITION SECTION
2C-6	COAL COMBUSTION PRODUCT PLACEMENT DETAIL
2C-7	STRUCTURE ANCHOR UNITS, TYPE III
2C-8	STRUCTURE ANCHOR UNITS, TYPE B-77
2C-9	REINFORCED CONCRETE ENDWALL
2C-10	TB 2G1 IN GRASS ISLAND
2C-11	SPECIAL FENCE ON RETAINING WALL
2C-12	SPECIAL JB 66" RCP to 5x6 RCBC WITH MH COVER
2C-13	SPECIAL JB 66" RCP to 5x6 RCBC
2C-14	METHOD FOR PLACEMENT OF DI IN CONCRETE ISLANDS
2C-15	ROUNDABOUT TRUCK APRON
2C-16	TEMPORARY STEEL PLATE COVERS
2G-1 THRU 2G-3	STANDARD TEMPORARY WALL
2H-1	STOCKPILE CONTAINMENT DETAIL
3B-1 THRU 3B-2	SUMMARY OF ROADWAY QUANTITIES
	SUMMARY OF EARTHWORK, GUARDRAIL
	SUMMARY, ASPHALT PAVEMENT REMOVAL
	SUMMARY, AND BREAKING OF EXISTING
	PAVEMENT SUMMARY, PREFENCING
3D-1 THRU 3D-14	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARY
3P-1 THRU 3P-2	PARCEL INDEX SHEETS
4 THRU 14	PLAN SHEETS
15 THRU 25	PROFILE SHEETS
TMP-1 THRU TMP-38A	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-14	PAVEMENT MARKING PLANS
EC-1 THRU EC-29	EROSION CONTROL PLANS
SIGN-1 THRU SIGN 19	SIGNING PLANS
SIG. 1.0 THRU SIG. 13.0	SIGNAL PLANS
SIG. M1 THRU SIG. M8	STANDARD DRAWINGS FOR METAL POLES
SIG. P1 THRU SIG. P3	PEDESTRIAN PUSHBUTTON STANDARDS
SCP. 1 THRU SCP. 15	COMMUNICATIONS CABLE AND CONDUIT ROUTING PLANS
UC-1 THRU UC-28	UTILITY CONSTRUCTION PLANS
UD-1 THRU UD-14	UTILITIES BY OTHERS PLANS
X-A THRU X-B	CROSS-SECTION INDEX
X-1A THRU X-166	CROSS-SECTIONS
C1-1 THRU C1-5	CULVERT PLANS (-L- STA. 40+60)
C2-1 THRU C2-8	CULVERT PLANS (-L- STA. 117+50)
S1-1 THRU S1-37	STRUCTURE PLANS (LT)
S2-1 THRU S2-37	STRUCTURE PLANS (RT)
W-1 THRU W-2	RETAINING WALL #1 PLANS
W-3 THRU W-5	RETAINING WALL #2 PLANS & WALL #5 PLANS
W-6 THRU W-7	RETAINING WALL #3 PLANS
W-8 THRU W-9	RETAINING WALL #4 PLANS

2012 ROADWAY ENGLISH STANDARD DRAWINGS

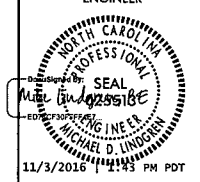
EFF. 01-17-2012  
REV. 02-29-2016

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	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
240.01	Guide for Berm Ditch Construction
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
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 7 - CONCRETE PAVEMENTS AND SHOULDERS	
700.01	Concrete Pavement Joints - Construction and Contraction Joints
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
840.00	Concrete Base Pad for Drainage Structures
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
840.24	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 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
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
840.51	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
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
850.01	Concrete Paved Ditches
852.01	Concrete Islands
852.02	Concrete Mountable Median - for Use with Rigid or Flexible Pavement
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
862.01	Guardrail Placement
862.02	Guardrail Installation
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
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

PROJECT REFERENCE NO. U-3440 SHEET NO. 1A

ROADWAY DESIGN ENGINEER



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-8866 Fax. (919) 851-7024 www.stantec.com License No. F-0672

GENERAL NOTES: 2012 SPECIFICATIONS EFFECTIVE: 01-17-2012 REVISED: 10-31-2014

GRADE LINE: 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. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING: CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY 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.

BERM DITCHES: BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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

DRIVEWAYS: DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

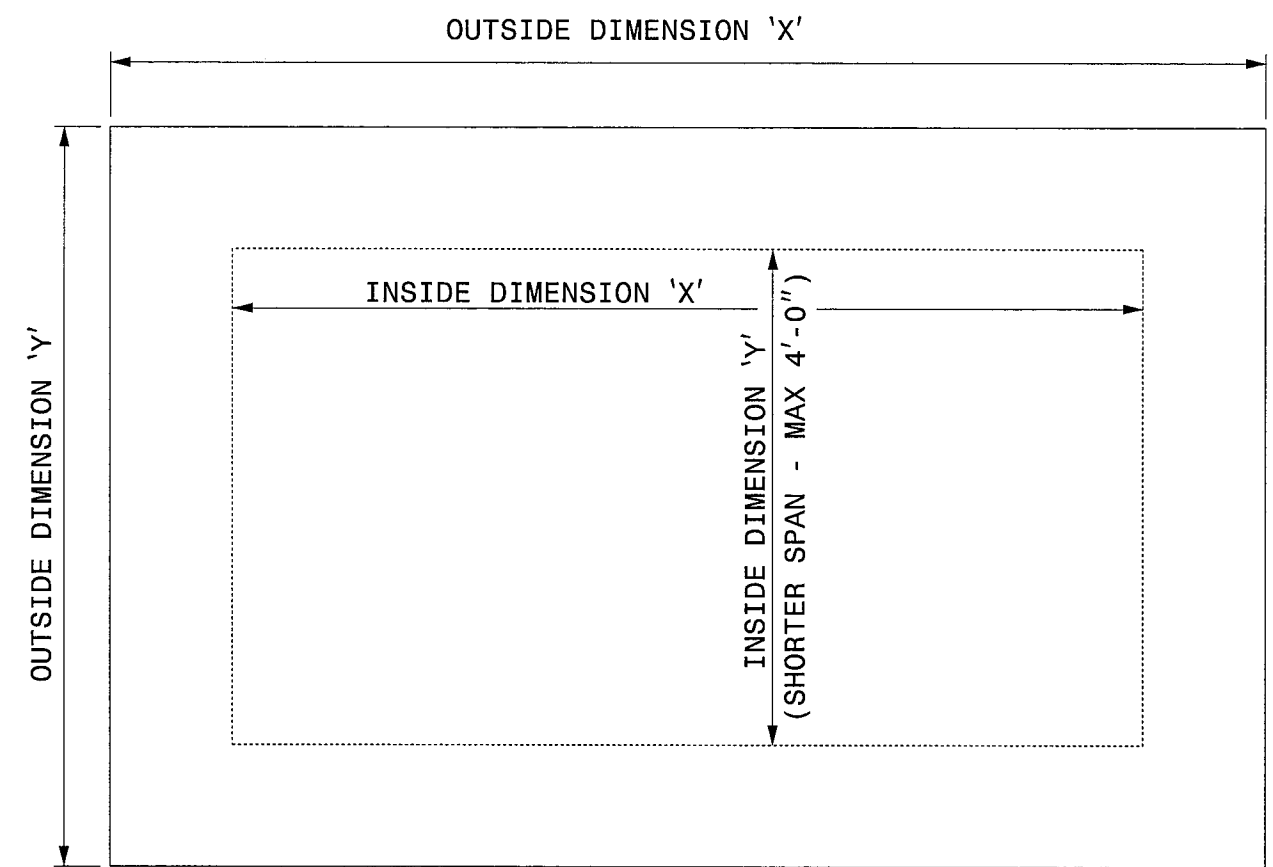
END BENTS: THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES: UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY, PSNC, MCNC. CITY OF KANNAPOLIS, WINDSTREAM, TIME WARNER, THE WATER AND SEWER AUTHORITY OF CABARRUS COUNTY ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

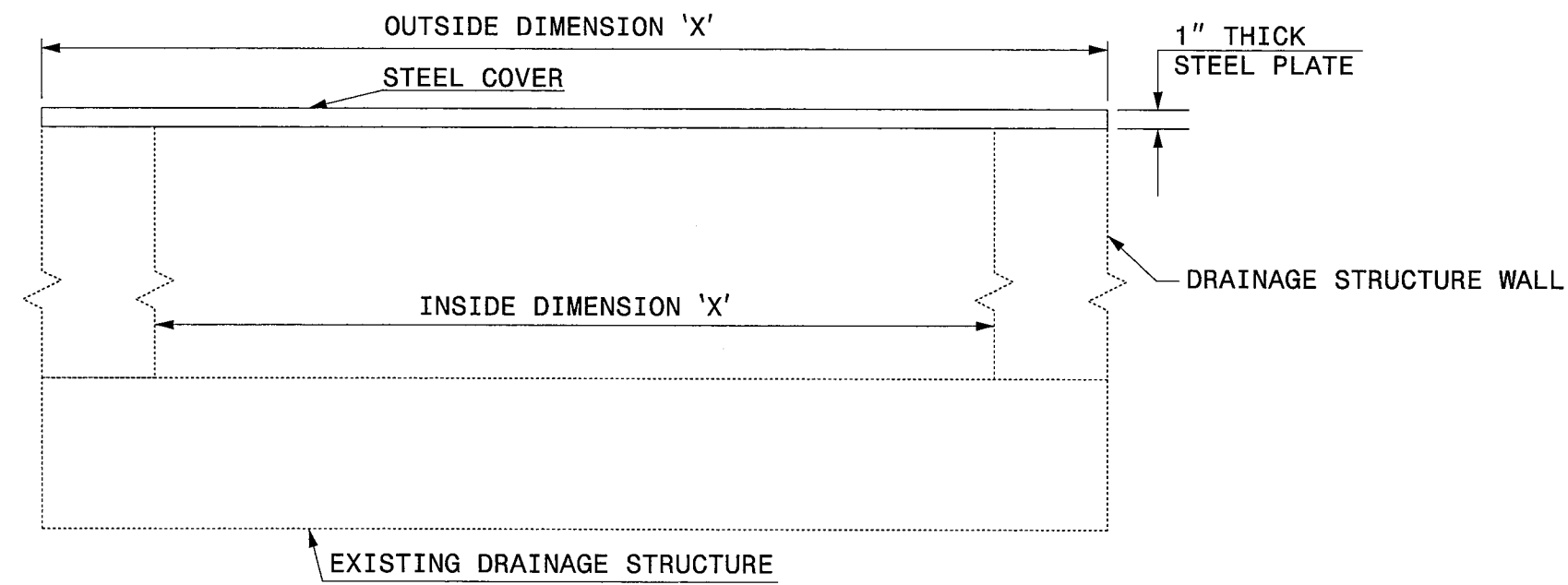
RIGHT-OF-WAY MARKERS: ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

CURB RAMPS: CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05.

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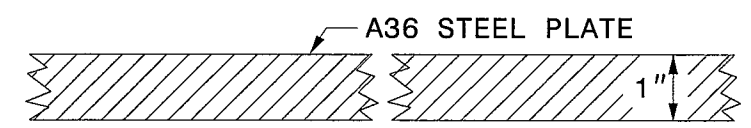
**PLAN VIEWS**



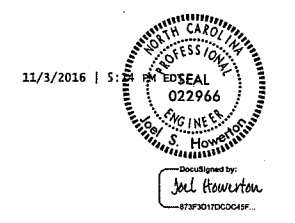
**ELEVATION VIEWS**

**GENERAL NOTES:**

- USE GRADE A36 STEEL
- STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
- FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
- SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
- QUANTITIES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.



**SECTION VIEW OF STEEL TOP PLATE**




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UNLESS ALL SIGNATURES COMPLETED

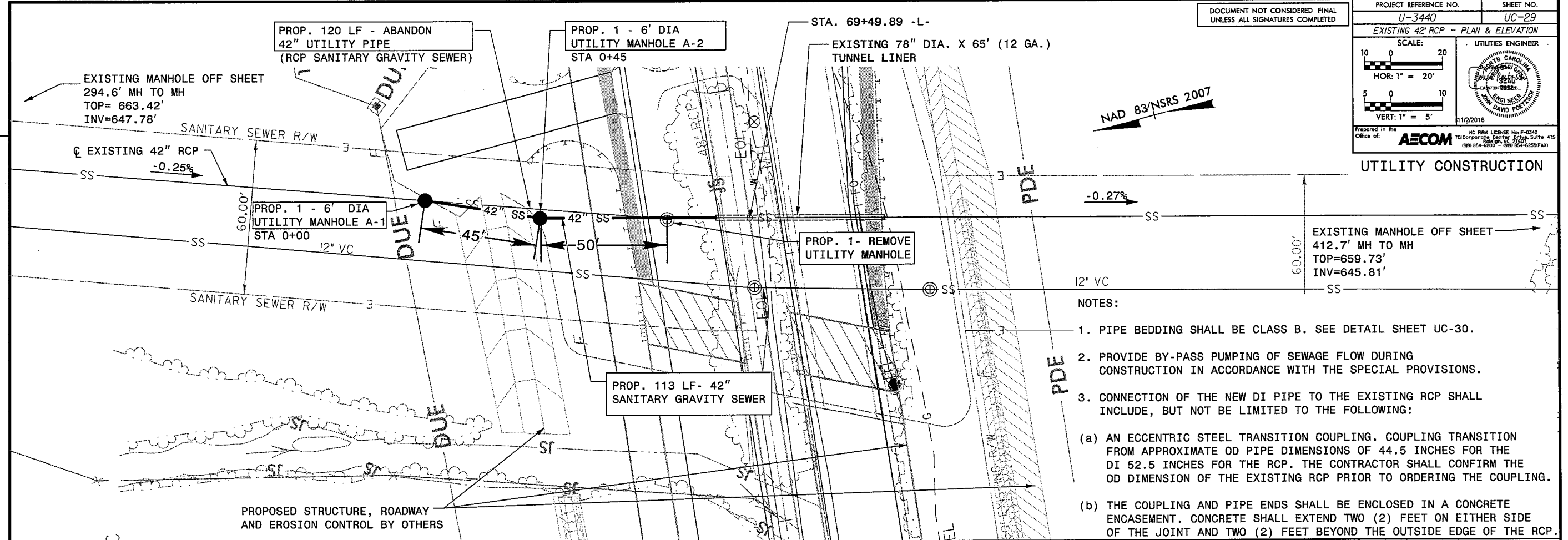
<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950	FAX 919-250-4119
<b>DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE</b>	
ORIGINAL BY: E.E. WARD	DATE: 2-2-98
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: eric/usr/details/metric/stand/stlcvr2.dgn	

\*\*\*\*\*SYTIME\*\*\*\*\*  
\*\*\*\*\*US\*\*\*\*\*

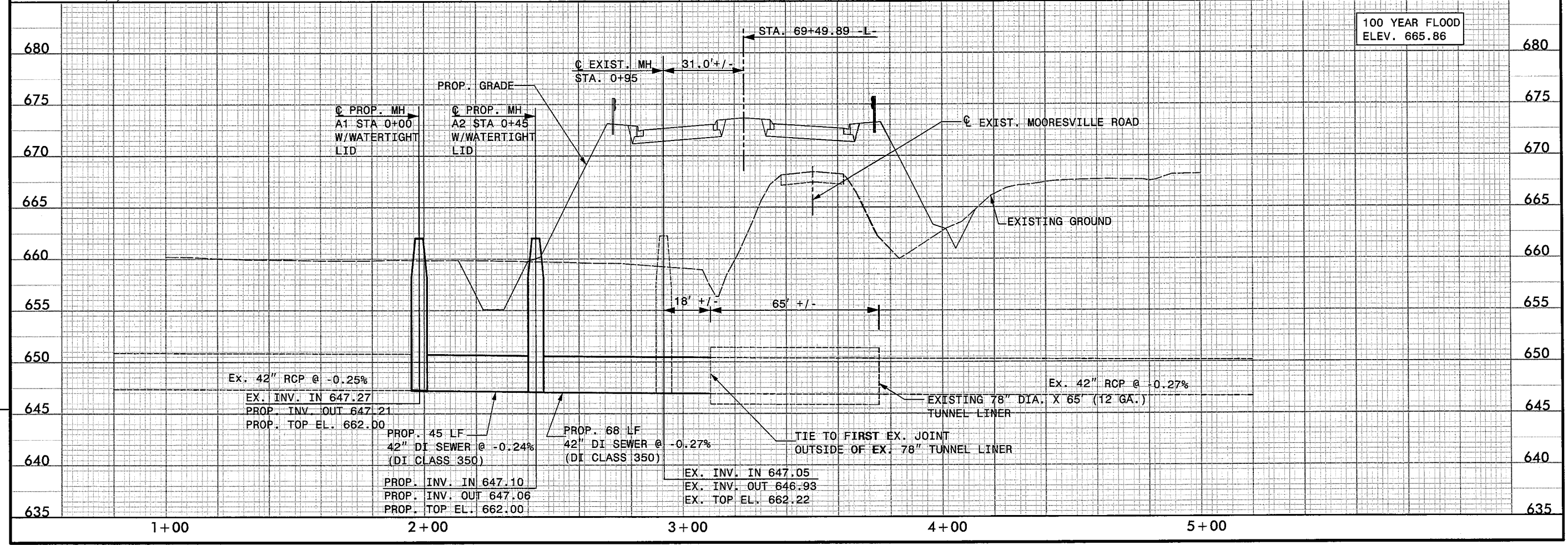


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PROJECT REFERENCE NO. U-3440	SHEET NO. UC-29
EXISTING 42" RCP - PLAN & ELEVATION	
SCALE: HOR: 1" = 20' VERT: 1" = 5'	
	
Prepared in the Office of: <b>AECOM</b> <small>NC REG. LICENSE No. F-0343 701 Corporate Center, Suite 415 Cary, NC 27513 (919) 854-2500 • (919) 854-6259 FAX</small>	

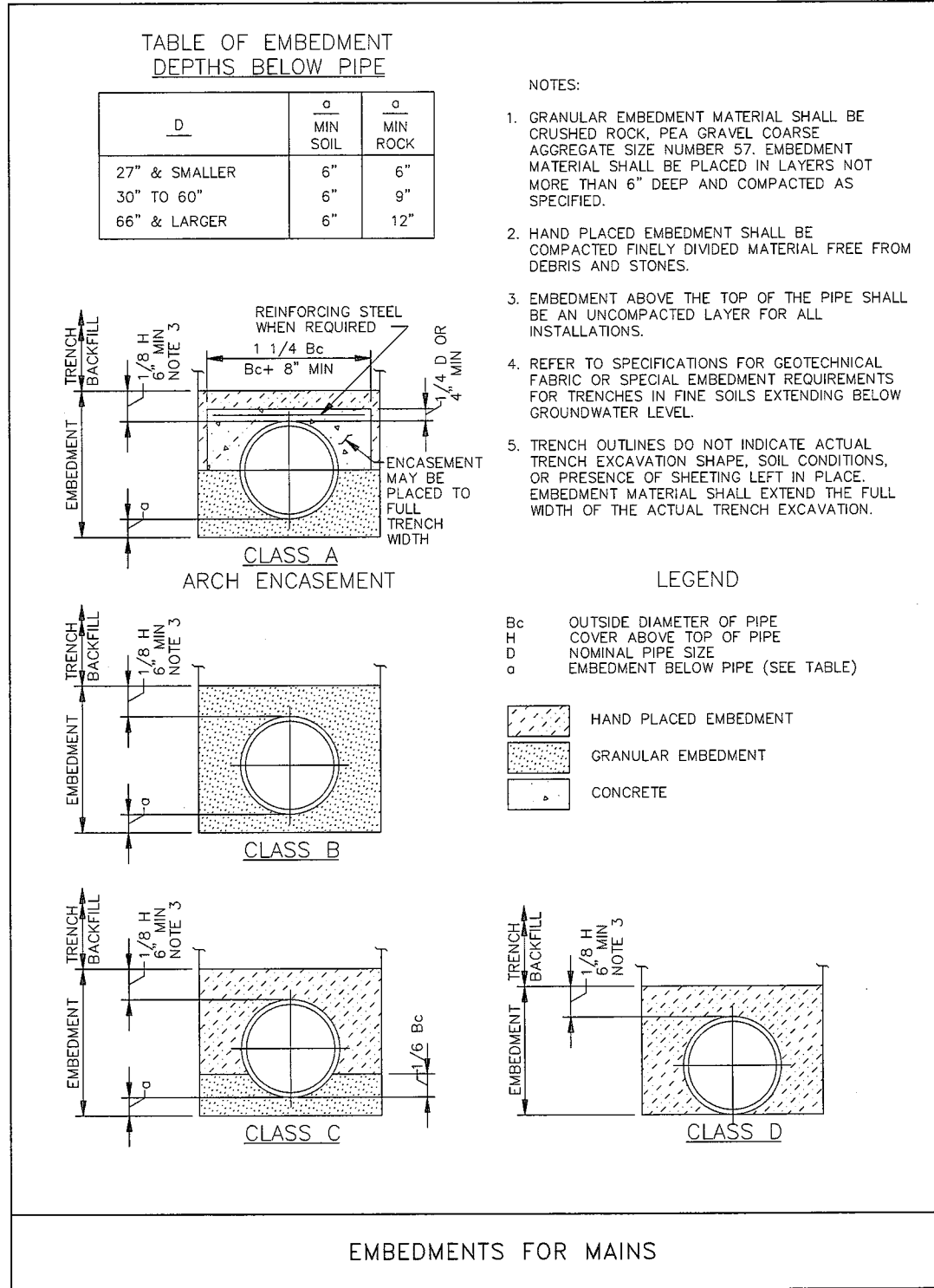
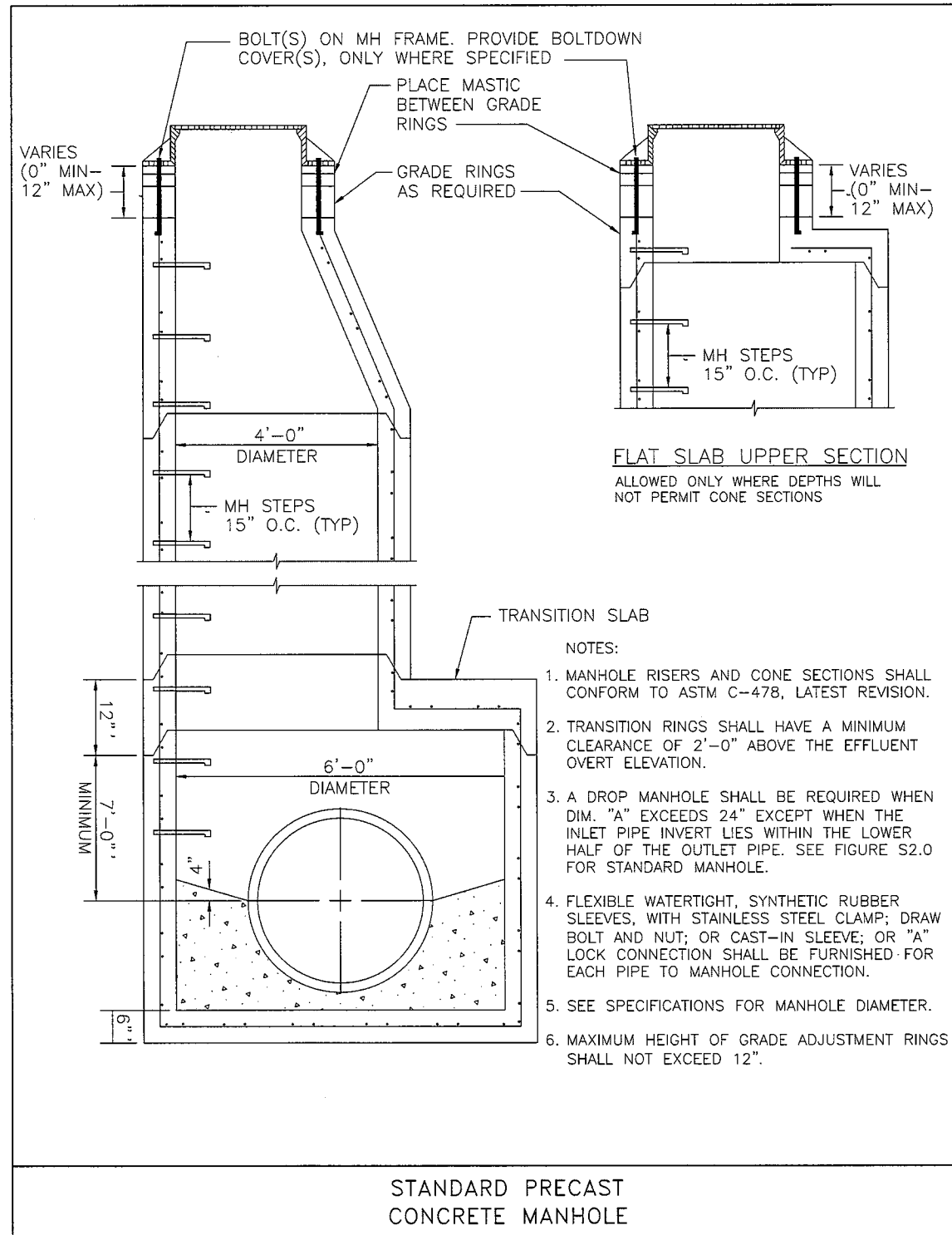


- NOTES:
- PIPE BEDDING SHALL BE CLASS B. SEE DETAIL SHEET UC-30.
  - PROVIDE BY-PASS PUMPING OF SEWAGE FLOW DURING CONSTRUCTION IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
  - CONNECTION OF THE NEW DI PIPE TO THE EXISTING RCP SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
    - AN ECCENTRIC STEEL TRANSITION COUPLING. COUPLING TRANSITION FROM APPROXIMATE OD PIPE DIMENSIONS OF 44.5 INCHES FOR THE DI 52.5 INCHES FOR THE RCP. THE CONTRACTOR SHALL CONFIRM THE OD DIMENSION OF THE EXISTING RCP PRIOR TO ORDERING THE COUPLING.
    - THE COUPLING AND PIPE ENDS SHALL BE ENCLOSED IN A CONCRETE ENCASUREMENT. CONCRETE SHALL EXTEND TWO (2) FEET ON EITHER SIDE OF THE JOINT AND TWO (2) FEET BEYOND THE OUTSIDE EDGE OF THE RCP.



REVISIONS  
 DATE: 11/22/06  
 USER: rerry  
 FILE: 11/22/06

DBK: BRD.D0115146.LIC2949  
 USER: rerry  
 DATE: 11/22/06  
 FILE: 11/22/06



REVISIONS

Revisions:

GEOTECHNICAL ENGINEER

ENGINEER



Designed by: Michael Stephens 10/27/2016  
DATE

SIGNATURE DATE

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

**NOTES:**

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS FOR WALL NO. 5.

A FENCE IS REQUIRED ON TOP OF RETAINING WALL NOS. 2 AND 5. SEE ROADWAY PLANS FOR FENCE ATTACHMENT DETAILS.

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NOS. 2 AND 5.

CAST-IN-PLACE REINFORCED CONCRETE COPING IS REQUIRED FOR RETAINING WALL NOS. 2 AND 5.

A SIMULATED BRICK FORM LINER FINISH IS REQUIRED FOR THE PRECAST CONCRETE PANELS FOR RETAINING WALL NOS. 2 AND 5. SUBMIT BRICK FORM LINER SAMPLES FOR APPROVAL BEFORE BEGINNING MSE WALL CONSTRUCTION. SEE SIMULATED BRICK FORM LINER FINISH SPECIAL PROVISION.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NOS. 2 AND 5 IF COARSE AGGREGATE IS USED.

A DRAIN IS REQUIRED FOR RETAINING WALL NOS. 2 AND 5.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NOS. 2 AND 5, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NOS. 2 AND 5 FOR THE FOLLOWING:

- 1) H = DESIGN HEIGHT + EMBEDMENT
- 2) DESIGN LIFE = 100 YEARS
- 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL =  $(3,300)$  LB/SF
- 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.7H OR 6 FT, WHICHEVER IS LONGER
- 5) MINIMUM EMBEDMENT ELEVATION = SEE WALL EMBEDMENT TABLE
- 6) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (φ) DEGREES	COHESION (c) LB/SF
COARSE	110	38	0
FINE	115	34	0

\*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

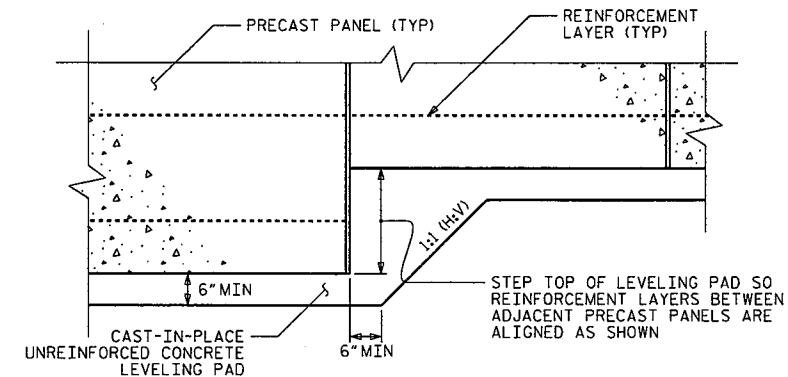
MATERIAL TYPE	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (φ) DEGREES	COHESION (c) LB/SF
BACKFILL	120	30	0
FOUNDATION	120	30	0

DESIGN RETAINING WALL NOS. 2 AND 5 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NOS. 2 AND 5.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NOS. 2 AND 5 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

\*TEMPORARY SHORING\* MAYBE REQUIRED FOR RETAINING WALL NO. 5 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY, STRUCTURE OR TRAFFIC CONTROL PLANS.



PRECAST CONCRETE PANELS

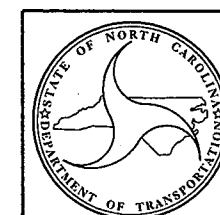
LEVELING PAD STEP DETAILS

PROJECT NO.: 39010.1.R2 (U-3440)

CABARRUS COUNTY

STATION: RWALL2: 138+50 -L- TO 137+00 -L-

SHEET 5 OF 9 RWALL5: 133+40 -L- TO 132+90 -L-



NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

**GEOTECHNICAL  
ENGINEERING UNIT**

**RETAINING WALL NOS. 2 AND 5  
MSE RETAINING WALL**

**REVISIONS**

NO.	BY	DATE	NO.	BY	DATE	SHEET NO.
1	MHS	10/27/16	3			W5
2			4			

PREPARED BY: MHS	DATE: 7/25/2016
REVIEWED BY: SCC	DATE: 7/25/2016