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**DRAWING INDEX - CANOPY STRUCTURE FOUNDATIONS**

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**LEGEND:**  
 STA. XX+XX.XX DENOTES STATION ALONG PLATFORM CONSTRUCTION BASELINE (FEET)

EL. XXX.XX DENOTES ELEVATION (FEET)

**LIST OF ABBREVIATIONS:**

ADD'L ADDITIONAL  
 B/ BOTTOM OF  
 BK BACK  
 BM BEAM  
 BL BASELINE  
 BOF BOTTOM OF FOOTING  
 BOS BOTTOM OF STEEL  
 BTWN BETWEEN  
 CL CENTERLINE  
 CONSTR CONSTRUCTION  
 CONSTR JT. CONSTRUCTION JOINT  
 DEF DEFLECTION  
 EF EACH FACE  
 EL ELEVATION  
 EQ EQUAL  
 FF FRONT FACE  
 FIX FIXED  
 FTG FOOTING  
 FS FAR SIDE  
 GALV GALVANIZED  
 HORZ HORIZONTAL  
 NB NORTHBOUND  
 N.I.C. NOT IN CONTRACT  
 NS NEAR SIDE  
 OPP OPPOSITE  
 PI POINT OF INTERSECTION  
 PITO POINT OF INTERSECTION OF TURNOUT  
 PGL PROFILE GRADE LINE  
 PROP PROPOSED  
 R RADIUS  
 SB SOUTHBOUND  
 SPA SPACE/SPACED  
 STA STATION  
 STR STRAIGHT  
 TGL THEORETICAL GRADE LINE  
 T/BALLAST TOP OF BALLAST  
 T/GRADE T TOP OF GRADE  
 T/S TOP OF STEEL  
 T&B TOP AND BOTTOM  
 TOF TOP OF FOOTING  
 TOS TOP OF SLAB  
 TYP TYPICAL  
 U.N.O. UNLESS NOTED OTHERWISE  
 WP WORK POINT

**BILL OF MATERIALS (TOTAL)**

ITEM	TOTAL
REINFORCING STEEL, GALVANIZED (GRADE 75)	LBS 67,320
REINFORCING STEEL, BLACK (GRADE 75)	LBS 139,300
SPIRAL REINFORCING STEEL, GALVANIZED (GRADE 75)	LBS 18,000
SPIRAL REINFORCING STEEL, BLACK (GRADE 75)	LBS 69,800
CLASS AA CONCRETE:	C.Y. 149
6'-0" DIA. DRILLED PIERS IN SOIL	L.F. 170
5'-6" DIA. DRILLED PIERS NOT IN SOIL	L.F. 407
PERMANENT STEEL CASING FOR 6'-0" DIA. DRILLED PIER	L.F. 170
SID INSPECTIONS	EACH 8
CSL TESTING	EACH 8
SPT TESTING	EACH 8
THERMAL INTEGRITY PROFILER	EACH 8
ARMORLESS EXPANSION JOINT SYSTEM	L.F. 335
LIGHTNING PROTECTION SYSTEM	EACH 2
SOIL / ROCK BORINGS	L.F. 640

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
 STATION: STA. 19+68.93 -S1-



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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 CANOPY STRUCTURE  
 INDEX OF DRAWINGS, BILL  
 OF MATERIALS (TOTAL),  
 LEGEND AND ABBREVIATIONS

<b>HNTB</b> HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS					SHEET NO. S13-01 TOTAL SHEETS 18	
	NO.	BY	DATE	NO.	BY		DATE
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DRAWN BY: L. RAMOS CHECKED BY: C. GAUNT	DATE: 3/27/2018 DATE: 3/27/2018	DWG. NO. 1	2		4		

**GENERAL NOTES (CANOPY STRUCTURE):**

DESIGN STANDARDS AND SPECIFICATIONS

1. NCDOT LRFD STRUCTURE DESIGN MANUAL, DECEMBER 2016
2. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, U.S. CUSTOMARY UNITS, 7TH EDITION WITH 2015 INTERIM REVISIONS
3. AASHTO GUIDE SPECIFICATIONS FOR LRFD SEISMIC BRIDGE DESIGN, 2ND EDITION, 2011 WITH 2014 AND 2015 INTERIM REVISIONS
4. AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 6TH EDITION, 2013
5. AASHTO GUIDE DESIGN SPECIFICATIONS FOR BRIDGE TEMPORARY WORKS, 1ST EDITION, 1995 WITH 2008 INTERIM REVISIONS
6. FHWA REPORT NO. FHWA-NHI-10-016, DRILLED SHAFTS: CONSTRUCTION PROCEDURES AND LRFD DESIGN METHODS, MAY 2010
7. CEB/FIP MODEL CODE FOR CONCRETE STRUCTURES, THIRD EDITION, 1990 APPENDIX E (TIME DEPENDENT BEHAVIOR OF CONCRETE, CREEP AND SHRINKAGE)
8. NORTH CAROLINA STATE BUILDING CODE, 2012 (2009 INTERNATIONAL BUILDING CODE WITH NORTH CAROLINA AMENDMENTS, 2011)
9. ASCE/SEI 7-10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES, 2010, INCLUDING SUPPLEMENTS NO. 1 AND 2, AND EXCLUDING CHAPTER 14 AND APPENDIX 11A
10. ASCE/SEI 37-14 DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION
11. ACI 318-14 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 2014
12. AMTRAK GRAPHICS SIGNAGE STANDARDS MANUAL, AUGUST 1995, REVISED 2010
13. AMTRAK STANDARD PROGRAM PLANNING GUIDELINES, AMTRAK STANDARD DRAWINGS, INCLUDING AMTRAK STANDARD DRAWING AM70050-G (TRACK PLAN MINIMUM ROADWAY CLEARANCES)
14. NORFOLK SOUTHERN RAILWAY STANDARD SPECIFICATIONS, 2017 AND NSR PUBLIC PROJECTS MANUAL, 2015
15. PTI DC45.1-12 RECOMMENDATIONS FOR STAY CABLE DESIGN, TESTING, & INSTALLATION, 2012
16. PTI M50.2-00 ANCHORAGE ZONE DESIGN, 2000
17. ADA STANDARDS FOR ACCESSIBLE DESIGN, 2010
18. NFPA 130 STANDARD FOR FIXED GUIDEWAY TRANSIT AND PASSENGER RAIL SYSTEMS, 2014

DESIGN LOADS

1. DEAD LOADS	
REINFORCED CONCRETE	155 PCF
BALLAST CONCRETE	170 PCF
PRECAST/PRESTRESSED CONCRETE	155 PCF
STRUCTURAL STEEL	490 PCF
STAY CABLE WIRE	490 PCF
POLYETHYLENE (HDPE) PIPE FOR STAY CABLES	60 PCF
EARTH	125 PCF

2. LIVE LOAD  
LIVE LOAD SHALL BE 20 PSF IN ACCORDANCE WITH ASCE 7-10 CHAPTER 4.  
INSPECTION MANLIFT, GVW = 40,900 LBS (OPERATING LOAD, ADD 15% DYNAMIC IMPACT FACTOR)
3. SNOW LOAD  
SNOW LOADS SHALL BE IN ACCORDANCE WITH ASCE 7-10 CHAPTER 7 AND A RAIN-ON-SNOW SURCHARGE LOAD OF 5 PSF SHALL BE INCLUDED FOR BALANCED SNOW LOADS.  
A. GROUND SNOW LOAD, P<sub>g</sub> = 10 PSF  
B. FLAT-ROOF SNOW LOAD, P<sub>f</sub> = 11.1 PSF  
C. SNOW EXPOSURE FACTOR, C<sub>e</sub> = 1.2  
D. SNOW IMPORTANCE FACTOR, I<sub>s</sub> = 1.1  
E. THERMAL FACTOR, C<sub>t</sub> = 1.2
4. RAIN LOAD  
RAIN LOADS SHALL BE 31 PSF IN ACCORDANCE WITH ASCE 7-10 CHAPTER 8.
5. ICE LOAD  
ICE LOADS ON STAY CABLES SHALL BE 22 PLF IN ACCORDANCE WITH ASCE 7-10 CHAPTER 10.  
A BASIC WIND SPEED OF 30 MPH SHALL BE USED TO DETERMINE THE WIND LOAD EFFECTS ON STAY CABLES DURING AN ICING EVENT. SEE WIND LOAD NOTES.
6. WIND LOAD  
WIND LOADS SHALL BE IN ACCORDANCE WITH AASHTO LRFD SECTION 3, EXCEPT AS NOTED BELOW.  
FOR USE IN ASCE 7-10 LOAD COMBINATIONS, WIND LOADS SHALL BE IN ACCORDANCE WITH THE FOLLOWING PROVISIONS OF ASCE 7-10:  
BASIC WIND SPEED SHALL BE DETERMINED IN ACCORDANCE WITH ASCE 7-10 CHAPTER 26, UNLESS OTHERWISE NOTED.  
A. BASIC WIND SPEED = 120 MPH  
B. WIND IMPORTANCE FACTOR, I = 1.0  
C. EXPOSURE CATEGORY = B  
D. OCCUPANCY CATEGORY = III  
WIND PRESSURES FOR THE CANOPY STRUCTURE SHALL BE IN ACCORDANCE WITH ASCE 7-10 CHAPTER 27, FOR OPEN, PITCHED ROOFS.  
WIND PRESSURES FOR EDGE GIRDERS, FLOORBEAMS, PYLONS, PIERS AND STAY CABLES SHALL BE IN ACCORDANCE WITH ASCE 7-10 CHAPTER 29.
7. SEISMIC LOAD

FOR USE IN AASHTO LRFD BRIDGE DESIGN SPECIFICATION LOAD COMBINATIONS, SEISMIC LOADS SHALL BE DETERMINED IN ACCORDANCE WITH SECTION 3.  
FOR USE IN ASCE 7-10 LOAD COMBINATIONS, RESPONSE SPECTRA SHALL BE IN ACCORDANCE WITH ASCE 7-10 CHAPTER 11 AND SEISMIC LOADS SHALL BE DETERMINED IN ACCORDANCE WITH ASCE 7-10 CHAPTER 12.

SEISMIC PARAMETERS (DESIGN RESPONSE SPECTRA):  
AASHTO  
A. MAPPED SPECTRAL RESPONSE ACCELERATIONS, S<sub>s</sub> = 0.192g, S<sub>1</sub> = 0.063g  
B. SITE CLASS = C  
C. SPECTRAL RESPONSE COEFFICIENT AT SHORT PERIODS, SDS = 0.230g  
D. SPECTRAL RESPONSE COEFFICIENT AT 1-SECOND PERIOD, SD1 = 0.108g

ASCE 7-10  
A. SEISMIC IMPORTANCE FACTOR, I = 1.25  
B. OCCUPANCY CATEGORY = III  
C. MAPPED SPECTRAL RESPONSE ACCELERATIONS, S<sub>s</sub> = 0.238g, S<sub>1</sub> = 0.103g  
D. SITE CLASS = C  
E. SPECTRAL RESPONSE COEFFICIENT AT SHORT PERIODS, SDS = 0.191g  
F. SPECTRAL RESPONSE COEFFICIENT AT 1-SECOND PERIOD, SD1 = 0.116g  
G. ANALYSIS METHOD USED = MODAL RESPONSE SPECTRUM ANALYSIS

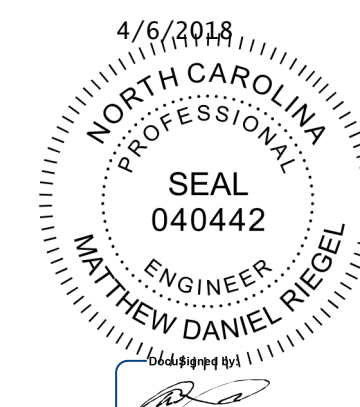
8. TEMPERATURE LOAD  
THE DESIGN MEAN TEMPERATURE IS 60°F. THERMAL EFFECTS SHALL BE CONSIDERED DUE TO THE FOLLOWING:  
STEEL: TEMPERATURE RISE = 50°F.  
TEMPERATURE FALL = 50°F.  
CONCRETE: TEMPERATURE RISE = 45°F.  
TEMPERATURE FALL = 40°F.
9. CABLE LOSS AND REPLACEMENT  
THE CANOPY STRUCTURE SHALL BE DESIGNED FOR CABLE LOSS AND REPLACEMENT IN ACCORDANCE WITH PTI DC45.1-12, RECOMENDATIONS FOR STAY CABLE DESIGN, TESTING AND INSTALLATIONS.
10. LOAD COMBINATIONS  
LOAD COMBINATIONS SHALL BE IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 3, EXCEPT AS NOTED BELOW.  
WHEN LOADS PER ASCE 7-10 ARE REQUIRED FOR DESIGN, LOAD COMBINATIONS SHALL BE IN ACCORDANCE WITH ASCE 7-10 CHAPTER 2.

CONSTRUCTION SPECIFICATIONS

1. NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, JANUARY 2018
2. NCDOT STRUCTURES PROJECT SPECIAL PROVISIONS, 2012
3. AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, 3RD EDITION WITH INTERIM SPECIFICATIONS THROUGH 2014
4. AASHTO CONSTRUCTION HANDBOOK FOR BRIDGE TEMPORARY WORKS, 1ST EDITION, 1995 WITH 2008 INTERIM REVISIONS
5. AASHTO-AWS D1-5M/D1-5:2010 BRIDGE WELDING CODE, 2010, WITH 2012 INTERIMS
6. DC45.1-12 RECOMMENDATIONS FOR STAY CABLE DESIGN, TESTING, & INSTALLATION (PTI), 2012
7. FHWA REPORT NO. FHWA-NHI-10-016, DRILLED SHAFTS: CONSTRUCTION PROCEDURES AND LRFD DESIGN METHODS, MAY 2010
8. AWS D1.1/D1.1M:2015 STRUCTURAL WELDING CODE STEEL, 2015
9. AWS D1.4/D1.4M:2011 STRUCTURAL WELDING CODE REINFORCING STEEL, 2011
10. AWS D1.3/D1.3M:2008 STRUCTURAL WELDING CODE SHEET STEEL, 2008
11. AWS D1.6/D1.6M:2017 STRUCTURAL WELDING CODE STAINLESS STEEL, 2017
12. PTI M55-1.12 SPECIFICATION FOR GROUTING OF POST-TENSIONED STRUCTURES, 3RD EDITION, APRIL 2012
13. PTI GUIDE SPECIFICATION FOR ACCEPTANCE STANDARDS FOR POST-TENSIONING SYSTEM, 1998

SPECIAL PROVISIONS:  
FOR PORTLAND CEMENT, SEE SPECIAL PROVISIONS.  
FOR FINE AND COARSE AGGREGATE, SEE SPECIAL PROVISIONS.  
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.  
FOR WATERSTOPS, SEE SPECIAL PROVISIONS.

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
STATION: STA. 19+68.93 -S1-



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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

CANOPY STRUCTURE  
INDEX OF DRAWINGS  
AND GENERAL NOTES  
SHEET 1 OF 2

HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS					SHEET NO.
	NO.	BY	DATE	NO.	BY	DATE
DRAWN BY: L. RAMOS		DATE: 4/5/2018				TOTAL SHEETS
CHECKED BY: C. GAUNT		DATE: 4/5/2018				18
DWG. NO. 2						

**GENERAL NOTES (CONT):**

FOUNDATIONS

1. MATERIALS AND DESIGN UNIT STRESSES:  
  
STRUCTURAL STEEL FOR DRILLED SHAFT PERMANENT CASING, ASTM A252, GRADE 3
2. THE DRILLED SHAFT PERMANENT STEEL CASING IS NOT USED TO ENHANCE THE STRENGTH OF THE DRILLED SHAFT UNDER SERVICE CONDITIONS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING ALL EQUIPMENT AND MATERIALS NECESSARY TO PERFORM CROSS HOLE SONIC LOGGING (CSL), AND OBTAINING THE SERVICES OF A CSL TESTING FIRM USING PERSONNEL EXPERIENCED WITH CSL TESTING AND APPROVED BY THE ENGINEER OF RECORD TO PERFORM THE TESTING.
4. CSL TUBES SHALL BE 1.5 TO 2.0 INCH I.D. SCHEDULE 40 STEEL PIPE CONFORMING TO ASTM A 53, GRADE A OR B, TYPE E, F, OR S.
5. CSL TUBES SHALL CONTAIN ROUND, REGULAR INTERNAL DIAMETERS FREE OF DEFECTS OR OBSTRUCTIONS, INCLUDING ANY AT PIPE JOINTS.
6. CSL TUBES SHALL BE CAPABLE OF PERMITTING THE FREE, UNOBSTRUCTED PASSAGE OF A 1.4 INCH DIAMETER SOURCE AND RECEIVER PROBES.
7. CSL TUBES SHALL BE WATERTIGHT AND FREE FROM CORROSION WITH CLEAN INTERNAL AND EXTERNAL FACES TO ENSURE PASSAGE OF THE PROBES AND A GOOD BOND BETWEEN THE CONCRETE AND THE TUBES.
8. WATERTIGHT SHOES SHALL BE PROVIDED ON THE BOTTOM AND REMOVABLE WATERTIGHT CAPS ON THE TOP OF ALL CSL TUBES.
9. NON-SHRINK GROUT SHALL BE PROVIDED TO FILL THE ACCESS TUBES AND ANY CORED HOLES AT THE COMPLETION OF THE CSL TESTS, AND WITH THE APPROVAL OF THE ENGINEER OF RECORD.
10. PRIOR TO THE START OF CONSTRUCTION OF ANY DRILLED PIERS FOR THE CANOPY FOUNDATIONS, THE CONTRACTOR SHALL TAKE SOIL/ROCK BORINGS AT THE CL. OF THE EAST AND WEST DRILLED SHAFTS AT ALL PIERS. THE BORINGS SHALL EXTEND TO A DEPTH OF 5.00 FEET BELOW THE BOTTOM OF ROCK SOCKET ELEVATION SHOWN ON THE PLANS. THE SOIL BORING DATA SHALL BE FURNISHED TO THE ENGINEER OF RECORD (EOR) AT LEAST 7 DAYS PRIOR TO THE START OF CONSTRUCTION OF THE DRILLED PIERS. THE EOR MAY ADJUST THE FINAL ROCK SOCKET TIP ELEVATIONS FOR THE DRILLED PIERS BASED ON REVIEW OF THE BORING DATA.
  - A. THE CONTRACTOR SHALL PERFORM SOIL BORINGS IN ACCORDANCE WITH ASTM D1586.
  - B. THE CONTRACTOR SHALL PERFORM A ONE CALL AND VERIFY PROPOSED BORING LOCATIONS ARE NOT IN CONFLICT WITH EXISTING UTILITIES.
  - C. THE CONTRACTOR SHALL PROVIDE ACCESS TO PROPOSED BORING LOCATION, WHICH MAY REQUIRE MOVING EQUIPMENT, CONSTRUCTING TEMPORARY ACCESS PATHS, OR OTHER INCIDENTAL TASKS NECESSARY TO PERFORM THE WORK.
  - D. THE CONTRACTOR SHALL LOCATE THE BORINGS APPROXIMATELY AS SHOWN AND SURVEY THE AS-DRILLED LOCATION.
  - E. SOIL SAMPLES SHALL BE RETRIEVED USING A 24" LONG SPLIT-SPOON SAMPLER (2" O.D.) DRIVEN BY A 140-LB HAMMER FALLING 30".
  - F. ROCK CORE SHALL BE NX OR NQ.
11. SPT ARE REQUIRED FOR DRILLED PIERS. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
12. THERMAL INTEGRITY PROFILING IS REQUIRED FOR ALL DRILLED PIERS. FOR THERMAL INTEGRITY PROFILING, SEE GEOTECHNICAL SPECIAL PROVISION.

STRUCTURES

1. STRUCTURAL CONCRETE:
  - A. MATERIALS AND DESIGN UNIT STRESSES:  
  
 DRILLED PIER AND ROCK SOCKET CONCRETE                      F'C = 4500 PSI  
 ANCHOR PIER AND PYLON COLUMNS                                  F'C = 4500 PSI  
 REINFORCING STEEL, ASTM A615, GRADE 75                              FY = 75 KSI
  - B. ALL CONCRETE SHALL BE 4,500 PSI CLASS AA CONCRETE WITH NO. 57 OR 67 COARSE AGGREGATE AND SHALL BE AIR-ENTRAINED. MINIMUM CEMENT CONTENT PER CUBIC YARD OF CONCRETE SHALL BE 6.5 BAGS. NO SUBSTITUTION OF FLYASH, BLAST FURNACE SLAG OR OTHER MATERIAL WILL BE PERMITTED IN MEETING THIS MINIMUM CEMENT REQUIREMENT. CHAMFER ALL EXPOSED EDGES AND CORNERS 3/4 " EXCEPT AS NOTED. THE USE OF GROUND GRANULATED BLAST FURNACE SLAG IS NOT PERMITTED IN THIS STRUCTURE.
  - C. UNLESS NOTED OTHERWISE, ALL REINFORCING STEEL SHALL BE GRADE 75 IN ACCORDANCE WITH ASTM A615 AND GALVANIZED (SEE SPECIAL PROVISIONS). REINFORCEMENT FOR THE DRILLED SHAFTS AND ROCK SOCKETS SHALL BE UNCOATED (BLACK), ALL OTHER REINFORCEMENT SHALL BE GALVANIZED.
  - D. MECHANICAL COUPLERS SHALL DEVELOP NOT LESS THAN 125% OF THE YIELD STRENGTH OF THE BAR AND SHALL CONFORM TO AASHTO SPECIFICATIONS.
  - E. UNLESS NOTED OTHERWISE, THE MINIMUM CLEAR COVER TO REINFORCING STEEL SHALL BE AS FOLLOWS:  
  
 DRILLED PIERS    6"  
 ROCK SOCKETS    3"  
 PIER COLUMNS     3"
  - F. THE DESIGN COMPRESSIVE STRENGTH (F'C) SHALL BE THE 28-DAY COMPRESSIVE STRENGTH.
  - G. ANY CONCRETE ELEMENT FOR WHICH ITS MINIMUM DIMENSION MEASURED IN ANY DIRECTION IS SIX FEET OR GREATER SHALL BE CONSIDERED MASS CONCRETE. MASS CONCRETE SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
  - H. PROVIDE A 3/4" CHAMFER AT ALL EXTERIOR CORNERS OF CONCRETE ELEMENTS UNLESS NOTED OTHERWISE.
  - I. ALL CONCRETE (CAST-IN-PLACE AND PRECAST) SHALL BE NORMAL WEIGHT CONCRETE.
  - J. DETAILING OF REINFORCING STEEL SHALL CONFORM TO SEISMIC ZONE 2 REQUIREMENTS, PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
  - K. A BONDED CONSTRUCTION JOINT SHALL BE USED BETWEEN CONCRETE POURS. ROUGHEN THE JOINT SURFACE TO 1/4" AMPLITUDE. PRIOR TO PLACEMENT OF THE NEXT POUR, THE JOINT SURFACE SHALL BE CLEANED OF ALL LAITANCE, CURING COMPOUND AND FOREIGN MATERIALS. THE JOINT SURFACE SHALL THEN BE THOROUGHLY SOAKED WITH POTABLE WATER BEFORE PLACEMENT OF THE SUBSEQUENT POUR AND THEN ALLOWED TO SUFFICIENTLY DRY TO AVOID PUDDLING OF WATER ON THE SURFACE.

SURVEY AND DATUM

1. THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "P5705B-2" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF  
  
 NORTHING:                      542629.390 (ft)  
 EASTING:                         1445444.637 (ft)  
 ELEVATION:                       683.308 (ft)
2. THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998447800. THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "P5705B-2" TO -S1- STATION 10+00.00 IS N52°33'53.8", 4449.67'. ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES.
3. VERTICAL DATUM USED IS NAVD 88.
4. PLAN DIMENSIONS SHOWN ARE MEASURED HORIZONTALLY AT 60°F, UNLESS NOTED OTHERWISE.

ELECTRICAL

1. FOR ELECTRICAL NOTES, SEE ELECTRICAL PLANS.

SIGNAGE

2. FOR SIGNAGE NOTES, SEE SIGNAGE PLANS.

STANDARD HOOKS FOR GALVANIZED REINFORCEMENT

1. MINIMUM FINISHED BEND DIAMETERS FOR GALVANIZED REINFORCING BARS SHALL BE IN ACCORDANCE WITH ASTM A767. FOR REFERENCE, STANDARD BEND DIMENSIONS MEETING THE MINIMUM BEND DIAMETERS FOR GALVANIZED REINFORCING BARS ARE LISTED IN TABLE 1, BELOW. THESE (MINIMUM) STANDARD BEND DIMENSIONS SHALL BE USED FOR GALVANIZED REINFORCEMENT, IN LIEU OF THE AASHTO/ACI STANDARD BAR BEND DETAILS.

TABLE 1 - STANDARD HOOKS FOR GALVANIZED REINFORCING BARS (IN.)									
		END HOOK			STIRRUP OR TIE HOOKS			SEISMIC STIRRUP OR TIE HOOKS	
		180°		90°	135°		90°	135°	
BAR SIZE	BAR DIAMETER	A OR G	J	A OR G	A OR G	H	A OR G	A OR G	H
ENGLISH									
3	0.375	5	3	6	4	2.5	4	4.5	3
4	0.5	6	4	8	5	3	5	5	3
5	0.625	7	5	10	6.5	3.75	6.25	6.5	3.75
6	0.75	8	6	12	8	4.5	12	8	4.5
7	0.875	11	8.75	15	10.25	5.5	15	10.25	5.5
8	1	13	10	17	11.5	6.5	17	11.5	6.5
9	1.128	15	11.75	19					
10	1.27	17	13.25	22					
11	1.41	19	14.75	24					
14	1.693	27	21.75	32					
18	2.257	36	28.5	41					

**PROJECT NO.**           P-5705BB            
          MECKLENBURG           COUNTY  
**STATION:**           STA. 19+68.93 -S1-          

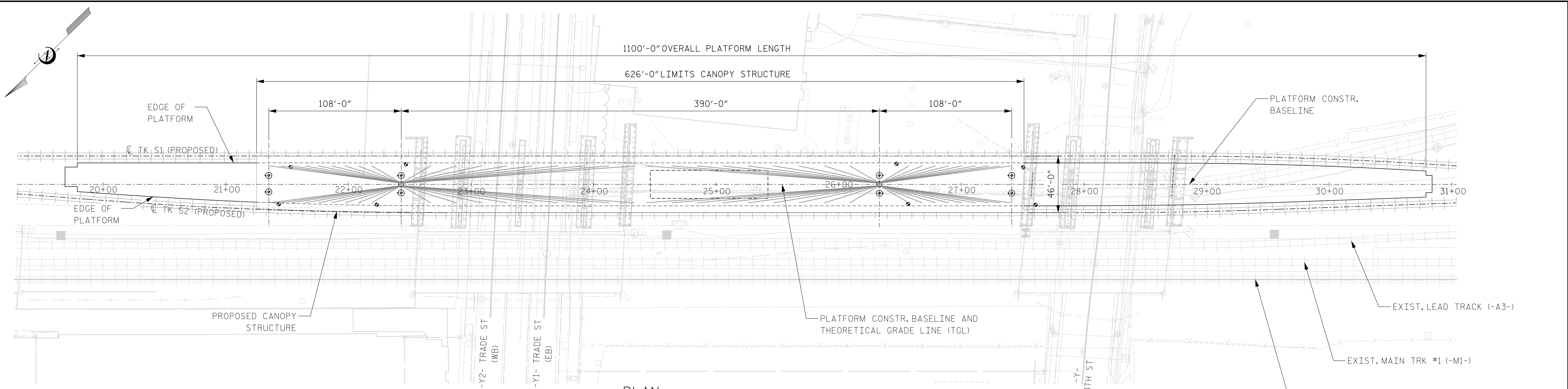


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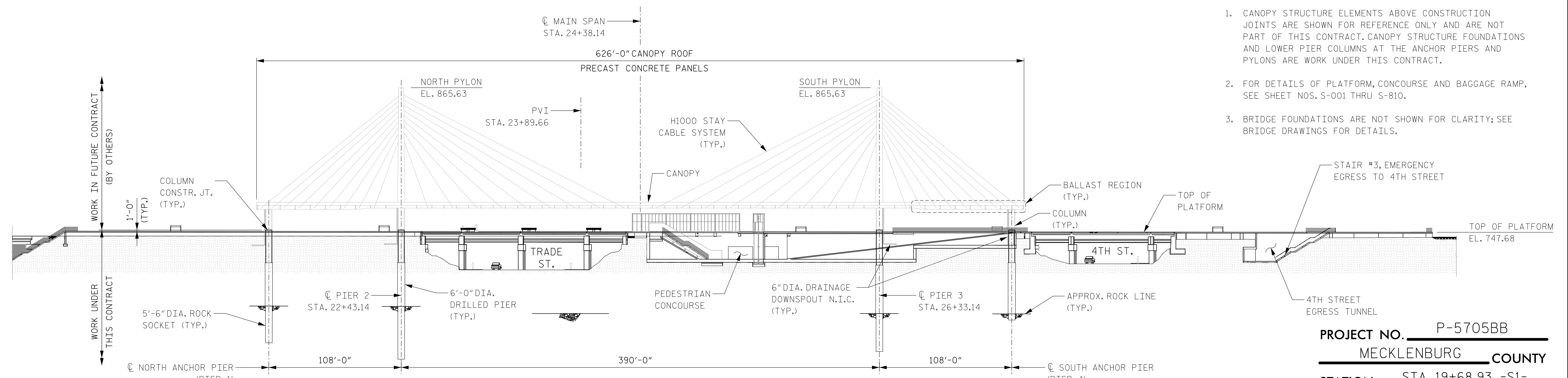
STATE OF NORTH CAROLINA  
**DEPARTMENT OF TRANSPORTATION**  
 RALEIGH

CANOPY STRUCTURE  
 GENERAL NOTES  
 SHEET 2 OF 2

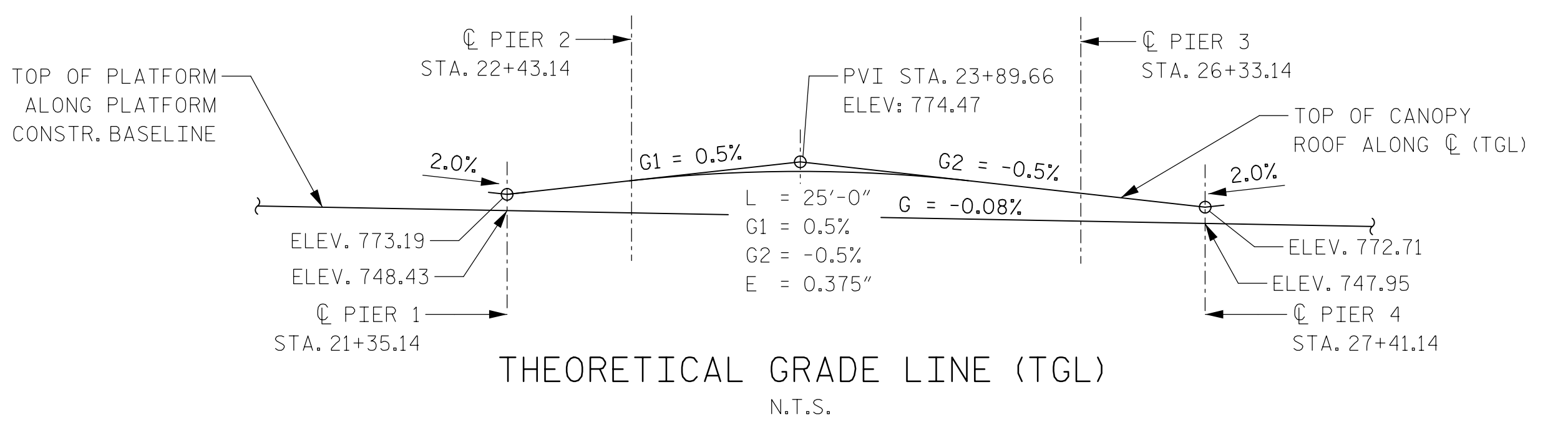
<b>HNTB</b> HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	<b>REVISIONS</b>					SHEET NO. S13-03  TOTAL SHEETS 18	
	NO.	BY	DATE	NO.	BY		DATE
	1		4/5/2018	3			
DRAWN BY: L. RAMOS CHECKED BY: C. GAUNT	DATE: 4/5/2018 DATE: 4/5/2018	DWG. NO. 3					



PLAN  
SCALE 1" = 40'-0"



WEST ELEVATION  
(LOOKING EAST)  
SCALE 1" = 40'-0"



- NOTES:
- CANOPY STRUCTURE ELEMENTS ABOVE CONSTRUCTION JOINTS ARE SHOWN FOR REFERENCE ONLY AND ARE NOT PART OF THIS CONTRACT. CANOPY STRUCTURE FOUNDATIONS AND LOWER PIER COLUMNS AT THE ANCHOR PIERS AND PYLONS ARE WORK UNDER THIS CONTRACT.
  - FOR DETAILS OF PLATFORM, CONCOURSE AND BAGGAGE RAMP, SEE SHEET NOS. S-001 THRU S-810.
  - BRIDGE FOUNDATIONS ARE NOT SHOWN FOR CLARITY; SEE BRIDGE DRAWINGS FOR DETAILS.

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
STATION: STA. 19+68.93 -S1-

3/27/2018

NORTH CAROLINA PROFESSIONAL SEAL 040442 ENGINEER MATTHEW DANIEL RIEGEL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

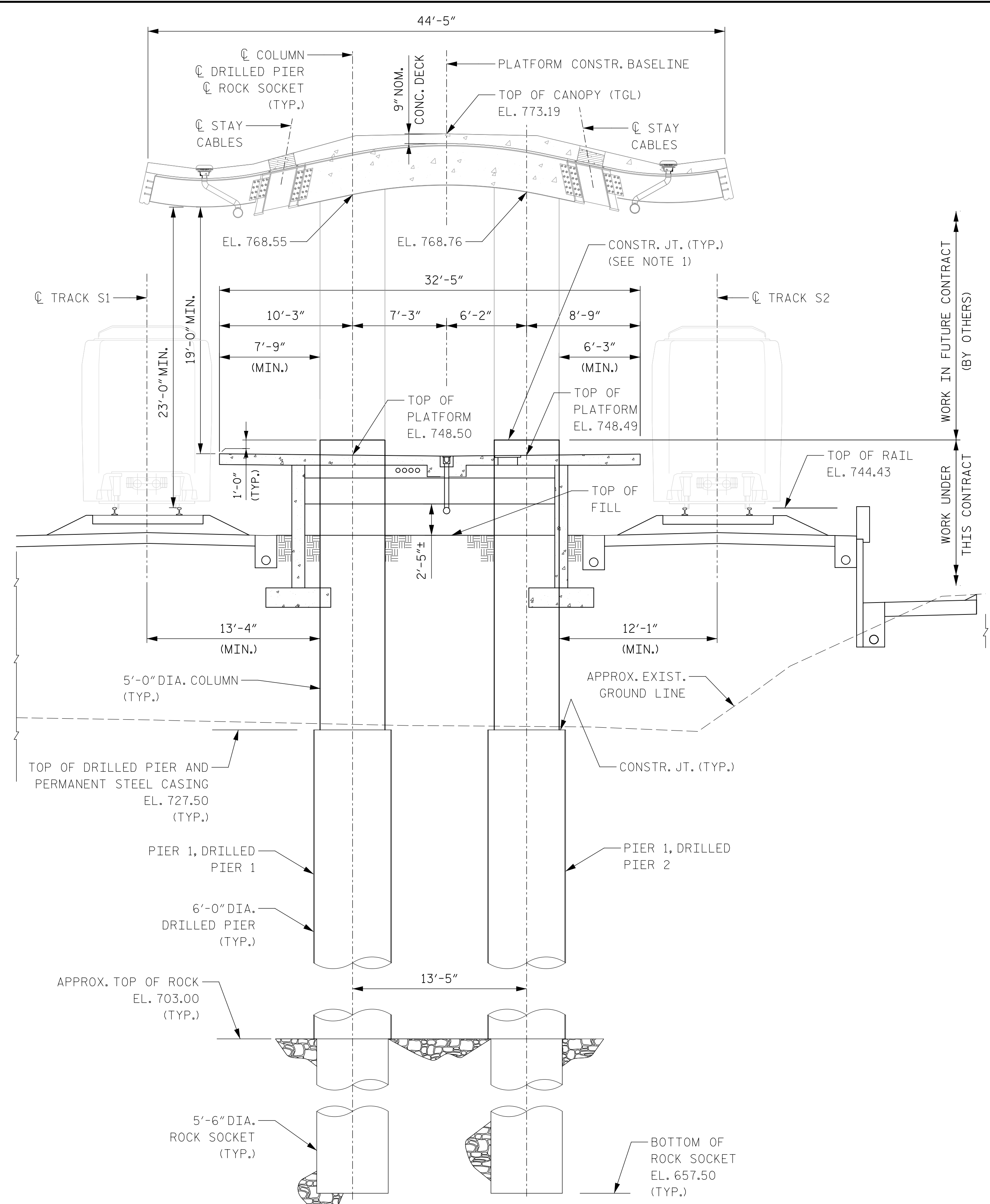
CANOPY STRUCTURE  
GENERAL PLAN  
AND ELEVATION

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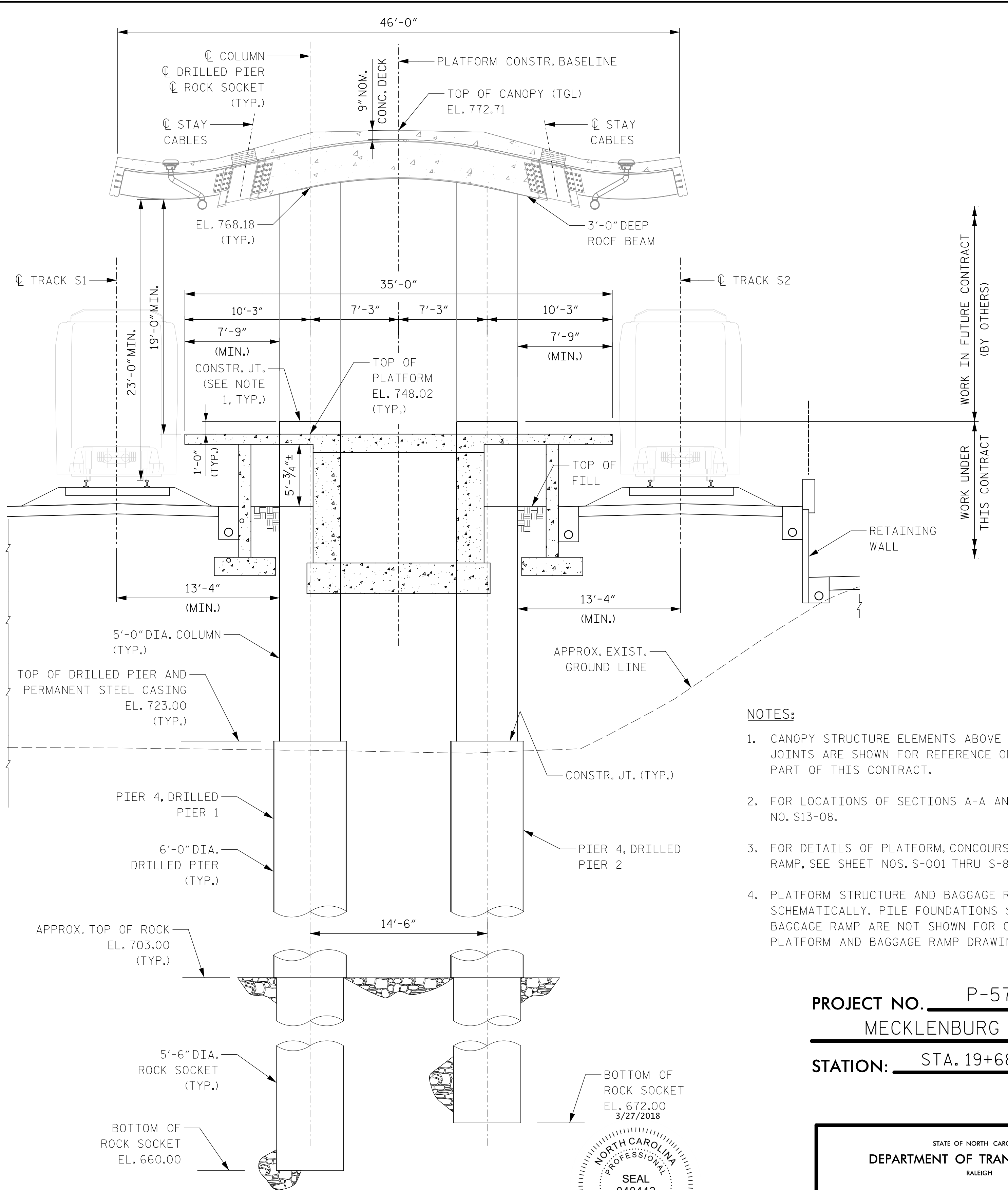
DRAWN BY: L. RAMOS DATE: 3/27/2018  
CHECKED BY: C. GAUNT DATE: 3/27/2018

DWG. NO. 4

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S13-04
1			3			TOTAL SHEETS
2			4			18



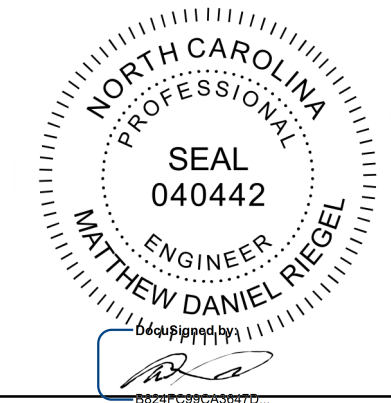
SECTION A-A  
SECTION AT PIER 1 (DEVELOPED)  
NORTH ANCHOR PIER  
(LOOKING SOUTH)  
SCALE 3/16" = 1'-0"



SECTION B-B  
SECTION AT PIER 4  
SOUTH ANCHOR PIER  
(LOOKING SOUTH)  
SCALE 3/16" = 1'-0"

- NOTES:**
- CANOPY STRUCTURE ELEMENTS ABOVE CONSTRUCTION JOINTS ARE SHOWN FOR REFERENCE ONLY AND ARE NOT PART OF THIS CONTRACT.
  - FOR LOCATIONS OF SECTIONS A-A AND B-B, SEE SHEET NO. S13-08.
  - FOR DETAILS OF PLATFORM, CONCOURSE AND BAGGAGE RAMP, SEE SHEET NOS. S-001 THRU S-810.
  - PLATFORM STRUCTURE AND BAGGAGE RAMP ARE SHOWN SCHEMATICALLY. PILE FOUNDATIONS SUPPORTING THE BAGGAGE RAMP ARE NOT SHOWN FOR CLARITY; SEE PLATFORM AND BAGGAGE RAMP DRAWINGS FOR DETAILS.

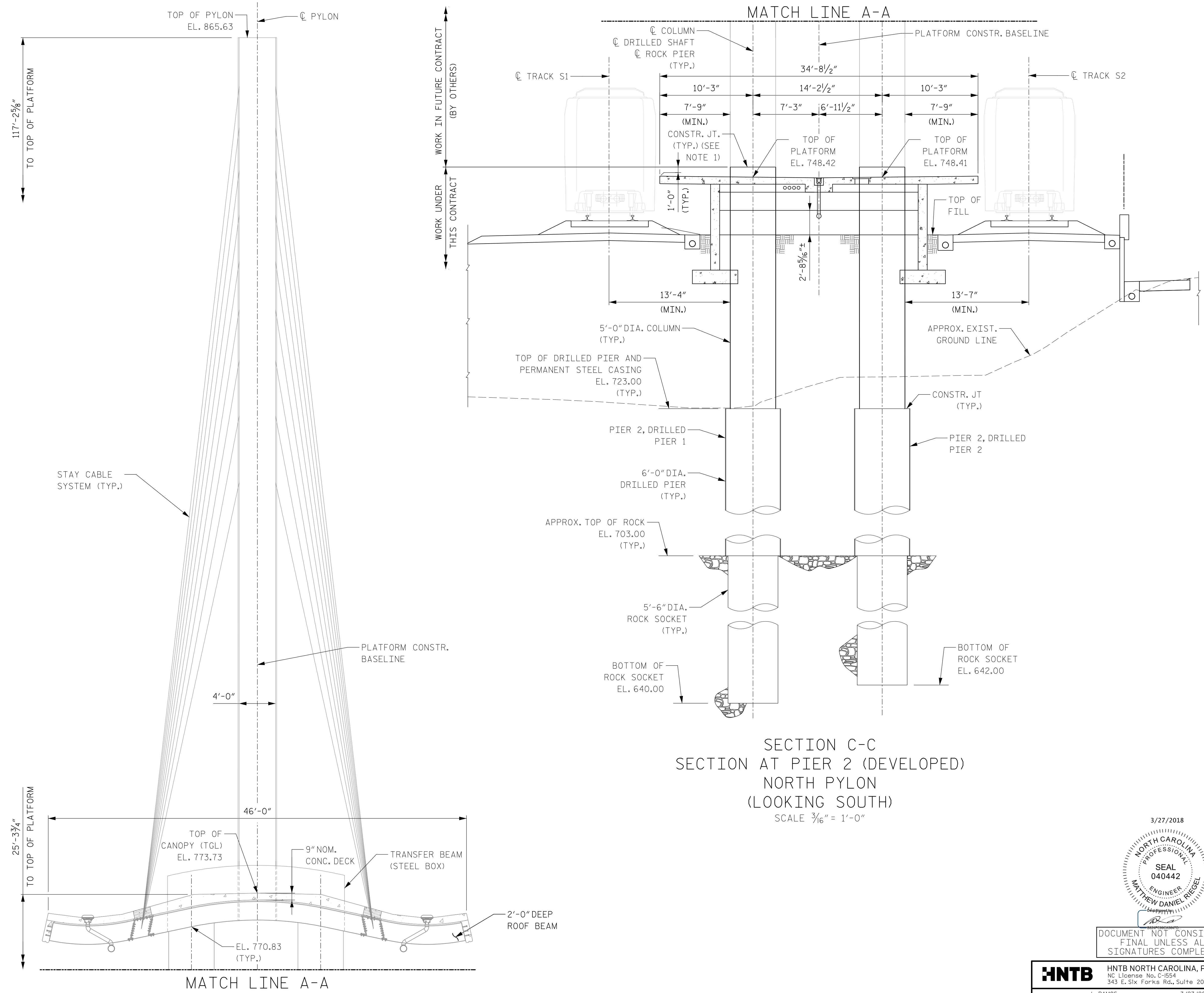
PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
 STATION: STA. 19+68.93 -S1-



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FINAL UNLESS ALL  
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DRAWN BY: L. RAMOS	DATE: 3/27/2018	DWG. NO. 5	
CHECKED BY: C. GAUNT	DATE: 3/27/2018		

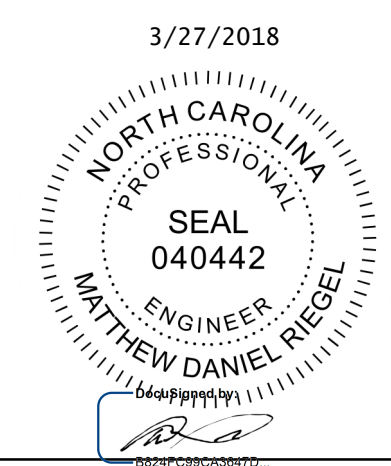
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
CANOPY STRUCTURE SECTION AT ANCHOR PIERS 1 AND 4					
SHEET NO. S13-05					
TOTAL SHEETS 18					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		



SECTION C-C  
SECTION AT PIER 2 (DEVELOPED)  
NORTH PYLON  
(LOOKING SOUTH)  
SCALE 3/16" = 1'-0"

- NOTES:
- CANOPY STRUCTURE ELEMENTS ABOVE CONSTRUCTION JOINTS ARE SHOWN FOR REFERENCE ONLY AND ARE NOT PART OF THIS CONTRACT.
  - FOR LOCATION OF SECTION C-C, SEE SHEET NO. S13-08.
  - FOR DETAILS OF PLATFORM, CONCOURSE AND BAGGAGE RAMP, SEE SHEET NOS. S-001 THRU S-810.
  - PLATFORM STRUCTURE AND BAGGAGE RAMP ARE SHOWN SCHEMATICALLY. PILE FOUNDATIONS SUPPORTING THE BAGGAGE RAMP ARE NOT SHOWN FOR CLARITY; SEE PLATFORM AND BAGGAGE RAMP DRAWINGS FOR DETAILS.

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
STATION: STA. 19+68.93 -S1-



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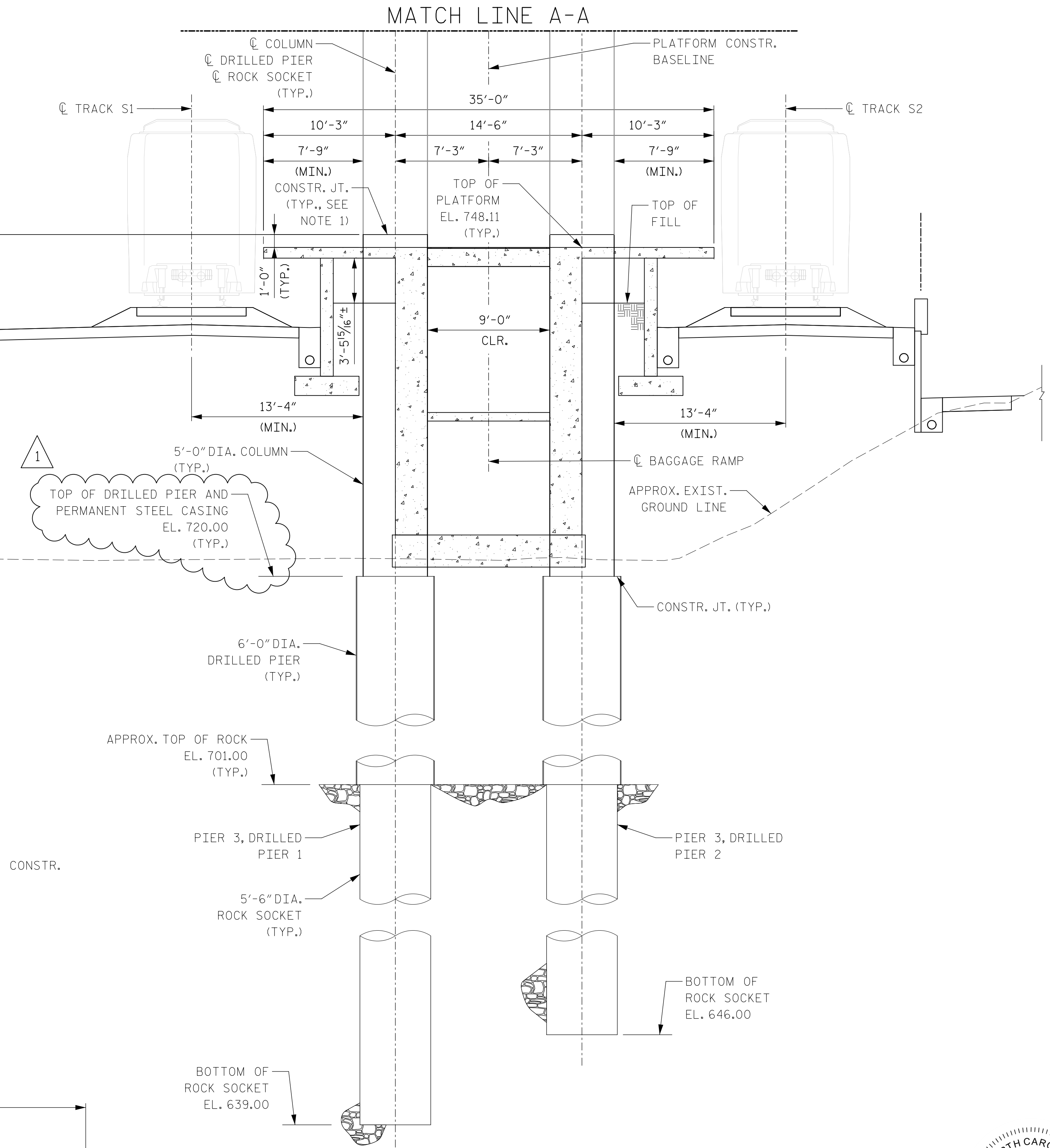
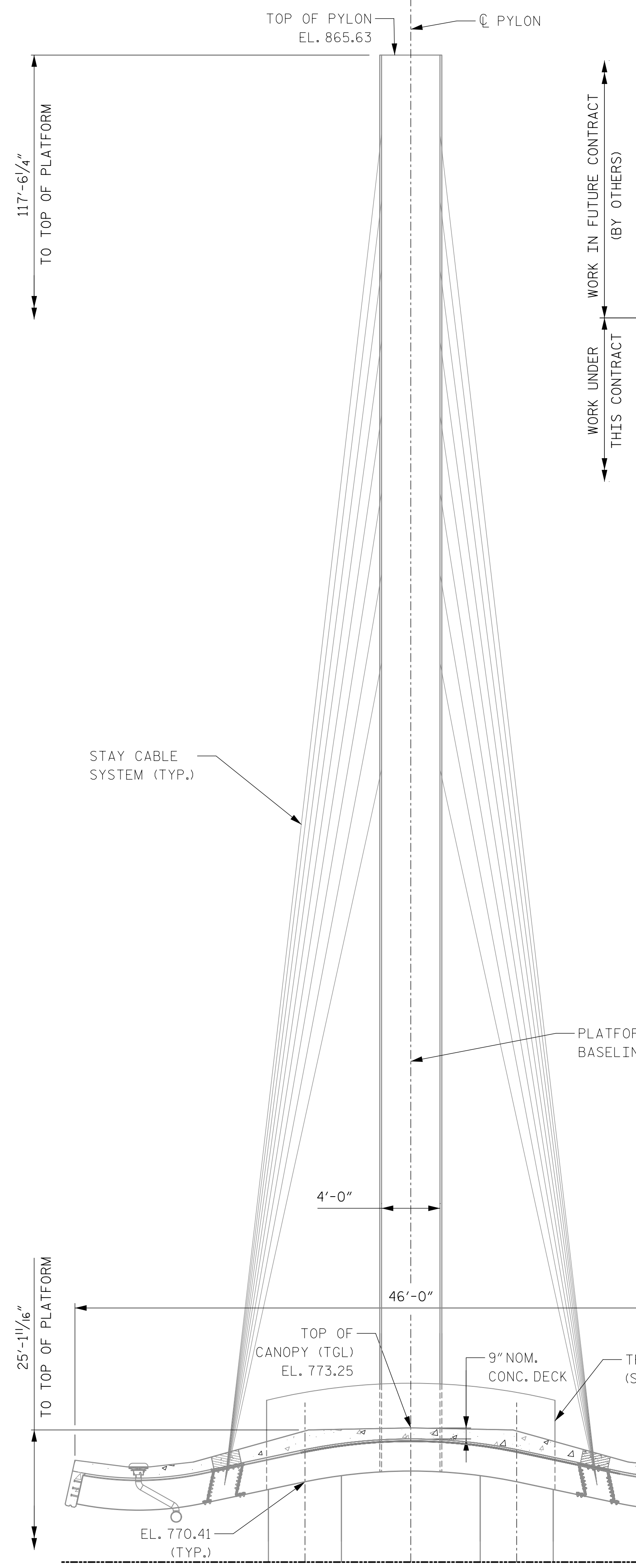
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
CANOPY STRUCTURE  
SECTION AT NORTH PYLON  
(PIER 2)

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DRAWN BY: L. RAMOS DATE: 3/27/2018  
CHECKED BY: C. GAUNT DATE: 3/27/2018

DWG. NO. 6

REVISIONS						SHEET NO. S13-06
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS
2			4			18

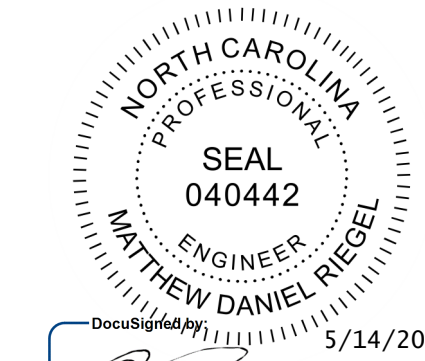


SECTION D-D  
SECTION AT PIER 3  
SOUTH PYLON  
(LOOKING SOUTH)  
SCALE 3/16" = 1'-0"

NOTES:

- CANOPY STRUCTURE ELEMENTS ABOVE CONSTRUCTION JOINTS ARE SHOWN FOR REFERENCE ONLY AND ARE NOT PART OF THIS CONTRACT.
- FOR LOCATION OF SECTION D-D, SEE SHEET NO. S13-08.
- FOR DETAILS OF PLATFORM, CONCOURSE AND BAGGAGE RAMP, SEE SHEET NOS. S-001 THRU S-810.
- PLATFORM STRUCTURE AND BAGGAGE RAMP ARE SHOWN SCHEMATICALLY. PILE FOUNDATIONS SUPPORTING THE BAGGAGE RAMP ARE NOT SHOWN FOR CLARITY; SEE PLATFORM AND BAGGAGE RAMP DRAWINGS FOR DETAILS.

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
 STATION: STA. 19+68.93 -S1-



5/14/2018 9:13:52 PM PDT  
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 SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 CANOPY STRUCTURE  
 SECTION AT SOUTH PYLON  
 (PIER 3)

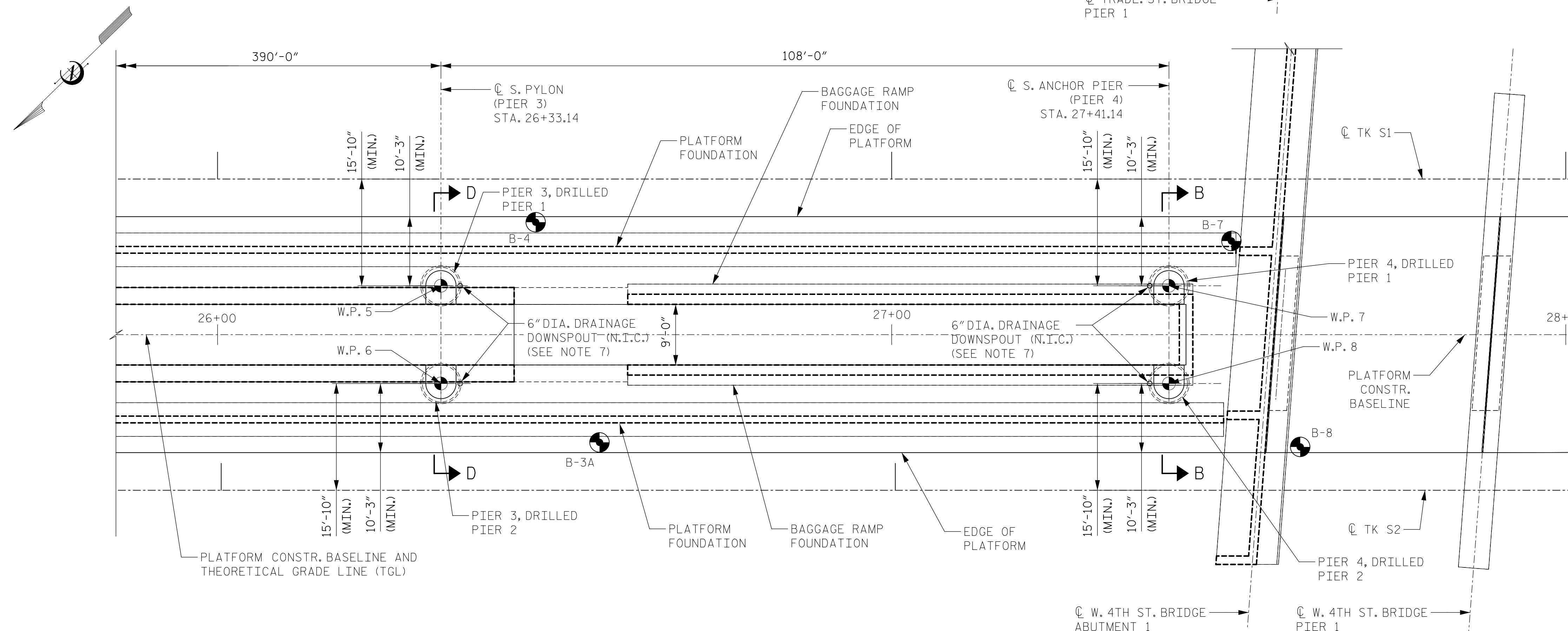
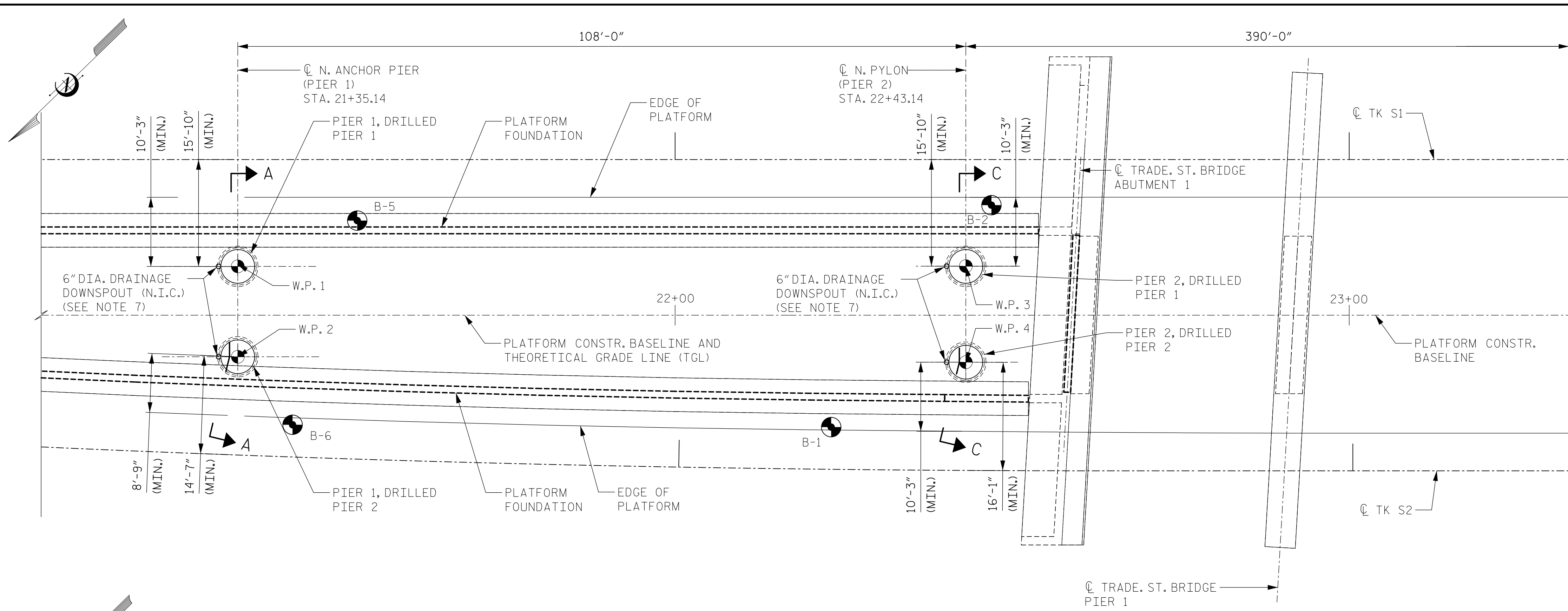
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DRAWN BY: L. RAMOS DATE: 3/27/2018  
 CHECKED BY: C. GAUNT DATE: 3/27/2018

DWG. NO. 7

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S13-07
1	C.G.	05/11/2018	3			TOTAL SHEETS
2			4			18





FOUNDATION PLAN  
SCALE 1" = 10'-0"

PIER NO.	DRILLED SHAFT NO.	W.P.	NORTHING	EASTING
1	1	1	544514.429	1448268.497
	2	2	544523.785	1448258.890
2	1	3	544437.055	1448193.149
	2	4	544446.973	1448182.965
3	1	5	544157.650	1447921.060
	2	6	544167.766	1447910.672
4	1	7	544080.276	1447845.711
	2	8	544090.393	1447835.323

BORING NO.	NORTHING	EASTING
B-1	544468.000	1448190.000
B-2	544428.000	1448197.000
B-3A	544157.000	1447888.000
B-4	544141.000	1447918.000
B-5	544497.000	1448261.000
B-6	544525.000	1448246.000
B-7	544069.000	1447844.000
B-8	544083.000	1447815.000

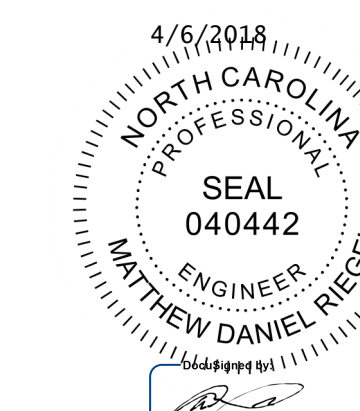
NOTES:

- FOR SECTIONS A-A AND B-B, SEE SHEET NO. S13-05.
- FOR SECTION C-C, SEE SHEET NO. S13-06.
- FOR SECTION D-D, SEE SHEET NO. S13-07.
- FOR DETAILS OF PLATFORM, CONCOURSE AND BAGGAGE RAMP, SEE SHEET NOS. S-001 THRU S-810.
- PLATFORM STRUCTURE AND BAGGAGE RAMP ARE SHOWN SCHEMATICALLY. PILE FOUNDATIONS SUPPORTING THE BAGGAGE RAMP ARE NOT SHOWN FOR CLARITY; SEE PLATFORM AND BAGGAGE RAMP DRAWINGS FOR DETAILS.
- FOR EXISTING BORING LOGS, REFER TO THE PROJECT REFERENCE DOCUMENTS.
- PROVIDE SLEEVE THROUGH PLATFORM DECK FOR FUTURE DRAINAGE DOWNSPOUT; SEE PLATFORM AND PLUMBING DRAWINGS FOR DETAILS.
- BRIDGE FOUNDATIONS ARE NOT SHOWN FOR CLARITY; SEE BRIDGE DRAWINGS FOR DETAILS.

LEGEND:

- WORKING POINT (W.P.)
- EXISTING BORING LOCATION

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
 STATION: STA. 19+68.93 -S1-



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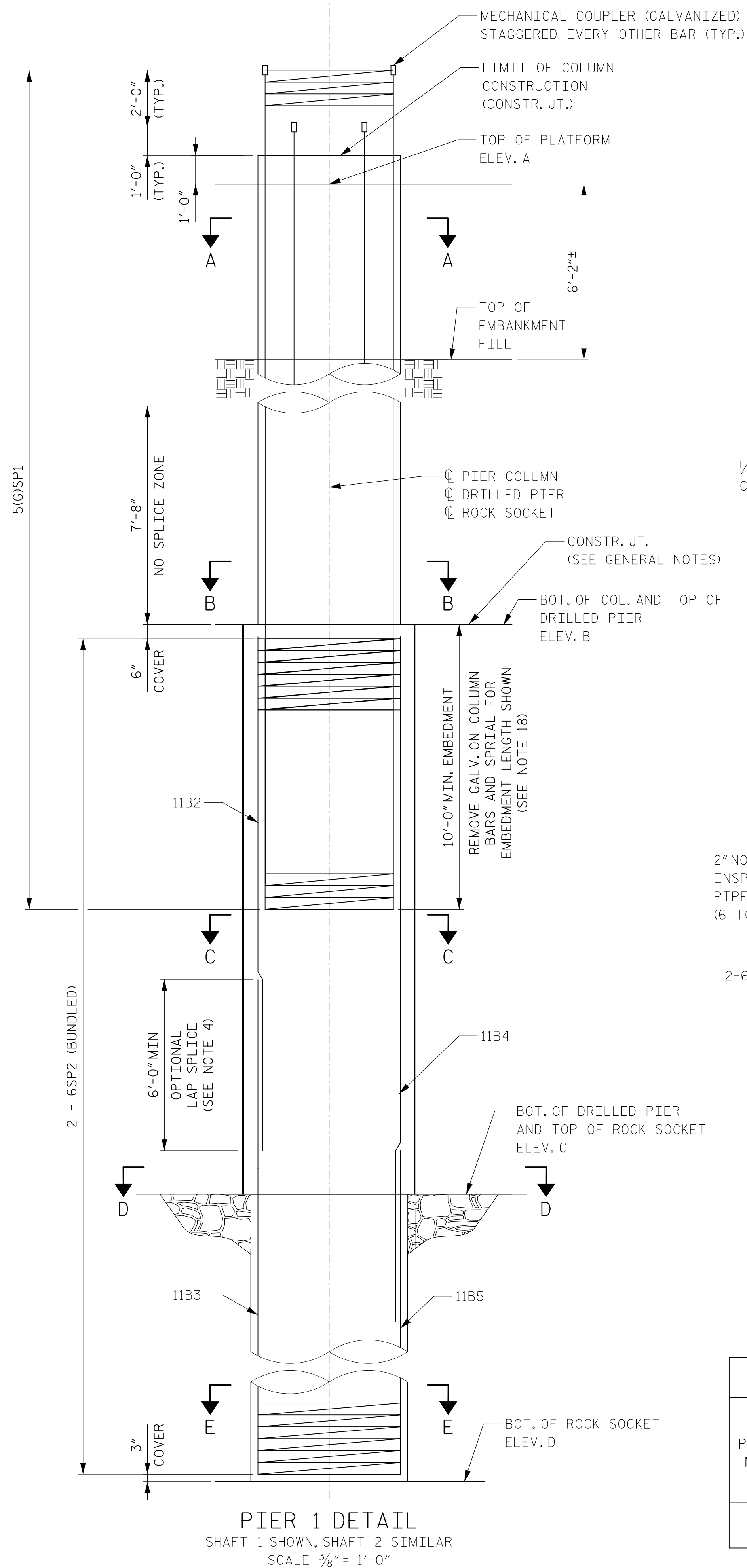
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 CHECKED BY: C. GAUNT DATE: 4/5/2018

DWG. NO. 8

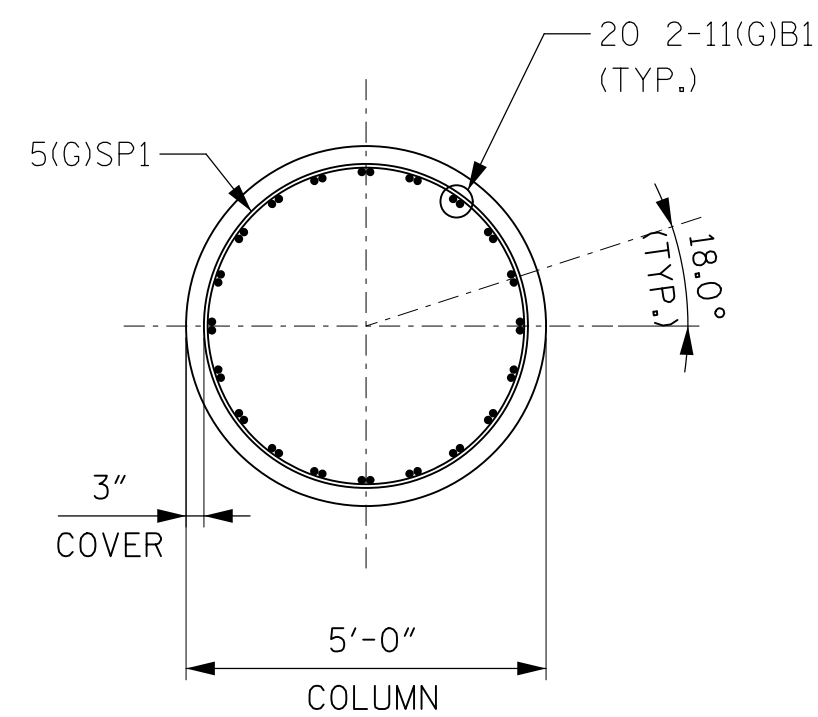
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

CANOPY STRUCTURE  
 FOUNDATION LAYOUT  
 PLAN

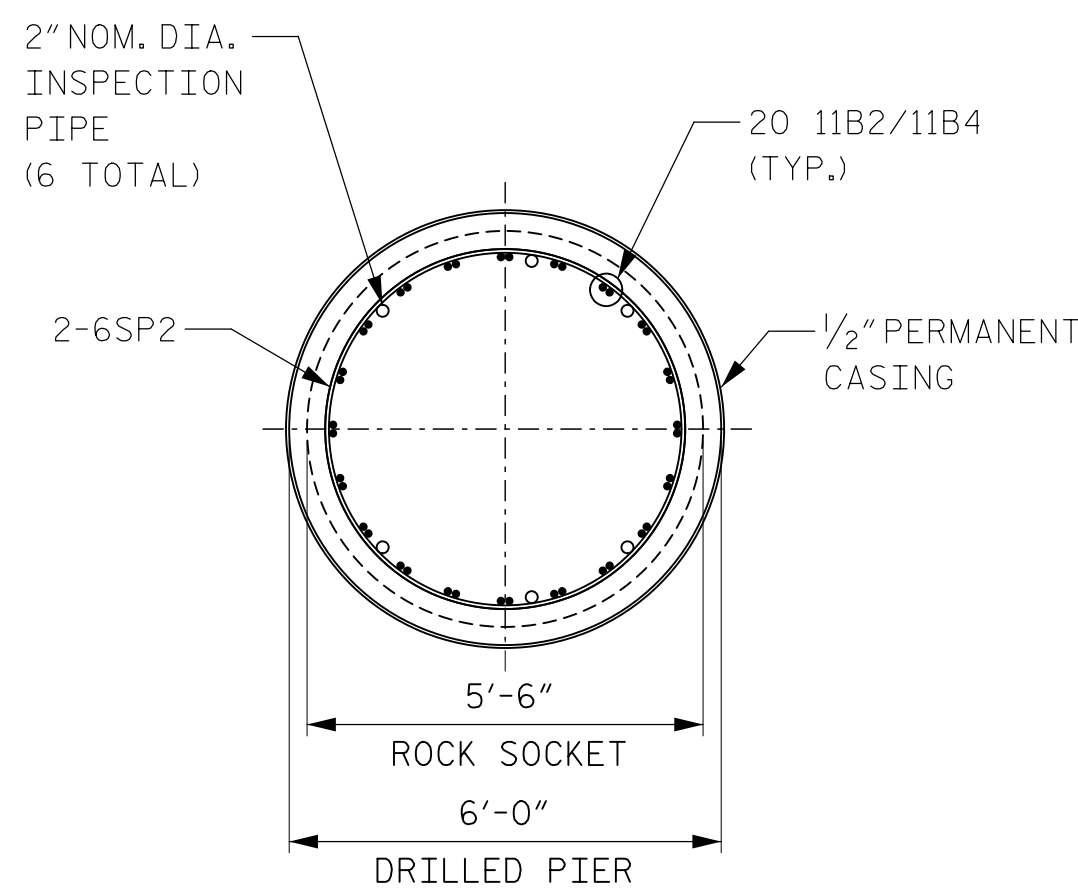
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S13-08
1			3			TOTAL SHEETS
2			4			18



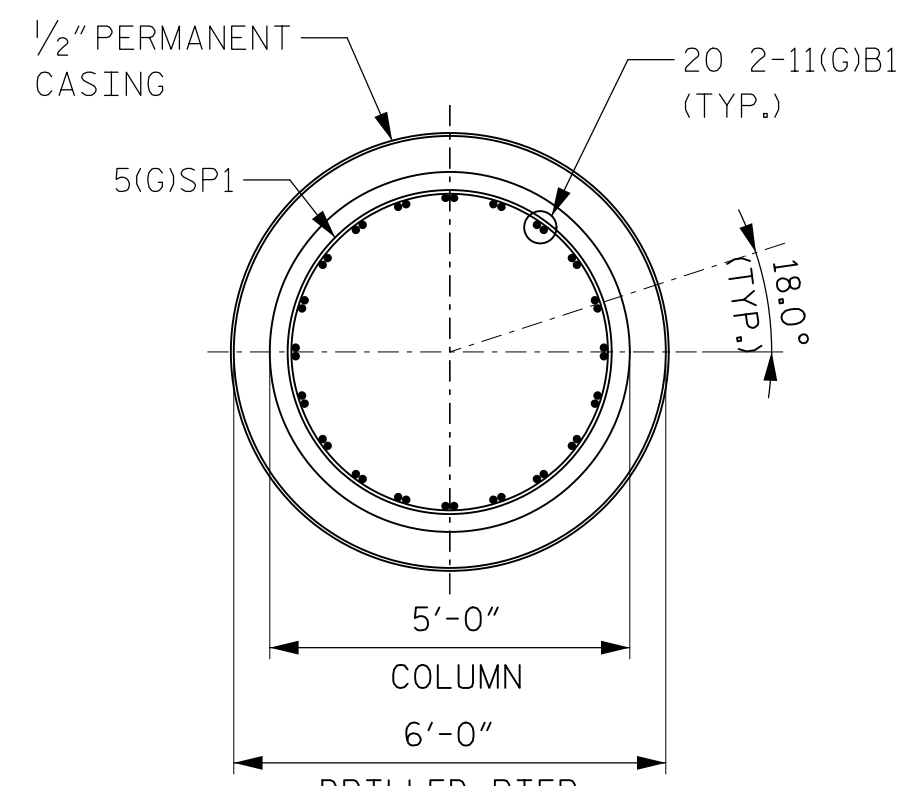
PIER 1 DETAIL  
SHAFT 1 SHOWN, SHAFT 2 SIMILAR  
SCALE 3/8" = 1'-0"



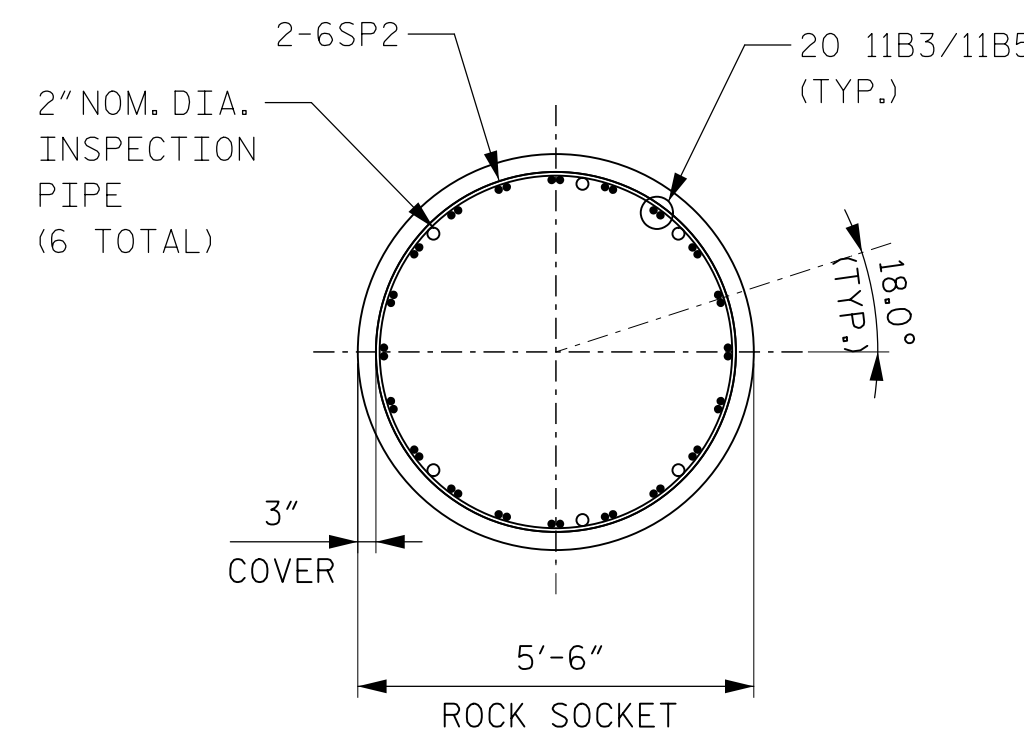
SECTION A-A  
SCALE 3/8" = 1'-0"



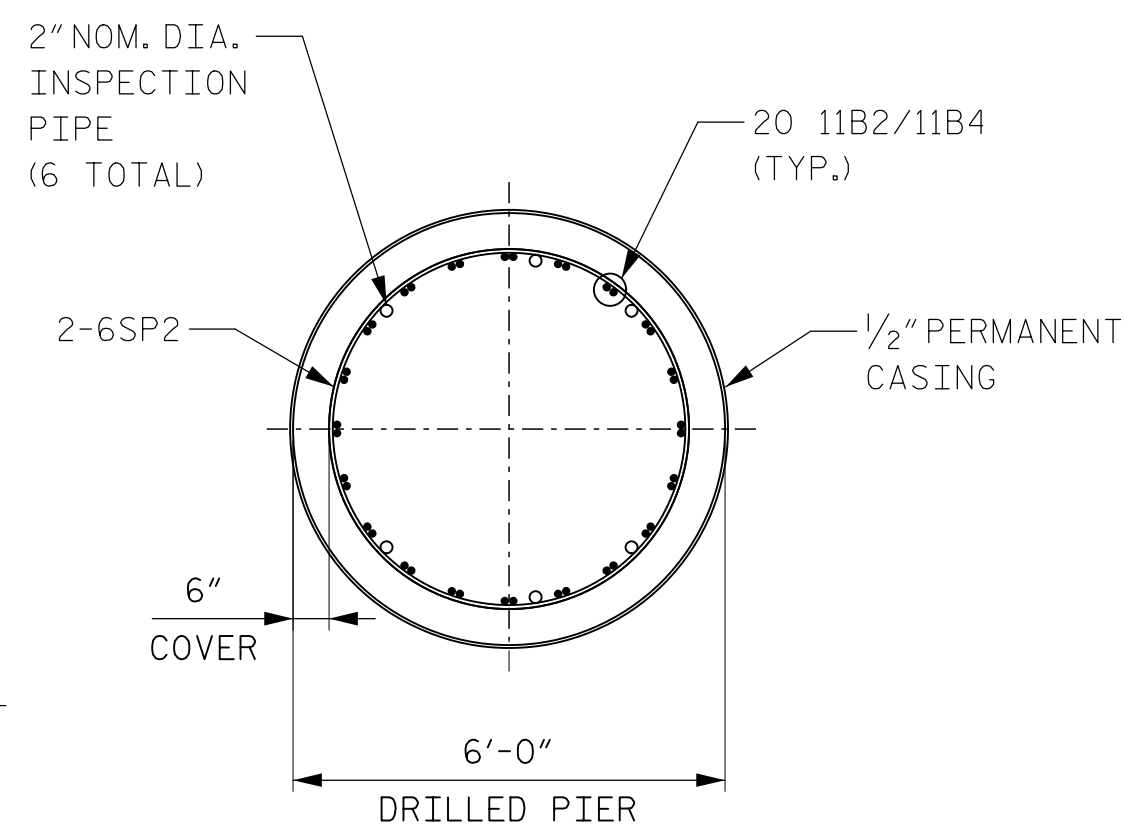
SECTION D-D  
SCALE 3/8" = 1'-0"



SECTION B-B  
SCALE 3/8" = 1'-0"



SECTION E-E  
SCALE 3/8" = 1'-0"



SECTION C-C  
SCALE 3/8" = 1'-0"

DRILLED PIER AND ROCK SOCKET TABLE								
PIER NO.	DRILLED PIER AND ROCK SOCKET NO.	W.P.	REQUIRED GEOTECHNICAL NOMINAL (ULTIMATE) RESISTANCE		TOP OF PLATFORM ELEV. A	TOP OF DRILLED PIER ELEV. B	TOP OF ROCK SOCKET ELEV. C	BOT. OF ROCK SOCKET ELEV. D
			COMPRESSION (KIPS)	TENSION (KIPS)				
1	1	1	650	1,209	748.50	727.50	703.00	657.50
	2	2	650	1,209	748.49	727.50	703.00	657.50

NOTES:

- FOR PIER 1 LOCATION, SEE SHEET NO. S13-08. FOR EXPANSION JOINT DETAILS, SEE SHEET NO. S13-13.
- ALL PIER COLUMN, DRILLED PIER AND ROCK SOCKET CONCRETE SHALL BE CLASS AA CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,500 PSI.
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GR. 75. COLUMN REINFORCING STEEL SHALL BE GALVANIZED (SEE SPECIAL SPECIFICATIONS), DESIGNATED WITH (G). DRILLED PIER AND ROCK SOCKET REINFORCING STEEL SHALL BE BLACK BARS.
- LAP SPLICES OF COLUMN REINFORCING BARS SHALL NOT BE PERMITTED, MECHANICAL COUPLERS SHALL BE USED FOR ALL COLUMN REINFORCING BAR SPLICES.  
  
OPTIONAL LAP SPLICES OF DRILLED PIER AND ROCK SOCKET REINFORCING BARS SHALL BE PERMITTED IN THE MIDDLE ONE THIRD (1/3) PORTION OF THE DRILLED PIER AND ROCK SOCKET, FOR THE MINIMUM LENGTH SHOWN, AND STAGGERED (EVERY OTHER BAR) TO PROVIDE A CLASS B LAP SPLICE. INDIVIDUAL BAR SPLICES WITHIN A BUNDLE SHALL NOT OVERLAP. OPTIONAL LAP SPLICE LOCATIONS SHALL BE CLEARLY SHOWN ON THE SHOP (WORKING) DRAWINGS.
- PERMANENT STEEL CASING IS REQUIRED FOR ALL DRILLED PIERS AT PIER 1. DO NOT EXTEND STEEL CASING BELOW ELEVATION 687.6 FT FOR DRILLED PIER 1 AND ELEVATION 687.3 FT FOR DRILLED PIER 2. SEE SECTION 411 OF THE STANDARD SPECIFICATIONS FOR DRILLED PIERS.
- INSTALL PERMANENT STEEL CASING AT PIER 1 BY VIBRATING, SCREWING OR OSCILLATING THE CASING.
- DRILLED PIERS AT PIER 1 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN THOSE PRESENTED ON THE DRILLED PIER AND ROCK SOCKET TABLE ON THIS SHEET.
- POLYMER SLURRY CONSTRUCTION IS REQUIRED FOR DRILLED PIERS AT PIER 1, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS FOR DRILLED PIERS.
- ALL ROCK SOCKET SIDE WALLS SHALL BE SCARIFIED WITH A BACKSCRATCHER TO PRECLUDE THE FORMATION OF A MUD CAKE WITHIN 48 HOURS OF CONCRETE PLACEMENT.
- SID INSPECTIONS ARE REQUIRED BY THE ENGINEER'S REPRESENTATIVE PRIOR TO PLACEMENT OF THE REINFORCING CAGE. IF REQUESTED ROCK SOCKET BOTTOMS SHALL BE INSPECTED WITH A SID AS SPECIFIED IN SECTION 411 OF THE STANDARD SPECIFICATIONS FOR DRILLED PIERS.
- ALL SHAFTS SHALL BE TESTED TO VERIFY CONCRETE INTEGRITY THROUGH CROSSHOLE SONIC LOGGING (CSL). SCHEDULE 40 STEEL INSPECTION PIPES FOR CSL TESTING SHALL BE ATTACHED TO THE INSIDE OF THE REINFORCEMENT CAGE. FILL CSL TUBES WITH WATER PRIOR TO CONCRETING. SEE STANDARD SPECIFICATION 411 FOR DRILLED PIERS.
- SEE STANDARD SPECIFICATION 411 FOR DRILLED PIERS, FOR ADDITIONAL DETAILS.
- PIER 1, DRILLED PIERS 1 AND 2 ARE DESIGNED FOR SIDE SHEAR ONLY.
- ALL REINFORCING STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL, BLACK" AND "SPIRAL REINFORCING STEEL, BLACK".
- FOR REINFORCEMENT BAR LIST AND BILL OF MATERIALS, SEE SHEET NO. S13-18.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FT. OF EXTRA LENGTH.
- THE LOCATION OF THE CONSTRUCTION JOINT AT THE TOP OF THE DRILLED PIERS IS BASED ON APPROXIMATE EXISTING GROUND LINE ELEVATIONS. IF THE ACTUAL GROUND ELEVATIONS ARE DIFFERENT THAN DEPICTED, THE LOCATION OF THE CONSTRUCTION JOINTS MAY BE ADJUSTED, SUBJECT TO APPROVAL OF THE ENGINEER OF RECORD (EOR).
- COLUMN BARS EMBEDDED IN THE DRILLED PIER SHALL MEET A "BLACK" BAR CONDITION. REMOVE GALVANIZING ON THE COLUMN BARS, PRIOR TO PLACEMENT, BY STRIPPING GALVANIZING IN THE FIELD, OR BY MASKING THE COLUMN BARS PRIOR TO GALVANIZING AND REMOVING MASKING PRIOR TO PLACEMENT.

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
STATION: STA. 19+68.93 -S1-



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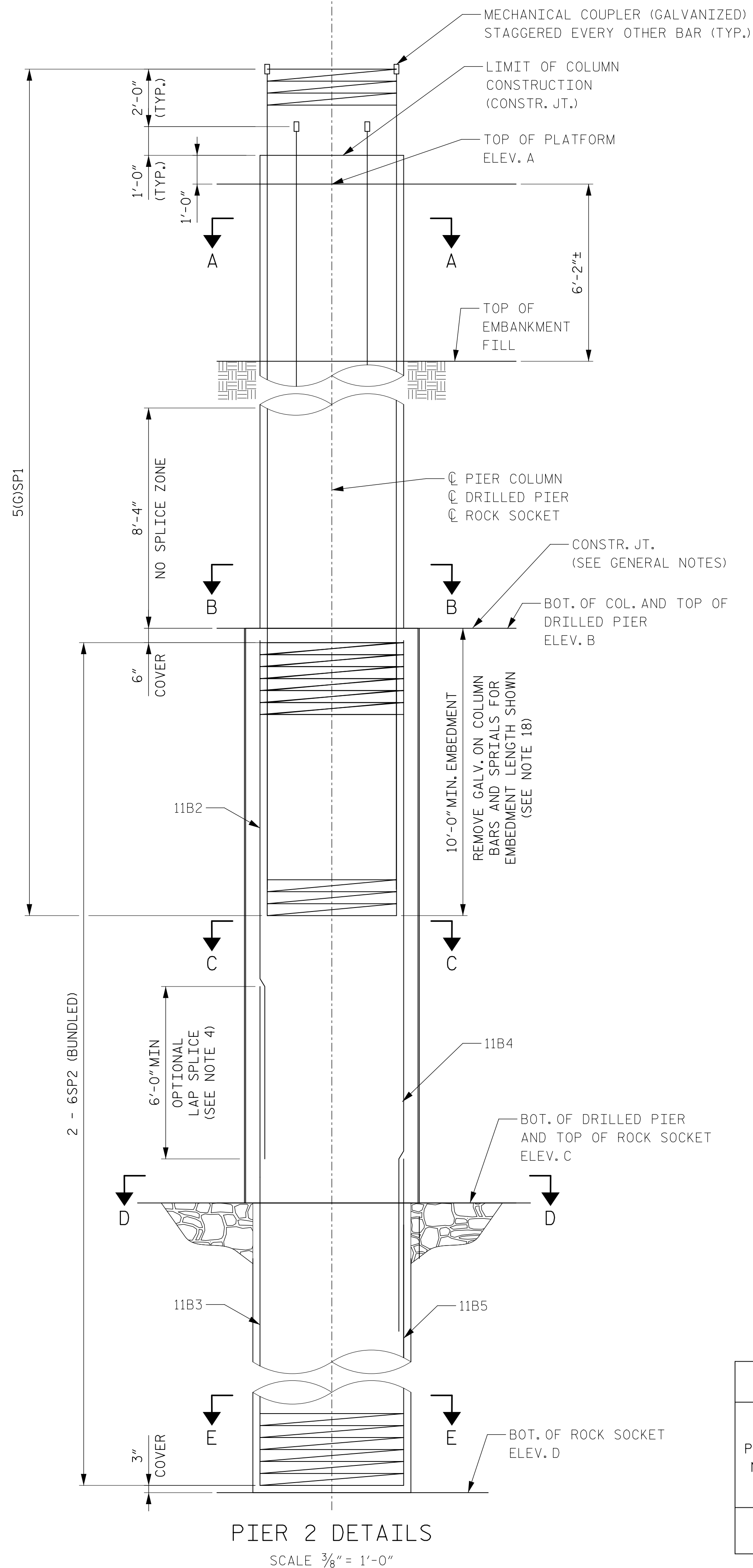
DRAWN BY: L. RAMOS DATE: 3/27/2018  
CHECKED BY: C. GAUNT DATE: 3/27/2018

DWG. NO. 9

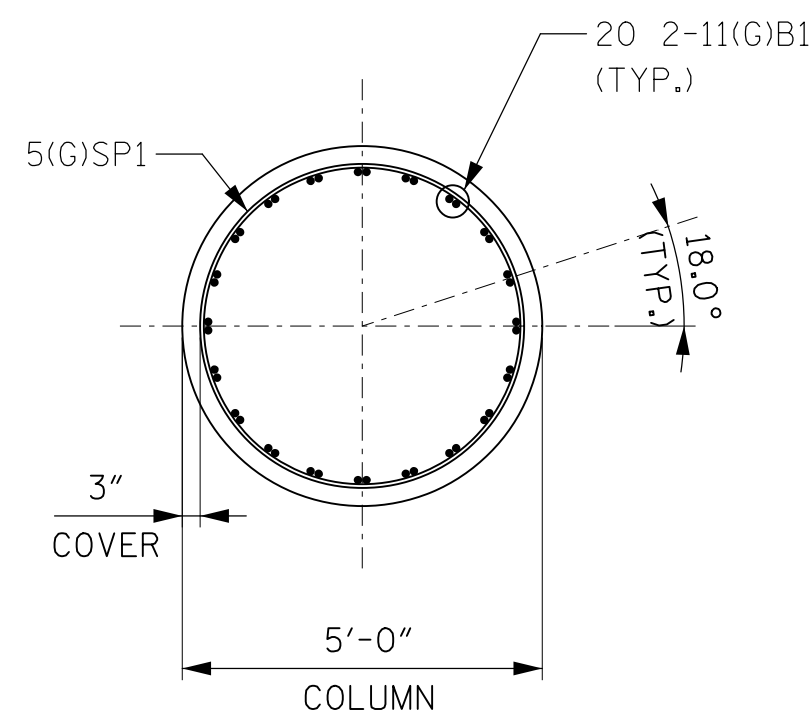
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

CANOPY STRUCTURE  
DRILLED PIER DETAILS AT  
PIER 1 (NORTH ANCHOR PIER)

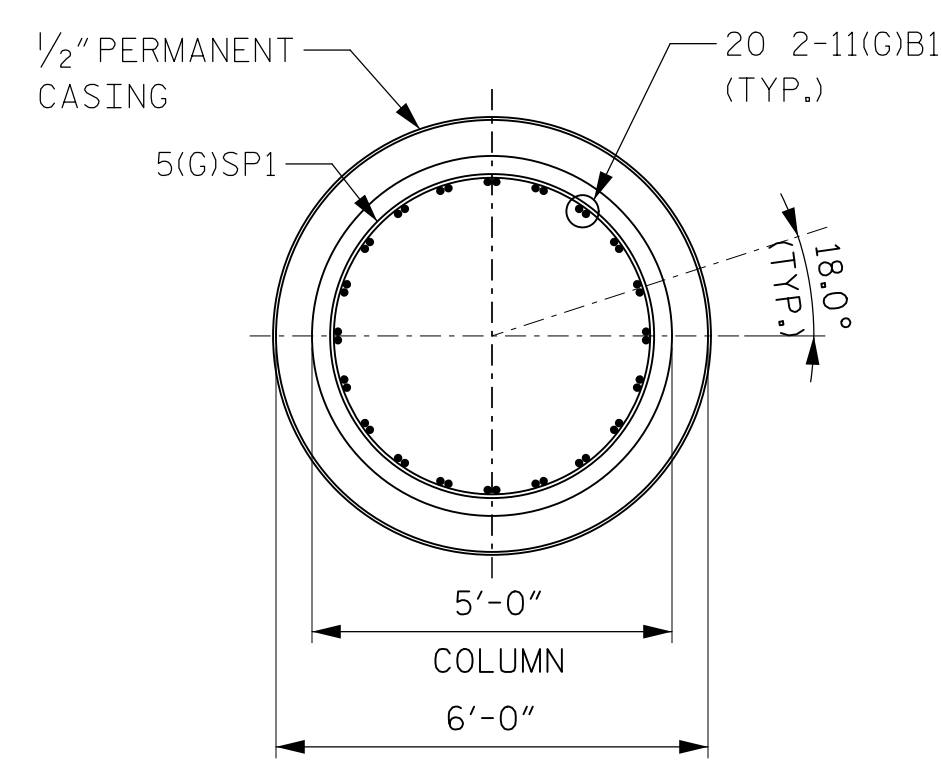
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S13-09
1			3			TOTAL SHEETS
2			4			18



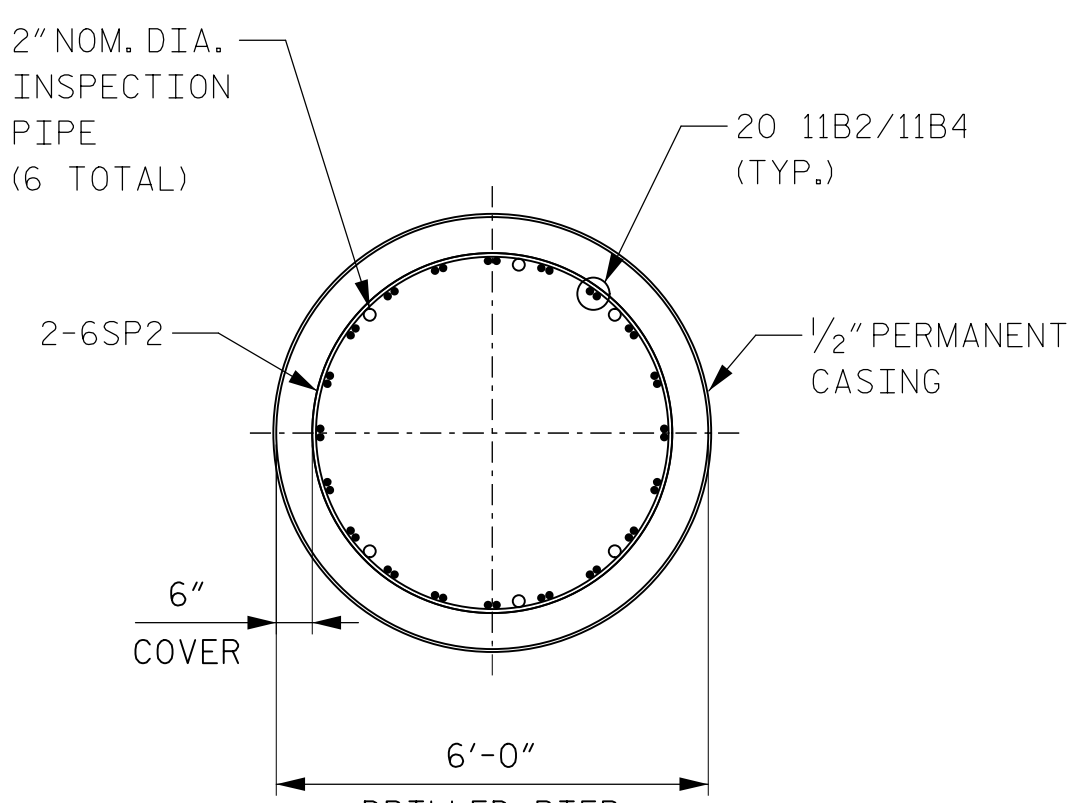
PIER 2 DETAILS  
SCALE 3/8" = 1'-0"



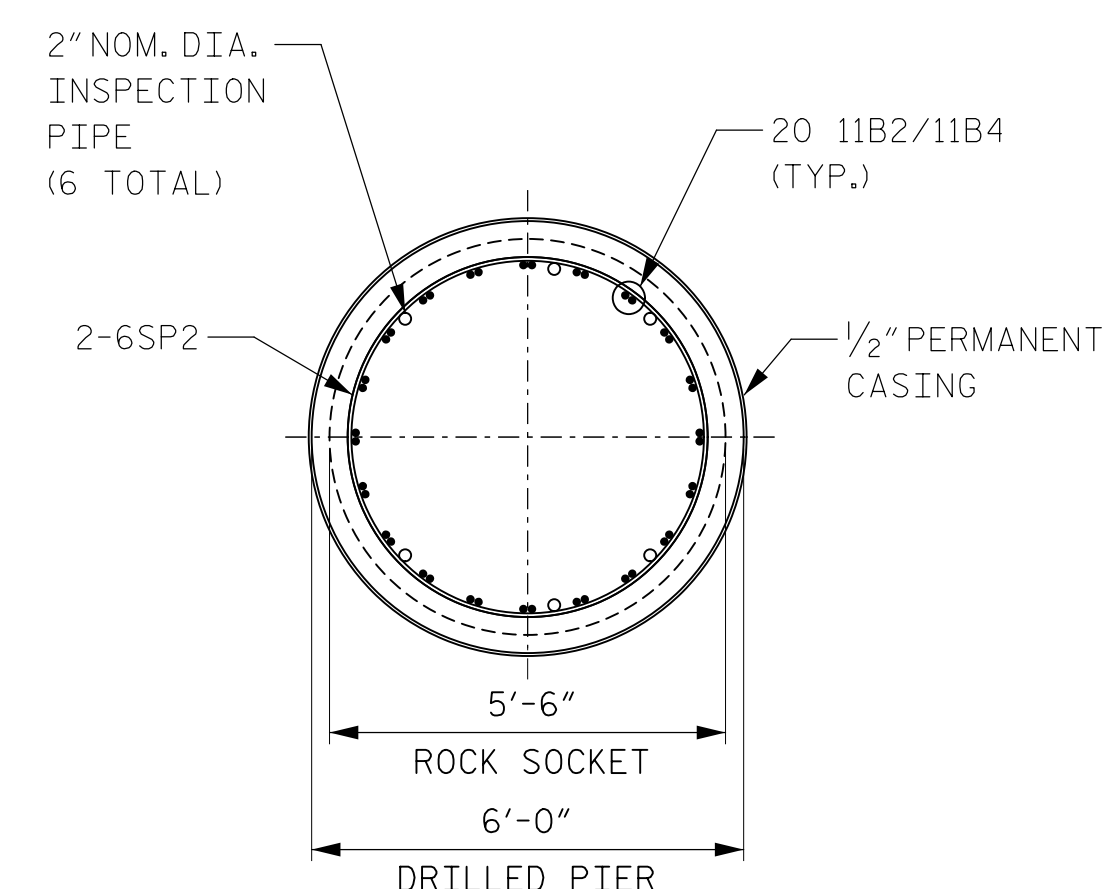
SECTION A-A  
SCALE 3/8" = 1'-0"



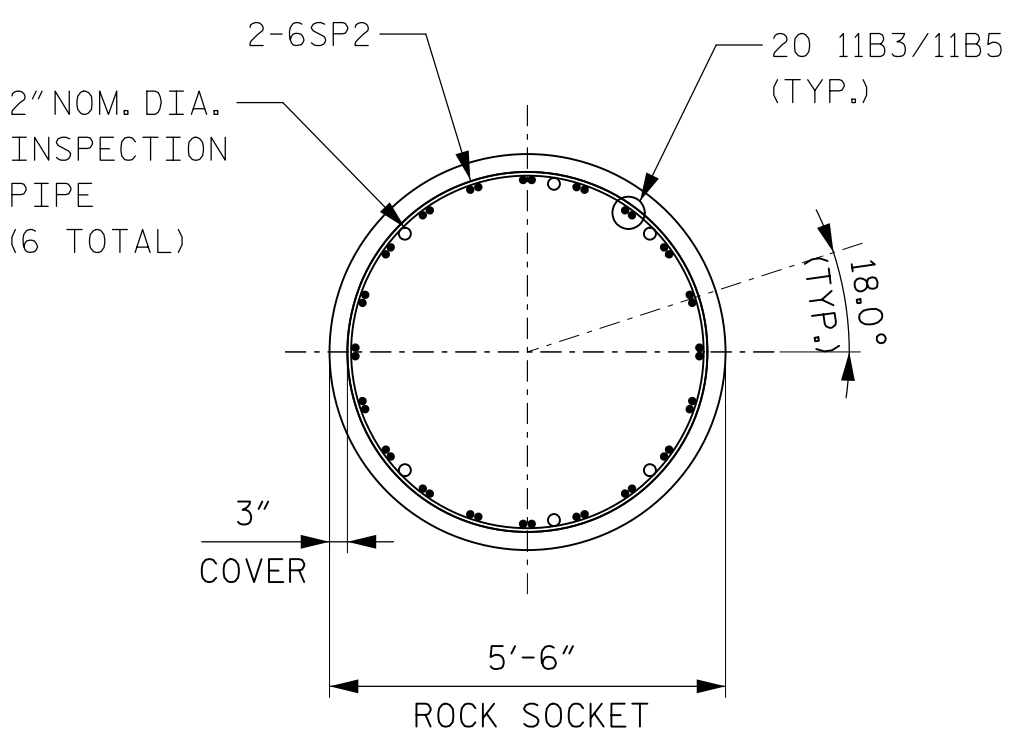
SECTION B-B  
SCALE 3/8" = 1'-0"



SECTION C-C  
SCALE 3/8" = 1'-0"



SECTION D-D  
SCALE 3/8" = 1'-0"



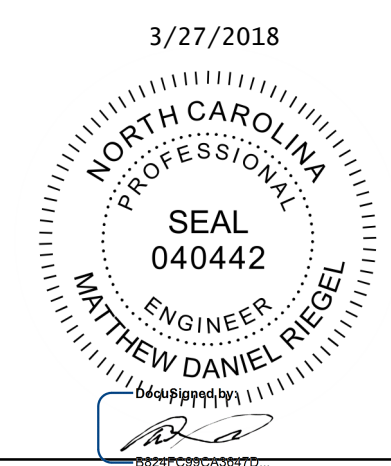
SECTION E-E  
SCALE 3/8" = 1'-0"

NOTES:

- FOR PIER 2 LOCATION, SEE SHEET NO. S13-08. FOR EXPANSION JOINT DETAILS, SEE SHEET NO. S13-13.
- ALL PIER COLUMN, DRILLED PIER AND ROCK SOCKET CONCRETE SHALL BE CLASS AA CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,500 PSI.
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GR. 75. COLUMN REINFORCING STEEL SHALL BE GALVANIZED (SEE SPECIAL SPECIFICATIONS), DESIGNATED WITH (G). DRILLED PIER AND ROCK SOCKET REINFORCING STEEL SHALL BE BLACK BARS.
- LAP SPLICES OF COLUMN REINFORCING BARS SHALL NOT BE PERMITTED, MECHANICAL COUPLERS SHALL BE USED FOR ALL COLUMN REINFORCING BAR SPLICES.  
  
OPTIONAL LAP SPLICES OF DRILLED PIER AND ROCK SOCKET REINFORCING BARS SHALL BE PERMITTED IN THE MIDDLE ONE THIRD (1/3) PORTION OF THE DRILLED PIER AND ROCK SOCKET, FOR THE MINIMUM LENGTH SHOWN AND STAGGERED (EVERY OTHER BAR) TO PROVIDE A CLASS B LAP SPlice. INDIVIDUAL BAR SPLICES WITHIN A BUNDLE SHALL NOT OVERLAP. OPTIONAL LAP SPlice LOCATIONS SHALL BE CLEARLY SHOWN ON THE SHOP (WORKING) DRAWINGS.
- PERMANENT STEEL CASING IS REQUIRED FOR ALL DRILLED PIERS AT PIER 2. DO NOT EXTEND STEEL CASING BELOW ELEVATION 684.2 FT FOR DRILLED PIER 1 AND ELEVATION 687.3 FT FOR DRILLED PIER 2. SEE SPECIFICATION SECTION 411 OF THE STANDARD SPECIFICATIONS FOR DRILLED PIERS.
- INSTALL PERMANENT STEEL CASING AT PIER 2 BY VIBRATING, SCREWING OR OSCILLATING THE CASING.
- DRILLED PIERS AT PIER 2 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN THOSE PRESENTED ON THE DRILLED PIER AND ROCK SOCKET TABLE ON THIS SHEET.
- POLYMER SLURRY CONSTRUCTION IS REQUIRED FOR DRILLED PIERS AT PIER 2, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS FOR DRILLED PIERS.
- ALL ROCK SOCKET SIDE WALLS SHALL BE SCARIFIED WITH A BACKSCRATCHER TO PRECLUDE THE FORMATION OF A MUD CAKE WITHIN 48 HOURS OF CONCRETE PLACEMENT.
- SID INSPECTIONS ARE REQUIRED BY THE ENGINEER'S REPRESENTATIVE PRIOR TO PLACEMENT OF THE REINFORCING CAGE. IF REQUESTED ROCK SOCKET BOTTOMS SHALL BE INSPECTED WITH A SID AS SPECIFIED IN SECTION 411 OF THE STANDARD SPECIFICATIONS FOR DRILLED PIERS.
- ALL SHAFTS SHALL BE TESTED TO VERIFY CONCRETE INTEGRITY THROUGH CROSSHOLE SONIC LOGGING (CSL). SCHEDULE 40 STEEL INSPECTION PIPES FOR CSL TESTING SHALL BE ATTACHED TO THE INSIDE OF THE REINFORCEMENT CAGE. FILL CSL TUBES WITH WATER PRIOR TO CONCRETING. SEE STANDARD SPECIFICATION 411 FOR DRILLED PIERS.
- SEE STANDARD SPECIFICATION 411 FOR DRILLED PIERS, FOR ADDITIONAL DETAILS.
- PIER 2, DRILLED PIERS 1 AND 2 ARE DESIGNED FOR SIDE SHEAR ONLY.
- ALL REINFORCING STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL, BLACK" AND "SPIRAL REINFORCING STEEL, BLACK".
- FOR REINFORCEMENT BAR LIST AND BILL OF MATERIALS, SEE SHEET NO. S13-18.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FT. OF EXTRA LENGTH.
- THE LOCATION OF THE CONSTRUCTION JOINT AT THE TOP OF THE DRILLED PIERS IS BASED ON APPROXIMATE EXISTING GROUND LINE ELEVATIONS. IF THE ACTUAL GROUND ELEVATIONS ARE DIFFERENT THAN DEPICTED, THE LOCATION OF THE CONSTRUCTION JOINTS MAY BE ADJUSTED, SUBJECT TO APPROVAL OF THE ENGINEER OF RECORD (EOR).
- COLUMN BARS EMBEDDED IN THE DRILLED PIER SHALL MEET A "BLACK" BAR CONDITION. REMOVE GALVANIZING ON THE COLUMN BARS, PRIOR TO PLACEMENT, BY STRIPPING GALVANIZING IN THE FIELD, OR BY MASKING THE COLUMN BARS PRIOR TO GALVANIZING AND REMOVING MASKING PRIOR TO PLACEMENT.

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
 STATION: STA. 19+68.93 -S1-

DRILLED PIER AND ROCK SOCKET TABLE								
PIER NO.	DRILLED PIER AND ROCK SOCKET NO.	W.P.	REQUIRED GEOTECHNICAL NOMINAL (ULTIMATE) RESISTANCE		TOP OF PLATFORM ELEV. A	TOP OF DRILLED PIER ELEV. B	TOP OF ROCK SOCKET ELEV. C	BOT. OF ROCK SOCKET ELEV. D
			COMPRESSION (KIPS)	TENSION (KIPS)				
2	1	3	7,335	0	748.42	723.00	703.00	640.00
	2	4	7,335	0	748.41	723.00	703.00	642.00



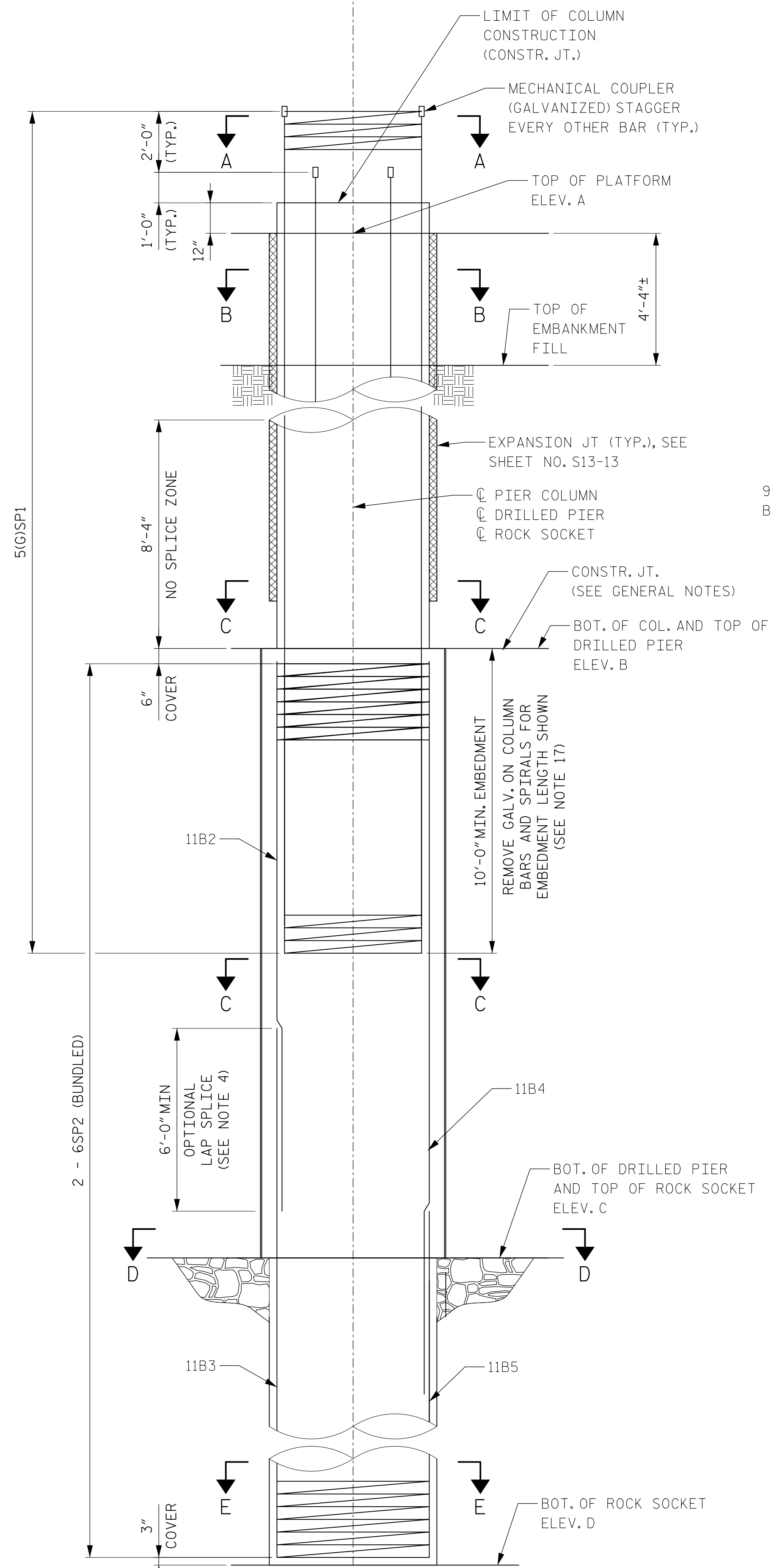
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609  
 DRAWN BY: L. RAMOS DATE: 3/27/2018  
 CHECKED BY: C. GAUNT DATE: 3/27/2018 DWG. NO. 10

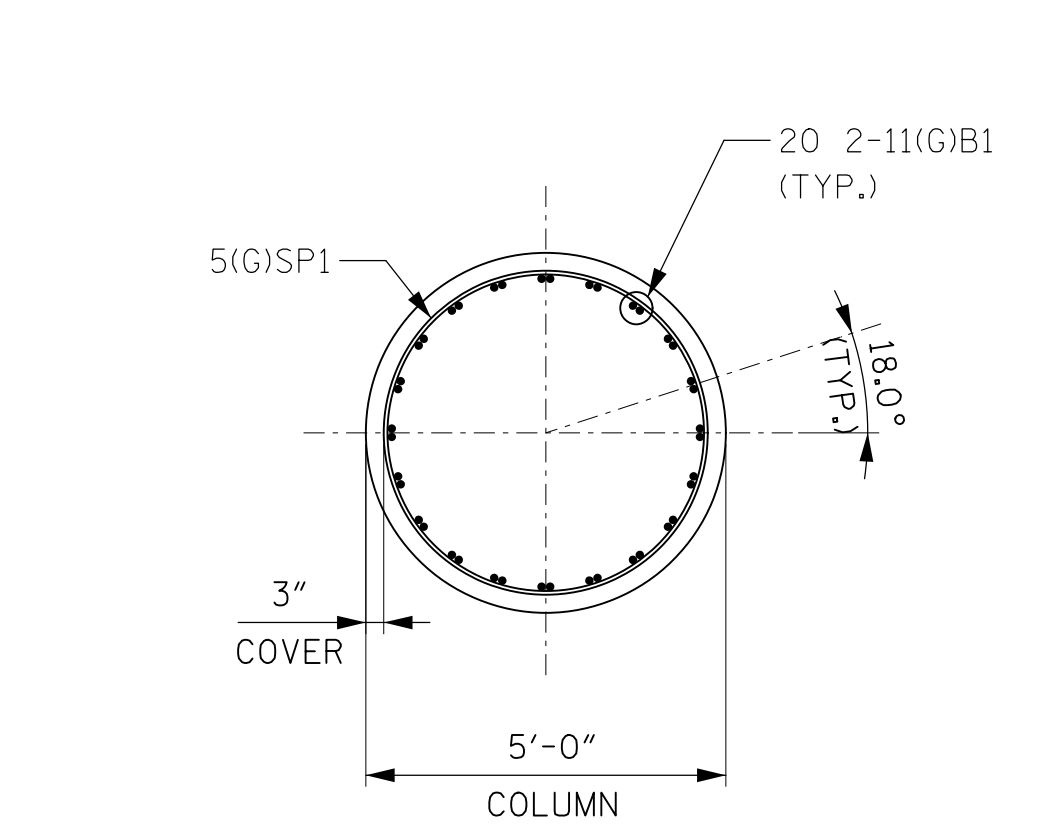
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

CANOPY STRUCTURE  
 DRILLED PIER DETAILS AT  
 PIER 2 (NORTH PYLON)

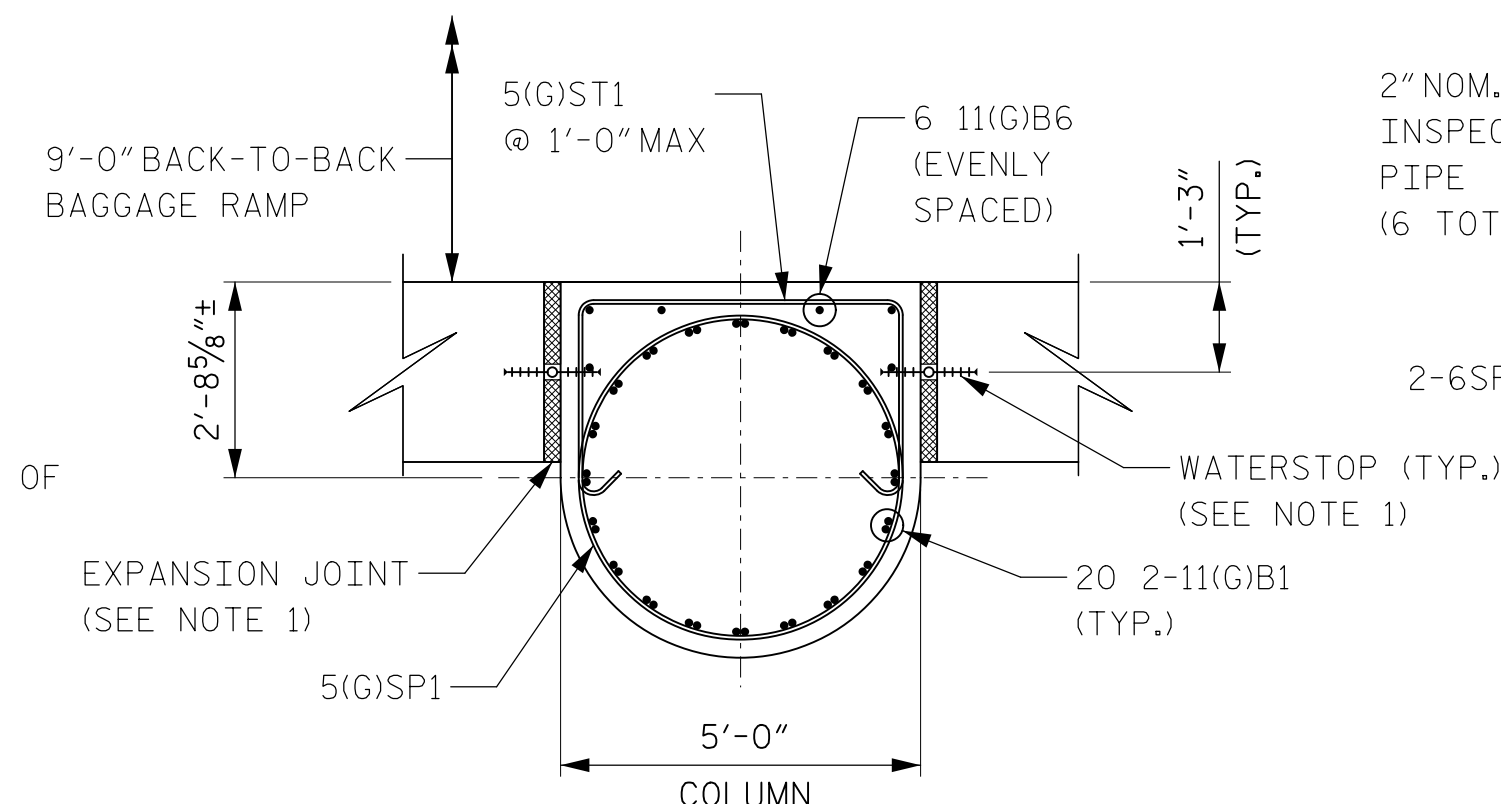
REVISIONS						SHEET NO. S13-10
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 18
2			4			



PIER 3 DETAILS  
SCALE 3/8" = 1'-0"

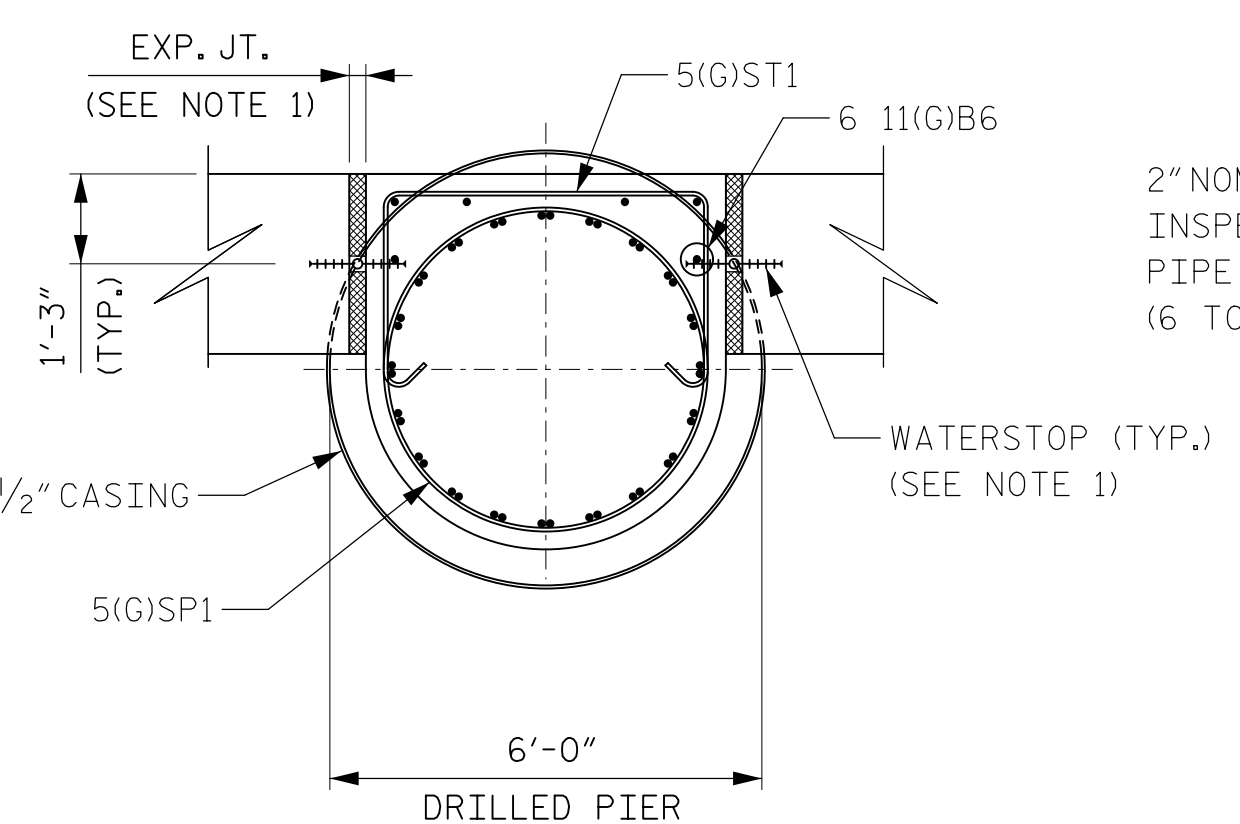


SECTION A-A (ABOVE PLATFORM)  
SCALE 3/8" = 1'-0"



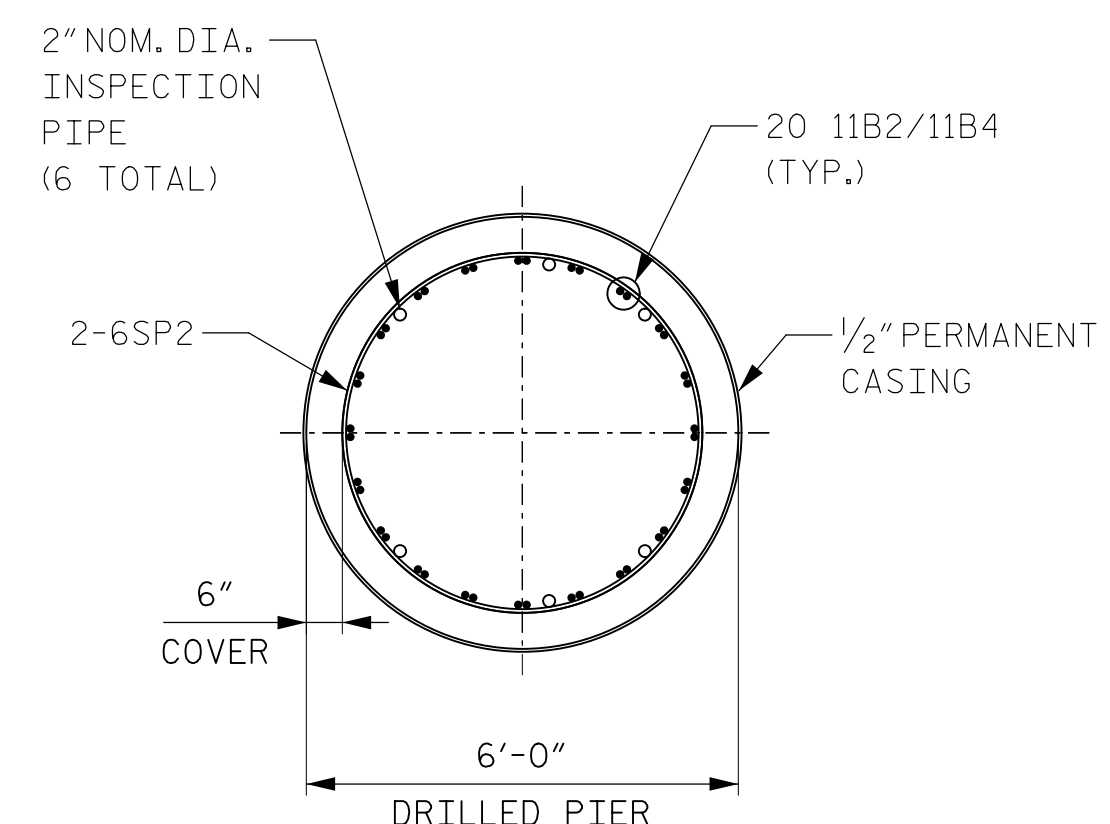
SECTION B-B  
SCALE 3/8" = 1'-0"

NOTE: WALL REINFORCEMENT NOT SHOWN, SEE PLATFORM DRAWINGS FOR DETAILS. SECTION IS OPPOSITE HAND IN SOME LOCATIONS.

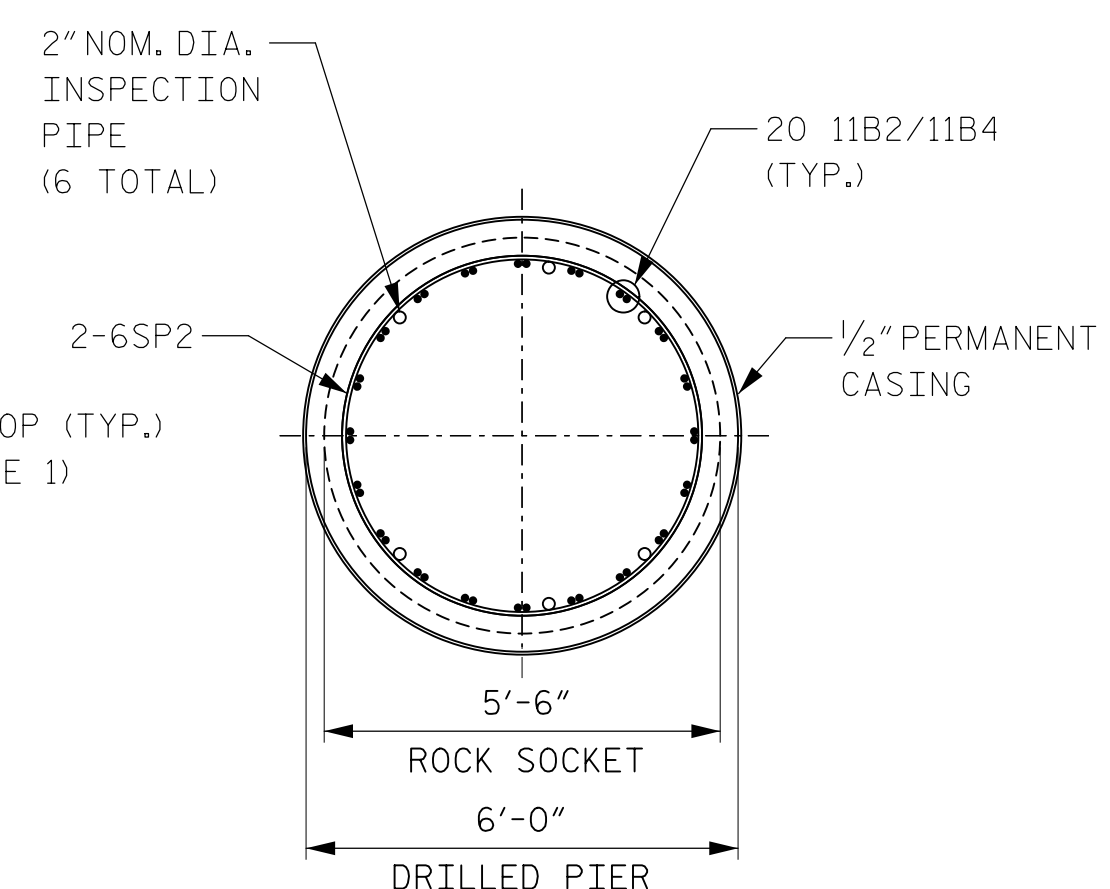


SECTION C-C  
SCALE 3/8" = 1'-0"

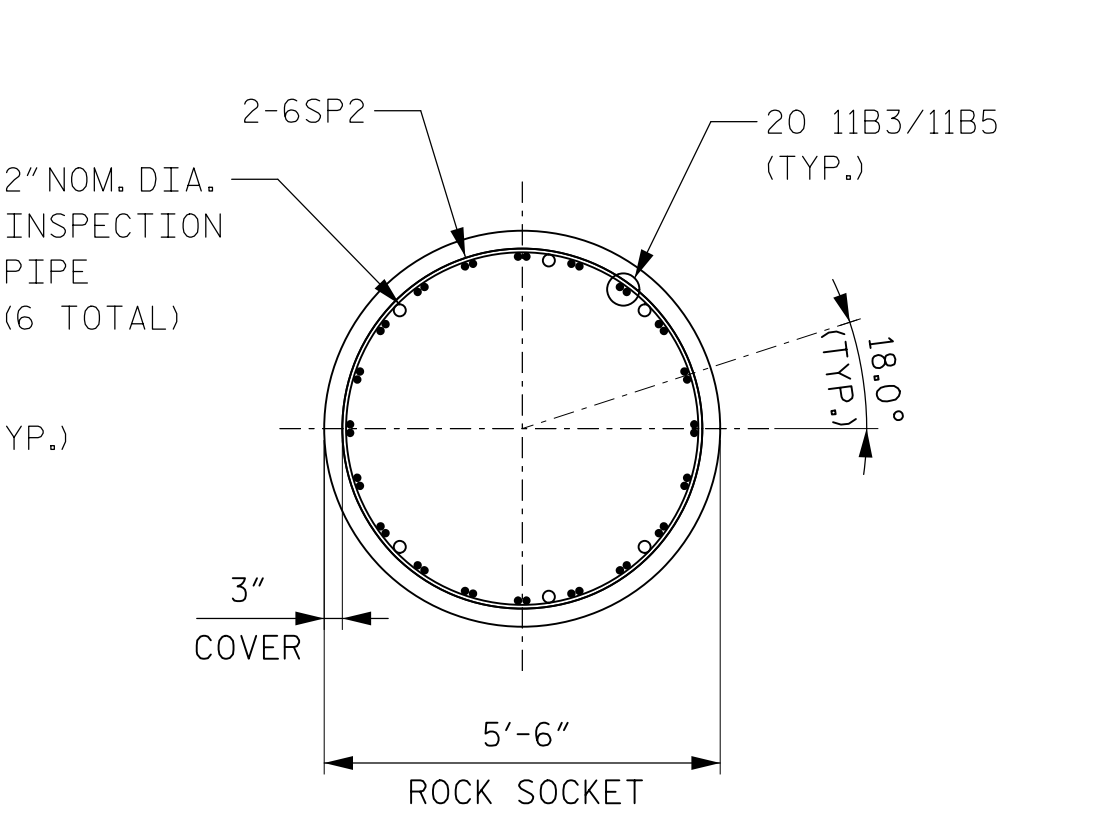
NOTE: WALL REINFORCEMENT NOT SHOWN, SEE PLATFORM DRAWINGS FOR DETAILS. SECTION IS OPPOSITE HAND IN SOME LOCATIONS.



SECTION D-D  
SCALE 3/8" = 1'-0"



SECTION E-E  
SCALE 3/8" = 1'-0"

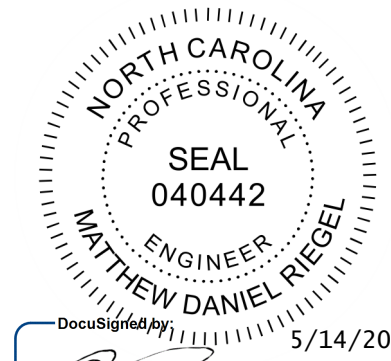


SECTION F-F  
SCALE 3/8" = 1'-0"

NOTES:

- FOR PIER 3 LOCATION, SEE SHEET NO. S13-08. FOR EXPANSION JOINT AND WATERSTOP DETAILS, SEE SHEET NO. S13-13.
- ALL PIER COLUMN, DRILLED PIER AND ROCK SOCKET CONCRETE SHALL BE CLASS AA CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,500 PSI.
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GR. 75. COLUMN REINFORCING STEEL SHALL BE GALVANIZED (SEE SPECIAL SPECIFICATIONS), DESIGNATED WITH (G). DRILLED PIER AND ROCK SOCKET REINFORCING STEEL SHALL BE BLACK BARS.
- LAP SPLICES OF COLUMN REINFORCING BARS SHALL NOT BE PERMITTED, MECHANICAL COUPLERS SHALL BE USED FOR ALL COLUMN REINFORCING BAR SPLICES.  
  
OPTIONAL LAP SPLICES OF DRILLED PIER AND ROCK SOCKET REINFORCING BARS SHALL BE PERMITTED IN THE MIDDLE ONE THIRD (1/3) PORTION OF THE DRILLED PIER AND ROCK SOCKET, FOR THE MINIMUM LENGTH SHOWN AND STAGGERED (EVERY OTHER BAR) TO PROVIDE A CLASS B LAP SPLICE. INDIVIDUAL BAR SPLICES WITHIN A BUNDLE SHALL NOT OVERLAP. OPTIONAL LAP SPLICE LOCATIONS SHALL BE CLEARLY SHOWN ON THE SHOP (WORKING) DRAWINGS.
- PERMANENT STEEL CASING IS REQUIRED FOR ALL DRILLED PIERS AT PIER 3. DO NOT EXTEND STEEL CASING BELOW ELEVATION 660.0 FT FOR DRILLED PIER 1 AND ELEVATION 681.5 FT FOR DRILLED PIER 2. SEE SECTION 411 OF THE STANDARD SPECIFICATIONS FOR DRILLED PIERS.
- INSTALL PERMANENT STEEL CASING AT PIER 3 BY VIBRATING, SCREWING OR OSCILLATING THE CASING.
- DRILLED PIERS AT PIER 3 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN THOSE PRESENTED ON THE DRILLED PIER AND ROCK SOCKET TABLE ON THIS SHEET.
- POLYMER SLURRY CONSTRUCTION IS REQUIRED FOR DRILLED PIERS AT PIER 3, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS FOR DRILLED PIERS.
- ALL ROCK SOCKET SIDE WALLS SHALL BE SCARIFIED WITH A BACKSCRATCHER TO PRECLUDE THE FORMATION OF A MUD CAKE WITHIN 48 HOURS OF CONCRETE PLACEMENT.
- SID INSPECTIONS ARE REQUIRED BY THE ENGINEER'S REPRESENTATIVE PRIOR TO PLACEMENT OF THE REINFORCING CAGE. IF REQUESTED ROCK SOCKET BOTTOMS SHALL BE INSPECTED WITH A SID AS SPECIFIED IN SECTION 411 OF THE STANDARD SPECIFICATIONS FOR DRILLED PIERS.
- ALL SHAFTS SHALL BE TESTED TO VERIFY CONCRETE INTEGRITY THROUGH CROSSHOLE SONIC LOGGING (CSL). SCHEDULE 40 STEEL INSPECTION PIPES FOR CSL TESTING SHALL BE ATTACHED TO THE INSIDE OF THE REINFORCEMENT CAGE. FILL CSL TUBES WITH WATER PRIOR TO CONCRETING. SEE STANDARD SPECIFICATION 411 FOR DRILLED PIERS.
- SEE STANDARD SPECIFICATION 411 FOR DRILLED PIERS, FOR ADDITIONAL DETAILS.
- PIER 3, DRILLED PIERS 1 AND 2 ARE DESIGNED FOR SIDE SHEAR ONLY.
- ALL REINFORCING STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL, BLACK" AND "SPIRAL REINFORCING STEEL, BLACK".
- FOR REINFORCEMENT BAR LIST AND BILL OF MATERIALS, SEE SHEET NO. S13-18.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FT. OF EXTRA LENGTH.
- COLUMN BARS EMBEDDED IN THE DRILLED PIER SHALL MEET A "BLACK" BAR CONDITION. REMOVE GALVANIZING ON THE COLUMN BARS, PRIOR TO PLACEMENT, BY STRIPPING GALVANIZING IN THE FIELD, OR BY MASKING THE COLUMN BARS PRIOR TO GALVANIZING AND REMOVING MASKING PRIOR TO PLACEMENT.

DRILLED PIER AND ROCK SOCKET TABLE								
PIER NO.	DRILLED PIER AND ROCK SOCKET NO.	W.P.	REQUIRED GEOTECHNICAL NOMINAL (ULTIMATE) RESISTANCE		TOP OF PLATFORM ELEV. A	TOP OF DRILLED PIER ELEV. B	TOP OF ROCK SOCKET ELEV. C	BOT. OF ROCK SOCKET ELEV. D
			COMPRESSION (KIPS)	TENSION (KIPS)				
3	1	5	7,134	0	748.11	720.00	701.00	639.00
	2	6	7,134	0	748.11	720.00	701.00	646.00



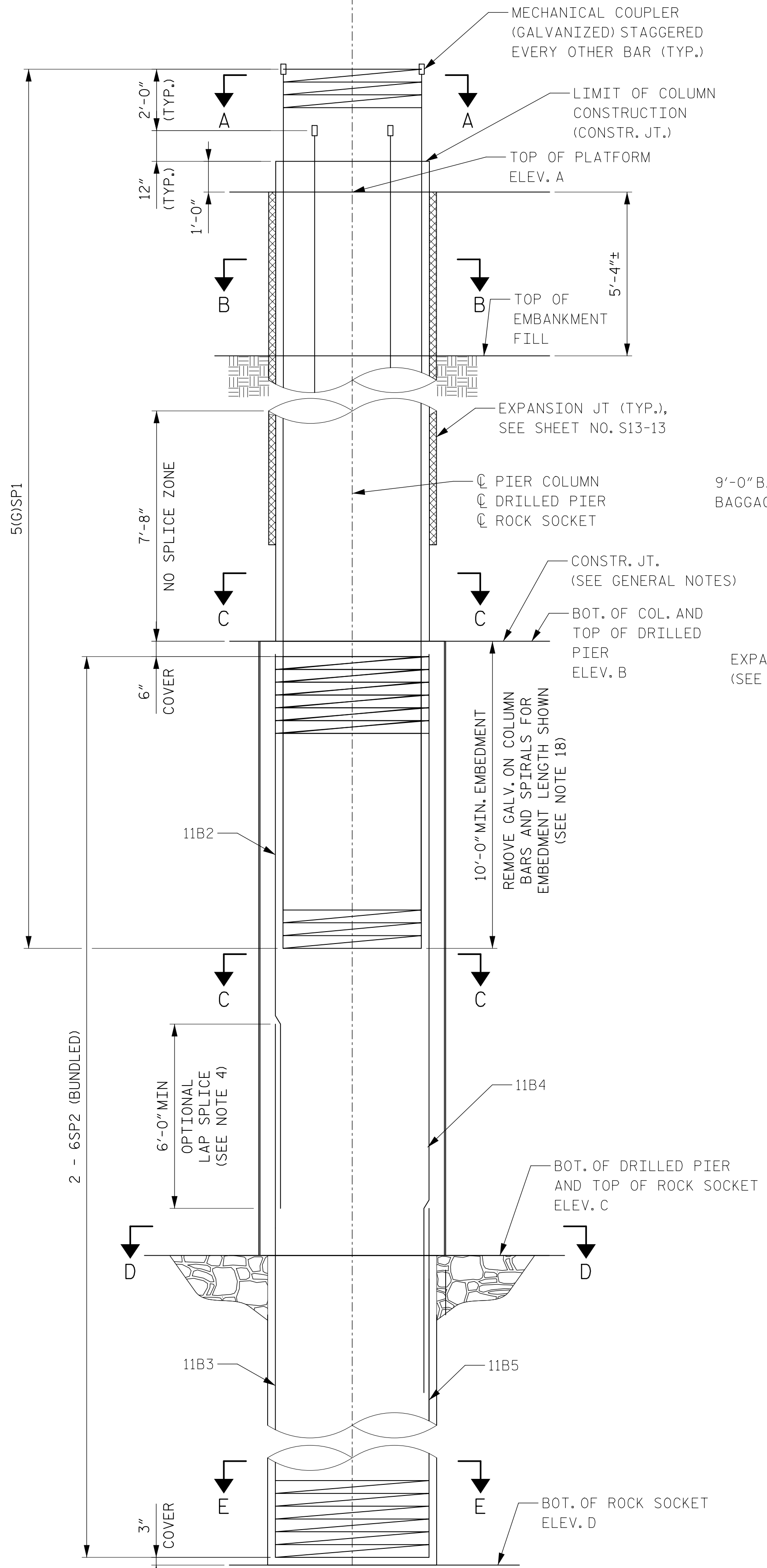
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
STATION: STA. 19+68.93 -S1-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

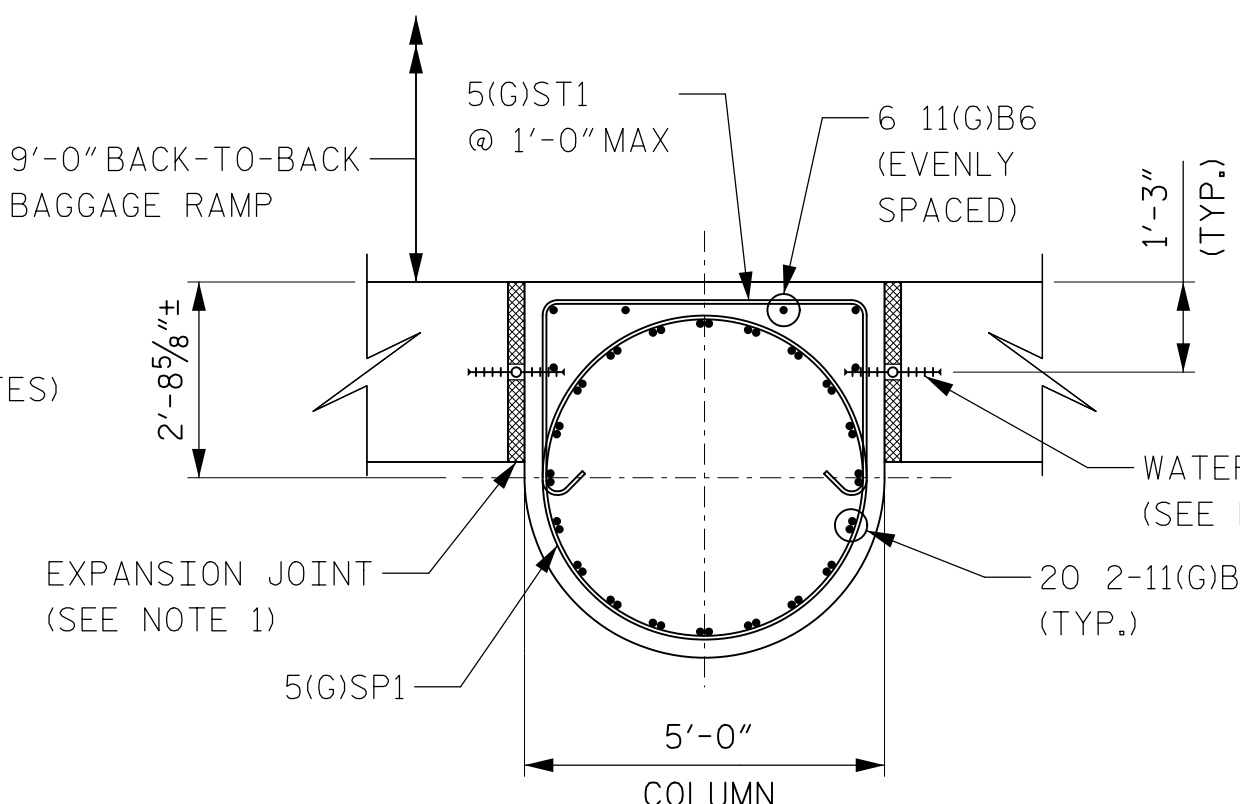
CANOPY STRUCTURE  
DRILLED PIER DETAILS AT  
PIER 3 (SOUTH PYLON)

<b>HNTB</b> HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S13-11		
	NO.	BY	DATE	NO.		BY	DATE
	1	C.G.	05/11/2018	3			
DRAWN BY: L. RAMOS CHECKED BY: C. GAUNT	DATE: 4/5/2018 DATE: 4/5/2018	DWG. NO. 11	TOTAL SHEETS 18				



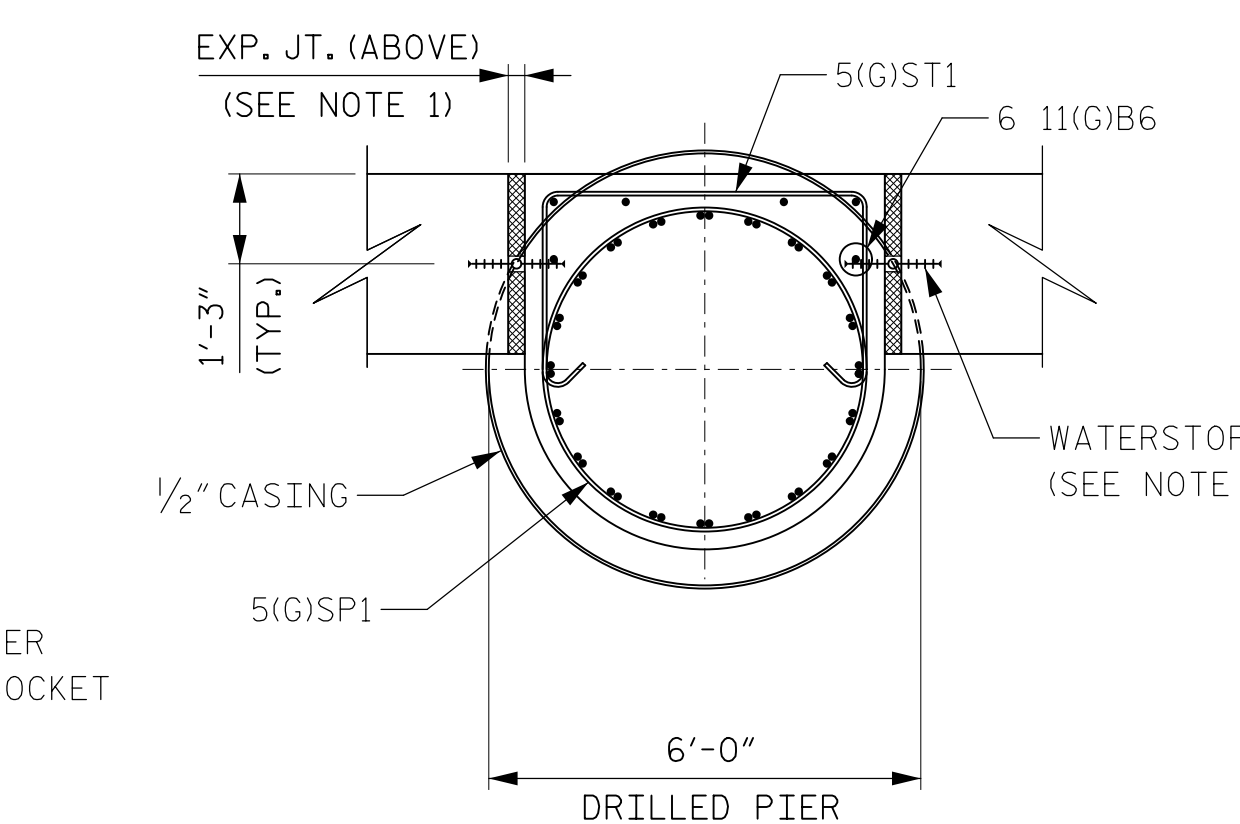
PIER 4 DETAILS  
SCALE 3/8" = 1'-0"

SECTION A-A (ABOVE PLATFORM)  
SCALE 3/8" = 1'-0"



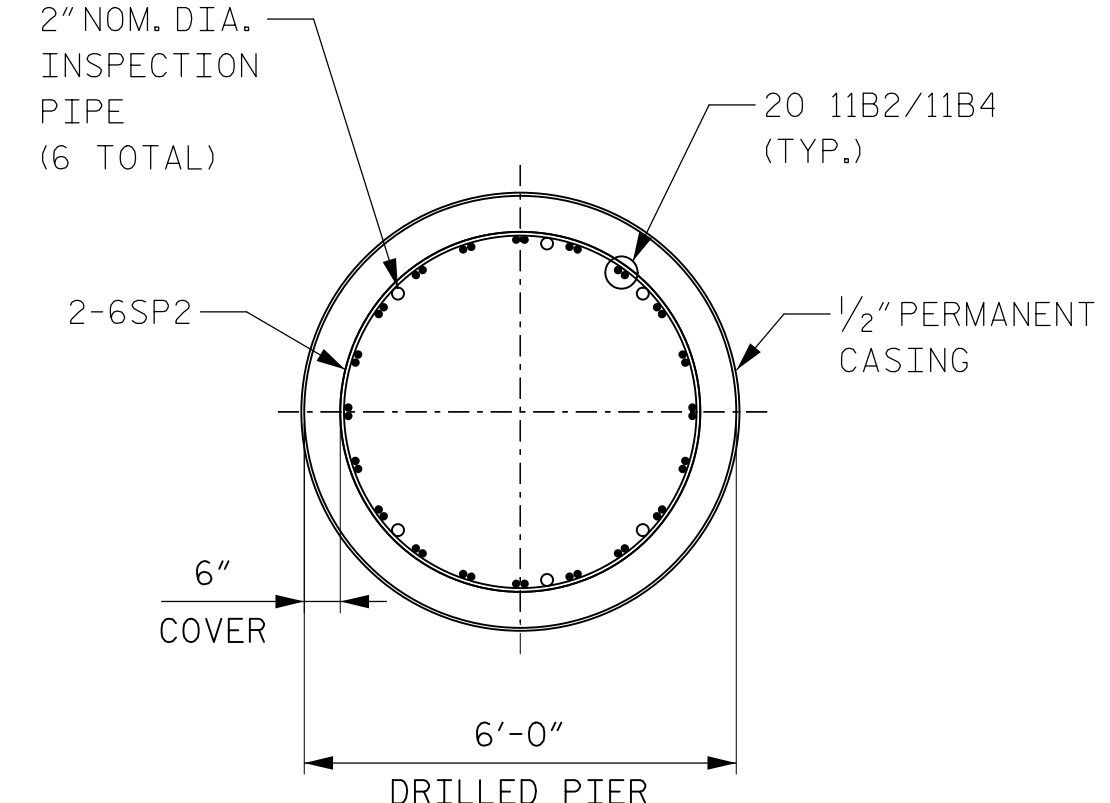
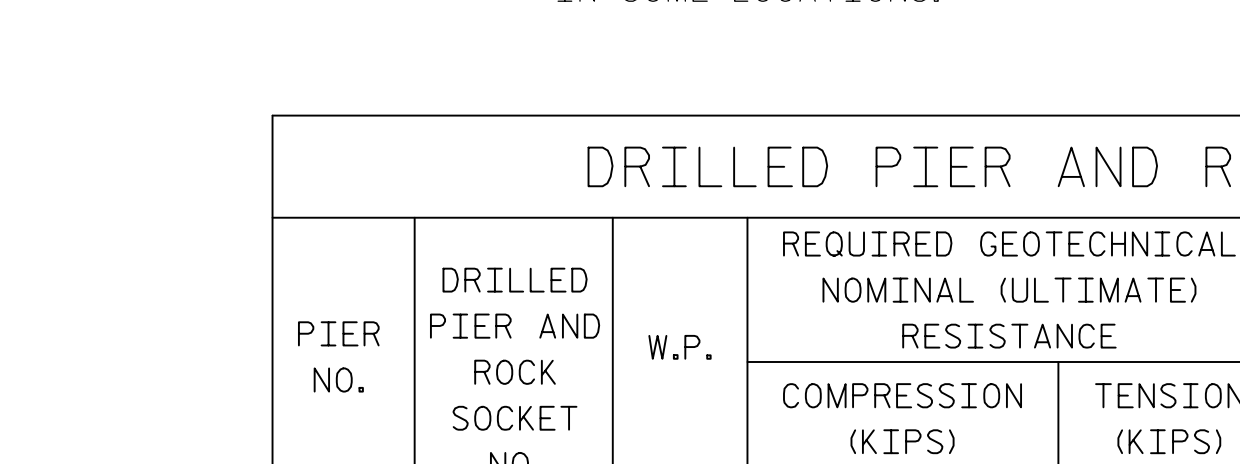
SECTION B-B  
SCALE 3/8" = 1'-0"

NOTE: WALL REINFORCEMENT NOT SHOWN, SEE PLATFORM DRAWINGS FOR DETAILS. SECTION IS OPPOSITE HAND IN SOME LOCATIONS.

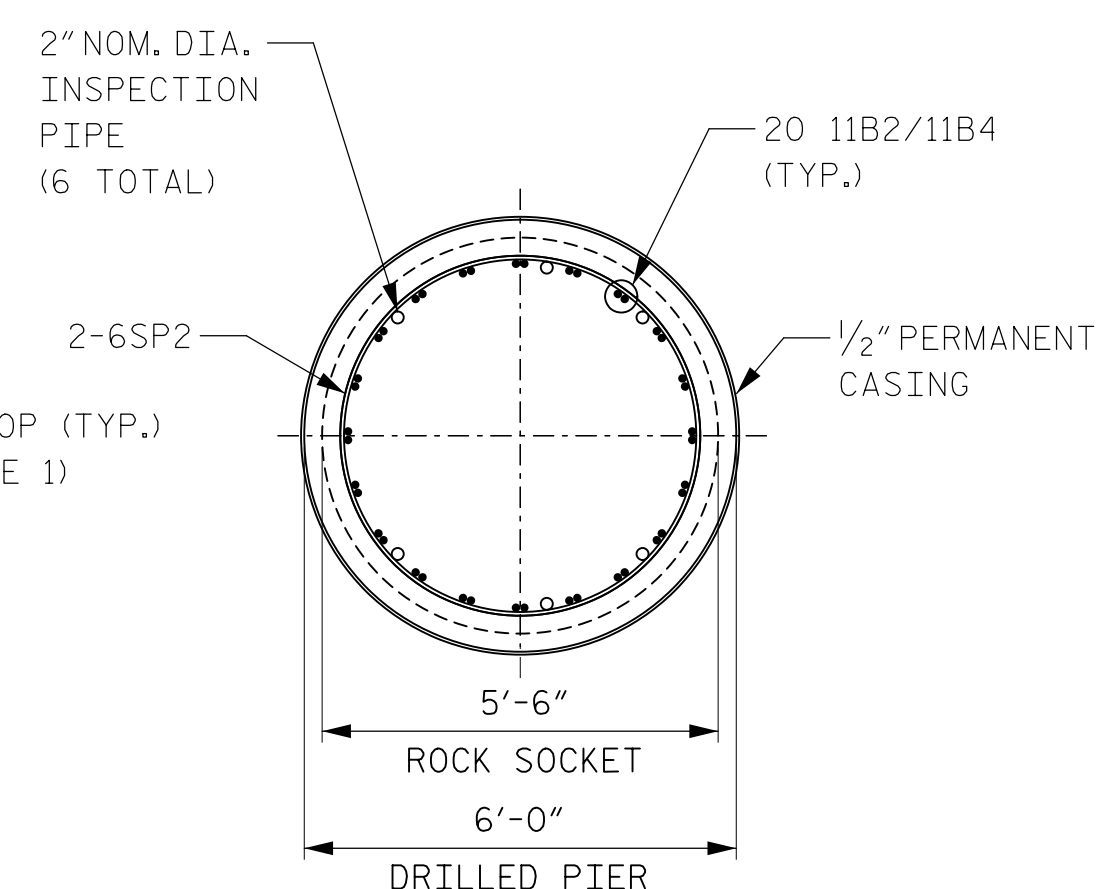


SECTION C-C  
SCALE 3/8" = 1'-0"

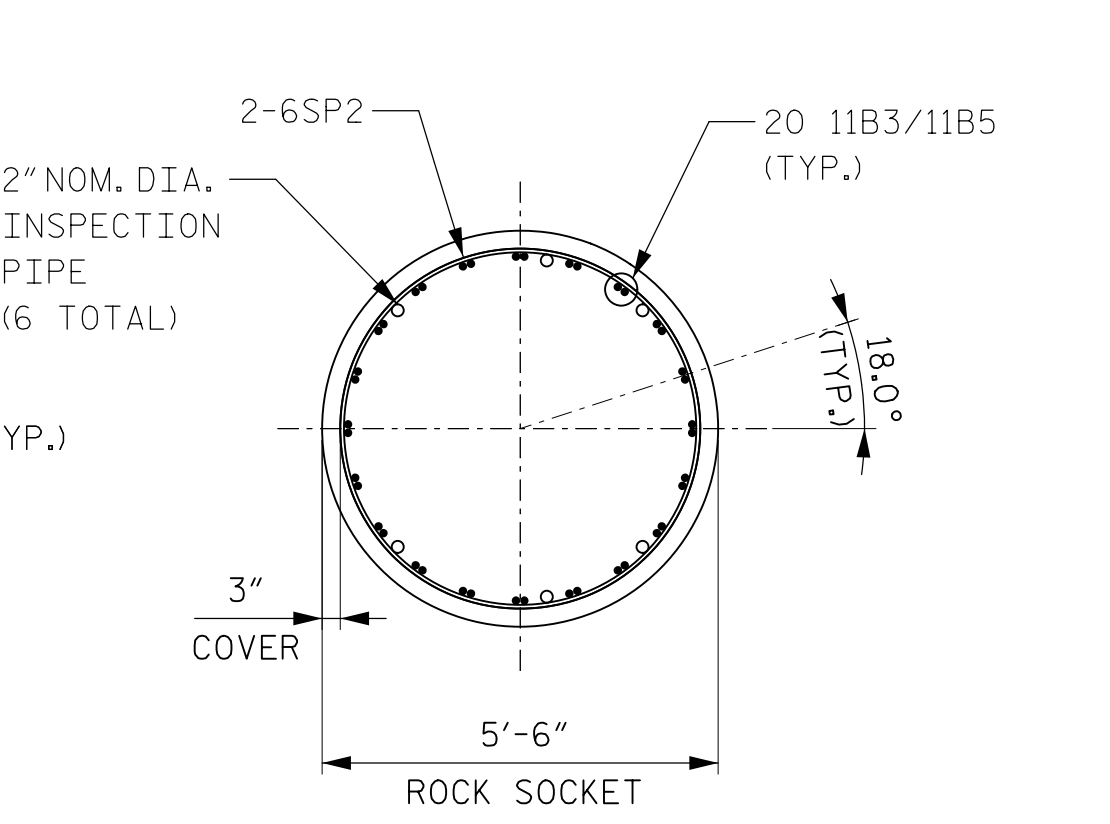
NOTE: WALL REINFORCEMENT NOT SHOWN, SEE PLATFORM DRAWINGS FOR DETAILS. SECTION IS OPPOSITE HAND IN SOME LOCATIONS.



SECTION D-D  
SCALE 3/8" = 1'-0"



SECTION E-E  
SCALE 3/8" = 1'-0"

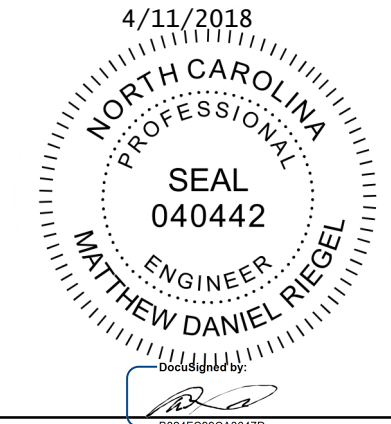


SECTION F-F  
SCALE 3/8" = 1'-0"

NOTES:

- FOR PIER 4 LOCATION, SEE SHEET NO. S13-08. FOR EXPANSION JOINT AND WATERSTOP DETAILS, SEE SHEET NO. S13-13.
- ALL PIER COLUMN, DRILLED PIER AND ROCK SOCKET CONCRETE SHALL BE CLASS AA CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,500 PSI.
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GR. 75. COLUMN REINFORCING STEEL SHALL BE GALVANIZED (SEE SPECIAL SPECIFICATIONS), DESIGNATED WITH (G). DRILLED SHAFT AND ROCK SOCKET REINFORCING STEEL SHALL BE BLACK BARS.
- LAP SPLICES OF COLUMN REINFORCING BARS SHALL NOT BE PERMITTED, MECHANICAL COUPLERS SHALL BE USED FOR ALL COLUMN REINFORCING BAR SPLICES.  
  
OPTIONAL LAP SPLICES OF DRILLED PIER AND ROCK SOCKET REINFORCING BARS SHALL BE PERMITTED IN THE MIDDLE ONE THIRD (1/3) PORTION OF THE DRILLED PIER AND ROCK SOCKET, FOR THE MINIMUM LENGTH SHOWN AND STAGGERED (EVERY OTHER BAR) TO PROVIDE A CLASS B LAP SPLICE. INDIVIDUAL BAR SPLICES WITHIN A BUNDLE SHALL NOT OVERLAP. OPTIONAL LAP SPLICE LOCATIONS SHALL BE CLEARLY SHOWN ON THE SHOP (WORKING) DRAWINGS.
- PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT PIER 4. DO NOT EXTEND STEEL CASING BELOW ELEVATION 669.2 FT. FOR DRILLED PIER 1 AND ELEVATION 681.2 FOR DRILLED PIER 2. SEE SPECIFICATION SECTION 411 OF THE STANDARD SPECIFICATIONS FOR DRILLED PIERS.
- INSTALL PERMANENT STEEL CASING AT PIER 4 BY VIBRATING, SCREWING OR OSCILLATING THE CASING.
- DRILLED PIERS AT PIER 4 SHALL EXTEND TO AN ELEVATION NO HIGHER THAN THOSE PRESENTED ON THE DRILLED PIER AND ROCK SOCKET TABLE ON THIS SHEET.
- POLYMER SLURRY CONSTRUCTION IS REQUIRED FOR DRILLED PIERS AT PIER 4, SEE SPECIFICATION SECTION 411 OF THE STANDARD SPECIFICATIONS FOR DRILLED PIERS.
- ALL ROCK SOCKET SIDE WALLS SHALL BE SCARIFIED WITH A BACKSCRATCHER TO PRECLUDE THE FORMATION OF A MUD CAKE WITHIN 48 HOURS OF CONCRETE PLACEMENT.
- SID INSPECTIONS MAY BE REQUIRED BY THE ENGINEER'S REPRESENTATIVE PRIOR TO PLACEMENT OF THE REINFORCING CAGE. IF REQUESTED ROCK SOCKET BOTTOMS SHALL BE INSPECTED WITH A SID AS SPECIFIED IN SECTION 411 OF THE STANDARD SPECIFICATIONS FOR DRILLED PIERS.
- ALL SHAFTS SHALL BE TESTED TO VERIFY CONCRETE INTEGRITY THROUGH CROSSHOLE SONIC LOGGING (CSL). SCHEDULE 40 STEEL INSPECTION PIPES FOR CSL TESTING SHALL BE ATTACHED TO THE INSIDE OF THE REINFORCEMENT CAGE. FILL CSL TUBES WITH WATER PRIOR TO CONCRETING. SEE STANDARD SPECIFICATION 411 FOR DRILLED PIERS.
- SEE STANDARD SPECIFICATION 411 FOR DRILLED PIERS, FOR ADDITIONAL DETAILS.
- PIER 4, DRILLED PIERS 1 AND 2 ARE DESIGNED FOR SIDE SHEAR ONLY.
- ALL REINFORCING STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL, BLACK" AND "SPIRAL REINFORCING STEEL, BLACK".
- FOR REINFORCEMENT BAR LIST AND BILL OF MATERIALS, SEE SHEET NO. S13-18.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FT. OF EXTRA LENGTH.
- THE LOCATION OF THE CONSTRUCTION JOINT AT THE TOP OF THE DRILLED PIERS IS BASED ON APPROXIMATE EXISTING GROUND LINE ELEVATIONS. IF THE ACTUAL GROUND ELEVATIONS ARE DIFFERENT THAN DEPICTED, THE LOCATION OF THE CONSTRUCTION JOINTS MAY BE ADJUSTED, SUBJECT TO APPROVAL OF THE ENGINEER OF RECORD (EOR).
- COLUMN BARS EMBEDDED IN THE DRILLED PIER SHALL MEET A "BLACK" BAR CONDITION. REMOVE GALVANIZING ON THE COLUMN BARS, PRIOR TO PLACEMENT, BY STRIPPING GALVANIZING IN THE FIELD, OR BY MASKING THE COLUMN BARS PRIOR TO GALVANIZING AND REMOVING MASKING PRIOR TO PLACEMENT.

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
STATION: STA. 19+68.93 -S1-



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DRILLED PIER AND ROCK SOCKET TABLE								
PIER NO.	DRILLED PIER AND ROCK SOCKET NO.	W.P.	REQUIRED GEOTECHNICAL NOMINAL (ULTIMATE) RESISTANCE		TOP OF PLATFORM ELEV. A	TOP OF DRILLED PIER ELEV. B	TOP OF ROCK SOCKET ELEV. C	BOT. OF ROCK SOCKET ELEV. D
			COMPRESSION (KIPS)	TENSION (KIPS)				
4	1	7	700	1,097	748.02	723.00	703.00	660.00
	2	8	700	1,097	748.02	723.00	703.00	672.00

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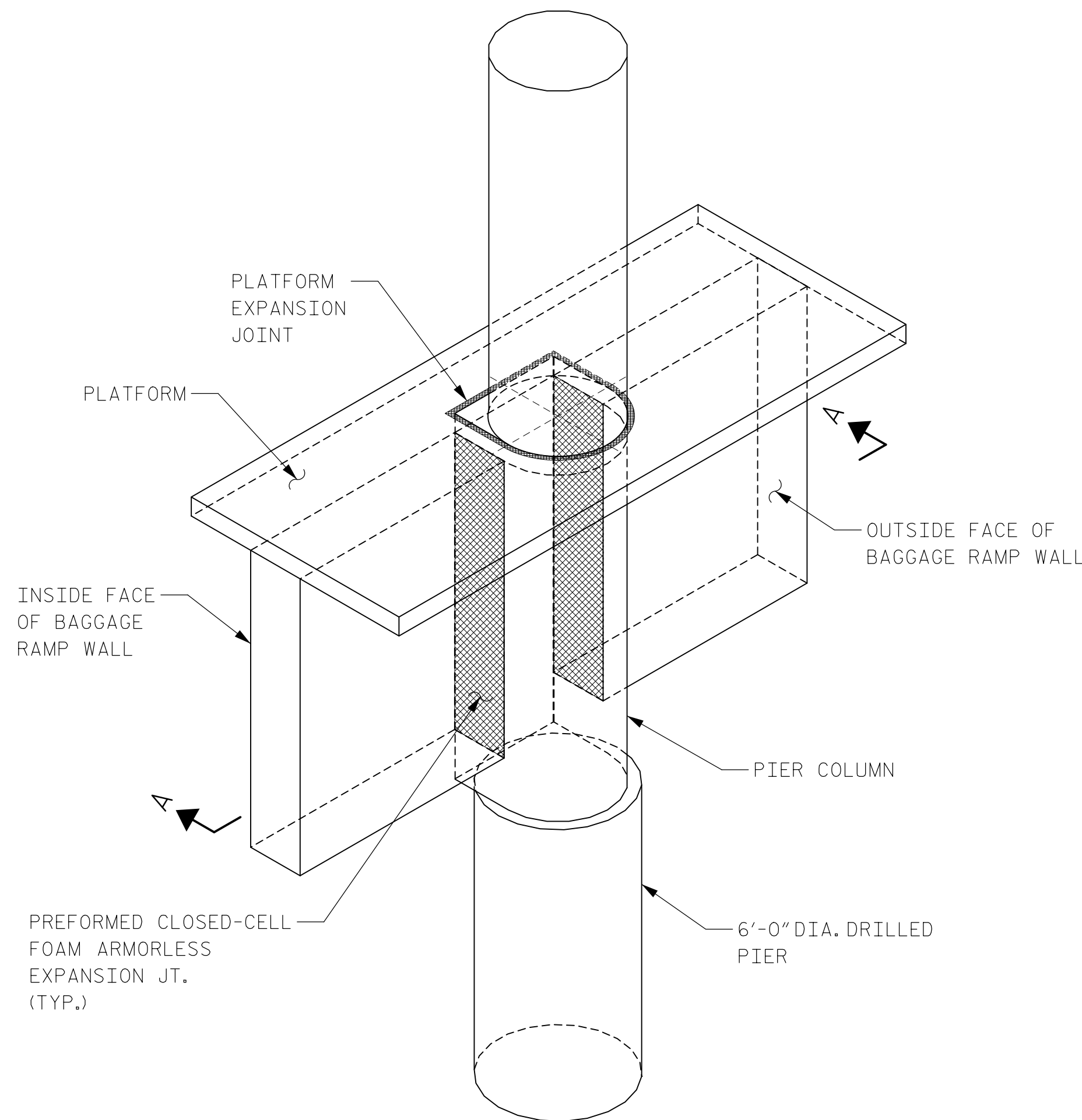
DRAWN BY: L. RAMOS DATE: 4/5/2018  
CHECKED BY: C. GAUNT DATE: 4/5/2018

DWG. NO. 12

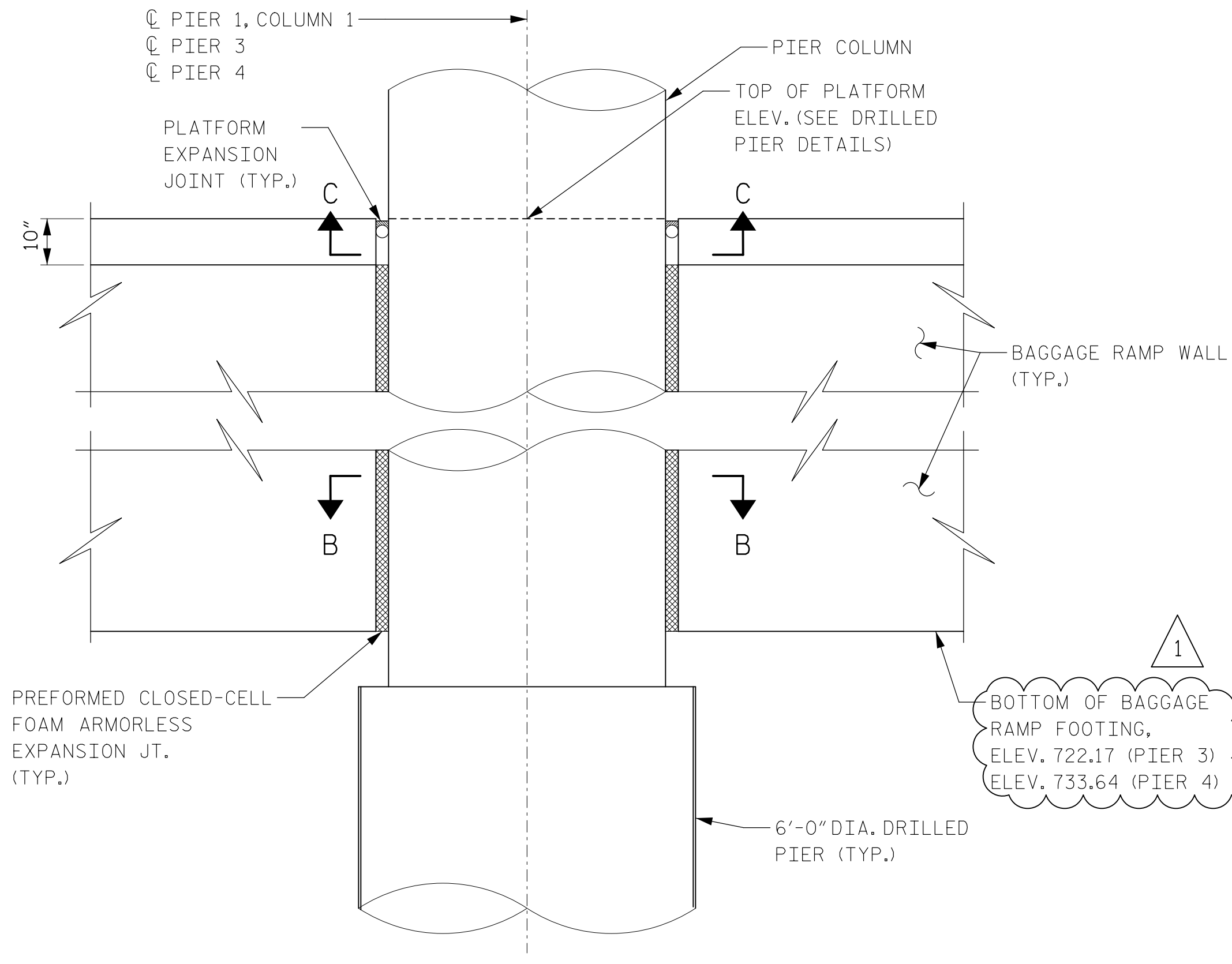
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

CANOPY STRUCTURE  
DRILLED PIER DETAILS AT  
PIER 4 (SOUTH ANCHOR PIER)

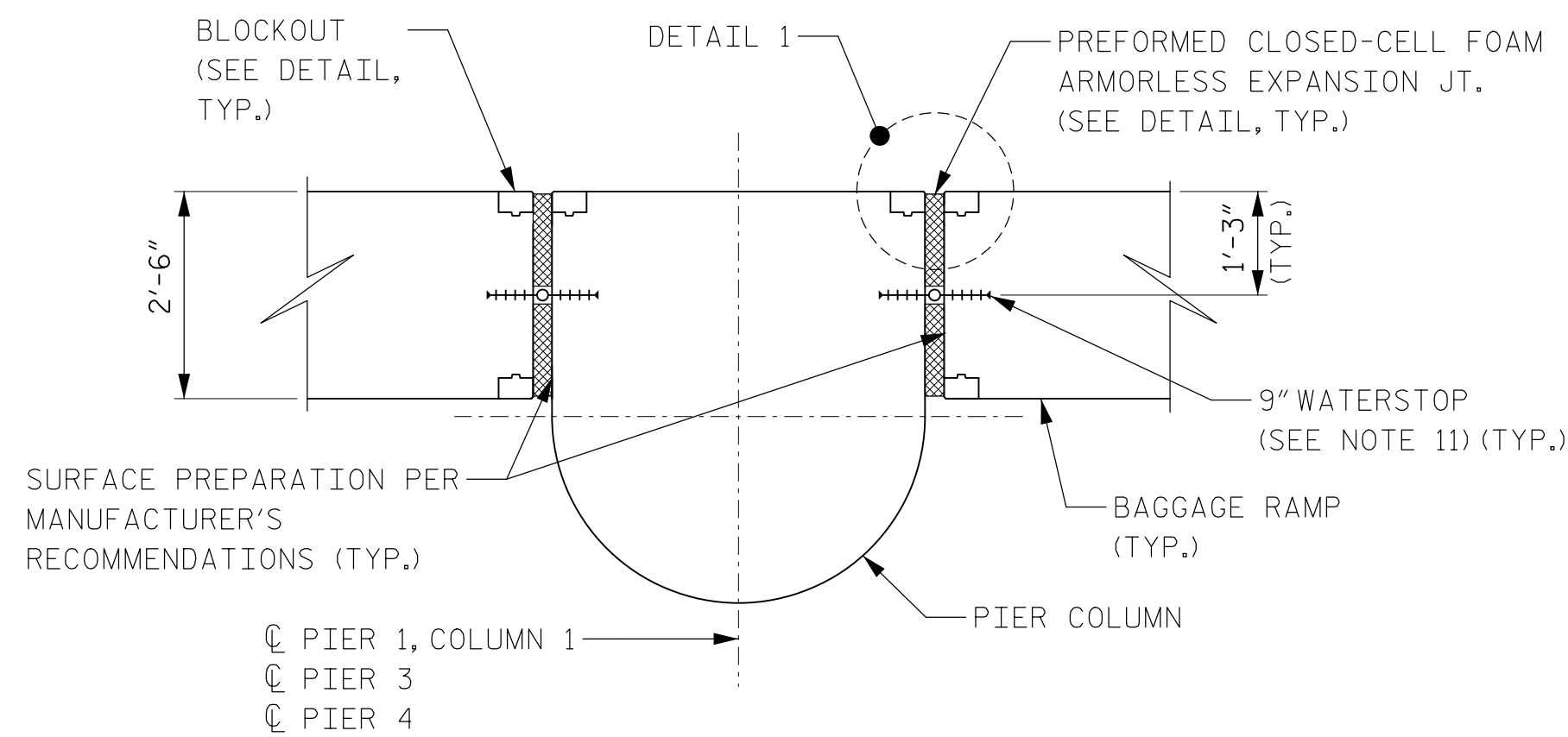
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S13-12
1			3			TOTAL SHEETS
2			4			18



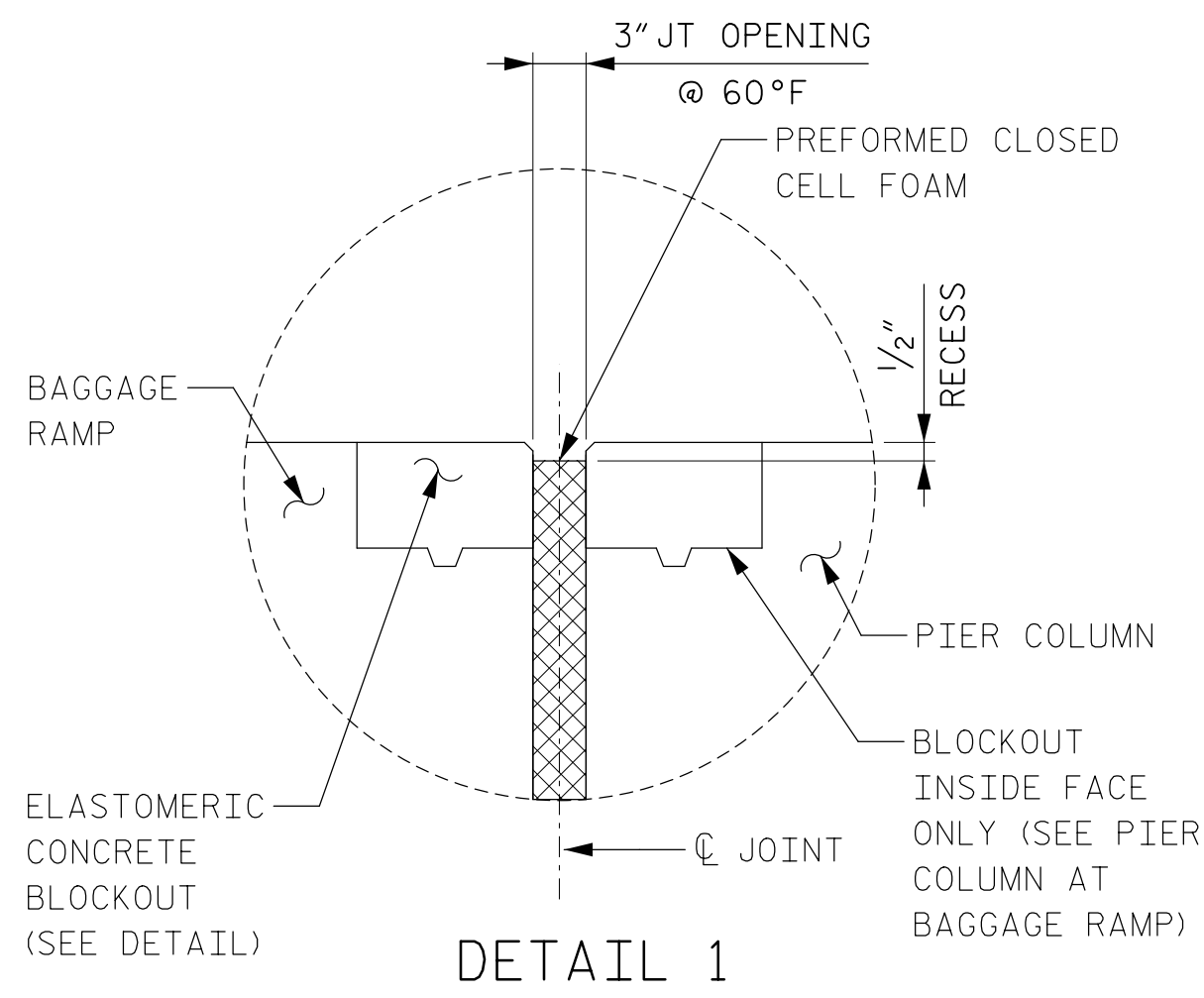
ISOMETRIC VIEW - COLUMN DETAIL BAGGAGE RAMP  
(PIER 3 SHOWN, PIER 1, COLUMN 2 AND PIER 4 SIMILAR)  
N.T.S.



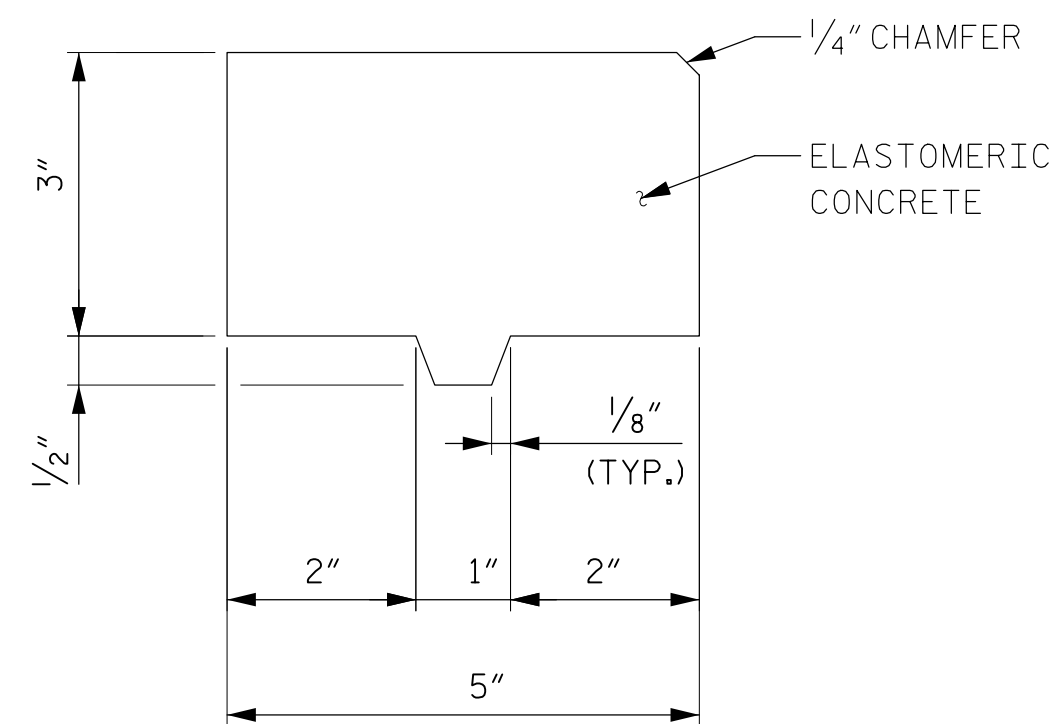
ELEVATION A-A  
SCALE 1/2" = 1'-0"



SECTION B-B  
SCALE 1/2" = 1'-0"



DETAIL 1  
NOT TO SCALE  
DETAIL OPPOSITE HAND AT SOME LOCATIONS



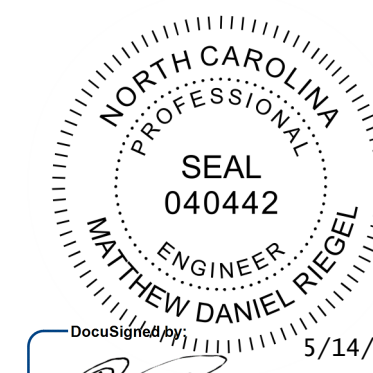
BLOCKOUT DETAIL  
NOT TO SCALE

NOTES:

- FOR SECTION C-C, SEE SHEET NO. S13-14.
- PLATFORM EXPANSION JOINTS SHALL BE A POURABLE SEAL WITH STRUCTURAL SILICONE SEALANT, PREFORMED CLOSED-CELL FOAM OR PREFORMED SEAL TYPE ARMORLESS JOINT IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
- PREFORMED EXPANSION JOINTS BELOW PLATFORM SHALL BE A PREFORMED CLOSED-CELL FOAM TYPE ARMORLESS JOINT IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
- EXPANSION JOINTS SHALL BE INSTALLED IN ACCORDANCE WITH THE JOINT MANUFACTURER'S WRITTEN INSTRUCTIONS. CARE SHALL BE TAKEN TO ENSURE ALL SURFACES ARE PROPERLY CLEANED AND PREPARED TO RECEIVE THE JOINT MATERIALS, TO THE SATISFACTION OF THE ENGINEER.
- CONTRACTOR SHALL DETERMINE AND SUPPLY CLOSED CELL FOAM/PREFORMED SEAL DIMENSIONS BASED UPON JOINT OPENING SIZE AND EXPECTED MOVEMENT (JOINT DISPLACEMENT).
- CONTRACTOR MAY HAVE TO MODIFY PLATFORM SLAB TO ACCOMMODATE ARMORLESS JOINT SYSTEM SELECTED.
- CONCRETE HEADERS SHALL NOT OVERHANG THE CONCRETE SLAB UNDER ANY CIRCUMSTANCES.
- DETAILS SHOWN ARE INTENDED TO BE SCHEMATIC AND CONTRACTOR SHALL VERIFY ALL DETAILS WITH THE JOINT MATERIAL SUPPLIER.
- DETAILS ON THE DRAWINGS LABELED NOT TO SCALE ARE INTENTIONALLY DRAWN NOT TO SCALE FOR VISUAL CLARITY, ALL OTHER DETAILS, FOR WHICH NO SCALE IS SHOWN, ARE DRAWN PROPORTIONAL AND ARE FULLY DIMENSIONED.
- FOR DETAILS OF PLATFORM, CONCOURSE AND BAGGAGE RAMP, SEE SHEET NOS. S-001 THRU S-810.
- WATERSTOP SHALL BE 9\"/>

LOAD COMBINATION		JOINT DISPLACEMENTS (IN.)							
		PIER 1		PIER 2		PIER 3		PIER 4	
		SHAFT 1	SHAFT 2	SHAFT 1	SHAFT 2	SHAFT 1	SHAFT 2	SHAFT 1	SHAFT 2
AASHTO	STRENGTH	1.102	1.128	1.048	1.033	1.239	1.081	0.967	0.927
	EXTREME	1.082	1.105	1.302	1.390	1.538	1.443	1.169	1.125
ASCE	NON-SEISMIC	1.095	1.099	1.083	0.992	1.259	1.048	0.945	0.906
	SEISMIC	1.148	1.159	1.359	1.453	1.613	1.522	1.242	1.181

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
 STATION: STA. 19+68.93 -S1-

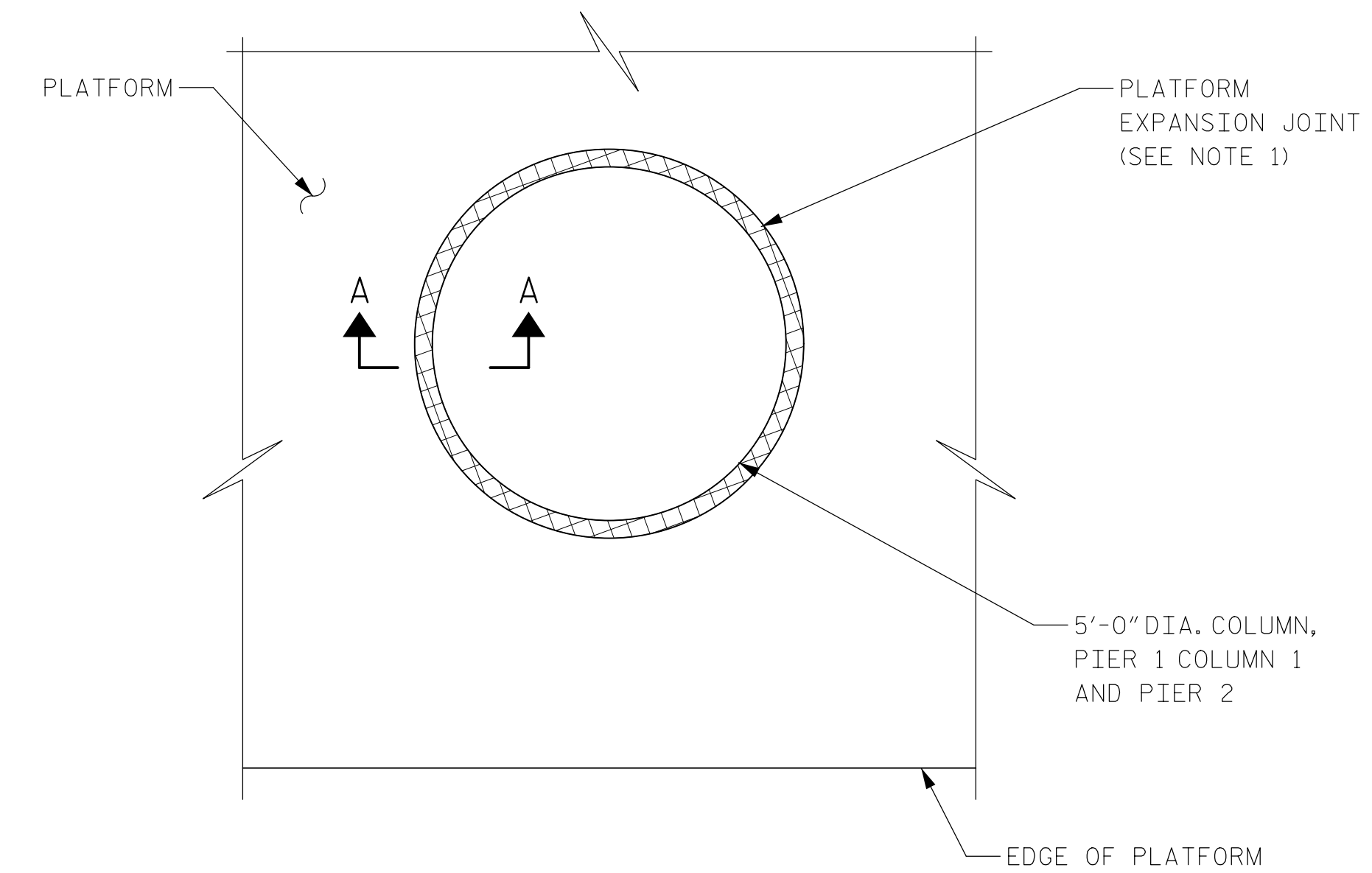


5/14/2018 9:13:52 PM PDT

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FINAL UNLESS ALL  
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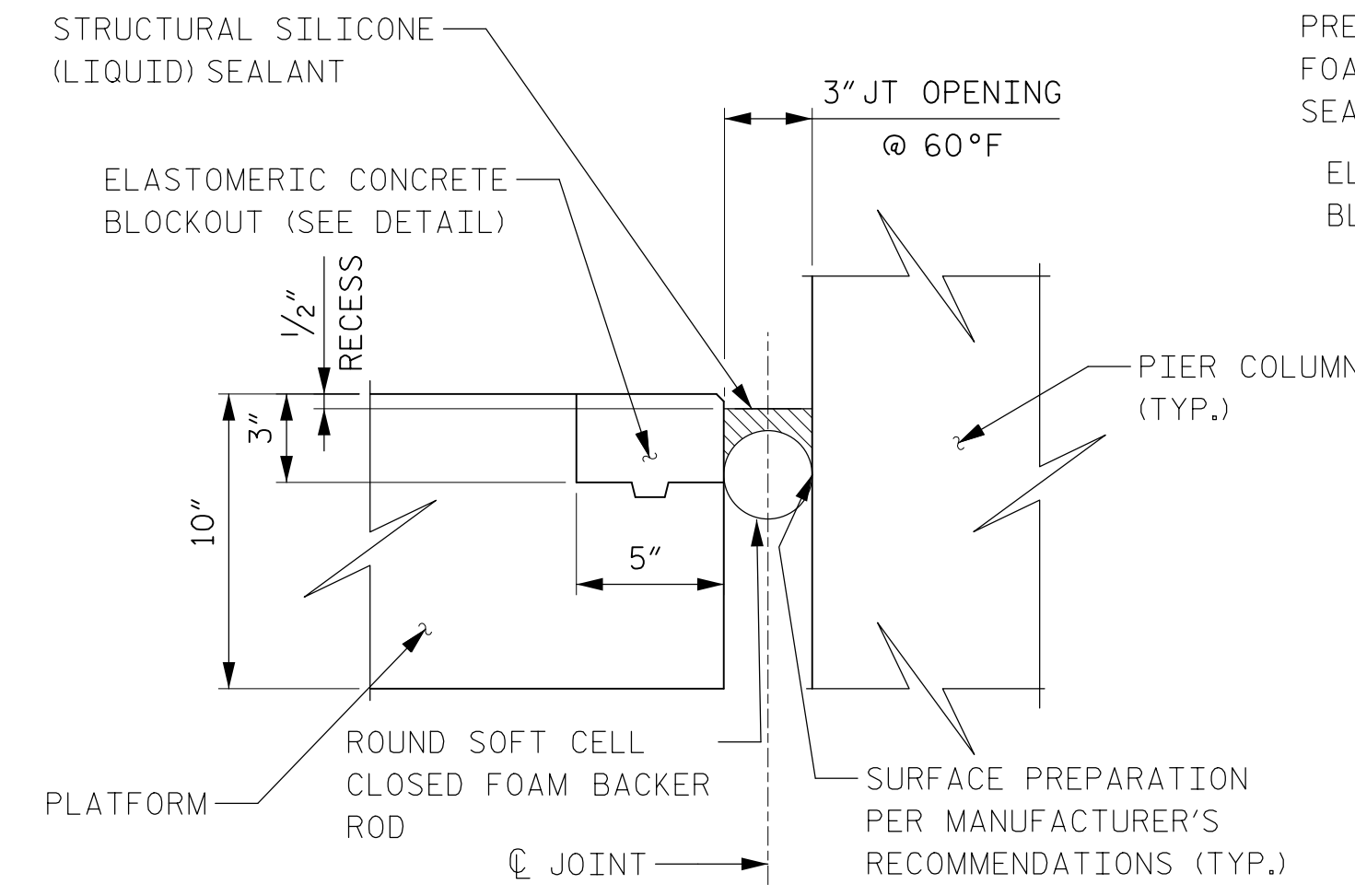
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 CANOPY STRUCTURE  
 DRILLED PIER  
 EXPANSION JOINT DETAILS  
 SHEET 1 OF 2

<b>HNTB</b> HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609		REVISIONS				SHEET NO. S13-13
DRAWN BY: L. RAMOS	DATE: 4/5/2018	NO.	BY	DATE	TOTAL SHEETS	
CHECKED BY: C. GAUNT	DATE: 4/5/2018	1	C.G.	05/11/2018	3	
		2			18	

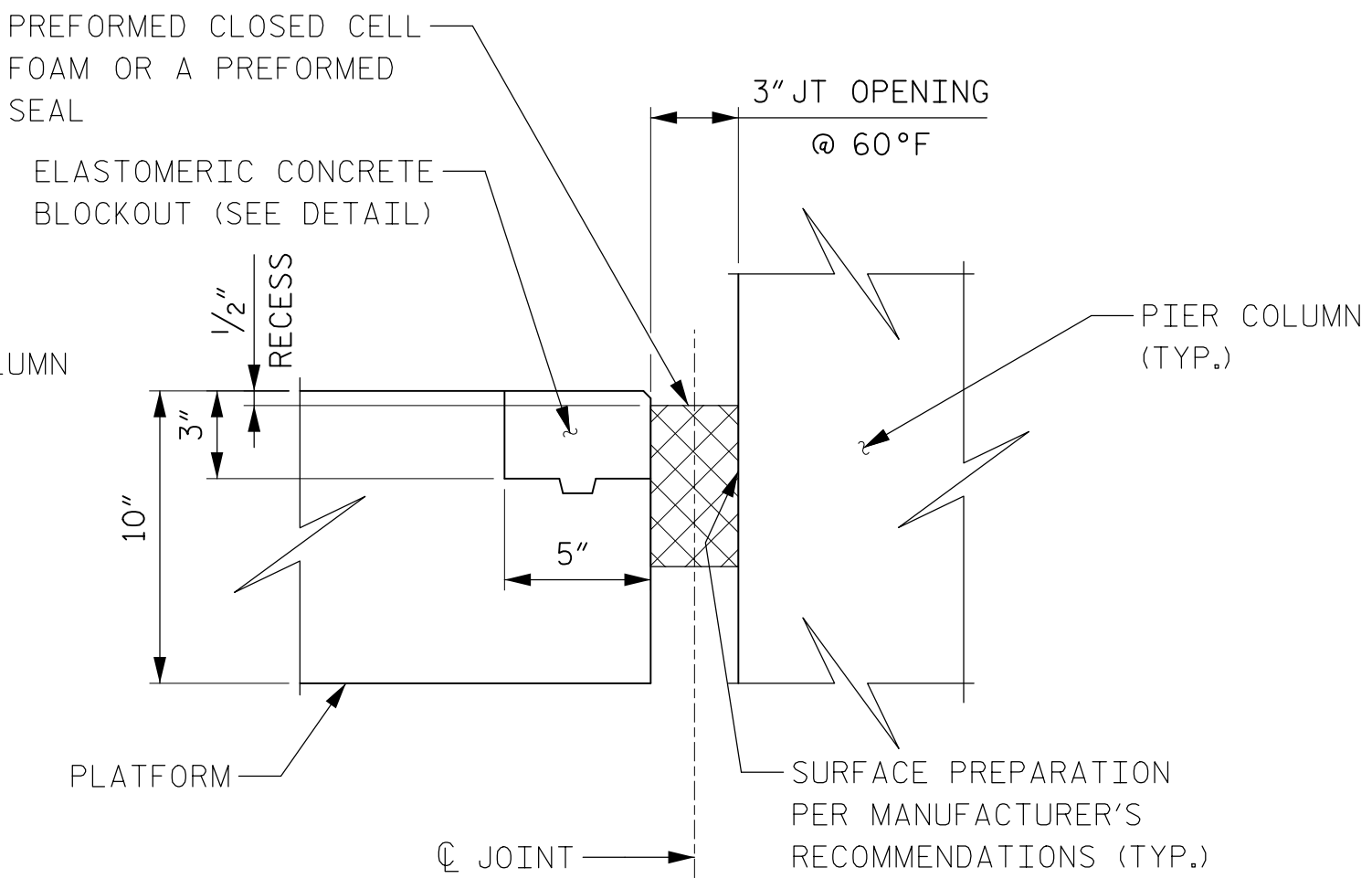


PLAN - COLUMN DETAIL AT PIER 1, COLUMN 1 AND PIER 2

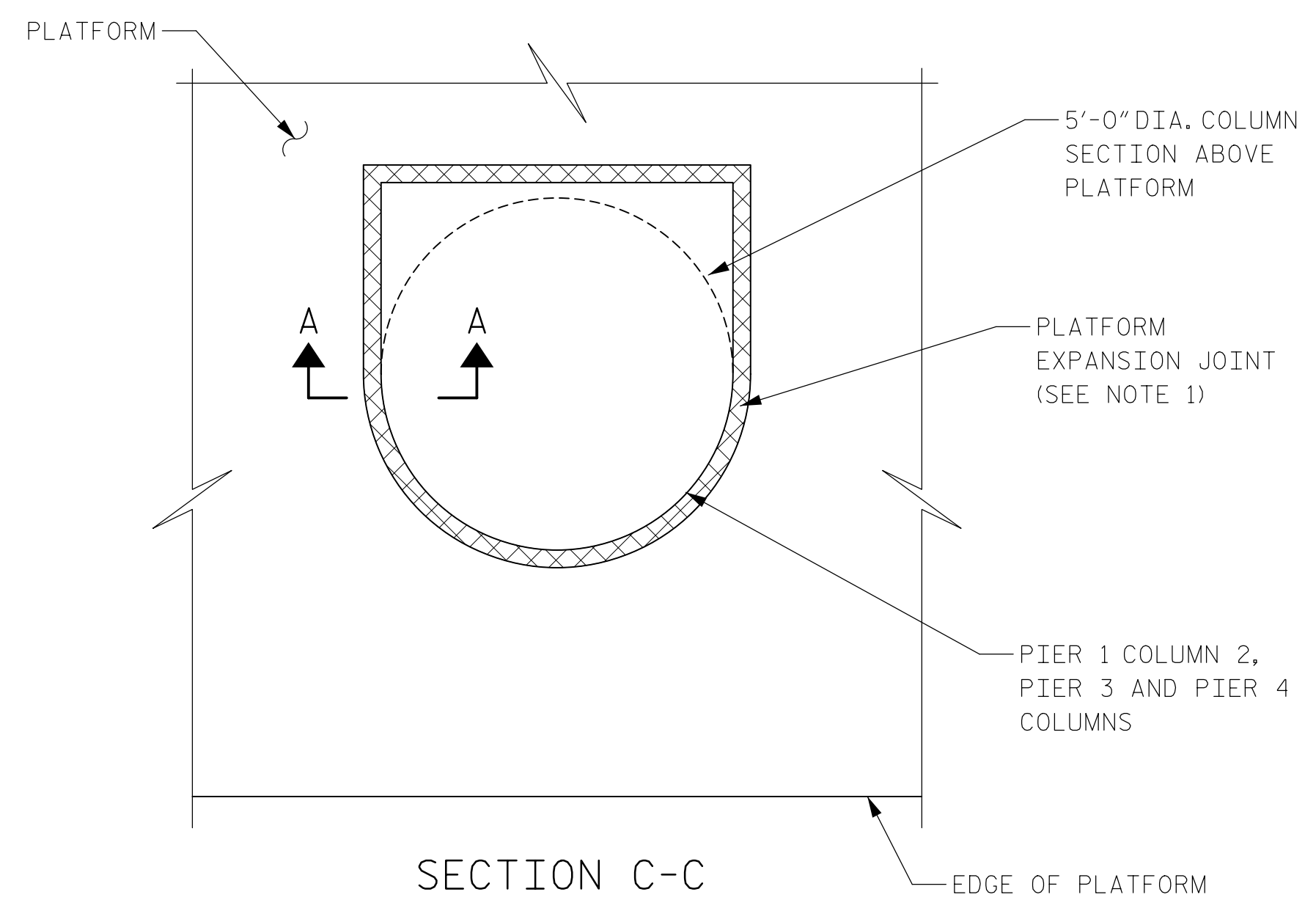
SCALE 1/2" = 1'-0"



SECTION A-A  
POURABLE SEAL  
ARMORLESS JOINT DETAIL  
N.T.S.



SECTION A-A  
CLOSED CELL FOAM/PREFORMED SEAL  
ARMORLESS JOINT DETAIL  
N.T.S.



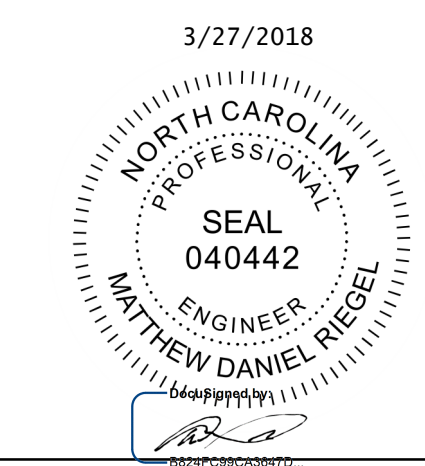
SECTION C-C

SCALE 1/2" = 1'-0"

NOTES:

- FOR ADDITIONAL NOTES AND DETAILS, SEE SHEET NO. S13-13.
- FOR LOCATION OF SECTION C-C, SEE SHEET NO. S13-13

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
 STATION: STA. 19+68.93 -S1-

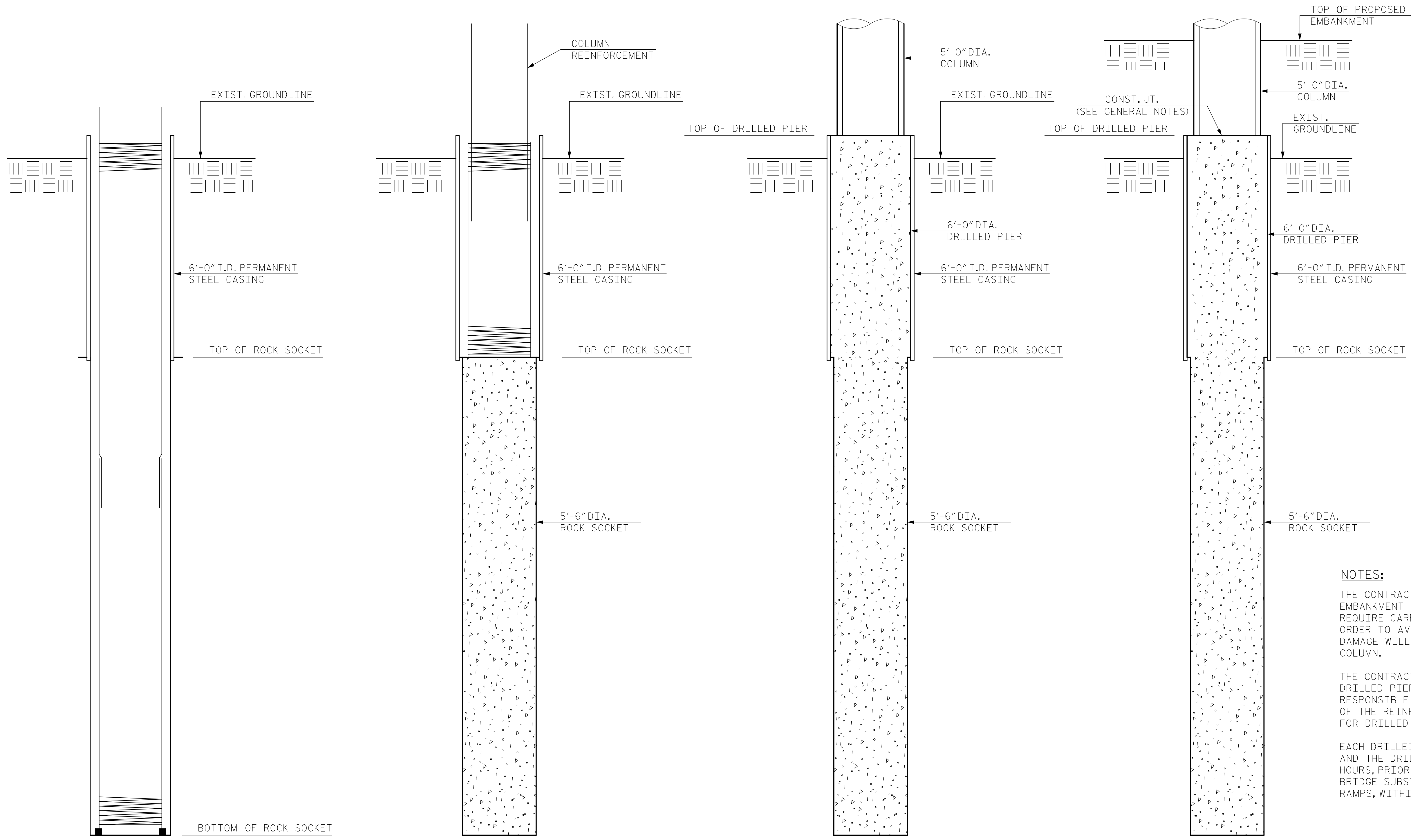


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 CANOPY STRUCTURE  
 DRILLED PIER  
 EXPANSION JOINT DETAILS  
 SHEET 2 OF 2

<b>HNTB</b>		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: L. RAMOS	DATE: 3/27/2018	DWG. NO. 14	
CHECKED BY: C. GAUNT	DATE: 3/27/2018		

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S13-14
1			3			TOTAL SHEETS
2			4			18



**NOTES:**

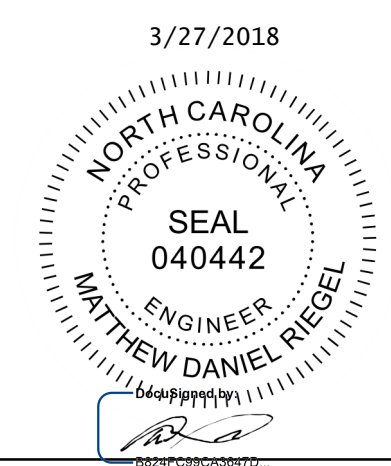
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT EMBANKMENT FILLING AGAINST THE COLUMNS (STEP 4) WILL REQUIRE CAREFUL PLACEMENT AND COMPACTION OF THE FILL IN ORDER TO AVOID DAMAGING THE COLUMNS. ANY SUBSTANTIAL DAMAGE WILL BE CAUSE FOR REJECTION OF THAT PARTICULAR COLUMN.

THE CONTRACTOR HAS THE OPTION TO INSTALL THE COLUMN AND DRILLED PIER REINFORCING AT ONE TIME. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE ALIGNMENT AND POSITION OF THE REINFORCING CAGE. SEE SHEET NOS. S13-09 TO S13-12 FOR DRILLED PIER REINFORCEMENT DETAILS.

EACH DRILLED PIER SHALL BE COMPLETELY INSTALLED AND THE AND THE DRILLED PIER CONCRETE CURED FOR A MINIMUM OF 72 HOURS, PRIOR TO DRIVING OF PILES FOR FOUNDATIONS FOR THE BRIDGE SUBSTRUCTURES, PLATFORMS, CONCOURSE OR BAGGAGE RAMPS, WITHIN A CLEAR DISTANCE OF 25 FEET.

- |  |   |   |   |
|--|---|---|---|
| <p><b>STEP 1</b></p> <ol style="list-style-type: none"> <li>1. TWIST IN 6'-0" ID BY 20'-0" LONG TEMPORARY STEEL CASING TO THE TOP OF ROCK SOCKET ELEVATION SHOWN ON SHEET NOS S13-09 THROUGH S13-12 WHILE SIMULTANEOUSLY EXCAVATING OUT THE SOIL FROM WITHIN. CASING SHALL BE A MINIMUM OF 0.5" THICK. THE CONTRACTOR SHALL ENSURE THAT EXCAVATION IS NOT PERFORMED BELOW THE TIP OF CASING UNTIL THE CASING REACHES THE TOP OF ROCK SOCKET ELEVATION.</li> <li>2. FILL THE EXCAVATION WITH POLYMER SLURRY AND ADVANCE 5'-6" DIAMETER ROCK SOCKET TO THE BOTTOM OF ROCK SOCKET ELEVATION AS SHOWN ON SHEET NOS. S13-09 THROUGH S13-12. THE CONTRACTOR SHALL MAINTAIN A MINIMUM POLYMER SLURRY HEAD OF 10' ABOVE THE GROUNDWATER ELEVATION AT ALL TIMES DURING THE DRILLED PIER EXCAVATION.</li> <li>3. SCARIFY THE SIDEWALLS OF THE ROCK SOCKET WITH A BACK SCRATCHER.</li> <li>4. CLEAN THE BOTTOM OF THE ROCK SOCKET AND INSPECT.</li> <li>5. INSTALL REBAR CAGE FOR DRILLED PIER</li> </ol> | <p><b>STEP 2</b></p> <ol style="list-style-type: none"> <li>1. TREMIE POUR CONCRETE FOR DRILLED PIER FROM BOTTOM OF ROCK SOCKET TO THE TOP OF DRILLED PIER ELEVATION. THE BOTTOM OF THE TREMIE PIPE SHALL BE SITUATED A MAXIMUM OF 6" ABOVE THE BOTTOM OF ROCK SOCKET WHEN STARTING THE POUR. THE CONTRACTOR SHALL ENSURE THE TREMIE PIPE IS EMBEDDED IN THE CONCRETE A MINIMUM OF 10' AT ALL TIMES DURING THE POUR.</li> <li>2. PERFORME CSL TESTING ON THE DRILLED PIER AFTER CONCRETE HAS REACHED ITS DESIGN STRENGTH PER THE CONCRETE CYLINDER BREAKS.</li> </ol> | <p><b>STEP 3</b></p> <ol style="list-style-type: none"> <li>1. PLACE TEMPORARY FORM FOR 5'-0" DIA. COLUMN.</li> <li>2. INSTALL REBAR CAGE FOR COLUMN AND PLACE TEMPORARY FORM FOR 5'-0" COLUMN.</li> <li>3. POUR CONCRETE FOR COLUMN TO CONSTRUCTION LIMIT AS INDICATED ON SHEETS S13-09 TO S13-12.</li> <li>4. REMOVE COLUMN FORMS.</li> </ol> | <p><b>STEP 4</b></p> <ol style="list-style-type: none"> <li>1. CONSTRUCT THE EMBANKMENT UP TO THE PROPOSED GRADE AROUND THE COLUMNS.</li> </ol> |
|--|---|---|---|

**PROJECT NO.** P-5705BB  
**MECKLENBURG COUNTY**  
**STATION:** STA. 19+68.93 -S1-

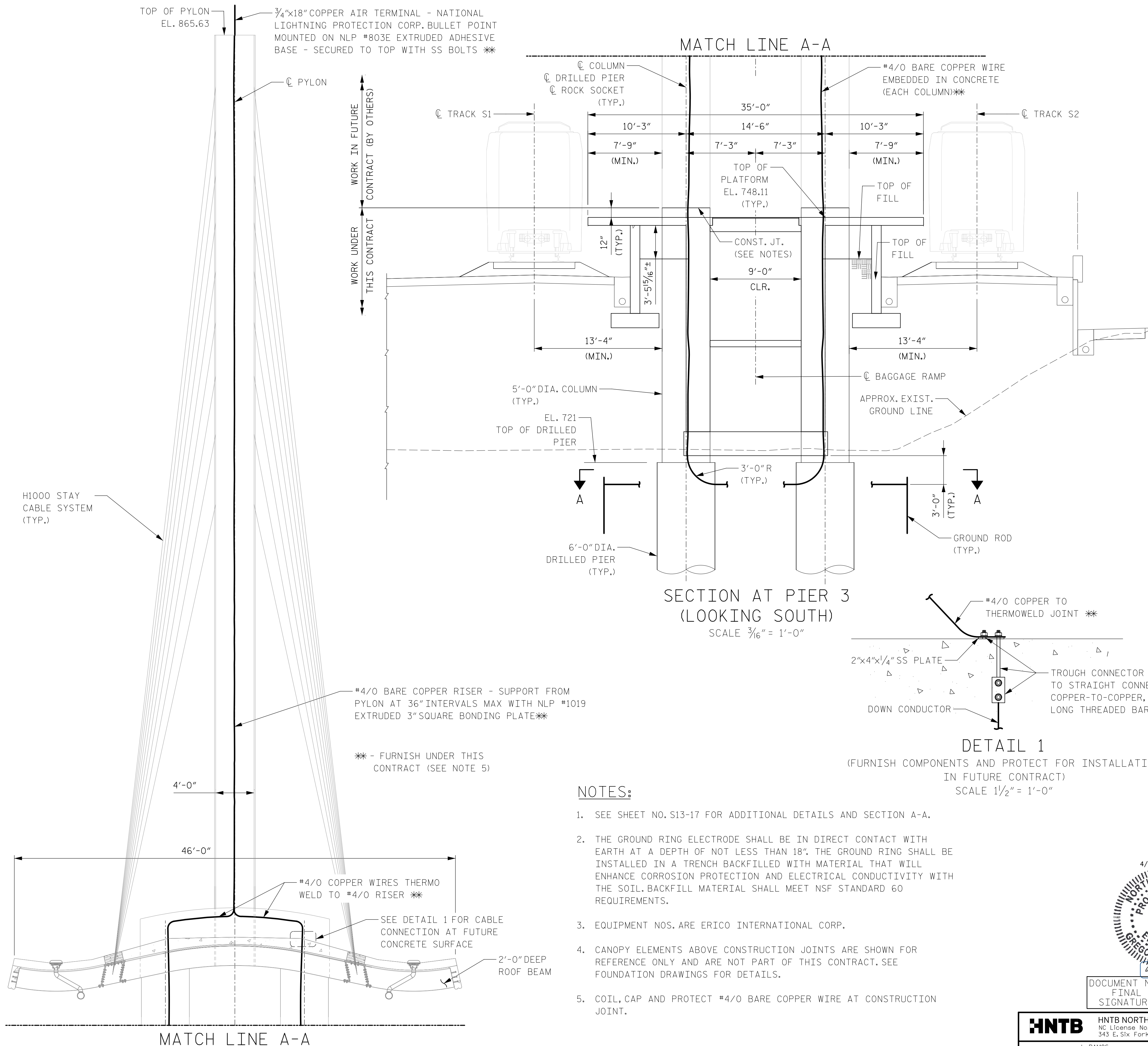


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 CANOPY STRUCTURE  
 DRILLED PIER  
 SUGGESTED CONSTRUCTION  
 SEQUENCE

<b>HNTB</b> HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS						SHEET NO. S13-15
	DRAWN BY: L. RAMOS CHECKED BY: C. GAUNT	DATE: 3/27/2018 DATE: 3/27/2018	NO. 1 NO. 2	BY BY	NO. 3 NO. 4	DATE DATE	





- GENERAL NOTES:**
- SYSTEM SHALL BE INSTALLED AS SHOWN TO ENSURE COMPLIANCE WITH NFPA 780 AND SYSTEM CERTIFICATION REQUIREMENTS. ANY VARIANCE SHALL BE SUBMITTED FOR APPROVAL.
  - ALL MATERIALS TO BE UNDERWRITER'S LABORATORIES APPROVED WITH "A" LABELS ON CONDUCTORS.
  - FINAL SYSTEM INSPECTION AND QUALITY CONTROL SHALL COMPLY WITH THE FOLLOWING:
    - THE CONTRACTOR SHALL FURNISH AN LPI-IP CERTIFICATE OR A UL CERTIFICATE UPON COMPLETION OF THE INSTALLATION. AN LPI CERTIFICATE REQUIRES A SIGNATURE BY A REPRESENTATIVE OF THE OWNER AT MULTIPLE STAGES OF INSTALLATION AND BY THEIR THIRD PARTY FIELD STAFF. IN ADDITION, FINAL INSPECTION IS REQUIRED BY THEIR THIRD PARTY FIELD STAFF.
    - AS-BUILT DRAWINGS SHALL BE COMPLETED AND STAMPED BY AN LPI CERTIFIED MASTER INSTALLER/DESIGNER.
    - A FINAL EVALUATION AND TEST REPORT SHALL BE COMPLETED BASED ON ANSI/TIA/EIA 607, NEC, NFPA 780, UL 96A, AND INDUSTRIAL STANDARDS AS APPLICABLE. THE REPORT SHALL INCLUDE DETAILED REPORTING AND TEST RESULTS WITH CORRESPONDING PHOTOS OF EACH EVALUATION CATEGORY.
  - THE SCOPE OF THE EVALUATION AND TEST REPORT SHALL INCLUDE:
    - EVALUATION AND TESTING OF THE GROUNDING SYSTEM WITH RECORD OF FINAL SYSTEM TO GROUND RESISTANCE LEVEL.
    - EVALUATION AND TESTING OF THE INTERNAL BONDING AND GROUNDING SYSTEMS.
    - EVALUATION AND TESTING OF EQUIPMENT GROUNDING.
    - COPY OF THE LPI-IP OR UL CERTIFICATE.
    - FINAL AS-BUILT REVIEW AND SUBMISSION.

- NOTES:**
- SEE SHEET NO. S13-17 FOR ADDITIONAL DETAILS AND SECTION A-A.
  - THE GROUND RING ELECTRODE SHALL BE IN DIRECT CONTACT WITH EARTH AT A DEPTH OF NOT LESS THAN 18". THE GROUND RING SHALL BE INSTALLED IN A TRENCH BACKFILLED WITH MATERIAL THAT WILL ENHANCE CORROSION PROTECTION AND ELECTRICAL CONDUCTIVITY WITH THE SOIL. BACKFILL MATERIAL SHALL MEET NSF STANDARD 60 REQUIREMENTS.
  - EQUIPMENT NOS. ARE ERICO INTERNATIONAL CORP.
  - CANOPY ELEMENTS ABOVE CONSTRUCTION JOINTS ARE SHOWN FOR REFERENCE ONLY AND ARE NOT PART OF THIS CONTRACT. SEE FOUNDATION DRAWINGS FOR DETAILS.
  - COIL, CAP AND PROTECT #4/0 BARE COPPER WIRE AT CONSTRUCTION JOINT.

4/11/2018  
 NORTH CAROLINA PROFESSIONAL SEAL  
 031843  
 ENGINEER  
 GREGORY S. BARON  
 Gregory S. Baron

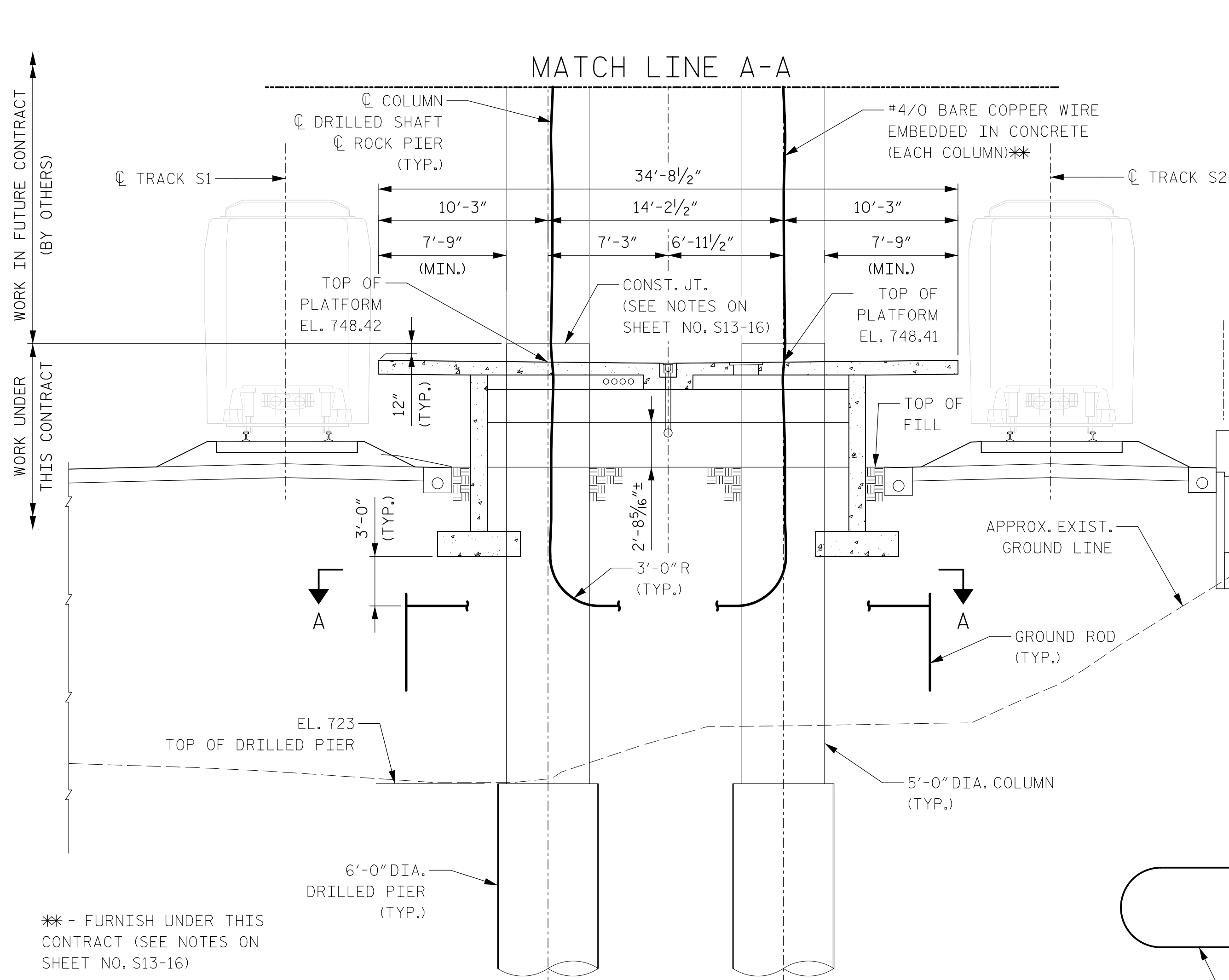
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PROJECT NO. P-5705BB  
 MECKLENBURG COUNTY  
 STATION: STA. 19+68.93 -S1-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

CANOPY STRUCTURE  
 LIGHTNING PROTECTION  
 DETAILS - SHEET 1 OF 2

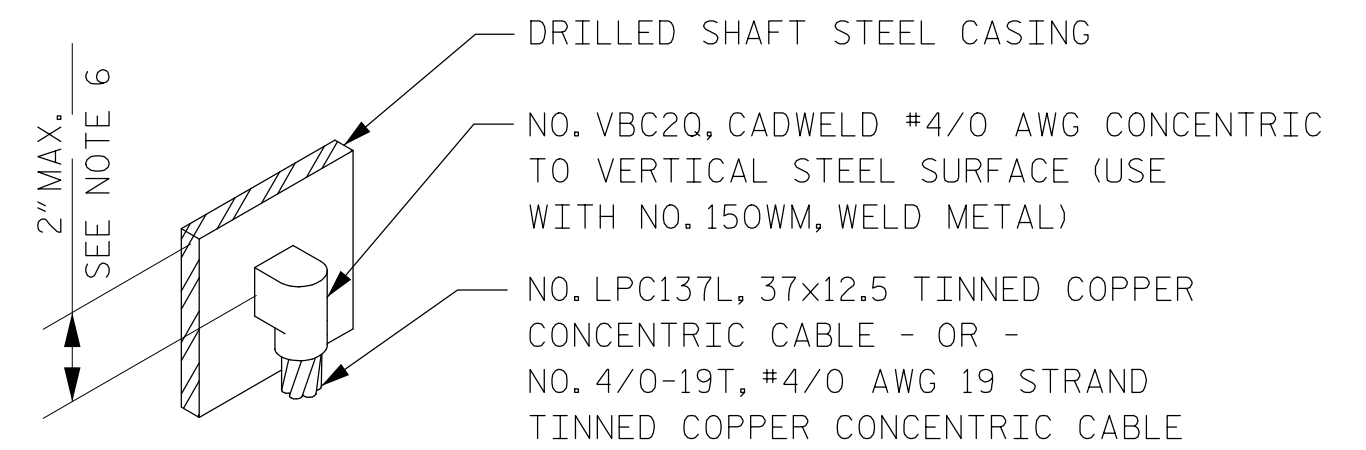
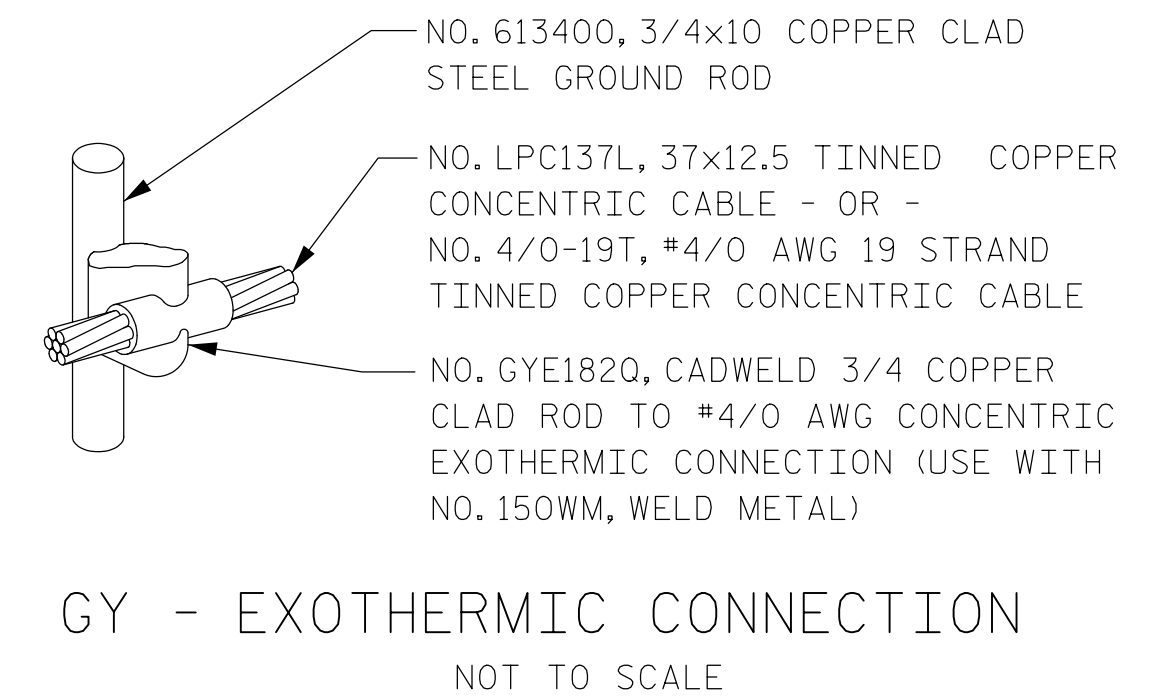
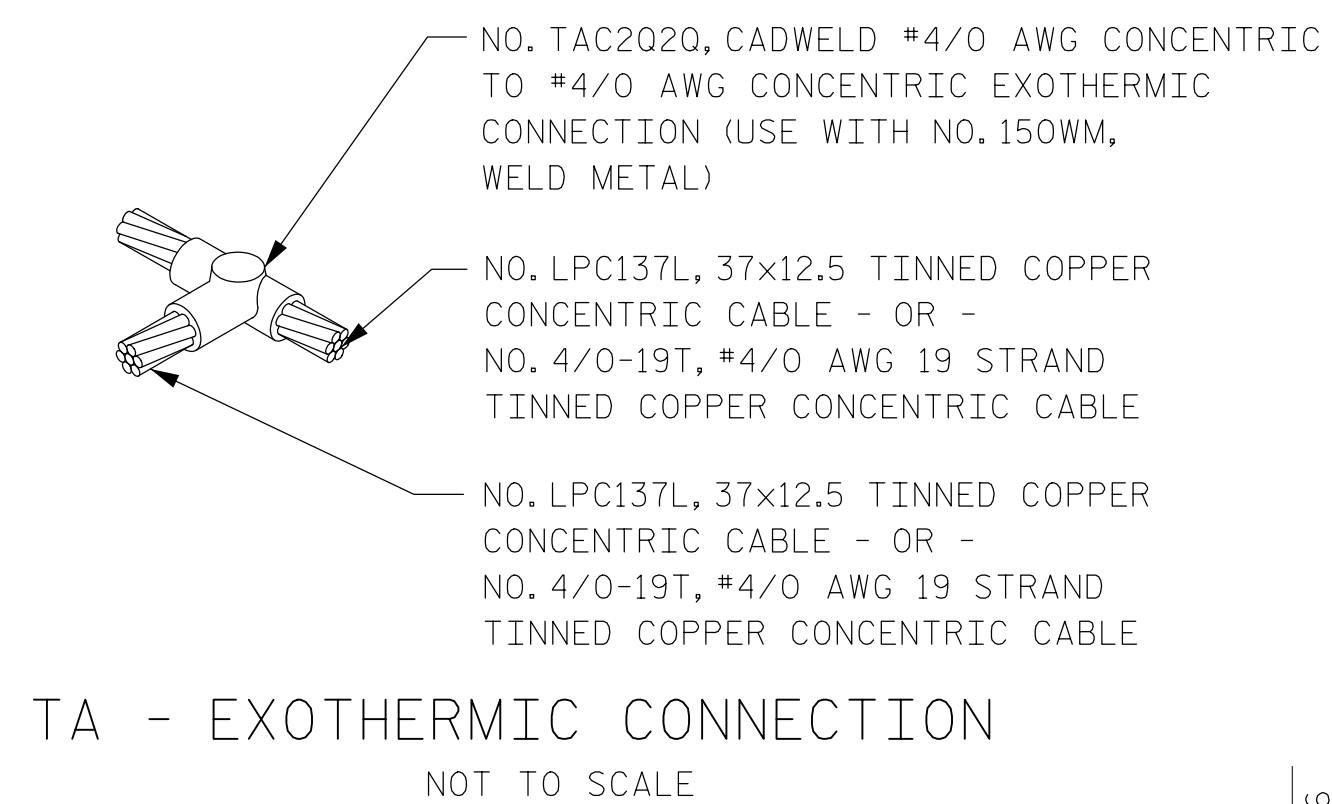
<b>HNTB</b>		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609		DWG. NO. 16			SHEET NO. S13-16		
DRAWN BY: L. RAMOS		DATE: 4/10/2018		NO.			BY		
CHECKED BY: B. KALEMBKA		DATE: 4/10/2018		1			3		
				2			4		
				TOTAL SHEETS			18		



SECTION AT PIER 2 (DEVELOPED)  
(LOOKING SOUTH)

SCALE 3/16" = 1'-0"

\*\* - FURNISH UNDER THIS CONTRACT (SEE NOTES ON SHEET NO. S13-16)



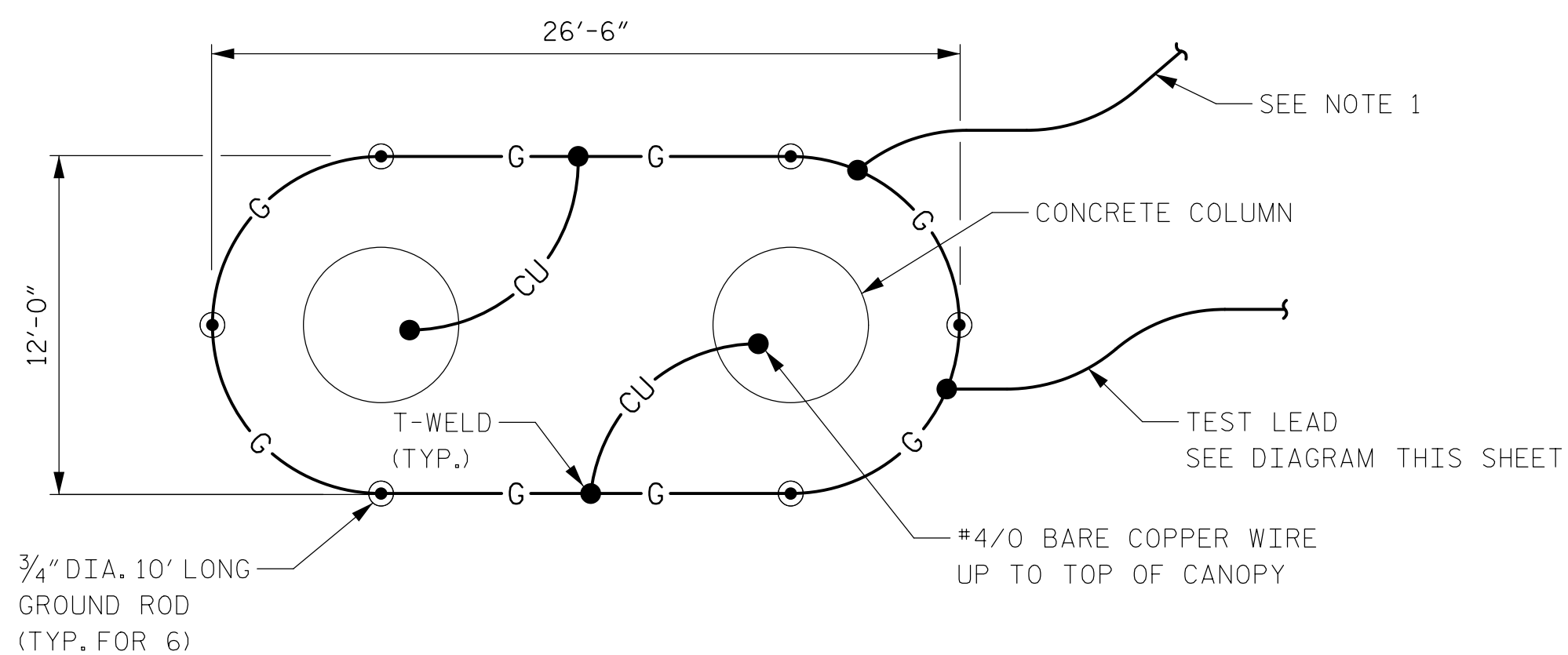
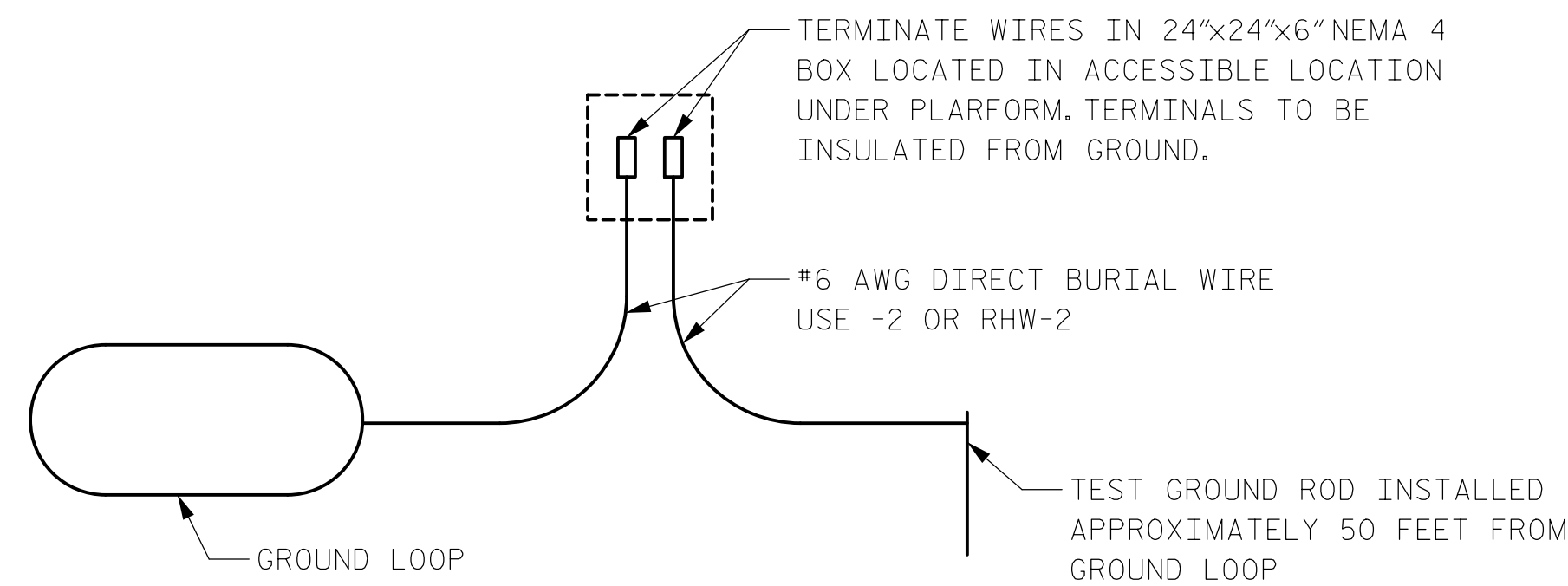
LEGEND:

- GY NO. 613400, 3/4x10 COPPER CLAD STEEL GROUND ROD EXOTHERMICALLY WELDED TO NO. LPC137L, 37x12.5 TINNED COPPER CONCENTRIC CABLE -OR- NO. 4/0-19T, #4/0 AWG 19 STRAND TINNED COPPER CONCENTRIC CABLE WITH NO. GYE1820, CADWELD 3/4 COPPER CLAD ROD TO #4/0 AWG CONCENTRIC EXOTHERMIC CONNECTION.
- VB BOND DRILLED SHAFT STEEL CASING TO NO. 4/0-19T, #4/0 AWG 19 STRAND TINNED COPPER CONCENTRIC CABLE GROUND RING WITH NO. VBC20, CADWELD #4/0 AWG CONCENTRIC TO VERTICAL STEEL SURFACE.
- TA SPLICE NO. LPC137L, 37x12.5 TINNED COPPER CONCENTRIC CABLE -OR- NO. 4/0-19T, #4/0 AWG 19 STRAND TINNED COPPER CONCENTRIC CABLE TOGETHER WITH NO. TAC2020, CADWELD #4/0 AWG CONCENTRIC TO #4/0 AWG CONCENTRIC EXOTHERMIC CONNECTION.

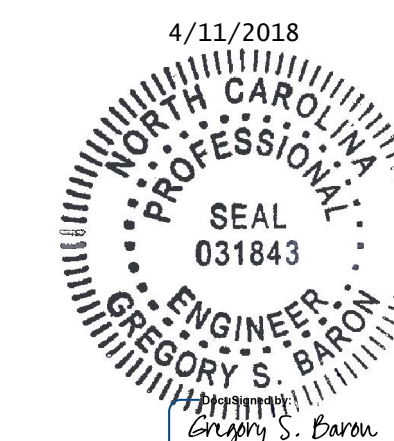
- CU— NO. LPC137L, CLASS II #4/0 AWG BARE COPPER CABLE SUPPORTED EVERY 6'-0" O.C. MAX. WITH NO. EK17 PERPENDICULAR REBAR CLAMP.
- G— NO. 4/0-19T, #4/0 AWG 19 STRAND TINNED COPPER CONCENTRIC CABLE, PROVIDE GROUND LOOP AROUND EACH TOWER FOOTING AND CONNECT AS SHOWN. REFER TO SHEET NOTE 1 FOR ADDITIONAL REQUIREMENTS.

NOTES:

1. RUN #4/0 BARE COPPER WIRE FROM PIER 3 LOOP TO VICINITY OF FUTURE STATION BUILDING FOR TYING TO THE STATION BUILDING LOOP WHEN CONSTRUCTION OF THE STATION BUILDING COMMENCES.
2. SEE SHEET NO. S13-16 FOR ADDITIONAL NOTES AND MATCH LINE A-A.



PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
STATION: STA. 19+68.93 -S1-



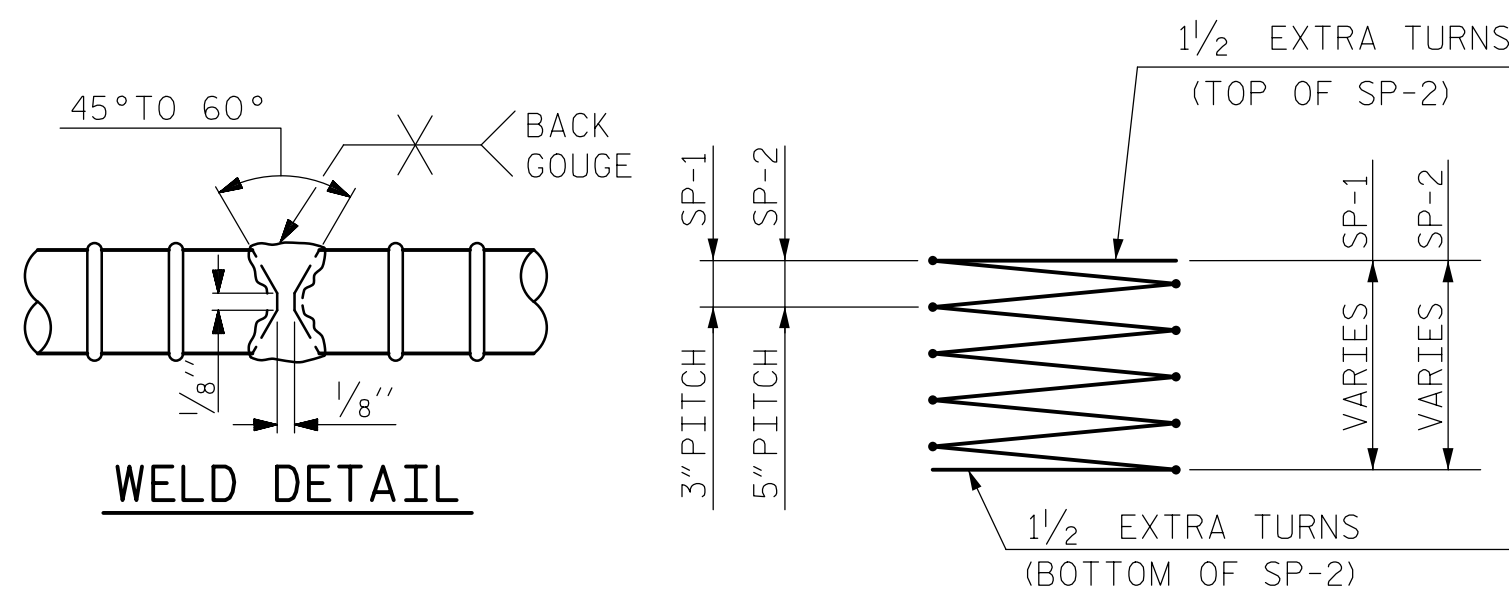
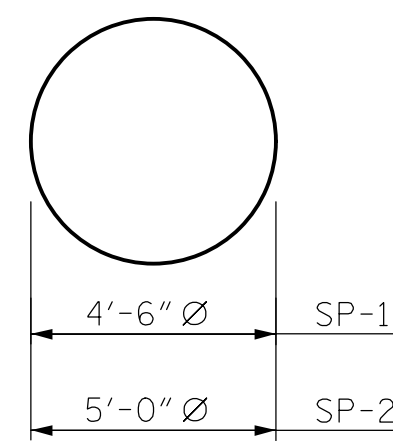
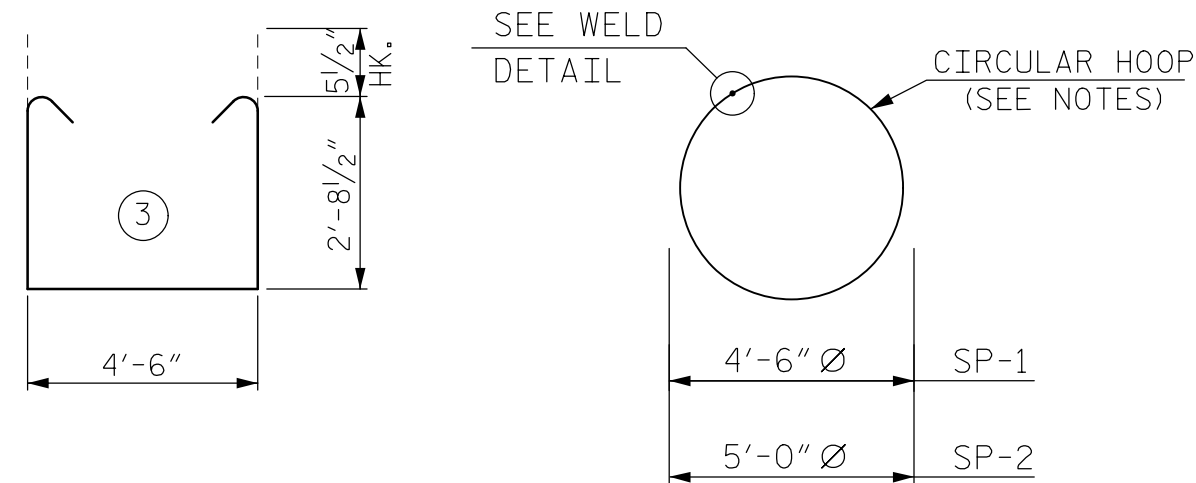
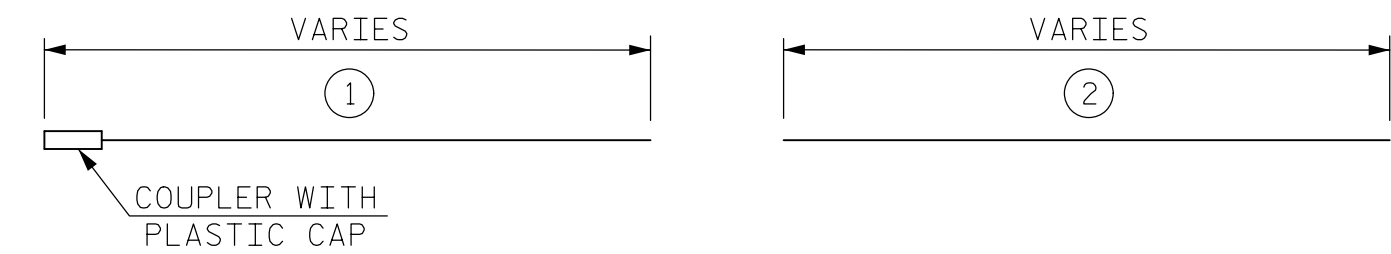
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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
CANOPY STRUCTURE  
LIGHTNING PROTECTION  
DETAILS - SHEET 2 OF 2

<b>HNTB</b> HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609		REVISIONS				SHEET NO. S13-17
		NO.	BY	DATE	NO.	
DRAWN BY	L. RAMOS	DATE	4/10/2018	3		TOTAL SHEETS
CHECKED BY	B. KALEMBKA	DATE	4/10/2018	4		18
DWG. NO. 17						

0012DEL\_P28

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT WHERE LENGTHS ARE SHOWN AS "VARIES" SEE BILL OF MATERIALS

REINFORCEMENT BAR LIST

PIER 1						PIER 2						PIER 3						PIER 4					
BAR	NO./ BUNDLES	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO./ BUNDLES	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO./ BUNDLES	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO./ BUNDLES	SIZE	TYPE	LENGTH	WEIGHT
DRILLED PIER 1						DRILLED PIER 1						DRILLED PIER 1						DRILLED PIER 1					
2-11(G)B1	20	11	1	33'-0"	7,100	2-11(G)B1	20	11	1	38'-0"	8,100	2-11(G)B1	20	11	1	40'-0"	8,600	2-11(G)B1	20	11	1	38'-0"	8,100
11B2	20	11	2	40'-0"	4,300	11B2	20	11	2	46'-0"	4,900	11B2	20	11	2	45'-6"	4,900	11B2	20	11	2	36'-0"	3,900
11B3	20	11	2	40'-0"	4,300	11B3	20	11	2	46'-0"	4,900	11B3	20	11	2	45'-6"	4,900	11B3	20	11	2	36'-0"	3,900
11B4	20	11	2	46'-3"	5,000	11B4	20	11	2	52'-3"	5,600	11B4	20	11	2	51'-9"	5,500	11B4	20	11	2	42'-3"	4,500
11B5	20	11	2	33'-9"	3,600	11B5	20	11	2	39'-9"	4,300	11B5	20	11	2	39'-3"	4,200	11B5	20	11	2	29'-9"	3,200
5(G)SP1	1	5**	SP1	34'-0"	2,100	5(G)SP1	1	5**	SP1	39'-0"	2,400	11(G)B6	6	11	1	26'-0"	830	11(G)B6	6	11	1	15'-0"	480
2-6SP2	2	6**	SP2	37'-0"	8,600	2-6SP2	2	6**	SP2	43'-0"	10,000	5(G)SP1	1	5**	SP1	41'-0"	2,500	5(G)SP1	1	5**	SP1	39'-0"	2,400
DRILLED PIER 2						DRILLED PIER 2						DRILLED PIER 2						DRILLED PIER 2					
2-11(G)B1	20	11	1	33'-0"	7,100	2-11(G)B1	20	11	1	38'-0"	8,100	2-11(G)B1	20	11	1	40'-0"	8,600	2-11(G)B1	20	11	1	38'-0"	8,100
11B2	20	11	2	40'-0"	4,300	11B2	20	11	2	45'-0"	4,800	11B2	20	11	2	42'-0"	4,500	11B2	20	11	2	30'-0"	3,200
11B3	20	11	2	40'-0"	4,300	11B3	20	11	2	45'-0"	4,800	11B3	20	11	2	42'-0"	4,500	11B3	20	11	2	30'-0"	3,200
11B4	20	11	2	46'-3"	5,000	11B4	20	11	2	52'-3"	5,600	11B4	20	11	2	48'-3"	5,200	11B4	20	11	2	36'-3"	3,900
11B5	20	11	2	33'-9"	3,600	11B5	20	11	2	38'-9"	4,200	11B5	20	11	2	35'-9"	3,800	11B5	20	11	2	23'-9"	2,600
5(G)SP1	1	5**	SP1	34'-0"	2,100	5(G)SP1	1	5**	SP1	39'-0"	2,400	11(G)B6	6	11	1	26'-0"	830	11(G)B6	6	11	1	26'-0"	480
2-6SP2	2	6**	SP2	37'-0"	8,600	2-6SP2	2	6**	SP2	42'-0"	9,700	5(G)SP1	1	5**	SP1	41'-0"	2,500	5(G)SP1	1	5**	SP1	39'-0"	2,400
DRILLED PIER 3						DRILLED PIER 3						DRILLED PIER 3						DRILLED PIER 3					
DRILLED PIER 4						DRILLED PIER 4						DRILLED PIER 4						DRILLED PIER 4					

BILL OF MATERIALS (PER PIER)

PIER 1			PIER 2			PIER 3			PIER 4		
ITEM	TOTAL		ITEM	TOTAL		ITEM	TOTAL		ITEM	TOTAL	
REINFORCING STEEL, GALVANIZED (GRADE 75)	LBS	14,200	REINFORCING STEEL, GALVANIZED (GRADE 75)	LBS	16,200	REINFORCING STEEL, GALVANIZED (GRADE 75)	LBS	19,440	REINFORCING STEEL, GALVANIZED (GRADE 75)	LBS	17,480
REINFORCING STEEL, BLACK (GRADE 75)	LBS	34,400	REINFORCING STEEL, BLACK (GRADE 75)	LBS	39,000	REINFORCING STEEL, BLACK (GRADE 75)	LBS	37,500	REINFORCING STEEL, BLACK (GRADE 75)	LBS	28,400
SPIRAL REINFORCING STEEL, GALVANIZED (GRADE 75)	LBS	4,200	SPIRAL REINFORCING STEEL, GALVANIZED (GRADE 75)	LBS	4,800	SPIRAL REINFORCING STEEL, GALVANIZED (GRADE 75)	LBS	5,000	SPIRAL REINFORCING STEEL, GALVANIZED (GRADE 75)	LBS	4,800
SPIRAL REINFORCING STEEL, BLACK (GRADE 75)	LBS	17,200	SPIRAL REINFORCING STEEL, BLACK (GRADE 75)	LBS	19,700	SPIRAL REINFORCING STEEL, BLACK (GRADE 75)	LBS	18,900	SPIRAL REINFORCING STEEL, BLACK (GRADE 75)	LBS	14,000
CLASS AA CONCRETE:			CLASS AA CONCRETE:			CLASS AA CONCRETE:			CLASS AA CONCRETE:		
5'-0" DIA. COLUMN POUR 2	C.Y.	32.0	5'-0" DIA. COLUMN POUR 2	C.Y.	38.4	5'-0" DIA. COLUMN POUR 2	C.Y.	40.9	5'-0" DIA. COLUMN POUR 2	C.Y.	37.8
TOTAL	C.Y.	165.3	TOTAL	C.Y.	189.4	TOTAL	C.Y.	185.7	TOTAL	C.Y.	144.8
6'-0" DIA. DRILLED PIERS			6'-0" DIA. DRILLED PIERS			6'-0" DIA. DRILLED PIERS			6'-0" DIA. DRILLED PIERS		
DRILLED PIER IN SOIL	L.F.	50.0	DRILLED PIER IN SOIL	L.F.	40.0	DRILLED PIER IN SOIL	L.F.	40.0	DRILLED PIER IN SOIL	L.F.	40.0
DRILLED PIER CONCRETE POUR 1	C.Y.	52.4	DRILLED PIER CONCRETE POUR 1	C.Y.	41.9	DRILLED PIER CONCRETE POUR 1	C.Y.	41.9	DRILLED PIER CONCRETE POUR 1	C.Y.	41.9
5'-6" DIA. DRILLED PIERS			5'-6" DIA. DRILLED PIERS			5'-6" DIA. DRILLED PIERS			5'-6" DIA. DRILLED PIERS		
DRILLED PIER NOT IN SOIL	L.F.	92.0	DRILLED PIER NOT IN SOIL	L.F.	124.0	DRILLED PIER NOT IN SOIL	L.F.	117.0	DRILLED PIER NOT IN SOIL	L.F.	74.0
DRILLED PIER CONCRETE POUR 1	C.Y.	81.0	DRILLED PIER CONCRETE POUR 1	C.Y.	109.1	DRILLED PIER CONCRETE POUR 1	C.Y.	103.0	DRILLED PIER CONCRETE POUR 1	C.Y.	65.1
PERMANENT STEEL CASING FOR 6'-0" DIA. DRILLED PIER	L.F.	50.0	PERMANENT STEEL CASING FOR 6'-0" DIA. DRILLED PIER	L.F.	40.0	PERMANENT STEEL CASING FOR 6'-0" DIA. DRILLED PIER	L.F.	40.0	PERMANENT STEEL CASING FOR 6'-0" DIA. DRILLED PIER	L.F.	40.0
SID INSPECTIONS	EACH	2	SID INSPECTIONS	EACH	2	SID INSPECTIONS	EACH	2	SID INSPECTIONS	EACH	2
CSL TESTING	EACH	2	CSL TESTING	EACH	2	CSL TESTING	EACH	2	CSL TESTING	EACH	2
SPT TESTING	EACH	2	SPT TESTING	EACH	2	SPT TESTING	EACH	2	SPT TESTING	EACH	2
THERMAL INTEGRITY PROFILER	EACH	2	THERMAL INTEGRITY PROFILER	EACH	2	THERMAL INTEGRITY PROFILER	EACH	2	THERMAL INTEGRITY PROFILER	EACH	2
ARMORLESS EXPANSION JOINT SYSTEM	L.F.	40	ARMORLESS EXPANSION JOINT SYSTEM	L.F.	40	ARMORLESS EXPANSION JOINT SYSTEM	L.F.	150	ARMORLESS EXPANSION JOINT SYSTEM	L.F.	105
LIGHTNING PROTECTION SYSTEM	EACH	-	LIGHTNING PROTECTION SYSTEM	EACH	1	LIGHTNING PROTECTION SYSTEM	EACH	1	LIGHTNING PROTECTION SYSTEM	EACH	-
SOIL / ROCK BORINGS	L.F.	150	SOIL / ROCK BORINGS	L.F.	176	SOIL / ROCK BORINGS	L.F.	178	SOIL / ROCK BORINGS	L.F.	136

NOTES:

- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GR. 75, UNLESS OTHERWISE INDICATED. BARS DESIGNATED (G) SHALL BE GALVANIZED (SEE SPECIFICATIONS), OTHERS SHALL BE BLACK BARS.
- CONTRACTOR SHALL HAVE THE OPTION OF SUBSTITUTING FULLY FUSED (BUTT WELDED) CIRCULAR HOOPS IN PLACE OF SPIRAL REINFORCEMENT SHOWN, PROVIDED THE SAME BAR SIZE AND SPACING IS USED.
- FULLY FUSED (BUTT WELDED) CIRCULAR HOOPS SHALL BE GALVANIZED AFTER WELDING.
- SEE NOTE "STANDARD HOOKS FOR GALVANIZED REINFORCEMENT" ON GENERAL NOTES - SHEET 2 OF 2 (SHEET NO. S13-03).

- \* #5S5 CIRCULAR TIES SHALL BE ASTM DESIGNATION A706, GRADE 80. FABRICATION TO BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE", A.C.I. 315.80.
- \*\* THE SP-1 AND SP-2 SPIRAL REINFORCING STEEL SHALL BE #5 GALV. PLAIN OR DEFORMED BAR AND #6 BLACK PLAIN OR DEFORMED BAR (RESPECTIVELY).

3/27/2018



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. P-5705BB  
MECKLENBURG COUNTY  
 STATION: STA. 19+68.93 -S1-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

CANOPY STRUCTURE  
 DRILLED PIER BILL  
 OF MATERIALS

<b>HNTB</b>		HNTB NORTH CAROLINA, P.C.	
NC License No. C-1554		343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: L. RAMOS	DATE: 3/27/2018	DWG. NO. 18	
CHECKED BY: C. GAUNT	DATE: 3/27/2018		

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			18
2			4			