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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.14	1	213

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
15BPR.14		CONSTRUCTION

PROJECT: 15BPR.14

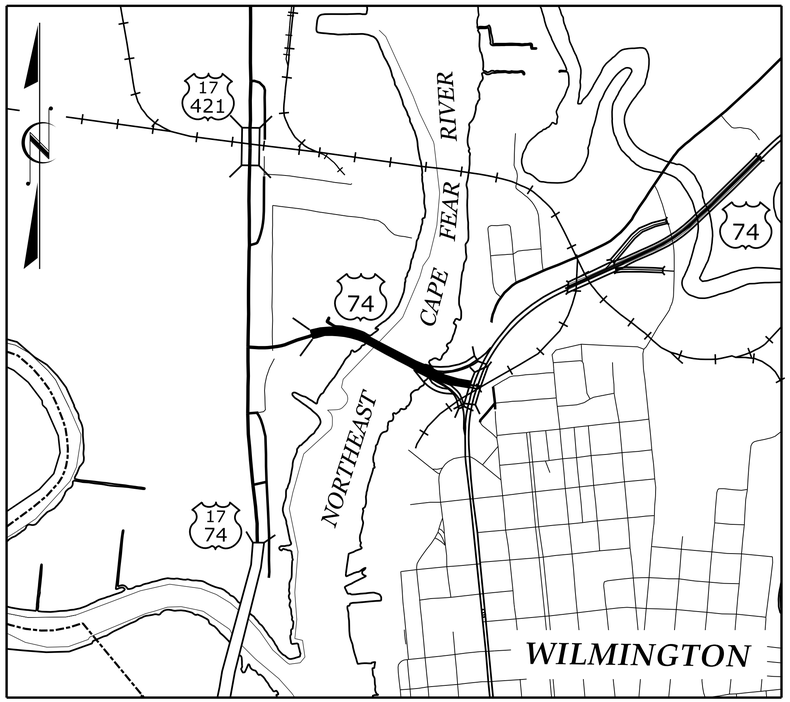
CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NEW HANOVER COUNTY

LOCATION: ISABEL HOLMES BASCULE BRIDGE ON US 74, NC 133 OVER NORTHEAST CAPE FEAR RIVER

TYPE OF WORK: BRIDGE PRESERVATION



VICINITY MAP

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

DESIGN DATA

LENGTH OF STRUCTURE = 0.437 MI

Prepared for the Office of:

DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR., RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

LETTING DATE:
FEBRUARY 19, 2019

Prepared in the Office of:

MODJESKI and MASTERS
Experience great bridges.

333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

JASON R. DOUGHTY, PE
DESIGN ENGINEER OF RECORD

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

DocuSigned by:
Jason R Doughty
5F73FA2DEA974E8...

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PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

DESIGNED BY:	C. CORMAN	DATE :	AUG 2018
DRAWN BY:	K. WHITE	DATE :	AUG 2018
CHECKED BY:	J. DOUGHTY	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SHEET INDEX

REVISIONS						SHEET NO.
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2			4			213

11/15/2018
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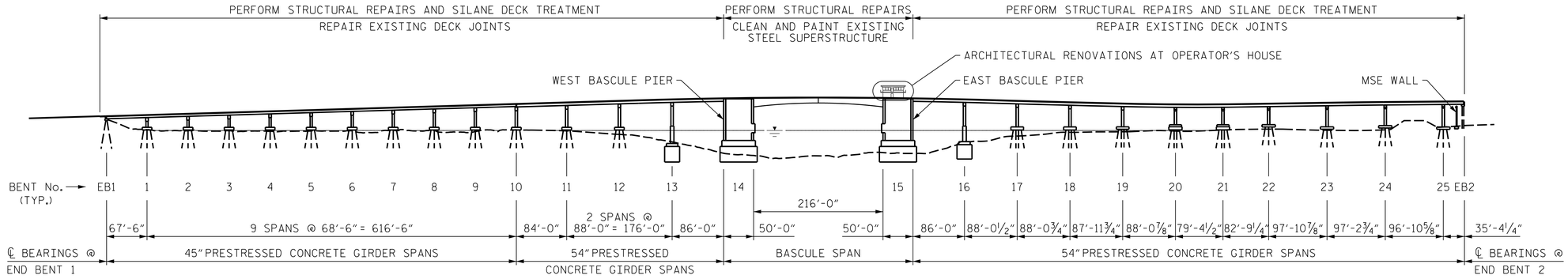
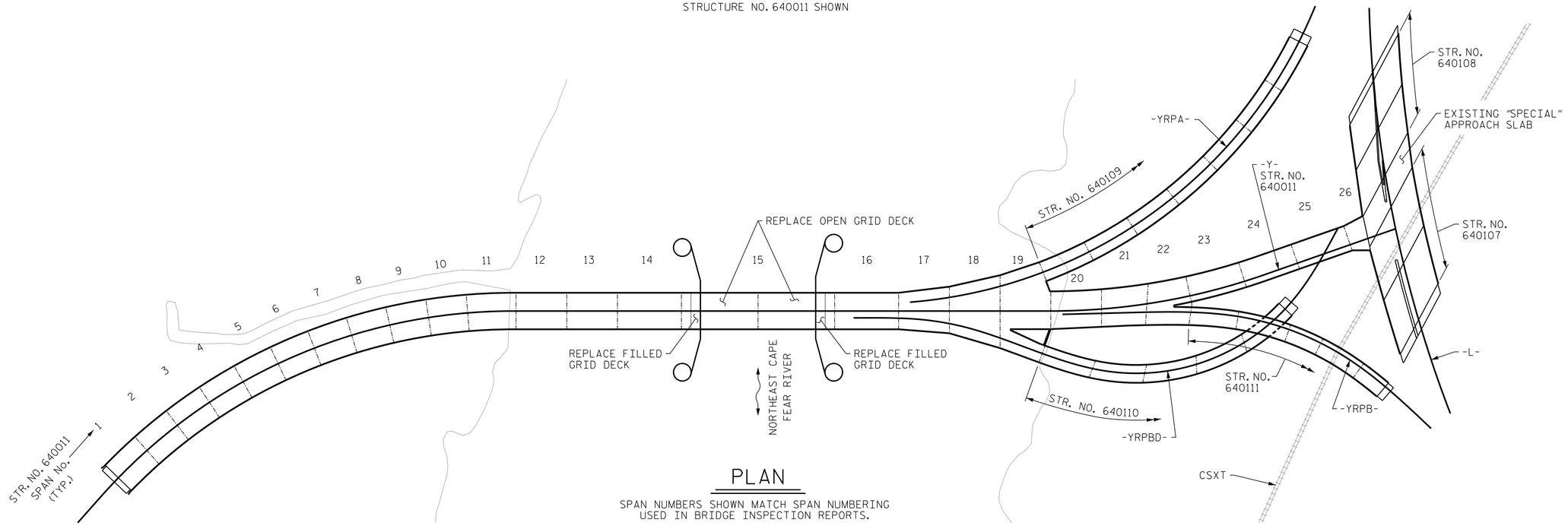


ELEVATION

STRUCTURE NO. 640011 SHOWN



PLAN

SPAN NUMBERS SHOWN MATCH SPAN NUMBERING USED IN BRIDGE INSPECTION REPORTS.

SCOPE OF WORK

STRUCTURAL:

1. REPLACE OPEN GRID DECK ON BASCULE SPAN.
2. REPLACE EXISTING FILLED GRID DECK AT ENDS OF BASCULE SPAN.
3. PLACE SILANE DECK TREATMENT ON APPROACH SPANS AND APPROACH SLAB.
4. REPLACE/REPAIR DECK EXPANSION JOINTS ON APPROACH SPANS AND ADJACENT STRUCTURES ON EAST SIDE OF RIVER.
5. PERFORM SUPERSTRUCTURE AND SUBSTRUCTURE REPAIRS AS SHOWN IN THE PLANS.
6. INSTALL CATHODIC PROTECTION MEASURES AS SHOWN IN THE PLANS.

MECHANICAL:

SEE "MECHANICAL SCOPE OF WORK" SHEET.

ELECTRICAL:

SEE "ELECTRICAL SCOPE OF WORK" SHEET.

CLEANING AND PAINTING:

EXISTING BASCULE SPAN STEEL SUPERSTRUCTURE SHALL BE CLEANED AND PAINTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

UTILITIES:

REPLACE EXISTING SANITARY SEWER LINE FROM OPERATOR HOUSE.

ARCHITECTURAL:

1. REPLACE OPERATOR'S HOUSE ROOF.
2. INSTALL NEW OPERATOR'S HOUSE INTERIOR FINISHES, PLUMBING, FIXTURES, LIGHTING, AND WINDOWS.
3. REPLACE OPERATOR'S HOUSE HVAC.
4. INSTALL NEW OPERATOR'S HOUSE FIRE ALARM SYSTEM.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL PLAN AND ELEVATION

DESIGNED BY:	J. DOUGHTY	DATE :	JULY 2018
DRAWN BY:	K. WHITE	DATE :	JULY 2018
CHECKED BY:	B. LOFLIN	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			213

11/12/2018
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TOTAL BILL OF MATERIAL

	SHOTCRETE REPAIRS	CONCRETE REPAIRS	REPAIRS TO PRESTRESSED CONCRETE GIRDERS	SPLICING OF PRESTRESSING STRAND	EPOXY PROTECTIVE COATING	CLASS II SURFACE PREPARATION	VOLUMETRIC MIXER	CONCRETE FOR DECK REPAIR	SHOTBLASTING BRIDGE DECK	SILANE DECK TREATMENT	CLEANING AND REPAINTING OF BRIDGE #11	PAINTING CONTAINMENT FOR BRIDGE #11	STRUCTURAL STEEL FOR REPAIRS
	CU. FT.	CU. FT.	CU. FT.	EACH	SQ. FT.	SQ. YD.	LUMP SUM	CU. FT.	SQ. YD.	SQ. YD.	LUMP SUM	LUMP SUM	LBS.
TOTAL	1,240	207	154	1	1,280	1.11	LUMP SUM	3.30	24,060	24,060	LUMP SUM	LUMP SUM	6,100

	EPOXY RESIN INJECTION	BRIDGE JOINT DEMOLITION	FOAM JOINT SEALS FOR PRESERVATION	ELASTOMERIC CONCRETE FOR PRESERVATION	EXPANSION JOINT SEAL REPAIR	REPLACEMENT OF OPEN STEEL GRID DECK	REPLACEMENT OF FILLED STEEL GRID DECK	MECHANICAL OPERATING MACHINERY	POLLUTION CONTROL	UNDER STRUCTURE WORK PLATFORM	BIRD DETERRENT SCREENING	PLASTIC GLAZING PANELS	OPERATOR HOUSE RENOVATION
	LIN. FT.	SQ. FT.	LIN. FT.	CU. FT.	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
TOTAL	12.5	1,160	2,940	290	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

	TRAFFIC GATE RELOCATION	PLATFORM EXTENSIONS	BRIDGE ELECTRICAL WORK	BRIDGE BACKUP GENERATOR	SUBMARINE CABLES	TRAFFIC GATES	VEHICLE SIGNAL HEAD (12", 3 SECTION)	BACKPLATE	NEW ELECTRICAL SERVICE	EMBEDDED GALVANIC ANODE	THERMAL SPRAYED ANODE	ASBESTOS ASSESSMENT	BRIDGE TENDER HOUSE SEWER LINE REPLACEMENT
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	EACH	EACH	EACH	EACH	EACH	SQ. FT.	LUMP SUM	LUMP SUM
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	9	2	2	1	2,370	2,440	LUMP SUM	LUMP SUM

LOCATION SKETCH

INFORMATION ON THE LOCATION SKETCH SHALL BE CONSIDERED GENERAL INFORMATION ONLY.

DESIGNED BY: J. BORUTA DATE : MAR 2018
DRAWN BY: K. WHITE DATE : MAR 2018
CHECKED BY: J. DOUGHTY DATE : NOV 2018
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE : NOV 2018

MODJESKI and MASTERS
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333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
1/17/2019
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TOTAL BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			213

1/16/2019
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GENERAL NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER. THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS.

EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS.

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION FOR SILANE DECK TREATMENT.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR SILANE DECK TREATMENT, SEE SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR CLASS II SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR EXPANSION JOINT SEAL REPAIR, SEE SPECIAL PROVISIONS.

FOR COAST GUARD COORDINATION, SEE SPECIAL PROVISIONS.

ACCESS TO OPERATOR'S HOUSE FOR BRIDGE TENDER SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

FOR MAINTENANCE OF WATER TRAFFIC, SEE SPECIAL PROVISIONS.

FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.

WORK ON BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE TO ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.

PRIOR TO BEGINNING WORK, CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPLETE SEQUENCE OF TASKS FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC.

ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR WORK IN, OVER, OR ADJACENT TO NAVIGABLE WATERS, SEE SPECIAL PROVISIONS.

FOR MECHANICAL OPERATING MACHINERY, SEE SPECIAL PROVISIONS.

FOR OPERATOR HOUSE RENOVATIONS, SEE ARCHITECTURAL DRAWINGS AND PROVISIONS. ALL WORK SHOWN ON ARCHITECTURAL DRAWINGS AND DESCRIBED IN THE ARCHITECTURAL PROVISIONS SHALL BE PAID FOR AT THE LUMP SUM PRICE BID FOR OPERATOR HOUSE RENOVATIONS.

FOR CLEANING AND REPAINTING BRIDGE 11, SEE SPECIAL PROVISIONS FOR PAINTING EXISTING STRUCTURE.

FOR REPLACEMENT OF OPEN STEEL GRID DECK, SEE SPECIAL PROVISIONS.

FOR REPLACEMENT OF FILLED STEEL GRID DECK, SEE SPECIAL PROVISIONS.

FOR STRUCTURAL STEEL FOR REPAIRS, SEE SPECIAL PROVISIONS.

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 PRICES FOR ITEMS ASSOCIATED WITH THE CLEANING AND REPAINTING OF BRIDGE #11.

FOR UNDER STRUCTURE WORK PLATFORM, SEE SPECIAL PROVISIONS.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

FOR BIRD DETERRENT SCREENING, SEE SPECIAL PROVISIONS.

FOR PLASTIC GLAZING PANELS, SEE SPECIAL PROVISIONS.

FOR PLATFORM EXTENSIONS, SEE SPECIAL PROVISIONS.

FOR BRIDGE ELECTRICAL WORK, SEE SPECIAL PROVISIONS.

FOR BRIDGE BACKUP GENERATOR, SEE SPECIAL PROVISIONS.

FOR NEW ELECTRICAL SERVICE, SEE SPECIAL PROVISIONS FOR BRIDGE BACKUP GENERATOR.

FOR SUBMARINE CABLES, SEE SPECIAL PROVISIONS.

FOR TRAFFIC GATES AND TRAFFIC GATE RELOCATION, SEE SPECIAL PROVISIONS FOR TRAFFIC GATES.

FOR THERMAL SPRAYED ANODE, SEE SPECIAL PROVISIONS.

FOR EMBEDDED GALVANIC ANODES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

FOR BRIDGE TENDER HOUSE SEWER LINE REPLACEMENT, SEE SPECIAL PROVISIONS.

SUGGESTED CONSTRUCTION SEQUENCE FOR MOVABLE SPAN WORK:

DUE TO THE NATURE OF THIS COMPREHENSIVE REHABILITATION PROJECT, THE FOLLOWING GENERAL APPROACH TO ACCOMPLISH THE WORK IS PROVIDED FOR CONSIDERATION BY THE CONTRACTOR. AN OVERALL SEQUENCE OF CONSTRUCTION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO COMMENCING WORK. THE SUGGESTED CONSTRUCTION SEQUENCE SHOWN BELOW MAY BE ALTERED, IF APPROVED BY THE ENGINEER, TO SUIT CONTRACTOR'S PREFERENCE AND TO ACCOMMODATE NCDOT AND USCG REQUIREMENTS.

STEP 1: PERFORM COUNTERWEIGHT BALANCE ADJUSTMENTS (MECHANICAL) AND ASSOCIATED LOCALIZED CLEANING AND PAINTING AT GIRDERS.

STEP 2: PERFORM LIVE LOAD BEARING ANCHOR BOLT REPLACEMENTS. THIS WORK CAN BE PERFORMED CONCURRENTLY WITH THE COUNTERWEIGHT BALANCE ADJUSTMENTS AND SPAN LOCK ACTUATOR TEMPORARY REMOVAL.

STEP 3: THE FOLLOWING ACTIVITIES MAY BE PERFORMED CONCURRENTLY, BUT ONLY AFTER STEPS 1 AND 2 ARE COMPLETE:

BASCULE SPAN STRUCTURAL STEEL REPAIRS (STRUCTURAL)

GRID DECK REPLACEMENT (STRUCTURAL)

COUPLING REHABILITATION (MECHANICAL)

REPLACEMENT OF AUXILIARY AND FIRST MAIN DRIVES (MECHANICAL)

INSTALLATION OF TEMPORARY OPERATING SYSTEM (ELECTRICAL)

SEVERAL STRUCTURAL STEEL REPAIRS REQUIRE LIVE LOAD TO BE SHIFTED WHILE THE REPAIR IS PERFORMED. STRUCTURAL STEEL REPAIRS SHALL BE SEQUENCED WITH THE APPROPRIATE STAGES OF THE GRID DECK REPLACEMENT.

STRUCTURAL STEEL REPAIR TYPE 3 CANNOT COMMENCE UNTIL THE EXISTING ELECTRICAL CONDUIT IN THE VICINITY OF THE REPAIR IS RELOCATED AND THE EXISTING FILLED GRID DECK IS REMOVED. REFER TO THE ELECTRICAL DRAWINGS FOR CONDUIT RELOCATION DETAILS.

STEP 4: PERFORM ELECTRICAL SERVICE CHANGE-OVER.

STEP 5: REPLACE SECOND MAIN DRIVE.

BASCULE SPAN STRUCTURAL STEEL REPAIRS AND GRID DECK REPLACEMENT OPERATIONS MAY OVERLAP AND BE ON-GOING DURING STEPS 4 AND 5.

STEP 6: PERFORM SHIMMING OF LIVE LOAD BEARINGS AND SPAN LOCKS. THIS WORK SHALL OCCUR AFTER BASCULE SPAN STRUCTURAL STEEL REPAIRS AND THE GRID DECK REPLACEMENT IS COMPLETE.

STEP 7: PERFORM BASCULE SPAN CLEANING AND PAINTING.

CONTRACTOR SHALL PROTECT EXISTING AND NEW MECHANICAL AND ELECTRICAL EQUIPMENT FROM CLEANING AND PAINTING OPERATIONS (WASTE, OVERSPRAY, ETC.). MEANS AND METHODS OF PROTECTION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

AIR BUFFERS SHALL BE REMOVED PRIOR TO PAINTING. REFER TO THE MECHANICAL SHEETS.

STEP 8: INSTALL REPLACEMENT SUBMARINE CABLES.

STEP 9: PERFORM ELECTRICAL CONTROL CHANGE-OVER.

ASSUMPTIONS FOR BRIDGE OPERATION DISRUPTIONS:

THE ASSUMPTIONS SUMMARIZED BELOW ARE SUBJECT TO CHANGE BASED ON FINAL PERMITTED BRIDGE OPERATION DISRUPTIONS AUTHORIZED BY THE USCG AND COORDINATED BY NCDOT. TYPE 1 AND 2 DISRUPTIONS ARE PRESENTED AS SCENARIOS POTENTIALLY AGREEABLE TO USCG.

TYPE 1:

MON.-FRI.: NO BRIDGE OPENINGS 6AM TO 6PM, BRIDGE OPENS ON THE HOUR IF REQUEST IS MADE 6PM TO 6AM.

SAT.-SUN.: BRIDGE OPENS ON THE HOUR, EACH DAY, IF REQUEST IS MADE 24 HOURS IN ADVANCE.

TYPE 2:

MON.-FRI.: BRIDGE OPENS ONE TIME AT NOON FROM 6AM TO 6PM, BRIDGE OPENS ON THE HOUR IF REQUEST IS MADE 6PM TO 6AM.

SAT.-SUN.: BRIDGE OPENS ON THE HOUR, EACH DAY, IF REQUEST IS MADE 24 HOURS IN ADVANCE.

BASED ON THESE TWO TYPES OF BRIDGE OPERATION DISRUPTION, IT IS SUGGESTED THAT THE FOLLOWING STEPS IN THE CONSTRUCTION SEQUENCE BE PERFORMED USING THE DISRUPTION TYPE LISTED:

PERFORM STEPS 1, 2, AND 3 USING TYPE 1 BRIDGE OPERATION DISRUPTION.

PERFORM STEPS 4, 5, AND 6 USING TYPE 2 BRIDGE OPERATION DISRUPTION.

PERFORM STEPS 7 AND 8 USING TYPE 1 BRIDGE OPERATION DISRUPTION.

PERFORM STEP 9 USING TYPE 2 BRIDGE OPERATION DISRUPTION.

CONTRACTOR SHALL USE A CLEANING AND PAINTING ENCLOSURE THAT WILL ALLOW THE BASCULE SPAN TO REMAIN FULLY OPERATIONAL.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

DESIGNED BY:	J. BORUTA	DATE :	MAR 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. DOUGHTY	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

MODJESKI and MASTERS
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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

1/17/2019

DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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GENERAL NOTES

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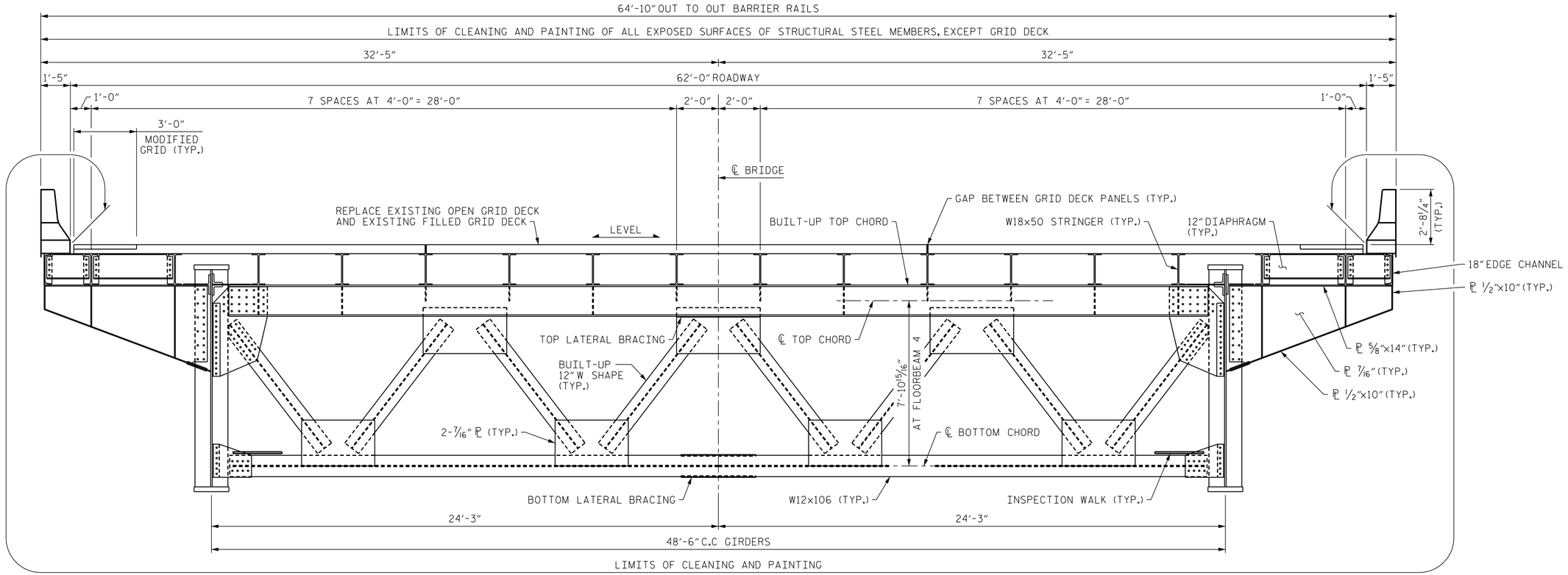

BASCULE SPAN TYPICAL SECTION

FLOORBEAM 4 SHOWN, SECTION AT OTHER FLOORBEAMS SIMILAR

CLEANING AND PAINTING NOTES:

ALL STRUCTURAL STEEL LOCATED WITHIN THE LIMITS OF THE BASCULE SPAN SHALL BE CLEANED AND PAINTED, INCLUDING THE EXTERIOR FACES OF THE EXISTING STEEL BARRIER RAILS AND THE DRAINAGE TROUGHS AT THE JOINTS. FOR CLEANING AND REPAINTING BRIDGE NO. 11, SEE SPECIAL PROVISIONS FOR PAINTING EXISTING STRUCTURE.

CLEANING AND PAINTING OPERATIONS SHALL BE COORDINATED WITH STRUCTURAL STEEL REPAIRS AND GRID DECK REPLACEMENT OPERATIONS. CONTRACTOR SHALL SUBMIT AN OVERALL CONSTRUCTION SEQUENCE TO THE ENGINEER FOR REVIEW PRIOR TO BEGINNING OF CONSTRUCTION.

CONTAINMENT AND ENCLOSURE SYSTEMS SHALL BE CAPABLE OF ACCOMMODATING OPENING AND CLOSING OF THE BASCULE SPAN.

MACHINERY PROTECTION SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF CLEANING AND PAINTING OPERATIONS. SUBMIT PROTECTION PLAN FOR APPROVAL BY ENGINEER. PROVIDE ACCESS TO ENGINEER AFTER PROTECTION IS IN PLACE AND BEFORE CLEANING AND PAINTING. AFTER CLEANING AND PAINTING, BLOW DOWN AND VACUUM ALL DEBRIS PRIOR TO REMOVING PROTECTION.

PRIOR TO THE WORK, SPAN BALANCE CHANGES AND WIND LOADING CHARACTERISTICS FOR ANY CONTAINMENT SYSTEM DETAILS SHALL BE CALCULATED BY THE CONTRACTOR TO SHOW ADDITIONAL LOADING ON THE SPAN DRIVE EQUIPMENT AND SUBMITTED FOR REVIEW AND APPROVAL BY ENGINEER.

NOTES:

FOR GRID DECK REPLACEMENT DETAILS, SEE "GRID DECK REPLACEMENT" SHEETS.

FOR STRUCTURAL STEEL REPAIRS ON THE BASCULE SPAN, REFER TO "BASCULE SPAN STRUCTURAL STEEL REPAIR LOCATIONS" SHEETS.

REFER TO TRAFFIC MANAGEMENT PLANS FOR TRAFFIC PHASING AND WORK ZONE INFORMATION.

FOR MECHANICAL OPERATING MACHINERY, SEE SPECIAL PROVISIONS.

FOR MEMBER SIZES AND DIMENSIONS AT OTHER FLOORBEAMS, SEE ORIGINAL STEEL SHOP DRAWINGS.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

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BASCULE SPAN
TYPICAL SECTION

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			213

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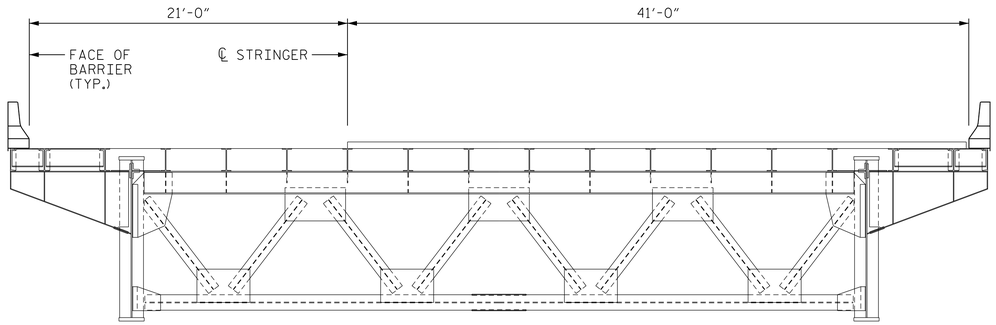
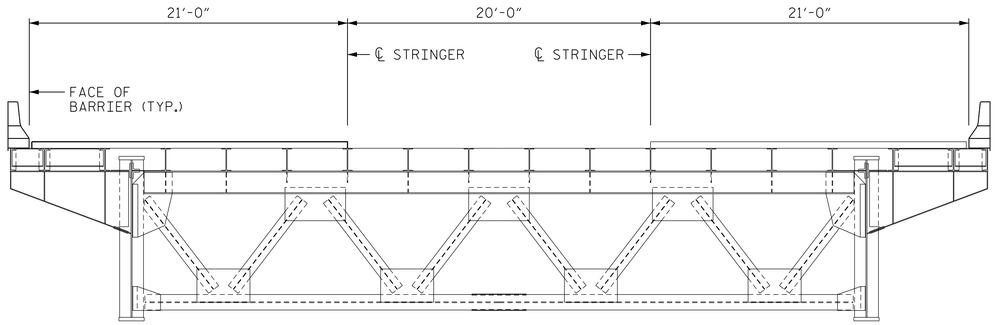
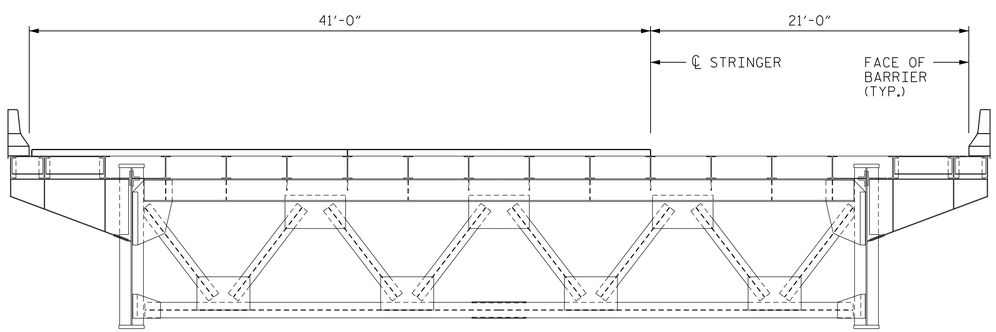


NORTH PANELS



CENTRAL PANELS



SOUTH PANELS

NOTES:

COORDINATE CONSTRUCTION OF GRID DECK REPLACEMENT WITH TRAFFIC MANAGEMENT PLANS.

CONTRACTOR SHALL SUBMIT A CONSTRUCTION SEQUENCE TO THE ENGINEER FOR REVIEW PRIOR TO REMOVING ANY EXISTING GRID DECK. ANTICIPATED CONSTRUCTION SEQUENCE SHALL BE SHOWN ON GRID DECK SHOP DRAWINGS.

TRAFFIC CONTROL DEVICES AND WORK ZONE PROTECTION MATERIALS MAY REQUIRE REMOVAL AND REINSTALLATION TO FACILITATE BRIDGE OPENINGS.

STRUCTURAL STEEL REPAIRS TO BE PERFORMED ON THE BASCULE SPAN FLOOR SYSTEM SHALL BE COORDINATED WITH THE GRID DECK REPLACEMENT OPERATION.

GRID DECK REPLACEMENT AND ASSOCIATED TRAFFIC MANAGEMENT PLAN SHALL BE COORDINATED WITH OTHER WORK ON THE PROJECT, INCLUDING BUT NOT LIMITED TO, PLACEMENT OF SILANE DECK SEALER, DECK EXPANSION JOINT RECONSTRUCTION, AND CLEANING AND PAINTING OPERATIONS.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

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BASCULE SPAN

PANEL LAYOUT GRID DECK REPLACEMENT

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2			4			213

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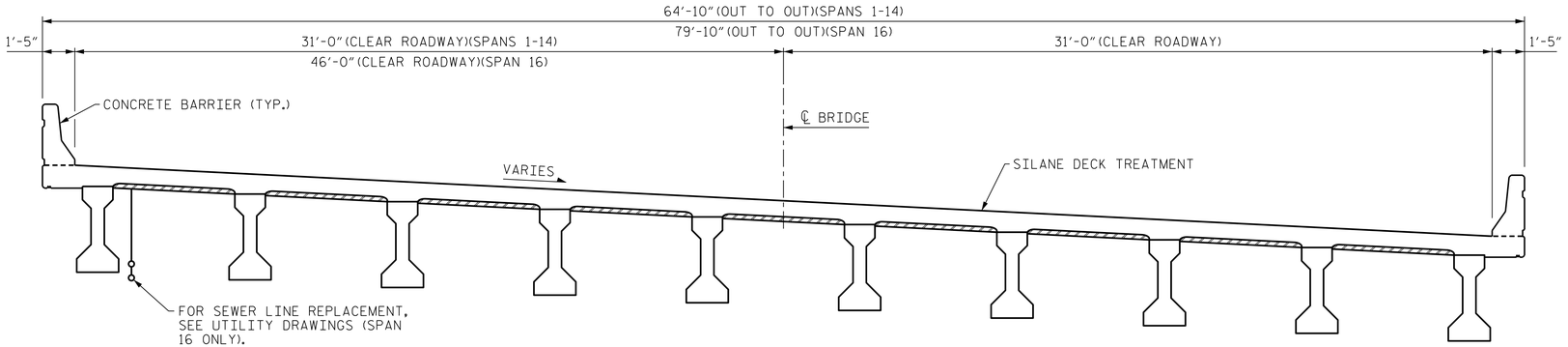


TYPICAL SECTION - SPANS 1 THROUGH 14, 16

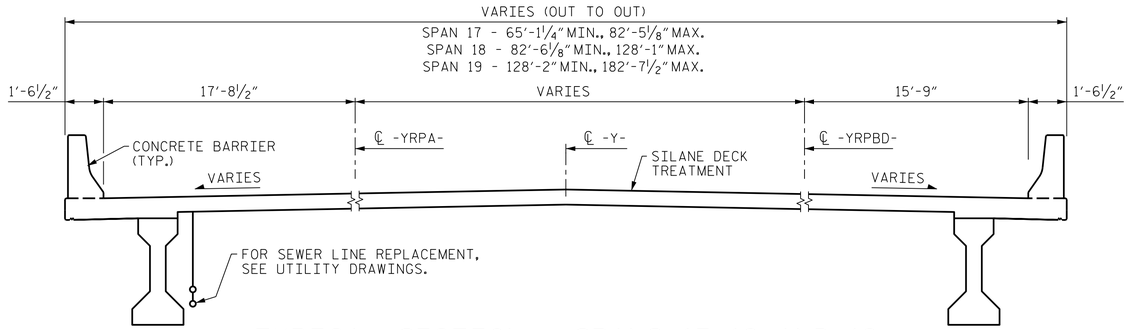
FIXED BASCULE PIER SPANS SIMILAR.

NOTES:

REFER TO TRANSPORTATION MANAGEMENT PLANS FOR TRAFFIC PHASING AND WORK ZONE INFORMATION.

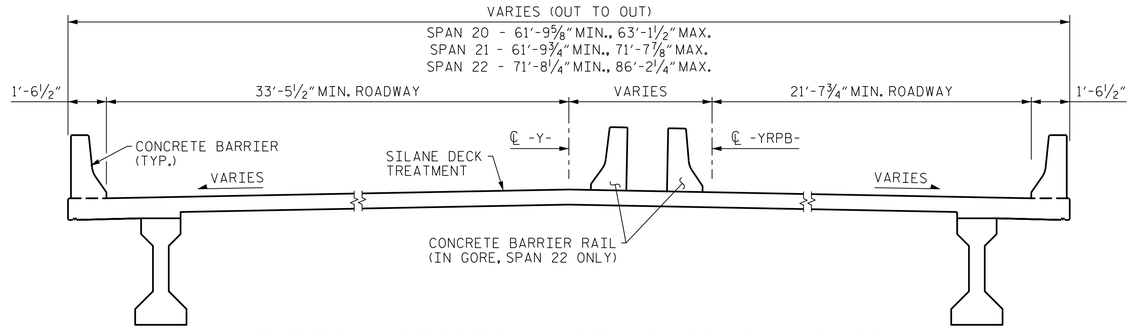
FOR GIRDER AND DIAPHRAGM REPAIRS ON THE APPROACH SPANS, REFER TO "GIRDER AND DIAPHRAGM REPAIRS" SHEETS.

DECK DRAINS NOT SHOWN.

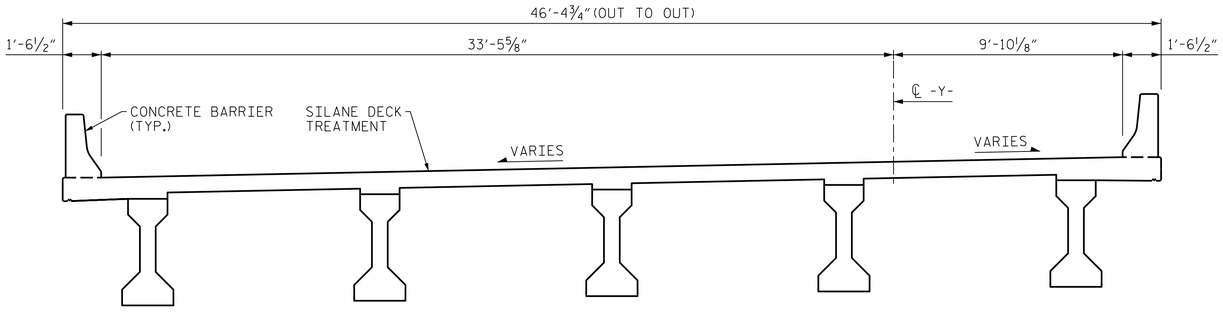


TYPICAL SECTION - SPANS 17, 18 AND 19

BARRIER IN SPAN 19 GORE AREA NOT SHOWN.



TYPICAL SECTION - SPANS 20, 21 AND 22



TYPICAL SECTION - SPANS 23, 24 AND 25

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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APPROACH SPANS

TYPICAL SECTION AND SILANE DECK TREATMENT

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11/15/2018

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CHECKED BY:	B. LOFLIN	DATE : AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE : NOV 2018

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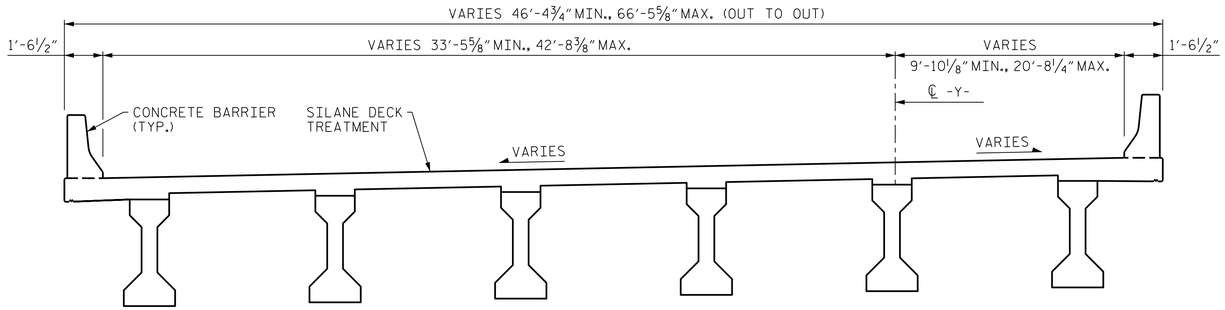
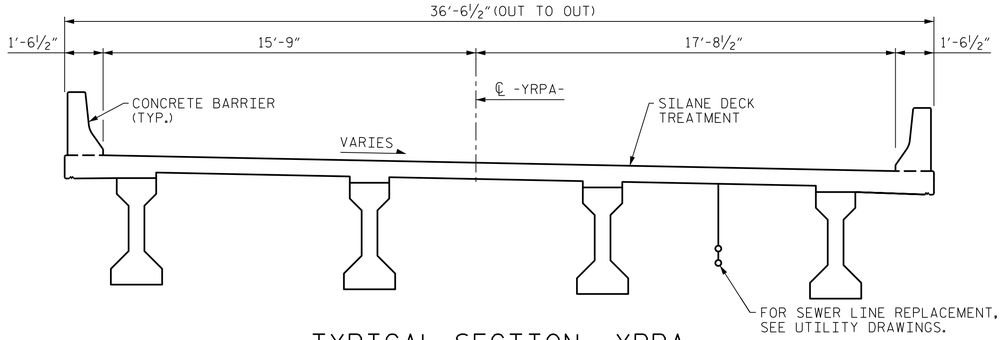
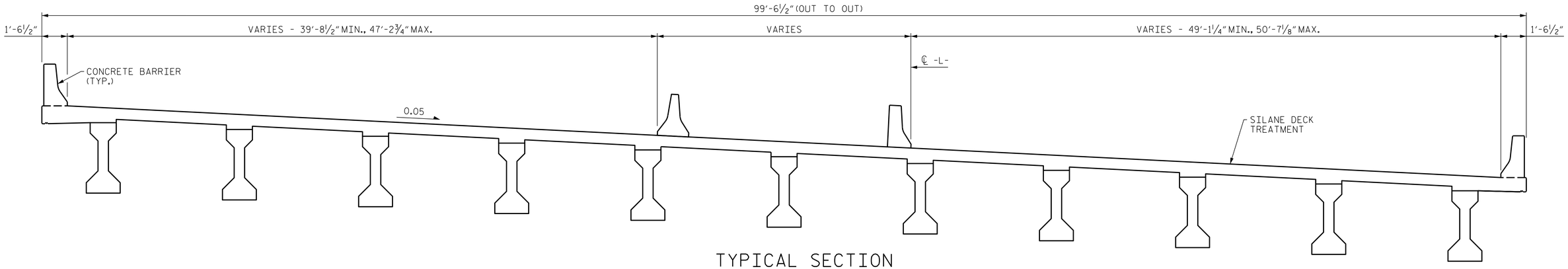


TYPICAL SECTION - SPAN 26

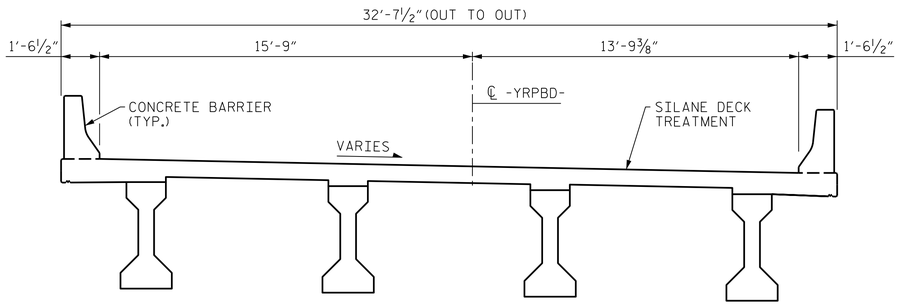


TYPICAL SECTION -YRPA-

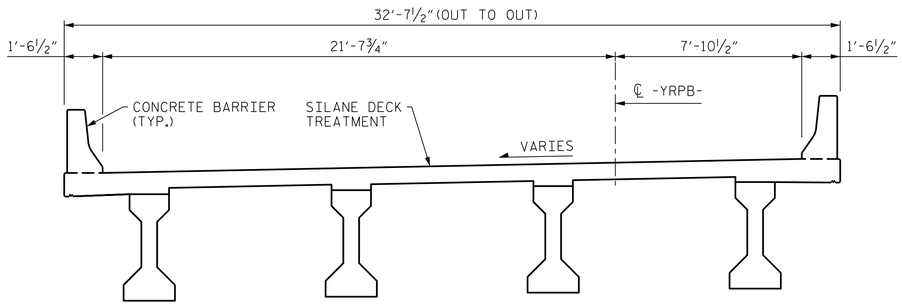


TYPICAL SECTION

BRIDGE No. 108 SHOWN, BRIDGE No. 107 SIMILAR



TYPICAL SECTION -YRPBD-



TYPICAL SECTION -YRPB-

NOTES:

FOR TYPICAL SECTION AND AND SILANE DECK TREATMENT NOTES, SEE SHEET 1 OF 2.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

TYPICAL SECTION AND SILANE DECK TREATMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	J. BORUTA	DATE :	MAR 2018
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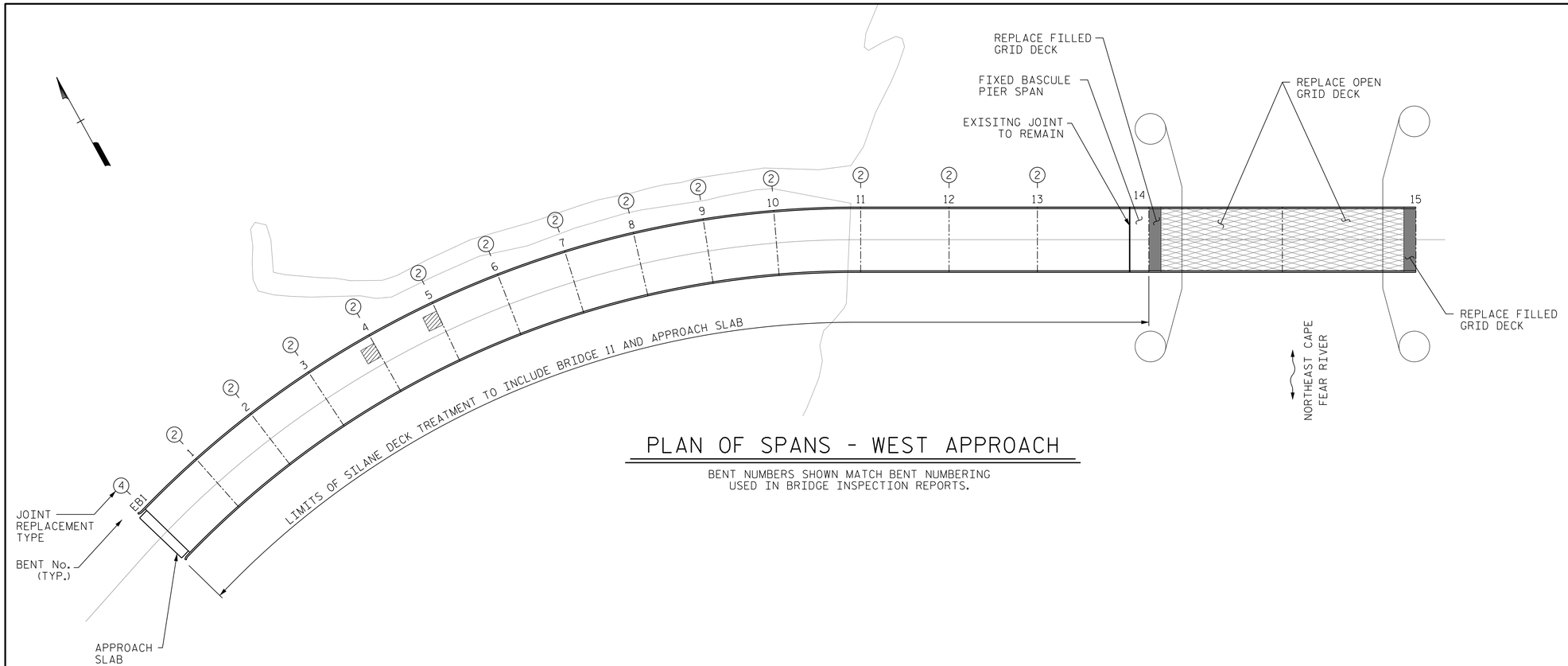

PLAN OF SPANS - WEST APPROACH

BENT NUMBERS SHOWN MATCH BENT NUMBERING USED IN BRIDGE INSPECTION REPORTS.

WEST APPROACH QUANTITIES

	ESTIMATE	ACTUAL
CLASS II SURFACE PREPARATION	1.11 SY	.
CONCRETE FOR DECK REPAIR	3.30 CF	.
SHOTBLASTING BRIDGE DECK	7,240 SY	.
SILANE DECK TREATMENT	7,240 SY	.
FOAM JOINT SEALS FOR PRESERVATION	890 LF	.
BRIDGE JOINT DEMOLITION	0 SF	.
ELASTOMERIC CONCRETE FOR PRESERVATION	0 CF	.

CLASS II SURFACE PREPARATION AND CONCRETE FOR DECK REPAIR SHALL BE COMPLETE PRIOR TO SHOTBLAST OF THAT PORTION OF BRIDGE DECK SURFACE FOR PREPARATION FOR SILANE DECK TREATMENT.

CLASS II SURFACE PREPARATION AND CONCRETE FOR DECK REPAIR

SHOTBLASTING AND SILANE DECK TREATMENT

NOTES:

FOR JOINT REPLACEMENT DETAILS, SEE SHEET S-12.

SURFACE PREPARATION OPERATIONS SHALL BE COORDINATED WITH TRAFFIC MANAGEMENT PLANS.

FOR FILLED AND OPEN GRID DECK, SEE GRID DECK DETAILS SHEETS.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

SURFACE PREPARATION

WEST APPROACH

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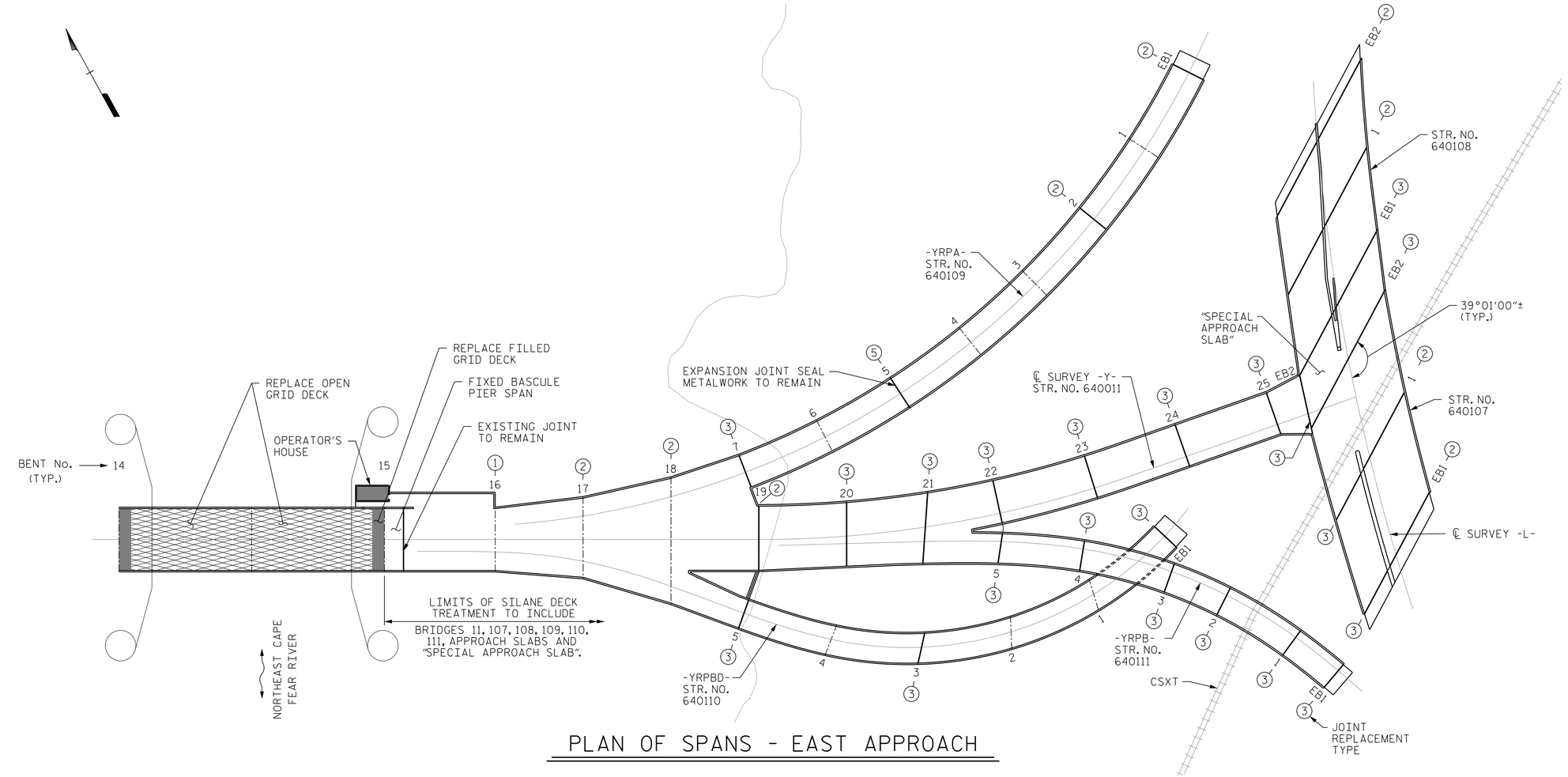

PLAN OF SPANS - EAST APPROACH

EAST APPROACH QUANTITIES

	ESTIMATE	ACTUAL
CLASS II SURFACE PREPARATION	0 SY	.
CONCRETE FOR DECK REPAIR	0 CF	.
SHOTBLASTING BRIDGE DECK	16,820 SY	.
SILANE DECK TREATMENT	16,820 SY	.
FOAM JOINT SEALS FOR PRESERVATION	2050 LF	.
BRIDGE JOINT DEMOLITION	1160 SF	.
ELASTOMERIC CONCRETE FOR PRESERVATION	290 CF	.

CLASS II SURFACE PREPARATION AND CONCRETE FOR DECK REPAIR SHALL BE COMPLETE PRIOR TO SHOTBLAST OF THAT PORTION OF BRIDGE DECK SURFACE FOR PREPARATION FOR SILANE DECK TREATMENT.

CLASS II SURFACE PREPARATION AND CONCRETE FOR DECK REPAIR

SHOTBLASTING AND SILANE DECK TREATMENT

NOTES:

FOR JOINT REPLACEMENT DETAILS, SEE SHEET S-12.

SURFACE PREPARATION OPERATIONS SHALL BE COORDINATED WITH TRAFFIC MANAGEMENT PLANS.

FOR FILLED GRID AND OPEN GRID, SEE GRID DECK DETAILS SHEETS.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 2 OF 2

DESIGNED BY: J. BORUTA DATE : MAR 2018
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APPROACH SPANS

SURFACE PREPARATION
EAST APPROACH

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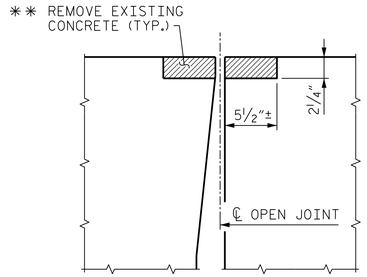
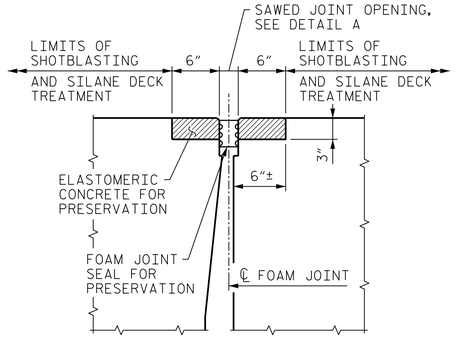


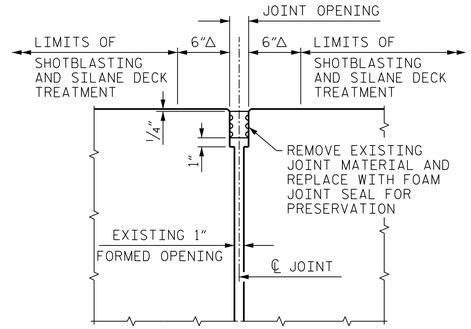


EXISTING

PROPOSED

JOINT TYPE (1)

BRIDGE 11: BENT 16



JOINT TYPE (2)

BRIDGE 11: BENTS 1-13, 17, 18, 19
BRIDGE 107: EB1-EAST, BENT 1-EAST
BRIDGE 108: BENT 1, EB2
BRIDGE 109: EB1, BENT 2

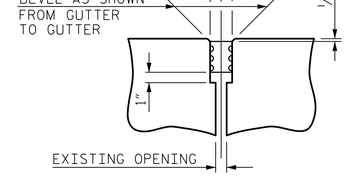
△ REDUCE TO 0" IF NO EXISTING ELASTOMERIC CONCRETE

EXISTING

PROPOSED

JOINT TYPE (3)

BRIDGE 11: BENTS 20-25, EB 2
BRIDGE 107: EB1-WEST, BENT 1-WEST, EB2
BRIDGE 108: EB1
BRIDGE 109: BENT 7
BRIDGE 110: EB1, BENTS 3, 5
BRIDGE 111: EB1, BENTS 1-5



DETAIL A

* SAWED OPENING SHALL BE THE GREATER OF THE OPENING SHOWN IN THE TABLE OR THE EXISTING JOINT OPENING PLUS ½".

UNCOMPRESSED SEAL WIDTH SHALL BE ½" LARGER THAN THE SAWED JOINT OPENING OR AS RECOMMENDED BY THE JOINT SEAL MANUFACTURER.

JOINT OPENINGS - BRIDGE 11 -

BENT NO.	JOINT OPENING @ 70°F [IN]	UNCOMPRESSED SEAL WIDTH [IN]
EB 1	1¾"	2¼"
1	1¾"	2¼"
2	1¾"	2¼"
3	1⅞"	2½"
4	1¾"	2¼"
5	1¾"	2¼"
6	1⅝"	2¼"
7	2"	2½"
8	1⅞"	2½"
9	1½"	2"
10	2"	2½"
11	1⅞"	2½"
12	1⅞"	2½"
13	1⅝"	2¼"
16	1¾"	2¼"
17	1¾"	2¼"
18	1¾"	2¼"
19	2¾"	3¼"
20	1¾"	2¼"
21	1¾"	2¼"
22	2½"	3"
23	2"	2½"
24	1¾"	2¼"
25	1¾"	2¼"
EB 2	2¼"	2¾"

JOINT OPENINGS - BRIDGE 107 -

BENT NO.	JOINT OPENING @ 70°F [IN]	UNCOMPRESSED SEAL WIDTH [IN]
EB1	1¾"	2¼"
1	1¾"	2¼"
EB2	1¾"	2¼"

JOINT OPENINGS - BRIDGE 108 -

BENT NO.	JOINT OPENING @ 70°F [IN]	UNCOMPRESSED SEAL WIDTH [IN]
EB1	1¾"	2¼"
1	1¾"	2¼"
EB2	1¾"	2¼"

JOINT OPENINGS - BRIDGE 109 -

BENT NO.	JOINT OPENING @ 70°F [IN]	UNCOMPRESSED SEAL WIDTH [IN]
EB1	2¼"	2¾"
2	4¼"	4¾"
5	2¾"	N/A
7	1¾"	2¼"

JOINT OPENINGS - BRIDGE 110 -

BENT NO.	JOINT OPENING @ 70°F [IN]	UNCOMPRESSED SEAL WIDTH [IN]
EB1	2½"	3"
3	2½"	3"
5	2½"	3"

JOINT OPENINGS - BRIDGE 111 -

BENT NO.	JOINT OPENING @ 70°F [IN]	UNCOMPRESSED SEAL WIDTH [IN]
EB1	1¾"	2¼"
1	1¾"	2¼"
2	2"	2½"
3	1¾"	2¼"
4	1¾"	2¼"
5	2⅞"	3¼"

NOTES:

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

EXISTING JOINT AND ADJACENT CONCRETE REMOVAL SHALL BE IN ACCORDANCE WITH BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

JOINT REPLACEMENT OPERATIONS SHALL BE COORDINATED WITH TRAFFIC MANAGEMENT PLANS.

** PROVIDE 1" DEEP SAWCUT AROUND THE PERIMETER OF AREAS NOTED FOR BRIDGE DECK REMOVAL.

CONTRACTOR SHALL FIELD MEASURE JOINTS AND JOINT OPENINGS AND COORDINATE WITH JOINT MANUFACTURER PRIOR TO ORDERING JOINT SEALS OR SAWING OPENINGS.

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

JOINT REPLACEMENT DETAILS

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
1/02/2019
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY: C. CORMAN/J. BORUTA DATE : APR 2018
DRAWN BY: K. WHITE DATE : APR 2018
CHECKED BY: B. LOFLIN DATE : AUG 2018
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE : NOV 2018

1/2/2019
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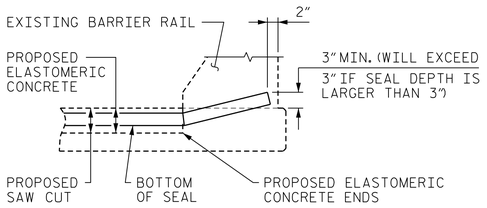
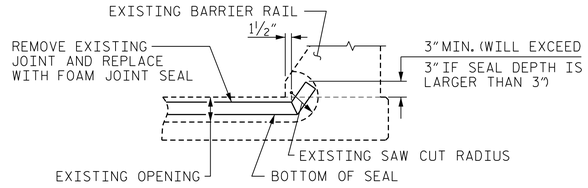


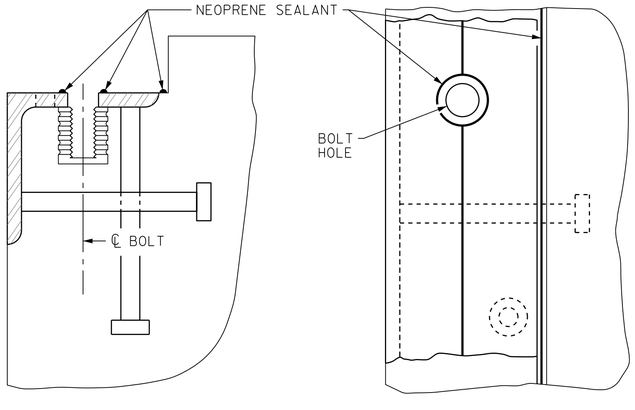
SECTION AT BARRIER RAIL

BRIDGE 11: BENTS 19-25, EB2
BRIDGE 107: EB1, BENT 1, EB2
BRIDGE 108: EB1, BENT 1, EB2
BRIDGE 109: EB1, BENT 7



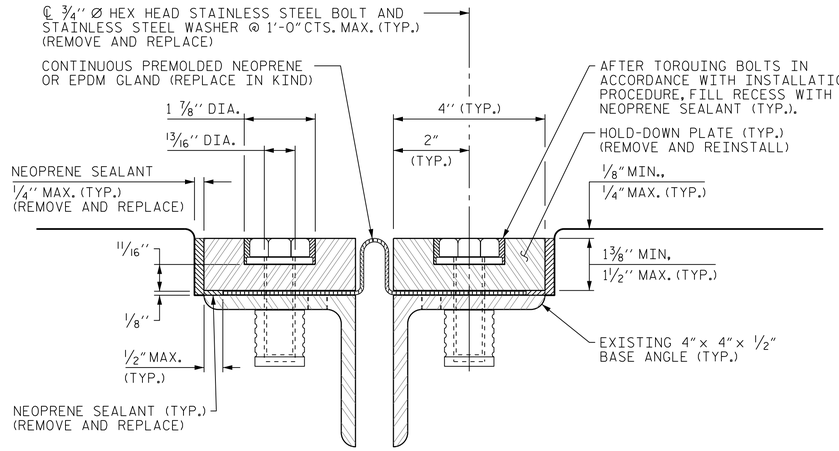
SECTION AT BARRIER RAIL

BRIDGE 11: EB1, BENTS 1-13, 16, 17, 18

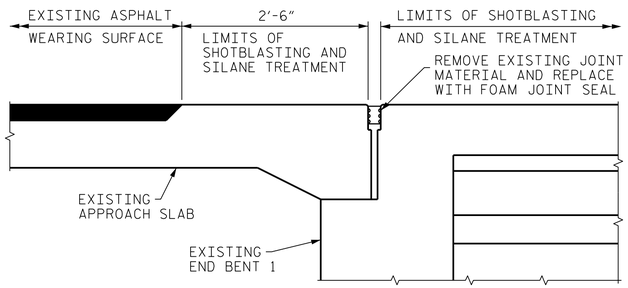


CROSS SECTION PLAN VIEW

INSTALLATION SKETCH

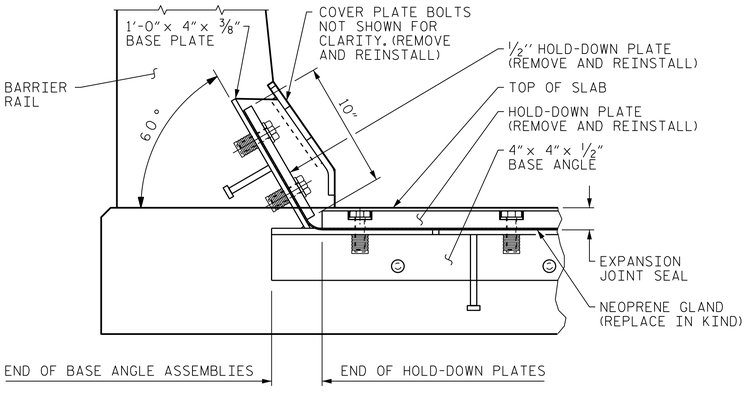


SECTION THROUGH JOINT



JOINT TYPE (4)

BRIDGE 11: EB 1



SECTION THRU RAIL NORMAL TO JOINT

INSTALLATION PROCEDURE:

1. REMOVE EXISTING HOLD-DOWN PLATES AND NEOPRENE GLAND.
2. REMOVE THE EXISTING NEOPRENE SEALANT AND CLEAN EXISTING BOLT HOLES AND ANGLES.
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED ⅞" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES AND THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, COMPLETELY FILL THESE RECESSES WITH NEOPRENE SEALANT.

JOINT TYPE (5)

BRIDGE 109: BENT 5

REPLACE NEOPRENE GLAND IN EXISTING EXPANSION JOINT SEAL

NOTES:

FOR EXPANSION JOINT SEAL REPAIR, SEE SPECIAL PROVISIONS.

ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

FOR ADDITIONAL NOTES, SEE SHEET 1 OF 2.

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 2 OF 2

DESIGNED BY:	J. BORUTA	DATE :	JULY 2018
DRAWN BY:	K. WHITE	DATE :	JULY 2018
CHECKED BY:	B. LOFLIN	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
APPROACH SPANS
JOINT REPLACEMENT DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			213

11/12/2018
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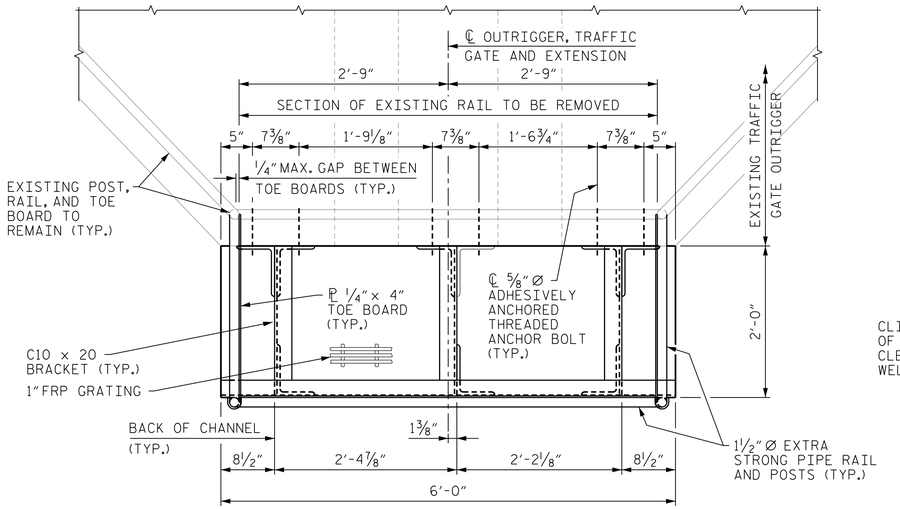
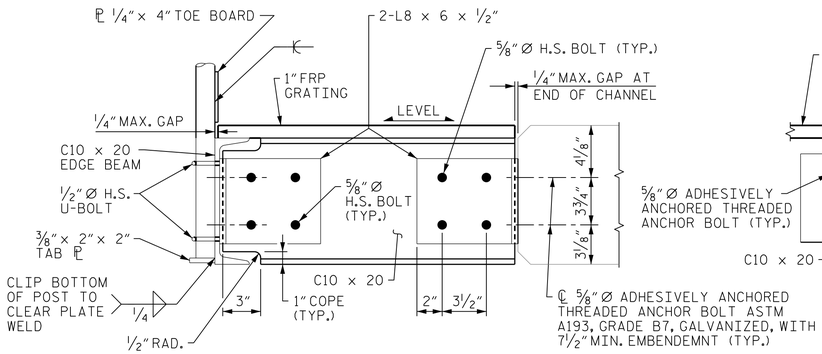
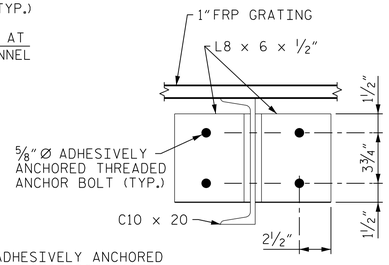


PLAN



DETAIL "B"



SECTION A-A

NOTES:

BOLTED CONNECTIONS SHALL BE ⅝" Ø ASTM F3125, GRADE A325 H.S. BOLTS GALVANIZED (EXCEPT AS NOTED).

STRUCTURAL STEEL SHALL CONFORM TO ASTM A709 GRADE 50, GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

RAILING SYSTEM SHALL BE ASTM A53, EXTRA STRONG GALVANIZED PIPE. ALL EXPOSED AREAS DAMAGED BY WELDING AND HANDLING SHALL BE GIVEN ONE COAT OF ZINC RICH PAINT.

VERIFY ALL DIMENSIONS AND GEOMETRY OF THE EXISTING STRUCTURE IN THE FIELD AS NECESSARY FOR PROPER FIT OF PROPOSED CONSTRUCTION PRIOR TO FABRICATION OF ANY COMPONENTS. DIFFERENCES IN DIMENSIONS FROM THOSE SHOWN ON THE PLANS SHALL BE SUBMITTED TO ENGINEER FOR REVIEW.

FRP SHALL BE ATTACHED TO THE STEEL SUPPORT WITH MECHANICAL FASTENERS PER MANUFACTURER'S REQUIREMENTS.

FOR PLATFORM EXTENSIONS, SEE SPECIAL PROVISIONS.

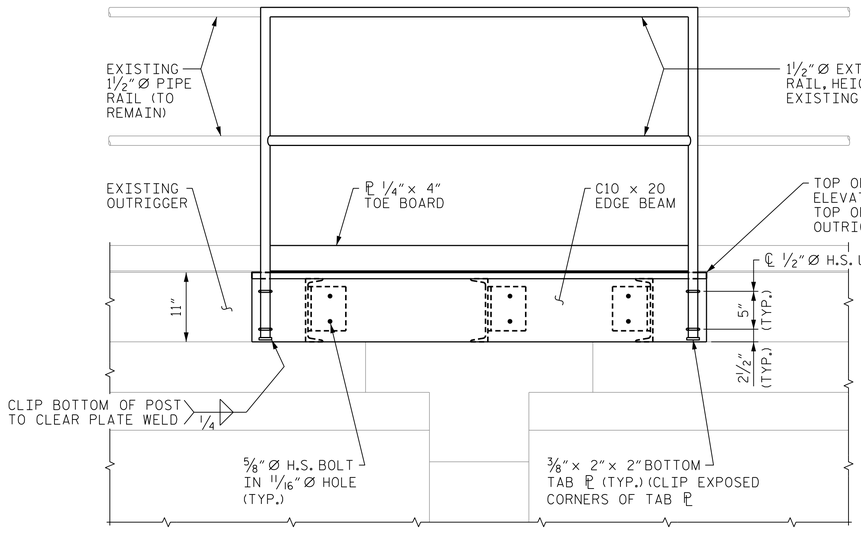
FOR OUTRIGGER MODIFICATION LOCATIONS, SEE ELECTRICAL PLANS.

FOR ADHESIVELY ANCHORED ANCHOR BOLTS, LEVEL 1 FIELD TESTING IS REQUIRED. TEST AT LEAST 10% OF ALL ANCHORS TO A LOAD OF 1.0 KIPS.

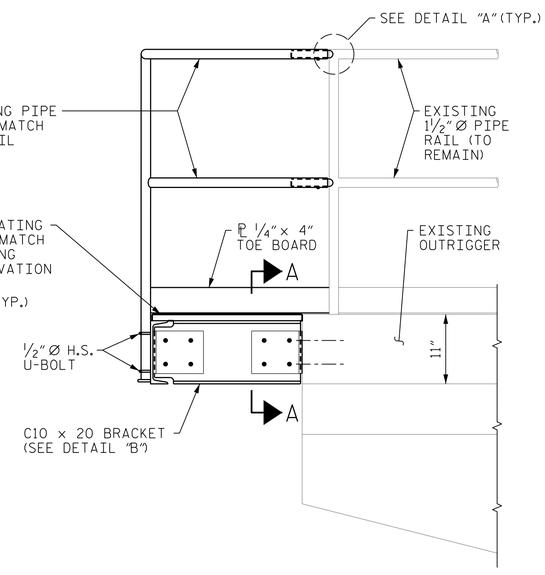
FIELD DRILLED HOLE SIZE IN EXISTING CONCRETE SHALL BE PER ADHESIVE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR HAS THE OPTION TO FIELD DRILL BOLT HOLES IN STEEL MEMBERS. AREAS OF GALVANIZING DAMAGED BY FIELD DRILLING SHALL BE TOUCHED UP WITH ONE COAT OF ZINC RICH PAINT.

FOR ADHESIVELY ANCHORED ANCHOR BOLTS, SEE SUBSECTION 420-13 OF THE STANDARD SPECIFICATIONS.



ELEVATION

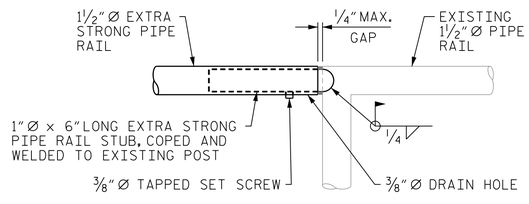


END VIEW

TRAFFIC GATE OUTRIGGER MODIFICATIONS

OUTRIGGER MODIFICATION PROCEDURE:

1. BARRICADE WORK AREA AS REQUIRED TO PREVENT PEDESTRIANS FROM ACCESSING OUTRIGGER.
2. REMOVE PORTION OF EXISTING 1½" Ø RAILING. ATTACH 6" PIPE RAIL STUB AS SHOWN.
3. ATTACH L8 x 6 x ½ ANGLES BY DRILLING AND ADHESIVELY ANCHORING ⅝" ANCHOR BOLTS INTO EXISTING CONCRETE OUTRIGGER FACE.
4. INSTALL STEEL FRAMING.
5. ATTACH FRP GRATING TO TOPS OF C10 x 20 CHANNELS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
6. INSTALL RAILING AND TOE BOARDS.



DETAIL "A"

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRAFFIC GATE OUTRIGGER MODIFICATIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			213

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RALEIGH, NC 27601
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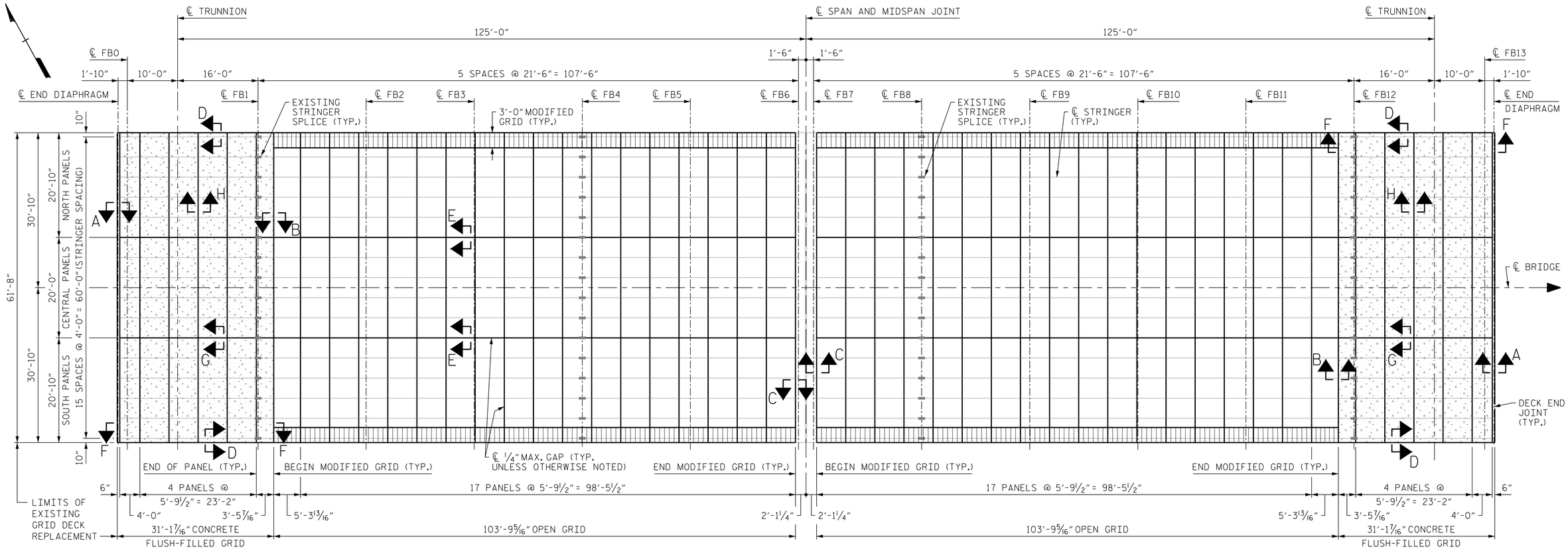
NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGNED BY:	J. BORUTA/C. CORMAN	DATE :	MAR 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. DOUGHTY	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

11/12/2018
400.027.15BPR14.SMU.TGO.6400I1.dgn



PLAN

GRID DECK REPLACEMENT PROCEDURE:

1 - CONTRACTOR SHALL SUBMIT A PANEL REMOVAL AND REPLACEMENT SEQUENCE AND GRID DECK SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCING REMOVAL OF EXISTING GRID DECK PANELS.

2 - IMPLEMENT THE REQUIRED TRAFFIC CONTROL SCHEME PER THE TRAFFIC MANAGEMENT PLANS PRIOR TO COMMENCING REMOVAL OF EXISTING GRID DECK PANELS.

3 - REMOVE ONLY THE EXISTING GRID DECK THAT CAN BE REPLACED IN ONE WORK SHIFT. MINIMIZE UNBALANCED LOADING AND DEAD LOAD VARIATIONS DURING REMOVAL AND REPLACEMENT OPERATIONS.

4 - AFTER EXISTING GRID DECK PANELS ARE REMOVED FROM A GIVEN WORK AREA, GRIND EXISTING GRID-TO-STRINGER WELDS SMOOTH.

5 - CLEAN EXISTING STRINGER TOP FLANGES IN ACCORDANCE WITH THE SPECIAL PROVISIONS FOR PAINTING EXISTING STRUCTURE.

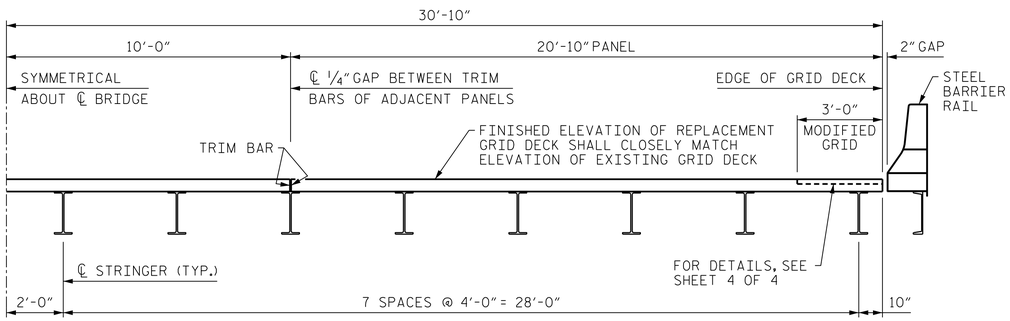
6 - INSTALL NEW GRID DECK PANELS AS SHOWN ON THE PLANS. PANELS SHALL BE ADJUSTED FOR PROPER ALIGNMENT, ELEVATION, AND FIT PRIOR TO FINAL FIELD WELDING TO EXISTING STRINGERS.

7 - NEW GRID DECK MUST BE SUFFICIENTLY ANCHORED TO THE STRINGERS AT THE END OF EACH WORK SHIFT. ANCHORING CAN BE DONE BY WELDING OR CLAMPING OR A COMBINATION OF BOTH. GRID DECK IS SUFFICIENTLY ANCHORED WHEN, UNDER LIVE LOAD, THERE IS NO DIFFERENTIAL MOVEMENT BETWEEN THE DECK AND ITS SUPPORTS.

8 - FINISH FIELD WELDING DURING SUBSEQUENT WORK SHIFTS AS REQUIRED.

9 - UPON COMPLETION OF ALL FINAL FIELD WELDING OF PANELS TO STRINGERS, FIELD PAINT STRINGERS AND GRID-TO-STRINGER WELDS IN ACCORDANCE WITH THE SPECIAL PROVISIONS FOR PAINTING EXISTING STRUCTURE.

10- PLACE RAPID-SETTING CLASS AA CONCRETE IN FILLED GRID LOCATIONS.



BASCULE SPAN TYPICAL HALF-SECTION

NOTES:

FOR REPLACEMENT OF OPEN STEEL GRID DECK, SEE SPECIAL PROVISIONS.

FOR REPLACEMENT OF FILLED STEEL GRID DECK, SEE SPECIAL PROVISIONS.

MATCH EXISTING PANEL LAYOUT AND DIMENSIONS. PANEL DIMENSIONS SHOWN ON THIS DRAWING SHALL BE FIELD VERIFIED PRIOR TO PREPARATION OF GRID DECK SHOP DRAWINGS.

FOR MODIFIED GRID REQUIRED IN OUTER 3'-0" OF EXTERIOR OPEN GRID DECK PANELS, SEE SHEET 4 OF 4.

FABRICATE GRID PANELS TO CLEAR BOLTS AT EXISTING STRINGER SPLICES. DETAILS SHALL BE SHOWN ON SHOP DRAWINGS.

MIDSPAN AND DECK END JOINT TO REMAIN AND NOT BE ALTERED.

CONTRACTOR SHALL COORDINATE DECK REPLACEMENT OPERATIONS WITH STRUCTURAL STEEL REPAIRS TO BASCULE SPAN FLOOR SYSTEM.

DIMENSIONS SHOWN ARE HORIZONTAL UNLESS OTHERWISE NOTED.

FLOORBEAM NUMBERING SHOWN MATCHES BRIDGE INSPECTION REPORT.

FB = FLOORBEAM

FOR SECTIONS A-A THROUGH F-F, SEE SHEET 2 OF 4.

FOR SPAN BALANCING, SEE SPECIAL PROVISIONS FOR MECHANICAL OPERATING MACHINERY.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN

GRID DECK REPLACEMENT

DESIGNED BY:	CCC/JRD	DATE :	MAR 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	B. LOFLIN	DATE :	JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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RALEIGH, NC 27601
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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
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2			4			213

11/12/2018
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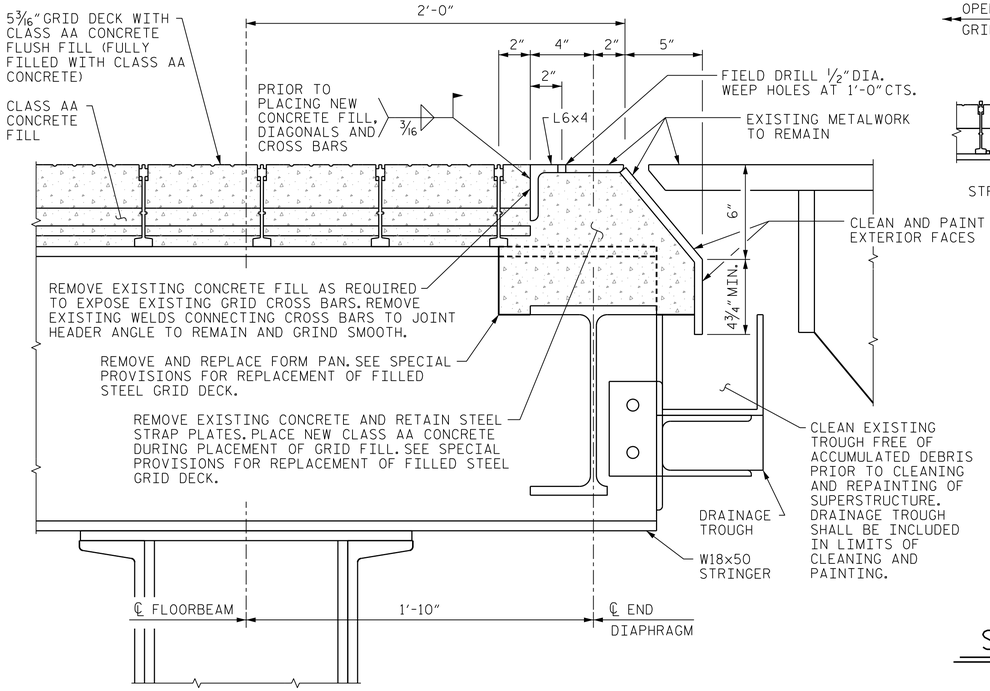
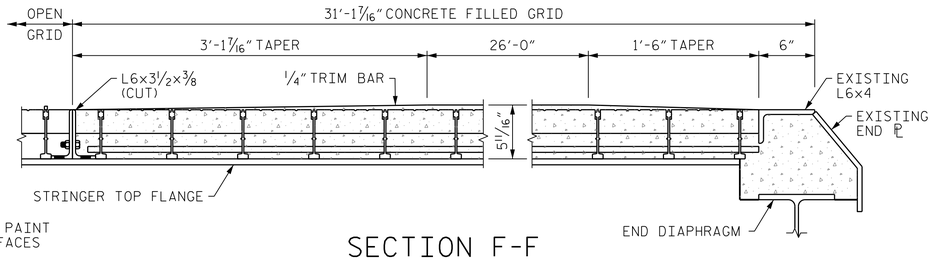


SECTION A-A



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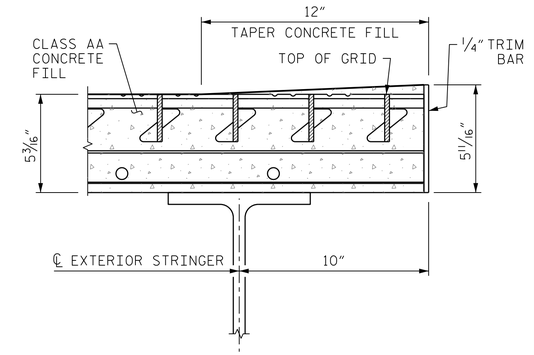
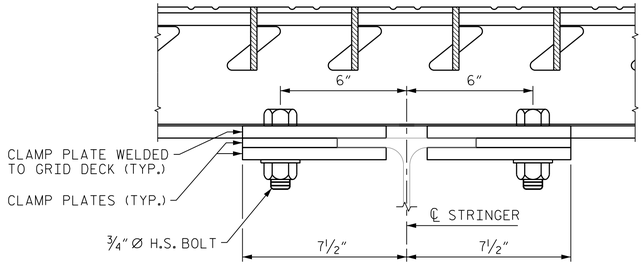


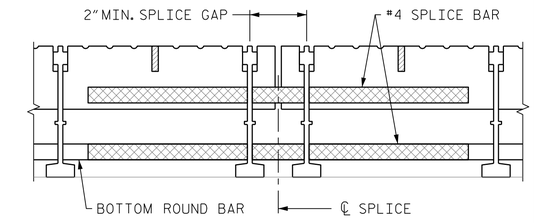
SECTION D-D



SUGGESTED TEMPORARY CLAMPDOWN PLATE FASTENER

CLAMPS SHOWN ARE OPTIONAL AND ARE TO BE USED AS NECESSARY TO ACCOMMODATE THE CONSTRUCTION SEQUENCE AND BRIDGE OPENINGS

ALTERNATE CLAMP DETAILS MAY BE SUBMITTED TO ENGINEER FOR REVIEW. CLAMP DETAILS, IF USED, SHALL BE SHOWN ON GRID DECK SHOP DRAWINGS.

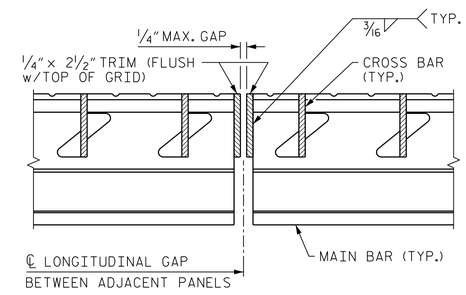


SECTION H-H

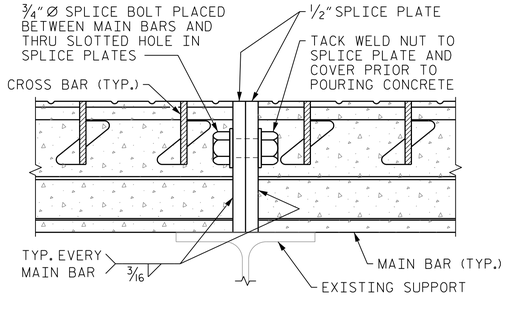
CONCRETE NOT SHOWN FOR CLARITY.

SHEET METAL FORM PANS BETWEEN MAIN BARS IN PANEL SPLICE REGIONS ARE SHIPPED LOOSE AND FIELD INSTALLED.

TYPICAL CROSS BAR SPACING IS 4".

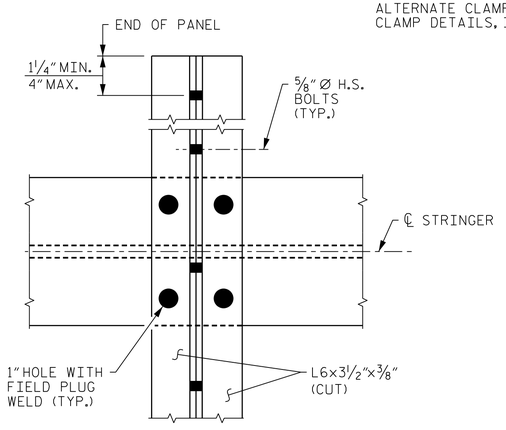


SECTION E-E



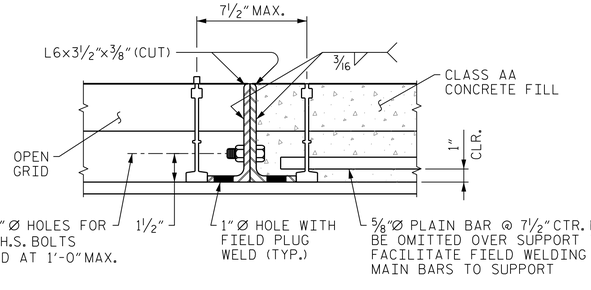
SECTION G-G

DECK-END JOINT

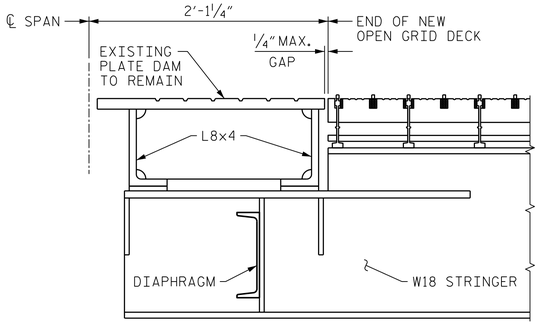


PLAN VIEW

GRID DECK NOT SHOWN FOR CLARITY



SECTION B-B



SECTION C-C

EXISTING MID-SPAN JOINT METALWORK TO REMAIN

NOTES:

SPLICE REBAR MAY BE INSERTED EITHER THROUGH SLOT FOR CROSS BAR IN GRID MAIN BAR OR THROUGH SEPARATE PUNCHED SLOT.

BOTTOM ROUND BAR PUNCH AT 4" O.C. ALTERNATE #4 BOTTOM SPLICE REBAR WITH BOTTOM ROUND BAR.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 2 OF 4

DESIGNED BY:	CCC/JRD	DATE :	MAR 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	B. LOFLIN	DATE :	JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN

GRID DECK REPLACEMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			213

11/12/2018
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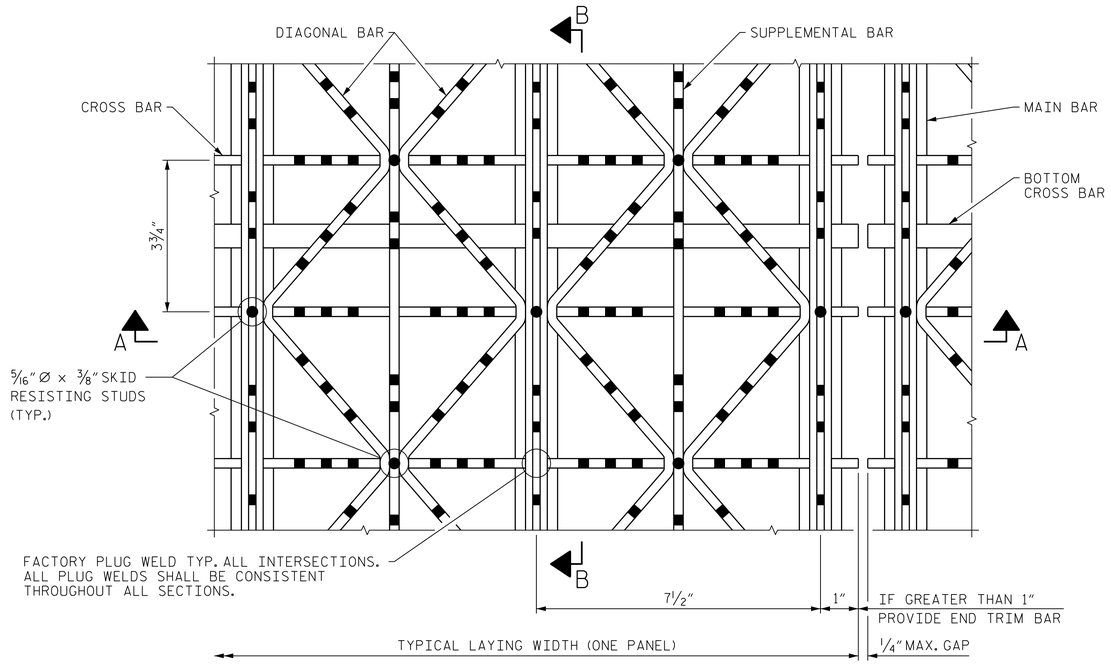
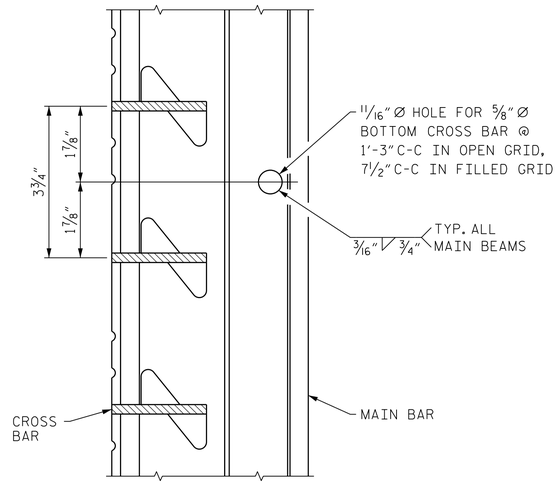


4-WAY OPEN GRID DETAIL

(FILLED GRID SIMILAR)



SECTION B-B

WELDING PROCESS

ALL WELDING TO BE DONE IN ACCORDANCE WITH AWS D1.5 BRIDGE WELDING CODE, LATEST VERSION.

MATERIAL SPECIFICATIONS

MAIN BARS (5.3#/FT.) TO BE ASTM A709 GR. 50 OR 50W
CROSS BARS (¼" x 2½") TO BE ASTM A709 GR. 50 OR 50W
DIAGONAL BARS (¼" x 1") TO BE ASTM A709 GR. 50 OR 50W
SUPPLEMENTAL BARS (¼" x 1") TO BE ASTM A709 GR. 50 OR 50W
BOTTOM CROSS BARS (⅝"Ø) TO BE ASTM A709 GR. 50 OR 50W

FINISH SPECIFICATIONS

GALVANIZED PER NCDOT STANDARD SPECIFICATIONS.

NOTES:

CONTRACTOR MAY REQUEST TO MAKE MINOR CHANGES FOR PRODUCT IMPROVEMENT.

ALL MATERIAL SUBJECT TO MILL/SHOP TOLERANCES.

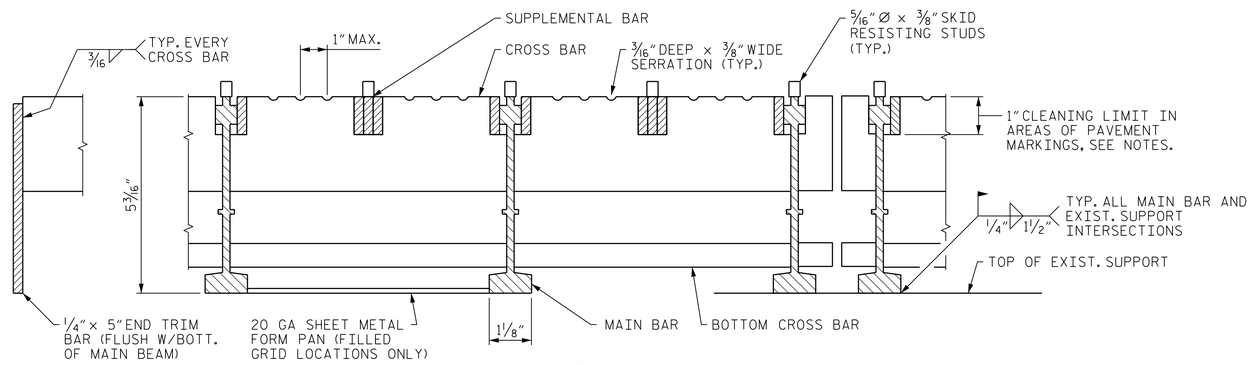
SERRATIONS TO BE APPROXIMATELY 3/16" DEEP BY 3/8" WIDE ON RANDOM CENTERS, 1" MAX. C-C SPACING.

PROVIDE TRIM BAR AT ALL MAIN BAR ENDS.

CONTRACTOR SHALL MEASURE THE EXISTING FLOOR SYSTEM DIMENSIONS AND VERIFY CLEAR LENGTH AND WIDTH REQUIRED PRIOR TO ANY NEW PANEL FABRICATION.

VERTICAL FACES OF TRANSVERSE BARS SHALL BE CLEANED IN AREAS TO RECEIVE PAVEMENT MARKINGS (PAINT LINES). CLEANING SHALL EXTEND 1" BELOW TOP OF GRID.

CLASS AA CONCRETE SHALL BE USED FOR CONCRETE FILL IN FILLED GRID LOCATIONS. CLASS AA CONCRETE FILL SHALL REACH A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI IN 3 HOURS. SEE SPECIAL PROVISIONS.

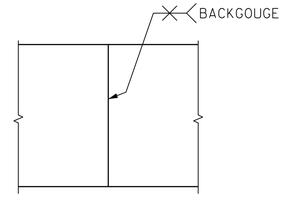


SECTION A-A

4-WAY (UNFILLED) GRID DECK PROPERTIES		
SECTION MODULUS ✱ (IN^3 / FT)		APPROX. GRID WEIGHT (LBS / SF) ✱✱
TOP STEEL	BOTTOM STEEL	20.3
4.038	4.321	

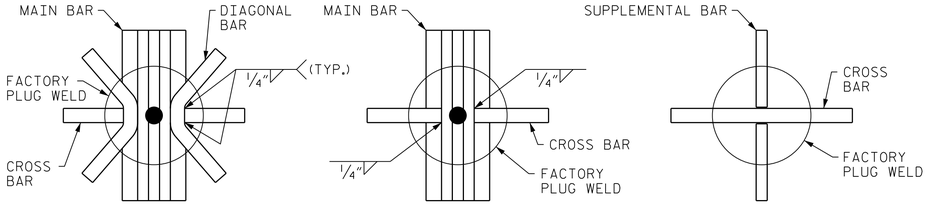
✱ SECTION MODULUS BASED ON 50% OF DIAGONAL BARS ACTIVE.

✱✱ THE GRID WEIGHT IS BASED ON A GALVANIZED GRID. ACTUAL WEIGHTS MAY VARY DUE TO COATING WEIGHT AND DECK ATTACHMENTS.



TYP. SHOP TRIM SPLICE

(WHERE REQ'D.)



AT MAIN BARS
WITH DIAGONAL BARS

AT MAIN BARS
WITHOUT DIAGONAL BARS

AT SUPPLEMENTAL BAR

WELDMENT DETAILS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN

GRID DECK REPLACEMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	CCC/JRD	DATE : MAR 2018
DRAWN BY:	K. WHITE	DATE : MAR 2018
CHECKED BY:	B. LOFLIN	DATE : JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE : NOV 2018

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11/12/2018
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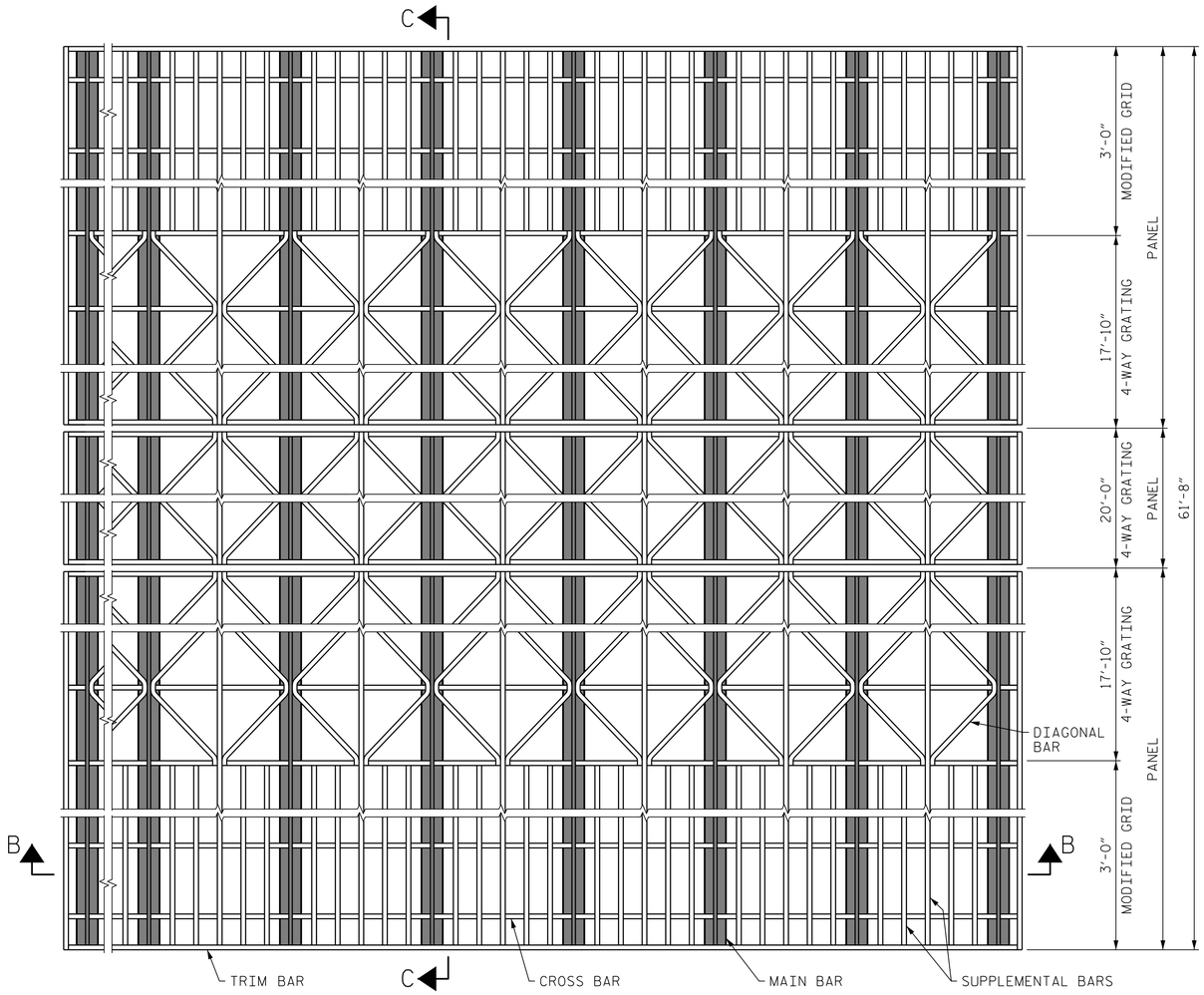
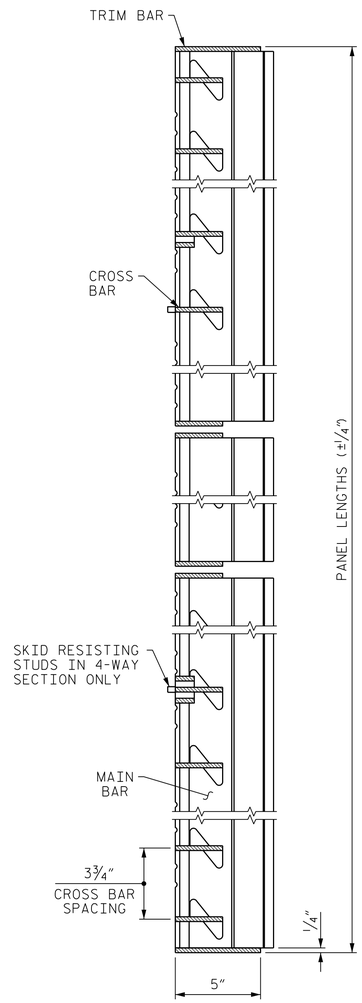
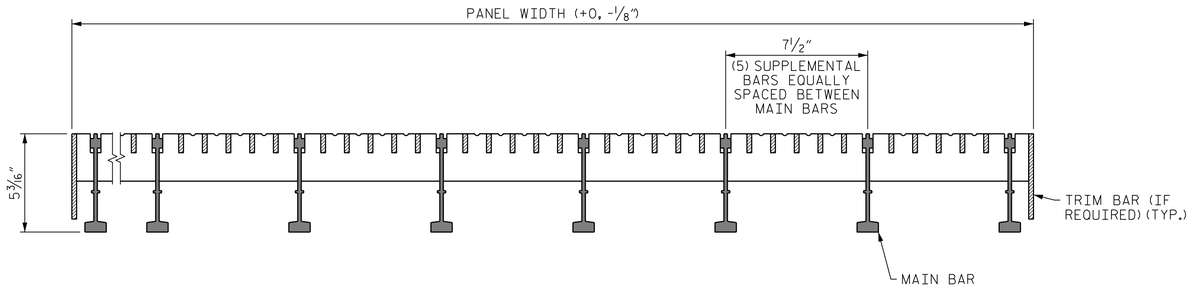


OPEN STEEL GRID DECK PANEL PLAN VIEW



SECTION C-C



SECTION B-B

NOTES:

MODIFIED GRID DECK AREAS SHALL HAVE NO DIAGONAL BARS.

SKID RESISTING STUDS SHALL BE OMITTED IN MODIFIED GRID DECK AREAS.

FOR NOTES, SEE SHEET 2 OF 4.

FOR MATERIAL AND FINISH SPECIFICATIONS, SEE SHEET 3 OF 4.

MODIFIED GRID DECK PROPERTIES		
SECTION MODULUS * (IN^3 / FT)		APPROX. GRID WEIGHT (LBS / SF) **
TOP STEEL	BOTTOM STEEL	24.5
5.35	4.25	

* SECTION MODULUS BASED ON 50% OF SUPPLEMENTAL BARS ACTIVE

** THE GRID WEIGHT IS BASED ON A GALVANIZED GRID. ACTUAL WEIGHTS MAY VARY DUE TO COATING WEIGHT AND DECK ATTACHMENTS.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN

GRID DECK REPLACEMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY: CCC/JRD DATE : MAR 2018
DRAWN BY: K. WHITE DATE : MAR 2018
CHECKED BY: B. LOFLIN DATE : JULY 2018
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE : NOV 2018

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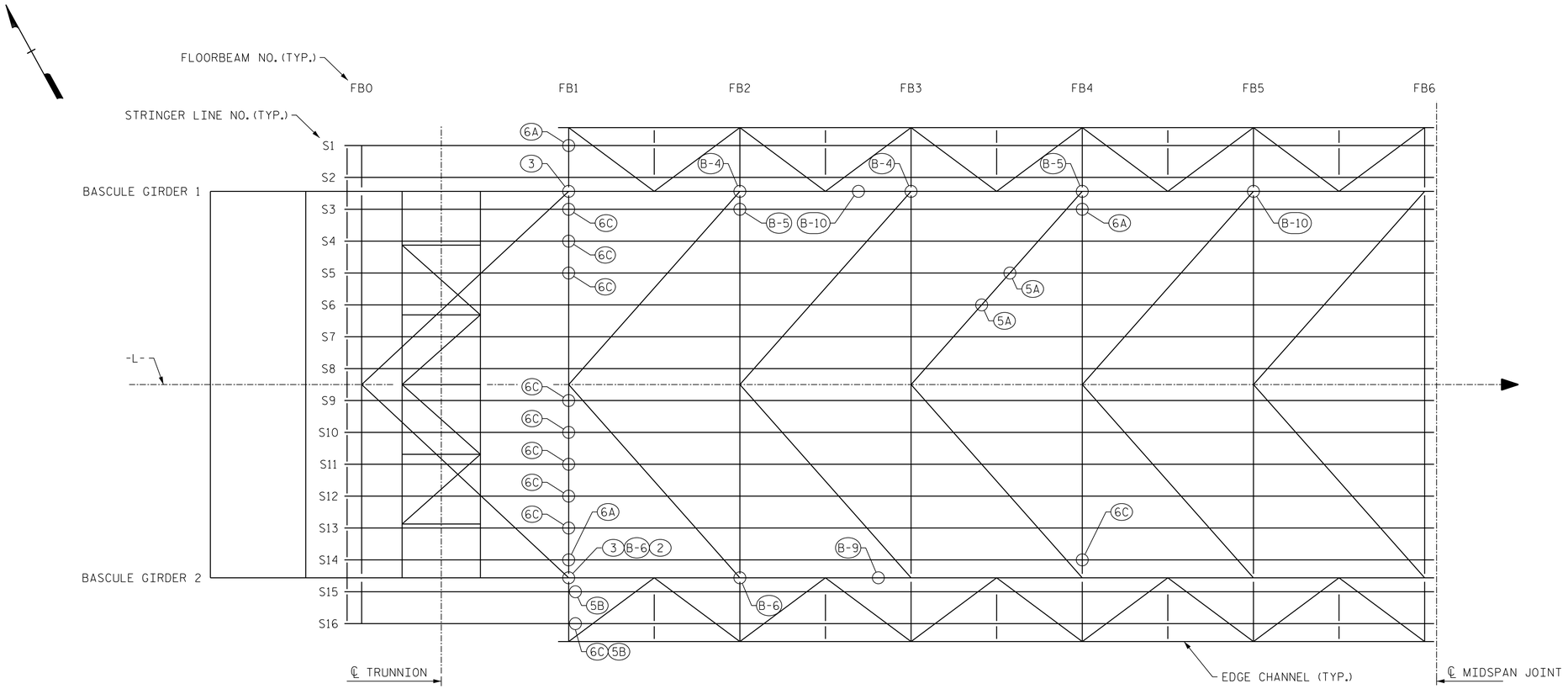

BASCULE SPAN - WEST LEAF

EXISTING STRINGER SPLICES ARE LOCATED AT FB1 AND FB4

REPAIR TYPES

- (1) - STIFFENER REPAIR
- (2) - OUTRIGGER CONNECTION REPAIR
- (3) - FB TOP CHORD GUSSET FATIGUE REPAIR
- (4A)(4B)(4C) - FB CONNECTION REPAIR
- (5A)(5B) - STRINGER REPAIRS
- (6A)(6B)(6C) - STRINGER SPLICE REPAIR
- (B-#) - REPLACE BOLTS

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BACSULE SPAN

STRUCTURAL STEEL REPAIR LOCATIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY: J. BORUTA/C. CORMAN DATE : FEB 2018
DRAWN BY: K. WHITE DATE : FEB 2018
CHECKED BY: B. LOFLIN DATE : AUG 2018
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE : NOV 2018

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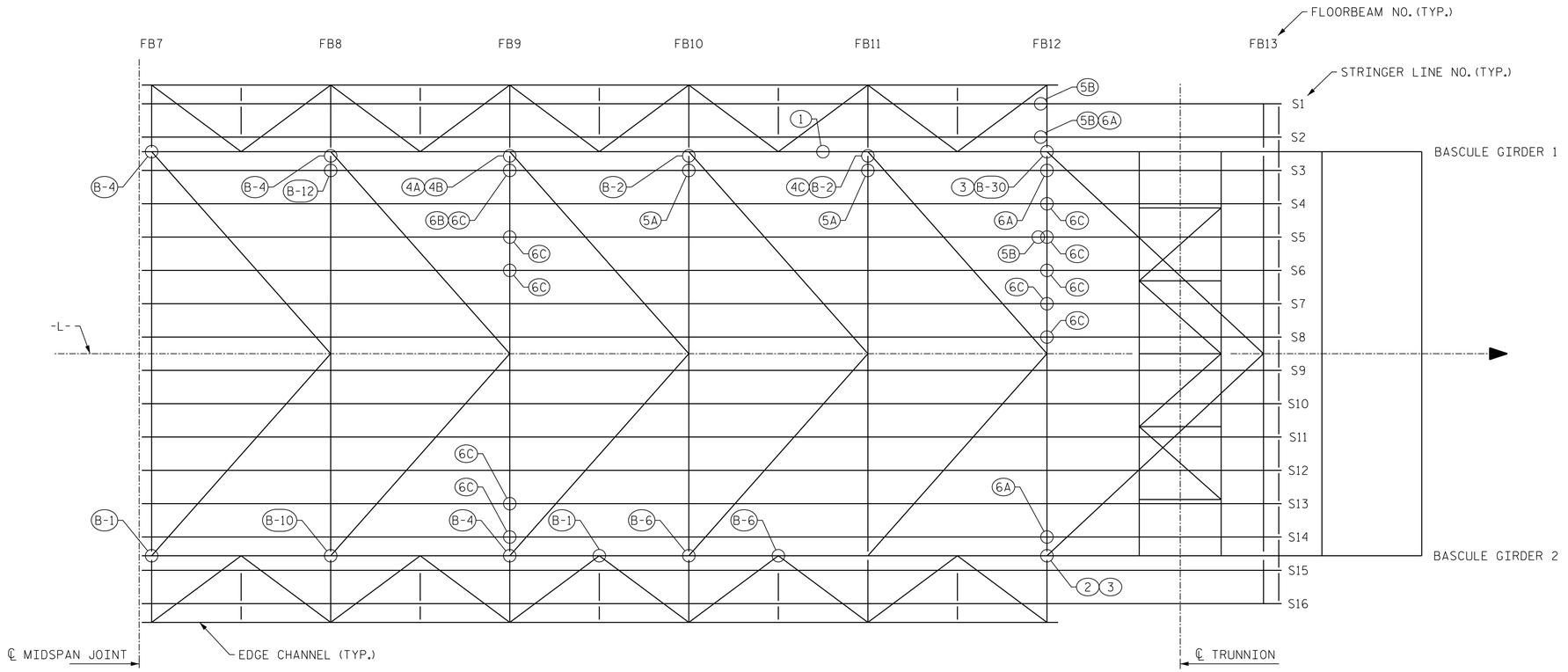

BASCULE SPAN - EAST LEAF

EXISTING STRINGER SPLICES ARE LOCATED AT FB9 AND FB12

REPAIR TYPES

- (1) - STIFFENER REPAIR
- (2) - OUTRIGGER CONNECTION REPAIR
- (3) - FB TOP CHORD GUSSET FATIGUE REPAIR
- (4A)(4B)(4C) - FB CONNECTION REPAIR
- (5A)(5B) - STRINGER REPAIRS
- (6A)(6B)(6C) - STRINGER SPLICE REPAIR
- (B-#) - REPLACE BOLTS

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BACSULE SPAN

STRUCTURAL STEEL REPAIR LOCATIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY: J. BORUTA/C. CORMAN DATE : FEB 2018
DRAWN BY: K. WHITE DATE : FEB 2018
CHECKED BY: B. LOFLIN DATE : AUG 2018
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE : NOV 2018

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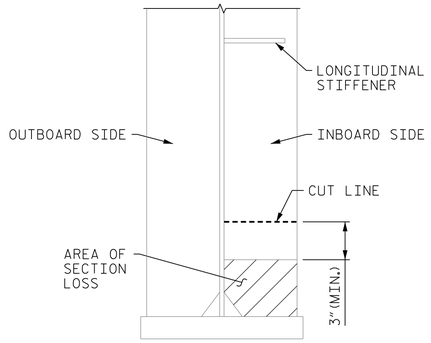
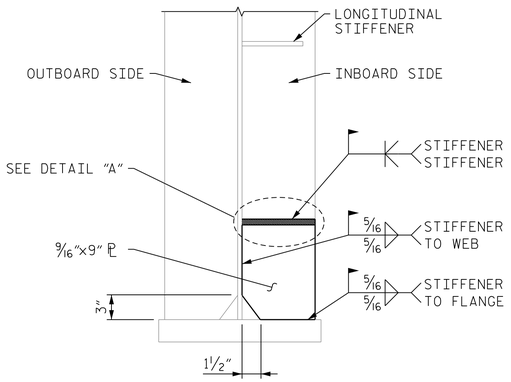
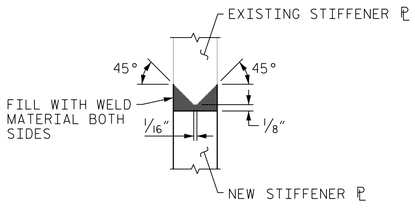


BASCULE GIRDER STIFFENER ℄ REMOVAL



BASCULE GIRDER STIFFENER ℄ REPAIR

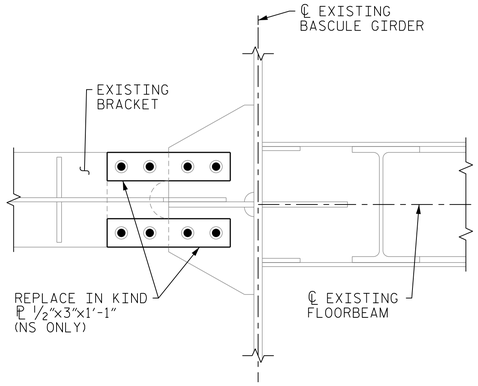


DETAIL A

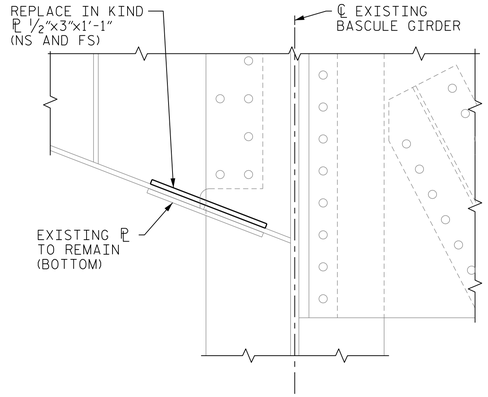
REPAIR (1)

1 LOCATION

NO LIVE LOAD SHALL BE PRESENT ON THE BASCULE SPAN WHEN PERFORMING THIS REPAIR.



PLAN



ELEVATION

REPAIR (2)

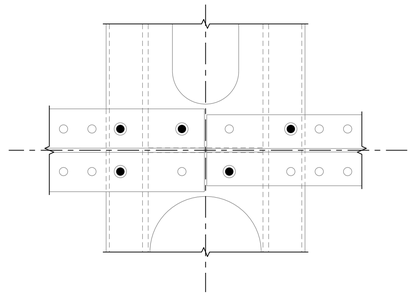
LOCATED AT OUTRIGGERS.

CLOSE 1 TRAFFIC LANE ADJACENT TO REPAIR LOCATION WHILE PERFORMING REPAIR.

REPLACE 1 PLATE AT A TIME.

BEFORE PAINTING, APPLY SEALANT AROUND PLATES.

(2) REQUIRED



REPAIR (B)

AS NECESSARY, REPLACE CORRODED / MISSING NUTS AND BOLTS, AND TIGHTEN LOOSE NUTS AND BOLTS.

REPLACE BOLTS ONE AT A TIME IN EACH MEMBER.

(APPROX. 141 TOTAL BOLTS TO BE REPLACED ON BASCULE SPAN.)

LOCATIONS OF REPAIR (B) VARY. TYPICAL STRINGER TO FLOORBEAM CONNECTION SHOWN AS ONE REPRESENTATIVE LOCATION TYPE.

STRUCTURAL STEEL NOTES:

STRUCTURAL STEEL SHALL CONFORM TO ASTM A709 GRADE 50 AND SHALL BE IN ACCORDANCE TO SECTION 440 OF THE STANDARD SPECIFICATIONS.

BOLTS SHALL CONFORM TO ASTM F3125 GRADE A325 AND SHALL BE IN ACCORDANCE WITH SECTION 440 OF THE STANDARD SPECIFICATIONS. BOLTS SHALL BE 7/8" DIA. UNLESS NOTED OTHERWISE.

BOLT HOLES SHALL BE 15/16" DIA. UNLESS NOTED OTHERWISE.

ALL REPAIR DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO SUBMITTING SHOP DRAWINGS.

CLEAN ALL REPAIR LOCATIONS TO THE SATISFACTION OF THE ENGINEER PRIOR TO INSTALLATION OF REPAIRS.

STRUCTURAL STEEL REPAIRS SHALL BE PAID FOR UNDER STRUCTURAL STEEL FOR REPAIRS. SEE SPECIAL PROVISIONS.

FOR CLEANING AND PAINTING REQUIREMENTS, SEE SPECIAL PROVISIONS FOR PAINTING EXISTING STRUCTURE.

BOLT LEGEND

- ○ - EXISTING FASTENER
- ◉ - NEW H.S. BOLT IN EXISTING HOLE
- ● - NEW H.S. BOLT IN NEW HOLE

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BACSULE SPAN

STRUCTURAL STEEL REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	J. BORUTA	DATE : FEB 2018
DRAWN BY:	K. WHITE	DATE : FEB 2018
CHECKED BY:	B. LOFLIN	DATE : AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE : NOV 2018

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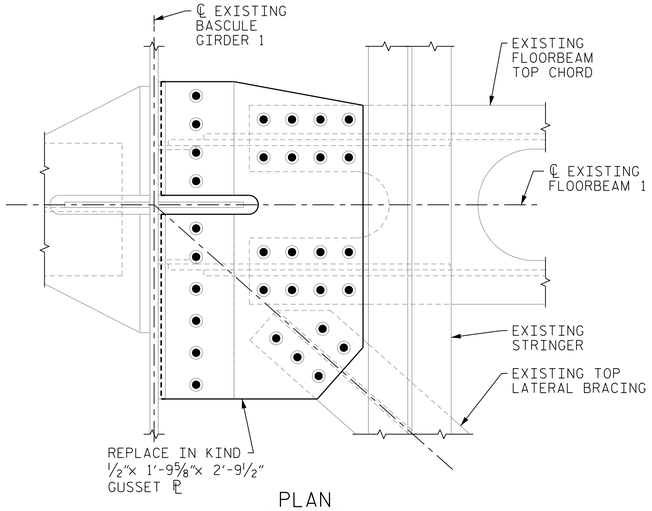
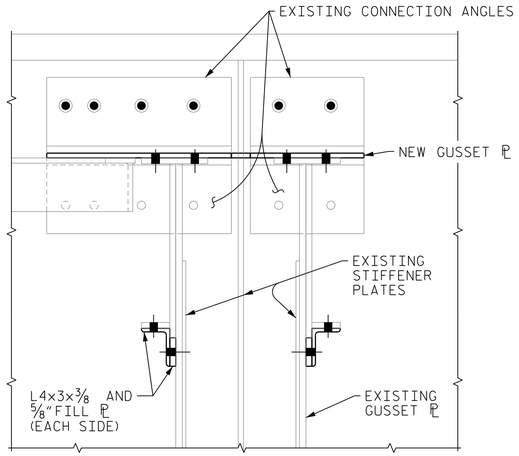
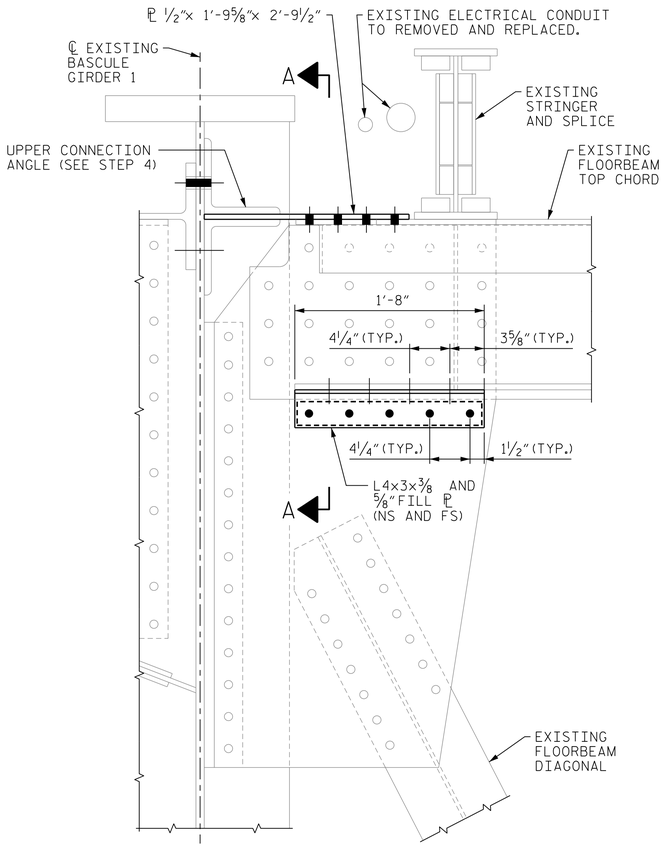


PLAN



SECTION A-A



ELEVATION

LOCATION WITH LATERIAL BRACING MEMBER SHOWN, LOCATION WITHOUT LATERIAL BRACING MEMBER SIMILAR.

REPAIR 3 PROCEDURE:

STEP 1. IMPLEMENT REQUIRED TRAFFIC CONTROL SCHEME PER THE TRAFFIC MANAGEMENT PLANS.

STEP 2. REMOVE EXISTING FILLED GRID DECK PANELS FROM WORK AREA.

STEP 3. POWER TOOL CLEAN FAYING SURFACES TO BARE METAL USING A NEEDLE GUN OR APPROVED EQUAL TO PRODUCE AN SSPC SP-11 SURFACE AT PROPOSED L4x3x⅜ LOCATIONS. INSTALL NEW L4x3x⅜ ANGLES AND ⅝"FILL PLATES AT BOTTOM FLANGE LOCATIONS OF FLOORBEAM TOP CHORD.

STEP 4. REMOVE UPPER CONNECTION ANGLES AT BASCULE GIRDER AND REMOVE EXISTING GUSSET PLATE.

STEP 5. POWER TOOL CLEAN FAYING SURFACES TO BARE METAL USING A NEEDLE GUN OR APPROVED EQUAL TO PRODUCE AN SSPC SP-11 SURFACE. CLEAN TO THE SATISFACTION OF THE ENGINEER PRIOR TO INSTALLING ANY NEW REPAIR MATERIALS IN THE GIVEN WORK AREA LOCATION.

STEP 6. INSTALL NEW GUSSET PLATE. REINSTALL EXISTING UPPER CONNECTION ANGLES.

REPAIR (3)

(4) REQUIRED

NOTES:

FOR STRUCTURAL STEEL NOTES, SEE SHEET 1 OF 4.

BASCULE GIRDER 1 AT FLOORBEAM 1 SHOWN, OTHER LOCATIONS SIMILAR.

NO LIVE LOAD IS PERMITTED IN THE TWO TRAFFIC LANES NEAREST THE REPAIR WHILE PERFORMING REPAIR (3).

REPAIR ONE LOCATION PER FLOORBEAM AT A TIME.

BEFORE PAINTING, APPLY SEALANT AROUND PLATES AND ANGLES.

REMOVE EXISTING ELECTRICAL CONDUIT PRIOR TO PERFORMING REPAIR (3). FOR ELECTRICAL CONDUIT REPLACEMENT INFORMATION, SEE ELECTRICAL PLANS AND CORRESPONDING SPECIAL PROVISIONS.

BOLT LEGEND

○ - EXISTING FASTENER
◉ - NEW H.S. BOLT IN EXISTING HOLE
● - NEW H.S. BOLT IN NEW HOLE

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BACSULE SPAN

STRUCTURAL STEEL REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			213

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

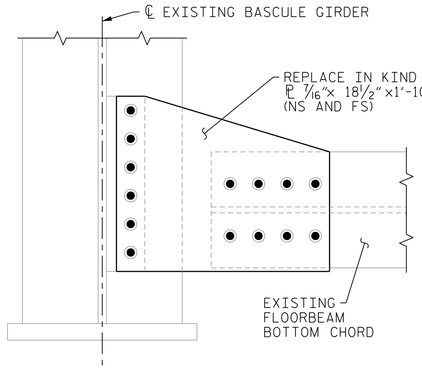
NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018

DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGNED BY:	J. BORUTA	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	FEB 2018
CHECKED BY:	B. LOFLIN	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

11/12/2018
400.043.15BPR14.SWU.SSR4.640011.dgn



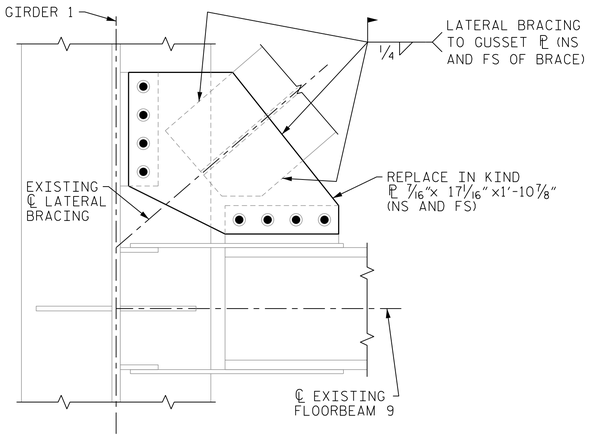
ELEVATION

REPAIR (4A)

(1) REQUIRED

NO LIVE LOAD IS PERMITTED IN THE TWO TRAFFIC LANES NEAREST THE REPAIR WHILE PERFORMING REPAIR (4A).

REPLACE ONE ℗ PER FLOORBEAM AT A TIME.



PLAN

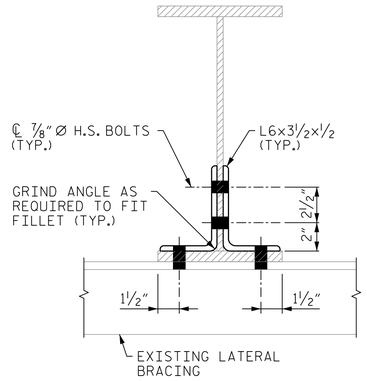
REPAIR (4B)

(1) REQUIRED

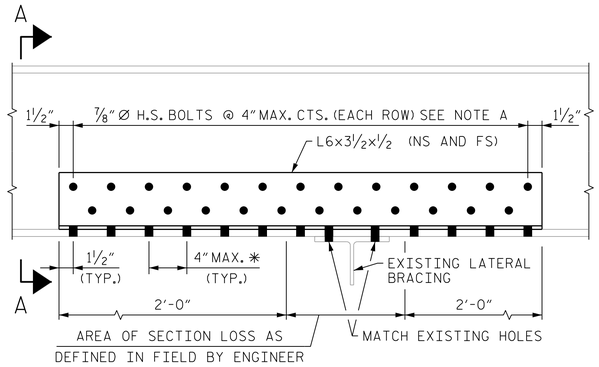
NO LIVE LOAD IS PERMITTED IN THE TWO TRAFFIC LANES NEAREST THE REPAIR WHILE PERFORMING REPAIR (4B).

REPLACE ONE ℗ PER FLOORBEAM AT A TIME.

NO LIVE LOAD SHALL BE PRESENT ON THE BASCULE SPAN WHEN WELDING.



SECTION A-A



ELEVATION

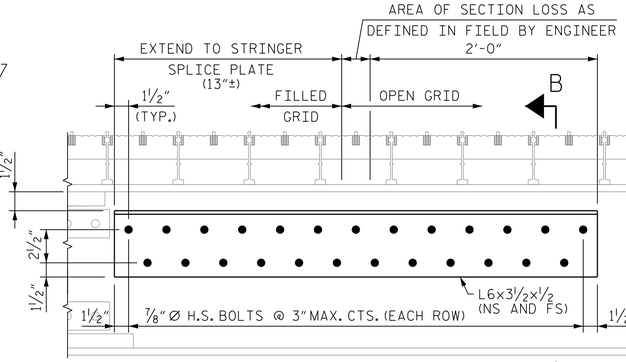
* EXCEPT AT EXISTING LATERAL BRACING OR FLOORBEAM

REPAIR (5A)

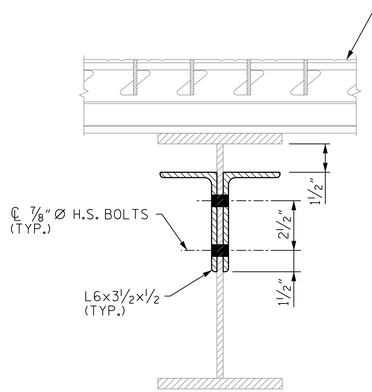
(4) REQUIRED

NO LIVE LOAD IS PERMITTED WITHIN 8 FEET MEASURED PERPENDICULAR TO STRINGER WHILE PERFORMING STRINGER REPAIRS.

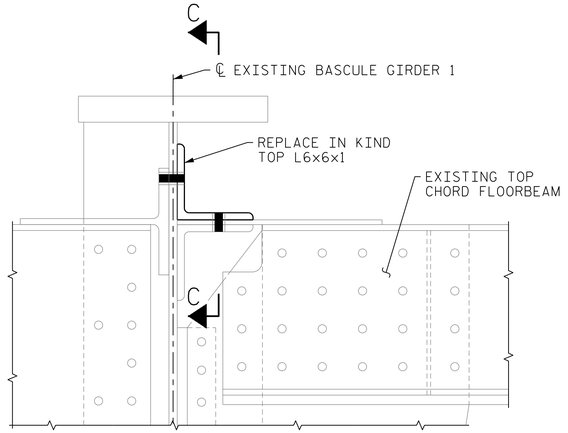
NOTE A: FOR REPAIRS AT STRINGER 3 WITH T-SECTION CONDUIT SUPPORTS, MATCH BOTTOM BOLT LOCATIONS IN EXISTING T-SECTIONS SUPPORTING ELECTRICAL CONDUIT TO BE RELOCATED. USE FILL PLATE BETWEEN T-SECTION CONDUIT SUPPORT AND STRINGER WEB AT TOP BOLT HOLE.



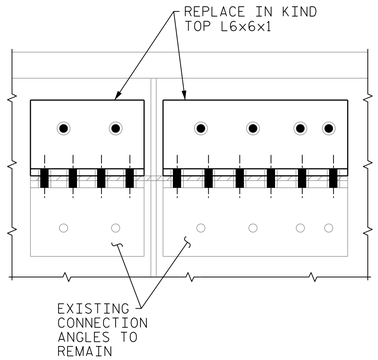
ELEVATION



SECTION B-B



ELEVATION



SECTION C-C

REPAIR (4C)

(1) REQUIRED

NO LIVE LOAD IS PERMITTED IN THE TWO TRAFFIC LANES NEAREST THE REPAIR WHILE PERFORMING REPAIR (4C).

REPLACE ONE ANGLE AT A TIME.

REPAIR (5B)

(5) REQUIRED

NO LIVE LOAD IS PERMITTED WITHIN 8 FEET MEASURED PERPENDICULAR TO STRINGER WHILE PERFORMING STRINGER REPAIRS.

BOLT LEGEND

- ○ - EXISTING FASTENER
- ◉ - NEW H.S. BOLT IN EXISTING HOLE
- ● - NEW H.S. BOLT IN NEW HOLE

NOTES:

FOR STRUCTURAL STEEL NOTES, SEE SHEET 1 OF 4.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BACSULE SPAN

STRUCTURAL STEEL REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY: J. BORUTA/C. CORMAN DATE : FEB 2018
DRAWN BY: K. WHITE DATE : FEB 2018
CHECKED BY: B. LOFLIN DATE : AUG 2018
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE : NOV 2018

11/13/2018
400.045.15BPR14.SWU.SSR5.640011.dgn

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty
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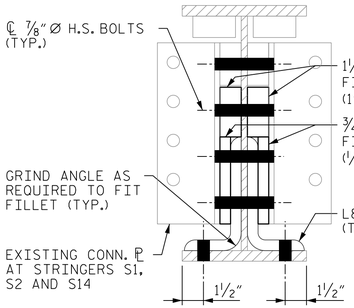
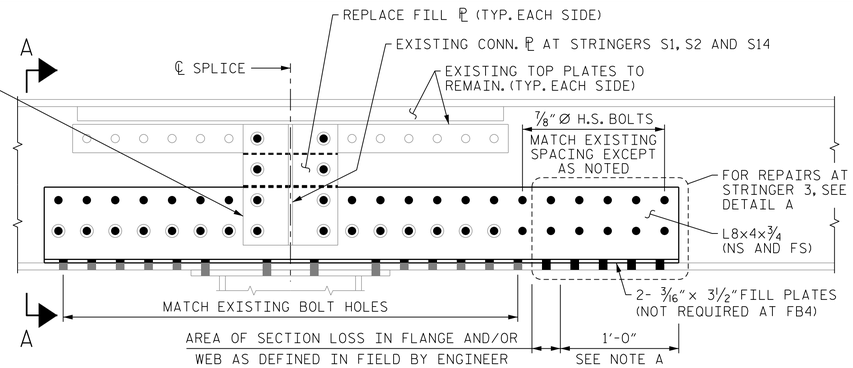


SECTION A-A

FILL PLATES AT W18x50 NOT SHOWN



ELEVATION

REPAIR 6A

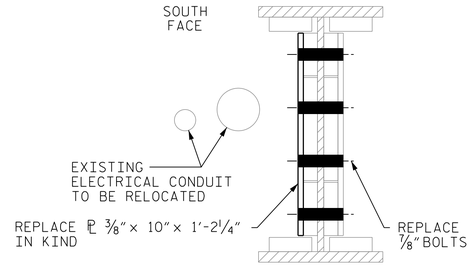
(6) REQUIRED

AT FLOORBEAMS 1 AND 12, REPAIR SHALL BE PERFORMED WHILE FILLED GRID IS REMOVED.

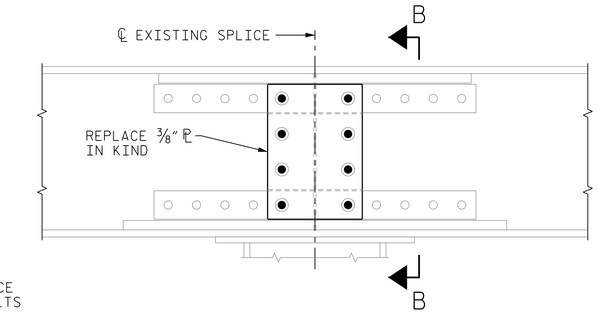
NO LIVE LOAD IS PERMITTED WITHIN 8 FEET MEASURED PERPENDICULAR TO STRINGER WHILE REPAIR IS PERFORMED.

IF PRESENT AT REPAIR LOCATION, DIAPHRAGMS SHALL BE REMOVED AND REINSTALLED AS NECESSARY TO PERFORM THE REPAIR.

NOTE A: AT STRINGER 1 AT FLOORBEAM 1, MATCH EXISTING BOLT HOLES IN BOTTOM FLANGE AT LATERAL BRACING.



SECTION B-B



ELEVATION

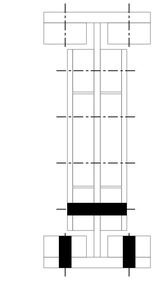
REPAIR 6B

STRINGER 3 AT FLOORBEAM 9
(1) REQUIRED

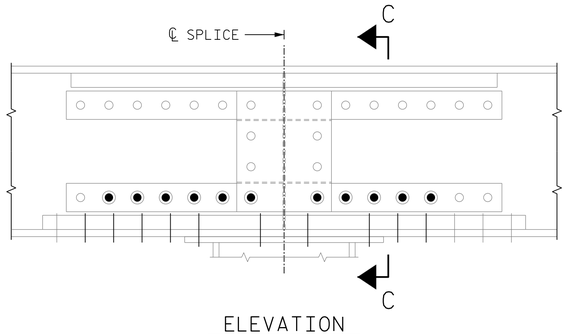
NO LIVE LOAD IS PERMITTED WITHIN 4 FEET MEASURED PERPENDICULAR TO STRINGER WHILE REPAIR IS PERFORMED.

NOTES:

FOR STRUCTURAL STEEL NOTES, SEE SHEET 1 OF 4.



SECTION C-C



ELEVATION

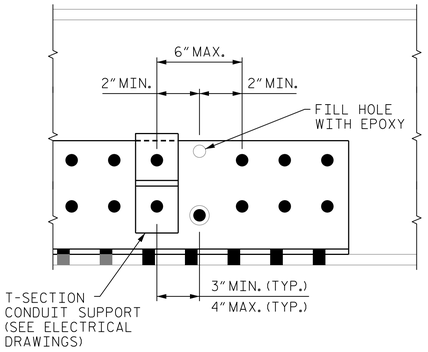
REPAIR 6C

(20) REQUIRED

NO LIVE LOAD IS PERMITTED WITHIN 4 FEET MEASURED PERPENDICULAR TO STRINGER WHILE REPAIR IS PERFORMED.

REPLACE BOLTS THAT EXHIBIT SECTION LOSS IN BOTTOM FLANGE AND WEB SPLICE PLATES.

REPLACE BOLTS ONE AT A TIME.



DETAIL A

REPAIRS AT STRINGER 3 AT T-SECTION CONDUIT SUPPORT

BOLT LEGEND

- ○ - EXISTING FASTENER
- ◉ - NEW H.S. BOLT IN EXISTING HOLE
- ● - NEW H.S. BOLT IN NEW HOLE

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BACSULE SPAN

STRUCTURAL STEEL REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			213

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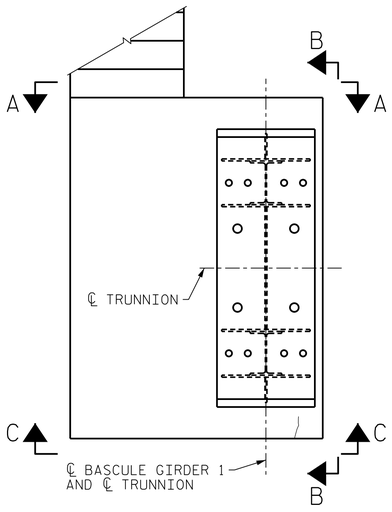
RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

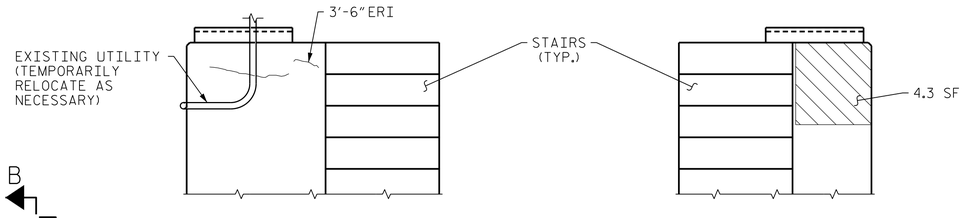
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGNED BY:	C. CORMAN	DATE : APR 2018
DRAWN BY:	K. WHITE	DATE : APR 2018
CHECKED BY:	B. LOFLIN	DATE : AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE : NOV 2018

11/14/2018
400_047_15BPR14_SMU_SSR6_640011.dgn

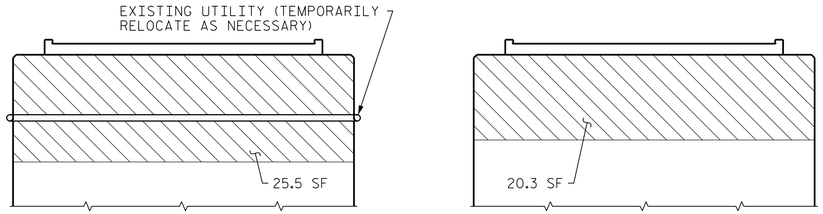


PLAN



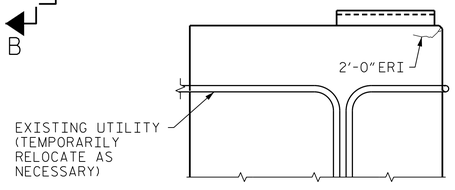
VIEW A-A

VIEW D-D

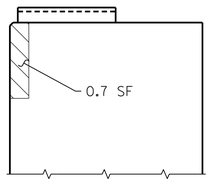


VIEW B-B

VIEW E-E

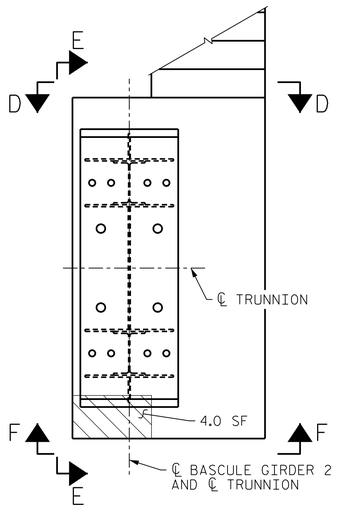


VIEW C-C



VIEW F-F

WEST BASCULE PIER - GIRDER 1



PLAN

WEST BASCULE PIER - GIRDER 2

NOTES:

FOR KEY PLAN, SEE SHEET 2 OF 2.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

REMOVE HANDRAIL AND REINSTALL AS REQUIRED. IF HAND RAIL BOLTS ARE MISSING OR REMOVED DURING REPAIR, INSTALL NEW ADHESIVELY ANCHORED BOLTS. INSTALL BOLTS IN ACCORDANCE WITH SECTION 420-13 OF STANDARD SPECIFICATIONS AND MANUFACTURERS RECOMMENDATIONS. NO FIELD TESTING IS REQUIRED. THIS WORK SHALL BE INCLUDED IN COST FOR CONCRETE REPAIRS.

AT THE TIME WHEN REPAIR CONCRETE IS BEING PLACED, NO LIVE LOAD IS PERMITTED IN THE TWO TRAFFIC LANES NEAREST THE TRUNNION COLUMN THAT IS BEING REPAIRED.

REPAIR SEQUENCE:

1. SOUND CONCRETE TO DETERMINE EXTENT OF REPAIR LOCATION.
2. REMOVE SURFACE CONCRETE TO VERIFY SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL. SAW CUT AROUND REPAIR AREA OUTSIDE OF TRUNNION BEARING TO A NOMINAL DEPTH OF ½ ", CREATING A "DOVE TAIL" EFFECT AROUND THE SAW CUT PERIMETER.
3. REMOVE ALL UNSOUND CONCRETE WITHIN SAW CUT AREA TO MINIMUM ½" DEPTH. IF REINFORCEMENT IS EXPOSED, REMOVE CONCRETE TO 1" BEHIND REINFORCEMENT (SEE TRUNNION COLUMN REPAIR DETAILS BELOW).
4. USE ABRASIVE BLAST METHOD TO CLEAN ALL EXPOSED REINFORCING STEEL. FOR BARS WITH MORE THAN 10% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL REINFORCING BARS AS NEEDED.
5. REMOVE ALL LOOSE OR WEAKENED MATERIAL THEN CLEAN THE REPAIR AREA OF DIRT, GREASE, OIL, AND FOREIGN MATTER.
6. PREPARE SURFACE AND PLACE APPROVED REPAIR MATERIAL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. FOR SHALLOW REPAIRS THAT DO NOT ENGAGE REINFORCEMENT, ANCHOR WIRE MESH MATERIAL USING 1"#4" GALVANIZED BOLTS, EPOXY ANCHORED WITH 2" EMBEDMENT. PLACE IN A 6" GRID. USE A LATEX OR EPOXY PATCH MATERIAL FOR IMPROVED BOND.

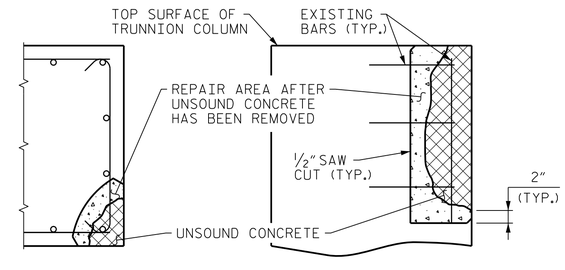
WEST BASCULE PIER TRUNNION COLUMN CONCRETE REPAIR QUANTITY TABLE

CONCRETE REPAIRS	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
TRUNNION COLUMN VERTICAL FACE	50.8	16.9	-	-
TRUNNION COLUMN TOP FACE (HORZ.)	4.0	1.3	-	-
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
TRUNNION COLUMN VERTICAL FACE		5.5		-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE CONCRETE REPAIRS SPECIAL PROVISIONS.

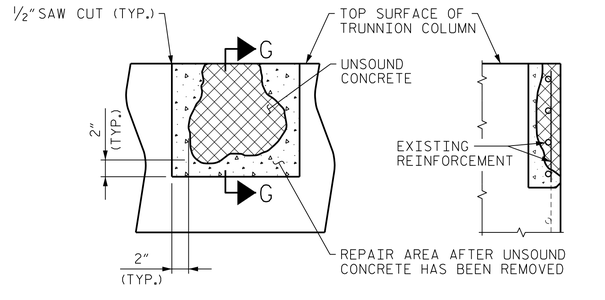
▨ - TRUNNION COLUMN REPAIR

ERI - EPOXY RESIN INJECTION



SECTION ELEVATION

CORNER REPAIR



ELEVATION SECTION G-G

FACE REPAIR

TRUNNION COLUMN REPAIR

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN

TRUNNION COLUMN REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	J. BORUTA	DATE :	MAR 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	B. LOFLIN	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

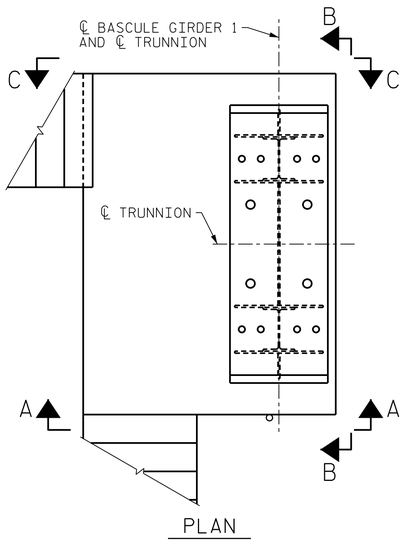
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

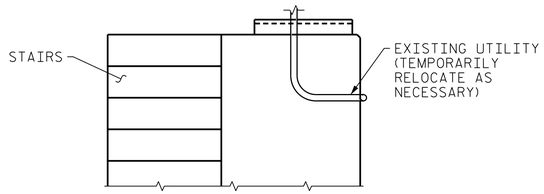
11/12/2018
400_049_15BPR14_SMU_TCR1_640011.dgn

NOTES:

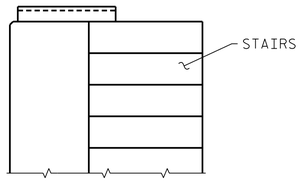
FOR TRUNNION COLUMN NOTES AND REPAIR SEQUENCE, SEE SHEET 1 OF 2.



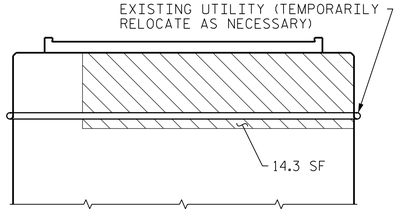
PLAN



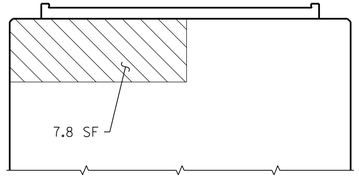
VIEW A-A



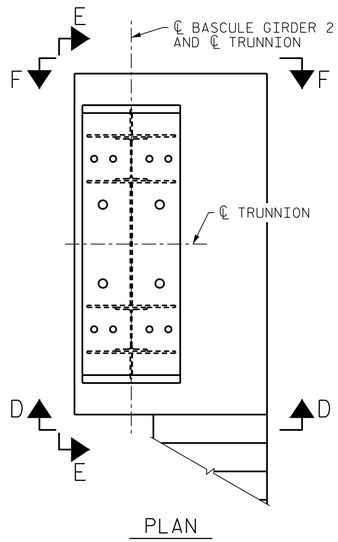
VIEW D-D



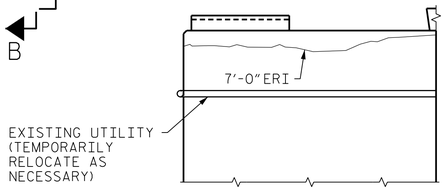
VIEW B-B



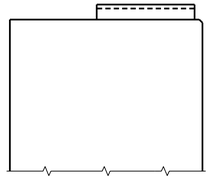
VIEW E-E



PLAN



VIEW C-C

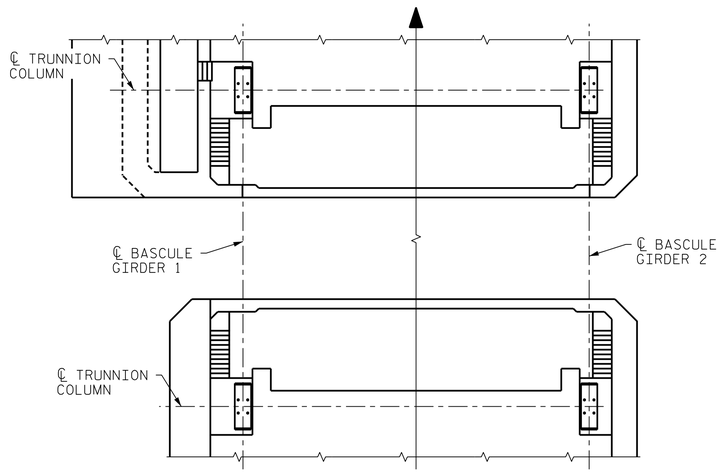


VIEW F-F

EAST BASCULE PIER - GIRDER 1

EAST BASCULE PIER - GIRDER 2

EAST BASCULE PIER



WEST BASCULE PIER

KEY PLAN

EAST BASCULE PIER TRUNNION COLUMN CONCRETE REPAIR QUANTITY TABLE				
CONCRETE REPAIR	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
TRUNNION COLUMN VERTICAL FACE	22.1	7.4	-	-
TRUNNION COLUMN TOP FACE (HORZ.)	-	-	-	-
EPOXY RESIN INJECTION		LN. FT.		LN. FT.
TRUNNION COLUMN VERTICAL FACE		7.0		-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE CONCRETE REPAIRS SPECIAL PROVISIONS.

- TRUNNION COLUMN REPAIR

ERI - EPOXY RESIN INJECTION

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN

TRUNNION COLUMN REPAIRS

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NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

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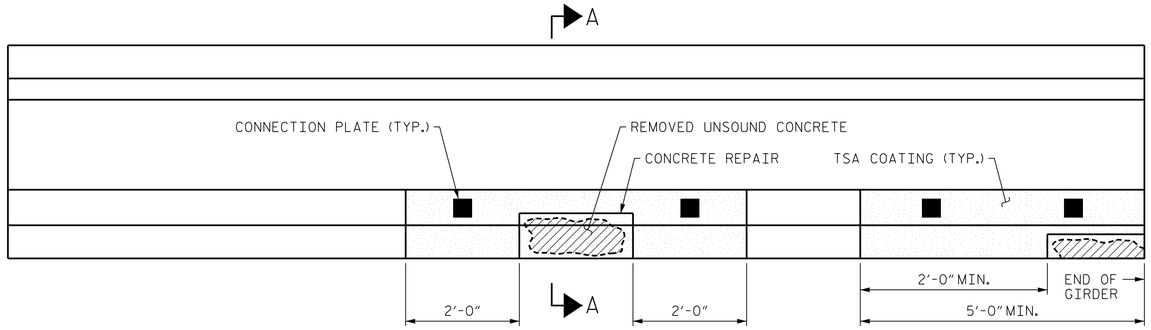
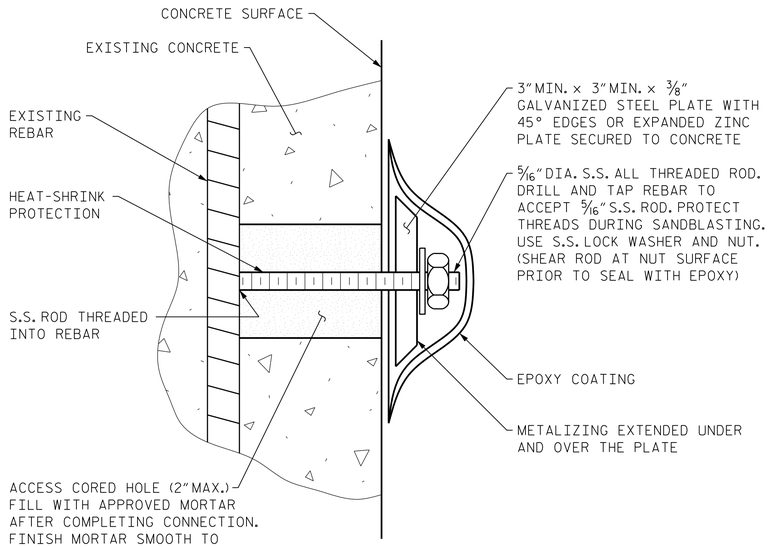
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	J. BORUTA	DATE : MAR 2018
DRAWN BY:	K. WHITE	DATE : MAR 2018
CHECKED BY:	B. LOFLIN	DATE : AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE : NOV 2018

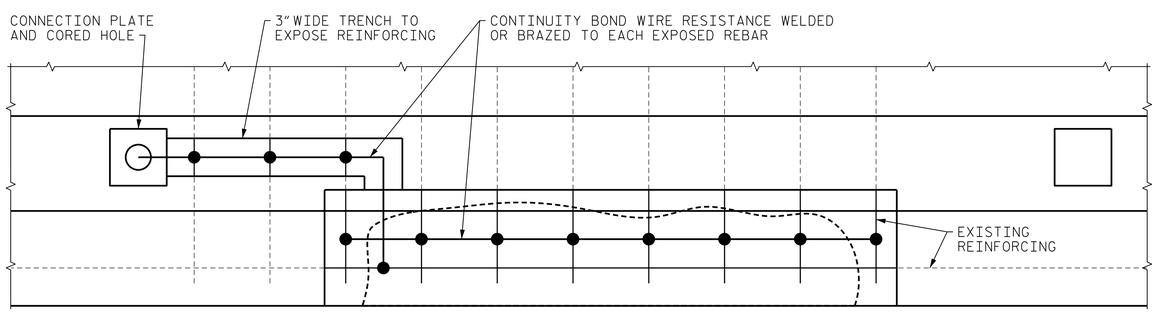
11/12/2018
400.051.15BPR14_SMU_TCR2_640011.dgn



GIRDER ELEVATION FOR THERMAL SPRAYED ANODE (TSA)

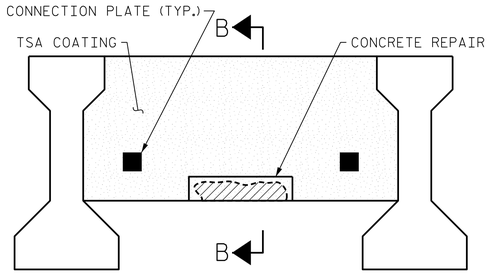


CONNECTION PLATE DETAIL FOR REBARS

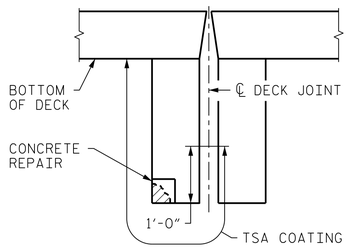


CONNECTIVITY TRENCH DETAIL

IF REQUIRED, SEE NOTES

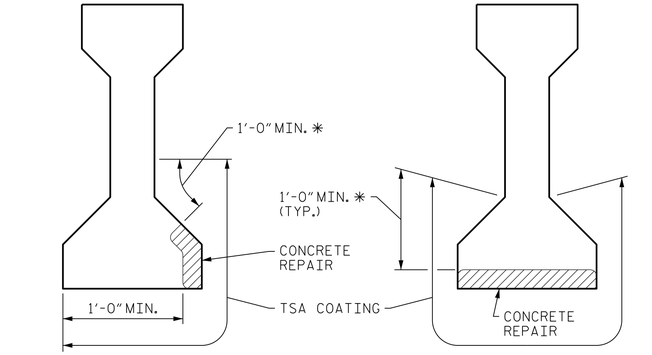


DIAPHRAGM ELEVATION



SECTION B-B

END DIAPHRAGM SHOWN, INTERMEDIATE DIAPHRAGM SIMILAR



SECTION A-A

AT SIDE OF FLANGE REPAIR

SECTION A-A

AT BOTTOM FLANGE REPAIR

* TSA COATING SHALL EXTEND TO FACE OF WEB OR 1'-0" FROM EDGE OF REPAIR, WHICHEVER IS GREATER.

METALIZING PROCEDURES:

1. METALIZING SHALL BE APPLIED AT GIRDER AND DIAPHRAGM REPAIR LOCATIONS WHERE CONCRETE WILL BE REMOVED FROM BEHIND REINFORCING.
2. REMOVE CONCRETE AS SHOWN ON THE GIRDER AND DIAPHRAGM REPAIRS SHEETS.
3. LOCATE STIRRUP IN SOUND CONCRETE ON DIAGONAL FACE OF BOTTOM FLANGE APPROXIMATELY 1'-0" FROM REPAIR AND CORE HOLE AS SHOWN IN CONNECTION PLATE DETAIL FOR REBAR. CORED HOLE LOCATION SHALL BE COORDINATED WITH EXISTING PLANS SO THAT A CONTINUITY BOND WIRE, IF REQUIRED, CAN BE LOCATED AT LEAST 3" FROM STRANDS.
4. CHECK ELECTRICAL CONTINUITY BETWEEN REBAR AT CORED HOLE AND EACH BAR IN REPAIR AREA.
5. IF A PORTION OF THE REBAR IN THE REPAIR AREA DOES NOT HAVE ELECTRICAL CONTINUITY, THEN ESTABLISH CONTINUITY TO THOSE BARS USING A BOND WIRE BRAZED OR WELDED TO AT LEAST TWO OTHER ELECTRICALLY CONNECTED BARS.
6. IF NONE OF THE REINFORCING IN THE REPAIR AREA IS ELECTRICALLY CONTINUOUS WITH THE REBAR AT THE CORED HOLE, THEN SHALLOW TRENCHES SHALL BE USED TO CONNECT A WIRE FROM THE TAPPED REBAR THROUGH THE REPAIR. THE WIRE SHALL BE BRAZED OR WELDED TO EACH BAR IN THE REPAIR AS SHOWN AND EACH BAR BETWEEN THE HOLE AND THE REPAIR.
7. AFTER CONTINUITY IS ESTABLISHED, INSTALL THREADED ROD INTO TAPPED REPAIR AND FILL HOLE.
8. INSTALL REPAIR CONCRETE.
9. NO METALIZING SHALL BE PERFORMED UNTIL THE CONCRETE RESTORATION HAS BEEN APPROVED BY THE ENGINEER. METALIZE AT NO LESS THAN 10 (TEN) DAYS AFTER PLACING CONCRETE, BUT NO MORE THAN 90 DAYS. CONNECT METALIZING CONNECTION PLATE IMMEDIATELY AFTER COMPLETING METALIZING.
10. APPLY A ZINC SILICATE OVERCOAT AT NO MORE THAN 72 HOURS AFTER METALIZING.
11. COAT CONNECTION PLATE WITH EPOXY AT NO MORE THAN 96 HOURS AFTER APPLICATION OF ZINC SILICATE OVERCOAT.

NOTES:

FOR THERMAL SPRAYED ANODE, SEE SPECIAL PROVISIONS.

COORDINATE TSA WITH GIRDER AND DIAPHRAGM REPAIR DETAILS.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

DESIGNED BY:	B. LOFLIN	DATE :	JUNE 2018
DRAWN BY:	K. WHITE	DATE :	JUNE 2018
CHECKED BY:	J. DOUGHTY	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

CATHODIC PROTECTION DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			213

11/12/2018
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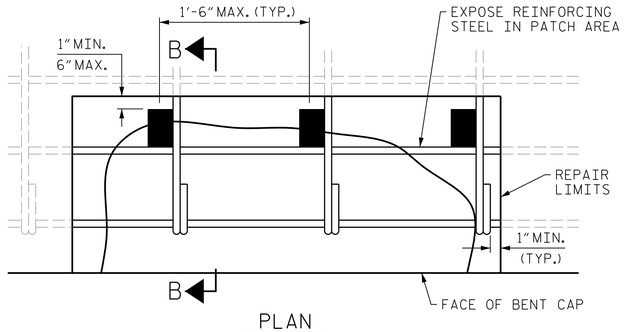
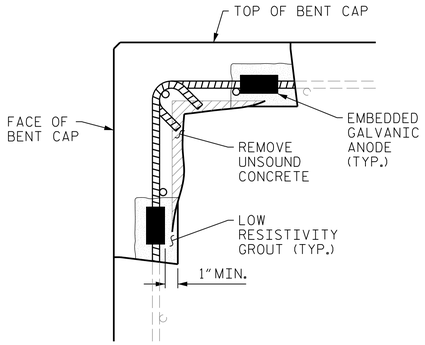
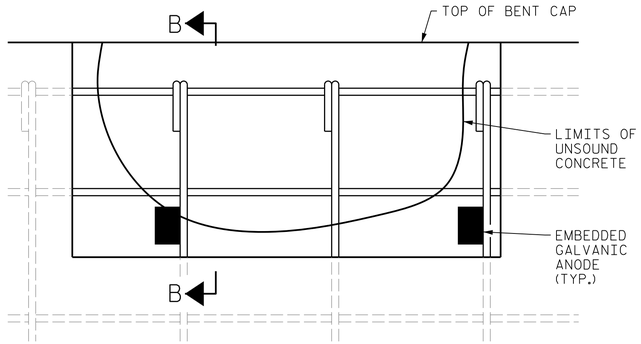


PLAN

LOW RESISTIVITY GROUT
NOT SHOWN FOR CLARITY



SECTION B-B

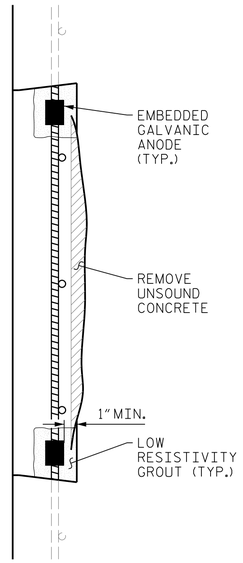


ELEVATION

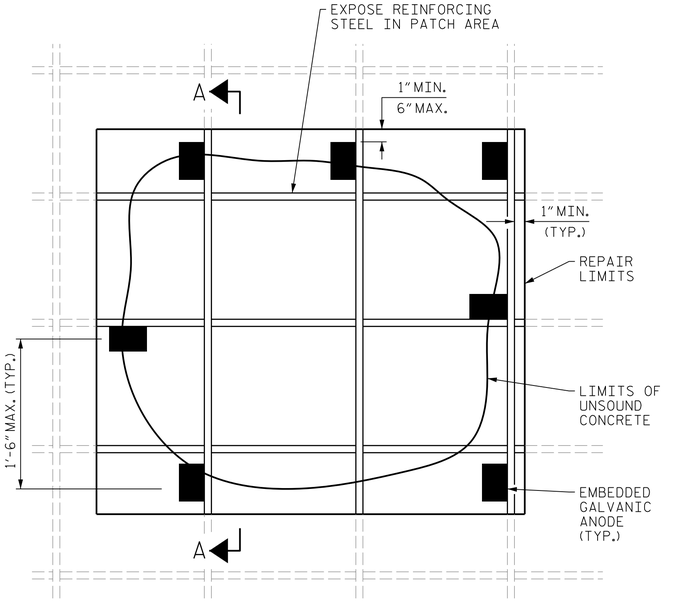
LOW RESISTIVITY GROUT
NOT SHOWN FOR CLARITY

TYPICAL EDGE REPAIR

BENT CAP



SECTION A-A



ELEVATION

LOW RESISTIVITY GROUT
NOT SHOWN FOR CLARITY

TYPICAL SURFACE REPAIR

FACE OF CAP OR COLUMN

NOTES:

EMBEDDED GALVANIC ANODES SHALL BE USED AT SUBSTRUCTURE REPAIR LOCATIONS WHERE CONCRETE BEHIND REINFORCING IS TO BE REMOVED EXCEPT AT INTERIOR OF BASCULE PIER AND TRUNNION COLUMN REPAIR LOCATIONS SHOWN ON THE PLANS. FOR EMBEDDED GALVANIC ANODES, SEE SPECIAL PROVISIONS.

CONTRACTOR MAY USE REPAIR CONCRETE WITH A RESISTIVITY OF 15,000 OHM-CM OR LOWER IN LIEU OF LOW RESISTIVITY GROUT SHOWN IN DETAILS.

ANODES SHALL BE LOCATED AROUND PERIMETER OF REPAIR AND AS CLOSE TO EDGE OF REPAIR AS POSSIBLE WHILE STILL PROVIDING 1" CLEAR BETWEEN ANODE AND EDGE OF REPAIR.

EACH ANODE SHALL CONTAIN A MINIMUM OF 100g OF ZINC.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

CATHODIC PROTECTION DETAILS

DESIGNED BY:	B. LOFLIN	DATE :	JUNE 2018		
DRAWN BY:	K. WHITE	DATE :	JUNE 2018		
CHECKED BY:	J. DOUGHTY	DATE :	AUG 2018		
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018		

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			213

11/12/2018
400.055.15BPR14_SMU.ZM2.640011.dgn

GIRDER AND DIAPHRAGM REPAIR TABLES

SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
1	G5	BENT 1	10"x 8"	LT. FACE BOTT. FLANGE	---
1	G8	BENT 1	13"x 7"	LT. FACE BOTT. FLANGE	---
2	G1	BENT 2	19"x 7"	BOTT. FLANGE	---
2	D1	BENT 1	78"x 10"	BOTT. DIAPHRAGM	1
2	D1	BENT 2	20"x 10"	BOTT. DIAPHRAGM	1
2	G2	MIDSPAN	44"x 17"	BOTT. FLANGE	---
2	G2	22' FROM BENT 2	88"x 10"	BOTT. FLANGE	---
2	G2	BENT 2	11"x 9"	BOTT. FLANGE	---
2	G3	26' FROM BENT 2	21"x 12"	BOTT. FLANGE	---
2	D3	BENT 1	38"x 10"	BOTT. DIAPHRAGM	3
2	G4	BENT 2	13"x 7"	RT. FACE BOTT. FLANGE	---
2	D4	BENT 2	18"x 10"	BOTT. DIAPHRAGM	4
2	G5	BENT 1	11" x 9"	RT. FACE BOTT. FLANGE	---
2	G5	BENT 1	9"x 7"	LT. FACE BOTT. FLANGE	---
2	G5	MIDSPAN	59"x 9"	BOTT. FLANGE	---
2	G5	27' FROM BENT 2	16"x 10"	BOTT. FLANGE	---
2	G5	21' FROM BENT 1	26"x 9"	BOTT. FLANGE	---
2	G5	26' FROM BENT 1	24"x 12"	BOTT. FLANGE	---
2	D5	BENT 1	49"x 10"	BOTT. DIAPHRAGM	5
2	G6	BENT 1	2 @ 10"DIA.	RT. FACE BOTT. FLANGE	---
2	G7	20' FROM BENT 1	121"x 16"	BOTT. FLANGE	---
2	G7	29' FROM BENT 1	35"x 10"	BOTT. FLANGE	---
2	G8	16' FROM BENT 1	28"x 9"	BOTT. FLANGE	---
2	G8	6' FROM BENT 1	14"x 9"	BOTT. FLANGE	---
2	G8	BENT 2	7"x 7"	LT. FACE BOTT. FLANGE	---
2	G9	MIDSPAN	19"x 14"	BOTT. FLANGE	---
2	G9	28' FROM BENT 2	20"x 14"	BOTT. FLANGE	---
2	G10	MIDSPAN	16"x 10"	BOTT. FLANGE	---
2	G10	16' FROM BENT 2	12"x 8"	BOTT. FLANGE	---
2	G10	BENT 1	7"x 7"	BOTT. FLANGE	---
2	G10	4' FROM BENT 2	16"x 7"	LT. FACE TOP FLANGE	---
3	D1	BENT 3	2 @ 36"x 10"	BOTT. DIAPHRAGM	1
3	D1	BENT 2	36"x 10"	BOTT. DIAPHRAGM	1
3	G1	BENT 2	22"x 7"	RT. FACE BOTT. FLANGE	1
3	D2	BENT 3	52"x 10"	BOTT. DIAPHRAGM	2
3	G3	MIDSPAN	5 @ 21"x 9"	BOTT. FLANGE	---
3	G3	21' FROM BENT 3	38"x 9"	BOTT. FLANGE	---
3	G3	18' FROM BENT 3	36"x 11"	BOTT. FLANGE	---
3	G4	MIDSPAN	16"x 10"	BOTT. FLANGE	---
3	G5	MIDSPAN	104"x 22"	BOTT. FLANGE	---
3	D5	BENT 3	40"x 12"	BOTT. DIAPHRAGM	5
3	G5	23' FROM BENT 3	24"x 8"	BOTT. FLANGE	---
3	G5	23' FROM BENT 3	21"x 13"	BOTT. FLANGE	---

GIRDER AND DIAPHRAGM REPAIR TABLES

SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
3	G5	18.5' FROM BENT 3	10"x 8"	BOTT. FLANGE	---
3	G5	BENT 3	13"x 7"	BOTT. FLANGE	---
3	G6	BENT 3	8"x 6"	RT. FACE BOTT. FLANGE	---
3	G8	BENT 2	12"x 7"	LT. FACE BOTT. FLANGE	---
3	G10	BENT 3	11"x 6"	RT. FACE BOTT. FLANGE	---
3	G10	BENT 4	11"x 11"	RT. FACE BOTT. FLANGE	---
3	G10	BENT 3	13"x 6"	LT. FACE BOTT. FLANGE	---
4	G1	BENT 4	6"x 7"	BOTT. FLANGE	---
4	G1	27' FROM BENT 4	28"x 10"	BOTT. FLANGE	---
4	D1	BENT 3	40"x 14"	BOTT. DIAPHRAGM	1
4	D2	BENT 4	40"x 12"	BOTT. DIAPHRAGM	2
4	G2	MIDSPAN	24"x 12"	BOTT. FLANGE	---
4	G2	36.25' FROM BENT 3	12"x 9"	BOTT. FLANGE	---
4	G2	27.25' FROM BENT 4	14"x 10"	BOTT. FLANGE	---
4	G2	19' FROM BENT 4	20"x 9"	BOTT. FLANGE	---
4	D3	BENT 4	61"x 10"	BOTT. DIAPHRAGM	3
4	G4	BENT 3	12"x 7"	BOTT. FLANGE	---
4	D4	BENT 4	40"x 10"	BOTT. DIAPHRAGM	4
4	G5	21.5' FROM BENT 4	18"x 8"	BOTT. FLANGE	---
4	G5	BENT 4	12"x 6"	LT. FACE BOTT. FLANGE	---
4	G5	BENT 4	11"x 7"	RT. FACE BOTT. FLANGE	---
4	G7	27' FROM BENT 4	20"x 8"	BOTT. FLANGE	---
4	G7	17' FROM BENT 4	24"x 11"	BOTT. FLANGE	---
4	G7	BENT 3	9"x 6"	LT. FACE BOTT. FLANGE	---
4	G7	26' FROM BENT 4	16"x 10"	BOTT. FLANGE	---
4	D7	BENT 4	40"x 10"	BOTT. DIAPHRAGM	7
4	G8	BENT 4	14"x 6"	RT. FACE BOTT. FLANGE	---
4	D9	BENT 3	48"x 10"	BOTT. DIAPHRAGM	9
4	D9	BENT 4	22"x 10"	BOTT. DIAPHRAGM	9
4	G10	BENT 3	8"DIAMETER	LT. FACE BOTT. CHAMFER	---
4	G10	BENT 4	11"x 7"	LT. FACE BOTT. FLANGE	---

REPAIR QUANTITY TABLE

SPAN	REPAIRS TO P/S CONCRETE GIRDERS	ESTIMATE		ACTUAL		
		AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
1	GIRDERS	1.19	0.19			
	DIAPHRAGMS	---	---			
2	GIRDERS	51.76	7.20			
	DIAPHRAGMS	14.10	8.54			
3	GIRDERS	36.93	6.28			
	DIAPHRAGMS	14.44	7.08			
4	GIRDERS	15.82	2.28			
	DIAPHRAGMS	22.71	13.83			

NOTES:

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. REPAIR DEPTHS VARY FROM 1½" TO 4½" DEPENDING ON LOCATION.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

DESIGNED BY: J. BORUTA DATE : JULY 2018
DRAWN BY: K. WHITE DATE : JULY 2018
CHECKED BY: C. CORMAN DATE : AUG 2018
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE : NOV 2018

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11/15/2018
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 1 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
APPROACH SPANS

GIRDER AND DIAPHRAGM REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			213

11/12/2018
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GIRDER AND DIAPHRAGM REPAIR TABLES

SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
5	G2	BENT 5	12 x 10"	LT. FACE BOTT. FLANGE	---
5	G3	BENT 4	7" x 7"	RT. FACE BOTT. FLANGE	---
5	G3	BENT 5	13" x 8"	LT. FACE BOTT. FLANGE	---
5	D3	BENT 5	40" x 9"	BOTT. DIAPHRAGM	3
5	G5	19' FROM BENT 4	31" x 10"	BOTT. FLANGE	---
5	G5	18' FROM BENT 5	12" DIAMETER	BOTT. FLANGE	---
5	G5	BENT 4	11" x 6"	LT. FACE BOTT. FLANGE	---
5	G5	BENT 5	10" x 7"	RT. FACE BOTT. FLANGE	---
5	G6	BENT4	11" x 9"	LT. FACE BOTT. FLANGE	---
5	G7	29' FROM BENT 5	13" x 10"	BOTT. FLANGE	---
5	G7	24.5' FROM BENT 4	18" x 11"	BOTT. FLANGE	---
5	D8	BENT 4	16" x 13"	BOTT. DIAPHRAGM	8
5	G8	BENT 4	8" x 8"	BOTT. FLANGE	---
5	G10	BENT 5	16" x 8"	LT. FACE BOTT. CHAMFER	---
6	G1	BENT 6	18" x 18"	LT. FACE WEB & TOP FL.	---
6	G1	BENT 6	21" x 14"	RT. FACE WEB & BOTT. CHAMFER	---
6	G1	BENT 6	30" x 11"	RT. FACE BOTT. FLANGE	---
6	D1	BENT 6	78" x 10"	BOTT. DIAPHRAGM	1
6	G2	BENT 6	16" x 15"	RT. FACE BOTT. FLANGE	---
6	G2	BENT 6	11" x 11"	LT. FACE WEB	---
6	G3	BENT 6	20" x 8"	LT. FACE BOTT. FLANGE	---
6	G3	BENT 6	10 x 6"	LT. FACE BOTT. FLANGE	---
6	G3	BENT 6	16" x 12"	LT. FACE WEB	---
6	G3	BENT 6	14" x 12"	BOTT. FLANGE	---
6	G4	BENT 5	8" x 7"	RT. FACE BOTT. CHAMFER	---
6	D4	BENT 6	28" x 8"	BOTT. DIAPHRAGM	4
6	G7	BENT 6	12" x 7"	LT. FACE BOTT. CHAMFER	---
6	G9	BENT 5	14" x 11"	LT. FACE BOTT. FL.	---
6	G10	MIDSPAN	6" x 7"	BOTT. FLANGE	---
7	G1	24' FROM BENT 7	30" x 9"	BOTT. FL.	---
7	G1	18.5' FROM BENT 7	13" x 9"	BOTT. FL.	---
7	G1	BENT 7	15" x 12"	RT. FACE BOTT. FL.	---
7	G1	17' FROM BENT 6	38" x 8"	BOTT. FLANGE	---
7	G1	30.25' FROM BENT 6	7" x 7"	BOTT. FLANGE	---
7	G2	MIDSPAN	11" x 9"	BOTT. FL.	---
7	D7	BENT 6	34" x 10"	BOTT. DIAPHRAGM	7
7	G6	BENT 6	18" x 12"	BOTT. FLANGE	---
8	G5	BENT 8	8" x 8"	RT. FACE BOTT. FL.	---
8	G9	BENT 7	11" x 6"	LT. FACE BOTT. FL.	---
8	G10	BENT 8	8" x 12"	RT. BOTT. FL.	---
8	G10	BENT 8	8" x 4"	LT. BOTT. FL.	---
9	G1	19' FROM BENT 8	31" x 8"	BOTT. FL.	---
9	G1	25' FROM BENT 8	22" x 12"	BOTT. FL.	---

GIRDER AND DIAPHRAGM REPAIR TABLES

SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
9	G1	22.5' FROM BENT 8	16" x 10"	BOTT. FL.	---
9	G1	MIDSPAN	22" x 11"	BOTT. FL.	---
9	G1	28' FROM BENT 9	16" x 10"	BOTT. FL.	---
9	G2	BENT 8	10" x 7"	RT. FACE BOTT. FL.	---
9	G3	BENT 9	9" x 6"	BOTT. FL.	---
9	G5	BENT 8	12" x 11"	LT. FACE BOTT. FL.	---
9	G6	MIDSPAN	22" x 9"	BOTT. FL.	---
9	G7	18' FROM BENT 8	2 @ 16" x 11"	BOTT. FL.	---
9	G7	26' FROM BENT 8	12" x 9"	BOTT. FL.	---
9	G7	28.5' FROM BENT 8	21" x 11"	BOTT. FL.	---
9	G7	21.5' FROM BENT 8	12" x 10"	BOTT. FL.	---
9	G7	MIDSPAN	13" x 14"	BOTT. FL.	---
9	G9	29' FROM BENT 9	12" x 8"	BOTT. FL.	---
9	G9	17.5' FROM BENT 8	28" x 9"	BOTT. FL.	---
9	G9	BENT 8	12" x 6"	BOTT. FL.	---
9	G9	23' FROM BENT 8	24" x 11"	BOTT. FL.	---
9	G10	BENT 9	14" x 12"	TOP FL.	---
9	G10	BENT 8	13" x 10"	RT. BOTT. FL.	---
10	G1	MIDSPAN	15" x 9"	BOTT. FL.	---
10	G1	20' FROM BENT 9	16" x 10"	BOTT. FL.	---
10	G2	BENT 9	15" x 10"	RT. FACE BOTT. FL.	---
10	G2	MIDSPAN	16" x 10"	BOTT. FL.	---
10	G3	22' FROM BENT 9	44" x 12"	BOTT. FL.	---
10	G5	BENT 9	9" x 6"	RT. FACE BOTT. FL.	---
10	G9	28' FROM BENT 9	16" x 7"	LT. FACE & BOTT. FL.	---
10	G9	30' FROM BENT 10	28" x 8"	LT. FACE & BOTT. FL.	---
10	G9	BENT 10	7" x 6"	LT. FACE OF BOTT. FL.	---
10	G10	BENT 10	8" x 7"	LT. FACE OF BOTT. FL.	---

REPAIR QUANTITY TABLE

SPAN	REPAIRS TO P/S CONCRETE GIRDERS	ESTIMATE		ACTUAL		
		AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
5	GIRDERS	10.29	1.88			
	DIAPHRAGMS	5.28	1.71			
6	GIRDERS	15.45	4.31			
	DIAPHRAGMS	6.97	4.07			
7	GIRDERS	8.58	1.20			
	DIAPHRAGMS	2.36	0.98			
8	GIRDERS	1.79	0.51			
	DIAPHRAGMS	---	---			
9	GIRDERS	23.66	3.04			
	DIAPHRAGMS	---	---			
10	GIRDERS	11.26	1.65			
	DIAPHRAGMS	---	---			

NOTES:

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. REPAIR DEPTHS VARY FROM 1½" TO 4½" DEPENDING ON LOCATION.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

DESIGNED BY: J. BORUTA DATE : JULY 2018
DRAWN BY: K. WHITE DATE : JULY 2018
CHECKED BY: C. CORMAN DATE : AUG 2018
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE : NOV 2018

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 2 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

GIRDER AND DIAPHRAGM REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			213

11/12/2018
400_059_15BPR14_SMU_GSR2_64001.dgn

GIRDER AND DIAPHRAGM REPAIR TABLES

SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
11	G1	BENT 11	13″ x 11″	BOTT. FL.	---
11	G2	27.25′ FROM BENT 10	16″ x 20″	BOTT. FL.	---
11	G2	BENT 11	13″ x 11″	BOTT. FL.	---
11	G3	MIDSPAN	38″ x 16″	BOTT. FL.	---
11	G3	BENT 11	6″ x 6″	BOTT. FL.	---
11	G4	20″ FROM BENT 10	12″ x 11″	BOTT. FL.	---
11	G4	BENT 10	11″ x 9″	BOTT. FL.	---
11	G4	20′ FROM BENT 10	40″ x 8″	BOTT. FL.	---
11	G5	BENT 10	11″ x 9″	RT. FACE WEB	---
11	G5	BENT 11	24″ x 8″	BOTT. FL.	---
11	G6	20′ FROM BENT 10	40″ x 10″	BOTT. FL.	---
11	G8	21′ FROM BENT 10	50″ x 16″	LT. FACE AND BOTT. FL.	---
11	G8	27′ FROM BENT 10	46″ x 12″	BOTT. FL.	---
11	G9	20′ FROM BENT 10	25″ x 12″	BOTT. FL.	---
11	G9	BENT 10	22″ x 16″	BOTT. FL.	---
11	G9	26′ FROM BENT 10	20″ x 18″	BOTT. FL.	---
11	G9	36′ FROM BENT 11	44″ x 15″	RT. FACE & BOTT. FL.	---
11	G9	BENT 11	6″ x 6″	BOTT. FL.	---
11	G9	BENT 11	21″ x 16″	BOTT. FL.	---
12	G1	BENT 11	12″ x 13″	RT. FACE BOTT. FL.	---
12	D1	BENT 12	42″ x 6″	BOTT. DIAPHRAGM	1
12	G2	BENT 11	9″ x 13″	LT. FACE OF BOTT. FL.	---
12	G2	BENT 11	17″ x 13″	BOTT. FL.	---
12	G3	BENT 11	16″ x 8″	BOTT. FL.	---
12	G4	BENT 11	21″ x 7″	BOTT. FL.	---
12	G5	BENT 12	14″ x 7″	LT. FACE OF BOTT. FL.	---
12	G5	BENT 11	21″ x 12″	BOTT. FL.	---
12	G6	BENT 12	15″ x 7″	RT. FACE OF BOTT. FL.	---
12	G5	BENT 12	19″ x 14″	BOTT. FL.	---
12	G5	BENT 12	19″ x 16″	RT. FACE OF BOTT. FL.	---
12	G6	15′ FROM BENT 11	22″ x 12″	BOTT. FL.	---
12	G6	15′ FROM BENT 11	22″ x 12″	BOTT. FL.	---
12	G6	30′ FROM BENT 11	28″ x 18″	BOTT. FL.	---
12	G6	25′ FROM BENT 11	6″ x 6″	BOTT. FL.	---
12	G6	BENT 11	15″ x 9″	LT. FACE OF BOTT. FL.	---
12	G6	35′ FROM BENT 11	46″ x 12″	BOTT. FL.	---
12	G6	38′ FROM BENT 12	24″ x 14″	BOTT. FL.	---
12	G6	AT MIDSPAN	24″ x 12″	BOTT. FL.	---
12	G6	24′ FROM BENT 11	60″ x 24″	BOTT. FL.	---
12	G6	30′ FROM BENT 11	22″ x 13″	BOTT. FL.	---
12	G7	BENT 11	13″ x 10″	BOTT. FL.	---
12	G7	BENT 12	11″ x 9″	LT. FACE OF BOTT. FL.	---
12	G7	BENT 11	8″ x 8″	RT. FACE OF BOTT. FL.	---

GIRDER AND DIAPHRAGM REPAIR TABLES

SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
12	D7	MIDSPAN	28″ x 11″	BOTT. DIAPHRAGM	7
12	G8	BENT 11	13″ x 9″	BOTT. FL.	---
12	G8	BENT 12	15″ x 10″	BOTT. FL.	---
12	G9	BENT 12	26″ x 26″	BOTT. FL.	---
12	G9	BENT 11	18″ x 12″	BOTT. FL.	---
12	G9	3′ FROM BENT 12	52″ x 21″	RT. FACE OF BOTT. FL.	---
12	G9	8″ FROM BENT 12	13″ x 9″	LT. FACE OF BOTT. FL.	---

REPAIR QUANTITY TABLE

SPAN	REPAIRS TO P/S CONCRETE GIRDERS	ESTIMATE		ACTUAL		
		AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
11	GIRDERS	40.89	7.42			
	DIAPHRAGMS	---	---			
12	GIRDERS	60.13	9.22			
	DIAPHRAGMS	3.89	0.84			

NOTES:

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. REPAIR DEPTHS VARY FROM 1½″ TO 4½″ DEPENDING ON LOCATION.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

DESIGNED BY: J. BORUTA/C. CORMAN DATE : JULY 2018
DRAWN BY: K. WHITE DATE : JULY 2018
CHECKED BY: C. CORMAN/J. BORUTA DATE : AUG 2018
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE : NOV 2018

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NC LICENSE NO. C-2979

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 3 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
APPROACH SPANS

GIRDER AND DIAPHRAGM REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			213

11/12/2018
400_061_15BPR14_SMU_CSR3_640011.dgn

GIRDER AND DIAPHRAGM REPAIR TABLES

SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
13	G1	BENT 12	27″ x 15″	RT. FACE & BOTT. FL.	---
13	G1	BENT 12	8″ DIAMETER	BOTT. FL.	---
13	G1	37′ FROM BENT 13	12″ x 11″	BOTT. FL.	---
13	G1	BENT 13	10″ x 9″	RT. FACE OF BOTT. CHAMFER	---
13	G2	BENT 12	15″ x 10″	BOTT. FL.	---
13	G2	2′ FROM BENT 13	7″ DIAMETER	BOTT. FL.	---
13	G2	BENT 13	11″ x 9″	LT. FACE OF BOTT. CHAMFER	---
13	G3	BENT 13	9″ x 8″	BOTT. FL.	---
13	G3	BENT 13	13″ x 8″	RT. FACE OF BOTT. FL.	---
13	G4	6″ FROM BENT 12	8″ x 6″	BOTT. FL.	---
13	G4	BENT 13	24″ x 10″	BOTT. FL.	---
13	G5	BENT 12	10″ x 16″	RT. FACE OF BOTT. FL.	---
13	G5	BENT 13	34″ x 23″	LT. FACE AND BOTT. FL.	---
13	G6	BENT 12	8″ x 11″	RT. FACE OF BOTT. FL.	---
13	G6	BENT 13	12″ x 7″	BOTT. FL.	---
13	G7	2′ FROM BENT 12	14″ x 7″	BOTT. FL.	---
13	G7	39′ FROM BENT 13	21″ x 13″	BOTT. FL.	---
13	G7	BENT 12	8″ DIAMETER	RT. FACE OF BOTT. CHAMFER	---
13	G7	BENT 12	8″ x 8″	LT. FACE OF BOTT. FL.	---
13	G7	BENT 12	17″ x 9″	BOTT. FL.	---
13	G7	BENT 13	19″ x 10″	BOTT. FL.	---
13	G8	2′ FROM BENT 13	13″ x 10″	BOTT. FL.	---
13	G8	MIDSPAN	21″ x 11″	BOTT. FL.	---
13	G8	BENT 12	7″ x 6″	LT. FACE OF BOTT. CHAMFER	---
13	G9	BENT 12	13″ x 12″	LT. FACE OF BOTT. FL.	---
13	G9	BENT 12	13″ x 10″	RT. FACE OF BOTT. FL.	---
13	G9	8′ FROM BENT 12	23″ x 13″	BOTT. FL.	---
13	G9	32′ FROM BENT 12	26″ x 15″	BOTT. FL.	---
13	G9	30′ FROM BENT 12	18″ x 16″	RT. FACE OF BOTT. FL.	---
13	G9	20.5′ FROM BENT 13	39″ x 14″	✳ RT. FACE OF BOTT. FL.	---
13	D8	AT MIDSPAN	21″ x 13″	SOUTH END OF DIAPHRAGM	8
13	G9	13′ FROM BENT 12	40″ x 16″	RT. FACE & BOTT. FL.	---
13	G9	18′ FROM BENT 12	30″ x 18″	LT. FACE OF BOTT. CHAMFER	---
13	G9	26′ FROM BENT 12	36″ x 14″	RT. FACE & BOTT. FL.	---
14	G1	37′ FROM BENT 13	28″ x 9″	BOTT. FL.	---
14	G1	7′ EAST OF MIDSPAN	10″ x 8″	BOTT. FL.	---
14	G1	MIDSPAN	21″ x 16″	BOTT. FL.	---
14	G2	36′ FROM BENT 13	15″ x 10″	BOTT. FL.	---
14	G2	BENT 13	14″ x 10″	RT. KEEPER BLOCK	---
14	G3	28′ FROM BENT 13	13″ x 8″	BOTT. FL.	---
14	G3	27′ FROM BENT 14	44″ x 10″	BOTT. FL.	---
14	G4	BENT 14	8″ DIAMETER	RT. FACE OF WEB	---
14	G4	BENT 13	10″ x 7″	LT. FACE OF BOTT. FL.	---

GIRDER AND DIAPHRAGM REPAIR TABLES

SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
14	G5	32′ FROM BENT 13	28″ x 7″	BOTT. FL.	---
14	G5	MIDSPAN	112″ x 13″	BOTT. FL.	---
14	G5	BENT 13	8″ x 14″	RT. FACE OF BOTT. FL.	---
14	G5	BENT 13	9″ x 7″	LT. FACE OF WEB	---
14	G5	BENT 14	7″ x 8″	BOTT. FL.	---
14	G6	36.5′ FROM BENT 13	12″ x 10″	BOTT. FL.	---
14	G8	BENT 14	28″ x 25″	BOTT. FL.	---
14	G9	BENT 14	19″ x 13″	BOTT. FL.	---
14	G9	BENT 13	10″ x 15″	RT. FACE OF BOTT. FL.	---
14	G9	16′ FROM BENT 13	9″ x 5″	BOTT. FL.	---
14	G9	BENT 13	6″ x 7″	BOTT. FL.	---
14	G9	10′ FROM BENT 13	25″ x 13″	BOTT. FL.	---
14	G9	30′ FROM BENT 14	13″ x 9″	BOTT. FL.	---

REPAIR QUANTITY TABLE

SPAN	REPAIRS TO P/S CONCRETE GIRDERS	ESTIMATE		ACTUAL		
		AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
13	GIRDERS	57.06	12.25			
	DIAPHRAGMS	1.90	0.55			
14	GIRDERS	36.37	5.85			
	DIAPHRAGMS	---	---			

SPLICING OF P/S STRAND

SPAN	GIRDER	EACH
13	9	1

NOTES:

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. REPAIR DEPTHS VARY FROM 1½″ TO 4½″ DEPENDING ON LOCATION.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

✳ REPAIR INCLUDES SPLICING OF PRESTRESSING STRAND(S).

DESIGNED BY: J. BORUTA/C. CORMAN DATE : JULY 2018
DRAWN BY: K. WHITE DATE : JULY 2018
CHECKED BY: C. CORMAN/J. BORUTA DATE : AUG 2018
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE : NOV 2018

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NC LICENSE NO. C-2979

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 4 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
APPROACH SPANS

GIRDER AND DIAPHRAGM REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			213

11/12/2018
400_063_15BPR14_SMU_GSR4_64001I.dgn

GIRDER AND DIAPHRAGM REPAIR TABLES

SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
16	G1	7' FROM BENT 15	31" x 12"	BOTT. FL.	---
16	G1	BENT 16	17" x 17"	TOP LFT. FLG.	---
16	G1	9.5' FROM BENT 15	56" x 10"	BOTT. FL.	---
16	G1	15.5' FROM BENT 15	516" x 10"	BOTT. FL.	---
16	G1	17' FROM BENT 16	24" x 12"	BOTT. FL.	---
16	G1	2' FROM BENT 16	16" x 11"	BOTT. FL.	---
16	G2	39' FROM BENT 16	14" x 8"	BOTT. FL.	---
16	G2	BENT 15	8" x 8"	BOTT. FL.	---
16	G2	38.5' FROM BENT 15	16" x 10"	BOTT. FL.	---
16	G3	MIDSPAN	28" x 10"	BOTT. FL.	---
16	G3	BENT 16	2 @ 14" x 13"	BOTT. FL.	---
16	G4	27' FROM BENT 15	40" x 14"	BOTT. FL.	---
16	G4	30' FROM BENT 15	70" x 10"	BOTT. FL.	---
16	G4	2' FROM BENT 15	16" x 9"	BOTT. FL.	---
16	G4	37' FROM BENT 15	124" x 9"	BOTT. FL.	---
16	G4	BENT 16	13" x 8"	BOTT. FL.	---
16	D2	MIDSPAN	13" x 10"	BOTT. DIAPHRAGM	---
16	G4	BENT 15	12" x 8"	N. KEEPER BLOCK	---
16	D9	BENT 15	40" x 16"	BOTT. DIAPHRAGM	9
16	G5	30' FROM BENT 15	216" x 26"	BOTT. FL.	---
16	G5	19' FROM BENT 15	28" x 14"	BOTT. FL.	---
16	G5	29' FROM BENT 15	26" x 12"	BOTT. FL.	---
16	G6	37' FROM BENT 15	40" x 12"	BOTT. FL.	---
16	G6	32' FROM BENT 15	34" x 16"	BOTT. FL.	---
16	G6	30' FROM BENT 15	9" DIAMETER	BOTT. FL.	---
16	G7	BENT 15	22" x 9"	BOTT. FL.	---
16	G8	BENT 16	14" x 9"	BOTT. FL.	---
16	G9	20' FROM BENT 16	10" x 5"	BOTT. FL.	---
16	G9	BENT 16	12" x 13"	BOTT. FL.	---
16	G10	BENT 16	2 @ 15" x 8"	BOTT. FL.	---
16	G10	BENT 16	10" x 12"	BOTT. FL.	---
16	G11	33' FROM BENT 15	26" x 14"	BOTT. FL.	---
16	G11	40' FROM BENT 16	56" x 13"	BOTT. FL.	---
16	G11	40' FROM BENT 15	26" x 13"	BOTT. FL.	---
16	G11	37' FROM BENT 16	9" DIAMETER	BOTT. FL.	---
16	G11	38' FROM BENT 16	26" x 13"	BOTT. FL.	---
17	G5	14' FROM BENT 16	22" x 15"	BOTT. FL.	---
17	G5	19.5' FROM BENT 16	9" x 11"	BOTT. FL.	---
17	G5	26' FROM BENT 16	96" x 24"	BOTT. FL.	---
17	G5	31' FROM BENT 16	31" x 9"	BOTT. FL.	---
17	G5	36' FROM BENT 16	54" x 24"	BOTT. FL.	---
17	G5	31.5' FROM BENT 17	180" x 13"	BOTT. FL.	---
17	D6	BENT 16	50" x 10"	BOTT. DIAPHRAGM	BAY 6

GIRDER AND DIAPHRAGM REPAIR TABLES

SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
17	D7	BENT 17	54" x 10"	CORNER OF DIAPHRAGM	BAY 7
17	G5	BENT 16	19" x 12"	BOTT. FL.	---
17	G6	MIDSPAN	10" DIAMETER	BOTT. FL.	---
17	G7	28' FROM BENT 16	11" x 7"	BOTT. FL.	---
17	G7	MIDSPAN	9" x 11"	BOTT. FL.	---
17	G7	BENT 16	10" DIAMETER	BOTT. FL.	---
17	G7	BENT 17	7" x 8"	BOTT. FL.	---
17	G7	2' FROM BENT 17	10" x 7"	BOTT. FL.	---
17	G8	26' FROM BENT 16	36" x 14"	BOTT. FL.	---
17	G8	2' FROM BENT 16	10" x 8"	BOTT. FL.	---
17	G8	BENT 16	9" x 13"	BOTT. FL.	---
17	G8	20' FROM BENT 16	52" x 14"	BOTT. FL.	---
18	G5	38' FROM BENT 18	26" x 10"	BOTT. FL.	---
18	G5	30' FROM BENT 18	25" x 10"	BOTT. FL.	---
18	G5	MIDSPAN	54" x 17"	BOTT. FL.	---
18	G5	40.5' FROM BENT 18	11" x 8"	BOTT. FL.	---
18	G5	31' FROM BENT 18	52" x 7"	BOTT. FL.	---
18	D5	BENT 17	52" x 10"	BOTT. DIAPHRAGM	BAY 5
18	G6	35' FROM BENT 18	20" x 9"	BOTT. FL.	---
18	G6	30' FROM BENT 18	25" x 7"	BOTT. FL.	---
18	G7	BENT 18	9" x 7"	BOTT. FL.	---
18	D7	BENT 17	40" x 13"	BOTT. DIAPHRAGM	BAY 7
18	G7	3' EAST OF MIDSPAN	14" DIAMETER	BOTT. FL.	---
18	G8	2' FROM BENT 17	2 @ 9" x 8"	BOTT. FL.	---
18	G9	BENT 17	7" DIAMETER	BOTT. FL.	---
18	G12	2' FROM BENT 18	16" x 5"	LT. FACE OF WEB	---

REPAIR QUANTITY TABLE

SPAN	REPAIRS TO P/S CONCRETE GIRDERS	ESTIMATE		ACTUAL		
		AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
16	GIRDERS	149.47	19.32			
	DIAPHRAGMS	5.35	1.78			
17	GIRDERS	60.67	8.56			
	DIAPHRAGMS	7.22	4.21			
18	GIRDERS	18.85	2.35			
	DIAPHRAGMS	7.22	4.21			

NOTES:

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. REPAIR DEPTHS VARY FROM 1½" TO 4½" DEPENDING ON LOCATION.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 5 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

GIRDER AND DIAPHRAGM REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			213

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

DESIGNED BY:	J. BORUTA/C. CORMAN	DATE :	JULY 2018
DRAWN BY:	K. WHITE	DATE :	JULY 2018
CHECKED BY:	C. CORMAN/J. BORUTA	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

11/12/2018
400_065_15BPR14_SMU_GSR5_640011.dgn

GIRDER AND DIAPHRAGM REPAIR TABLES

SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
19	G7	21.5' FROM BENT 18	28"x 13"	BOTT. FL.	---
19	G7	MIDSPAN	18"x 10"	BOTT. FL.	---
19	G7	36' FROM BENT 19	64"x 14"	BOTT. FL.	---
19	G7	BENT 18	11"x 7"	BOTT. FL.	---
19	G7	32' FROM BENT 18	64"x 13"	BOTT. FL.	---
19	D7	BENT 19	40"x 10"	BOTT. DIAPHRAGM	BAY 7
19	G8	BENT 19	21"x 10"	BOTT. FL.	---
19	D8	BENT 18	28"x 10"	BOTT. DIAPHRAGM	BAY 8
19	D8	BENT 19	40"x 10"	BOTT. DIAPHRAGM	BAY 8
19	G9	29.5' FROM BENT 18	19"x 12"	BOTT. FL.	---
19	G9	39' FROM BENT 18	11"x 7"	BOTT. FL.	---
19	G9	31' FROM BENT 18	11" DIAMETER	BOTT. FL.	---
19	G9	36' FROM BENT 18	33"x 17"	BOTT. FL.	---
19	D9	BENT 19	19"x 12"	BOTT. DIAPHRAGM	BAY 9
19	G10	BENT 19	10" DIAMETER	BOTT. FL.	---
19	G12	BENT 18	12"x 7"	BOTT. FL.	---
19	D12	BENT 19	22"x 10"	BOTT. DIAPHRAGM	BAY 12
19	G13	BENT 19	9"x 4"	LT. FACE OF WEB	---
19	G14	25' FROM BENT 18	76"x 9"	BOTT. FL.	---
19	G15	24' FROM BENT 18	34"x 17"	BOTT. FL.	---
19	G15	27' FROM BENT 18	48"x 15"	RT. FACE AND BOTT. FL.	---
19	G15	34' FROM BENT 18	11"x 11"	BOTT. FL.	---
19	G15	37.5' FROM BENT 18	54"x 11"	BOTT. FL.	---
19	G15	35' FROM BENT 19	16"x 14"	BOTT. FL.	---
19	G15	28.5' FROM BENT 19	15"x 14"	BOTT. FL.	---
19	G15	37.5 ' FROM BENT 18	20"x 14"	BOTT. FL.	---
19	G15	2' FROM BENT 19	12"x 7"	BOTT. FL.	---
19	G18	2' FROM BENT 18	22"x 5"	RT. FACE OF WEB	---

REPAIR QUANTITY TABLE

SPAN	REPAIRS TO P/S CONCRETE GIRDERS	ESTIMATE		ACTUAL		
		AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
19	GIRDERS	50.42	7.14			
	DIAPHRAGMS	10.61	5.55			

NOTES:

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. REPAIR DEPTHS VARY FROM 1½" TO 4½" DEPENDING ON LOCATION.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 6 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

GIRDER AND DIAPHRAGM REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			213

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

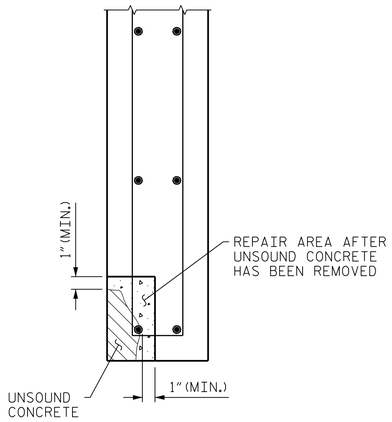
NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018

DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

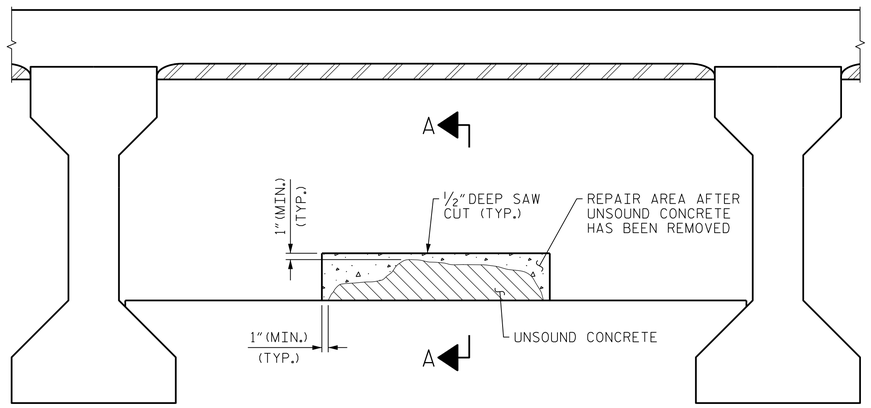
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGNED BY:	J. BORUTA	DATE : JULY 2018
DRAWN BY:	K. WHITE	DATE : JULY 2018
CHECKED BY:	C. CORMAN	DATE : AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE : NOV 2018

11/12/2018
400.067.15BPR14.SWU.GSR6.64001I.dgn



SECTION A-A



ELEVATION

PRESTRESSED GIRDER DIAPHRAGM REPAIR

NOTES:

CONTRACTOR SHALL REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL.

CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF ½" BUT REINFORCING STEEL SHALL NOT BE DAMAGED.

CONTRACTOR SHALL SAW CUT THE REPAIR AREAS SO THAT THE CORNERS ARE SQUARE AS INDICATED ON THE DETAILS.

FOR REPAIRS TO CONCRETE DIAPHRAGM, SEE SPECIAL PROVISIONS FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS.

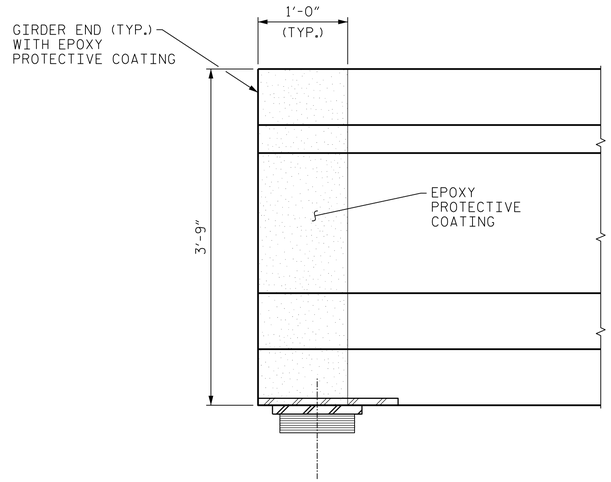
FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

PACKAGED MATERIAL IS REQUIRED.

FOR REPAIRS OVER TRAFFIC AND SHALLOW REPAIRS THAT DO NOT ENGAGE REINFORCEMENT, ANCHOR PATCH MATERIAL USING ¼" GALVANIZED BOLTS, EPOXY ANCHORED WITH 2" EMBEDMENT. PLACE BOLTS IN A 6" GRID. USE A LATEX OR EPOXY PATCH MATERIAL FOR IMPROVED BOND. USE EXTREME CARE TO NOT DAMAGE STRANDS.

REPAIRS THAT EXTEND BEHIND REINFORCING SHALL USE THERMALLY SPRAYED ANODE. SEE CATHODIC PROTECTION DETAILS SHEET.

AT LOCATIONS WHERE BOTH THERMAL SPRAYED ANODE AND EPOXY PROTECTIVE COATING ARE REQUIRED, THERMAL SPRAYED ANODE SHALL BE COMPLETED PRIOR TO PLACEMENT OF EPOXY PROTECTIVE COATING.



EPOXY PROTECTIVE COATING DETAIL

AASHTO TYPE III SHOWN, AASHTO TYPE IV SIMILAR.

EPOXY PROTECTIVE COATING TO BE APPLIED AS SHOWN ABOVE, ONLY WHEN REPAIRS ARE LOCATED WITHIN 1'-0"± OF GIRDER END.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 7 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

GIRDER AND DIAPHRAGM REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	J. BORUTA	DATE : JULY 2018
DRAWN BY:	K. WHITE	DATE : JULY 2018
CHECKED BY:	B. LOFLIN	DATE : AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE : NOV 2018

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

11/12/2018
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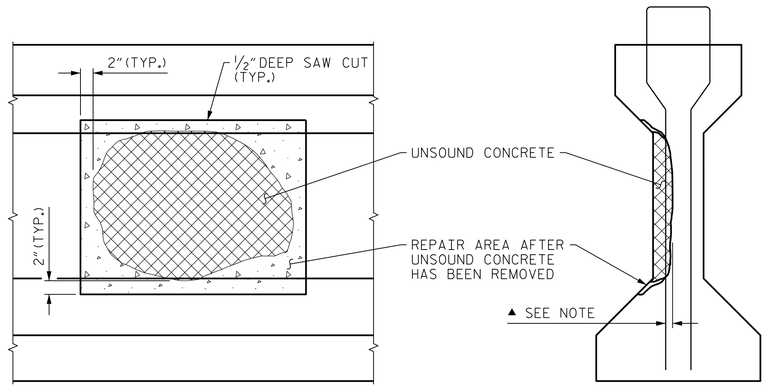
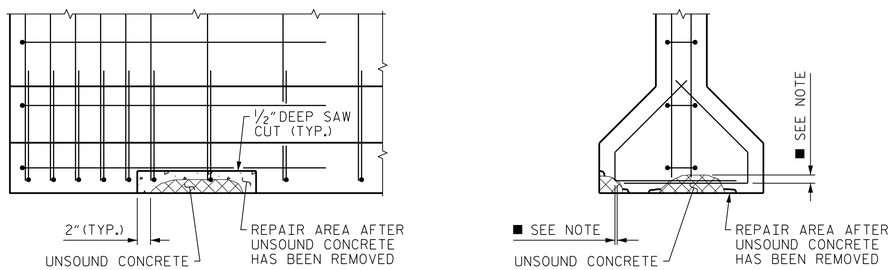


ELEVATION SECTION

GIRDER WEB REPAIR



ELEVATION SECTION

GIRDER FLANGE REPAIR

PRESTRESSED GIRDER REPAIR

PRESTRESSED GIRDER REPAIR SEQUENCE:

1. SOUND CONCRETE TO DETERMINE EXTENTS OF REPAIR LOCATION.
2. REMOVE SURFACE CONCRETE TO VERIFY THAT SAW CUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL. SAW CUT AROUND REPAIR AREA TO A NOMINAL DEPTH OF ½".
3. REMOVE CONCRETE WITHIN SAW CUT AREA TO MINIMUM ½" DEPTH. IF CONCRETE IS DAMAGED BEYOND THE ORIGINAL SAW CUT, A NEW SAW CUT IS REQUIRED.
4. IF MORE THAN HALF THE CIRCUMFERENCE OF A REINFORCING BAR IS EXPOSED DURING THIS PROCESS, REMOVE ADDITIONAL CONCRETE TO 1" BEHIND THE BAR.
   ▲ THIS DOES NOT APPLY TO PRESTRESSED STRANDS.
5. ■ ALL UNSOUND CONCRETE MUST BE REMOVED. HOWEVER, PRESTRESSED STRANDS SHOULD NOT BE DISTURBED UNLESS ABSOLUTELY NECESSARY. USE EXTREME CARE TO NOT DAMAGE STRANDS.
6. USE ABRASIVE BLAST METHOD TO CLEAN ALL EXPOSED REINFORCING BARS AND PRESTRESSED STRANDS. FOR BARS WITH MORE THAN 10% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL REINFORCING BARS AS NEEDED. NOTE AND PROVIDE DETAILED DOCUMENTATION, INCLUDING LOCATION AND SEVERITY, OF ALL DAMAGE TO PRESTRESSED STRANDS THAT EXCEEDS 10% SECTION LOSS. IF FIVE OR MORE STRANDS ARE DAMAGED, NOTIFY THE ENGINEER PRIOR TO PLACEMENT OF REPAIR MATERIAL.
7. REMOVE ALL LOOSE OR WEAKENED MATERIAL THEN CLEAN THE REPAIR AREA OF DIRT, GREASE, OIL, AND FOREIGN MATTER.
8. PREPARE SURFACE AND PLACE APPROVED REPAIR MATERIAL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. MAXIMUM AGGREGATE SIZE FOR REPAIR MATERIAL SHALL NOT EXCEED 2/3 THE MINIMUM REPAIR DEPTH.

NOTES:

CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF ½" BUT REINFORCING STEEL AND PRESTRESSED TENDONS SHALL NOT BE DAMAGED.

CONTRACTOR SHALL SAW CUT THE REPAIR AREAS SO THAT THE CORNERS ARE SQUARE AS INDICATED ON THE DETAILS.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

PACKAGED MATERIAL IS REQUIRED.

CONSULT WITH THE ENGINEER TO DETERMINE PRELOADING REQUIREMENTS WHEN REPAIR IS WITHIN THE CENTER REGION OF THE BEAM (0.25L TO 0.75L).

FOR REPAIRS OVER TRAFFIC AND SHALLOW REPAIRS THAT DO NOT ENGAGE REINFORCEMENT, ANCHOR PATCH MATERIAL USING 1#4" GALVANIZED BOLTS, EPOXY ANCHORED WITH 2" EMBEDMENT. PLACE BOLTS IN A 6" GRID. USE A LATEX OR EPOXY PATCH MATERIAL FOR IMPROVED BOND. USE EXTREME CARE TO NOT DAMAGE STRANDS.

REPAIRS THAT EXTEND BEHIND REINFORCING SHALL USE THERMALLY SPRAYED ANODE. SEE CATHODIC PROTECTION DETAILS SHEET.

FOR GIRDER BOTTOM FLANGE REPAIRS, AT THE TIME WHEN REPAIR MATERIAL IS BEING PLACED, NO LIVE LOAD IS PERMITTED WITHIN 10 FEET OF THE GIRDER BEING REPAIRED.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 8 OF 8

DESIGNED BY:	J. BORUTA — DATE : JULY 2018
DRAWN BY:	K. WHITE — DATE : JULY 2018
CHECKED BY:	B. LOFLIN — DATE : AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY — DATE : NOV 2018

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

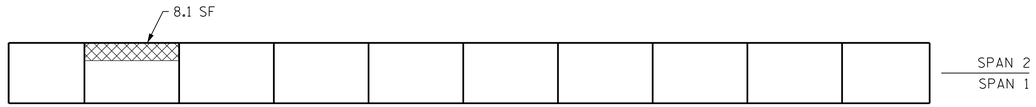
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

GIRDER AND DIAPHRAGM REPAIRS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			213

11/12/2018
400.071.15BPR14_SMU_GSR8_64001I.dgn



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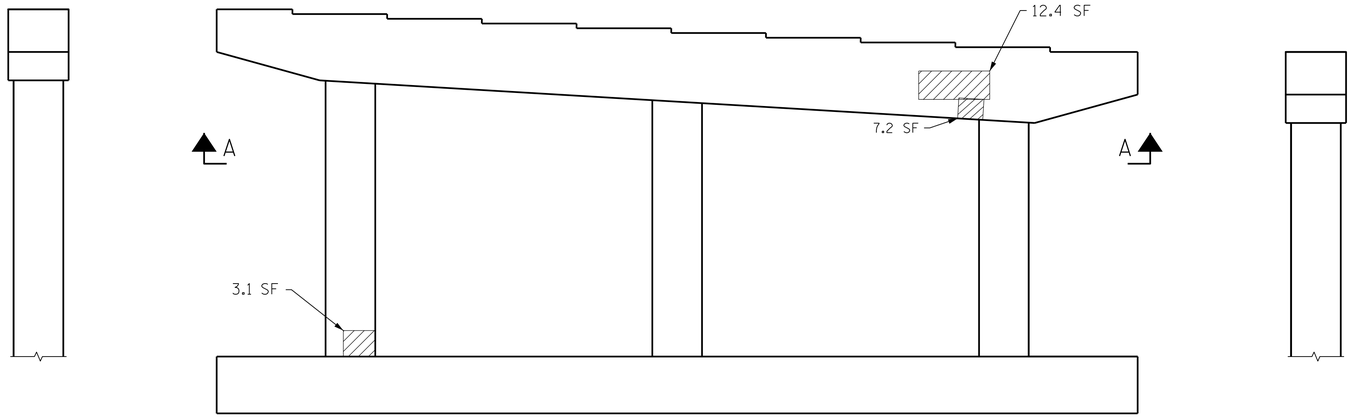


END VIEW
NORTH END

ELEVATION
LOOKING AHEAD STATION

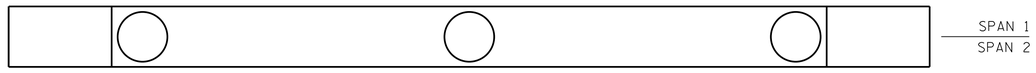
END VIEW
SOUTH END

REPAIR QUANTITY TABLE				
REPAIRS BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	19.7	7.6	-	-
CAP (HORIZONTAL, CORNER)	-	-	-	-
COLUMN (VERT. FACE)	34.4	11.5	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	8.1	2.7	-	-
CAP (HORIZONTAL FACE)	10.8	3.6	-	-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.



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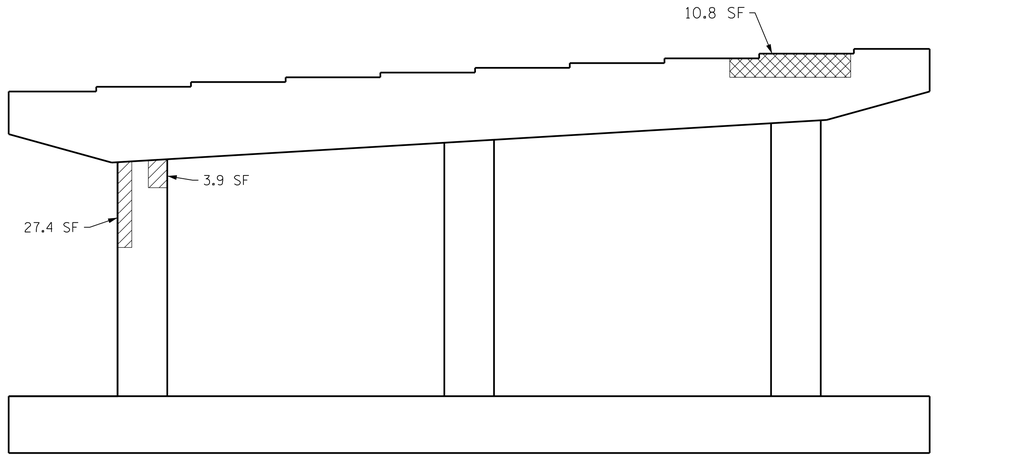

ELEVATION
LOOKING BACK STATION

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 1 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

BENT 1

DESIGNED BY:	C. CORMAN	DATE : FEB 2018
DRAWN BY:	K. WHITE	DATE : MAR 2018
CHECKED BY:	J. BORUTA	DATE : JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE : NOV 2018

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11/15/2018
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			213

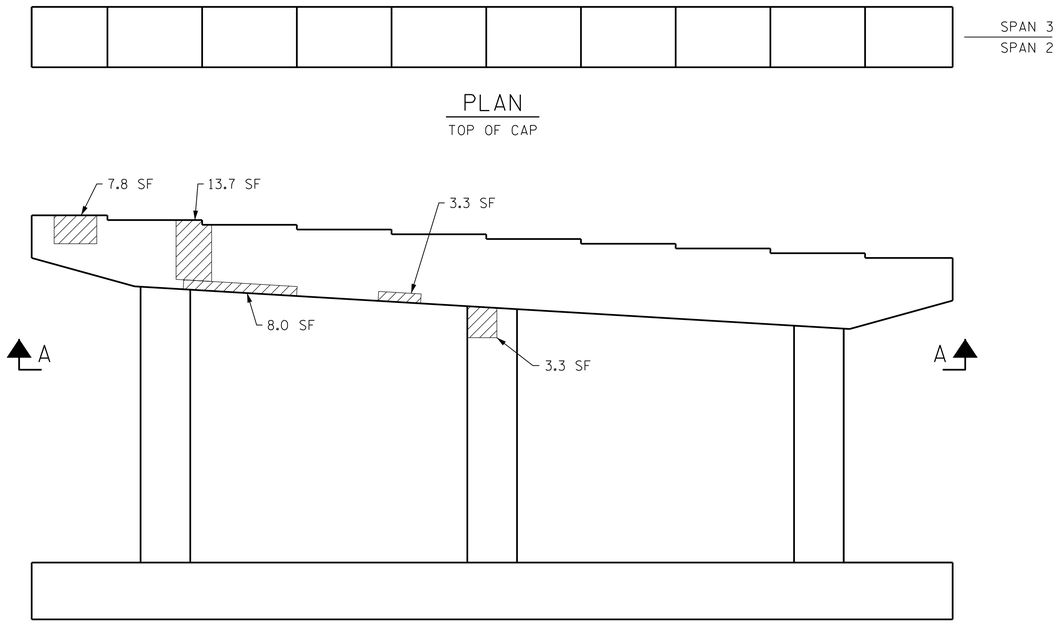
11/12/2018
400_073_15BPR14_SMU_PRL_64001I.dgn

REPAIR QUANTITY TABLE				
REPAIRS BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	53.1	18.52	-	-
CAP (HORIZONTAL, CORNER)	14.2	4.8	-	-
COLUMN (VERT. FACE)	3.3	1.1	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	-	-	-	-
CAP (HORIZONTAL FACE)	-	-	-	-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

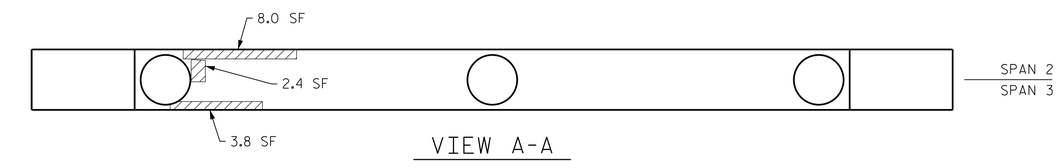


PLAN
TOP OF CAP

END VIEW
NORTH END

ELEVATION
LOOKING AHEAD STATION

END VIEW
SOUTH END



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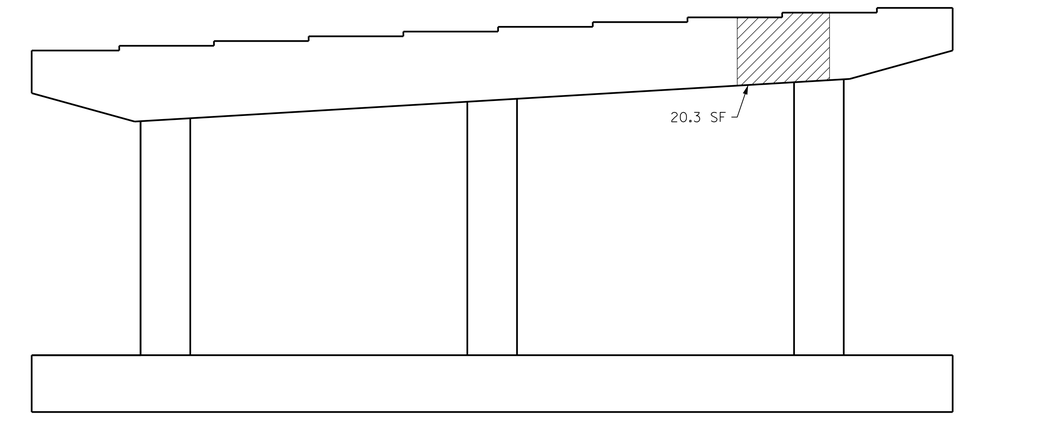

ELEVATION
LOOKING BACK STATION

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 2 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

BENT 2

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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11/15/2018
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS
2			4			213

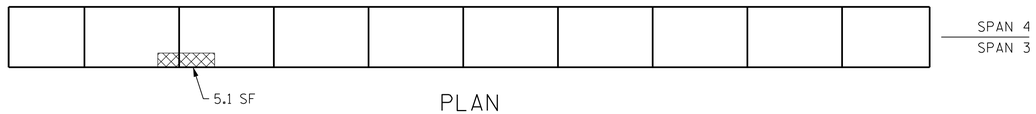
11/12/2018
400_075_15BPR14_SMU_PR2_640011.dgn

REPAIR QUANTITY TABLE				
REPAIRS BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	49.2	16.4	-	-
CAP (HORIZONTAL, CORNER)	4.7	1.2	-	-
COLUMN (VERT. FACE)	34.1	11.4	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	13.0	6.5	-	-
CAP (HORIZONTAL FACE)	5.1	2.5	-	-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.



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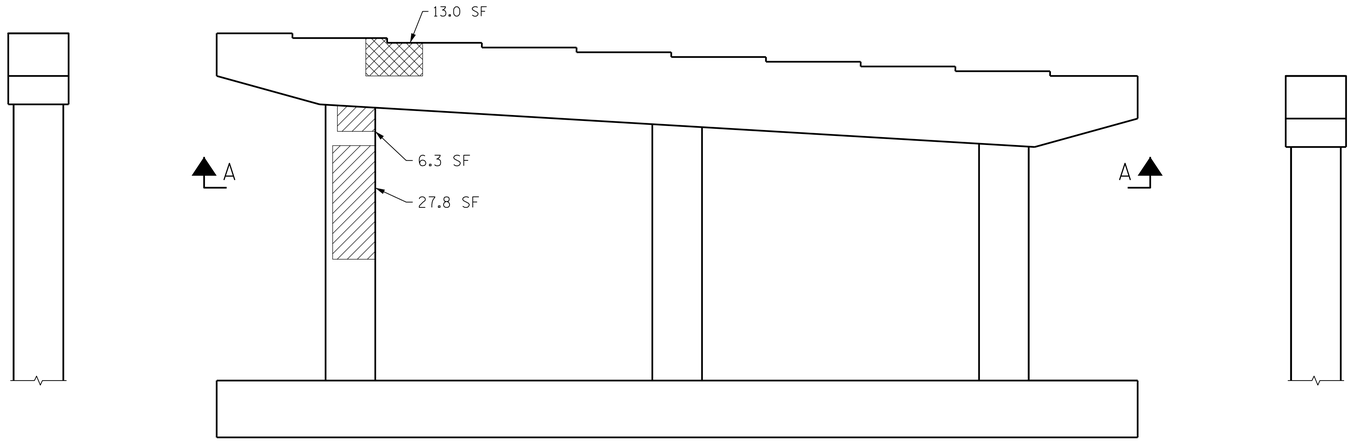
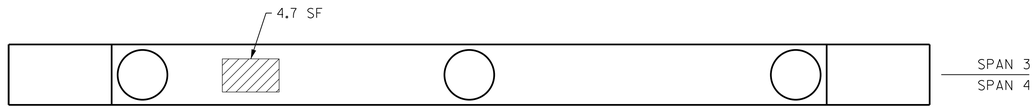


END VIEW
NORTH END

ELEVATION
LOOKING AHEAD STATION

END VIEW
SOUTH END



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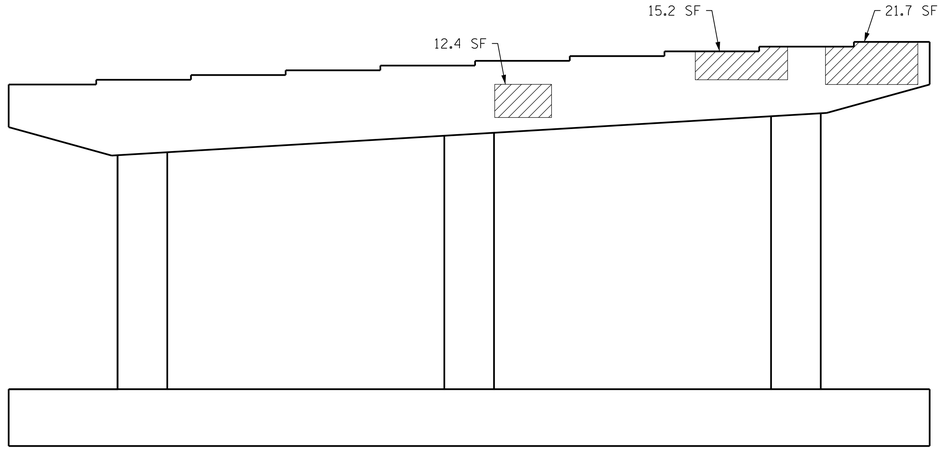

ELEVATION
LOOKING BACK STATION

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 3 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

BENT 3

DESIGNED BY:	C. CORMAN	DATE : FEB 2018
DRAWN BY:	K. WHITE	DATE : MAR 2018
CHECKED BY:	J. BORUTA	DATE : JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE : NOV 2018

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11/15/2018
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			213

11/12/2018
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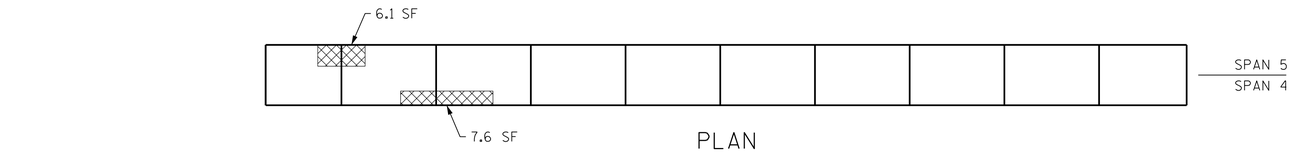

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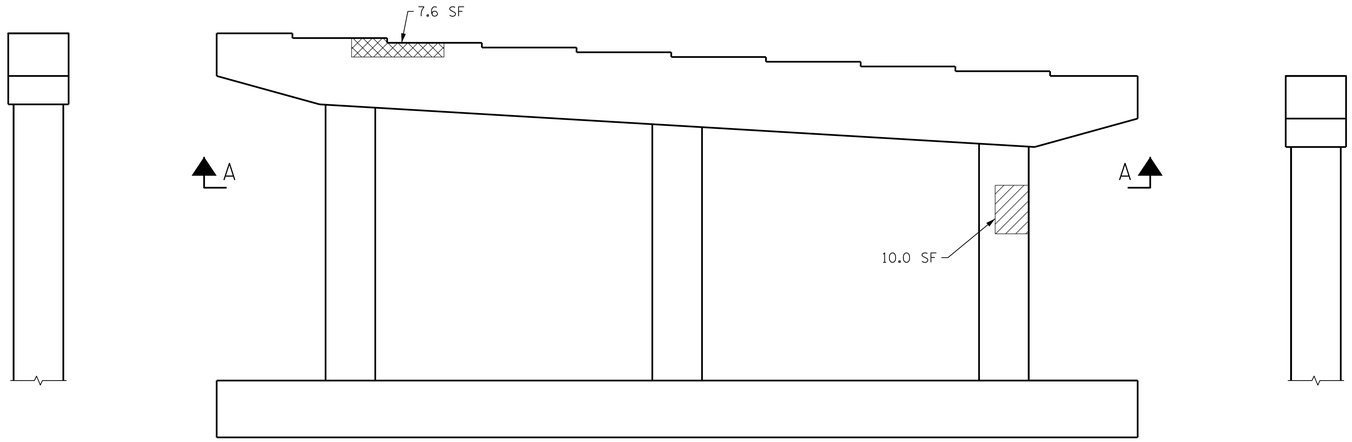
TOP OF CAP



END VIEW
NORTH END

ELEVATION
LOOKING AHEAD STATION

END VIEW
SOUTH END

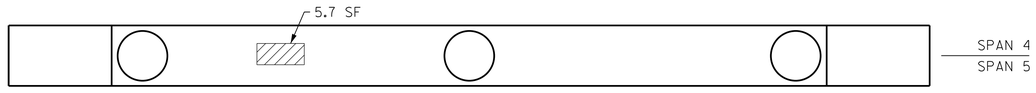
REPAIR QUANTITY TABLE

REPAIRS BENT 4	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	37.8	12.6	-	-
CAP (HORIZONTAL, CORNER)	6.3	2.1	-	-
COLUMN (VERT. FACE)	10	3.3	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	13.7	4.6	-	-
CAP (HORIZONTAL FACE)	13.7	4.6	-	-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.



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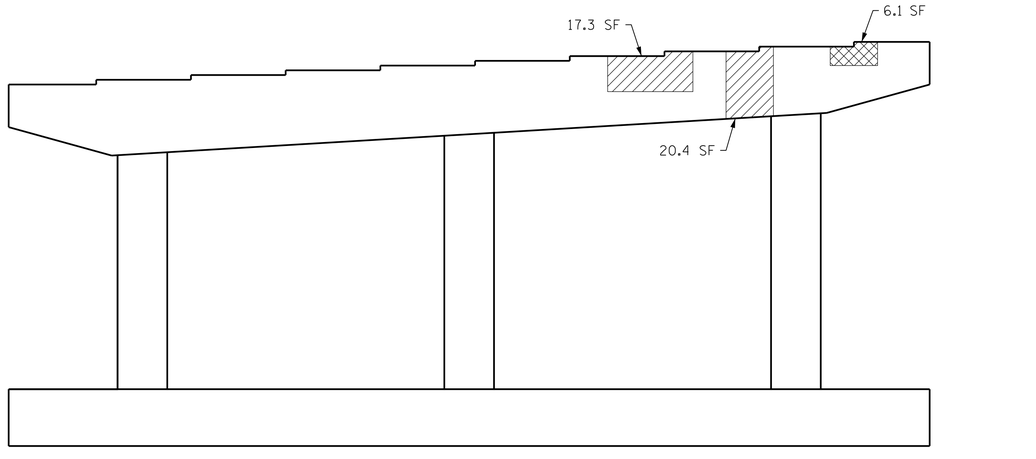

ELEVATION
LOOKING BACK STATION

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY

STATION:

SHEET 4 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

BENT 4

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

DocuSigned by:
Jason R Doughty
5F73FA2DEA974E8...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-40
1			3			TOTAL SHEETS
2			4			213

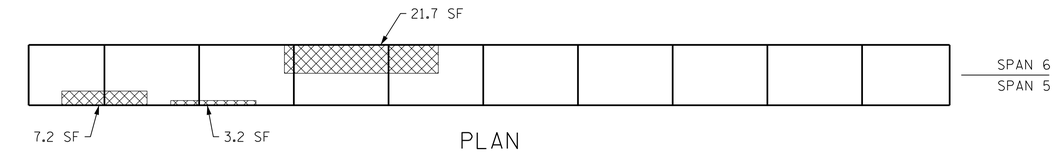
11/12/2018
400_079_15BPR14_SMU_PR4_640011.dgn

REPAIR QUANTITY TABLE				
REPAIRS BENT 5	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	14.4	7.4	-	-
CAP (HORIZONTAL, CORNER)	18.8	8.0	-	-
COLUMN (VERT. FACE)	12.8	4.3	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	34.7	11.6	-	-
CAP (HORIZONTAL FACE)	32.0	10.7	-	-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.



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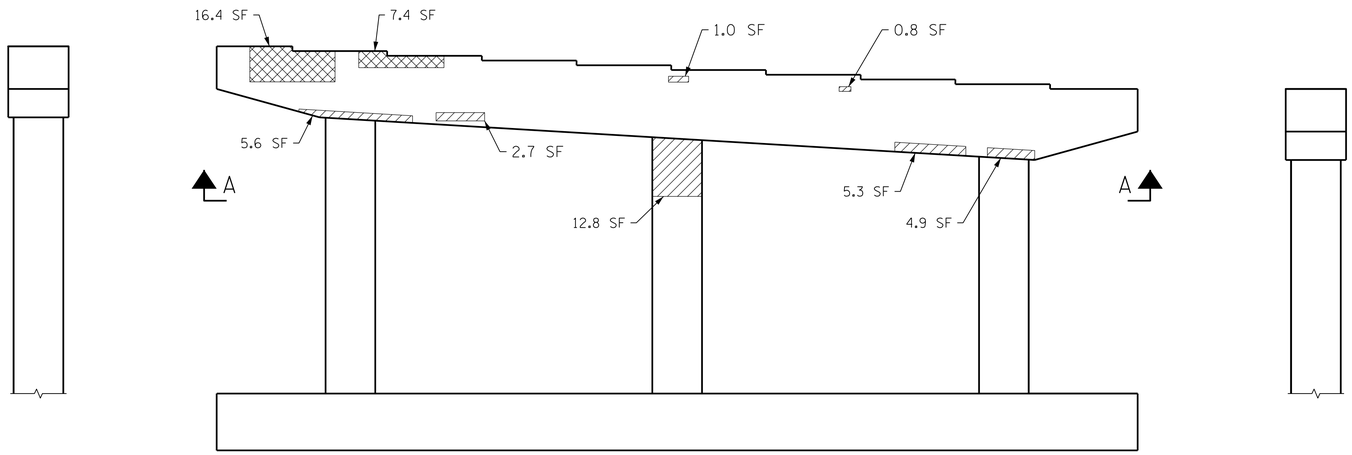
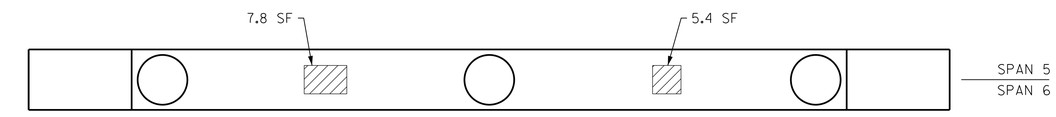
TOP OF CAP



END VIEW
NORTH END

ELEVATION
LOOKING AHEAD STATION

END VIEW
SOUTH END



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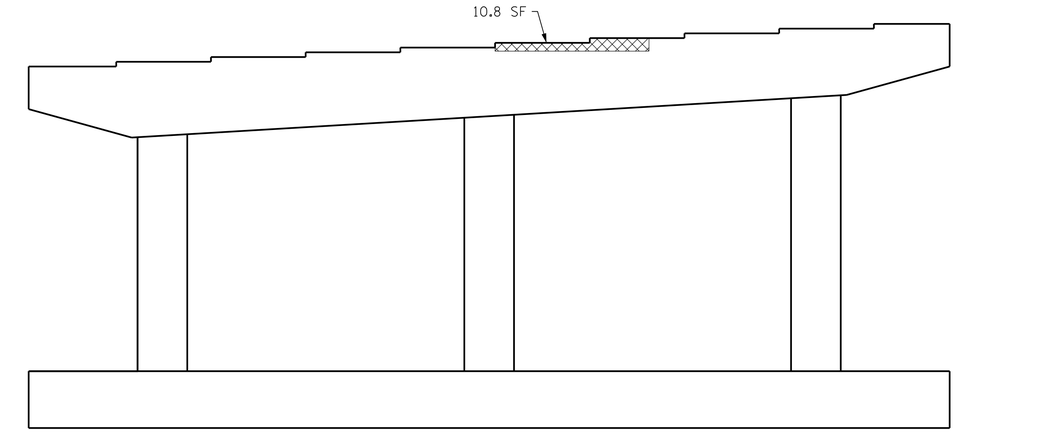

ELEVATION
LOOKING BACK STATION

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY

STATION:

SHEET 5 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

BENT 5

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

DocuSigned by:
Jason R Doughty
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-41
1			3			TOTAL SHEETS
2			4			213

11/12/2018
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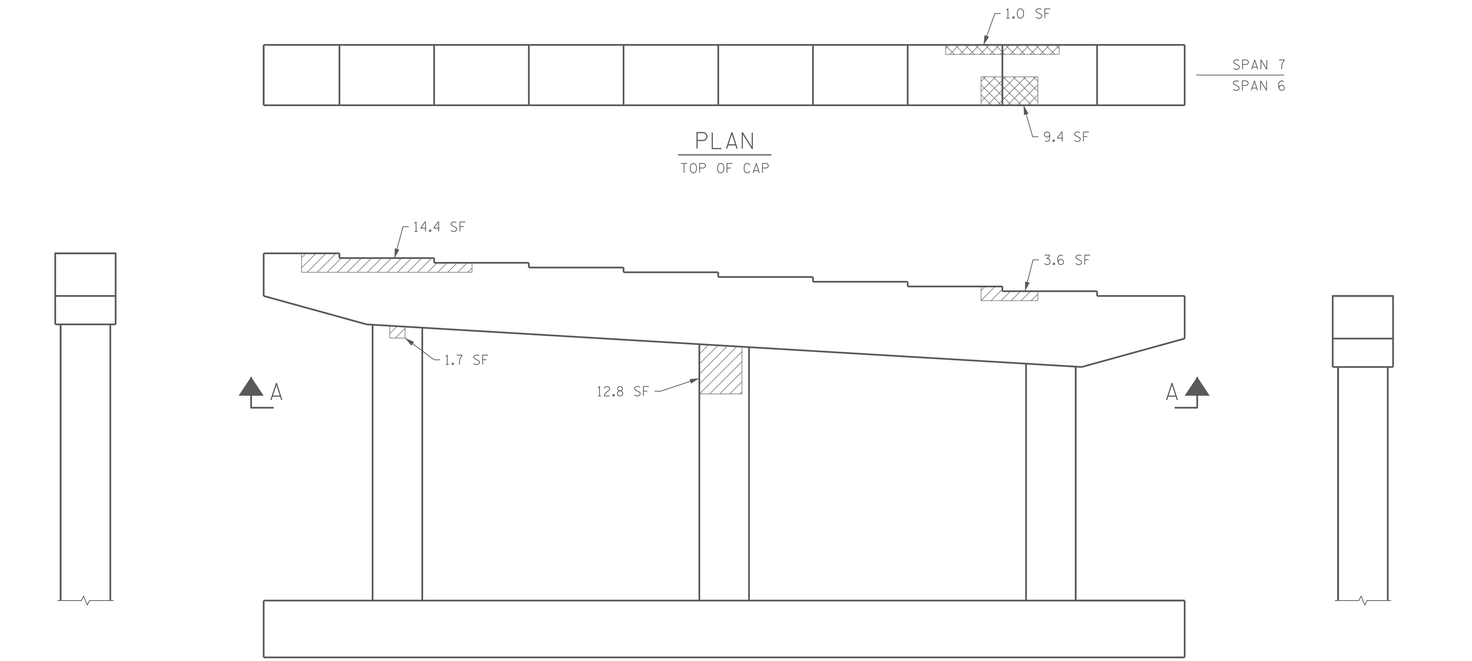

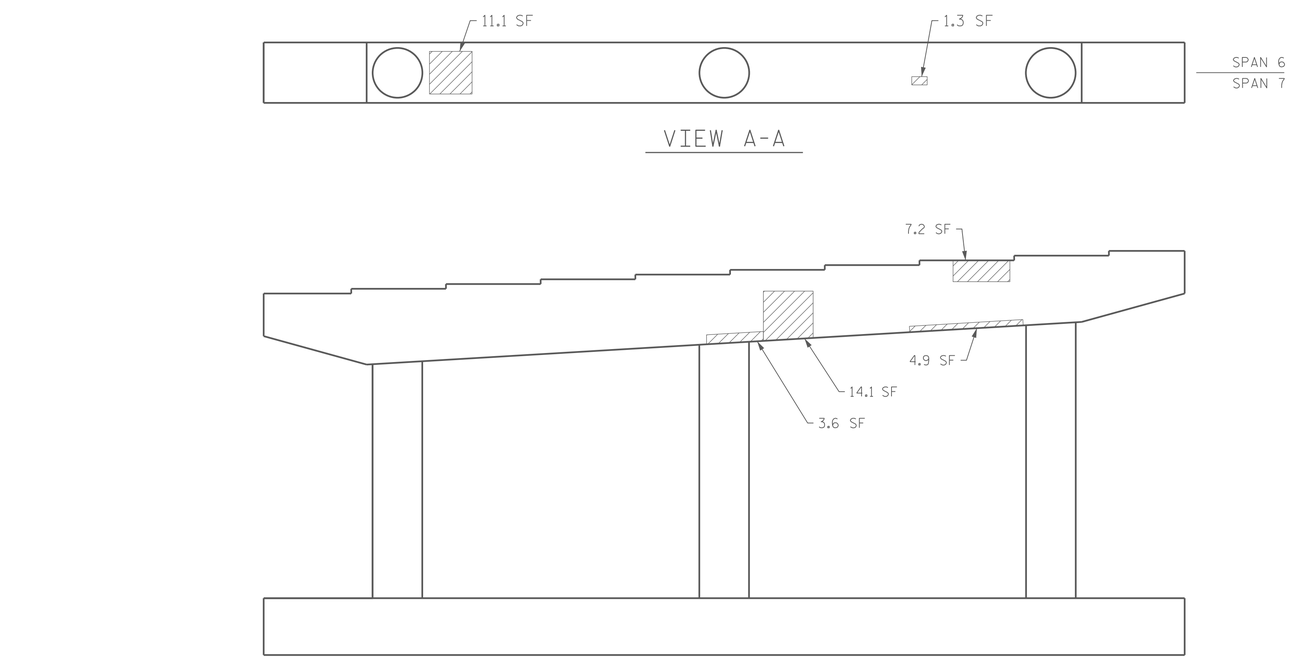

REPAIR QUANTITY TABLE

REPAIRS BENT 6	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	35.7	11.9	-	-
CAP (HORIZONTAL, CORNER)	24.5	9.4	-	-
COLUMN (VERT. FACE)	14.4	4.8	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	-	-	-	-
CAP (HORIZONTAL FACE)	10.1	3.3	-	-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 6 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

BENT 6

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
1			3			TOTAL SHEETS
2			4			213

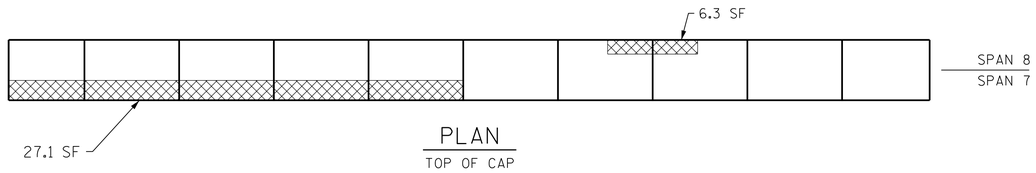
11/12/2018
400_083_15BPR14_SMU_PR6_640011.dgn

REPAIR QUANTITY TABLE				
REPAIRS BENT 7	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	178.4	62.6	-	-
CAP (HORIZONTAL, CORNER)	166.6	55.5	-	-
COLUMN (VERT. FACE)	5.9	2.0	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	81.0	27.0	-	-
CAP (HORIZONTAL FACE)	33.4	11.1	-	-

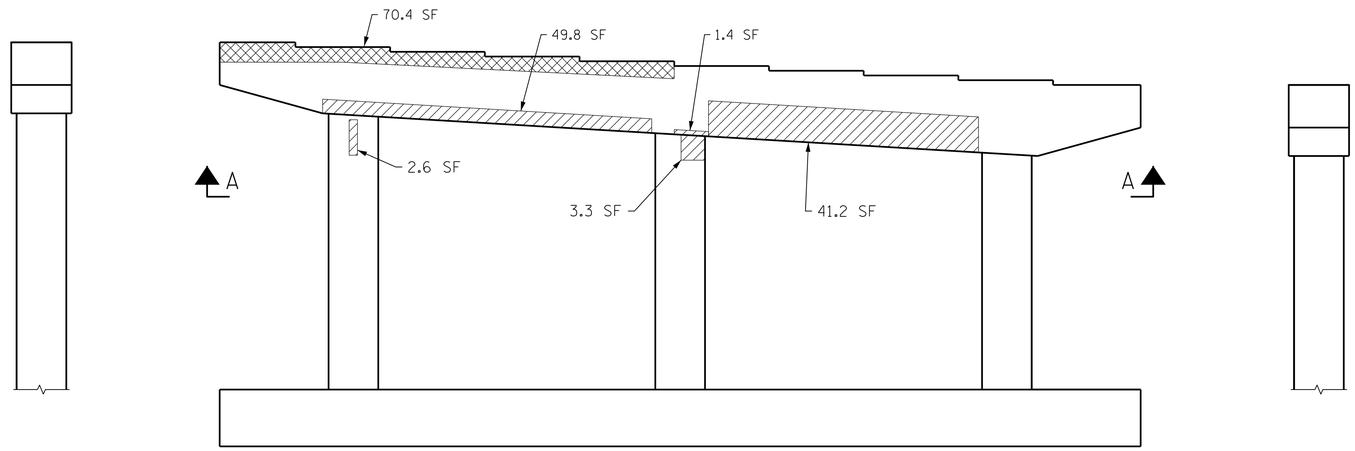
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.



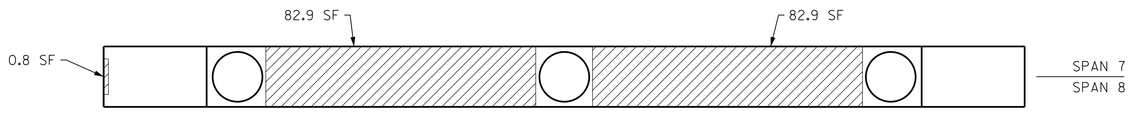
PLAN
TOP OF CAP



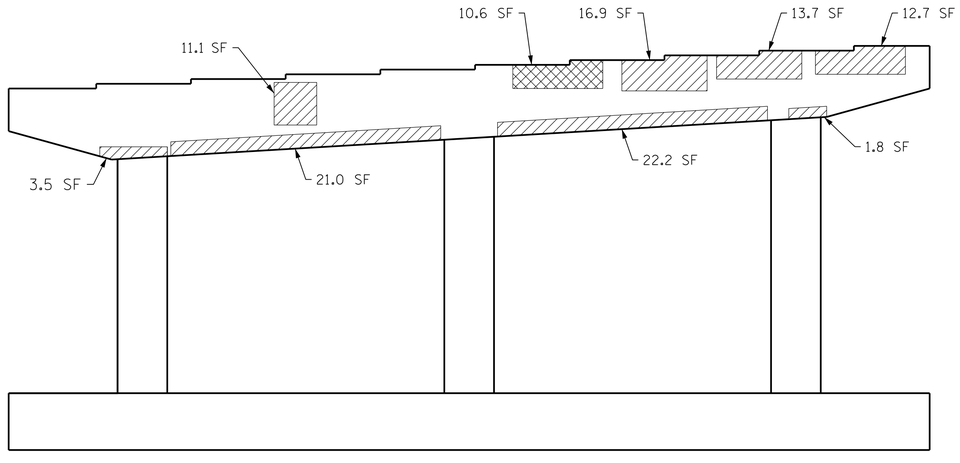
END VIEW
NORTH END

ELEVATION
LOOKING AHEAD STATION

END VIEW
SOUTH END



VIEW A-A



ELEVATION
LOOKING BACK STATION

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 7 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS
BENT 7

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-43
1			3			TOTAL SHEETS
2			4			213

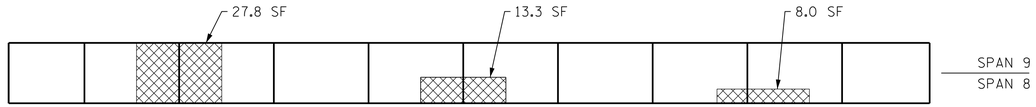
11/12/2018
400_085_15BPR14_SMU_PR7_640011.dgn

REPAIR QUANTITY TABLE				
REPAIRS BENT 8	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	148.5	56.3	-	-
CAP (HORIZONTAL, CORNER)	85.6	30.2	-	-
COLUMN (VERT. FACE)	100.3	33.4	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	41.0	13.7	-	-
CAP (HORIZONTAL FACE)	49.1	16.4	-	-

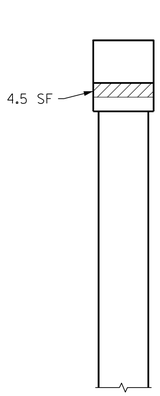
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

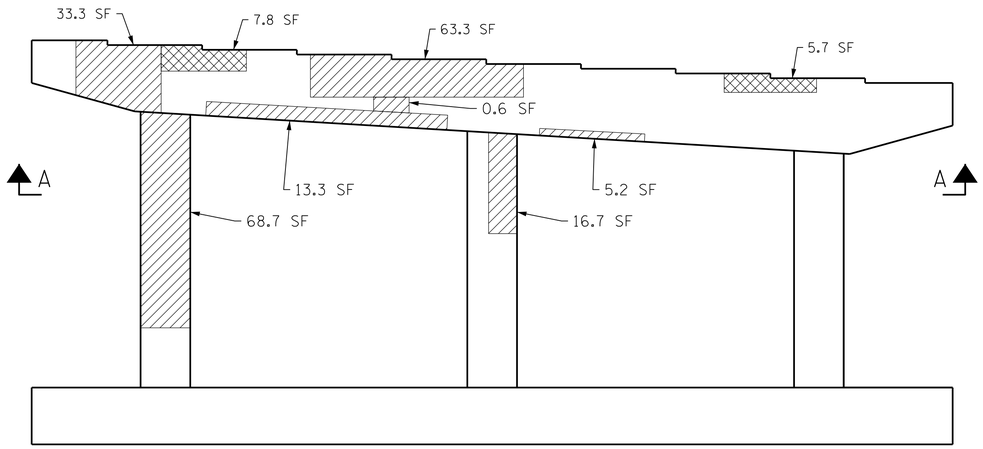
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.



PLAN
TOP OF CAP

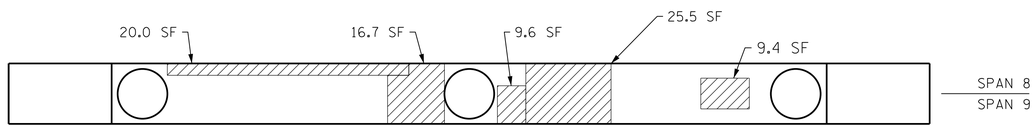


END VIEW
NORTH END

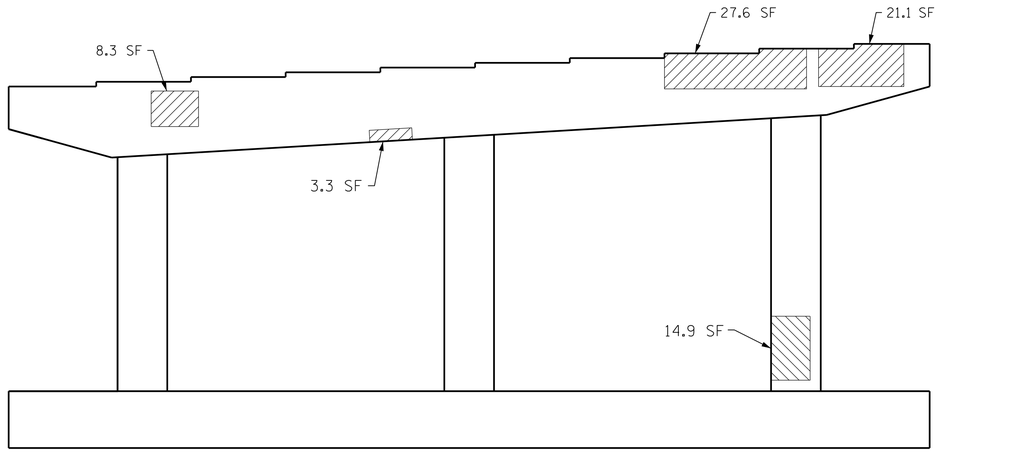


ELEVATION
LOOKING AHEAD STATION

END VIEW
SOUTH END



VIEW A-A



ELEVATION
LOOKING BACK STATION

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 8 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
APPROACH SPANS
BENT 8

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-44
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

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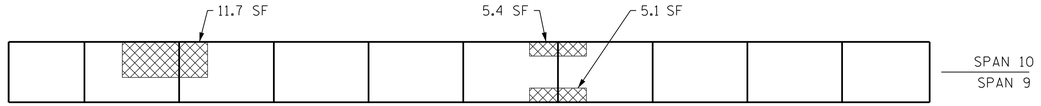
REPAIR QUANTITY TABLE				
REPAIRS BENT 9	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	43.8	14.6	-	-
CAP (HORIZONTAL, CORNER)	43.4	15.1	-	-
COLUMN (VERT. FACE)	45.1	15.1	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	16.9	5.6	-	-
CAP (HORIZONTAL FACE)	22.2	7.4	-	-

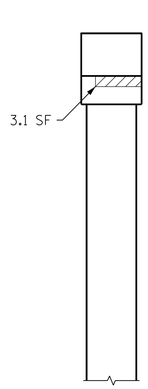
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

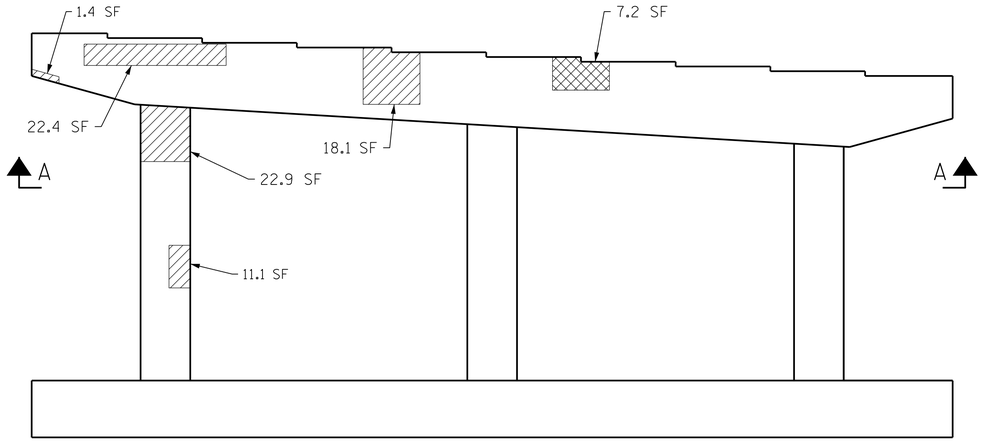
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.



PLAN
TOP OF CAP

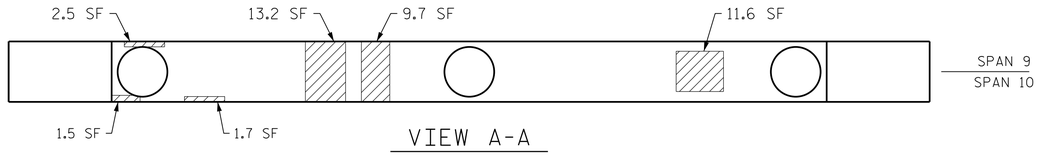


END VIEW
NORTH END

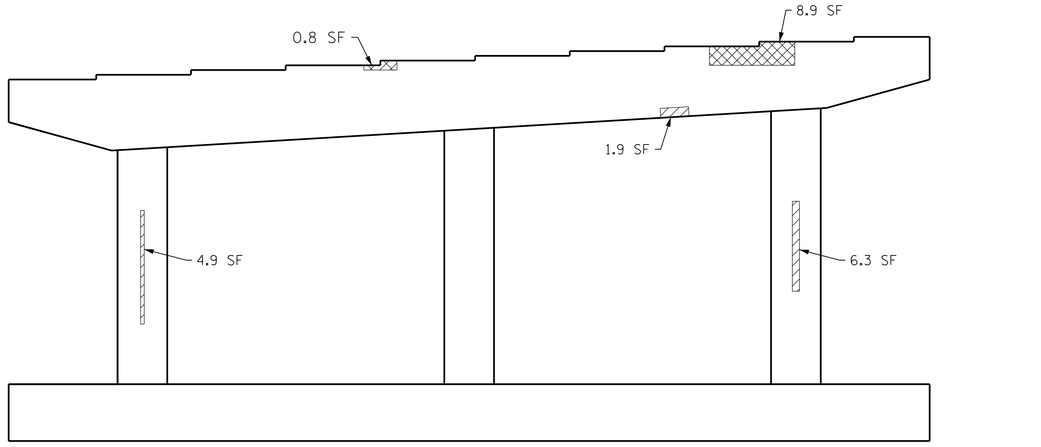


ELEVATION
LOOKING AHEAD STATION

END VIEW
SOUTH END



VIEW A-A



ELEVATION
LOOKING BACK STATION

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY

STATION:

SHEET 9 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

BENT 9

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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NC LICENSE NO. C-2979

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11/15/2018

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Jason R Doughty
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1			3		
2			4		

SHEET NO. S-45

TOTAL SHEETS 213

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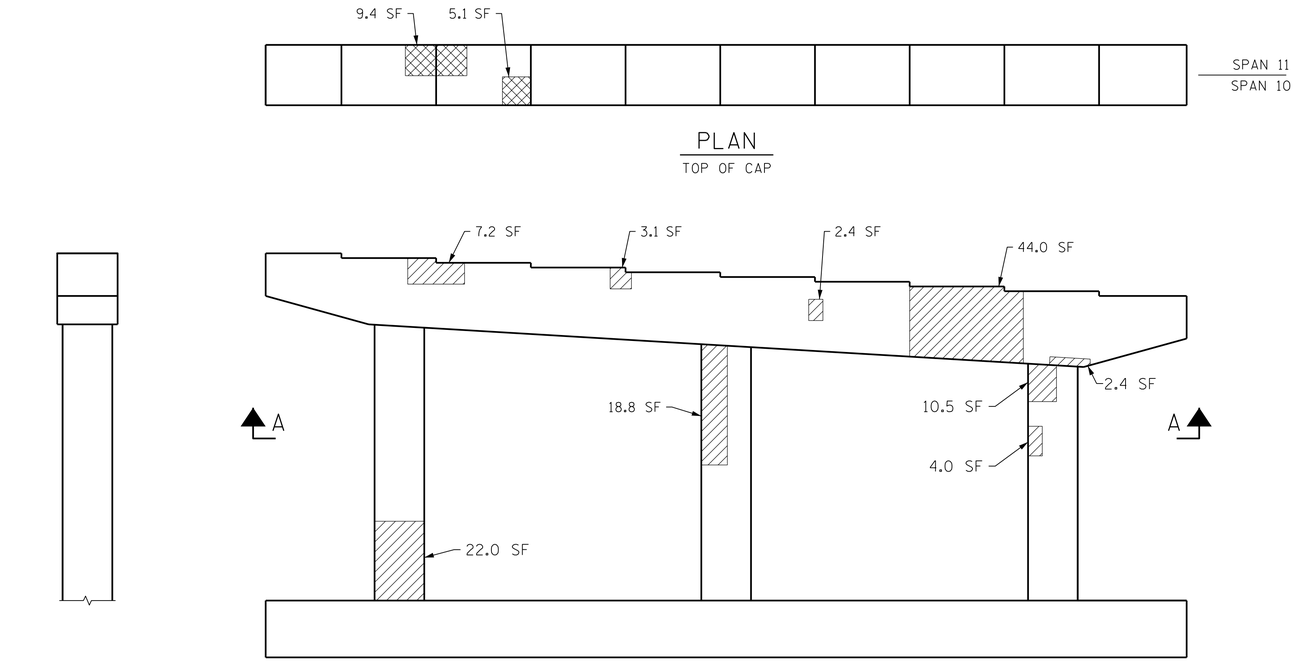


PLAN
TOP OF CAP

END VIEW
NORTH END

ELEVATION
LOOKING AHEAD STATION

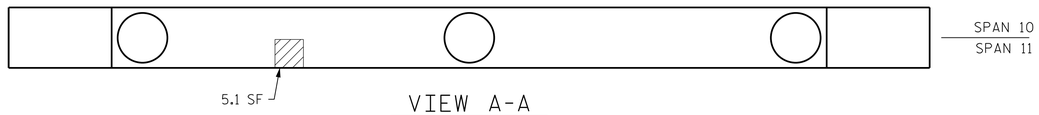
END VIEW
SOUTH END

REPAIR QUANTITY TABLE				
REPAIRS BENT 10	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	89.8	30.7	-	-
CAP (HORIZONTAL, CORNER)	5.1	1.7	-	-
COLUMN (VERT. FACE)	75.7	25.2	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	1.4	0.5	-	-
CAP (HORIZONTAL FACE)	14.4	4.8	-	-

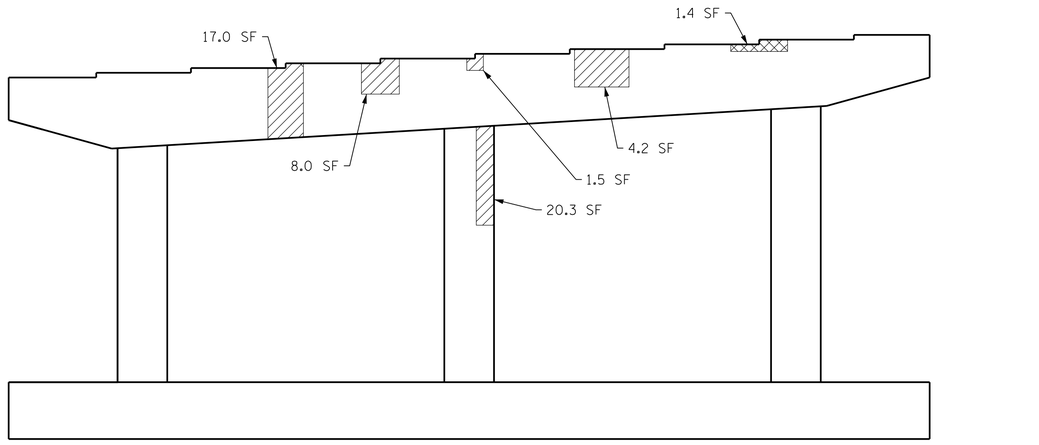
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.



VIEW A-A



ELEVATION
LOOKING BACK STATION

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 10 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
APPROACH SPANS
BENT 10

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

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REVISIONS						SHEET NO.
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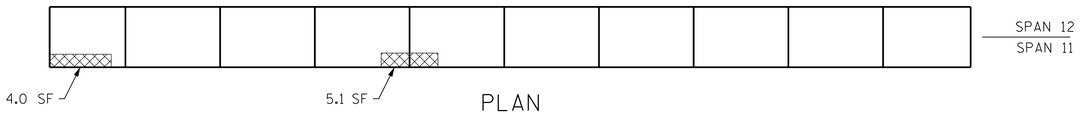
1			3			TOTAL SHEETS
2			4			213

11/12/2018
400_091_15BPR14_SMU_PR10_640011.dgn



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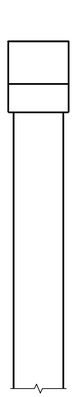
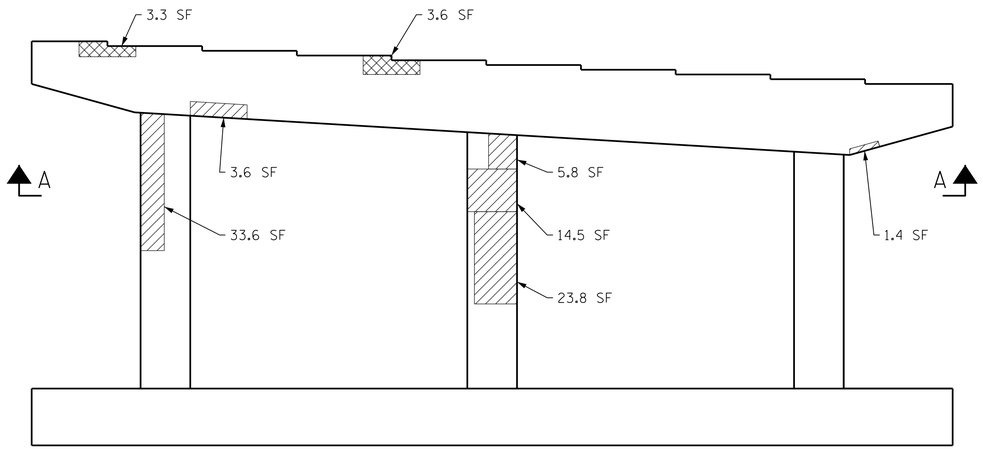
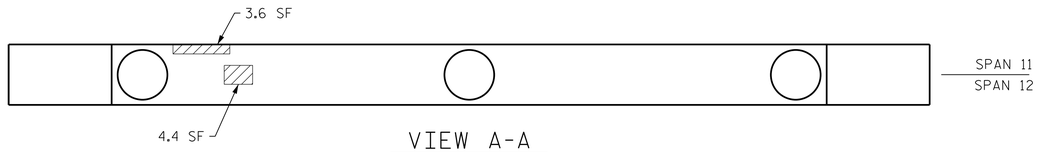




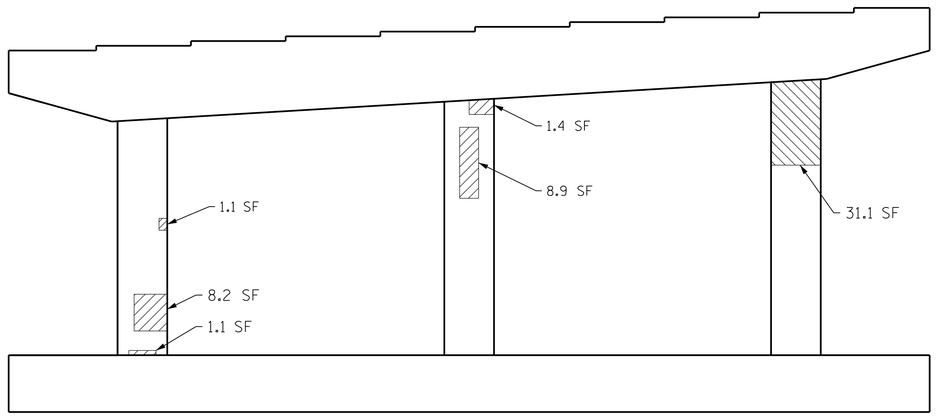
END VIEW
NORTH END

ELEVATION
LOOKING AHEAD STATION

END VIEW
SOUTH END



VIEW A-A



ELEVATION
LOOKING BACK STATION

REPAIR QUANTITY TABLE

REPAIRS BENT 11	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	5.0	1.7	-	-
CAP (HORIZONTAL, CORNER)	8.1	2.7	-	-
COLUMN (VERT. FACE)	129.5	45.8	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	6.9	2.3	-	-
CAP (HORIZONTAL FACE)	9.1	3.0	-	-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 11 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
APPROACH SPANS
BENT 11

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

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1			3			TOTAL SHEETS
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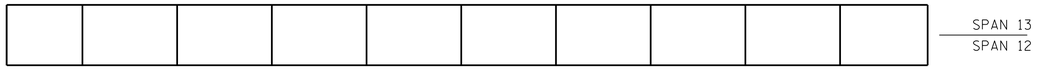

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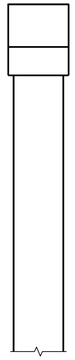
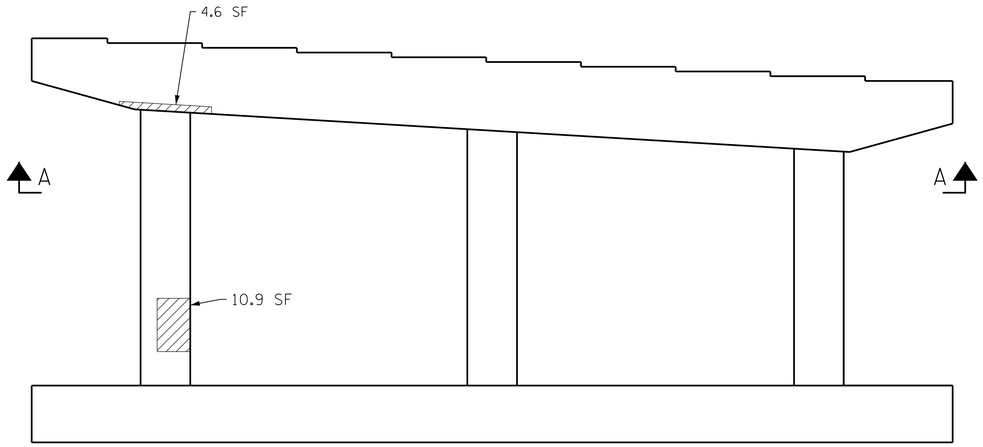
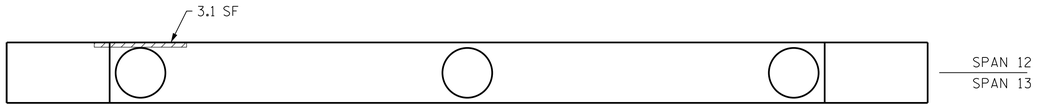


END VIEW
NORTH END



ELEVATION
LOOKING AHEAD STATION

END VIEW
SOUTH END



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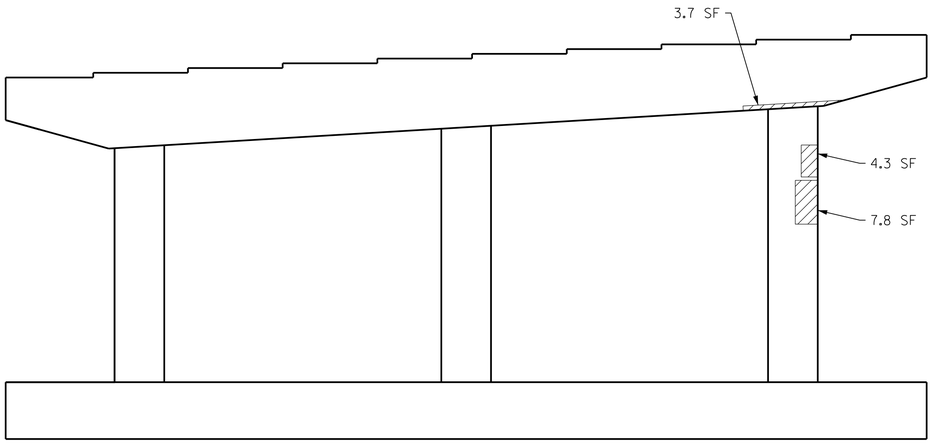

ELEVATION
LOOKING BACK STATION

REPAIR QUANTITY TABLE				
REPAIRS BENT 12	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	8.3	2.8	-	-
CAP (HORIZONTAL, CORNER)	3.1	1.0	-	-
COLUMN (VERT. FACE)	23.0	7.7	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	-	-	-	-
CAP (HORIZONTAL FACE)	-	-	-	-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 12 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

BENT 12

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	JULY 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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NC LICENSE NO. C-2979

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11/15/2018
DocuSigned by: Jason R Doughty
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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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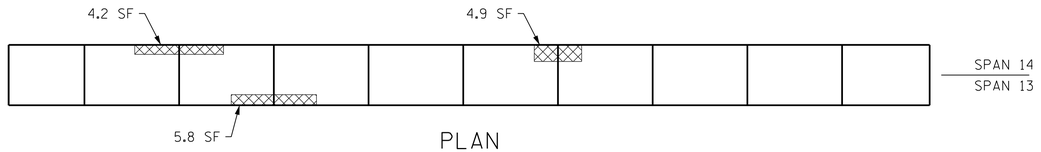

PLAN
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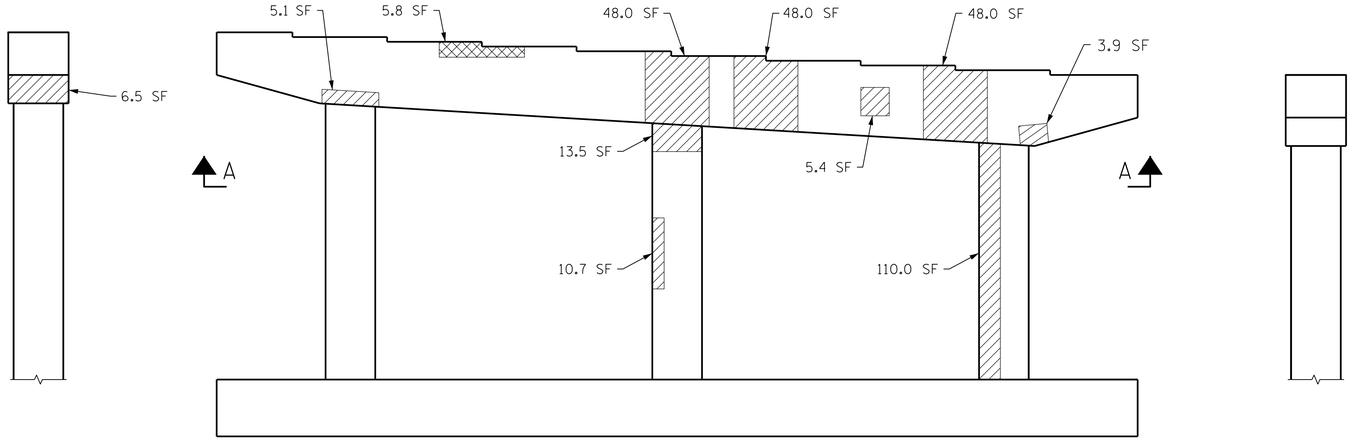
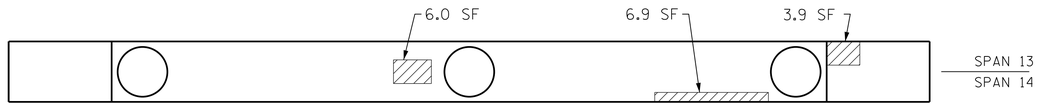


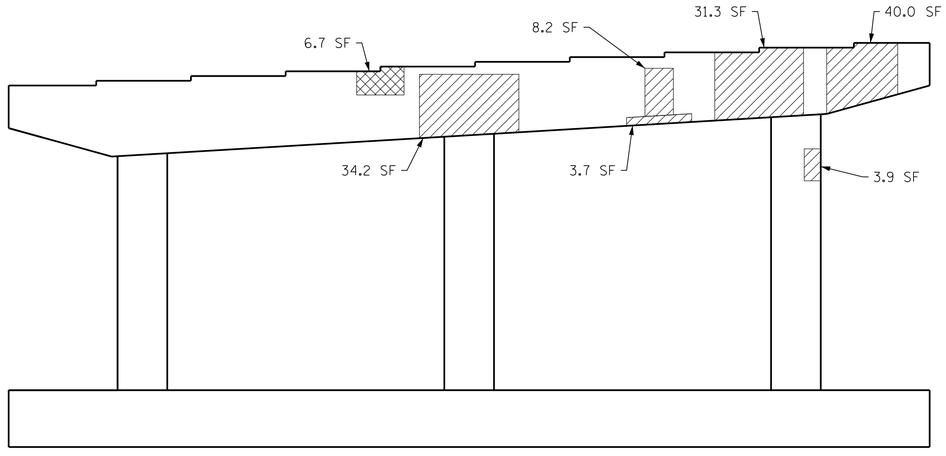
END VIEW
NORTH END

ELEVATION
LOOKING AHEAD STATION

END VIEW
SOUTH END



VIEW A-A



ELEVATION
LOOKING BACK STATION

REPAIR QUANTITY TABLE				
REPAIRS BENT 13	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	272.0	90.7	-	-
CAP (HORIZONTAL, CORNER)	27.0	9.3	-	-
COLUMN (VERT. FACE)	138.1	46.0	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	12.5	4.2	-	-
CAP (HORIZONTAL FACE)	14.9	5.0	-	-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 13 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS
BENT 13

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR2018
CHECKED BY:	J. BORUTA	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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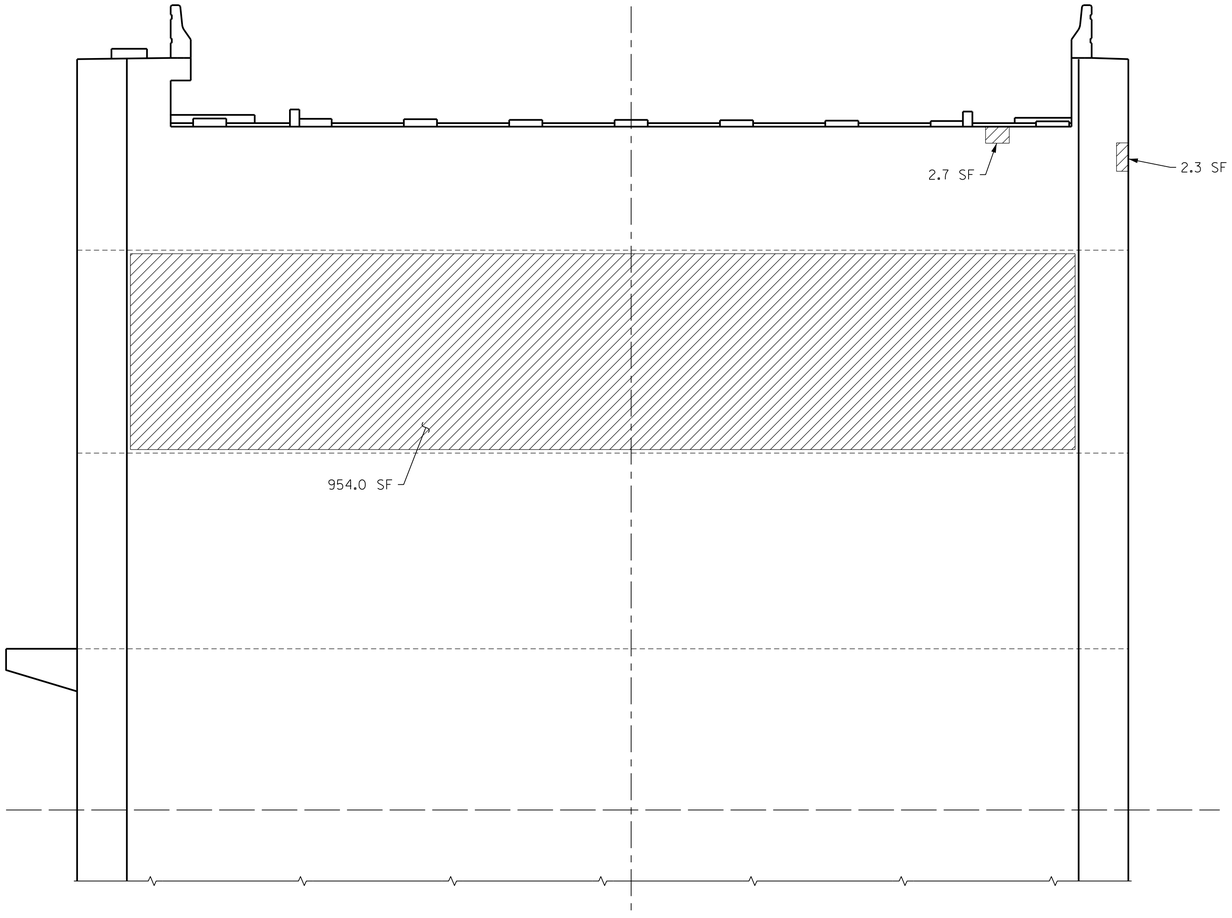

ELEVATION

(LOOKING AHEAD STATION)

REPAIR QUANTITY TABLE				
REPAIRS WEST PIER	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	960.0	319.9	-	-
CAP (HORIZONTAL, CORNER)	-	-	-	-
COLUMN (VERT. FACE)	-	-	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	-	-	-	-
CAP (HORIZONTAL FACE)	-	-	-	-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 14 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN

WEST PIER

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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11/15/2018
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1			3			TOTAL SHEETS
2			4			213

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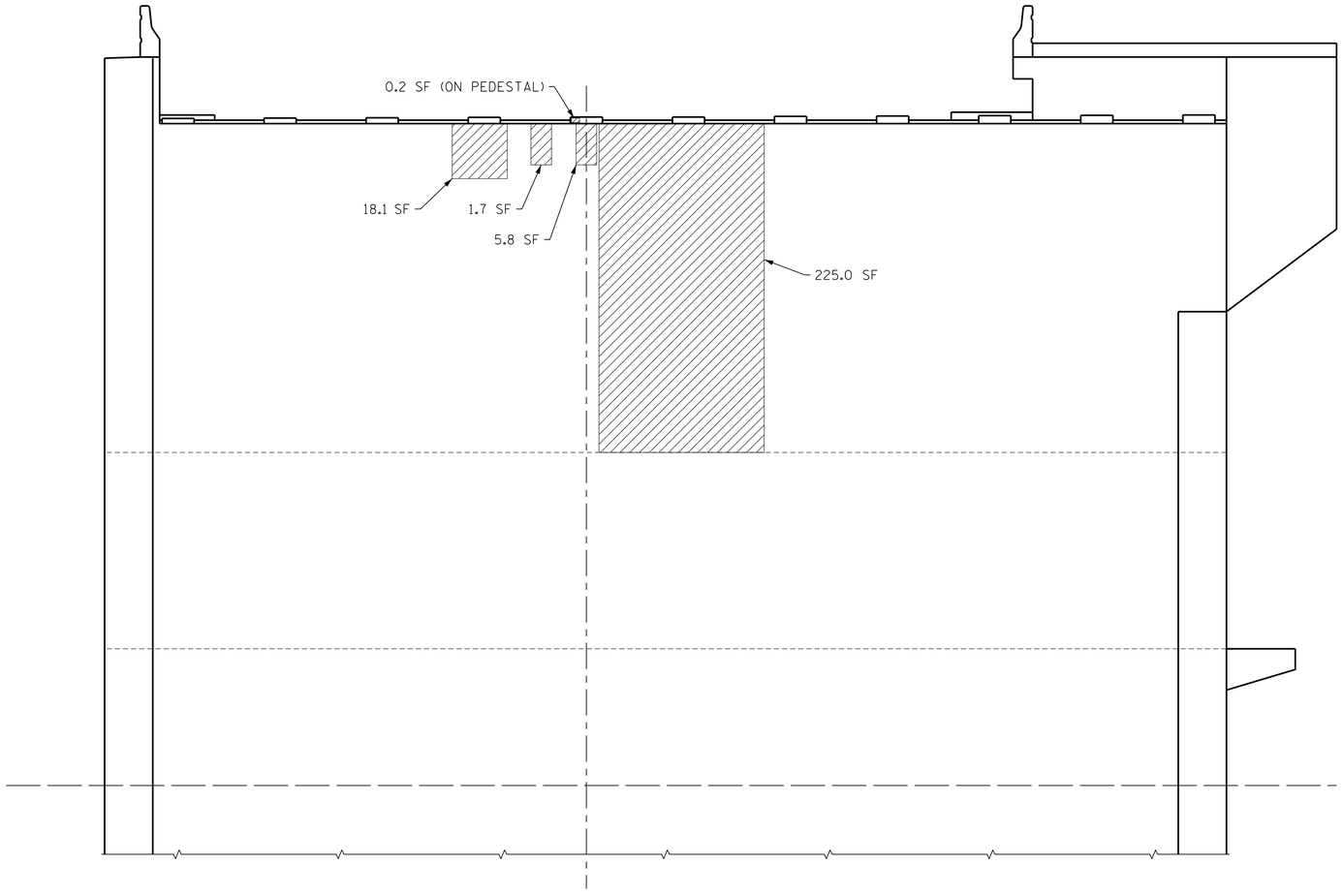


ELEVATION

(LOOKING BACK STATION)

REPAIR QUANTITY TABLE				
REPAIRS EAST PIER	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	267.5	79.25	-	-
CAP (HORIZONTAL, CORNER)	-	-	-	-
COLUMN (VERT. FACE)	-	-	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	-	-	-	-
CAP (HORIZONTAL FACE)	0.2	0.06	-	-
MACHINERY ROOM FLOOR (HORIZONTAL, CORNER)	3.0	2.0	-	-

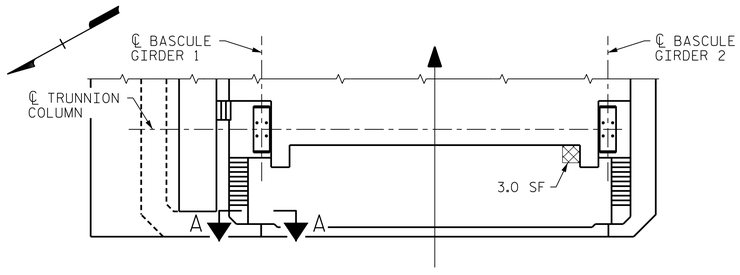
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

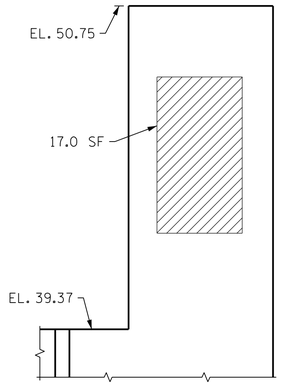
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

CONCRETE REPAIRS

SHOTCRETE REPAIRS



EAST BASCULE PIER KEY PLAN



SECTION A-A

REPAIR LOCATED AT NORTH SIDE OF STRUCTURE, INTERIOR WALL OF BASCULE PIER

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 15 OF 18

STATE OF NORTH CAROLINA
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BASCULE SPAN

EAST PIER

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NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

DocuSigned by:
Jason R Doughty
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DESIGNED BY:	C. CORMAN/J. BORUTA	DATE : JULY 2018
DRAWN BY:	K. WHITE	DATE : JULY 2018
CHECKED BY:	J. BORUTA/C. CORMAN	DATE : AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE : NOV 2018

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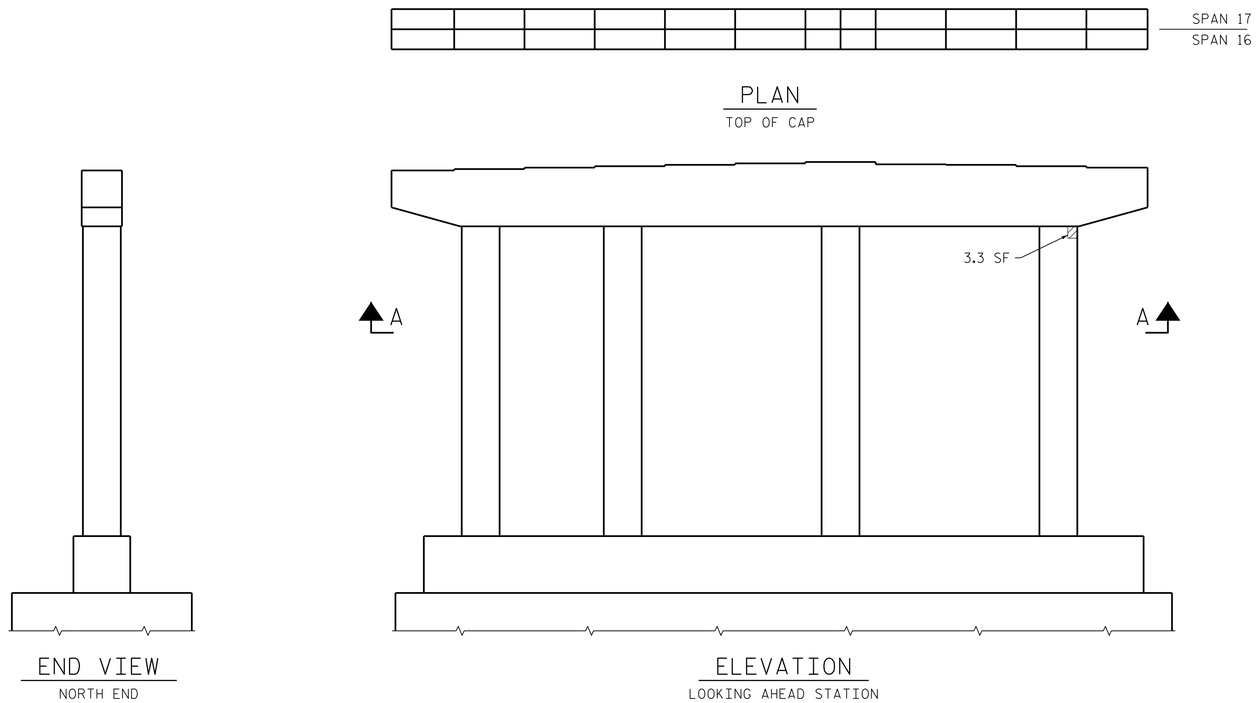
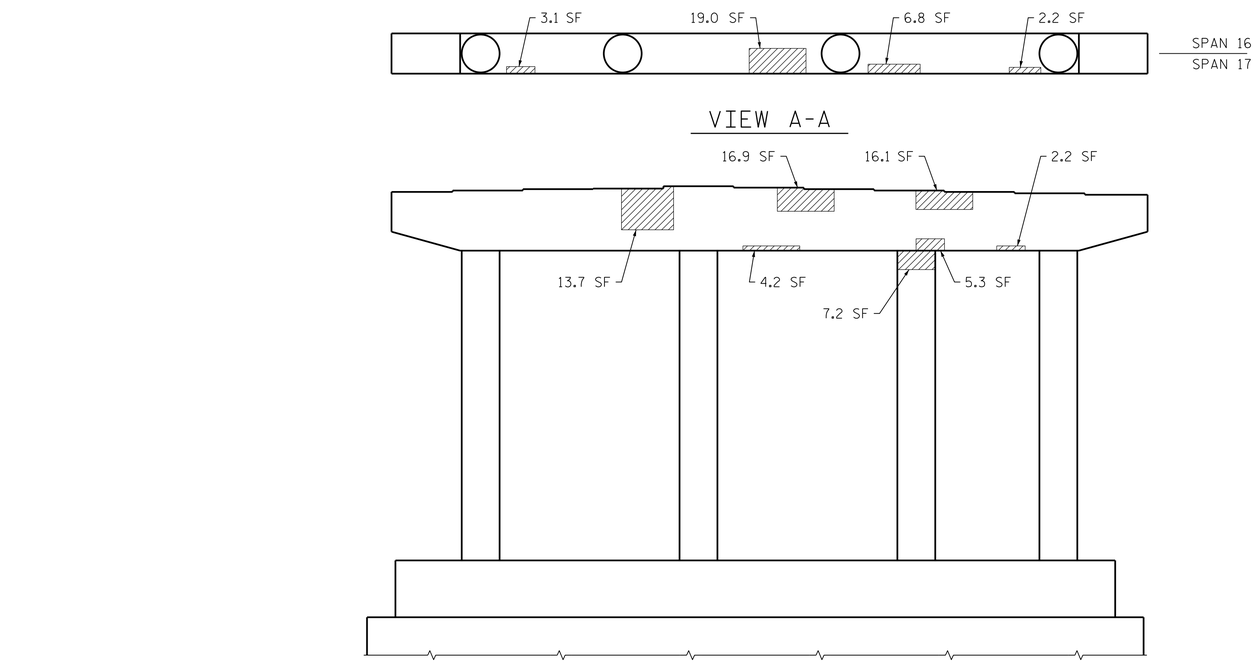


REPAIR QUANTITY TABLE				
REPAIRS BENT 16	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	64.2	21.4	-	-
CAP (HORIZONTAL, CORNER)	36.4	13.4	-	-
COLUMN (VERT. FACE)	10.5	3.51	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	-	-	-	-
CAP (HORIZONTAL FACE)	-	-	-	-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.



CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 16 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

BENT 16

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

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1			3			TOTAL SHEETS
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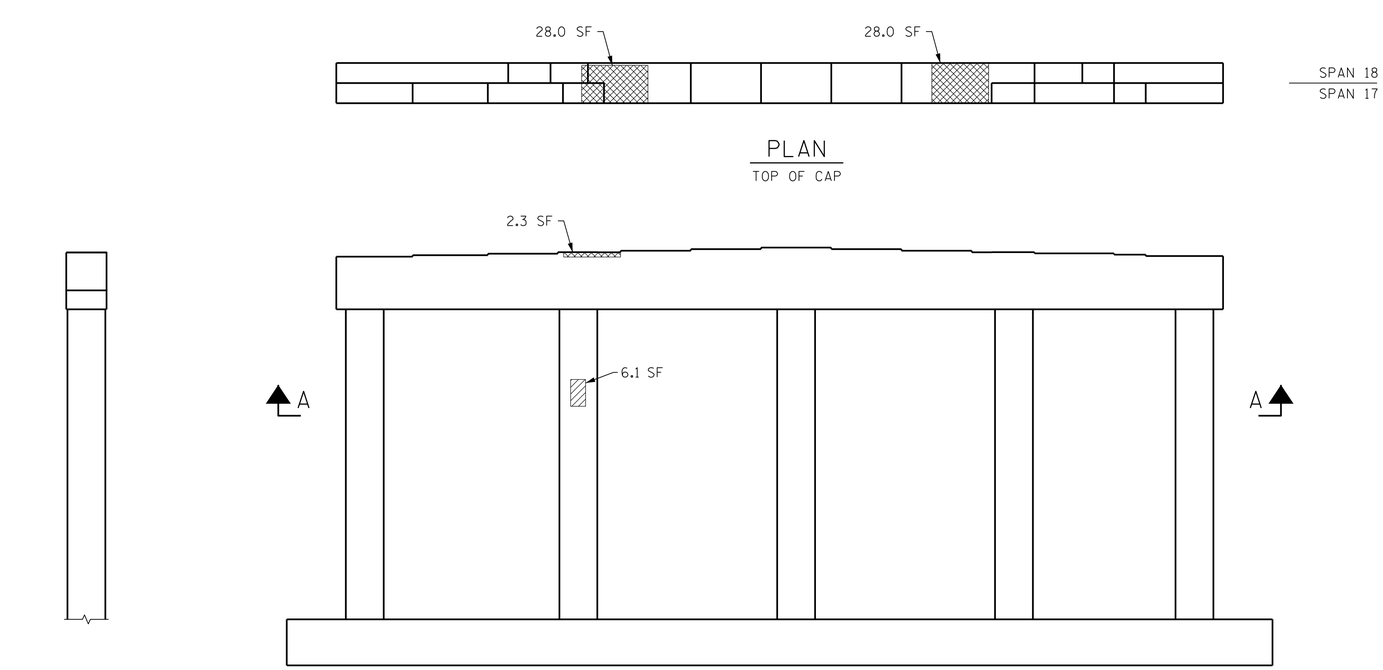


PLAN
TOP OF CAP

END VIEW
NORTH END

ELEVATION
LOOKING AHEAD STATION

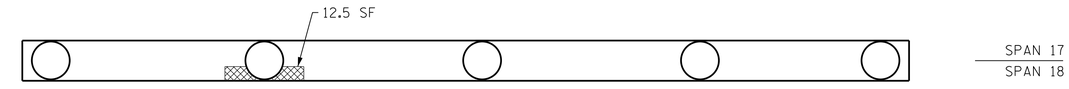
END VIEW
SOUTH END

REPAIR QUANTITY TABLE				
REPAIRS BENT 17	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	8.7	2.9	-	-
CAP (HORIZONTAL, CORNER)	12.5	4.2	-	-
COLUMN (VERT. FACE)	93.5	31.2	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	2.3	0.8	-	-
CAP (HORIZONTAL FACE)	56.0	18.7	-	-

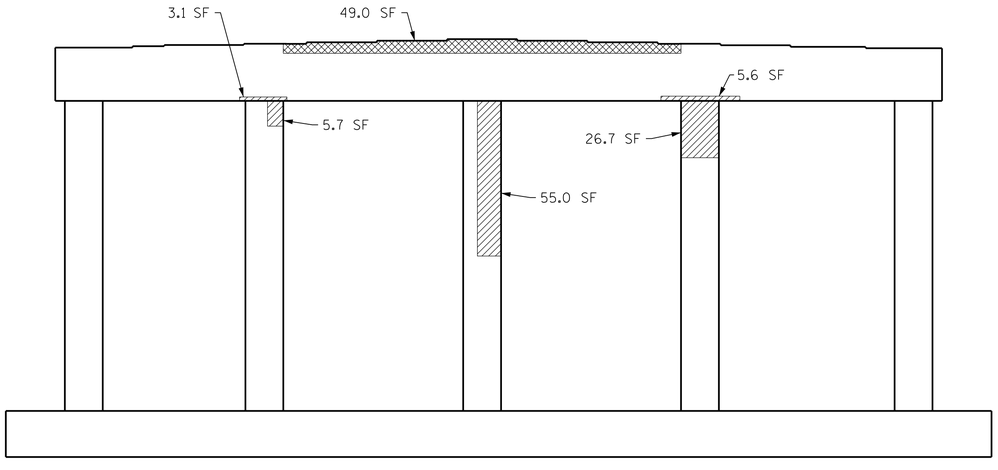
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT, SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.



VIEW A-A



ELEVATION
LOOKING BACK STATION

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

SHEET 17 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
APPROACH SPANS
BENT 17

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-53
1			3			TOTAL SHEETS
2			4			213

11/12/2018
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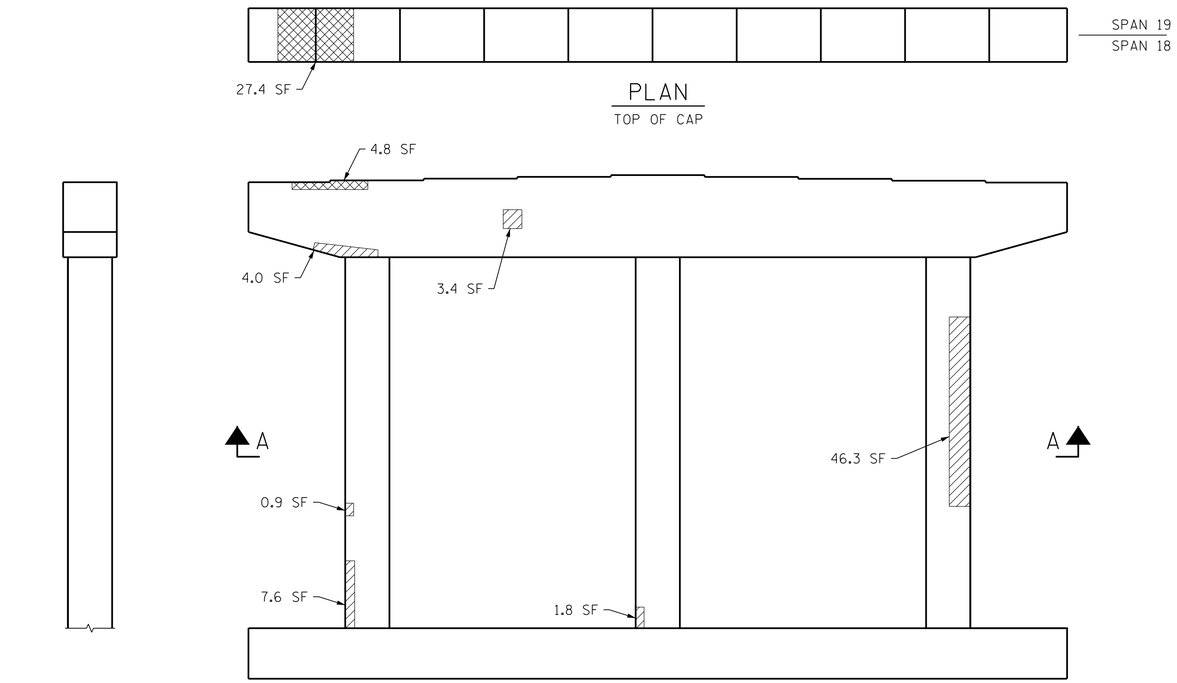

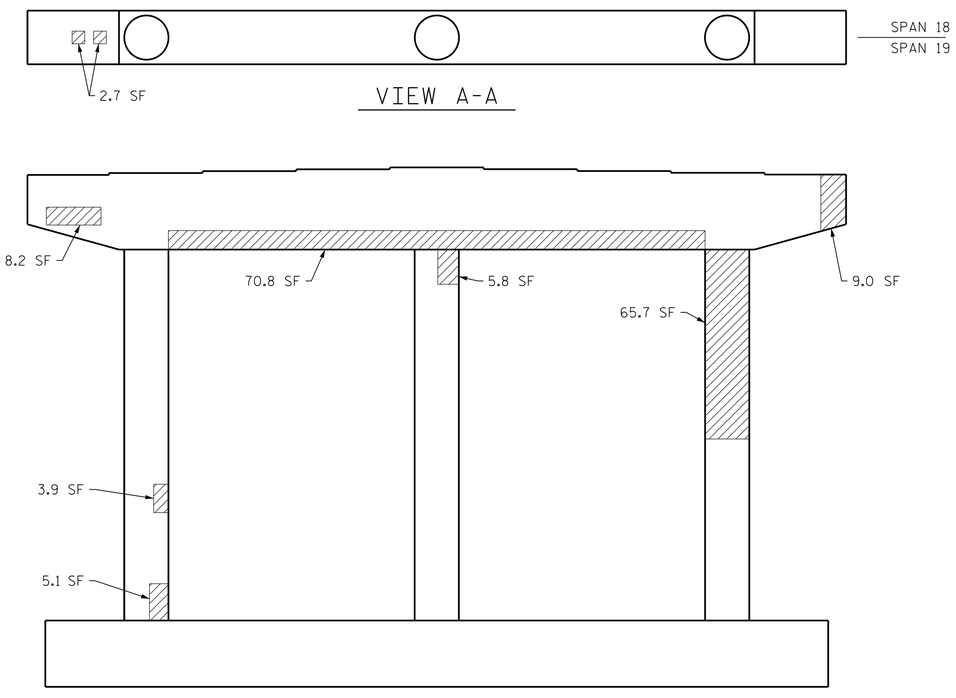

REPAIR QUANTITY TABLE

REPAIRS BENT 18	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	95.4	31.8	-	-
CAP (HORIZONTAL, CORNER)	2.7	0.9	-	-
COLUMN (VERT. FACE)	137.1	45.7	-	-
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	4.8	1.6	-	-
CAP (HORIZONTAL FACE)	27.4	9.2	-	-

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM 1" BEHIND REBAR AND MINIMUM 2" CLEARANCE TO SAWCUT. SEE SHOTCRETE REPAIRS SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

WIDENED PIER SEGMENTS NOT SHOWN.

CONCRETE REPAIRS

SHOTCRETE REPAIRS

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 18 OF 18

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

BENT 18

DESIGNED BY:	C. CORMAN	DATE :	FEB 2018
DRAWN BY:	K. WHITE	DATE :	MAR 2018
CHECKED BY:	J. BORUTA	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			213

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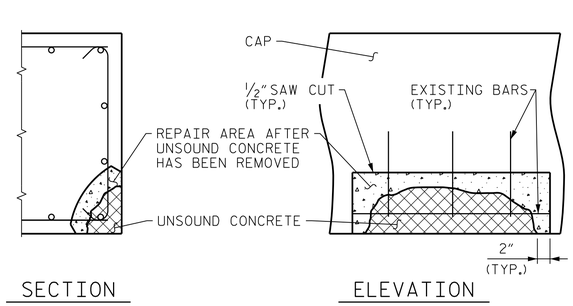
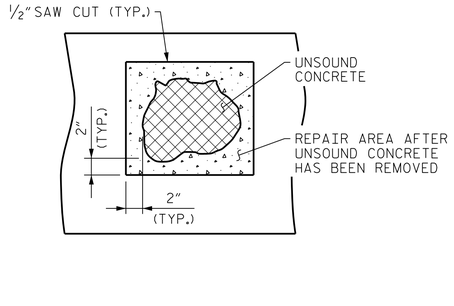


SECTION ELEVATION

CORNER REPAIR



FACE REPAIR

CAP REPAIR

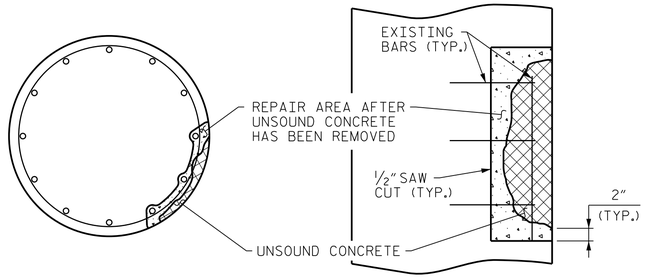
REPAIR SEQUENCE:

1. SOUND CONCRETE TO DETERMINE EXTENT OF REPAIR LOCATION.
2. REMOVE SURFACE CONCRETE TO VERIFY SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL. SAW CUT AROUND REPAIR AREA TO A MINIMUM DEPTH OF ½".
3. REMOVE CONCRETE WITHIN SAW CUT AREA TO MINIMUM ½" DEPTH.
4. USE A WIRE BRUSH TO CLEAN ALL EXPOSED REINFORCING STEEL. FOR BARS WITH MORE THAN 10% SECTION LOSS, SPLICE AND SECURELY TIE SUPPLEMENTAL REINFORCING BARS AS NEEDED.
5. REMOVE ALL LOOSE OR WEAKENED MATERIAL THEN CLEAN THE REPAIR AREA OF DIRT, GREASE, OIL, AND FOREIGN MATTER.
6. PREPARE SURFACE AND PLACE APPROVED REPAIR MATERIAL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

NOTES:

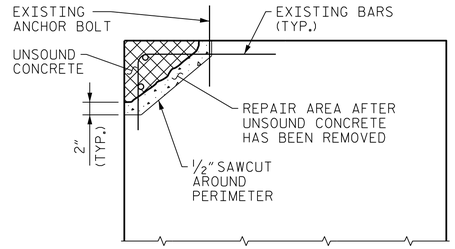
FOR REPAIRS OVER TRAFFIC AND SHALLOW REPAIRS THAT DO NOT ENGAGE REINFORCEMENT, ANCHOR PATCH MATERIAL USING ¼" GALVANIZED BOLTS, EPOXY ANCHORED WITH 2" EMBEDMENT. PLACE IN A 6" GRID. USE LATEX OR EPOXY PATCH MATERIAL FOR IMPROVED BOND.

FOR REPAIRS WHERE CONCRETE IS REMOVED BEHIND REINFORCING, INSTALL EMBEDDED GALVANIC ANODES. SEE CATHODIC PROTECTION DETAILS SHEETS.

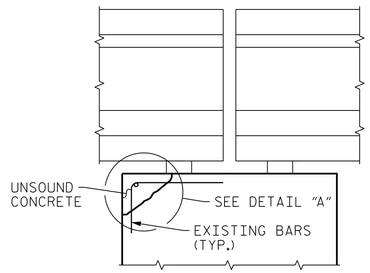


SECTION ELEVATION

COLUMN REPAIR



DETAIL A



TYPICAL CONCRETE REPAIR AT BEAM BEARING

IT IS NOT ANTICIPATED THAT ANY LOCATIONS WILL REQUIRE 30% OF BEARING AREA TO BE REMOVED. IN THE EVENT THAT JACKING AND SHORING MAY BE REQUIRED TO FACILITATE REPAIR WORK, THE ENGINEER MUST BE NOTIFIED BEFORE PROCEEDING.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SPANS

SUBSTRUCTURE CONCRETE REPAIR DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-55
1			3			TOTAL SHEETS
2			4			213

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333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

DESIGNED BY:	C. CORMAN	DATE :	JULY 2018
DRAWN BY:	K. WHITE	DATE :	JULY 2018
CHECKED BY:	J. BORUTA	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

11/12/2018
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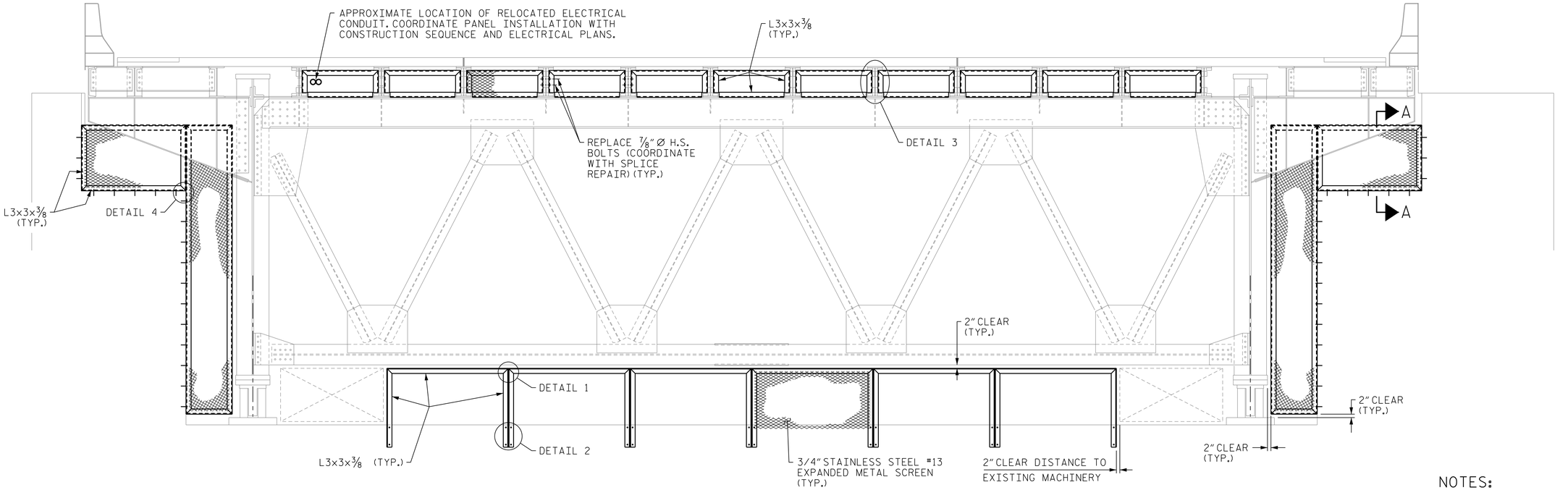
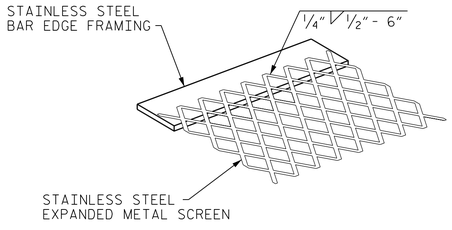
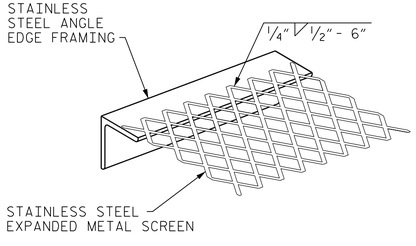


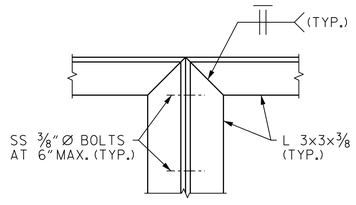
FLOORBEAM 12 ELEVATION

FLOORBEAM 12 (LOOKING AHEAD STATION AT EAST BASCULE PIER) SHOWN, FLOORBEAM 1 WEST BASCULE PIER SIMILAR.

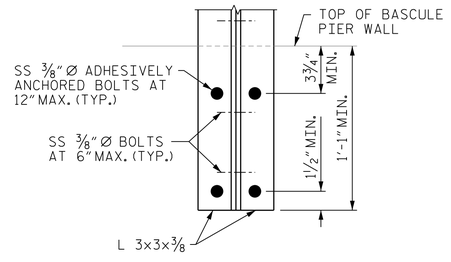




SCREEN TACK WELD DETAILS



DETAIL 1



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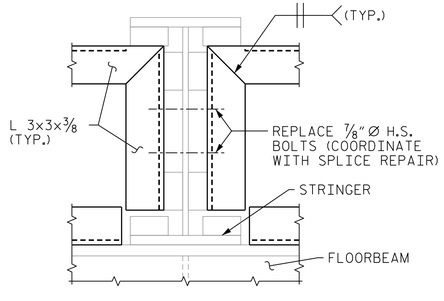

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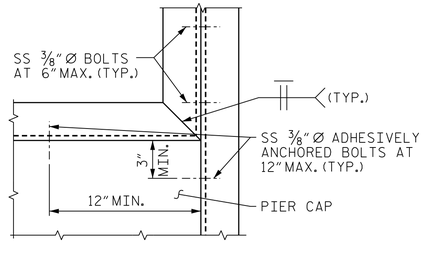

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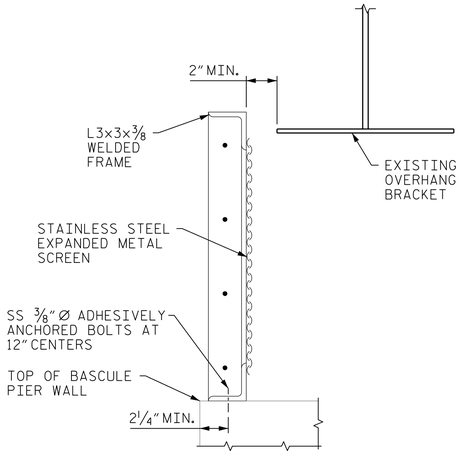

SECTION A-A

NOTES:

FOR GENERAL NOTES, SEE SHEET S-5.

FOR BIRD DETERRENT SCREENING, SEE SPECIAL PROVISIONS.

FOR EXISTING ELECTRICAL CONDUIT RELOCATION INFORMATION, SEE ELECTRICAL PLANS AND CORRESPONDING SPECIAL PROVISIONS.

FIELD DRILLED HOLE SIZE AND PREPARATION OF EXISTING CONCRETE SHALL BE PER ADHESIVE MANUFACTURER'S RECOMMENDATIONS.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

DESIGNED BY:	C. CORMAN	DATE :	APR 2018
DRAWN BY:	K. WHITE	DATE :	APR 2018
CHECKED BY:	J. BORUTA	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
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NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY

11/15/2018

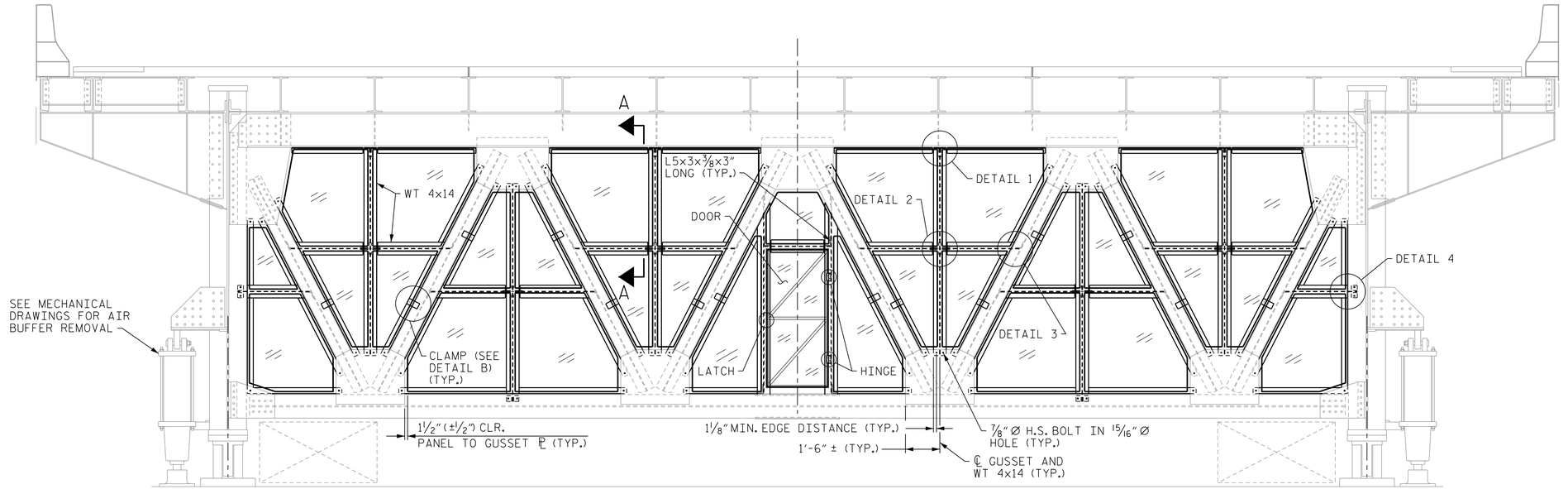
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN

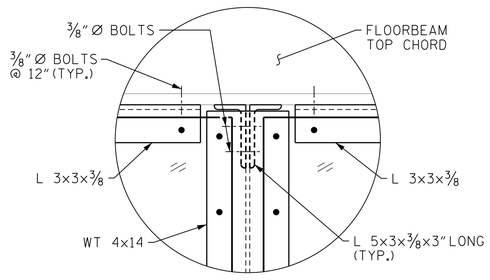
BIRD DETERRENT SCREENING

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-56
1			3			TOTAL SHEETS
2			4			213

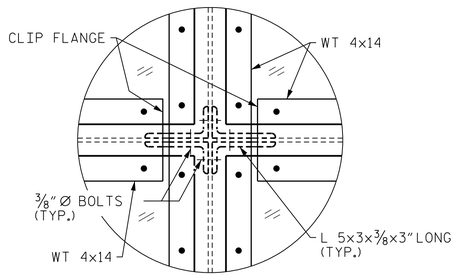


ELEVATION AT FLOORBEAM 1

(LOOKING BACK STATION)
FLOORBEAM 12 SIMILAR



DETAIL 1



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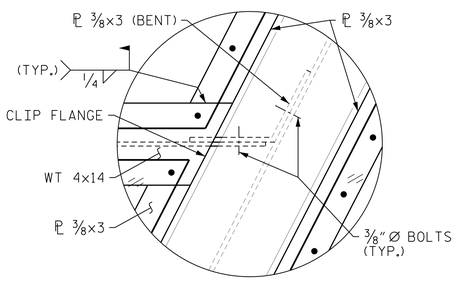

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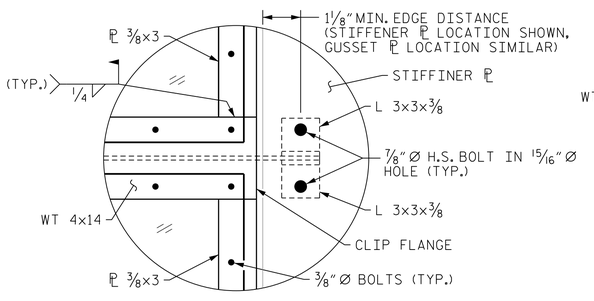

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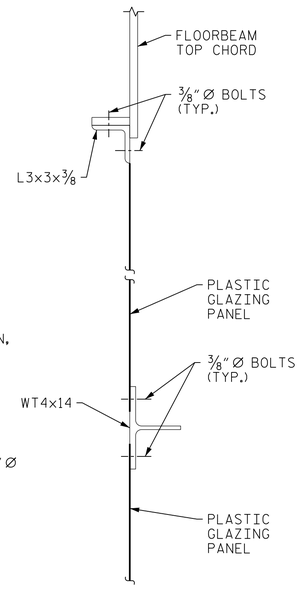
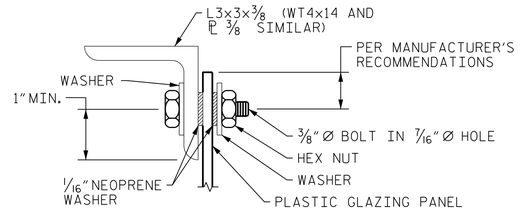
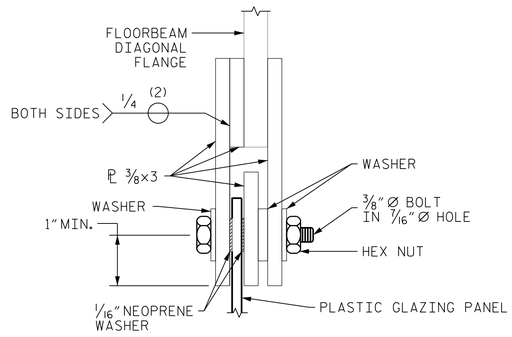


SECTION A-A



DETAIL A

(OCCURS AT ALL PLASTIC GLAZING PANEL CONNECTION POINTS, EXCEPT CLAMP LOCATIONS)



DETAIL B

(PLACE CLAMPS AT LOCATIONS SHOWN ON PLANS)

NOTES:

FOR PLASTIC GLAZING PANELS, SEE SPECIAL PROVISIONS.

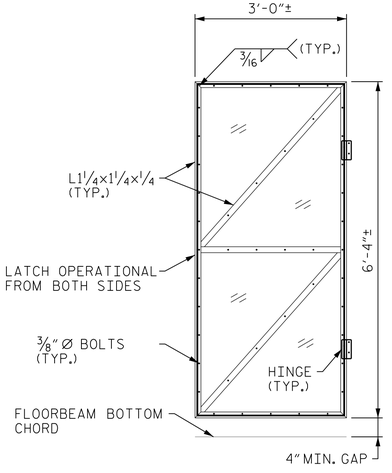
CONTRACTOR MAY REQUEST TO MAKE MINOR CHANGES FOR PRODUCT IMPROVEMENT.

BOLTS SHOWN ON THIS DRAWING SHALL BE ASTM A307, GRADE A UNLESS OTHERWISE NOTED.

FOR CLEANING AND REPAINTING, SEE SPECIAL PROVISIONS FOR PAINTING EXISTING STRUCTURE.

GLAZING PANEL INSTALLATION PROCEDURE:

1. REMOVE EXISTING PLASTIC GLAZING PANELS, FRAMING AND DOOR.
2. INSTALL NEW PLASTIC GLAZING FRAMING. COORDINATE INSTALLATION WITH CLEANING AND REPAINTING OF BRIDGE.
3. INSTALL NEW PLASTIC GLAZING PANELS AND CLAMPS.



DOOR DETAIL

CONTRACTOR TO FIELD MEASURE DOOR DIMENSIONS BEFORE FABRICATION.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN

PLASTIC GLAZING DETAILS AT PANEL ABOVE MACHINERY

DESIGNED BY:	C. CORMAN	DATE :	APR 2018
DRAWN BY:	K. WHITE	DATE :	APR 2018
CHECKED BY:	J. BORUTA	DATE :	AUG 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE :	NOV 2018

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11/15/2018
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

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1			3			TOTAL SHEETS
2			4			213

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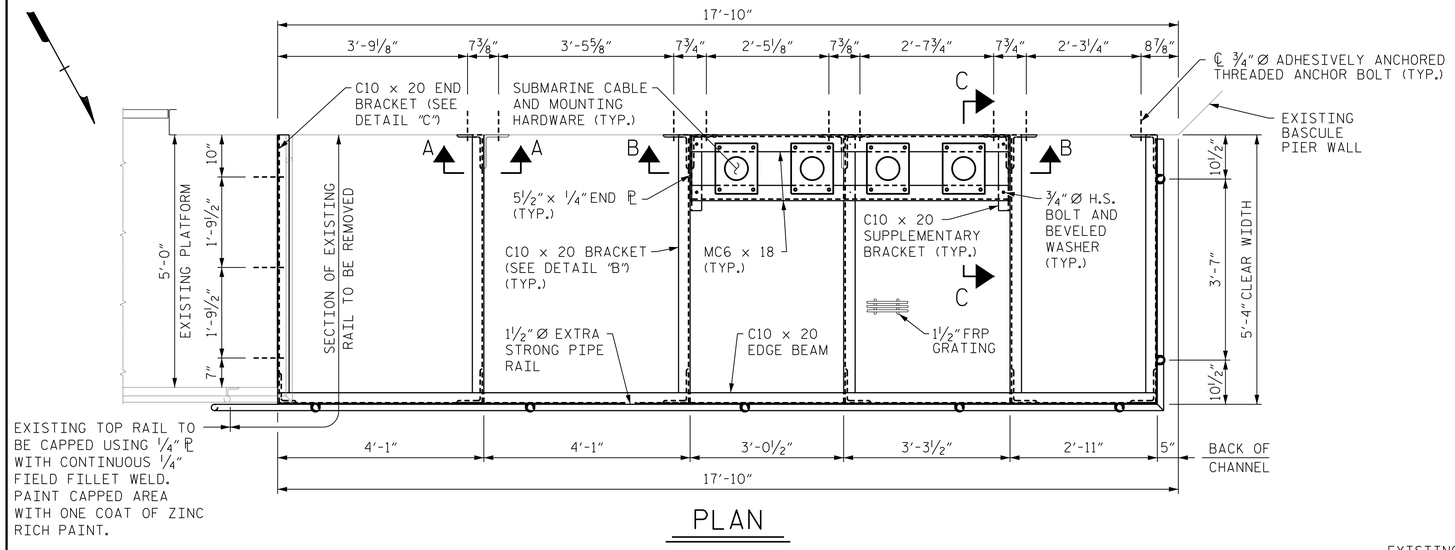
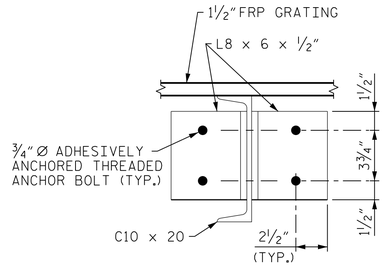
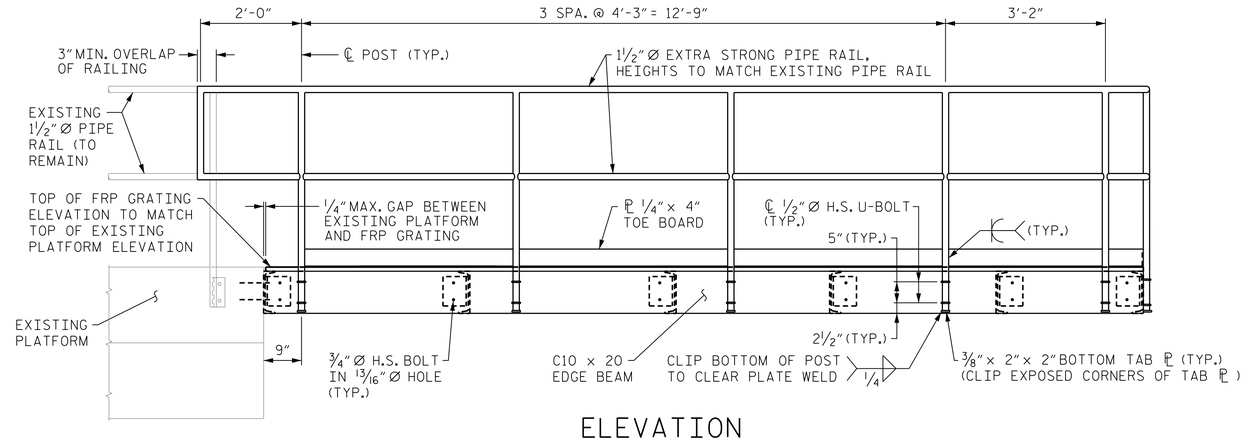


PLAN

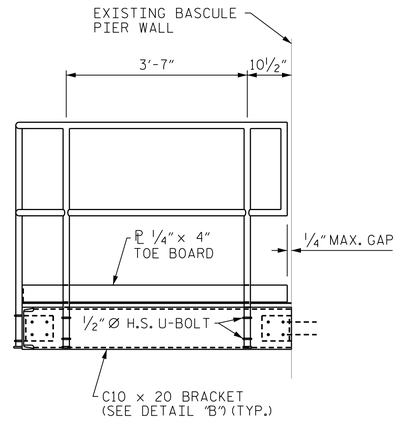


SECTION A-A

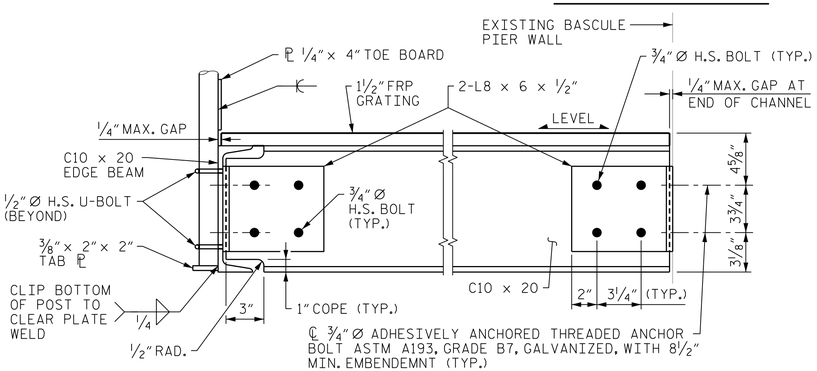
SECTION A'-A' SIMILAR



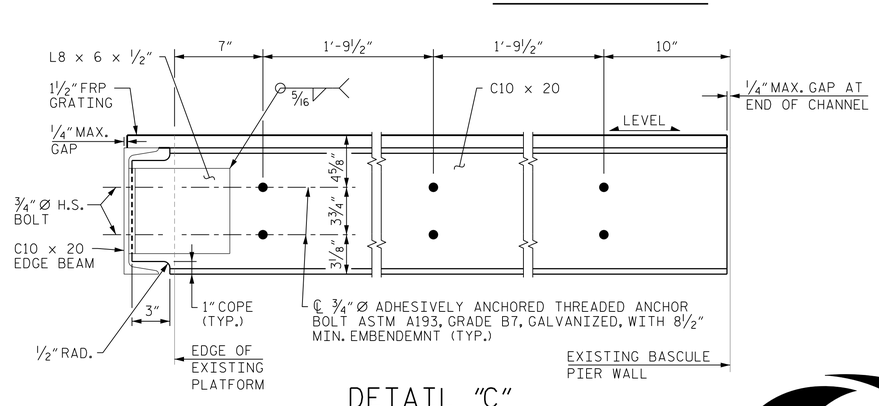
ELEVATION



END VIEW



DETAIL "B"



DETAIL "C"

NOTES:

FOR LOCATION OF SUBMARINE CABLES AND MOUNTING HARDWARE, SEE ELECTRICAL PLANS AND CORRESPONDING SPECIAL PROVISIONS.

BOLTED CONNECTIONS SHALL BE ¾" DIA. ASTM F3125, GRADE A325 H.S. BOLTS GALVANIZED (EXCEPT AS NOTED).

STRUCTURAL STEEL SHALL CONFORM TO ASTM A709 GRADE 50, GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

RAILING SYSTEM SHALL BE ASTM A53, EXTRA STRONG GALVANIZED PIPE. ALL EXPOSED AREAS DAMAGED BY WELDING AND HANDLING SHALL BE GIVEN ONE COAT OF ZINC RICH PAINT.

VERIFY DIMENSIONS AND GEOMETRY OF THE EXISTING STRUCTURE IN THE FIELD AS NECESSARY FOR PROPER FIT OF PROPOSED CONSTRUCTION PRIOR TO FABRICATION OF ANY COMPONENTS. DIFFERENCES IN DIMENSIONS FROM THOSE SHOWN ON THE PLANS SHALL BE SUBMITTED TO ENGINEER FOR REVIEW.

FRP SHALL BE ATTACHED TO THE STEEL SUPPORT WITH MECHANICAL FASTENERS PER MANUFACTURER'S REQUIREMENTS.

FOR PLATFORM EXTENSIONS, SEE SPECIAL PROVISIONS.

FOR PLATFORM EXTENSION LOCATIONS, SEE ELECTRICAL PLANS.

FOR ADHESIVELY ANCHORED ANCHOR BOLTS, LEVEL 1 FIELD TESTING IS REQUIRED. TEST AT LEAST 10% OF ALL ANCHORS TO A LOAD OF 2.0 KIPS.

FIELD DRILLED HOLE SIZE IN EXISTING CONCRETE SHALL BE PER ADHESIVE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR HAS THE OPTION TO FIELD DRILL BOLT HOLES IN STEEL MEMBERS. AREAS OF GALVANIZING DAMAGED BY FIELD DRILLING SHALL BE TOUCHED UP WITH ONE COAT OF ZINC RICH PAINT.

FOR DETAIL "A", SECTION "B-B" AND SECTION "C-C", SEE SHEET 2 OF 2.

PLATFORM EXTENSION PROCEDURE:

IT IS SUGGESTED THAT THE PLATFORM EXTENSION BE COMPLETE PRIOR TO INSTALLING NEW SUBMARINE CABLES AND CABINETS.

1. REMOVE PORTION OF EXISTING 1½" Ø RAILING.
2. ATTACH L8 x 6 x ½ ANGLES BY DRILLING AND ADHESIVELY ANCHORING ¾" ANCHOR BOLTS INTO EXISTING CONCRETE BASCULE PIER FACE.
3. INSTALL STEEL FRAMING.
4. ATTACH FRP GRATING TO TOPS OF C10 x 20 CHANNELS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
5. INSTALL RAILING AND TOE BOARDS.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 1 OF 2

DESIGNED BY:	J. BORUTA/C. CORMAN
DRAWN BY:	K. WHITE
CHECKED BY:	J. DOUGHTY
DESIGN ENGINEER OF RECORD:	J. DOUGHTY
DATE :	AUG 2018
DATE :	JULY 2018
DATE :	SEPT 2018
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11/15/2018
DocuSigned by: Jason R Doughty
5F73FA2DEA974E8...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN

PLATFORM EXTENSION AT SUBMARINE CABLE TERMINAL CABINET

WEST BASCULE PIER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-58
1			3			TOTAL SHEETS
2			4			213

11/12/2018
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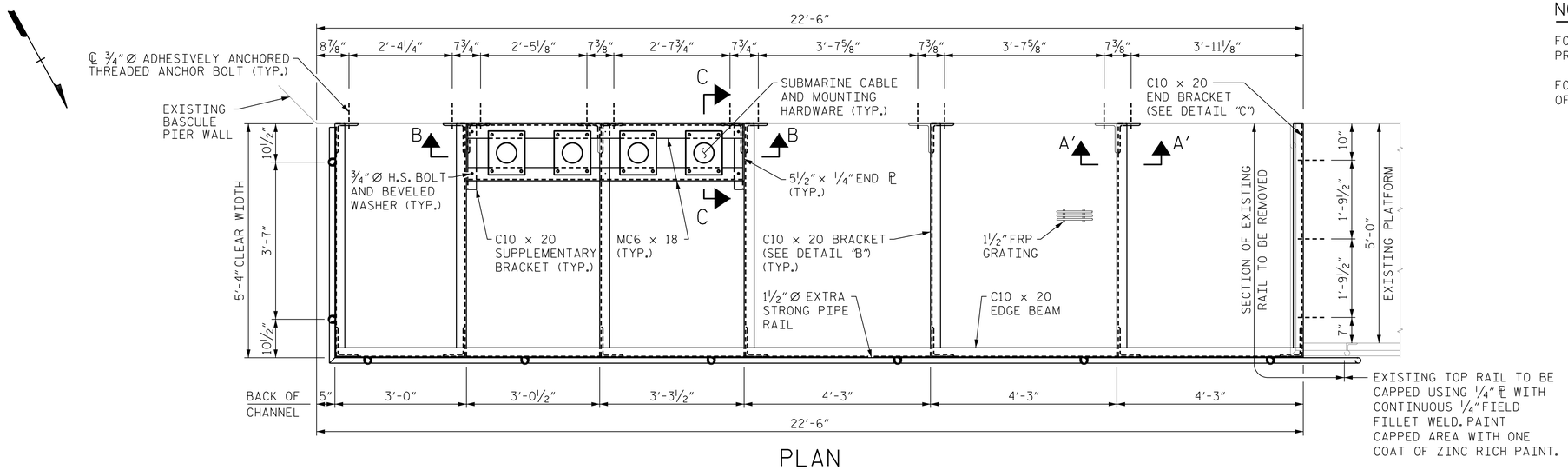
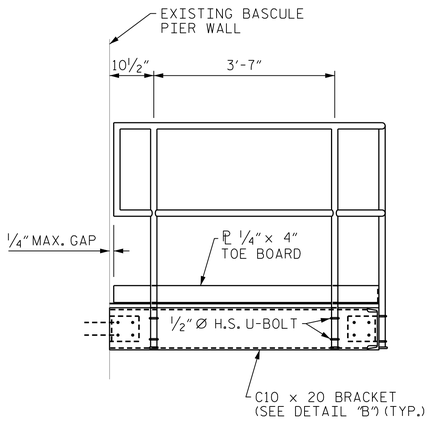
NOTES:

FOR ADDITIONAL NOTES AND PLATFORM EXTENSION PROCEDURE, SEE SHEET 1 OF 2.

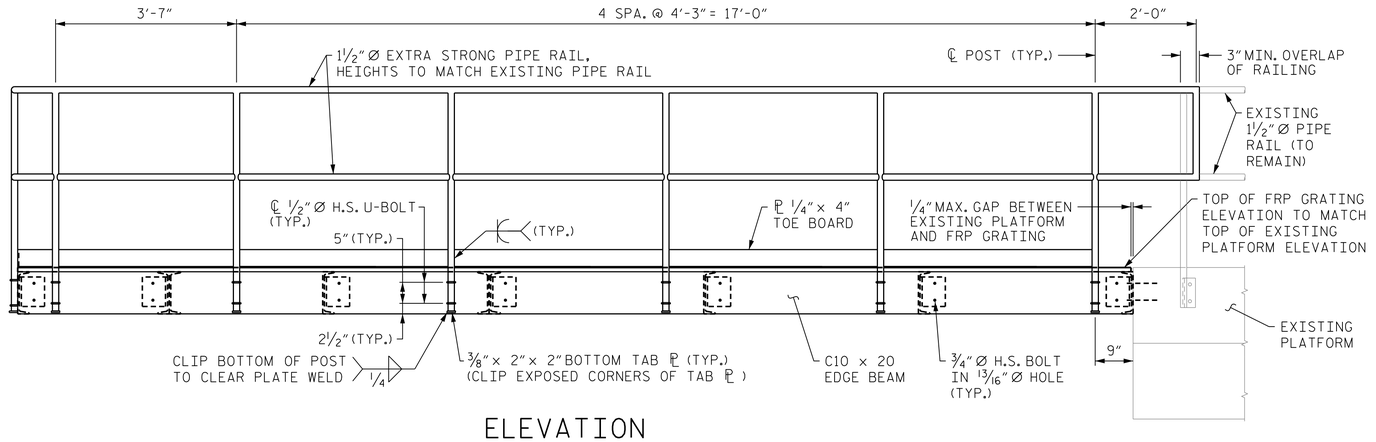
FOR SECTION A'-A' AND DETAILS "B" AND "C", SEE SHEET 1 OF 2.



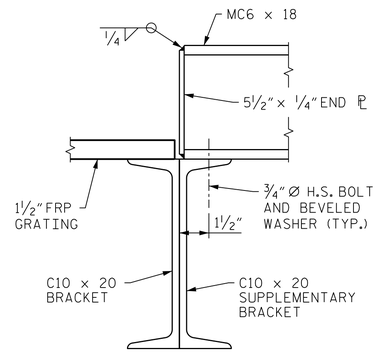
PLAN



END VIEW

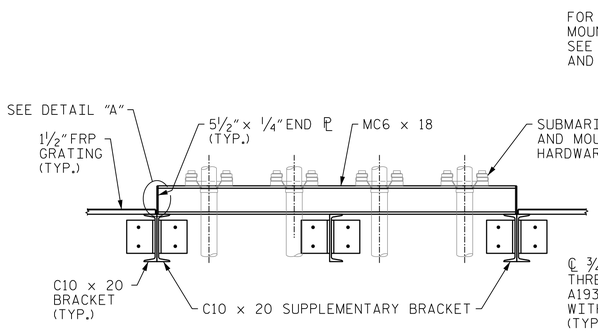


ELEVATION

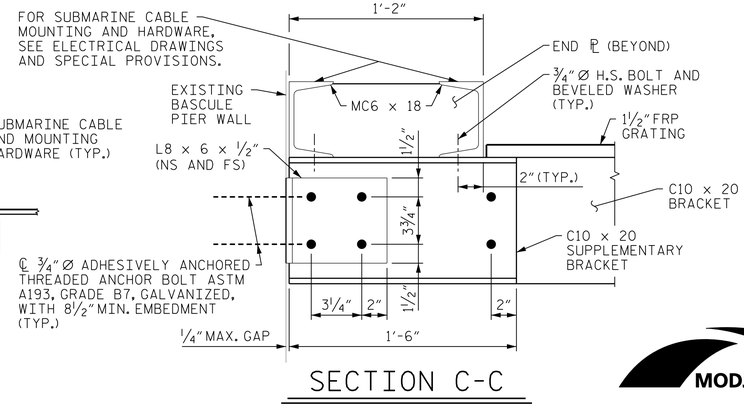


DETAIL A

CONNECTION ANGLES NOT SHOWN FOR CLARITY



SECTION B-B



SECTION C-C

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BASCULE SPAN

PLATFORM EXTENSION AT SUBMARINE CABLE TERMINAL CABINET

EAST BASCULE PIER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-59
1			3			TOTAL SHEETS
2			4			213

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333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 032967 ENGINEER JASON R. DOUGHTY
11/15/2018
DocuSigned by: Jason R Doughty 5F73FA2DEA974E8...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGNED BY:	J. BORUTA/C. CORMAN	DATE : AUG 2018
DRAWN BY:	K. WHITE	DATE : JULY 2018
CHECKED BY:	J. DOUGHTY	DATE : SEPT 2018
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE : NOV 2018

11/12/2018
400.117.15BPR14_SWU_SCP2_64001I.dgn

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 2018 "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 ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞" Ø STUDS FOR 4 - ¾" 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 (/) RGW REV. 5-7-03 RWW (/) JTE REV. 10-1-11 MAA (/) GM
REV. 8-16-99 RWW (/) LES REV. 5-1-06 TLA (/) GM REV. 12-17 MAA (/) THC

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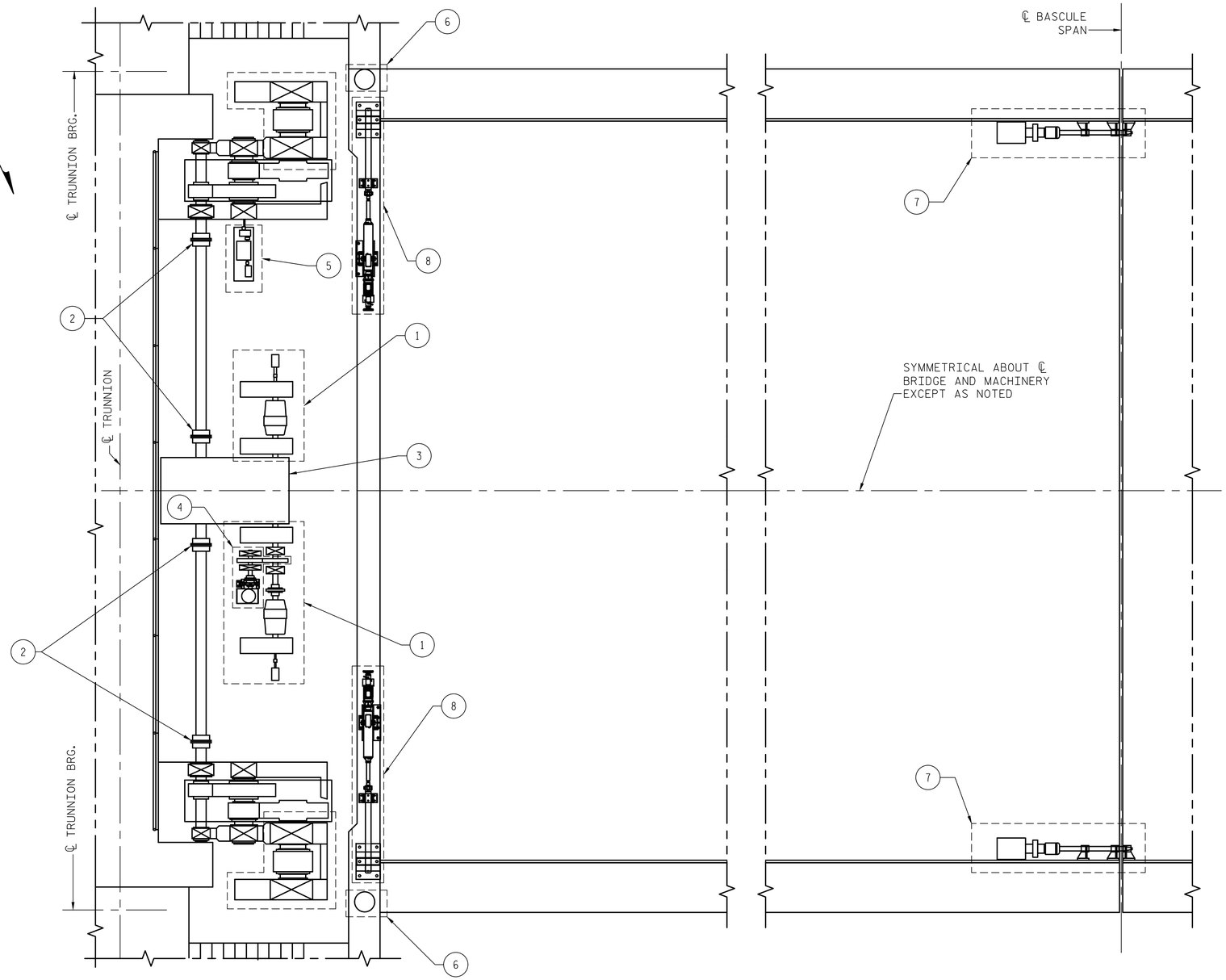

MECHANICAL SCOPE

WORK ITEM NO.	DESCRIPTION	SHEET NO.
1	REMOVE ALL EXISTING COMPONENTS BEFORE THE REDUCER INPUT SHAFT, INCLUDING MAIN MOTORS, BRAKES, BEARINGS, AND MOTOR COUPLINGS AND INSTALL NEW COMPONENTS.	M-2 TO M-3
2	OPEN, CLEAN, INSPECT, REPAIR AND LUBRICATE ALL FLOATING SHAFT COUPLINGS ON EACH LEAF (8 COUPLINGS TOTAL) INSTALL NEW O-RING SEALS AND LUBRICATION FITTINGS FOR EACH COUPLING. DRIVE COUPLING KEYS BACK INTO THE KEYWAYS.	M-2
3	DRAIN, FLUSH, AND REFILL OIL IN THE PRIMARY REDUCERS (2 LOCATIONS TOTAL).	M-2
4	REPLACE AUXILIARY DRIVE (2 LOCATIONS TOTAL).	M-4 TO M-6
5	REPLACE EXISTING ROTARY CAM LIMIT SWITCH SUPPORT, GEARBOX, COUPLINGS, AND UNIVERSAL JOINTS (2 LOCATIONS TOTAL).	M-8
6	REMOVE EXISTING AIR BUFFERS (4 LOCATIONS TOTAL).	M-9
7	ADJUST EXISTING CENTER LOCK GUIDES AND RECEIVERS WITH SHIMS (2 LOCATIONS TOTAL).	M-10
8	SHIM LIVE LOAD BEARING RECEIVER (2 LOCATIONS). REPLACE SPAN-MOUNTED RECEIVER BOLTS (1 LOCATION, 8 BOLTS TOTAL). REPLACE EXISTING LIVE LOAD BEARING ANCHOR BOLTS (2 BEARINGS, 12 BOLTS TOTAL). REMOVE, RECONDITION, AND REINSTALL EXISTING LIVE LOAD SPAN LOCKS (4 LOCATIONS TOTAL).	M-11
9	ADJUST SPAN BALANCE.	M-12

EXISTING MACHINERY - LAYOUT

SCALE: 1/4"=1'-0"
EAST LEAF SHOWN, WEST LEAF SIMILAR

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MECHANICAL

MECHANICAL SCOPE OF WORK

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-1
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	S. M. SEITZ	DATE : 04/02/18
DRAWN BY:	S. M. SEITZ	DATE : 04/03/18
CHECKED BY:	R. C. HOFFMAN	DATE : 10/03/18
DESIGN ENGINEER OF RECORD:	L. R. LENTZ	DATE : 11/15/18

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333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 044302 ENGINEER LEE R. LENTZ
DocuSigned by: lee lentz 11/15/2018
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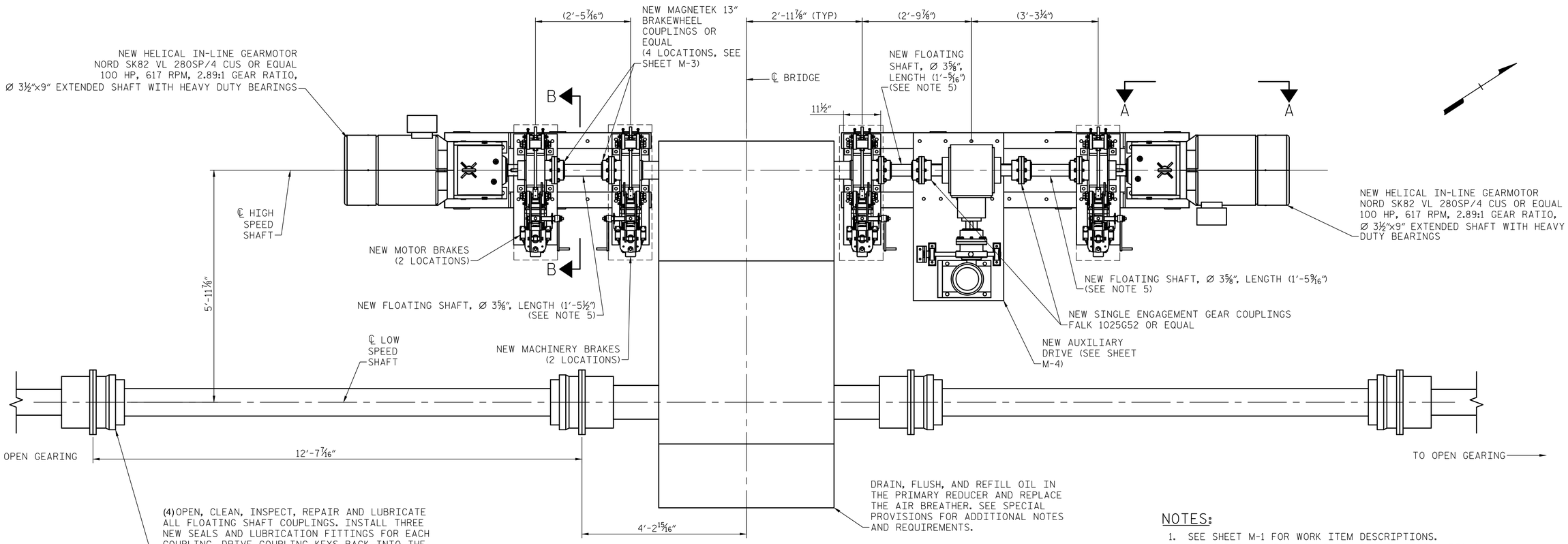
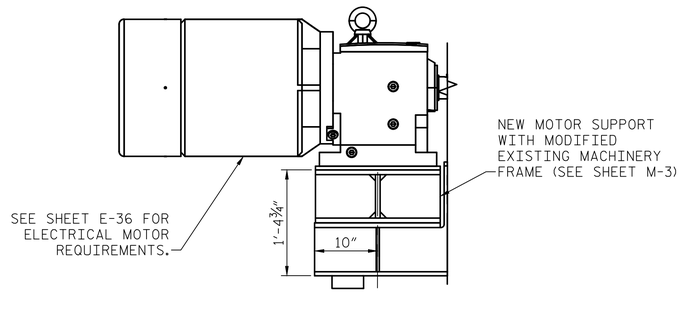
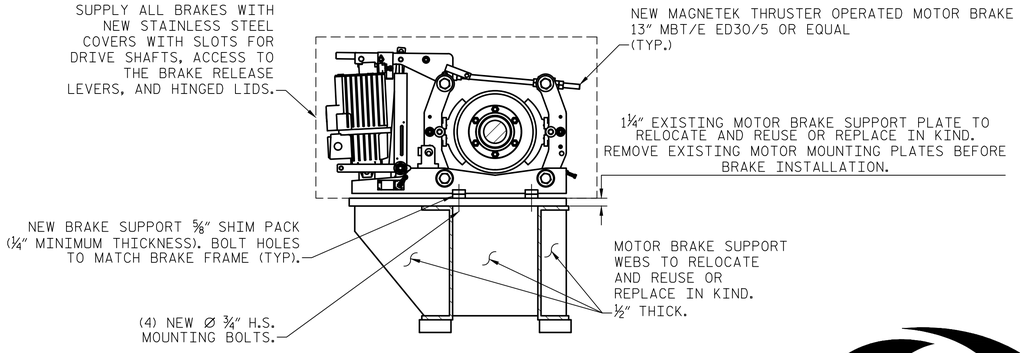


SPAN DRIVE MACHINERY - LAYOUT

SCALE: 3/4″=1′-0″
EAST LEAF SHOWN, WEST LEAF SIMILAR



SECTION A-A
SCALE: 1″=1′-0″



SECTION B-B
SCALE: 1″=1′-0″

NOTES:

1. SEE SHEET M-1 FOR WORK ITEM DESCRIPTIONS.
2. SEE SHEET M-7 FOR MACHINERY FRAME MODIFICATIONS.
3. ALL DIMENSIONS SHOWN ON SHEETS M-1 THROUGH M-12 TO BE FIELD VERIFIED.
4. ONLY ONE GEARMOTOR AT A TIME DRIVES EACH LEAF. THE BRIDGE SHALL NOT OPERATE IF THE WIND IS ABOVE 50 MPH (7 PSF).
5. FINAL FLOATING SHAFT LENGTHS SHALL BE DETERMINED BY MEASURING THE DISTANCE BETWEEN THE END OF THE RIGHT ANGLE REDUCER OUTPUT SHAFTS AND THE BRAKEWHEEL COUPLING STUB SHAFTS (AFTER THE AUXILIARY DRIVE INSTALLATION) AND PROVIDING THE PROPER COUPLING GAP PER THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE THE FLOATING SHAFTS WITH ⅞″X⅛″ KEYS AT EACH END WITH THE KEYWAY LENGTH TO MATCH THE COUPLING HUB KEYWAYS.

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

DESIGNED BY:	S. M. SEITZ	DATE :	04/09/18
DRAWN BY:	S. M. SEITZ	DATE :	04/12/18
CHECKED BY:	R. C. HOFFMAN	DATE :	10/03/18
DESIGN ENGINEER OF RECORD:	L. R. LENTZ	DATE :	11/15/18

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 044302 ENGINEER LEE R. LENTZ
DocuSigned by: Lee Lentz 11/15/2018
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
MECHANICAL

NEW SPAN DRIVE MACHINERY - LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-2
1			3			TOTAL SHEETS
2			4			213

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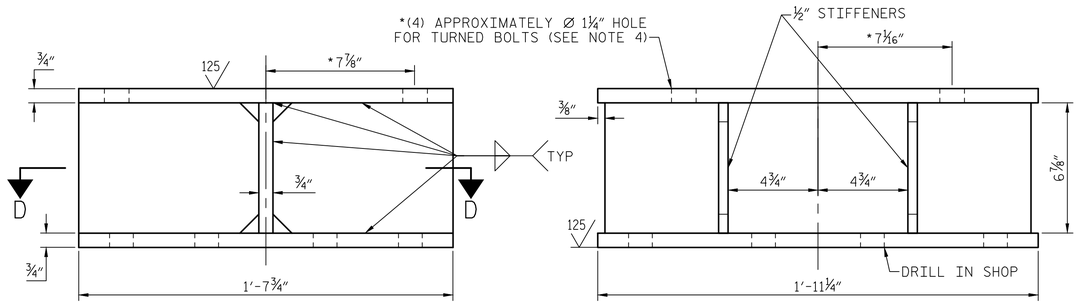
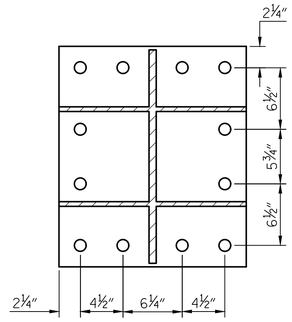


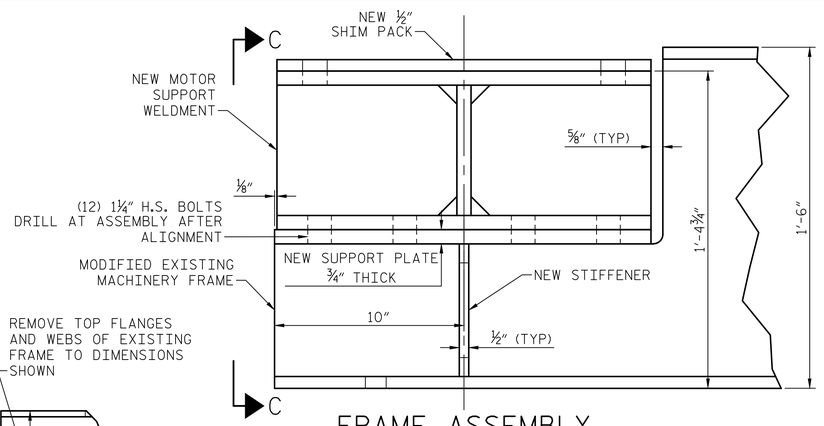
NEW MOTOR SUPPORT WELDMENT

SCALE: 3"=1'-0"
QUANTITY: 2 PER LEAF



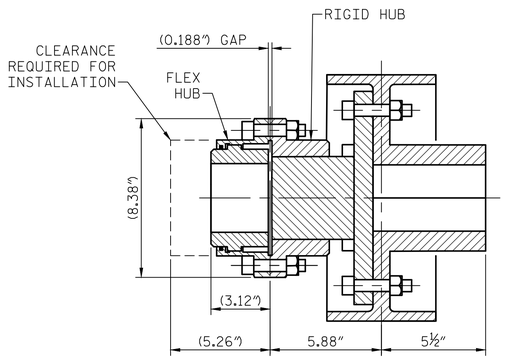
SECTION D-D

SCALE: 1-1/2"=1'-0"



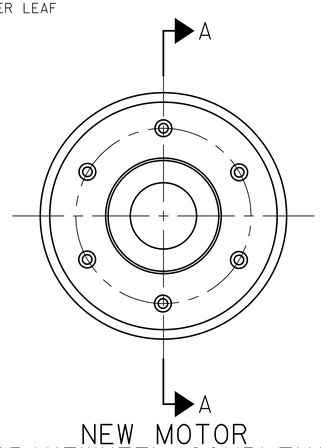
FRAME ASSEMBLY

SCALE: 3"=1'-0"



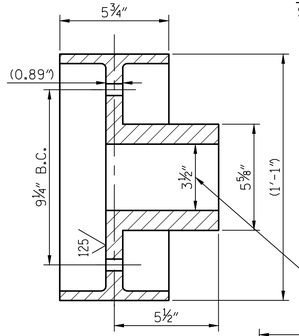
SECTION A-A

SCALE: 3"=1'-0"



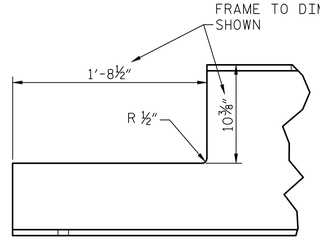
NEW MOTOR BRAKEWHEEL COUPLING

SCALE: 3"=1'-0"
QUANTITY: 2 PER LEAF
MAGNETEK BRAKEWHEEL 122767 CUSTOM STUB SHAFT (SEE DETAIL)
FALK 1025G52 GEAR COUPLING WITH RIGID HUB BORED AND KEYWAY FOR STUB SHAFT AND FLEX HUB BORED AND KEYWAY FOR FLOATING SHAFT



NEW MOTOR BRAKEWHEEL

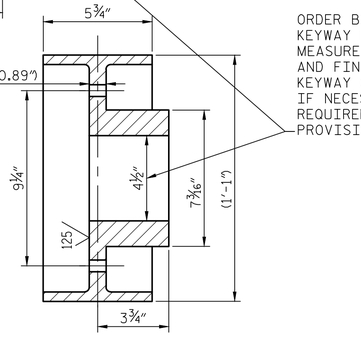
SCALE: 3"=1'-0"



MODIFIED EXISTING MACHINERY FRAME

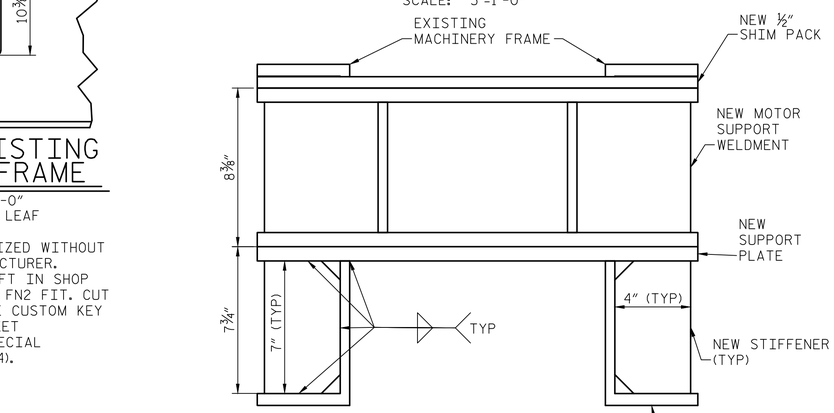
SCALE: 1-1/2"=1'-0"
2 LOCATIONS PER LEAF

ORDER BORES UNDERSIZED WITHOUT KEYWAY FROM MANUFACTURER. MEASURE MATING SHAFT IN SHOP AND FINAL BORE FOR FN2 FIT. CUT KEYWAY (AND PROVIDE CUSTOM KEY IF NECESSARY) TO MEET REQUIREMENTS IN SPECIAL PROVISIONS (FN2, LC4).



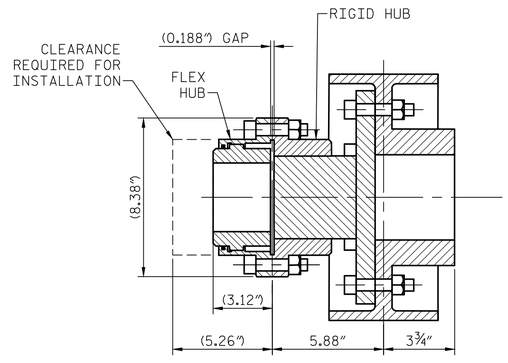
NEW MACHINERY BRAKEWHEEL

SCALE: 3"=1'-0"



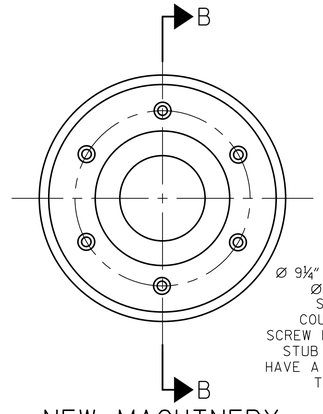
SECTION C-C

SCALE: 3"=1'-0"



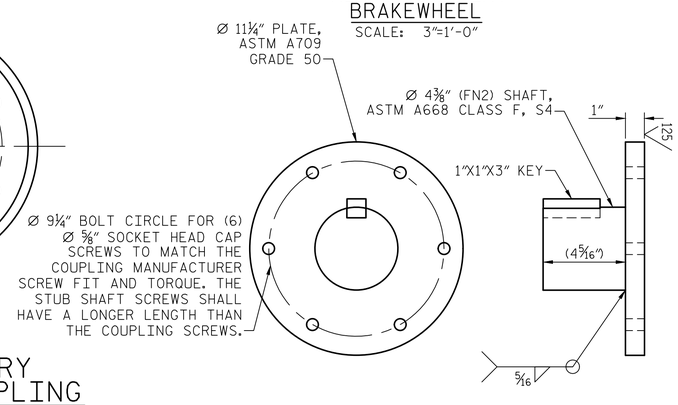
SECTION B-B

SCALE: 3"=1'-0"



NEW MACHINERY BRAKEWHEEL COUPLING

SCALE: 3"=1'-0"
QUANTITY: 2 PER LEAF
MAGNETEK BRAKEWHEEL 122767 CUSTOM STUB SHAFT (SEE DETAIL)
FALK 1025G52 GEAR COUPLING WITH RIGID HUB BORED AND KEYWAY FOR STUB SHAFT AND FLEX HUB BORED AND KEYWAY FOR FLOATING SHAFT



NEW BRAKEWHEEL STUB SHAFT

SCALE: 3"=1'-0"
QUANTITY: 4 PER LEAF

NOTES:

1. SEE SHEET M-1 FOR WORK ITEM DESCRIPTIONS.
2. ALL WELDMENTS TO BE STRESS RELIEVED BY HEAT PRIOR TO MACHINING.
3. NEW MOTOR BRAKEWHEEL COUPLING SHALL BE INSTALLED TO FULLY ENGAGE MOTOR SHAFT SO MOTOR SHAFT CONTACTS STUB SHAFT.
4. BOLT HOLES FOR NEW GEARMOTOR AND NEW GEARMOTOR SHIMS SHALL BE ALIGNED WITH THE NEW MOTOR SUPPORT. AFTER INITIAL ALIGNMENT, ATTACH COMPONENTS WITH TEMPORARY UNDERSIZED BOLTS AND RECHECK ALIGNMENT. UPON FINAL ALIGNMENT VERIFICATION, DRILL THRU AND REAM FOR LC6 FIT WITH TURNED BOLTS ONE NOMINAL SIZE ABOVE EXISTING HOLE SIZE (REPLACING ONE TEMPORARY BOLT AT A TIME).

*DIMENSIONS SHALL BE CONFIRMED WITH GEARMOTOR MANUFACTURER

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

DESIGNED BY:	S. M. SEITZ	DATE : 04/10/18
DRAWN BY:	S. M. SEITZ	DATE : 04/18/18
CHECKED BY:	R. C. HOFFMAN	DATE : 10/03/18
DESIGN ENGINEER OF RECORD:	L. R. LENTZ	DATE : 11/15/18

MODJESKI and MASTERS
Experience great bridges.
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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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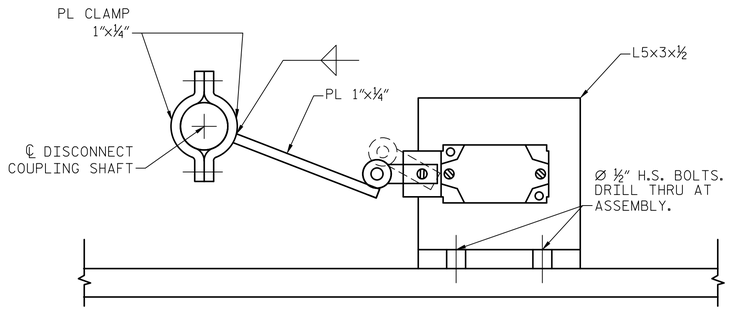
NORTH CAROLINA PROFESSIONAL SEAL 044302 ENGINEER LEE R. LENTZ
DocuSigned by: Lee Lentz 266C7CBE8BFE4C6...
11/15/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MECHANICAL

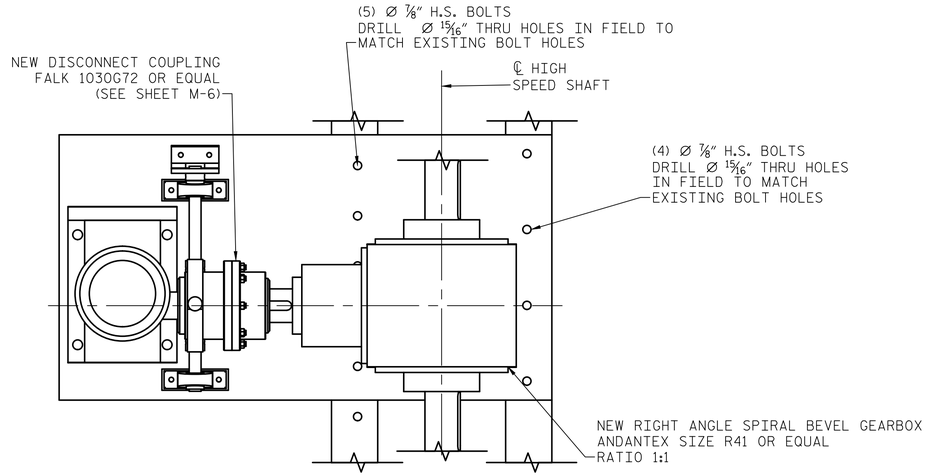
NEW SPAN DRIVE MACHINERY - DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-3
1			3			TOTAL SHEETS
2			4			213



NEW AUXILIARY DRIVE LIMIT SWITCH

SCALE: 6"=1'-0"
QUANTITY: 1 PER LEAF
LIMIT SWITCH ELECTRICAL ITEM E304.
SEE SHEET E-36.

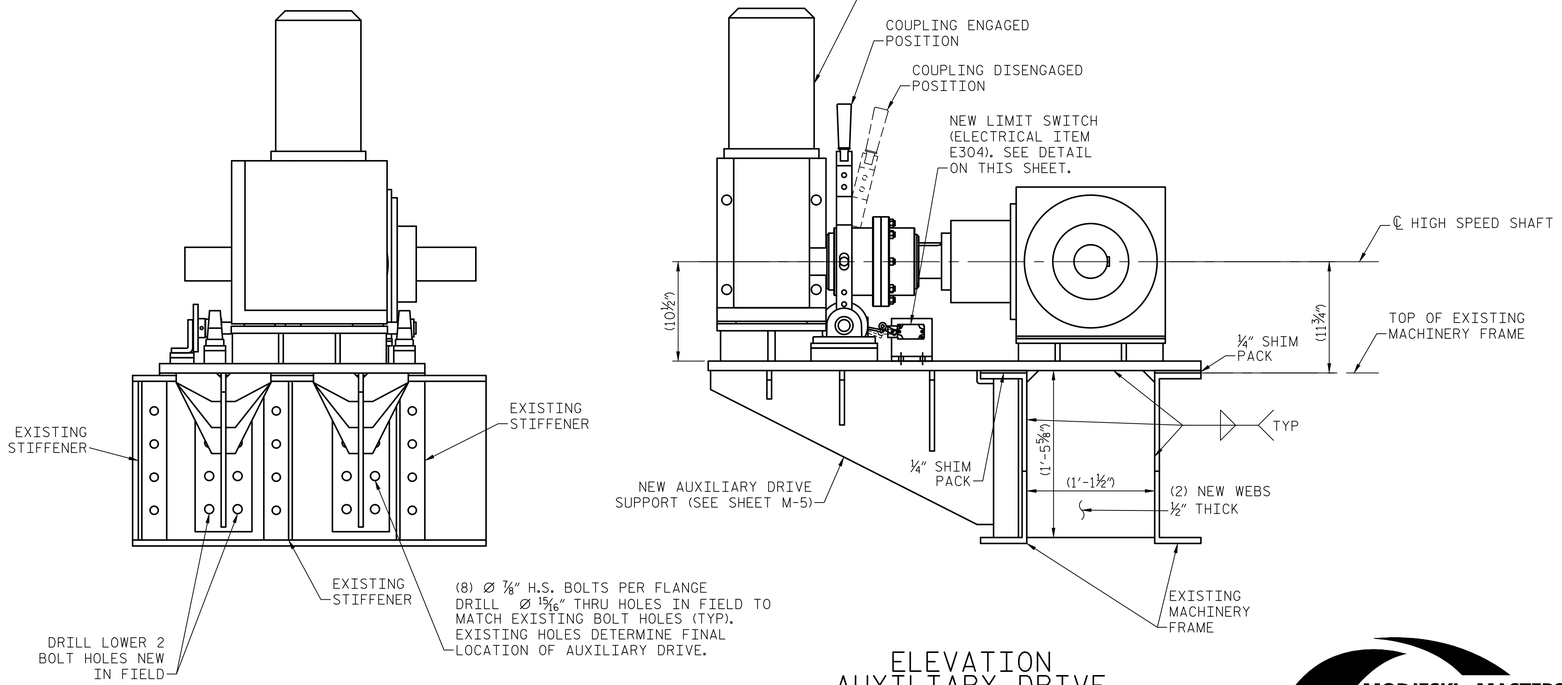


PLAN
AUXILIARY DRIVE

SCALE: 1-1/2"=1'-0"
QUANTITY: 1 PER LEAF

NOTES:

1. SEE SHEET M-1 FOR WORK ITEM DESCRIPTIONS.



ELEVATION
AUXILIARY DRIVE

SCALE: 1-1/2"=1'-0"
QUANTITY: 1 PER LEAF

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MECHANICAL

NEW AUXILLARY DRIVE - LAYOUT

DESIGNED BY:	S. M. SEITZ	DATE : 04/13/18
DRAWN BY:	S. M. SEITZ	DATE : 04/19/18
CHECKED BY:	R. C. HOFFMAN	DATE : 10/03/18
DESIGN ENGINEER OF RECORD:	L. R. LENTZ	DATE : 11/15/18

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 044302 ENGINEER LEE R. LENTZ
DocuSigned by: Lee Lentz 11/15/2018
26BC7CBEBBFE4C6...

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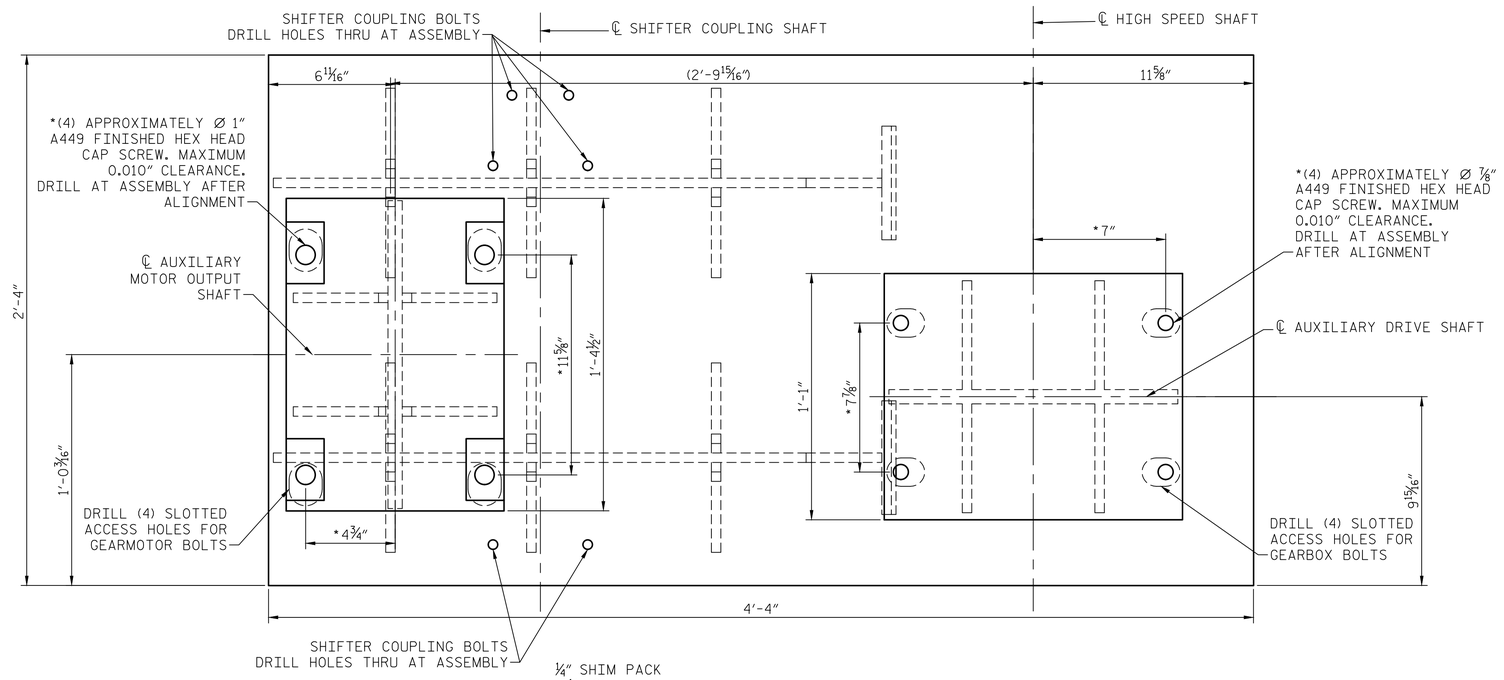
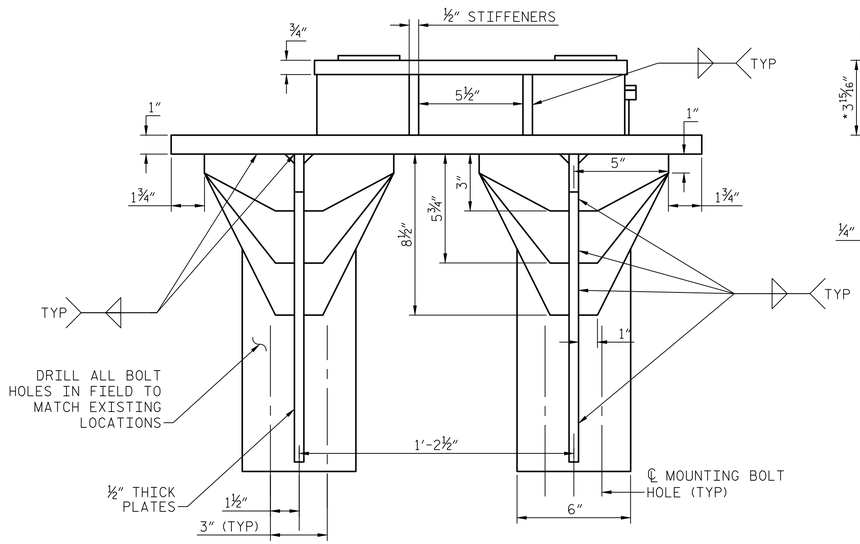
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-4
1			3			TOTAL SHEETS
2			4			213

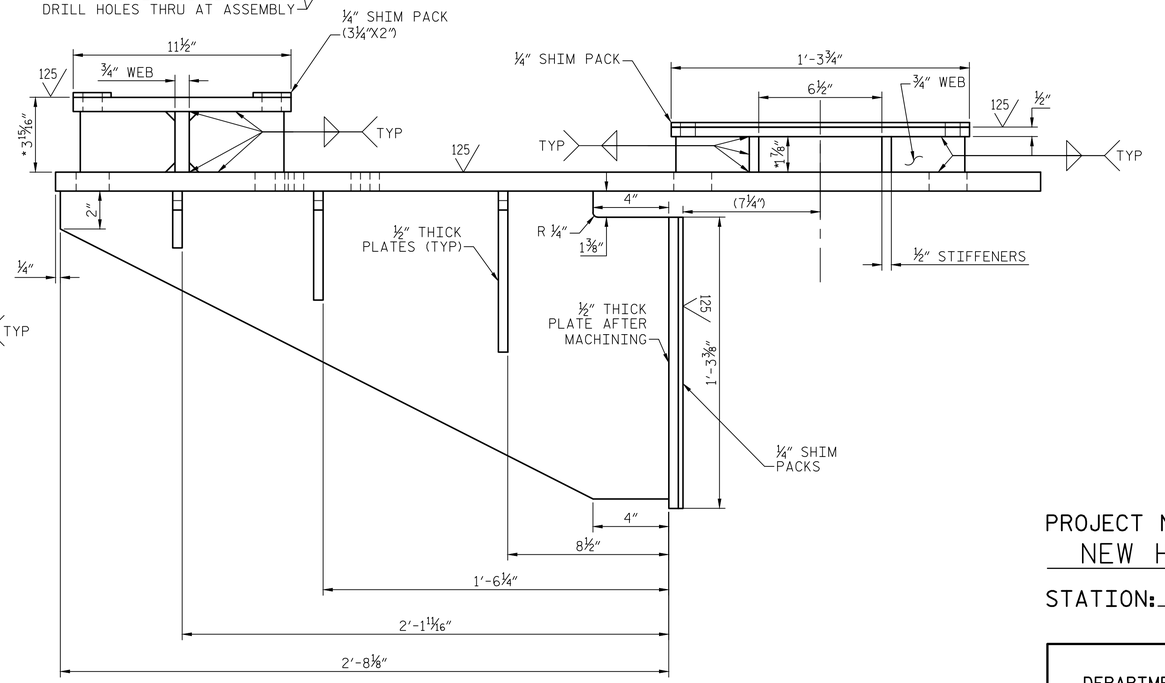
NOTES:

1. SEE SHEET M-1 FOR WORK ITEM DESCRIPTIONS.
2. ALL WELDMENTS TO BE STRESS RELIEVED BY HEAT PRIOR TO MACHINING.
3. FIELD VERIFY ALL DIMENSIONS.

*DIMENSIONS SHALL BE CONFIRMED WITH GEARMOTOR AND GEARBOX MANUFACTURER







NEW AUXILIARY DRIVE SUPPORT

SCALE: 3"=1'-0"
QUANTITY: 1 PER LEAF

DESIGNED BY:	S. M. SEITZ	DATE :	04/17/18
DRAWN BY:	S. M. SEITZ	DATE :	04/19/18
CHECKED BY:	R. C. HOFFMAN	DATE :	10/03/18
DESIGN ENGINEER OF RECORD:	L. R. LENTZ	DATE :	11/15/18

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 044302 ENGINEER LEE R. LENTZ
DocuSigned by: 11/15/2018
26BC7CBEBBFE4C6...

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
MECHANICAL

NEW AUXILIARY DRIVE - DETAILS I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-5
1			3			TOTAL SHEETS
2			4			213

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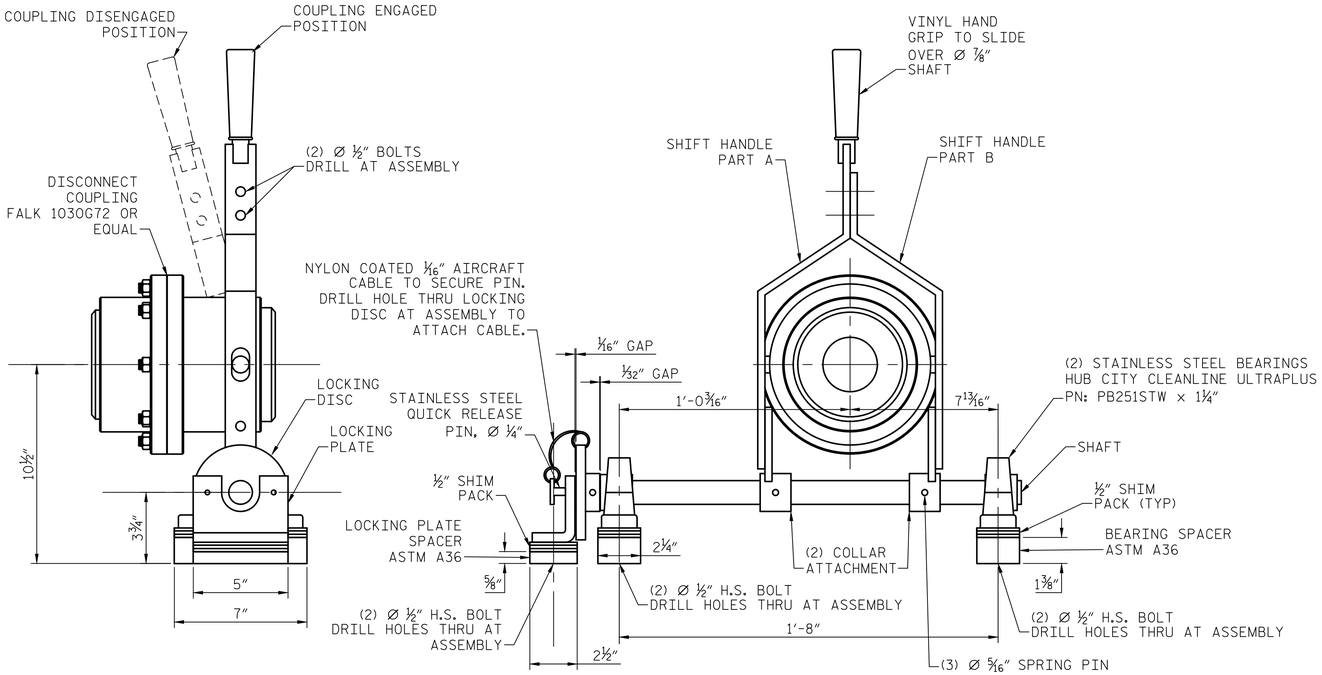
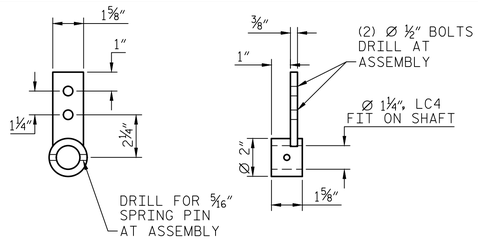
FILE: \\mmd10\projects\3682.03\CADD\Mechanical\402_009_15BPR14_SMU_M05_640011



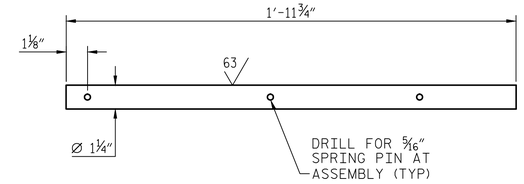
NEW SHIFTER COUPLING

SCALE: 3"=1'-0"
QUANTITY: 1 ASSEMBLY PER LEAF



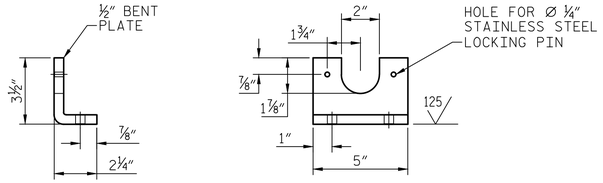
COLLAR ATTACHMENT

SCALE: 3"=1'-0"
QUANTITY: 2 PER ASSEMBLY
MATERIAL: TYPE 316 STAINLESS STEEL



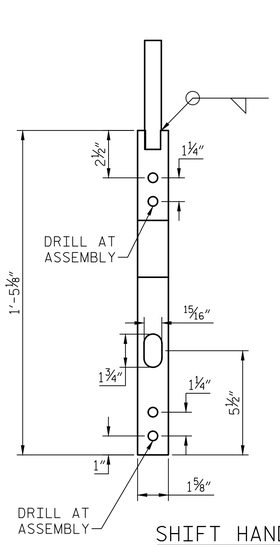
SHAFT

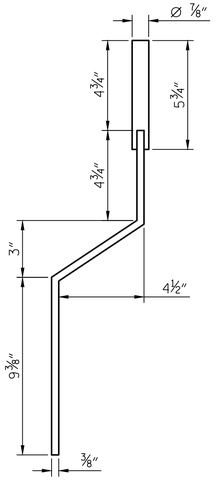
SCALE: 3"=1'-0"
QUANTITY: 1 PER ASSEMBLY
MATERIAL: TYPE 316 STAINLESS STEEL



LOCKING PLATE

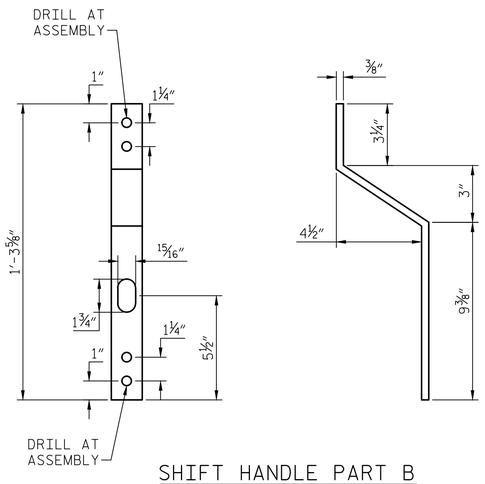
SCALE: 3"=1'-0"
QUANTITY: 1 PER ASSEMBLY
MATERIAL: TYPE 316 STAINLESS STEEL





SHIFT HANDLE PART A

SCALE: 3"=1'-0"
QUANTITY: 1 PER ASSEMBLY
MATERIAL: TYPE 316 STAINLESS STEEL

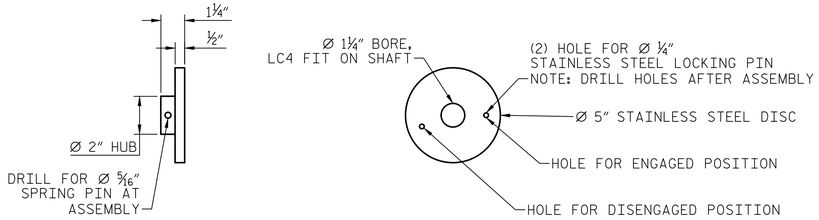


SHIFT HANDLE PART B

SCALE: 3"=1'-0"
QUANTITY: 1 PER ASSEMBLY
MATERIAL: TYPE 316 STAINLESS STEEL

SHIFTER COUPLING HANDLE DETAILS

SCALE: 3"=1'-0"



LOCKING DISC

SCALE: 3"=1'-0"
QUANTITY: 1 PER ASSEMBLY
MATERIAL: TYPE 316 STAINLESS STEEL

NOTES:

1. SEE SHEET M-1 FOR WORK ITEM DESCRIPTIONS.
2. STRESS RELIEVE WELDMENTS.
3. FIT AND FINISH OF SHAFT AT BEARING INTERFACE TO BE IN ACCORDANCE WITH BEARING MANUFACTURER'S RECOMMENDATIONS.

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

DESIGNED BY:	S. M. SEITZ — DATE: 05/07/18
DRAWN BY:	S. M. SEITZ — DATE: 06/04/18
CHECKED BY:	R. C. HOFFMAN — DATE: 10/03/18
DESIGN ENGINEER OF RECORD:	L. R. LENTZ — DATE: 11/15/18

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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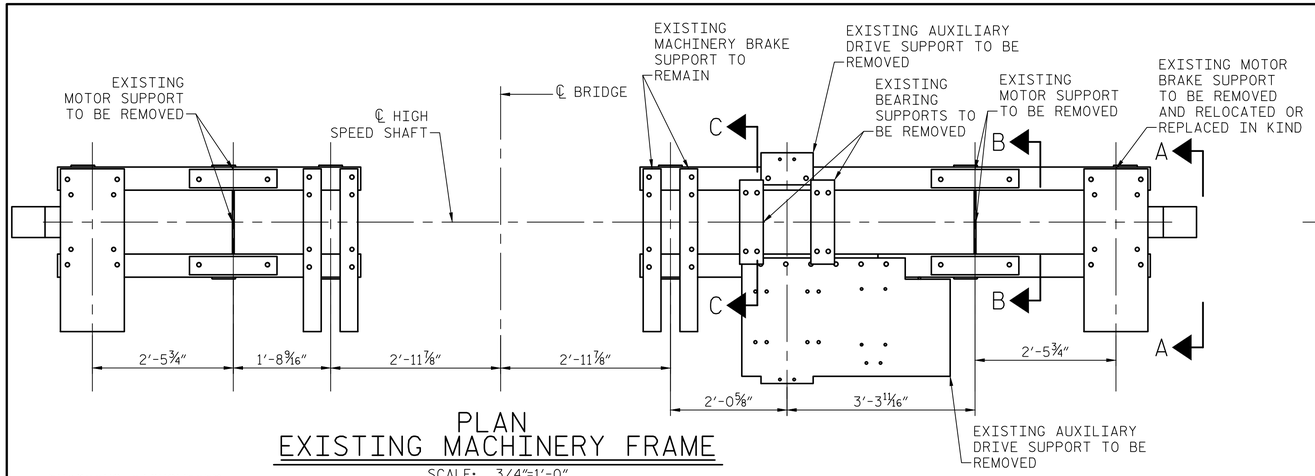
NORTH CAROLINA PROFESSIONAL SEAL 044302 ENGINEER LEE R. LENTZ
DocuSigned by: Lee Lentz 26BC7CBEBBFE4C6...
11/15/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
MECHANICAL

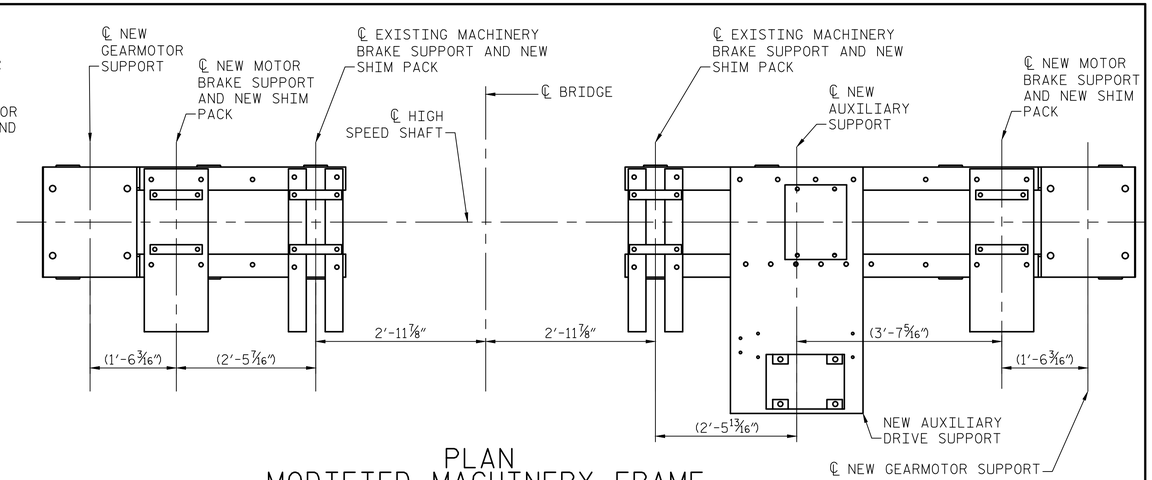
NEW AUXILIARY DRIVE - DETAILS II

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-6
1			3			TOTAL SHEETS
2			4			213



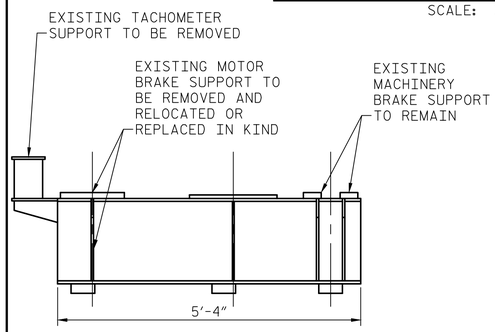
PLAN
EXISTING MACHINERY FRAME

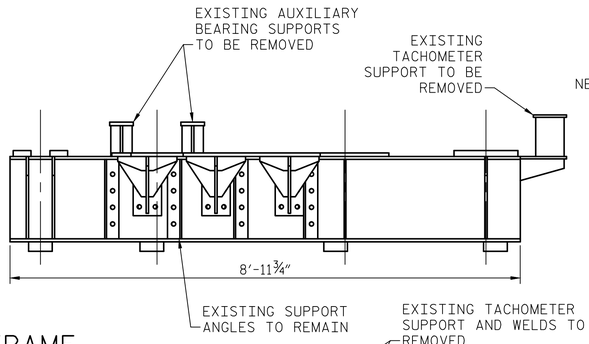
SCALE: 3/4″=1′-0″



PLAN
MODIFIED MACHINERY FRAME

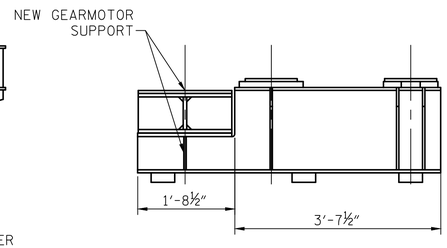
SCALE: 3/4″=1′-0″

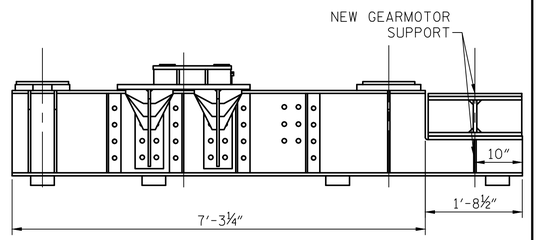




ELEVATION
EXISTING MACHINERY FRAME

SCALE: 3/4″=1′-0″



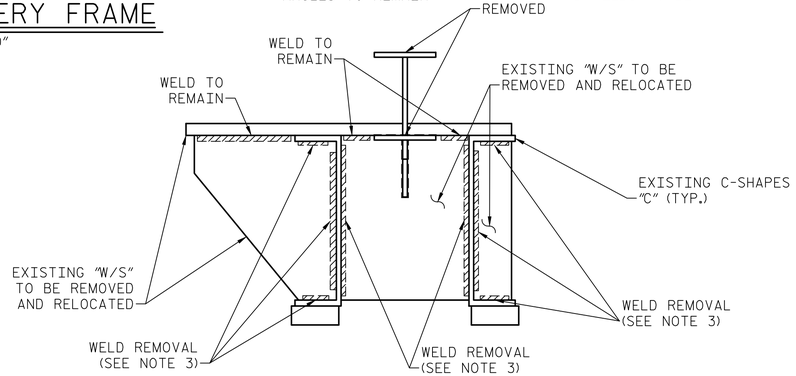


ELEVATION
MODIFIED MACHINERY FRAME

SCALE: 3/4″=1′-0″

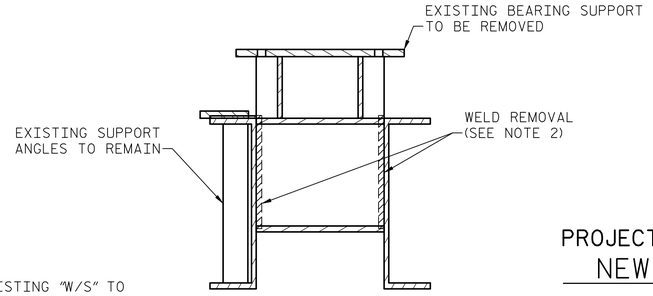
NOTES:

1. SEE SHEET M-1 FOR WORK ITEM DESCRIPTIONS.
2. FOR WELD REMOVALS WHERE THE C-SHAPES (“C”) ARE TO REMAIN AND THE WEBS/STIFFENERS (“W/S”) ARE TO BE REMOVED THE FOLLOWING STEPS SHALL BE TAKEN.
   - 2.1. TORCH CUT THE “W/S” TO THE TOP OF THE FILLET WELD.
   - 2.2. AIR CARBON ARC GOUGE THE REMAINING WELD AND “W/S” TO ⅛″ BEYOND THE “C”.
   - 2.3. GRIND THE REMAINING ⅛″ FLUSH WITH “C”.
3. FOR WELD REMOVALS WHERE THE “C” IS TO REMAIN AND THE “W/S” IS TO BE RELOCATED THE FOLLOWING STEPS SHALL BE TAKEN.
   - 3.1. AIR CARBON ARC GOUGE THE WELD TO ⅛″ BEYOND THE “C” AND “W/S”.
   - 3.2. HAND GRIND TO NEAR FLUSH WITHOUT DAMAGING THE EXISTING “C” AND “W/S” METAL.
   - 3.3. GRIND SLIGHTLY INTO THE “W/S” METAL ON BOTH SIDES UNTIL THE “W/S” CAN BE REMOVED. TRANSITION THE REMOVED PORTIONS OF THE “W/S” AT A ONE AND TEN SLOPE TO FULL BASE METAL THICKNESS.
   - 3.4. GRIND THE REMAINING MATERIAL FLUSH WITH THE “C”.
4. ALL VACANT BOLT HOLES LEFT IN THE MACHINERY FRAME SHALL BE FILLED WITH BOLTS OR PLUG WELDS.
5. THE EXISTING MOTOR BRAKE SUPPORT SHALL BE REMOVED AND RELOCATED. THE SUPPORT SHALL BE WELDED IN PLACE AT ITS NEW LOCATION.



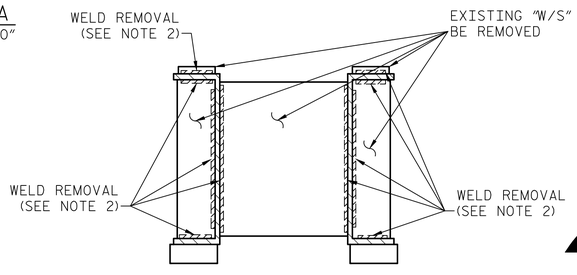
SECTION A-A

SCALE: 1-1/2″=1′-0″



SECTION C-C

SCALE: 1-1/2″=1′-0″



SECTION B-B

SCALE: 1-1/2″=1′-0″

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MECHANICAL

MACHINERY FRAME MODIFICATIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-7
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	S. M. SEITZ	DATE : 06/11/18
DRAWN BY:	S. M. SEITZ	DATE : 06/19/18
CHECKED BY:	R. C. HOFFMAN	DATE : 10/03/18
DESIGN ENGINEER OF RECORD:	L. R. LENTZ	DATE : 11/15/18

MODJESKI and MASTERS
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333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 044302 ENGINEER LEE R. LENTZ

DocuSigned by: Lee Lentz 11/15/2018

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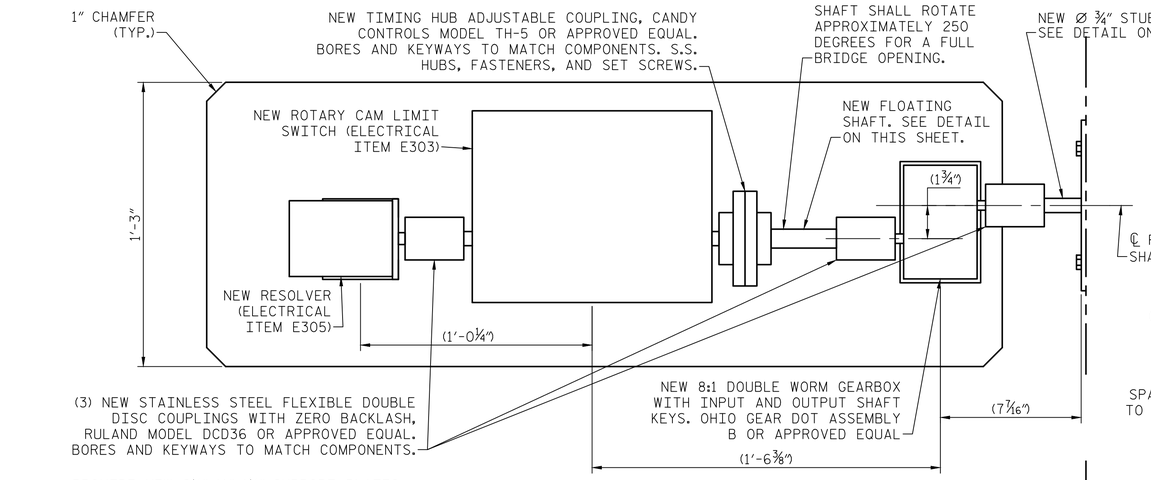
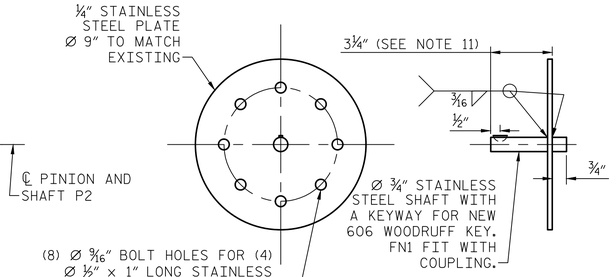


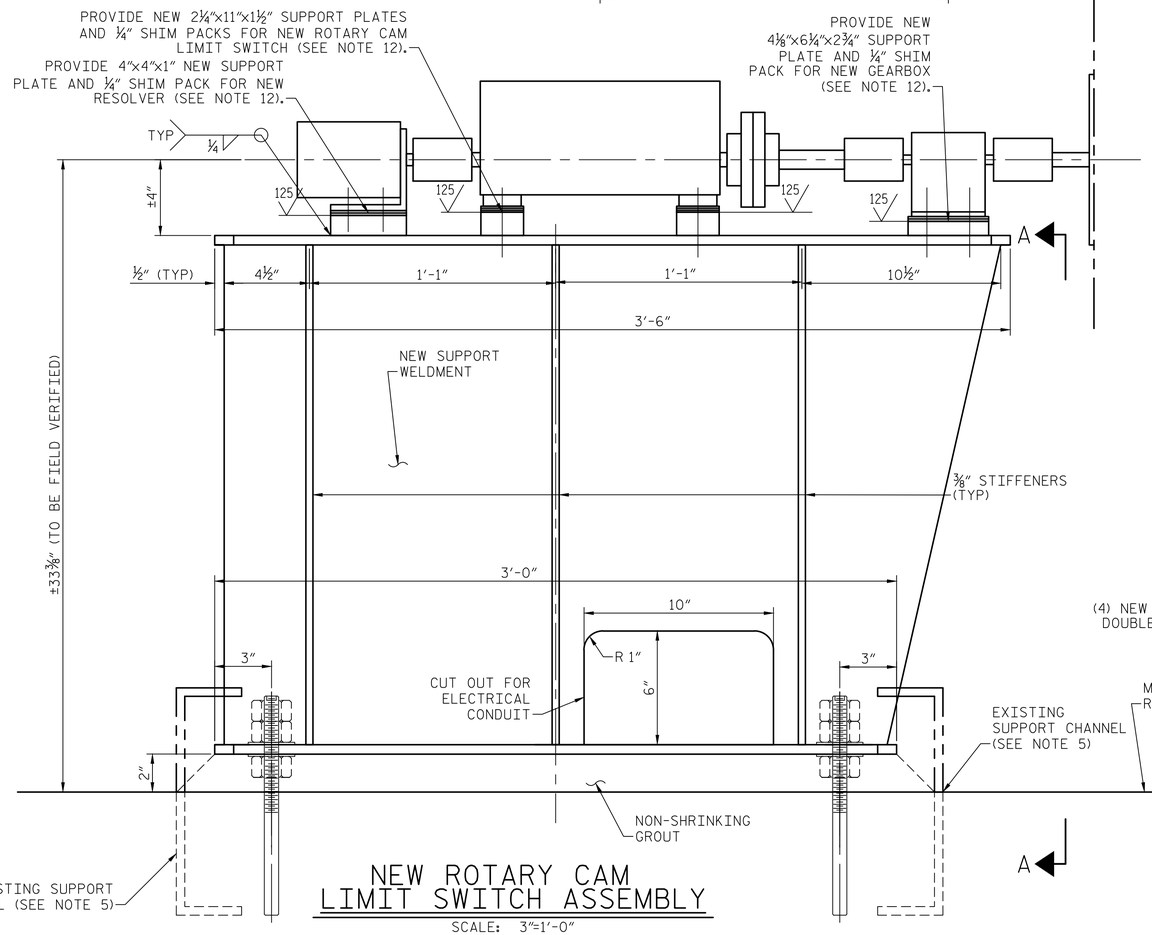


NEW DRIVE STUB SHAFT

SCALE: 3"=1'-0"
QUANTITY: 1 PER LEAF
MATERIAL: ASTM A276, TYPE 316

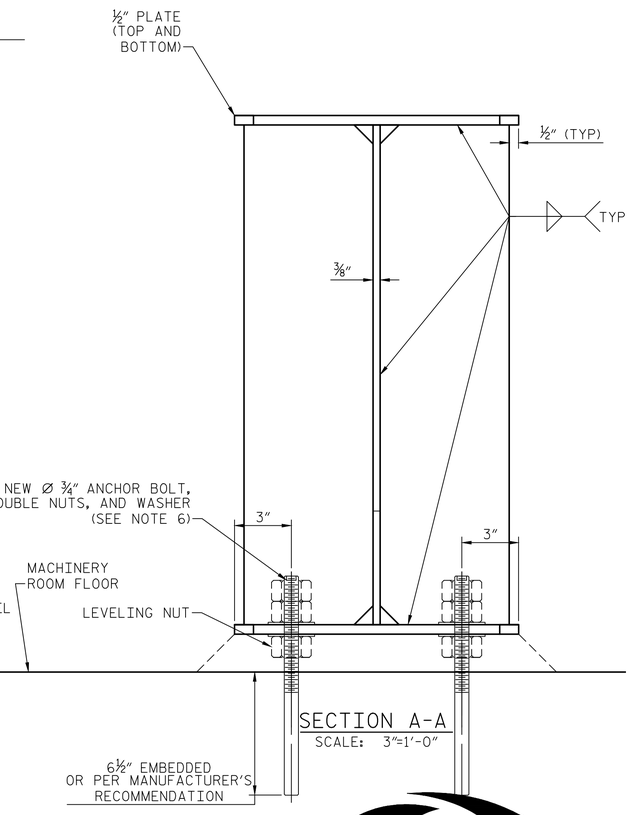
NOTES:

1. SEE SHEET M-1 FOR WORK ITEM DESCRIPTIONS.
2. CONTRACTOR MUST FIELD-VERIFY ALL DIMENSIONS.
3. ALL WELDMENTS TO BE STRESS RELIEVED BY HEAT PRIOR TO MACHINING.
4. PAINT IN ACCORDANCE WITH STRUCTURAL SPECIFICATIONS.
5. REMOVE EXISTING SUPPORT WELDMENT AND TORCH CUT EXISTING SUPPORT CHANNEL FLUSH WITH THE FLOOR.
6. ANCHOR BOLT INSTALLATION GUIDANCE:
   - 6.1. DRILL OVERSIZED HOLE FOR BOLTS IN CONCRETE.
   - 6.2. INSTALL NEW ¾" DIAMETER ANCHOR BOLTS AND POUR KELIGROUT (OR APPROVED EQUAL) IN BOLT HOLE.
   - 6.3. INSTALL THE NEW LEVELING NUTS AND NEW SUPPORT WELDMENT. ALIGN SUPPORT WITH LEVELING NUTS.
   - 6.4. INSTALL WASHER AND DOUBLE NUTS.
   - 6.5. POUR NON-SHRINKING GROUT FROM THE NCDOT APPROVED PRODUCTS LIST.
   - 6.6. INSTALLATION SHALL BE IN ACCORDANCE WITH ANCHOR BOLT AND GROUT MANUFACTURER RECOMMENDATIONS TO DEVELOP THE REQUIRED STRENGTH.
7. ALIGN ALL COMPONENTS TO MEET INSTALLATION TOLERANCES OF COUPLING MANUFACTURERS.
8. CONTRACTOR SHALL SUBMIT FOR APPROVAL THE NON-SHRINKING GROUT, ANCHOR BOLT INSTALLATION PROCEDURE, AND COUPLING ALIGNMENT MEASUREMENTS.
9. DRILL THRU HOLES AT INSTALLATION FOR THE ROTARY CAM LIMIT SWITCH AND GEARBOX MOUNTING HARDWARE. TAPPED MOUNTING BOLTS SHALL BE PROVIDED FOR THE RESOLVER. PROVIDE NEW STAINLESS STEEL MOUNTING HARDWARE FOR ALL COMPONENTS ON THE WELDMENT.
10. SEE SHEET E-36 FOR ELECTRICAL ITEMS.
11. CONTRACTOR SHALL USE THE STUB SHAFT LENGTH TO DETERMINE THE FINAL AXIAL LOCATION OF THE SUPPORT WELDMENT.
12. FINAL DIMENSIONS AND LOCATIONS FOR SPAN CONTROL COMPONENT SUPPORT PLATES SHALL BE CONFIRMED WITH THE MANUFACTURERS.



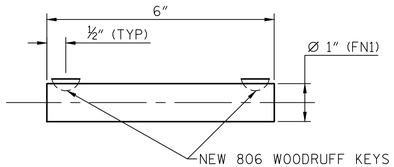
NEW ROTARY CAM LIMIT SWITCH ASSEMBLY

SCALE: 3"=1'-0"
QUANTITY: 1 PER LEAF



SECTION A-A

SCALE: 3"=1'-0"



NEW FLOATING SHAFT

SCALE: 6"=1'-0"
QUANTITY: 1 PER LEAF
MATERIAL: ASTM A276, TYPE 316

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
MECHANICAL

NEW ROTARY CAM LIMIT SWITCH MOUNTING

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-8
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	S. M. SEITZ	DATE : 04/27/18
DRAWN BY:	S. M. SEITZ	DATE : 04/27/18
CHECKED BY:	R. C. HOFFMAN	DATE : 10/03/18
DESIGN ENGINEER OF RECORD:	L. R. LENTZ	DATE : 11/15/18

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 044302 ENGINEER LEE R. LENTZ
DocuSigned by: lee lentz 11/15/2018
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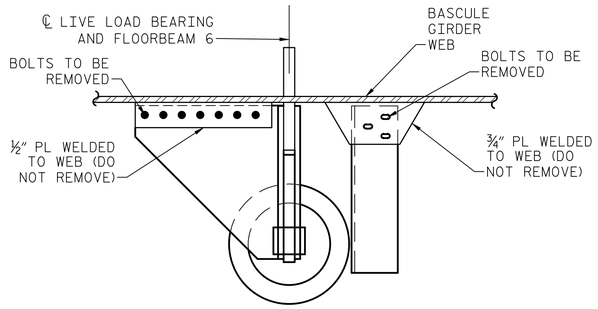
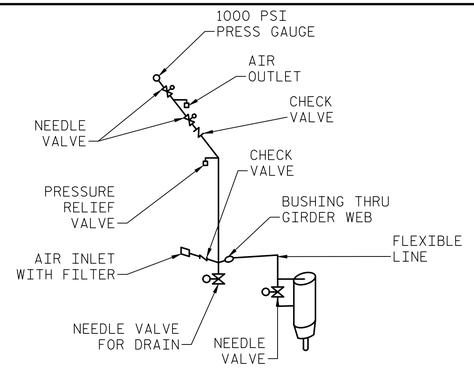
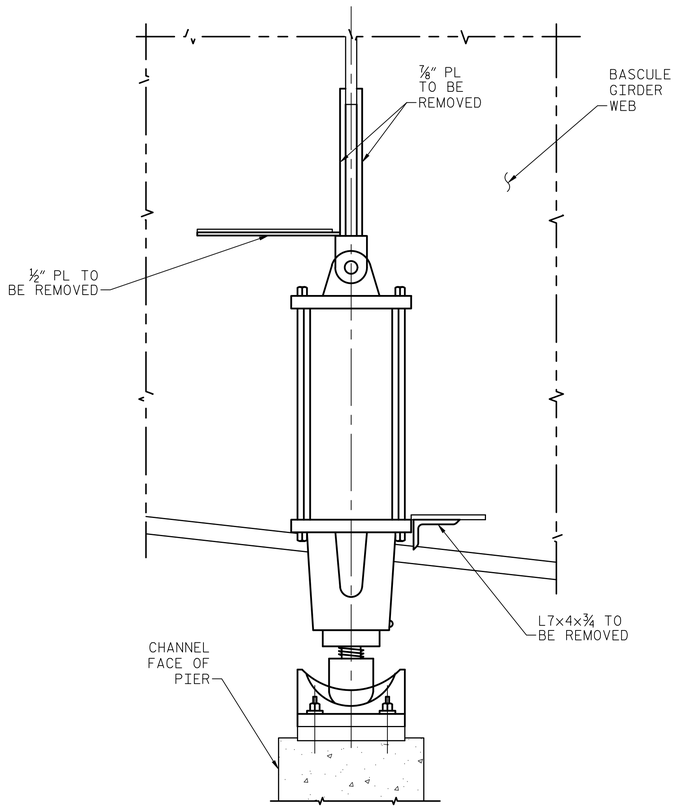
LAST SAVED 11/15/2018 2:45 PM BY AMBRODSKY. LAST PLOTTED 11/15/2018 2:48 PM.
FILE: \\mmdc10\projects\3682.03\CADD\Mechanical\402.015_15BPR14_SMU_M08_640011





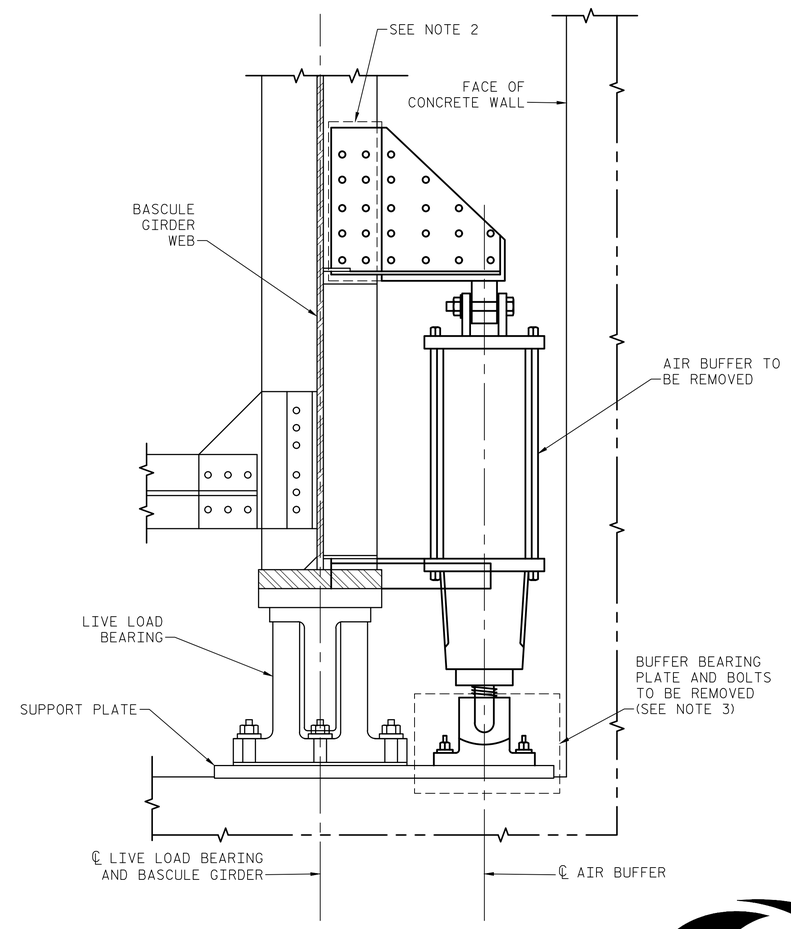
TYPICAL LEAF BUFFER SYSTEM TO BE REMOVED

SCALE: NONE



EXISTING AIR BUFFER

SCALE: 1"=1'-0"
QUANTITY: 2 PER LEAF



NOTES:

1. SEE SHEET M-1 FOR WORK ITEM DESCRIPTIONS.
2. BOLTS TO BE REMOVED. ALL VACANT HOLES LEFT IN THE STRUCTURE SHALL BE FILLED WITH Ø 1" H.S. BOLTS.
3. AFTER THE EXISTING BEARING PLATE IS REMOVED, CUT THE MOUNTING BOLTS FLUSH WITH THE SUPPORT PLATE. PLUG WELD THE BOLT HOLE.
4. AIR BUFFER REMOVAL SHALL BE COMPLETED PRIOR TO PAINTING WORK.

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
MECHANICAL

EXISTING AIR BUFFER REMOVAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-9
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	S. M. SEITZ	DATE : 04/17/18
DRAWN BY:	S. M. SEITZ	DATE : 04/17/18
CHECKED BY:	R. C. HOFFMAN	DATE : 10/03/18
DESIGN ENGINEER OF RECORD:	L. R. LENTZ	DATE : 11/15/18

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

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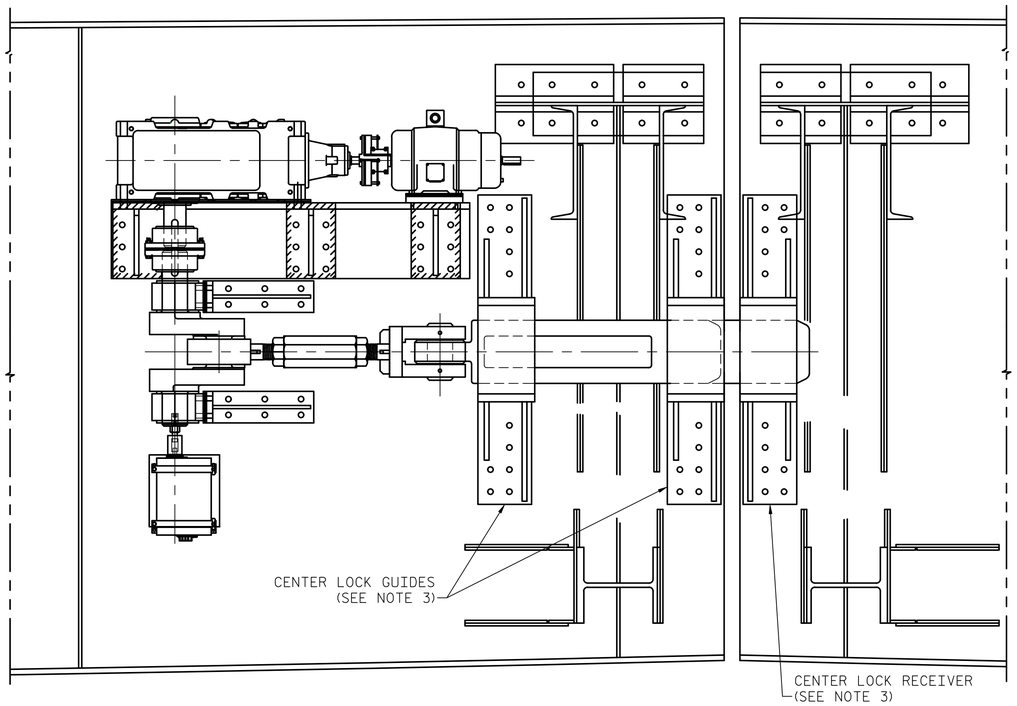
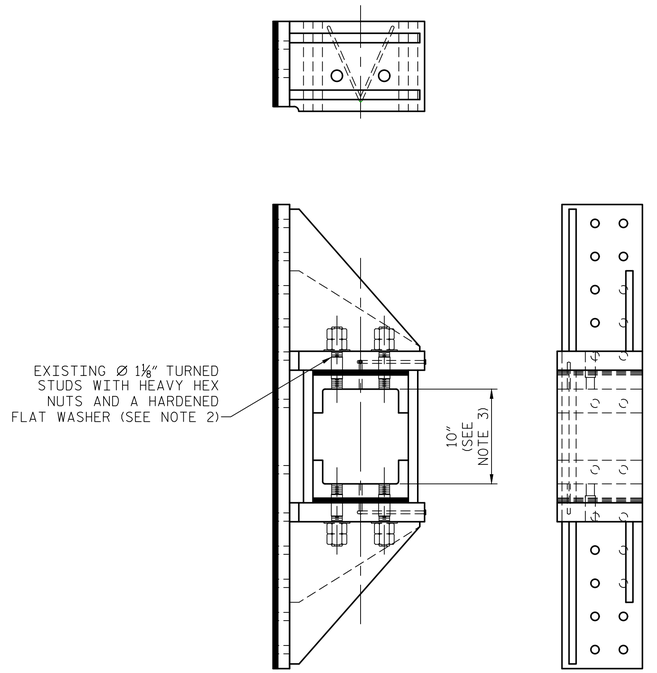
NORTH CAROLINA PROFESSIONAL SEAL 044302 ENGINEER LEE R. LENTZ
DocuSigned by: Lee Lentz 26BC7CBE8BFE4C6...
11/15/2018



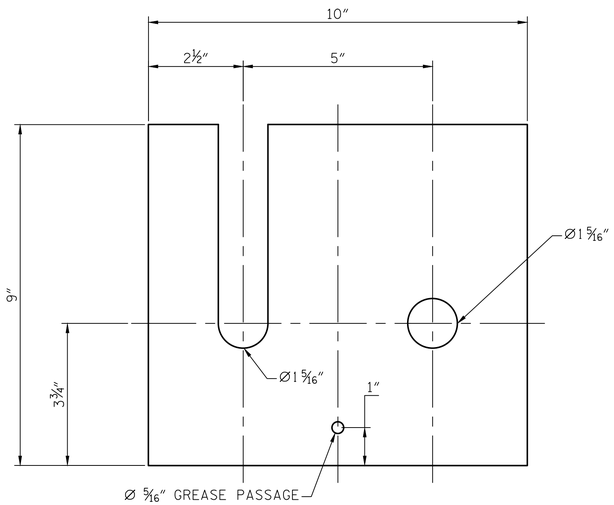
ELEVATION
EXISTING CENTER LOCK ASSEMBLY

SCALE: 1"=1'-0"
QUANTITY: 2
SOUTH SHOWN, NORTH OPPOSITE HAND



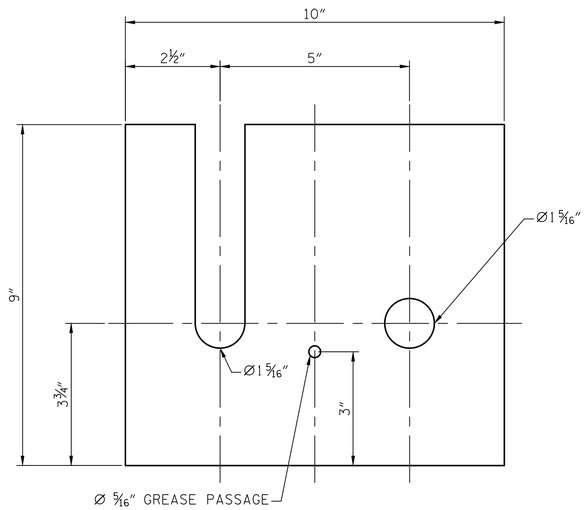
EXISTING CENTER LOCK
GUIDES AND RECEIVER

SCALE: 1-1/2"=1'-0"



NEW GUIDE 1/4" SHIM PACK

SCALE: 6"=1'-0"
QUANTITY: 8 (2 FOR EACH GUIDE)



NEW RECEIVER 1/4" SHIM PACK

SCALE: 6"=1'-0"
QUANTITY: 4 (2 FOR EACH RECEIVER)

NOTES:

1. SEE SHEET M-1 FOR WORK ITEM DESCRIPTIONS.
2. REMOVE ONE UPPER BOLT AND ONE LOWER BOLT AT EACH GUIDE/RECEIVER TO TAP IN NEW SHIMS ABOVE AND BELOW THE LOCK BAR.
3. SHIM TOP AND/OR BOTTOM OF THE GUIDES AS NECESSARY TO ACHIEVE RC6 FIT AND MAINTAIN PROPER ALIGNMENT OF CENTER LOCK BAR. SHIM TOP AND/OR BOTTOM OF THE RECEIVER AS NECESSARY TO ACHIEVE A TOTAL CLEARANCE OF 1/16".
4. CENTER LOCK SHIMMING SHALL BE DONE IN TANDEM WITH THE LIVE LOAD SPAN LOCK SHIMMING.

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

DESIGNED BY:	S. M. SEITZ — DATE : 04/18/18
DRAWN BY:	S. M. SEITZ — DATE : 04/18/18
CHECKED BY:	R. C. HOFFMAN — DATE : 10/03/18
DESIGN ENGINEER OF RECORD:	L. R. LENTZ — DATE : 11/15/18

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044302 LEE R. LENTZ
DocuSigned by: Lee Lentz 26BC7CBEBBFE4C8...
11/15/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
MECHANICAL

EXISTING CENTER LOCK ADJUSTMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-10
1			3			TOTAL SHEETS
2			4			213

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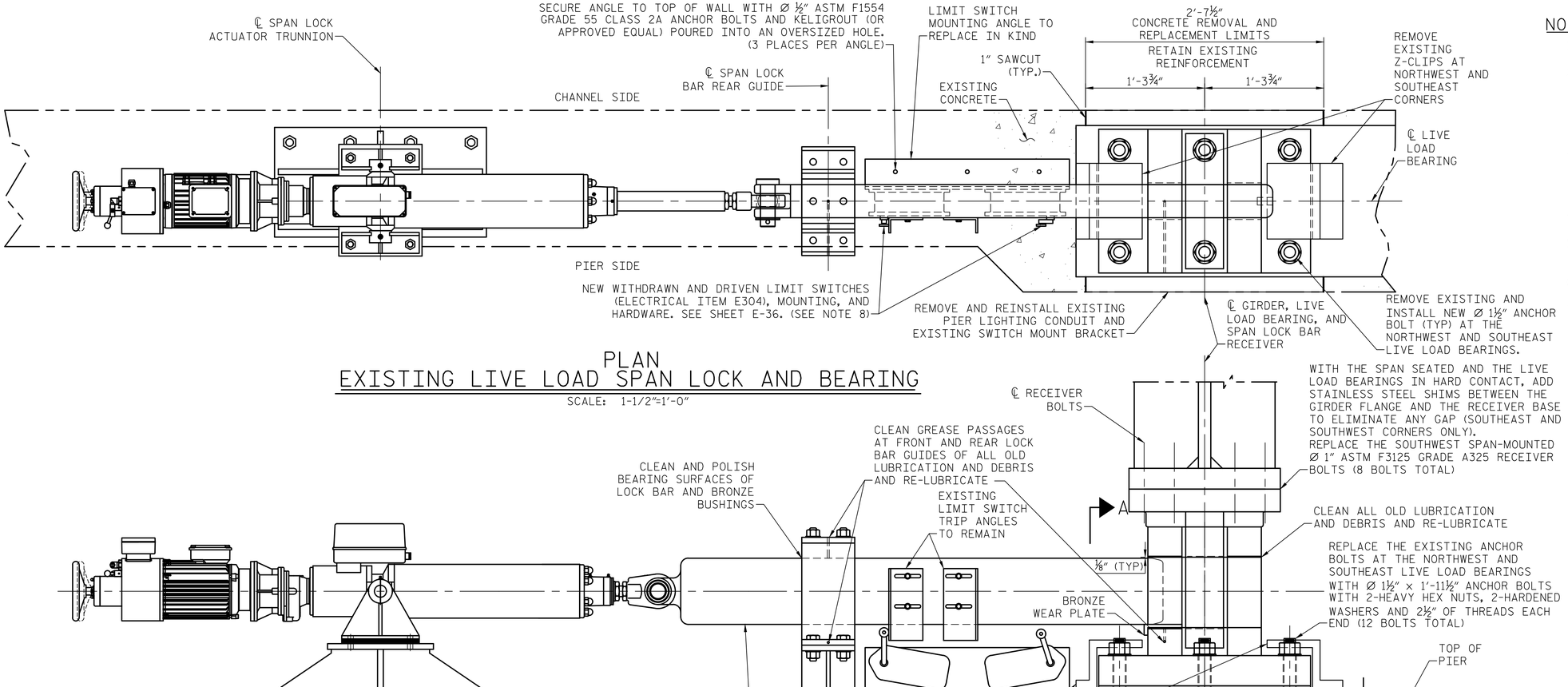
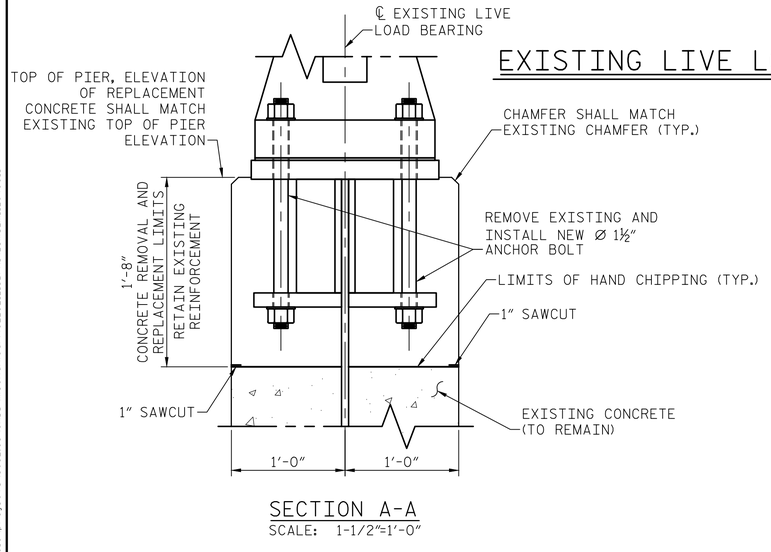


PLAN
EXISTING LIVE LOAD SPAN LOCK AND BEARING

SCALE: 1-1/2"=1'-0"



ELEVATION
EXISTING LIVE LOAD SPAN LOCK AND BEARING

SCALE: 1-1/2"=1'-0"
QUANTITY: 2 PER LEAF

SECTION A-A

SCALE: 1-1/2"=1'-0"

NOTES:

1. SEE SHEET M-1 FOR WORK ITEM DESCRIPTIONS.
2. ACTUATORS SHALL BE REMOVED FOR A TYPICAL EVALUATION AND RECONDITION BY THE ORIGINAL MANUFACTURER. THE MANUFACTURER MUST REPLACE THE SEALS, CLEAN THE UNIT, RE-LUBRICATE AND PAINT.
3. THE SPAN LOCK UNITS MUST BE INSPECTED FOR WATER INTRUSION BEFORE USE. THE MOTOR, BRAKE, HANDWHEEL, AND LIMIT SWITCHES MUST BE DRY.
4. THE SPAN LOCKS SHOULD BE ELECTRONICALLY TESTED BEFORE USE.
5. A ⅛" CLEARANCE AT THE TOP OF THE SPAN LOCK BAR WITH THE LIVE LOAD BEARING SHALL BE MAINTAINED WHILE SHIMMING.
6. SHIMMING SHALL BE DONE IN TANDEM WITH THE CENTER LOCK SHIMMING.
7. REPLACE THE LIVE LOAD BEARING ANCHOR BOLTS ONE CORNER AT A TIME. TO REPLACE THE ANCHOR BOLTS THE FOLLOWING STEPS SHALL BE TAKEN:
   - 7.1. ENSURE THE FULLY SEATED LIMIT SWITCH IS OPERATIONAL AT THE ADJACENT BASCULE GIRDER. TEMPORARILY REMOVE THE EXISTING SWITCH MOUNT BRACKET AND THE EXISTING PIER LIGHTING CONDUIT ON THE PIER SIDE OF THE LIVE LOAD BEARING.
   - 7.2. SAW CUT AT THE LIMITS INDICATED.
   - 7.3. REMOVE EXISTING CONCRETE TO THE LIMITS INDICATED USING HAND CHIPPING METHODS. TAKE CAUTION NOT TO DAMAGE EXISTING REINFORCEMENT OR STRUCTURAL STEEL TO REMAIN.
   - 7.4. REMOVE THE EXISTING ANCHOR BOLTS AND HARDWARE.
   - 7.5. BLAST CLEAN AND PRIME PAINT THE EXISTING STRUCTURAL STEEL SURFACES.
   - 7.6. OPEN MOVABLE SPAN.
   - 7.7. REMOVE AND DISPOSE OF EXISTING Z-CLIPS WHERE REQUIRED.
   - 7.8. INSTALL AND SNUG-TIGHTEN THE NEW ANCHOR BOLTS AND HARDWARE.
   - 7.9. INSTALL AND CURE REPLACEMENT CONCRETE.
   - 7.10. REINSTALL THE LIMIT SWITCH MOUNT BRACKET AND THE PIER LIGHTING CONDUIT.
   - 7.11. CLOSE THE MOVABLE SPAN.
8. LIMIT SWITCH BODIES SHALL BE INSTALLED AT 10 DEGREES FROM HORIZTONAL AS SHOWN. LIMIT SWITCHES SHALL BE MOUNTED WITH TYPE 316 STAINLESS STEEL HARDWARE.

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

DESIGNED BY:	SMS, TJS	DATE :	04/16/18
DRAWN BY:	SMS, TJS	DATE :	04/16/18
CHECKED BY:	RCH, JRD	DATE :	10/03/18
DESIGN ENGINEER OF RECORD:	L. R. LENTZ	DATE :	11/15/18

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 044302 ENGINEER LEE R. LENTZ
11/15/2018
DocuSigned by: Lee Lentz 26BC7CBEBBFE4C8...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
MECHANICAL

EXISTING LIVE LOAD SPAN LOCK AND BEARING

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	M-11
1			3			TOTAL SHEETS
2			4			213

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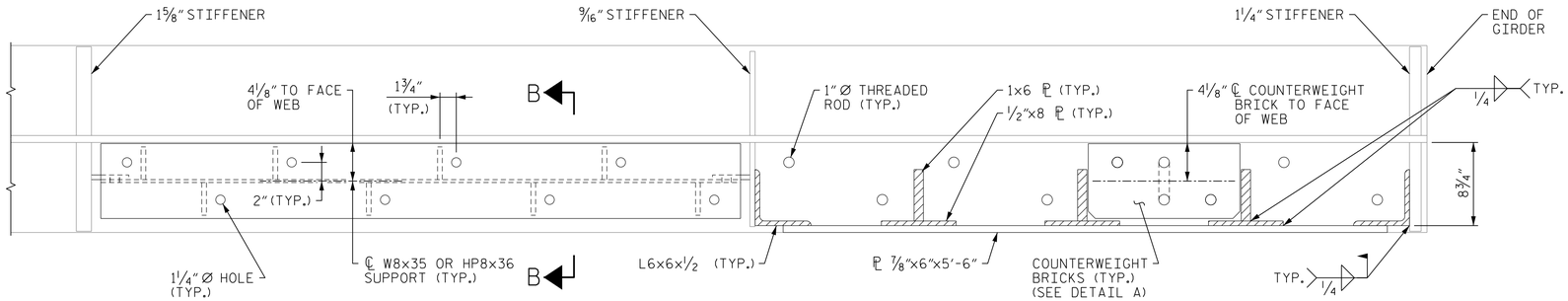
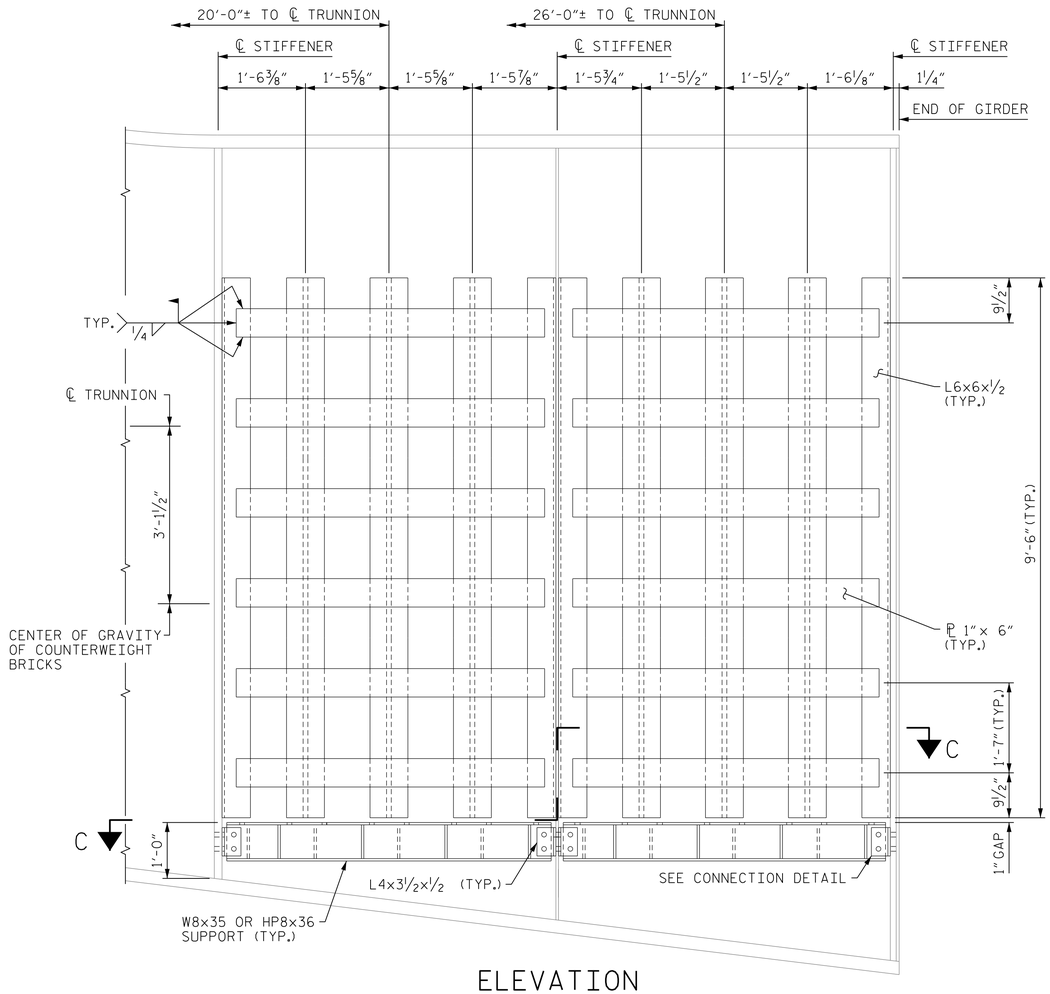
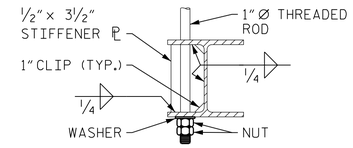


SECTION C-C



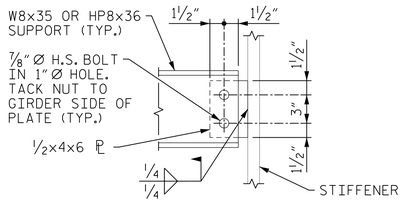
ELEVATION

THREADED RODS AND COUNTERWEIGHT BRICKS NOT SHOWN
OUTBOARD FACE OF BASCULE GIRDER

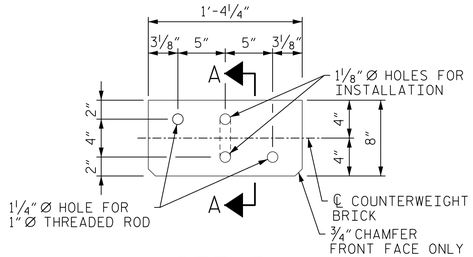


SECTION B-B

TOP THREADED ROD CONNECTION SIMILAR

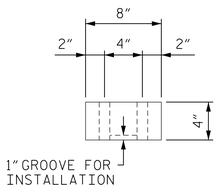


CONNECTION DETAIL



DETAIL A

200 COUNTERWEIGHT BRICKS REQUIRED PER GIRDER



SECTION A-A

NOTES:

1. SEE SHEET M-1 FOR WORK ITEM DESCRIPTIONS.
2. THE CONTRACTOR MAY SUBMIT ALTERNATIVE COUNTERWEIGHT BRICK DETAILS TO FACILITATE INSTALLATION.
3. THE COUNTERWEIGHT BRICKS SHALL ADD THE DESIRED COUNTERWEIGHT OF APPROXIMATELY 19,000 LB PER PANEL (38,000 LBS. PER GIRDER). THE FIRST 5,000 LBS. PER PANEL (10,000 LBS. PER GIRDER) SHALL BE ADDED PRIOR TO ANY SIGNIFICANT CHANGES IN THE BASCULE SPAN WEIGHT (PERMANENT OR TEMPORARY). AT THIS TIME, REMOVE 5,000 LBS. OF EXISTING COUNTERWEIGHT BLOCKS FROM THE ORIGINAL COUNTERWEIGHT POCKETS. THE COUNTERWEIGHT BLOCKS SHALL REMAIN THE PROPERTY OF NCDOT. SEE THE PROJECT SPECIFICATIONS FOR MORE INFORMATION ON THE DETAILS OF THIS REMOVAL. THE REMAINDER OF THE BRICKS SHALL BE ADDED AS THE GRID DECK IS REPLACED. THE PROPOSED CENTER OF GRAVITY LOCATION SHALL BE THE SAME AS DETAILED ON THE PLANS.
4. FOR COUNTERWEIGHT BRICK MATERIAL SPECIFICATIONS, SEE MECHANICAL SPECIAL PROVISIONS.
5. THE PLATES, ANGLES AND W (OR HP) SHAPES SHALL BE ASTM A709 GRADE 50 STEEL AND SHALL BE PAINTED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR PAINTING EXISTING STRUCTURE.
6. CLEANING AND PAINTING OF THE AREAS BEHIND THE COUNTERWEIGHT PLATES AND THEIR CONNECTIONS SHALL BE PERFORMED PRIOR TO INSTALLING THE COUNTERWEIGHT.
7. CONTRACTOR SHALL VERIFY LOCATION AND SIZE OF EXISTING BASCULE GIRDER STIFFENERS PRIOR TO SUBMITTING SHOP DRAWINGS.
8. THREADED ROD SHALL EXTEND TO TOP OF BUILT-UP T'S.
9. THREADED ROD SHALL CONFORM TO ASTM A449 OR ASTM F1554 GR. 105 AND SHALL BE FULLY THREADED. THE THREADED RODS SHALL BE TENSIONED TO 10 KIPS IN THE FINAL CONDITION AND TO 5 KIPS IN TEMPORARY CONDITIONS. NUTS SHALL CONFORM TO ASTM A563 GRADE DH AND WASHERS SHALL CONFORM TO ASTM F3125. RODS, NUTS, AND WASHERS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.
10. PROVIDE A ½" MIN. x 8" x 1'-4" STEEL PLATE TO BE PLACED ON TOP OF EACH STACK OF COUNTERWEIGHT BRICKS.

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

COUNTERWEIGHT BALANCE ADJUSTMENT

DESIGNED BY:	B. LOFLIN	DATE : NOV 2018
DRAWN BY:	K. WHITE	DATE : NOV 2018
CHECKED BY:	T. STEPHENS	DATE : NOV 2018
DESIGN ENGINEER OF RECORD:	L.R. LENTZ	DATE : NOV 2018

MODJESKI and MASTERS
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333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 044302 ENGINEER LEE LENTZ
DocuSigned by: Lee Lentz 11/15/2018
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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			213

11/15/2018
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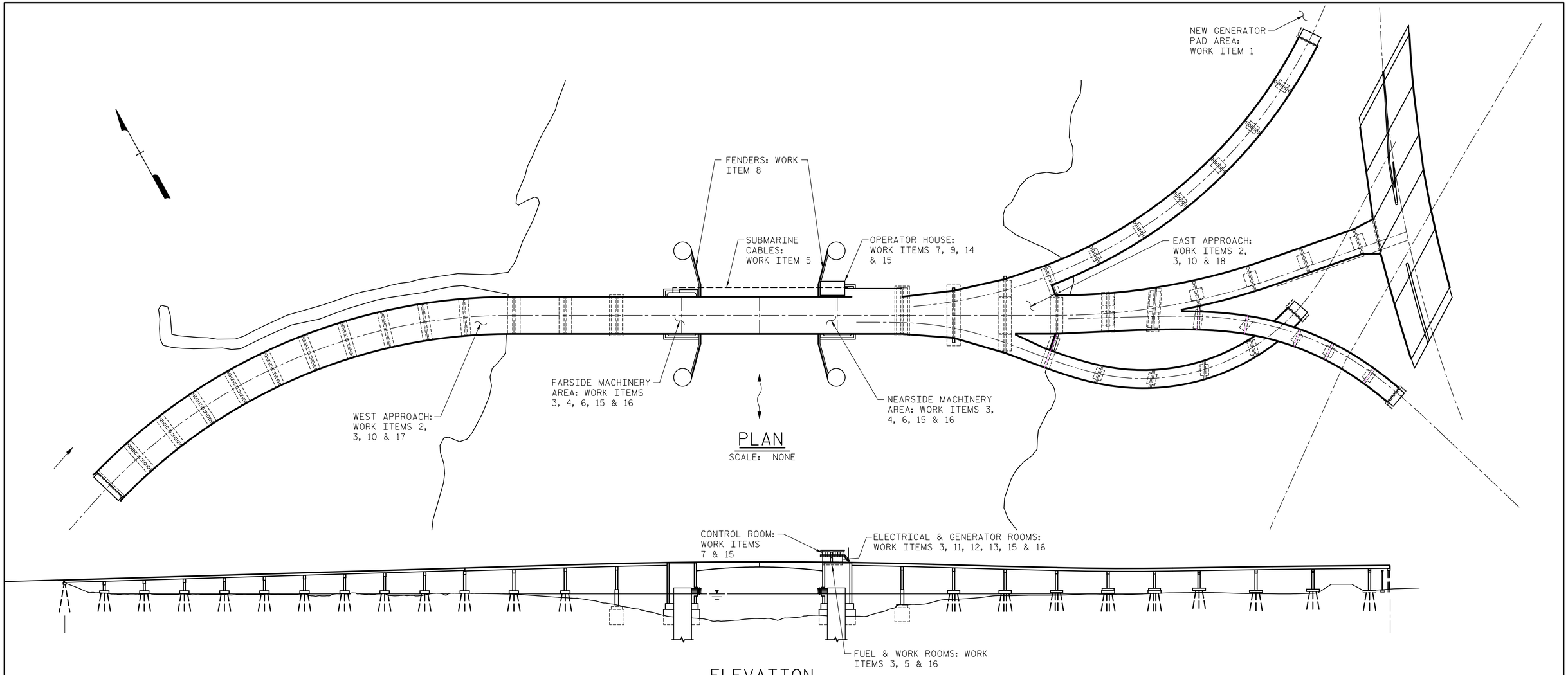

PLAN
SCALE: NONE

ELEVATION
SCALE: NONE

ELECTRICAL WORK ITEMS:

1. PROVIDE NEW CONCRETE GENERATOR PAD WITH NEW BACKUP GENERATOR, ATS, LOAD BANK, SECURITY FENCE, CRUSHED STONE ACCESS DRIVEWAY, AND RELATED COMPONENTS.
2. REMOVE EXISTING TRAFFIC GATES AND INSTALL NEW TRAFFIC GATES AT SAME LOCATION (6 LOCATIONS). REMOVE EXISTING RAMP A AND RAMP B TRAFFIC GATES AND INSTALL NEW TRAFFIC GATES AT NEW LOCATIONS (2 LOCATIONS). INSTALL NEW NEARSIDE OFFGOING TRAFFIC GATE AT NEW LOCATION (1 LOCATION).
3. REMOVE EXISTING EXPOSED CONDUIT AND CONDUCTORS ON THE BASCULE PIERS AND APPROACH SPANS AND REPLACE WITH NEW CONDUIT AND WIRING.
4. REROUTE CONDUITS AND CONDUCTORS FROM SUBMARINE CABLE TERMINAL CABINETS TO THE MACHINERY AREAS TO ELIMINATE USE OF EXISTING PULL BOXES IN COUNTERWEIGHT PITS.
5. INSTALL NEW SUBMARINE CABLES AND RELATED TERMINAL CABINETS.
6. REMOVE EXISTING FLEXIBLE CABLES TO MOVEABLE SPAN. PROVIDE AND INSTALL NEW FLEXIBLE CABLES AND RELATED HARDWARE BETWEEN EXISTING JUNCTION BOXES.
7. INSTALL NEW ANALOG CCTV CAMERAS. PROVIDE ADDITIONAL CAMERAS AND A SECOND VIEWING MONITOR IN CONTROL ROOM FOR ADDITIONAL CAMERA VIEWS.
8. REMOVE EXISTING PIER NAVIGATION LIGHTS AND WARNING HORN. PROVIDE AND INSTALL NEW PIER NAVIGATION LIGHTS, WARNING HORN, AND CHANNEL FLOODLIGHTS BENEATH MOVABLE SPAN.
9. INSTALL NEW SECURITY FENCE WITH RFID LOCK AROUND CONTROL HOUSE.
10. REMOVE EXISTING HPS ROADWAY LIGHTING CONDUCTORS. INSTALL NEW CONDUCTORS AND CONNECT NEW WIRING TO EXISTING POLES AND FIXTURES.
11. IN CONJUNCTION WITH MAIN MOTOR REPLACEMENT, PROVIDE AND INSTALL NEW AC FLUX VECTOR DRIVES, CABINETS, AND RELATED COMPONENTS.
12. REMOVE EXISTING PANEL BOARDS PNB-1 AND PNB-2, TRANSFORMER, GENERATORS, AND AUTOMATIC TRANSFER SWITCHES. PROVIDE AND INSTALL A NEW 208/120V PANEL BOARD, TRANSFORMER, AND TELEPHONE BOARD, INSTALL NEW HEAT PUMP SYSTEM TO SERVE ELECTRICAL ROOMS BELOW CONTROL ROOM.
13. REMOVE EXISTING CONTROL CABINETS IN ELECTRICAL ROOM. INSTALL NEW MOTOR CONTROL CENTER WITH MOTOR STARTERS AND RELATED COMPONENTS FOR POWER DISTRIBUTION.
14. PROVIDE NEW PUBLIC ADDRESS SYSTEM.
15. INSTALL NEW PLC BASED CONTROL SYSTEM INCLUDING CONTROL CABINETS AND COMPONENTS, NEW/REFURBISHED CONTROL CONSOLE, AND VARIOUS LIMIT SWITCHES/SENSORS.
16. REMOVE EXISTING SERVICE LIGHTS IN MACHINERY AREAS, ELECTRICAL ROOMS, AND STAIRWAYS. INSTALL NEW LED SERVICE LIGHTING FIXTURES IN SIMILAR LOCATIONS.
17. REMOVE EXISTING WEST TRAFFIC SIGNAL HEADS. INSTALL NEW STANDARD TRAFFIC SIGNAL HEADS WITH VISORS.
18. INSTALL NEW 120VAC POWER FOR EAST INTERSECTION TRAFFIC SIGNALS WITH PROVISIONS FOR A PORTABLE GENERATOR CONNECTION.
19. PROVIDE AND INSTALL TEMPORARY CONTROLS AS REQUIRED TO MAINTAIN BRIDGE OPERATIONS DURING CONSTRUCTION.

DESIGNED BY:	J. C. RINEHART	DATE : 03/09/18
DRAWN BY:	R. L. REED	DATE : 03/09/18
CHECKED BY:	L. V. BORDEN	DATE : 11/15/18
DESIGN ENGINEER OF RECORD:	J. G. STRENKOSKI	DATE : 11/15/18

MODJESKI and MASTERS
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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 044780 ENGINEER JOSEPH G. STRENKOSKI
DocuSigned by: Joe Strenkoski 11/15/2018
BC58212F3FAD4FA...

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELECTRICAL

ELECTRICAL SCOPE OF WORK

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-1
1			3			TOTAL SHEETS
2			4			213

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ELECTRICAL NOTES:

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (2018 EDITION) AND WITH THE 2007 2ND EDITION 2015 INTERIM REVISION OF THE AASHTO LRFD "MOVABLE HIGHWAY BRIDGE DESIGN SPECIFICATIONS."

ALL EQUIPMENT, RACEWAYS, WIRING, ETC. SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER IN ACCORDANCE WITH NECA 1 (STANDARD PRACTICES FOR GOOD WORKMANSHIP IN ELECTRICAL CONTRACTING) AND WITHOUT VIOLATING ANY REQUIRED CLEAR WORKING SPACE (NEC 110.26).

IN NO WAY SHALL THESE PLANS BE INTERPRETED AS REQUIRING A VIOLATION OF THE NATIONAL ELECTRICAL CODE OR ANY OTHER APPLICABLE FEDERAL, STATE, OR LOCAL CODE OR REGULATION. IN ANY CASE OF DISPUTE BETWEEN THESE PLANS AND THE NATIONAL ELECTRICAL CODE, THE MORE STRINGENT REQUIREMENT SHALL GOVERN.

THE INSTALLATION OF ALL EQUIPMENT AND MATERIALS SHALL COMPLY WITH THEIR RESPECTIVE MANUFACTURE'S RECOMMENDATIONS AND INSTALLATION PROCEDURES.

THE CONTRACTOR IS EXPECTED TO DELIVER A COMPLETE, WORKING, AND SAFE ELECTRICAL SYSTEM.

VARIATIONS FROM THESE PLANS MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL. ALL CHANGES SHALL BE REFLECTED IN THE AS-BUILT DRAWINGS.

IN ADDITION TO THE MATERIALS, COMPONENTS, AND EQUIPMENT SHOWN ON THE PLANS, PROVIDE ALL RACEWAYS, JUNCTION AND PULL BOXES, FITTINGS, CONDUCTORS, CONNNECTORS, AND OTHER ITEMS REQUIRED TO PROVIDE A COMPLETE, FUNCTIONAL, AND SAFE INSTALLATION.

THE CONTRACTOR IS REQUIRED TO COORDINATE WITH LOCAL TELEPHONE PROVIDERS FOR SERVICE CONNECTIONS.

THE CONTRACTOR SHALL INVESTIGATE AND/OR VERIFY THE LOCATIONS OF ALL EXISTING FACILITIES, ABOVE GROUND AND UNDERGROUND, PRIOR TO CONSTRUCTION. ANY DAMAGE TO EXISTING FACILITIES SHALL BE REPAIRED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.

THE CONTRACTOR SHALL CAREFULLY TRACE, LOCATE, IDENTIFY, AND DOCUMENT ALL EXISTING EQUIPMENT, CONDUCTORS, RACEWAYS, AND OTHER ITEMS WHICH ARE EXISTING AND TO REMAIN IN PLACE, BE RE-ROUTED, OR BE RELOCATED. THE CONTRACTOR SHALL EXERCISE CARE NOT TO DAMAGE OR OTHERWISE DISTURB ANY ITEMS WHICH ARE EXISTING AND TO REMAIN IN PLACE.

LOCATIONS OF CONDUIT, CABLES, WIRING, AND OTHER EQUIPMENT SHOWN ON THE CONTRACT PLANS ARE DIAGRAMMATIC ONLY. EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR AND SUBJECT TO APPROVAL BY THE ENGINEER.

THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR VERIFICATION OF ALL RELEVANT DIMENSIONS, EQUIPMENT SPECIFICAITONS, ELECTRICAL LOADS, CIRCUIT LOADS, SUBMARINE CABLE DESIGN, AND SIMILAR INFORMATION PRIOR TO PURCHASE AND/OR FABRICATION OF EQUIPMENT OR MATERIALS. EQUIPMENT RATINGS, AND/OR WIRE SIZES SHOWN ON THE PLANS SHALL BE INCREASED WHERE REQUIRED BY THE LOADS SERVED.

ALL EQUIPMENT, RACEWAYS, WIRING, ETC. SHOWN ON THESE PLANS, OR OTHERWISE REQUIRED, SHALL BE NEW UNLESS SPECIFICALLY NOTED OTHERWISE.

E NUMBERS IN PARENTHESES, (EXXX), ASSOCIATED WITH EQUIPMENT REFER TO ITEM NUMBERS IN THE EQUIPMENT SCHEDULE.

THE CONTRACTOR IS RESPONSIBLE FOR SUPPLYING ANY TEMPORARY POWER REQUIRED TO SUPPORT BRIDGE OPERATIONS DURING CONSTRUCTION AND TO SUPPORT THE OVERALL CONSTRUCTION EFFORT.

WHERE DETAILS ARE NOT PROVIDED OR FULLY DEVELOPED, THE CONTRACTOR SHALL PROVIDE THE ADDITIONAL DETAIL DEVELOPMENT NECESSARY TO PROVIDE AND SUBMIT LAYOUT DRAWINGS AND SHOP DRAWINGS FOR REVIEW.

SUBSTITUTION OF MATERIALS:

REFERENCE TO A SPECIFIC MANUFACTURER, BRAND, MODEL, OR CATALOG NUMBER IS INTENDED TO DESCRIBE THE QUALITY AND CHARACTERISTICS OF THE MATERIAL REFERENCED, AND SHALL NOT BE INTERPRETED AS EXCLUDING EQUIVALENT PRODUCTS BY OTHER MANUFACTURERS. ALL PROPOSED SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

ARC FLASH HAZARD

THE CONTRACTOR SHALL UTILIZE THE SERVICES OF A QUALIFIED ARC FLASH CONSULTANT TO PERFORM ARC FLASH ANALYSIS, DETERMINATION OF DEGREE OF ARC FLASH HAZARD LABELS FOR ALL ELECTRICAL ENCLOSURES AND TERMINAL CABINETS IN COMPLIANCE WITH THE ARC FLASH SAFETY REQUIREMENTS OF NFPA 70 AND NFPA 70E.

QUANTITIES ESTIMATES:

ALL TABULATIONS OF QUANTITIES CONTAINED HEREIN ARE FOR PORTRAYING GENERAL INTENT AND MINIMUM REQUIREMENTS ONLY AND ARE NOT NECESSARILY SUITABLE FOR BIDDING PURPOSES. CONTRACTOR SHALL DEVELOP HIS OWN INDEPENDENT ESTIMATES OF QUANTITIES FOR BIDDING PURPOSES.

WIRING METHODS AND MATERIAL

UNLESS EXPLICITLY INDICATED OTHERWISE, ONLY THE FOLLOWING WIRING METHODS ARE PERMITTED:

(A) ALL LOCATIONS
1. PVC COATED STEEL RIGID METAL CONDUIT (RMC)
2. LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

(B) MACHINERY AREA AND BASCULE SPAN
1. ANY METHOD PERMITTED IN (A)
2. FLEXIBLE MULTI-CONDUCTOR CONTROL AND POWER CABLE (FOR FLEX CONNECTIONS TO THE SPAN AND TO THE DEVICES)

(C) BRIDGE APPROACHES
1. ANY METHOD PERMITTED IN (A)
2. MESSENGER CABLE SUPPORTED PVC JACKETED TYPE MC CABLES

(D) INSIDE THE CONTROL HOUSE - ELECTRICAL ROOM AND STORAGE ROOM
1. ANY METHOD PERMITTED IN (A)
2. STEEL RIGID METAL CONDUIT (RMC)
3. PVC JACKETED TYPE MC OR TC CABLES IN ALUMINUM CABLE TRAY

(E) INSIDE THE NEW CONTROL HOUSE OPERATOR'S ROOM
1. ANY METHOD PERMITTED IN (A)
2. STEEL RIGID METAL CONDUIT (RMC)
3. TYPE MC CABLE FOR LIGHTS AND RECEPTACLES, CONCEALED RUNS ONLY

ALL CONDUIT CONNECTIONS TO MOTORS AND SIMILAR EQUIPMENT SHALL BE MADE WITH FLEXIBLE CONDUIT. LENGTH OF FLEXIBLE CONDUIT SHALL BE NOT LESS THAN 18 INCHES BUT NOT MORE THAN 36 INCHES.

GALVANIZED CONDUITS, BOXES, ENCLOSURES, FIXTURES, ETC. SHALL BE ISOLATED FROM UNPAINTED STEEL WITH SIMILAR NEOPRENE SHIMS OF ⅛ INCH MINIMUM THICKNESS.

RIGID CONDUITS SHALL BE SUPPORTED WITHIN 18 INCHES OF ALL TERMINATIONS AND AT REGULAR INTERVALS NOT TO EXCEED 6 FEET.

ALL CONDUIT CONNECTIONS TO BOXES AND ENCLOSURES WHICH DO NOT HAVE INTEGRAL THREADED HUBS SHALL UTILIZE WEATHERPROOF GROUNDING TYPE HUBS OR CONNECTIONS. ALL HUBS AND CONNECTORS SHALL HAVE INSULATED THROATS OR BE PROVIDED WITH INSULATED BUSHINGS.

ANY CONDUIT ROUTINGS SHOWN ON THESE PLANS ARE CONCEPTUAL ONLY. ACTUAL ROUTINGS SHALL BE DETERMINED BY THE CONTRACTOR BASED ON ACTUAL CONDITIONS AND SUBMITTED TO THE ENGINEER FOR APPROVAL.

ALL CONDUCTORS SHALL BE STRANDED COPPER TYPE XHHW-2, EXCEPT WHERE SHOWN OTHERWISE ON THE PLANS. THE MINIMUM SIZE FOR FIELD POWER AND CONTROL WIRING SHALL BE 12AWG. INSULATION SHALL HAVE A 600V MINIMUM RATING, AND BE RATED FOR 90 DEG CELSIUS.

NEUTRAL CONDUCTORS SHALL NOT BE SHARED BETWEEN MULTIPLE BRANCH CIRCUITS, EXCEPT FOR DESIGNATED MULTIPLE LIGHTING AND RECEPTACLE CIRCUITS WHERE CLEARLY SHOWN ON THE PLANS.

CONDUCTOR FILL IN RACEWAYS SHALL NOT EXCEED 40%. MINIMUM CONDUIT SIZE SHALL BE ¾ INCH EXCEPT THAT ½ INCH SHALL BE PERMITTED FOR FLEXIBLE CONDUIT CONNECTIONS TO LUMINAIRES.

WIRING IN ENCLOSURES, CABINETS, BOXES, ETC. SHALL BE NEATLY ROUTED AND BUNDLED WITH PVC CABLE TIES OR PLACED IN NON-METALIC WIRING TROUGHS.

SPARE AND UN-TERMINATED CONDUCTORS SHALL BE CAPPED, OR CONNECTED TO SPARE TERMINAL BLOCKS WHERE AVAILABLE, AND CLEARLY IDENTIFIED. ONE FULL TURN OF SLACK FOR ALL SPARE CONDUCTORS SHALL BE PROVIDED IN ALL ENCLOSURES, CABINETS, BOXES, ETC.

RACEWAYS CROSSING EXPANSION JOINTS, OR OTHERWISE SUBJECT TO MOVEMENT, SHALL BE PROVIDED WITH EXPANSION AND/OR DEFLECTION FITTINGS OR OTHER APPROVED MEANS TO COMPENSATE FOR SUCH MOVEMENT. EACH SUCH EXPANSION AND/OR DEFLECTION MEANS SHALL BE PROVIDED WITH AN EXTERNAL COPPER BONDING JUMPER, SIZED 6 AWG MINIMUM.

CONDUCTOR SPLICES SHALL BE MADE ONLY IN JUNCTION BOXES, OUTLET OR DEVICE BOXES, TERMINAL CABINETS, AND EQUIPMENT ENCLOSURES. SPLICES SHALL BE MADE ON TERMINAL BLOCKS, EXCEPT FOR SPLICES AT LUMINAIRES AND WIRING DEVICES WHICH SHALL UTILIZE INSULATED SET-SCREW TYPE, OR SIMILAR APPROVED CONNECTIONS. TWIST-ON (WIRENUT) TYPE CONNECTIONS SHALL NOT BE USED, EXCEPT FOR LIGHTING OR OUTLET CIRCUITS OF 120 VOLTS, 20 AMPS OR LESS. TERMINAL BLOCKS SHALL NOT HAVE MORE THAN TWO CONDUCTORS PER TERMINAL.

LAYOUT OF TERMINAL BLOCKS IN JUNCTION BOXES AND TERMINAL CABINETS SHALL COMPLY WITH THE REQUIREMENTS FOR WIRE BENDING SPACE GIVEN IN NEC 312.6, EXCEPT THAT THE MINIMUM SPACE PERMITTED SHALL BE 2 INCHES. PROPOSED LAYOUTS, INCLUDING ANTICIPATED LOCATIONS AND SIZES OF KNOCKOUTS, SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION.

TERMINAL BLOCKS, POWER DISTRIBUTION BLOCKS, AND CRIMP TYPE CONNECTORS SHALL BE RATED FOR 90 DEG CELSIUS.

A CONDUIT BODY OR BOX SHALL BE PROVIDED ON AT LEAST ONE SIDE OF ALL FLEXIBLE CONDUITS.

ALL RACEWAYS SHALL BE ARRANGED TO DRAIN. CONDUIT DRAINS SHALL BE INSTALLED IN A CONDUIT BODY AT THE LOW POINT OF ALL RUNS.

UNLESS SPECIFICALLY INDICATED OTHERWISE, CONDUIT AND CABLE ENTRANCES IN DAMP AND WET LOCATIONS SHALL BE MADE ONLY AT THE BOTTOM OF CABINETS AND/OR ENCLOSURES.

CONDUCTORS WITH GREEN COLORED INSULATION MAY BE USED ONLY FOR GROUNDING CONDUCTORS. RE-IDENTIFICATION OF CONDUCTORS, SUCH AS WITH GREEN COLORED TAPE, IS NOT PERMITTED.

MISCELLANEOUS MATERIALS AND METHODS

ALL BOLTS, NUTS, WASHERS, CONCRETE ANCHORS, AND SIMILAR HARDWARE SHALL BE TYPE 316 STAINLESS STEEL. ALL CONCRETE ANCHORS SHALL BE EPOXY ADHESIVE TYPE.

ALL BOLTED AND SIMILAR CONNECTIONS SHALL UTILIZE LOCK WASHERS. CONNECTIONS WHICH DO NOT PERMIT THE USE OF LOCK WASHERS SHALL UTILIZE AN APPROVED MEDIUM STRENGTH THREAD-LOCKING ADHESIVE.

SUPPORTS FOR ELECTRICAL EQUIPMENT SHALL BE FABRICATED FROM TYPE 316 STAINLESS STEEL OR TYPE A36 STEEL (HOT DIPPED GALVANIZED AFTER FABRICATION).

EQUIPMENT ENCLOSURES, CABINETS, BOXES, AND SIMILAR ITEMS SHALL BE INSTALLED PLUMB AND SECURELY FASTENED IN PLACE. LARGE FREE STANDING CABINETS, MOTOR CONTROL CENTERS, ETC. SHALL BE MOUNTED ON VIBRATION ISOLATION NEOPRENE PADS.

IDENTIFICATION

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVELOPING A COMPREHENSIVE WIRE NUMBERING SYSTEM AND SHALL LABEL ALL WIRES, CABLES, AND TERMINAL BLOCKS. IDENTIFICATION NUMBERS SHALL BE COORDINATED FOR CONSISTENCY AND ACCURACY WITH NUMBERS SHOWN ON THE CONTRACTOR'S WIRING DIAGRAMS AND SHOP DRAWINGS, FIELD WIRING DIAGRAMS, AND ANY OTHER DIAGRAMS SHOWING THE SAME ITEM.

ALL CONDUCTORS, INCLUDING SPARES, SHALL BE UNIQUELY IDENTIFIED AND CLEARLY LABELED WITH MACHINE PRINTED, WEATHERPROOF, NON-SHRINK SLEEVE TYPE LABELS. EACH CONDUCTOR SHALL BE ASSIGNED ONLY ONE IDENTIFICATION NUMBER THROUGHOUT ITS ENTIRE ROUTING FROM ORIGIN TO DESTINATION POINT(S).

ALL TERMINAL BLOCKS SHALL BE CLEARLY LABELED AT EACH TERMINAL POSITION WITH ENGRAVED PLASTIC WEATHERPROOF LABELS (WHITE TEXT ON BLACK BACKGROUND) ATTACHED WITH STAINLESS STEEL HARDWARE.

ALL ELECTRICAL EQUIPMENT ENCLOSURES, PULL BOXES, JUNCTION BOXES, LOAD PANELS, AND SIMILAR ITEMS SHALL BE CLEARLY LABELED WITH ENGRAVED PLASTIC WEATHERPROOF LABELS (WHITE TEXT ON BLACK BACKGROUND) ATTACHED WITH STAINLESS STEEL HARDWARE.

ALL CONDUIT AND CABLE RUNS SHALL BE LABELED AT EACH TERMINATION POINT. LABELS SHALL BE STAMPED 19 GAUGE BRASS TAGS. MINIMUM SIZE SHALL BE 1 INCH DIAMETER. TAGS SHALL BE FASTENED WITH UV RESISTANT PVC CABLE TIES.

GROUNDING AND BONDING

ALL CIRCUITS SHALL INCLUDE AN EQUIPMENT GROUNDING CONDUCTOR. EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED EQUAL TO THE CIRCUIT CONDUCTORS, EXCEPT WHERE SHOWN OTHERWISE IN THE PLANS OR PERMITTED OTHERWISE BY THE NEC.

ALL GROUNDING TYPE HUBS AND CONNECTORS IN A BOX OR ENCLOSURE SHALL BE BONDED TOGETHER AND TO THE BOX OR ENCLOSURE WITH A STRANDED COPPER BONDING JUMPER SIZED EQUAL TO THE LARGEST EQUIPMENT GROUNDING CONDUCTOR IN THE BOX OR ENCLOSURE.

ALL GROUNDING CONDUCTORS WITHIN AN EQUIPMENT ENCLOSURE OR TERMINAL CABINET SHALL BE TERMINATED ON A COMMON UNINSULATED GROUNDING BAR.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

DESIGNED BY:	E. N. CLAY	DATE :	07/31/18
DRAWN BY:	R. L. REED	DATE :	08/01/18
CHECKED BY:	L. V. BORDEN	DATE :	11/15/18
DESIGN ENGINEER OF RECORD:	J. G. STRENKOSKI	DATE :	11/15/18

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RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 044780 ENGINEER JOSEPH G. STRENKOSKI

DocuSigned by: Joseph G. Strenkoski
BC5821F3FAD4FA...
11/15/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELECTRICAL

ELECTRICAL GENERAL NOTES - 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-2
1			3			TOTAL SHEETS
2			4			213

LAST SAVED 11/15/2018 11:19 AM BY AMBRODSKY. LAST PLOTTED 11/15/2018 12:42 PM.
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ELECTRICAL NOTES (CONTINUED):

REMOVALS:

PERFORM ALL REMOVALS IN SUCH A MANNER AS TO AVOID DAMAGE TO EXISTING EQUIPMENT AND/OR CONDUCTORS WHICH ARE TO REMAIN.

THE CONTRACTOR SHALL GIVE THE DEPARTMENT THE OPTION OF SALVAGING ANY ELECTRICAL EQUIPMENT WHICH IS TO BE REMOVED.

THE CONTRACTOR SHALL DELIVER ALL EQUIPMENT WHICH IS TO BE SALVAGED TO A LOCATION DESIGNATED BY THE DEPARTMENT. ALL EQUIPMENT WHICH IS TO BE SALVAGED SHALL BE HANDLED WITH CARE AT ALL TIMES TO AVOID DAMAGE.

ALL EQUIPMENT WHICH IS TO BE REMOVED AND IS NOT TO BE SALVAGED SHALL BECOME THE PROPERTY OF, AND BE REMOVED FROM THE PROJECT SITE BY THE CONTRACTOR.

THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR THE PROPER DISPOSAL OF REMOVED EQUIPMENT AND/OR MATERIALS IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

THE FOLLOWING LIST OUTLINES THE ELECTRICAL ITEMS TO BE REMOVED AS PART OF THE WORK. NOT ALL ITEMS ARE LISTED. THE CONTRACTOR'S SEQUENCE OF CONSTRUCTION SHALL DETERMINE THE ACTUAL WORK SEQUENCE.

(A) REMOVE EXISTING GENERATORS, AUTOMATIC TRANSFER SWITCHES, AND OTHER RELATED EQUIPMENT FROM THE GENERATOR ROOM. REMOVE THE FUEL TANK FROM THE FUEL TANK ROOM.

(B) REMOVE THE EXISTING PANELBOARDS, TRANSFORMER, AND TELEPHONE BOARD FROM THE GENERATOR ROOM.

(C) REMOVE ALL EXISTING INCANDESCENT AND FLUORESCENT LIGHT FIXTURES FROM THE CONTROL HOUSE, STAIRWAYS AND MACHINERY AREAS.

(D) REMOVE EXISTING SWITCHBOARD CABINETS AND RELATED EQUIPMENT FROM THE ELECTRICAL ROOM.

(E) REMOVE EXISTING TRAFFIC GATES AND TRAFFIC GATE WIRING.

(F) REMOVE MESSENGER CABLES AND CONDUCTORS FOR EXISTING ROADWAY LIGHTING CIRCUITS.

(G) REMOVE EXISTING SPAN LOCK LIMIT SWITCHES, ROTARY CAM LIMIT SWITCHES, AUXILIARY DRIVE LIMIT SWITCHES, AND FULLY SEATED LIMIT SWITCHES.

(H) REMOVE EXISTING FARSIDE TRAFFIC SIGNAL HEADS.

(I) REMOVE EXISTING NAVIGATION LIGHTS AND NAVIGATION LIGHTING CONDUITS AND CONDUCTORS ON FENDER SYSTEMS. REMOVE EXISTING WARNING HORN.

(J) REMOVE EXISTING CONTROL CONSOLE.

(K) DISCONNECT, CUT BELOW SURFACE, AND ABANDON THE EXISTING SUBMARINE CABLES. REMOVE EXISTING SUBMARINE CABLE TERMINAL BOXES.

(L) REMOVE EXISTING RESISTOR BANKS FOR MAIN MOTORS IN MACHINERY AREAS.

INSTALLATION OF NEW CONTROL SYSTEM AND ELECTRICAL EQUIPMENT:

THE FOLLOWING LIST REPRESENTS THE MAJORITY OF THE NEW WORK TO BE DONE. NOT ALL ITEMS ARE LISTED. THE CONTRACTOR'S SEQUENCE OF CONSTRUCTION SHALL DETERMINE THE ACTUAL WORK SEQUENCE.

(A) PROVIDE AND INSTALL A NEW BACKUP GENERATOR, AUTOMATIC TRANSFER SWITCH, GROUNDING SYSTEM, GENERATOR PAD, GRAVEL ACCESS ROAD, FUEL TANK, FENCING, PANELBOARD, AND FEEDER CONDUCTORS IN NEW MESSENGER CABLE TO THE BRIDGE.

(B) PROVIDE AND INSTALL NEW LED MAINTENANCE LIGHT FIXTURES IN THE STAIRWAYS AND MACHINERY AREAS AND NEW OVERHEAD LED FIXTURES IN ELECTRICAL ROOMS AS SHOWN ON THE PLANS.

(C) PROVIDE AND INSTALL A NEW MOTOR CONTROL CENTER WITH CONTACTORS, STARTERS, AND ALL OTHER RELATED EQUIPMENT.

(D) PROVIDE AND INSTALL NEW FLUX VECTOR VARIABLE SPEED DRIVES, CABINETS, BRAKING RESISTORS AND ENCODERS FOR NEW MAIN DRIVE MOTORS.

(E) PROVIDE AND INSTALL NEW TRAFFIC GATES AND WIRING AS DETAILED IN THE PLANS.

(F) PROVIDE AND INSTALL NEW MESSENGER CABLES AND CONDUCTORS FOR ROADWAY LIGHTING AND CONNECT TO EXISTING ROADWAY LIGHTING POLES AND FIXTURES.

(G) PROVIDE AND INSTALL NEW LIMIT SWITCHES.

(H) PROVIDE AND INSTALL NEW FARSIDE TRAFFIC SIGNAL HEADS.

(I) PROVIDE AND INSTALL NEW LED NAVIGATION LIGHTS, CONDUIT, CONDUCTORS, AND WARNING HORNS ON THE FENDER SYSTEMS.

(J) PROVIDE AND INSTALL, AND TEST NEW BRIDGE CONTROL SYSTEM WITH NEW AUTOMATIC-SEQUENCE PROGRAMMABLE LOGIC CONTROLLER BASED CONTROL LOGIC, INCLUDING NECESSARY CABINETS, LAPTOP, BRIDGE CONTROL CONSOLE, AND ALL OTHER RELATED DEVICES AND INSTRUMENTATION AS REQUIRED.

(K) PROVIDE INSTALL NEW SUBMARINE CABLES AND SUBMARINE CABLE TERMINAL CABINETS AS SHOWN ON THE PLANS.

(L) PROVIDE AND INSTALL A NEW RFID ACCESS FENCE AROUND BASE OF CONTROL HOUSE AS SHOWN ON THE PLANS.

(M) PROVIDE AND INSTALL ADDITIONAL CLOSED CIRCUIT TV CAMERAS AND VIEWING MONITORS AS SHOWN ON THE PLANS. INTEGRATE NEW CAMERAS WITH EXISTING CLOSED CIRCUIT TV SYSTEM.

(N) PROVIDE AND INSTALL NEW PUBLIC ADDRESS SYSTEM.

(O) PROVIDE AND INSTALL A NEW HEAT PUMP SYSTEM TO SERVE ELECTRICAL ROOMS BELOW CONTROL ROOM.

SPARE PARTS:

ALL SPARE PARTS SHALL BE BOXED ACCORDING TO THE ITEM IN SUCH A MANNER AS TO PROTECT FROM DAMAGE AND CLEARLY LABELED AS TO CONTENTS ON THE FRONT AND TOP OF EACH BOX. SPARE PARTS SHALL BE DELIVERED TO LOCATIONS AS DESIGNATED BY THE DEPARTMENT.

THE FOLLOWING SPARE PARTS SHALL BE PROVIDED:

TWO COMPLETE LEVER ARM LIMIT SWITCHES OF EACH TYPE USED.

FOUR SNAP ACTION LIMIT SWITCHES FOR EACH TYPE OF ROTARY CAM LIMIT SWITCH USED.

ONE COMPLETE DRIVE MOTOR ENCODER.

ONE PROXIMITY SWITCH AND CABLE OF EACH TYPE USED.

ONE INDICATOR LIGHT ASSEMBLY OF EACH COLOR AND TYPE USED.

TEN INDICATOR LAMPS OR EACH COLOR AND SIZE USED.

ONE PUSHBUTTON OF EACH TYPE USED.

ONE SELECTOR SWITCH OF EACH TYPE USED.

ONE DISPLAY AND METER OF EACH TYPE USED.

TEN FUSES OF EACH TYPE AND SIZE USED.

TWO CONTROL RELAYS OF EACH TYPE USED.

TO ISOLATING RELAYS WITH BASE OF EACH TYPE USED.

TWO COMPLETE SETS OF CONTACTORS FOR EACH TYPE OF RELAY WITH REPLACEABLE CONTACTS.

FIVE SURGE SUPPRESSOR REPLACEMENT CARTRIDGES OF EACH TYPE USED.

ONE COMPLETE SET (MOVEABLE AND STATIONARY) OF CONTACTS AND ONE COIL FOR EACH TYPE AND SIZE OF CONTACTOR USED.

ONE SET OF OVERLOAD RELAY HEATER ELEMENTS OF EACH TYPE AND SIZE USED.

ONE COMPLETE SET OF REPLACEMENT PARTS FOR THE FLUX VECTOR DRIVES AS RECOMMENDED BY THE MANUFACTURERS.

ONE COMPLETE NAVIGATION LIGHT ASSEMBLY FOR EACH TYPE USED.

FOUR NAVIGATION LIGHT REPLACEMENT BULBS OF EACH TYPE, COLOR, A AND SIZE USED.

ONE COMPLETE TRAFFIC GATE ARM INCLUDING WARNING LIGHTS FOR EACH LENGTH PROVIDED.

SIX GATE ARM WARNING LIGHT REPLACEMENT BULBS.

ONE PLC I/O MODULE AND SPECIALTY MODULE OF EACH TYPE USED.

ONE PLC POWER SUPPLY OF EACH TYPE USED.

ONE SPARE PRE-CONFIGURED HMI FOR EACH SIZE PROVIDED.

ONE SPARE HARD DRIVE FOR EACH PC PROVIDED, PRE-CONFIGURED WITH DRIVE IMAGE OF THE INSTALLED DRIVE.

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

DESIGNED BY:	E. N. CLAY	DATE :	07/31/18
DRAWN BY:	E. N. CLAY	DATE :	07/31/18
CHECKED BY:	L. V. BORDEN	DATE :	11/15/18
DESIGN ENGINEER OF RECORD:	J. G. STRENKOSKI	DATE :	11/15/18

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NORTH CAROLINA PROFESSIONAL SEAL 044780 ENGINEER JOSEPH G. STRENKOSKI

Joseph G. Strenkoski 11/15/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELECTRICAL

ELECTRICAL GENERAL NOTES - 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-3
1			3			TOTAL SHEETS
2			4			213

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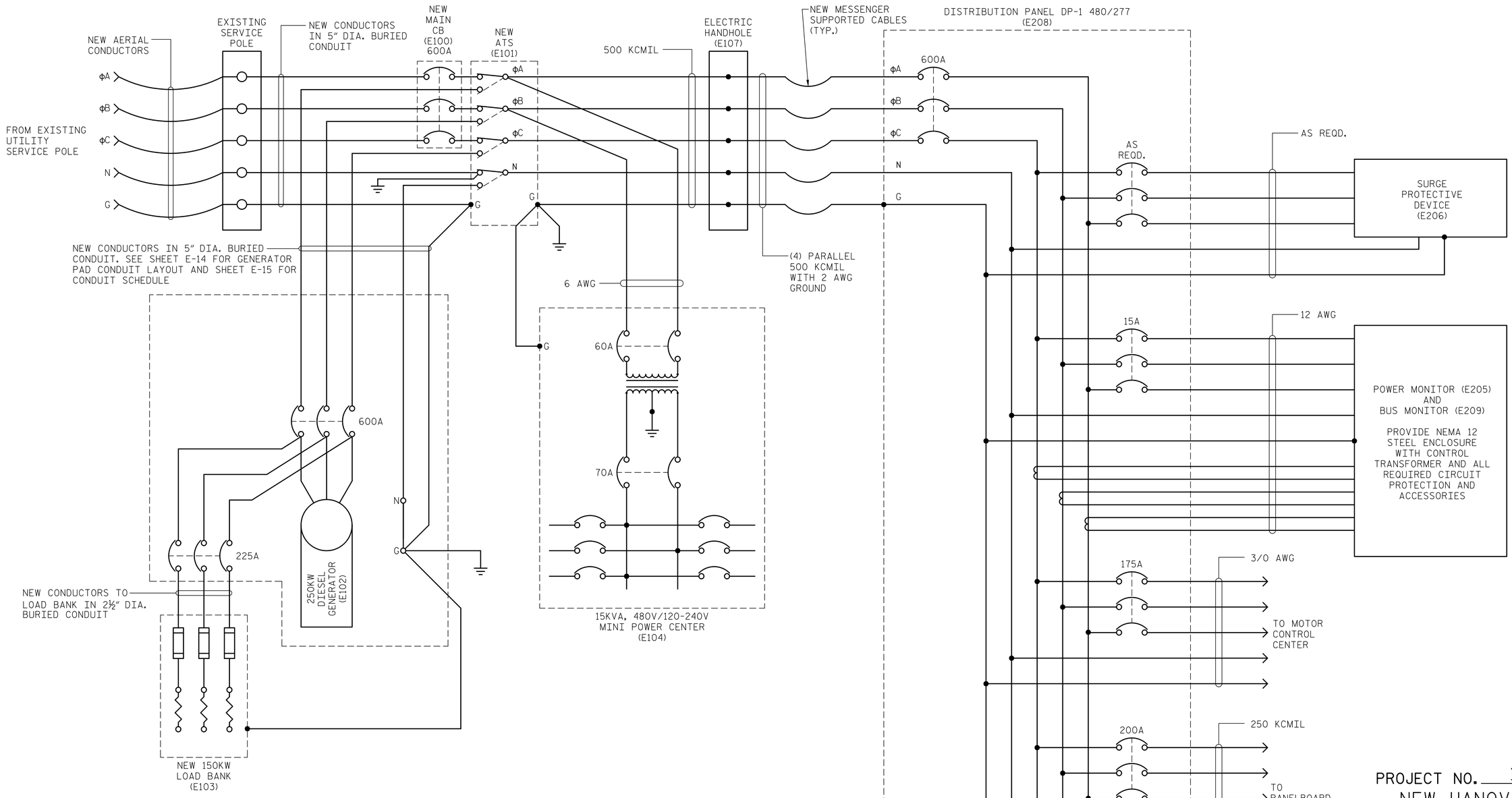

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ELECTRICAL

THREE LINE DIAGRAM - 1

REVISIONS						SHEET NO.
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NORTH CAROLINA PROFESSIONAL SEAL 044780 ENGINEER JOSEPH G. STRENKOSKI

DocuSigned by: Joe Strenkoski BC55212F3FAD4FA...

11/15/2018

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DESIGNED BY:	N. K. BHINGE	DATE : 03/16/18
DRAWN BY:	R. L. REED	DATE : 04/04/18
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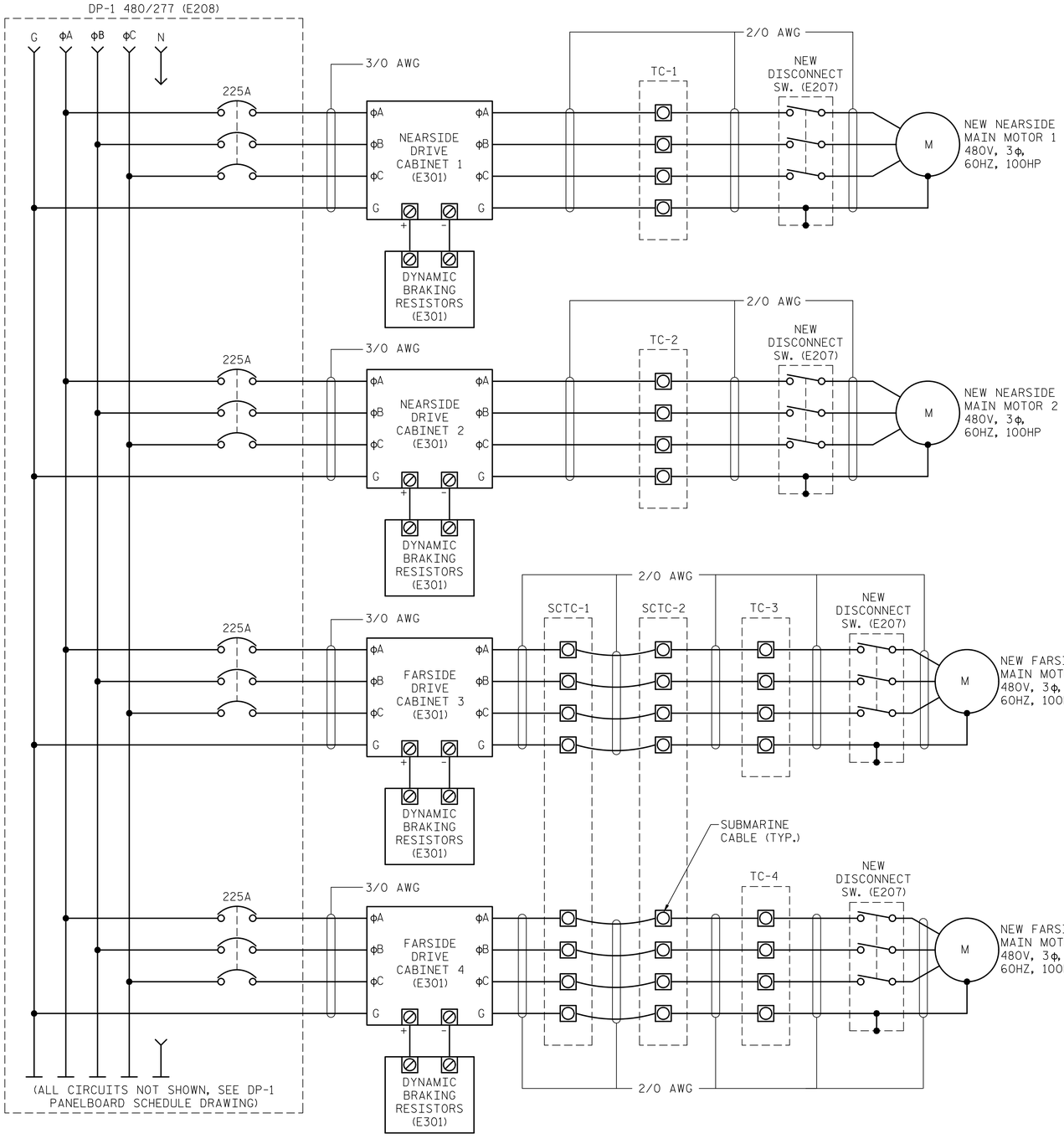

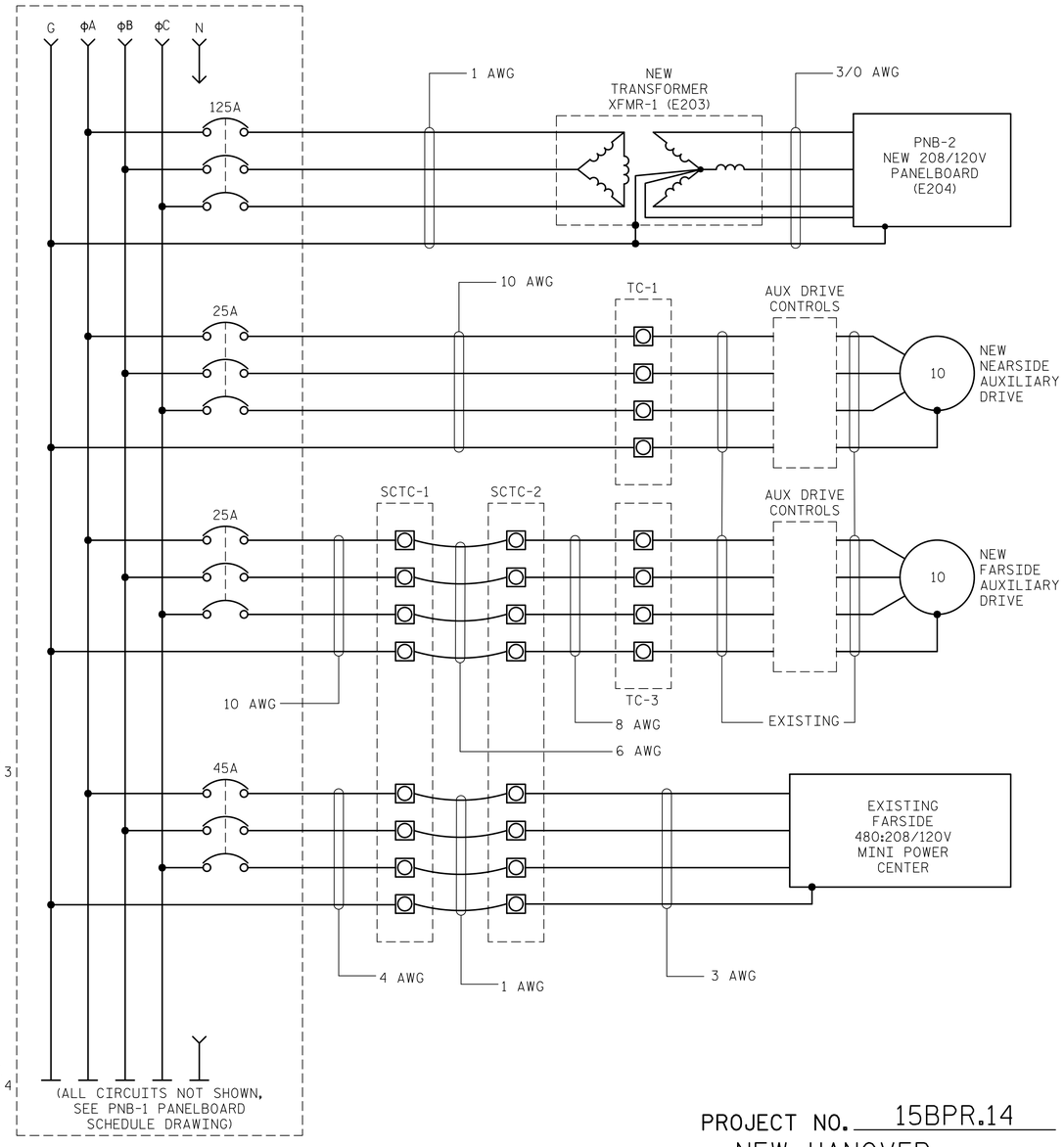

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ELECTRICAL

THREE LINE DIAGRAM - 2

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DESIGN ENGINEER OF RECORD:	J. G. STRENKOSKI	DATE :	11/15/18

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NORTH CAROLINA PROFESSIONAL SEAL 044780 ENGINEER JOSEPH GREGORY STRENKOSKI

Joe Strenkoski 11/15/2018

DocuSigned by: BC58212F3FAD4FA...

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			213

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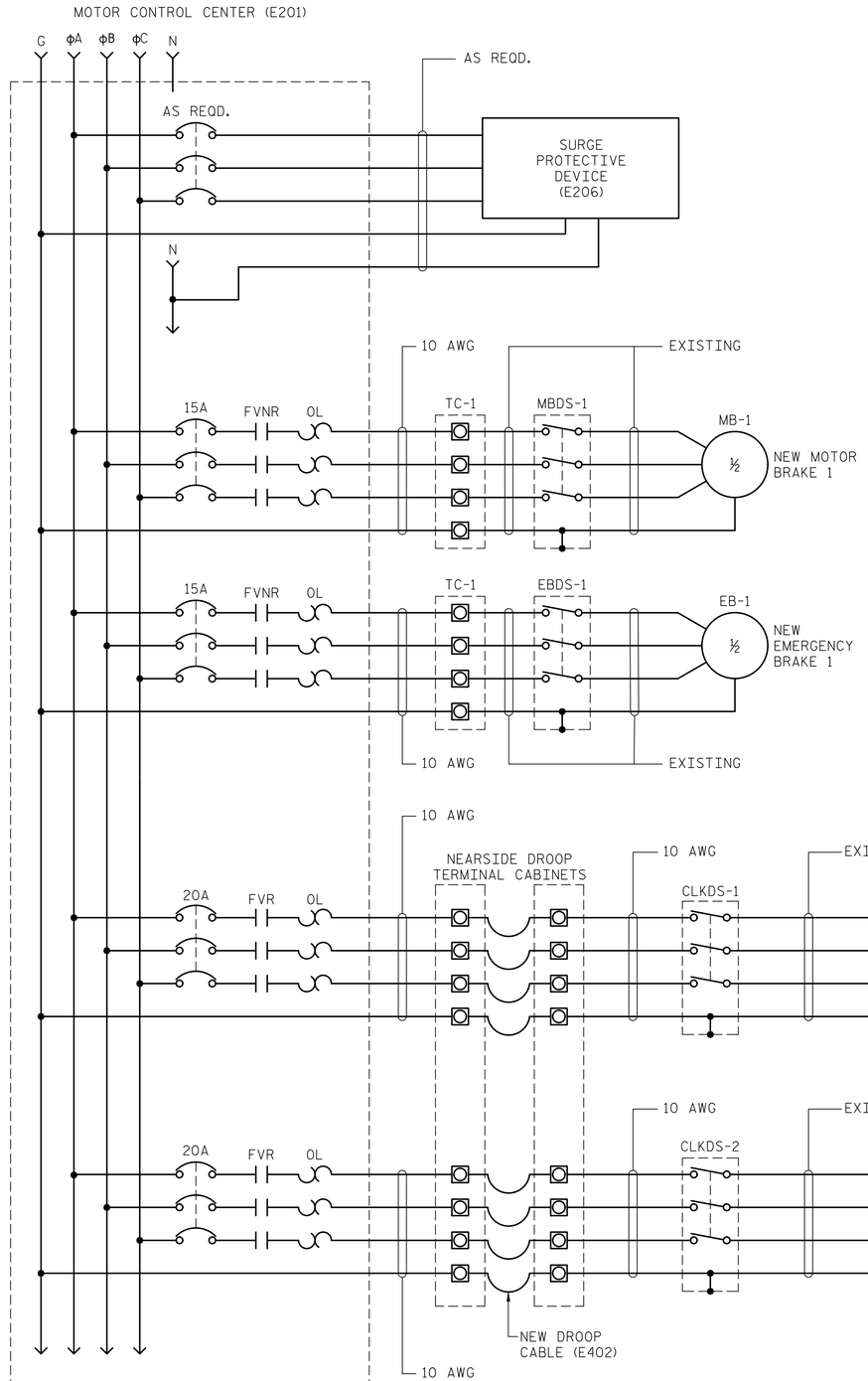

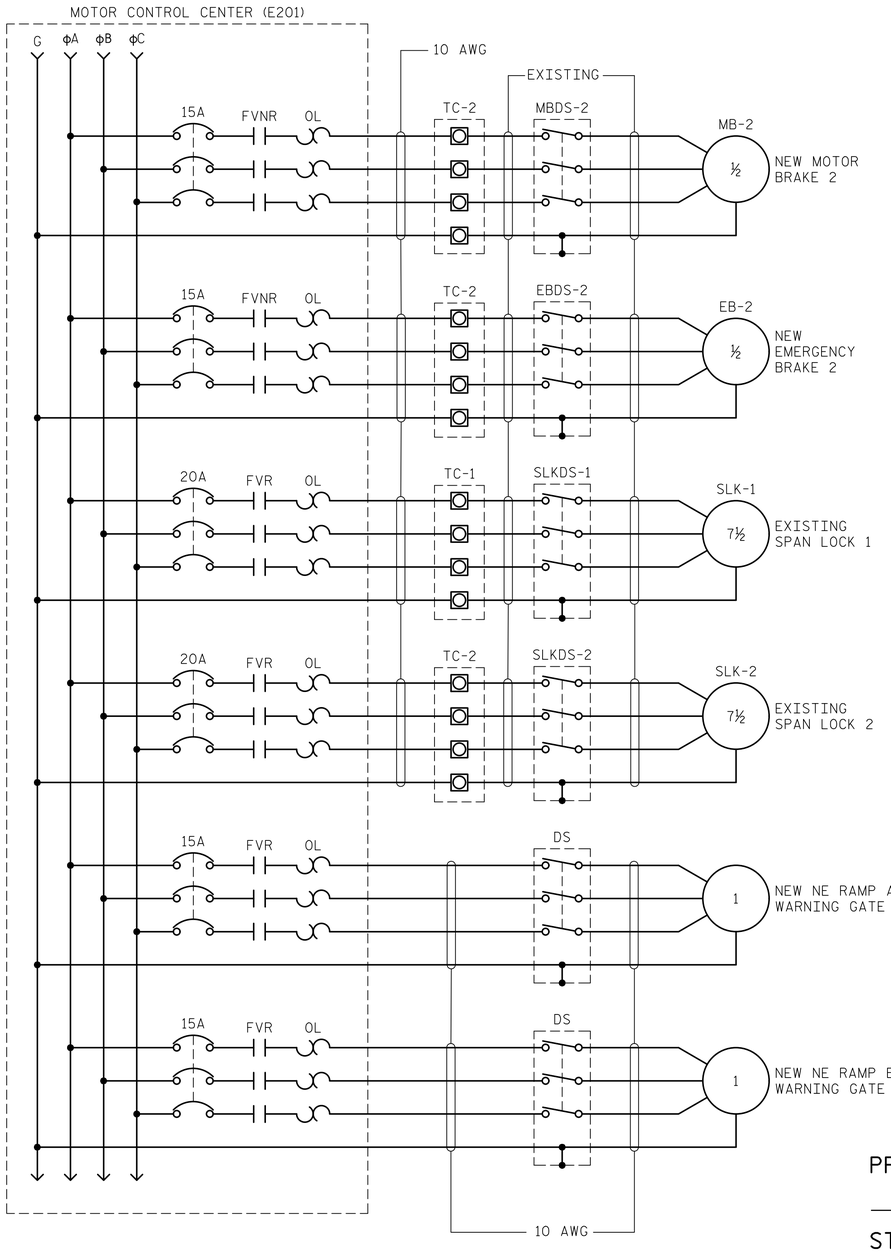

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ELECTRICAL

THREE LINE DIAGRAM - 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-6
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	E. N. CLAY	DATE : 04/16/18
DRAWN BY:	R. L. REED	DATE : 04/17/18
CHECKED BY:	L. V. BORDEN	DATE : 11/15/18
DESIGN ENGINEER OF RECORD:	J. G. STRENKOSKI	DATE : 11/15/18

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Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

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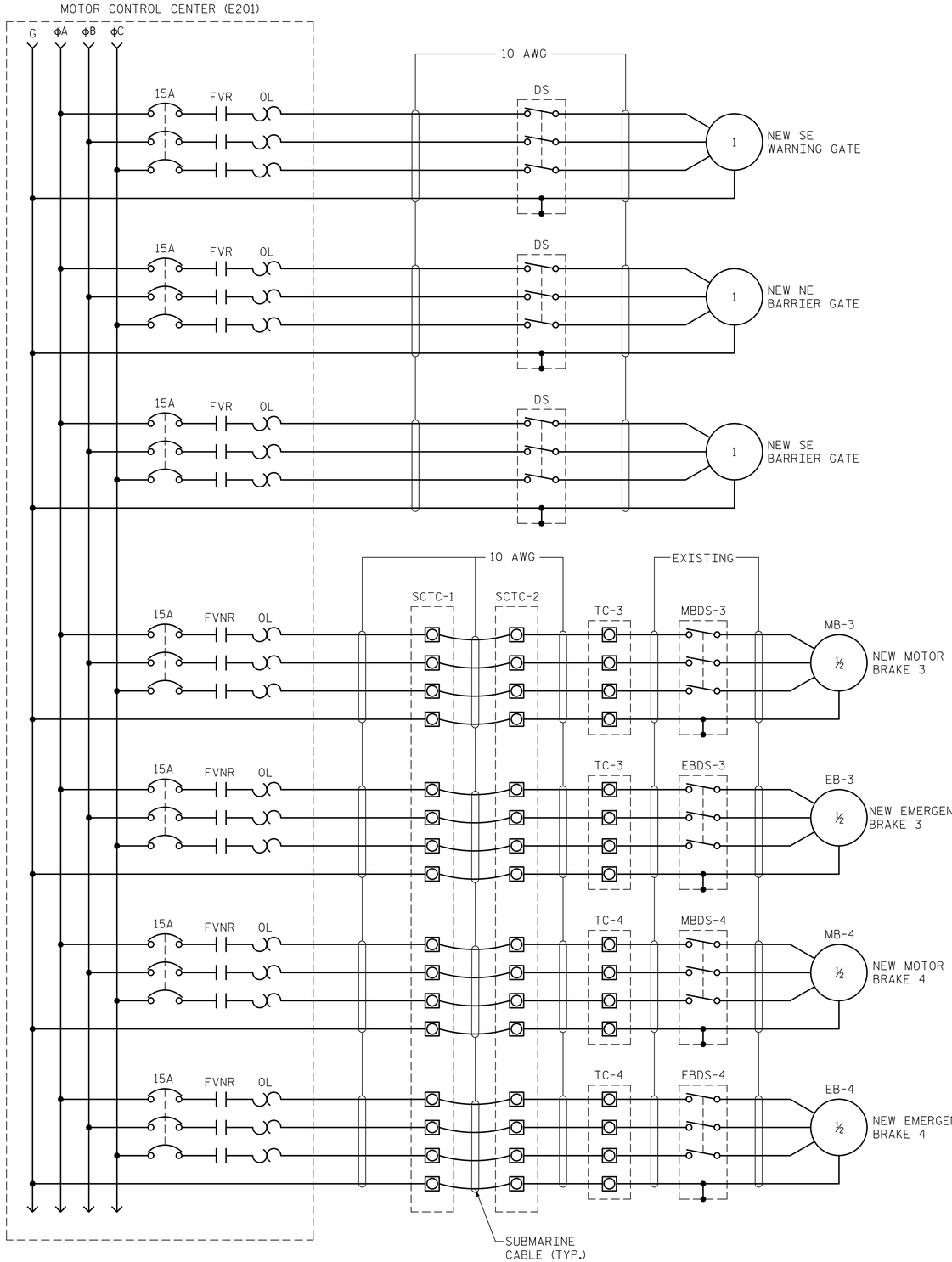
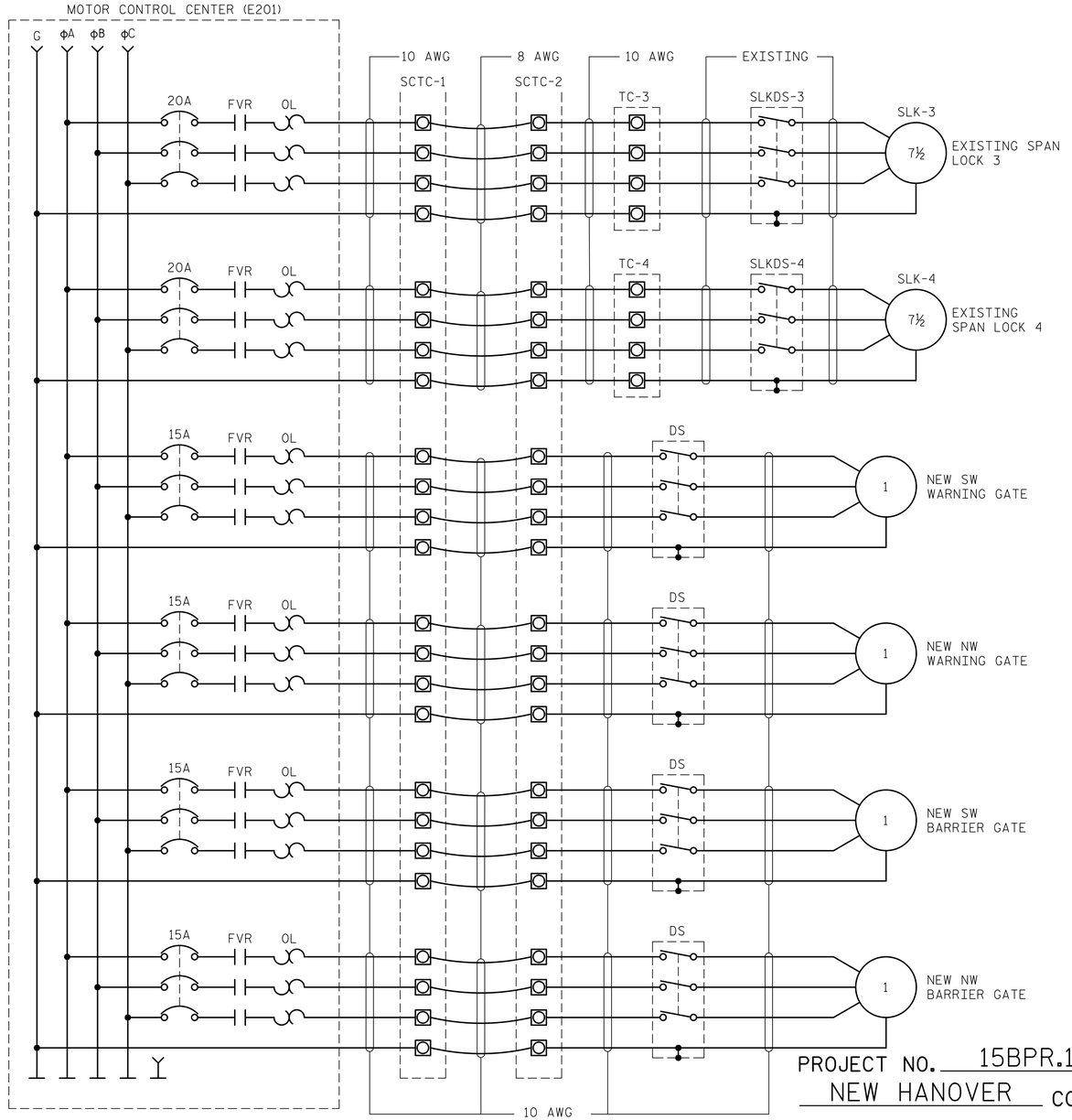
NORTH CAROLINA PROFESSIONAL SEAL 044780 ENGINEER JOSEPH G. STRENKOSKI

DocuSigned by: Joseph G. Strenkoski BC58212F3FAD4FA... 11/15/2018





PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

DESIGNED BY:	E. N. CLAY	DATE :	04/16/18
DRAWN BY:	R. L. REED	DATE :	04/17/18
CHECKED BY:	L. V. BORDEN	DATE :	11/15/18
DESIGN ENGINEER OF RECORD:	J. G. STRENKOSKI	DATE :	11/15/18

MODJESKI and MASTERS
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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 044780 ENGINEER JOSEPH G. STRENKOSKI

Docusigned by: Joseph Strenkoski 11/15/2018
BC58212F3FAD4FA...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ELECTRICAL

THREE LINE DIAGRAM - 4

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-7
1			3			TOTAL SHEETS
2			4			213

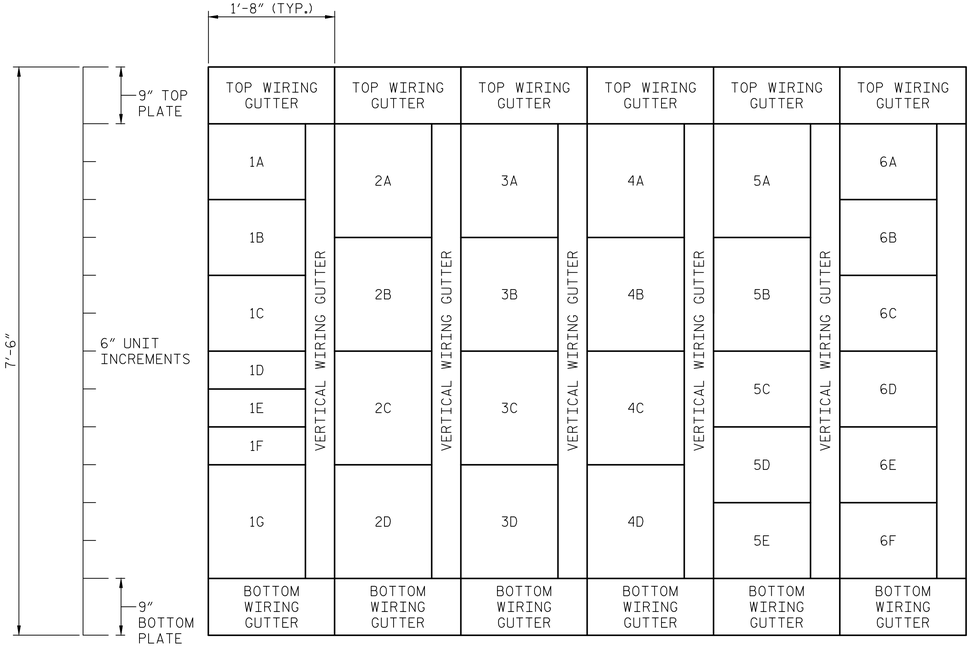
LAST SAVED 11/15/2018 11:26 AM BY AMBRODSKY. LAST PLOTTED 11/15/2018 12:42 PM.
FILE: \\mmdc10\projects\3682.03\CADD\Electrical\404_013_15BPR14_SMU_E07_640011

MOTOR CONTROL CENTER (MCC)

VOLTAGE: 480
PHASE: 3
WIRE: 4
BUS HORIZ. AMPERES: 600
MAIN: MAIN LUG ONLY
SHORT CIRCUIT: 42,000 SYMMETRICAL AMPERES
LOCATION: EXISTING GENERATOR ROOM
FED FROM: -
MOUNTING ENCLOSURE: FREE STANDING NEMA TYPE 12

UNIT NO.	UNIT TYPE	DESCRIPTION	MOTOR HP	STARTER SIZE	BREAKER		
					POLES	TRIP AMPS	TYPE
1A	LUG	INCOMING MAIN LUGS	-	-	3	-	-
1B	LUG	INCOMING NEUTRAL LUG	-	-	1	-	-
1C	BL	SPACE	-	-	-	-	-
1D	BL	SPACE	-	-	-	-	-
1E	BL	SPACE	-	-	-	-	-
1F	FCB	SPD	-	-	3	PER SPD	TM
1G	FVR	SPAN LOCK 1	7½	1	3	20	MCP
2A	FVR	SPAN LOCK 2	7½	1	3	20	MCP
2B	FVR	SPAN LOCK 3	7½	1	3	20	MCP
2C	FVR	SPAN LOCK 4	7½	1	3	20	MCP
2D	FVR	CENTER LOCK 1	3	1	3	20	MCP
3A	FVR	CENTER LOCK 2	3	1	3	20	MCP
3B	FVR	FARSIDE WARNING GATE ONCOMING/SOUTHWEST GATE	1	1	3	15	MCP
3C	FVR	FARSIDE WARNING GATE OFFGOING/NORTHWEST GATE	1	1	3	15	MCP
3D	FVR	FARSIDE BARRIER GATE ONCOMING/SOUTHWEST BARRIER	1	1	3	15	MCP
4A	FVR	FARSIDE BARRIER GATE OFFGOING/NORTHWEST BARRIER	1	1	3	15	MCP
4B	FVR	NEARSIDE BARRIER GATE ONCOMING/NORTHEAST BARRIER	1	1	3	15	MCP
4C	FVR	NEARSIDE BARRIER GATE OFFGOING/SOUTHEAST BARRIER	1	1	3	15	MCP
4D	FVR	NEARSIDE WARNING GATE OFFGOING/SOUTHEAST GATE	1	1	3	15	MCP
5A	FVR	NEARSIDE RAMP A WARNING GATE ONCOMING/NORTHEAST GATE	1	1	3	15	MCP
5B	FVR	NEARSIDE RAMP B WARNING GATE ONCOMING/NORTHEAST GATE	1	1	3	15	MCP
5C	FVNR	BRAKE MOTOR 1	½	1	3	15	MCP
5D	FVNR	BRAKE MOTOR 2	½	1	3	15	MCP
5E	FVNR	BRAKE MOTOR 3	½	1	3	15	MCP
6A	FVNR	BRAKE MOTOR 4	½	1	3	15	MCP
6B	FVNR	EMERGENCY BRAKE 1	½	1	3	15	MCP
6C	FVNR	EMERGENCY BRAKE 2	½	1	3	15	MCP
6D	FVNR	EMERGENCY BRAKE 3	½	1	3	15	MCP
6E	FVNR	EMERGENCY BRAKE 4	½	1	3	15	MCP
6F	BL	SPACE	-	-	-	-	-

UNIT TYPE	BL = BLANK, FCB = FEEDER CIRCUIT BREAKER, FVNR = FULL VOLTAGE NON-REVERSING COMBINATION STARTER, FVR = FULL VOLTAGE REVERSING COMBINATION STARTER, INSR = INSTRUMENTATION SPACE (WITH HINGED DOOR), MCB = MAIN CIRCUIT BREAKER, TVSS = TRANSIENT VOLTAGE SURGE SUPPRESSOR, SPD = SURGE PROTECTION DEVICE DS = DISCONNECT SWITCH
BREAKER TYPE:	EL = ELECTRONIC TRIP, MCP = MOTOR CIRCUIT PROTECTOR, TM = THERMAL - MAGNETIC



NOTES:

1. DIMENSIONS SHOWN ARE APPROXIMATE.
2. ENGRAVED PLASTIC NAMEPLATES BEARING THE NAME OF THE EQUIPMENT SERVED SHALL BE ON EACH UNIT OF THE MCC. NAMEPLATES SHALL BE PERMANENTLY ATTACHED TO THE FRONT OF EACH UNIT WITH A SMALL BRASS OR STAINLESS STEEL MACHINE SCREW.
3. THE INCOMING LINE/DISCONNECT SECTION SHALL HAVE AN ENGRAVED NAMEPLATE, THE MCC SERIAL NUMBER, SYSTEM ELECTRICAL DATA, BUS AMPACITY, AND BUS SHORT CIRCUIT RATING.

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELECTRICAL
MOTOR CONTROL CENTER LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-8
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY: N. K. BHINGE DATE : 04/17/18
DRAWN BY: R. L. REED DATE : 04/17/18
CHECKED BY: L. V. BORDEN DATE : 11/15/18
DESIGN ENGINEER OF RECORD: J. G. STRENKOSKI DATE : 11/15/18

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 044780 ENGINEER JOSEPH G. STRENKOSKI
DocuSigned by: Joe Strenkoski 11/15/2018
BC58212F3FAD4FA...

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EXISTING PANELBOARD PNB-1

VOLTAGE:	480Y/277 VOLTS	LOCATION:	EXISTING GENERATOR ROOM
PHASE:	3	FED FROM:	ATSW-2 TRANSFER SWITCH
WIRE:	4	MOUNTING/ENCLOSURE:	SURFACE/NEMA 12
BUS AMPERES:	225		
MAIN CIRCUIT BREAKER:	225		
SHORT CIRCUIT:	14,000 SYMMETRICAL AMPERES		

DESCRIPTION	BREAKER POLES	BREAKER AMPS	A B C	BREAKER AMPS	BREAKER POLES	DESCRIPTION
PNB-2 TRANSFORMER	1	50	1 2	30	3	ROADWAY LIGHTS
			3 4			
			5 6			
WORK ROOM FLUORES. LIGHTS	1	20	7 8	50	3	HEAT PUMP
CONTROL ROOM FLUORES. LIGHTS	1	20	9 10			
CONTROL HOUSE FLUORES. LIGHTS	1	20	11 12			
GENERATOR ROOM FLUORES. LIGHTS	1	20	13 14	20	3	WL-1 WATER LINE HEAT TRACE
SPARE	1	20	15 16			
HEAT TRACE	1	50	17 18			
PNB-3 TRANSFORMER (WEST)	3	30	19 20	20	1	HEATING A/C - 1
			21 22	20	1	HEATING A/C - 2
			23 24	20	1	HEATING A/C - 3
NEAR AUX DRIVE	3	20	25 26	20	3	FAR AUX DRIVE
			27 28			
			29 30			
SPARE	1	20	31 32	20	1	SPARE
SPACE	-	-	33 34	-	-	SPACE

NEW PANELBOARD PNB-1

VOLTAGE:	480Y/277 VOLTS	LOCATION:	EXISTING GENERATOR ROOM
PHASE:	3	FED FROM:	DP-1
WIRE:	4	MOUNTING/ENCLOSURE:	SURFACE/NEMA 12
BUS AMPERES:	225		
MAIN CIRCUIT BREAKER:	MAIN LUGS ONLY		
SHORT CIRCUIT:	14,000 SYMMETRICAL AMPERES		

DESCRIPTION	BREAKER POLES	BREAKER AMPS	A B C	BREAKER AMPS	BREAKER POLES	DESCRIPTION
SPD	1	AS REQ.	1 2	30	3	NEARSIDE ROADWAY LIGHTS
			3 4			
			5 6			
WORK ROOM FLUORES. LIGHTS	1	20	7 8	20	3	FARSIDE ROADWAY LIGHTS
CONTROL ROOM LED LIGHTS	1	20	9 10			
CONTROL HOUSE LED LIGHTS	1	20	11 12			
GENERATOR ROOM LED LIGHTS	1	20	13 14	20	3	WL-1 WATER LINE HEAT TRACE
SPARE	1	20	15 16			
HEAT TRACE	1	50	17 18			
PNB-3 TRANSFORMER (WEST)	3	45	19 20	20	1	HEATING A/C -1 / RECEP
			21 22	20	1	SPARE
			23 24	20	1	SPARE
NEAR AUX DRIVE	3	25	25 26	25	3	FAR AUX DRIVE
			27 28			
			29 30			
AIR COMPRESSOR (WARNING HORN)	3	15	31 32	125	3	PNB-2 TRANSFORMER
			33 34			
			35 36			

NEW DISTRIBUTION PANELBOARD DP-1

VOLTAGE:	480Y/277 VOLTS	LOCATION:	FUEL & WORK ROOM LEVEL
PHASE:	3	FED FROM:	MAIN SERVICE ATS
WIRE:	4	MOUNTING/ENCLOSURE	SURFACE/NEMA 12
BUS AMPERES:	800		
MAIN CIRCUIT BREAKER:	600A		
SHORT CIRCUIT:	50,000 SYMMETRICAL AMPERES		

DESCRIPTION	BREAKER POLES	BREAKER AMPS	A B C	BREAKER AMPS	BREAKER POLES	DESCRIPTION
SPD	3	AS REQ.	1 2	30	3	POWER MONITOR / PHASE MONITOR
			3 4			
			5 6			
MCC	3	175	7 8	200	3	PNB-1 PANELBOARD
			9 10			
			11 12			
VFD 1	3	225	13 14	225	3	VFD 3
			15 16			
			17 18			
VFD 2	3	225	19 20	225	3	VFD 4
			21 22			
			23 24			
EXISTING DRIVE CABINET (TEMPORARY BREAKER)	3	600	25 26	30	3	SPARE
			27 28			
			29 30			
SPACE	-	-	31 32	-	-	SPACE
			33 34			
			35 36			

NEW MINI POWER CENTER PNB-GEN

VOLTAGE:	240/120 VOLTS	LOCATION:	GENERATOR PAD
PHASE:	1	FED FROM:	MINI POWER CENTER XFMR
WIRE:	3	MOUNTING/ENCLOSURE:	SURFACE/NEMA 3R/4X
MAIN CIRCUIT BREAKER:	60	TRANSFORMER:	15KVA
SHORT CIRCUIT:	65,000 SYMMETRICAL AMPERES		

DESCRIPTION	BREAKER POLES	BREAKER AMPS	A B	BREAKER AMPS	BREAKER POLES	DESCRIPTION
GEN. BATTERY CHARGER	1	15	1 2	20	2	GEN. COOLANT HEATER
ALTERNATOR HEATER	1	20	3 4			
AREA LIGHTING	1	15	5 6	20	1	RECEPTACLES
LOAD BANK CONTROL POWER	1	20	7 8	20	1	RECEPTACLES
LOAD BANK HEATER	1	20	9 10	20	2	SPARE
OUTDOOR POLE LIGHT	1	15	11 12			
SPARE	1	20	13 14	20	1	SPARE
SPARE	1	20	15 16	20	1	SPARE
SPARE	1	15	17 18	-	-	SPACE
SPARE	1	15	19 20	-	-	SPACE

PROJECT NO. 15BPR.14

NEW HANOVER COUNTY

STATION:

NOTES:

1. THE CONTRACTOR SHALL PROVIDE A NEAT TYPEWRITTEN OR COMPUTER PRINTED CIRCUIT LEGEND WITH CIRCUIT DESCRIPTIONS FOR EACH LOAD PANEL.
2. THE CONTRACTOR SHALL ARRANGE CIRCUIT ASSIGNMENTS AS REQUIRED TO PROVIDE BALANCED LOADING.

DESIGNED BY: E. N. CLAY DATE : 04/20/18
DRAWN BY: R. L. REED DATE : 04/20/18
CHECKED BY: L. V. BORDEN DATE : 11/15/18
DESIGN ENGINEER OF RECORD: J. G. STRENKOSKI DATE : 11/15/18

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

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NORTH CAROLINA PROFESSIONAL SEAL 044780 ENGINEER JOSEPH G. STRENKOSKI
DocuSigned by: Joe Strenkoski 11/15/2018
BC58212F3FAD4FA...

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELECTRICAL

PANELBOARD SCHEDULES - 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-9
1			3			TOTAL SHEETS
2			4			213

EXISTING PANELBOARD PNB-2

VOLTAGE: 208Y/120 VOLTS
PHASE: 3
WIRE: 4
BUS AMPERES: 100
MAIN CIRCUIT BREAKER: 100
SHORT CIRCUIT: 14,000 SYMMETRICAL AMPERES

LOCATION: EXISTING GENERATOR ROOM
FED FROM: PNB-1 / TRANSFORMER XFMR-1
MOUNTING/ENCLOSURE: SURFACE/NEMA 12

DESCRIPTION	BREAKER POLES	BREAKER AMPS		BREAKER AMPS	BREAKER POLES	DESCRIPTION
LOCK STALL RELAYS	1	15	1 2	20	1	NPL1 OUTSIDE PIER WALKWAY LTS
STAIRS	1	20	3 4	20	1	SPARE
NVT2 PIER STAIRWAY LIGHTS	1	20	5 6	20	1	NR4 RECEPTACLES
HEATER	2	20	7 8	20	1	LAV1 BATHROOM FAN, LIGHT, HEAT
			9 10	20	1	GENERATOR SMALL BATT CHARGER
NR1 RECEPT SUB CABINET & MACH	1	20	11 12	20	1	NR3 RECEPT GEN & CONTR ROOM
NR3 RECEPT GEN &CONTROL ROOM	1	20	13 14	20	1	AX FAN
NR2 RECEPT WORKROOM & FAN	1	20	15 16	20	1	NVT5 FUEL ROOM LIGHTS
MOTOR HEATER 2	1	20	17 18	20	1	HOT WATER HEATER
MOTOR HEATER 1	2	40	19 20	20	1	FP1 GENERATOR FUEL PUMP
			21 22	20	1	FIRE ALARM SYSTEM
COMP	2	20	23 24	20	1	GENERATOR LARGE BATT CHARGER
			25 26	20	1	NVT6-1 VAPOR LIGHTS GEN & WORK
SPARE	1	20	27 28	20	1	NVT6-2 MECH LIGHTS
SP1 (CONSOLE SPAN POSITION)	1	20	29 30	20	2	SEWER PUMP
-	2	20	31 32			
			33 34	20	1	TRAFFIC SIGNAL
RLC ROADWAY LIGHTING CONTROL	1	20	35 36	20	1	TRAFFIC CAMERA
CD CONTROL DESK LIGHT & HEAT	1	20	37 38	20	1	LARGE GENERATOR HEATER
NAVIGATION LIGHTS	1	20	39 40	20	1	EAST TRAFFIC SIGNALS (NCDOT)
NVT7 ENTRANCE LIGHT STAIRS (34)	1	20	41 42	20	1	SMALL GENERATOR HEATER

EXISTING MINI POWER CENTER PNB-3

VOLTAGE: 208Y/120 VOLTS
PHASE: 3
WIRE: 4
MAIN CIRCUIT BREAKER: 40
SHORT CIRCUIT: 14,000 SYMMETRICAL AMPERES

LOCATION: FARSIDE MACHINERY AREA
FED FROM: MCC/MINI POWER CENTER XFMR
MOUNTING/ENCLOSURE: SURFACE/NEMA 4X ENCLOSURE
TRANSFORMER: 15KVA

DESCRIPTION	BREAKER POLES	BREAKER AMPS		BREAKER AMPS	BREAKER POLES	DESCRIPTION
PNB-3 FAN	1	20	1 2	20	1	MOTOR HEATER 3
WEST TRAFF. GATE RECEPTS. (NEW)	1	20	3 4	20	1	MOTOR HEATER 4
WEST TRAFF. GATE FLASHERS (NEW)	1	15	5 6	20	1	RECEPTACLE 1
PIER NAVIGATION LIGHTS (NEW)	1	20	7 8	20	1	MACHINERY AREA LIGHTS
REMOTE I/O CABINET (NEW)	1	20	9 10	20	1	STAIRWAY LIGHTS
REMOTE I/O CABINET UTIL. (NEW)	1	20	11 12	20	1	COUNTERWEIGHT PIT LIGHTS
SPACE	-	-	13 14	20	1	PIER LIGHTS (SPARE)
SPACE	-	-	15 16	-	-	SPACE
SPACE	-	-	17 18	-	-	SPACE

NEW PANELBOARD PNB-2

VOLTAGE: 208Y/120 VOLTS
PHASE: 3
WIRE: 4
BUS AMPERES: 225
MAIN CIRCUIT BREAKER: 225
SHORT CIRCUIT: 22,000 SYMMETRICAL AMPERES

LOCATION: EXISTING GENERATOR ROOM
FED FROM: PNB-1/TRANSFORMER
MOUNTING/ENCLOSURE: SURFACE/NEMA 12

DESCRIPTION	BREAKER POLES	BREAKER AMPS		BREAKER AMPS	BREAKER POLES	DESCRIPTION
STAIRWAY LIGHTS	1	20	1 2	20	1	MACHINERY AREA LIGHTS
MACHINERY & CLK RECEPTACLES	1	20	3 4	20	1	COUNTERWEIGHT PIT LIGHTS
NVT2 PIER STAIRWAY LIGHTS	1	20	5 6	20	1	NVT6 VAPOR LIGHTS GEN & WORK
NR1 RECEPT SUB CABINET & MACH	1	20	7 8	20	1	NR2 RECEPT WORK ROOM & FAN
NR3 RECEPT GEN & CONTR ROOM	1	20	9 10	20	1	NR3B RECEPT GEN & CONTR ROOM
NAVIGATION LIGHTS	1	20	11 12	20	1	NVT5 FUEL ROOM LIGHTS
MOTOR HEATER 1	1	20	13 14	20	1	CHANNEL FLOODLIGHTS
HOT WATER HEATER	1	20	15 16	20	1	SPARE
PA SYSTEM	1	20	17 18	20	1	MOTOR HEATER 2
LAVATORY EXHAUST FAN	1	15	19 20	20	1	CCTV
HVAC HEAT PUMP MSI-1	2	30	21 22	20	1	FIRE ALARM SYSTEM
			23 24	20	1	LAVATORY LOADS
HVAC HEAT PUMP MSI-2	2	30	25 26	AS REQ.	3	SPD
			27 28			
HEAT PUMP OUTDOOR UNIT	2	30	29 30			
			31 32	20	2	SEWER PUMP
HEAT PUMP INDOOR UNIT-1, 2	2	20	33 34			
			35 36	20	2	SPARE
EAST TRAFFIC GATE RECEPTACLES	1	20	37 38			
EAST TRAFFIC GATE FLASHERS	1	15	39 40	20	1	SPARE
WEST TRAFFIC SIGNALS	1	20	41 42	20	1	EAST TRAFFIC SIGNALS (NCDOT)
PLC & I/O CONTROL CIRCUITS	1	30	43 44	20	1	CONSOLE CONTROL CIRCUITS
PLC & I/O CABINET UTILITY	1	15	45 46	15	1	SPARE
CONTROL CONSOLE UTILITY	1	15	47 48	20	1	SPARE

NOTES:

1. THE CONTRACTOR SHALL PROVIDE A NEAT TYPEWRITTEN OR COMPUTER PRINTED CIRCUIT LEGEND WITH CIRCUIT DESCRIPTIONS FOR EACH LOAD PANEL.
2. THE CONTRACTOR SHALL ARRANGE CIRCUIT ASSIGNMENTS AS REQUIRED TO PROVIDE BALANCED LOADING.
3. ENSURE THAT PLC CONTROL CIRCUITS UTILIZE THE SAME PHASE.

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELECTRICAL
PANELBOARD SCHEDULES - 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-10
1			3			TOTAL SHEETS
2			4			213

MODJESKI and MASTERS
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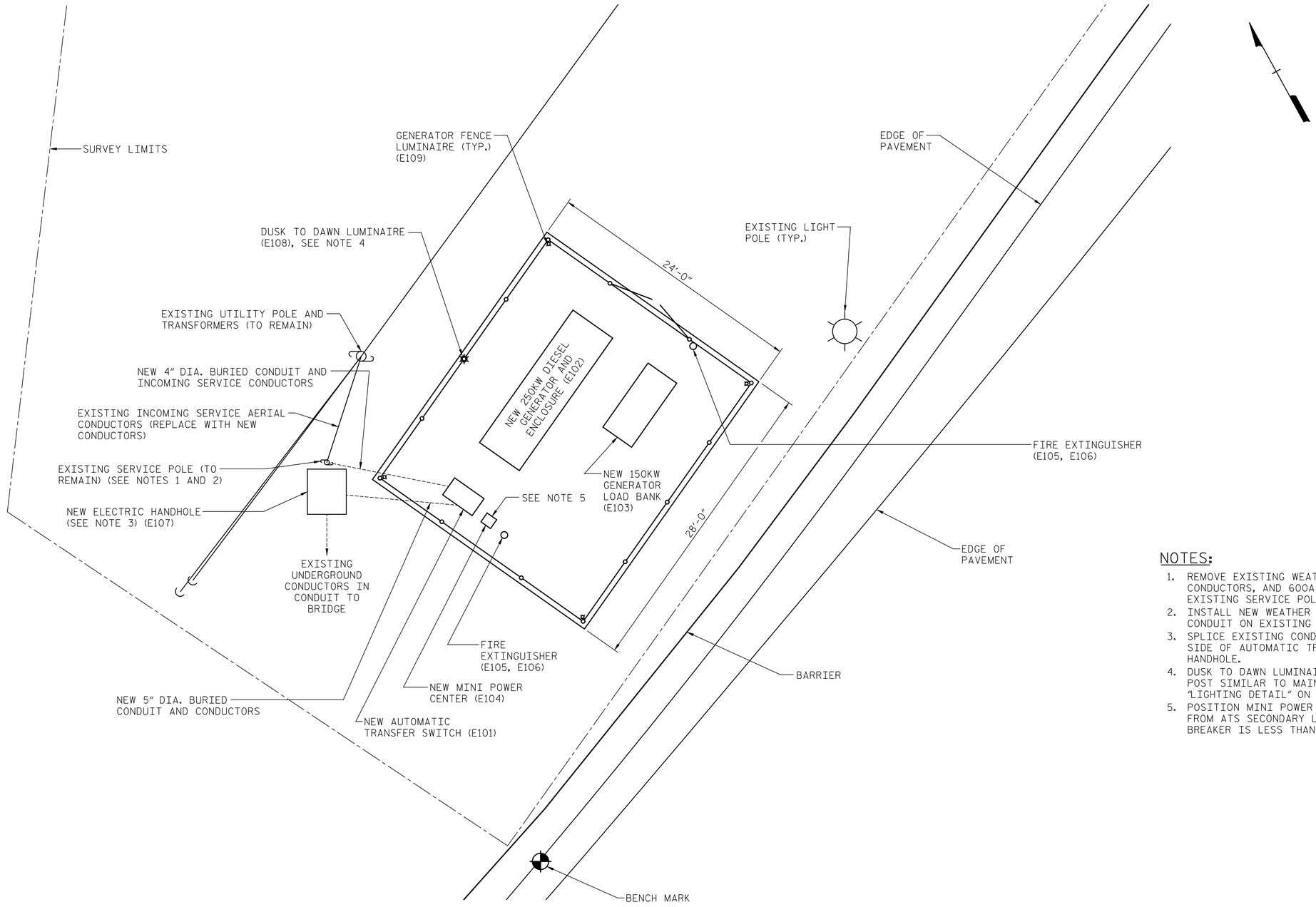
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 044780 ENGINEER JOSEPH G. STRENKOSKI
DocuSigned by: Joe Strenkoski 11/15/2018
BC58212F3FAD4FA...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGNED BY: R. I. PETERS DATE : 10/02/18
DRAWN BY: R. L. REED DATE : 10/02/18
CHECKED BY: L. V. BORDEN DATE : 11/15/18
DESIGN ENGINEER OF RECORD: J. G. STRENKOSKI DATE : 11/15/18

LAST SAVED 11/15/2018 13:10 PM BY AMBROOSKY. LAST PLOTTED 11/15/2018 13:11 PM.
FILE: \\mmdc10\projects\3682.03\CADD\Electrical\404.019.15BPR14_SMU_E10_640011



PLAN
GENERATOR PAD
SCALE: 1"=5'-0"

NOTES:

1. REMOVE EXISTING WEATHER HEAD, CONDUITS, SERVICE CONDUCTORS, AND 600A MAIN DISCONNECT SWITCH FROM EXISTING SERVICE POLE.
2. INSTALL NEW WEATHER HEAD, NEW SERVICE CONDUCTORS, AND CONDUIT ON EXISTING SERVICE POLE.
3. SPLICE EXISTING CONDUCTORS TO NEW CONDUCTORS FROM LOAD SIDE OF AUTOMATIC TRANSFER SWITCH IN THE ELECTRIC HANDHOLE.
4. DUSK TO DAWN LUMINAIRE TO BE MOUNTED TO TOP OF FENCE POST SIMILAR TO MAINTENANCE LIGHT MOUNTING DETAILED IN "LIGHTING DETAIL" ON DRAWING E-12.
5. POSITION MINI POWER CENTER SUCH THAT CONDUCTOR LENGTH FROM ATS SECONDARY LUGS TO MINI POWER CENTER MAIN BREAKER IS LESS THAN 10'.

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELECTRICAL
ELECTRICAL GENERATOR LOCATION PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-11
1			3			TOTAL SHEETS
2			4			213

DESIGNED BY:	R. I. PETERS	DATE :	04/11/18
DRAWN BY:	R. L. REED	DATE :	04/11/18
CHECKED BY:	L. V. BORDEN	DATE :	11/15/18
DESIGN ENGINEER OF RECORD:	J. G. STRENKOSKI	DATE :	11/15/18

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044780 JOSEPH G. STRENKOSKI
DocuSigned by: Joe Strenkoski 11/15/2018
BC58212F3FAD4FA...

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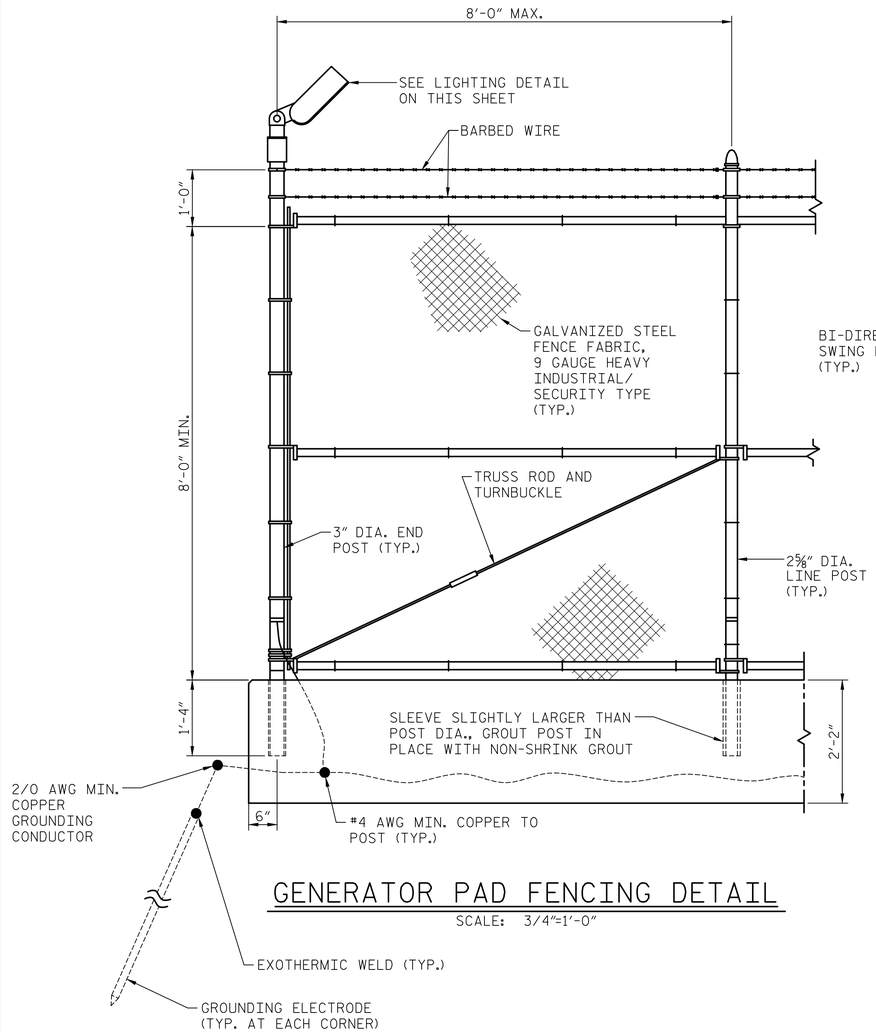
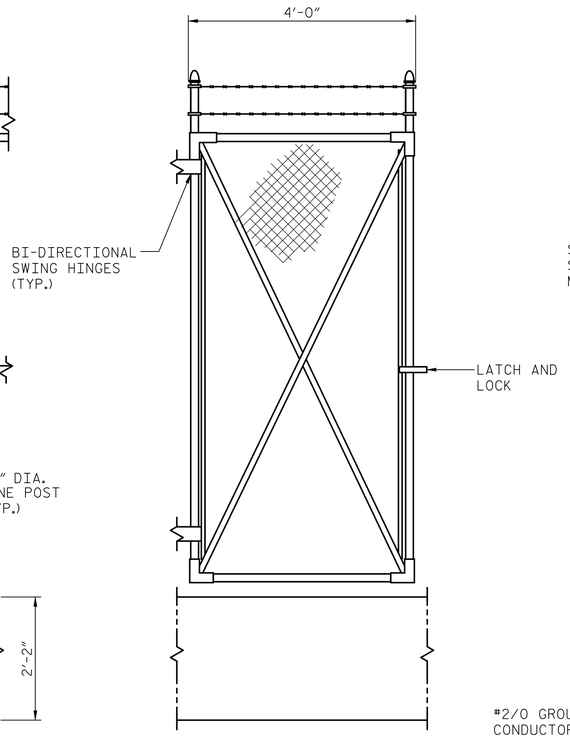


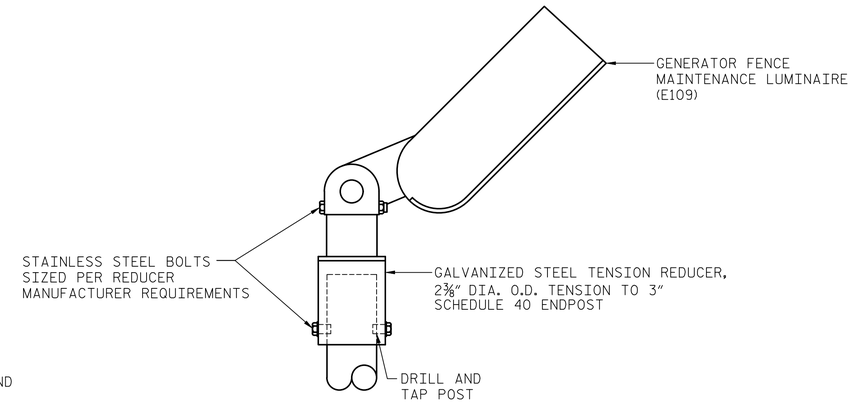
GENERATOR PAD FENCING DETAIL

SCALE: 3/4"=1'-0"



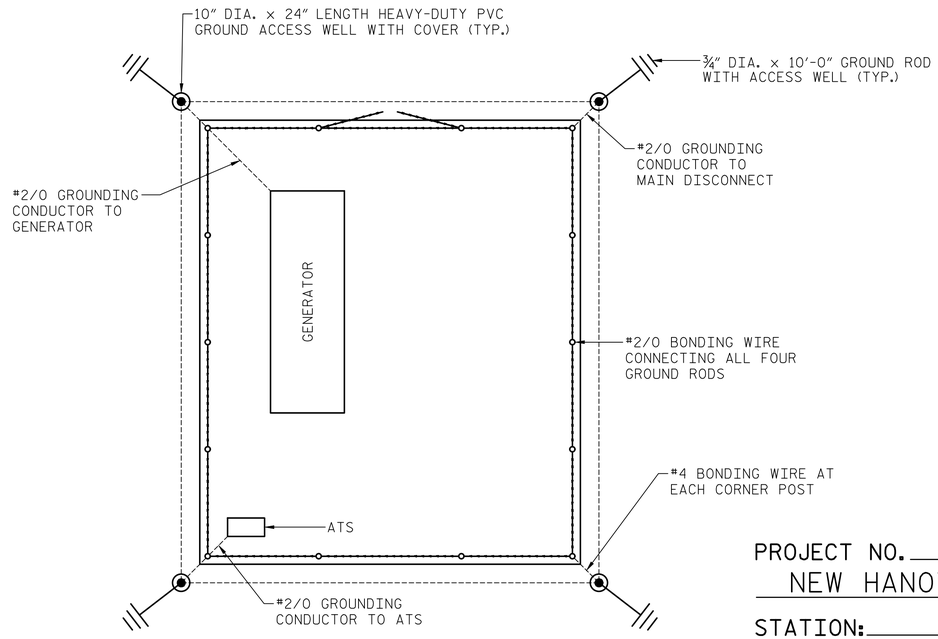
SWING GATE DETAIL

SCALE: 3/4"=1'-0"



LIGHTING DETAIL TYP. FOR (4) LOCATIONS

SCALE: NONE



GROUNDING DETAIL

SCALE: NONE

NOTES:

1. CHAIN LINK FABRIC, POSTS, RAILS, GATES, AND OTHER ASSOCIATED HARDWARE SHALL BE GALVANIZED STEEL, A MOISTURE-EXLUDING CAP IS REQUIRED FOR ALL POSTS.
2. POSTS SHALL BE HIGH STRENGTH SCHEDULE 40 PIPE, TOP RAIL BRACE RAIL, AND BOTTOM RAIL SHALL BE 1⅝" DIA. TRUSS ROD ADJUSTING UNITS SHALL BE ⅜" DIA. MIN.
3. THE SWING GATE SHALL HAVE LOCKABLE TYPE HARDWARE WITH CORROSION RESISTANT LOCK. LOCK TYPE AND KEYING SHALL BE AS SPECIFIED BY THE DEPARTMENT.
4. BONDING CONNECTIONS TO POSTS, FABRIC, AND BARBED WIRE SHALL BE MADE WITH UL LISTED GROUND CLAMPS, COMPRESSION TYPE CONNECTORS SHALL BE SUITABLE FOR USE WITH COPPER.
5. PROVIDE AND INSTALL FOUR GROUNDING ELECTRODES, ONE AT EACH CORNER OF THE GENERATOR PAD, GROUNDING ELECTRODES SHALL BE DRIVEN TO A DEPTH OF AT LEAST 12 INCHES BELOW FINISHED GRADE. INSTALL A GROUNDING RING AROUND THE PERIMETER OF THE PAD AT A SIMILAR DEPTH BELOW GRADE.
6. GROUNDING CONDUCTORS FOR FENCE GROUNDING SHALL BE AWG SOLID COPPER WITH TIN PLATING, GATES SHALL BE BONDED WITH AWG 2 FLEXIBLE STRANDED COPPER CONDUCTORS.
7. PROVIDE GROUNDING CONNECTIONS TO THE GROUNDING RING FOR THE GENERATOR AND LOAD PANEL AS SHOWN IN THE PLANS.
8. FENCING SHALL COMPLY WITH NCDOT SECTION 866.
9. PROVIDE TEST WELLS FOR ALL GROUND RODS, TEST WELLS SHALL PROVIDE ACCESS TO GROUND ROD CONNECTIONS.

DESIGNED BY:	R. I. PETERS	DATE :	04/11/18
DRAWN BY:	R. L. REED	DATE :	04/11/18
CHECKED BY:	L. V. BORDEN	DATE :	11/13/18
DESIGN ENGINEER OF RECORD:	J. G. STRENKOSKI	DATE :	11/15/18

MODJESKI and MASTERS
Experience great bridges.
333 FAYETTEVILLE STREET, SUITE 505
RALEIGH, NC 27601
NC LICENSE NO. C-2979

NORTH CAROLINA PROFESSIONAL SEAL 044780 ENGINEER JOSEPH G. STRENKOSKI

DocuSigned by: Joe Strenkoski 11/15/2018
BC58212F3FAD4FA...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. 15BPR.14
NEW HANOVER COUNTY
STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELECTRICAL

ELECTRICAL GENERATOR PAD DETAILS - 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E-12
1			3			TOTAL SHEETS
2			4			213

LAST SAVED 11/15/2018 11:27 AM BY AMBRODSKY.
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LAST PLOTTED 11/15/2018 12:43 PM.