PROJECT: BMU-1511OR

CONTRACT: C203050

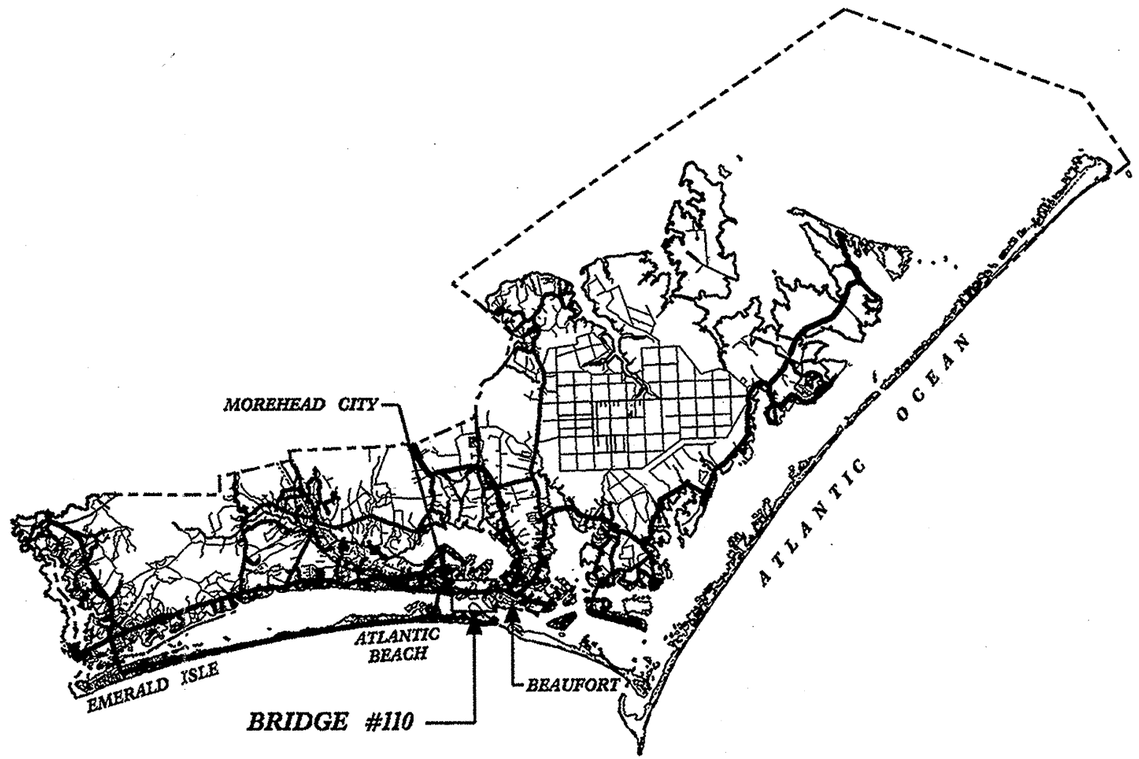
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

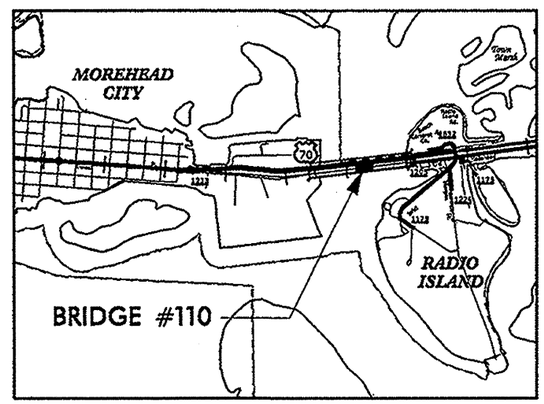
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BMU-1511OR	1	76
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
43326.1.1	-	PE	
43326.3.1	-	CONST.	

CARTERET COUNTY

LOCATION: *BASCULE SPAN OF BRIDGE #110 ON THE CAROLINA COASTAL RAILROAD OVER THE NEWPORT RIVER*

TYPE OF WORK: *BRIDGE PRESERVATION: STRUCTURAL STEEL, MECHANICAL, ELECTRICAL AND SUBSTRUCTURE REPAIRS*





VICINITY MAP BRIDGE #110

STV/Ralph Whitehead Associates, Inc.
1020 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. P-0991

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

PROJECT LENGTH

BRIDGE #110
LENGTH STRUCTURE PROJECT = .025 MILE

Prepared For:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT - PRESERVATION AND REPAIR GROUP
1000 BIRCH RIDGE DRIVE, RALEIGH, NORTH CAROLINA 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE:

JUNE 19, 2012

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030101 ENGINEER DANIEL C. MILLER

4/27/2012

$DATE$ $TIME$ $FILE$

TIP PROJECT: BMU-15110R

CONTRACT: 70000 10802

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CARTERET COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BMU-15110R	1A	76

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
43326.1.1	–	PE
43326.3.1	–	CONSTR.

LOCATION: ***BASCULE SPAN OF BRIDGE #110 ON THE CAROLINA COASTAL RAILROAD OVER THE NEWPORT RIVER***

TYPE OF WORK: ***BRIDGE PRESERVATION: STRUCTURAL STEEL, MECHANICAL, ELECTRICAL AND SUBSTRUCTURE REPAIRS***

INDEX OF SHEETS

NORTH CAROLINA PROFESSIONAL SEAL 036706 ENGINEER MICHAEL C HARRISON

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC LICENSE NO. F-0991

SUMMARY OF QUANTITIES - BMU-15110R

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C203050

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
4400000000-E	1110	128	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	116	SF	WORK ZONE SIGNS (PORTABLE)
4422000000-N	1120	40	DAY	PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM)
4430000000-N	1130	35	EA	DRUMS
4455000000-N	1150	40	DAY	FLAGGER
8294000000-N	442	Lump Sum		PAINTING OF STRUCTURAL STEEL
8296000000-N	442	Lump Sum		POLLUTION CONTROL
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM ANCHOR BOLTS
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM BALANCE TEST AND MAINTENANCE OF BALANCE
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM BRIDGE DECK WORK
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM BRIDGE ELECTRICAL WORK
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM BRIDGE MECHANICAL WORK
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM BRIDGE STRUCTURAL WORK
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM CCTV
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM CLEANING & REPAINTING OF BRIDGE #110
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM REMOTE CONTROL STATION HOUSE
8897000000-N	SP	500	EA	GENERIC STRUCTURE ITEM MISCELLANEOUS RIVET REPLACE-MENT

GENERAL NOTES

SCOPE OF WORK:

THE GOAL OF THE REHABILITATION IS TO PROVIDE 20 - 25 ADDITIONAL YEARS OF RELIABLE SERVICE AND TO FACILITATE AN ELECTRICALLY BASED REMOTE CONTROL OPERATION OF THE BRIDGE. SPECIFIC OBJECTIVES ARE OUTLINED BELOW:

STRENGTHEN THE MAIN BASCULE GIRDERS

REPLACE THE ENTIRE EXISTING BASCULE SPAN FLOOR SYSTEM AND STATIONARY STRINGERS EXCEPT FB-11 OVER BASCULE PIER

REPAIR THE COUNTERWEIGHT SUPPORT AND TRUNNION FRAMES

REPAIR/REPLACE THE OPERATING MACHINERY

CLEAN AND PAINT THE SUPERSTRUCTURE

MINIMIZE THE WEIGHT CHANGES TO THE BASCULE SPAN AND COUNTERWEIGHT INSTALL A NEW ELECTRIC OPERATING SYSTEM, OPERABLE REMOTELY FROM THE SHORE.

SPECIFICATIONS:

STRUCTURAL: CURRENT AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY ASSOCIATION (AREMA, 2012) MANUAL FOR RAILWAY ENGINEERING EXCEPT AS MODIFIED BY THE PROJECT SPECIAL PROVISIONS.

MACHINERY AND ELECTRICAL: AREMA, 2012

WELDING: AWS BRIDGE WELDING CODE D1.5

GEOMETRY:

ALL DIMENSIONS ARE MEASURED AT 60°F. CONTRACTOR SHALL FIELD VERIFY THE DIMENSIONS AND SHOW THEM ON THE FABRICATION DRAWINGS TO BE SUBMITTED TO ENGINEER FOR REVIEW.

MATERIALS:

STRUCTURAL STEEL: ASTM A709 GRADE 50 UNLESS SHOWN OTHERWISE ON THE PLANS

ANCHOR BOLT: ASTM A193 B8M STAINLESS STEEL, Fy = 45 ksi

STAINLESS PLATE: AISI 316, Fy = 42 KSI

HIGH STRENGTH BOLT: ASTM A325

HIGH STRENGTH COUNTERSUNK BOLTS/SPECIAL/MECHANICAL BOLTS: ASTM A449

TIMBER TIES SHALL MEET THE REQUIREMENTS OF AREMA CHAPTER 7.

PAINTING:

THE EXISTING STRUCTURAL STEEL IS ASSUMED TO BE A LEAD BASED PAINT SYSTEM. LEAD BASED PAINT SHALL BE REMOVED PER NCDOT STANDARD SPECIFICATIONS AND MEET THE REQUIREMENTS OF ALL AGENCIES HAVING JURISDICTION. THE CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED TO PERFORM THIS TASK. THE COST FOR LEAD BASED PAINT REMOVAL SHALL BE INCLUDED IN THE PAY ITEM FOR CLEANING AND PAINTING OF BRIDGE #110

ALL NEW STRUCTURAL STEEL SHALL BE CLEANED AND PAINTED; ALL COATS SHALL BE DONE IN THE SHOP ACCORDING TO SYSTEM 1 IN ARTICLE 442 OF THE NCDOT 2012 STANDARD SPECIFICATIONS.

ALL EXISTING STRUCTURAL STEEL SHALL BE PAINTED IN THE FIELD. THE BASCULE GIRDERS SHALL BE BLAST CLEANED AND PRIMED WITH AN ORGANIC ZINC SYSTEM. REMAINING EXISTING STEEL NOT OTHERWISE SPECIFIED TO BE BLAST CLEANED SHALL BE POWER WASHED AND HAND CLEANED AND OVERCOATED. THE CONTRACTOR SHALL PROPOSE A SYSTEM SIMILAR TO PAINTING SPECIFICATIONS IN ARTICLE 442 AND SUBMIT TO THE ENGINEER FOR APPROVAL TO FIELD PAINT THE STRUCTURAL STEEL. FINISH COAT SHALL BE GREY TO MATCH THE SHOP PAINT COLOR. PAINT SYSTEM SHALL ALLOW APPLICATION IN CLOSE PROXIMITY TO THE WATER. MACHINERY SHALL BE PAINTED USING THE PAINT SYSTEM ABOVE. CONTRACTOR SHALL GIVE SPECIAL PRECAUTION TO PROTECT ALL MACHINERY AND ROTATING ELEMENTS WHILE BLASTING, CLEANING, POWER WASHING AND PAINTING. SEE PROJECT SPECIAL PROVISIONS, PAINTING EXISTING STRUCTURES, FOR ADDITIONAL REQUIREMENTS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

BRIDGE REPAIRS HAVE BEEN DESIGNED AND RATED BY THE ALLOWABLE STRESS DESIGN METHOD AS SPECIFIED IN THE AREMA MANUAL.

OPERATION REQUIREMENT DURING CONSTRUCTION:

NAVIGATION LIGHTING IS REQUIRED DURING CONSTRUCTION. CONTRACTOR SHALL REMOVE, PROTECT AND REINSTALL EXISTING NAVIGATION LIGHT SYSTEM, WIRING AND CONDUIT AS REQUIRED. TEMPORARY NAVIGATION LIGHTING IS REQUIRED ANYTIME EXISTING NAVIGATION LIGHT SYSTEM IS NOT FUNCTIONING.

RAIL OPERATION WINDOWS OF LONGER DURATIONS ARE ANTICIPATED FOR THE WORK. SEE SPECIAL PROVISIONS FOR RAILROAD OPERATION REQUIREMENTS.

THE FOLLOWING WORK IS ANTICIPATED DURING NAVIGATION OUTAGES:

BALANCING OF BRIDGE AND MONITORING OF SPAN BALANCE.

PAINTING OF THE SPAN COMPONENTS IN WHICH MEN, OR EQUIPMENT AFFECT THE NAVIGATIONAL CLEARANCE.

INSTALLATION AND TESTING OF THE ELECTRICAL SYSTEM AND REMOTE OPERATIONS TESTING

INSTALLATION OF PROPOSED NEW COVER PLATES IN THE CLOSED POSITION (TOP FLANGE COVER PLATES) REPLACEMENT OF THE BASCULE FLOOR SYSTEM

INSTALLATION OF THE NEW SPAN LOCK

INSTALLATION OF PORTIONS OF ELECTRICAL CONTROL SYSTEM

CONSTRUCTION SEQUENCE:

STEP 1: SPAN BALANCE AND SPAN BALANCE MONITORING
STEP 1A: INITIAL SURFACE PREPARATION OF STRUCTURAL STEEL (SSPC - 6)
STEP 2: INSTALLATION OF ELECTRICAL UTILITIES (NOTE: EXISTING CABLING ON NORTH BASCULE GIRDER MUST BE REMOVED AND REINSTALLED)

CONTRACTOR SHALL REPLACE THE LAST 3 TIMBER TIES WITH NEW OAK TIES AT THE VERY END OF APPROACH SPAN NEAR REST PIER AND REALIGN THE RAIL TO THE BASCULE SPAN WITH BASCULE SPAN FULLY SEATED.

STEP 3: TOWER FRAME REPAIRS

A-FRAME TOWER LOWER SECTIONS WILL BE BLAST CLEANED AND PAINTED IN THE FIELD. ALL MACHINERY SHALL BE PROTECTED DURING ALL BLASTING AND PAINTING OPERATIONS.

INSTALL NEW A-TOWER ANCHOR BOLTS AND REPAIR TOWER FRAME. THE TOP OF PIER TO BOTTOM OF THE NEW MASONRY PLATE SHALL BE LEVEL AND PROVIDE MINIMUM 1/4" GAP BETWEEN THE PLATE AND THE TOP CONCRETE.

COMPLETE TOWER FRAME INTERIOR FACE REPAIRS.

STEP 4: INSTALLATION OF NEW FLOOR SYSTEM

CONTRACTOR SHALL PLACE A CROSS STRUT AT THE TOE PRIOR TO REMOVAL OF ANY FLOOR SYSTEM COMPONENTS AND SUPPORT THE TOE OF THE BASCULE SPAN TO THE REST PIER BY A TIE DOWN SYSTEM WITH A MINIMUM FACTOR OF SAFETY OF 2.5. THE DESIGN AND DETAILS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ANY WORK BEING PERFORMED ON THE BASCULE LEAF.

THE TEMPORARY LATERAL BRACING IS REQUIRED IF THE WIND SPEED IS ABOVE 25 MPH DURING FLOOR BEAM REPLACEMENT WHEN THE BRIDGE IS NOT FULLY SEATED AND SECURED AT THE REST PIER.

FLOOR SYSTEM REPLACEMENT WILL BE PERFORMED BY PANELIZING THE EXISTING TRACK AND TIES DURING NAVIGATION OUTAGES.

THE STRINGERS, FLOOR BEAMS AND LATERAL BRACINGS SHALL BE SHOP ASSEMBLED, DISASSEMBLED AND SHIPPED TO THE SITE INDIVIDUALLY FOR FIELD ASSEMBLING.

KEEP LATERAL BRACING BOLT HOLES UNDERSIZED UNTIL ALL FLOOR SYSTEM IS INSTALLED. REAM HOLES AT ASSEMBLY.

STEP 5: INSTALLATION OF BRIDGE SPAN LOCK ASSEMBLY

CONTRACTOR SHALL INSTALL THE SPAN LOCK TO THE WEB OF NORTH BASCULE GIRDER. THE LOCK SHALL BE PARALLEL TO THE BOTTOM FLANGE OF THE BASCULE GIRDER. THE LOCK RECEIVER WILL BE ALIGNED WITH THE LOCK BAR. THE SHIM PLATES WILL BE USED TO REALIGN THE RECEIVER WITH THE LOCK. LEAVE SPAN LOCK IN RETRACTED POSITION.

STEP 6: TRUNNION BEARING REPAIRS, SEE SHEET M-07 FOR DETAILS

TRUNNION BEARING SPRING

TRUNNION BEARING BOLT REPLACEMENT

STEP 7: REPLACE THE DECK SYSTEM

THE SPAN SHALL BE SEATED AND LOCKED DURING A NAVIGATION OUTAGE. THE EXISTING RAIL, TIES AND TIE PLATES WILL BE REMOVED. (MULTIPLE OUTAGES ANTICIPATED)

CONSTRUCTION SEQUENCE (CONT.):

NO MORE THAN 2 BAYS OF TRACK AND TIES MAY BE REMOVED FROM THE BASCULE SPAN AT ANY TIME.

CONTRACTOR SHALL MAINTAIN BALANCE AND ADJUST AS REQUIRED TO MAINTAIN AT LEAST 1000 LBS (+500 POUNDS/-500 POUNDS) ON EACH LIVE LOAD SHOE. CONTRACTOR SHALL SUBMIT BALANCE CALCULATIONS TO THE ENGINEER FOR REVIEW PRIOR TO ADJUSTING SPAN BALANCE.

CONTRACTOR SHALL ALSO BALANCE TO PROVIDE FOR ADEQUATE OPERATION OF THE SPAN FOR NAVIGATION AND AT ANY TIME AS REQUIRED BY THE ENGINEER.

WHEN THE CONTRACTOR HAS COMPLETED THE FLOOR SYSTEM REPLACEMENT, THE TRACK AND TIES SHALL BE REPLACED. THE NEW TIES WITH TIE PLATES WILL BE INSTALLED AND SECURED TO THE STRINGERS. THE NEW CONTINUOUS RAIL ON THE BASCULE SPAN WILL BE FURNISHED, INSTALLED AND MITERED TO MATCH THE EXISTING DETAILS. ADJUST COUNTERWEIGHT AS REQUIRED. TEST-OPERATE THE BRIDGE AND RESTORE NAVIGATION.

STEP 8: INSTALL THE NEW BASCULE GIRDER COVER PLATES

THE NEW COVER PLATES SHALL BE INSTALLED WITH HIGH STRENGTH BOLTS. THE SPAN SHALL BE LOWERED AND LOCKED TO INSTALL THE PROPOSED TOP FLANGE COVER PLATES. THE COVER PLATES SHALL BE INSTALLED SYMMETRICALLY ABOUT THE CENTER LINE OF THE BRIDGE. PERFORM THE FOLLOWING SEQUENCES TO INSTALL THE COVER PLATES: TWO TOP FLANGE INTERIOR PLATES, TWO TOP FLANGE EXTERIOR COVER PLATES, TWO BOTTOM INTERIOR COVER PLATES AND TWO BOTTOM EXTERIOR COVER PLATES. BOTTOM COVER PLATES MAY BE INSTALLED WITH BASCULE LEAF RAISED.

THE BASCULE PIER LIVE LOAD SHOES SHALL BE REMOVED PRIOR TO THE INSTALLATION OF THE BOTTOM COVER PLATES.

STEP 9: REPLACEMENT OF THE REST PIER AND BASCULE PIER LIVE LOAD SHOES

WHEN THE CONTRACTOR HAS INSTALLED THE NEW COVER PLATES, THE NEW LIVE LOAD SHOES SHALL BE INSTALLED. THE LIVE LOAD SHOE AT THE REST PIER SHALL BE SET TO CONTACT WITH THE SOLE PLATE AT TOE OF THE SPAN WITH A FORCE OF 1,000 LBS AT THE SHOE UNDER THE DEAD LOAD. THE LIVE LOAD SHOE AT FB 11 SHALL BE SET 0.250" ± 0.010 INCHES OF GAP TO THE SOLE PLATE UNDER THE DEAD LOAD.

STEP 10: BUILD REMOTE CONTROL STATION AND INSTALL ELECTRICAL CONTROL SYSTEM.

STEP 11: INSTALLATION OF BRIDGE TAIL LOCKS.

STEP 12: INSTALLATION OF MACHINERY BRAKES AND NEW MOTOR/TRANSITION FROM ENGINE OPERATION TO ELECTRICAL OPERATION.
STEP 12A: FINAL SURFACE PREPARATION (SSPC - 10) AND STRUCTURAL PAINTING
STEP 13: TEST-OPERATE THE BRIDGE/FINAL BALANCE BRIDGE.

SEE PROJECT SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

COORDINATION WITH USCG:

THE CONTRACTOR SHALL OBTAIN ALL AUTHORIZATIONS THAT ARE REQUIRED TO ALLOW TO WORK ON THE SPAN. PRELIMINARY DISCUSSIONS WITH THE USCG SUGGEST THAT WORKING WINDOWS CAN BE AVAILABLE AT NIGHT TIME HOURS DURING THE WINTER MONTHS. THE CONTRACTOR IS TO COORDINATE THESE CLOSURES AS NECESSARY TO PERFORM THE WORK ON THE BASCULE SPAN. ALL COST RELATED TO COAST GUARD COORDINATIONS AND AUTHORIZATIONS SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT PAY ITEMS AND NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE.

CONTRACTOR SHALL COORDINATE WITH USCG SUCH THAT THE APPROPRIATE LEAD TIME FOR PUBLIC NOTICES OR RELATED PROCESSES CAN BE COMPLETED PRIOR TO BEGINNING WORK AFFECTING NAVIGATION.

NO ADDITIONAL TIME WILL BE GRANTED FOR DELAYS OF RELATED TO OBTAINING THE NECESSARY USCG APPROVALS/PERMITS. FOR USCG COORDINATION, SEE SPECIAL PROVISIONS.

RIVET REMOVAL:

RIVET HEADS MAY BE BURNED OFF WITH A TORCH AS LONG AS THE CONTRACTOR'S PROCEDURE DOES NOT DAMAGE THE REMAINING CONNECTED PARTS. THE RIVET SHANKS SHALL BE REMOVED BY MECHANICAL MEANS. UNDER NO CIRCUMSTANCES SHALL RIVET SHANKS BE BURNED OUT WITH A TORCH.

NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C. HARRISON 3/16/2012

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

TOTAL BILL OF MATERIAL

REMOTE CONTROL STATION HOUSE	PAINTING OF STRUCTURAL STEEL	CLEANING AND REPAINTING OF BRIDGE #110	POLLUTION CONTROL	BALANCE TEST AND MAINTENANCE OF BALANCE	BRIDGE STRUCTURAL WORK	ANCHOR BOLTS	CCTV	BRIDGE DECK WORK	BRIDGE MECHANICAL WORK	BRIDGE ELECTRICAL WORK	MISCELLANEOUS RIVET REPLACEMENT
LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	EACH
LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	500

STRUCTURAL QUANTITIES PROVIDED FOR INFORMATION ONLY; FLOOR BEAMS - 45,000 LBS., STRINGERS/BRACING/GUSSETS - 20,000 LBS., COVER PLATES - 4,000 LBS., STATIONARY SPAN - 6,500 LBS, MISC./BALANCE MATERIAL - 25,000 LBS. STAINLESS STEEL ANCHOR BOLTS - 60.

DRAWN BY : PWP DATE : 9-11
CHECKED BY : MCH DATE : 12-11

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL NOTES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	G-01
1			3			TOTAL SHEETS
2			4			76

3/16/2012 2:34:13 PM N:\proj\dev\NCDOT\Radio Island\CAD\GENERAL\G-01-GEN NOTES.dgn

2012 APPENDIX B
BUILDING CODE SUMMARY
FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: RADIO ISLAND REMOTE CONTROL STATION
Address: BASCULE SPAN OF BRIDGE #110 ON THE CAROLINA RAILROAD Zip Code 28557
Proposed Use: ELECTRICAL EQUIPMENT SHELTER
Owner/Authorized Agent: JOHNNY METCALFE Phone # (252) 514-4759 E-Mail jmetcalfe@ncdot.gov
Owned By: ☐ City/County ☐ Private ☒ State
Code Enforcement Jurisdiction: ☐ City_____ ☐ County_____ ☒ State

LEAD DESIGN PROFESSIONAL: _____

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural	STV Architects	Harry D. Sherrill, Jr	4337	(704) 372-1885	harry.sherrill@stvinc.com
Civil				( )	
Electrical	STV Incorporated	Charles E. Mace	038769	(617) 303-1133	charles.mace@stvinc.com
Fire Alarm				( )	
Plumbing				( )	
Mechanical				( )	
Sprinkler-Standpipe				( )	
Structural				( )	
Retaining Walls >5' High				( )	
Other				( )	

2012 EDITION OF NC CODE FOR: ☒ New Construction ☐ Addition ☐ Upfit
EXISTING: ☐ Reconstruction ☐ Alteration ☐ Repair ☐ Renovation
CONSTRUCTED: (date) _____ **ORIGINAL USE(S)** (Ch. 3): _____
RENOVATED: (date) _____ **CURRENT USE(S)** (Ch. 3): _____
PROPOSED USE(S) (Ch. 3): _____

BASIC BUILDING DATA
Construction Type: (check all that apply) ☐ I-A ☐ I-B ☐ II-A ☐ II-B ☐ III-A ☐ III-B ☐ IV ☐ V-A ☒ V-B
Sprinklers: ☒ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☒ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: ☒ No ☐ Yes (Primary) **Flood Hazard Area:** ☐ No ☐ Yes
Building Height: (feet) 13
Gross Building Area:

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
6th Floor			
5th Floor			
4th Floor			
3rd Floor			
2nd Floor	N.A.	N.A.	N.A.
Mezzanine	N.A.	N.A.	N.A.
1st Floor	N.A.	36	36
Basement	N.A.	N.A.	N.A.
TOTAL	N.A.	36	36

ALLOWABLE AREA

Occupancy:
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 ☐ I-3 ☐ I-4
I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled ☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☒

Accessory Occupancies:
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 ☐ I-3 ☐ I-4
I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled ☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☐

Incidental Uses (Table 508.2.5):
☐ Furnace room where any piece of equipment is over 400,000 Btu per hour input
☐ Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower
☐ Refrigerant machine room
☐ Hydrogen cutoff rooms, not classified as Group H
☐ Incinerator rooms
☐ Paint shops, not classified as Group H, located in occupancies other than Group F
☐ Laboratories and vocational shops, not classified as Group H, located in a Group E or I-2 occupancy
☐ Laundry rooms over 100 square feet
☐ Group I-3 cells equipped with padded surfaces
☐ Group I-2 waste and linen collection rooms
☐ Waste and linen collection rooms over 100 square feet
☐ Stationary storage battery systems having a liquid electrolyte capacity of more than 50 gallons, or a lithium-ion capacity of 1,000 pounds used for facility standby power, emergency power or uninterrupted power supplies
☐ Rooms containing fire pumps
☐ Group I-2 storage rooms over 100 square feet
☐ Group I-2 commercial kitchens
☐ Group I-2 laundries equal to or less than 100 square feet
☐ Group I-2 rooms or spaces that contain fuel-fired heating equipment

Special Uses: ☐ 402 ☐ 403 ☐ 404 ☐ 405 ☐ 406 ☐ 407 ☐ 408 ☐ 409 ☐ 410 ☐ 411 ☐ 412 ☐ 413 ☐ 414 ☐ 415 ☐ 416 ☐ 417 ☐ 418 ☐ 419 ☐ 420 ☐ 421 ☐ 422 ☐ 423 ☐ 424 ☐ 425 ☐ 426 ☐ 427
Special Provisions: ☐ 509.2 ☐ 509.3 ☐ 509.4 ☐ 509.5 ☐ 509.6 ☐ 509.7 ☐ 509.8 ☐ 509.9
Mixed Occupancy: ☒ No ☐ Yes Separation: ____ Hr. Exception: _____
☐ Incidental Use Separation (508.2.5)

This separation is not exempt as a Non-Separated Use (see exceptions).
☐ Non-Separated Use (508.3)
The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction so determined, shall apply to the entire building.
☐ Separated Use (508.4) - See below for area calculations
For each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

_____ + _____ + ... = _____ ≤ 1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 503[1] AREA	(C) AREA FOR FRONTAGE INCREASE[1]	(D) AREA FOR SPRINKLER INCREASE[2]	(E) ALLOWABLE AREA OR UNLIMITED	(F) MAXIMUM BUILDING AREA[3]
ONE	Electrical Equip.	36	5,500	N.A.	N.A.	N.A.	N.A.

[1] Frontage area increases from Section 506.2 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = _____ (F)
b. Total Building Perimeter = _____ (P)
c. Ratio (F/P) = _____ (F/P)
d. W = Minimum width of public way = _____ (W)
e. Percent of frontage increase I_f = 100 [F/P - 0.25] x W/30 = _____ (%)
[2] The sprinkler increase per Section 506.3 is as follows:
a. Multi-story building I_s = 200 percent
b. Single story building I_s = 300 percent
[3] Unlimited area applicable under conditions of Section 507.
[4] Maximum Building Area = total number of stories in the building x E (506.4).
[5] The maximum area of open parking garages must comply with Table 406.3.5. The maximum area of air traffic control towers must comply with Table 412.1.2.

ALLOWABLE HEIGHT

	ALLOWABLE (TABLE 503)	INCREASE FOR SPRINKLERS	SHOWN ON PLANS	CODE REFERENCE
Type of Construction	Type VB	N.A.	Type VB	506
Building Height in Feet	40	Feet = H + 20' = N.A.	13	504
Building Height in Stories	1	Stories + 1 = N.A.	1	503

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/ * REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	DESIGN # FOR RATED PENETRATION	DESIGN # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses	>30'	0	0				
Bearing Walls	>30'	0	0				
Exterior	>30'	0	0				
North	>30'	0	0				
East	>30'	0	0				
West	>30'	0	0				
South	>30'	0	0				
Interior	N.A.	N.A.	N.A.				
Nonbearing Walls and Partitions	>30'	0	0				
Exterior walls							
North	>30'	0	0				
East	>30'	0	0				
West	>30'	0	0				
South	>30'	0	0				
Interior walls and partitions	N.A.	N.A.	N.A.				
Floor Construction Including supporting beams and joists	>30'	0	0				
Roof Construction Including supporting beams and joists	>30'	0	0				
Shaft Enclosures - Exit	N.A.	N.A.	N.A.				
Shaft Enclosures - Other	N.A.	N.A.	N.A.				
Corridor Separation	N.A.	N.A.	N.A.				
Occupancy Separation	N.A.	N.A.	N.A.				
Party/Fire Wall Separation	N.A.	N.A.	N.A.				
Smoke Barrier Separation	N.A.	N.A.	N.A.				
Tenant Separation	N.A.	N.A.	N.A.				
Incidental Use Separation	N.A.	N.A.	N.A.				

* Indicate section number permitting reduction

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☒ No ☐ Yes
Exit Signs: ☒ No ☐ Yes
Fire Alarm: ☒ No ☐ Yes
Smoke Detection Systems: ☒ No ☐ Yes ☐ Partial _____
Panic Hardware: ☒ No ☐ Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: N.A.
☐ Fire and/or smoke rated wall locations (Chapter 7)
☐ Assumed and real property line locations
☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
☐ Existing structures within 30' of the proposed building
☐ Occupancy types for each area as it relates to occupant load calculation (Table 1004.1.1)
☐ Occupant loads for each area
☐ Exit access travel distances (1016)
☐ Common path of travel distances (1014.3 & 1028.8)
☐ Dead end lengths (1018.4)
☐ Clear exit widths for each exit door
☐ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.1)
☐ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
☐ Location of doors with panic hardware (1008.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1008.1.9.7)
☐ Location of doors with electromagnetic egress locks (1008.1.9.8)
☐ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1029)
☐ The square footage of each fire area (902)
☐ The square footage of each smoke compartment (407.4)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS - N/A
(SECTION 1107)

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING - N/A
(SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES REQUIRED	TOTAL # OF PARKING SPACES PROVIDED	# OF ACCESSIBLE SPACES PROVIDED				TOTAL # ACCESSIBLE PROVIDED
			REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE		
TOTAL							

STRUCTURAL DESIGN

DESIGN LOADS:
Importance Factors: Wind (I_w) _____ Snow (I_s) _____ Seismic (I_E) _____
Live Loads: Roof 20 psf Mezzanine N.A. psf Floor 200 psf
Ground Snow Load: 10 psf
Wind Load: Basic Wind Speed 130 mph (ASCE-7) Exposure Category C Wind Base Shears (for MWFRS) Vx = _____ Vy = _____

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☐ C ☐ D
Provide the following Seismic Design Parameters:
Occupancy Category (Table 1604.5) ☒ I ☐ II ☐ III ☐ IV
Spectral Response Acceleration S_s _____ %g S_1 _____ %g
Site Classification (Table 1613.5.2) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
Data Source: ☐ Field Test ☐ Presumptive ☐ Historical Data
Basic structural system (check one)
☐ Bearing Wall ☐ Dual w/Special Moment Frame
☐ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum
Seismic base shear: V_X = V_Y =
Analysis Procedure: ☐ Simplified ☐ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☐ Yes ☐ No

LATERAL DESIGN CONTROL: Earthquake ☐ Wind ☒

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) _____ psf
Presumptive Bearing capacity 2,000 psf
Pile size, type, and capacity N.A.

SPECIAL INSPECTIONS REQUIRED: ☒ Yes ☐ No

PLUMBING FIXTURE REQUIREMENTS - N/A
(TABLE 2902.1)

USE		WATER CLOSETS		URINALS	LAVATORIES		SHOWERS/ TUBS	DRINKING FOUNTAINS	
		MALE	FEMALE		MALE	FEMALE		REGULAR	ACCESSIBLE
SPACE	EXISTING								
	NEW								
	REQUIRED								

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, ICC, etc., describe below)
_____
_____
_____

ENERGY SUMMARY - N/A

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Climate Zone: ☐ 3 ☐ 4 ☐ 5

Method of Compliance:
☐ Prescriptive (Energy Code)
☐ Performance (Energy Code)
☐ Prescriptive (ASHRAE 90.1)
☐ Performance (ASHRAE 90.1)

THERMAL ENVELOPE

Roof/ceiling Assembly (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Skylights in each assembly: _____
U-Value of skylight: _____
total square footage of skylights in each assembly: _____

Exterior Walls (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Openings (windows or doors with glazing)
U-Value of assembly: _____
Solar heat gain coefficient: _____
projection factor: _____
Door R-Values: _____

Walls below grade (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____

Floors over unconditioned space (each assembly)
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____

Floors slab on grade
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Horizontal/vertical requirement: _____
slab heated: _____

MECHANICAL SUMMARY - N/A

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT
Thermal Zone
winter dry bulb: _____
summer dry bulb: _____

Interior design conditions
winter dry bulb: _____
summer dry bulb: _____
relative humidity: _____

Building heating load: _____

Building cooling load: _____

Mechanical Spacing Conditioning System
Unitary
description of unit: _____
heating efficiency: _____
cooling efficiency: _____
size category of unit: _____
Boiler
Size category. If oversized, state reason.: _____
Chiller
Size category. If oversized, state reason.: _____

List equipment efficiencies: _____

ELECTRICAL SUMMARY – N/A

ELECTRICAL SYSTEM AND EQUIPMENT
Method of Compliance:
Energy Code: ☐ Prescriptive ☐ Performance
ASHRAE 90.1: ☐ Prescriptive ☐ Performance

Lighting schedule (each fixture type)
lamp type required in fixture
number of lamps in fixture
ballast type used in the fixture
number of ballasts in fixture
total wattage per fixture
total interior wattage specified vs. allowed (whole building or space by space)
total exterior wattage specified vs. allowed

Additional Prescriptive Compliance
☐ 506.2.1 More Efficient Mechanical Equipment
☐ 506.2.2 Reduced Lighting Power Density
☐ 506.2.3 Energy Recovery Ventilation Systems
☐ 506.2.4 Higher Efficiency Service Water Heating
☐ 506.2.5 On-Site Supply of Renewable Energy
☐ 506.2.6 Automatic Daylighting Control Systems

PROJECT NO. BMU-15110R
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPENDIX B FOR REMOTE CONTROL STATION

STV ARCHITECTS, INC. REGISTERED ARCHITECTURAL CORPORATION 51843 NORTH CAROLINA CHARLOTTE, N.C.

HARRY D. SHERRILL, JR. REGISTERED ARCHITECT 4337 NORTH CAROLINA CHARLOTTE, N.C.
March 29, 2012

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

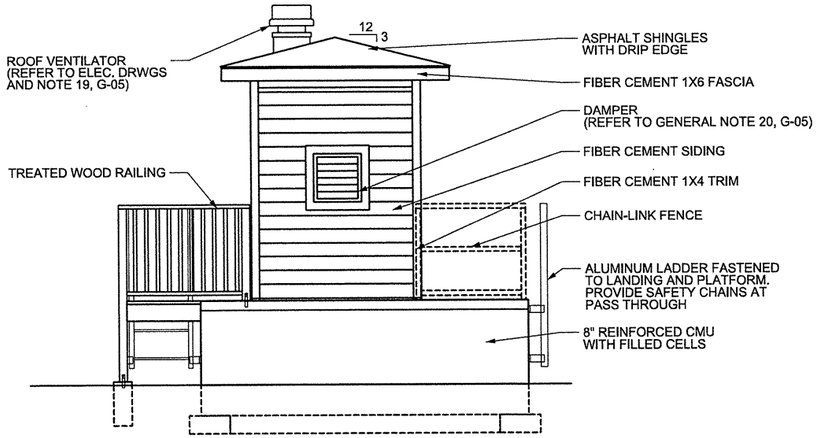
SHEET NO. G-02
TOTAL SHEETS 76

DRAWN BY : KLB DATE : 03-20-12
CHECKED BY : HDS DATE : 03-20-12

STV Architects, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License number – 51843

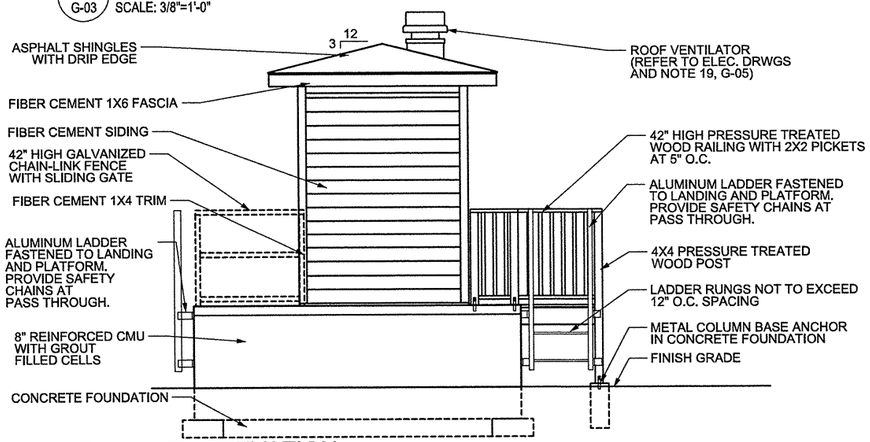
STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

03/20/2012
I:\Common\Architecture TEMP\4545 Radio Island\Appendix B.dgn
KBENFIELD



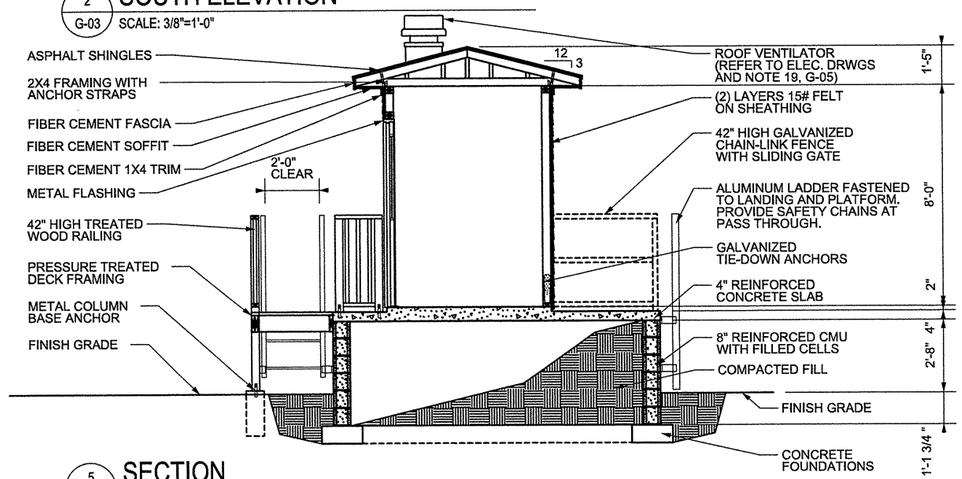
1 G-03 NORTH ELEVATION

SCALE: 3/8"=1'-0"



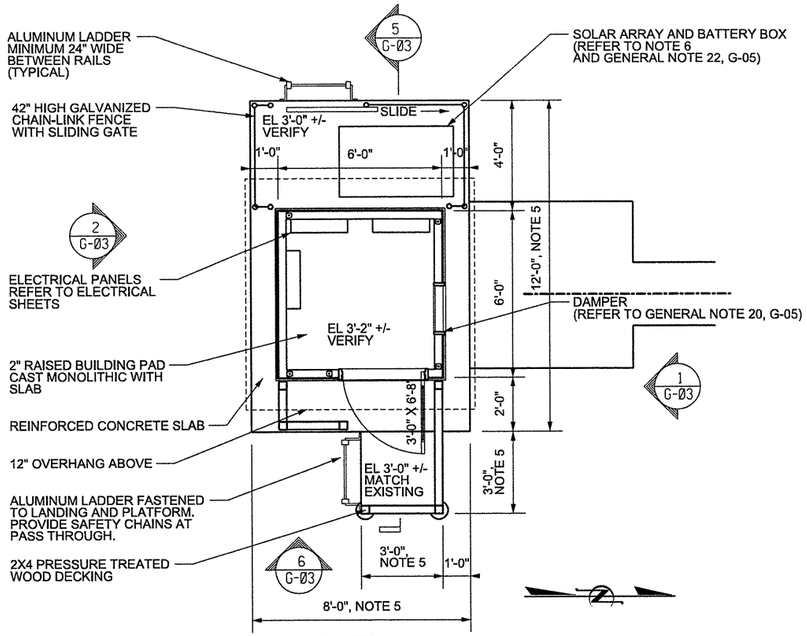
2 G-03 SOUTH ELEVATION

SCALE: 3/8"=1'-0"



5 G-03 SECTION

SCALE: 3/8"=1'-0"

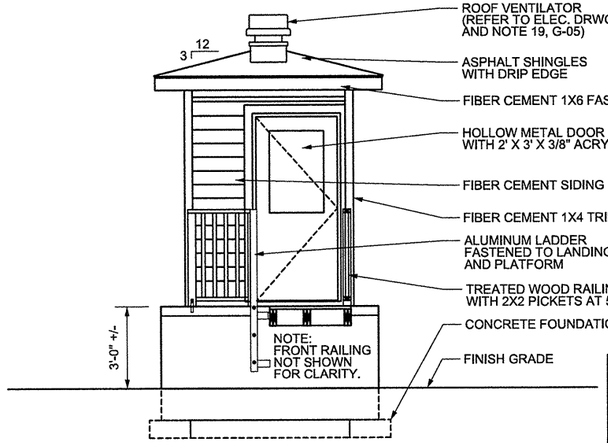


NEW WORK NOTES:

1) FOOTING NOT SHOWN FOR CLARITY.
2) INSTALL ELECTRICAL CONDUIT TO AVOID EXITING FOOTINGS.
3) DIMENSIONS ARE TO THE FACE OF STUD.
4) SLOPE 4" REINFORCED CONC. SLAB AT 1/4" PER FOOT BEYOND 2" RAISED FLOOR SLAB.
5) THE PROPOSED CONSTRUCTION FOR THE NEW REMOTE CONTROL STATION SHALL BE WITHIN THE LIMITS OF THE EXISTING PLATFORM AND SLAB.
6) SOLAR ARRAY AND BATTERY BOX TO BE REMOVED AND INSTALLED BY NC DEPARTMENT OF TRANSPORTATION. (REFER TO GENERAL NOTE 22, G-05.)

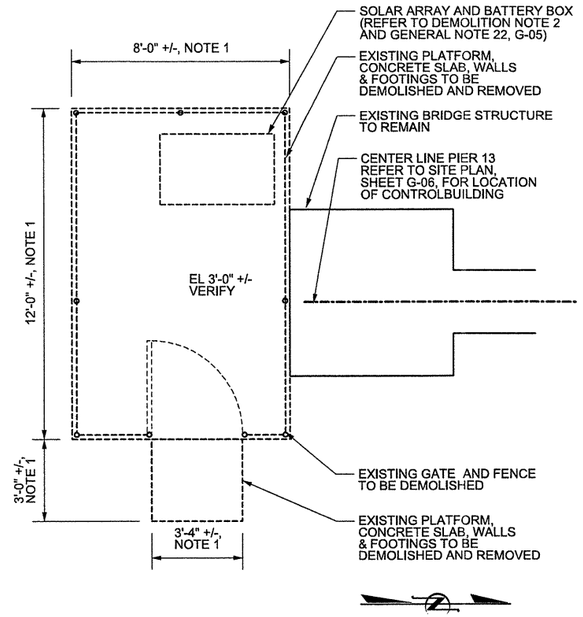
3 G-03 FLOOR PLAN

SCALE: 3/8"=1'-0"



6 G-03 EAST ELEVATION

SCALE: 3/8"=1'-0"



DEMOLITION WORK NOTES:

1) THE PROPOSED CONSTRUCTION FOR THE NEW REMOTE CONTROL STATION SHALL BE WITHIN THE LIMITS OF THE EXISTING PLATFORM AND SLAB.
2) SOLAR ARRAY AND BATTERY BOX TO BE REMOVED AND INSTALLED BY NC DEPARTMENT OF TRANSPORTATION. (REFER TO GENERAL NOTE 22, G-05.)

4 G-03 SOLAR ARRAY PLATFORM DEMOLITION PLAN

SCALE: 3/8"=1'-0"

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

REMOTE CONTROL STATION

STV ARCHITECTS, INC. REGISTERED ARCHITECTURAL CORPORATION 51843 NORTH CAROLINA CHARLOTTE, N.C.

HARRY D. SHERRILL JR. REGISTERED ARCHITECT 4337 NORTH CAROLINA CHARLOTTE, N.C.

MARCH 22, 2012

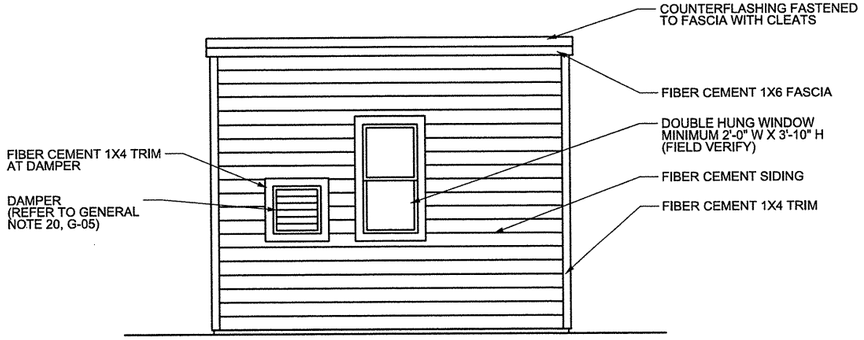
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	G-03
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : KLB DATE : 03-22-12
CHECKED BY : HDS DATE : 03-22-12

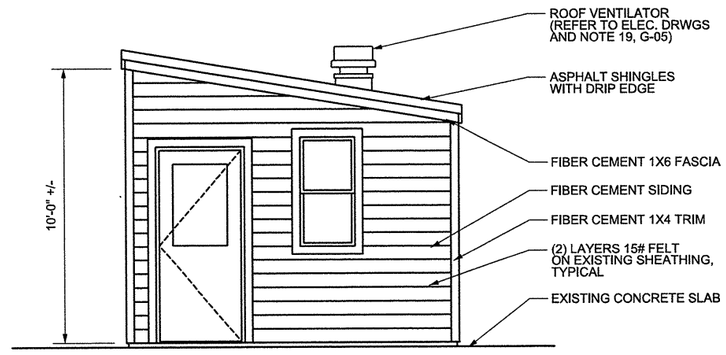
STV Architects, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License number – 51843

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

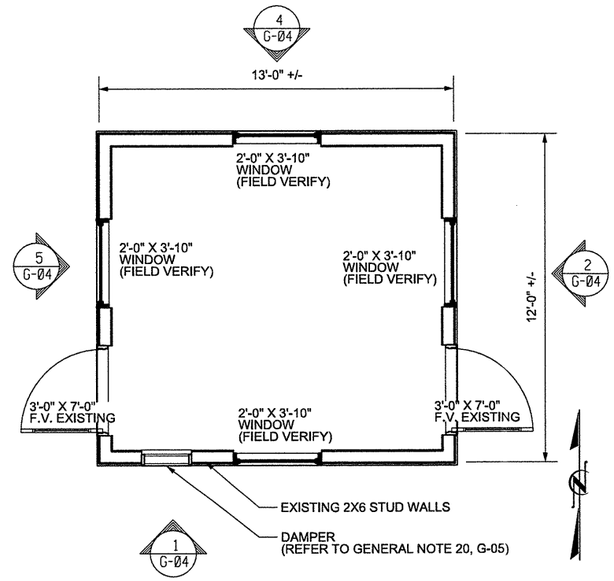
03/22/2012
I:\Common\Architecture TEMP\4545 Radio Island\Electrical Equipment Shelter.dgn
KBENFIELD



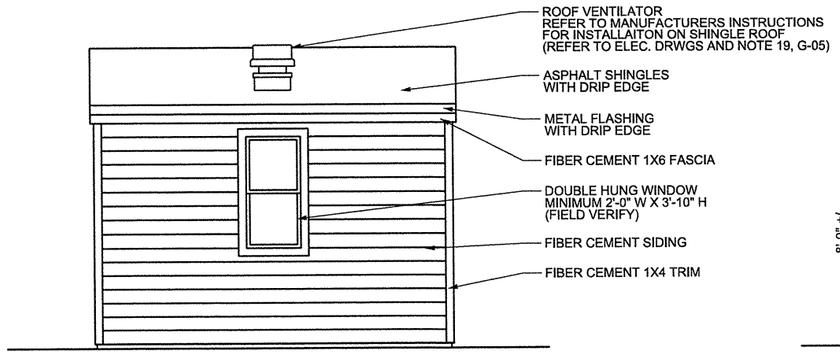
1 G-04 **SOUTH ELEVATION**
SCALE: 3/8"=1'-0"



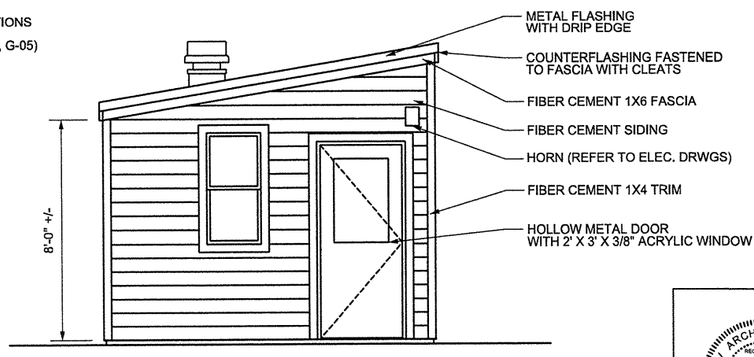
2 G-04 **EAST ELEVATION**
SCALE: 3/8"=1'-0"



3 G-04 **FLOOR PLAN**
SCALE: 3/8"=1'-0"



4 G-04 **NORTH ELEVATION**
SCALE: 3/8"=1'-0"



5 G-04 **WEST ELEVATION**
SCALE: 3/8"=1'-0"

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONTROL BUILDING

STV ARCHITECTS, INC. REGISTERED ARCHITECTURAL CORPORATION 51843 NORTH CAROLINA CHARLOTTE, N.C.

HARRY D. SHERRILL JR. REGISTERED ARCHITECT 4337 NORTH CAROLINA CHARLOTTE, N.C. MARCH 29, 2012

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		G-04
1			3				TOTAL SHEETS
2			4				76

DRAWN BY : KLB DATE : 03-20-12
CHECKED BY : HDS DATE : 03-20-12

STV Architects, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License number – 51843

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

03/20/2012
I:\Common\Architecture TEMP\4545 Radio Island\Electrical Equipment Shelter.dgn
KBENFIELD

GENERAL NOTES

1. THE GENERAL CONTRACTOR SHALL PROVIDE A SET OF SUBMITTAL DRAWINGS FOR THE REMOTE CONTROL STATION AND WOOD DECK. THESE SUBMITTALS SHALL BE SIGNED AND SEALED BY A NORTH CAROLINA REGISTERED ENGINEER. THIS SET OF SUBMITTAL DRAWINGS MUST MEET THE REQUIREMENTS OF THE NORTH CAROLINA STATE BUILDING CODE (NCSBC) AND APPENDIX B OF THE 2012 EDITION OF THE CODE. THE LOCATION OF EXISTING SUBSURFACE UTILITIES AND EXISTING CONCRETE FOOTINGS SHALL BE DETERMINED AND LOCATED ON THE SUBMITTAL DRAWINGS. DESIGN OF REMOTE CONTROL STATION SHALL NOT CONFLICT WITH LOCATION OF THE EXISTING SUBSURFACE UTILITIES CONDUIT AND CONCRETE FOOTINGS. ACCESS TO THE ELEVATED REMOTE CONTROL STATION IS NOT REQUIRED TO BE ACCESSIBLE PER THE NCSBC SECTION 1103.2.7 AND 1103.2.9. ONLY ABLE BODIED PERSONNEL REQUIRE ACCESS TO THE ELECTRICAL EQUIPMENT.

2. THE EXISTING CONTROL BUILDING AND THE NEW REMOTE CONTROL STATION PLANS SHOW THE MINIMUM SIZES (FLOOR PLAN: LENGTH, WIDTH AND HEIGHT; WINDOW SIZES, DOOR SIZES, BUILDING HEIGHT AND ROOF SLOPES). THE GENERAL CONTRACTOR SHALL VERIFY THE SIZE OF THE EXISTING FRAMED DOOR AND WINDOW OPENINGS IN THE CONTROL BUILDING PRIOR TO ORDERING THESE WINDOWS AND DOORS. THE GENERAL CONTRACTOR MAY PROPOSE AN ALTERNATE DESIGN FOR REMOTE CONTROL STATION MEETING THE MINIMUM CRITERIA AS LISTED IN THE GENERAL NOTES. THE OWNER SHALL DETERMINE ACCEPTABILITY OF PRODUCTS OR ACCEPTABLE METHODS.

3. FORMAL REQUEST FOR SUBSTITUTION OF PRODUCTS AND METHODS IN PLACE OF THOSE SPECIFIED WILL BE CONSIDERED, BUT ONLY IF THOSE REQUESTS HAVE BEEN SUBMITTED WITHIN 30 DAYS AFTER EFFECTIVE DATE OF ADMINISTRATIVE NOTICE TO PROCEED. ACCEPTANCE OF SUBSTITUTE PRODUCTS OR METHODS WILL BE ONLY FOR CHARACTERISTICS AND USE NAMED IN ACCEPTANCE, AND SHALL NOT BE INTERPRETED AS A MODIFICATION OF THE SPECIFICATIONS OR PROJECT DRAWING REQUIREMENTS. IF USE OF A SUBSTITUTE PRODUCT AND METHOD INVOLVES REDESIGN OF OTHER PARTS OF THE WORK, THE COST AND TIME REQUIRED TO EFFECT THAT REDESIGN WILL BE CHARGED TO THE CONTRACTOR OR THE REDESIGN SHALL BE ACCOMPLISHED BY CONTRACTOR, AS DETERMINED BY THE OWNER.

4. THE EXISTING CONCRETE SLAB, MASONRY WALLS, CONCRETE FOOTINGS AND CHAIN LINK FENCE OF THE 8' X 12' (APPROXIMATE SIZE) EXISTING PLATFORM NEAR BRIDGE PIER #13 IS TO BE DEMOLISHED AND REMOVED. THIS IS THE LOCATION OF THE NEW REMOTE CONTROL STATION. COMPACT ANY DISTURBED SOIL BELOW THE NEW CONCRETE FOOTINGS.

5. THE EXISTING WOOD TRIM, SIDING, WATER BARRIER OVER WALL SHEATHING OR OVER ROOF DECK, WINDOWS, WINDOW TRIM, DOORS, DOOR TRIM, THRESHOLDS, AND METAL ROOF OF THE CONTROL BUILDING SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH COUNTY REGULATIONS.

6. CONTROL BUILDING AND REMOTE CONTROL STATION DOOR HARDWARE TO BE AS FOLLOWS FOR EACH DOOR:

QTY	DESCRIPT.	MODEL NUMBER	FINISH	MFG
3 EA	HINGES	5BB1 4.5 X 4.5	652	IVES
1 EA	LOCKSET	CK4257	630	CORBIN
1 EA	DOOR SEAL	5050C X HEAD AND JAMBS	628	NGP*
1 EA	THRESHOLD	883N 5 X OPG WIDTH	628	NGP*
1EA	DOOR SHOE	101EVDKB	GRY	NGP*
3 EA	SILENCERS	SR 64	GRY	IVES

* NGP (NATIONAL GUARD PRODUCTS, OR APPROVED EQUAL)
KEYS TO MATCH PORT MASTER KEY

7. REMOTE CONTROL STATION'S CONCRETE FLOOR SLAB TO BE BROOM FINISHED WITH A LIQUID SEALER APPLIED.

8. EXPOSED FACE OF THE REMOTE CONTROL STATION 8" REINFORCED CMU FOUNDATION WALLS SHALL BE PRIMED WITH BLOCK FILLER AND PAINTED WITH TWO COATS OF EXTERIOR PAINT. COLOR SELECTION TO BE DETERMINED DURING SUBMITTAL.

9. EXTERIOR WALLS OF THE REMOTE CONTROL STATION SHALL BE WOOD FRAMED CONSTRUCTION DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE NORTH CAROLINA STATE BUILDING CODE (NCSBC) FOR 130 MPH WIND AND IN ACCORDANCE WITH AMERICAN FOREST AND PAPER ASSOCIATION (AF&PA) WOOD FRAME CONSTRUCTION MANUAL (WFCM) OR OTHER CODE-APPROVED STANDARDS. COMPONENTS OF EXTERIOR WALLS SHALL BE FASTENED IN ACCORDANCE WITH CODE AND MANUFACTURER'S DESIGN CRITERIA. MINIMUM 2X4 STUD GRADE SOUTHERN PINE TO BE A SPACED 16" O.C. SILL PLATE TO BE CCA 0.40 (LBS/CU.FT.) PRESSURE TREATED SOUTHERN YELLOW PINE WITH GALVANIZED ANCHOR BOLTS AS INDICATED ON PLANS.

10. ALUMINUM LADDERS TO BE OSHA COMPLIANT (1910.27). MINIMUM 24" WIDE BETWEEN VERTICAL RAILS, MAXIMUM SPACING BETWEEN RUNGS 12" ON CENTER.

11. SHEATHING FOR THE REMOTE CONTROL STATION SHALL BE ORIENTED STRAND BOARD (OSB). SHEATHING TO BE MINIMUM 15/32" THICK SECURED WITH GALVANIZED 8D COMMON NAILS WITH SMOOTH OR RING SHANKS THAT COMPLY WITH ASTM F11667, STANDARD SPECIFICATION FOR DRIVEN FASTENERS: NAILS, SPIKES, AND STAPLES. NAILS SHALL BE INSTALLED AT 6" ON CENTER AT SUPPORTED PANEL EDGES AND OVER INTERMEDIATE PANEL SUPPORTS. INSTALL TWO LAYERS OF 15# ASPHALT FELT UNDERLAYMENT OVER THE OSB SHEATHING.

12. INSPECT AND REPLACE STRUCTURALLY DAMAGED AND OR ROTTED 2 X 6 WOOD STUDS IN THE EXTERIOR WALLS OF THE CONTROL BUILDING. REPLACE STUD FROM FLOOR TO 3' ABOVE DAMAGE.

13. INSTALL TWO LAYERS OF 15# ASPHALT FELT UNDERLAYMENT OVER THE EXISTING SHEATHING ON THE CONTROL BUILDING STATION AND NEW SHEATHING OF THE REMOTE CONTROL STATION. SIDING TO BE BEVELED FIBER CEMENT LAP SIDING WITH 30-YEAR LIMITED, NON-PRORATED WARRANTY. SIDING OVERLAP TO BE MINIMUM 1 ¼" FOR FACE AND BLIND NAILING. SIDING NAILS TO BE GALVANIZED (0.09" SHANK X 0.221" HD X 2" LONG, MINIMUM).

14. INSTALL NEW SQUARE EDGED ¾" BCX TREATED PLYWOOD TO THE INTERIOR FACE OF THE EXISTING 2 X 6 WOOD STUD WALLS OF THE CONTROL BUILDING. INSTALL PLYWOOD TO COVER THE EXISTING STUD WALLS STARTING AT 6" ABOVE THE CONCRETE SLAB AND EXTENDING UP TO ROOF JOIST. INSTALL THE PLYWOOD USING DECK MATE #7 X 1 5/8" COARSE POLYMER-PLATED GALVANIZED STEEL FLAT-HEAD PHILLIPS WOOD SCREWS (OR APPROVED EQUAL) RATED FOR ACQ (ALKALINE COPPER QUATERNARY) TREATED LUMBER OR GALVANIZED SCREWS MEETING ASTM-A153 AND ASTM-A653 (COATING A G-185 DESIGNATION). INSTALL SCREWS AT 16" ON CENTER.

15. ALL ENTRY DOORS TO BE 3'-0" WIDE, 16 GAUGE GALVANIZED STEEL DOOR, 747 SERIES BY CURRIES (ASSA ABLOY), (OR APPROVED EQUAL) WITH 3/8" ACRYLIC GLAZING IN A 2'-0" WIDE X 3'-0" HIGH WINDOW. HOLLOW METAL DOOR FRAME TO BE 14 GAUGE GALVANIZED DOOR FRAME. DOOR THRESHOLD TO BE ALUMINUM SET IN SEALANT. PAINT DOOR AND FRAME WITH TWO COATS OF PAINT. COLOR SELECTION TO BE DETERMINED DURING SUBMITTAL FROM MANUFACTURER'S STANDARD COLORS.

16. ALL WOOD DECK MEMBERS TO BE A MINIMUM PRESSURE TREATED WOOD, CCA 0.25 (LBS/CU. FT). 4 X 4 DECK POSTS ARE TO BE PRESSURE TREATED WOOD, CCA 0.60 (LBS./CU. FT.). USE WOOD SCREWS MEETING RTE3D ACQ OR REQUIREMENTS OF GALVANIZED SCREWS MEETING ASTM-A153 AND ASTM-A653 (COATING A G-185 DESIGNATION).

17. WINDOWS TO BE PELLA ARCHITECT SERIES (OR APPROVED EQUAL), WHITE ALUMINUM CLAD, SINGLE HUNG WITH IMPACT-RESISTANT GLAZING DESIGNED FOR 130 MPH WIND LOADS TO MEET THE REQUIREMENTS OF AAMA/ WDNA/ CSA 101/ I.S.2/ A440-11. MINIMUM WINDOW SIZE TO BE 2' X 3'. VERIFY ACTUAL WINDOW SIZE WITH EXISTING FRAMED OPENINGS.

18. FIBERGLASS SHINGLES, OWENS CORNING, DURATION PREMIUM SERIES, (OR APPROVED EQUAL) MEETS ASTM D 7178, CLASS H, OVER TWO LAYERS OF 15# ASPHALT FELT UNDERLAYMENT. COLOR TO BE SELECTED DURING THE SUBMITTAL OF SHOP DRAWINGS. ROOFING NAILS TO BE GALVANIZED 1 ¼" LENGTH. NAILS TO BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATION FOR 130 MPH WIND LOADS. COLOR SELECTION TO BE DETERMINED DURING SUBMITTAL FROM MANUFACTURER'S STANDARD COLORS. INSTALL 26 GA. GALVANIZED DRIP EDGE (T-STYLE 3" X 2 ½", COLOR WHITE).

19. FURNISH AND INSTALL ROOF MOUNTED POWERED ATTIC VENTILATORS ON THE EXISTING CONTROL BUILDING AND THE NEW REMOTE CONTROL STATION ROOFS. POWER VENTILATOR 1,200 CFM- 120VAC MINIMUM WITH HUMISTAT/ THERMOSTAT CONTROLLER. INSTALL ROOF FLASHING PER THE MANUFACTURES RECOMMENDATIONS. ROOF VENTILATOR FINISH TO BE ALUMINUM.

20. FURNISH AND INSTALL A SPRING LOADED DAMPER IN THE EXISTING CONTROL BUILDING AND THE NEW REMOTE CONTROL STATION WALLS AS PER THE FLOOR PLANS. THE DAMPER IS TO BE NORMALLY CLOSED AND OPEN WHEN THE POWER VENTILATION IS OPERATING TO ALLOW FOR VENTILATION. DAMPER SIZE IS A MINIMUM OF 18" X 18" FOR THE POWER VENTILATOR INSTALLED.

21. PAINT ALL EXTERIOR SIDING, EXTERIOR TRIM, FASCIA, SOFFITS, DOORS, CMU, DOOR FRAMES IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS (MINIMUM, TWO COATS OF PAINT).

22. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF HIS INTENTION TO BEGIN DEMOLITION OF THE EXISTING SOLAR ARRAY PLATFORM 30 DAYS PRIOR TO BEGINNING THE WORK. THIS NOTICE SHALL FACILITATE THE REMOVAL OF THE EXISTING SOLAR ARRAY AND BATTERY BOX BY THE NC DEPARTMENT OF TRANSPORTATION (NCDOT). THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY POWER TO THE EXISTING BRIDGE NAVIGATION LIGHTING WHILE THE SOLAR ARRAY AND BATTERY BOX ARE DISCONNECTED. UPON COMPLETION OF THE NEW REMOTE CONTROL STATION CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER THAT NCDOT HAS 30 DAYS TO REINSTALL, CONNECT AND TEST THE SOLAR ARRAY AND BATTERY BOX. UPON COMPLETION OF THE SOLAR ARRAY AND BATTERY BOX TESTING, THE CONTRACTOR SHALL REMOVE THE TEMPORARY POWER.

23. PROVIDE SHOP DRAWINGS FOR THE FOLLOWING ITEMS:
SIGNED AND SEALED REMOTE CONTROL STATION, DAMPERS, DOORS, DOOR HARDWARE, WINDOWS, SIDING, TRIM, SOFFIT, NAILS, SCREWS, ROOF SHINGLES, PAINT, LIQUID CONCRETE SEALER, SEALANTS, AND FLASHINGS.

24. THE LISTING OF SPECIFIC MANUFACTURERS IS TO ESTABLISH A MINIMUM LEVEL OF QUALITY.

25. STORAGE AND HANDLING OF CONSTRUCTION MATERIAL SHALL BE DONE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

26. FOR REMOTE CONTROL STATION HOUSE, SEE SPECIAL PROVISIONS.

27. REPAIR AND CONSTRUCTION OF THE CONTROL BUILDING SHALL BE CONSIDERED INCIDENTAL TO THE BRIDGE ELECTRICAL WORK. THIS INCLUDES BUT IS NOT LIMITED TO SIDING, WINDOWS, DOORS, DAMPER, ROOF VENT, TIMBER, ROOFING MATERIALS, AND ALL EQUIPMENT, LABOR, HARDWARE AND INCIDENTALS REQUIRED TO COMPLETE THE ACCEPTED CONTROL BUILDING AS SHOWN ON THE PLANS.

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STV ARCHITECTS, INC. REGISTERED ARCHITECTURAL CORPORATION 51843 NORTH CAROLINA CHARLOTTE, N.C.

HARRY D. SHERRILL, JR. REGISTERED ARCHITECT 4337 NORTH CAROLINA CHARLOTTE, N.C.

JUNE 11, 2012

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL NOTES FOR REMOTE CONTROL STATION & CONTROL BUILDING

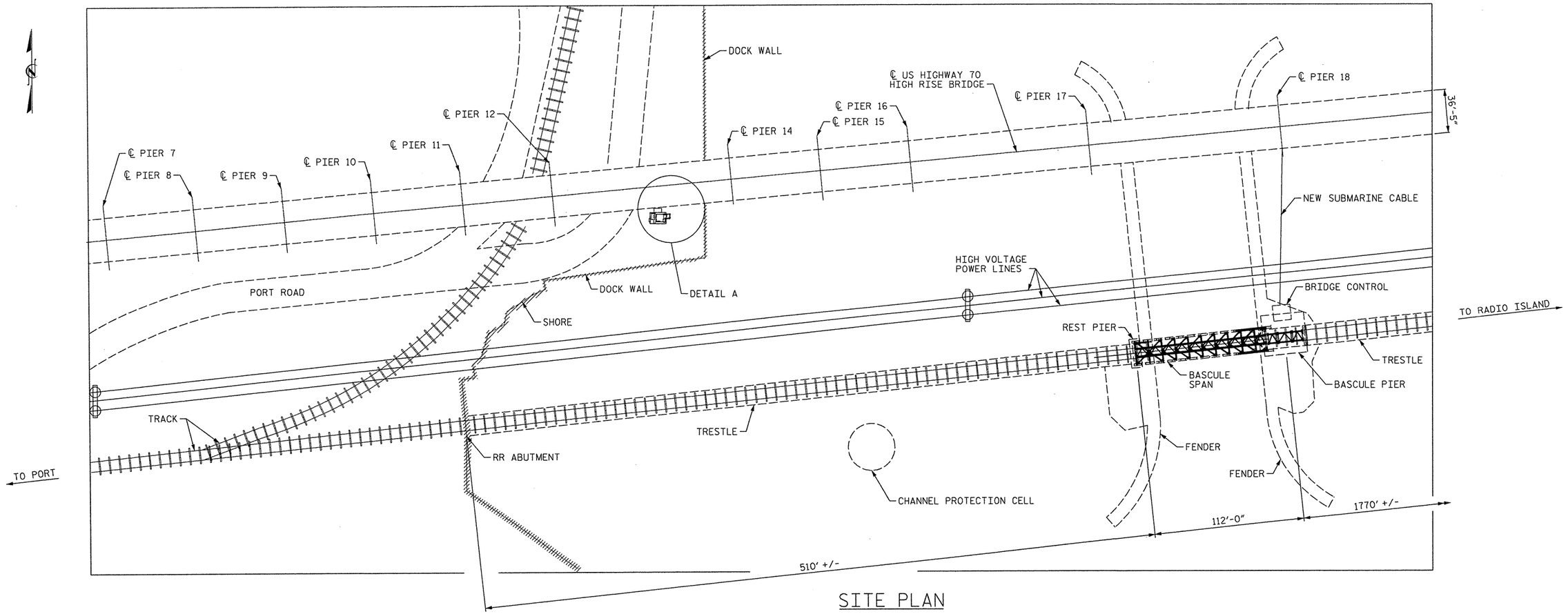
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	G-05
1	STV	6/12	3			TOTAL SHEETS
2			4			76

DRAWN BY : KLB DATE : 03-22-12
CHECKED BY : HDS DATE : 03-22-12

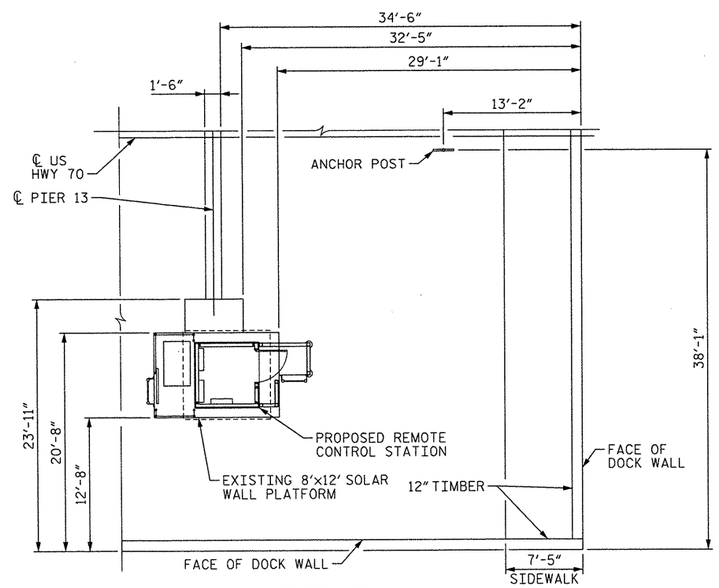
STV Architects, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License number – 51843

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

03/22/2012
I:\Common\Architecture TEMP\4545 Radio Island\Electrical Equipment Shelter.dgn
KBENFIELD



SITE PLAN



DETAIL A

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SITE PLAN

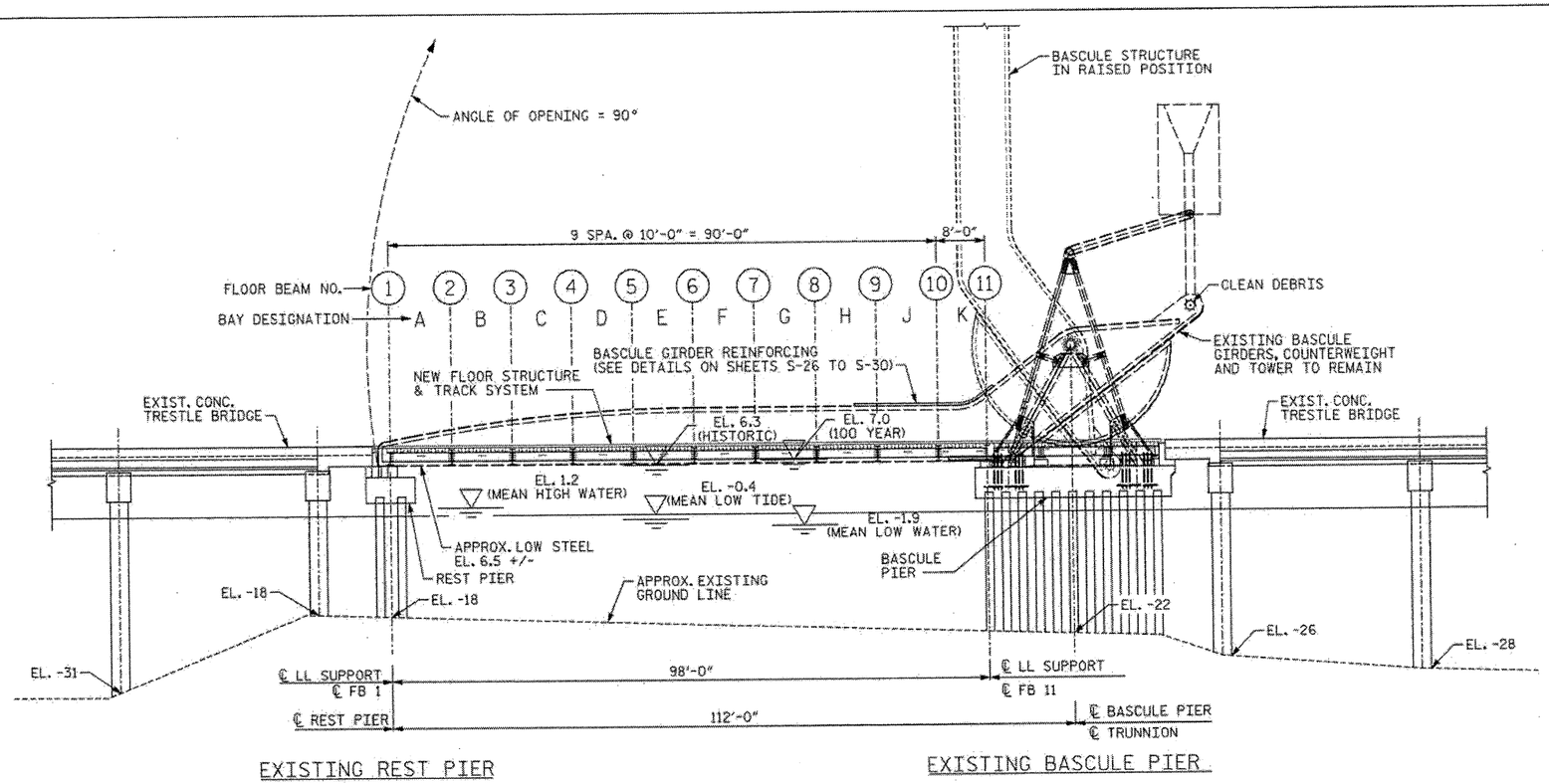
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C. HARRISON

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	G-06
1			3			TOTAL SHEETS
2			4			76

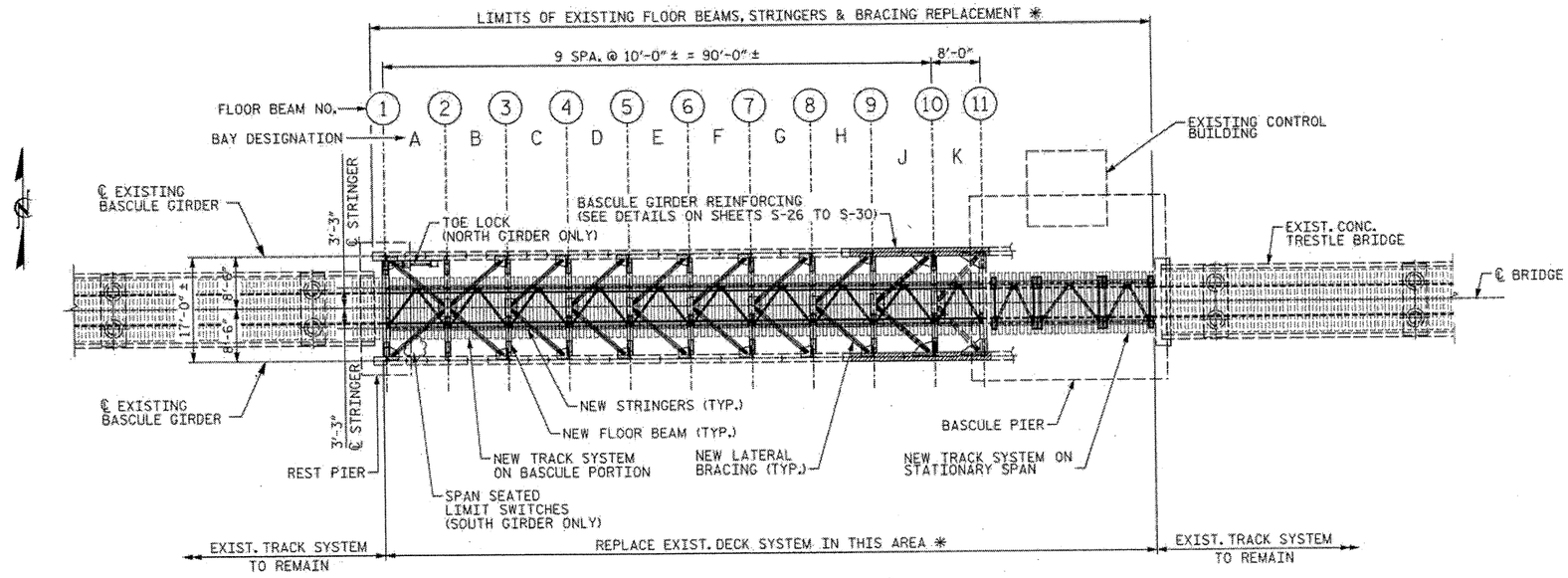
DRAWN BY : MAC DATE : 1-12
CHECKED BY : MCH DATE : 1-12

4/5/2012 3:46:57 PM N:\proj\dev\NCDOT\Radio Island\CAD\GENERAL\G-06 ST PLN.dgn



SECTION ALONG ℄ BRIDGE & TRACK

(ELEVATIONS SHOWN FROM 2009 HNTB SURVEY AND REPORT)



PLAN

* ALL FLOOR SYSTEM MEMBERS TO BE REPLACED EXCEPT FOR FB11 SEE SHEET S-16 FOR FB 11 REPAIRS

GENERAL NOTES:

DESIGN LIVE LOAD = COOPER E-60 (WITHOUT FATIGUE) @ MAXIMUM TRAVEL SPEED OF 10 MPH.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET G-01.

REMOVAL OF THE EXISTING BRIDGE MEMBERS SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE COMPONENTS AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE SUPERSTRUCTURE DETAILS INDICATED ON THE PLANS ARE BASED ON THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "CLEANING AND PAINTING OF EXISTING STRUCTURE".

THE CONTRACTOR SHALL ENSURE THAT ALL MATERIAL REQUIRED FOR ANY STAGE OF CONSTRUCTION IS ON-HAND PRIOR TO CLOSING THE BRIDGE TO RAIL OR NAVIGATION TRAFFIC TO BEGIN WORKING ON THAT STAGE.

SEE NOTE 8 ON SHEET S-03. CONTRACTOR SHALL HAVE BOTH THE NARROW FILL PLATES (FPX) AND WIDE FILL PLATES (FPXA) ON HAND FOR EACH FLOOR BEAM TO BE REPLACED DURING A GIVEN STAGE OF WORK PRIOR TO CLOSING THE BRIDGE TO RAIL OR NAVIGATION TRAFFIC FOR THAT STAGE OF WORK.

CONTRACTOR SHALL NOTE THAT THERE IS DETERIORATION WITHIN THE BASCULE SPAN AND TOWER THAT IS NOT BEING REPAIRED. CONTRACTOR SHALL NOT LEAVE OR PAINT OVER FEATHERED EDGES. FEATHERED EDGES SHALL BE GROUND TO A 1/8" INCH MINIMUM RADIUS, PRIMED AND PAINTED. GRINDING EFFORTS ARE CONSIDERED INCIDENTAL TO THE PAINTING ITEM AND NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS EFFORT. CONTRACTOR SHALL BE HELD TO THE PAINTING PERFORMANCE REQUIREMENTS STATED IN THE SPECIAL PROVISIONS.

THE CONTRACTOR IS REQUIRED TO SHOT BLAST CERTAIN AREAS OF THE SPAN. THE CONTRACTOR'S ATTENTION SHALL BE TO MONITOR THE BLAST OPERATIONS TO PREVENT FURTHER DAMAGE TO THE STEEL DUE TO THE BLASTING OPERATIONS AND ADJACENT WORK. THE CONTRACTOR SHALL NOTIFY THE ENGINEER ABOUT ANY AREA WHERE GREATER THAN 50 PERCENT SECTION LOSS EXISTS WITHIN A 3 FOOT SQUARE AREA. THE CONTRACTOR SHALL ALSO PREPARE A PROPOSED REPAIR APPROACH, AN ESTIMATE OF TIME REQUIRED TO PERFORM THE PROPOSED REPAIR AND A COST TO PERFORM THE REPAIRS. THE ENGINEER WILL SOLELY DETERMINE THE VALIDITY OF ANY PROPOSED REPAIRS. THE CONTRACTOR WILL NOT BE PAID FOR ANY REPAIRS NOT SPECIFICALLY APPROVED IN ADVANCE BY THE ENGINEER. ALL OTHER COSTS ASSOCIATED WITH THIS WORK WILL NOT BE PAID FOR SEPARATELY. THESE COSTS WILL BE INCIDENTAL TO THE COST OF PAINTING.

CONTRACTOR SHALL PROTECT ALL MACHINERY, GEARING AND ELECTRICAL COMPONENTS FROM DAMAGE DUE TO SHOT BLASTING. DAMAGE CAUSED TO THE ABOVE ITEMS DUE TO SHOT BLASTING WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

CONTRACTOR SHALL NOTE THAT BRIDGE REPAIRS HAVE BEEN MADE THAT ARE NOT SHOWN ON THE EXISTING SHOP DRAWINGS. THESE PIECES SHALL BE INCLUDED IN THE BALANCE CALCULATIONS. THESE PIECES SHALL ALSO BE ACCOUNTED FOR AS PART OF THE WORK. NO ADDITIONAL PAYMENTS WILL BE MADE FOR ANY COST ASSOCIATED WITH THESE ITEMS.

SUBMARINE CABLE INSTALLATION SHALL BE PERFORMED BY JET CUTTING THE TRENCH. SEE SHEET E-16.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STRUCTURAL GENERAL PLAN AND ELEVATION

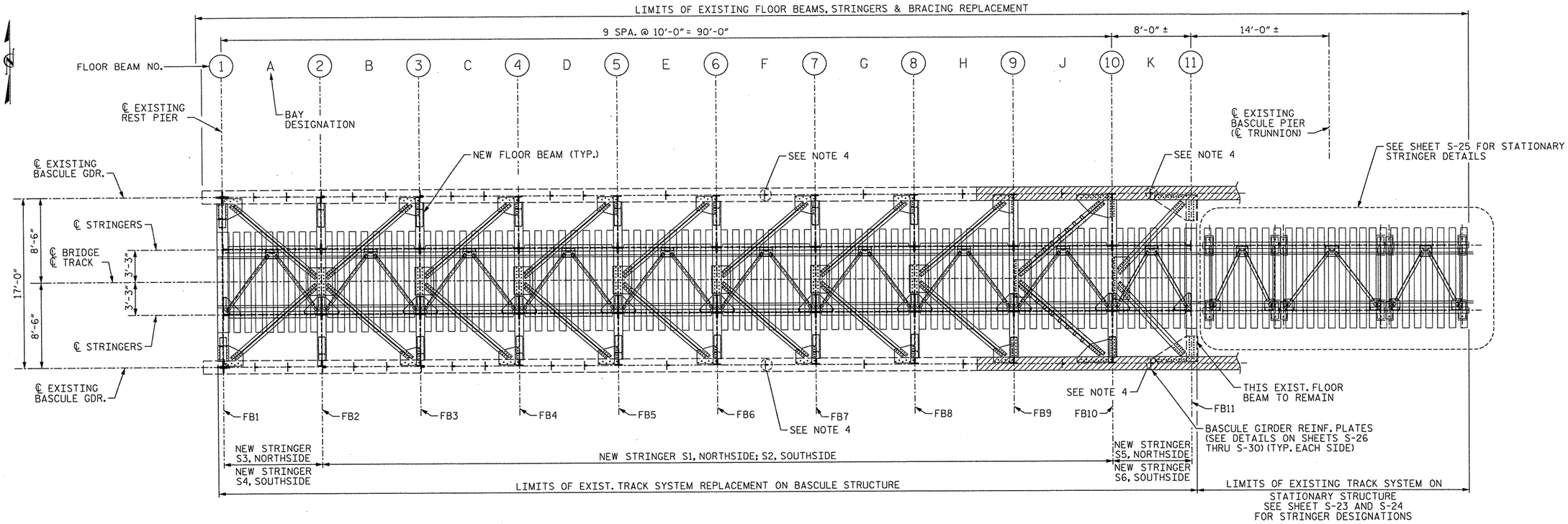
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

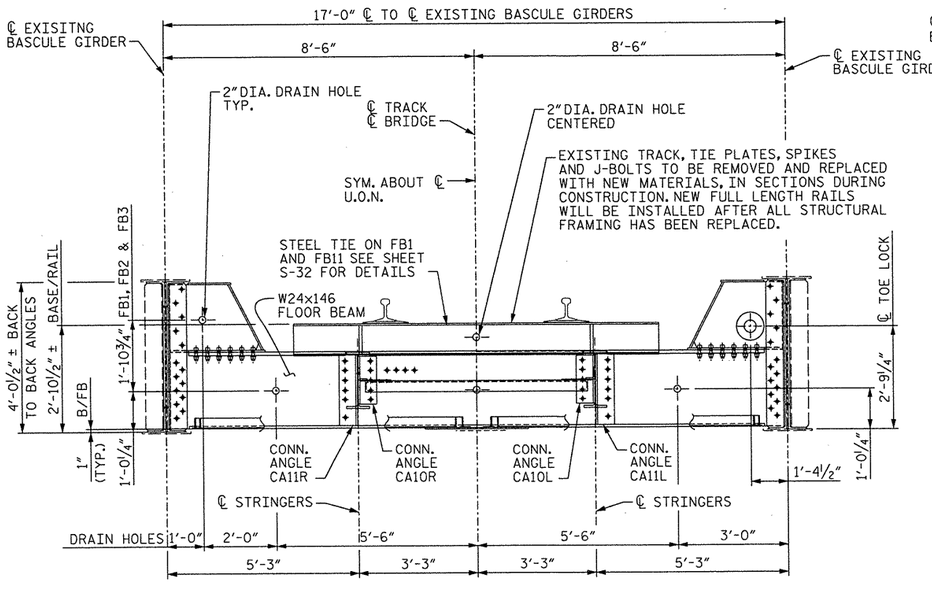
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-01
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

4/24/2012 10:33:34 AM I:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-01GPE.dgn

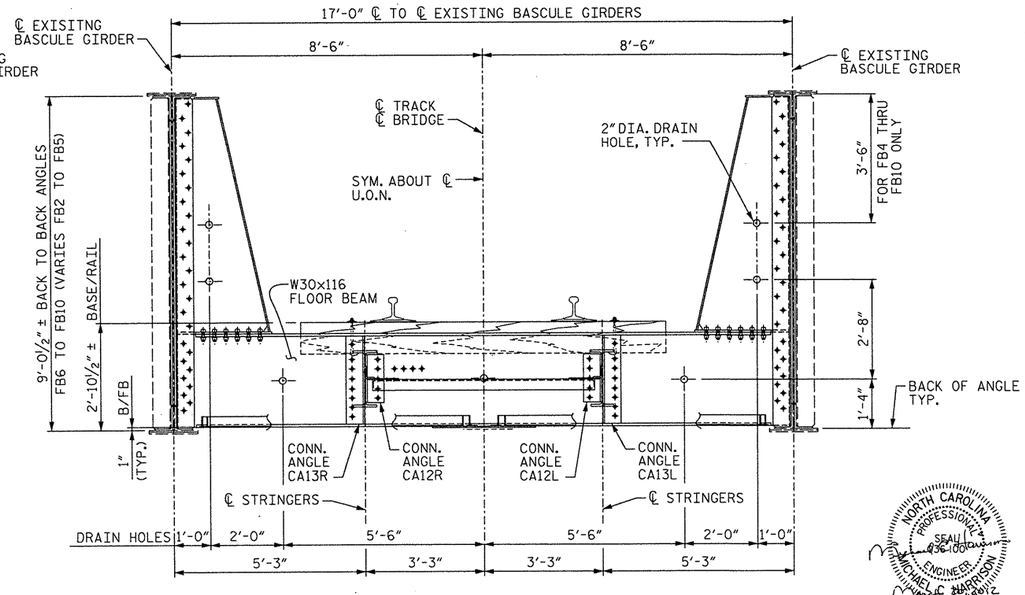


FRAMING PLAN



TYPICAL SECTION - PROPOSED FB1

(LOOKING WEST)



TYPICAL SECTION - PROPOSED FB2 TO FB10

(LOOKING WEST)

NOTE:

"CAXXL/R" REFERS TO EXISTING SHOP DRAWING PIECE MARKS.

NOTES:

1. SEE SHEET S-03 FOR GENERAL STEEL NOTES. SEE SHEET G-01 FOR GENERAL NOTES.
2. U.O.N. DENOTES UNLESS OTHERWISE NOTED.
3. FOR STRINGER DETAILS, SEE SHEET S-17 TO S-18.
4. CONTRACTOR SHALL REPAIR HEAVILY DETERIORATED STIFFENER ANGLES BY WELDING 4 1/2x3/8 BARS OVER THE HOLES IN THE OUTSTANDING LEGS OF THE ANGLES OR REPLACING THE STIFFENER ANGLES WITH THE ENGINEER'S APPROVAL.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FRAMING PLAN AND TYPICAL SECTIONS

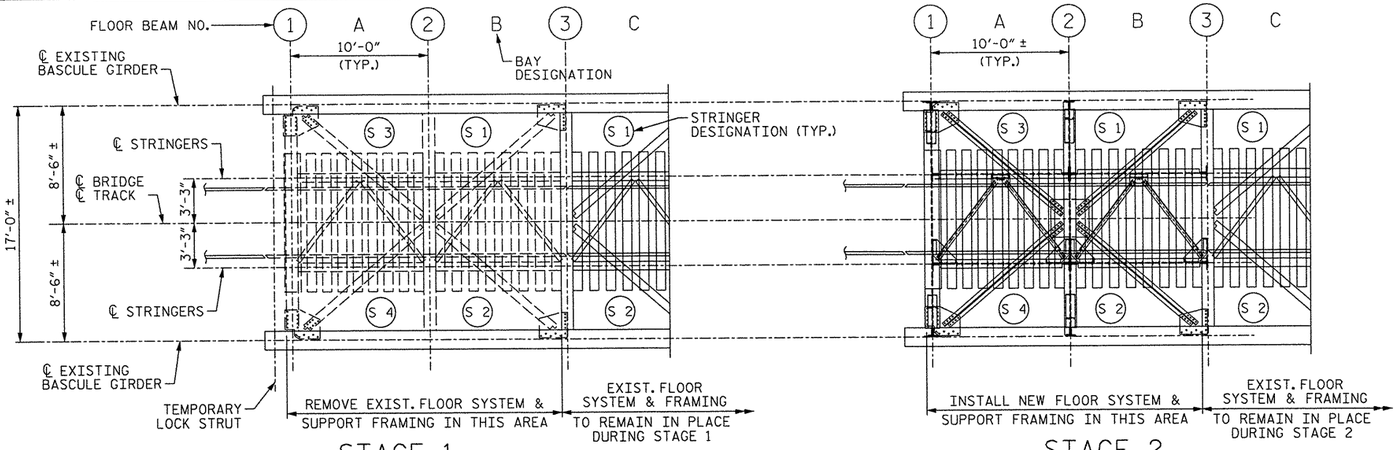
NORTH CAROLINA PROFESSIONAL SEAL 036-10[illegible] ENGINEER MICHELLE HARRISON

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-02
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:23:23 PM N:\project\NCDOT\Radio Island\CAD\STRUCTURAL\S-02 FRM PLN.dgn

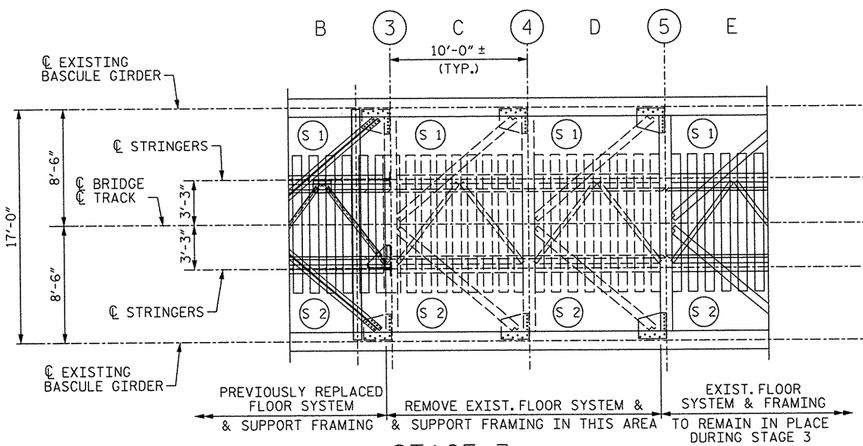


STAGE 1
REMOVE EXIST. FLOOR SYSTEM BAYS A & B

- TEMPORARILY LOCK THE EXISTING GIRDERS TO THE REST PIER.
- CUT THE EXISTING RAILS NEAR THE CENTERLINE OF EXISTING FLOOR BEAM FB3.
- DISCONNECT EXISTING RAILROAD TIES FROM STRUCTURE AND REMOVE BOTH RAILS (WITH TIES ATTACHED) AND STORE IN A CONVENIENT LOCATION FOR REINSTALLATION DURING STAGE 2.

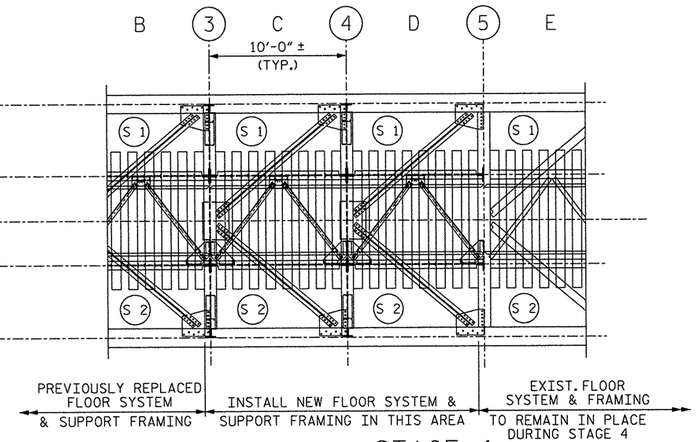
STAGE 2
INSTALL NEW FLOOR SYSTEM BAYS A & B

- ERECT NEW FLOOR BEAMS FB1 & FB2.
- INSTALL NEW BOTTOM LATERAL BRACING IN BAYS A & B. CONNECT TO NEW FLOOR BEAMS FB1 & FB2 AND EXISTING FLOOR BEAM FB3.
- INSTALL NEW STRINGERS AND UPPER LATERAL BRACING IN BAYS A & B. CONNECT TO NEW FLOOR BEAMS FB1 & FB2 AND EXISTING FLOOR BEAM FB3.
- REINSTALL ORIGINAL RAILS WITH TIES ATTACHED THAT WERE REMOVED DURING STAGE 1. (REPLACE ANY DAMAGED TIES)



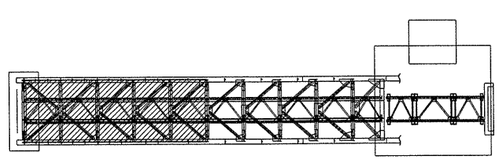
STAGE 3
REMOVE EXIST. FLOOR SYSTEM BAYS C & D

- TEMPORARILY SUPPORT ENDS OF NEW STRINGER AND LATERAL BRACING PREVIOUSLY INSTALLED DURING STAGE 2.
- CUT THE EXISTING RAILS NEAR THE CENTERLINE OF EXISTING FLOOR BEAM FB5.
- DISCONNECT EXISTING RAILROAD TIES FROM STRUCTURE AND REMOVE BOTH RAILS (WITH TIES ATTACHED) AND STORE IN A CONVENIENT LOCATION FOR REINSTALLATION DURING STAGE 4.



STAGE 4
REPLACE EXIST. FLOOR SYSTEM BAYS C & D

- ERECT NEW FLOOR BEAMS FB3 & FB4.
- INSTALL NEW BOTTOM LATERAL BRACING IN BAYS C & D. CONNECT TO NEW FLOOR BEAMS FB3 & FB4 AND EXISTING FLOOR BEAM FB5.
- INSTALL NEW STRINGERS AND UPPER LATERAL BRACING IN BAYS C & D. CONNECT TO NEW FLOOR BEAMS FB3 & FB4 AND EXISTING FLOOR BEAM FB5.
- REINSTALL ORIGINAL RAILS WITH TIES ATTACHED THAT WERE REMOVED DURING STAGE 3.



KEY PLAN

GENERAL STEEL NOTES:

1. ALL NEW STRUCTURAL STEEL SHALL CONFORM TO ASTM SPECIFICATION A709. GRADE 50 EXCEPT AS NOTED.
2. ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.
3. ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.
4. ALL DIMENSIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO FABRICATION OF STRUCTURAL STEEL IN ORDER TO FIT THE EXISTING STRUCTURE.
5. DIMENSIONS AND DETAILS OF THE EXISTING SUPERSTRUCTURE AS INDICATED ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

GENERAL CONSTRUCTION NOTES:

1. TEMPORARY LATERAL BRACING IS REQUIRED DURING CONSTRUCTION WHEN WIND SPEED IS ABOVE 25 MPH. SEE SHEET S-22 FOR DETAILS.
2. CONTRACTOR SHALL EXERCISE CAUTION WHEN REMOVING PAINT SO AS TO NOT DAMAGE THE EXISTING STRUCTURE.
3. A LOCK STRUT SHOULD BE PLACED AT THE TOE PRIOR TO THE REMOVAL OF THE FLOOR SYSTEM. CROSS STRUT SHALL BE A COMPACT WIDE FLANGE BEAM WITH SECTION MODULUS NOT LESS THAN 65.0 IN^3.
4. KEEP LATERAL BRACING BOLTS UNDERSIZED UNTIL ALL FLOOR SYSTEM IS INSTALLED. REAM THE HOLES AT ASSEMBLY.
5. WHEN A BAY IS DISASSEMBLED, THE CONTRACTOR SHALL SUPPORT THE FLOOR SYSTEM MEMBERS OF ADJACENT BAYS AND PROTECT THOSE MEMBERS. TEMPORARY CONNECTION SHOULD BE MADE WITH BLACK HIGH STRENGTH BOLTS AT THESE INTERFACES. INSTALL NEW HOT DIP GALVANIZED HIGH STRENGTH BOLTS ONLY AFTER ALL NEW COMPONENTS ARE ASSEMBLED INTO ANY GIVEN CONNECTION.
6. THE BEARING STIFFENER CONNECTOR ANGLES ON THE EXISTING FLOOR BEAMS AT STRINGER CONNECTION SHALL REMAIN IN PLACE WHEN THE STRINGERS IN THE PREVIOUS BAY ARE REMOVED.
7. REPEAT STAGE 3 AND 4 TO REPLACE BAYS E AND F; G AND H; J AND K. SEE NOTE 11 FOR BAYS J AND K.
8. BEFORE INSTALLING FLOOR BEAMS CONTRACTOR SHOULD SELECT EITHER FILL PLATE FPx OR FPxA TO BE USED, BASED ON GIRDER WEB DETERIORATION LEVEL. THE SAME FILL PLATES SHOULD BE USED ON BOTH ENDS OF EACH FLOOR BEAM. IT IS RECOMMENDED THAT THE FPxA FILL PLATES BE USED AT FB3, FB4, FB5, AND FB9. FPx FILL PLATES WILL BE USED AT OTHER LOCATIONS UNLESS THE FIELD ENGINEER FINDS THE SECTION LOSS IS GREATER THAN 20% FOR MORE THAN 8 INCHES OR EQUIVALENT. IN THAT CASE, FPxA SHALL BE USED. SURFACE DEFECTS IN EXCESS OF 1/16 INCH IN DEPTH SHALL BE FILLED WITH AN EPOXY CAULK JUST PRIOR TO THE PLACEMENT OF THE NEW FILL PLATE.
9. THE FLOOR BEAMS SHALL BE SWUNG IN WITH AT LEAST ONE END CONNECTION ANGLES DISASSEMBLED. THE FLOOR BEAMS SHALL KEEP LEVEL WHEN MOVED TO THE POSITION. CONTRACTOR SHALL GIVE SPECIAL PRECAUTION TO PREVENT THE NEW FLOOR BEAMS AND THE EXISTING BASCULE GIRDER FROM DAMAGE.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY INSTALLATION CLEARANCES AND ENSURE THAT THE PROPOSED FLOOR SYSTEM PANELS CAN BE INSTALLED. WHEN REVIEWING INSTALLATION CLEARANCES, IF INTERFERENCES ARE DISCOVERED, IT IS THE CONTRACTOR'S RESPONSIBILITY TO WORK WITH THE FABRICATOR TO MODIFY DETAILS IN SUCH A MANNER THAT DOES NOT COMPROMISE THE DESIGN CAPACITY OF THE MEMBERS. IF SUCH ADJUSTMENTS MUST BE MADE, THE CONTRACTOR SHALL SUBMIT PROPOSED REVISIONS TO THE ENGINEER FOR REVIEW.
11. FOR THE STAGE THAT REPLACES BAY J AND BAY K AND FLOOR BEAM FB 10, THIS WORK SHALL BE COMPLETED DURING ONE (1) CONTINUOUS NAVIGATION OUTAGE WITH THE BRIDGE SECURED TO THE REST PIER.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN FLOOR SYSTEM REPLACEMENT

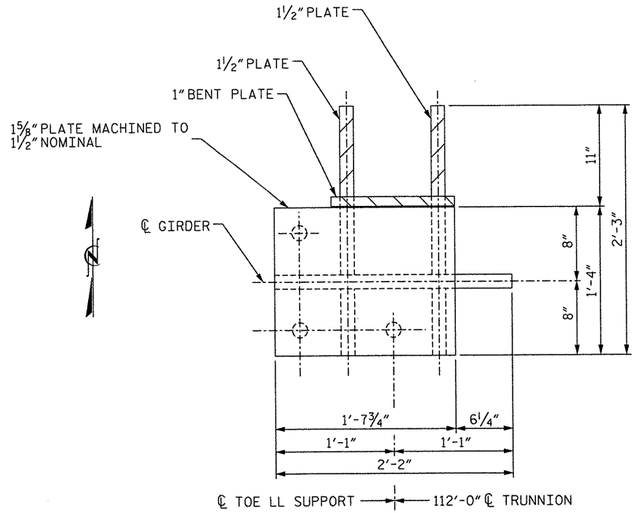
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON 2012

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-03
1			3			TOTAL SHEETS
2			4			76

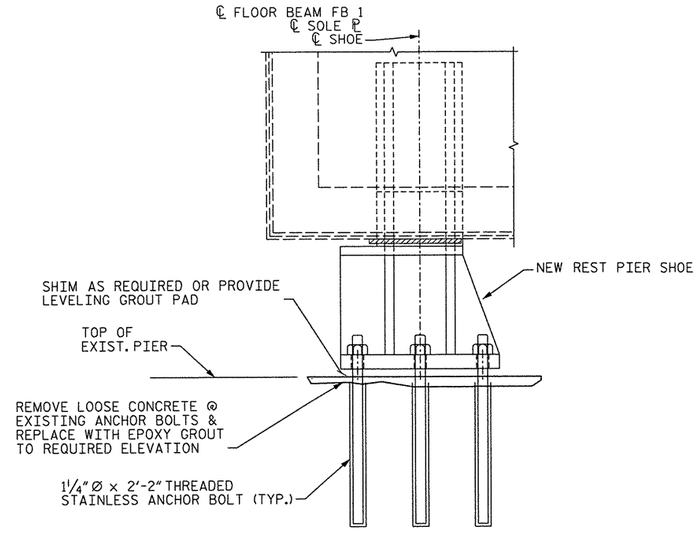
DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:23:47 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-03 FLR REPL.dgn



SECTION A-A

(BASE PLATE AND ANCHOR BOLTS NOT SHOWN FOR CLARITY)

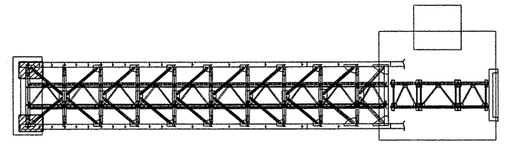


BASCULE GIRDER SHOE REPLACEMENT AT REST PIER

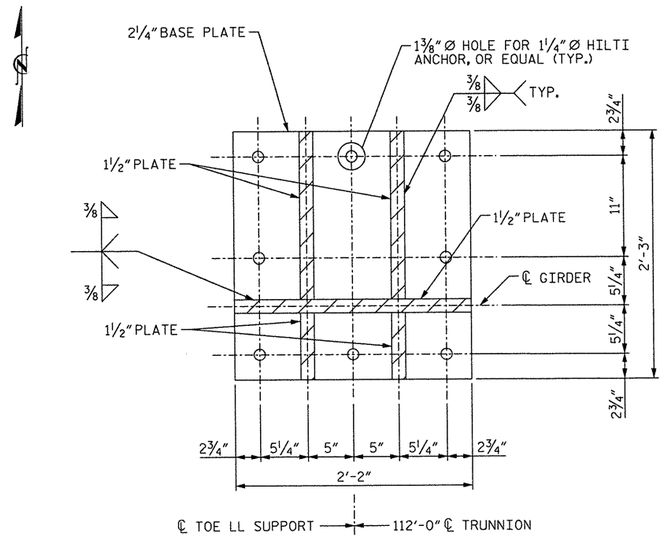
DETAIL SHOWN @ NORTH BASCULE GIRDER
OPPOSITE HAND @ SOUTH BASCULE GIRDER

NOTES:

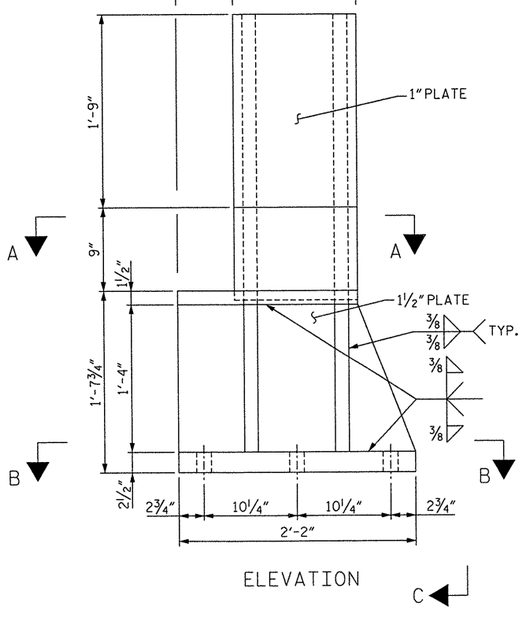
1. ADJUST LL SHOE TO MAKE CONTACT WITH BASCULE SPAN IN LOWERED POSITIONS, RAILS ALIGNED VERTICALLY WITHIN 1/16 INCH.
2. SHIMS MAY BE REQUIRED TO LEVEL NEW GIRDER SHOES. USE STAINLESS STEEL SHIMS FOR LEVELING. CONTRACTOR MAY ELECT TO USE A GROUT PAD IN LIEU OF SHIMS.
3. ANCHOR BOLT IS ASTM A193 GRADE B8M STAINLESS ROD, YIELD STRESS Fy = 45 ksi.
4. SHOE AT REST PIER SHALL BE CHANGED DURING RAIL OUTAGES. ONE SHOE REPLACED AT A TIME.
5. COST FOR INCIDENTAL WORK/REPAIR ON THE REST PIER TO INSTALL BEARINGS SHALL NOT BE CONSIDERED EXTRA WORK AND WILL NOT BE PAID FOR SEPERATELY.
6. EXISTING 1⅝" ANCHOR BOLTS SHALL BE CORED OUT. HOLES REFILLED WITH HIGH STRENGTH GROUT AND ALLOWED TO CURE PRIOR TO PLACING NEW HILTI HVA ANCHORS OR APPROVED EQUAL.



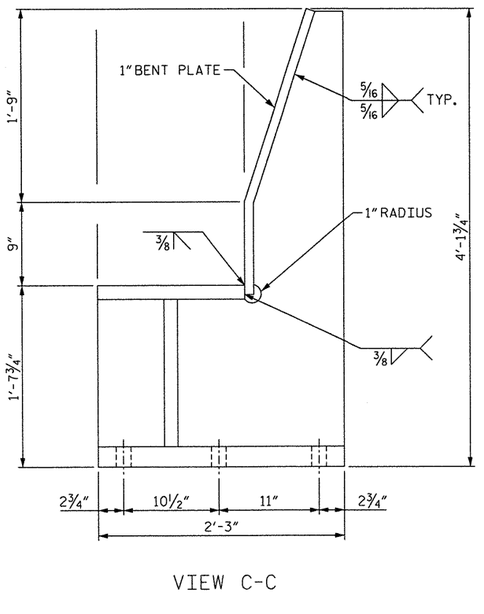
KEY PLAN



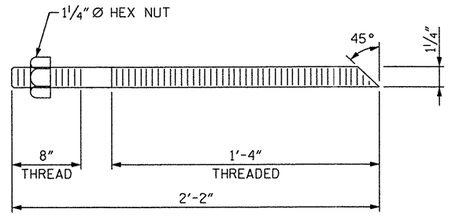
SECTION B-B



ELEVATION



VIEW C-C



ANCHOR BOLT DETAIL

(16 REQD.)

PROPOSED BASCULE GIRDER SHOE AT REST PIER

DETAIL SHOWN @ NORTH BASCULE GIRDER
OPPOSITE HAND @ SOUTH BASCULE GIRDER

NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C. HARRISON

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

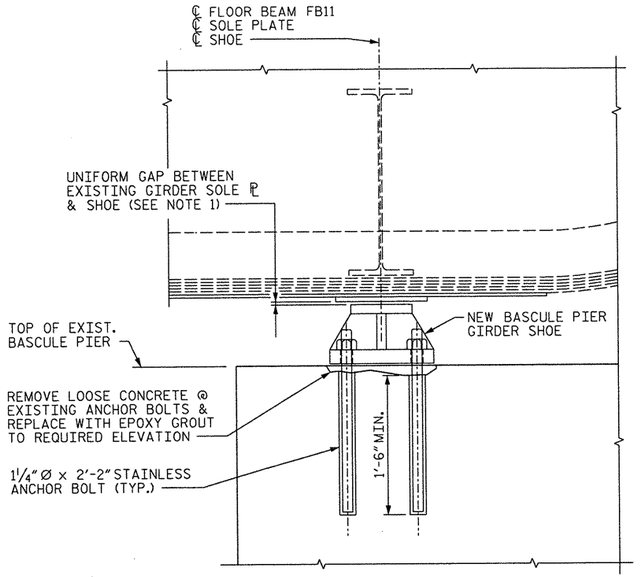
GIRDER REST PIER SHOE REPLACEMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-04
1			3			TOTAL SHEETS
2			4			76

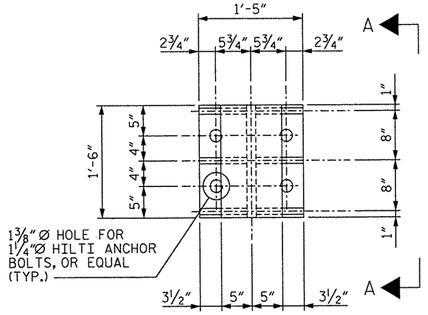
DRAWN BY : PWP DATE : 10-11
CHECKED BY : DAM DATE : 12-11

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

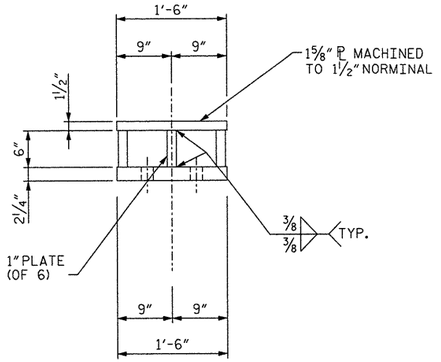
3/19/2012 3:24:18 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-04 SHOE REPL.dgn



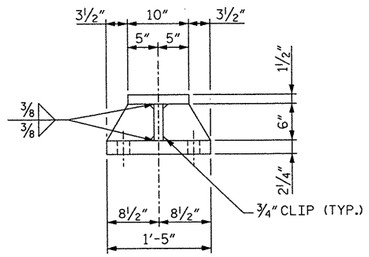
BASCULE GIRDER SHOE REPLACEMENT AT BASCULE PIER



PLAN VIEW



VIEW A-A

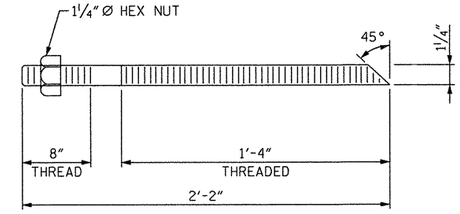


SIDE VIEW

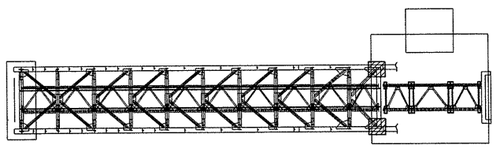
PROPOSED BASCULE GIRDER SHOE AT BASCULE PIER
(2 REQD.)

NOTES:

1. BEARING SHOE REPLACEMENT AT THE BASCULE PIER NEEDS TO BE COORDINATED WITH THE INSTALLATION OF THE NEW A-FRAME ANCHOR BOLTS.
2. SHIMS MAY BE REQUIRED TO LEVEL NEW GIRDER SHOES. USE STAINLESS STEEL SHIMS FOR LEVELING.
3. THE GAP BETWEEN SOLE ℄ & GIRDER SHOE @ BASCULE PIER SHOULD BE SET TO ¼" UNDER DEAD LOAD ONLY.
4. ANCHOR BOLT IS ASTM A193 GRADE B8M STAINLESS ROD, YIELD STRESS Fy = 45 ksi.



ANCHOR BOLT DETAIL
(8 REQD.)



KEY PLAN

NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON
March 29, 2012

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

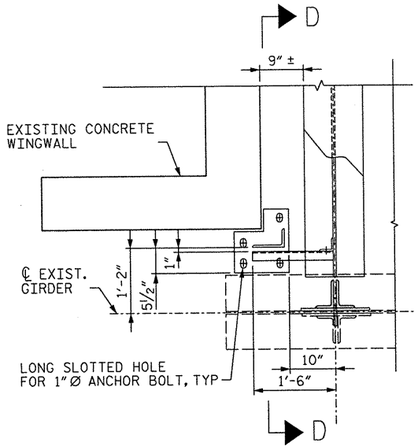
GIRDER BASCULE PIER SHOE REPLACEMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-05
1			3			TOTAL SHEETS
2			4			76

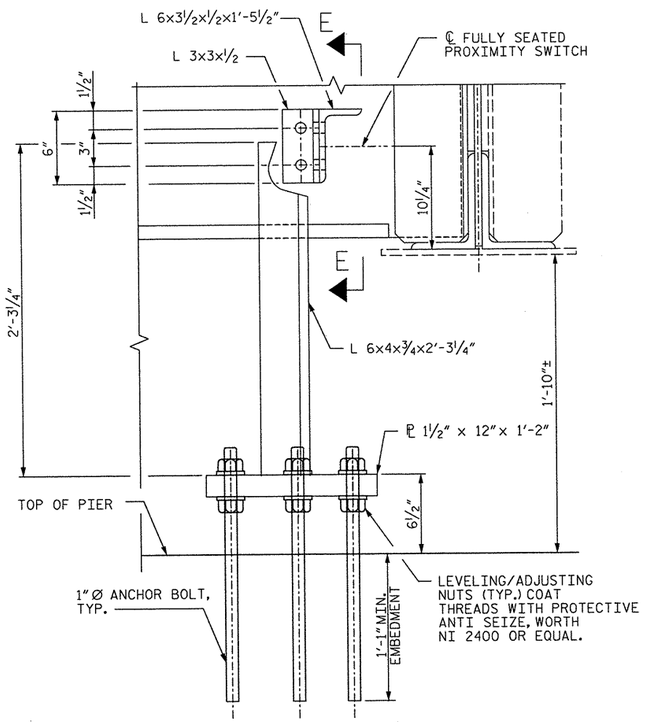
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : PWP DATE : 10-11
CHECKED BY : DAM DATE : 12-11

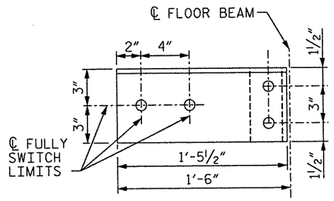
3/19/2012 3:24:45 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-05 SHOE REPL.dgn



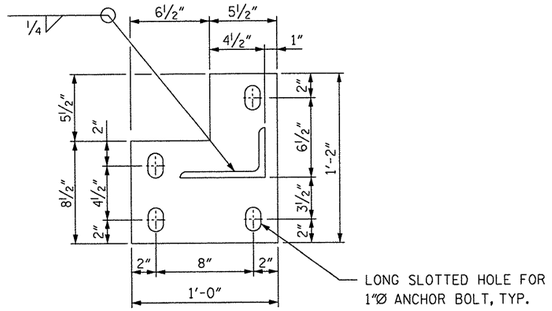
FULLY SEATED PROXIMITY SWITCH SUPPORT PLAN



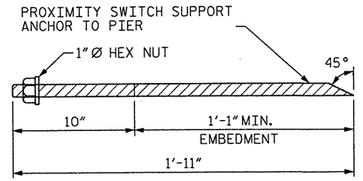
SECTION D-D



SECTION E-E

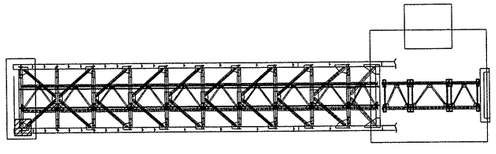


FULLY SEATED PROXIMITY SWITCH ANCHOR PLATE



1"Ø ANCHOR BOLT DETAIL

4 REQUIRED



KEY PLAN

NOTES:

1. ALL STEEL PLATES AND STEEL ANGLES SHALL BE HOT DIP GALVANIZED.
2. CONTRACTOR SHALL FOLLOW HILTI HVA CAPSULE ADHESIVE ANCHOR PROCEDURE, OR EQUIVALENT, TO INSTALL THE STAINLESS ANCHOR BOLTS.
3. SEE SHEET M-05 FOR MORE DETAILS OF PROXIMITY SWITCH.
4. SLOTTED HOLES SAHLL MEET REQUIREMENTS OF AISC MANUAL, 13TH EDITION.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

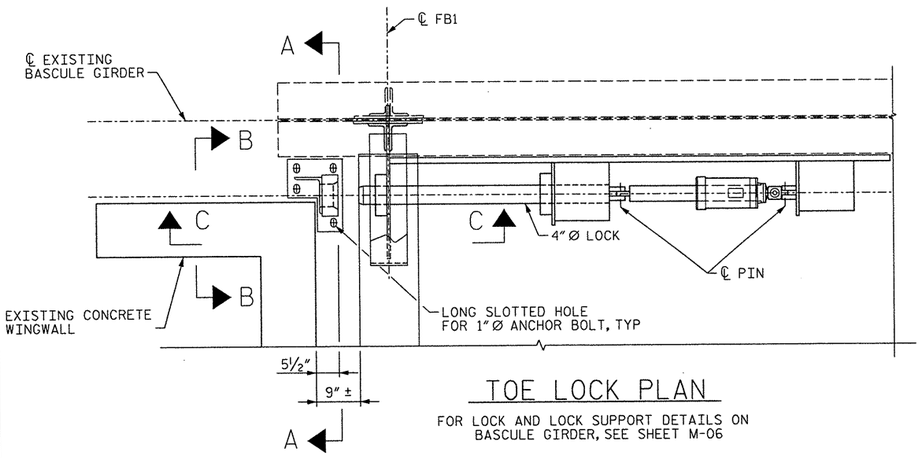
SEATED LIMIT SWITCH SUPPORT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-06
1			3			TOTAL SHEETS
2			4			76

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

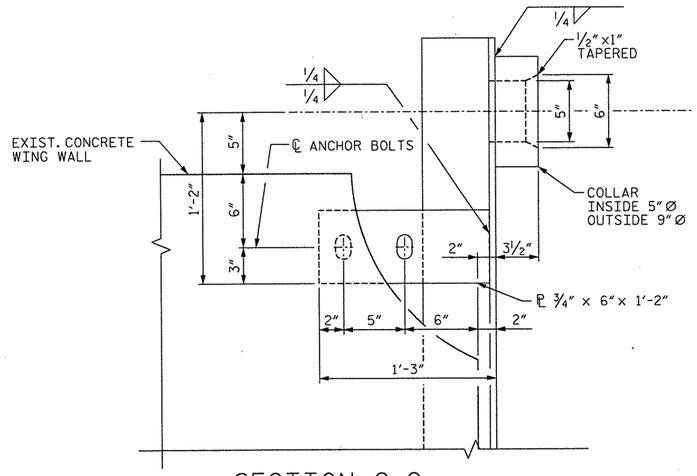
DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:25:14 PM N:\proj\dev\NCDOT\Radio Island\CAD\STRUCTURAL\S-06 LS SUPP.dgn

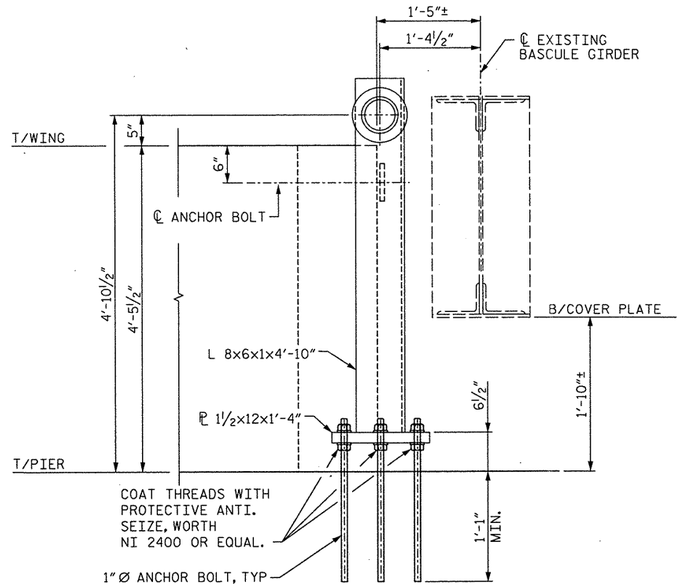


TOE LOCK PLAN

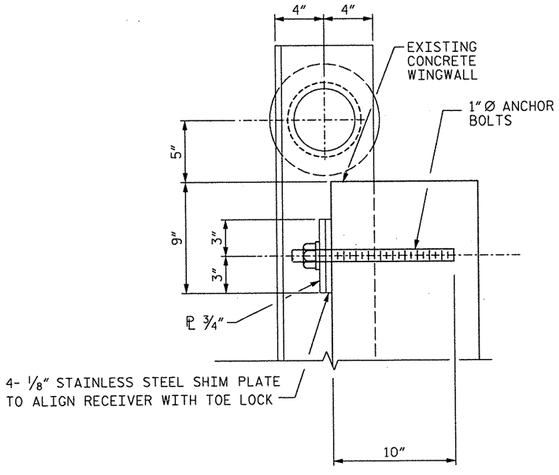
FOR LOCK AND LOCK SUPPORT DETAILS ON BASCULE GIRDER, SEE SHEET M-06



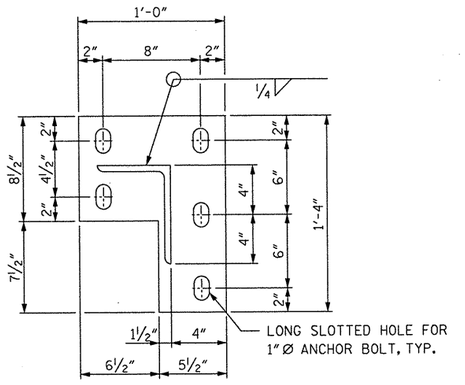
SECTION C-C



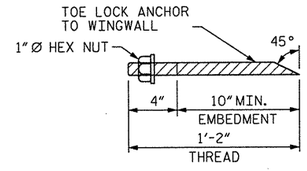
SECTION A-A



SECTION B-B

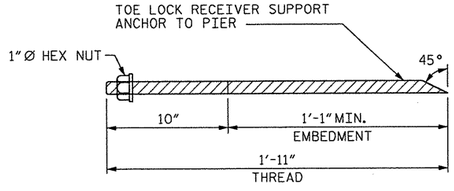


TOE LOCK ANCHOR PLATE



1"Ø ANCHOR BOLT DETAIL

2 REQUIRED



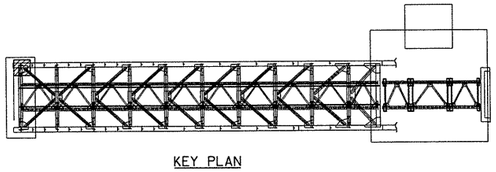
1"Ø ANCHOR BOLT DETAIL

5 REQUIRED

NOTES:

1. ALL STEEL PLATES AND STEEL ANGLES SHALL BE HOT DIP GALVANIZED. COLLAR STAINLESS STEEL 316L OR APPROVED EQUAL.
2. CONTRACTOR SHALL FOLLOW HILTI HVA CAPSULE ADHESIVE ANCHOR PROCEDURE, OR EQUIVALENT, TO INSTALL THE STAINLESS ANCHOR BOLTS.
3. THE RECEIVER SHALL BE ALIGNED WITH THE LOCK BY FIELD ADJUSTING THE STAINLESS SHIM PLATES.
4. SEE SHEET M-06 OR ACTUATOR SUPPORT DETAILS ON BASCULE GIRDER.
5. SLOTTED HOLES SHALL MEET REQUIREMENTS OF AISC MANUAL, 13TH EDITION.

NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C. HARRISON
Jan 6, 2012



KEY PLAN

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

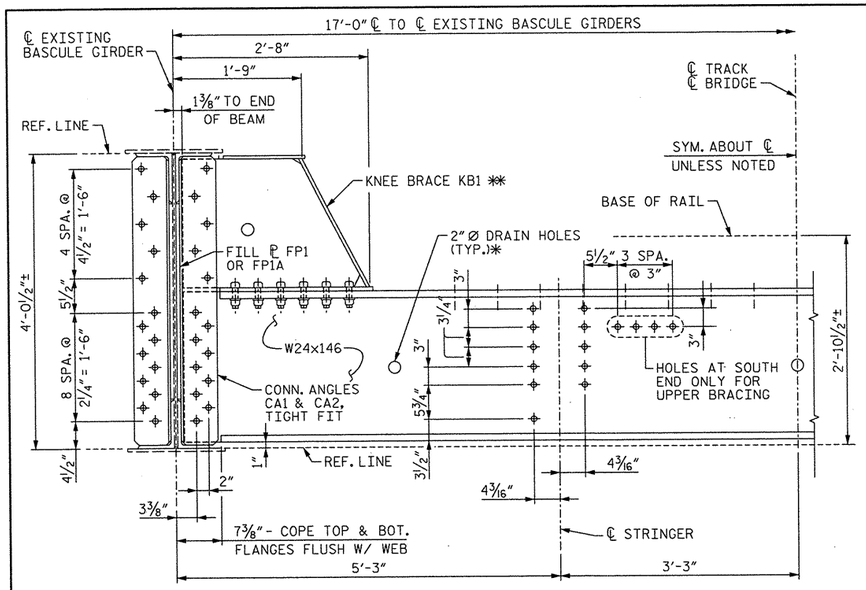
TOE LOCK RECEIVER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-07
1			3			TOTAL SHEETS
2			4			76

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:25:39 PM N:\proJdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-07 TL SUPP.dgn

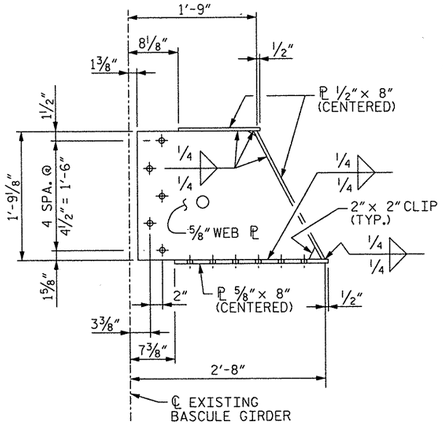


ELEVATION OF PROPOSED FLOOR BEAM FB1

(LOOKING WEST)

* SEE SHEET S-02 FOR DRAIN HOLE LOCATION

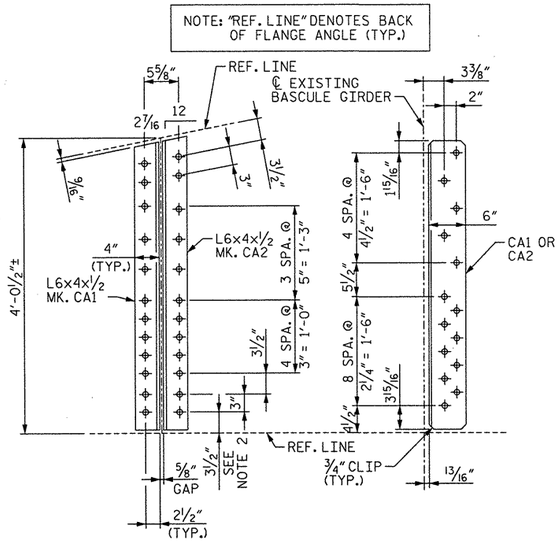
** SEE SHEET M-06 AND S-02 FOR DETAILS OF NORTH KB1 MODIFICATION FOR TOE LOCK SUPPORT FULLY SEATED PROXIMITY SWITCH NOT SHOWN FOR CLARITY.



KNEE BRACE KB1

(2 REQD.)

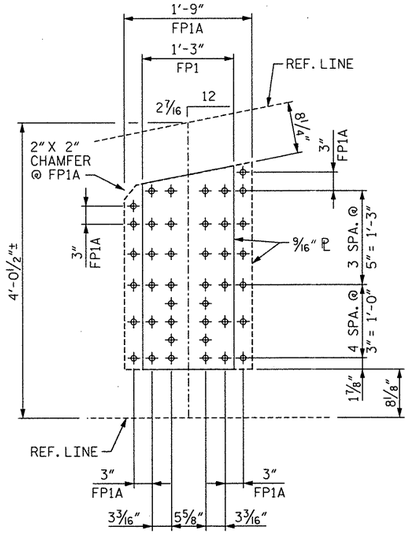
NOTE: "REF. LINE" DENOTES BACK OF FLANGE ANGLE (TYP.)



BASCULE GIRDER FACE FLOOR BEAM FACE

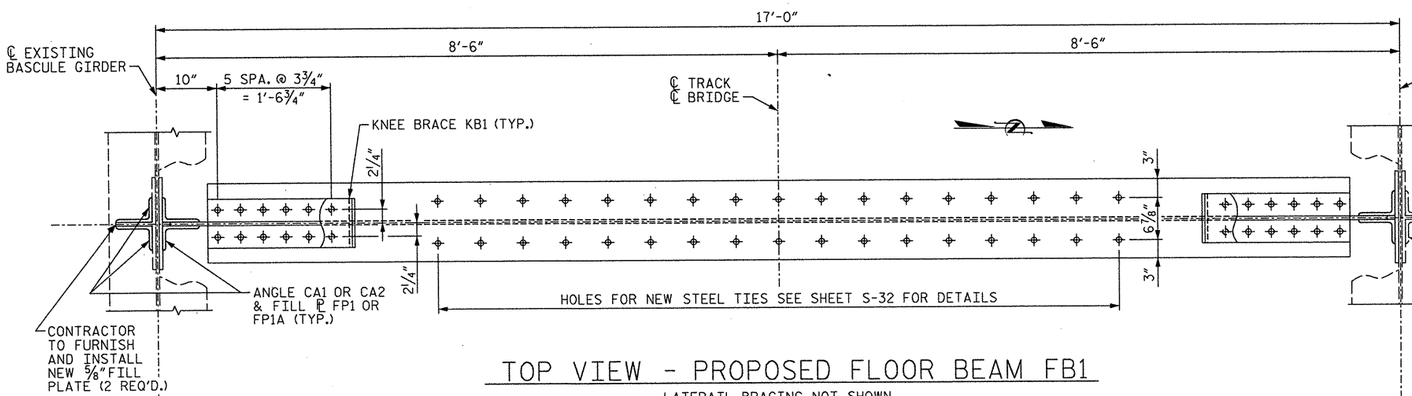
CONN. ANGLES CA1 & CA2

(2 SETS OF LEFT AND RIGHT HAND VERSIONS OF EACH REQD.)
TIGHT FIT TO BOTTOM FLANGE



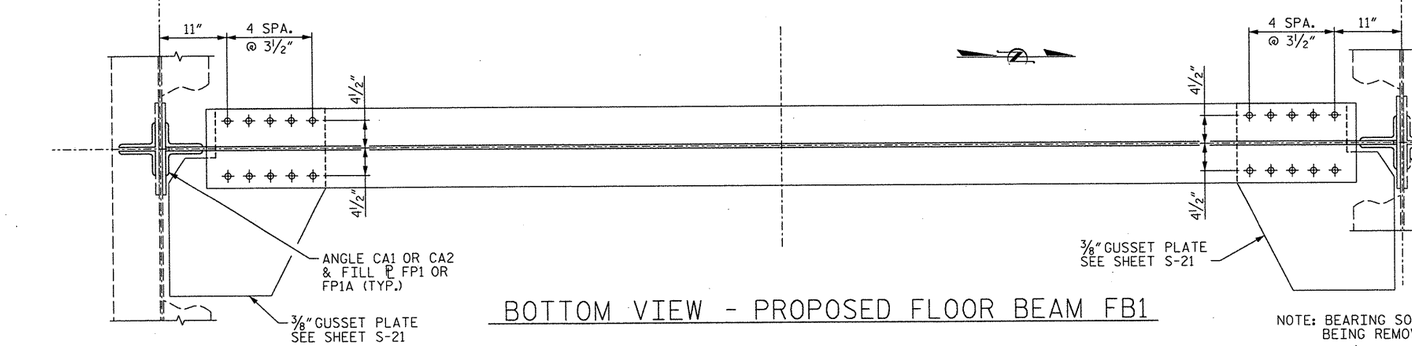
FILL PLATE FP1 & FP1A

(2 REQD. OF EACH - SEE NOTES)



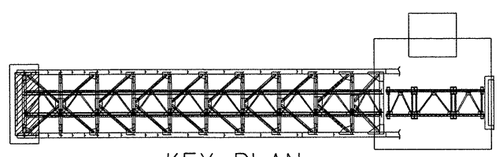
TOP VIEW - PROPOSED FLOOR BEAM FB1

LATERAIL BRACING NOT SHOWN
SEE SHEET S-21 AND S-23



BOTTOM VIEW - PROPOSED FLOOR BEAM FB1

NOTE: BEARING SOLE PLATE NOT BEING REMOVED OR REPLACED.



KEY PLAN

NOTES:

1. ALL HOLES 15⁄16" Ø UNLESS NOTED OTHERWISE.
2. EXISTING FLOOR BEAM CONNECTION ANGLES SHALL BE REPLACED WITH NEW STEEL ANGLES (CA1 AND CA2) AS SHOWN. ON FB1 BOTH THE INTERIOR CONNECTION ANGLES AND THE EXTERIOR ANGLES WILL BE REPLACED. ANGLES SHALL BE GROUND IN THE FIELD TO "TIGHT FIT" TO THE BOTTOM FLANGE. NOTE BOTTOM FLANGE ANGLE CONDITION IN FIELD.
3. AFTER THE EXISTING FILL PLATES ARE REMOVED FROM THE BASCULE GIRDER, THE ENGINEER SHALL INSPECT THE GIRDER WEB FOR CORROSION AND DETERMINE IF NARROW OR WIDE FILL PLATES SHALL BE INSTALLED. IT IS RECOMMENDED THAT FP1A BE USED IF THE SECTION LOSS IS GREATER THAN 20%. SURFACE DEFECTS IN THE BASCULE GIRDER WEB UNDER THE FILL PLATES GREATER THAN 1/16 INCH IN DEPTH SHALL BE FILLED WITH AN EPOXY CAULK JUST PRIOR TO PLACEMENT OF THE FILL PLATE.
4. FOR ADDITIONAL DETAILS, SEE EXISTING MEMBER SHOP DRAWINGS.
5. FOR ADDITIONAL NOTES, SEE SHEET S-03.
6. THE CONTRACTOR SHALL VERIFY THE DIMENSIONS SHOWN ON THE PLANS WITH FIELD MEASUREMENTS SHOWN ON THE FABRICATION DRAWINGS SUBMITTED TO THE ENGINEER FOR REVIEW.
7. THE CONTRACTOR SHALL INSPECT ANGLES LOCATED ON THE EXTERIOR FACE OF THE BASCULE GIRDER AT THE FB CONNECTION. ANGLES HAVING SECTION LOSS GREATER THAN 25% SHALL BE REPLACED WITH NEW MATERIAL IF SO DIRECTED BY THE ENGINEER. THIS EFFORT WILL BE CONSIDERED "EXTRA WORK" AND BASED ON A TIME AND MATERIALS AS PER NCDOT STANDARD CONTRACT PROVISIONS FOR FB2 THROUGH FB10.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FLOOR BEAM DETAILS - BEAM FB1

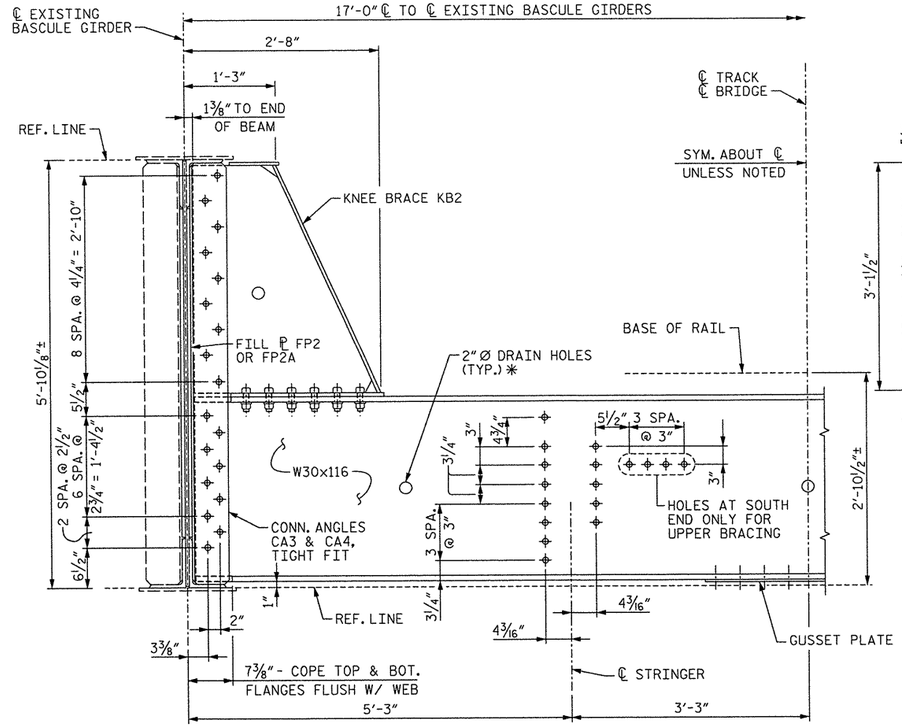
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON
March 20, 2012

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-08
1			3			TOTAL SHEETS
2			4			76

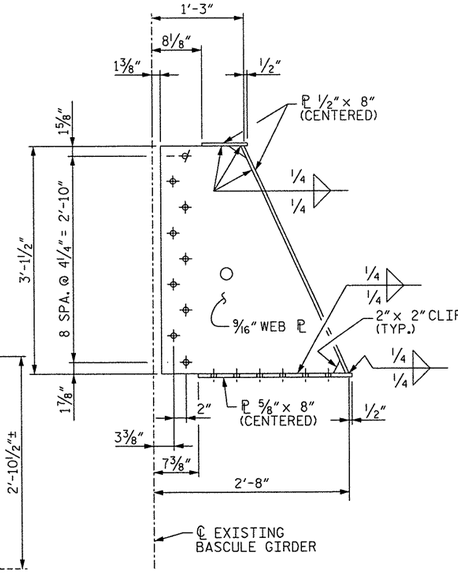
DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:26:07 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-08 FBl.dgn



ELEVATION OF PROPOSED FLOOR BEAM FB2

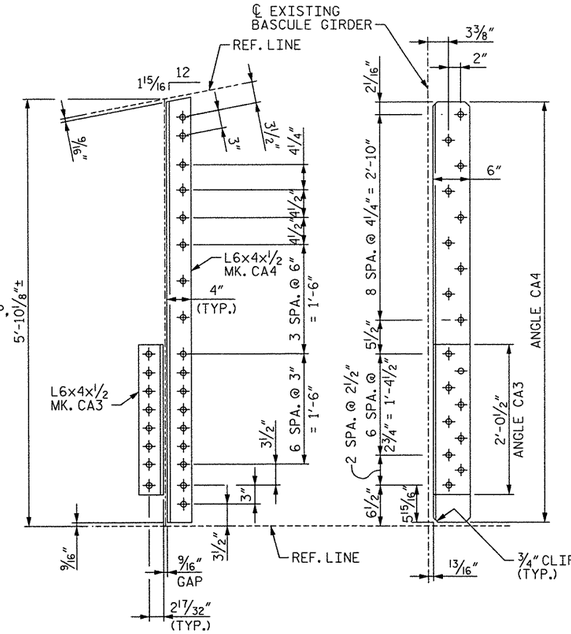
(LOOKING WEST)
* SEE SHEET S-02 FOR DRAIN HOLE LOCATION



KNEE BRACE KB2

(2 REQD.)

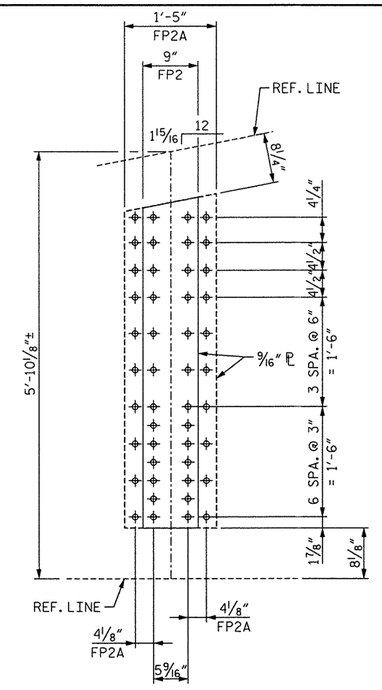
NOTE: "REF. LINE" DENOTES BACK OF FLANGE ANGLE (TYP.)



BASCULE GIRDER FACE FLOOR BEAM FACE

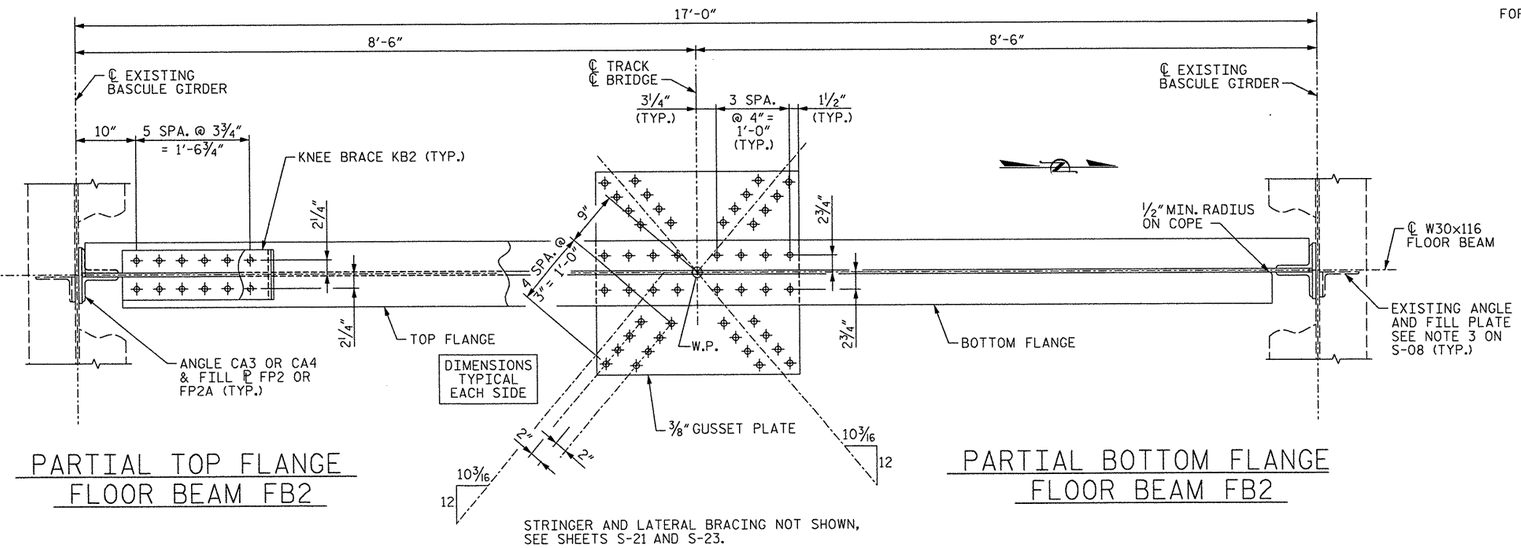
CONN. ANGLES CA3 & CA4

(LEFT AND RIGHT HAND VERSIONS OF EACH REQD.)



FILL PLATE FP2 & FP2A

(2 REQD. OF EACH - SEE NOTE 3 SHEET S-08)



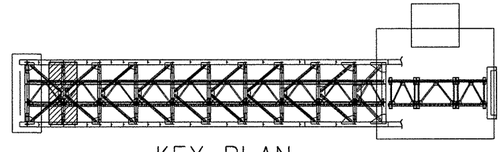
PARTIAL TOP FLANGE FLOOR BEAM FB2

PARTIAL BOTTOM FLANGE FLOOR BEAM FB2

STRINGER AND LATERAL BRACING NOT SHOWN, SEE SHEETS S-21 AND S-23.

NOTES:

FOR FLOOR BEAM NOTES, SEE SHEET S-08.



KEY PLAN

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FLOOR BEAM DETAILS - BEAM FB2

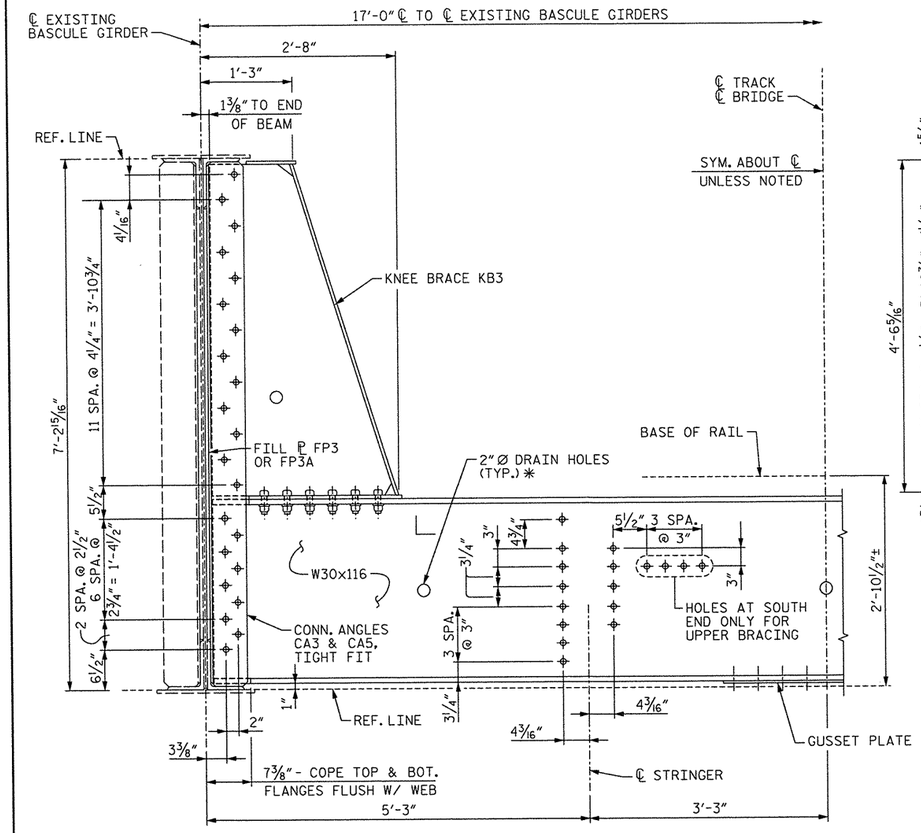
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON
3/19/2012

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-09
1			3			TOTAL SHEETS
2			4			76

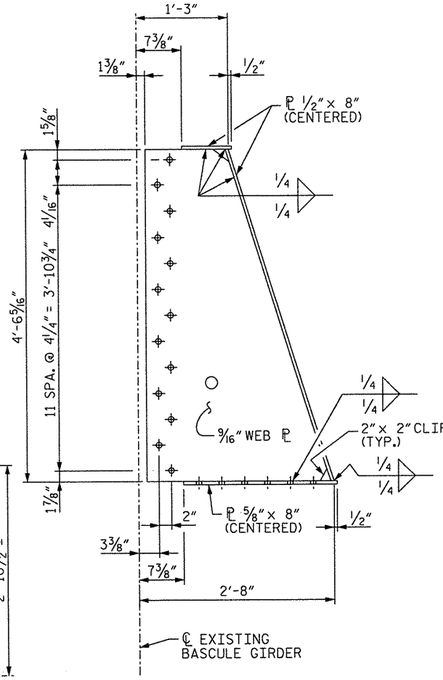
DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:26:56 PM N:\proJdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-09 FB2.dgn



ELEVATION OF PROPOSED FLOOR BEAM FB3

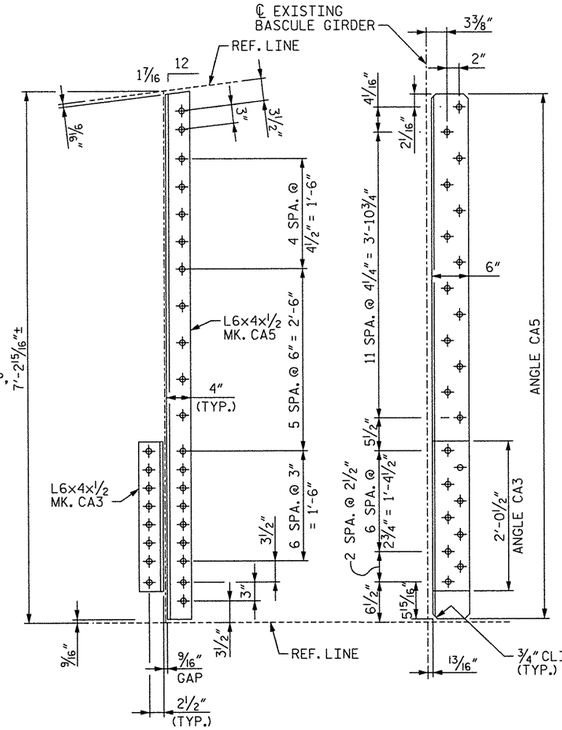
(LOOKING WEST)
* SEE SHEET S-02 FOR DRAIN HOLE LOCATION



KNEE BRACE KB3

(2 REQD.)

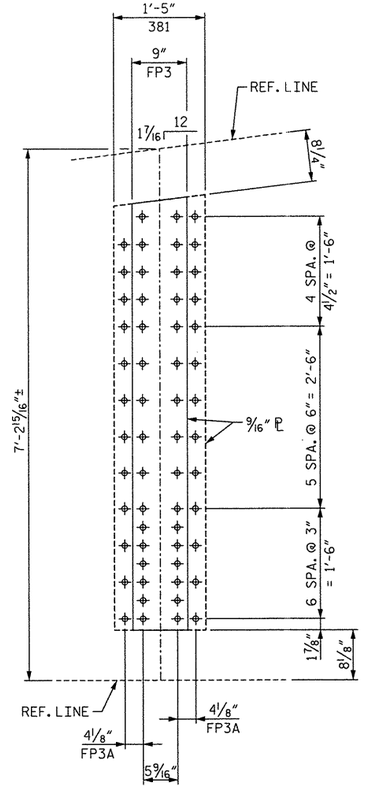
NOTE: "REF. LINE" DENOTES BACK OF FLANGE ANGLE (TYP.)



BASCULE GIRDER FACE FLOOR BEAM FACE

CONN. ANGLES CA3 & CA5

(LEFT AND RIGHT HAND VERSIONS OF EACH REQD.)

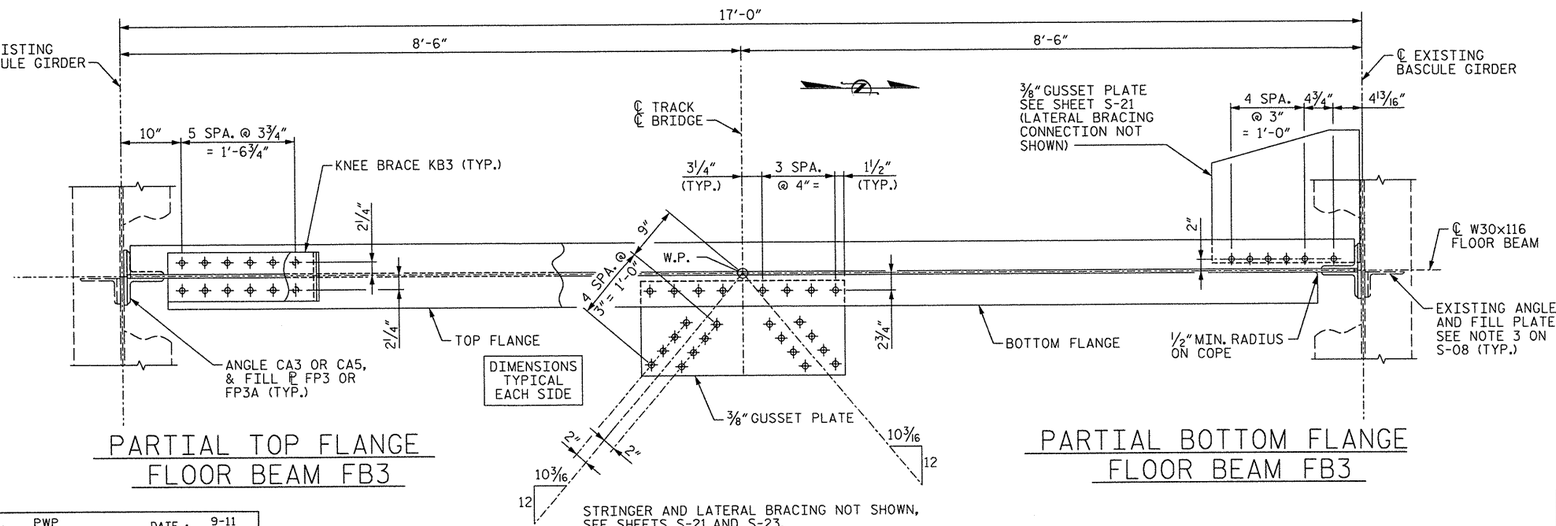


FILL PLATE FP3 & FP3A

(2 REQD. OF EACH - SEE NOTE 3, SHEET S-08)

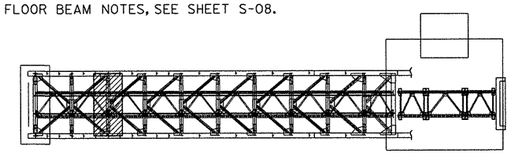
NOTES:

FOR FLOOR BEAM NOTES, SEE SHEET S-08.



PARTIAL TOP FLANGE FLOOR BEAM FB3

PARTIAL BOTTOM FLANGE FLOOR BEAM FB3



KEY PLAN

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FLOOR BEAM DETAILS - BEAM FB3

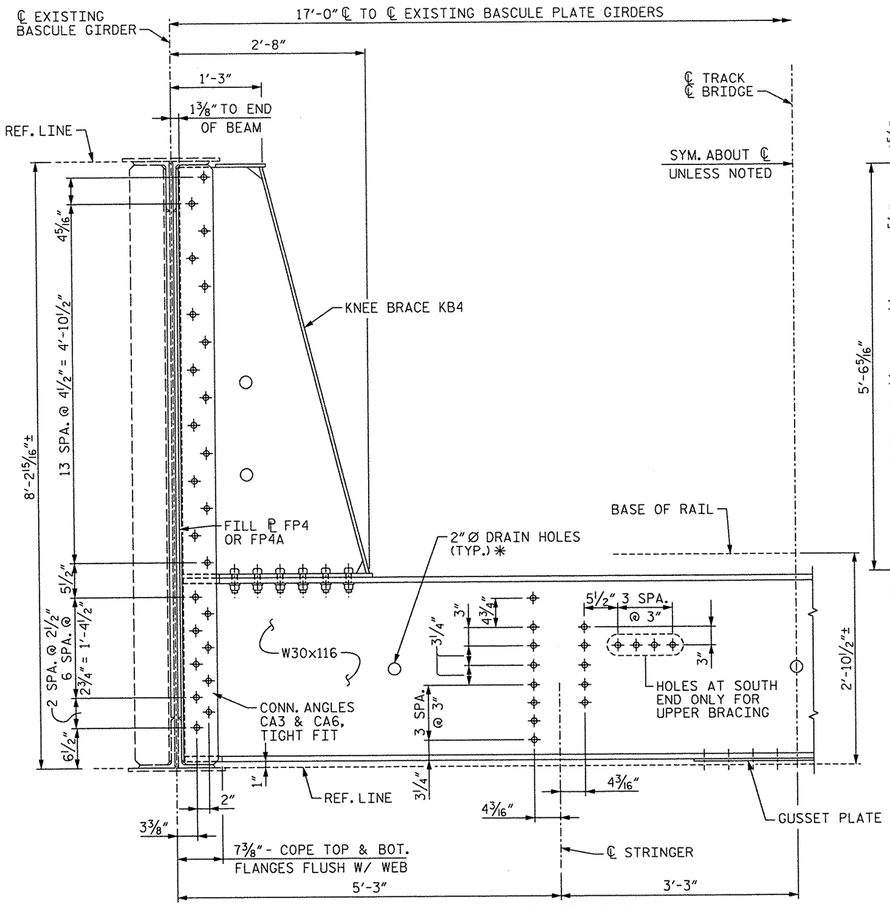
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL HARRISON

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			76

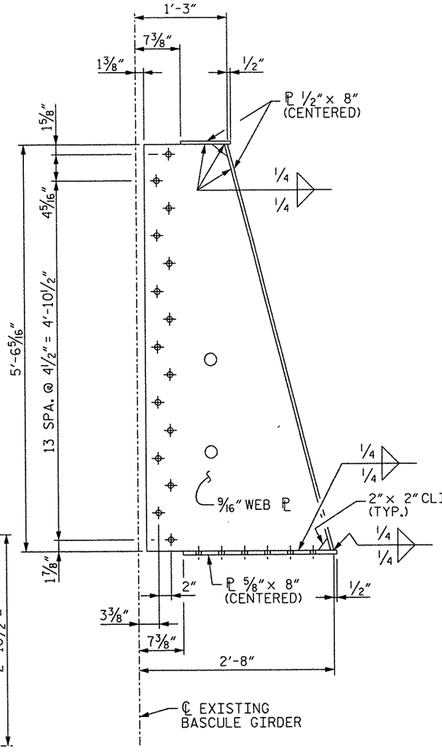
DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:27:34 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-10 FB3.dgn



ELEVATION OF PROPOSED FLOOR BEAM FB4

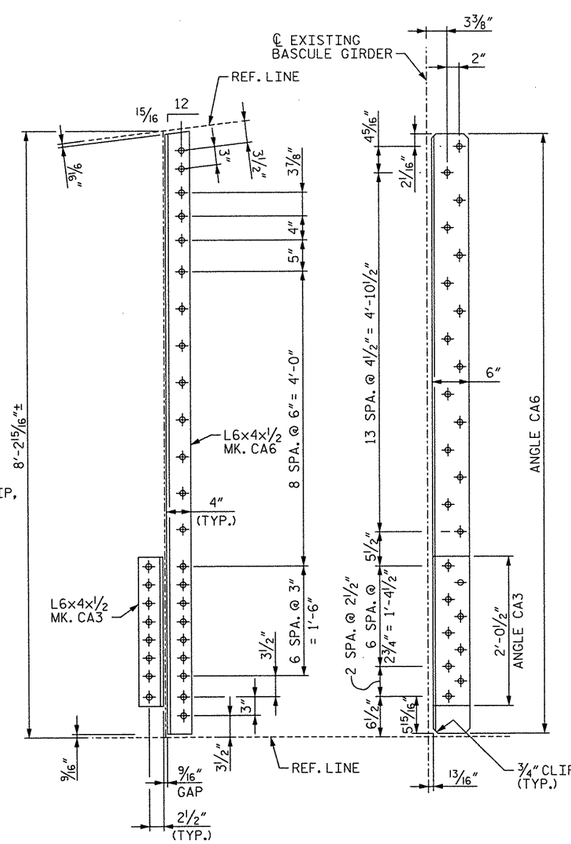
(LOOKING WEST)
* SEE SHEET S-02 FOR DRAIN HOLE LOCATION



KNEE BRACE KB4

(2 REQD.)

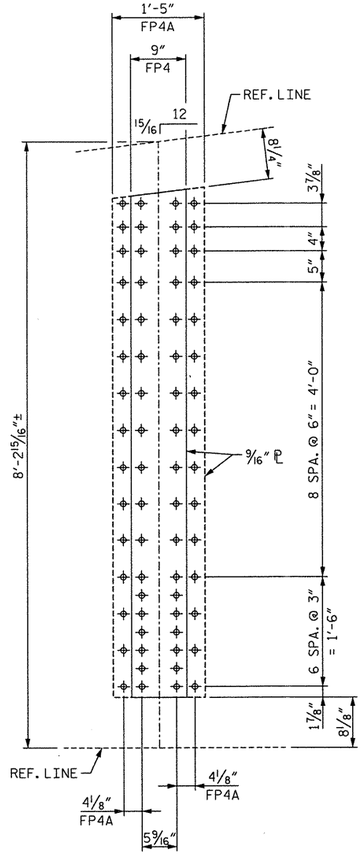
NOTE: "REF. LINE" DENOTES BACK OF FLANGE ANGLE (TYP.)



BASCULE GIRDER FACE FLOOR BEAM FACE

CONN. ANGLES CA3 & CA6

(LEFT AND RIGHT HAND VERSIONS OF EACH REQD.)

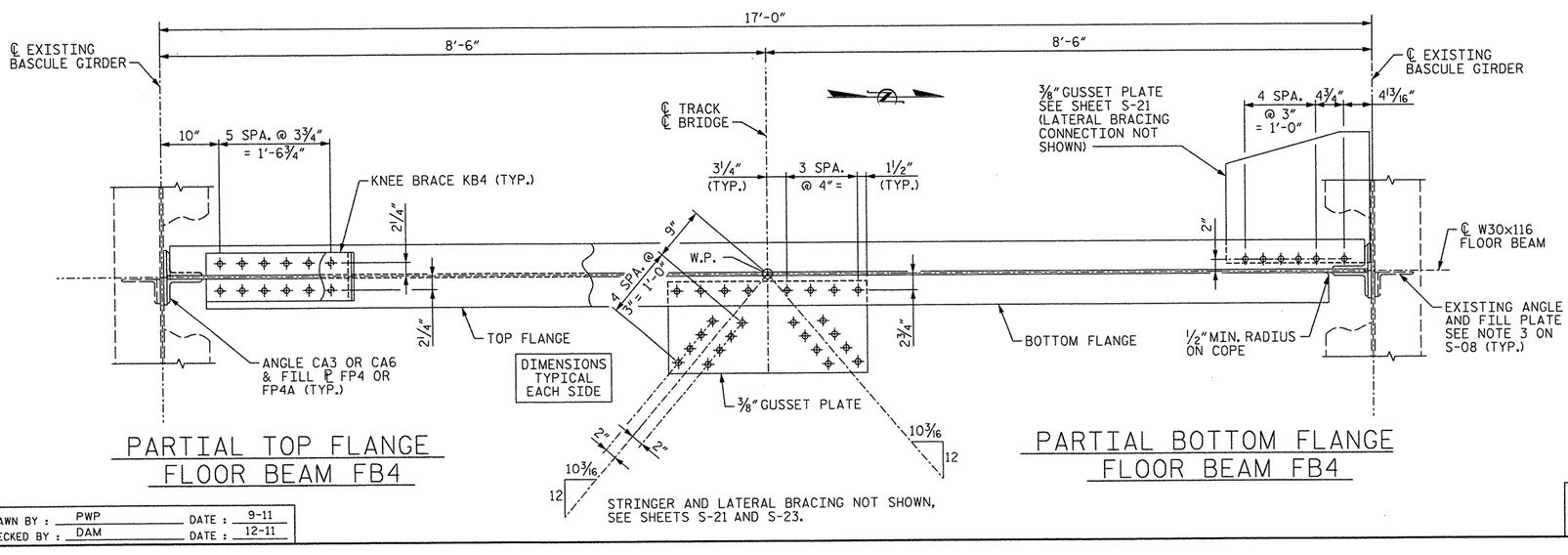


FILL PLATE FP4 & FP4A

(2 REQD. OF EACH - SEE NOTE 3, SHEET S-08)

NOTES:

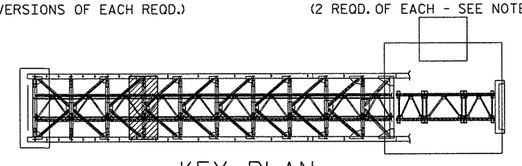
FOR FLOOR BEAM NOTES, SEE SHEET S-08.



PARTIAL TOP FLANGE FLOOR BEAM FB4

STRINGER AND LATERAL BRACING NOT SHOWN, SEE SHEETS S-21 AND S-23.

PARTIAL BOTTOM FLANGE FLOOR BEAM FB4



KEY PLAN

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FLOOR BEAM DETAILS - BEAM FB4

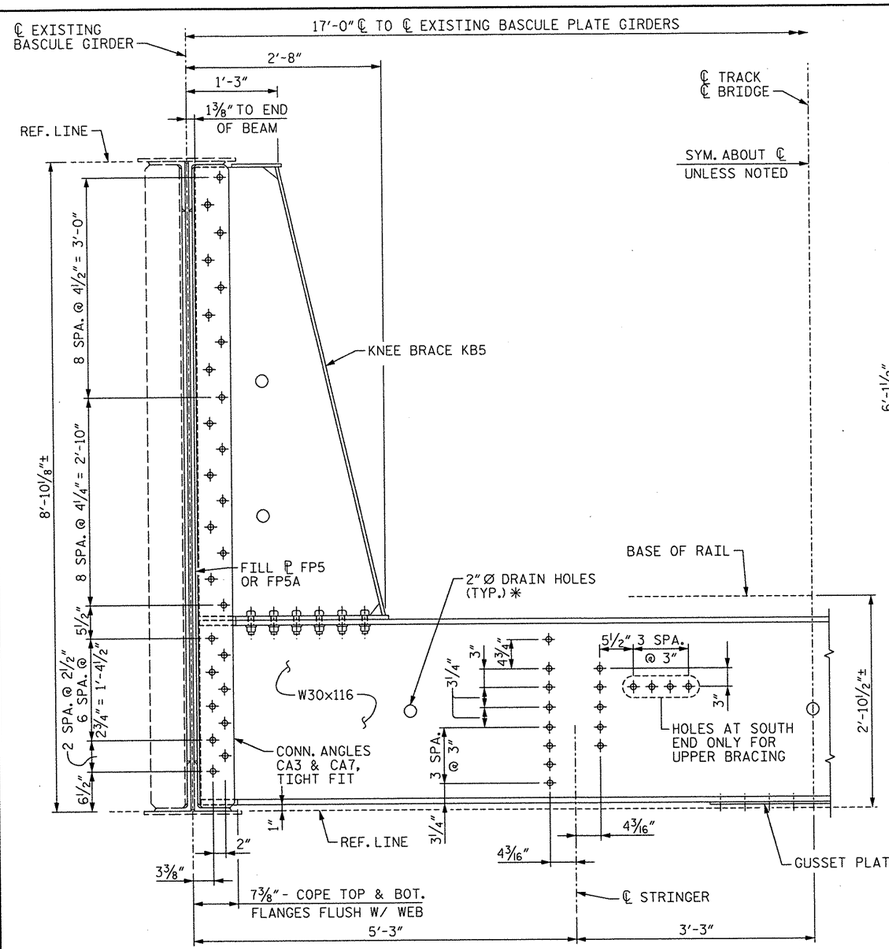
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C. HARRISON

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

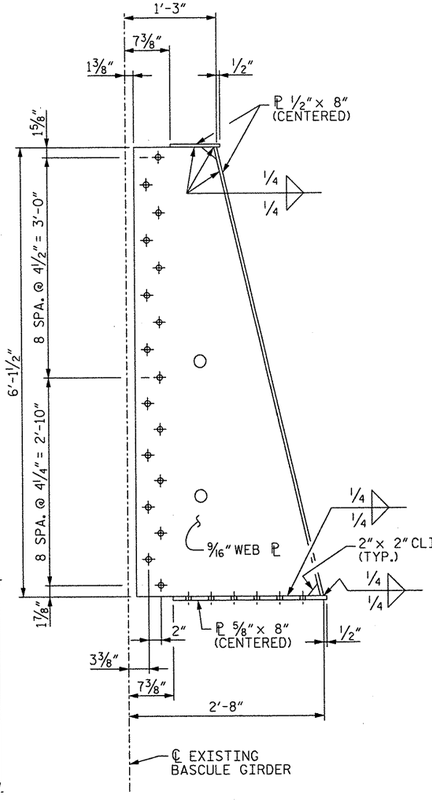
3/19/2012 3:27:55 PM N:\proj\dev\NCDOT\Radio Island\CAD\STRUCTURAL\S-11FB4.dgn



ELEVATION OF PROPOSED FLOOR BEAM FB5

(LOOKING WEST)

* SEE SHEET S-02 FOR DRAIN HOLE LOCATION



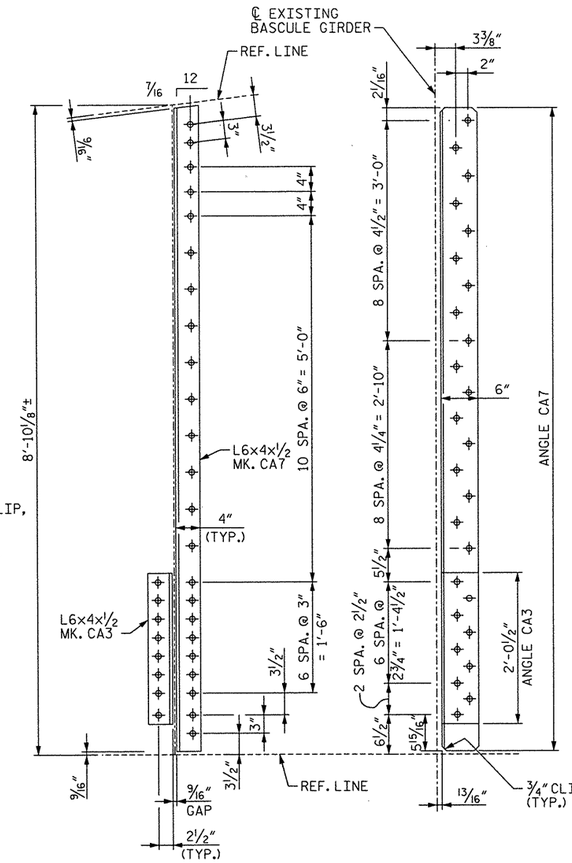
KNEE BRACE KB5

(2 REQD.)

NOTE: "REF. LINE" DENOTES BACK OF FLANGE ANGLE (TYP.)

NOTES:

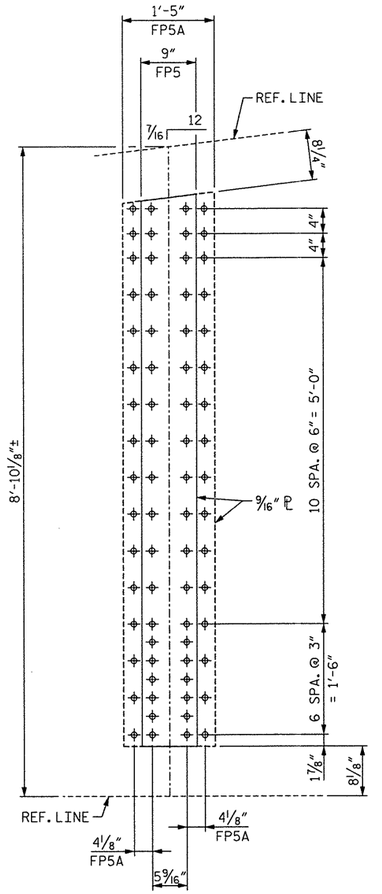
FOR FLOOR BEAM NOTES, SEE SHEET S-08.



BASCULE GIRDER FACE FLOOR BEAM FACE

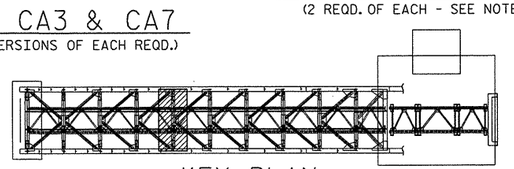
CONN. ANGLES CA3 & CA7

(LEFT AND RIGHT HAND VERSIONS OF EACH REQD.)

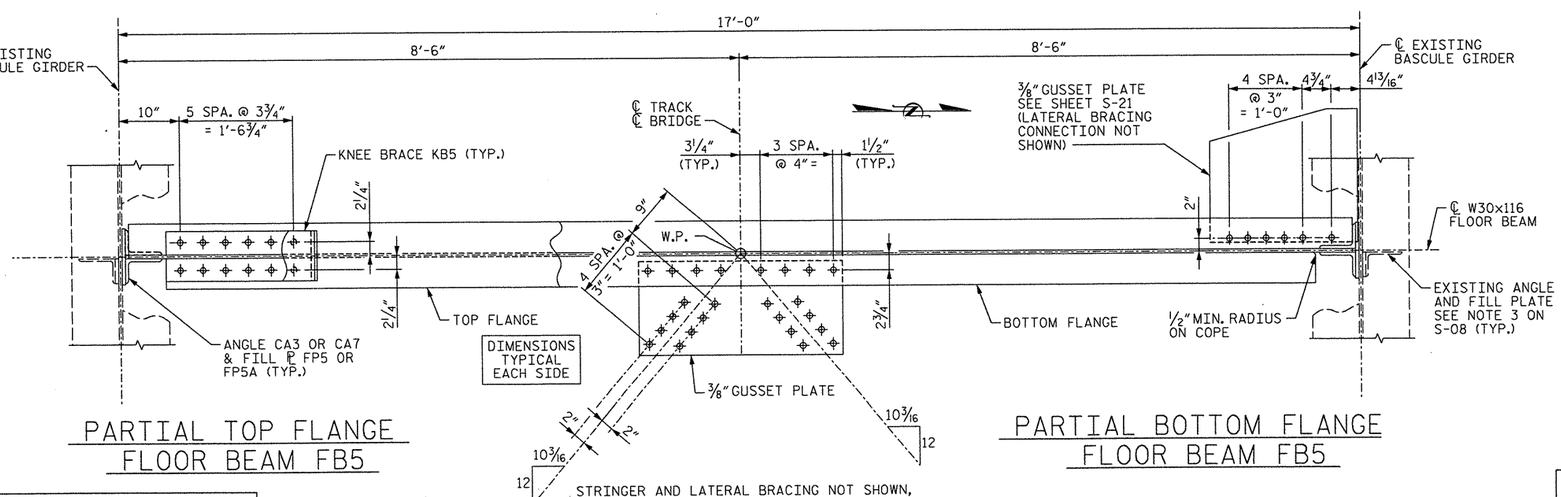


FILL PLATE FP5 & FP5A

(2 REQD. OF EACH - SEE NOTE 3, SHEET S-08)



KEY PLAN



PARTIAL TOP FLANGE FLOOR BEAM FB5

PARTIAL BOTTOM FLANGE FLOOR BEAM FB5

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FLOOR BEAM DETAILS - BEAM FB5

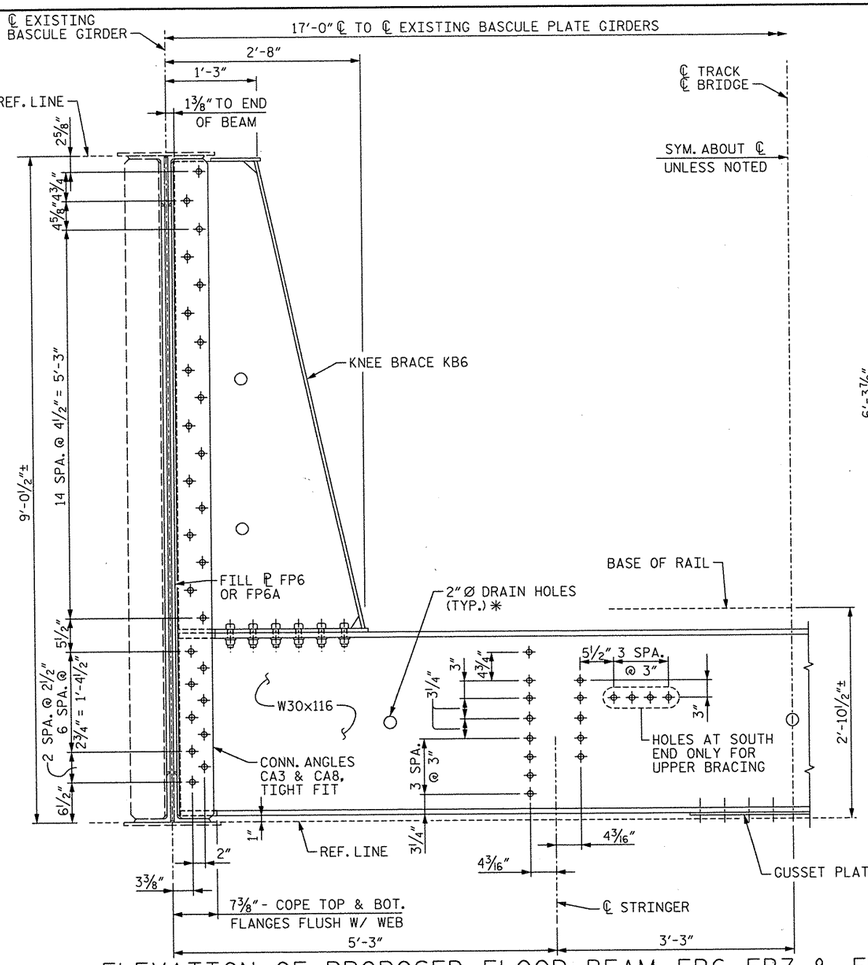
NORTH CAROLINA PROFESSIONAL SEAL 038100 ENGINEER MICHAEL C HARRISON
12, 2012

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			76

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

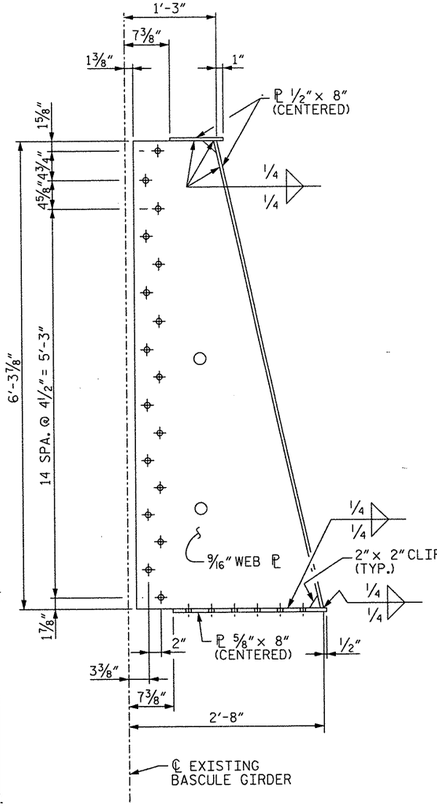
3/19/2012 3:28:18 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-12 FB5.dgn



ELEVATION OF PROPOSED FLOOR BEAM FB6, FB7 & FB8

(LOOKING WEST)

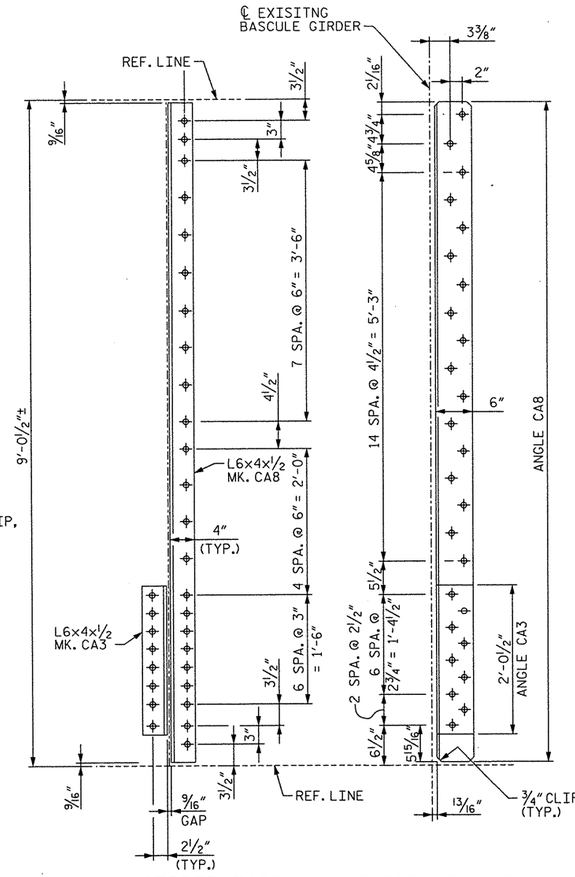
* SEE SHEET S-02 FOR DRAIN HOLE LOCATION



KNEE BRACE KB6

(6 REQD.)

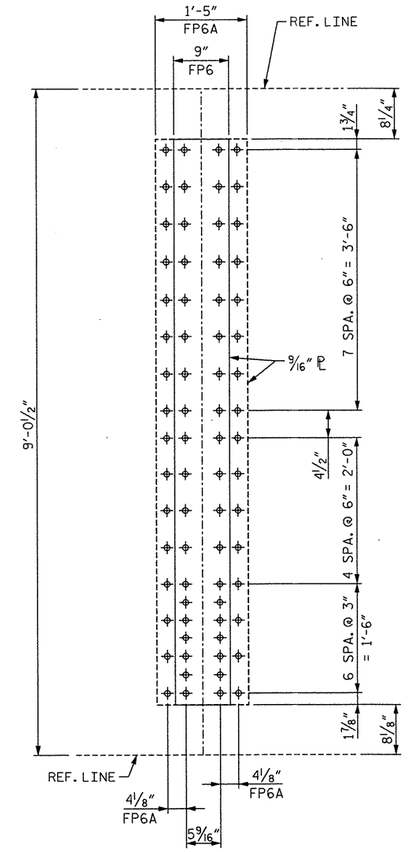
NOTE: "REF. LINE" DENOTES BACK OF FLANGE ANGLE (TYP.)



BASCULE GIRDER FACE FLOOR BEAM FACE

CONN. ANGLES CA3 & CA8

(LEFT AND RIGHT HAND VERSIONS OF EACH REQD.)

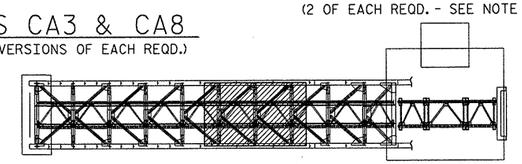


FILL PLATE FP6 & FP6A

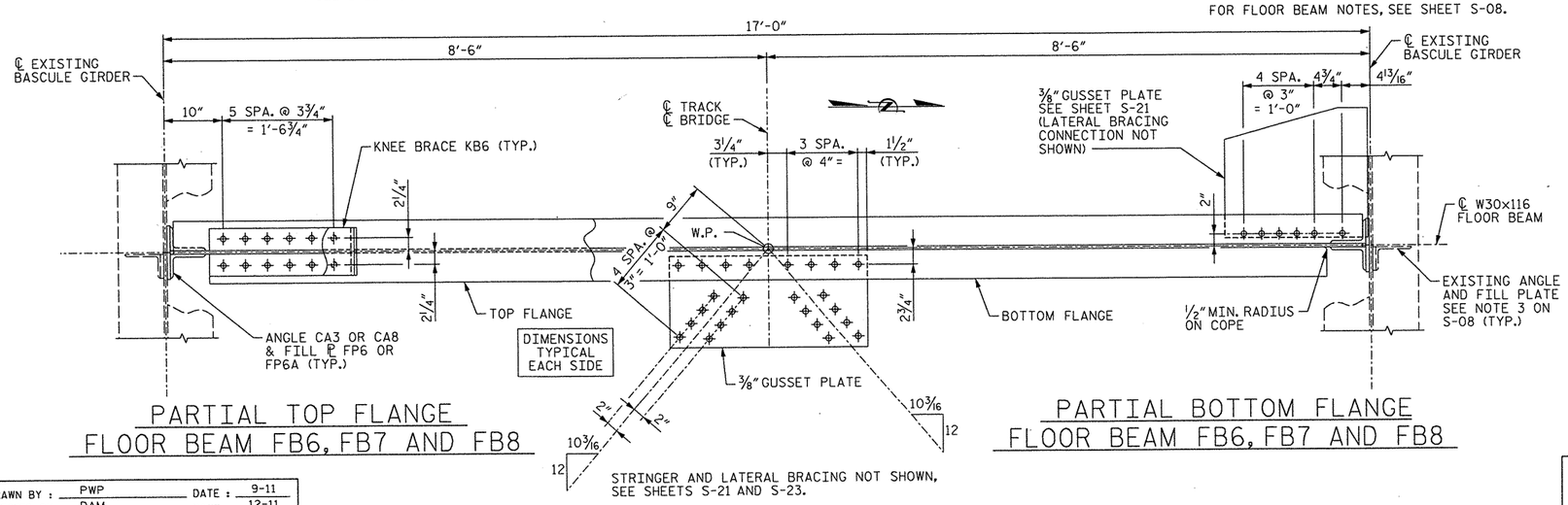
(2 OF EACH REQD. - SEE NOTE 3, SHEET S-08)

NOTES:

FOR FLOOR BEAM NOTES, SEE SHEET S-08.



KEY PLAN



PARTIAL TOP FLANGE FLOOR BEAM FB6, FB7 AND FB8

PARTIAL BOTTOM FLANGE FLOOR BEAM FB6, FB7 AND FB8

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FLOOR BEAM DETAILS - BEAMS FB6, FB7 & FB8

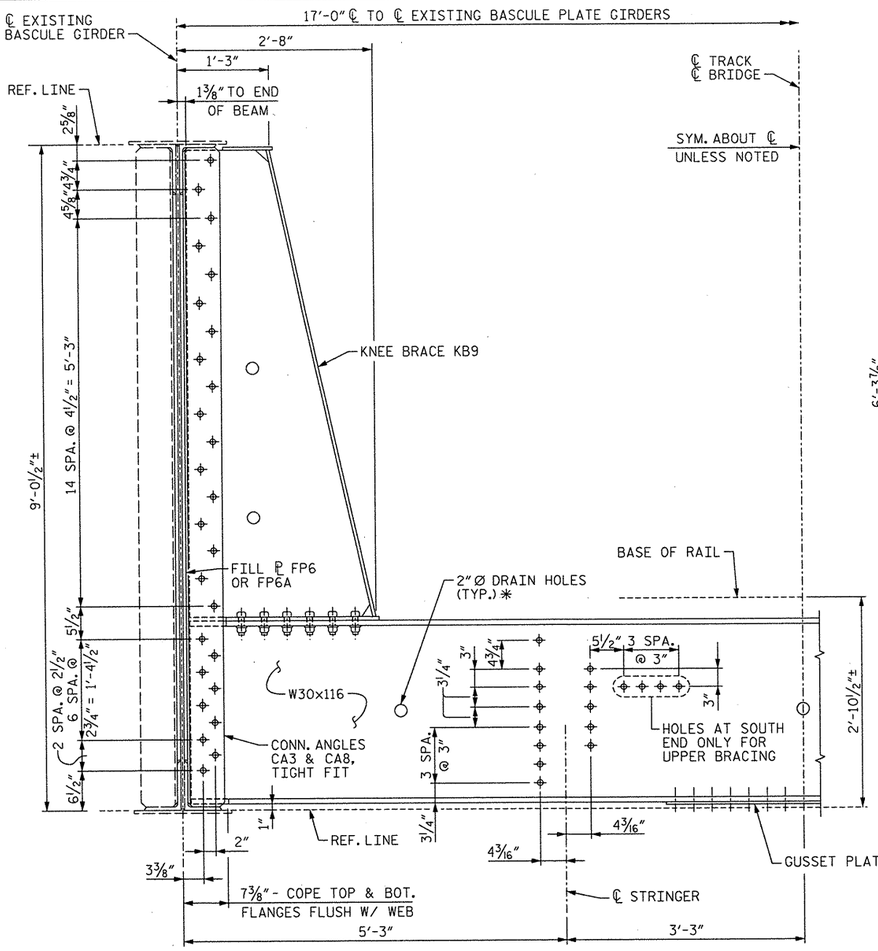
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL D. HARRISON

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

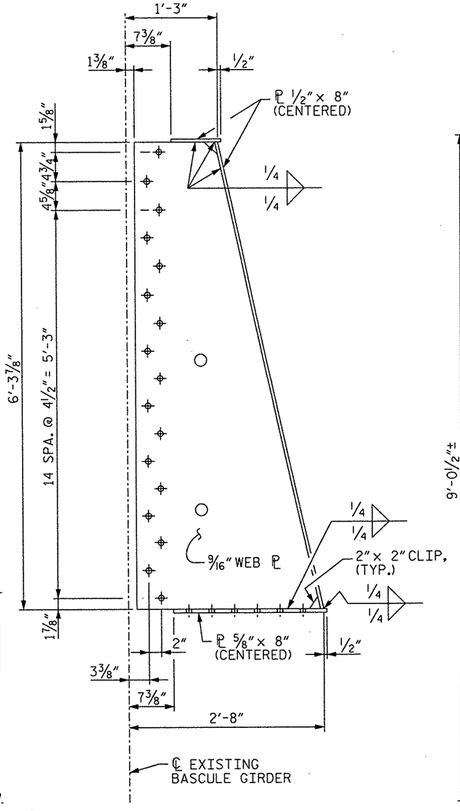
3/9/2012 3:28:46 PM N:\proJdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-13 FB6-8.dgn



ELEVATION OF PROPOSED FLOOR BEAM FB9

(LOOKING WEST)

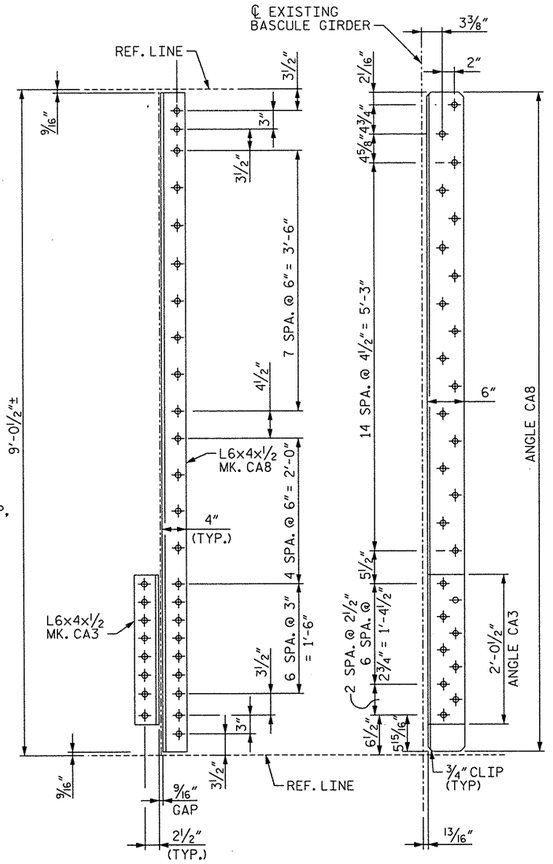
*SEE SHEET S-02 FOR DRAIN HOLE LOCATION



KNEE BRACE KB9

(6 REQD.)

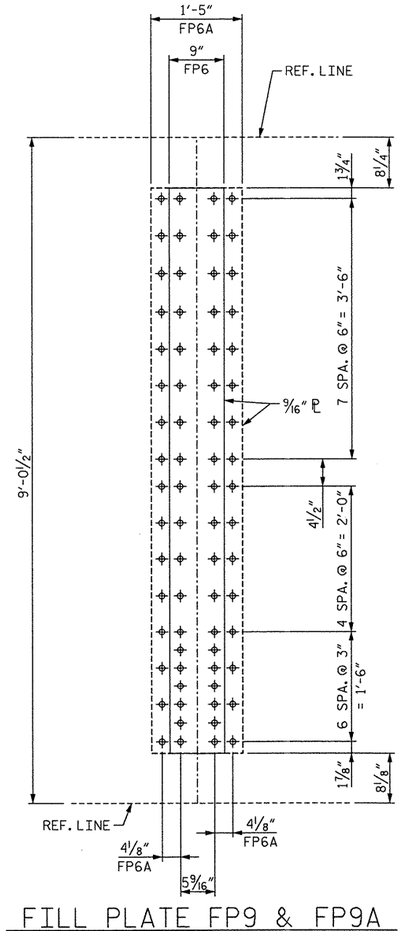
NOTE: "REF. LINE" DENOTES BACK OF FLANGE ANGLE (TYP.)



BASCULE GIRDER FACE FLOOR BEAM FACE

CONN. ANGLES CA3 & CA8

(LEFT AND RIGHT HAND VERSIONS OF EACH REQD.)

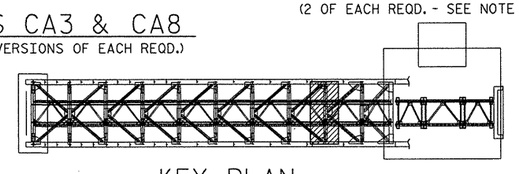


FILL PLATE FP9 & FP9A

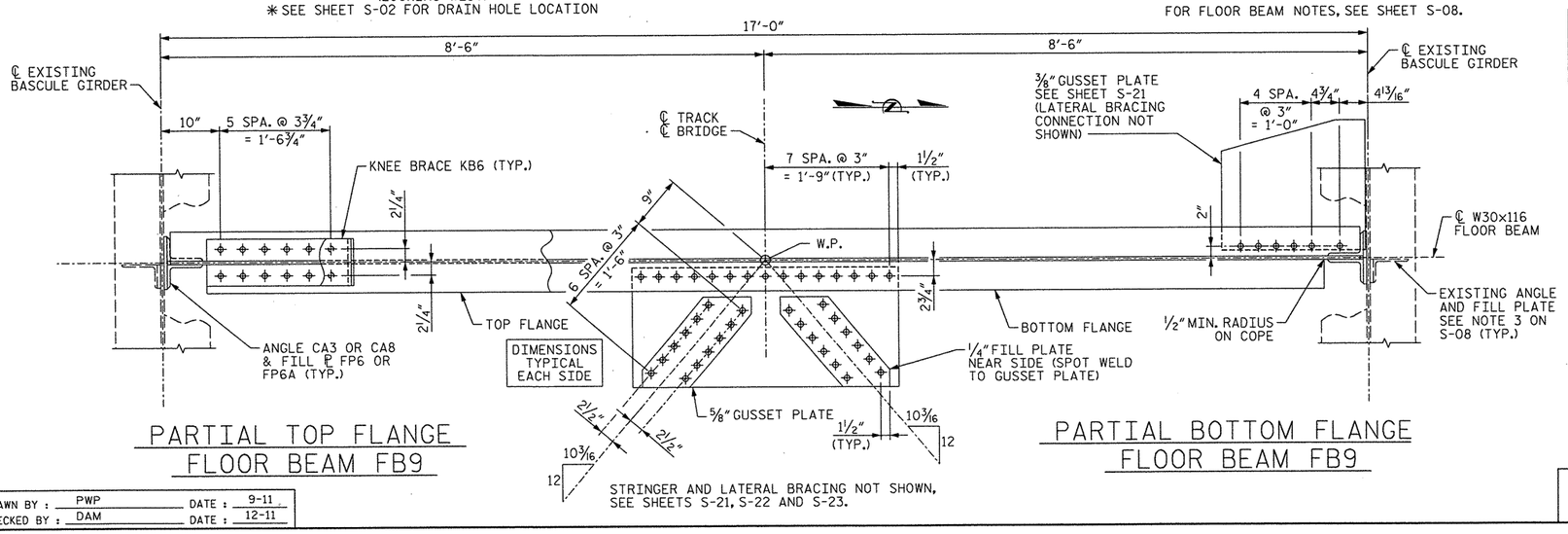
(2 OF EACH REQD. - SEE NOTE 3, SHEET S-08)

NOTES:

FOR FLOOR BEAM NOTES, SEE SHEET S-08.



KEY PLAN



PARTIAL TOP FLANGE FLOOR BEAM FB9

PARTIAL BOTTOM FLANGE FLOOR BEAM FB9

STRINGER AND LATERAL BRACING NOT SHOWN, SEE SHEETS S-21, S-22 AND S-23.

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FLOOR BEAM DETAILS - BEAM FB9

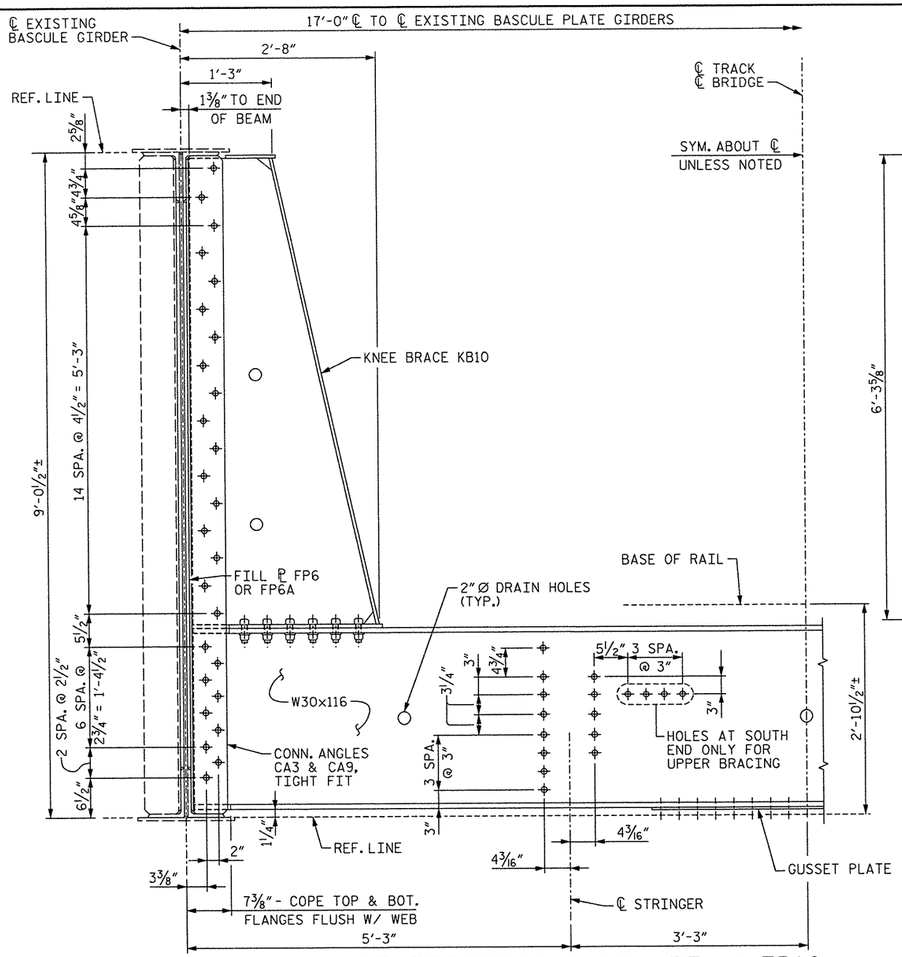
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHELLE HARRISON ROTZ

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			76

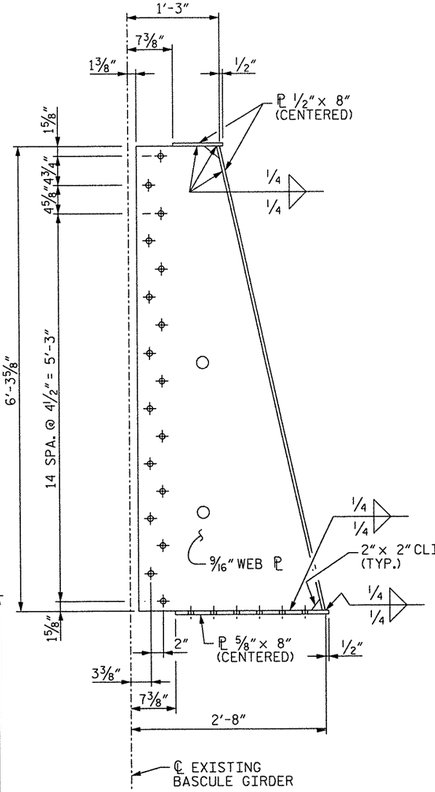
DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:30:08 PM N:\proj dev\NCDOT\Radio Island\CAD\STRUCTURAL\S-14 FB9.dgn



ELEVATION OF PROPOSED FLOOR BEAM FB10

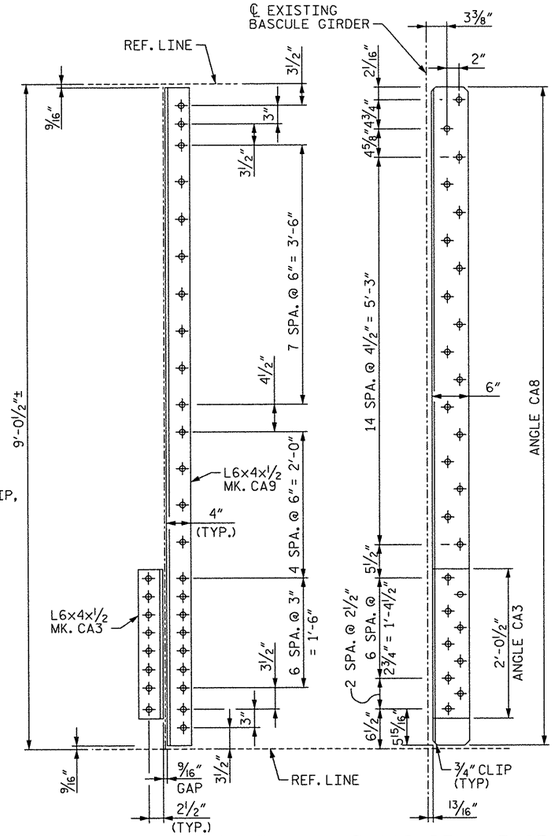
(LOOKING WEST)
* SEE SHEET S-02 FOR DRAIN HOLE LOCATION



KNEE BRACE KB10

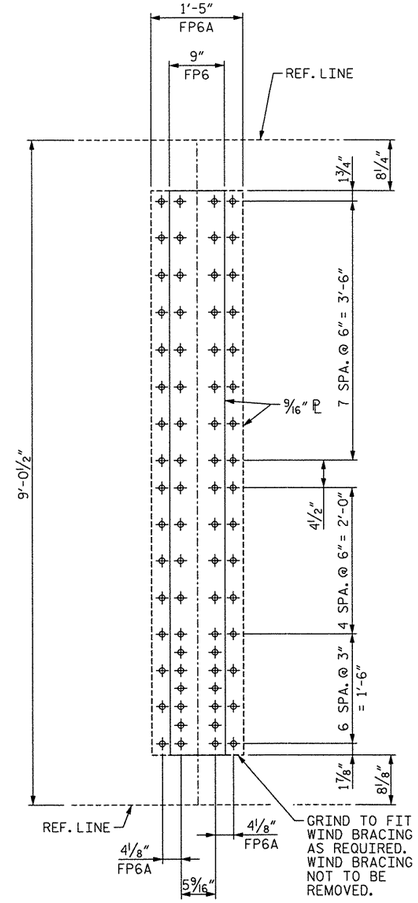
(2 REQD.)

NOTE: "REF. LINE" DENOTES BACK OF FLANGE ANGLE (TYP.)



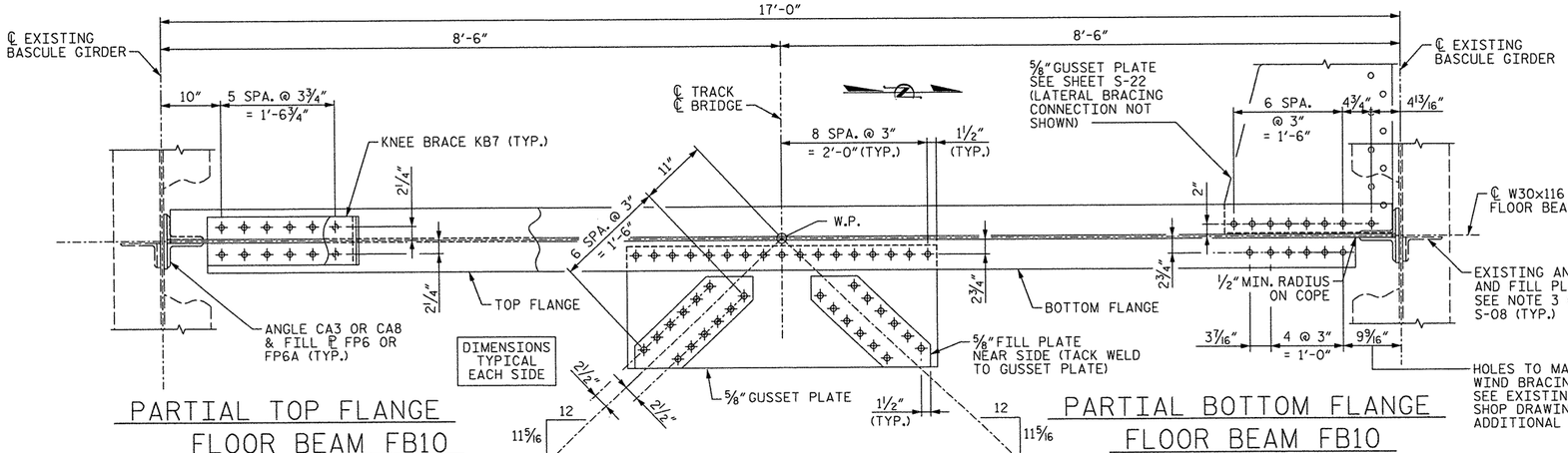
CONN. ANGLES CA3 & CA8

(LEFT AND RIGHT HAND VERSIONS OF EACH REQD.)



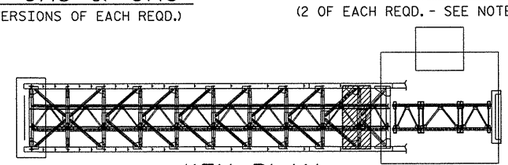
FILL PLATE FP10 & FP10A

(2 OF EACH REQD. - SEE NOTE 3, SHEET S-08)



PARTIAL TOP FLANGE FLOOR BEAM FB10

PARTIAL BOTTOM FLANGE FLOOR BEAM FB10



KEY PLAN

NOTES:

FOR OTHER FLOOR BEAM NOTES, SEE SHEET S-08.

FOR FB10 STAGING REQUIREMENTS, SEE SHEET S-03, NOTE 11.

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FLOOR BEAM DETAILS - BEAM FB10

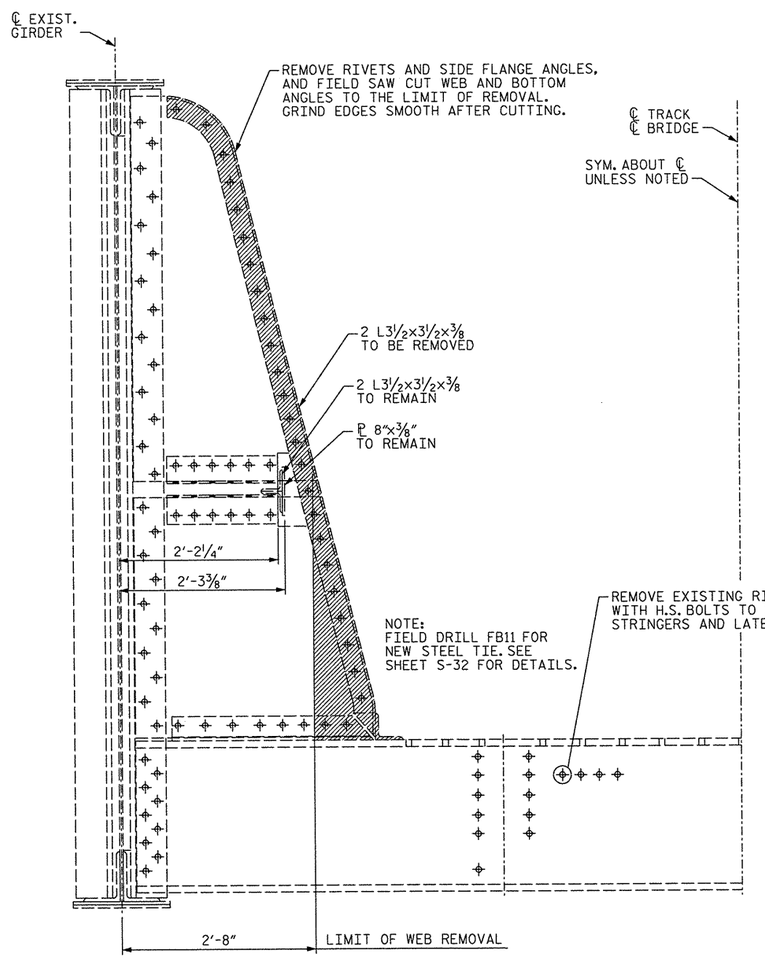
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036100 RICHARD A. HARRISON 3/19/12

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			76

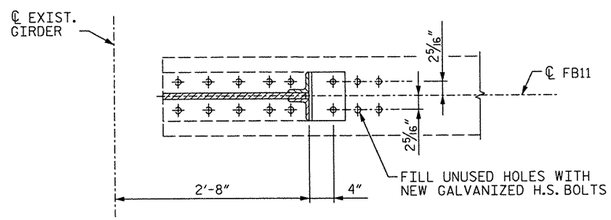
DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:31:37 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-15 FB10.dgn

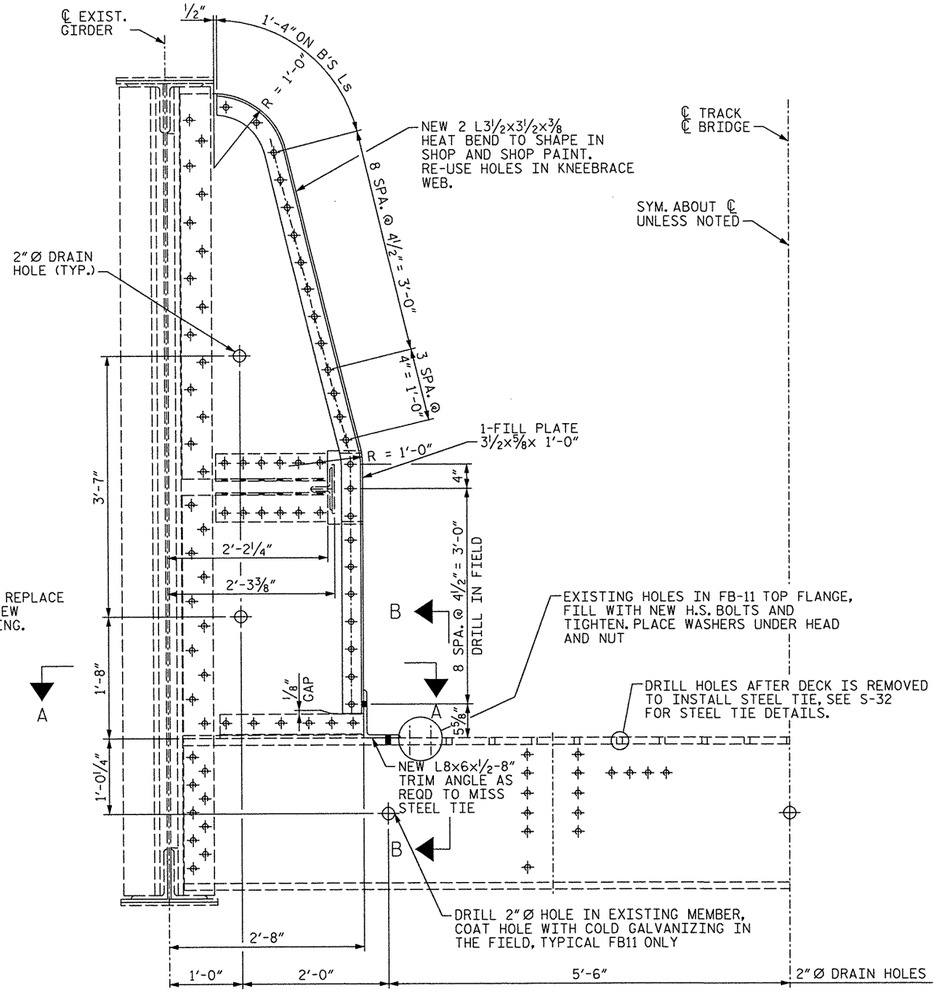


REMOVAL OF PARTIAL KNEEBRACE @ FB11

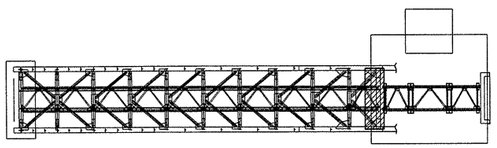
LATERAL BRACING NOT SHOWN. SEE SHEET S-22 AND S-24



SECTION A-A



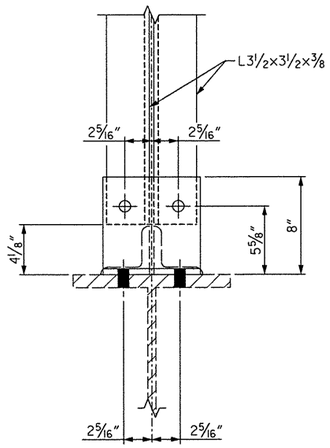
FB11 KNEEBRACE MODIFICATION



KEY PLAN

NOTES:

1. HOLES ON NEW ANGLES SHOULD MATCH THE HOLES ON EXISTING ⅝" WEB.
2. CONTRACTOR SHALL CAREFULLY PROTECT THE KNEEBRACE WEB FROM DAMAGE DURING THE REMOVAL OF FLANGE ANGLES & PART OF WEB.
3. THE FB11 KNEEBRACE SHALL BE MODIFIED AFTER NEW FLOOR SYSTEM IS INSTALLED AND BEFORE NEW STEEL TIE IS INSTALLED.
4. WORK ON FLOOR BEAM TO BE PERFORMED DURING A RAIL OUTAGE.



SECTION B-B

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FLOOR BEAM DETAILS - BEAM FB11 REPAIRS

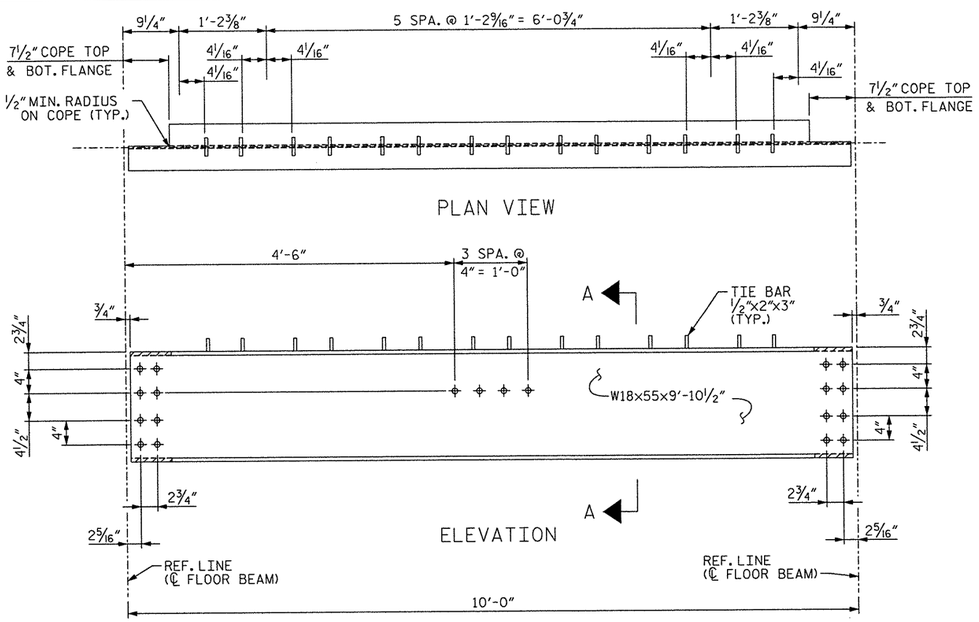
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON 3/19/2012

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

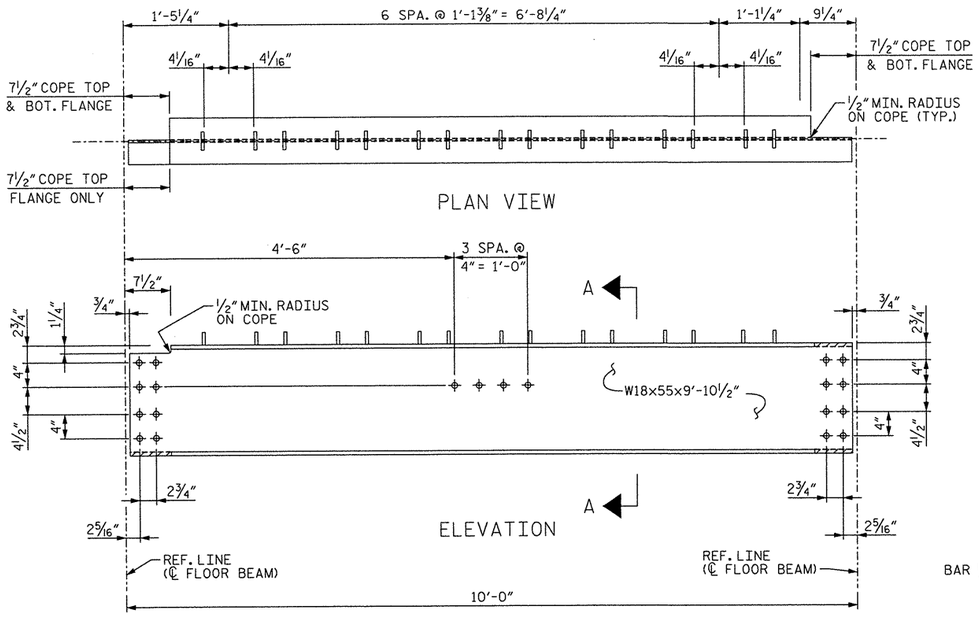
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

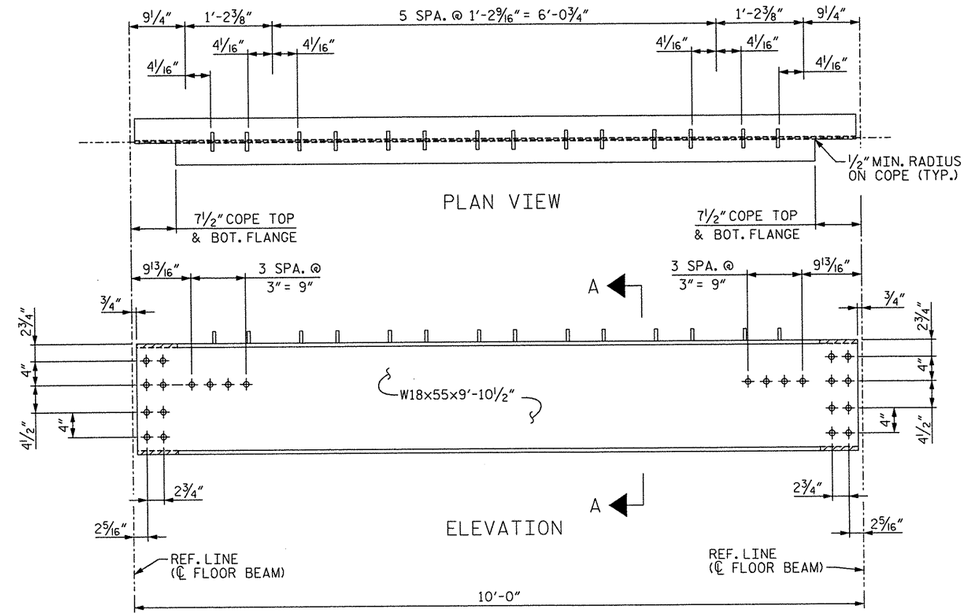
3/19/2012 3:31:04 PM N:\projdev\NCDOT\Rodio Island\CAD\STRUCTURAL\S-16 FB11.dgn



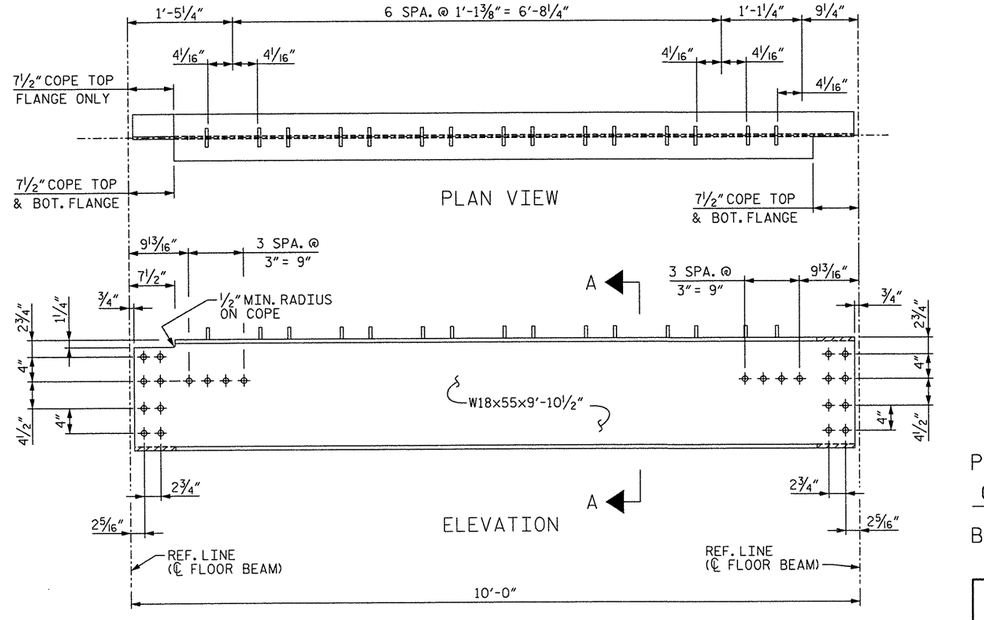
PROPOSED STRINGER S1



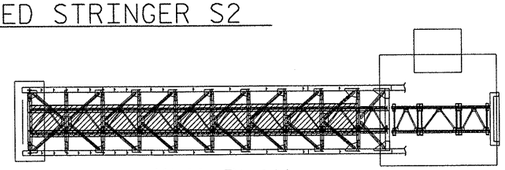
PROPOSED STRINGER S3



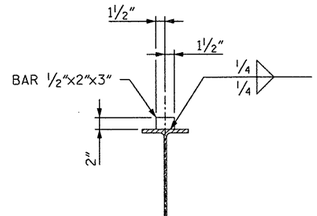
PROPOSED STRINGER S2



PROPOSED STRINGER S4



KEY PLAN



SECTION A-A

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN STRINGER DETAILS (SHEET 1 OF 2)

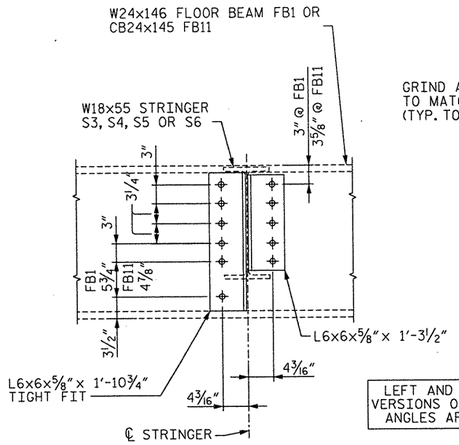
NORTH CAROLINA PROFESSIONAL SEAL 044100 ENGINEER MICHAEL C. HARRISON

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

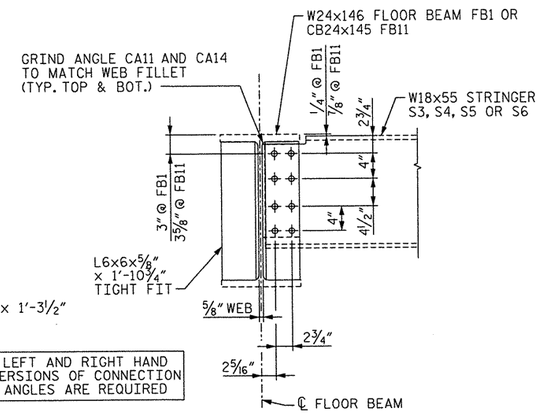
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:32:07 PM N:\proJdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-17 STR DETL.dgn



SECTION THROUGH STRINGER

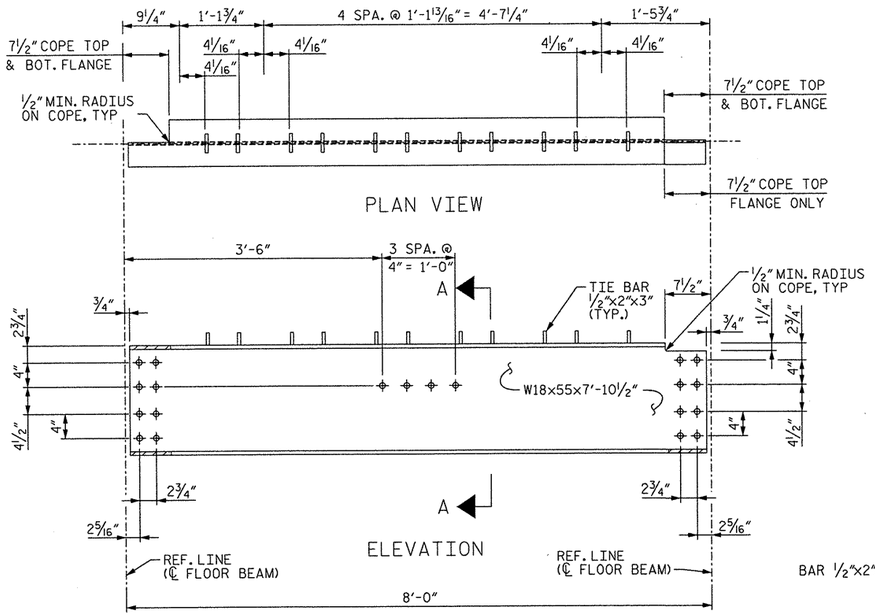


LEFT AND RIGHT HAND VERSIONS OF CONNECTION ANGLES ARE REQUIRED

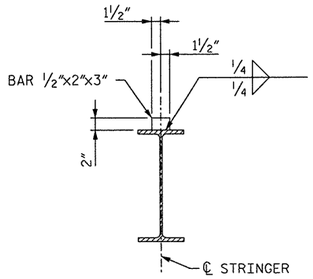
SECTION THROUGH FLOOR BEAM

STRINGER TO FLOOR BEAM CONNECTION ANGLES @ FB1 & FB11

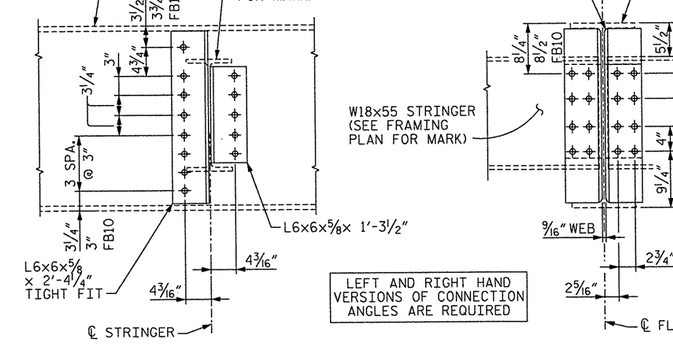
*REUSE CLIP ANGLES AT FB11 (IF SECTION LOSS IS GREATER THAN 20%, REPLACE CLIP ANGLES)



PROPOSED STRINGER S5



SECTION A-A

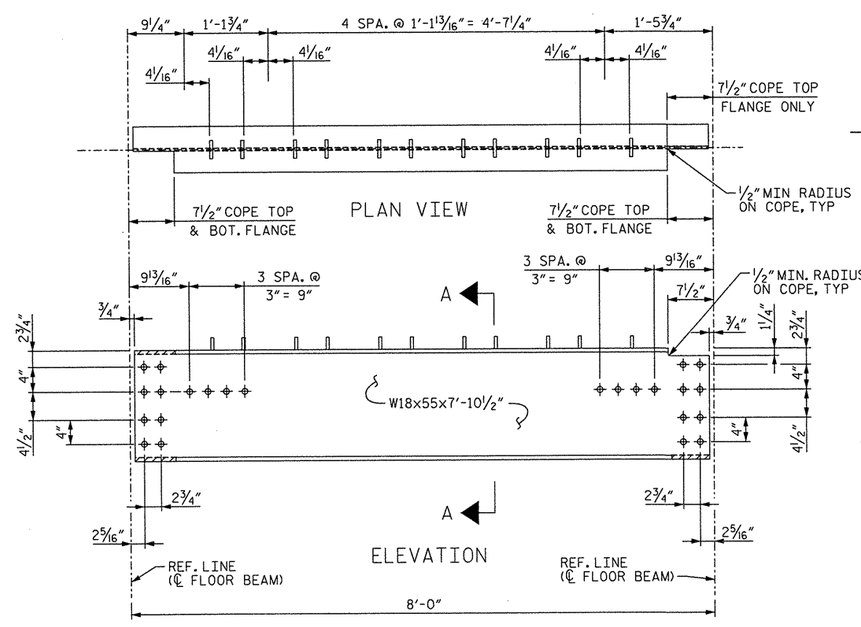


SECTION THROUGH STRINGER

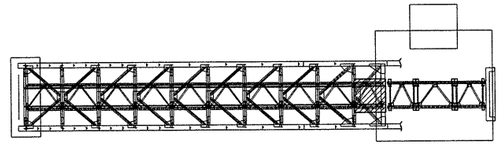
LEFT AND RIGHT HAND VERSIONS OF CONNECTION ANGLES ARE REQUIRED

SECTION THROUGH FLOOR BEAM

STRINGER TO FLOOR BEAM CONNECTION ANGLES @ FB2 - FB10



PROPOSED STRINGER S6



KEY PLAN

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN STRINGER DETAILS (SHEET 2 OF 2)

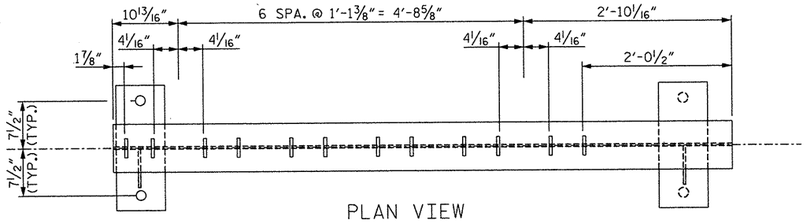
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			76

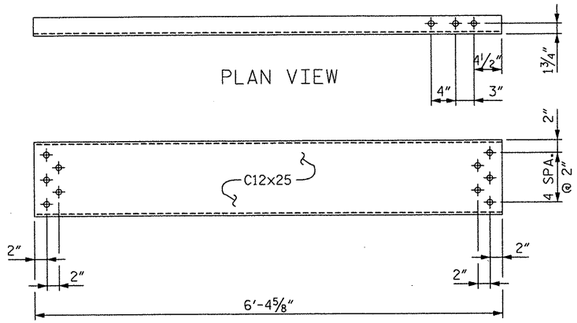
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON 3/19/2012

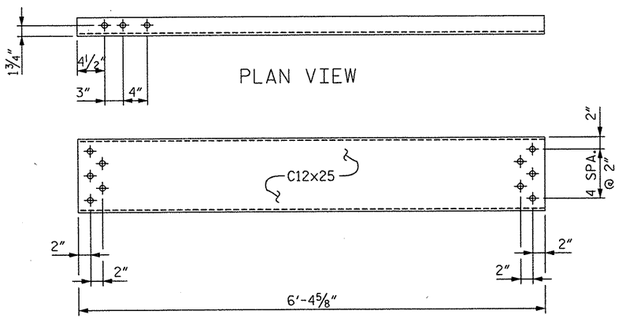
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

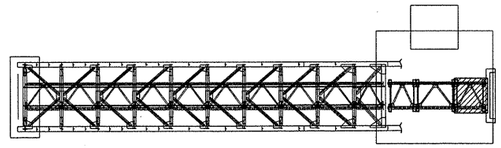
DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

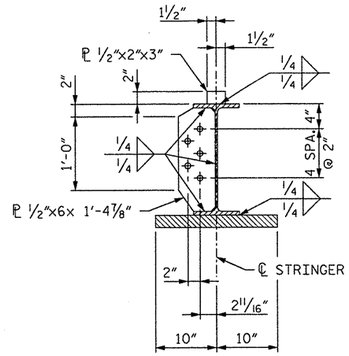
3/19/2012 3:32:47 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-18 STR DET2.dgn



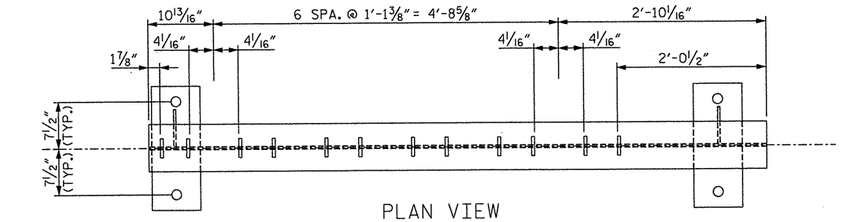


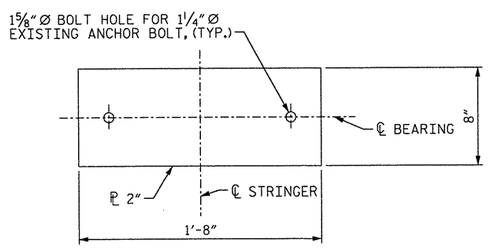



KEY PLAN



NOTE: RE-USE EXISTING ANCHOR BOLTS.





PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STATIONARY STRINGER DETAILS (SHEET 1 OF 2)

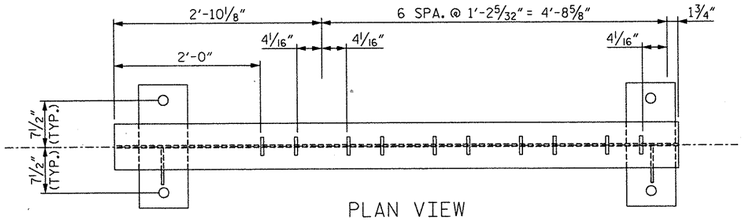
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON
March 30, 2012

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			76

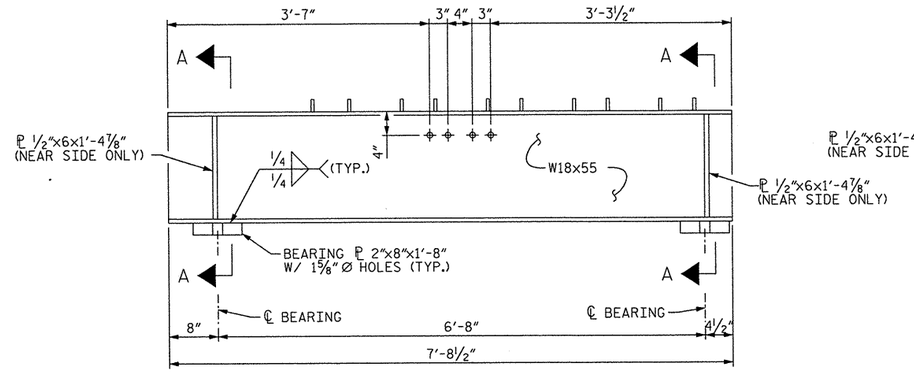
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:33:17 PM N:\proj\dev\NCDOT\Radio Island\CAD\STRUCTURAL\S-19 STA STRI.dgn

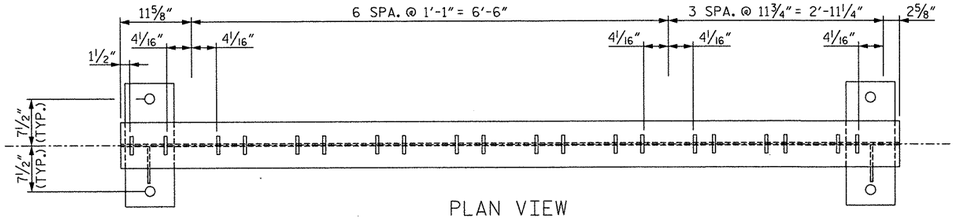


PLAN VIEW

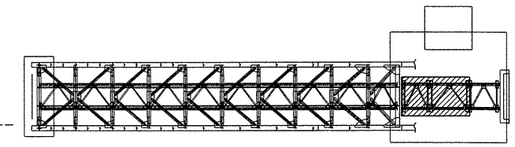


ELEVATION

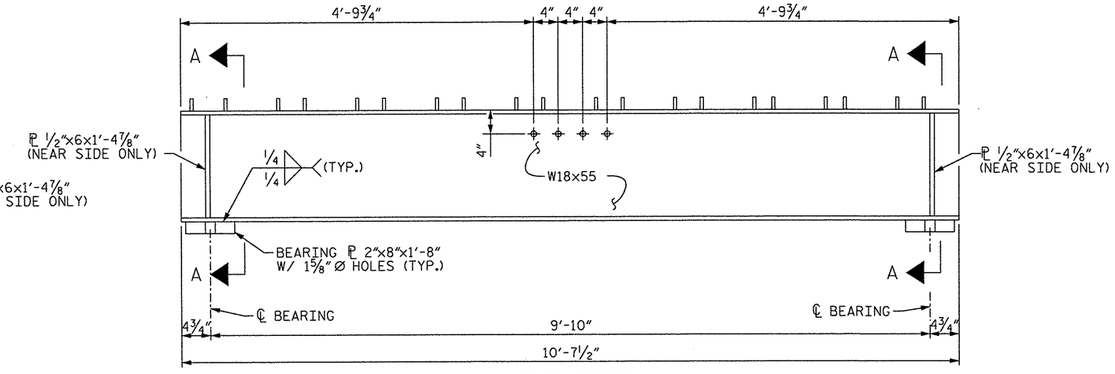
STRINGER S7



PLAN VIEW

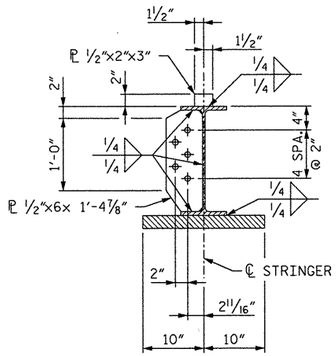


KEY PLAN

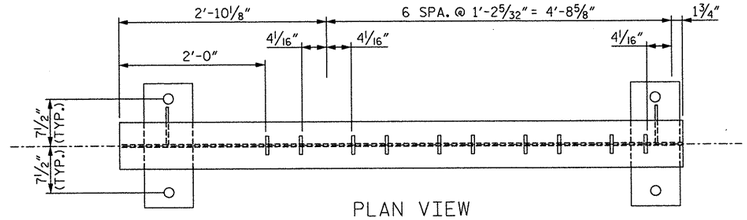


ELEVATION

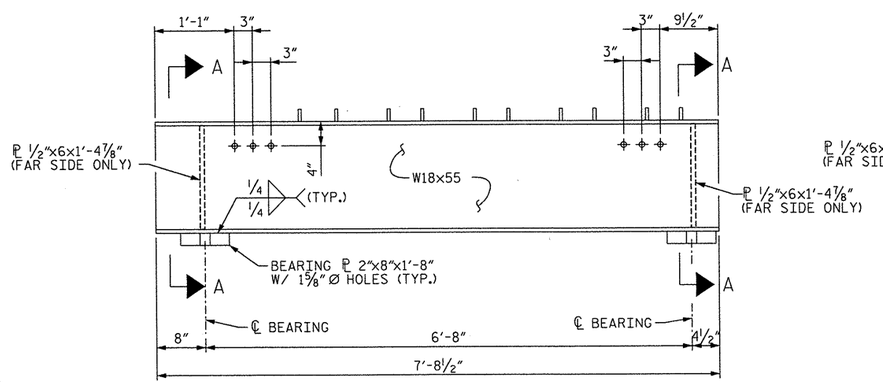
STRINGER S9



SECTION A-A

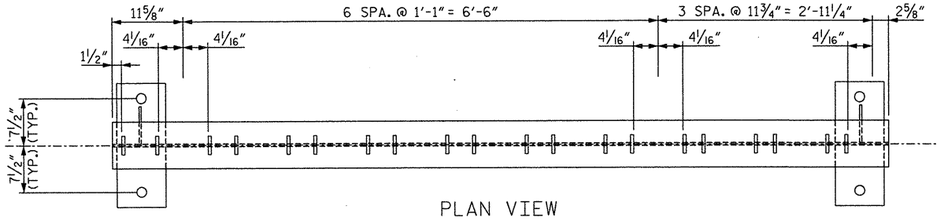


PLAN VIEW

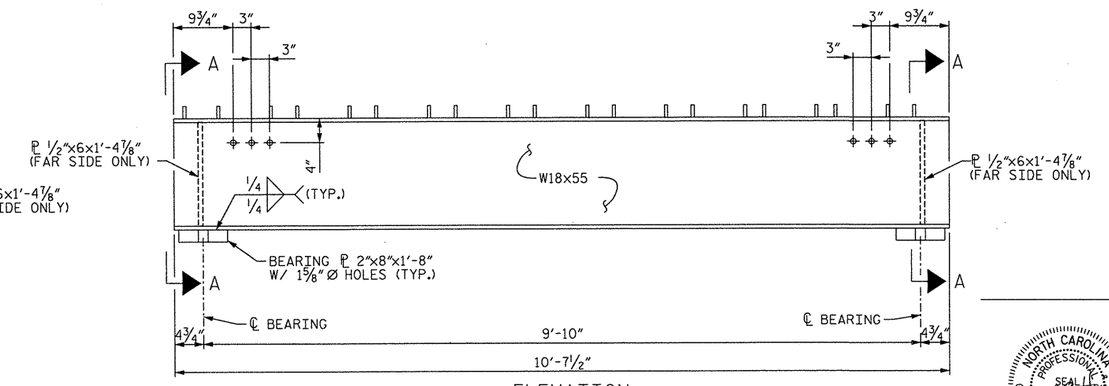


ELEVATION

STRINGER S8



PLAN VIEW



ELEVATION

STRINGER S10

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STATIONARY STRINGER DETAILS (SHEET 2 OF 2)

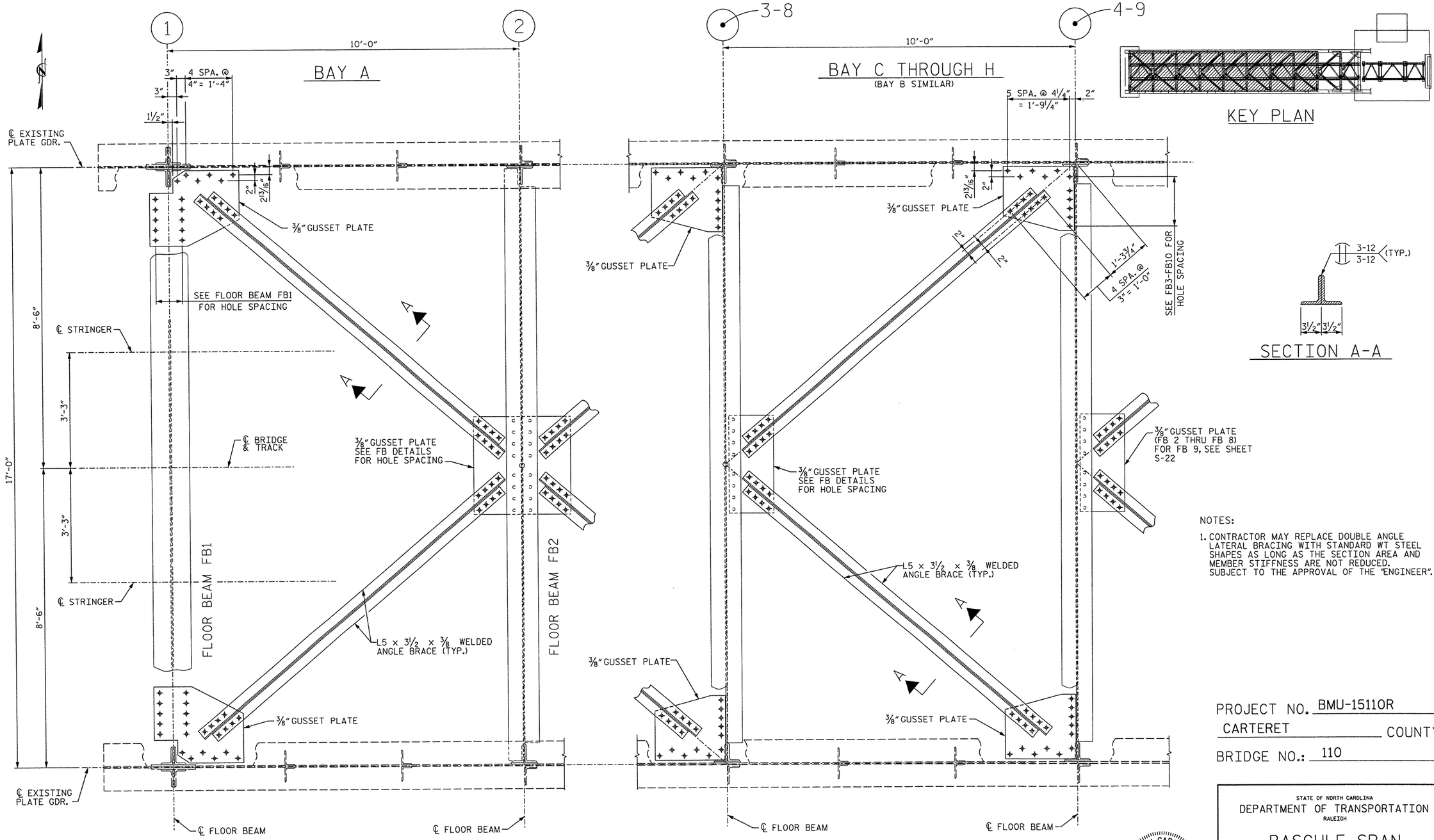
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			76

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:34:08 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-20 STA STR2.dgn



PARTIAL PLAN OF FLOOR BEAM LATERAL BRACING

(DECK, KNEEBRACES, STRINGERS, STRINGER BRACING AND PARTIAL FLANGE NOT SHOWN FOR CLARITY)

NOTES:

1. CONTRACTOR MAY REPLACE DOUBLE ANGLE LATERAL BRACING WITH STANDARD WT STEEL SHAPES AS LONG AS THE SECTION AREA AND MEMBER STIFFNESS ARE NOT REDUCED. SUBJECT TO THE APPROVAL OF THE "ENGINEER".

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN LATERAL BRACING DETAILS (SHEET 1 OF 2)

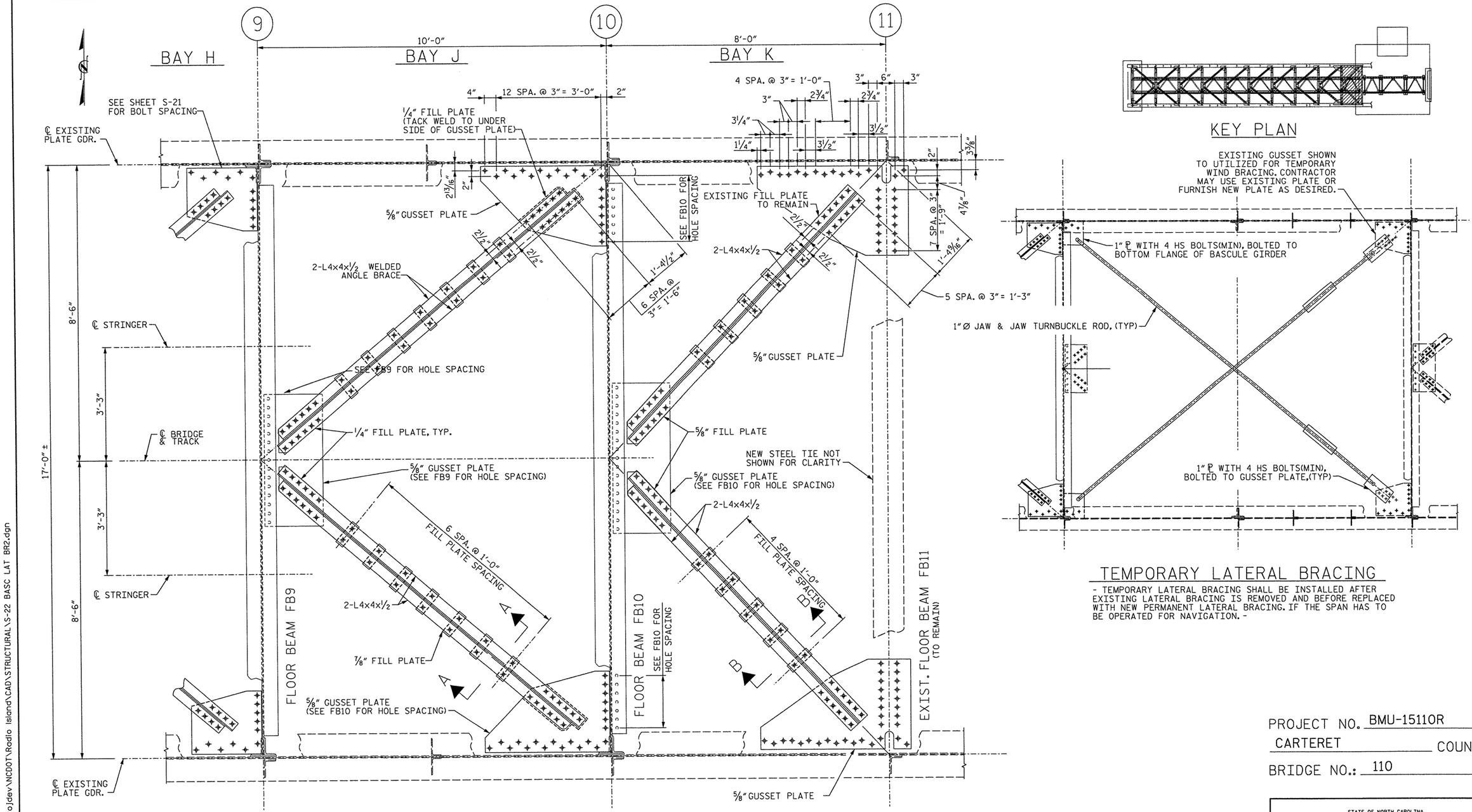
NORTH CAROLINA PROFESSIONAL SEAL 038100 ENGINEER MICHAEL C HARRISON
December 20, 2012

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			76

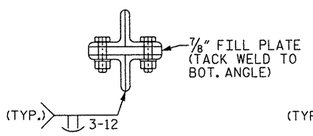
DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:34:29 PM N:\proj dev\NCDOT\Radio Island\CAD\STRUCTURAL\S-21BASC LAT BRL.dgn

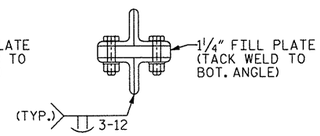


PARTIAL PLAN OF FLOOR BEAM LATERAL BRACING

- DECK, KNEEBRACES, STIFFENERS, STRINGERS, STRINGER BRACING AND PARTIAL FLANGE NOT SHOWN FOR CLARITY -



SECTION A-A



SECTION B-B

NOTES:

1. CONTRACTOR MAY REPLACE DOUBLE ANGLE LATERAL BRACING WITH STANDARD WT STEEL SHAPES AS LONG AS THE SECTION AREA AND MEMBER STIFFNESS ARE NOT REDUCED.

KEY PLAN

TEMPORARY LATERAL BRACING

- TEMPORARY LATERAL BRACING SHALL BE INSTALLED AFTER EXISTING LATERAL BRACING IS REMOVED AND BEFORE REPLACED WITH NEW PERMANENT LATERAL BRACING. IF THE SPAN HAS TO BE OPERATED FOR NAVIGATION. -

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN LATERAL BRACING DETAILS (SHEET 2 OF 2)

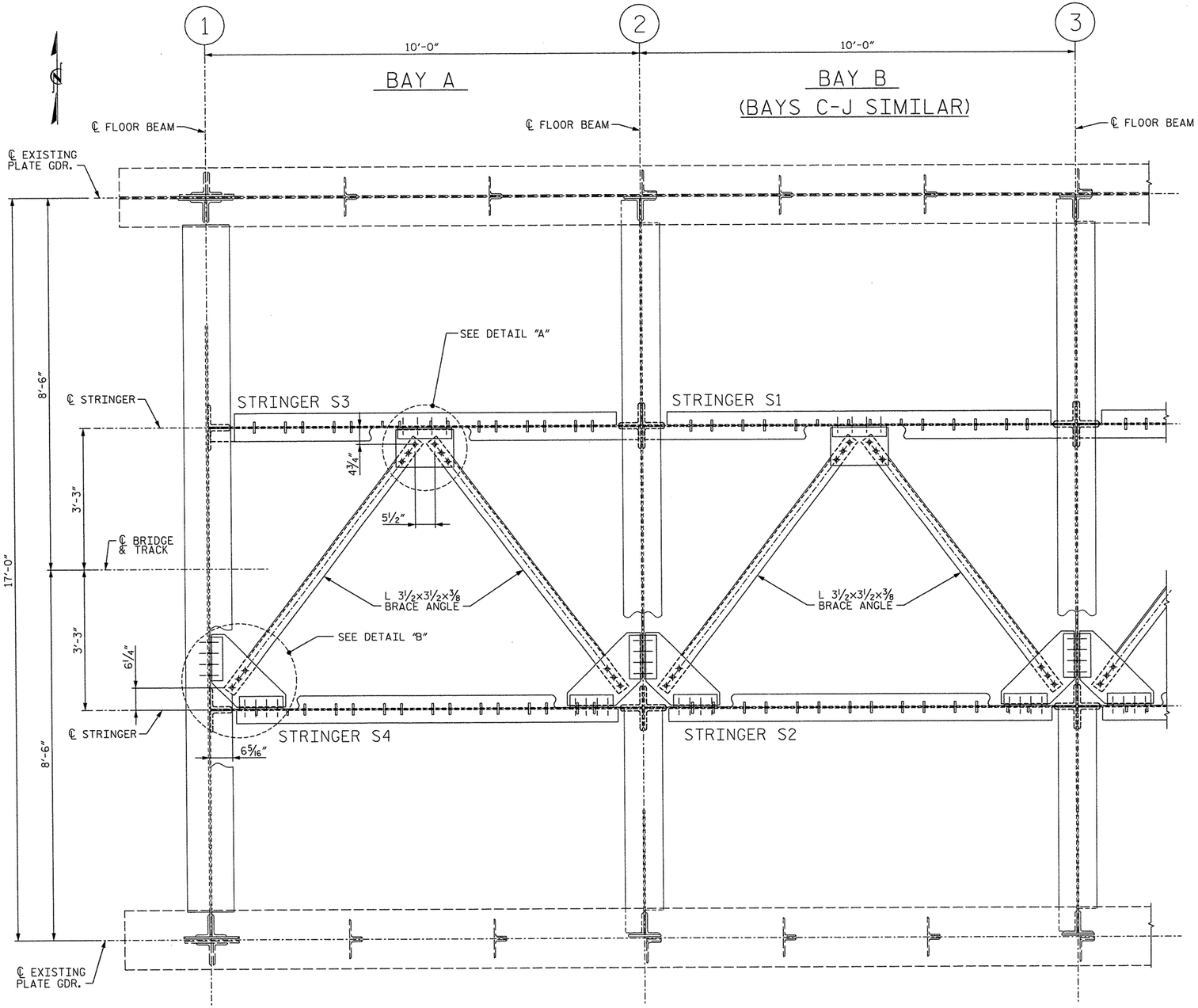
NORTH CAROLINA PROFESSIONAL SEAL 088100 ENGINEER MICHAEL C HARRISON
3/19/2012

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			76

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

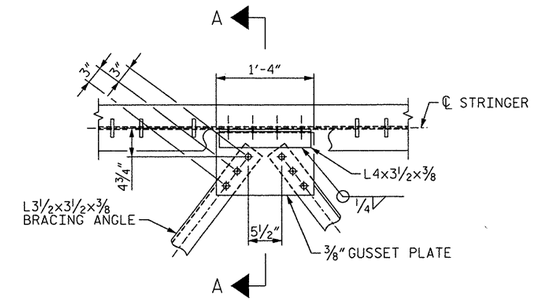
DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:34:51 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-22 BASC LAT BR2.dgn



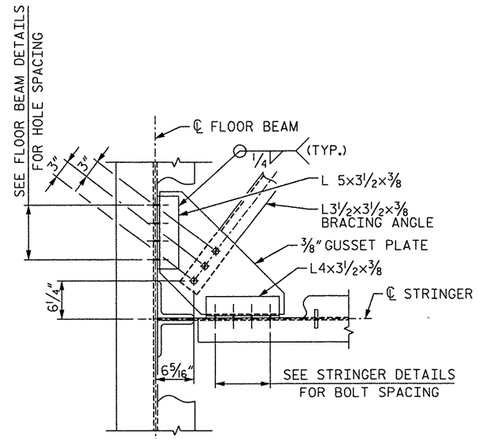
PARTIAL PLAN OF STRINGER LATERAL BRACING

(DECK, KNEE BRACE, GIRDER LATERAL BRACING AND PARTIAL FLANGE NOT SHOWN FOR CLARITY)



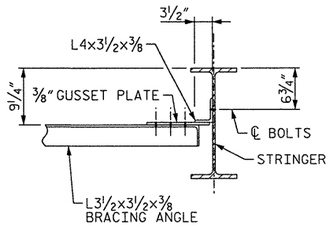
DETAIL A

(FLANGES REMOVED FOR CLARITY)



DETAIL B

(FLANGES REMOVED FOR CLARITY)



SECTION A-A

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN STRINGER LATERAL BRACING DETAILS (SHEET 1 OF 2)

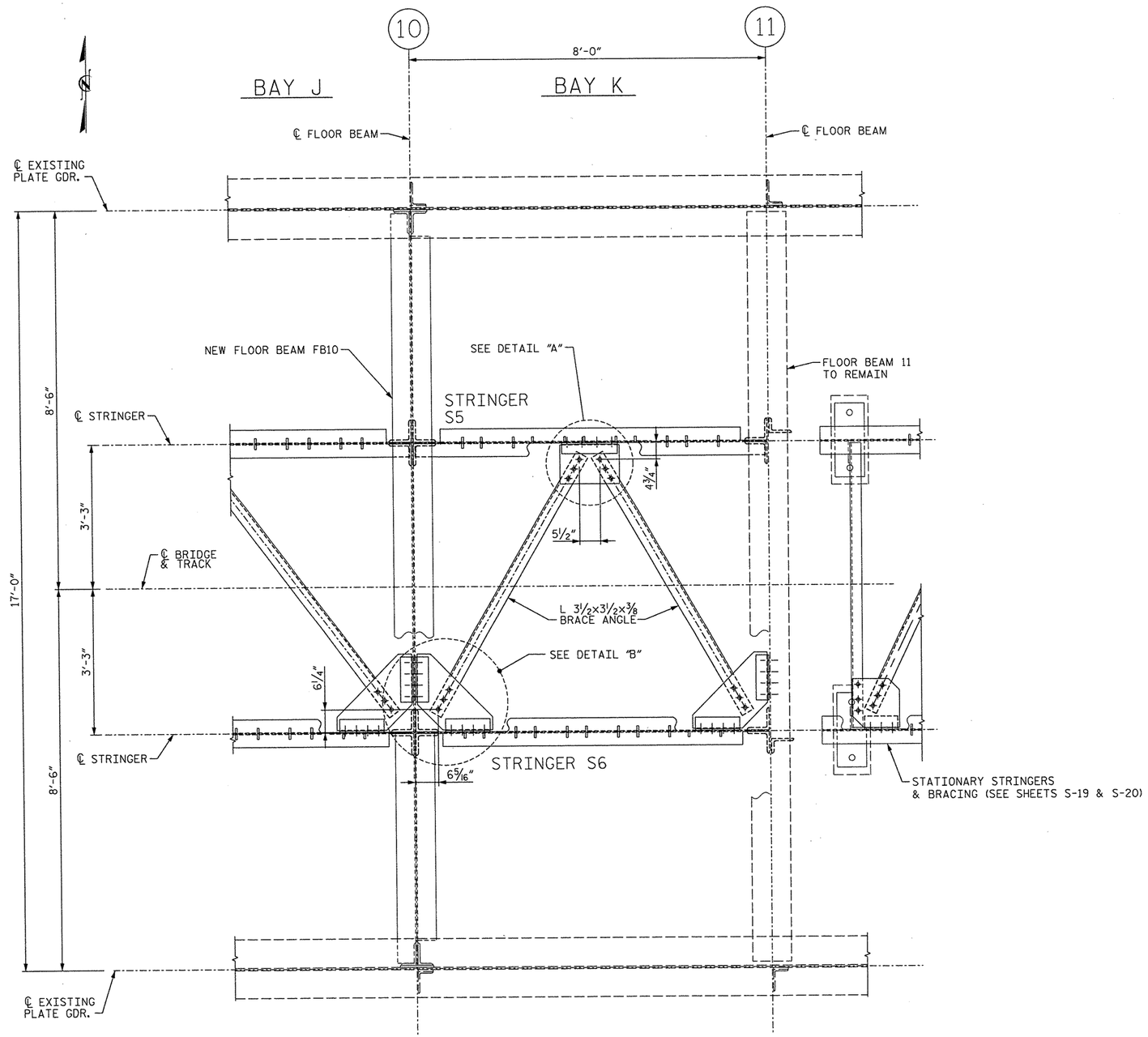
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON
3/19/2012

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			76

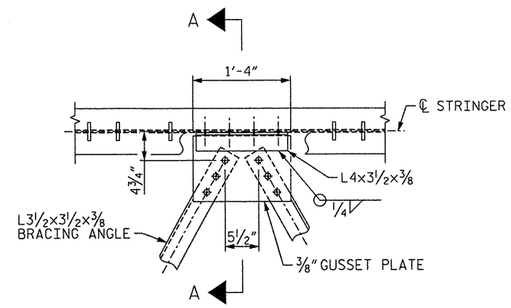
DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:35:09 PM N:\proj\dev\NCDOT\Radio Island\CAD\STRUCTURAL\S-23 STR LAT BRI.dgn



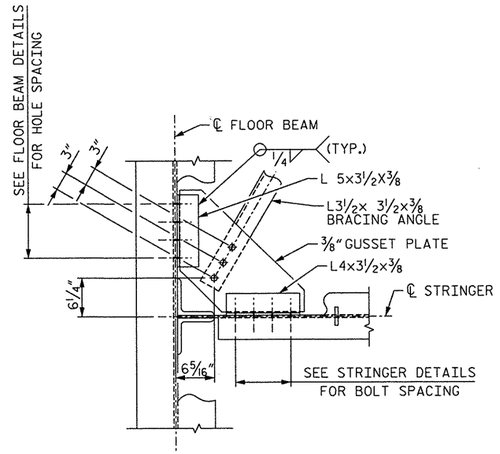
PARTIAL PLAN OF STRINGER LATERAL BRACING

(DECK, KNEE BRACE, GIRDER LATERAL BRACING AND PARTIAL FLANGE NOT SHOWN FOR CLARITY)



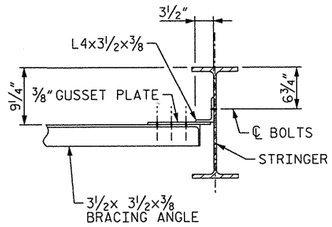
DETAIL A

(FLANGES REMOVED FOR CLARITY)



DETAIL B

(FLANGES REMOVED FOR CLARITY)



SECTION A-A

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

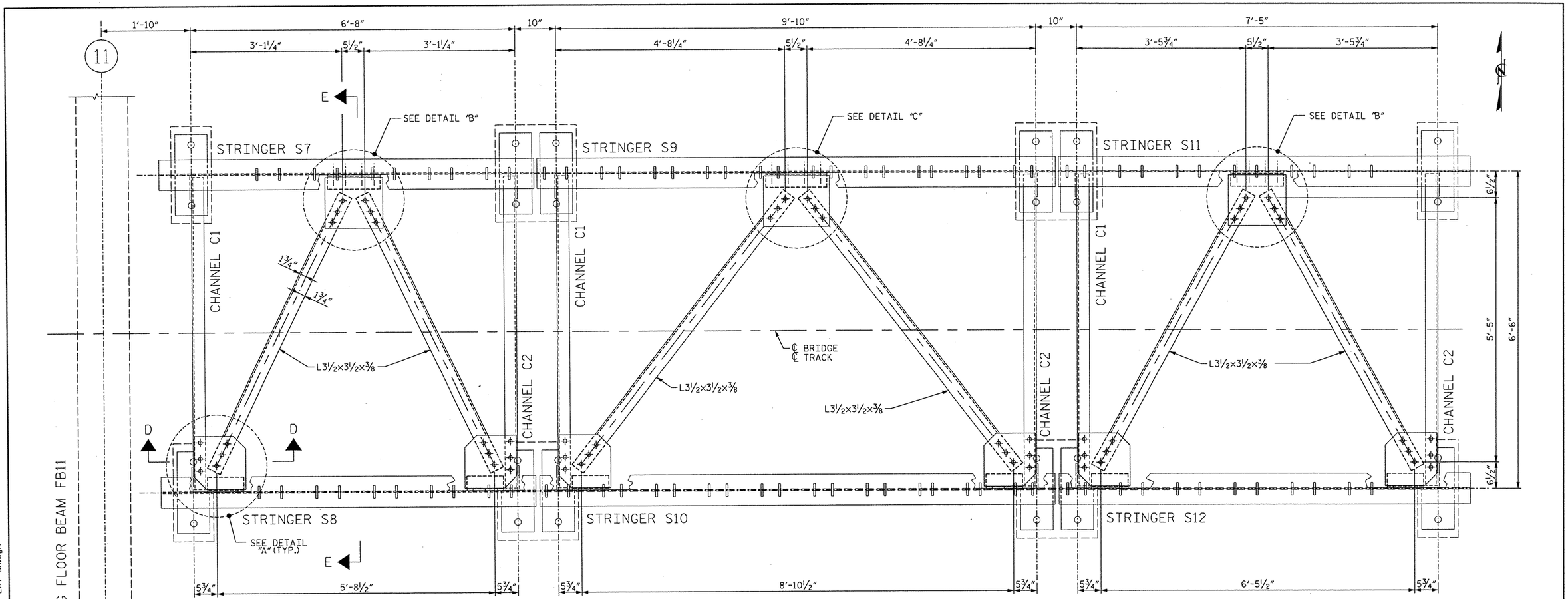
BASCULE SPAN STRINGER LATERAL BRACING DETAILS (SHEET 2 OF 2)

NORTH CAROLINA PROFESSIONAL SEAL 036400 ENGINEER MICHAEL C HARRISON
December 20, 2012

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

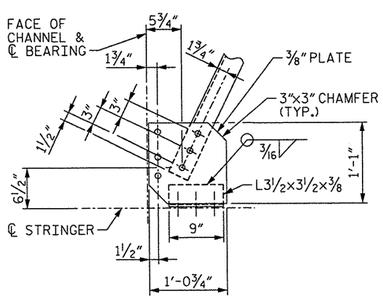
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

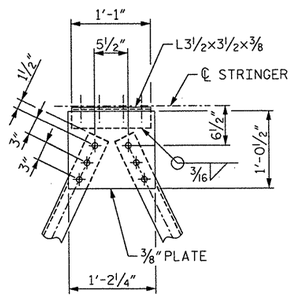


PLAN OF LATERAL BRACING - STATIONARY STRINGERS

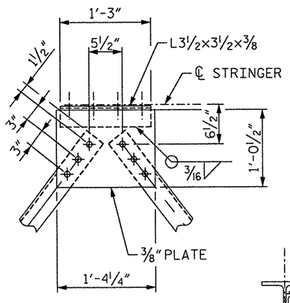
- PARTIAL FLANCE NOT SHOWN FOR CLARITY -



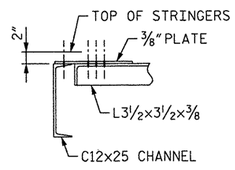
DETAIL "A"



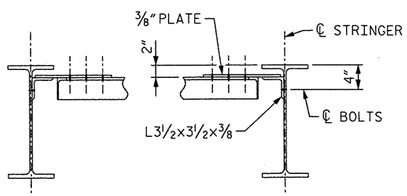
DETAIL "B"



DETAIL "C"



SECTION D-D



SECTION E-E

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STATIONARY STRINGER LATERAL BRACING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			76

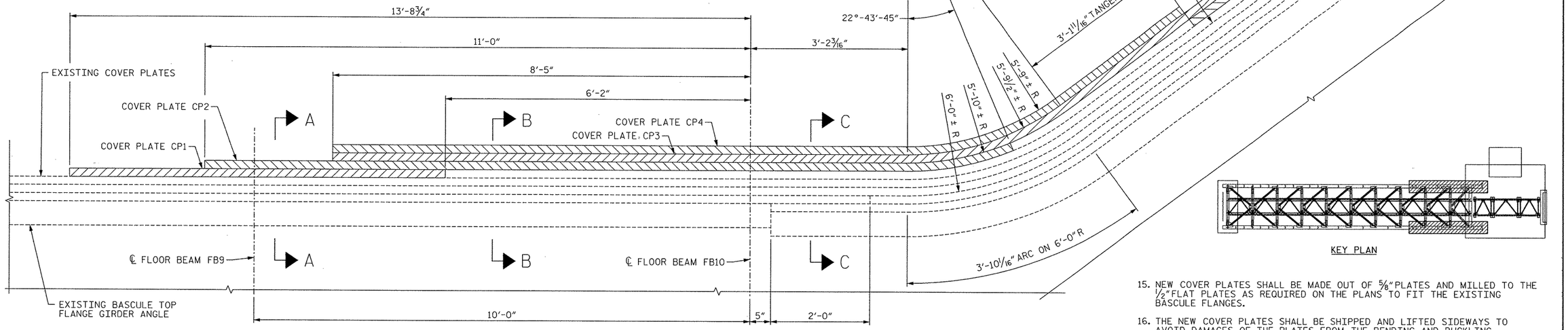
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:36:13 PM N:\proj\dev\NCDOT\Radio Island\CAD\STRUCTURAL\S-25 STA STR LAT BR.dgn

NEW TOP FLANGE COVER PLATE INSTALLATION:

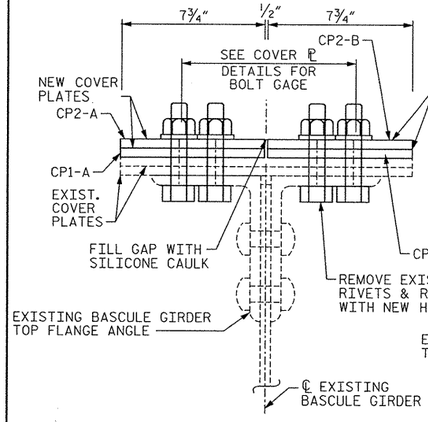
1. REMOVE PAINT, RUST AND PRIME EXISTING COVER PLATE.
2. REPLACE THE RIVETS IN TOP FLANGE WITHIN THE REGION WHERE THE NEW COVER PLATES ARE PROPOSED WITH H.S. BLACK BOLTS. NO MORE THAN FOUR RIVETS MAY BE REMOVED PRIOR TO PLACING H.S. BOLT IN EXISTING RIVET HOLE AND TIGHTEN BOLTS EACH TIME. IT IS ALLOWED TO OPERATE THE BRIDGE FOR NAVIGATION AND RAILROAD OPERATION AFTER EACH GROUP OF RIVETS IS REPLACED WITH A H.S. BOLT AND THAT BOLT HAS BEEN PROPERLY TIGHTENED. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
3. LOWER THE SPAN TO THE REST PIER AND SECURE TO REST PIER.
4. REMOVE TEMPORARY BOLTS FOR CP1-A. NOTE ALLOWABLE WINDOW OF NAVIGATION OUTAGE TO DETERMINE THE NUMBER OF PLATES THAT CAN BE INSTALLED WITHIN THE OUTAGE AVAILABLE. USE MINIMUM OF 8 DRIFT PINS EQUALLY SPACED ACROSS BOLT GROUP.
5. PREPARE THE EXISTING COVER PLATE FOR PLATE CP1-A. SURFACE DEFECTS IN EXCESS OF 1#16 INCH IN DEPTH SHALL BE FILLED WITH AN EPOXY CAULK JUST PRIOR TO PLACEMENT OF NEW COVER PLATE.
6. PLACE NEW COVER PLATE, INSTALL TEMPORARY BOLTS AT EACH END OF THE COVER PLATE. IF TIME REMAINING FOR NAVIGATION OUTAGE, PLACE COVER PLATE CP2-A ON CP1-A. CONTINUE AND INSTALL TEMPORARY BOLTS.
7. CONTINUE TO PLACE COVER PLATES AS TIME ALLOWS.
8. FILL REMAINING HOLES WITH TEMPORARY BOLTS. SNUG TIGHTEN ALL TEMPORARY BOLTS STARTING FROM THE CENTER OF THE COVER PLATE TOWARD EACH END EQUALLY.
9. TORQUE TEMPORARY H.S. BOLTS PRIOR TO ALLOWING SPAN TO BE OPERATED FOR NAVIGATION.
10. RECHECK SPAN BALANCE AND RELEASE TOE SUPPORT ON THE REST PIER. SEE SPECIAL PROVISIONS.
11. RESTORE SPAN OPERATION.
12. REPEAT STEPS ABOVE FOR ADDITIONAL COVER PLATE PLACEMENT.
13. COMPLETE INSTALLATION OF THE INSIDE SET OF COVER PLATES ON BOTH BASCULE GIRDERS AND THEN INSTALL THE EXTERIOR SET (CPx-B) FOLLOWING THE SAME PROCEDURE.
14. AFTER COVER PLATE INSTALLATION IS COMPLETE, REPLACE THE TEMPORARY H.S. BOLTS WITH NEW GALVANIZED H.S. BOLTS HAVING THE PROPER GRIP LENGTH. PLACE A GALVANIZED HARDENED WASHER UNDER EACH HEAD AND EACH NUT.



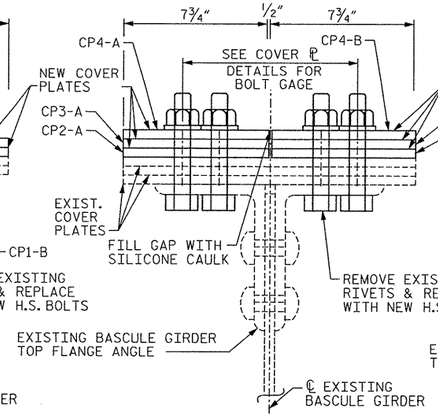
PROPOSED BASCULE GIRDER TOP FLANGE REINFORCEMENT DETAIL

KEY PLAN

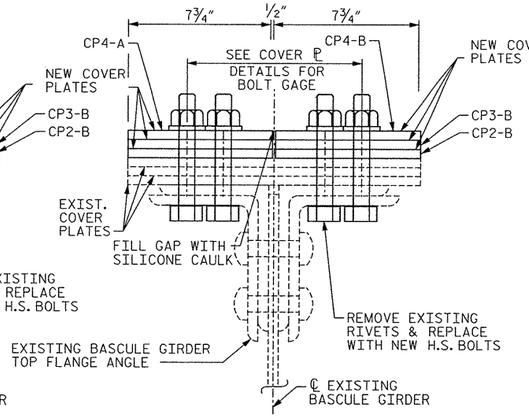
15. NEW COVER PLATES SHALL BE MADE OUT OF ⅝″ PLATES AND MILLED TO THE ½″ FLAT PLATES AS REQUIRED ON THE PLANS TO FIT THE EXISTING BASCULE FLANGES.
16. THE NEW COVER PLATES SHALL BE SHIPPED AND LIFTED SIDEWAYS TO AVOID DAMAGES OF THE PLATES FROM THE BENDING AND BUCKLING. CONTRACTOR SHALL SUBMIT THE SHIPMENT AND LIFT PLAN TO THE ENGINEER FOR REVIEW.



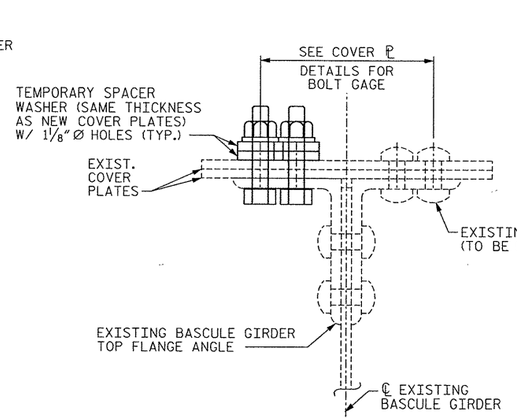
SECTION A-A



SECTION B-B



SECTION C-C



RIVET REPLACEMENT DETAIL

NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C. HARRISON

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

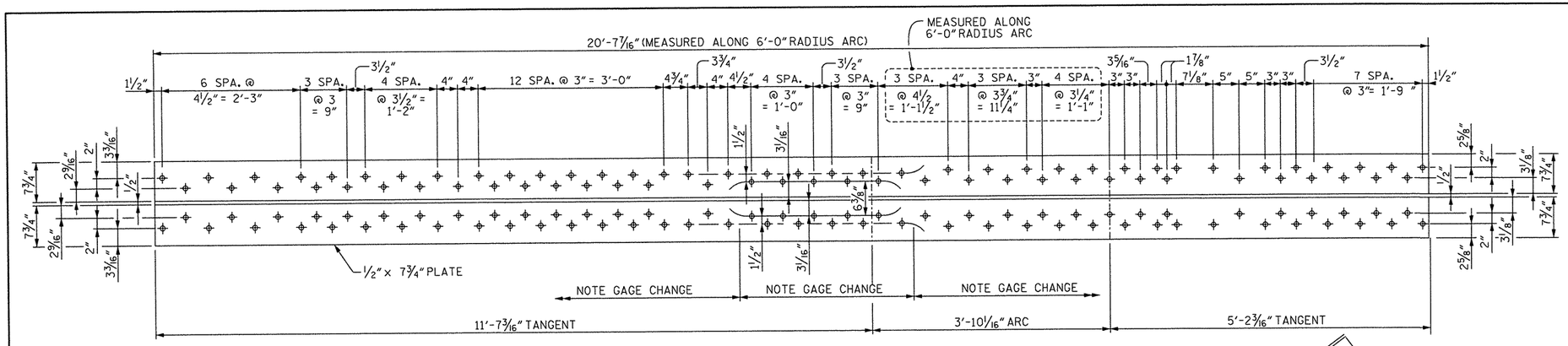
PROPOSED BASCULE GIRDER REINFORCEMENT TOP FLANGE DETAILS (SHEET 1 OF 3)

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

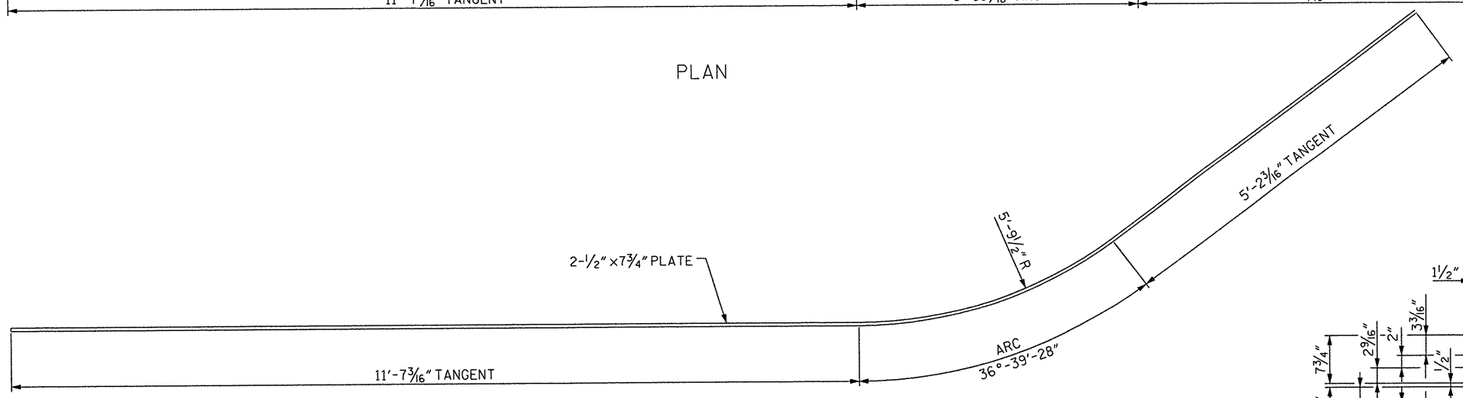
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			76

3/19/2012 3:36:41 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-26 BASC GRDR REINL.dgn



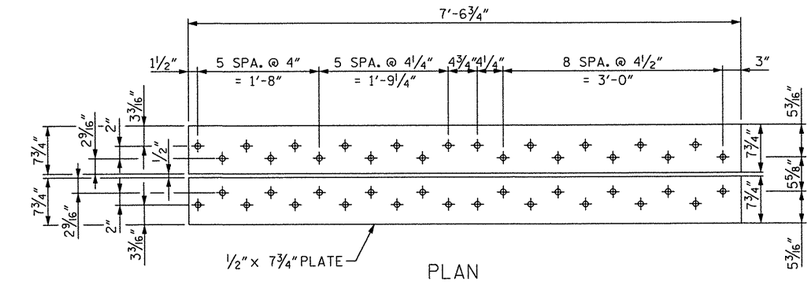
PLAN



ELEVATION

PROPOSED COVER PLATE CP3

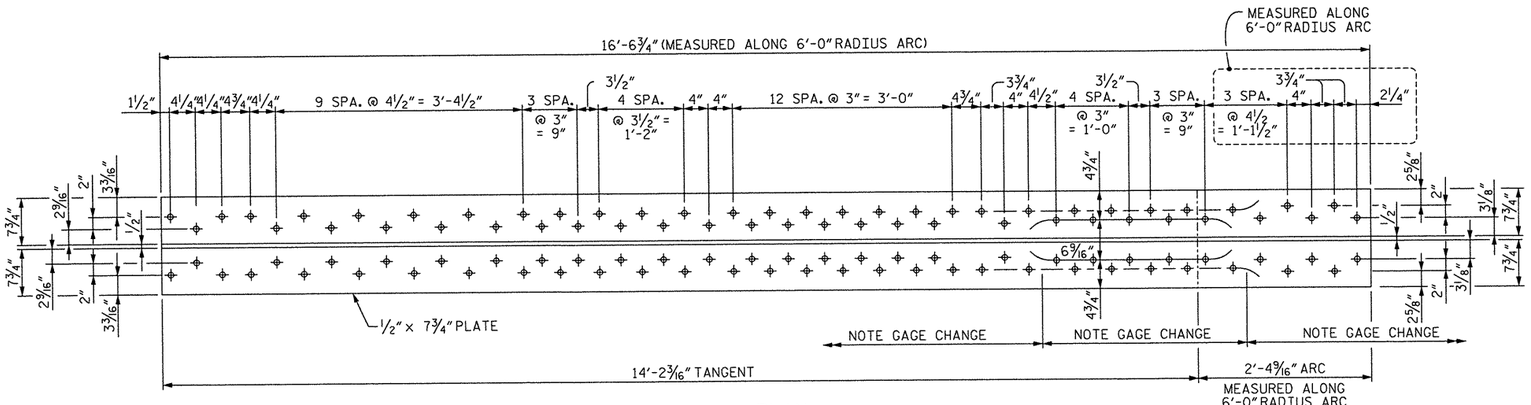
1 PAIR REQUIRED - A & B



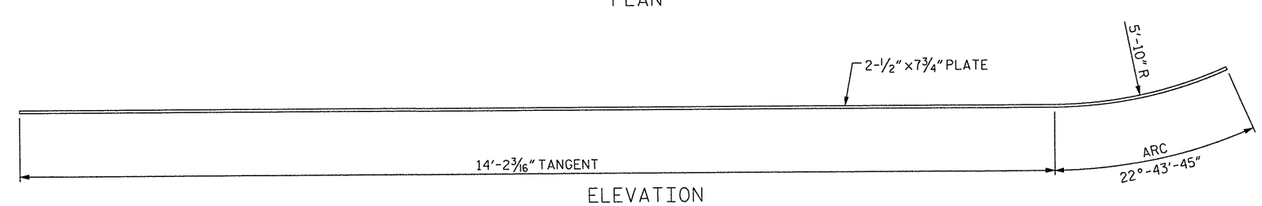
PLAN

COVER PLATE CP1

1 PAIR REQUIRED - A & B



PLAN



ELEVATION

PROPOSED COVER PLATE CP2

1 PAIR REQUIRED - A & B

NOTES:

1. THE BRIDGE SHALL BE IN THE DOWN POSITION WHILE PERFORMING MODIFICATIONS TO EXISTING TOP FLANGE. WORK SHALL BE PERFORMED ON ONE GIRDER AT A TIME.
2. CONTRACTOR SHALL EXERCISE CAUTION WHILE REMOVING EXISTING RIVETS SO AS TO NOT DAMAGE EXISTING COVER PLATES AND FLANGE ANGLES. CLAMPS SHALL BE USED AS NECESSARY TO PREVENT LOOSENING OR MOVEMENT OF MEMBERS DURING FIELD WORK.
3. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF EXISTING RIVETS IN THE EXISTING PLATE GIRDER, THE TOP FLANGE CURVATURE AND EXISTING COVER PLATE TERMINATIONS AND MAKE A TEMPLATE. HOLES IN NEW PLATES SHALL BE SHOP DRILLED OR PUNCHED 1/8" UNDERSIZE AND REAMED IN THE FIELD USING THE EXISTING AS A TEMPLATE.
4. DEFECTS IN THE PLATE GREATER THAN 1/16 INCH IN DEPTH SHALL BE FILLED WITH EPOXY CAULK JUST PRIOR TO PLACEMENT OF THE COVER PLATE.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PROPOSED BASCULE GIRDER REINFORCEMENT TOP FLANGE DETAILS (SHEET 2 OF 3)

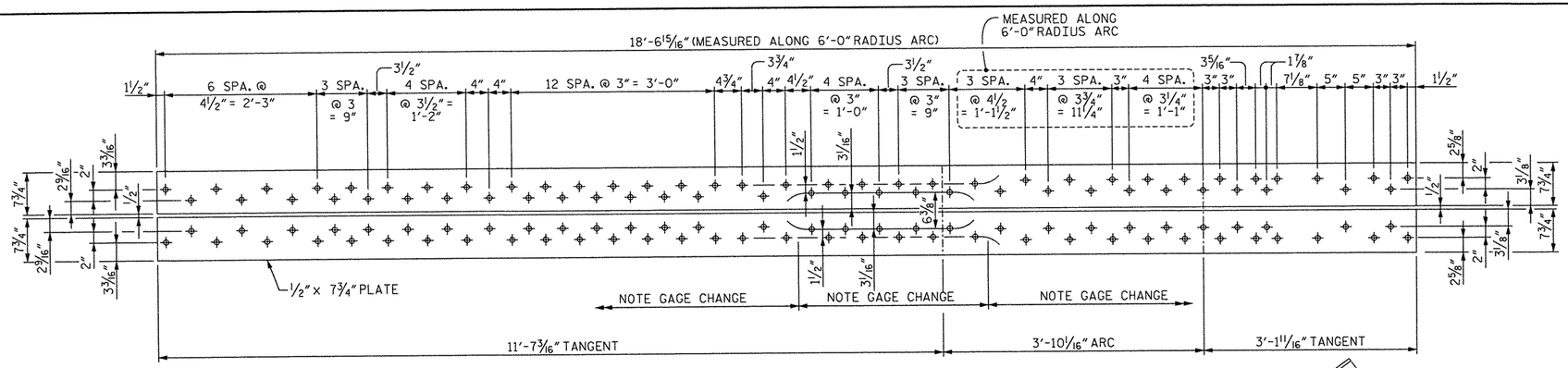
NORTH CAROLINA PROFESSIONAL SEAL 026108 ENGINEER MICHAEL C HARRISON
3/19/2012

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			76

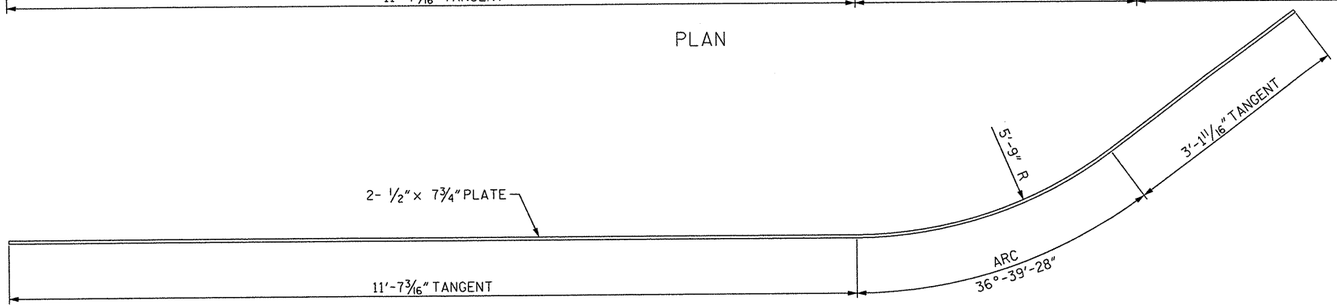
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:37:10 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-27 BASC GRDR REIN2.dgn



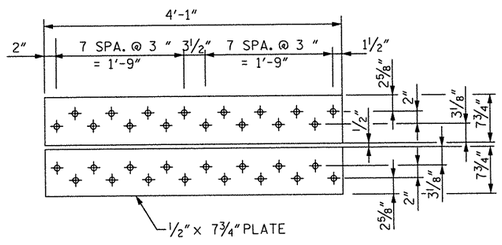
PLAN



ELEVATION

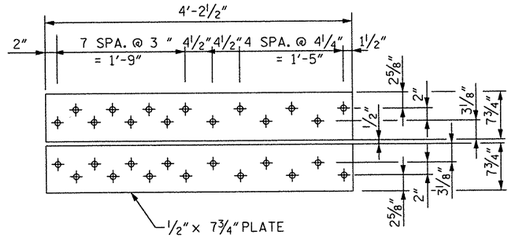
COVER PLATE CP4

1 PAIR REQUIRED - A & B



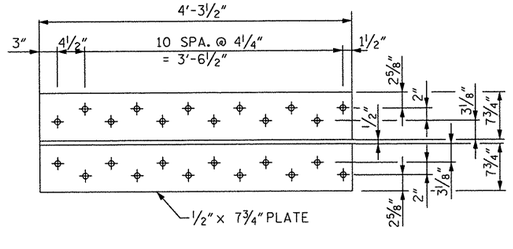
PROPOSED COVER PLATE CP5

1 PAIR REQUIRED - A & B



PROPOSED COVER PLATE CP6

1 PAIR REQUIRED - A & B



PROPOSED COVER PLATE CP7

1 PAIR REQUIRED - A & B

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PROPOSED BASCULE GIRDER REINFORCEMENT TOP FLANGE DETAILS (SHEET 3 OF 3)

NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL G. HARRISON

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

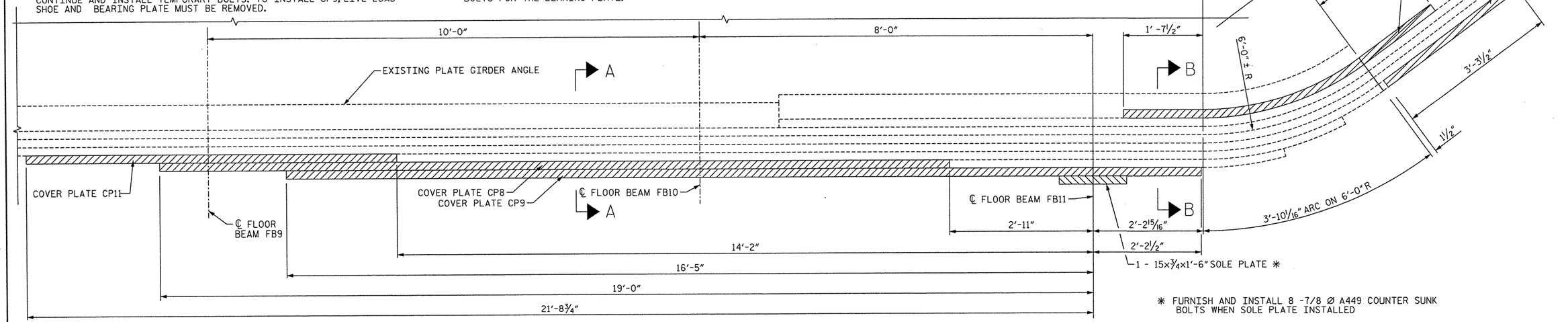
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:37:40 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-28 BASC GRDR REIN3.dgn

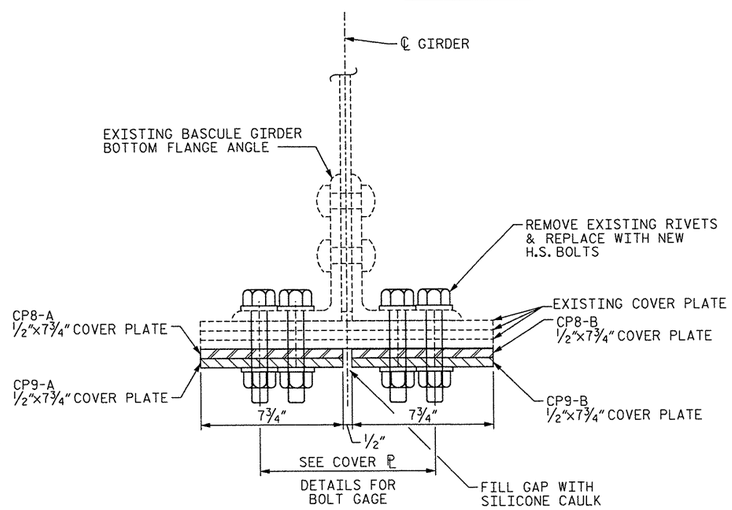
NEW BOTTOM FLANGE COVER PLATE INSTALLATION:

1. REMOVE PAINT, RUST AND PRIME EXISTING COVER PLATE.
2. REPLACE RIVETS IN BOTTOM FLANGE WITHIN THE REGION OF THE NEW COVER PLATES AND REINFORCING BARS. REPLACE WITH TEMPORARY H.S. BOLTS AND SPACER PLATES. LIMIT RIVET REMOVAL TO 4 RIVETS MAXIMUM PRIOR TO INSTALLATION OF NEW H.S. BOLTS.
3. PERFORM REMAINING TASKS DURING NON RAILROAD OPERATIONAL WINDOW (NO LIVE LOAD)
4. PLACE SPAN IN OPEN POSITION. CONTRACTOR TO COORDINATE WITH USCG AND OBTAIN ALL PERMITS REQUIRED IF WORK EQUIPMENT WILL IMPACT NAVIGATIONAL CLEARANCE.
5. REMOVE TEMPORARY BOLTS FOR CP11-A. NOTE ALLOWABLE WINDOW OF NAVIGATION OUTAGE TO DETERMINE THE NUMBER OF PLATES THAT CAN BE INSTALLED WITHIN THE OUTAGE AVAILABLE. LEAVE A MINIMUM OF 8 PINS OR BOLTS IN EXISTING HOLES DURING COVER PLATE INSTALLATION AT ALL TIMES.
6. PREPARE THE EXISTING COVER PLATE FOR PLATE CP11-A. SURFACE DEFECTS IN EXCESS OF $\frac{1}{16}$ INCH IN DEPTH SHALL BE FILLED WITH AN EPOXY CAULK JUST PRIOR TO PLACEMENT OF NEW COVER PLATE.
7. PLACE NEW COVER PLATE, INSTALL TEMPORARY BOLTS AT EACH END OF THE COVER PLATE. IF TIME REMAINING FOR NAVIGATION OUTAGE, PLACE COVER PLATE CP8-A AND CP9-A. LEAVE A MINIMUM OF 8 PINS OR BOLTS IN EXISTING HOLES DURING COVER PLATE INSTALLATION AT ALL TIMES. CONTINUE AND INSTALL TEMPORARY BOLTS. TO INSTALL CP9, LIVE LOAD SHOE AND BEARING PLATE MUST BE REMOVED.
8. CONTINUE TO PLACE COVER PLATES AS TIME ALLOWS.
9. FILL REMAINING HOLES WITH TEMPORARY BOLTS. SNUG TIGHTEN ALL TEMPORARY BOLTS STARTING FROM THE CENTER OF THE COVER PLATE TOWARD EACH END EQUALLY.
10. TIGHTEN H.S. BOLTS STARTING FROM THE CENTER OF THE BOLT GROUP WORKING TO THE ENDS OF THE COVER PLATE EQUALLY.
11. TORQUE ALL TEMPORARY H.S. BOLTS PRIOR TO ALLOWING SPAN TO BE OPERATED FOR NAVIGATION.
12. RESTORE SPAN TO ALLOW MOVEMENT IF NEEDED. RAILROAD OPERATIONS NOT PERMITTED UNTIL BOTTOM COVER PLATE AND LIVE LOAD SHOE INSTALLATION HAS BEEN COMPLETED.
13. REPEAT STEPS ABOVE FOR ADDITIONAL COVER PLATE INSTALLATION.
14. COMPLETE INSTALLATION OF THE INSIDE SET OF COVER PLATES ON BOTH BASCULE GIRDERS. THEN INSTALL THE EXTERIOR SET (FOR EXAMPLE : CP11-B) BY FOLLOWING THE SAME PROCEDURE.
15. AFTER COVER PLATE INSTALLATION IS COMPLETE, INSTALL REINFORCING BAR RB1-A IN A MANNER SIMILAR TO COVER PLATE INSTALLATION. INSTALL BOTH BARS RB1-A FIRST, THEN INSTALL RB-1B PLATES.
16. INSTALL NEW FB-11 LIVE LOAD BEARING PLATE TO BOTTOM OF GIRDER. REMOVE TEMPORARY BOLTS AND INSTALL NEW COUNTERSUNK H.S. GALVANIZED BOLTS FOR THE BEARING PLATE.
17. CLOSE SPAN TO NAVIGATION
18. PLACE NEW REAR LIVE LOAD BEARING ASSEMBLY AT FB-11. THEN LOWER SPAN, LOCK SPAN IN THE LOWERED POSITION.
19. ADJUST THE CLEARANCE BETWEEN THE BEARING PLATE AND THE BEARING ASSEMBLY TO PROVIDE A $\frac{1}{4}$ INCH GAP WITHOUT LIVE LOAD. DO NOT OPERATE RAIL TRAFFIC PRIOR TO INSTALLING NEW BASCULE PIER BEARING.
20. REPLACE THE TEMPORARY H.S. BOLTS WITH NEW GALVANIZED H.S. BOLTS HAVING THE PROPER GRIP LENGTH. PLACE A GALVANIZED HARDENED WASHER UNDER EACH HEAD AND EACH NUT.

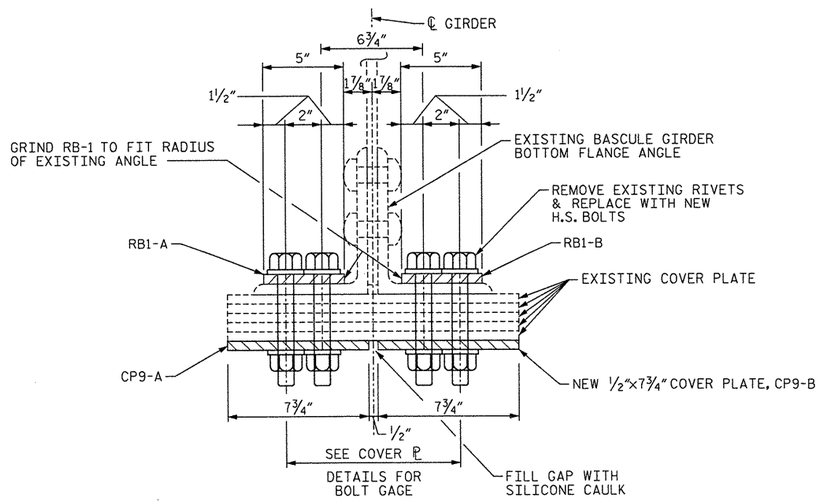


* FURNISH AND INSTALL 8 -7/8 Ø A449 COUNTER SUNK BOLTS WHEN SOLE PLATE INSTALLED

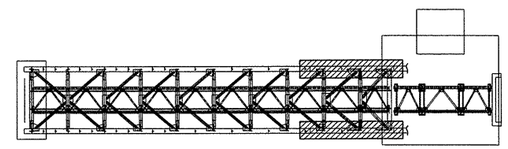
PROPOSED BASCULE GIRDER BOTTOM FLANGE REINFORCEMENT DETAIL



SECTION A-A



SECTION B-B



KEY PLAN

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PROPOSED BASCULE GIRDER REINFORCEMENT BOTTOM FLANGE DETAILS (SHEET 1 OF 2)

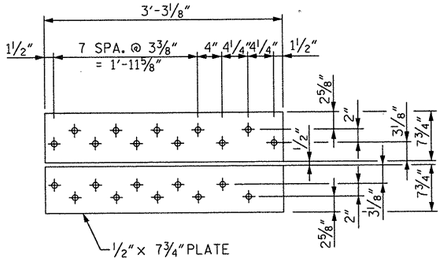
NORTH CAROLINA PROFESSIONAL SEAL 029001 ENGINEER MICHAEL C HARRISON

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			76

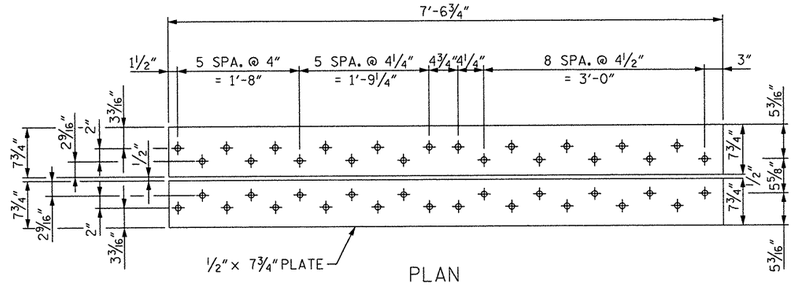
DRAWN BY : NCA DATE : 11-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:38:21 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-29 BASC GRDR REIN4.dgn



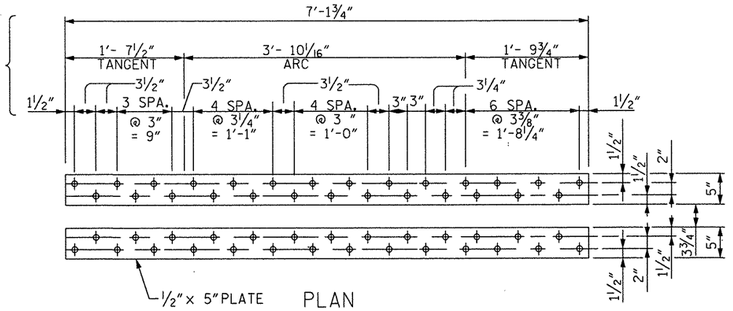
COVER PLATES CP10

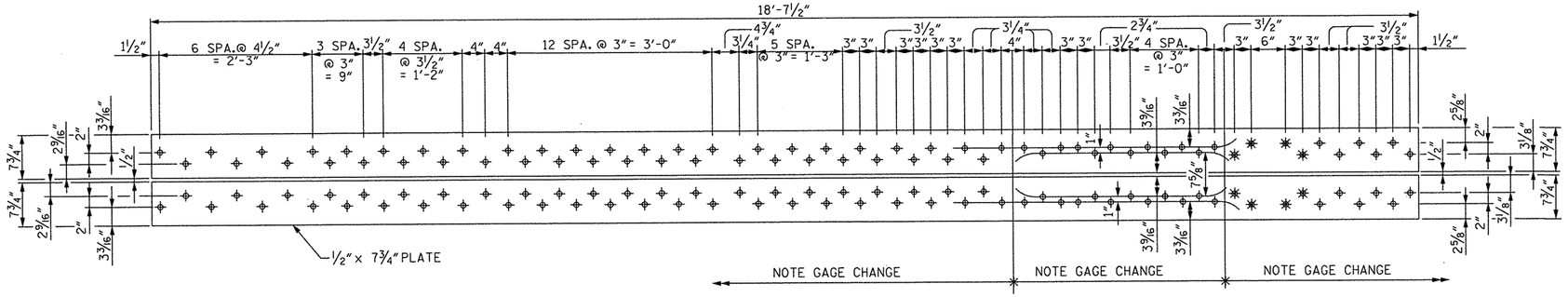
1 PAIR REQUIRED - A & B



COVER PLATE CP11

1 PAIR REQUIRED - A & B



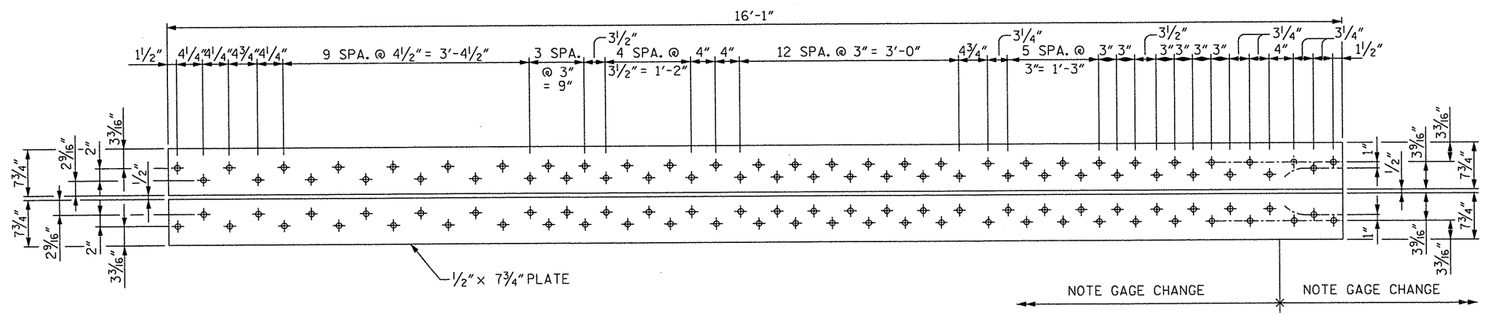


PROPOSED COVER PLATE CP9

1 PAIR REQUIRED - A & B

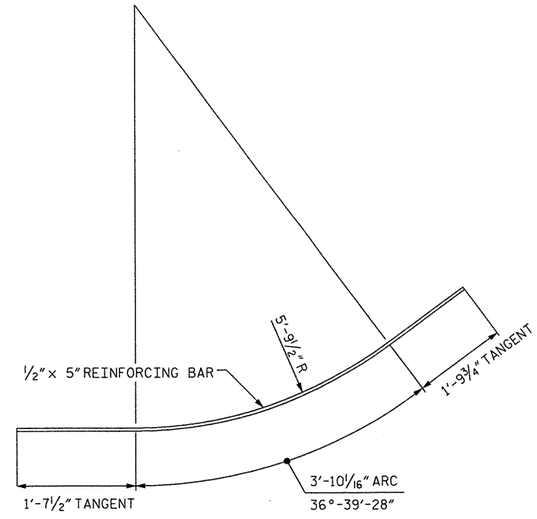
HIGH STRENGTH BOLT

COUNTERSUNK BOLT



PROPOSED COVER PLATE CP8

1 PAIR REQUIRED - A & B



ELEVATION

PROPOSED REINFORCING BAR RB1

1 PAIR REQUIRED - A & B

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PROPOSED BASCULE GIRDER REINFORCEMENT BOTTOM FLANGE DETAILS (SHEET 2 OF 2)

NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			76

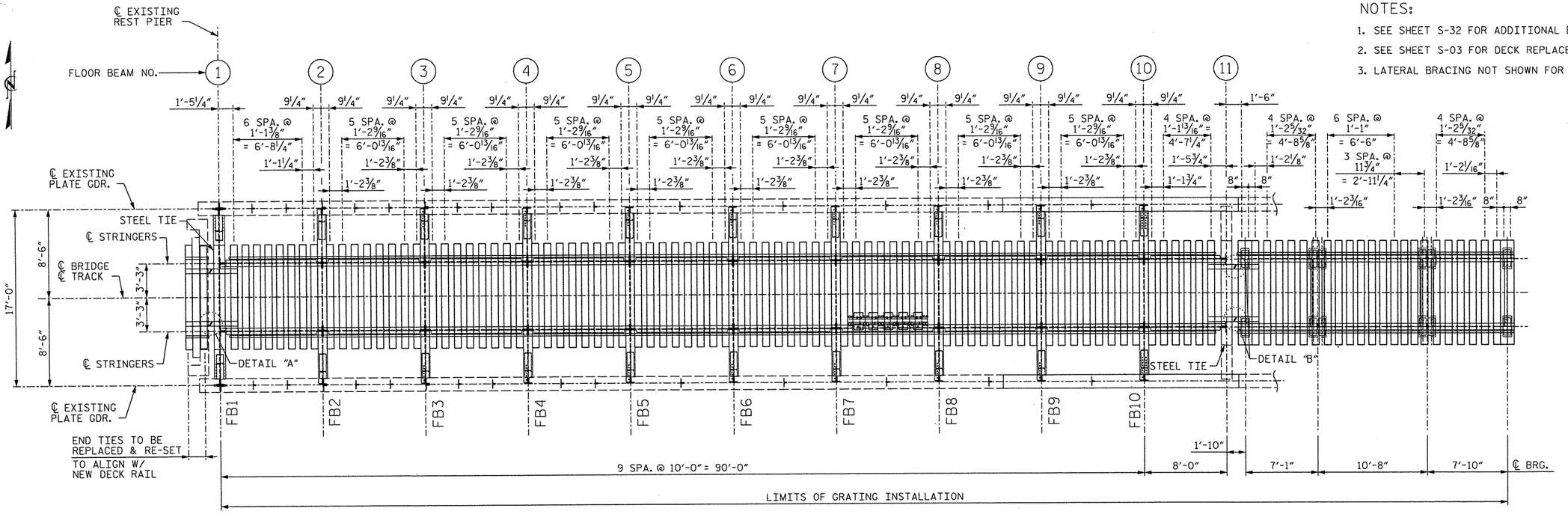
DRAWN BY : NCA DATE : 11-11

CHECKED BY : DAM DATE : 12-11

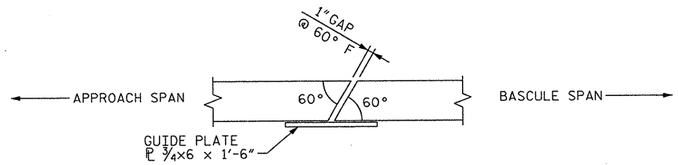
3/19/2012 3:38:50 PM N:\project\NCDOT\Radio Island\CAD\STRUCTURAL\S-30 BASC GRDR REIN5.dgn

NOTES:

1. SEE SHEET S-32 FOR ADDITIONAL DETAILS.
2. SEE SHEET S-03 FOR DECK REPLACEMENT SEQUENCE.
3. LATERAL BRACING NOT SHOWN FOR CLARITY.



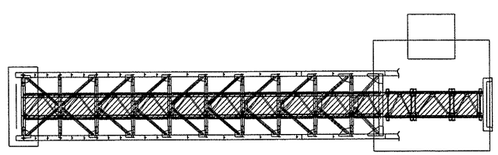
DECK PLAN
(GRATING NOT SHOWN)



DETAIL A
(DETAILS BASED ON EXISTING PLANS, MATCH TO THE IN PLACE STRUCTURE)
(DETAIL "B" SIMILAR WITHOUT GUIDE PLATE)

CONSTRUCTION NOTES:

1. WHEN THE CONTRACTOR HAS COMPLETED THE FLOOR BEAM, STRINGER AND LATERAL BRACING REPLACEMENT, THE TRACK AND TIES SHALL BE REPLACED. THE SPAN SHALL BE LOWERED TO THE REST PIER AND SECURED. THE EXISTING RAIL REMOVED, EXISTING TIES AND TIE PLATES REMOVED, NEW TIES WITH TIE PLATES INSTALLED AND SECURED TO THE STRINGERS. NO MORE THAN TWO BAYS OF TIES MAY BE OFF OF THE BASCULE SPAN AT ANY TIME. FURNISH AND INSTALL NEW CONTINUOUS RAIL ON THE BASCULE SPAN AND MITER RAIL TO MATCH THE EXISTING DETAILS. TEST-OPERATE THE BRIDGE AND RESTORE NAVIGATION. TEMPORARY BALANCE MATERIAL MAY BE REQUIRED.
2. FLOOR SYSTEM REPLACEMENT WILL BE PERFORMED BY PANELIZING THE EXISTING TRACK AND TIES. TEMPORARY RAIL CONNECTIONS WILL BE REQUIRED TO OPERATE RAIL TRAFFIC OVER THE BRIDGE.
3. CONTRACTOR SHALL SUPPORT THE TOE OF THE BASCULE SPAN TO THE REST PIER BY A TIE DOWN SYSTEM WITH A MINIMUM FACTOR OF SAFETY OF 2.5. THE DESIGN AND DETAILS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ANY WORK PERFORMED ON THE BASCULE LEAF. REFER TO THE SPECIFICATIONS FOR OPERATING WINDOWS REQUIRED FOR PORT OPERATION OVER THIS RAILROAD BRIDGE.
4. CONTRACTOR SHALL SHIM ONE APPROACH SPAN ON EACH SIDE OF THE BASCULE SPAN AND STATIONARY SPANS AS REQUIRED TO OBTAIN SMOOTH TRANSITION OVER THE BASCULE SPANS. FINAL ACCEPTANCE SHALL BE BASED ON APPROVAL OF THE GENERAL MANAGER FOR THE CAROLINA COASTAL RAILWAY COMPANY.



KEY PLAN

CONSTRUCTION SEQUENCE OF DECK PLATE REPLACEMENT:

1. FOLLOW FLOOR SYSTEM REPLACEMENT SEQUENCE TO REPLACE THE FLOOR SYSTEM, SEE SHEET S-03.
2. INSTALL NEW TIES BAY BY BAY FOR BASCULE SPAN. CONTRACTOR MAY NOTCH THE EXISTING TIES TO FIT ON THE NEW STRINGERS AS NECESSARY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE PROPER PLACEMENT OF THE TIE SPACERS ON THE STRINGERS SUCH THAT THE TIMBER TIES CAN BE PLACED AS SHOWN IN THE DECK PLAN.
3. INSTALL NEW RAIL ON NEW TIES AFTER FLOOR SYSTEM IS REPLACED.
4. BETWEEN TIE PLATES, INSTALL 1" FIBERGLASS GRATING 3' WIDE SIMILAR TO DURAGRID OR APPROVED EQUAL AT APPROXIMATELY 2.5 POUNDS PER SQUARE FOOT, PER MANUFACTURER'S RECOMMENDATIONS. SECURE GRATING TO EVERY OTHER TIE IN AN ALTERNATING PATTERN WITH ⅜" Ø ZINC PLATED LAG BOLTS. COST OF GRATING INCIDENTAL TO THE COST OF THE DECK AND SHALL BE INCLUDED UNDER "BRIDGE DECK WORK".

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK PLAN

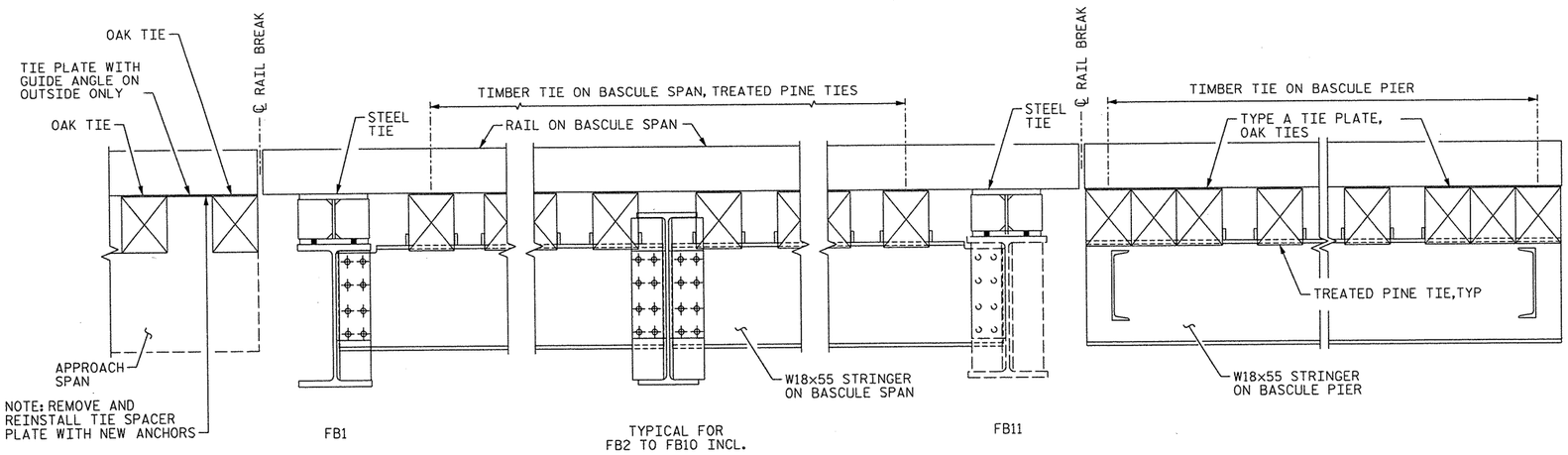
NORTH CAROLINA PROFESSIONAL SEAL 036109 ENGINEER MICHAEL C. HARRISON

DRAWN BY : YY	DATE : 11-11
CHECKED BY : DAM	DATE : 12-11

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			76

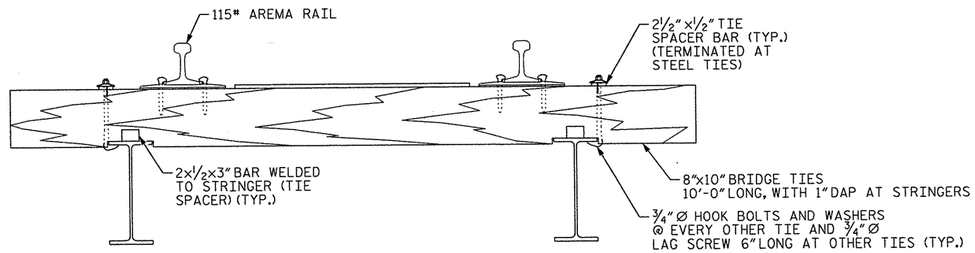
3/19/2012 3:39:12 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-31DK PLN.dgn



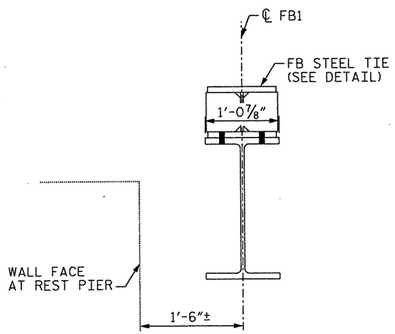
DECK ELEVATION

NOTES:

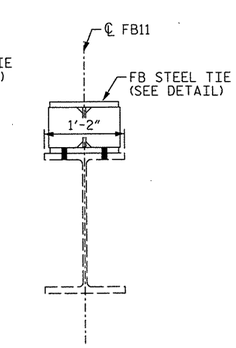
1. EXISTING DECK SYSTEM AND TRACK TO BE PANELIZED TO FACILITATE REPAIRS TO THE BASCULE SPAN FLOOR SYSTEM. TRACK WORK SHALL CONFORM TO AREMA REQUIREMENTS. ALL TRACK WORK SHALL BE PERFORMED IN THE CLOSED TO NAVIGATION POSITION.
2. EXISTING TIMBER TIES MAY REQUIRE CHANGES WHEN REMOVED AND RE-INSTALLED. CONTRACTOR SHALL HOOK BOLT EVERY OTHER TIE ON BOTH STRINGERS PRIOR TO MOVING SPAN FOR NAVIGATION AND INSTALL HOOK BOLT ON EVERY TIE PRIOR TO COMPLETION OF THE WORK AND AS REQUIRED TO OPERATE THE SPAN.
3. NEW TIMBER TIES SHALL MEET AREMA CHAPTER 7 REQUIREMENTS AND SHALL BE TREATED PINE. TIE DIMENSIONS SHALL MATCH THE EXISTING, PROVIDING A 1 INCH DAP. TIMBER TIES SHALL BE ADJUSTED TO FIT TIGHT ON THE NEW STRINGERS.
4. NEW TIE PLATES SHALL BE FURNISHED ON TIES.
5. NEW RAIL MATCHING THE EXISTING RAIL SHALL BE FURNISHED AND INSTALLED AFTER THE FLOOR SYSTEM REPAIRS ARE COMPLETED. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SPAN BALANCE AND MAKING BALANCE ADJUSTMENTS DURING THIS WORK. ALL TIE PLATES SHALL BE SPIKED PER AREMA GUIDELINES.
6. FURNISH AND INSTALL 2 NEW 4x8 TIE SPACERS ON THE BASCULE SPAN AND THE BASCULE PIER SPAN. ATTACH TIE SPACER WITH 5/8 INCH BY 10 INCH GALVANIZED LAG BOLT AT EVERY TIE.
7. TIE PLATES ON STEEL TIES SHALL BE DRILLED AND BOLTED WITH 3/4" H.S. BOLTS.
8. ADJUST REST PIER SHOE AS REQUIRED TO ACHIEVE PROPER RAIL VERTICAL ALIGNMENT.



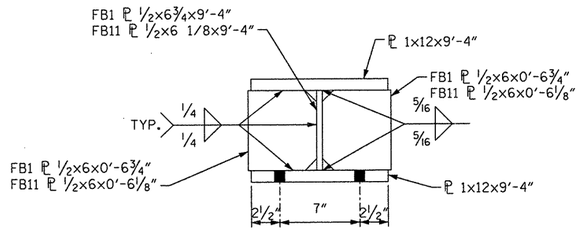
PROPOSED TRACK DETAILS



SECTION A-A

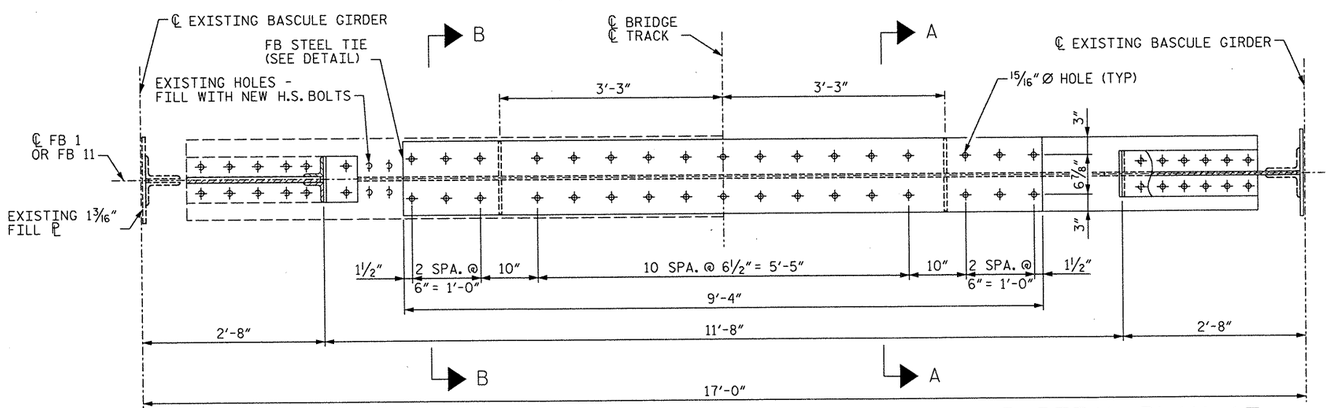


SECTION B-B



STEEL TIE DETAIL

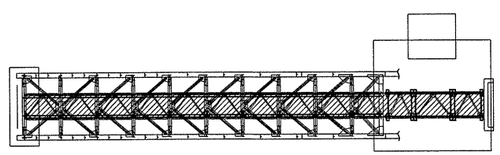
(2 REQUIRED, 1 AT FB1 AND 1 AT FB11)
(NOTE: DRILL AND BOLT TIE PLATES ON STEEL TIES)



PARTIAL PLAN AT FLOOR BEAM FB11

PARTIAL PLAN AT FLOOR BEAM FB1

LIST OF TIES	
TYPE	NUMBER
STEEL	2
OAK	8
TREATED PINE	88



KEY PLAN

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK DETAILS

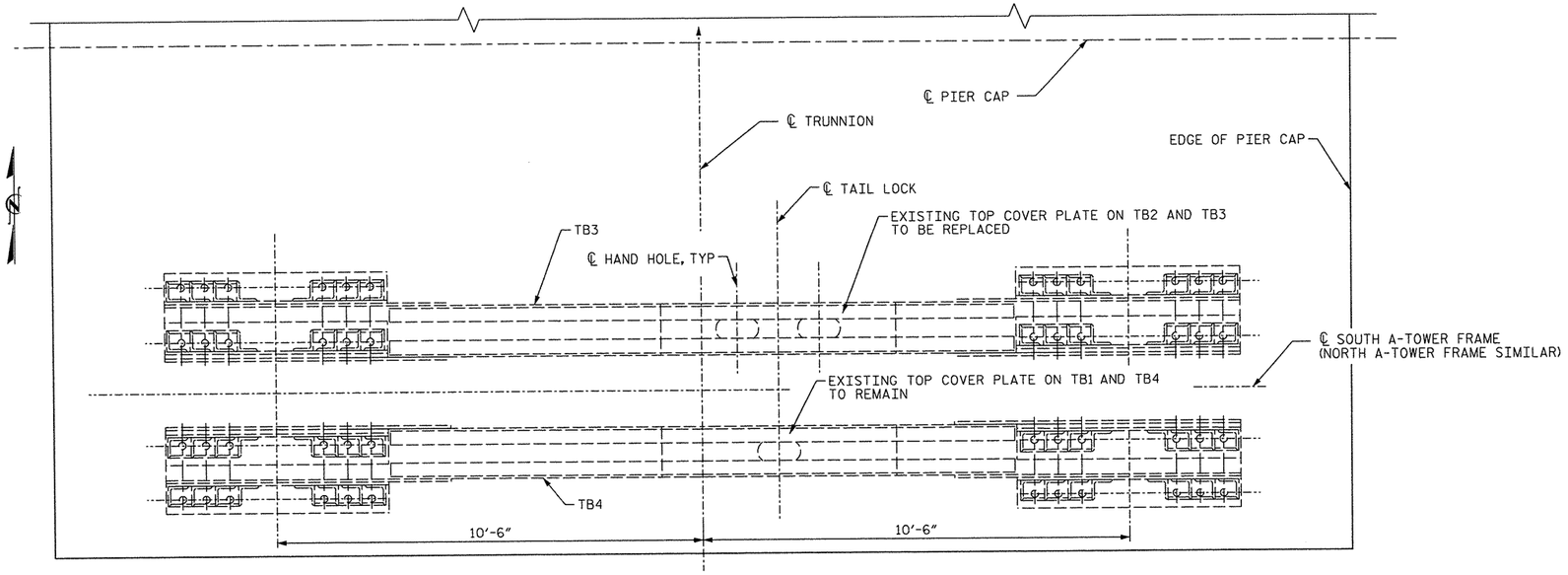
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON 10/1/2012

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			76

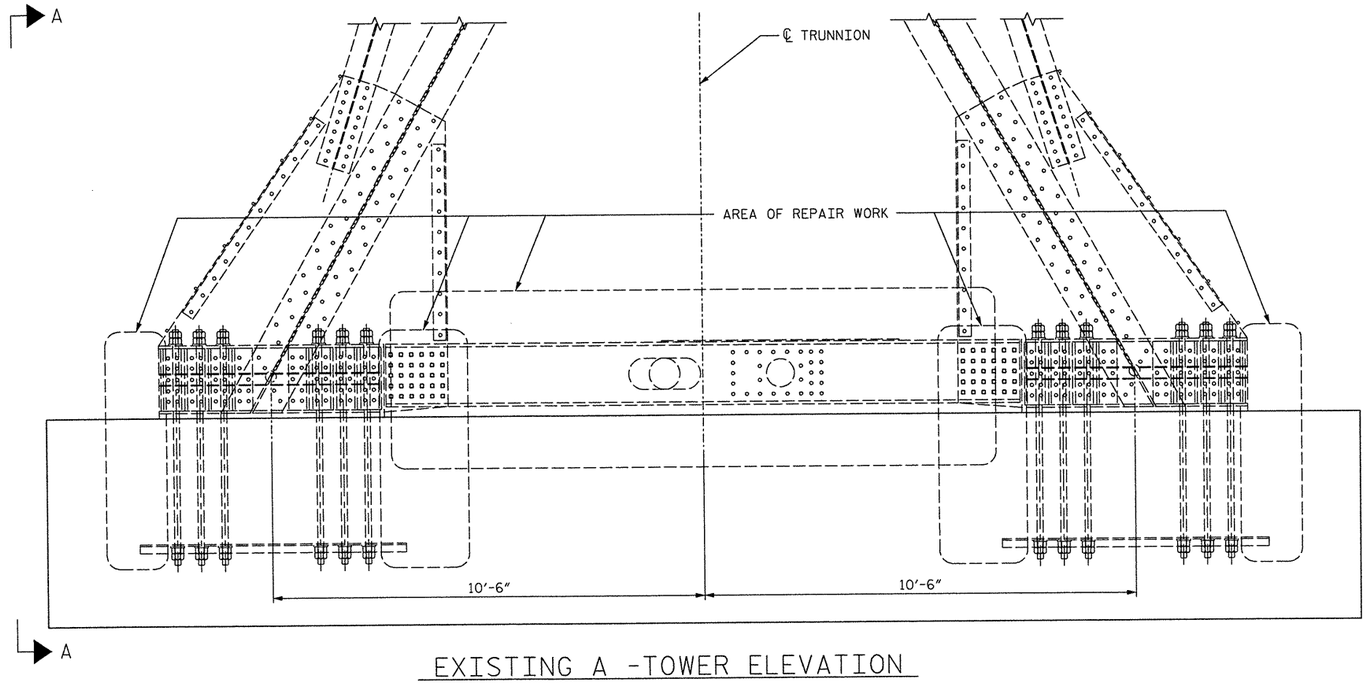
DRAWN BY : YY DATE : 11-11
CHECKED BY : DAM DATE : 12-11

3/9/2012 3:39:42 PM N:\proJdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-32 DK DTLS.dgn

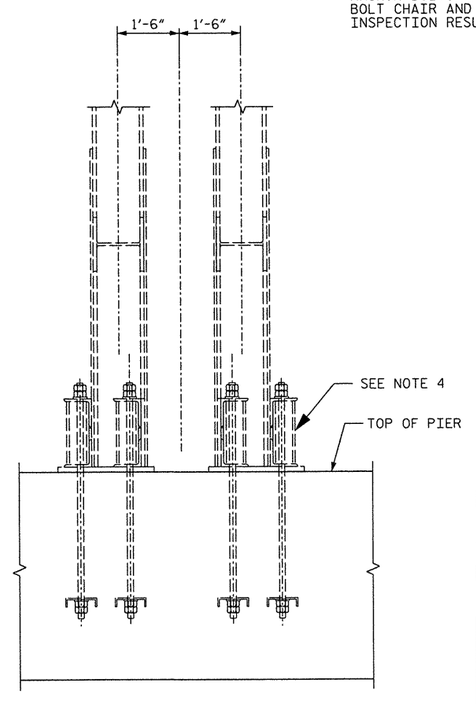


EXISTING A - TOWER PLAN

SOUTH A-TOWER FRAME SHOWN
NORTH A-TOWER FRAME SYMMETRICAL ABOUT ℄ PIER CAP



EXISTING A -TOWER ELEVATION



VIEW A-A

GENERAL NOTES:

1. ANCHOR BOLTS AND ANCHOR ASSEMBLIES SHALL MEET THE REQUIREMENTS FOR HILTI HVA CAPSULE ADHESIVE ANCHOR OR EQUAL. ANCHOR BOLTS ASTM A193 GRADE B8M STAINLESS STEEL, FY=45 KSI OR APPROVED EQUAL. TENSION TESTING NOT REQUIRED. PAYMENT SHALL BE INCLUDED IN THE LUMP SUM "STRUCTURAL" PAY ITEM.
2. THE CONTRACTOR IS REQUIRED TO SHOT BLAST THE A-FRAME TOWER. THE CONTRACTOR'S ATTENTION SHALL BE TO MONITOR THE BLAST OPERATIONS TO PREVENT FURTHER DAMAGE TO THE STEEL DUE TO THE BLASTING OPERATIONS AND ADJACENT WORK. THE CONTRACTOR SHALL COVER AND COMPLETELY PROTECT ALL MACHINERY DURING THE BLASTING OPERATION, CLEAN THE MACHINERY COMPONENTS TO BARE METAL AFTER THE BLASTING PROCEDURES AND RE-LUBRICATE PRIOR TO ANY SPAN OPERATION. THE SAME PROCEDURE SHALL BE FOLLOWED DURING ALL PAINTING ON THE TOWER AND MACHINERY.
3. CONTRACTOR SHALL NOT LEAVE OR PAINT OVER FEATHERED EDGES. CONTRACTOR SHALL NOTE THAT THERE IS DETERIORATION WITHIN THE TOWER THAT IS NOT BEING REPAIRED. FEATHERED EDGES SHALL BE GROUND TO A MINIMUM THICKNESS OF 1/8" ON THE OUTSTANDING LEG OF ANGLES OR EDGES OF PLATES. THE PERIMETER SHALL BE GROUND SUCH THAT THERE ARE NO KINKS OR IRREGULARITIES THAT ARE NOT SMOOTHED TO A MINIMUM 1" RADIUS. AFTER SUCH GRINDING IS COMPLETED, THE REPAIRED STEEL MAY BE PRIMED AND PAINTED. GRINDING EFFORTS ARE CONSIDERED INCIDENTAL TO THE PAINTING ITEM AND NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS EFFORT. CONTRACTOR SHALL BE HELD TO THE PAINTING PERFORMANCE REQUIREMENTS STATED IN THE SPECIAL PROVISIONS.
4. CONTRACTOR SHALL REMOVE COVER PLATES OF EXISTING ANCHOR BOLTS AFTER THE NEW ANCHOR BOLTS ARE INSTALLED AND INSPECT THE EXISTING ANCHOR BOLTS AND RIVETS WHICH CONNECT ANCHOR BOLT CHAIR AND GUSSET PLATES. REPORT THE INSPECTION RESULT TO THE ENGINEER.

NORTH CAROLINA PROFESSIONAL SEAL 038400 ENGINEER MICHAEL C. HARRISON

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

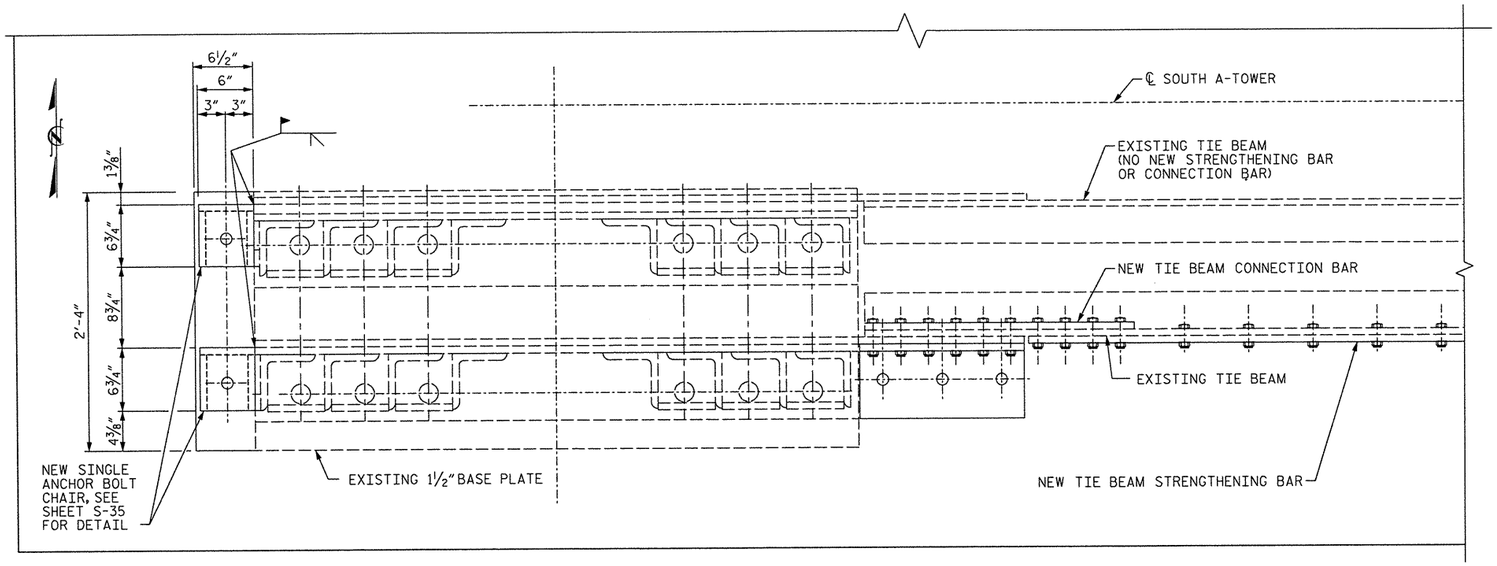
A-TOWER REPAIRS (SHEET 1 OF 4)

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St, Ste. 200
Charlotte, NC 28208
NC License No. F-0991

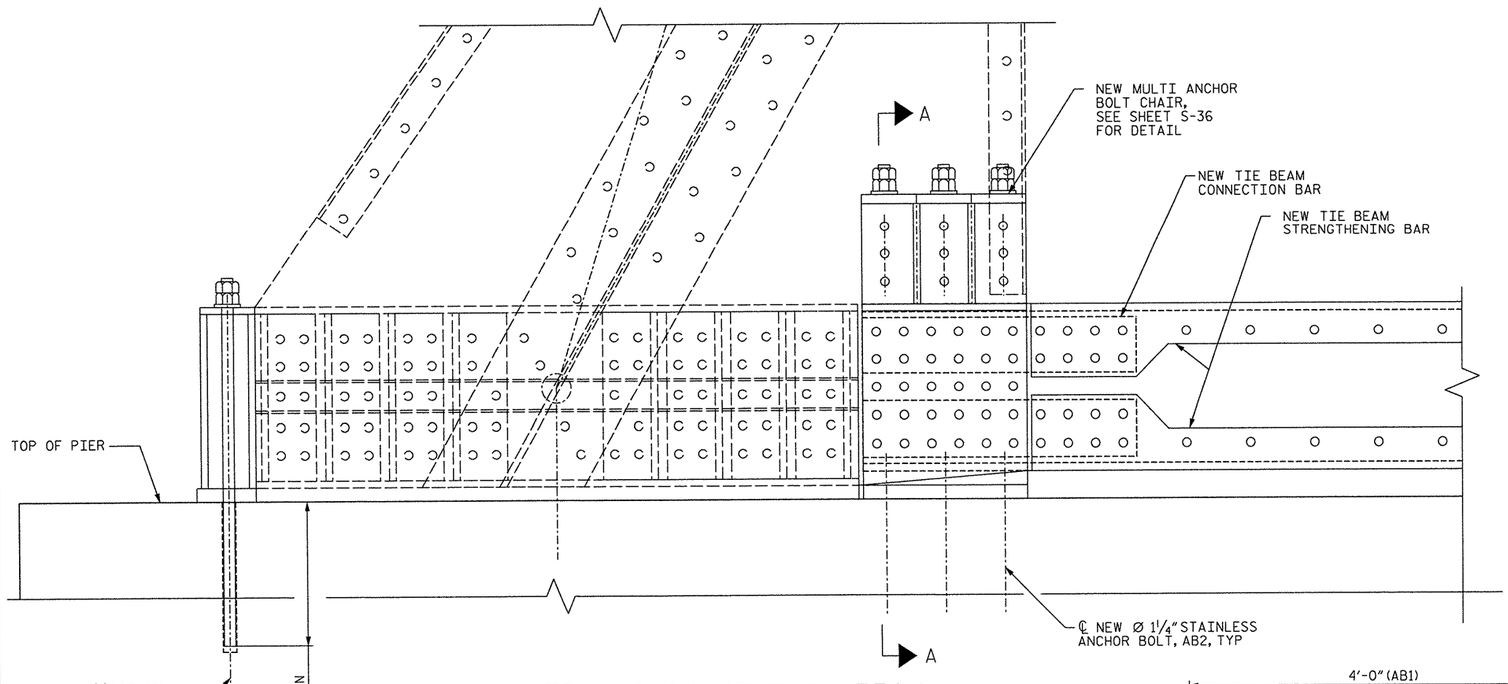
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : NCA DATE : 12-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:40:12 PM N:\proj\dev\NCDOT\Radio Island\CAD\STRUCTURAL\S-33 A TWR.dgn

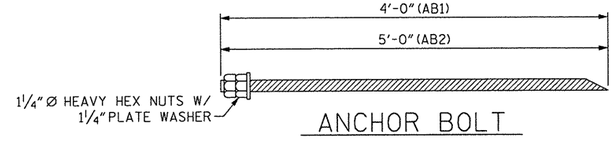


A-TOWER ANCHORAGE PLAN



A-TOWER ANCHORAGE ELEVATION

SOME ANCHOR BOLTS NOT SHOWN FOR CLARITY.
SEE SHEET S-35 FOR SECTION A-A.



ANCHOR BOLT

GENERAL NOTES:

1. REPAIRS SHOWN ARE FOR THE WEST LEG OF THE SOUTH A-TOWER. THE SAME REPAIRS ARE TO BE PERFORMED AT THE OTHER THREE A-TOWER LEGS.
2. NEW TIE BEAM CONNECTION BARS AND TIE BEAM STRENGTHENING BARS ARE ONLY INSTALLED ON THE OUTBOARD CHANNELS OF THE EXISTING A-FRAME TIE BEAM.
3. SEE SHEET S-33 FOR NOTES REGARDING FEATHERED EDGES AND THE REPAIR PROCEDURE.

CONSTRUCTION SEQUENCE:

1. CLEAN THE TOP OF THE CONCRETE IN THE AREA WHERE THE NEW ANCHOR BOLT CHAIR BASE PLATE WILL BE SEATED.
2. INSTALL NEW SINGLE ANCHOR BOLT AT THE END OF A-FRAME.
3. REMOVE RIVETS AND REPLACE WITH TEMPORARY H.S. BLACK BOLTS PRIOR TO ANY OTHER REPAIRS BEING PERFORMED ON THE A-FRAME EXCEPT FOR THE INSTALLATION OF NEW SINGLE ANCHOR BOLT. SEE GENERAL STEEL NOTES ON SHEET S-01 FOR RIVET REMOVAL REQUIREMENTS. CONTRACTOR SHALL NOT REMOVE MORE THAN 5 RIVETS AT ANY ONE TIME WITHOUT FILLING THE OPEN HOLE WITH A NEW H.S. BOLT. SEE SHEETS S-34 AND S-35 TO DETERMINE WHICH RIVETS SHOULD BE REPLACED.
4. REMOVE HALF OF THE TEMPORARY HIGH STRENGTH BOLTS AND DRIVE A FULL SIZE DRIFT PIN THROUGH THE HOLE, DOING SO ONE BOLT AT A TIME. DRIFT PINS ARE PREFERRED TO BE AT THE PERIMETER OF THE EXISTING BOLT GROUP.
5. REMOVE THE NUTS ON THE REMAINING TEMPORARY HIGH STRENGTH BOLTS.
6. INSTALL THE NEW MULTI ANCHOR BOLT CHAIR WELDMENT OVER THE DRIFT PINS AND INSTALL THE NUTS ON THE TEMPORARY HIGH STRENGTH BOLTS. TORQUE BOLTS.
7. REMOVE THE DRIFT PINS ONE AT A TIME AND REPLACE THEM WITH TEMPORARY HIGH STRENGTH BOLTS. TORQUE BOLTS.
8. FOR INSTALLATION OF THE TOP TIE BEAM CONNECTION BAR, REMOVE THE TOP TWO ROWS OF TEMPORARY HIGH STRENGTH BOLTS AND FILL HALF OF THE OPEN HOLES WITH FULL SIZE DRIFT PINS. INSTALL THE TOP TIE BEAM CONNECTION BAR OVER THE DRIFT PINS. REMOVE THE DRIFT PINS AND INSTALL PERMANENT GALVANIZED HIGH STRENGTH BOLTS. TORQUE BOLTS.
9. REPEAT THE SAME STEPS FOR THE BOTTOM TIE BEAM CONNECTION BAR.
10. REPLACE THE MIDDLE ROW OF TEMPORARY HIGH STRENGTH BOLTS WITH PERMANENT GALVANIZED HIGH STRENGTH BOLTS. TORQUE BOLTS.
11. USING THE TIE BEAM CONNECTION BARS AS TEMPLATES, FIELD DRILL HOLES IN THE EXISTING TIE BEAM CHANNELS AND INSTALL PERMANENT GALVANIZED HIGH STRENGTH BOLTS. TORQUE BOLTS.
12. FIELD DRILL THE TOP GROUP OF 9 BOLTS IN THE EXISTING GUSSET PLATE USING THE MULTI ANCHOR BOLT CHAIR AS A TEMPLATE. INSTALL PERMANENT GALVANIZED HIGH STRENGTH BOLTS. TORQUE BOLTS.
13. RE-CHECK TORQUE ON ALL PERMANENT GALVANIZED HIGH STRENGTH BOLTS.
14. IF THE NEW MULTI ANCHOR BOLT CHAIR IS NOT WELL SEATED AGAINST THE PIER TOP, AN EPOXY GROUT SHALL BE PLACED UNDER THE BASE PLATE TO ENSURE GOOD BEARING CONTACT WITH THE PIER TOP.
15. AFTER THE MULTI ANCHOR BOLT CHAIR IS INSTALLED AND CONSIDERED ACCEPTABLE TO THE ENGINEER, NEW ANCHOR BOLT HOLES CAN BE DRILLED AND ANCHOR BOLTS INSTALLED.
16. INSTALL HILTI HVA CAPSULE ADHESIVE ANCHOR OR EQUIVALENT. THE ANCHOR BOLT IS ASTM A193 GRADE B8M STAINLESS ROD, YIELD STRESS, Fy = 45 ksi.
17. DRILLED HOLES FOR NEW ANCHOR BOLTS MAY CONFLICT WITH THE EMBEDDED CHANNEL THAT'S CONNECTED TO THE EXISTING ANCHOR BOLTS. THE CONTRACTOR SHALL BE PREPARED TO DRILL THROUGH AND REMOVE MATERIAL FROM THIS EMBEDDED CHANNEL IN ORDER TO ACHIEVE THE SPECIFIED EMBEDMENT DEPTH FOR THE NEW ANCHOR BOLTS.
18. EXISIING ANCHOR BOLTS WILL BE EXPOSED AND INSPECTED. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

A-TOWER REPAIRS (SHEET 2 OF 4)

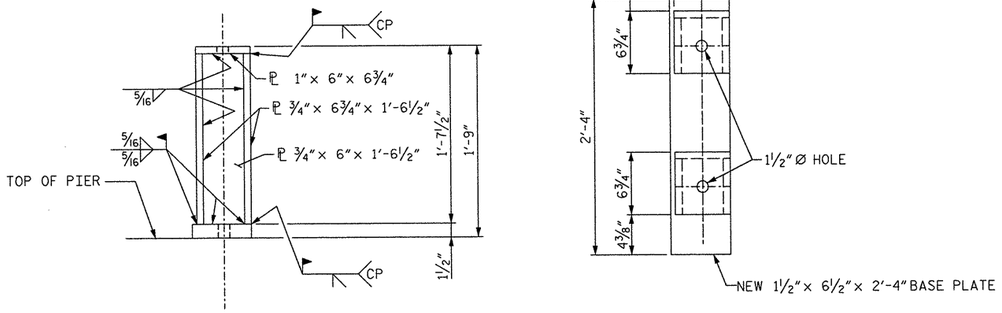
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON
3/19/2012

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

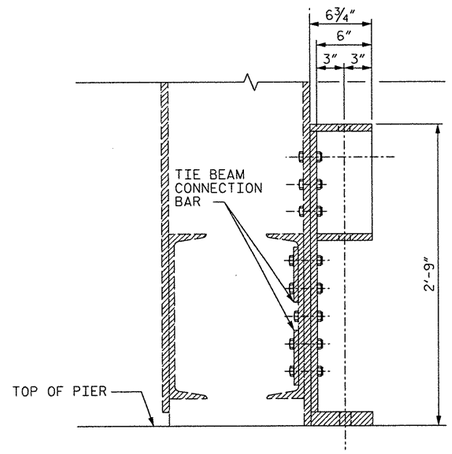
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : NCA DATE : 12-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:40:55 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-34 A TWR.dgn



SINGLE ANCHOR BOLT CHAIR DETAIL

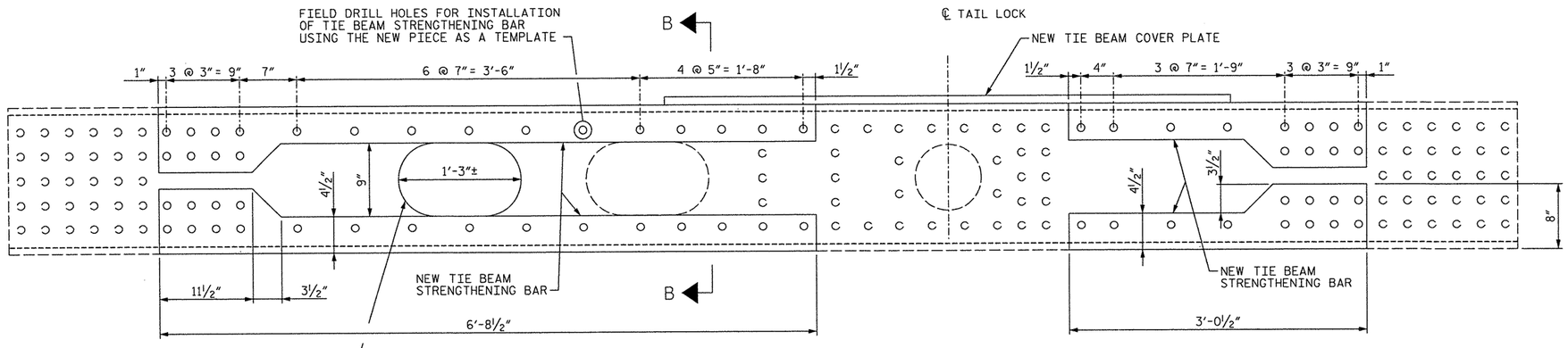


SECTION A-A

SEE SHEET S-34 FOR SECTION LOCATION

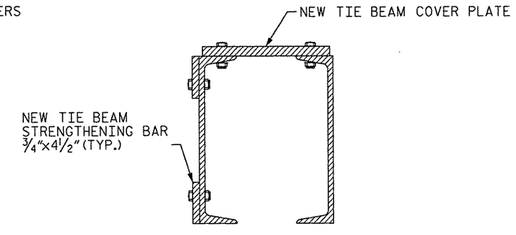
NOTES:

1. SEE SHEET S-34 FOR LOCATION OF SECTION A-A.
2. TIE BEAM REPAIRS SHALL BE MADE AFTER NEW ANCHOR CHAIRS ARE INSTALLED.
3. NEW TIE BEAM STRENGTHENING BARS WILL BE FABRICATED AND PAINTED IN THE SHOP, WITH ALL HOLES SHOP DRILLED AS SHOWN IN THE TIE BEAM REPAIR DETAIL ON THIS SHEET.
4. NEW TIE BEAM COVER PLATE WILL BE FABRICATED AND PAINTED IN THE SHOP, WITH ALL HOLES SHOP DRILLED AS SHOWN IN THE TIE BEAM COVER PLATE DETAIL ON SHEET S-36.
5. REMOVE THE EXISTING TIE BEAM COVER PLATE BEFORE SAND BLASTING THE EXISTING A-FRAME TIE BEAM STEEL.
6. SEE SHEET S-33 FOR NOTES REGARDING IDENTIFICATION AND MARKING OF FEATHERED EDGES AND OTHER DETERIORATION AFTER SAND BLASTING THE EXISTING A-FRAME TIE BEAM STEEL.
7. AFTER THE ENGINEER HAS GIVEN APPROVAL FOR SPECIFIC REPAIRS TO THE EXISTING TIE BEAM AND THE REPAIRS ARE PERFORMED, THE EXISTING TIE BEAM MAY BE PAINTED PER THE SPECIAL PROVISIONS.
8. INSTALL THE NEW TIE BEAM STRENGTHENING BARS. FIELD DRILL NEW HOLES IN THE EXISTING TIE BEAM CHANNELS USING THE STRENGTHENING BARS AS TEMPLATES.
9. INSTALL THE NEW TIE BEAM COVER PLATE. SOME REAMING MAY BE REQUIRED.
10. SOME DETERIORATED ANGLES THAT FUNCTION AS STIFFENING DEVICES HAVE HOLES IN MEMBER. CONTRACTOR TO COVER HOLE WITH ½ INCH PLATE AFTER BLASTING IS COMPLETE AND WELD TO EXISTING STEEL USING ¼ INCH FILLET WELDS.
11. SURFACE DEFECTS IN TIE BEAM AND IN TOWER GUSSET PLATES GREATER THAT 1/16 INCH IN DEPTH SHALL BE FILLED WITH AN EPOXY CAULK JUST PRIOR TO PLACEMENT OF CONNECTION BARS, STRENGTHENING BARS, TIE BEAM COVER PLATES AND MULTI ANCHOR BOLT CHAIR.



TIE BEAM REPAIR DETAIL

NOTE: ALL DIMENSIONS ARE TYPICAL FOR SIMILAR MEMBERS



SECTION B-B

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

A-TOWER REPAIRS (SHEET 3 OF 4)

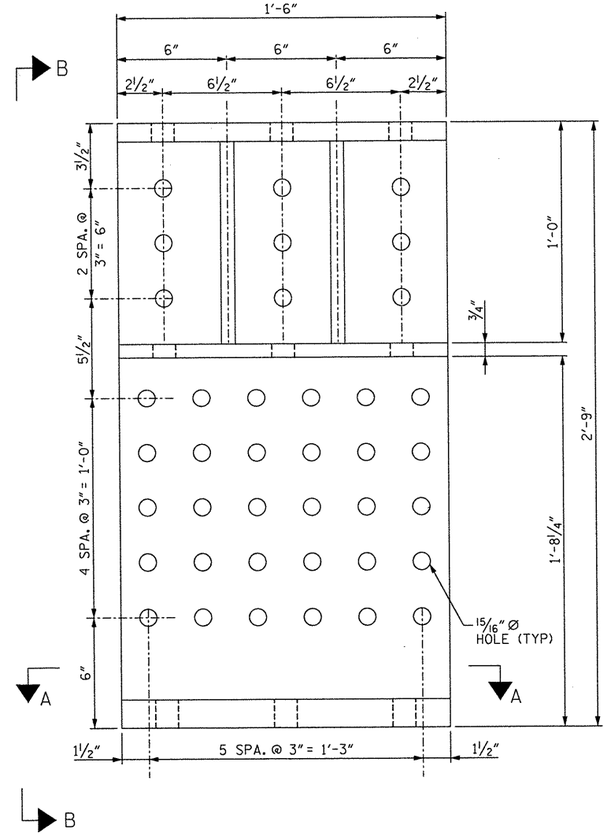
NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C HARRISON
3/19/2012

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

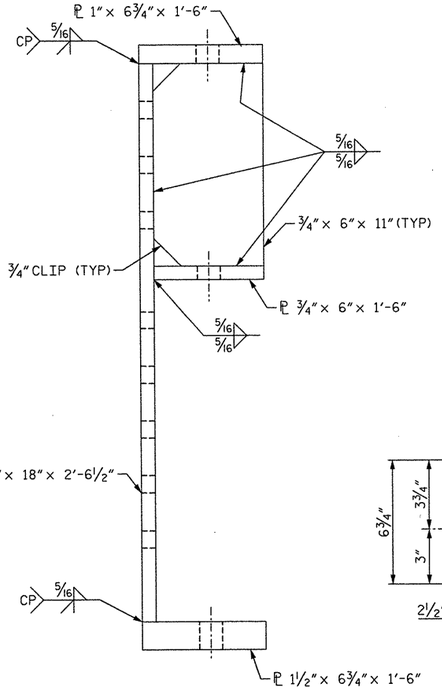
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			76

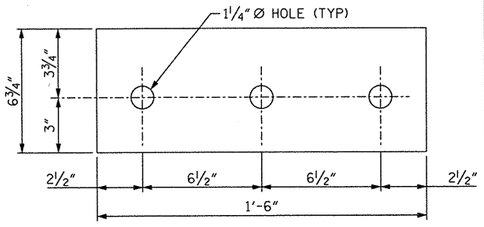
DRAWN BY : NCA DATE : 12-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:41:44 PM N:\projdev\NCDOT\Radio Island\CAD\STRUCTURAL\S-35 A TWR.dgn

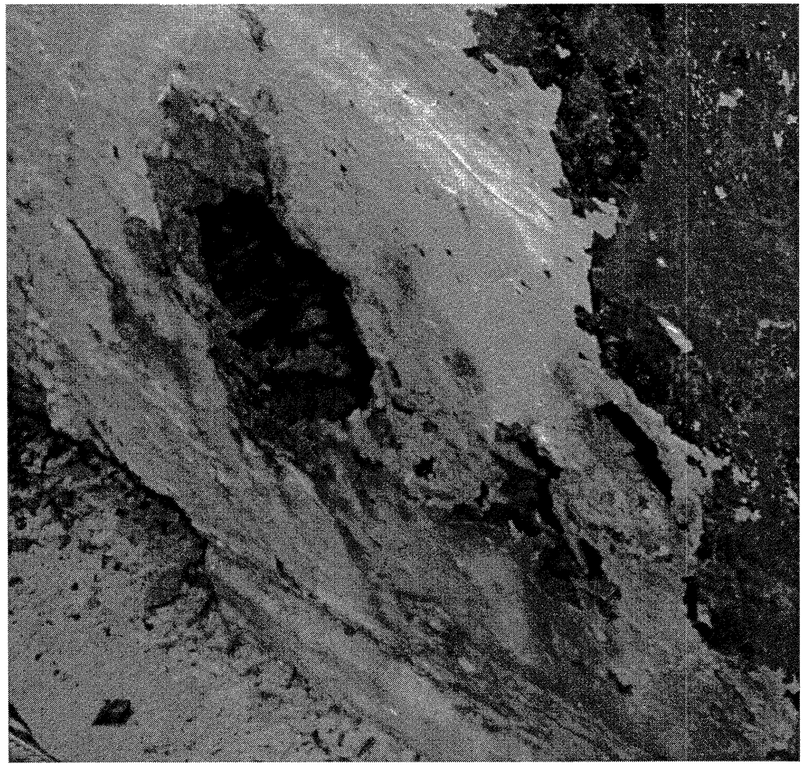


VIEW B-B





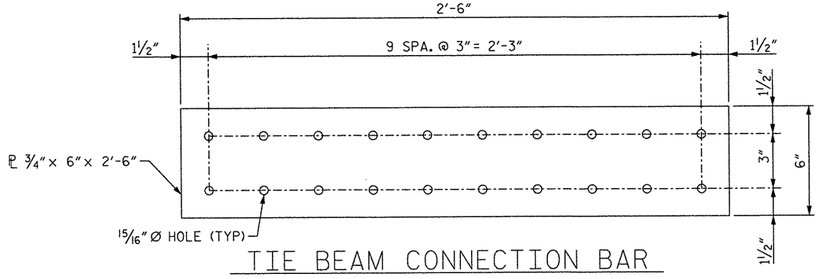
SECTION A-A



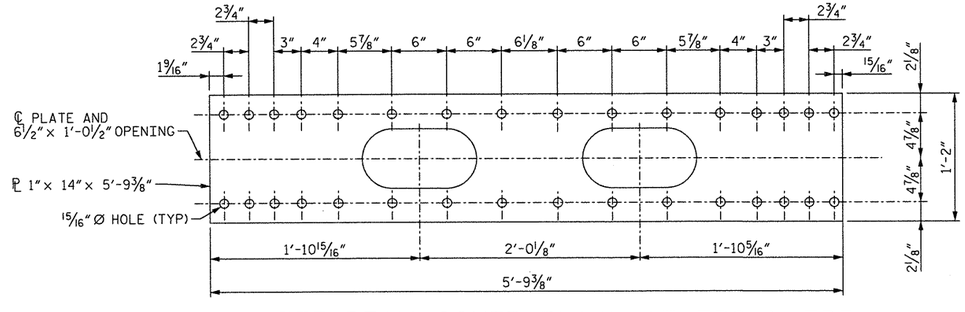
DETERIORATION ON TIE BEAM TB3

(FEATHERED EDGES SHALL BE REMOVED SEE SHEET S-35)

MULTI ANCHOR BOLT CHAIR DETAIL



TIE BEAM CONNECTION BAR



TIE BEAM COVER PLATE AT TB2 & TB3

NORTH CAROLINA PROFESSIONAL SEAL L-088-100 ENGINEER MICHAEL C HARRISON 2012

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

A-TOWER REPAIRS (SHEET 4 OF 4)

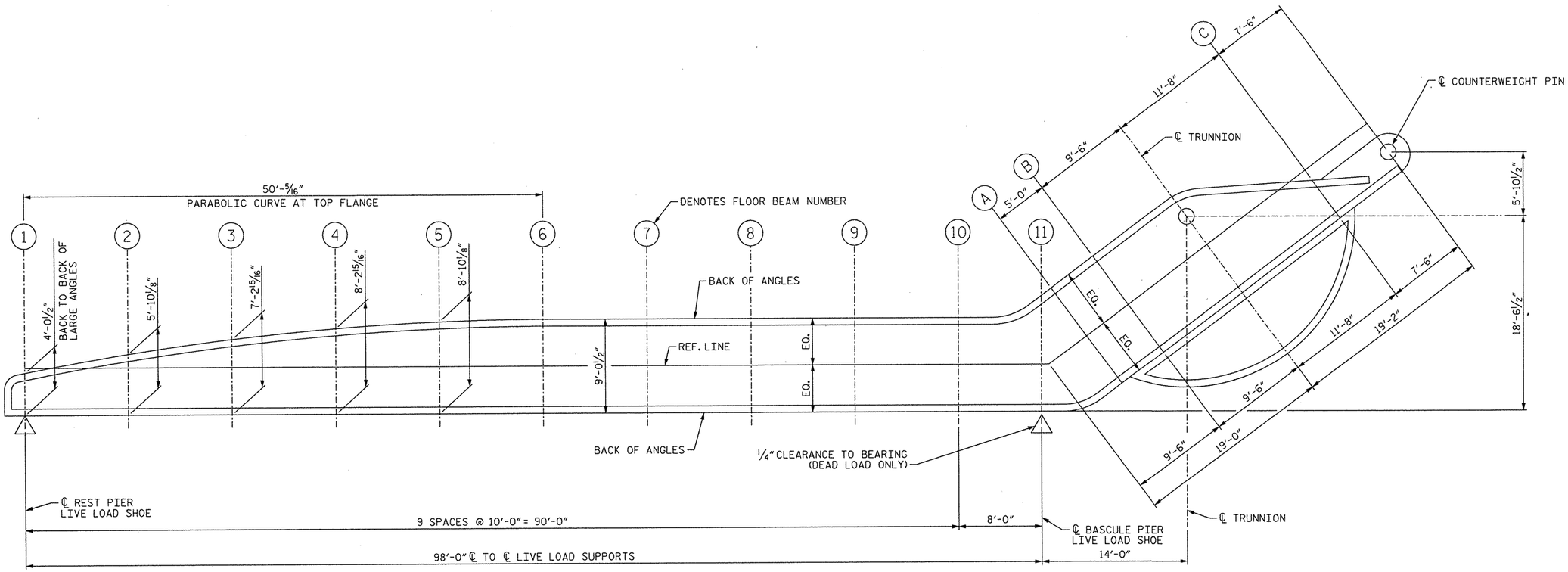
DRAWN BY : NCA DATE : 12-11
CHECKED BY : DAM DATE : 12-11

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-36
TOTAL SHEETS 76

3/19/2012 3:42:14 PM N:\proj\dev\NCDOT\Radio Island\CAD\STRUCTURAL\S-36 A TWR.dgn



APPROX. GEOMETRIC LAYOUT OF EXISTING BASCULE GIRDERS

TABLE OF BASCULE GIRDER STRESSES							"E"-RATING *
E60	UNITS: KIP/FT						
LOCATION	SHEAR			MOMENT			
	DL	LL	IM	DL	LL	IM	
FB1	-6.87	201.72	60.51	0	0	0	> 80
FB2	-14.84	168.25	50.17	-83.82	1554.92	473.48	79
FB3	-23.50	131.73	38.92	-250.79	2606.05	791.96	> 80
FB4	-32.79	90.14	26.24	-507.48	3198.81	970.31	> 80
FB5	-42.28	53.73	15.74	-858.08	3415.35	1032.91	> 80
FB6	-51.88	-95.97	-29.46	-1304.14	3221.88	969.74	> 80
FB7	-61.49	-126.27	-38.76	-1846.26	2727.57	814.81	> 80
FB8	-71.08	-164.32	-50.43	-2484.59	-281.77	-86.57	> 80
FB9	-80.86	-203.07	-62.33	-3219.81	-1260.50	-386.97	> 80
FB10	-90.87	-238.27	-73.14	-4055.72	-3018.56	-926.52	62
FB11	-95.70	-237.75	-73.01	-4802.08	-4792.72	-1471.16	74
A	-81.97	-155.27	-42.26	-5217.74	-3378.62	-1037.80	65
B	-84.61	-155.27	-42.26	-5593.54	-2136.69	-656.56	61
TRUNNION	-98.11	-155.27	-42.26	-6461.45	0	0	> 80

*RATING VALUE AFTER REPAIRS OUTLINED WITHIN.

TABLE OF FLOOR SYSTEM STRESSES							"E"-RATING *
E60	UNITS: KIP/FT						
LOCATION	SHEAR			MOMENT			
	DL	LL	IM	DL	LL	IM	
FB1	2.42	45.00	13.84	11.78	236.65	72.60	> 80
FB2	3.75	60.00	27.51	19.42	314.17	144.13	> 80
FB3	3.75	60.00	27.51	19.42	314.17	144.13	> 80
FB4	3.75	60.00	27.51	19.42	314.17	144.13	> 80
FB5	3.75	60.00	27.51	19.42	314.17	144.13	> 80
FB6	3.75	60.00	27.51	19.42	314.17	144.13	> 80
FB7	3.75	60.00	27.51	19.42	314.17	144.13	> 80
FB8	3.75	60.00	27.51	19.42	314.17	144.13	> 80
FB9	3.75	60.00	27.51	19.42	314.17	144.13	> 80
FB10	3.75	60.00	27.51	19.42	314.17	144.13	> 80
FB11	2.15	4.25	14.53	9.92	205.22	62.11	> 80
STRINGER	1.37	45.00	24.84	3.50	84.38	46.57	> 80
PIER							66

(ASSUMED DEAD LOAD 1,000 POUNDS PER BEARING AT FB1)

NOTES:

1. DEAD LOADS ARE PER AREMA 2012 MANUAL.
2. LIVE LOAD, COOPER E-60, 10 MPH W/O FATIGUE.
3. RATING PER AREMA CHAPTER 15 SECTION 7.3 W/O FATIGUE. EXISTING STEEL, Fy = 33 ksi. PROPOSED STEEL SHOWN ON DRAWINGS, Fy = 50 ksi.

NORTH CAROLINA PROFESSIONAL SEAL 036104 ENGINEER MICHAEL C HARRISON 3/19/2012

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN STRESS SHEET

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			76

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : PWP DATE : 9-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:42:48 PM N:\proj\dev\NCDOT\Radio Island\CAD\STRUCTURAL\S-37 STRESS.dgn

BALANCE TABLE

EXISTING STRUCTURE							PROPOSED STRUCTURE						
LOCATION	PIECE	WEIGHT, W (LB)	X (FT)	WX	Y (FT)	WY	LOCATION ≠	PIECE	WEIGHT, W (LB)	X (FT)	WX	Y (FT)	WY
GIRDER	GIRDER	242,011*		6,724,280*	9.10	2,202,860*	GIRDER	COVER PLATE	3,387		72,805	12.81	43,386
FLOOR SYSTEM	FLOOR SYSTEM	59,590*		3,544,210*	16.57	987,390*	FB-1	FB-1	3,344	112.00	374,533	16.16	54,055
							BAY A	BAY A	1,861	107.00	199,086	17.22	32,034
							FB-2	FB-2	3,170	102.00	323,316	15.72	49,836
							BAY B	BAY B	1,859	97.00	180,311	17.23	32,029
							FB-3	FB-3	3,447	92.00	317,148	15.33	52,861
							BAY C	BAY C	1,859	87.00	161,722	17.26	32,090
							FB-4	FB-4	3,620	82.00	296,832	15.04	54,439
							BAY D	BAY D	1,859	77.00	143,133	17.29	32,136
							FB-5	FB-5	3,723	72.00	268,086	14.87	55,361
							BAY E	BAY E	1,859	67.00	124,545	17.31	32,181
							FB-6	FB-6	3,757	62.00	232,911	14.83	55,706
							BAY F	BAY F	1,859	57.00	105,956	17.48	32,492
							FB-7	FB-7	3,757	52.00	195,345	14.85	55,791
							BAY G	BAY G	1,859	47.00	87,367	17.48	32,486
							FB-8	FB-8	3,757	42.00	157,779	14.87	55,876
							BAY H	BAY H	1,859	37.00	68,778	17.48	32,486
							FB-9	FB-9	3,779	32.00	120,915	15.47	58,472
							BAY J	BAY J	2,492	27.00	67,279	17.63	43,942
							FB-10	FB-10	4,058	22.00	89,270	15.73	63,816
							BAY K	BAY K	2,222	18.00	39,998	17.65	39,224
							FB-11	FB-11	4,782	14.00	66,942	15.95	76,288
DECK	DECK	28,964		1,826,520	15.97	462,585	DECK	DECK SYSTEM	37,439		2,352,659	15.93	596,352
RAIL ADJUSTING	115# RE - 60.5# RE **	3,632		228,224	15.50	56,296	FB-1	EXISTING LOCK REMOVED	-530	112.00	-59,360	18.77	-9,948
TIE ADJUSTING	60#/CF - 50#/CF ***	4,333		272,278	16.08	69,680	FB-1	NEW LOCK RECEIVER	2100	112.00	235,200	16.16	33,932
TOTAL		338,530		12,595,512	11.16	3,778,811	TOTAL		342,206		12,661,262	11.08	3,792,378
COMPARISON													
INCREASE									6,656		351,323		61,372
INCREASE %									1.97%		2.79%		1.62%
COUNTERWEIGHT ADJUSTMENT													
ADDITIONAL COUNTERWEIGHT									17,959	19.56	351,323	5.88	105,600

* NUMBERS ARE FROM THE ORIGINAL DESIGN BALANCE TABLE.

** BRIDGE WAS BUILT WITH 60.5# RE RAIL, CURRENT RAIL IS 115# RE. THE ADJUSTMENT BRINGS EXISTING STRUCTURE WEIGHTS TO THE CURRENT CONDITION. IT IS ASSUMED THAT THE BRIDGE IS BALANCED UNDER THE CURRENT CONDITION.

*** UNIT TIMBER WEIGHT USED TO CALCULATE TIE WEIGHT WAS 50#/CF FOR ORIGINAL DESIGN BALANCE TABLE. THE ADJUSTMENT ENSURES EXISTING STRUCTURE WEIGHTS FOLLOW CURRENT AREMA GUIDELINES.

≠ "BAY" INCLUDES STRINGERS, STRINGER LATERAL BRACING, BASCULE LATERAL BRACING, AND ALL ASSOCIATED CONNECTION ANGLES AND GUSSETS.

PROPOSED DECK SYSTEM

STEEL MEMBER	UNIT	QUANTITY	W/UNIT	WEIGHT, W (LB)	X (FT)	WX	Y (FT)	WY
115# RAIL	LIN. FT.	200.67	38.33	7,692	62.83	483,328	15.50	1119,229
SPLICE BARS & BOLTS	EA.	4	35.70	143	62.83	8,972	15.50	2,213
R.R. SPIKES (5/8")	EA.	328.00	0.83	273	63.00	17,220	15.88	4,341
SPACER BAR: 2 1/2 x 1/2	LIN. FT.	200.00	4.25	850	63.00	53,550	15.64	13,175
TIE CLAMPS: 3x3/16x6"	EA.	78.00	0.96	75	63.00	4,717	16.63	1,245
HOOK BOLTS & NUTS: 3/4 Dia. X 1'-1 1/2"	EA.	78.00	2.11	165	63.00	10,369	16.08	2,646
LAG SCREWS: 3/4" Ø x 6"	EA.	78.00	0.75	59	63.00	3,686	16.08	941
TIES - 8" x 10" x 10'	EA.	78	333.33	26,000	62.83	1,633,667	16.08	418,080
STEEL TIES	EA.	2	601.44	1,203	62.83	75,577	15.80	18,962
GRATING & CABLE	LIN. FT.	98.00	10.00	980	62.83	61,573	15.80	15,480
TOTAL				37,439		2,352,659		596,352

COUNTERWEIGHT ADJUSTMENT

ADDITIONAL COUNTERWEIGHT	17,959	19.56	351,323	5.88	105,600

COMPARISON

INCREASE	6,656		351,323		61,372
INCREASE %	1.97%		2.79%		1.62%

X = HORIZONTAL OFFSET FROM CENTER OF GRAVITY OF THE PIECES ON THE SPAN TO THE CENTERLINE OF TRUNNION WITH SPAN IN THE DOWN POSITION.

Y = VERTICAL OFFSET FROM CENTER OF GRAVITY OF THE PIECES ON THE SPAN TO THE CENTERLINE OF TRUNNION WITH SPAN IN THE DOWN POSITION.

XW AND YW ARE MOMENTS ABOUT THE TRUNNION IN FT-LBS.

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

NORTH CAROLINA PROFESSIONAL SEAL 036100 ENGINEER MICHAEL C. HARRISON

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

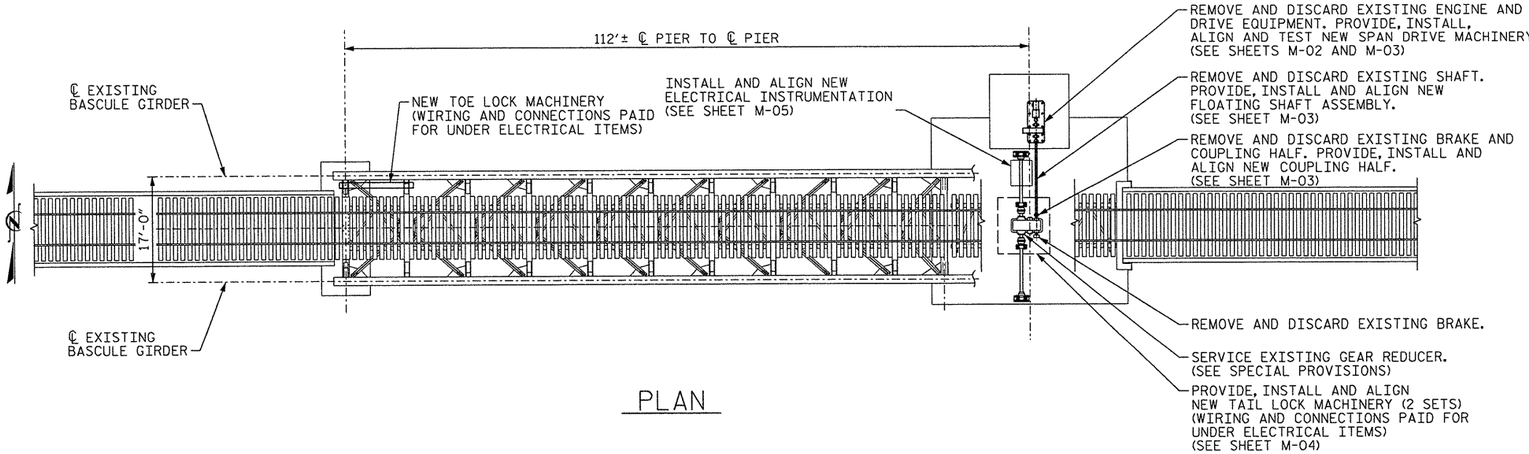
BALANCE TABLE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS
2			4			76

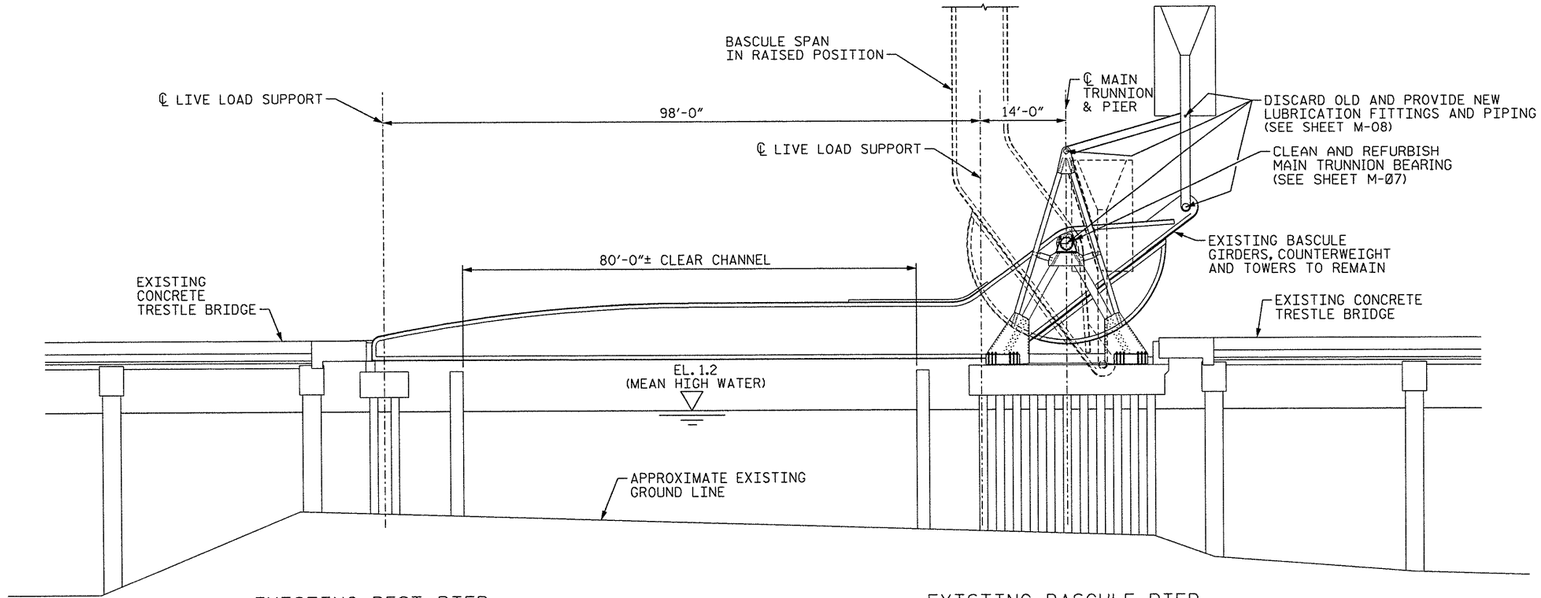
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : YY DATE : 11-11
CHECKED BY : DAM DATE : 12-11

3/19/2012 3:43:24 PM N:\proj dev\NCDOT\Radio Island\CAD\STRUCTURAL\S-38 BAL TBL.dgn



PLAN



EXISTING REST PIER

EXISTING BASCULE PIER

ELEVATION

GENERAL MACHINERY NOTES:

THE MACHINERY WORK SHOWN ON THESE PLANS AND REQUIRED IN THE SPECIAL PROVISIONS SHALL CONFORM TO THE AREMA MANUAL FOR RAILWAY ENGINEERING, CHAPTER 15, "STEEL STRUCTURES," 2012 EDITION.

ALL DIMENSIONS FOR MACHINE FINISHED SURFACES SHALL BE HELD TO ±0.010-INCHES, EXCEPT AS OTHERWISE INDICATED ON THE PLANS OR REQUIRED BY THE SPECIAL PROVISIONS.

UNLESS SHOWN OTHERWISE ON THE PLANS OR SPECIFIED OTHERWISE IN THE SPECIAL PROVISIONS, PROVIDE ASTM A449 HIGH STRENGTH CAP SCREWS, AASHTO M291 NUTS AND AASHTO M293 WASHERS FOR CONNECTING NEW MACHINERY COMPONENTS TO EACH OTHER AND TO SUPPORTING MEMBERS. CLEARANCE BETWEEN THE BODY OF THE FASTENER AND THE HOLE SHALL BE 0.010-INCHES OR LESS FOR FASTENERS UP TO AND INCLUDING 1-INCH NOMINAL DIAMETER AND 0.012-NCHES FOR FASTENERS OVER 1-INCH NOMINAL DIAMETER. TIGHTENING SHALL BE ACCOMPLISHED AS PER SECTION 440 OF THE STANDARD SPECIFICATIONS USING TURN OF THE NUT METHOD. IMPACT WRENCHES SHALL NOT BE USED TO TIGHTEN MACHINERY COMPONENT FASTENERS.

TURNED BOLTS SHALL BE PROVIDED AS SHOWN ON THE PLANS OR IN THE SPECIAL PROVISIONS AND TOLERANCE TO MATCH EXISTING TURNED BOLTS. THE TIGHTENING PROCEDURE FOR TURNED BOLTS SHALL BE AS SPECIFIED IN THE SPECIAL PROVISIONS.

ANCHOR BOLTS AND ANCHOR ASSEMBLIES SHALL MEET THE REQUIREMENTS FOR HILTI HVA CAPSULE ADHESIVE ANCHOR OR EQUAL. ANCHOR BOLTS SHALL BE ASTM A193 GRADE B8M STAINLESS STEEL, Fy = 45 KSI OR APPROVED EQUAL. TENSION TESTING IS NOT REQUIRED. PAYMENT SHALL BE INCLUDED IN THE LUMP SUM "MECHANICAL" PAY ITEM.

FASTENING OF STRUCTURAL MEMBERS TO OTHER STRUCTURAL MEMBERS SHALL BE ACCOMPLISHED USING ASTM A325 GALVANIZED HIGH STRENGTH BOLTS, NUTS AND WASHERS.

STRUCTURAL STEEL SUPPORTING MACHINERY COMPONENTS SHALL MEET THE REQUIREMENTS OF AREMA CHAPTER 15. STRUCTURAL STEEL SHALL BE PAINTED, SEE GENERAL NOTES.

MACHINERY COMPONENTS SHALL BE CLEANED AND PAINTED. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

THE CONFIGURATION, DETAILS AND DIMENSIONS OF THE EXISTING BRIDGE AND ITS FUNCTIONAL SYSTEMS INDICATED ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE AT THE TIME THESE PLANS WERE PREPARED. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING CONDITIONS AT THE SITE WITH SUFFICIENT ACCURACY AND THOROUGHNESS TO ACCOMPLISH THE WORK INDICATED. THE CONTRACTOR SHALL HAVE NO CLAIM AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE SITE INFORMATION SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE. FIELD MEASUREMENTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

MACHINERY DIMENSIONS SHOWN ON THESE PLANS ARE THOSE AFTER MACHINING.

MODEL NUMBERS AND DETAILS OF REDUCERS, COUPLINGS, BEARINGS AND OTHER STANDARD COMPONENTS ARE BASED ON MANUFACTURER'S CATALOG DATA CURRENT AT THE TIME THESE PLANS WERE PREPARED. EQUIVALENT MODELS FROM OTHER MANUFACTURERS MAY BE SUBSTITUTED AT THE OPTION OF THE CONTRACTOR AND UPON THE REVIEW AND APPROVAL OF THE ENGINEER. ALL RELATED STRUCTURAL, MECHANICAL AND ELECTRICAL DETAILS SHALL BE REVISED BY THE CONTRACTOR TO SUIT THE CERTIFIED DIMENSIONS OF THE COMPONENTS ACTUALLY FURNISHED AT NO ADDITIONAL COST TO THE DEPARTMENT.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

NORTH CAROLINA PROFESSIONAL SEAL 025855 ENGINEER DENNIS A. DIESEL

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

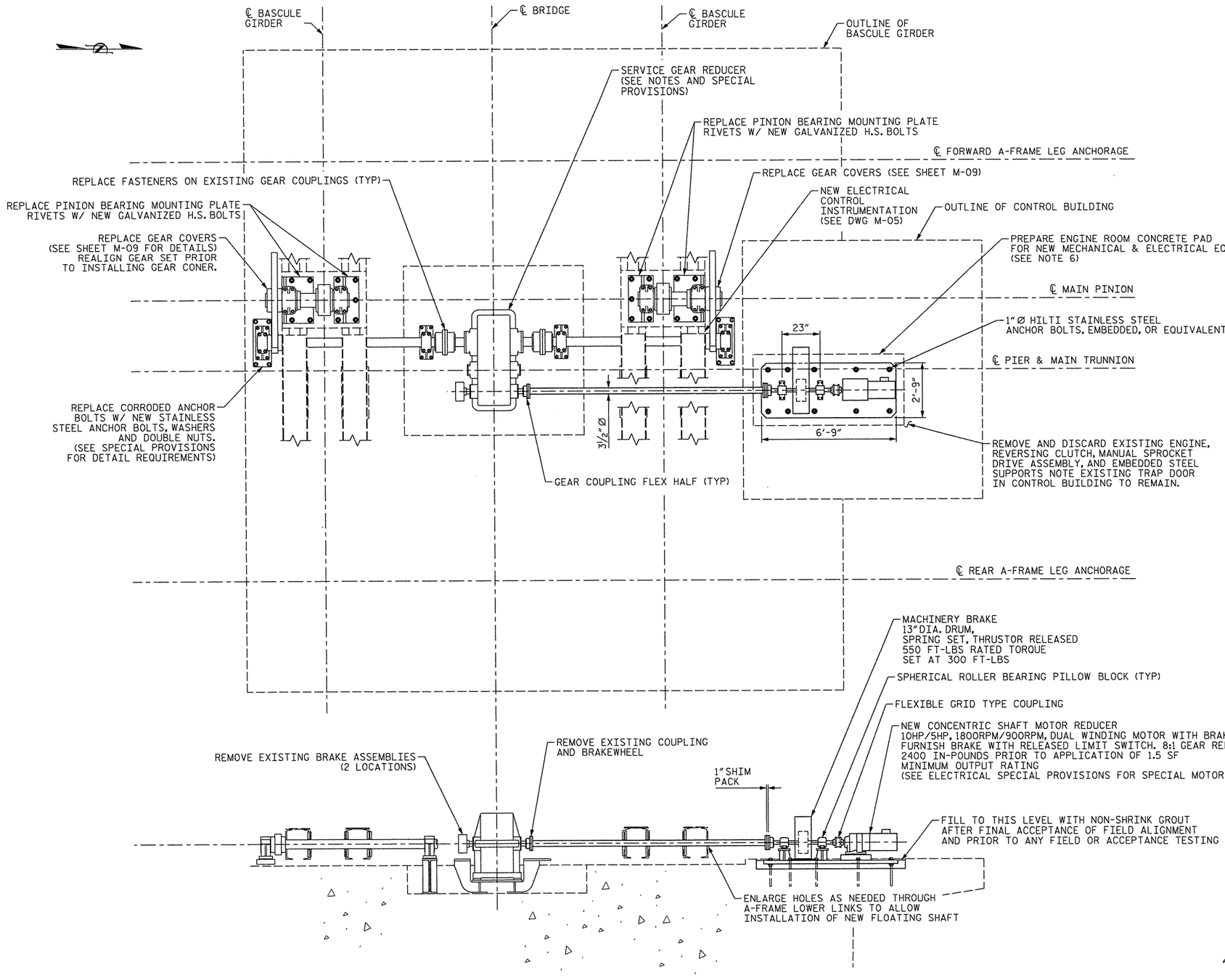
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL MACHINERY PLAN, ELEVATION AND NOTES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-01
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : DB DATE : 12/11
CHECKED BY : MCH DATE : 12/11

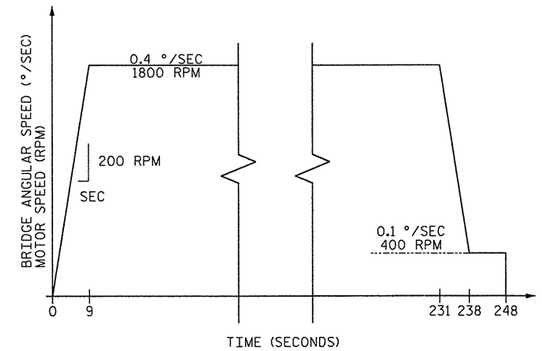
3/16/2012 2:36:19 PM N:\projdev\NCDOT\Radio Island\CAD\Machinery\M-1.dgn



PROPOSED OPERATING MACHINERY - PLAN & ELEVATION

NOTES:

1. A-FRAME AND OTHER STRUCTURAL MEMBERS OMITTED FOR CLARITY.
2. MECHANICAL EQUIPMENT REMOVED AND/OR REPLACED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF. THE COST OF REMOVALS AND DISPOSALS SHALL BE CONSIDERED INCIDENTAL TO THE MECHANICAL WORK.
3. CLEAN AND REPLACE OIL IN REDUCER WITH NEW OIL, PROVIDE AND INSTALL NEW BREATHER, CLEAN AND PAINT REDUCER IN THE FIELD, PROVIDE AND INSTALL NEW GREASE FITTINGS. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.
4. 1 INCH SHIM PACK SHALL CONSIST OF A 1" PLATE, 1/2" PLATE, 3/8" PLATE, 1/8" PLATE, 1/16" PLATE, 1/32" PLATE AND TWO 1/64" PLATES. ALL PLATES SHALL BE ASTM A240 TYPE 316 STAINLESS STEEL.
5. COORDINATE MACHINERY CHANGE-OUT WITH STRUCTURAL AND ELECTRICAL WORK ITEMS.
6. REMOVE SUFFICIENT AMOUNT OF EXISTING CONCRETE TO REMOVE EXISTING ENGINE AND REVERSING CLUTCH EMBEDDED SUPPORTS AND TO INSTALL, LEVEL, ALIGN AND ADJUST NEW EQUIPMENT.



OPERATING DIAGRAM

TOTAL TIME OF OPERATION = 4 MIN 10 SECONDS ±
TOTAL ANGLE OF OPENING = 90°
(SAME FOR OPEN AND CLOSE CYCLE)

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

NEW OPERATING MACHINERY PLAN & ELEVATION

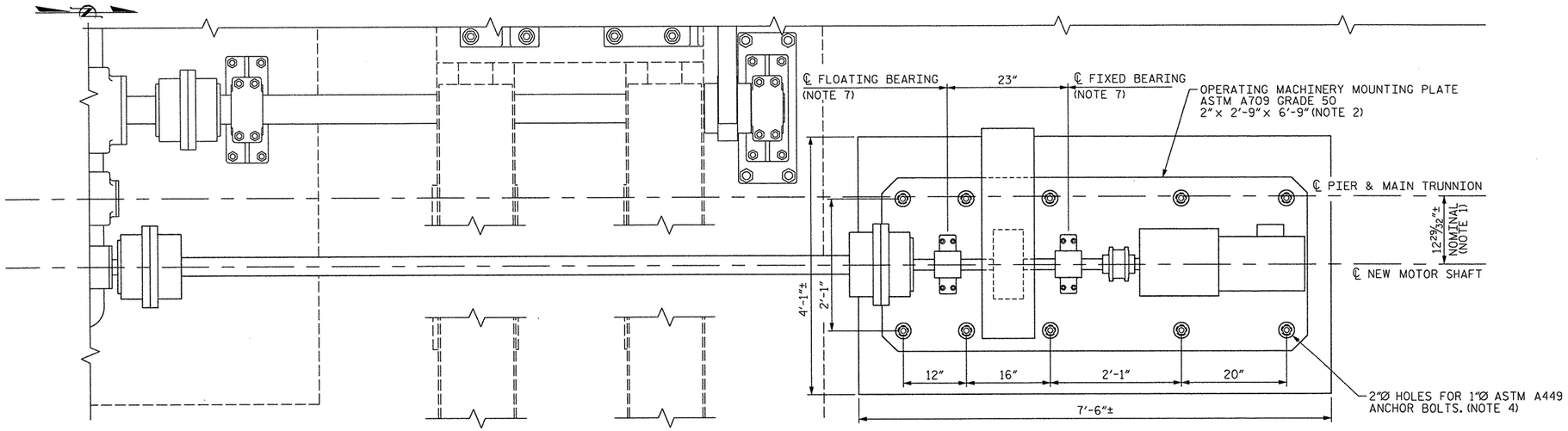
NORTH CAROLINA PROFESSIONAL SEAL 035855 ENGINEER DENNIS J. BIEGEL

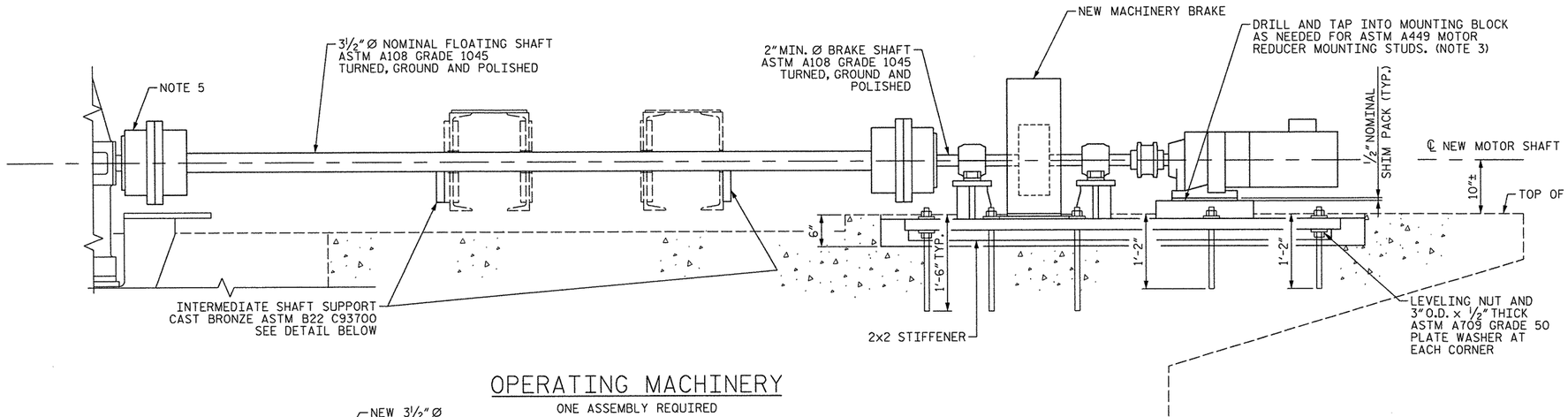
STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-02
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : DB DATE : 12/11
CHECKED BY : MCH DATE : 12/11

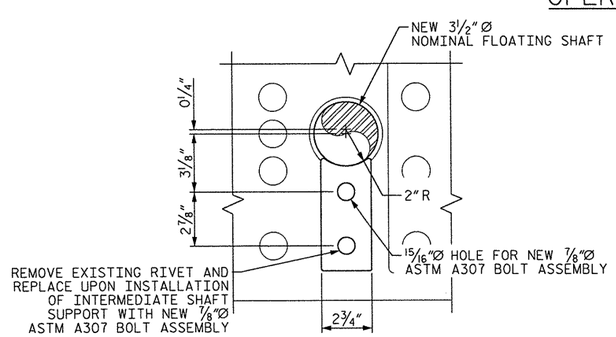
3/16/2012 2:37:05 PM N:\projdev\NCDOT\Radio Island\CAD\Machinery\M-2.dgn





OPERATING MACHINERY

ONE ASSEMBLY REQUIRED



INTERMEDIATE SHAFT SUPPORT DETAIL

1½" THICK
FINISH 125 MICROINCHES,
EXCEPT RADIUSED FACE, WHICH SHALL BE FINISHED TO 32 MICROINCHES
2 REQUIRED

NOTES:

1. THE CENTERLINES OF THE NEW MOTOR AND BRAKE SHAFTS SHALL BE ALIGNED IN HORIZONTAL AND VERTICAL PLANES TO HAVE NO MORE THAN A 1/32-INCH PARALLEL OFFSET AND NO MORE THAN A 3/10-DEGREE ANGULAR OFFSET WITH THE CENTERLINE OF THE EXISTING GEAR REDUCER INPUT SHAFT.
2. THE OPERATING MACHINERY MOUNTING PLATE SHALL INCLUDE MOUNTING BLOCKS AND SUPPORTS FOR THE NEW GEARMOTOR, MACHINERY BRAKE AND BRAKE SHAFT BEARINGS. THIS ASSEMBLY SHALL BE DETAILED BY THE CONTRACTOR BASED ON THE ACTUAL CERTIFIED DIMENSIONS OF THE COMPONENTS PROVIDED. WELDING SHALL UTILIZE CONTINUOUS DOUBLE SIDED 5/16"FILLET WELDS, SHALL BE DONE IN ACCORDANCE WITH AWS D1.5 FOR COMPRESSION MEMBERS AND SHALL INCLUDE THE USE OF JIGS AND FIXTURES TO MINIMIZE DISTORTION. MACHINE ALL MACHINERY MOUNTING SURFACES FLAT TO WITHIN 0.005-INCHES AND TO A 125 MICROINCH FINISH. ALL MACHINERY MOUNTING SURFACES SHALL BE PARALLEL TO WITHIN 0.015-INCHES. FURNISH BASE PLATE WITH A STIFFENER 2x2 AT CENTERLINE OF SHAFT FILLET WELDED TO THE PLATE.
3. MOTOR REDUCER MOUNTING STUDS SHALL EITHER HAVE A 0.010-INCH MAXIMUM CLEARANCE WITH HOLES THROUGH SHIMS AND MOTOR REDUCER MOUNTING FEET OR SHALL HAVE A 1/16-INCH MAXIMUM CLEARANCE WITH THESE SAME HOLES AND THE MOTOR REDUCER MOUNTING FEET PROVIDED WITH MACHINED SIDES AND THOSE SAME SIDES FIRMLY CHOCKED IN PLACE BY STEEL BLOCKS.
4. AFTER FIELD ALIGNMENT IS ACCEPTED BY THE ENGINEER, FILL SPACE AROUND AND UNDER OPERATING MACHINERY MOUNTING PLATE AND ANNULAR SPACES BETWEEN ANCHOR BOLTS AND MOUNTING PLATE WITH NON-SHRINK EPOXY BASED GROUT. GROUT LEVEL SHALL BE LEVEL WITH THE TOP OF THE MOUNTING PLATE.
5. REMOVE EXISTING BRAKE AND BRAKEWHEEL COUPLING. FILL EXISTING SHAFT KEYWAY WITH NEW STEEL KEY MACHINED FOR AN ANSI FN1 CLASS FIT WITH THE KEYWAY AND GRIND FLUSH WITH SHAFT SURFACE. FIELD PREPARE SHAFT FOR INSTALLATION OF REXNORD 1050G52 COUPLING BORED FOR A TAPER-LOCK 3535 BUSHING AS PER THE RECOMMENDATIONS OF THE COUPLING MANUFACTURER.
6. COORDINATE SHAFT SUPPORT DETAIL WITH STRUCTURAL REPAIRS. CONTRACTOR SHALL ADJUST AS REQUIRED TO PROVIDE SHAFT SUPPORT AND STRUCTURAL REPAIRS SPECIFIED AT NO ADDITIONAL COST TO NCDOT.
7. BRAKE SHAFT BEARINGS SHALL BE SPHERICAL ROLLER TYPE BEARINGS HOUSED IN CAST STEEL PILLOW BLOCKS SKF SAFS 22310 WITH TRIPLE LIP TYPE SEALS OR EQUAL.
8. PROVIDE ½-INCH NOMINAL SHIM PACKS UNDER MOTOR REDUCER, MACHINERY BRAKE AND BRAKE SHAFT BEARINGS.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

OPERATING MACHINERY DETAILS

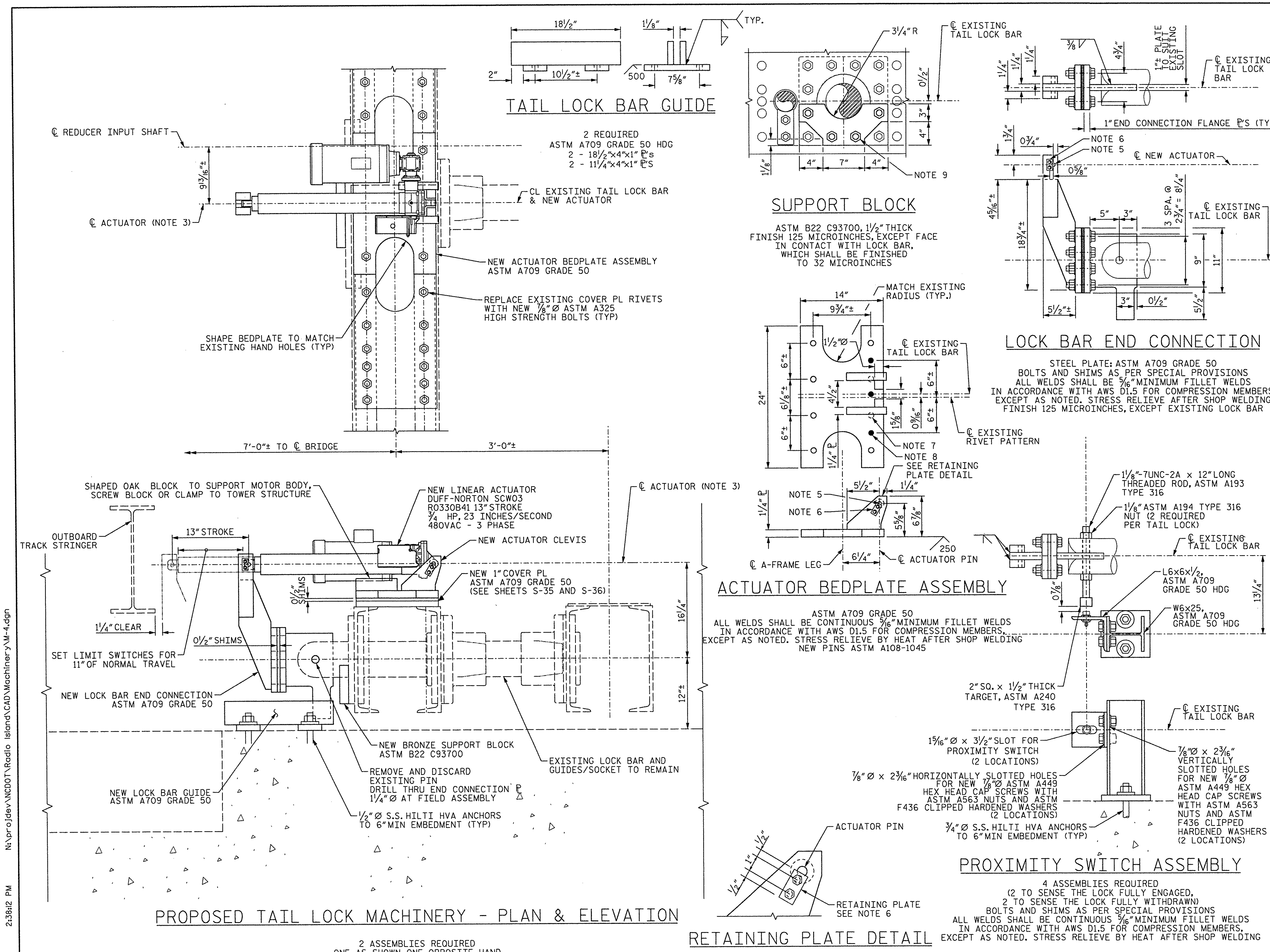
NORTH CAROLINA PROFESSIONAL SEAL 035885 ENGINEER DENNIS C. BRICE

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-03
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : DB DATE : 11/11
CHECKED BY : MCH DATE : 12/11

3/16/2012 2:37:32 PM N:\projdev\NCDOT\Radio Island\CAD\Machinery\M-3.dgn


TAIL LOCK BAR GUIDE
2 REQUIRED
ASTM A709 GRADE 50 HDG
2 - 18½"×4"×1" PL's
2 - 11¼"×4"×1" PL'S
SUPPORT BLOCK
ASTM B22 C93700, 1½" THICK
FINISH 125 MICROINCHES, EXCEPT FACE IN CONTACT WITH LOCK BAR, WHICH SHALL BE FINISHED TO 32 MICROINCHES
LOCK BAR END CONNECTION
STEEL PLATE: ASTM A709 GRADE 50
BOLTS AND SHIMS AS PER SPECIAL PROVISIONS
ALL WELDS SHALL BE 5/16" MINIMUM FILLET WELDS IN ACCORDANCE WITH AWS D1.5 FOR COMPRESSION MEMBERS, EXCEPT AS NOTED. STRESS RELIEVE AFTER SHOP WELDING
FINISH 125 MICROINCHES, EXCEPT EXISTING LOCK BAR
ACTUATOR BEDPLATE ASSEMBLY
ASTM A709 GRADE 50
ALL WELDS SHALL BE CONTINUOUS 5/16" MINIMUM FILLET WELDS IN ACCORDANCE WITH AWS D1.5 FOR COMPRESSION MEMBERS, EXCEPT AS NOTED. STRESS RELIEVE BY HEAT AFTER SHOP WELDING
NEW PINS ASTM A108-1045
PROPOSED TAIL LOCK MACHINERY - PLAN & ELEVATION
2 ASSEMBLIES REQUIRED
ONE AS SHOWN, ONE OPPOSITE HAND
RETAINING PLATE DETAIL
PROXIMITY SWITCH ASSEMBLY
4 ASSEMBLIES REQUIRED
(2 TO SENSE THE LOCK FULLY ENGAGED, 2 TO SENSE THE LOCK FULLY WITHDRAWN)
BOLTS AND SHIMS AS PER SPECIAL PROVISIONS
ALL WELDS SHALL BE CONTINUOUS 5/16" MINIMUM FILLET WELDS IN ACCORDANCE WITH AWS D1.5 FOR COMPRESSION MEMBERS, EXCEPT AS NOTED. STRESS RELIEVE BY HEAT AFTER SHOP WELDING
℄ REDUCER INPUT SHAFT
℄ ACTUATOR (NOTE 3)
CL EXISTING TAIL LOCK BAR & NEW ACTUATOR
NEW ACTUATOR BEDPLATE ASSEMBLY ASTM A709 GRADE 50
REPLACE EXISTING COVER PL RIVETS WITH NEW 7/8"Ø ASTM A325 HIGH STRENGTH BOLTS (TYP)
SHAPE BEDPLATE TO MATCH EXISTING HAND HOLES (TYP)
7'-0"± TO ℄ BRIDGE
3'-0"±
SHAPED OAK BLOCK TO SUPPORT MOTOR BODY, SCREW BLOCK OR CLAMP TO TOWER STRUCTURE
NEW LINEAR ACTUATOR DUFF-NORTON SCW03 R0330B41 13" STROKE ¾ HP, 23 INCHES/SECOND 480VAC - 3 PHASE
NEW ACTUATOR CLEVIS
NEW 1" COVER PL ASTM A709 GRADE 50 (SEE SHEETS S-35 AND S-36)
OUTBOARD TRACK STRINGER
13" STROKE
1¼" CLEAR
0½" SHIMS
SET LIMIT SWITCHES FOR 11" OF NORMAL TRAVEL
NEW LOCK BAR END CONNECTION ASTM A709 GRADE 50
NEW BRONZE SUPPORT BLOCK ASTM B22 C93700
REMOVE AND DISCARD EXISTING PIN DRILL THRU END CONNECTION PL 1¼"Ø AT FIELD ASSEMBLY
EXISTING LOCK BAR AND GUIDES/SOCKET TO REMAIN
NEW LOCK BAR GUIDE ASTM A709 GRADE 50
½"Ø S.S. HILTI HVA ANCHORS TO 6" MIN EMBEDMENT (TYP)
℄ EXISTING TAIL LOCK BAR
MATCH EXISTING RADIUS (TYP.)
℄ EXISTING RIVET PATTERN
SEE RETAINING PLATE DETAIL
℄ A-FRAME LEG
℄ ACTUATOR PIN
ACTUATOR PIN
RETAINING PLATE SEE NOTE 6
1" END CONNECTION FLANGE PL'S (TYP)
℄ NEW ACTUATOR
1⅛"-7UNC-2A × 12" LONG THREADED ROD, ASTM A193 TYPE 316
1⅛" ASTM A194 TYPE 316 NUT (2 REQUIRED PER TAIL LOCK)
L6x6x½, ASTM A709 GRADE 50 HDG
W6x25, ASTM A709 GRADE 50 HDG
2" SQ. × 1½" THICK TARGET, ASTM A240 TYPE 316
1 5/16"Ø × 3½" SLOT FOR PROXIMITY SWITCH (2 LOCATIONS)
7/8"Ø × 2 3/16" HORIZONTALLY SLOTTED HOLES FOR NEW 7/8"Ø ASTM A449 HEX HEAD CAP SCREWS WITH ASTM A563 NUTS AND ASTM F436 CLIPPED HARDENED WASHERS (2 LOCATIONS)
¾"Ø S.S. HILTI HVA ANCHORS TO 6" MIN EMBEDMENT (TYP)
7/8"Ø × 2 3/16" VERTICALLY SLOTTED HOLES FOR NEW 7/8"Ø ASTM A449 HEX HEAD CAP SCREWS WITH ASTM A563 NUTS AND ASTM F436 CLIPPED HARDENED WASHERS (2 LOCATIONS)

HDG = HOT DIPPED GALVANIZED.

NOTES:

1. PROVIDE SPECIAL SPHERICAL ROD ENDS AT EACH END OF THE NEW ACTUATORS.
2. PROVIDE SPECIAL MOTOR FRAME WITH MOUNTING FEET AS PART OF THE NEW ACTUATORS. MOTORS SHALL BE INSTALLED ON THE ACTUATORS SUCH THAT THE MOUNTING FEET SHALL FACE DOWNWARD WHEN THE ASSEMBLIES ARE IN THEIR FINAL MOUNTED ORIENTATIONS.
3. ALIGN EACH NEW ACTUATOR SUCH THAT IT IS PARALLEL IN A VERTICAL PLANE TO WITHIN 2/10 DEGREES AND IN A HORIZONTAL PLANE TO WITHIN 1/10 DEGREES TO ITS MATCHING TAIL LOCK BAR. IN ADDITION, THE CENTERLINE OF THE NEW ACTUATOR SHALL NOT HAVE A PARALLEL OFFSET FROM THAT OF THE EXISTING LOCK BAR GREATER THAN 0.015-INCHES.
4. PROVIDE VERTICAL, SHORT SLOTTED HOLES AS DEFINED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS, SPECIFICATIONS FOR STRUCTURAL JOINTS, IN LOCK BAR END CONNECTION FLANGE PLATES FOR 7/8"Ø ASTM A449 HEX HEAD CAP SCREWS, NUTS AND WASHERS. HOLES THROUGH THE FLANGE PLATES AND SHIMS SHALL HAVE A 0.010-INCH MAX. SIDE WITH THE BODY OF THE CAP SCREWS.
5. PROVIDE SPECIAL 5/8"Ø CONNECTING PIN CONFORMING TO ASTM A193 AISI TYPE 316, TOLERANCED AS PER THE END PLAIN SPHERICAL BEARING MANUFACTURER'S RECOMMENDATIONS, AND WITH NOTCHED ENDS TO INTERFACE WITH RETAINING PLATES (SEE NOTE 6 BELOW).
6. DRILL THRU AND TAP FOR 3/8"Ø ASTM A307 HEX HEAD CAP SCREWS. CAP SCREWS SHALL FIT A ½×1×2" ASTM A709 GRADE 50 RETAINING PLATE TO EACH END OF THE LOCK BAR END CONNECTION AFTER ACCEPTANCE OF FINAL ALIGNMENT. THIS RETAINING PLATE SHALL RETAIN THE AXIAL POSITION OF THE CONNECTING PIN OF THE NEW ACTUATOR. END OF PIN NOTCHED, RETAINER TO PREVENT ROTATION.
7. USE 7/8"Ø ASTM A325 HIGH STRENGTH COUNTERSUNK BOLTS IN EXISTING RIVET HOLES THROUGH NEW 1" COVER PLATE (2 LOCATIONS PER TAIL LOCK ASSEMBLY)
8. AFTER FINAL ALIGNMENT, DRILL THRU FOR NEW 7/8"Ø ASTM A325 HIGH STRENGTH BOLTS.
9. REPLACE EXISTING TURNED BOLTS WITH NEW, LONGER ASTM A307 TURNED BOLTS (4 LOCATIONS PER SUPPORT BLOCK)
10. PROVIDE COVERS FABRICATED FROM 12 GAGE ASTM A240 TYPE 316 STAINLESS STEEL FOR EACH PROXIMITY SOLE ASSEMBLY. COVERS SHALL BE DESIGNED SUCH THEY DO NOT NEED TO BE REMOVED TO OPERATE THE BRIDGE OR TAIL LOCK.

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

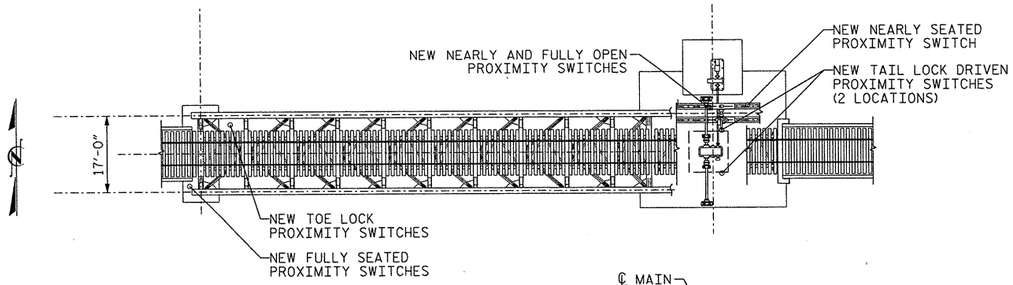
NEW TAIL LOCK MACHINERY

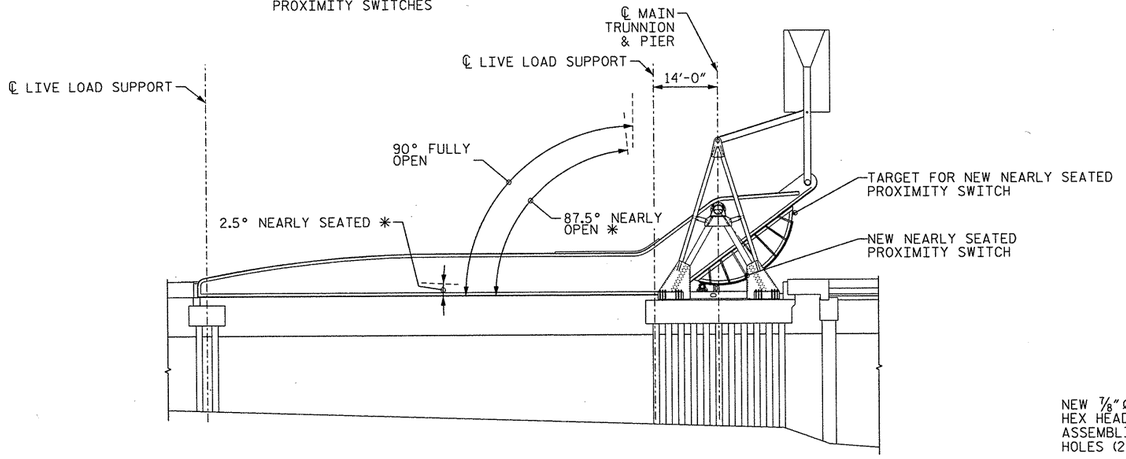
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-04
1			3			TOTAL SHEETS
2			4			76

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY: DB DATE: 12/11
CHECKED BY: MCH DATE: 12/11

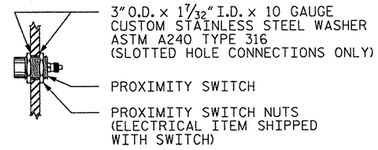
3/16/2012 2:38:12 PM N:\projdev\NCDOT\Radio Island\CAD\Machinery\M-4.dgn



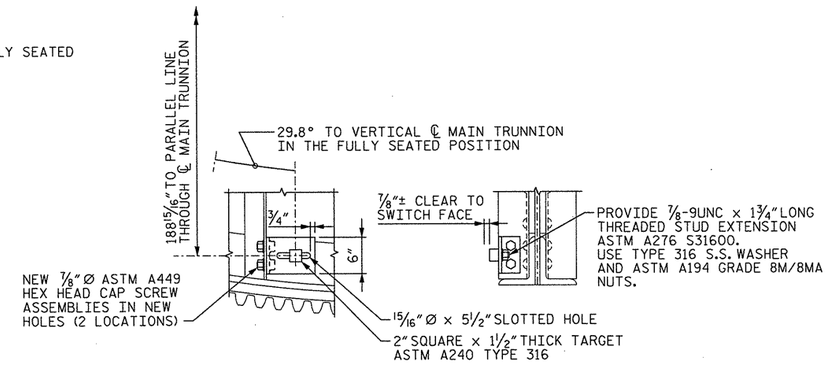


PROXIMITY SWITCH KEY PLAN AND ELEVATION

✳ ANGLE WHERE PROXIMITY SWITCH ACTIVATES.
CONTRACTOR TO ADJUST TARGET AND BRACKET AS REQUIRED TO ACHIEVE THESE ACTIVATION POINTS.



TYPICAL PROXIMITY SWITCH MOUNTING DETAIL

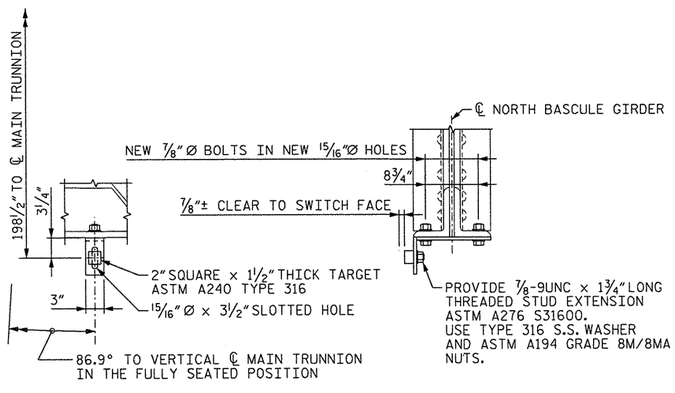


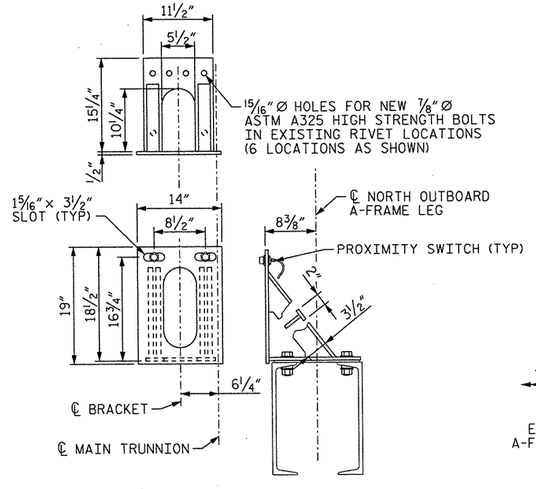
NOTES:

1. ALL STRUCTURAL STEEL USED FOR BRACKETS AND SUPPORTS SHALL BE HOT DIP GALVANIZED.
2. PROXIMITY SWITCHES, PROXIMITY SWITCH NUTS, CABLES AND FIELD WIRING SHALL BE PAID FOR UNDER "BRIDGE ELECTRICAL WORK". FIELD MOUNTING AND ALIGNING OF SWITCHES SHALL BE PAID FOR UNDER "BRIDGE MECHANICAL WORK".
3. ALL WELDS SHALL BE 5/16" MINIMUM, CONTINUOUS WELDS.
4. WELDS SHALL BE DOUBLE SIDED FILLET WELDS, UNLESS OTHERWISE INDICATED. CONTRACTOR SHALL SUBMIT ALTERNATE WELDING DETAILS TO THE ENGINEER FOR REVIEW. DOUBLE SIDED OR FILLET WELDS ARE IMPRACTICAL.
5. UTILIZE FIXTURES DURING WELDING TO MINIMIZE DISTORTION.
6. ADJUST PROXIMITY SWITCH SENSING HEADS AND TARGETS AS NECESSARY IN THE FIELD TO RELIABLY AND CONSISTENTLY ACHIEVE THE SPECIFIED AND INDICATED BRIDGE OPERATIONAL CHARACTERISTICS.
7. FOR FULLY SEATED SWITCH DETAILS, SEE SHEET S-06.
8. FOR TAIL LOCK SWITCH DETAILS, SEE SHEET M-04.
9. FOR TOE LOCK SWITCH DETAILS, SEE SHEET M-06.

NEARLY SEATED SWITCH TARGET

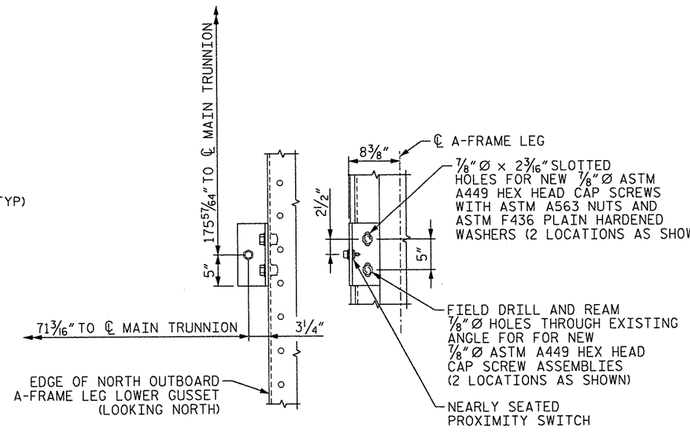
ONE ASSEMBLY REQUIRED
L8x3 1/2x1/2
ASTM A709 GRADE 50
(NOTE: VIEW ROTATED)





NEARLY/FULLY OPEN SWITCH BRACKET

ONE ASSEMBLY REQUIRED
FABRICATE USING 1/2" MINIMUM
ASTM A709 GRADE 50 PLATE
WELDING SHALL BE IN ACCORDANCE WITH AWS D1.5



NEARLY SEATED SWITCH BRACKET

ONE ASSEMBLY REQUIRED
L5x5x1/2"
ASTM A709 GRADE 50

NEARLY/FULLY OPEN SWITCH TARGET

ONE ASSEMBLY REQUIRED
FABRICATE USING 1/2" MINIMUM
ASTM A709 GRADE 50 PLATE
WELDING SHALL BE IN ACCORDANCE WITH AWS D1.5

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

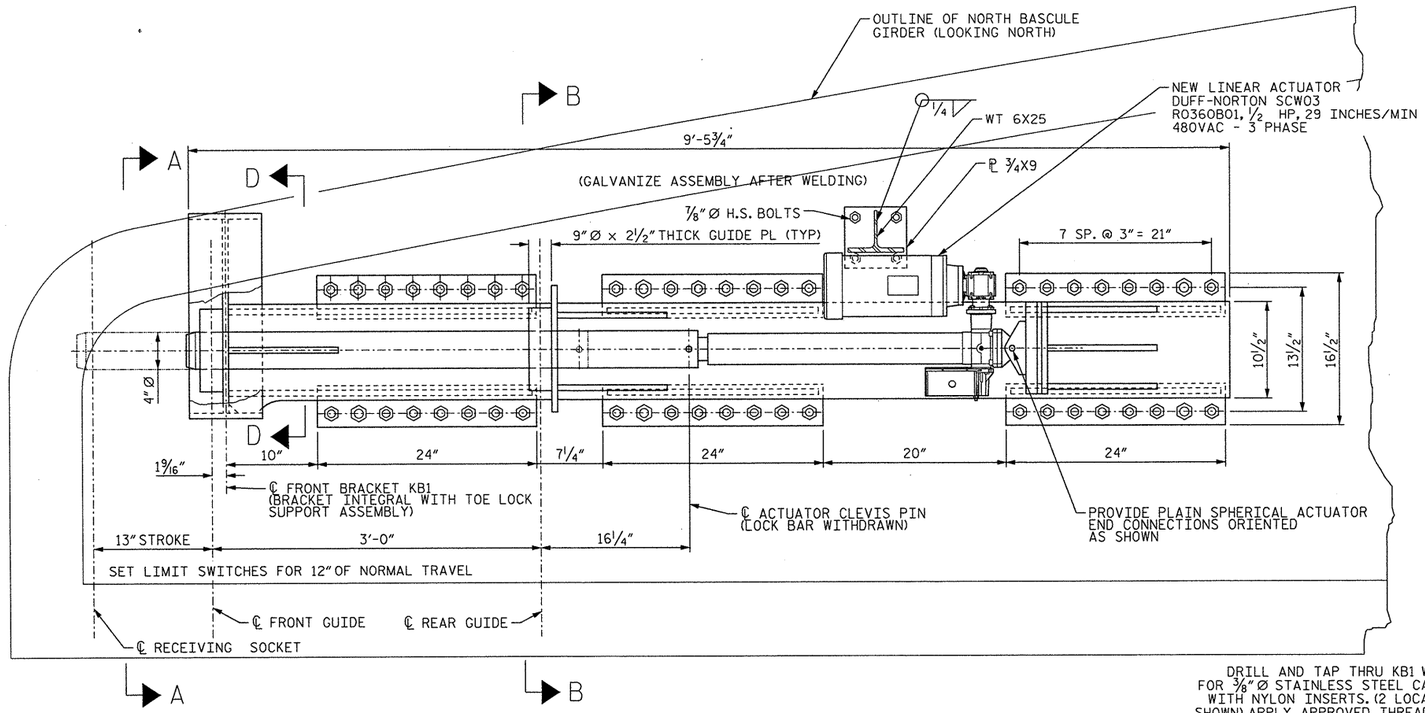
NEW ELECTRICAL INSTRUMENTATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-05
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : DB DATE : 12/11
CHECKED BY : MCH DATE : 12/11

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St. Ste. 200
Charlotte, NC 28208
NC License No. F-0991

3/16/2012 2:38:54 PM N:\proj\dev\NCDOT\Radio Island\CAD\Machinery\M-5.dgn

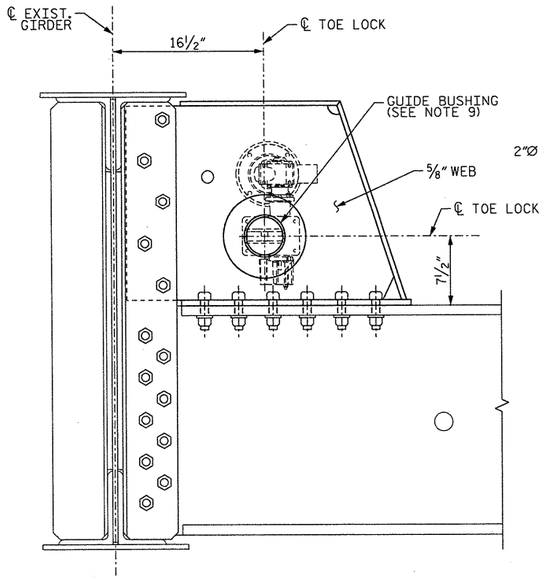


PROPOSED TOE LOCK MACHINERY - ELEVATION

SCALE: 1½" = 1'-0"
ONE ASSEMBLY REQUIRED
(SEE SHOP DRAWINGS FOR EXISTING GIRDER DETAILS)
COVER NOT SHOWN FOR CLARITY

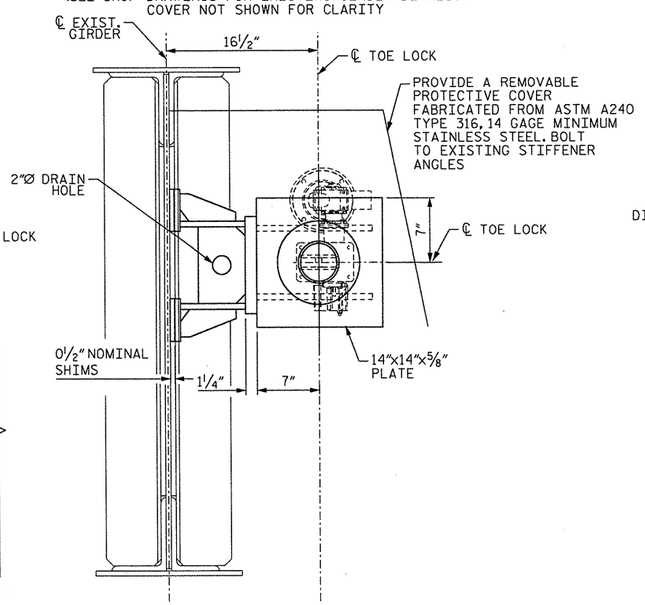
NOTES:

1. HOLES FOR GUIDE BUSHINGS SHALL BE LINE BORED IN THE SHOP TO ENSURE THEY ARE PARALLEL TO WITHIN 0.2° AND CONCENTRIC TO WITHIN 0.005".
2. THE DIAMETER OF HOLES FOR GUIDE BUSHINGS SHALL BE TOLERENCED AS PER THE BUSHING MANUFACTURER'S RECOMMENDATIONS. RETAIN BUSHINGS AS RECOMMENDED BY THEIR MANUFACTURER.
3. THE AXES OF THE GUIDE BUSHINGS AND THE RECEIVING SOCKET BORE SHALL BE FIELD ALIGNED SUCH THAT THEY ARE PARALLEL TO WITHIN 0.5° AND CONCENTRIC TO WITHIN 0.015".
4. THE PERMANENT CONNECTION OF THE TOE LOCK ASSEMBLY TO SUPPORTING STEEL SHALL BE ACCOMPLISHED USING 7/8" DIAMETER, ASTM A449 HEX HEAD CAP SCREW ASSEMBLIES.
5. PROVIDE SPECIAL MOTOR FRAME WITH MOUNTING FEET AS PART OF THE NEW ACTUATOR. THE MOTOR SHALL BE INSTALLED SUCH THAT THE FEET FACE AND ARE PERPENDICULAR TO THE GIRDER WEB WHEN THE ASSEMBLY IS IN ITS FINAL ALIGNED POSITION, AS SHOWN IN SECTION C-C.
6. FABRICATE TOE LOCK SUPPORT/GUIDE ASSEMBLY USING 5/16" CONTINUOUS DOUBLE SIDED FILLET WELDS, EXCEPT AS OTHERWISE NOTED. ALL WELDING SHALL BE IN ACCORDANCE WITH AWS D1.5.
7. ALL PLATE SHALL BE 5/8" THICK UNLESS OTHERWISE NOTED.
8. ALL PLATE SHALL CONFORM TO ASTM A709 GRADE 50, HOT DIPPED GALVANIZED.
9. GUIDE BUSHINGS SHALL BE CONTINUOUS CAST C93200 (SAE 660) BRONZE BUSHINGS, 4" INNER DIAMETER, 5" OUTER DIAMETER, CUT TO 2½" LONG AND MACHINE FINISHED FLUSH TO THE 2½" THICK GUIDE PLATES. BUSHINGS SHALL BE PROVIDED WITH DOUBLE OVAL GREASE GROOVES DRILL THRU GUIDE PLATES AND BUSHING GROOVES AND TAP FOR PIPE COUPLING AND PRESSURIZED GREASE CUP FITTING.



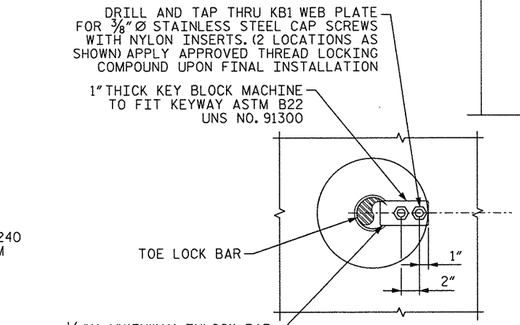
SECTION A-A

SEE SHEET S-06 FOR FLOORBEAM DETAILS.

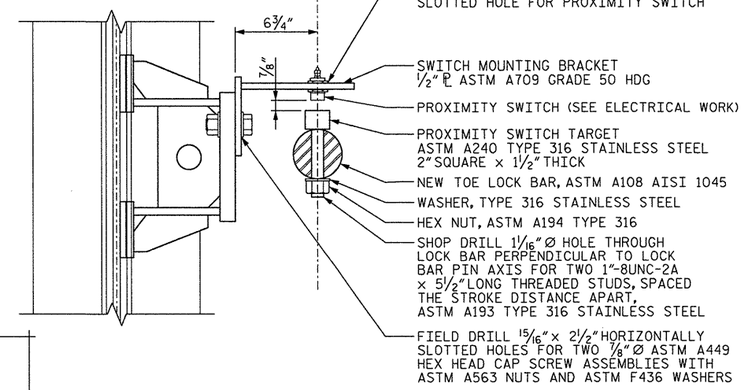


SECTION B-B

HDG = HOT DIP GALVANIZED

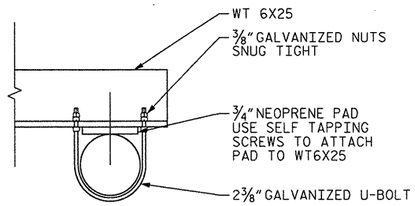


SECTION D-D



PROXIMITY SWITCH DETAIL

2 ASSEMBLIES REQUIRED
1 TO SENSE LOCK BAR FULLY WITHDRAWN
1 TO SENSE LOCK BAR FULLY ENGAGED



NOTE:
PLACE ¾" THICK NEOPRENE STRIP BETWEEN MOTOR AND U-BOLTS. GLUE TO BOLT ATTACH 3/8" GALVANIZED BOLT TO MOTOR AND SNUG TIGHTEN TO MOTOR TO DAMPEN VIBRATION.

MOTOR BRACKET DETAIL

(NEOPRENE PADS MIN. 40 DUROMETER ABBEON OR EQUAL)

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

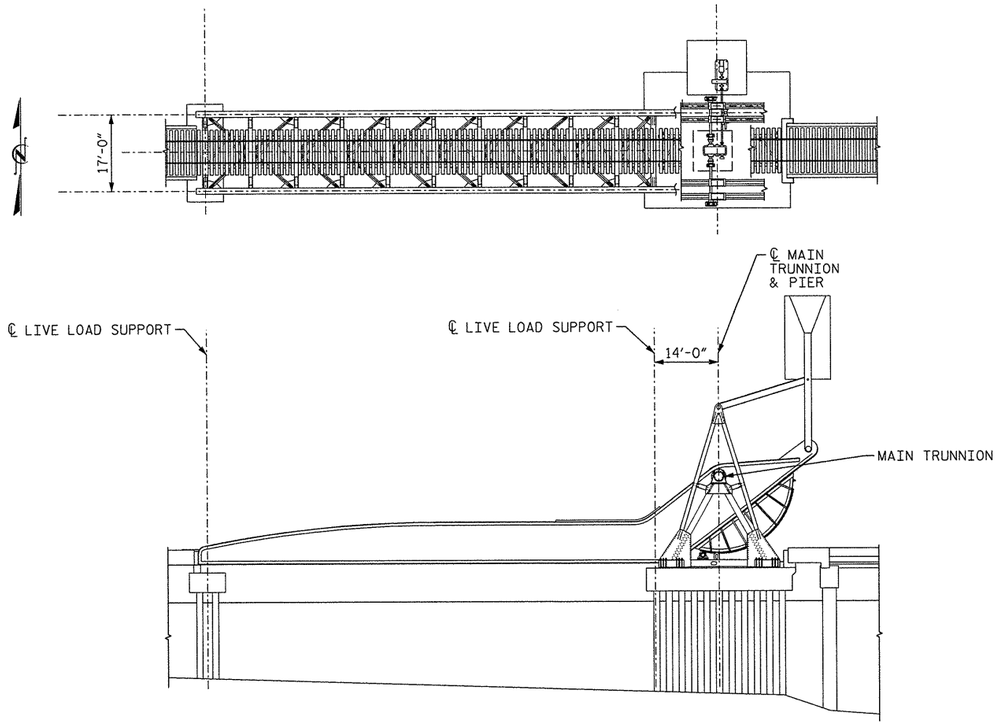
NEW TOE LOCK MACHINERY

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-06
1			3			TOTAL SHEETS
2			4			76

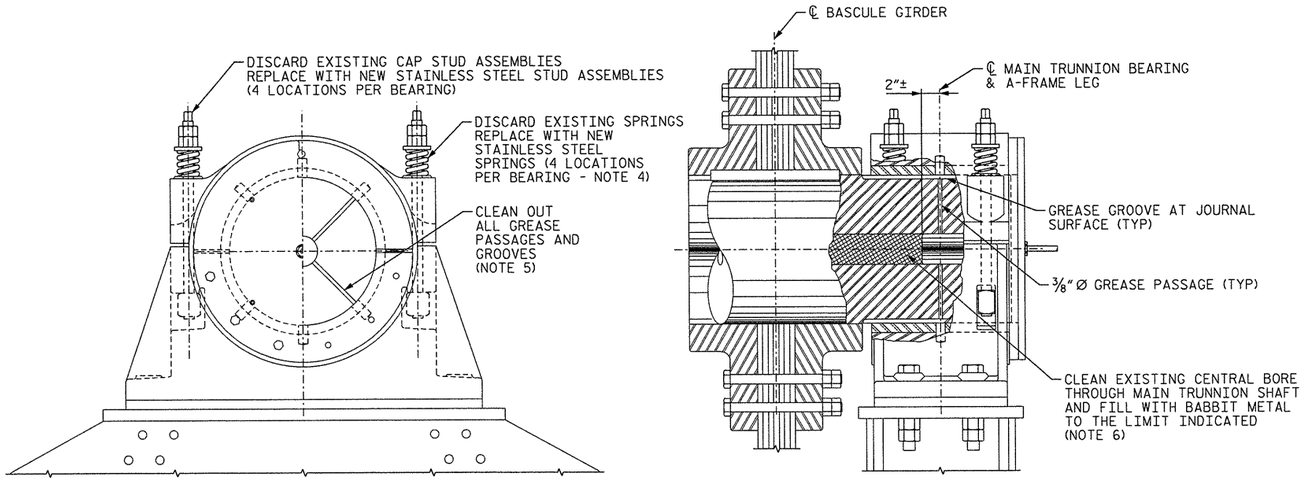
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : DB DATE : 10/11
CHECKED BY : MCH DATE : 12/11

3/6/2012 2:39:38 PM N:\proj\dev\NCDOT\Radio Island\CAD\Machinery\M-6.dgn



MAIN TRUNNION BEARING KEY PLAN & ELEVATION

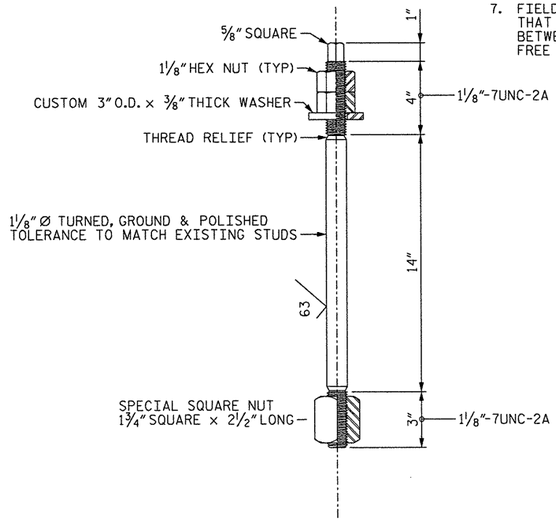


MAIN TRUNNION BEARING REHABILITATION WORK ITEMS

4 LOCATIONS

NOTES:

1. THE BRIDGE FEATURES TWO MAIN TRUNNION SHAFTS EACH SUPPORTED BY TWO MAIN TRUNNION BEARINGS.
2. COORDINATE MAIN TRUNNION BEARING REHABILITATION CLOSELY WITH THE INSTALLATION OF NEW LUBRICATION PIPING.
3. TRUNNION REHABILITATION WORK ITEMS SHALL BE DONE WITH THE SPAN IN THE FULLY SEATED POSITION AND DURING A TRACK OUTAGE. ALL CONSTRUCTION VEHICLES AND HEAVY EQUIPMENT AND MATERIAL SHOULD BE REMOVED FROM THE BASCULE SPAN PRIOR TO THE START OF THESE WORK ITEMS.
4. NEW SPRINGS SHALL USE 7/16" Ø STAINLESS STEEL WIRE CONFORMING TO ASTM A313 TYPE 316. THE SPRINGS SHALL HAVE SQUARED AND GROUND ENDS, A FREE HEIGHT OF 3 1/2", A SOLID HEIGHT OF 2 3/16", AND AN OUTSIDE DIAMETER OF 2 1/2".
5. THOROUGHLY FLUSH AND CLEAN OUT GREASE PASSAGES AND GROOVES WITH PRESSURIZED HOT WATER, STEAM OR OTHER ENGINEER-APPROVED METHOD IN ACCORDANCE WITH THE SPECIAL PROVISIONS. COLLECT ALL GREASE AND CONTAMINANTS TO PREVENT MATERIALS FROM ENTERING THE WATERWAY. EACH MAIN TRUNNION BEARING HAS ASSOCIATED WITH IT FOUR 3/8" Ø GREASE PASSAGES, SPACED 90° APART, RUNNING RADIALLY FROM THE CENTRAL BORE OF THE TRUNNION SHAFT TO THE JOURNAL SURFACE. EACH PASSAGE TERMINATES INTO A GREASE GROOVE RUNNING PARALLEL TO THE TRUNNION AXIS MACHINED INTO THE TRUNNION SHAFT JOURNAL SURFACE.
6. BLOCK BOTH ENDS OF EACH TRUNNION SHAFT CENTRAL BORE INBOARD OF THE GREASE PASSAGES AS SHOWN AND FILL INTERIOR SPACE WITH BABBIT METAL, OR OTHER ENGINEER-APPROVED MATERIAL AS PER THE SPECIAL PROVISIONS. BABBIT METAL SHALL MEET THE REQUIREMENTS OF ASTM B23.
7. FIELD INSTALL NEW CAP STUD ASSEMBLY SUCH THAT THE NEW SPRINGS ARE DEFLECTED BETWEEN 1/8-INCH AND 1/4-INCH FROM THEIR FREE HEIGHT.



NEW CAP STUD ASSEMBLY

16 ASSEMBLIES REQUIRED
STUD: ASTM A193 AISI TYPE 316
NUTS: ASTM A194 AISI TYPE 316
WASHERS: AISI TYPE 316

NORTH CAROLINA PROFESSIONAL SEAL 035655 ENGINEER DENNIS J. DIEGEL

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

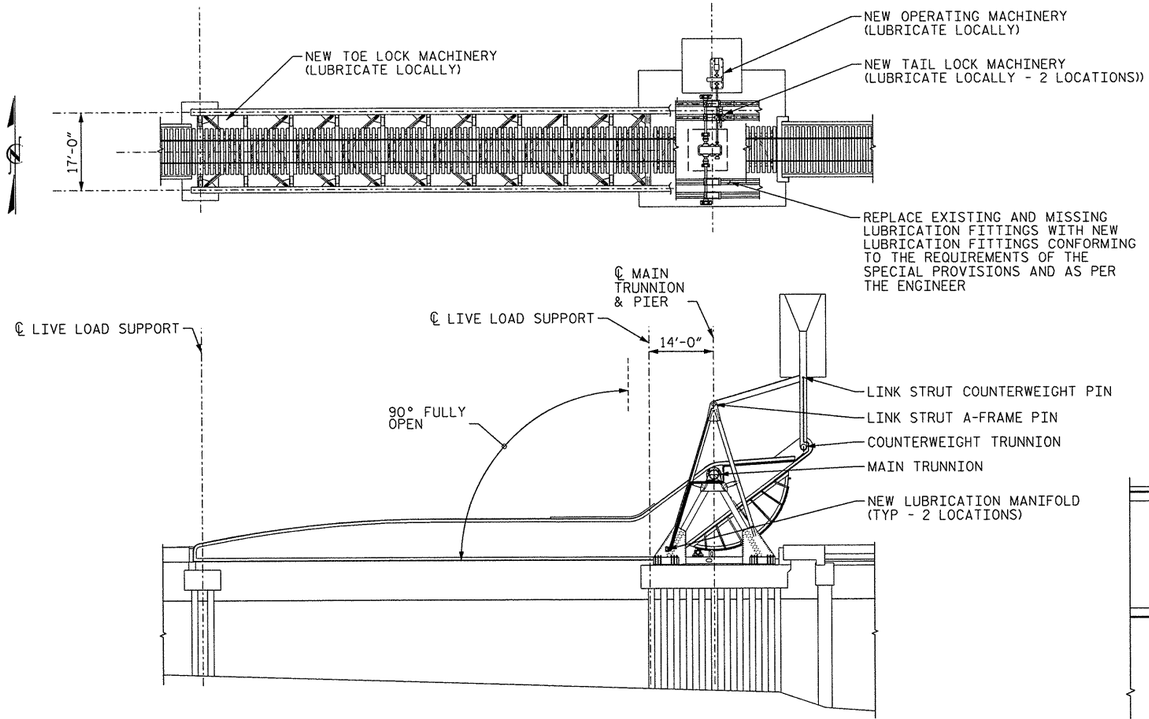
MAIN TRUNNION BEARING REHABILITATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-07
1			3			TOTAL SHEETS
2			4			76

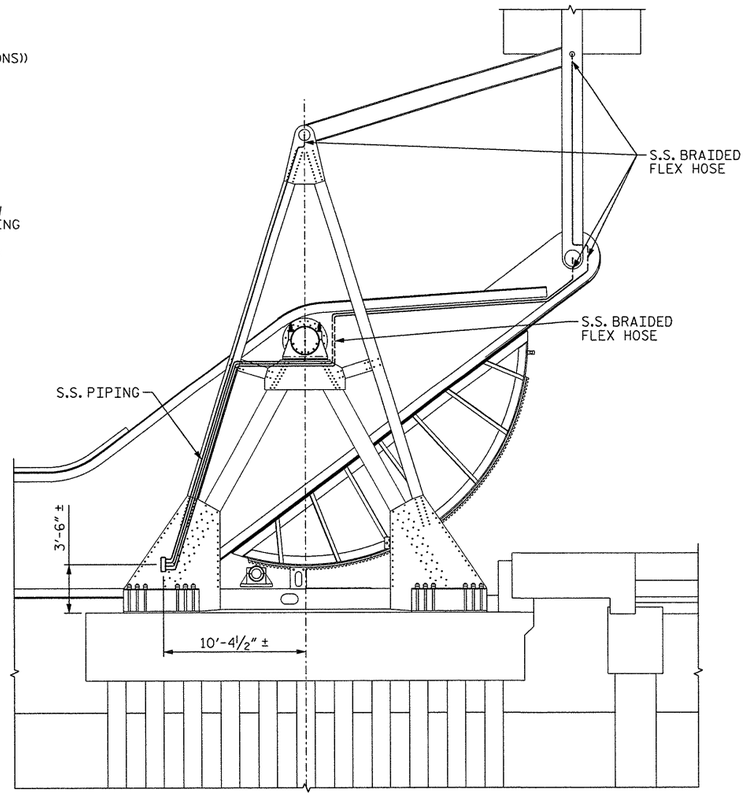
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : DB DATE : 12/11
CHECKED BY : MCH DATE : 12/11

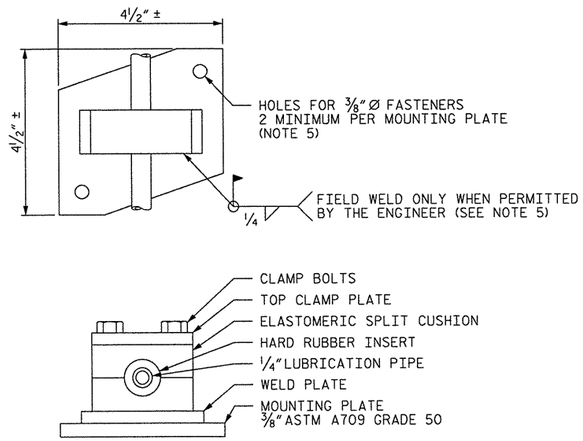
3/16/2012 2:40:18 PM N:\projdev\NCDOT\Radio Island\CAD\Machinery\M-7.dgn



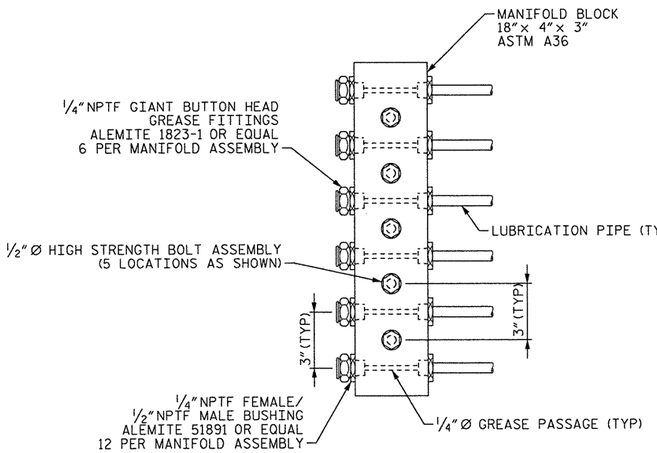
NEW LUBRICATION PIPING SCHEMATIC PLAN AND ELEVATION



SCHEMATIC ELEVATION DETAIL



TYPICAL LUBRICATION PIPE MOUNTING DETAIL



TYPICAL MANIFOLD DETAIL

2 ASSEMBLIES REQUIRED

NOTES:

1. NEW LUBRICATION PIPE SHALL BE ¼" SCHEDULE 40 STAINLESS STEEL PIPE CONFORMING TO ASTM A312 AND ASTM A376 TYPE 316
2. FOR CONNECTIONS BETWEEN COMPONENTS AND ELEMENTS WHICH MOVE WITH RESPECT TO ONE ANOTHER, PROVIDE NEW ¼" NOMINAL DOUBLE WALLED, DOUBLE BRAIDED, SPIRALLY WOUND, SELF-DRAINING, CORRUGATED STAINLESS STEEL FLEXIBLE HOSE, TYPE 316, 5,800 PSI WORKING PRESSURE, 23,000 PSI MINIMUM BURST PRESSURE. LENGTHS OF LUBRICATION HOSE INSTALLED SHALL BE SUFFICIENT TO REMAIN SLACK THROUGHOUT THE FULL MOVEMENT OF THE BASCULE, PLUS AN ADDITIONAL 15° OF ROTATION TO ACCOUNT FOR OVER-TRAVEL. THE LENGTHS OF HOSE INSTALLED SHALL BE SECURED TO THE ADJACENT ELEMENTS WITH U-BOLTS AND SHALL NOT BE SO LONG AS TO BECOME CAUGHT IN OR INTERFERE WITH BRIDGE ELEMENTS DURING OPENING AND CLOSING OPERATIONS.
3. PROVIDE TYPE 316 STAINLESS STEEL THREADED, LEAK-PROOF CONNECTIONS BETWEEN BETWEEN PIPE AND FLEXIBLE HOSE, BETWEEN FLEXIBLE HOSE AND TRUNNIONS AND PINS, AND BETWEEN PIPES AND THE MANIFOLDS.
4. PIPES SHALL BE SUPPORTED AT LEAST EVERY SIX FEET ON CENTER AND WITHIN ONE FOOT OF BOTH ENDS OF ANY PIPE BEND AND ANY HOSE CONNECTION.
5. PIPE SUPPORTS MAY BE WELDED TO EXISTING STEEL MEMBERS ONLY IN LOCATIONS APPROVED BY THE ENGINEER. SUPPORTS IN ALL OTHER AREAS MUST EITHER BE BOLTED USING ASTM A449 OR A307 BOLTS, ASTM A563 NUTS, AND ASTM F436 PLAIN HARDENED WASHERS UNDER THE TURNED ELEMENT, OR BE FASTENED USING SELF TAPPING SCREWS CONFORMING TO SAE J81 OR SELF DRILLING TAPPING SCREWS CONFORMING TO SAE J78.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING THE FIELD ROUTING OF LUBRICATION PIPING AND HOSE SUBJECT TO THE APPROVAL OF THE ENGINEER. SUBMIT PROPOSED ROUTING AND DETAILS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE START OF WORK. LUBRICATION ROUTING TO BE COORDINATED TO NOT INTERFERE WITH THE ELECTRICAL WORK.
7. MANIFOLD MOUNTING BOLTS SHALL BE INSTALLED AND TORQUED PRIOR TO ATTACHMENT OF THE LUBRICATION PIPES.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

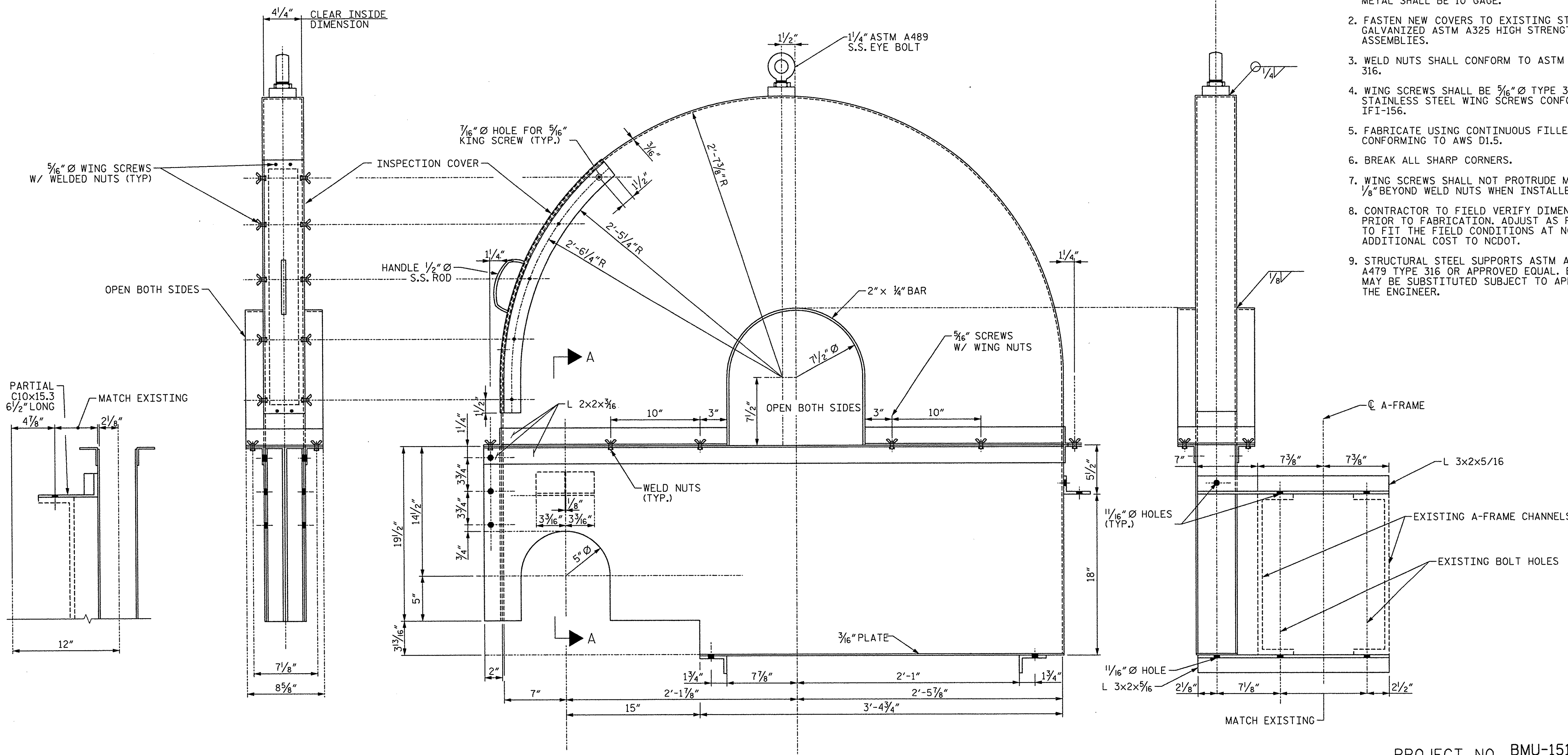
NEW LUBRICATION PIPING

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-08
1			3			TOTAL SHEETS
2			4			76

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : DJB DATE : 12/11
CHECKED BY : MCH DATE : 12/11

3/16/2012 2:41:18 PM N:\projdev\NCDOT\Radio Island\CAD\Machinery\M-8.dgn



NEW BULL GEARSET COVER

2 ASSEMBLIES REQUIRED
ONE AS SHOWN,
ONE OPPOSITE HAND

NOTES:

1. FABRICATE FROM SHEET METAL CONFORMING TO ASTM A240 TYPE 316 STAINLESS STEEL. SHEET METAL SHALL BE 10 GAGE.
2. FASTEN NEW COVERS TO EXISTING STEEL USING GALVANIZED ASTM A325 HIGH STRENGTH BOLT ASSEMBLIES.
3. WELD NUTS SHALL CONFORM TO ASTM A194 TYPE 316.
4. WING SCREWS SHALL BE 5/16" Ø TYPE 316 STAINLESS STEEL WING SCREWS CONFORMING TO IFI-156.
5. FABRICATE USING CONTINUOUS FILLET WELDS CONFORMING TO AWS D1.5.
6. BREAK ALL SHARP CORNERS.
7. WING SCREWS SHALL NOT PROTRUDE MORE THAN ⅛" BEYOND WELD NUTS WHEN INSTALLED.
8. CONTRACTOR TO FIELD VERIFY DIMENSIONS PRIOR TO FABRICATION. ADJUST AS REQUIRED TO FIT THE FIELD CONDITIONS AT NO ADDITIONAL COST TO NCDOT.
9. STRUCTURAL STEEL SUPPORTS ASTM A276 OR A479 TYPE 316 OR APPROVED EQUAL. BENT PLATE MAY BE SUBSTITUTED SUBJECT TO APPROVAL OF THE ENGINEER.

PROJECT NO. BMU-15110R
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

NEW GEAR COVERS

NORTH CAROLINA PROFESSIONAL SEAL 035655 ENGINEER DENNIS V. BIEGEL

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. M-09
TOTAL SHEETS 76

DRAWN BY : MVR DATE : 12/12
CHECKED BY : MCH DATE : 12/12

3/16/2012 2:42:00 PM N:\projdev\NCDOT\Radio Island\CAD\Machinery\M-9.dgn

X 20A 3P OR X 100AF 80AT 3P — LOW VOLTAGE CIRCUIT BREAKER (CB). RATINGS AND NO. OF POLES AS SHOWN. WHEN SPECIFIC TYPE IS REQUIRED, X INDICATES TYPE.

TYPES:
MCCB - MOLDED CASE
ICCB - INSULATED CASE
LVP - LOW VOLTAGE POWER
MCP - MOTOR CIRCUIT PROTECTOR (RATING PER CONNECTED LOAD)

CB — SEPARATELY MOUNTED CIRCUIT BREAKER, SEE ELECTRICAL ONE LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

GFP — GROUND FAULT PROTECTION

FUSE, SIZE AND NUMBER OF FUSES AS NOTED

FUSIBLE SWITCH, CURRENT RATING, FUSE SIZE AND QUANTITY AS NOTED

NON-FUSED SWITCH, CURRENT RATING AND NUMBER OF POLES AS NOTED

30A, 3P — UNLESS OTHERWISE NOTED

X — SEPARATELY MOUNTED COMBINATION MAGNETIC MOTOR STARTER.

MOTOR CONTROLLER

X - INDICATES SIZE

FULL VOLTAVGE NON-REVERSING:

NEMA SIZE 4 SHOWN, OTHER SIZES AS NOTED.

SEPARATELY MOUNTED COMBINATION MOTOR STARTER OR CONTROLLER, SEE ELECTRICAL ONE LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

THERMAL OVERLOAD ELEMENT

OL — THERMAL OVERLOAD RELAY CONTACT

DISCONNECT OR SAFETY SWITCH, 30A, 3P, NON-FUSED UNLESS OTHERWISE NOTED

7½ OR HP — MOTOR WITH DESIGN HORSEPOWER (WHEN INDICATED)

G — GENERATOR

ATS — TRANSFER SWITCH, CURRENT RATING AND NUMBER OF POLES AS NOTED.

ATS - AUTOMATIC
MTS - MANUAL

TRANSFORMER

△ 3 PHASE, 3 WIRE DELTA CONNECTION

Y 3 PHASE, 4 WIRE GROUNDED WYE CONNECTION

LP100 208/120V 3Ø, 4W — SWITCHBOARD OR PANELBOARD. NAME, VOLTAGE, PHASE, NUMBER OF WIRES WHEN INDICATED.

100 KVA — NON-MOTOR LOAD WITH DESIGN KVA, KW OR AMPS

CPT — CONTROL POWER TRANSFORMER (CPT)

VOLTAGE TRANSFORMER (VT OR PT)

CURRENT TRANSFORMER (CT)

RTM — RUN TIME METER

GROUND

SPD — LOW VOLTAGE SURGE PROTECTIVE DEVICE

ELECTRICAL CONNECTION

OR — NO ELECTRICAL CONNECTION

X / Y — CONTROL/RELAY COIL, X INDICATES TYPE, Y INDICATES LOOP NO. WHEN USED

TYPES:
CR - CONTROL RELAY
DP - DEFINITE PURPOSE RELAY
LC - LIGHTING CONTACTOR
M - MOTOR STARTER
PC - PHOTO CELL
TC - TIME CLOCK
TR - TIMING RELAY

NORMALLY OPEN CONTACT (N.O.)

NORMALLY CLOSED CONTACT (N.C.)

NORMALLY OPEN TIME DELAY RELAY CONTACT, WITH TIME DELAY ON CLOSING AFTER COIL IS ENERGIZED

NORMALLY CLOSED TIME DELAY RELAY CONTACT, WITH TIME DELAY ON OPENING AFTER COIL IS ENERGIZED

NORMALLY OPEN TIME DELAY RELAY CONTACT, WITH TIME DELAY ON OPENING AFTER COIL IS DE-ENERGIZED

NORMALLY CLOSED TIME DELAY RELAY CONTACT, WITH TIME DELAY ON CLOSING AFTER COIL IS DE-ENERGIZED

NORMALLY CLOSED PRESSURE SWITCH, OPEN ON INCREASING PRESSURE

NORMALLY OPEN LIMIT SWITCH, CLOSE ON REACHING LIMIT

NORMALLY CLOSED LIMIT SWITCH, OPEN ON REACHING LIMIT

OFF / HAND / AUTO — X00 / 00X — 3 POSITION SELECTOR SWITCH, MAINTAINED CONTACTS, UNLESS OTHERWISE NOTED, 2 POSITION SIMILAR

NORMALLY OPEN PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

NORMALLY CLOSED PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

X — INDICATING LIGHT, X INDICATES LENS COLOR

LENS COLORS:

R - RED
G - GREEN
B - BLUE
Y - YELLOW
W - WHITE
A - AMBER

T — TRANSFORMER

CONTROL PANEL INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

CONTROL PANEL WITH DISCONNECT SWITCH INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

J — JUNCTION OR PULL BOX

PANELBOARD (LESS THAN 250V)

ELECTRICAL EQUIPMENT ENCLOSURE: SWITCHBOARD, MOTOR CONTROL CENTER, CONTROL PANEL OR OTHER EQUIPMENT AS INDICATED

X / Y — WALL MOUNTED LUMINAIRE - HID, COMPACT FLUORESCENT

X / Y — CEILING/PENDANT MOUNTED FLUORESCENT FIXTURE

SPECIAL PURPOSE RECEPTACLE AS DEFINED ON PLANS

X / Y — DUPLEX RECEPTACLE, NEMA 5-20R

SUBSCRIPTS:

X - INDICATES TYPE
GFCI - GROUND FAULT CIRCUIT INTERRUPTER

Y - INDICATES CIRCUIT NUMBER FROM PANELBOARD

Y / X — TOGGLE SWITCH

SUBSCRIPTS:

X - INDICATES TYPE
NONE NONE - SINGLE POLE
3 - THREE-WAY
4 - FOUR-WAY
HP - TOGGLE SWITCH, HORSEPOWER RATED
K - KEY SWITCH
TE - MANUAL MOTOR STARTER WITH THERMAL ELEMENT
P - PILOT LIGHT
L - LIGHTED HANDLE

Y - INDICATES CONTROLLING SWITCH (IF REQUIRED)

CONDUIT TURNING UP

CONDUIT TURNING DOWN

HOME RUN TO PANEL, 2 #12, 1 #12G IN ¾" CONDUIT UNLESS OTHERWISE NOTED

CIRCUIT RUN BETWEEN DEVICES EXPOSED IN NON-ARCHITECTURALLY FINISHED AREAS, CONCEALED IN ARCHITECTURALLY FINISHED AREAS. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOME RUN FOR THE CIRCUIT

CONDUIT RUN BETWEEN DEVICES CONCEALED IN NON-ARCHITECTURALLY FINISHED AREAS OR UNDER FLOOR SLAB. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOME RUN FOR THE CIRCUIT.

CIRCUIT CONTINUATION

CONDUIT STUBBED OUT AND CAPPED

XXX — CONDUIT TAG OR CIRCUIT NUMBER - WIRE AND CONDUIT SIZE AS SPECIFIED IN CIRCUIT SCHEDULE ON THE SHEETS

GENERAL NOTES:

1. THIS IS A STANDARD ELECTRICAL SYMBOLS SHEET. ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
3. USE STAINLESS STEEL FOR ALL FITTINGS, CLIPS, MOUNTING HARDWARE ETC., SS TYPE 316 UNLESS OTHERWISE NOTED.

ABBREVIATIONS:

A	AMPERE
ALP	ALL LOCKS PULLED
AUX	AUXILIARY
BFO	BRIDGE FULLY OPEN
BFOB	BRIDGE FULLY OPEN BYPASS
BFS	BRIDGE FULLY SEATED
BFSB	BRIDGE FULLY SEATED BYPASS
BNC	BRIDGE NEARLY CLOSED
BNO	BRIDGE NEARLY OPEN
C	CONTACTOR
CCTV	CLOSE CIRCUIT TELEVISION
CB	CIRCUIT BREAKER, CLOSE BRIDGE
CM	CURRENT MONITOR
CR	CONTROL RELAY
CS	CLOSE SEQUENCE
DM	DRIVE MOTOR
FDS	FUSIBLE DISCONNECT
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
H	HORN
HB	HOLDING BRAKE
HC	HORN CONTROL
HP	HORSE POWER
HR	HORN RELAY, HAND RELEASED
IC	INPUT CONTACTOR
KAIC	KILO AMPERE INTERRUPT CURRENT
KVA	KILOVOLT-AMPERE
L	LOWER
LD	LOCK DELAY
LS	LIMIT SWITCH
MB	MACHINERY BRAKE
MPZ	MINI-POWER ZONE
MS	MOTOR STARTER
MTS	MANUAL TRANSFER SWITCH
NTL	NORTH TAIL LOCK
NTLD	NORTH TAIL LOCK DRIVEN/DRIVE
NTLDB	NORTH TAIL LOCK DRIVEN BYPASS
NTLP	NORTH TAIL LOCK PULLED/PULL
NTLPB	NORTH TAIL LOCK PULLED BYPASS
OB	OPEN BRIDGE
OC	OUTPUT CONTACTOR
OL	OVERLOAD
OS	OPEN SEQUENCE
PE	PHOTOEYE
PH	PHASE
PPL	POWER PANELBOARD
R	RAISE, REMOTE, RELEASED
RC	RELAY CABINET
RCS	REMOTE CLOSE SEQUENCE
ROS	REMOTE OPEN SEQUENCE
RS	REMOTE STOP
S	SET, STOP
SO	START OPEN
SS	STAINLESS STEEL
STL	SOUTH TAIL LOCK
STLD	SOUTH TAIL LOCK DRIVEN/DRIVE
STLDB	SOUTH TAIL LOCK DRIVEN BYPASS
STLP	SOUTH TAIL LOCK PULLED/PULL
STLPB	SOUTH TAIL LOCK PULLED BYPASS
TL	TAIL LOCK
TLD	TAIL LOCK DRIVEN/DRIVE
TLDB	TAIL LOCK DRIVEN BYPASS
TLP	TAIL LOCK PULLED/PULL
TLPB	TOCK PULLED BYPASS
TR	TIMING RELAY
TYP	TYPICAL
UC	ULTIMATE CLOSE
UO	ULTIMATE OPEN
V	VOLT
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ELECTRICAL LEGEND

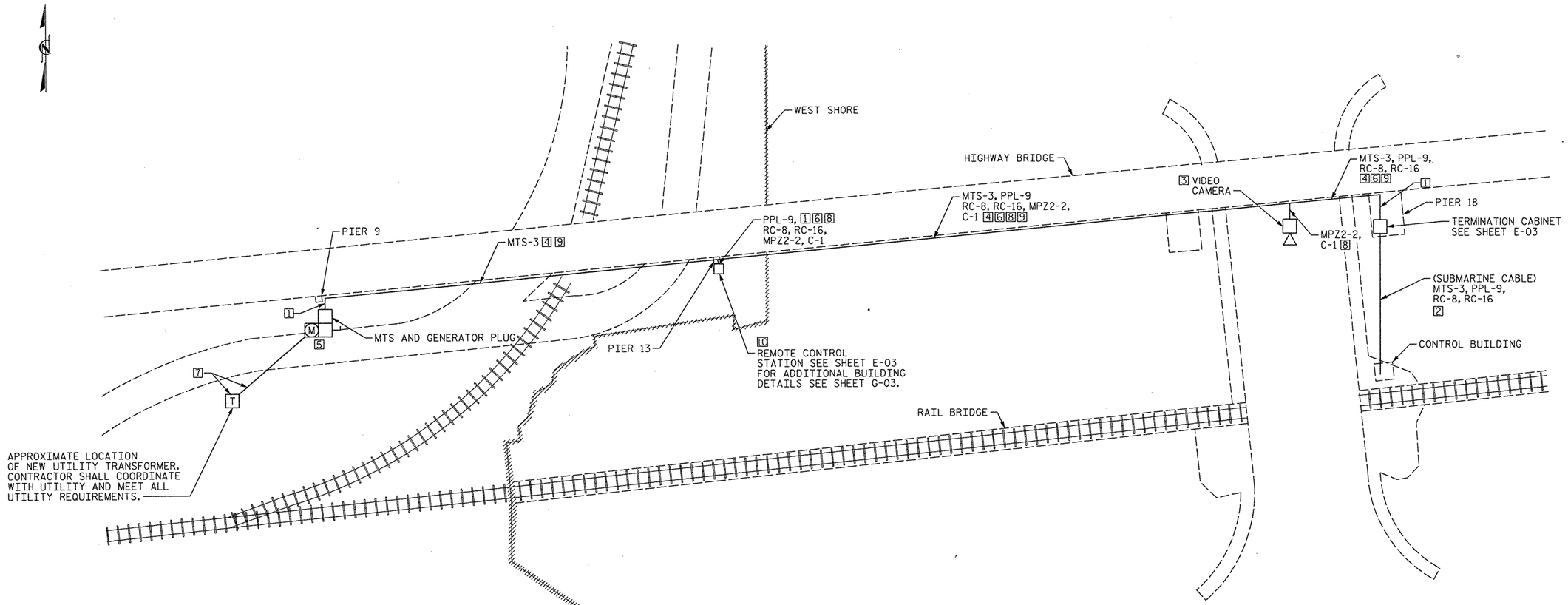
NORTH CAROLINA PROFESSIONAL SEAL 029768 ENGINEER CHARLES J. KRAMER

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-01
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : DBS DATE : 10-11
CHECKED BY : JAK DATE : 12-11

3/19/2012 2:06:18 PM N:\proj\dev\NCDOT\Radio Island\CAD\ELECTRICAL\E-01EL LGND.dgn



KEY NOTES:

1. CABLES SHALL BE ROUTED (UP/DOWN) ON THE HIGHWAY BRIDGE PIERS. CABLES SHALL BE ROUTED VERTICALLY (UP/DOWN) ON THE BRIDGE PIER FROM THE ELECTRICAL EQUIPMENT TO THE BRIDGE CURB. MOUNT TO PIER WITH CONDUIT/CABLE CLAMPS SIMILAR TO EXISTING. SEE SHEET E-15, DETAIL 2.
2. SUBMARINE CABLE ROUTED FROM THE HIGHWAY BRIDGE PIER TERMINATION CABINET TO THE CONTROL HOUSE TERMINATION CABINET. FOR DETAILS, SEE SHEET E-16. CIRCUITS MTS-3, PPL-9, RC-8, AND RC-16 SHALL BE ROUTED IN THE SAME SUBMARINE CABLE.
3. ONE CAMERA POINTED SOUTH SHALL BE INSTALLED IN THE CENTER OF THE CHANNEL AND POSITIONED TO SEE THE CHANNEL UNDER THE BASCULE. TO BE PAID FOR UNDER "CCTV SYSTEM". SEE SHEET E-18 FOR DETAILS
4. THE MULTI-CONDUCTOR CABLES SHALL BE MOUNTED TO THE HIGHWAY BRIDGE UNDER THE CURB SIMILAR TO EXISTING. SEE DETAIL 2, SHEET E-18. CABLES SHALL BE SUPPORTED BY A MESSENGER. SEE DETAIL 2, SHEET E-17.
5. UTILITY METER, DISCONNECT SWITCH, MTS AND GENERATOR PLUG SHALL BE MOUNTED NEXT TO THE HIGHWAY BRIDGE PIER 9. SEE SHEET E-17, DETAIL 4.
6. CIRCUITS PPL-9, RC-8 AND RC-16 SHALL BE ROUTED IN THE SAME CABLE AND SUPPORTED BY ITS OWN MESSENGER. THE LENGTH FROM THE REMOTE CONTROL STATION TO THE TERMINATION CABINET ON PIER 18 IS APPROXIMATELY 700 FEET. CONTRACTOR SHALL FIELD VERIFY EXACT LENGTH.
7. TRANSFORMER, WIRE, CONDUIT AND ACCESSORIES FURNISHED AND INSTALLED BY PROGRESS ENERGY. PAID FOR UNDER "ELECTRICAL".
8. CIRCUITS MPZ2-2 AND C-1 SHALL BE ROUTED TOGETHER, LASHED TOGETHER WITH A STAINLESS STEEL LASHING, AND SUPPORTED TOGETHER BY A MESSENGER CABLE (ONE MESSENGER TOTAL). THE LENGTH FROM THE REMOTE CONTROL STATION TO THE CAMERA IS APPROXIMATELY 500 FEET. CONTRACTOR SHALL FIELD VERIFY EXACT LENGTH.
9. CIRCUIT MTS-3 SHALL BE SUPPORTED BY A MESSENGER. THE LENGTH FROM THE MTS TO THE TERMINATION CABINET ON PIER 18 IS APPROXIMATELY 1000 FEET. CONTRACTOR SHALL FIELD VERIFY EXACT LENGTH.
10. REMOTE CONTROL STATION SHALL BE BUILT IN THE SAME SPACE AS THE EXISTING PHOTOVOLTAIC (PV) AND BATTERY EQUIPMENT. EXISTING PV AND BATTERY EQUIPMENT WILL BE REMOVED BY NCDOT. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY POWER FOR NAVIGATION LIGHTING UNTIL PERMANENT POWER IS IN PLACE. CONTRACTOR SHALL COORDINATE WITH NCDOT. CONTRACTOR SHALL ADJUST THE ROUTING OF THE EXISTING CABLE AS NECESSARY FOR THE CONSTRUCTION OF THE REMOTE CONTROL STATION. CONTRACTOR SHALL INVESTIGATE AND PROVIDE THE TYPE AND SIZE OF POWER REQUIRED FOR THE NAVIGATION LIGHTS. NAVIGATION LIGHT OPERATION SHALL REMAIN THE SAME AS IT IS CURRENTLY WHEN IT IS ON TEMPORARY POWER. ALL CHANGE OVERS TO TEMPORARY POWER AND SUBSEQUENT TESTING TO ENSURE THE NAVIGATION LIGHTS ARE OPERATING CORRECTLY SHALL BE DONE DURING DAYLIGHT HOURS TO PROVIDE AMPLE TIME FOR TROUBLESHOOTING SHOULD AN ISSUE ARISE. NCDOT WILL REINSTALL PV AND BATTERY EQUIPMENT AFTER REMOTE CONTROL STATION IS CONSTRUCTED. CONTRACTOR SHALL COORDINATE WITH NCDOT.

GENERAL NOTES:

1. FOR BASCULE SPAN AND CONTROL BUILDING DETAILS, SEE E-04 AND E-05.
2. FOR CIRCUIT INFORMATION SEE SHEET E-07 FOR ONE-LINE DIAGRAM, E-19 FOR RELAY CABINET ONE-LINE DIAGRAM AND E-18 FOR CCTV DETAILS.
3. SEE SHEET E-06 FOR MPZ AND MPZ2 PANEL SCHEDULES. ALL CIRCUITS FROM ANY MPZ PANEL SHALL BE 2#10, 10#G, ¾" UNLESS OTHERWISE NOTED.
4. ELECTRICAL CABLES FOR BRIDGE OPERATION WILL BE PAID FOR UNDER "ELECTRICAL". CABLES FOR CCTV WILL BE PAID FOR UNDER "CCTV SYSTEM".
5. HIGH VOLTAGE POWER LINES ARE LOCATED BETWEEN THE RAILROAD AND HIGHWAY BRIDGES. EXTREME CAUTION SHALL BE TAKEN WHEN AROUND THESE LINES. CONTRACTOR SHALL COORDINATED WITH THE UTILITY AND MEET ALL UTILITY REQUIREMENTS WHEN WORKING UNDER THE HIGH VOLTAGE POWER LINES.
6. CABLES ROUTED VERTICALLY ON THE HIGHWAY BRIDGE PIER SHALL BE MOUNTED SIMILAR TO EXISTING CABLE ROUTING FOR NAVIGATION LIGHTS.
7. CABLES ROUTED HORIZONTALLY UNDER THE HIGHWAY BRIDGE CURB SHALL BE SUPPORTED BY A MESSENGER SIMILAR TO THE EXISTING CABLE ROUTING FOR THE NAVIGATION LIGHTS.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

OVERALL SITE PLAN

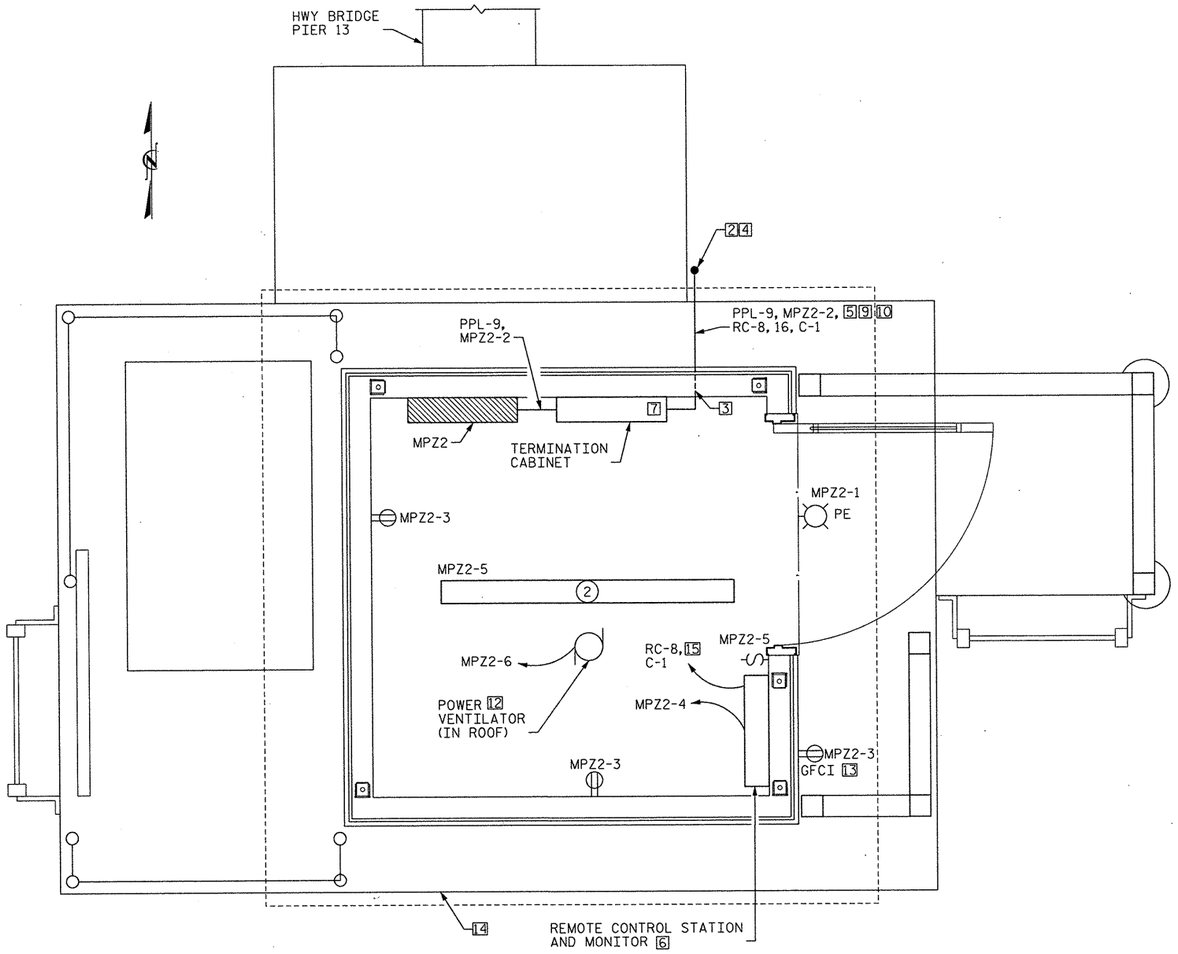
NORTH CAROLINA PROFESSIONAL SEAL 038166 ENGINEER CHARLES T. AGUTA

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-02
1			3			TOTAL SHEETS
2			4			76

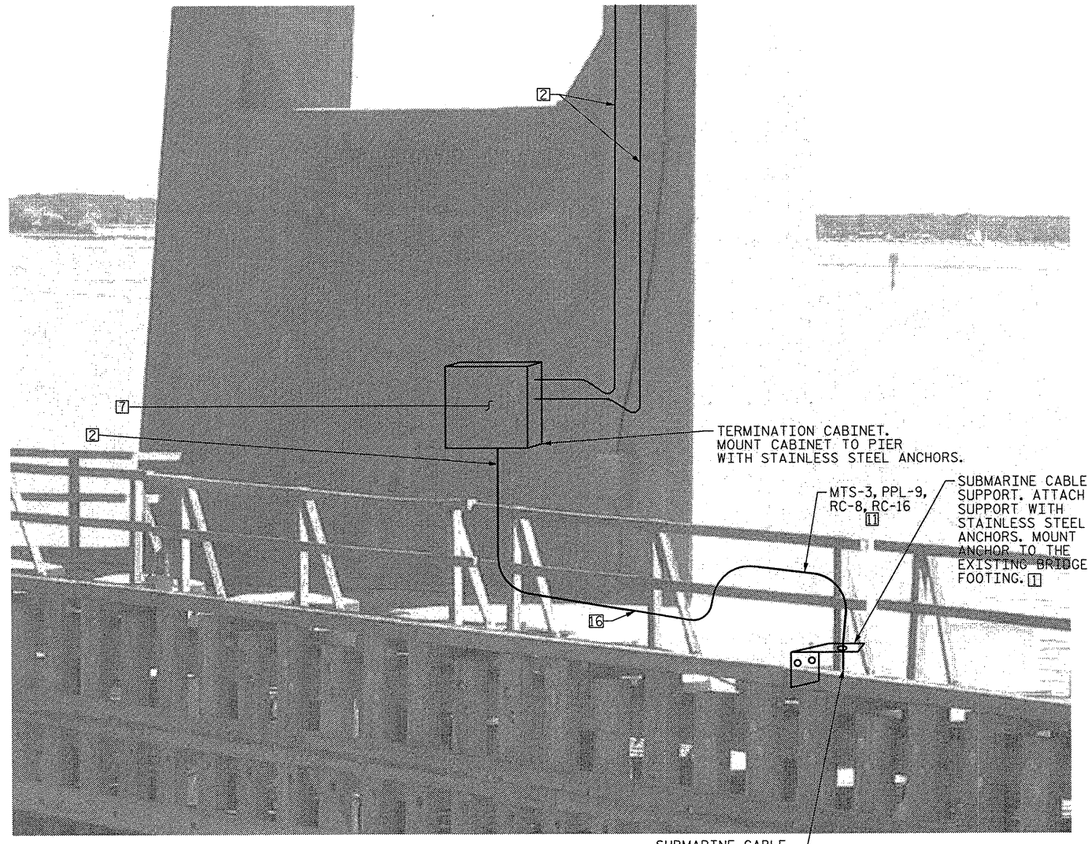
DRAWN BY : JAK DATE : 9-11
CHECKED BY : CM DATE : 12-11

4/6/2012 10:11:24 AM N:\projdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-02-OVERALL SITE PLAN.dgn



REMOTE CONTROL STATION PLAN

CONTRACTOR SHALL COORDINATE EQUIPMENT TO FIT WITHIN CONTROL STATION TO MEET ALL REQUIREMENTS FROM NCDOT.



PIER 18 (NEAR CONTROL BUILDING)

(ADJACENT TO RAILROAD BRIDGE)

KEY NOTES:

1. SEE SHEET E-16 FOR ADDITIONAL DETAILS.
2. CABLES SHALL BE ATTACHED TO THE HIGHWAY BRIDGE PIER WITH CONDUIT/CABLE CLAMPS SIMILAR TO EXISTING. SEE SHEET E-15, DETAIL 2.
3. CABLES SHALL ENTER/EXIT THE REMOTE CONTROL BUILDING THROUGH THE WALL. THE CABLES SHALL PASS THROUGH A PVC SLEEVE WHEN PENETRATING THROUGH THE WALL. THE PENETRATION SHALL BE SEALED AFTER THE CABLES HAVE BEEN INSTALLED.
4. ROUTE CONDUCTORS VERTICALLY ON HIGHWAY BRIDGE PIER. WHEN TRANSITIONING FROM THE HIGHWAY PIER TO THE REMOTE CONTROL STATION PLATFORM PROVIDE A DRIP LOOP.
5. CABLES SHALL BE ATTACHED TO THE CONCRETE/PLATFORM WITH CABLE/CONDUIT CLAMPS SIMILAR TO CLAMPS MOUNTED ON THE HIGHWAY BRIDGE PIER.
6. ENCLOSURES SHALL HAVE A SWING OUT PANEL. MONITOR SHALL BE MOUNTED ABOVE THE REMOTE CONTROL STATION. SEE SHEET E-18, DETAIL 2.
7. SEE SHEET E-15 DETAIL 3 FOR ADDITIONAL REQUIREMENTS.
8. NOT USED.
9. CIRCUITS PPL-9, RC-8, AND RC-16 SHALL BE ROUTED IN THE SAME CABLE AND SUPPORTED BY ITS OWN MESSENGER.
10. CIRCUITS MPZ-2 AND C-1 SHALL BE ROUTED TOGETHER, LASHED TOGETHER WITH A STAINLESS STEEL LASHING, AND SUPPORTED TOGETHER BY A MESSENGER CABLE (ONE MESSENGER TOTAL).
11. CIRCUITS MTS-3, PPL-9, RC-8, AND RC-16 SHALL BE ROUTED IN THE SAME SUBMARINE CABLE FROM THE TERMINATION CABINET ON PIER 18 TO THE TERMINATION CABINET NEAR THE CONTROL HOUSE.
12. POWER VENTILATOR SHALL BE CONTROLLED WITH A THERMOSTAT.
13. PROVIDE AN "IN-USE" TYPE WEATHERPROOF COVER.
14. SEE KEYNOTE 10 ON SHEET E-02 FOR PV AND BATTERY REQUIREMENTS AND COORDINATION.
15. TO TERMINATION CABINET.
16. ROUTE CABLE ON PIER 18 TO TERMINATION CABINET AS NECESSARY. ATTACH WITH CONDUIT/CABLE CLAMPS.

GENERAL NOTES:

1. FOR CIRCUIT INFORMATION SEE SHEET E-07 FOR ONE-LINE DIAGRAM, SHEET E-19 FOR RELAY CABINET ONE-LINE DIAGRAM, AND SHEET E-18 FOR CCTV DETAILS.
2. SEE SHEET E-06 FOR MPZ AND MPZ2 PANEL SCHEDULES. ALL CIRCUITS FROM ANY MPZ PANEL SHALL BE 2#10, #10G, ¾" UNLESS OTHERWISE NOTED.
3. PROVIDE STRAIN RELIEF AT THE TERMINATION CABINETS AS NECESSARY.
4. FOR LIGHTING FIXTURE SCHEDULE SEE SHEET E-06.
5. HOMERUNS FOR LIGHTING FIXTURES, SWITCHES, AND RECEPTACLES NOT SHOWN FOR CLARITY.
6. SEE SHEET G-03 FOR ADDITIONAL REMOTE CONTROL STATION REQUIREMENTS.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SHORE SITE PLAN

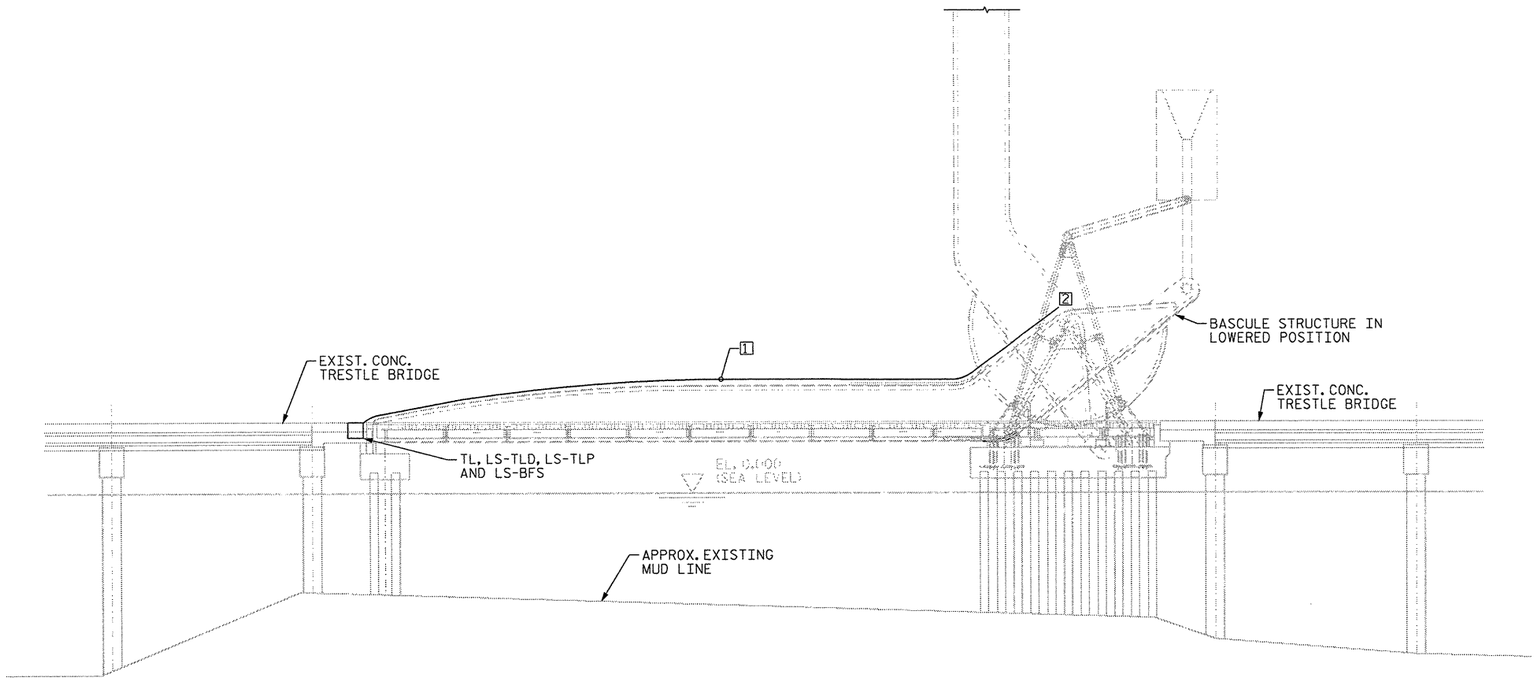
NORTH CAROLINA PROFESSIONAL ENGINEER 038189 CHARLES MACE 4.6.12

DRAWN BY : JAK DATE : 12-11
CHECKED BY : MCH DATE : 12-11

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

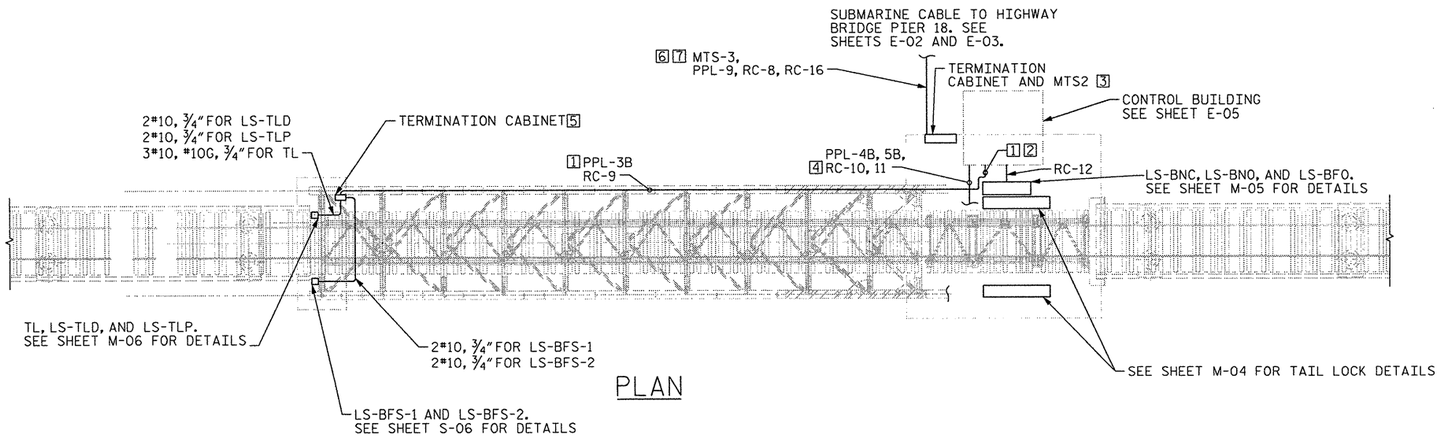
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-03
1			3			TOTAL SHEETS
2			4			76

4/6/2012 10:17:50 AM N:\projdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-03 SHR ST PLN.dgn



ELEVATION

BASCULE STRUCTURE SHOWN IN LOWERED POSITION
(LOOKING NORTH)



PLAN

GENERAL NOTES:

1. FOR CIRCUIT INFORMATION SEE SHEET E-07 FOR ONE-LINE DIAGRAM AND SHEET E-19 FOR RELAY CABINET ONE-LINE DIAGRAM.
2. SEE SHEET E-06 FOR MPZ PANEL SCHEDULE. ALL CIRCUITS FROM ANY MPZ SHALL BE 2#10, #10G, 3/4" UNLESS OTHERWISE NOTED.
3. NO WELDING SHALL BE DONE ON THE BRIDGE OR "A-FRAME" FOR ELECTRICAL EQUIPMENT OR SUPPORTS. ALL CABLES, CONDUITS, AND SUPPORTS SHALL BE CLAMPED TO THE BRIDGE, UNLESS OTHERWISE NOTED.

KEY NOTES:

1. MULTI-CONDUCTOR ARMORED CABLE. CIRCUITS PPL-3B AND RC-9 SHALL BE ROUTED IN THE SAME CABLE AND SHALL BE ATTACHED TO THE TOP OF THE GIRDER. EXISTING CONDUCTORS AND SUPPORTS FOR NAVIGATION LIGHTING ARE ALSO ROUTED ON SUPERSTRUCTURE. EXISTING CONDUCTORS AND SUPPORTS WILL NEED TO BE REMOVED DURING COVER PLATE INSTALLATION. COORDINATE WITH STRUCTURAL CONTRACTOR. EXISTING CONDUCTORS SHALL BE REINSTALLED ON THE NEW SUPPORT. SEE DETAIL 1 ON SHEET E-17.
2. DROOP LOOP FOR TRANSITIONING FROM THE BASCULE TO "A-FRAME" SHALL BE DONE AS CLOSE TO THE PIVOT POINT AS POSSIBLE TO REDUCE LENGTH OF CABLE. CONTRACTOR TO PLACE SUCH AS TO AVOID INTERFERENCES DURING SPAN OPERATIONS. SEE DETAIL 3 ON SHEET E-17.
3. SEE SHEET E-15, DETAILS 1 AND 3.
4. TO TAIL LOCKS AND TAIL LOCK LIMIT SWITCHES. CONDUIT AND CONDUCTORS SHALL BE ROUTED UNDER THE RAILS/BRIDGE DECK TO THE TAIL LOCKS AND TAIL LOCK LIMIT SWITCHES IN SUCH A WAY THAT THEY DO NOT INTERFERE WITH BRIDGE OPERATIONS. SECURE CONDUIT AND CONDUCTORS AT 3'-0" MAXIMUM INTERVALS.
5. BOLT TERMINATION CABINET TO BRIDGE WEB WITH STAINLESS STEEL BOLTS AND NUTS. NO HOLES SHALL BE DRILLED INTO THE TOP OR "EAST" SIDE OF CABINET. DRAIN HOLE SHALL BE DRILLED IN "WEST" SIDE OF CABINET. (NOTES REFER TO POSITION OF BOX WITH THE SPAN IN THE FULLY SEATED POSITION).
6. SEE SHEET E-16 FOR ADDITIONAL SUBMARINE CABLE AND SUPPORT DETAILS.
7. CIRCUITS MTS-3, PPL-9, RC-8, AND RC-16 SHALL BE ROUTED IN THE SAME SUBMARINE CABLE.

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE PLAN AND ELEVATION

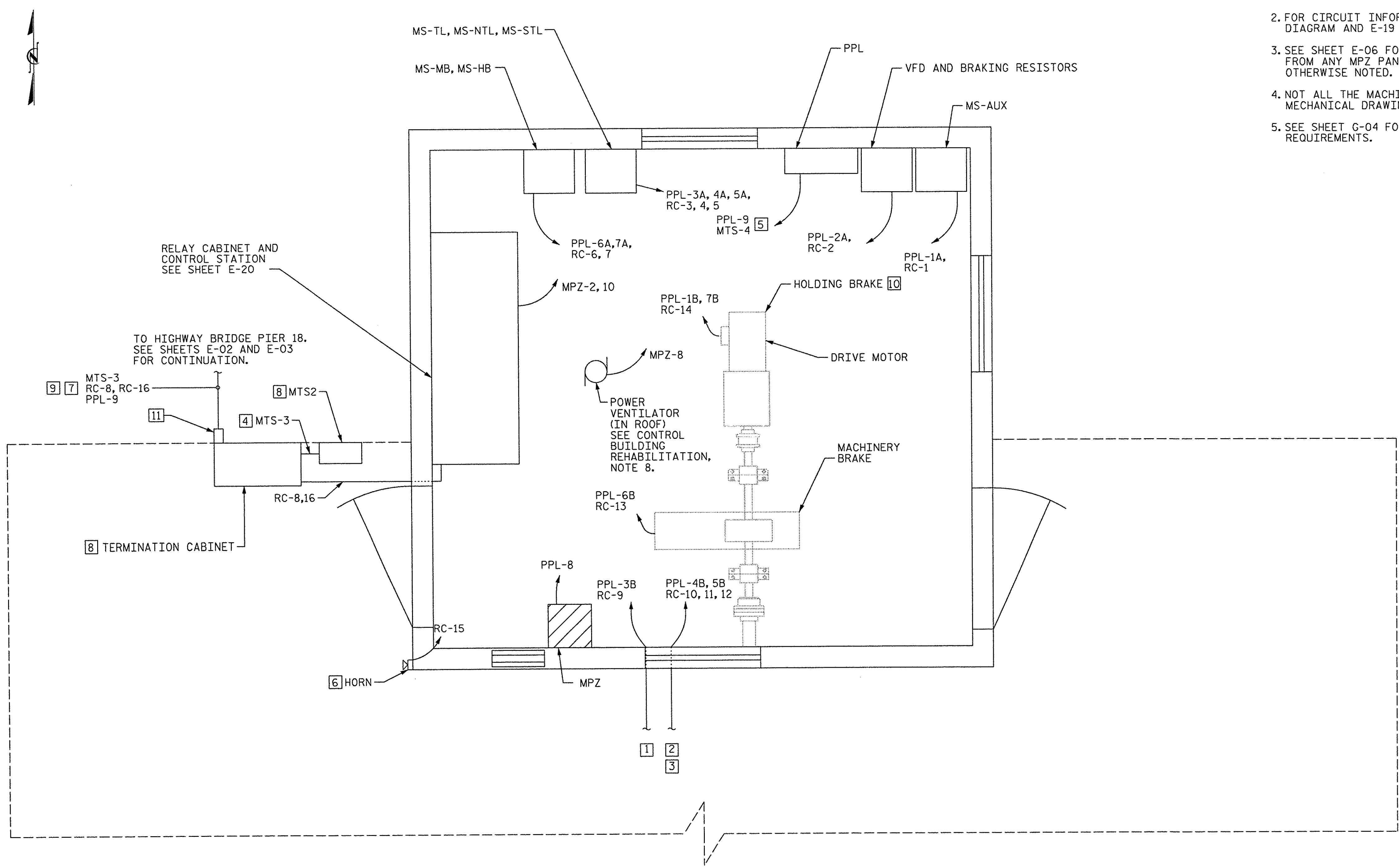
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-04
1			3			TOTAL SHEETS
2			4			76

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038704 CHARLES KEY, JR.

DRAWN BY : DBS DATE : 10-11
CHECKED BY : JAK DATE : 12-11

4/6/2012 8:59:57 AM N:\proJdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-04 BASC PLN ELEV.dgn



GENERAL NOTES:

1. ALL ENCLOSURES SHALL BE NEMA 4X STAINLESS STEEL.
2. FOR CIRCUIT INFORMATION, SEE SHEET E-07 FOR ONE-LINE DIAGRAM AND E-19 FOR RELAY CABINET ONE-LINE DIAGRAM.
3. SEE SHEET E-06 FOR MPZ PANEL SCHEDULE. ALL CIRCUITS FROM ANY MPZ PANEL SHALL BE 2#10, #10G, 3/4" UNLESS OTHERWISE NOTED.
4. NOT ALL THE MACHINERY DETAILS ARE SHOWN. SEE MECHANICAL DRAWINGS FOR ADDITIONAL DETAILS.
5. SEE SHEET G-04 FOR CONTROL BUILDING REHABILITATION REQUIREMENTS.

KEY NOTES:

1. TO TL, LS-TLD, LS-TLO, LS-BFS-1, AND LS-BFS-2. SEE SHEET E-04 FOR CONTINUATION.
2. TO LS-BNC, LS-BNO, AND LS-BFO. SEE SHEET E-04 FOR CONTINUATION.
3. TO NTL, STL, LS-NTLD, LS-STLD, AND LS-STLP. SEE SHEET E-04 FOR CONTINUATION.
4. SUBMARINE CABLE TO HIGHWAY BRIDGE PIER.
5. ROUTE MTS-4 TO MTS2 AND ROUTE PPL-9 TO THE TERMINATION CABINET.
6. MOUNT TO CONTROL BUILDING WITH STAINLESS STEEL LAG BOLTS. HORN SHALL BE LOCATED 2 FEET BELOW THE ROOFLINE. HORN SHALL BE A B&B ELECTROMATIC HORN OR APPROVED EQUAL.
7. SEE SHEET E-16 FOR ADDITIONAL SUBMARINE CABLE AND SUPPORT DETAILS.
8. SEE SHEET E-15, DETAIL 1 AND 3.
9. CIRCUITS MTS-3, PPL-9, RC-8, AND RC-16 SHALL BE ROUTED IN THE SAME SUBMARINE CABLE.
10. HOLDING BRAKE IS MOUNTED TO THE BACK OF THE DRIVE MOTOR.
11. SUBMARINE CABLE SUPPORT MOUNTED TO PIER. SEE SHEET E-16 FOR DETAILS.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONTROL BUILDING ELECTRICAL PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-05
1			3			TOTAL SHEETS
2			4			76

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : JAK DATE : 9-11
CHECKED BY : MCH DATE : 12-11

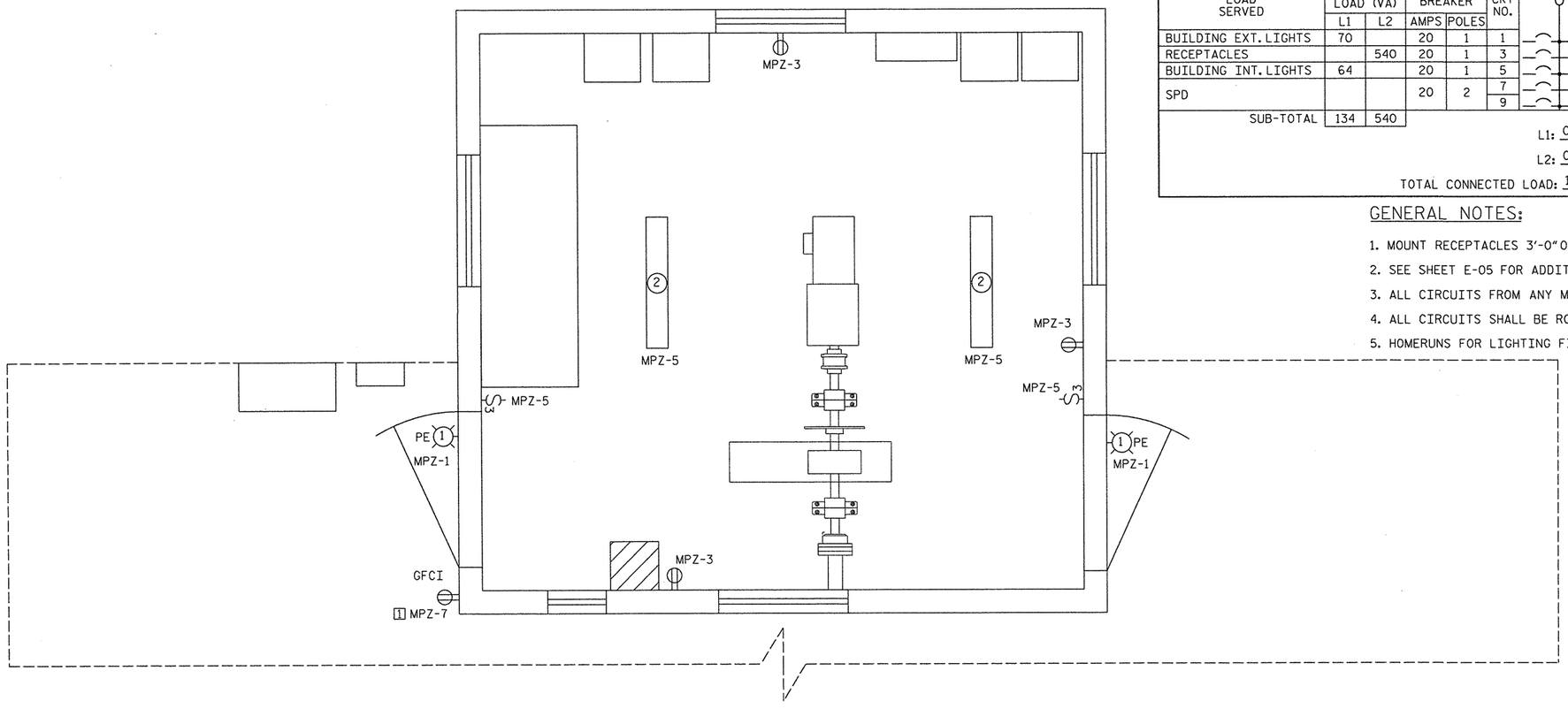
N:\projdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-05 CNTRL PLN.dgn 10:21:41 AM 4/6/2012

LIGHTING FIXTURE SCHEDULE

SYMBOL	LAMP	MOUNTING/HEIGHT	DESCRIPTION	MANUF/MODEL NO.	MANUF/MODEL NO.
(2)	F32T8-CW	PENDANT/8'-0" AFF	2-LAMP, 120V, HEAVY DUTY INDUSTRIAL FLUORESCENT, 10% UPLIGHT, RAPID START, ENERGY SAVING ELECTRONIC BALLAST	MEALUX/DIMN-232-120V-EB81-POR-CEP	LITHONIA/ AF10-232-PO-120-GEB
(1)	70W CLEAR MH	MOUNT ABOVE DOOR	OUTDOOR WALL PACK, 120V	HOLOPHANE/ W470DMH12SGBF1-LAMP	LITHONIA/ TWH70M-120SFPE-LAMP

NOTES FOR LIGHTING FIXTURES

1. LIGHTING FIXTURE DENOTED BY "PE" SHALL BE OPERATED BY A PHOTO-CELL.
2. CONTRACTOR SHALL SUPPLY ALL HARDWARE NECESSARY TO INSTALL, WIRE, AND OPERATE LIGHTS AS SHOWN ON PLANS AND CALLED FOR IN SPECIFICATIONS.



KEY NOTE:

[1] MOUNT A MINIMUM OF 3'-6" ABOVE CONCRETE. PROVIDE AN "IN-USE" TYPE WEATHERPROOF COVER.

PANEL DESIGNATION: MPZ — MINI-POWER ZONE
VOLTAGE: 120/240V, 1PH, 3W
LOCATION: CONTROL BUILDING
MAIN: 30A
PANEL MOUNTING: SURFACE

LOAD SERVED	CONNECTED LOAD (VA) L1	CONNECTED LOAD (VA) L2	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CKT NO.	CKT NO.	CIRCUIT BREAKER POLES	CIRCUIT BREAKER AMPS	CONNECTED LOAD (VA) L1	CONNECTED LOAD (VA) L2	LOAD SERVED
BUILDING EXT. LIGHTS	140		20	1	1	2	1	20	500		RELAY CONTROL SYSTEM
INT. RECEPTACLES		540	20	1	3	4	1	20		100	DRIVE CONTROLS
BUILDING INT. LIGHTS	128		20	1	5	6	1	20			SPARE
EXT. RECEPTACLE		180	20	1	7	8	1	20		400	POWER VENTILATOR
SPARE			20	1	9	10	1	20	100		HORN
SUB-TOTAL	268	720							600	500	SUB-TOTAL

L1: 0.87 KVA
L2: 1.22 KVA
TOTAL CONNECTED LOAD: 2.09 KVA

PANEL DESIGNATION: MPZ2 — MINI-POWER ZONE
VOLTAGE: 120/240V, 1PH, 3W
LOCATION: CONTROL REMOTE STATION
MAIN: 30A
PANEL MOUNTING: SURFACE

LOAD SERVED	CONNECTED LOAD (VA) L1	CONNECTED LOAD (VA) L2	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER POLES	CKT NO.	CKT NO.	CIRCUIT BREAKER POLES	CIRCUIT BREAKER AMPS	CONNECTED LOAD (VA) L1	CONNECTED LOAD (VA) L2	LOAD SERVED
BUILDING EXT. LIGHTS	70		20	1	1	2	1	20	100		CAMERA
RECEPTACLES		540	20	1	3	4	1	20		100	MONITOR
BUILDING INT. LIGHTS	64		20	1	5	6	1	20	400		POWER VENTILATOR
SPD			20	2	7	8	1	20			SPARE
					9	10	1	20			SPARE
SUB-TOTAL	134	540							500	100	SUB-TOTAL

L1: 0.63 KVA
L2: 0.54 KVA
TOTAL CONNECTED LOAD: 1.17 KVA

GENERAL NOTES:

1. MOUNT RECEPTACLES 3'-0" OFF OF FLOOR. ALL RECEPTACLES GFCI TYPE.
2. SEE SHEET E-05 FOR ADDITIONAL DETAILS.
3. ALL CIRCUITS FROM ANY MPZ PANEL SHALL BE 2#10, #10G, 3/4" UNLESS OTHERWISE NOTED.
4. ALL CIRCUITS SHALL BE ROUTED IN CONDUIT UNLESS OTHERWISE NOTED.
5. HOMERUNS FOR LIGHTING FIXTURES, SWITCHES, AND RECEPTACLES NOT SHOWN FOR CLARITY.

PROJECT NO. BMU-1511OR
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONTROL BUILDING LIGHTING PLAN

NORTH CAROLINA PROFESSIONAL SEAL 034769 ENGINEER CHARLES MACK

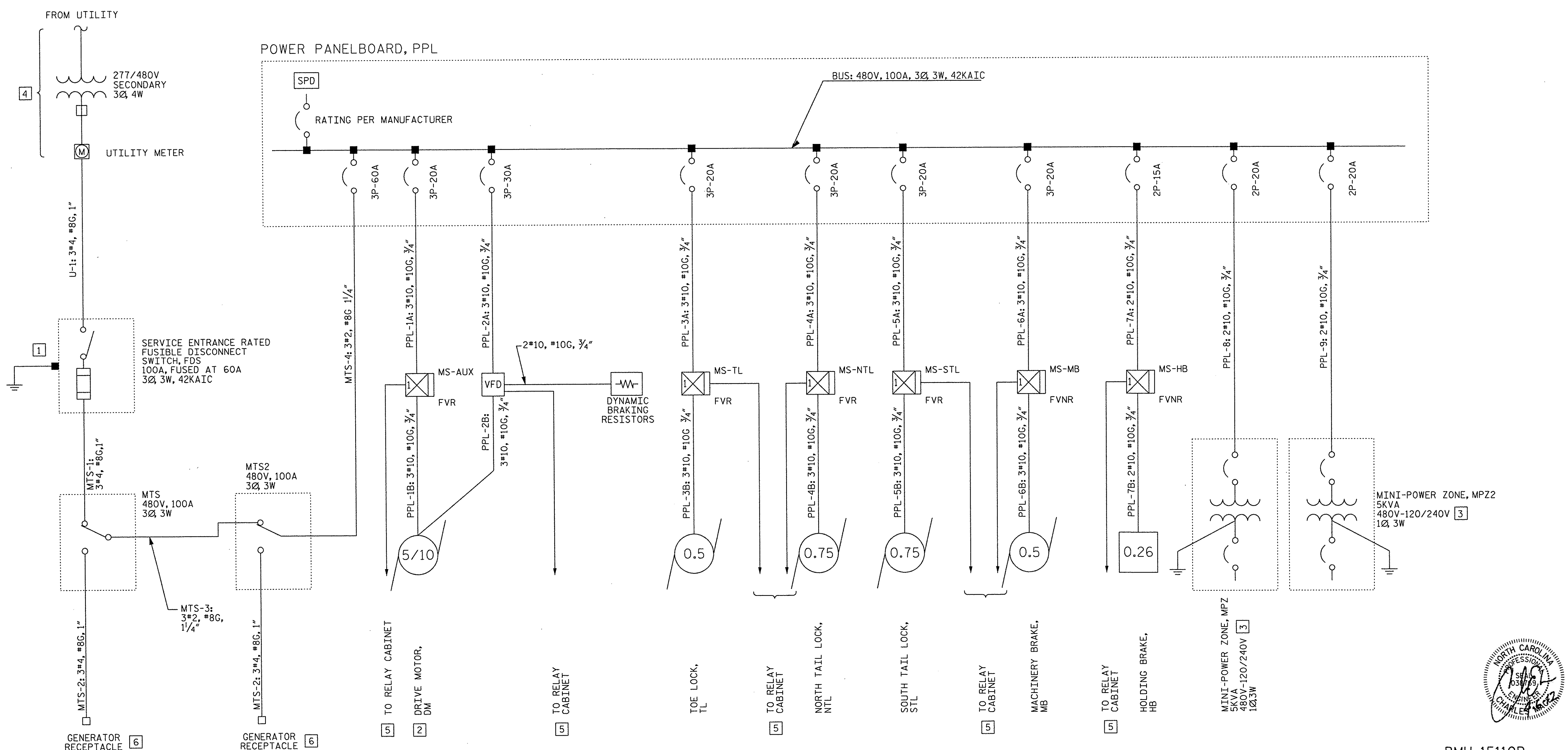
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. E-06
TOTAL SHEETS 76

DRAWN BY : JAK DATE : 9-11
CHECKED BY : CM DATE : 12-11

4/6/2012 9:00:58 AM N:\proj\dev\NCDOT\Radio Island\CAD\ELECTRICAL\E-06_CONTROL HOUSE LIGHTING PLAN.dgn



PPL LOAD CALCULATIONS

LOAD ID	HP/KVA	FULL LOAD AMPS (FLA)	FLA MAX
DM	5/10	14	14
TL	0.5	1.1	
NTL	0.75	1.6	
STL	0.75	1.6	
MB	0.5	1.1	1.1
HB*	0.26	0.54	0.54
MPZ*	5	10.4	10.4
MPZ2*	5	10.4	10.4
TOTAL		40.7	36.4

* - DENOTES SINGLE-PHASE LOAD

GENERAL NOTES:

1. ALL CIRCUITS SHALL BE ROUTED IN CONDUIT UNLESS OTHERWISE INDICATED.
2. PROVIDE A MINIMUM OF THREE SPARE 3P-20A CIRCUIT BREAKERS.

KEY NOTES:

1 SERVICE ENTRANCE RATED. BOND NEUTRAL TO GROUND.

2 TWO-SPEED, TWO-WINDING, CONSTANT TORQUE MOTOR. HIGH SPEED WINDING SHALL BE CONNECTED TO THE VFD AND THE LOW SPEED WINDING SHALL BE CONNECTED TO MS-AUX.

3 SEE SHEET E-06 FOR PANEL SCHEDULE.

4 BY UTILITY. CONTRACTOR SHALL COORDINATE WITH THE UTILITY AND MEET ALL UTILITY REQUIREMENTS. PAYMENT UNDER "ELECTRICAL" PAY ITEM.

5 FOR CIRCUIT INFORMATION, SEE RELAY CABINET ONE-LINE DIAGRAM ON SHEET E-19.

6 RECEPTACLE SHALL BE RATED 60A (MIN.), 15HP (MIN.), 600V, 3W, 3-PHASE, PIN-AND-SLEEVE TYPE AND A NEMA 3R ENCLOSURE WITH A 1½ INCH HUB. PROVIDE THE DEPARTMENT WITH A MATCHING PLUG. PLUG SHALL BE NEMA 3R AND HAVE THE SAME RATINGS AS THE RECEPTACLE. THE NEMA 3R RATING SHALL REMAIN WHEN THE RECEPTACLE/PLUG IS IN USE.

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ONE-LINE DIAGRAM

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

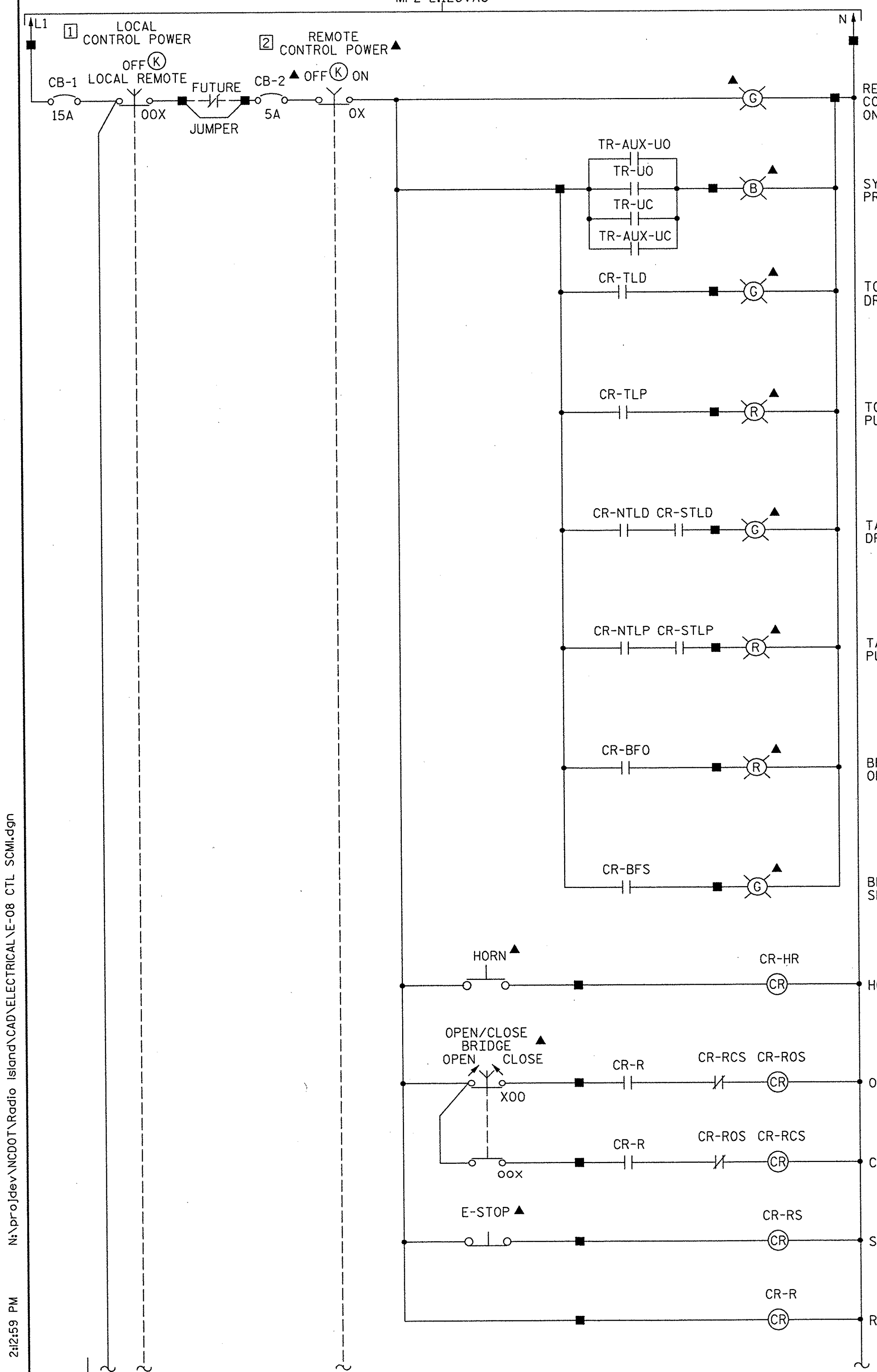
SHEET NO. E-07
TOTAL SHEETS 76

STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

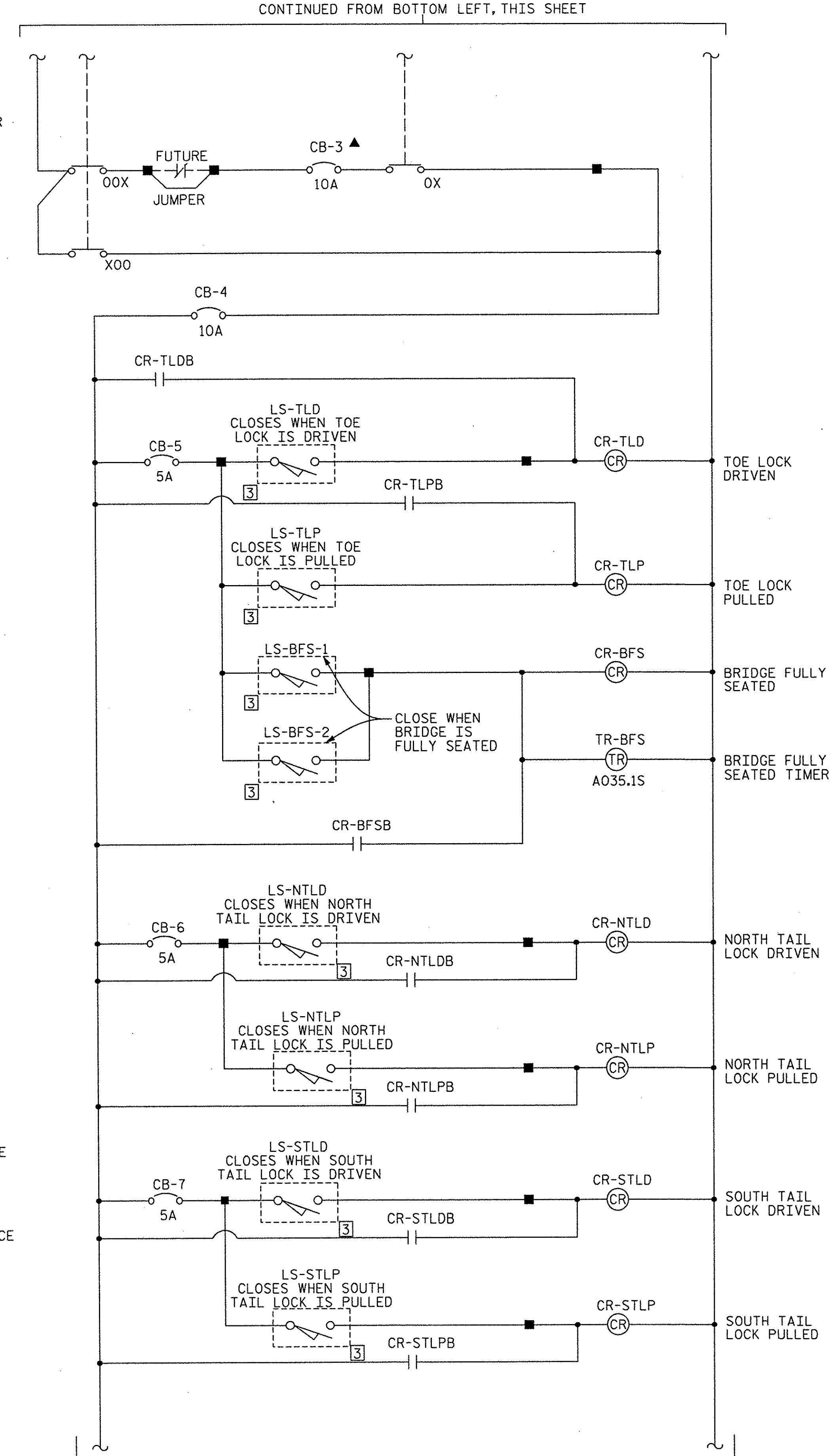
DRAWN BY : JAK DATE : 9-11
CHECKED BY : CM DATE : 12-11

N:\projdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-07 ONE LN.dgn 9:01:33 AM 4/6/2012

CONTINUED FROM BOTTOM LEFT, THIS SHEET



CONTINUED ON TOP RIGHT, THIS SHEET



CONTINUED ON TOP LEFT, SHEET E-09

SCHEMATIC NOTES:

1. TIMERS SHOWN ARE TYCO ELECTRONICS CNT SERIES TIMERS. SUBSCRIPTS INDICATE TIMER MODE, TIME, AND TIME BASE. PINS 5 AND 6 SHALL BE JUMPERED TOGETHER UNLESS OTHERWISE NOTED. TIME INDICATED IS APPROXIMATE. ACTUAL TIME REQUIRED FOR EACH TIMER SHALL BE FIELD TESTED AND ADJUSTED AS REQUIRED.
2. ALL DEVICES SHOWN ARE LOCATED ON OR IN THE RELAY CABINET UNLESS OTHERWISE NOTED.
3. ALL LIMIT SWITCHES ARE EXTERNAL TO THE RELAY CABINET AND ARE ON THE BRIDGE OR MACHINERY.
4. MOTOR STARTERS/VFD ARE LOCATED IN THEIR OWN ENCLOSURE.
5. ADDITIONAL RELAYS/TIMERS MAY BE ADDED IN PARALLEL TO ACHEIVE THE NUMBER OF CONTACTS REQUIRED.

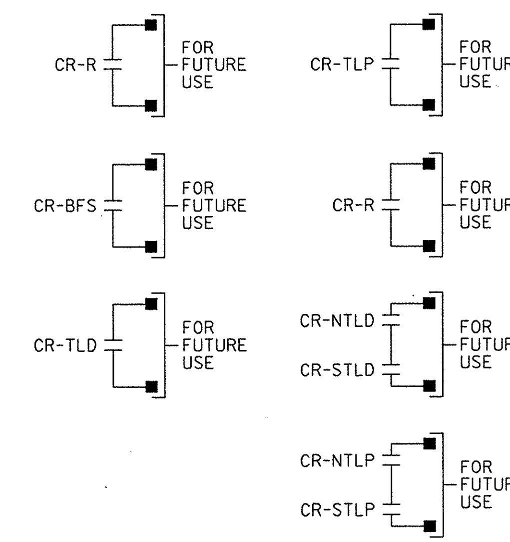
KEY NOTES:

1. KEY SWITCH SHALL CAPTURE THE KEY WHEN IN THE "LOCAL" POSITION.
2. KEY SWITCH SHALL CAPTURE THE KEY WHEN IN THE "ON" POSITION.
3. PROXIMITY TYPE SWITCH.

DEVICE LOCATION LEGEND:

▲ - REMOTE CONTROL STATION

■ - TERMINAL BLOCK IN RELAY CABINET



PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONTROL SCHEMATICS (SHEET 1 OF 5)

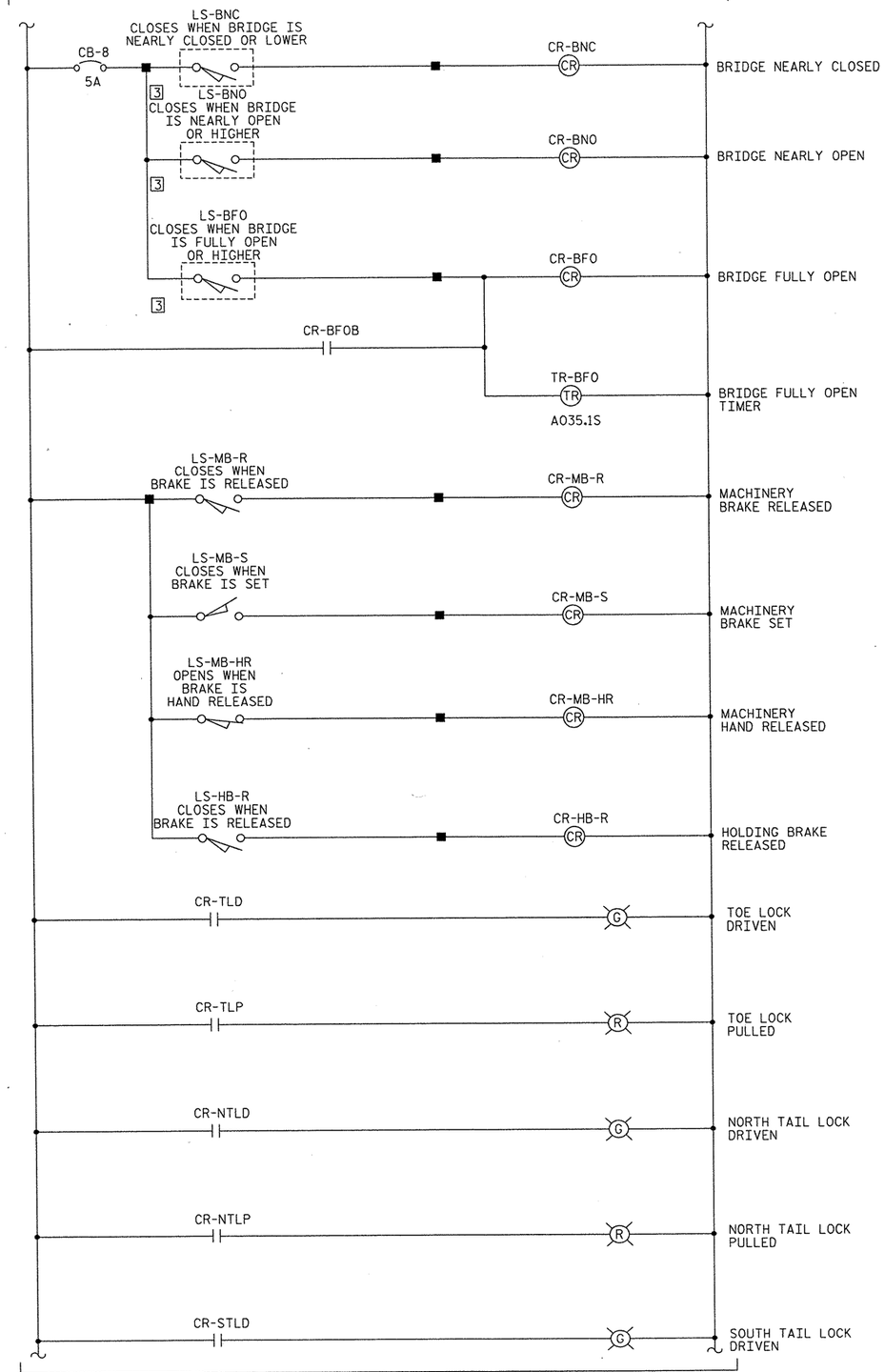
STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. E-08
TOTAL SHEETS 76

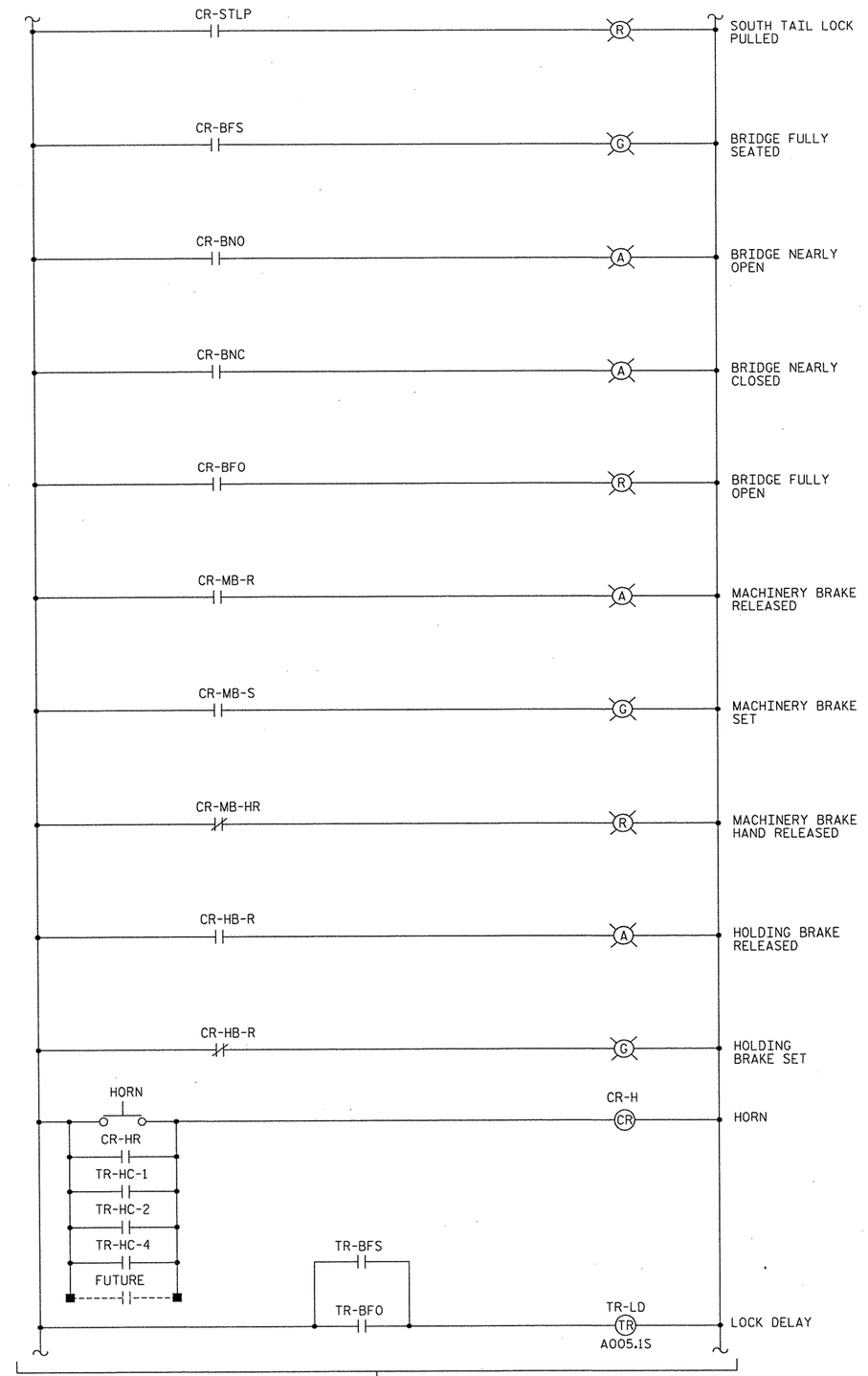
DRAWN BY : JAK DATE : 12-11
CHECKED BY : CM DATE : 12-11

CONTINUED FROM BOTTOM RIGHT, SHEET E-08



CONTINUED FROM TOP RIGHT, THIS SHEET

CONTINUED FROM BOTTOM LEFT, THIS SHEET



CONTINUED FROM TOP LEFT, SHEET E-10

SCHEMATIC NOTES:

1. TIMERS SHOWN ARE TYCO ELECTRONICS CNT SERIES TIMERS. SUBSCRIPTS INDICATE TIMER MODE, TIME, AND TIME BASE. PINS 5 AND 6 SHALL BE JUMPERED TOGETHER UNLESS OTHERWISE NOTED. TIME INDICATED IS APPROXIMATE. ACTUAL TIME REQUIRED FOR EACH TIMER SHALL BE FIELD TESTED AND ADJUSTED AS REQUIRED.
2. ALL DEVICES SHOWN ARE LOCATED ON OR IN THE RELAY CABINET UNLESS OTHERWISE NOTED.
3. ALL LIMIT SWITCHES ARE EXTERNAL TO THE RELAY CABINET AND ARE ON THE BRIDGE OR MACHINERY.
4. MOTOR STARTERS/VFD ARE LOCATED IN THEIR OWN ENSLOSURE.
5. ADDITIONAL RELAYS/TIMERS MAY BE ADDED IN PARALLEL TO ACHEIVE THE NUMBER OF CONTACTS REQUIRED.

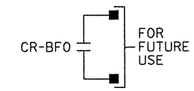
KEY NOTES:

[3] PROXIMITY TYPE SWITCH

DEVICE LOCATION LEGEND:

▲ - REMOTE CONTROL STATION

■ - TERMINAL BLOCK IN RELAY CABINET



PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

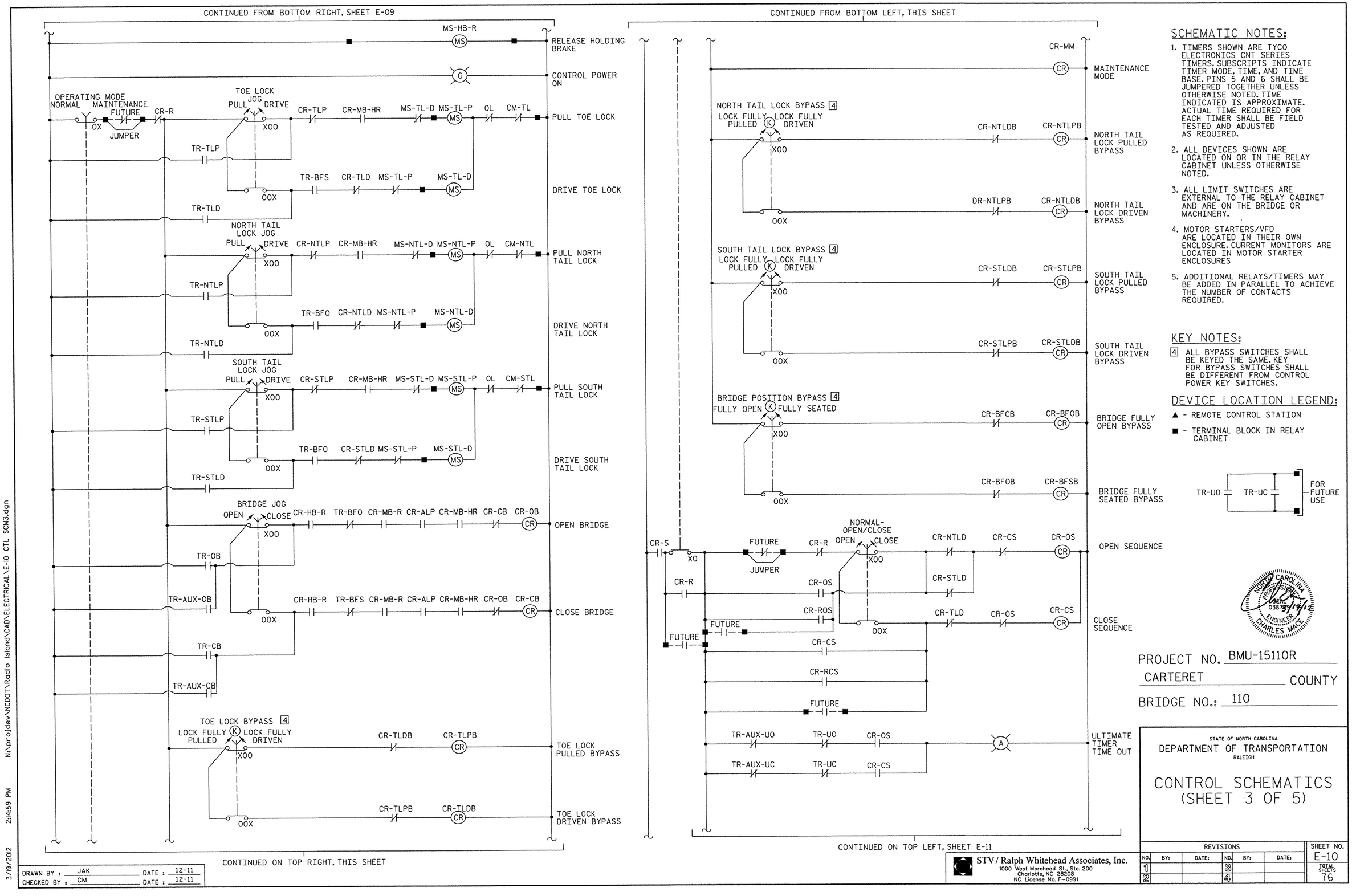
CONTROL SCHEMATICS (SHEET 2 OF 5)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-09
1			3			TOTAL SHEETS
2			4			76

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : JAK DATE : 12-11
CHECKED BY : CM DATE : 12-11

3/19/2012 2:14:27 PM N:\proJdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-09 CTL SCM2.dgn



SCHEMATIC NOTES:

1. TIMERS SHOWN ARE TYCO ELECTRONICS CNT SERIES TIMERS. SUBSCRIPTS INDICATE TIMER MODE, TIME, AND TIME BASE. PINS 5 AND 6 SHALL BE JUMPERED TOGETHER UNLESS OTHERWISE NOTED. TIME INDICATED IS APPROXIMATE. ACTUAL TIME REQUIRED FOR EACH TIMER SHALL BE FIELD TESTED AND ADJUSTED AS REQUIRED.
2. ALL DEVICES SHOWN ARE LOCATED ON OR IN THE RELAY CABINET UNLESS OTHERWISE NOTED.
3. ALL LIMIT SWITCHES ARE EXTERNAL TO THE RELAY CABINET AND ARE ON THE BRIDGE OR MACHINERY.
4. MOTOR STARTERS/VFD ARE LOCATED IN THEIR OWN ENCLOSURE. CURRENT MONITORS ARE LOCATED IN MOTOR STARTER ENCLOSURES
5. ADDITIONAL RELAYS/TIMERS MAY BE ADDED IN PARALLEL TO ACHIEVE THE NUMBER OF CONTACTS REQUIRED.

KEY NOTES:

[4] ALL BYPASS SWITCHES SHALL BE KEYED THE SAME. KEY FOR BYPASS SWITCHES SHALL BE DIFFERENT FROM CONTROL POWER KEY SWITCHES.

DEVICE LOCATION LEGEND:

▲ - REMOTE CONTROL STATION

■ - TERMINAL BLOCK IN RELAY CABINET

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038... 3/19/12 CHARLES MACE

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

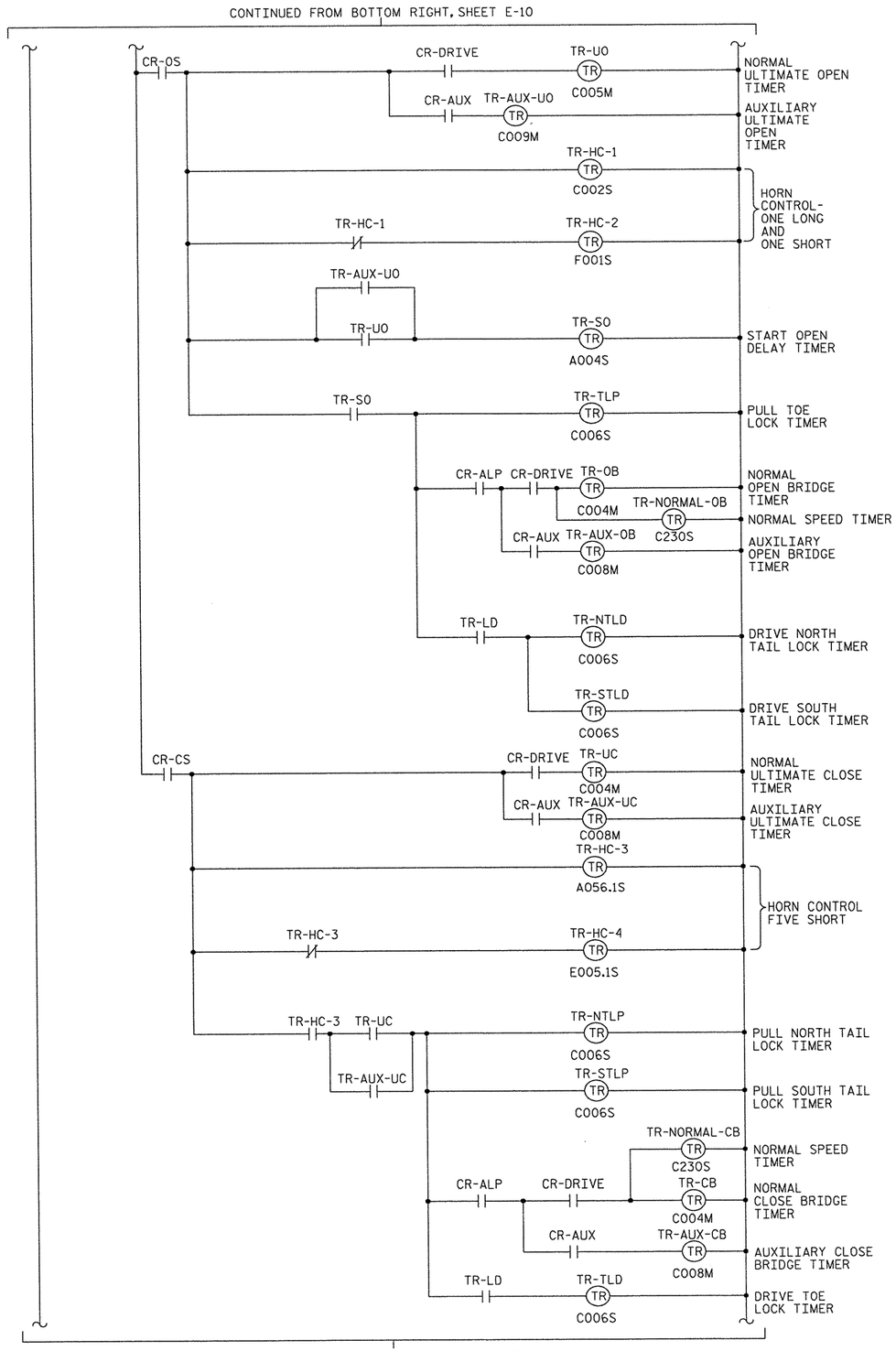
CONTROL SCHEMATICS (SHEET 3 OF 5)

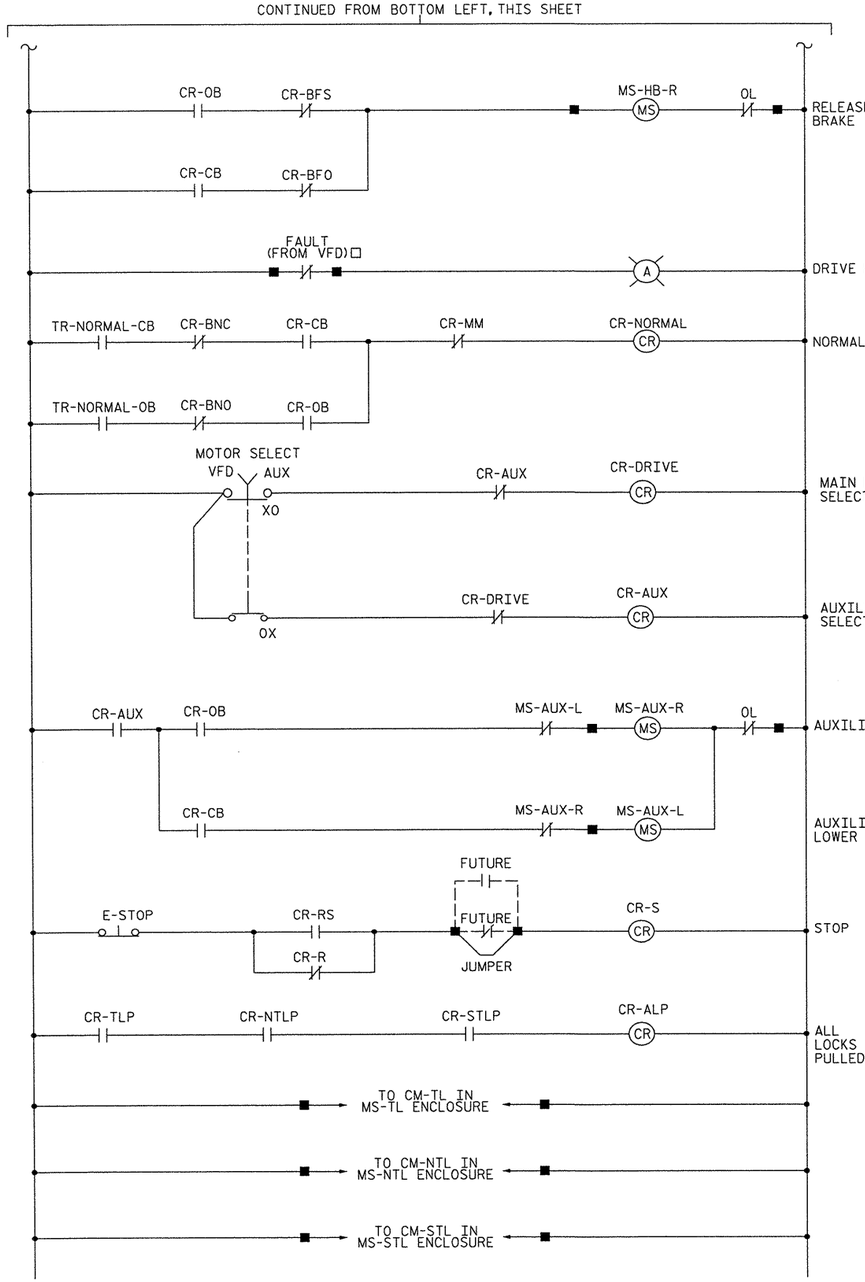
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-10
1			3			TOTAL SHEETS
2			4			76

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : JAK DATE : 12-11
CHECKED BY : CM DATE : 12-11

3/19/2012 2:14:59 PM N:\proj\dev\NCDOT\Radio Island\CAD\ELECTRICAL\E-10 CTL SCM3.dgn





SCHEMATIC NOTES:

1. TIMERS SHOWN ARE TYCO ELECTRONICS CNT SERIES TIMERS. SUBSCRIPTS INDICATE TIMER MODE, TIME, AND TIME BASE. PINS 5 AND 6 SHALL BE JUMPERED TOGETHER UNLESS OTHERWISE NOTED. TIME INDICATED IS APPROXIMATE. ACTUAL TIME REQUIRED FOR EACH TIMER SHALL BE FIELD TESTED AND ADJUSTED AS REQUIRED.
2. ALL DEVICES SHOWN ARE LOCATED ON OR IN THE RELAY CABINET UNLESS OTHERWISE NOTED.
3. ALL LIMIT SWITCHES ARE EXTERNAL TO THE RELAY CABINET AND ARE ON THE BRIDGE OR MACHINERY.
4. MOTOR STARTERS/VFD ARE LOCATED IN THEIR OWN ENSLOSURE.
5. ADDITIONAL RELAYS/TIMERS MAY BE ADDED IN PARALLEL TO ACHIEVE THE NUMBER OF CONTACTS REQUIRED.

DEVICE LOCATION LEGEND:

▲ - REMOTE CONTROL STATION

■ - TERMINAL BLOCK IN RELAY CABINET

□ - LOCATED IN VFD ENCLOSURE

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONTROL SCHEMATICS (SHEET 4 OF 5)

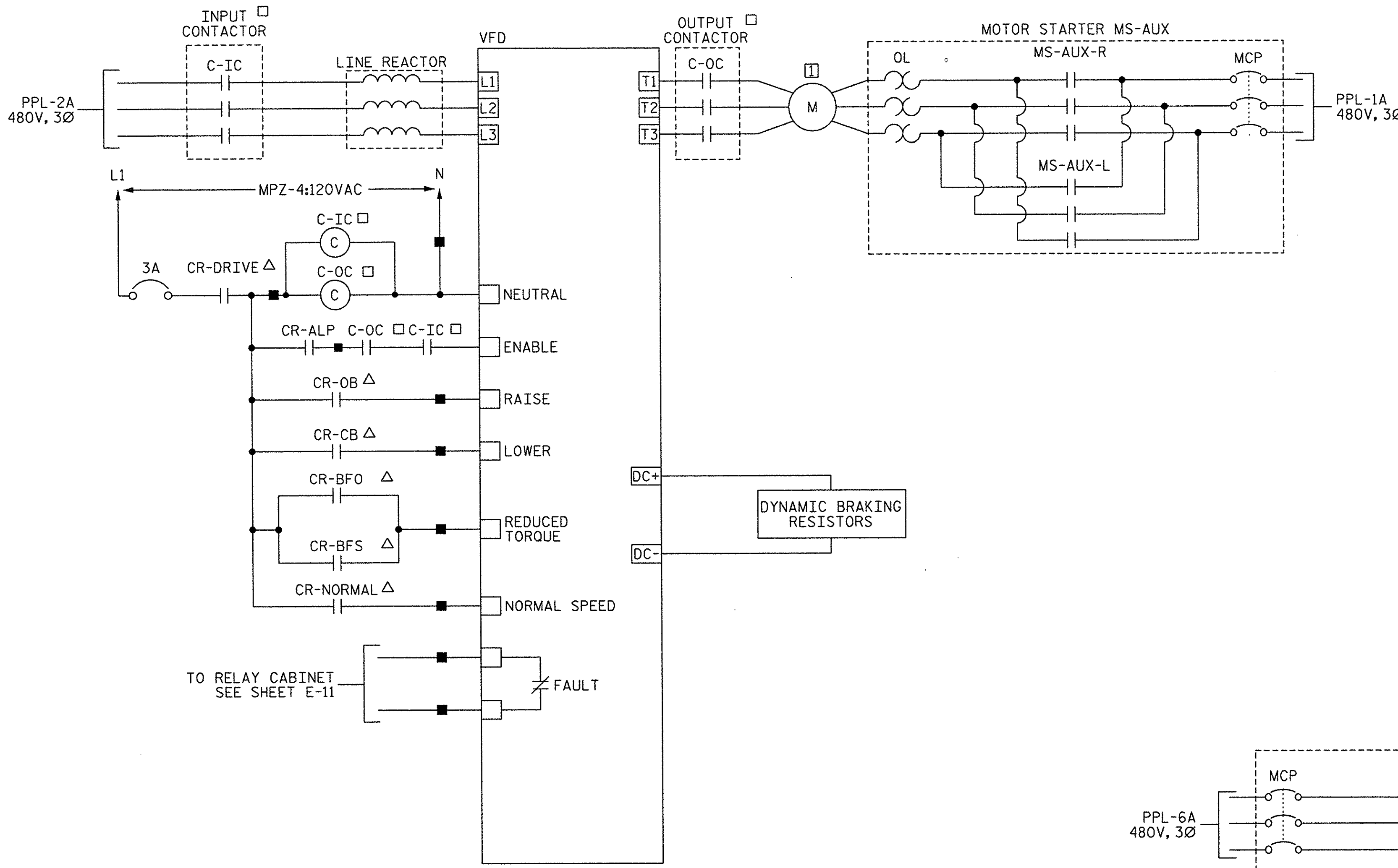
NORTH CAROLINA PROFESSIONAL SEAL 039168 ENGINEER CHARLES MARTIN

DRAWN BY : JAK	DATE : 12-11
CHECKED BY : CM	DATE : 12-11

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-11
1			3			TOTAL SHEETS
2			4			76

3/19/2012 2:15:45 PM N:\proJdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-11CTL SCM4.dgn



DRIVE MOTOR SCHEMATIC

NOTES:

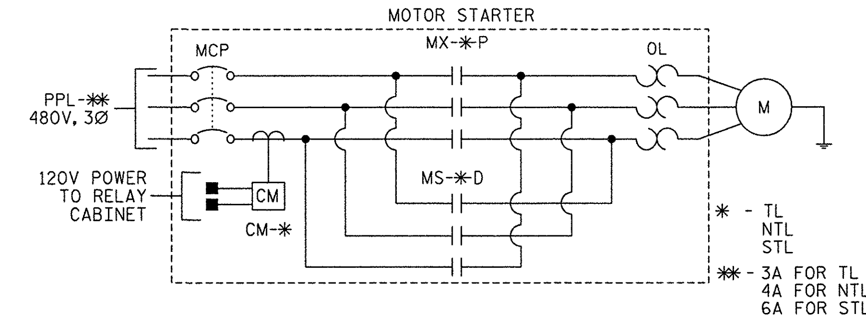
1. NORMAL SPEED SHALL BE 1800 RPM (60 HZ) AND SLOW SPEED SHALL BE 400 RPM (13.3 HZ). SLOW SPEED SHALL BE UTILIZED ANY TIME THERE IS NOT A NORMAL SPEED COMMAND. WHEN THE RAISE AND LOWER COMMANDS ARE REMOVED THE BRIDGE WILL RAMP DOWN AND STOP.
2. TORQUE SHALL BE LIMITED TO A MAXIMUM OF 150% OF THE FULL LOAD MOTOR TORQUE. WHEN IN REDUCED TORQUE THE TORQUE SHALL BE LIMITED TO 80%. REDUCED TORQUE LIMITATION SHALL BE FIELD TESTED AND ADJUSTED ACCORDINGLY AND APPROVED BY THE ENGINEER IF NECESSARY.
3. VFD SHALL BE A FLUX VECTOR DRIVE TYPE. DRIVE SHALL BE HEAVY DUTY AND RATED FOR 15 HP.
4. RESET BUTTON SHALL BE LOCATED ON THE DRIVE.

DEVICE LOCATION LEGEND:

△ - LOCATED IN RELAY CABINET

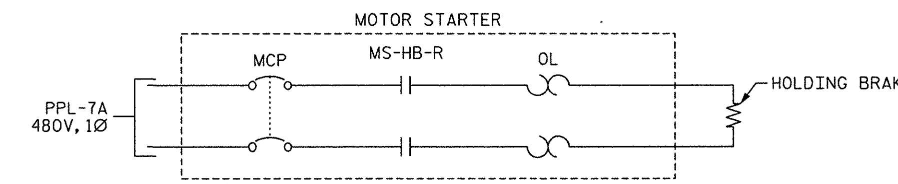
□ - LOCATED IN VFD ENCLOSURE

■ - TERMINAL BLOCK IN RELAY CABINET



TYPICAL LOCK MOTOR STARTER SCHEMATIC

(MS-TL, MS-NTL, MS-STL)

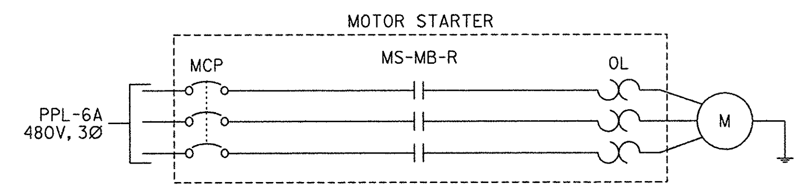


NOTES:

1. HOLDING BRAKE IS A SOLENOID TYPE BRAKE.

HOLDING BRAKE MOTOR STARTER SCHEMATIC

(MS-HB)

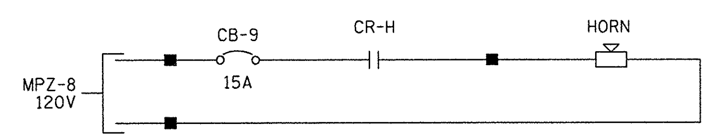


NOTES:

1. MACHINERY BRAKE IS A THRUSTER TYPE BRAKE.

MACHINERY BRAKE MOTOR STARTER SCHEMATIC

(MS-MB)



HORN SCHEMATIC

KEY NOTE:

1 TWO SPEED TWO WINDING 5/10 HP CONSTANT TORQUE MOTOR. HIGH SPEED WINDINGS SHALL BE CONNECTED TO THE VFD AND THE LOW SPEED WINDINGS SHALL BE CONNECTED TO THE FULL VOLTAGE REVERSING MOTOR STARTER.

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONTROL SCHEMATICS
(SHEET 5 OF 5)

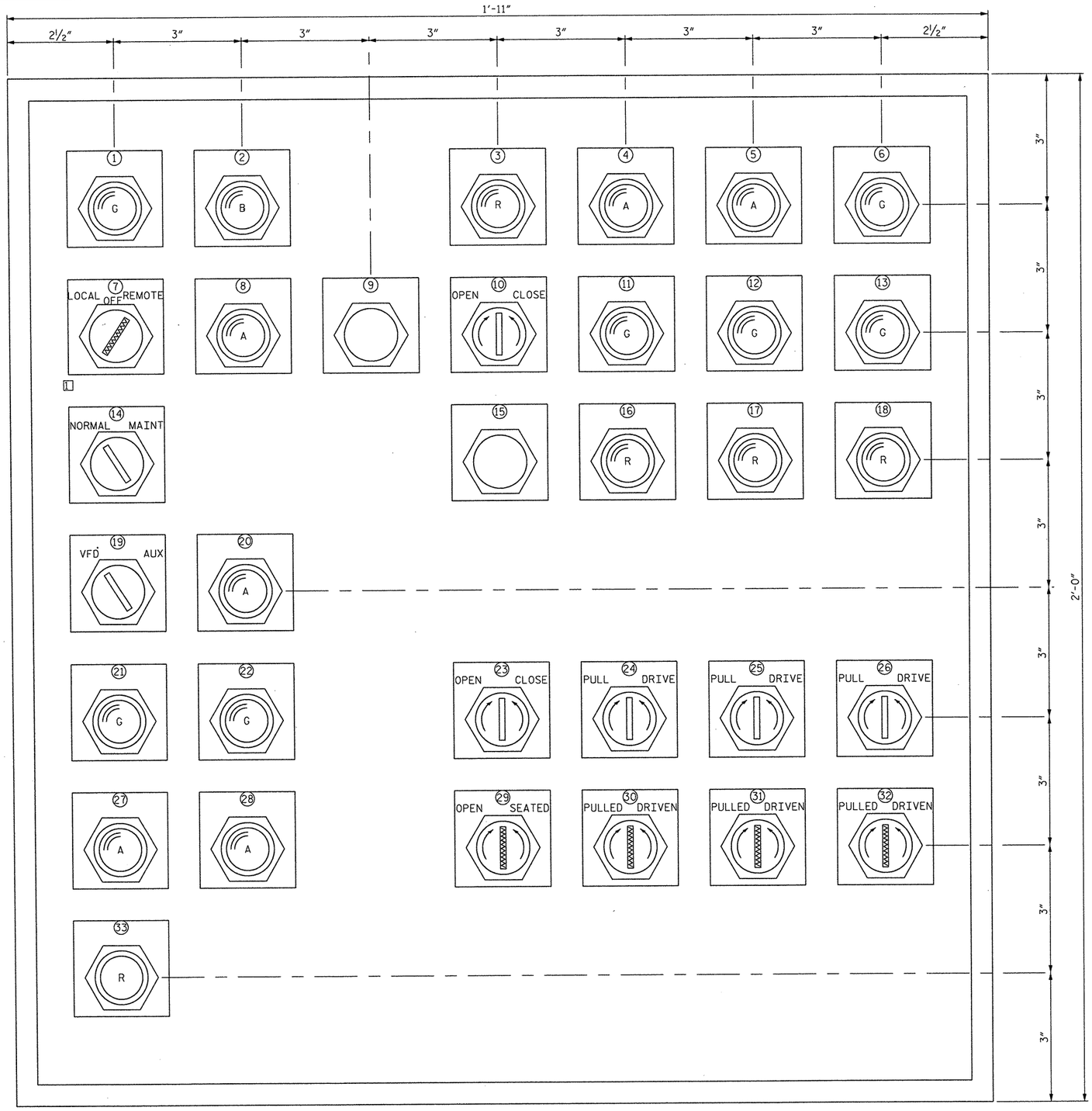
NORTH CAROLINA PROFESSIONAL SEAL 036767 ENGINEER CHARLES M...

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-12
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : JAK DATE : 12-11
CHECKED BY : CM DATE : 12-11

3/19/2012 2:16:26 PM N:\projdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-12 CTL SCM5.dgn



MAIN CONTROL PANEL LAYOUT

(NEMA 4X)

GENERAL NOTES:

1. BYPASS SWITCHES SHALL BE KEYED THE SAME AND SHALL BE KEYED DIFFERENTLY FROM THE CONTROL POWER SWITCHES.
2. CONTROL PANEL SHALL BE MOUNTED ON THE DOOR OF THE RELAY CABINET.

KEY NOTE:

[1] KEY SWITCH. SWITCH SHALL CAPTURE THE KEY WHEN IN THE "LOCAL" POSITION.

MAIN CONTROL PANEL:

(1) CONTROL POWER
(2) SYSTEM IN PROGRESS
(3) BRIDGE OPEN
(4) NEAR OPEN
(5) NEAR CLOSED
(6) BRIDGE SEATED
(7) CONTROL POWER
(8) ULTIMATE TIMER TIME OUT
(9) E-STOP
(10) NORMAL OPEN/CLOSE BRIDGE
(11) SOUTH TAIL LOCK DRIVEN
(12) NORTH TAIL LOCK DRIVEN
(13) TOE LOCK DRIVEN
(14) OPERATING MODE
(15) HORN
(16) SOUTH TAIL LOCK PULLED
(17) NORTH TAIL LOCK PULLED
(18) TOE LOCK PULLED
(19) DRIVE SELECTION
(20) DRIVE FAULT
(21) MACHINERY BRAKE SET
(22) HOLDING BRAKE SET
(23) BRIDGE JOG
(24) SOUTH TAIL LOCK JOG
(25) NORTH TAIL LOCK JOG
(26) TOE LOCK JOG
(27) MACHINERY BRAKE RELEASED
(28) HOLDING BRAKE RELEASED
(29) BRIDGE POSITION BYPASS
(30) SOUTH TAIL LOCK BYPASS
(31) NORTH TAIL LOCK BYPASS
(32) TOE LOCK BYPASS
(33) MACHINERY BRAKE HAND RELEASED

PROJECT NO. BMU-15110R
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MAIN CONTROL PANEL LAYOUT

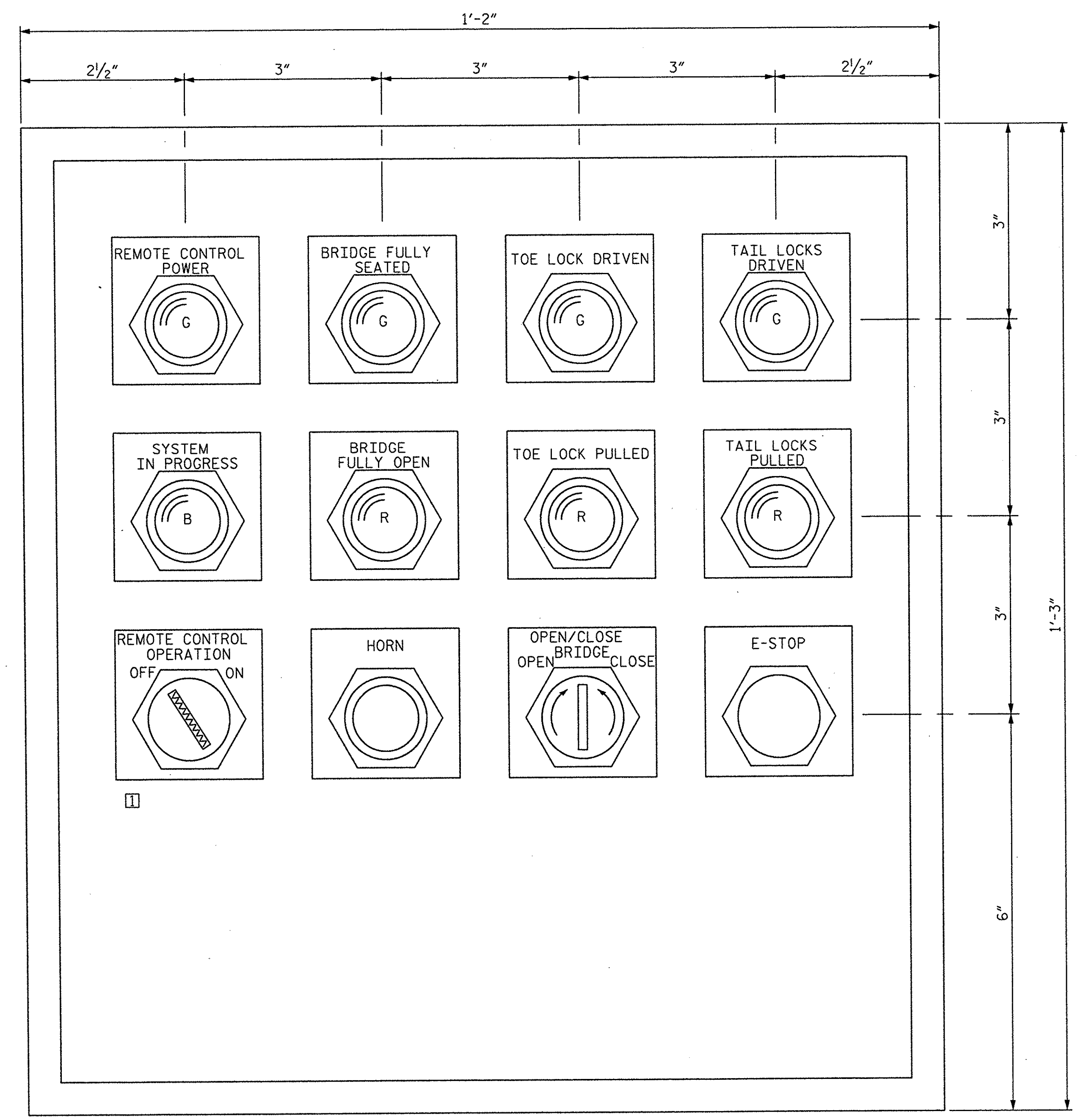
NORTH CAROLINA PROFESSIONAL SEAL 035766 ENGINEER CHARLES MCH 3/19/12

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-13
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : JAK DATE : 12-11
CHECKED BY : MCH DATE : 12-11

3/19/2012 2:16:56 PM N:\projdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-13 CTL PNL LYT.dgn



REMOTE CONTROL STATION LAYOUT
(NEMA 4X)

GENERAL NOTES:

1. PANEL SHALL MOUNTED IN A SWING OUT PANEL.
2. THE ENCLOSURE SHALL HAVE A LOCKABLE SOLID DOOR.

KEY NOTE:

1 KEY SWITCH. KEY SHALL BE CAPTURED WHEN IN THE "ON" POSITION.

PROJECT NO. BMU-15110R

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

REMOTE CONTROL STATION LAYOUT

NORTH CAROLINA PROFESSIONAL SEAL 038159 ENGINEER CHARLES

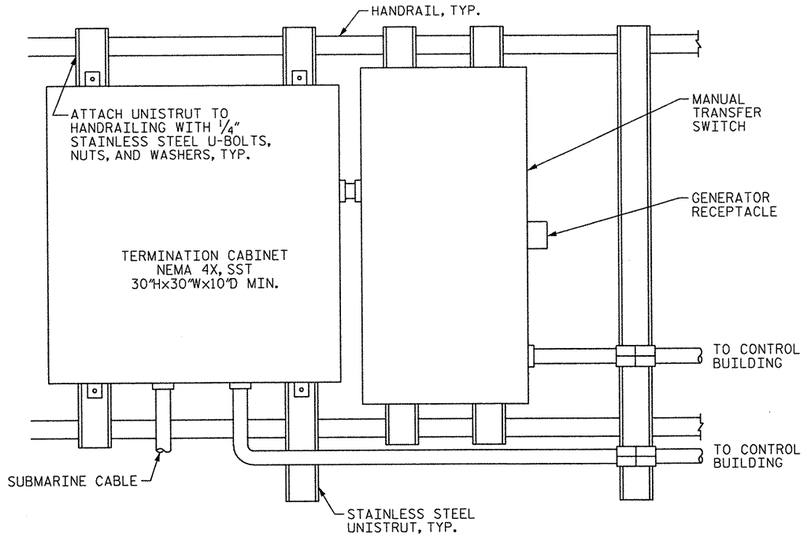
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. E-14
TOTAL SHEETS 76

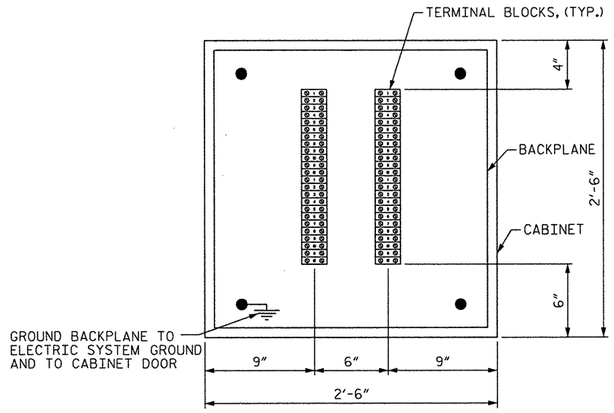
DRAWN BY : JAK DATE : 9-11
CHECKED BY : MCH DATE : 12-11

3/19/2012 2:17:25 PM N:\projdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-14 RMT CTRL PNL.dgn



DETAIL 1: CABLE TERMINATION CABINET

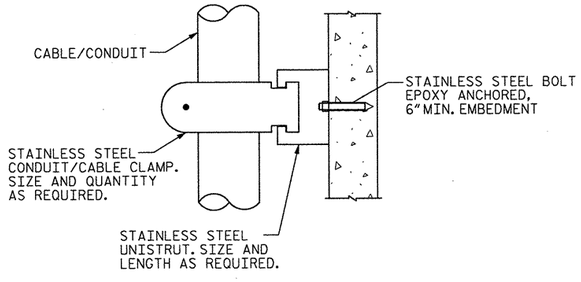
(AT CONTROL BUILDING ONLY)



DETAIL 3: CABLE TERMINATION CABINET LAYOUT

NOTES:

1. TERMINAL BLOCKS UTILIZED FOR #10 AWG CONDUCTORS AND SMALLER SHALL BE GE TYPE CR151B2. ALL TERMINATIONS FOR #10 AWG CONDUCTORS AND SMALLER SHALL BE WITH RING TYPE CONNECTORS.
2. TERMINAL BLOCKS UTILIZED FOR #6 AWG AND LARGER SHALL BE GE TYPE CR151A7.
3. SPLICE/TERMINATE FIBER OPTIC CABLES AS NECESSARY.



DETAIL 2: CONDUIT/CABLE CLAMP MOUNTING ON HIGHWAY BRIDGE PIER

NOTE:

1. MAXIMUM SUPPORT SPACING SHALL BE 4 FT.

GENERAL NOTES:

1. ALL CABINETS AND MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
2. CONDUIT SIZES SHOWN ARE MINIMUM

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

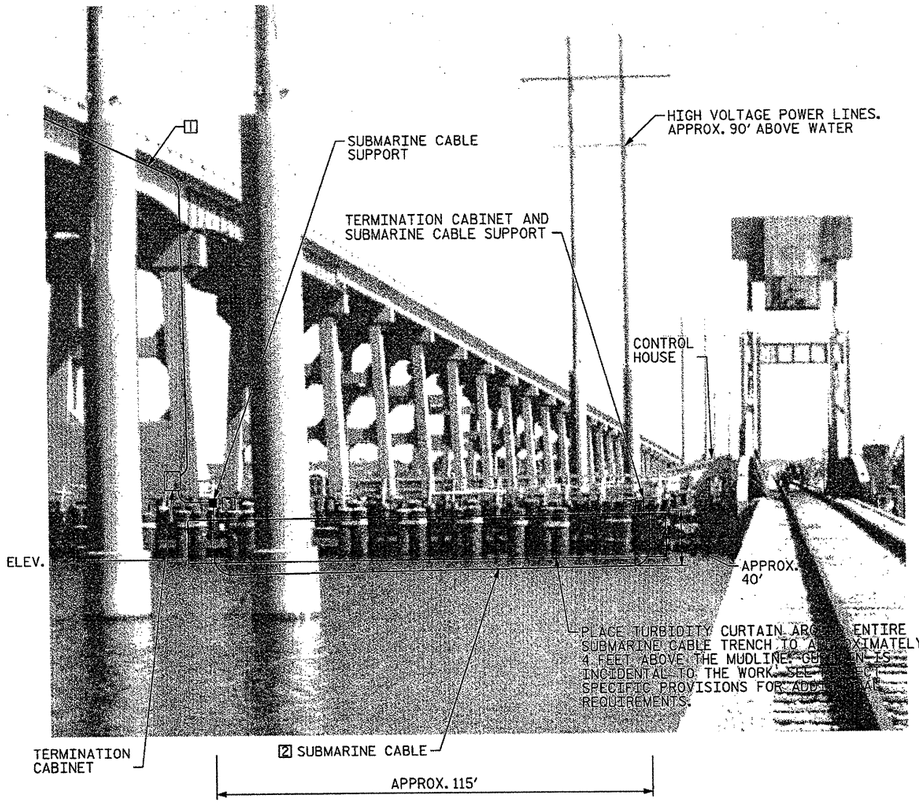
TERMINATION CABINET DETAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-15
1			3			TOTAL SHEETS
2			4			76

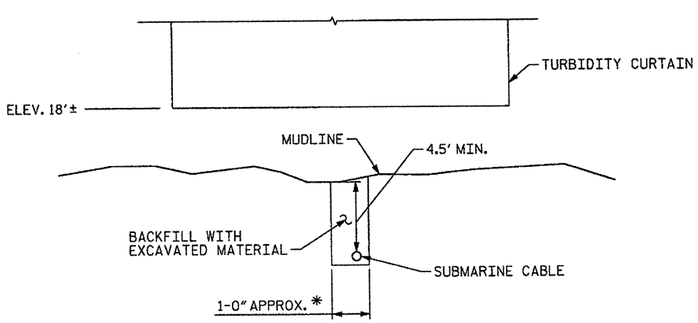
STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : JAK DATE : 9/11
CHECKED BY : CM DATE : 12/11

4/6/2012 9:02:02 AM N:\projdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-15 TRM CAB DTLS.dgn

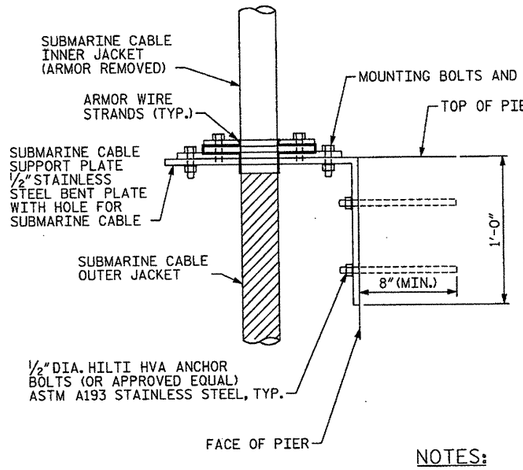


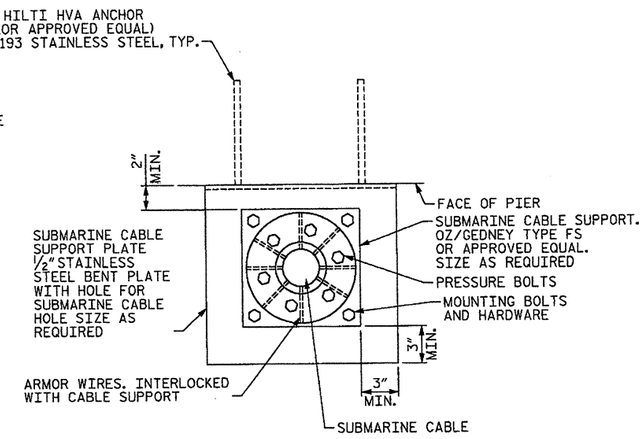
SUBMARINE CABLE ELEVATION



SUBMARINE CABLE TRENCH

*ACTUAL TRENCH WIDTH DEPENDENT ON JET CUTTING EQUIPMENT.





SUBMARINE CABLE SUPPORT PLATE DETAIL

NOTES:

1. ALL BOLTS AND NUTS SHALL BE STAINLESS STEEL.
2. ALL PLATES AND WASHERS SHALL BE STAINLESS STEEL.
3. MINIMUM OF 4 ANCHOR BOLTS INTO PIER ARE REQUIRED.

GENERAL NOTES:

1. ALL LENGTHS SHOWN APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS.
2. SUBMARINE CABLE INSTALLATION SHALL BE PERFORMED BY JET CUTTING THE TRENCH.

KEY NOTES:

[1] CABLES SHALL BE SUPPORTD BY A MESSENGER AND SECURED TO THE BRIDGE WITH AERIAL CABLE CLAMPS.

[2] SUBMARINE CABLE SHALL BE BURIED A MINIMUM OF 4.5 FEET BELOW THE MUDLINE.

[3] A SIGN SHALL BE MOUNTED NEXT TO THE SUBMARINE CABLE SUPPORT STATING: "DANGER: SUBMARINE CABLE. DO NOT ANCHOR".

PROJECT NO. BMU-15110R
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBMARINE CABLE AND DETAILS

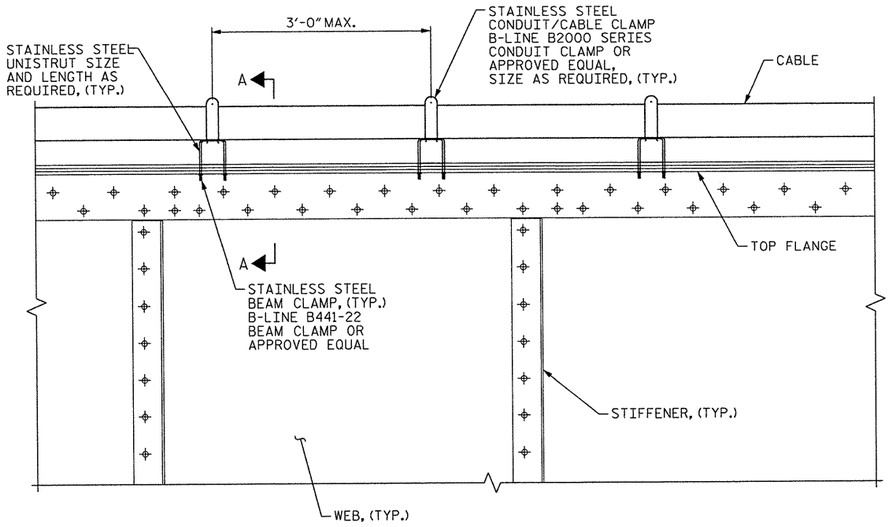
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25269 CHARLES MACE

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-16
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : JAK DATE : 12-11
CHECKED BY : MCH DATE : 12-11

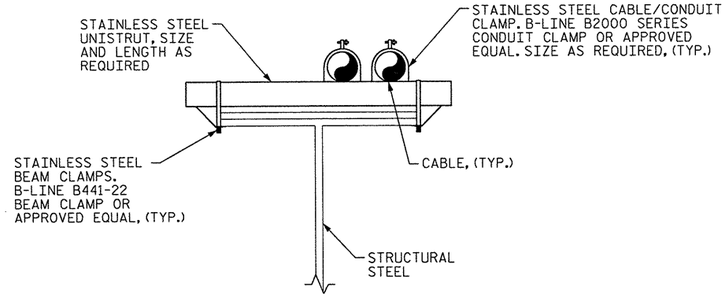
4/24/2012 10:19:17 AM i:\proj\dev\NCDOT\Radio Island\CAD\ELECTRICAL\E-16 SUB CBL DTLS.dgn



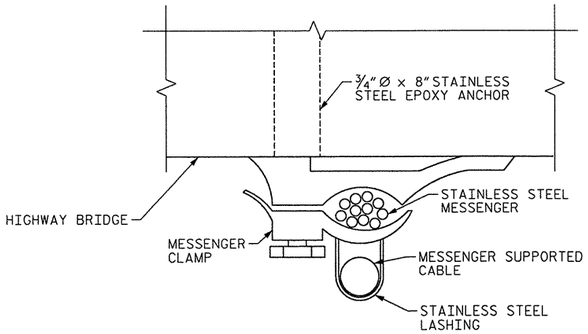
DETAIL 1: CABLE MOUNTING ON TOP OF FLANGE

NOTES:

1. MAX. SPACING BETWEEN SUPPORTS SHALL BE 3 FT.



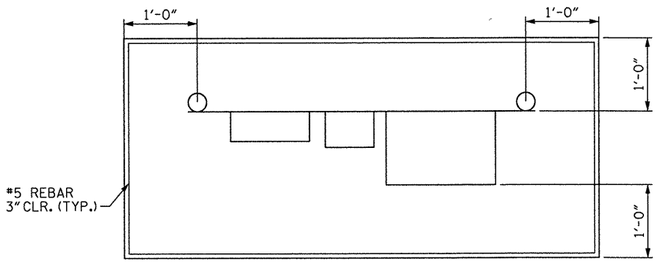
VIEW A-A



NOTES:

1. CLAMP SHALL BE A MACLEAN POWER AERIAL CABLE, MESSENGER CLAMP CATALOG NUMBER MBXH-82 OR APPROVED EQUAL.

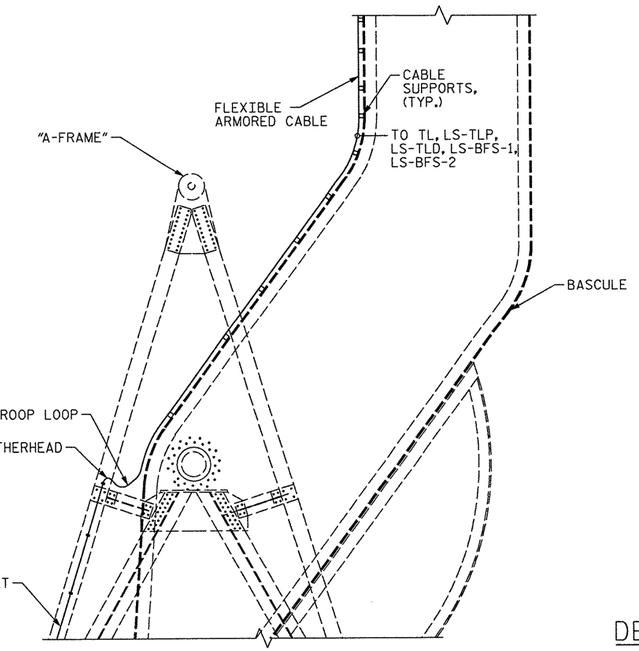
DETAIL 2: CABLE SUPPORT TO BRIDGE



DETAIL 5: SERVICE ENTRANCE EQUIPMENT SLAB LAYOUT PLAN

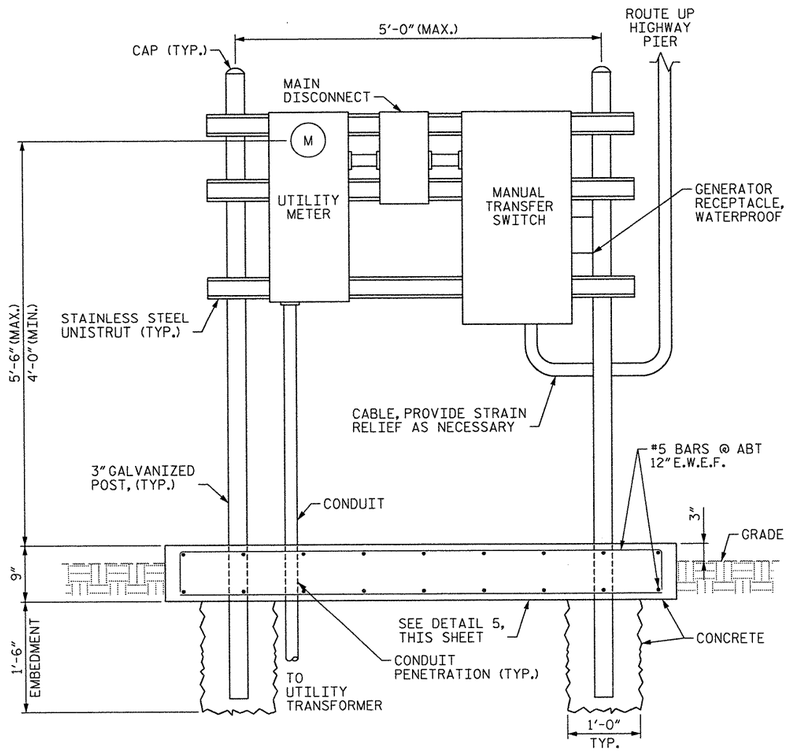
NOTES:

1. ALL ENCLOSURES TO ME NEMA 4X.
2. REFER TO ONE-LINE DIAGRAM, SHEET E-07 FOR CONDUIT AND WIRING REQUIREMENTS.
3. ALL REBAR TO BE ASTM A615 GRADE 60.
4. CONCRETE SHALL BE 3,000 PSI.



DETAIL 3: DROOP LOOP CABLE ROUTING

[1] FIELD VERIFY LENGTH OF DROOP LOOP REQUIRED. CHECK BRIDGE IN BOTH RAISED AND LOWERED POSITION PRIOR TO INSTALLING CABLES. VERIFY LOOP DOES NOT CATCH ON OBSTACLES THROUGHOUT ENTIRE BRIDGE RANGE OF MOTION.



DETAIL 4: SERVICE ENTRANCE EQUIPMENT ELEVATION

NOTES:

1. ALL ENCLOSURES TO BE NEMA 4X RATED.
2. METER BASE SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH UTILITY AND CONFORM TO ALL UTILITY REQUIREMENTS.
3. ALL REBAR TO BE ASTM A615 GRADE 60.
4. CONCRETE SHALL BE 3,000 PSI.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ELECTRICAL DETAILS

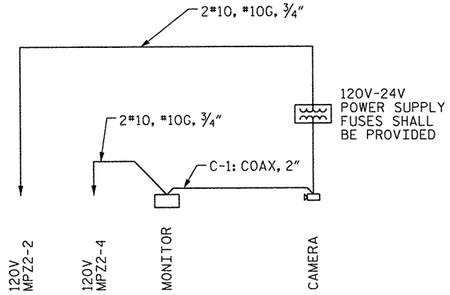
NORTH CAROLINA PROFESSIONAL SEAL 032169 ENGINEER CHARLES MCGEE

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

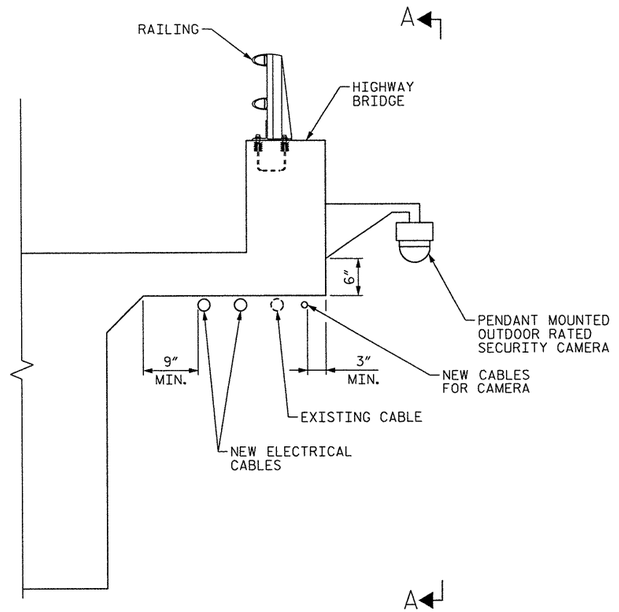
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-17
1			3			TOTAL SHEETS
2			4			76

DRAWN BY : ATH DATE : 12-11
CHECKED BY : JAK DATE : 12-11

3/19/2012 2:19:08 PM N:\proJdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-17 ELEC DTLS.dgn



CCTV ONE-LINE DIAGRAM

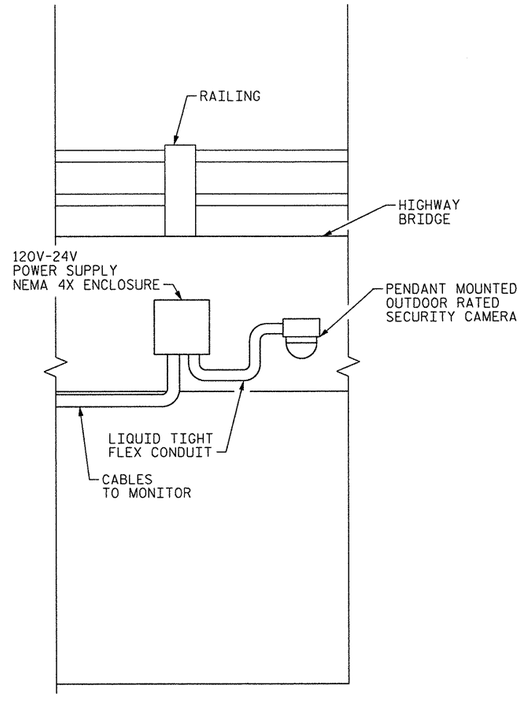


DETAIL 1: CAMERA MOUNTING

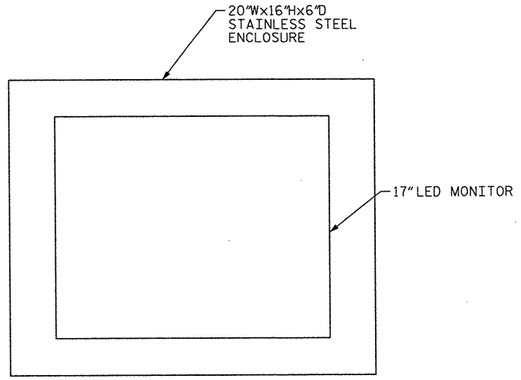
(LOOKING EAST)

NOTES:

1. CAMERA AND POWER SUPPLY SHALL BE MOUNTED TO THE BRIDGE WITH 1/4" STAINLESS STEEL EPOXY ANCHORS. MIN. EMBEDMENT 4".
2. POWER SUPPLY, CAMERA, AND MONITOR SHALL ALL BE FROM THE SAME MANUFACTURER.
3. ALL COMPONENTS INCLUDING THE ENCLOSURES, WIRING, CAMERA, MONITOR, MOUNTING, CONDUIT, ALL EQUIPMENT AND ACCESSORIES SHALL BE PAID FOR UNDER "CCTV SYSTEM".
4. MOUNT NEW CABLES SIMILAR TO EXISTING. SEE SHEET E-17 DETAIL 2 FOR OTHER DETAILS.



VIEW A-A



DETAIL 2: MONITOR PANEL LAYOUT

NOTES:

1. MONITOR SHALL BE MOUNTED ON A SWING OUT PANEL.
2. THE ENCLOSURE SHALL HAVE A LOCKABLE SOLID DOOR. WHEN THE DOOR IS CLOSED THE MONITOR SHALL NOT BE VISIBLE.

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038769 CHARLES MACE 3/19/12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

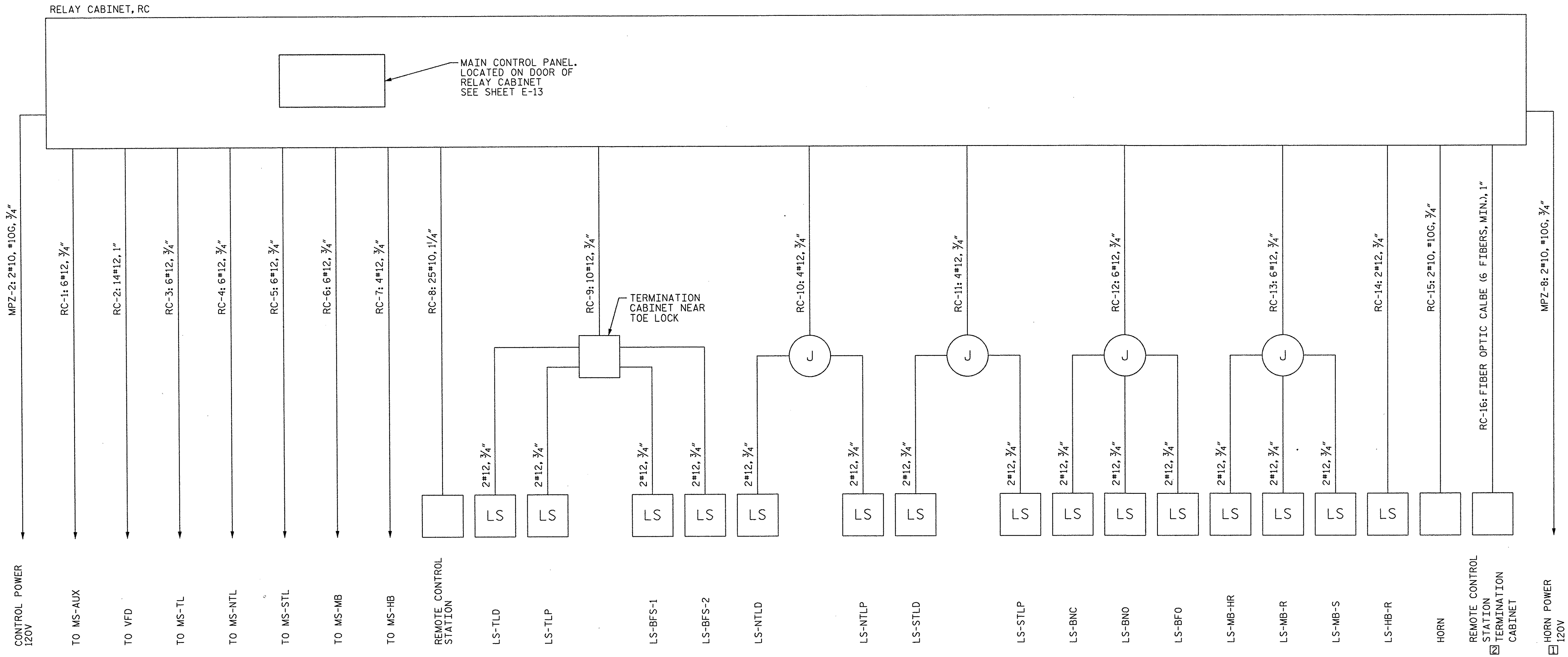
CCTV DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-18
1			3			TOTAL SHEETS
2			4			76

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : ATH DATE : 12-12
CHECKED BY : MCH DATE : 12-11

3/19/2012 2:19:40 PM N:\projdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-18 CCTV Details.dgn



RELAY CABINET ONE-LINE DIAGRAM

GENERAL NOTES:

1. ALL CIRCUITS SHALL BE ROUTED IN CONDUIT UNLESS OTHERWISE NOTED.

KEY NOTES:

1. 120V POWER CIRCUIT IS FOR HORN POWER.
2. THE FIBER OPTIC CABLE IS FOR FUTURE USE. SPLICE CABLE AS NECESSARY. TERMINATE THE ENDS OF EACH FIBER IN THE REMOTE CONTROL STATION TERMINATION CABINET AND THE RELAY CABINET.

PROJECT NO. BMU-15110R
CARTERET COUNTY
BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

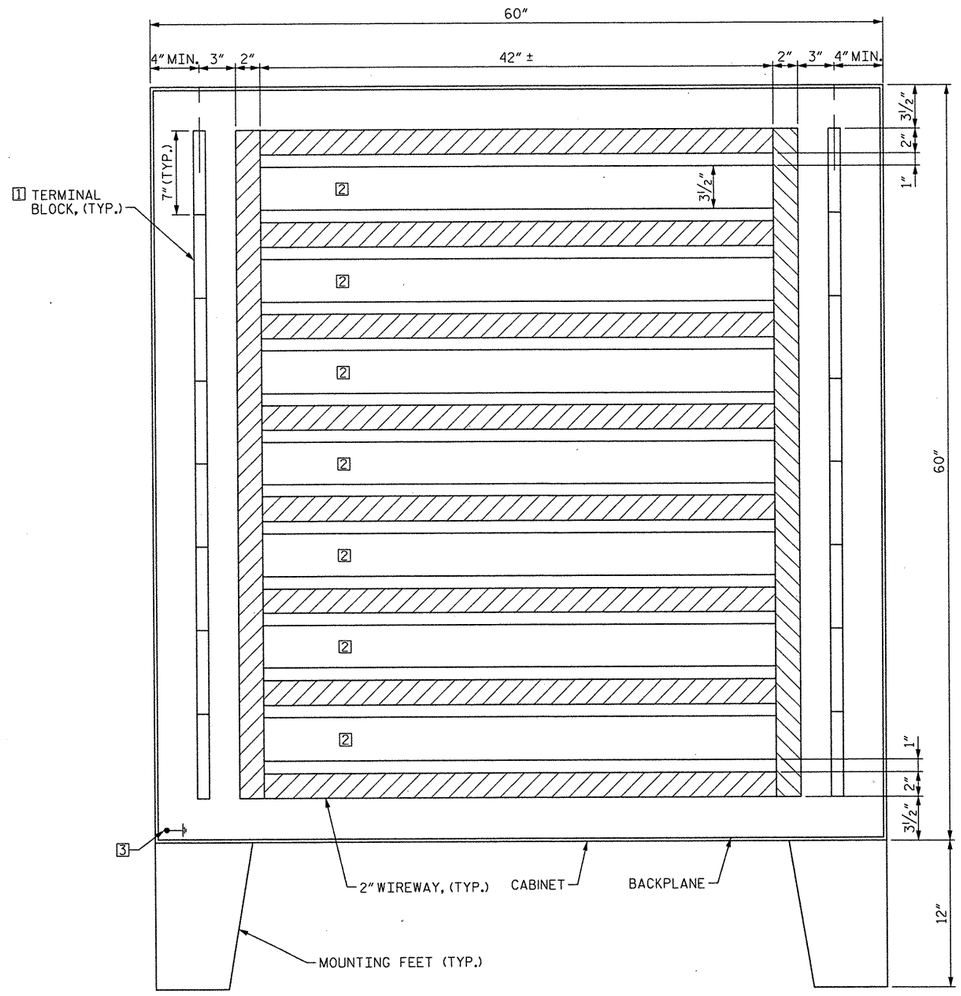
RELAY CABINET
ONE-LINE DIAGRAM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-19
1			3			TOTAL SHEETS
2			4			76

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : JAK DATE : 9-11
CHECKED BY : CM DATE : 12-11

N:\projdev\NCDOT\Radio Island\CAD\ELECTRICAL\E-19 RLY ONE LN.dgn 2:20:15 PM 3/19/2012



GENERAL NOTES:

1. NEMA 4X STAINLESS STEEL LOCKABLE TYPE CABINET.
2. CONTROL PANEL SHALL BE MOUNTED TO THE DOOR OF THE CABINET.
3. MINIMUM DIMENSIONS SHOWN.
4. MINIMUM DEPTH SHALL BE 12".
5. ALL TERMINATION TO TERMINAL BLOCKS AND RELAYS/TIMERS SHALL BE DONE WITH RING TYPE CONNECTORS.

KEY NOTES:

1 12 POINT TERMINAL BLOCK, SCREW TYPE BOTH SIDES. GE TYPE CR151B2 OR APPROVED EQUAL.

2 SPACE RESERVED FOR RELAYS/TIMERS.

3 GROUND BACKPLANE AND CABINET DOORS.

RELAY CABINET LAYOUT

PROJECT NO. BMU-1511OR

CARTERET COUNTY

BRIDGE NO.: 110

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RELAY CABINET DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 030769 ENGINEER CHARLES MAYER

STV / Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-20
1			3			TOTAL SHEETS
2			4			76

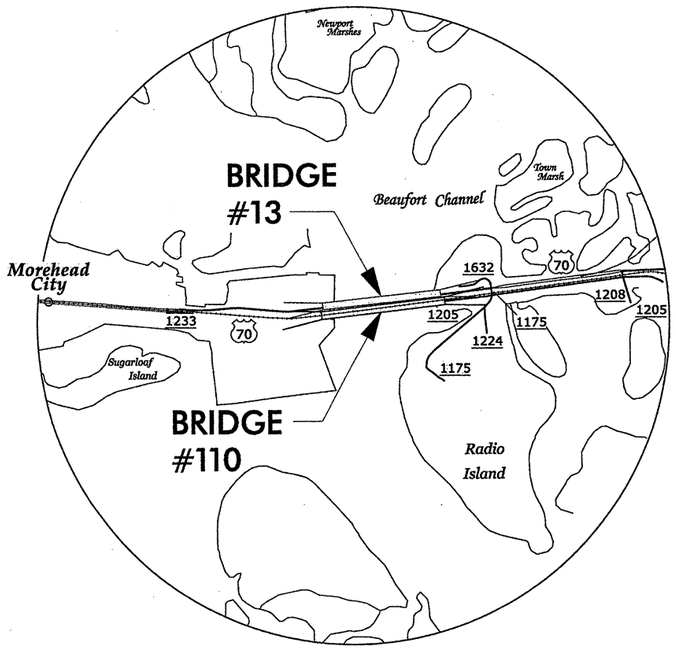
DRAWN BY : ATH DATE : 12-11
CHECKED BY : CM DATE : 12-11

3/19/2012 2:20:43 PM N:\proj\dev\NCDOT\Radio Island\CAD\ELECTRICAL\E-20 Relay Cabinet Details.dgn

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

CARTERET COUNTY

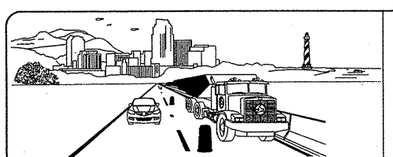


VICINITY MAP
BRIDGES #13 AND #110

INDEX OF SHEETS

SHEET NO.
TMP-1

PROJECT: BMU-1511OR



PLAN PREPARED FOR NCDOT BRIDGE MANAGEMENT UNIT

RALEIGH, NC

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

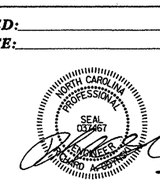
STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

PROJECT ENGINEER JOHN JOHNSON, PE

DESIGN ENGINEER RICHARD ODYNSKI, PE

APPROVED:
DATE:

SEAL



2/16/2012
I:\PROJ\25145\Radio Island BMU-1511OR\TMP\BMU1511OR_TMP_TSH.dgn
odynskir

PROJ. REFERENCE NO.	SHEET NO.
BMU-1511OR	TMP-1A

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

ROADWAY STANDARD DRAWINGS

REV. SEPTEMBER 2011

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1150.01	FLAGGING DEVICES
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1180.01	SKINNY DRUMS

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- REMOVAL

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD (TYPE C)
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

SIGNALS

EXISTING PROPOSED TEMP TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 030463 ENGINEER JOSEPH A. GOTHSK

2-16-12

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD DRAWINGS & LEGEND

2/16/2012
i:\proj\2514545\r-adio island bmu-1511l0r\tmp\BMU1511l0R_TMP_1A.dgn
odynskra

STV/ Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208 NC License Number F-0991	PROJ. REFERENCE NO.	SHEET NO.
	BMU-1511OR	TMP-1B

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
US 70	MONDAY TO SUNDAY 5:00 A.M. TO 11:00 P.M.

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME

US 70

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 5:00 A.M. DECEMBER 31st TO 11:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 11:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 5:00 A.M. THURSDAY AND 11:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 5:00 A.M. FRIDAY TO 11:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 5:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 11:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 5:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 11:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 5:00 A.M. FRIDAY AND 11:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 5:00 A.M. TUESDAY TO 11:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 5:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 11:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

LANE AND SHOULDER CLOSURE REQUIREMENTS

C) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

   WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK IS PROTECTED BY BARRIER OR GUARDRAIL.

E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

F) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

TRAFFIC PATTERN ALTERATIONS

G) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

H) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

I) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

   PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

J) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

   COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

K) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

MISCELLANEOUS

L) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.

PHASING

USE NCDOT STD. 1101.01 SHEETS 1 AND 2 OF 3 TO INSTALL WORK ZONE ADVANCE WARNING SIGNS.

USING SHEETS TMP-2 AND TMP-3 INSTALL SIGNS AND DEVICES.

USE FLAGGERS WITH PILOT CAR GUIDANCE AS SHOWN ON SHEETS TMP-2 AND TMP-3 TO INSTALL THE UTILITY LINE ON THE BRIDGE AS NEEDED.

WHEN WORK IS COMPLETE REMOVE ALL SIGNS AND DEVICES AND RETURN TRAFFIC TO ITS NORMAL PATTERN.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032945 ENGINEER RICHARD A. CONNOR

2-16-12

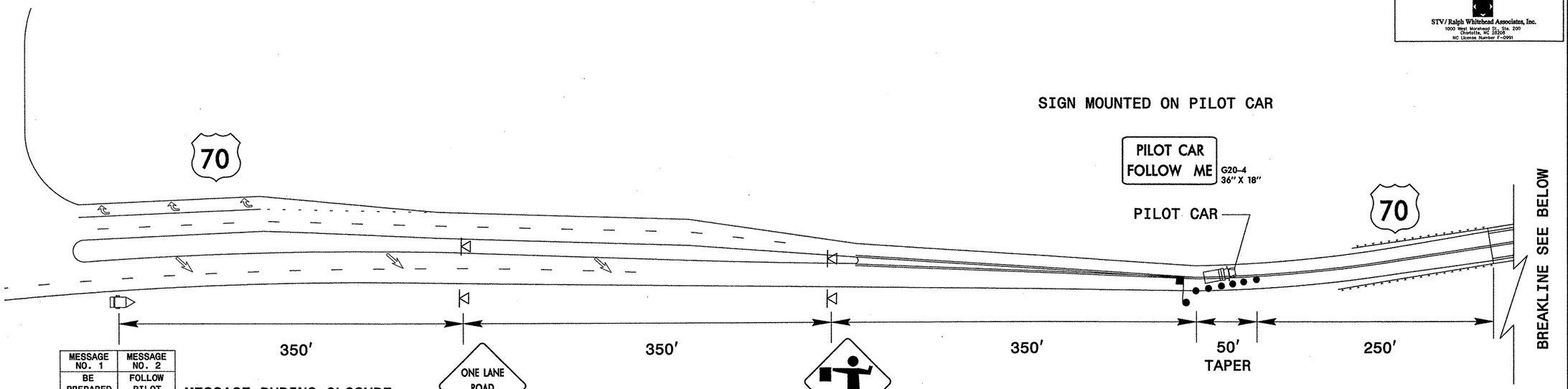
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

GENERAL NOTES AND PHASING

2/16/2012
I:\proj\25145\radio island bmu-1511or\tmp\BMU1511OR_TMP_1B.dgn
osynski.rd

PROJ. REFERENCE NO.	SHEET NO.
BMU-15110R	TMP-2

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



MESSAGE NO. 1	MESSAGE NO. 2
BE PREPARED TO STOP	FOLLOW PILOT VEHICLE

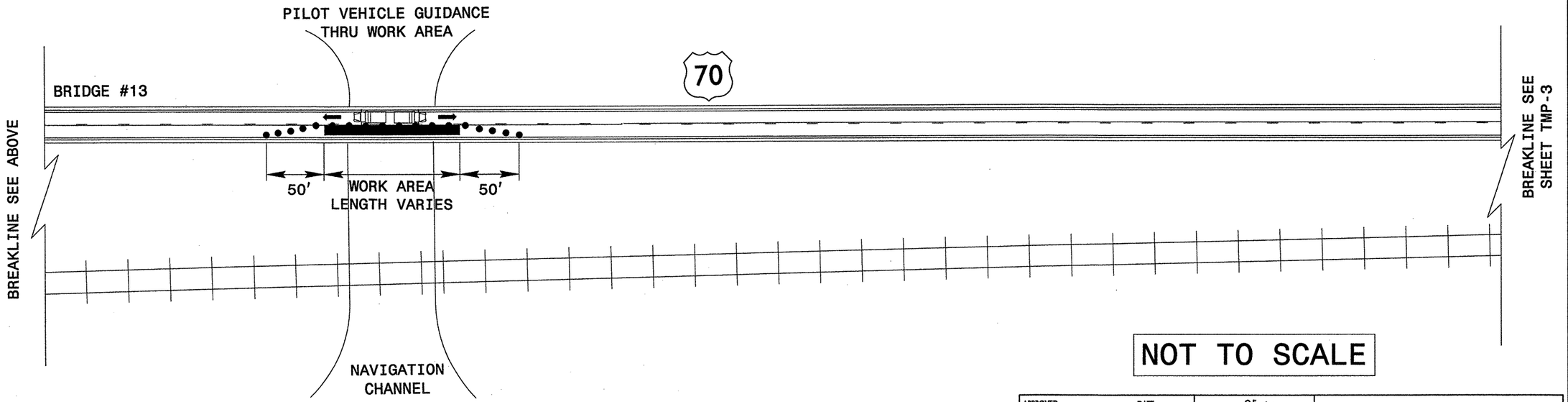
CHANGEABLE MESSAGE SIGN

MESSAGE DURING CLOSURE

MESSAGE NO. 1	MESSAGE NO. 2
BRIDGE WORK TONIGHT	EXPECT DELAYS 11PM-5AM

CHANGEABLE MESSAGE SIGN

MESSAGE DURING DAY



NOT TO SCALE

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 030451 ENGINEER RICHARD A. DOYNICH
2-16-12

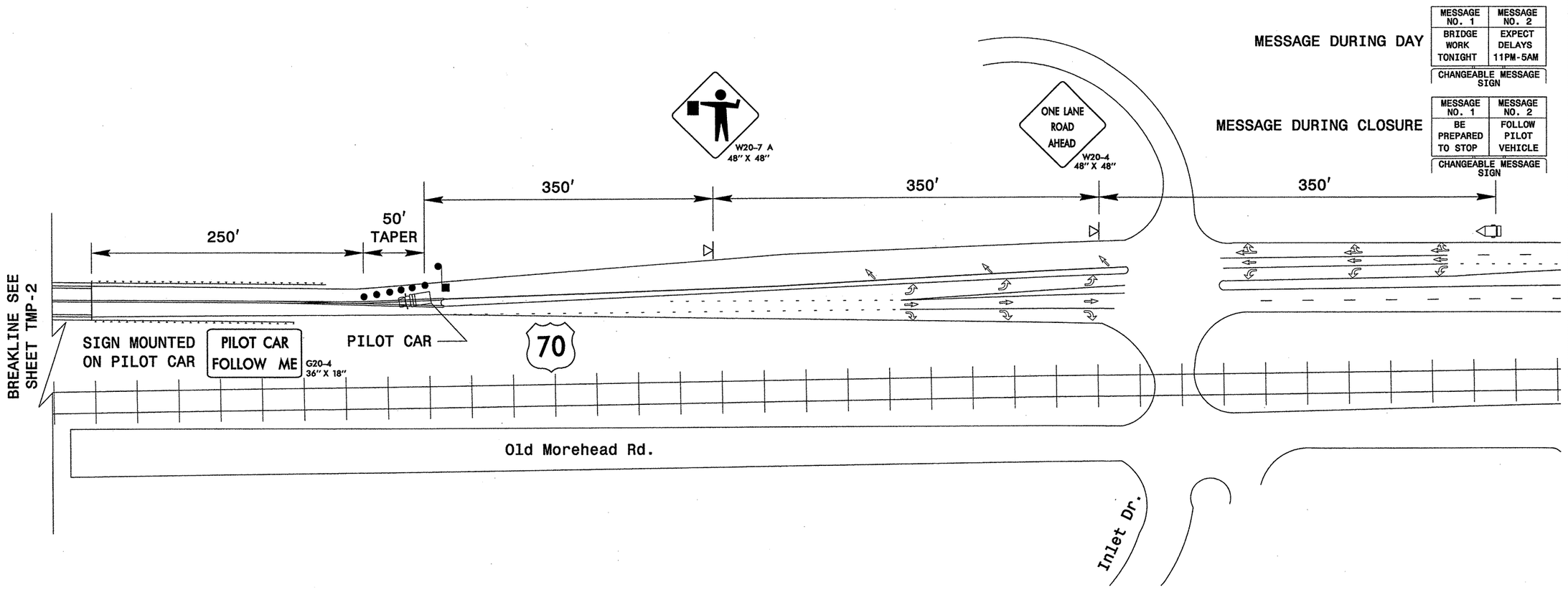
DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION * WORK ZONE TRAFFIC CONTROL

PILOT VEHICLE OPERATION DETAIL

2/16/2012
I:\projs\25l4545\radio island bmu-15110r\tmp\BMU15110R_TMP_2.dgn
odynskrg

PROJ. REFERENCE NO.	SHEET NO.
BMU-15110R	TMP-3

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



NOT TO SCALE

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037467 ENGINEER RICHARD A. ODYNSKI
2-16-12

DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION * WORK ZONE TRAFFIC CONTROL *

PILOT VEHICLE OPERATION DETAIL

2/16/2012
I:\projects\4545\radio island bmu-1511or\tmp\BMU1511OR_TMP_3.dgn
odynskra

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION	
GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR	
UNTREATED - EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95 EEM W RGW REV. 5-7-03 RWW W JTE
REV. 8-16-99 RWW W LES REV. 5-1-06 TLA W GM

30-NOV-2006 15:26
S:\Share\Structures Standards\Standards english 2006\sn_06.std
rblasette