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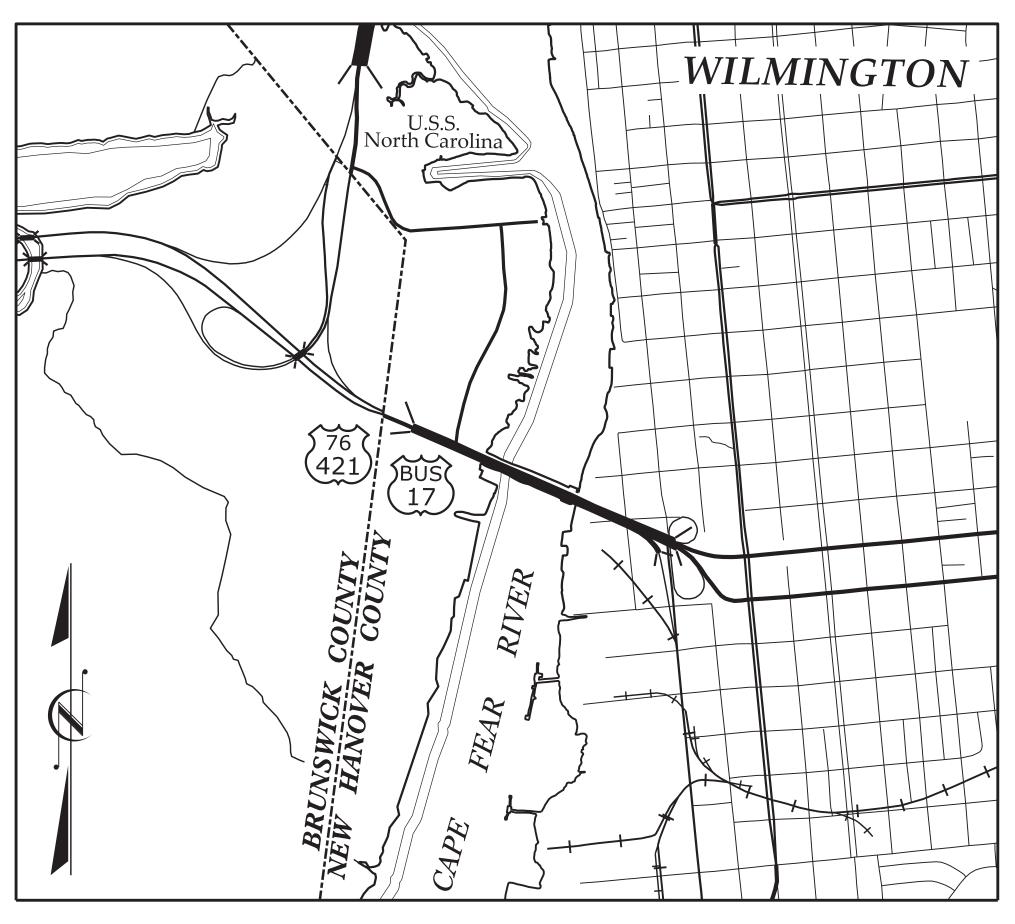
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

NEW HANOVER COUNTY

15BPR.15 STATE PROJ. NO. 15BPR.15 CONSTRUCTION

LOCATION: MEMORIAL LIFT BRIDGE ON US 76, US 421, BUS. 17 (OCEAN HWY) OVER CAPE FEAR RIVER

TYPE OF WORK: BRIDGE PRESERVATION



VICINITY MAP

DESIGN DATA

LENGTH OF STRUCTURE = 0.575 MI

DESIGN DATA

Prepared for the Office of:

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

Prepared in the Office of: 2018 STANDARD SPECIFICATIONS

LETTING DATE: FEBRUARY 20, 2018



JASON R. DOUGHTY, PE DESIGN ENGINEER OF RECORD

Jason R Doughty

RALEIGH, NC 27601 NC LICENSE NO. C-2979

333 FAYETTEVILLE STREET, SUITE 505

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PROJECT NO. ____15BPR.15 ___NEW HANOVER ___COUNTY STATION: ____

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
RALEIGH

SHEET INDEX

SEAL 032967

SEAL 032967

OR DOUBLE BOOK 1/25/18

WGINEER STATE					
— DecuSigned by:			REVIS	SIO	١
DocuSigned by:					Г

Jason R Doughty

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1/25/18							
17 237 10			REVI	SION	1S		SHEET NO
)	NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
oughty	1			3			TOTAL SHEETS
lE8	2			4			66

DESIGNED BY: B.LOFLIN DATE: NOV 2017
DRAWN BY: B.LOFLIN DATE: NOV 2017
CHECKED BY: J.DOUGHTY DATE: JAN 2018

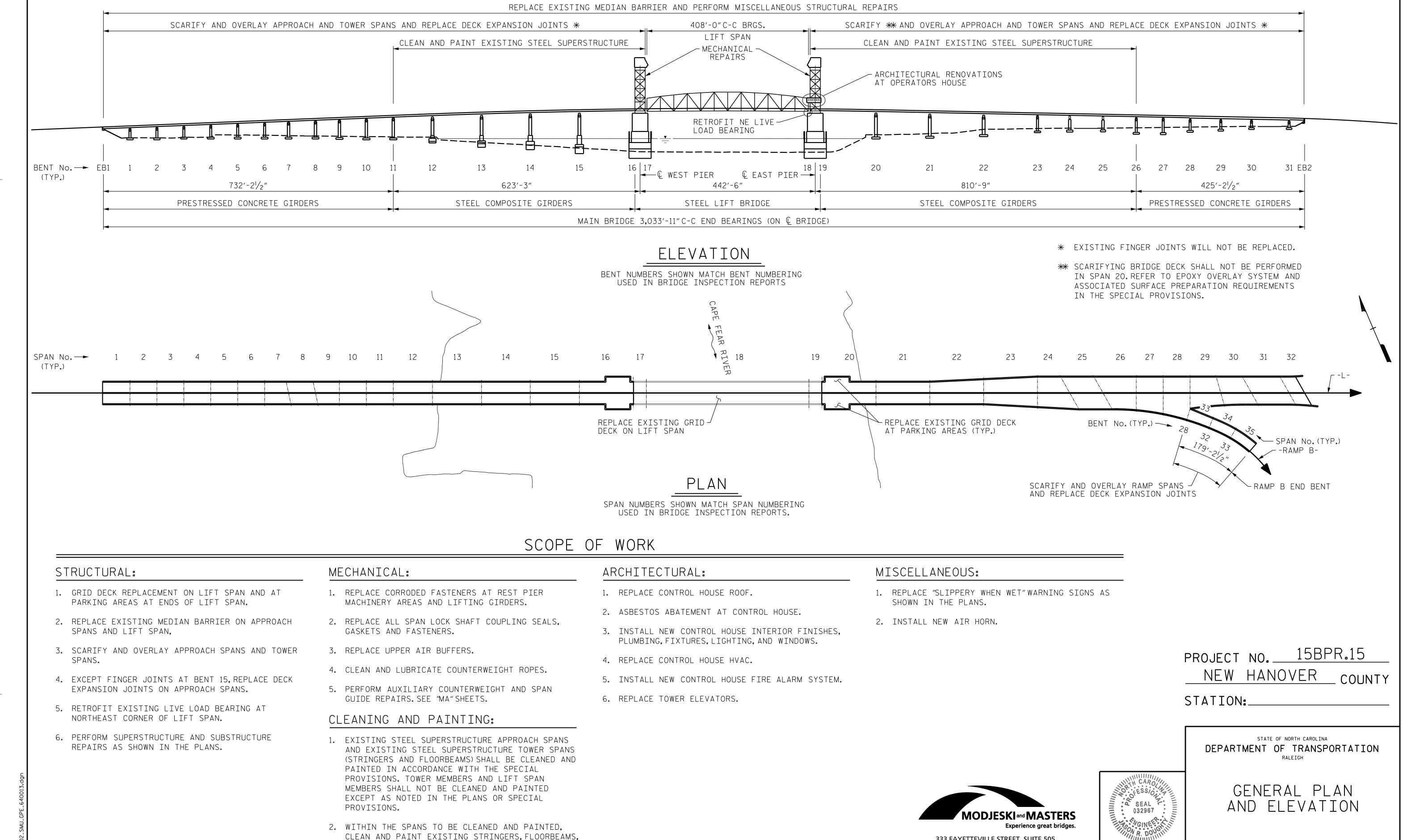
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OF RECORD: J.DOUGHTY DATE: JAN 2018

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GIRDERS, DIAPHRAGMS, CROSS FRAMES, STIFFENERS,

GIRDERS, ASSOCIATED CONNECTIONS, AND BEARINGS.

CONNECTION PLATES, CANTILEVERED BRACKETS.

EXTERIOR SURFACES OF TRANSVERSE STEEL CAP

333 FAYETTEVILLE STREET, SUITE 505

RALEIGH, NC 27601

NC LICENSE NO. C-2979

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REVISIONS

DATE:

BY:

Jason R Doughty

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NO. BY:

SHEET NO.

S-3

TOTAL SHEETS

DATE:

DESIGNED BY: J. DOUGHTY

CHECKED BY: B.LOFLIN

DRAWN BY:

DESIGN ENGINEER OF RECORD:

K. WHITE

J. DOUGHTY

_ DATE : <u>NOV 2017</u>

_ DATE : <u>NOV 2017</u>

_ DATE : <u>DEC 2017</u>

_ DATE : <u>JAN 2018</u>

LOCATION SKETCH

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

				TOTAL E	BILL OF	MATER	RIAL			
	GROOVING BRIDGE FLOORS	SHOTCRETE REPAIRS	REPAIRS TO PRESTRESSED CONCRETE GIRDERS	*** SPLICING OF PRESTRESSING STRAND		* CLASS III SURFACE PREPARATION	# HYDRO- DEMOLITION OF BRIDGE DECK	** SCARIFYING BRIDGE DECK	SHOTBLASTING BRIDGE DECK	CONCRETE DECK REPAIR FOR PPC OVERLAY
	SQ.FT.	CU.FT.	CU.FT.	EACH	SQ. YD.	SQ. YD.	SQ. YD.	SQ. YD.	SQ. YD.	SQ. YD.
TOTAL	149,300	125	1.5	1	10	13.5	13.5	17,655	18,574	10
	PPC MATERIALS	PLACING AND FINISHING PPC OVERLAY	EPOXY OVERLAY SYSTEM	CLEANING AND REPAINTING OF BRIDGE #13	PAINTING CONTAINMENT FOR BRIDGE #13	STRUCTURAL STEEL FOR REPAIRS	*** EPOXY RESIN INJECTION	MODIFIED ALASKA BARRIER RAIL	FOAM JOINT SEALS	REPLACEMENT OF STEEL GRID DECK
	CU. YD.	SQ. YD.	SQ.FT.	LUMP SUM	LUMP SUM	LBS.	LIN.FT.	LN. FT.	LUMP SUM	LUMP SUM
TOTAL	495	17655	7390	LUMP SUM	LUMP SUM	25,000	1	3034	LUMP SUM	LUMP SUM
	·									
	FLOWABLE FILL	AIR HORN REPLACEMEN	INSTALL T NEW SIGNS	MACHINERY	AUXILIARY COUNTERWEIGHT AND SPAN GUIDE REPAIRS	CONTROL	CONC. DEC REPAIR F EPOXY OVERLAY	OR STRUCTU WORK	RE HOUSE RENOVATION	
	CY	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	SQ.FT.	LUMP SL	JM LUMP SUI	M
TOTAL	8	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	52	LUMP SL	JM LUMP SUI	M

- * QUANTITIES ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. IF ANY ADDITIONAL CLASS II OR III LOCATIONS ARE ENCOUNTERED PRIOR TO OR DURING SCARIFICATION, SEE TYP. "BLOW THRU" CONTAINMENT AND FALSEWORK DETAILS.
- ** INCLUDES MILLING OF APPROACH ROADWAY PAVEMENT AT EXISTING APPROACH SLABS.
- *** TOKEN PAY ITEMS ARE INDICATED FOR PRICING PURPOSES, IN CASE UNANTICIPATED REPAIR AREAS ARE ENCOUNTERED.

32			
3682	DESIGNED BY:	J. BORUTA	DATE : <u>NOV 2017</u>
7.	DRAWN BY:	C. CORMAN	DATE : NOV 2017
ŏ	CHECKED BY:	J. DOUGHTY	DATE : <u>JAN 2018</u>
2	DESIGN ENGINEE OF RECORD:	TR J. DOUGHTY	DATE : <u>JAN 2018</u>

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 OF BRIDGE DECK.

DEPENDING ON MILLING AND OVERLAY SEQUENCE CHOSEN BY CONTRACTOR, LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS MAY NEED TO BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.

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 OVERLAY SURFACE PREPARATION FOR POLYESTER POLYMER CONCRETE, SEE SPECIAL PROVISIONS.

FOR POLYESTER POLYMER CONCRETE BRIDGE DECK OVERLAY, SEE SPECIAL PROVISIONS.

FOR OVERLAY OF BRIDGE WITH EPOXY OVERLAY SYSTEM, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS, 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 CONCRETE DECK REPAIR FOR EPOXY OVERLAY, SEE SPECIAL PROVISIONS.

FOR MAINTENANCE OF WATER TRAFFIC. SEE SPECIAL PROVISIONS.

FOR SECURING VESSELS. SEE SPECIAL PROVISIONS.

FOR FLOWABLE FILL, SEE SPECIAL PROVISIONS.

ALL PROPOSED EXPANSION JOINT DIMENSIONS, OPENINGS AND BLOCKOUTS ARE SHOWN AT 70°F. CONTRACTOR SHALL FOLLOW MANUFACTURER'S INSTALLATION GUIDELINES AND MAKE ANY NECESSARY ADJUSTMENTS.

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.

CONTRACTOR SHALL DETERMINE EXTENT OF WORKING AREA. STAGING PROCESS, AND INSTALL COVER PLATE ASSEMBLY AS NECESSARY TO MEET THE REQUIREMENTS OF TRAFFIC MANAGEMENT PLANS.

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 SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

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

FOR MODIFIED ALASKA BARRIER RAIL, SEE SPECIAL PROVISIONS.

FOR AIR HORN REPLACEMENT, SEE SPECIAL PROVISIONS.

FOR INSTALL NEW SIGNS, SEE SPECIAL PROVISIONS.

FOR MECHANICAL OPERATING MACHINERY. SEE SPECIAL PROVISIONS.

FOR AUXILIARY COUNTERWEIGHT AND SPAN GUIDE REPAIRS, SEE SPECIAL PROVISIONS.

AUXILIARY COUNTERWEIGHT AND SPAN GUIDE REPAIRS SHOWN ON SHEETS MA-1 THROUGH MA-10 SHALL BE COMPLETED EARLY IN THE PROJECT. SEE SHEETS MA-1 THROUGH MA-10 AND THE 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 13, SEE SPECIAL PROVISIONS FOR PAINTING EXISTING STRUCTURE.

FOR REPLACEMENT OF 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 #13.

FOR UNDER STRUCTURE WORK PLATFORM, SEE SPECIAL PROVISIONS.

HYDRO-DEMOLITION IS PERMITTED FOR USE AT CLASS III SURFACE PREPARATION AREA(S) ONLY. FOR HYDRO-DEMOLITION OF BRIDGE DECK, SEE SPECIAL PROVISIONS.

FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

> PROJECT NO. 15BPR.15 NEW HANOVER _ COUNTY STATION:_

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

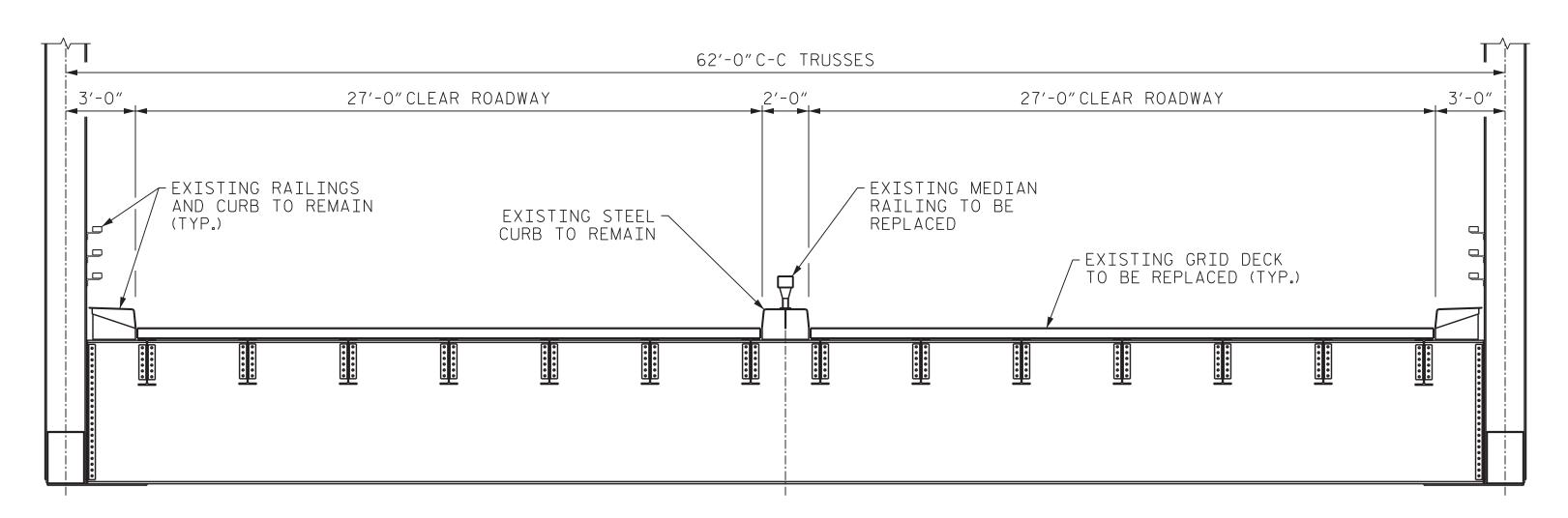
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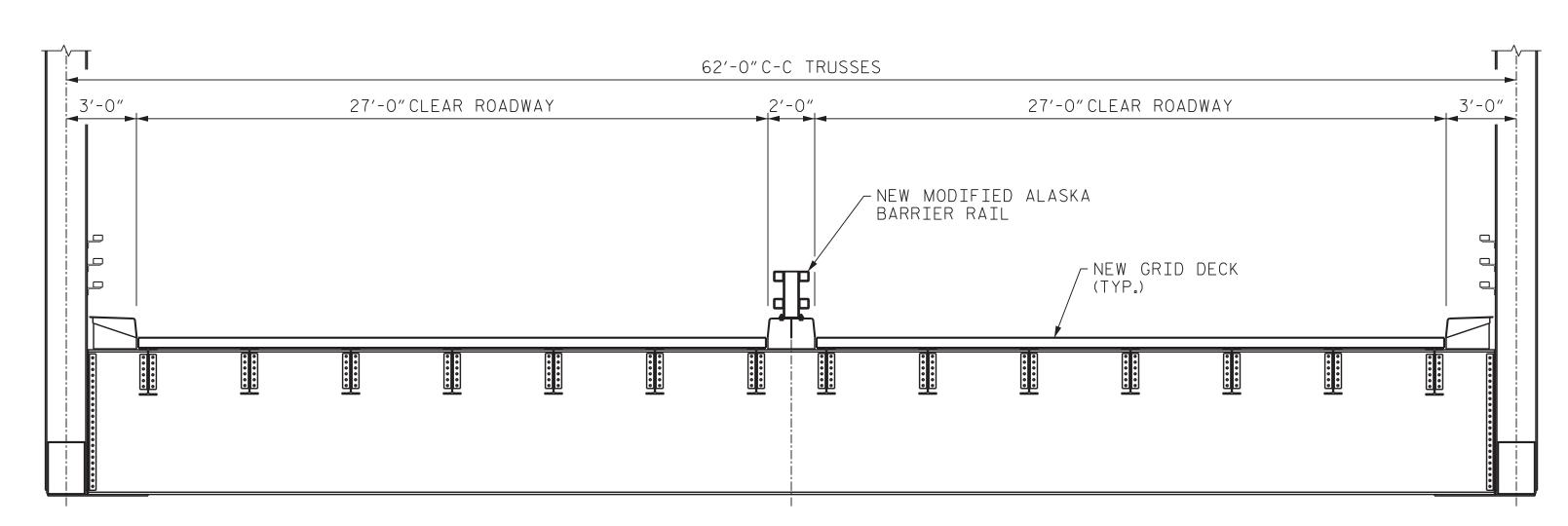
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GENERAL NOTES AND TOTAL BILL OF MATERIAL

SHEET NO. REVISIONS S-4 NO. BY: BY: DATE: DATE: Jason R Doughty TOTAL SHEETS ----5F73FA2DEA974E8...



EXISTING TYPICAL SECTION



PROPOSED TYPICAL SECTION



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

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NOTES:

FOR GRID DECK REPLACEMENT SEQUENCE, SEE SHEET NO. S-19.

FOR MODIFIED ALASKA BARRIER RAIL, SEE SHEET NO. S-30.

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

PROJECT NO. 15BPR.15

NEW HANOVER COUNTY

STATION:

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

LIFT SPAN TYPICAL SECTION

Jason R Doughty.

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SEAL 032967

REVISIONS

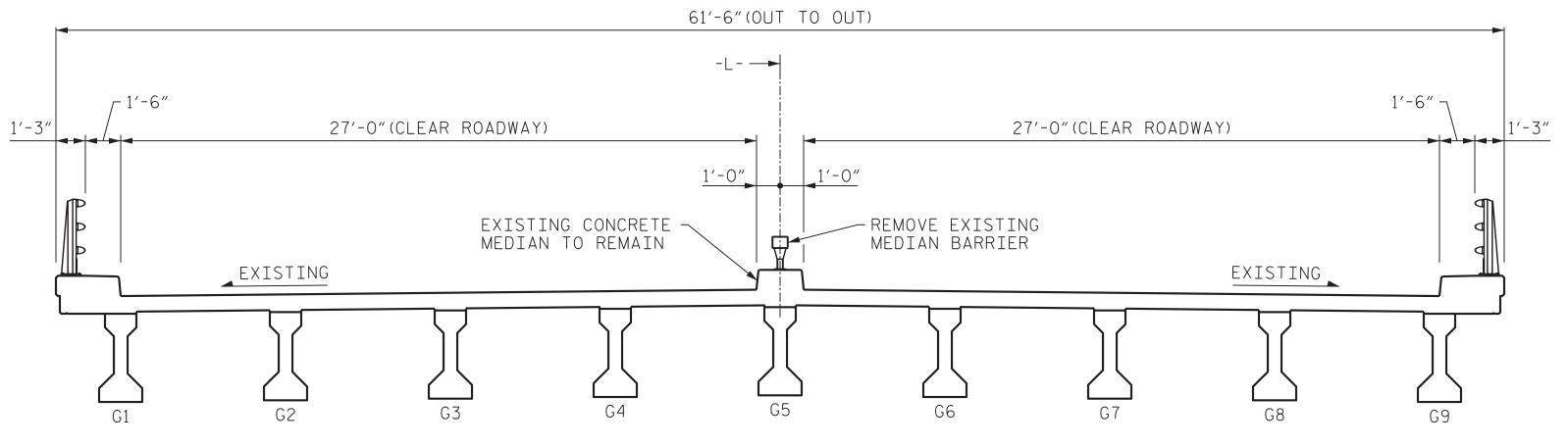
BY: DATE: NO. BY: DATE: S-5

3 TOTAL SHEETS
66

DESIGNED BY: B.LOFLIN DATE: NOV 2017
DRAWN BY: K. WHITE DATE: NOV 2017
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DESIGN ENGINEER
OF RECORD: J. DOUGHTY DATE: DEC 2017

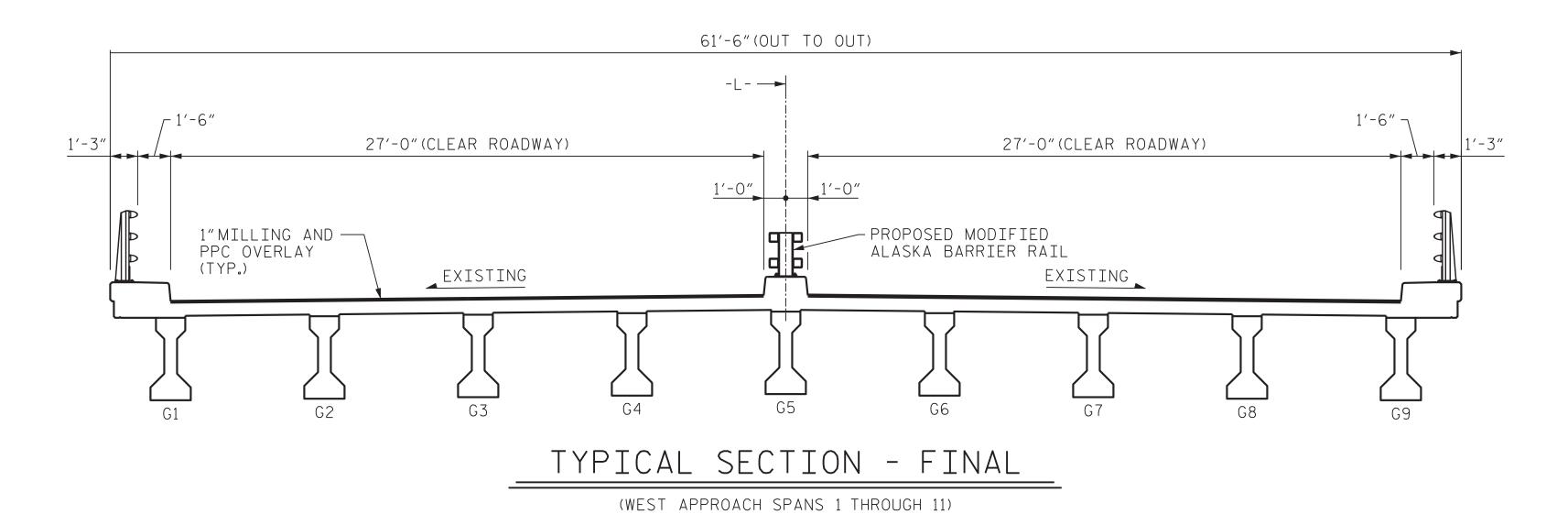
REFER TO TRANSPORTATION MANAGEMENT PLANS FOR TRAFFIC PHASING AND WORK ZONE INFORMATION.

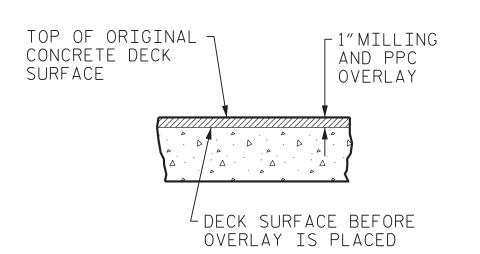
EXISTING SCUPPERS NOT SHOWN



TYPICAL SECTION - EXISTING

(WEST APPROACH SPANS 1 THROUGH 11)





DETAIL FOR MILLING AND PPC OVERLAY

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

SHEET 1 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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4	Jason R Doughty	NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
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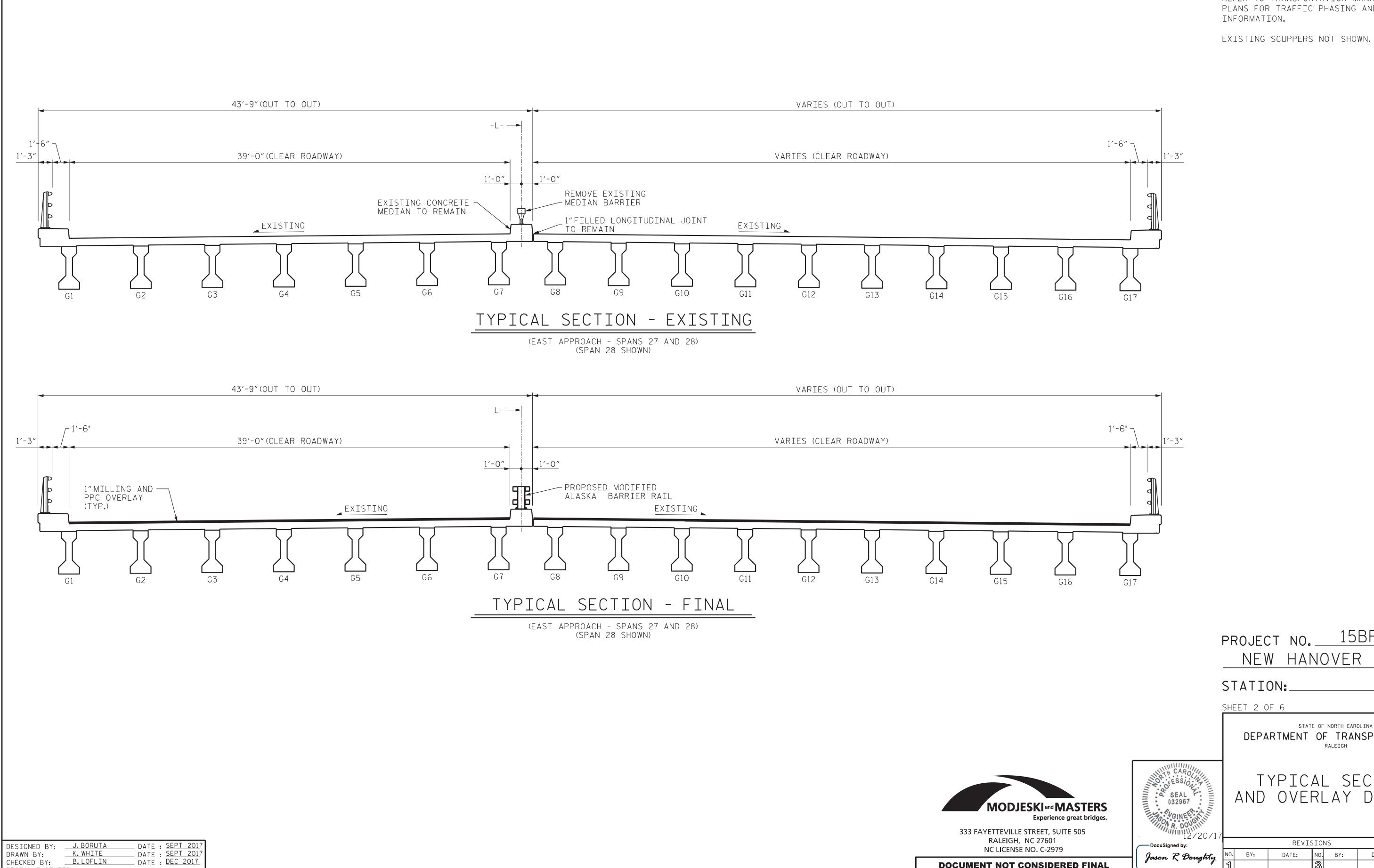
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DRAWN BY: K.WHITE
CHECKED BY: B.LOFLIN DESIGN ENGINEER
OF RECORD: J. DOUGHTY _ DATE : <u>DEC 2017</u>

__ DATE : <u>SEPT 201</u>7 __ DATE : <u>SEPT 201</u>7 __ DATE : <u>DEC 2017</u>



CHECKED BY: B.LOFLIN

DESIGN ENGINEER
OF RECORD: J. DOUGHTY

_ DATE : <u>DEC 2017</u>

NOTE:

FOR "DETAIL FOR MILLING AND PPC OVERLAY", SEE SHEET 1 OF 6.

REFER TO TRANSPORTATION MANAGEMENT PLANS FOR TRAFFIC PHASING AND WORK ZONE

PROJECT NO. 15BPR.15 COUNTY

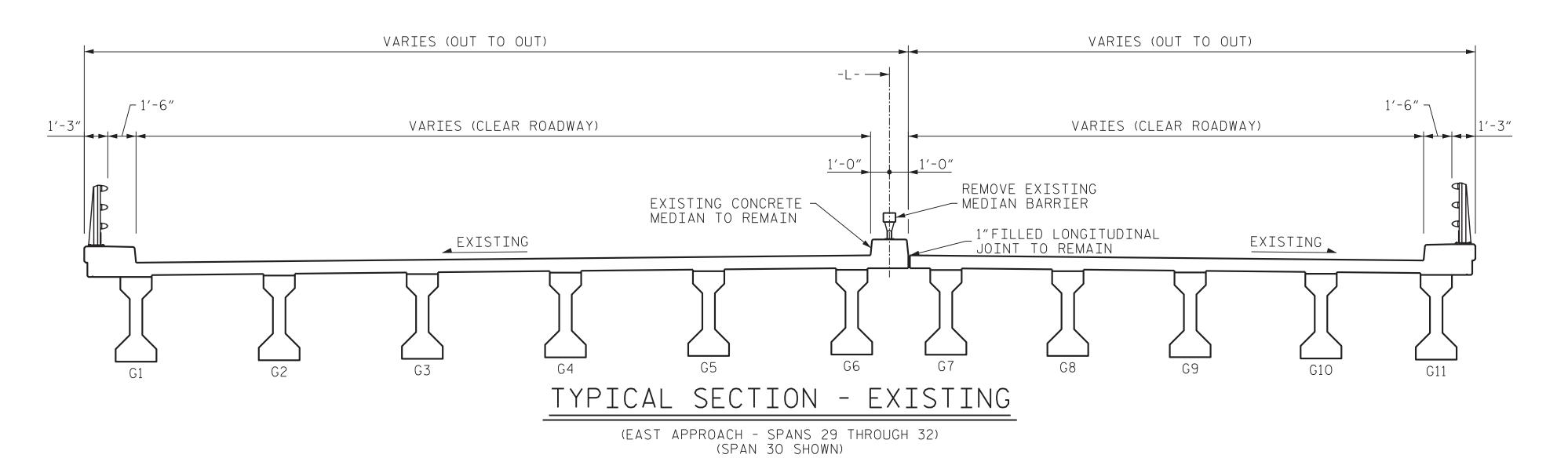
> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

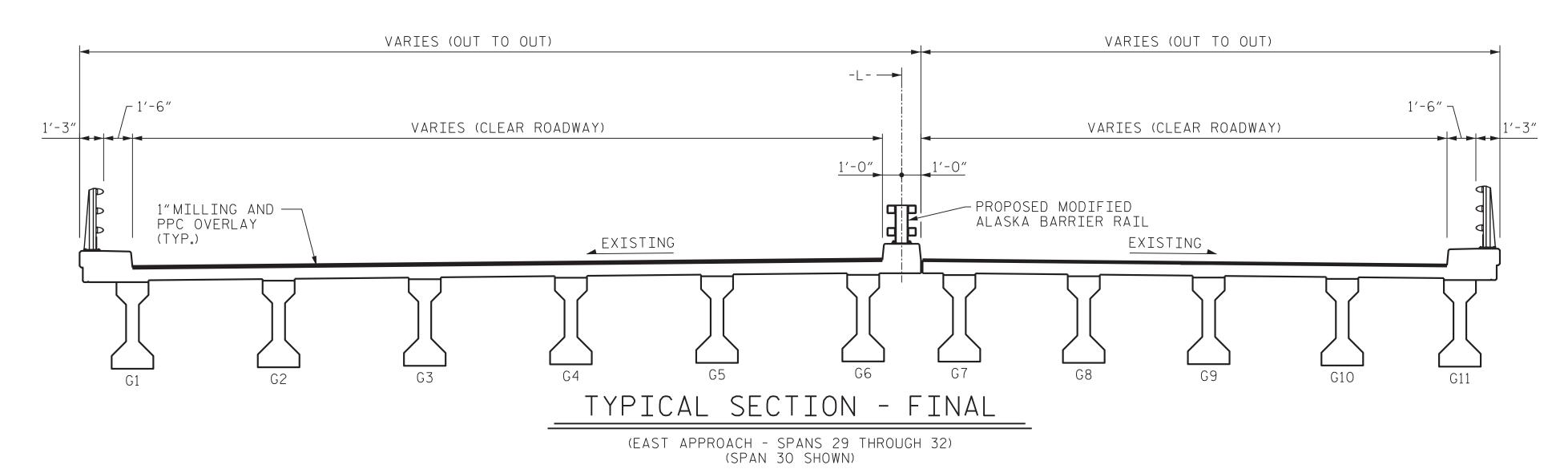
TYPICAL SECTION AND OVERLAY DETAILS

SHEET NO. S-7Jason R Doughty NO. BY: DATE: TOTAL SHEETS ----5F73FA2DEA974E8..

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NOTE:

FOR "DETAIL FOR MILLING AND PPC OVERLAY", SEE SHEET 1 OF 6.

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

EXISTING SCUPPERS NOT SHOWN.

PROJECT NO. 15BPR.15

NEW HANOVER COUNTY

STATION:_

SHEET 3 OF 6

DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION AND OVERLAY DETAILS

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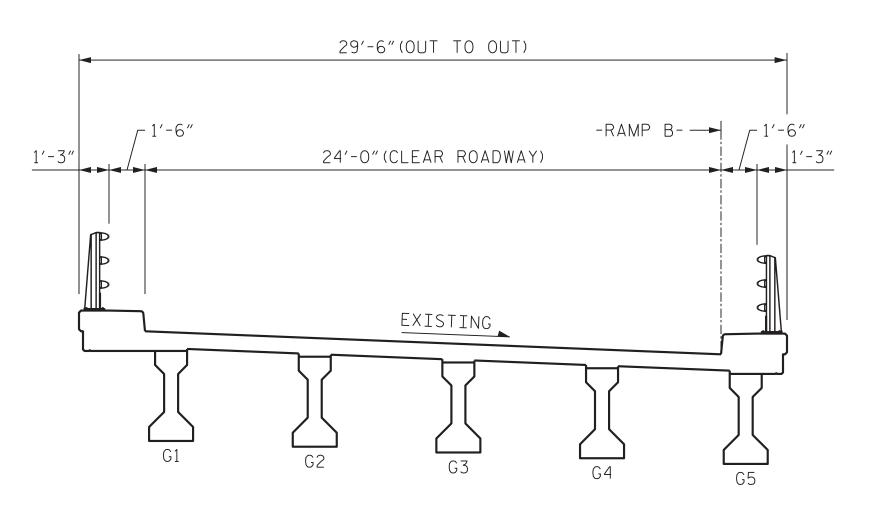
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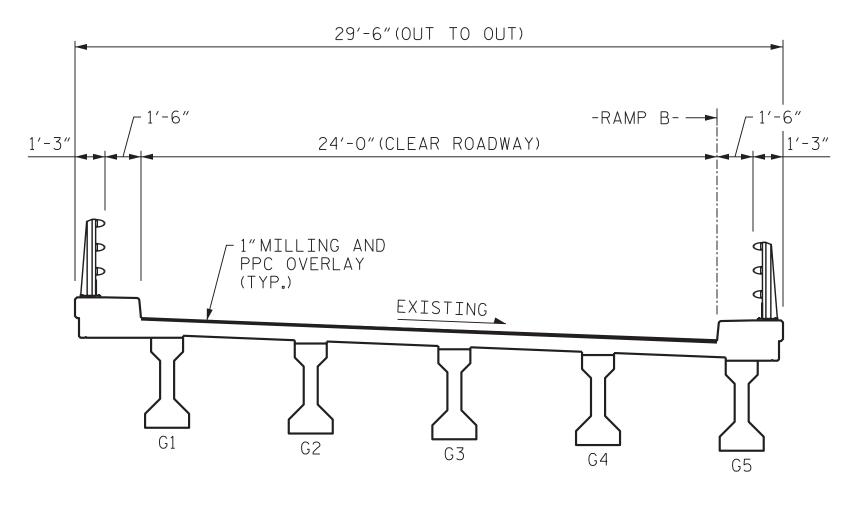
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DESIGNED BY: J.BORUTA DATE: SEPT 2017
DRAWN BY: K.WHITE DATE: SEPT 2017
CHECKED BY: B.LOFLIN DATE: DEC 2017
DESIGN ENGINEER
OF RECORD: J.DOUGHTY DATE: DEC 2017



TYPICAL SECTION - EXISTING

(RAMP B - SPANS 33 THROUGH 35)



TYPICAL SECTION - FINAL

(RAMP B - SPANS 33 THROUGH 35)

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NOTE:

FOR "DETAIL FOR MILLING AND PPC OVERLAY", SEE SHEET 1 OF 6.

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

EXISTING SCUPPERS NOT SHOWN.

PROJECT NO. 15BPR.15

NEW HANOVER COUNTY

STATION:_

SHEET 4 OF 6

DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION AND OVERLAY DETAILS

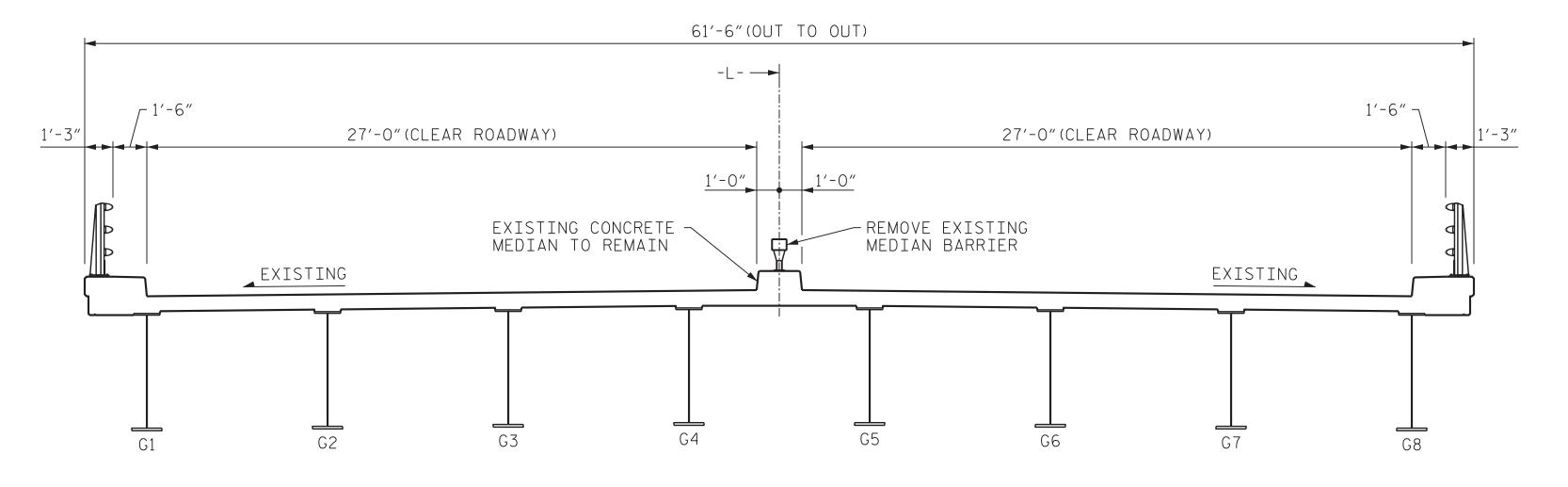
Jason R Doughty

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SEAL 032967

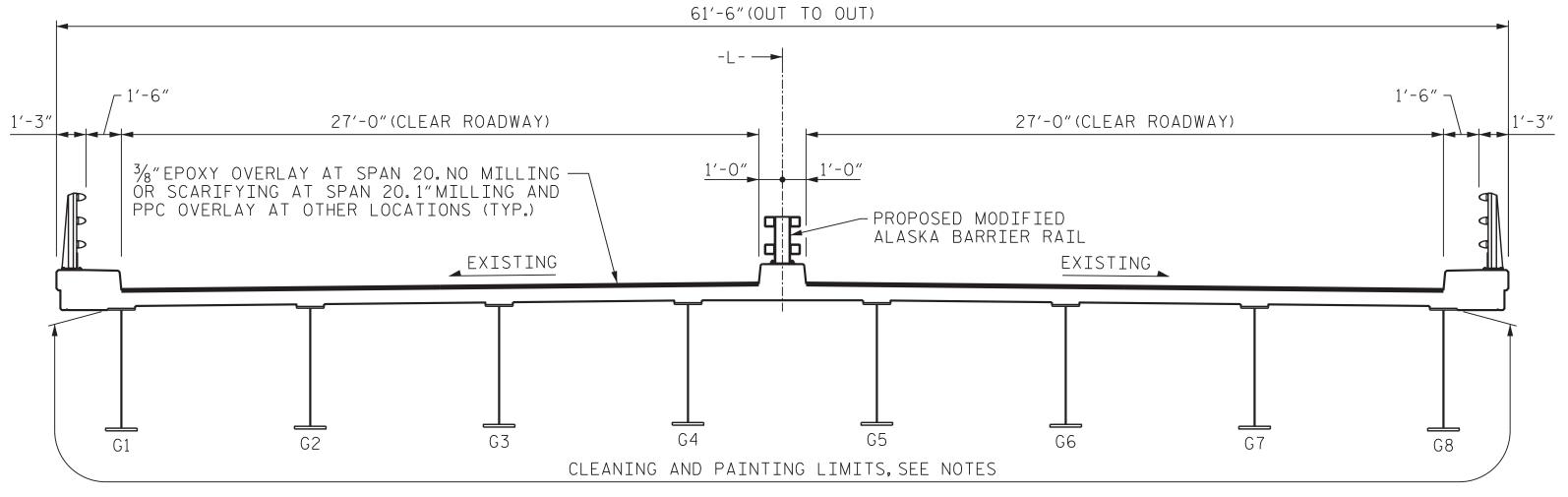
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			66

DESIGNED BY: J.BORUTA DATE: SEPT 2017
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OF RECORD: J.DOUGHTY DATE: DEC 2017



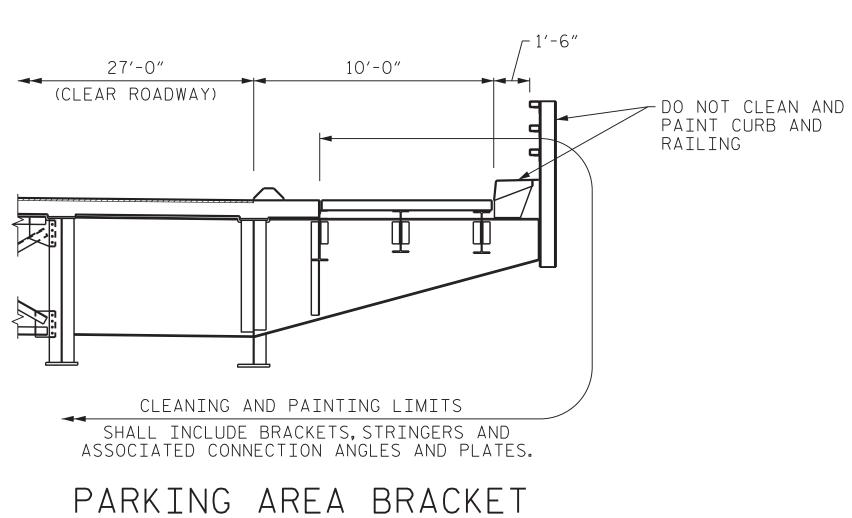
TYPICAL SECTION - EXISTING

(WEST APPROACH SPANS 12 THROUGH 16) (EAST APPROACH SPANS 20 THROUGH 26) SPANS 12 THROUGH 16, 20 AND 21 SHOWN, SPANS 22 TO 26 SIMILAR EXCEPT WITH A LONGITUDINAL JOINT, VARYING DECK WIDTHS AND ADDITIONAL GIRDER LINES.



TYPICAL SECTION - FINAL

(WEST APPROACH SPANS 12 THROUGH 16) (EAST APPROACH SPANS 20 THROUGH 26) SPANS 12 THROUGH 16,20 AND 21 SHOWN, SPANS 22 TO 26 SIMILAR EXCEPT WITH A LONGITUDINAL JOINT, VARYING DECK WIDTHS AND ADDITIONAL GIRDER LINES.



MODJESKI and MASTERS Experience great bridges.

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NOTES:

FOR "DETAIL FOR MILLING AND PPC OVERLAY", SEE SHEET 1 OF 6.

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

CLEANING AND PAINTING LIMITS FOR STEEL GIRDER APPROACH SPANS SHALL INCLUDE ALL GIRDERS, CROSSFRAMES, DIAPHRAGMS, CONNECTION PLATES, BEARINGS AND EXTERIOR SURFACES OF TRANSVERSE STEEL BOX GIRDERS AT BENTS 24 AND 25.

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

SHEET 5 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

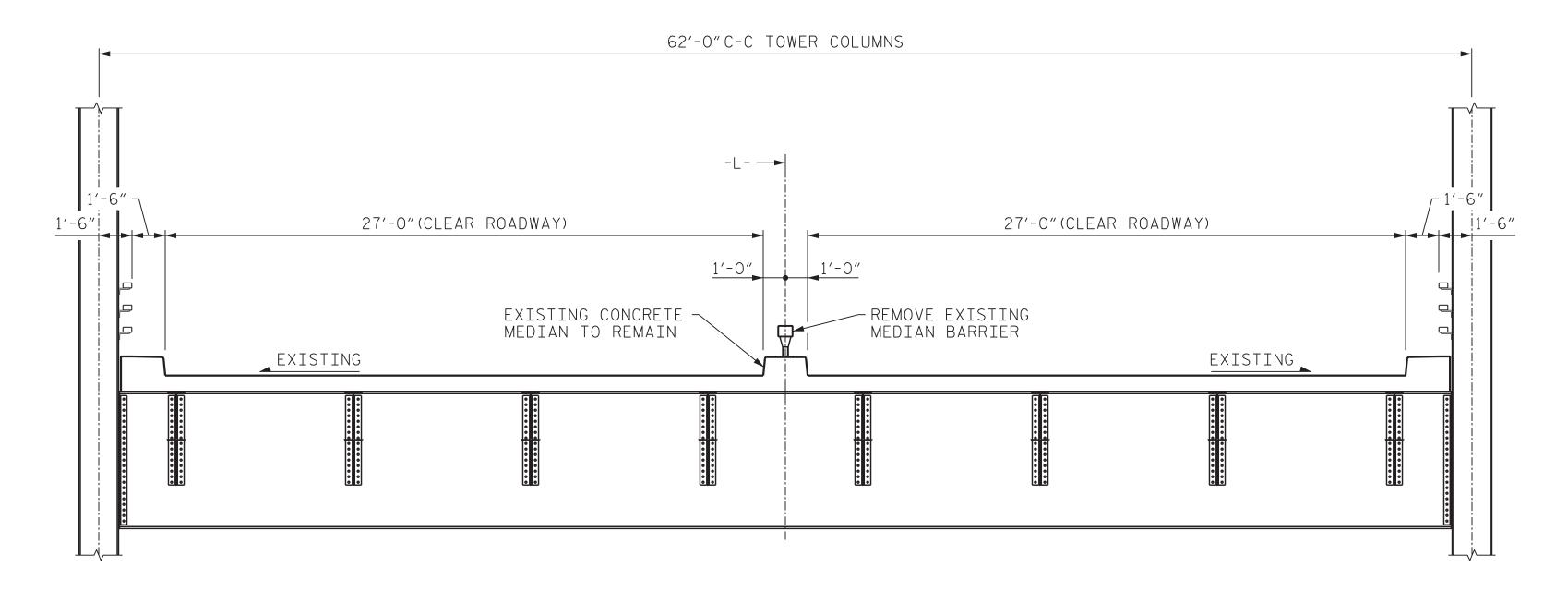
TYPICAL SECTION AND OVERLAY DETAILS

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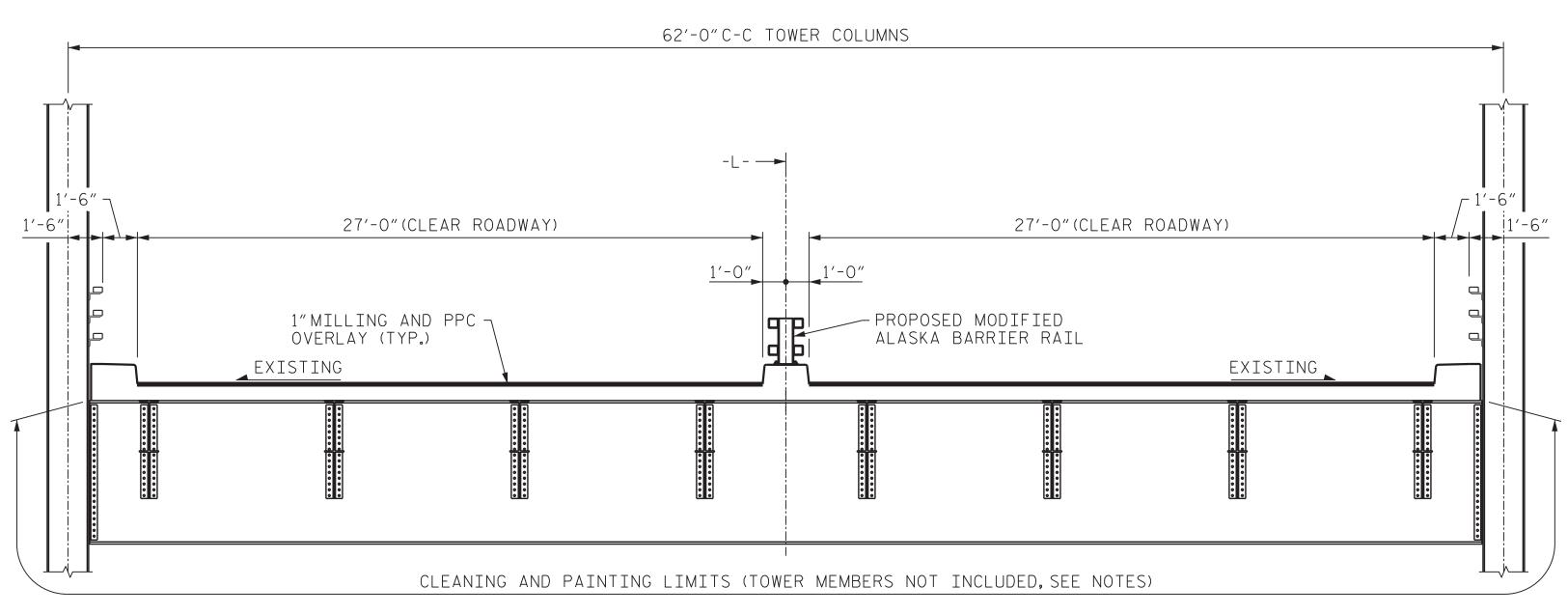
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Y:	DATE:	NO.	BY:	DATE:	S-10
		8			TOTAL SHEETS
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__ DATE : <u>SEPT 201</u>7 __ DATE : <u>SEPT 201</u>7 __ DATE : <u>DEC 2017</u> DESIGNED BY: J.BORUTA K.WHITE CHECKED BY: B.LOFLIN DESIGN ENGINEER
OF RECORD: J. DOUGHTY _ DATE : <u>DEC 2017</u>



TYPICAL SECTION - EXISTING

WEST TOWER SPAN SHOWN, EAST TOWER SPAN SIMILAR



TYPICAL SECTION - FINAL

WEST TOWER SPAN SHOWN, EAST TOWER SPAN SIMILAR



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NOTE:

FOR "DETAIL FOR MILLING AND PPC OVERLAY", SEE SHEET 1 OF 6.

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

CLEANING AND PAINTING LIMITS INCLUDE FLOORBEAMS, STRINGERS, DIAPHRAGMS, BRACKETS, JOINT SUPPORTS AND CONNECTIONS ASSOCIATED WITH THESE ITEMS IN THE TOWER SPANS.

PROJECT NO. 15BPR.15

NEW HANOVER COUNTY

STATION:_

SHEET 6 OF 6

DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION AND OVERLAY DETAILS

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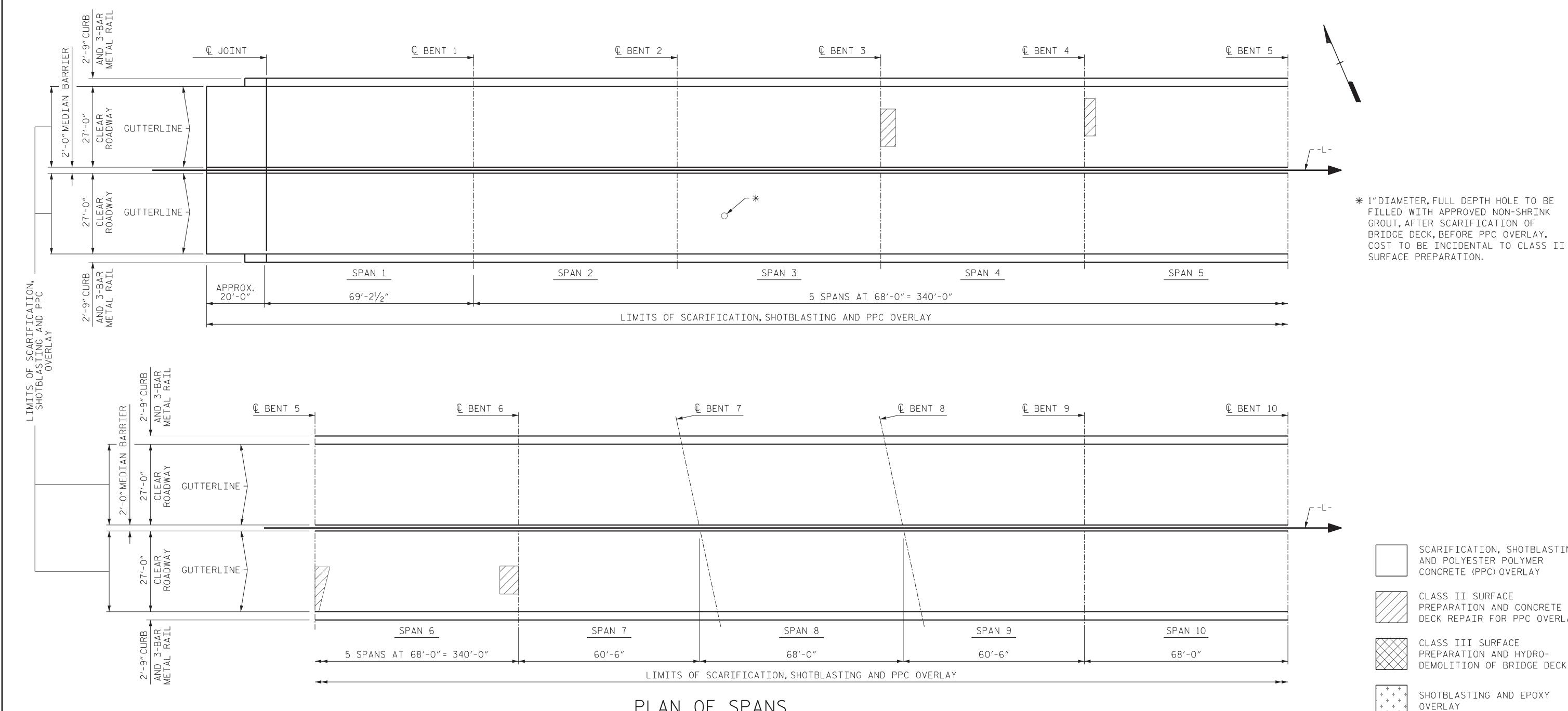
Jason R Boughty

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DESIGNED BY: J.BORUTA DATE: SEPT 2017
DRAWN BY: K.WHITE DATE: SEPT 2017
CHECKED BY: B.LOFLIN DATE: DEC 2017
DESIGN ENGINEER
OF RECORD: J.DOUGHTY DATE: DEC 2017



NOTES:

FOR JOINT INSTALLATION SEQUENCE, SEE "JOINT REPAIR DETAILS" SHEETS.

FOR SCARIFYING BRIDGE DECK, SHOTBLASTING BRIDGE DECK, CLASS II SURFACE PREPARATION, AND CLASS III SURFACE PREPARATION, SEE OVERLAY SURFACE PREPARATION FOR POLYESTER POLYMER CONCRETE SPECIAL PROVISION.

FOR CONCRETE DECK REPAIR FOR PPC OVERLAY, PPC MATERIALS, AND PLACING AND FINISHING PPC OVERLAY SEE POLYESTER POLYMER CONCRETE BRIDGE DECK OVERLAY SPECIAL PROVISION.

ALL DIMENSIONS SHOWN ARE HORIZONTAL.

DECK WITHIN 1'-0" OF THE FINGER JOINT PLATES AND SCUPPERS SHALL BE CHIPPED WITH HAND TOOLS. CARE SHALL BE TAKEN TO NOT DAMAGE FINGER JOINT PLATES OR SCUPPERS.

FOR PARKING AREA GRID DECK REPLACEMENT, SEE "GRID DECK REPLACEMENT, SHEET 2 OF 3."

368	DESIGNED BY:	J. BORUTA	DATE : <u>OCT 20</u>	17
23-	DRAWN BY:	K.WHITE	DATE : <u>OCT 20</u>	<u>17</u>
0	CHECKED BY:	B.LOFLIN	DATE : <u>DEC 20</u>	<u>17</u>
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PLAN OF SPANS

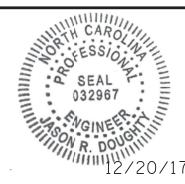
AS-BUILT REPAIR QUA	ANTITY T	ABLE
	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	17,655 S	SY
HYDRO-DEMOLITION	13.5 S	SY
CLASS II SURFACE PREPARATION	10 S	SY
CLASS III SURFACE PREPARATION	13.5 S	SY
CONCRETE DECK REPAIR FOR PPC OVERLAY	10 S	SY
SHOTBLASTING BRIDGE DECK	18,574 S	SY
PPC MATERIALS	495 C	CY
PLACING AND FINISHING PPC OVERLAY	17,655 S	SY
CONCRETE DECK REPAIR FOR EPOXY OVERLAY	52 S	SF
EPOXY OVERLAY	7,390 S	SF
GROOVING BRIDGE FLOORS	149,300 S	SF

QUANTITIES IN TABLE REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION, CLASS III SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR PPC OVERLAY AFTER REMOVAL UNSOUND CONCRETE (MIN. 2"CLEAR TO SAW CUT). SEE OVERLAY SURFACE PREPARATION FOR POLYESTER POLYMER CONCRETE SPECIAL PROVISION AND EPOXY OVERLAY SPECIAL PROVISION.



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SURFACE PREPARATION AND PPC OVERLAY

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

SCARIFICATION, SHOTBLASTING

PREPARATION AND CONCRETE DECK REPAIR FOR PPC OVERLAY

CLASS II SURFACE

CLASS III SURFACE

OVERLAY

NEW HANOVER

STATION:__

SHEET 1 OF 5

PROJECT NO. 15BPR.15

PREPARATION AND HYDRO-

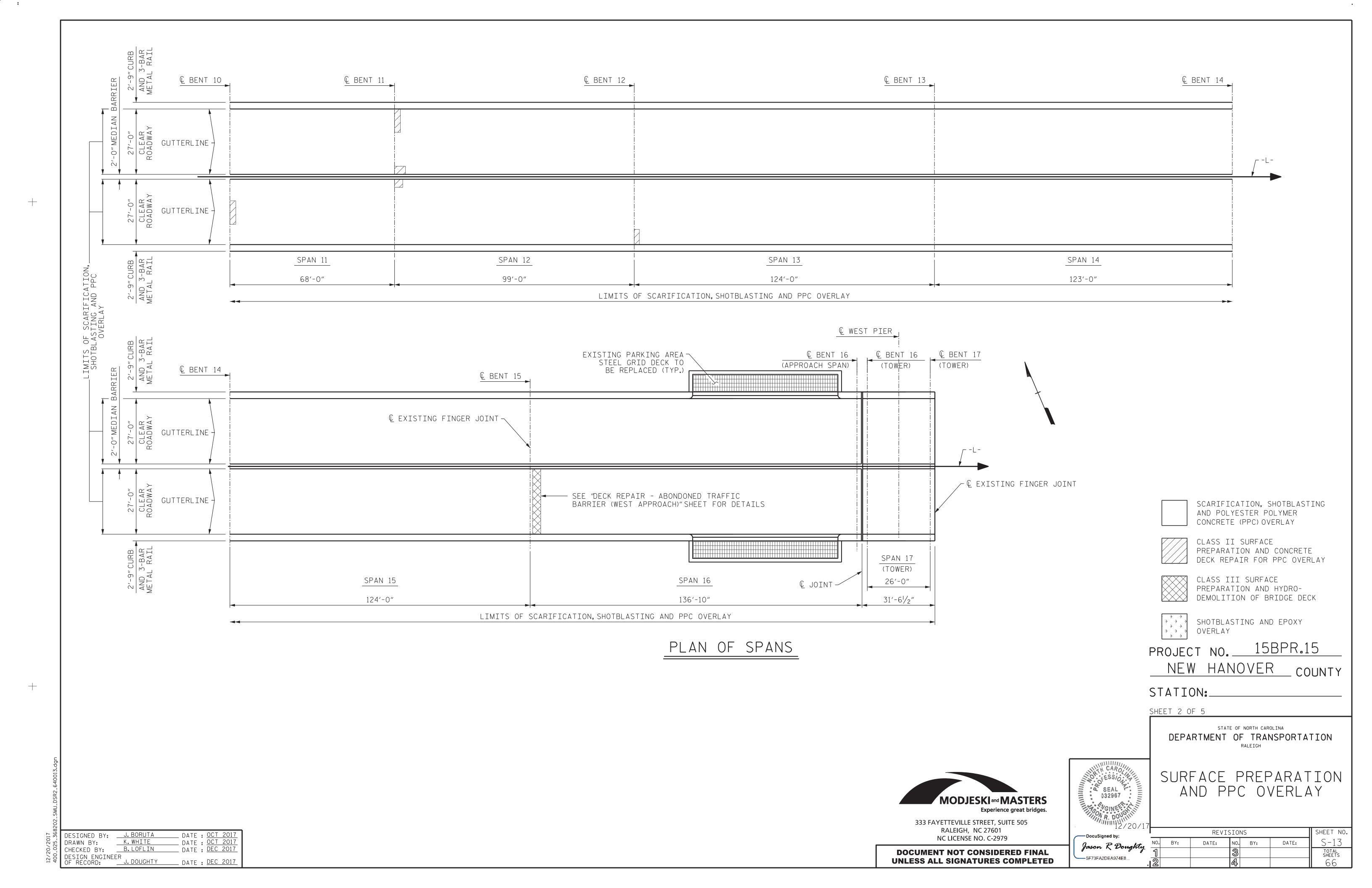
SHOTBLASTING AND EPOXY

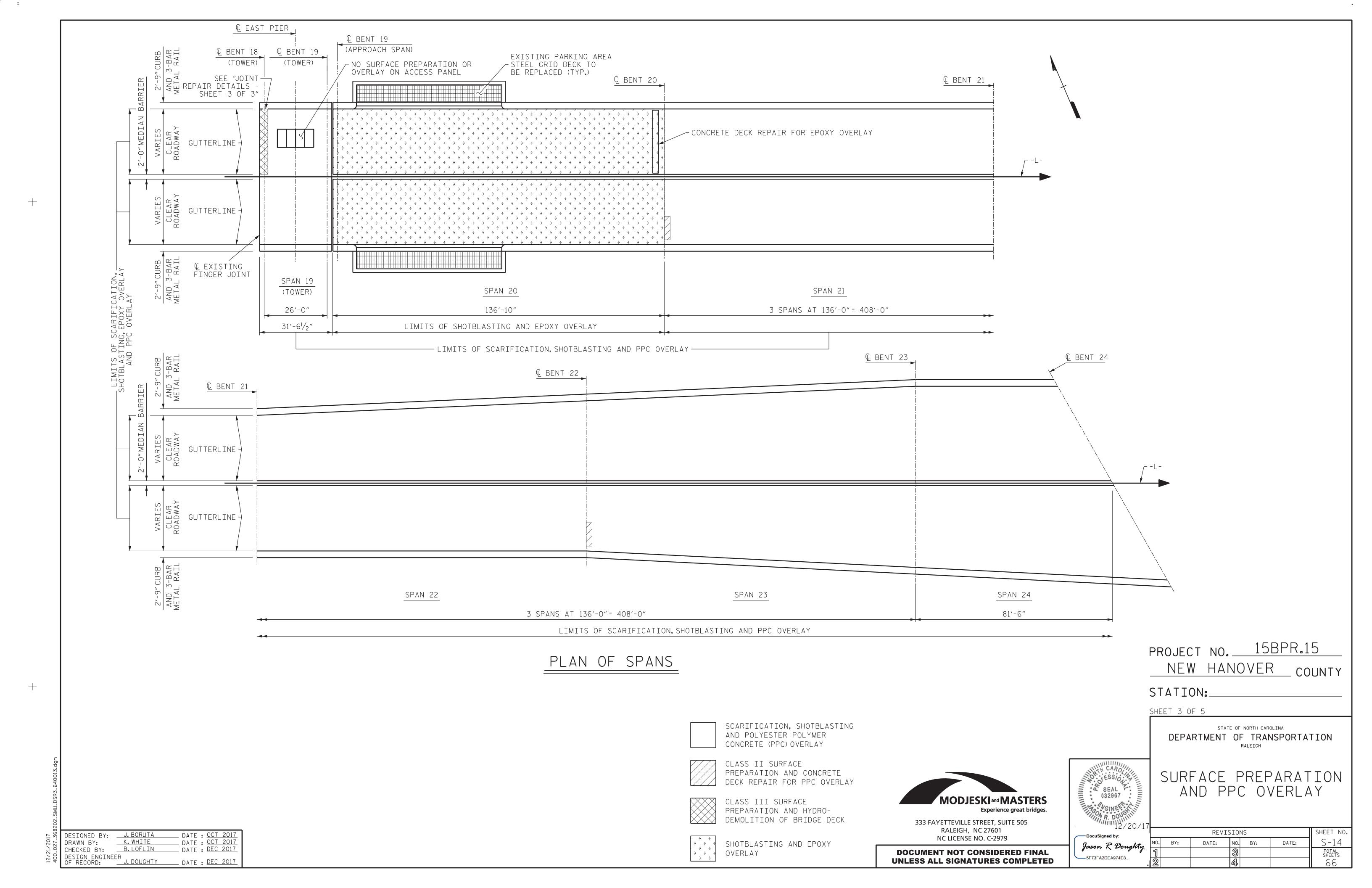
DEMOLITION OF BRIDGE DECK

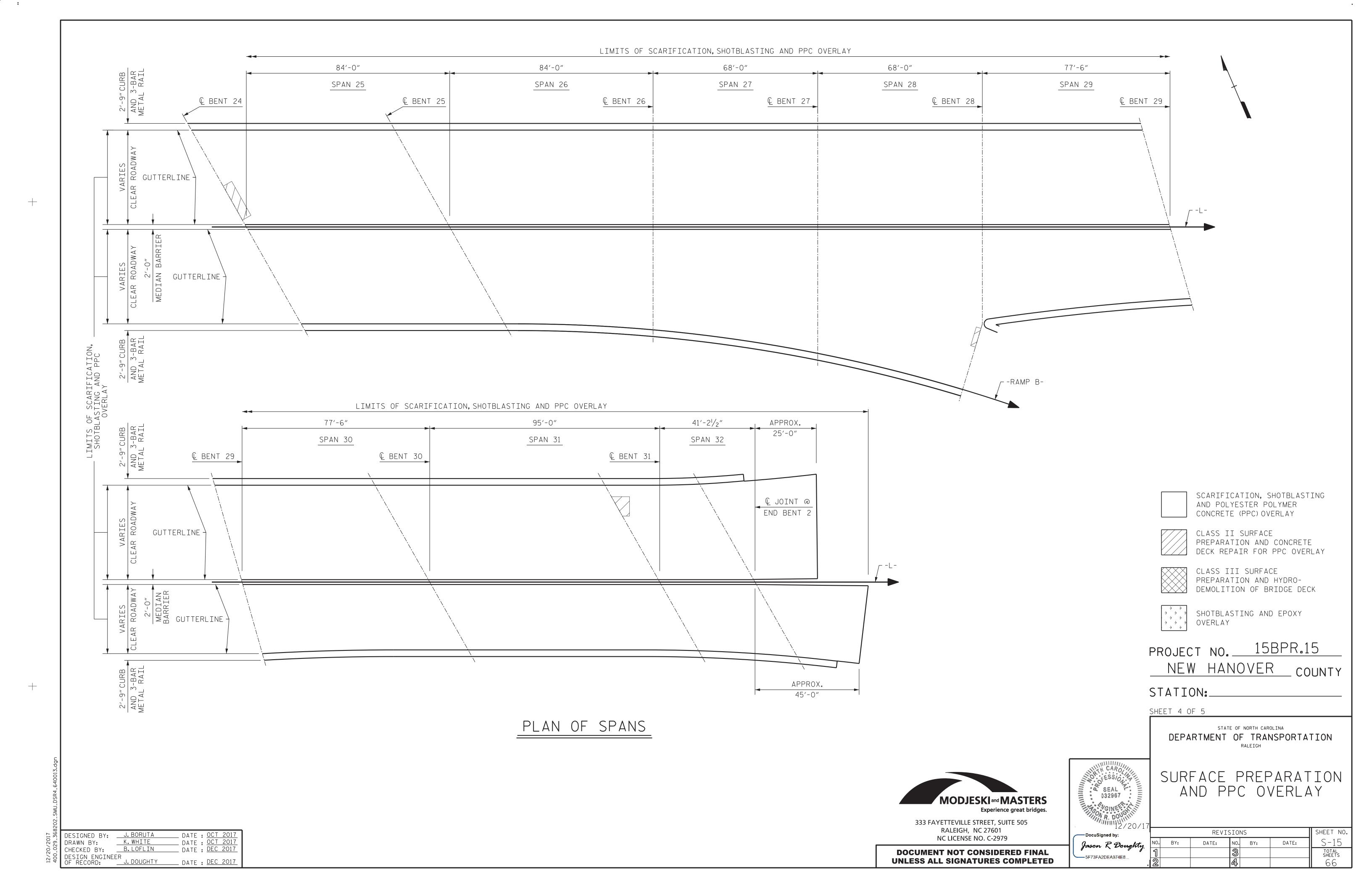
_ COUNTY

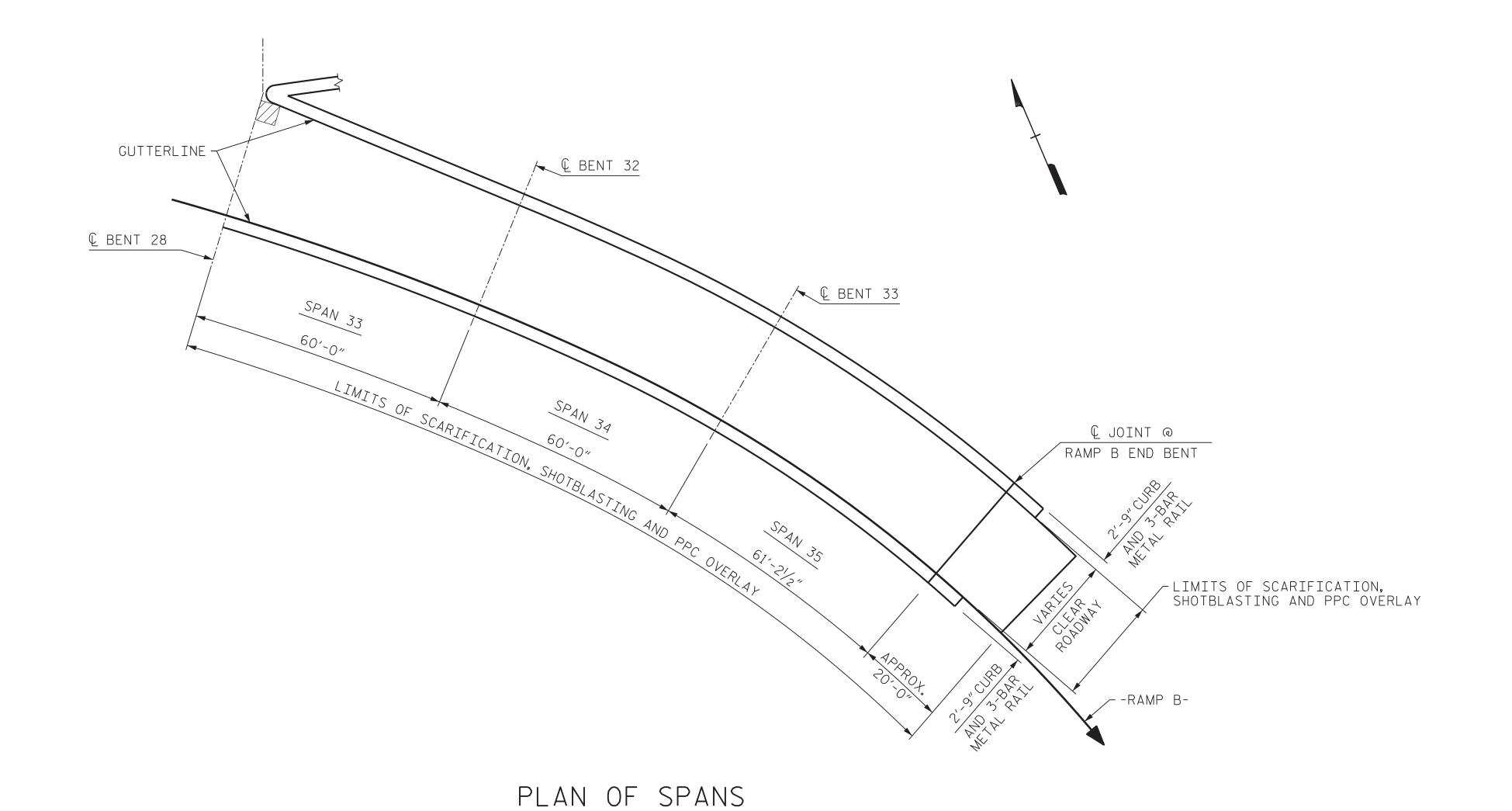
SHEET NO. REVISIONS NO. BY: DATE: DATE: Jason R Doughty TOTAL SHEETS ----5F73FA2DEA974E8..

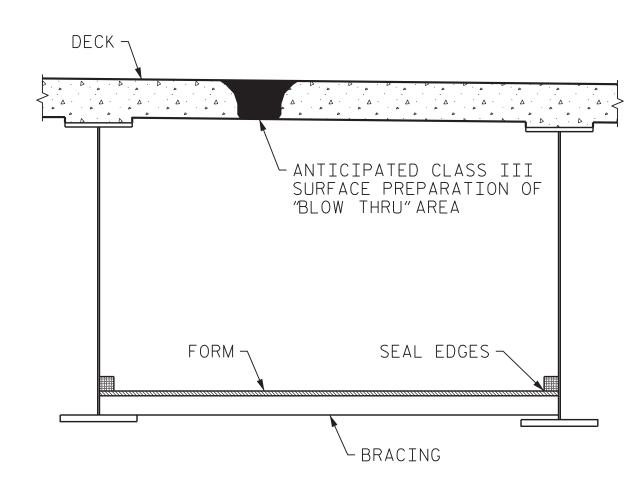
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TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK

A METHOD TO CAPTURE WATER AND DEBRIS FROM BLOW THRU DURING HYDRO-DEMOLITION SHALL BE INSTALLED IN AREAS INDICATED AS CLASS III SURFACE PREPERATION.

SUBMIT DETAILS OF PROPOSED FORMWORK FOR APPROVAL PRIOR TO BEGINNING WORK.

COST FOR INSTALLING AND REMOVING FORMWORK SHALL BE INCIDENTAL TO THE PRICE PER SQ. YARD OF HYDRO-DEMOLITION.

> SCARIFICATION, SHOTBLASTING AND POLYESTER POLYMER CONCRETE (PPC) OVERLAY CLASS II SURFACE PREPARATION AND CONCRETE

CLASS III SURFACE PREPARATION AND HYDRO-DEMOLITION OF BRIDGE DECK

DECK REPAIR FOR PPC OVERLAY

SHOTBLASTING AND EPOXY OVERLAY

PROJECT NO. 15BPR.15 NEW HANOVER COUNTY

STATION:_

SHEET 5 OF 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

SURFACE PREPARATION AND PPC OVERLAY

SHEET NO.

S-16

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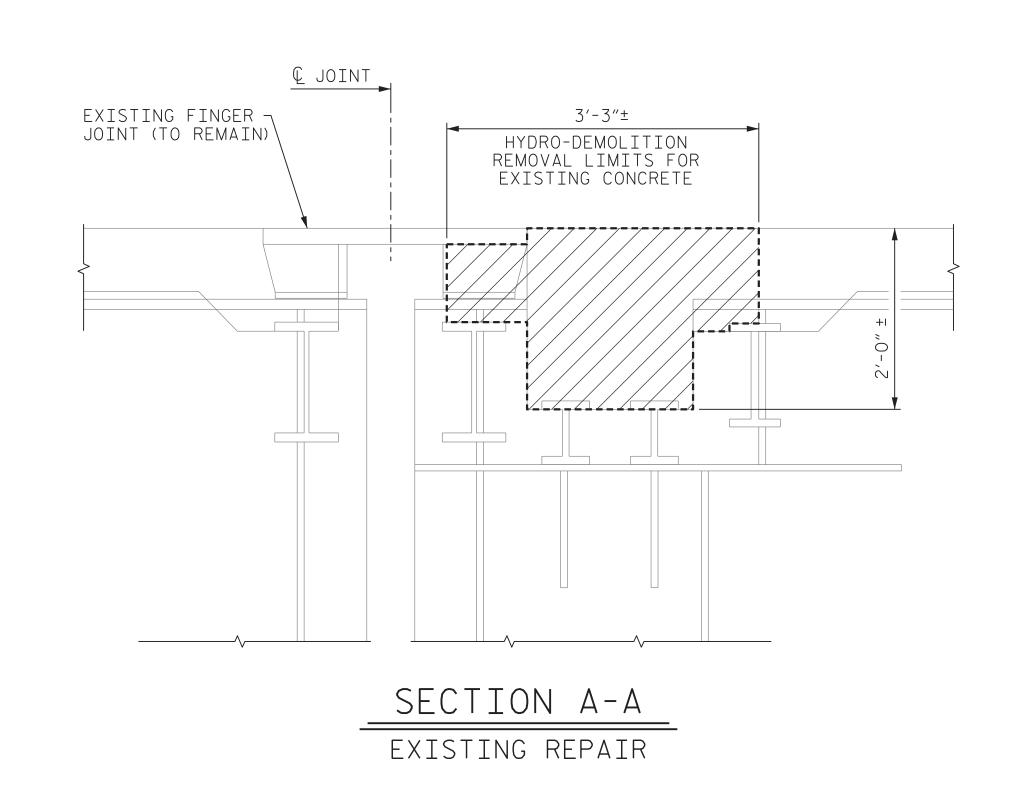
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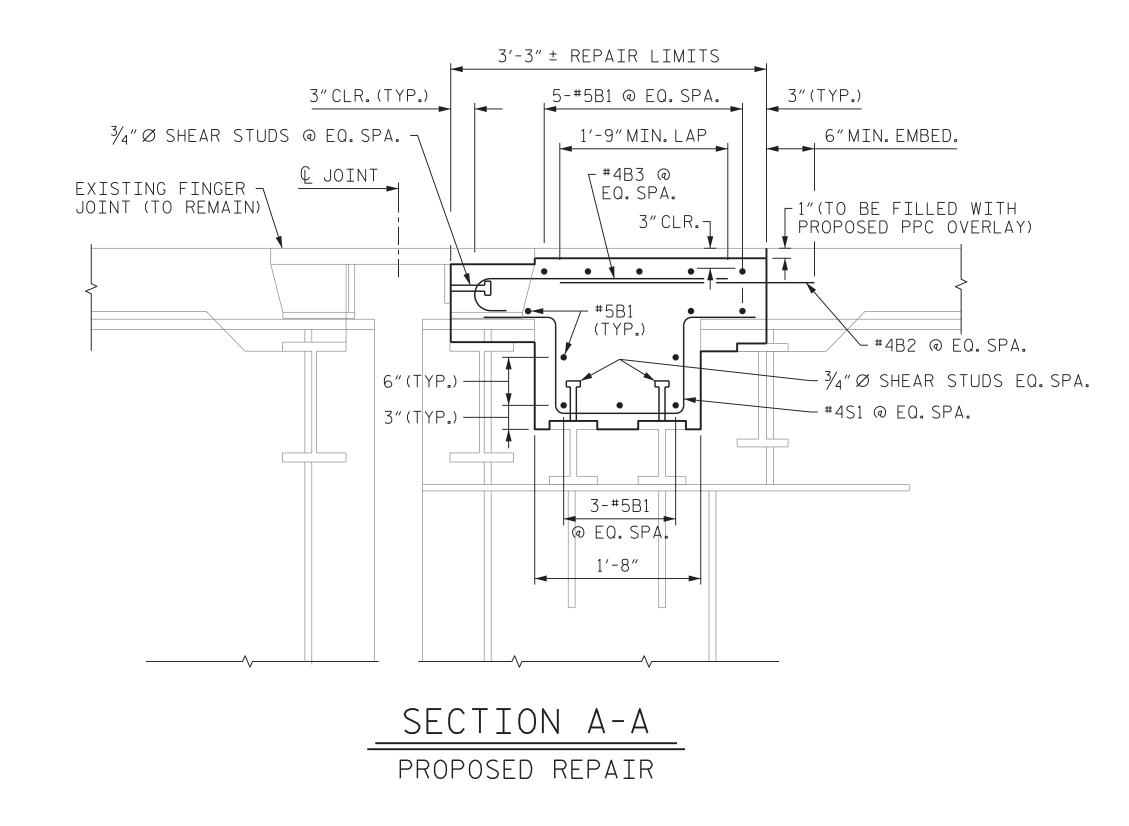
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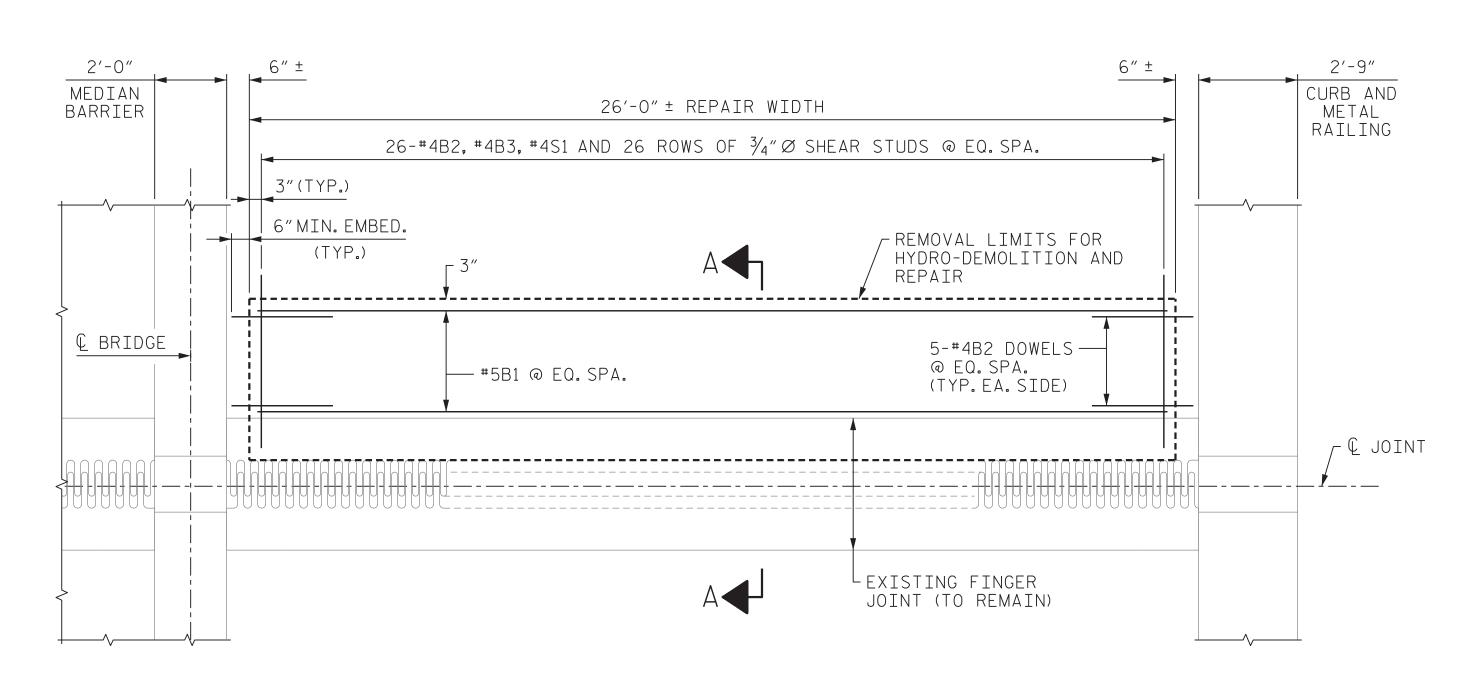
DESIGNED BY: J.BORUTA
DRAWN BY: K.WHITE DESIGN ENGINEER
OF RECORD: J. DOUGHTY _ DATE : <u>DEC 2017</u>

DATE : OCT 2017
DATE : OCT 2017
DATE : DEC 2017 CHECKED BY: B.LOFLIN

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PLAN OF TRAFFIC BARRIER REPAIR LOCATION

NOTES:

FOR CLASS III SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

SHIFT BARS AND STUDS AS REQUIRED TO PROVIDE 2" CLEAR TO EXISTING FINGER PLATE SUPPORTS.

#4B2 DOWELS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. LEVEL 1 FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE DOWEL IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

THE EXISTING REINFORCEMENT IN THIS AREA IS UNKNOWN. THE ENGINEER MAY ADJUST THE PROPOSED REINFORCEMENT AS NECESSARY TO ACCOMMODATE THE EXISTING REINFORCEMENT.

BILL OF MATERIAL WEST APPROACH BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT #5 | STR | 25′-6″ 2'-9" #4 | STR | 36 66 В3 56 26 #4 3′-3″ S1 | 26 | #4 | 2 | 4'-10" 84 EPOXY-COATED REINFORCING STEEL 552 LBS.

CLASS AA CONCRETE 4 C.Y. $78-\frac{3}{4}$ \varnothing \times 5" SHEAR STUDS 50 LBS.

HK. 1
6" 2'-9"

3" 1'-4" 9"
2)

ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. ____15BPR.15 ____NEW HANOVER COUNTY STATION: _____

DEPARTMENT OF TRANSPORTATION
RALEIGH

SHEET NO.

TOTAL SHEETS

DECK REPAIR
ABANDONED TRAFFIC
BARRIER
(WEST APPROACH)

BARRIER
(WEST APPROACH)

12/20/17

REVISIONS

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No. BY: DATE: No. BY: DATE:

3

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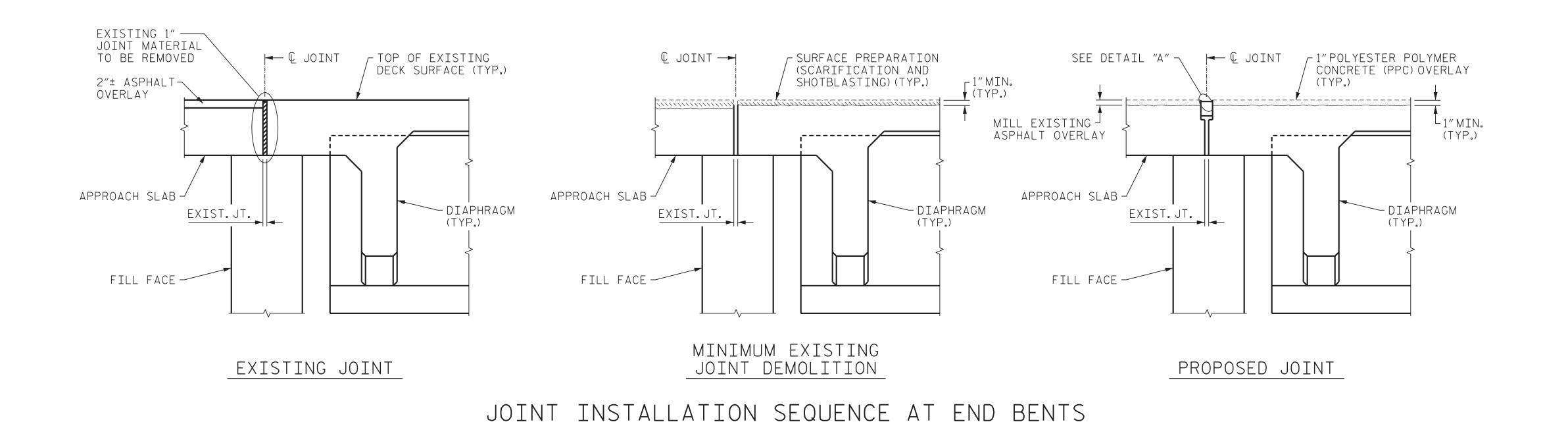
DESIGNED BY: J.BORUTA DATE: DEC 2017
DRAWN BY: K.WHITE DATE: DEC 2017
CHECKED BY: B.LOFLIN DATE: DEC 2017
DESIGN ENGINEER
OF RECORD: J.DOUGHTY DATE: DEC 2017

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ITE DATE: DEC 2017

FLIN DATE: DEC 2017



Q JOINT → © JOINT → Q JOINT → 1"MIN.¬ (TYP.) EXISTING JOINT MATERIAL TO BE - TOP OF EXISTING -SURFACE PREPARATION 1″MIN.¬ SEE DETAIL "A" -1"POLYESTER POLYMER (SCARIFICATION AND DECK SURFACE (TYP.) CONCRETE (PPC) OVERLAY (TYP.) SHOTBLASTING) (TYP.) REMOVED (TYP.) EXIST. JT. EXIST.JT. EXIST.JT. - DIAPHRAGM - DIAPHRAGM - DIAPHRAGM (TYP.) (TYP.) (TYP.) MINIMUM EXISTING EXISTING JOINT JOINT DEMOLITION PROPOSED JOINT

JOINT INSTALLATION SEQUENCE AT BENTS WITHOUT DECK REPAIRS

CONCRETE GIRDER LOCATION SHOWN, STEEL GIRDER LOCATION SIMILAR



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

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

> JOINT REPAIR DETAILS

Jason R Doughty 5F73FA2DEA974E8..

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NOTES:

TIGHT.

SAWING THE JOINT.

THE INSTALLED FOAM JOINT SEAL SHALL BE WATER

IF CONCRETE REPAIRS ARE REQUIRED AT THE JOINT.

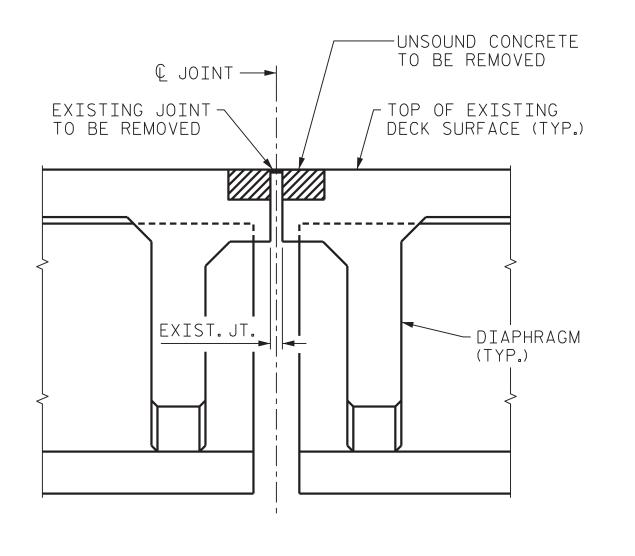
THE CONTRACTOR WILL NOT BE PERMITTED TO FORM

THE JOINT FOR THE FOAM JOINT SEAL IN LIEU OF

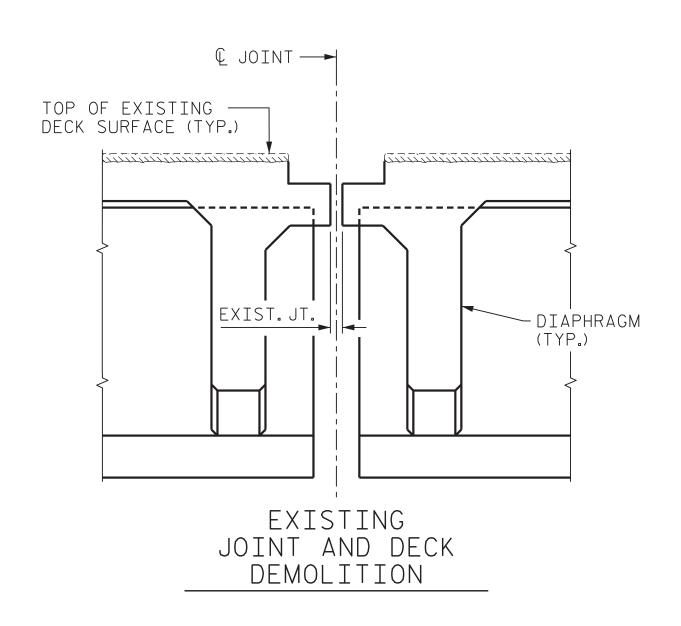
REVISIONS SHEET NO. NO. BY: DATE: TOTAL SHEETS

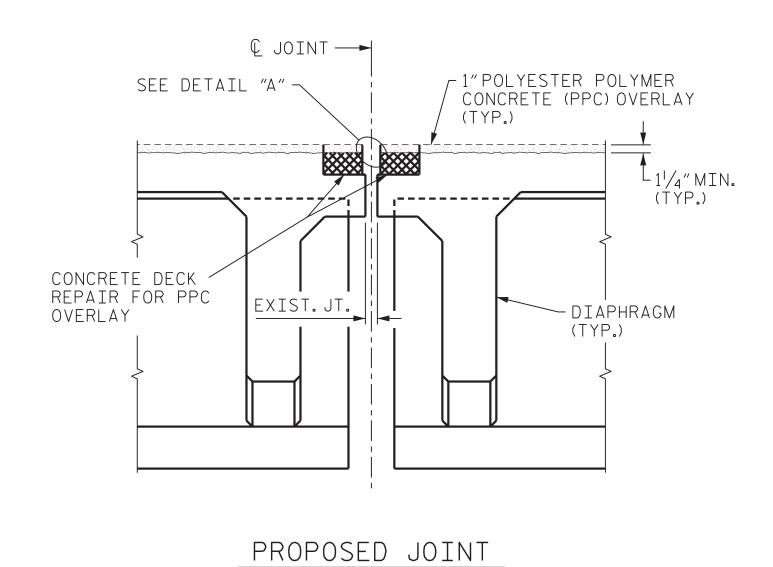
DESIGNED BY: B.LOFLIN DRAWN BY: K.WHITE _ DATE : <u>NOV 2017</u> DATE : NOV 2017
DATE : DEC 2017 CHECKED BY: J. BORUTA DESIGN ENGINEER
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EXISTING JOINT



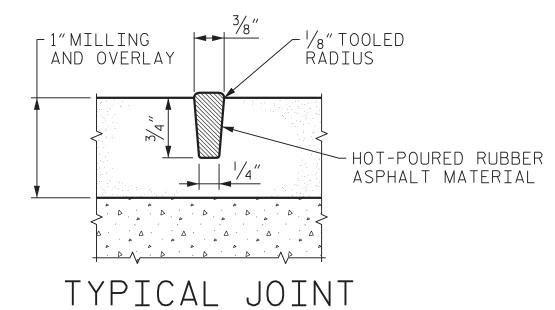


JOINT INSTALLATION SEQUENCE AT JOINT LOCATIONS WITH DECK REPAIRS

CONCRETE GIRDER LOCATION SHOWN, STEEL GIRDER LOCATION SIMILAR

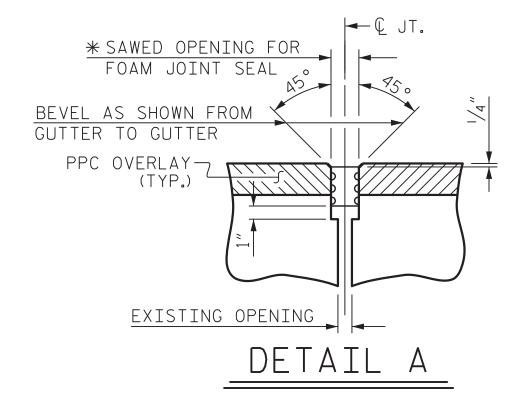
BENT NO.	SAWED JOINT OPENING @ 70°F [IN]	UNCOMPRESSED SEAL WIDTH [IN]
EB1, 2-11, 16, 19, 22-33, EB2, RAMP B EB	1.75	2.25
1, 12, 20, 21	2.5	3

SAWED JOINT OPENINGS



ON CONTINUOUS SPANS

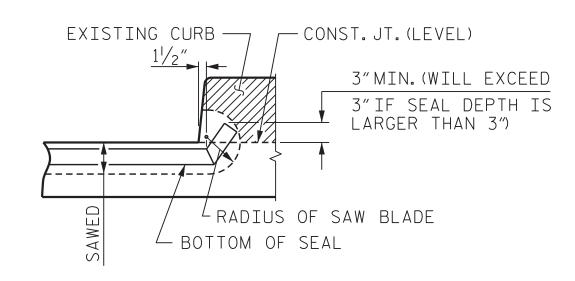
(DUMMY JOINT AT BENTS 13 AND 14) SAW AFTER PPC HAS HARDENED AND PRIOR TO LIVE LOAD ON THE LANES OVERLAID UNDER CLOSURE



* SAWED OPENING SHALL BE THE GREATER OF THE OPENING SHOWN IN THE TABLE OR THE EXISTING JOINT OPENING PLUS $\frac{1}{2}$ ".

UNCOMPRESSED SEAL WIDTH SHALL BE 1/2" LARGER THAN THE SAWED JOINT OPENING.

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



SECTION AT CONCRETE CURB

MEDIAN CURB SHOWN, EXTERIOR CURB SIMILAR



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SHEET 2 OF 3 STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

JOINT REPAIR DETAILS

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Jason R Doughty	NO.	В
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R Doughty	NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
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DESIGNED BY: B.LOFLIN
DRAWN BY: C.CORMAN
CHECKED BY: J.BORUTA _ DATE : <u>OCT.2017</u> DATE: NOV. 2017
DATE: DEC 2017 DESIGN ENGINEER OF RECORD: <u>J.DOUGHTY</u> _ DATE : <u>DEC 2017</u>

NC LICENSE NO. C-2979

NOTES:

THE PURPOSE OF THIS REPAIR IS TO VERTICALLY ALIGN THE ADJACENT FINGER PLATES IN THE WESTBOUND LANES AT THE EAST TOWER OF THE LIFT SPAN.

EXCEPT FOR HYDRO-DEMOLITION, REPAIR WORK SHOWN ON THIS SHEET INVOLVED WITH REMOVAL AND PLACEMENT OF CONCRETE SHALL BE PAID FOR UNDER THE CLASS III SURFACE PREPARATION PAY ITEM. FOR CLASS III SURFACE PREPARATION, SEE SPECIAL PROVISIONS.

HYDRO-DEMOLITION SHALL BE PAID FOR UNDER THE HYDRO-DEMOLITION PAY ITEM. FOR HYDRO-DEMOLITION, SEE SPECIAL PROVISIONS.

REPAIR WORK SHOWN ON THIS SHEET INVOLVED WITH RESETTING AND SHIMMING THE FINGER PLATE SHALL BE PAID FOR UNDER THE STRUCTURAL STEEL FOR REPAIRS PAY ITEM. FOR STRUCTURAL STEEL FOR REPAIRS, SEE SPECIAL PROVISIONS.

FINGER PLATE ON THE TOWER SPAN SIDE OF JOINT SHALL BE RAISED TO MATCH THE ELEVATION OF THE FINGER PLATE ON THE LIFT SPAN WHEN IN THE FULLY SEATED POSITION.

IT IS ESTIMATED THAT THE FINGER PLATE ON THE TOWER SPAN SIDE WILL NEED TO BE RAISED $1\frac{3}{4}$ "AT THE OUTSIDE CURB AND $\frac{3}{4}$ "AT THE INSIDE CURB.

TOTAL NUMBER OF SHIM LOCATIONS: 26

SHIFT REINFORCEMENT AS REQUIRED TO PROVIDE 2"CLEAR TO EXISTING STRAPS.

THE EXISTING REINFORCEMENT IN THIS AREA IS UNKNOWN. THE ENGINEER MAY ADJUST THE PROPOSED REINFORCEMENT AS NECESSARY TO ACCOMMODATE THE EXISTING REINFORCEMENT.

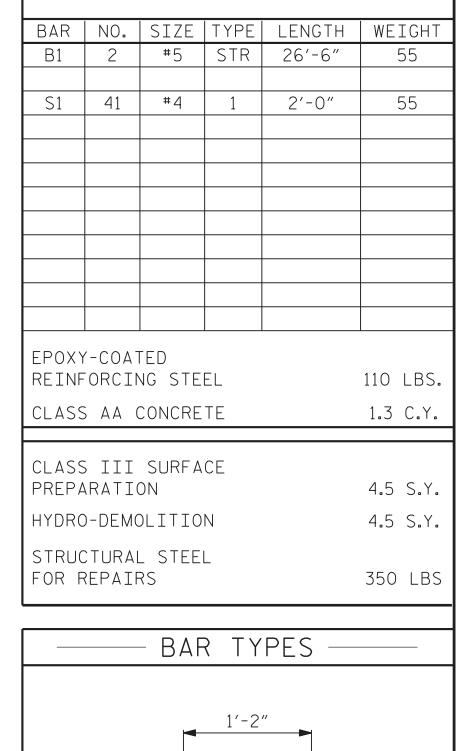
CONTRACTOR SHALL USE AS FEW SHIMS AS POSSIBLE AT EACH SHIM LOCATION.

CONTRACTOR SHALL VERIFY SHIM PLATE PLAN DIMENSIONS PRIOR TO FABRICATION.

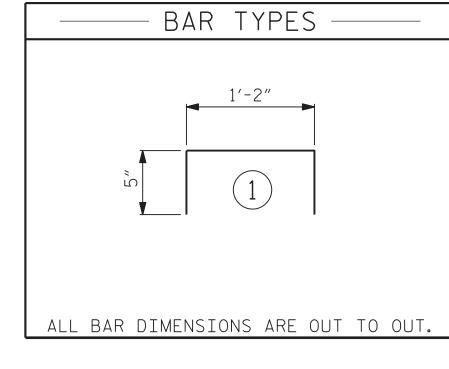
CLEANING AND PAINTING IN THE REPAIR AREA SHOWN SHALL NOT BE PERFORMED UNTIL AFTER THE FINGER PLATE IS REPOSITIONED AND NEW BOLTS AT SHIM PACKS ARE TIGHTENED.

CONTRACTOR SHALL USE CAUTION DURING CONCRETE REMOVAL OPERATIONS TO PREVENT DAMAGE TO EXISTING FLOORBEAM AND OTHER METALWORK TO REMAIN.

* IF AN EXISTING STRAP IS DAMAGED OR BROKEN DURING CONCRETE REMOVAL. REMOVE THE EXISTING STRAP AND REPLACE IT WITH (2)- $\frac{3}{4}$ " \@ X 5" SHEAR STUD ANCHORS AT THE SAME ELEVATION AS THE REPLACED STRAP. STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THROUGH 1020 OR APPROVED EQUAL.



BILL OF MATERIAL



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

SHEET 3 OF 3

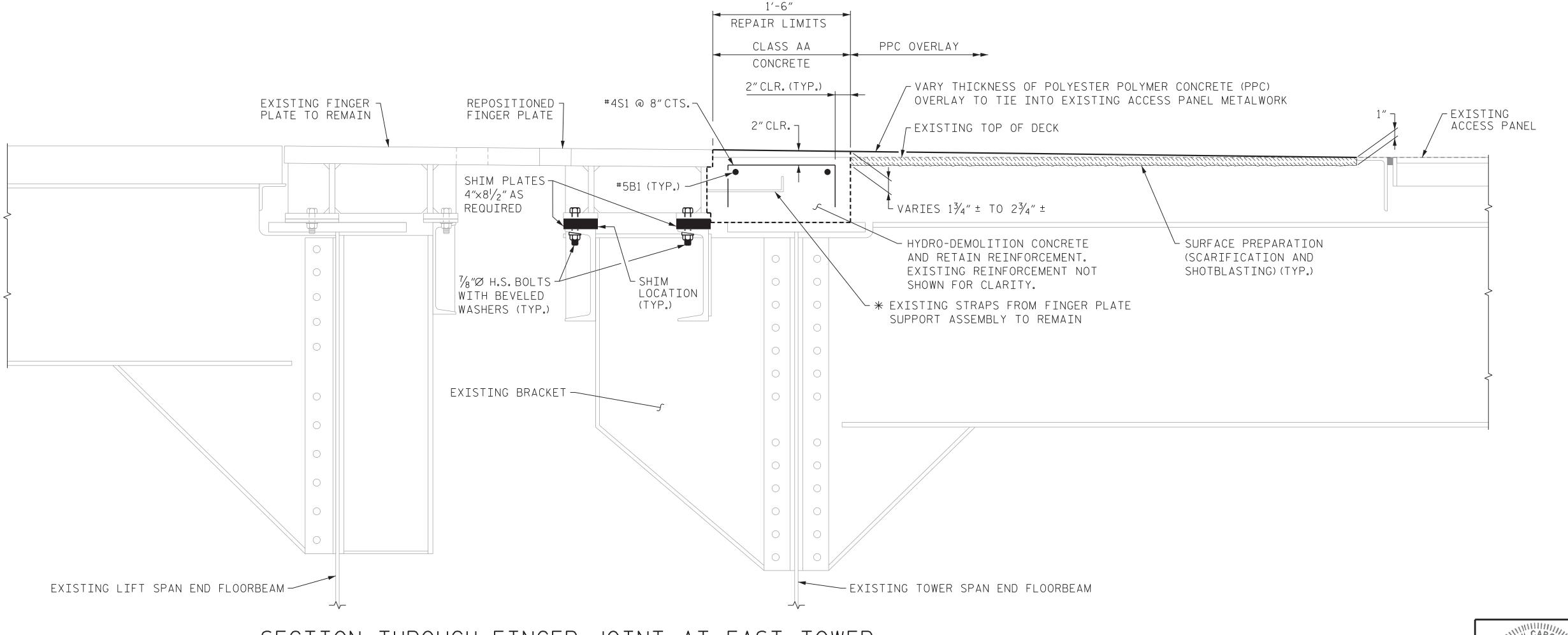
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

> JOINT REPAIR DETAILS

REVISIONS SHEET NO. S-20 NO. BY: DATE: DATE: Jason R Doughty TOTAL SHEETS



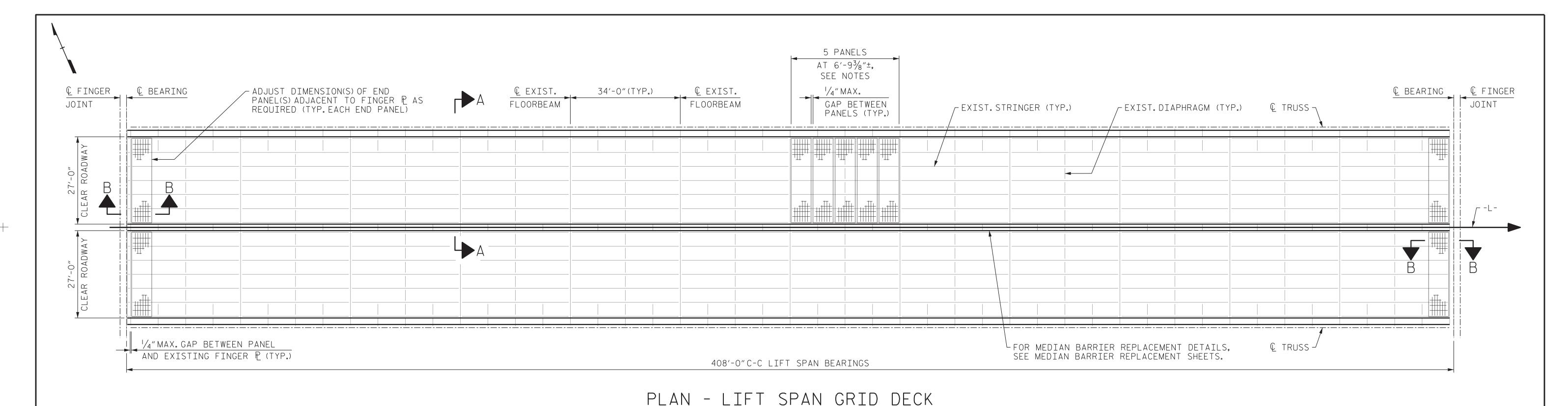
SECTION THROUGH FINGER JOINT AT EAST TOWER

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DRAWN BY:	K. WHITE	DATE	:	DEC	201
CHECKED BY:	J. DOUGHTY	DATE	:	DEC	201
DESIGN ENGINEE OF RECORD:	IR J. DOUGHTY	DATE		DEC	201



NOTES:

FOR REPLACEMENT OF STEEL GRID DECK, SEE SPECIAL PROVISIONS.

CONTRACTOR MAY ADJUST THE DIMENSIONS AND NUMBER OF PANELS BETWEEN FLOORBEAMS. GRID DECK PANEL WIDTHS SHALL NOT BE LESS THAN 5'-O"OR GREATER THAN 8'-8". NEW GRID DECK SHOP DRAWINGS SHALL INDICATE THAT PROPOSED PANEL DIMENSIONS HAVE BEEN FIELD VERIFIED AND ARE CONSISTENT WITH EXISTING FLOOR SYSTEM DIMENSIONS.

EXISTING FINGER JOINTS AT ENDS OF LIFT SPAN SHALL REMAIN AND SHALL NOT BE ALTERED OR DAMAGED DURING GRID DECK REPLACEMENT OPERATIONS.

CONTRACTOR SHALL SURVEY TOP OF EXISTING GRID DECK ELEVATIONS AT EACH OF THE FOUR CURB LINES TAKEN AT THE ENDS OF THE LIFT SPAN AND AT EACH FLOORBEAM. PRE-CONSTRUCTION SURVEY ELEVATIONS SHALL BE PROVIDED TO THE ENGINEER PRIOR TO COMMENCING GRID DECK REPLACEMENT. SURVEYING SHALL OCCUR WHEN NO LIVE LOAD IS PRESENT ON THE BRIDGE.

UPON COMPLETION OF THE GRID DECK REPLACEMENT, CONTRACTOR SHALL RE-SURVEY THE SAME POINTS AND PROVIDE THE SURVEYED AS-BUILT TOP OF GRID DECK ELEVATIONS TO THE ENGINEER. SURVEYING SHALL OCCUR WHEN NO LIVE LOAD IS PRESENT ON THE BRIDGE.

DIMENSIONS SHOWN ARE HORIZONTAL UNLESS OTHERWISE NOTED.

GRID DECK REPLACEMENT PROCEDURE:

EXISTING GRID DECK PANELS SHALL BE REMOVED AND REPLACED IN A PROGRESSIVE MANNER. GROUPS OF PANELS REMOVED SHALL BE REPLACED WITH NEW PANELS, WITH MINIMAL WELDS OR CLAMPS TO EXISTING STRINGERS, BEFORE MOVING TO THE NEXT WORK AREA.

CONTRACTOR SHALL SUBMIT A PANEL REMOVAL AND REPLACEMENT SEQUENCE TO THE ENGINEER FOR REVIEW PRIOR TO IMPLEMENTING THE TOTAL BRIDGE CLOSURE.

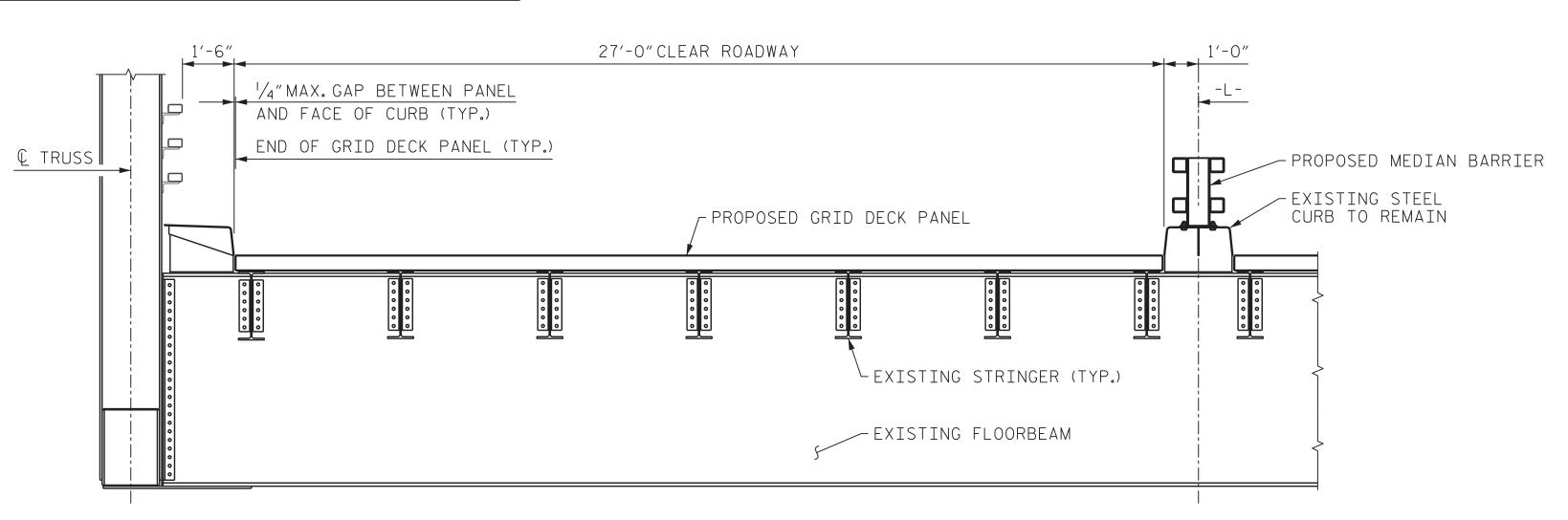
- STEP 1. IMPLEMENT REQUIRED TRAFFIC CONTROL
 SCHEME PER THE TRAFFIC MANAGEMENT
 PLANS ASSOCIATED WITH TOTAL CLOSURE OF
 THE BRIDGE.
- STEP 2. REMOVE EXISTING GRID DECK PANELS FROM WORK AREA. MINIMIZE UNBALANCED LOADING AND DEAD LOAD VARIATIONS DURING REMOVAL AND REPLACEMENT OPERATIONS.
- STEP 3. EXISTING GRID DECK PANEL WELDS ON FLOOR SYSTEM MEMBERS IN WORK AREA SHALL BE GROUND SMOOTH.
- STEP 4. HAND CLEAN EXISTING STRINGER AND FLOORBEAM TOP FLANGES TO BE CLEAR OF DEBRIS TO THE SATISFACTION OF THE ENGINEER PRIOR TO INSTALLING ANY NEW GRID DECK PANELS IN THE GIVEN WORK LOCATION.
- STEP 5. INSTALL NEW GRID DECK PANEL(S) IN WORK AREA. SET NEW GRID DECK PANELS IN PLACE WITH MINIMAL WELDS OR CLAMPS.

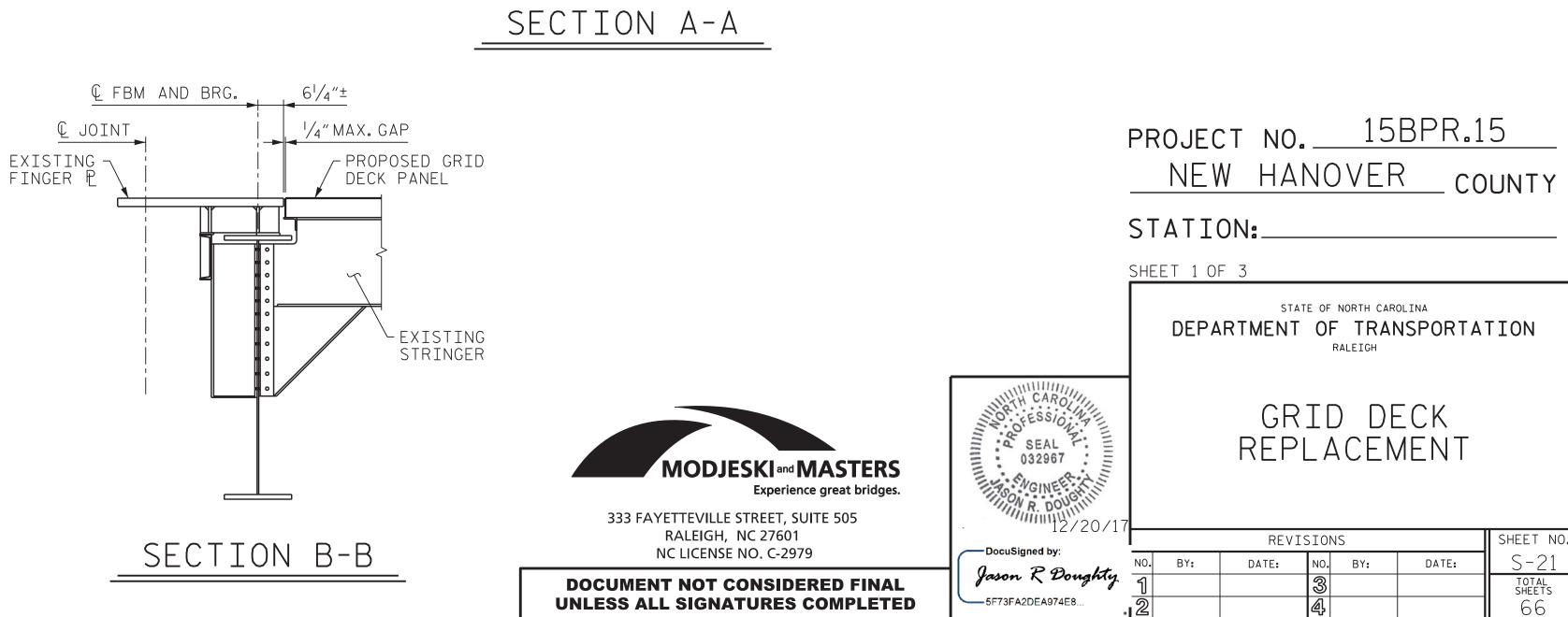
STEP 6. REPEAT STEPS 2 THROUGH 5.

ONCE ALL NEW GRID DECK PANELS ARE SET IN PLACE ON ENTIRE SPAN WITH MINIMAL WELDS OR CLAMPS, MAKE FINAL ADJUSTMENTS BEFORE COMMENCING FINAL WELDING TO STRINGERS.

FINAL FIELD WELDING SHALL BE PERFORMED AFTER FINAL PANEL ADJUSTMENTS ARE COMPLETE AND PRIOR TO OPENING THE BRIDGE TO VEHICULAR TRAFFIC.

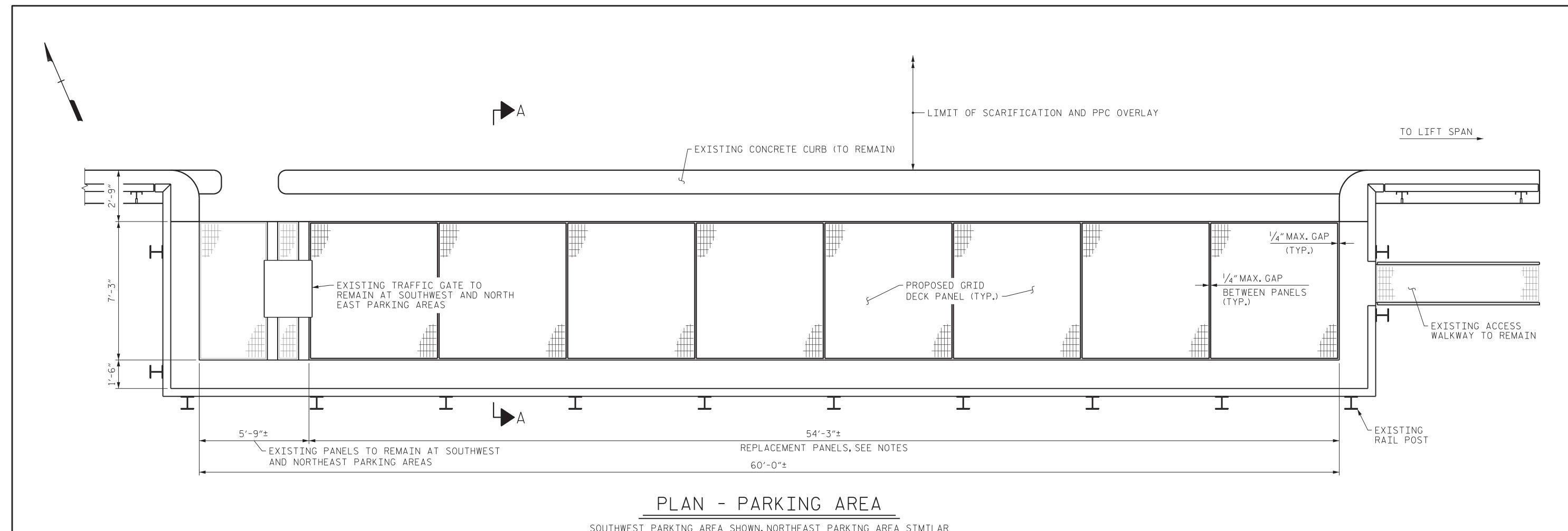
UPON COMPLETION OF ALL FIELD WELDING OF PANELS TO FLOOR SYSTEM, FIELD PAINT STRINGER TOP FLANGE PER THE SPECIAL PROVISIONS.



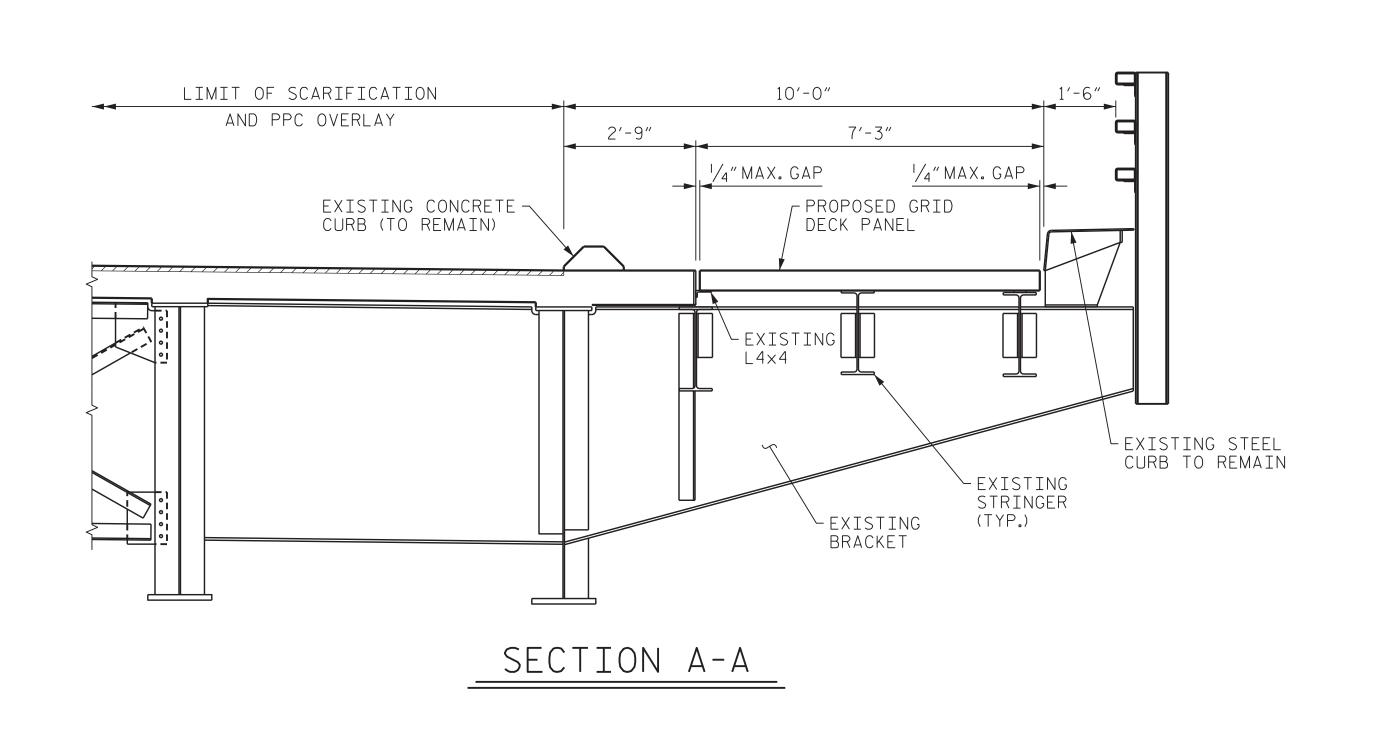


DESIGNED BY: C. CORMAN/J. DOUGHTY DATE: NOV 2017
DRAWN BY: K. WHITE DATE: NOV 2017
CHECKED BY: B. LOFLIN DATE: DEC 2017
DESIGN ENGINEER
OF RECORD: J. DOUGHTY DATE: DEC 2017

_368202_SMU_GRID1_640013.dgn



SOUTHWEST PARKING AREA SHOWN. NORTHEAST PARKING AREA SIMILAR



NOTES:

ALL DIMENSIONS SHOWN ARE HORIZONTAL.

UNLESS CONTRACTOR ELECTS TO PERFORM THIS WORK DURING THE PERMITTED TOTAL BRIDGE CLOSURE, ONLY REMOVE AND REPLACE NUMBER OF PANELS IN A SINGLE SHIFT THAT ALLOWS TRAFFIC TO BE REOPENED ADJACENT TO THE PARKING AREA AFTER NIGHTLY CLOSURES.

FOR REPLACEMENT WITHOUT FULL BRIDGE CLOSURE, NEW GRID DECK PANELS IN PARKING AREA SHALL HAVE SIMILAR DIMENSIONS AS THE EXISTING GRID DECK PANELS TO FACILITATE REPLACEMENT. NEW GRID DECK SHOP DRAWINGS SHALL INDICATE THAT PROPOSED PANEL DIMENSIONS HAVE BEEN FIELD VERIFIED AND ARE CONSISTENT WITH EXISTING PANEL DIMENSIONS.

ELEVATION OF TOP OF NEW GRID DECK PANELS IN PARKING AREAS SHALL MATCH ELEVATION OF TOP OF EXISTING GRID DECK IN PARKING AREAS.

NORTHWEST AND SOUTHEAST PARKING AREAS DO NOT HAVE EXISTING TRAFFIC GATES LOCATED IN THE PARKING AREAS. REPLACE ALL GRID DECK PANELS AT THE NORTHWEST AND SOUTHEAST PARKING AREAS.

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

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

> GRID DECK REPLACEMENT

> > SHEET NO.

S-22

TOTAL SHEETS

Jason & Dongmy ----5F73FA2DEA974E8...

STOP FESSION THE

SEAL 032967 SEAL NOW R. DOUGHILL			RÉPI	_	ACEN	MENT
DocuSigned by:			REVIS	SIO	NS	
Jason P Donahty	NO.	BY:	DATE:	NO.	BY:	DATE:

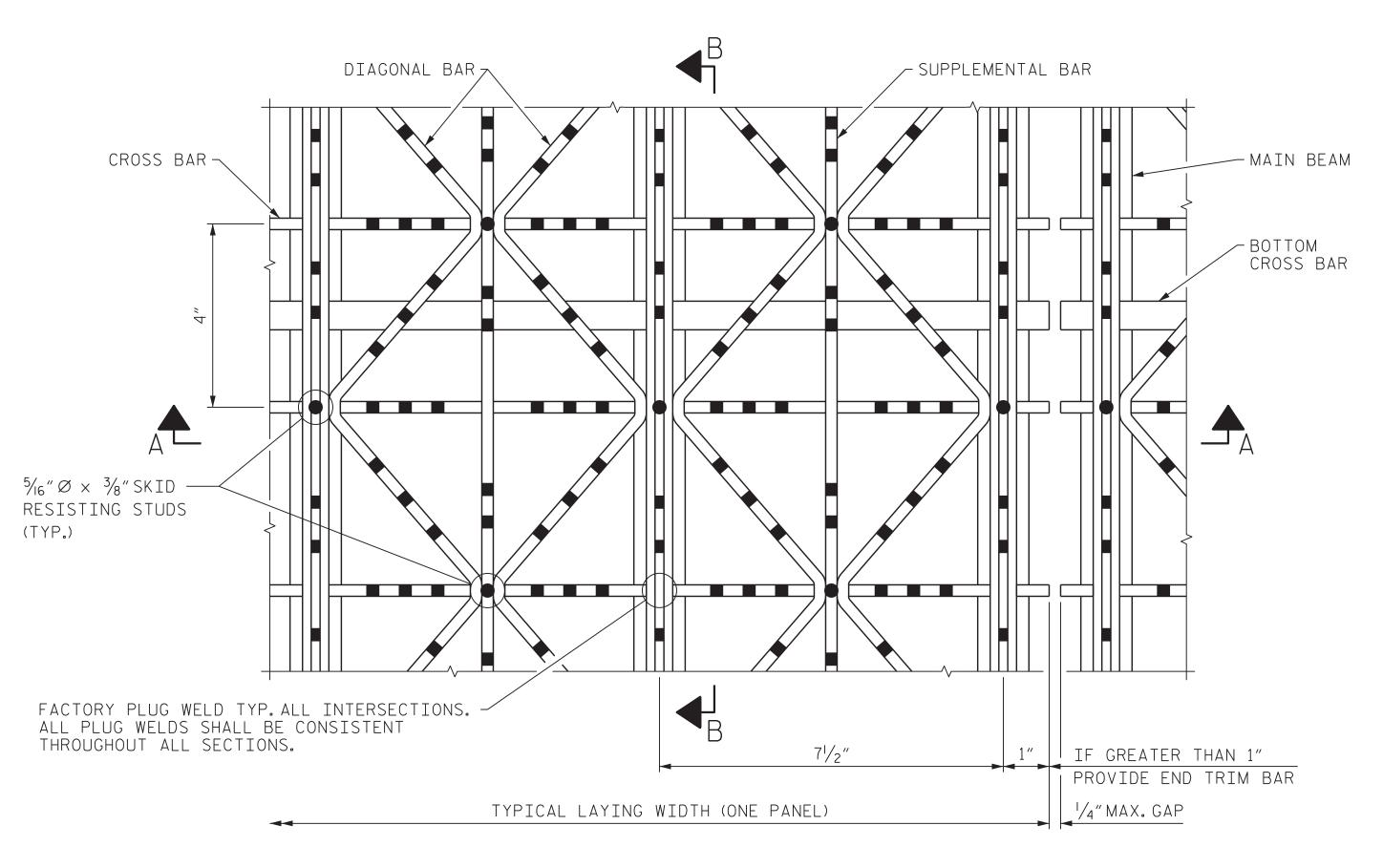
MODJESKI and MASTERS Experience great bridges.

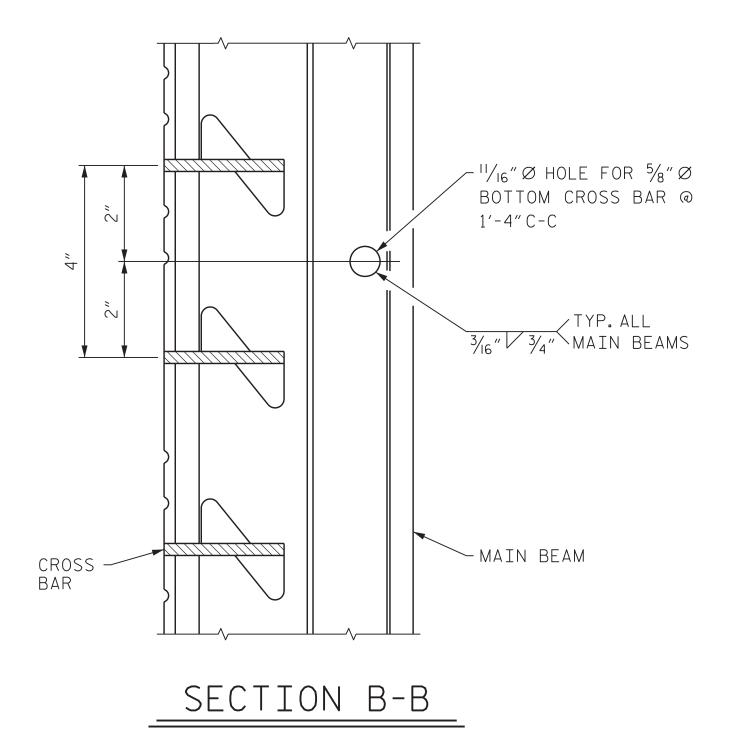
333 FAYETTEVILLE STREET, SUITE 505 RALEIGH, NC 27601 NC LICENSE NO. C-2979

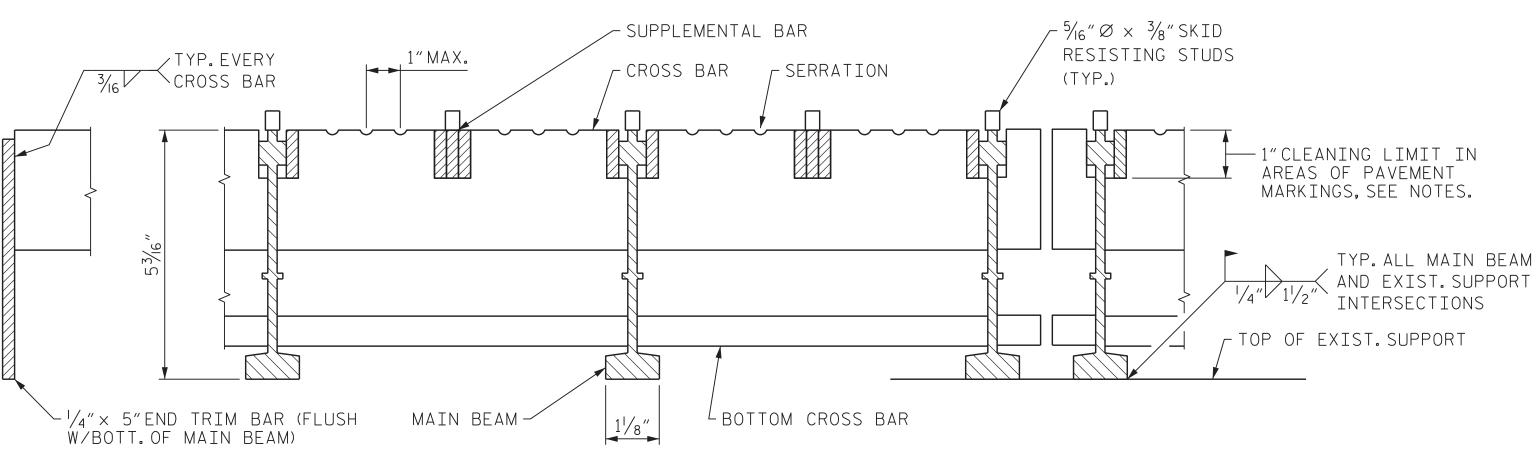
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

K. WHITE DATE : NOV 2017
DATE : DEC 2017 DESIGN ENGINEER
OF RECORD: J. DOUGHTY _ DATE : <u>DEC 2017</u>

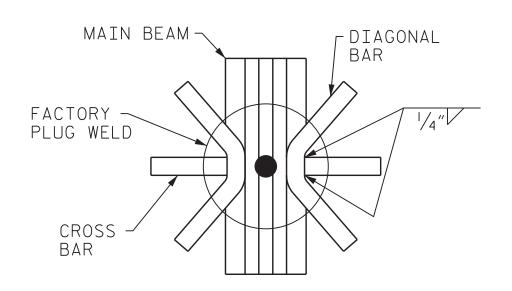
DESIGNED BY: C. CORMAN/J. DOUGHTYDATE : NOV 2017 DRAWN BY: CHECKED BY: B.LOFLIN



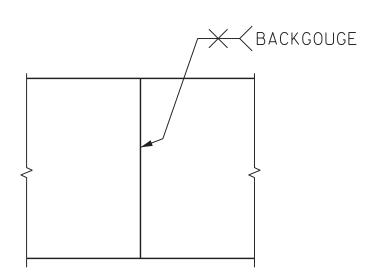




SECTION A-A



TYP. DIAG. BAR SPLICE



TYP. SHOP TRIM SPLICE

MODJESKI and MASTERS Experience great bridges.

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WELDING PROCESS

ALL WELDING TO BE DONE IN ACCORDANCE WITH AASHTO BRIDGE SPEC. AWS D1.5 LATEST VERSION.

MATERIAL SPECIFICATIONS

MAIN BEAM (5.3#/FT.) TO BE A.S.T.M. A588 CROSS BARS ($\frac{1}{4}$ " × $2\frac{1}{2}$ ") TO BE A.S.T.M. A588 DIAGONAL BARS ($\frac{1}{4}$ " × 1") TO BE A.S.T.M. A588 SUPPLEMENTAL BARS ($\frac{1}{4}$ " × 1") TO BE A.S.T.M. A588 BOTTOM CROSS BARS (5/8" Ø) TO BE A.S.T.M. A588

FINISH SPECIFICATIONS

PAINT PER NCDOT STANDARD SPECIFICATIONS. COLOR AS DIRECTED BY NCDOT.

NOTES:

CONTRACTOR MAY REQUEST TO MAKE MINOR CHANGES FOR PRODUCT IMPROVEMENT.

ALL MATERIAL SUBJECT TO MILL/SHOP TOLERANCES.

SERRATIONS TO BE APPROXIMATELY 3/6" DEEP BY 3/8" WIDE ON RANDOM CENTERS, 1" MAX. C-C SPACING.

PROVIDE END TRIM BAR AT ALL MAIN BEAM 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.

GRI	D DECK	PROPERTIES
SECTION N		APPROX.GRID WEIGHT (LBS / SF) * *
TOP STEEL	BOTTOM STEEL	18.5
4.038	4.321	10.5

- * SECTION MODULUS BASED ON 50% OF DIAGONAL BARS ACTIVE.
- ** THE GRID WEIGHT IS BASED ON AN UNCOATED GRID. ACTUAL WEIGHTS MAY VARY DUE TO COATING WEIGHT AND DECK ATTACHMENTS.

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

SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

> GRID DECK REPLACEMENT

Jason R Doughty 5F73FA2DEA974E8.

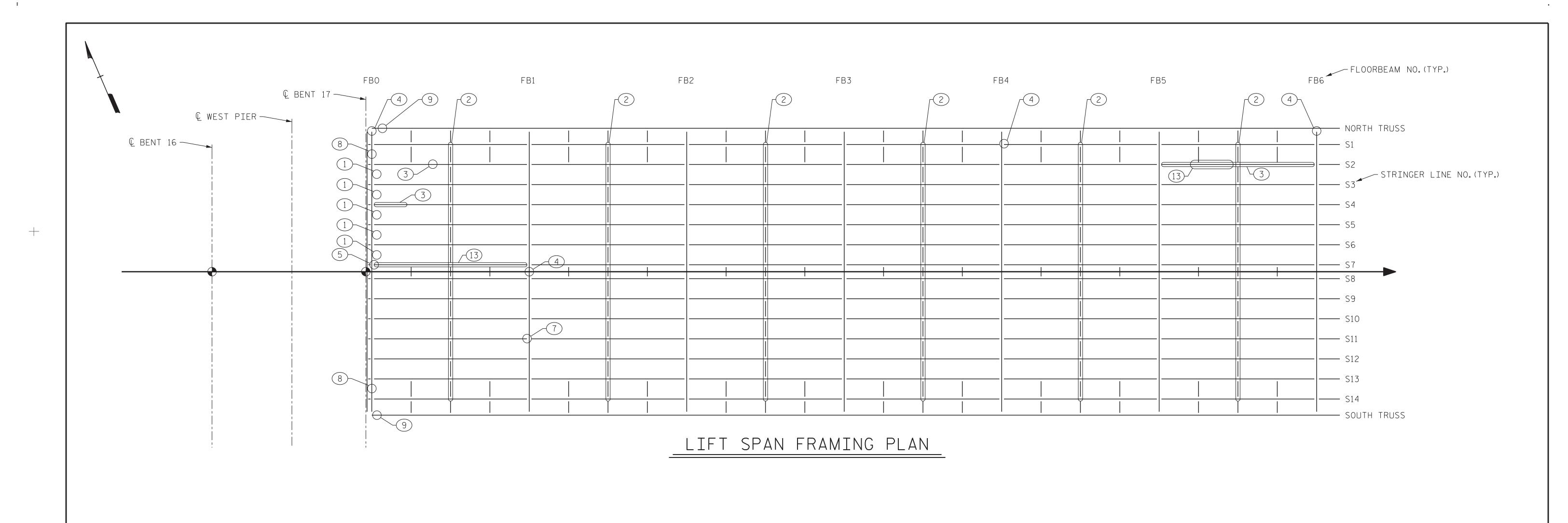
SEAL 032967

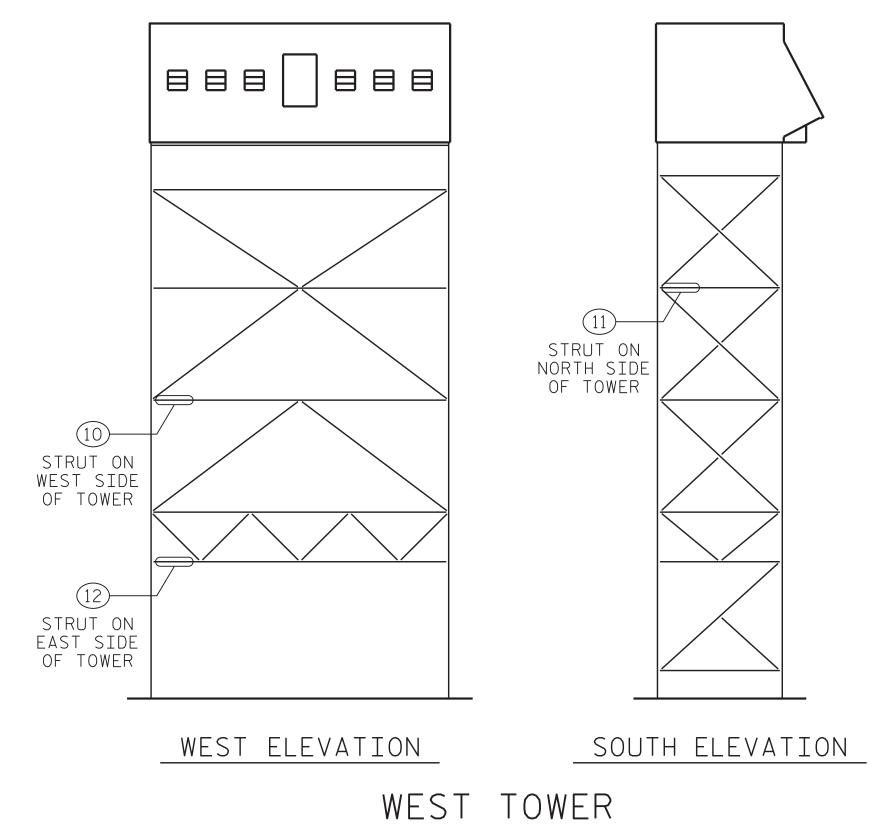
REVISIONS SHEET NO. S-23 NO. BY: DATE: DATE: TOTAL SHEETS

DESIGNED BY: C. CORMAN/J. DOUGHTY DATE : NOV 2017 K. WHITE DATE: NOV 2017
DATE: DEC 2017 DRAWN BY: CHECKED BY: B.LOFLIN DESIGN ENGINEER
OF RECORD: J. DOUGHTY _ DATE : <u>DEC 2017</u>

(WHERE REQ'D.)

(WHERE REQ'D.)





REPAIR TYPES

- 1) FLOORBEAM STIFFENER PLATE REPAIR
- 2 STRINGER WEB CRACK RETROFIT (STRINGERS S1 THROUGH S14)
- 3 STRINGER WEB REPAIR
- 4 REPLACE BOLTS
- (5) CRACK ARREST HOLE
- 6 FLOORBEAM WEB REPAIR 7 - STRINGER END REPAIR
- 8 LIFT GIRDER REPAIR
- 9 LO-L1 CHORD REPAIR
- 10 TOWER LATERAL REPAIR 1
- 11) TOWER LATERAL REPAIR 2
- 12 TOWER LATERAL REPAIR 3 (13) - STRINGER TOP FLANGE REPAIR



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SHEET 1 OF 2

SEAL 032967

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

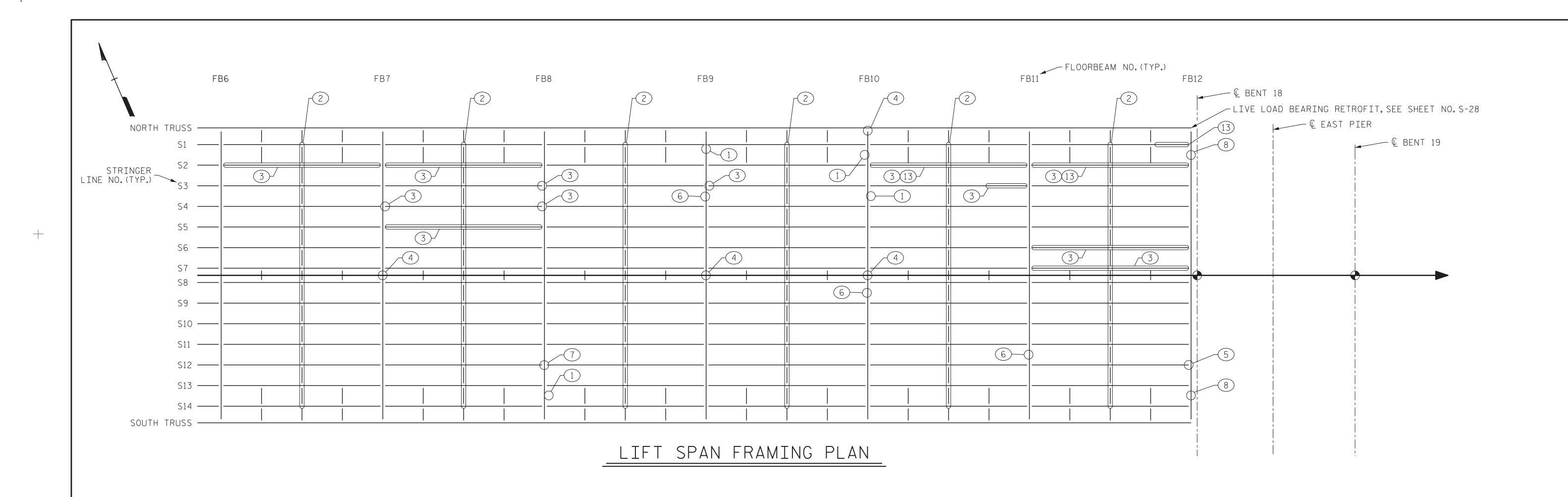
LIFT SPAN

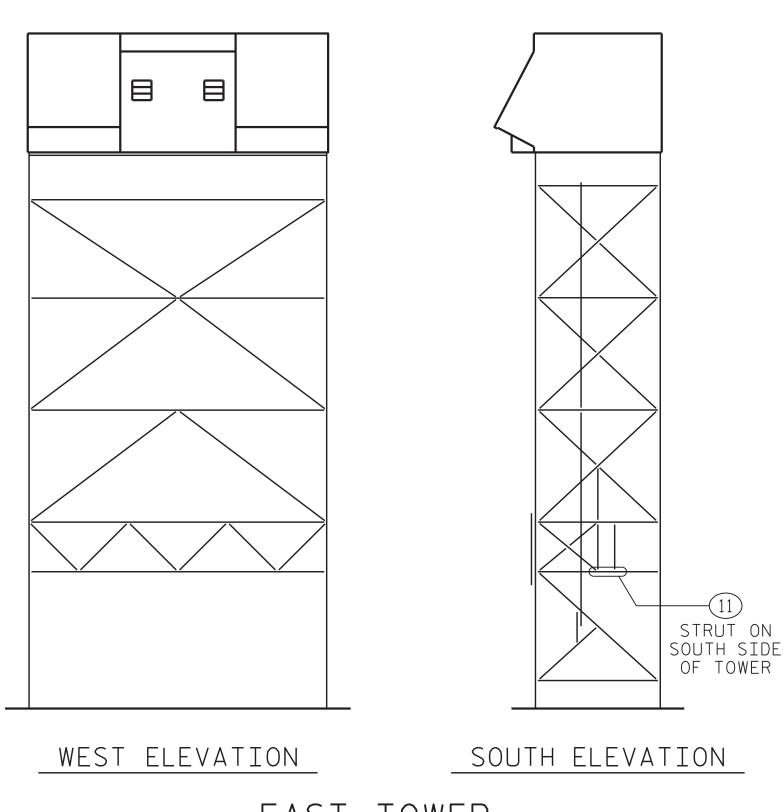
STRUCTURAL STEEL REPAIR LOCATIONS

SHEET NO. REVISIONS S-24 NO. BY: DATE: DATE: Jason R Doughty TOTAL SHEETS ----5F73FA2DEA974E8...

DESIGNED BY: B.LOFLIN
DRAWN BY: K.WHITE
CHECKED BY: J.DOUGHTY DATE : NOV 2017
DATE : DEC 2017
DATE : DEC 2017 DESIGN ENGINEER OF RECORD: J.DOUGHTY

__ DATE : <u>DEC 2017</u>





REPAIR TYPES

- 1 FLOORBEAM STIFFENER PLATE REPAIR
- 2 STRINGER WEB CRACK RETROFIT (STRINGERS S1 THROUGH S14)
- 3 STRINGER WEB REPAIR
- 4) REPLACE BOLTS
- 5 CRACK ARREST HOLE
- 6 FLOORBEAM WEB REPAIR
- 7 STRINGER END REPAIR
- 8 LIFT GIRDER REPAIR
- 9 LO-L1 CHORD REPAIR
- 10 TOWER LATERAL REPAIR 1
- (11) TOWER LATERAL REPAIR 2
- 12 TOWER LATERAL REPAIR 3
- (13) STRINGER TOP FLANGE REPAIR



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NC LICENSE NO. C-2979

NEW HANOVER _ COUNTY STATION:__ SHEET 2 OF 2 STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT NO. 15BPR.15

STRUCTURAL STEEL REPAIR LOCATIONS

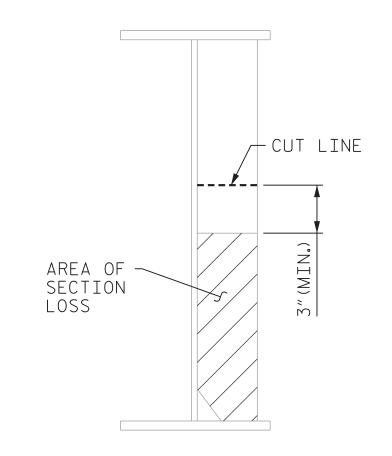
LIFT SPAN

SHEET NO. REVISIONS S-25 NO. BY: DATE: DATE: Jason R Doughty TOTAL SHEETS ----5F73FA2DEA974E8..

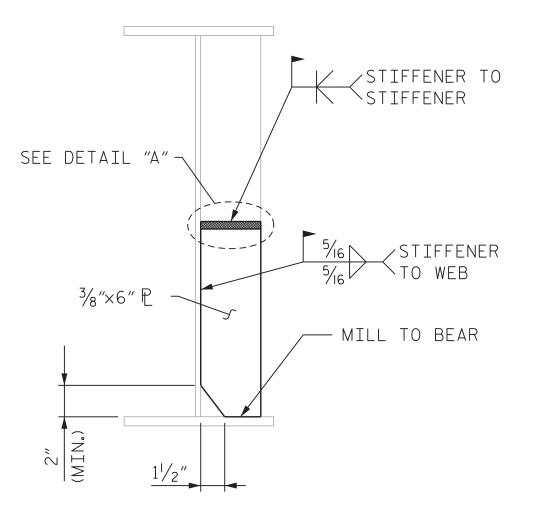
DESIGNED BY: B.LOFLIN K.WHITE DATE : NOV 2017
DATE : DEC 2017 CHECKED BY: J. DOUGHTY DESIGN ENGINEER
OF RECORD: J. DOUGHTY __ DATE : <u>DEC 2017</u>

_ DATE : <u>NOV 2017</u>

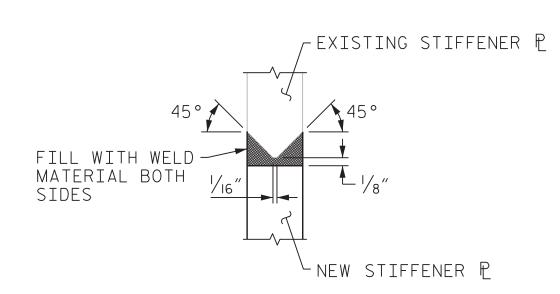
EAST TOWER



FLOORBEAM STIFFENER PREMOVAL



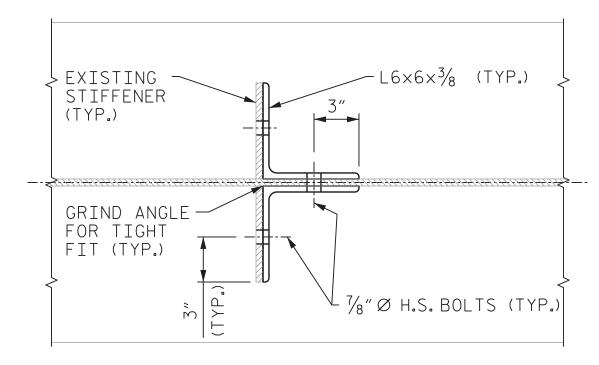
FLOORBEAM STIFFENER PREPAIR



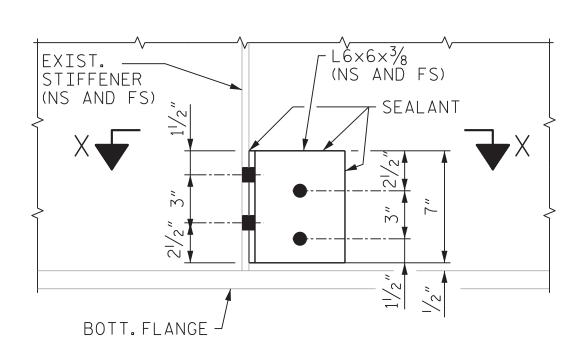
DETAIL A

9 LOCATIONS

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



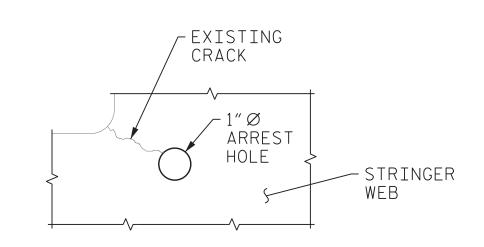
SECTION X-X



ELEVATION

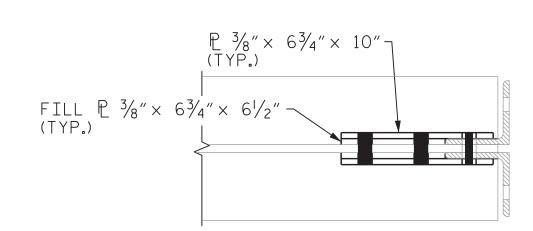
FLOORBEAM WEB REPAIR

REPAIR(6) 3 LOCATIONS

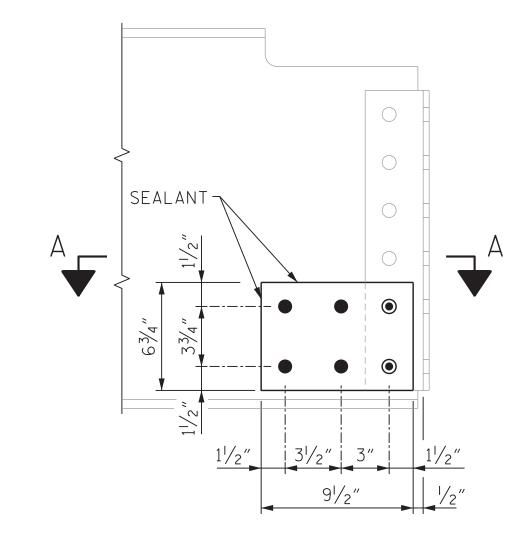


CRACK ARREST HOLE

EDGE OF 1"Ø FIELD-DRILLED HOLE SHALL INTERSECT END OF CRACK 2 LOCATIONS



SECTION A-A



ELEVATION

STRINGER END REPAIR

2 LOCATIONS

WHEN PERFORMING THIS REPAIR, NO LIVE LOAD SHALL BE PRESENT WITHIN 6 FEET OF STRINGER BEING REPAIRED.

BOLT REPLACEMENT TABLE	-
LOCATION	No.OF BOLTS
LO GUSSET	2
LO BEARING	1
ROLLER ASSEMBLY COVER PLATE	10
CENTER GUSSET AT FLOORBEAM 1	2
STRINGER 1 AT FLOORBEAM 4	2
CENTER GUSSET AT FLOORBEAM 6	1
CENTER GUSSET AT FLOORBEAM 7	1
CENTER GUSSET AT FLOORBEAM 9	4
U10 GUSSET	1
L10 GUSSET	10

REPAIR(4)



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NOTES:

STRUCTURAL STEEL REPAIRS SHOWN ON THIS SHEET SHALL BE PAID FOR UNDER STRUCTURAL STEEL FOR REPAIRS. SEE SPECIAL PROVISIONS.

FOR CLEANING AND PAINTING AND MATERIAL REQUIREMENTS, SEE SPECIAL PROVISION FOR STRUCTURAL STEEL FOR REPAIRS.

BOLT LEGEND

- EXISTING FASTENER
- NEW H.S. BOLT IN EXISTING HOLE
- - NEW H.S. BOLT IN NEW HOLE

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

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

LIFT SPAN

STRUCTURAL STEEL REPAIRS

Jason R Doughty ----5F73FA2DEA974E8..

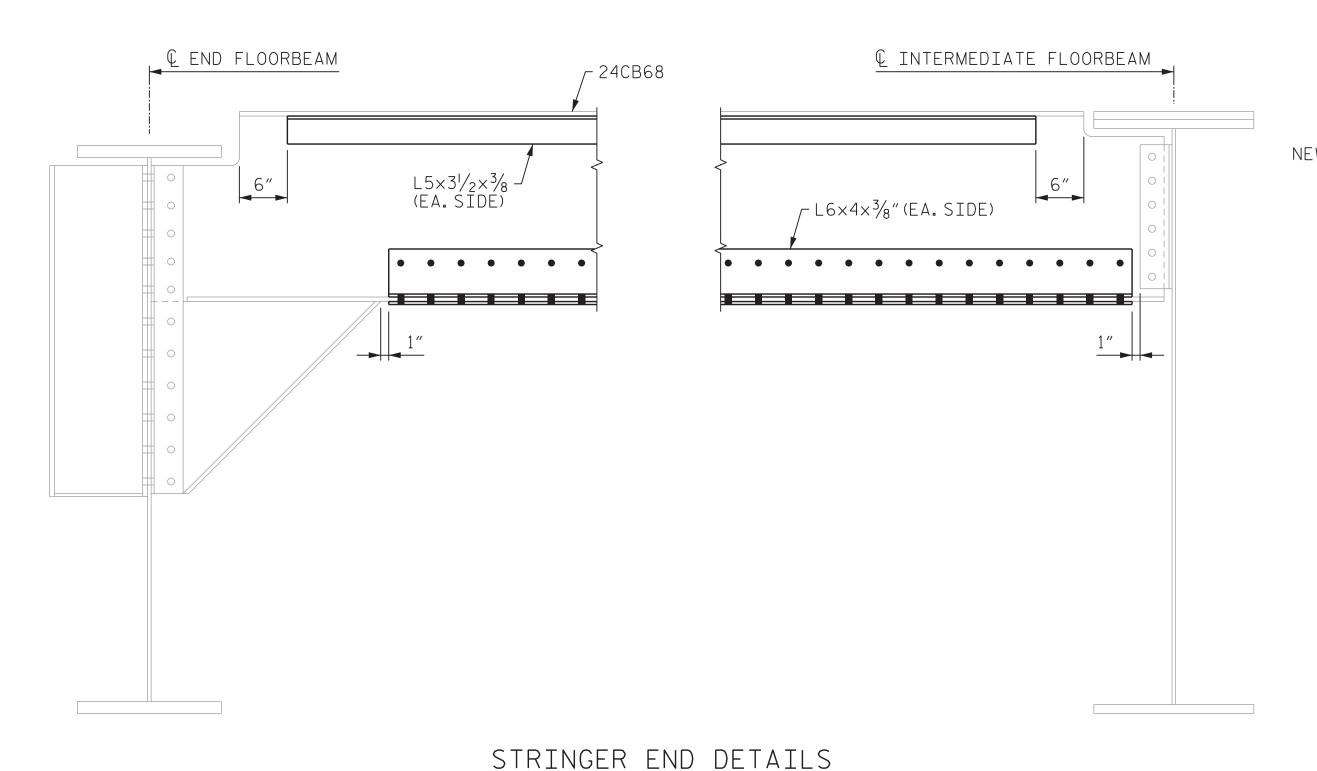
SEAL 7

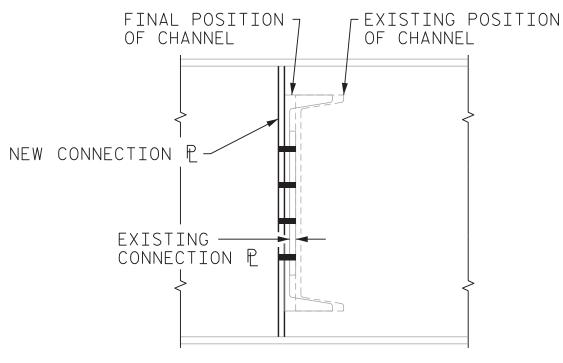
REVISIONS SHEET NO. S-26 NO. BY: DATE:

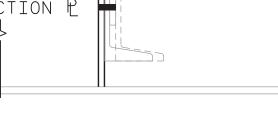
TOTAL SHEETS

DESIGNED BY: B.LOFLIN RAWN BY: K.WHITE CHECKED BY: J. DOUGHTY DESIGN ENGINEER
OF RECORD: J. DOUGHTY

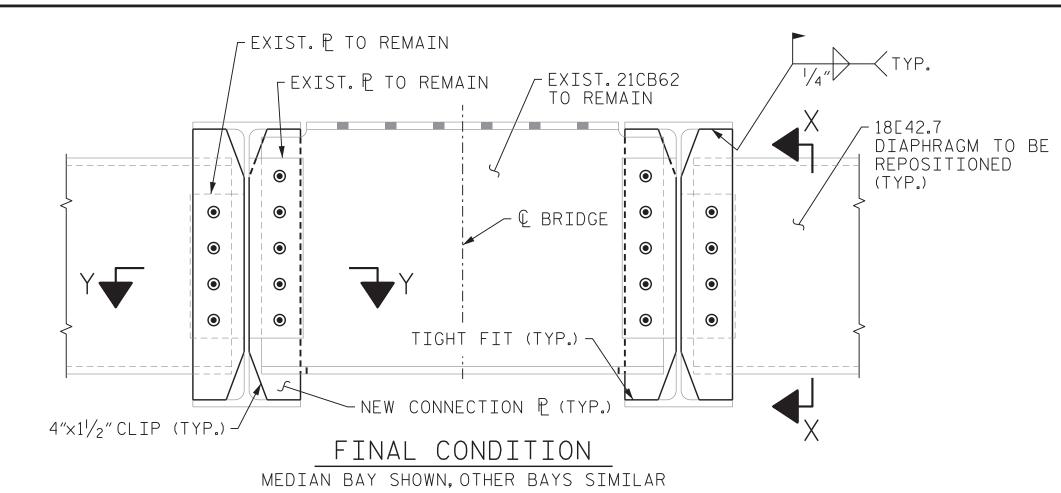
_ DATE : <u>NOV 2017</u> DATE : NOV 2017
DATE : DEC 2017 _ DATE : <u>DEC 2017</u>

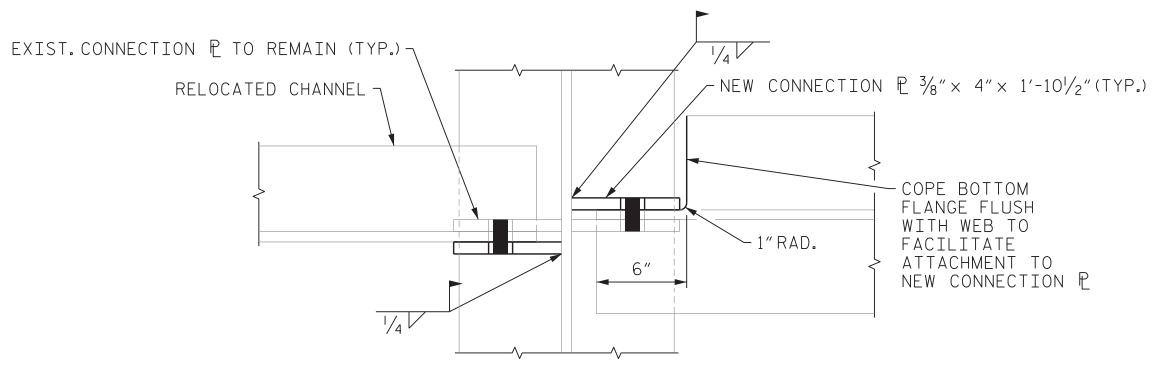






SECTION X-X





SECTION Y-Y

STRINGER WEB CRACK RETROFIT

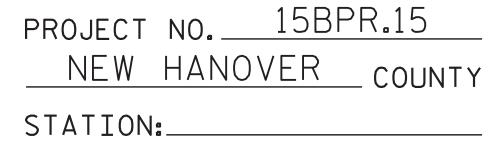
168 LOCATIONS

IF LIVE LOAD IS PRESENT, ADJACENT BAYS SHALL NOT BE REPAIRED SIMULTANEOUSLY.

IF REPAIR ② OCCURS AT THE SAME LOCATION AS REPAIR ① ,INSTALL REPAIR ① FIRST AND ATTACH THE CONNECTION PLATE TO THE ANGLE INSTEAD OF THE EXISTING STRINGER TOP FLANGE.

PROCEDURE FOR CHANNEL DIAPHRAGMS

- 1. IF LOCATION HAS A CRACK IN STRINGER WEB, DRILL ARREST HOLE(S) SIMILAR TO REPAIR (5).
- 2. TEMPORARILY SUPPORT DIAPHRAGM.
- 3. REMOVE BOLTS AND MOVE DIAPHRAGM TO OTHER SIDE OF EXISTING \mathbb{R} .
- 4. INSTALL NEW CONNECTION P.
- 5. INSTALL NEW BOLTS AND REMOVE TEMPORARY SUPPORT.



SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

LIFT SPAN

STRUCTURAL STEEL REPAIRS

REVISIONS SHEET NO. S-27 NO. BY: DATE: BY: DATE: TOTAL SHEETS

- DETERIORATED TOP FLANGE AREA OF SECTION LOSS AS 2'-0" 2'-0" DEFINED IN FIELD BY ENGINEER -24CB68 STRINGER REPAIR (13) L TRIM ANGLE LEG AS $L5\times3^{1}/_{2}\times\frac{3}{8}$ (TYP.) REQUIRED TO CLEAR 21CB62 DIAPHRAGMS NEW CONN. $\mathbb{P} \sqrt[3]{8}$ " $\times 4$ " $\times 1$ '-10 $\frac{1}{2}$ ", \sim SEE REPAIR TYPE 2SPLICE AS REQUIRED EXISTING CONNECTION ${\Bbb P}$ — MIN. 7/8"∅ H.S. BOLTS @ 4"MAX. CTS. 7/8"∅ H.S. BOLTS @ 4"MAX. CTS. - Ç ½" Ø H.S. BOLTS @ 4" MAX. CTS. (TYP.) (TYP.) (TYP.) $L6\times4\times\frac{3}{8}$ $_{\Gamma}$ L6×4× $\frac{3}{8}$ (EA. SIDE) SEALANT -(TYP.) - AREA OF DETERIORATION AT LOWER PORTION OF WEB AND TOP OF BOTTOM FLANGE SEALANT 1/2" (TYP.) (TYP.) - GRIND ANGLE AS REQUIRED TO FIT FILLET (TYP.) └ P 1/2"× 81/2"

2'-0"

SECTION B-B

 $- \frac{1}{2} \frac{1}{2} \times \frac{8}{2}$

(CONTINUOUS)

STRINGER WEB REPAIR

ELEVATION

AREA OF SECTION LOSS AS

DEFINED IN FIELD BY ENGINEER

15 LOCATIONS (BOTTOM)

4"MAX.(TYP.)

2'-0"

_ DATE : <u>DEC 2017</u>

5 LOCATIONS (TOP)

NO LIVE LOAD IS PERMITTED WITHIN 6 FEET OF STRINGER BEING REPAIRED. AFTER FIELD

DIAPHRAGM CONNECTIONS SHALL USE CONNECTION PLATES SIMILAR TO THE NEW PLATES SHOWN IN REPAIR 2. THE NEW STRINGER SHALL BE ASTM A-709 GRADE 36 OR 50 AND SHALL BE SHOP PAINTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE NEW STRINGERS, HARDWARE AND PAINTING SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE DEPARTMENT.

REPAIR(3)

5½″

(MAX.)

DRILLING AND BOLTING OF REPAIR ANGLES AND PLATES IS COMPLETE LIVE LOAD CAN BE PLACED OVER STRINGER BEING REPAIRED.

REPAIR (3) AND (13) MAY OR MAY NOT OCCUR AT THE SAME LOCATION.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FOR NOTES AND BOLT LEGEND, SEE SHEET 1 OF 3.

DESIGNED BY: B.LOFLIN _ DATE : <u>NOV 2017</u> <u>K.WHITE</u> _ DATE : <u>NOV 2017</u> DRAWN BY: CHECKED BY: <u>J.DOUGHTY</u> _ DATE : <u>DEC 2017</u>

J. DOUGHTY

DESIGN ENGINEER OF RECORD:

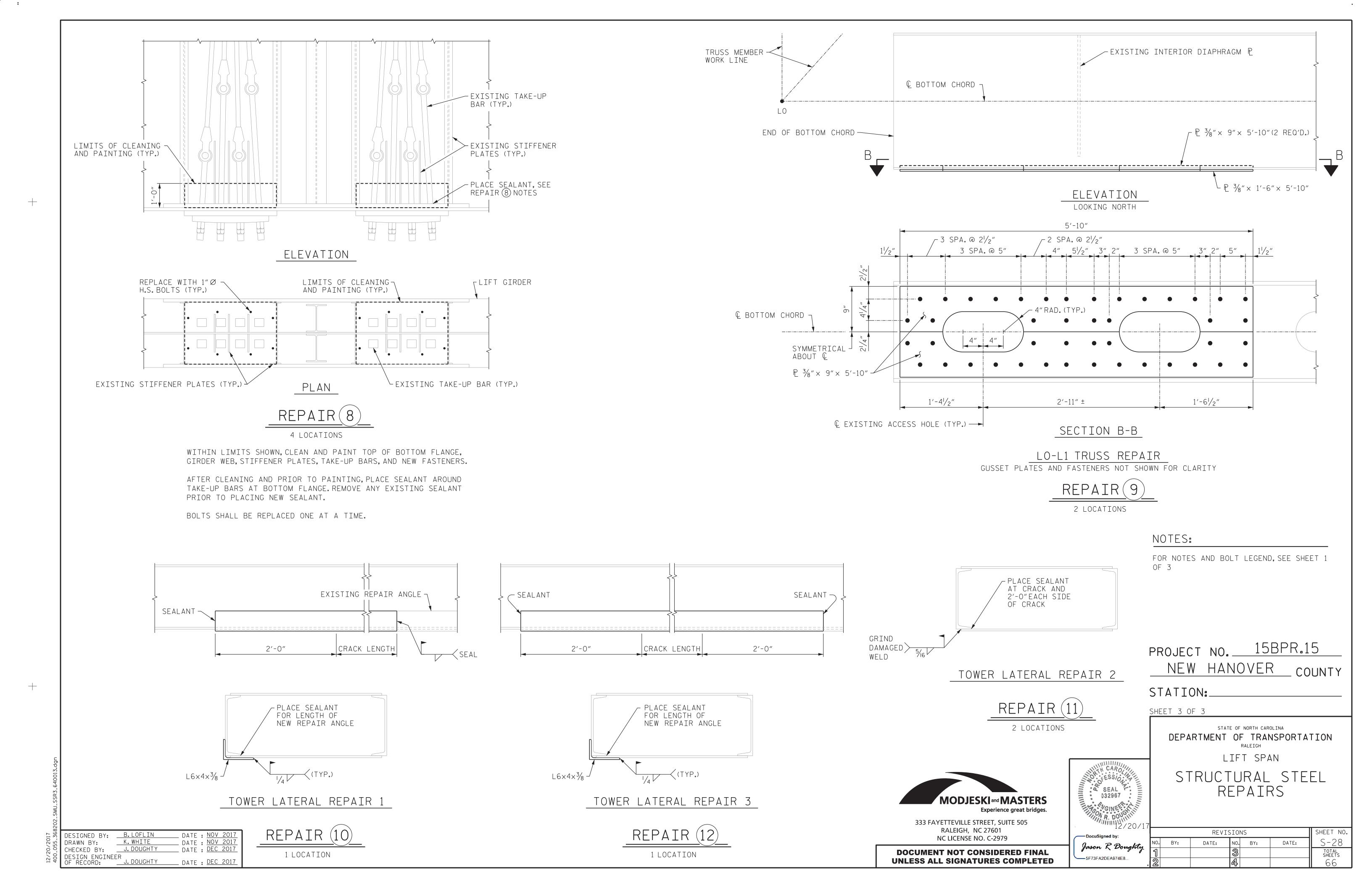
'(TYP.)

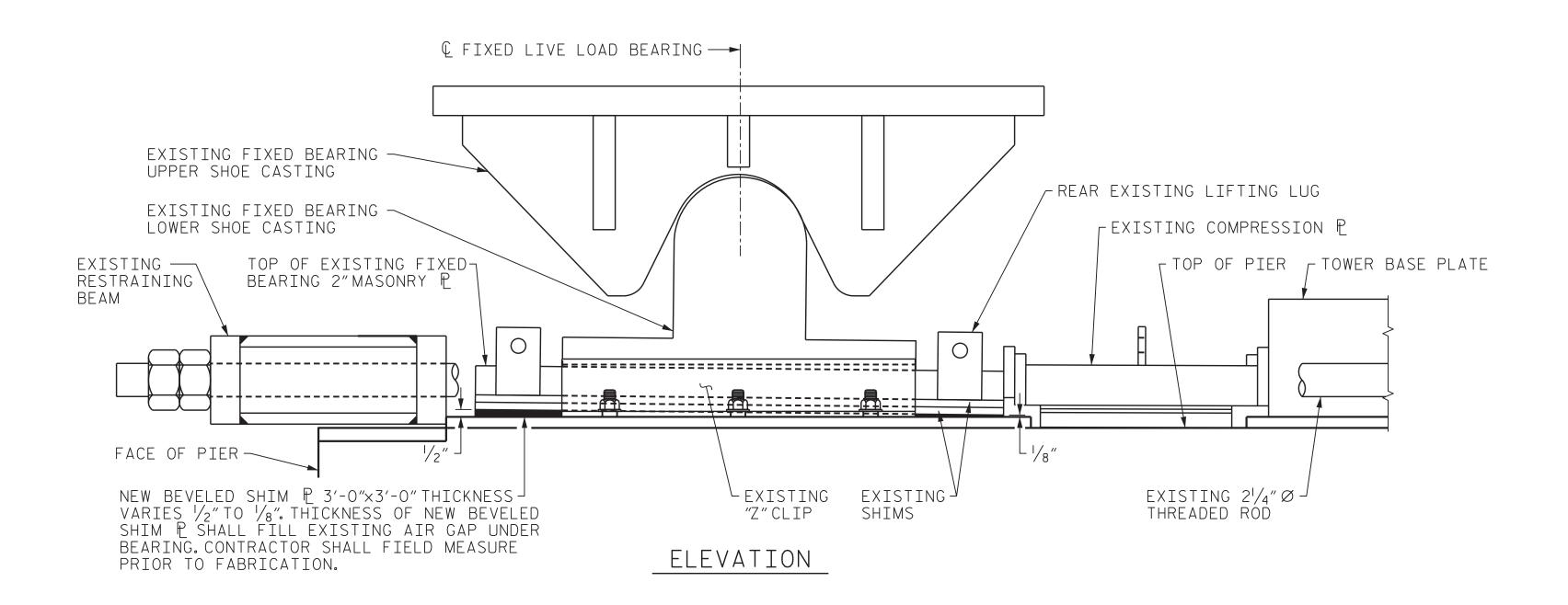
MODJESKI and MASTERS Experience great bridges. 333 FAYETTEVILLE STREET, SUITE 505 RALEIGH, NC 27601 NC LICENSE NO. C-2979

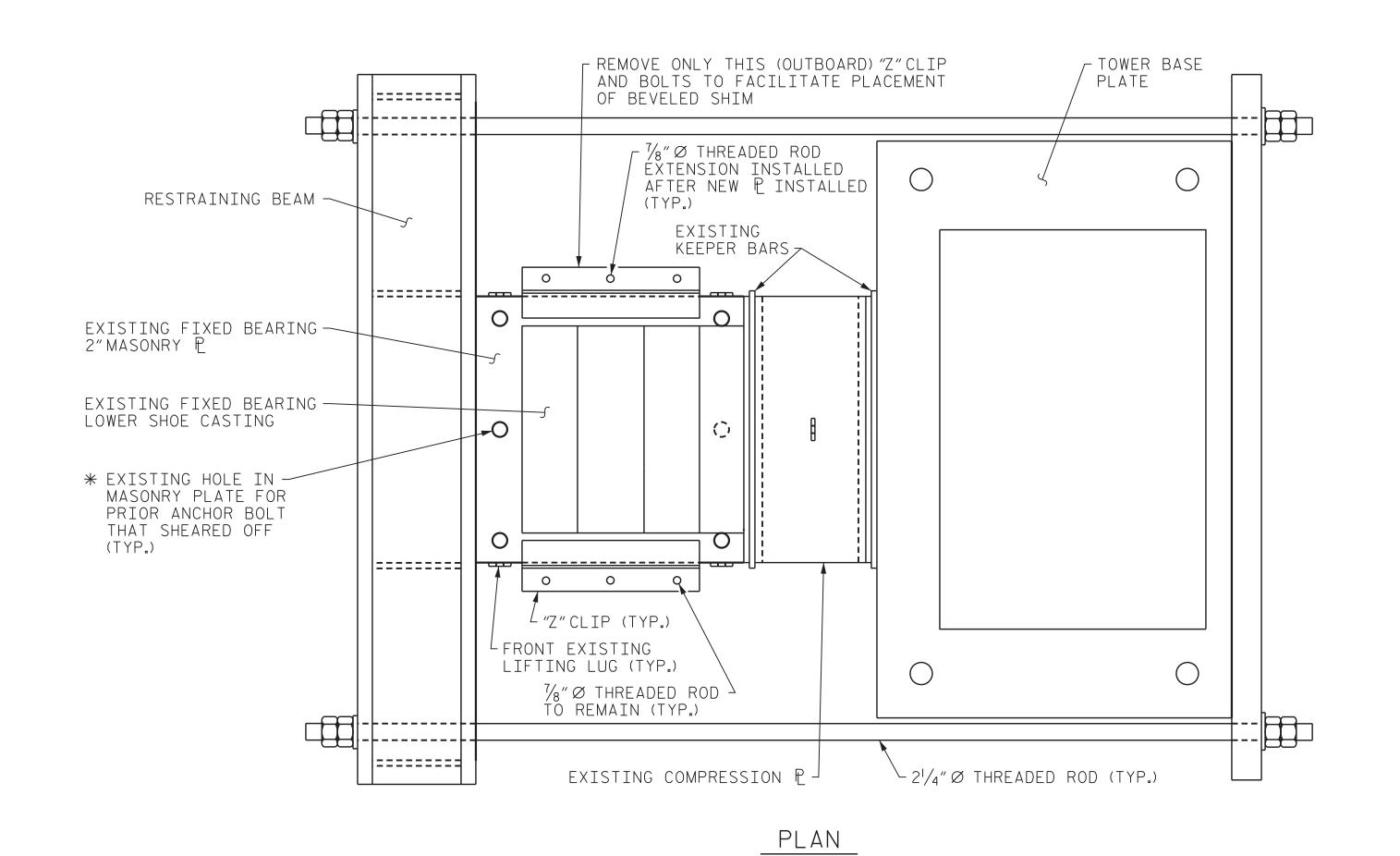
NOTES:

--- DocuSigned by: Jason R Doughty ----5F73FA2DEA974E8.

SEAL 032967







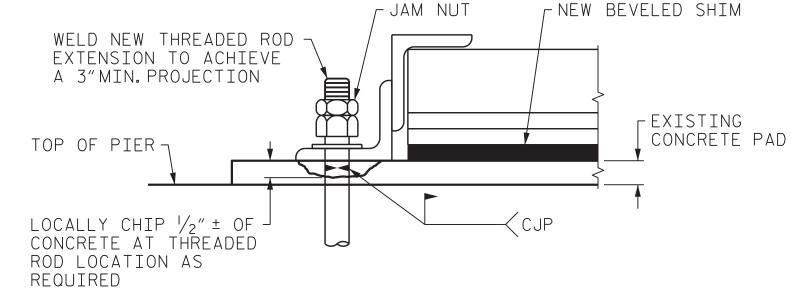
NORTHEAST FIXED LIVE LOAD BEARING

SINGLE BEVELED SHIM, THE CONTRACTOR MAY, AT NO ADDITIONAL COST TO THE DEPARTMENT, USE THREE BEVELED SHIM PLATES WHERE TWO OF THE PLATES ARE

* IF EXISTING SHEARED ANCHOR BOLTS PREVENT THE INSTALLATION OF THE

ANCHOR BOLTS.

FABRICATED TO SLIDE AND FIT AROUND THE REMAINING PORTIONS OF THE



"Z" CLIP DETAIL

PATCH CHIPPED AREA AROUND ANCHOR BOLT WITH MATERIAL TO BE SUBMITTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

NEW HANOVER COUNTY STATION:_

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

LIFT SPAN

SHEET NO.

S-29

TOTAL SHEETS

DATE:

FIXED LIVE LOAD BEARING RETROFIT

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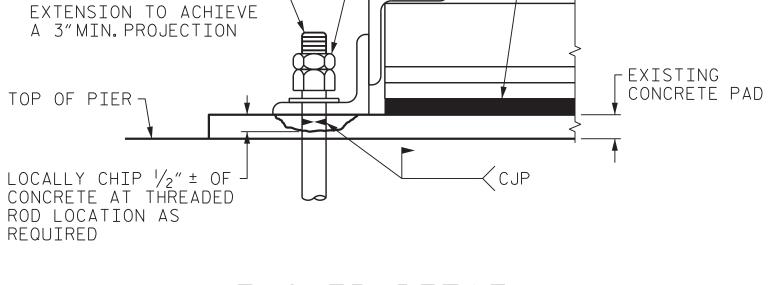
REVISIONS

MODJESKI and MASTERS Experience great bridges.

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DESIGNED BY: B.LOFLIN _ DATE : <u>DEC 2017</u> K. WHITE _ DATE : <u>DEC 2017</u> DRAWN BY: CHECKED BY: <u>J.DOUGHTY</u> _ DATE : <u>DEC 2017</u> DESIGN ENGINEER OF RECORD: _ DATE : <u>DEC 2017</u>



PROJECT NO. 15BPR.15

OF ESSION A SEAL F. 032967

NOTES:

SEE SPECIAL PROVISIONS.

EXISTING LIFTING LUGS

PENETRATION WELD.

MATERIAL:

ALL MATERIAL AND WORK SHOWN ON THIS DRAWING SHALL BE INCLUDED IN THE PAY ITEM STRUCTURAL STEEL FOR REPAIRS,

BEVELED SHIM INSTALLATION PROCEDURE:

2. WHILE SUPERSTRUCTURE IS LIFTED OFF OF TOP OF BEARING,

LIFT FRONT OF BEARING APPROXIMATELY 1/8"USING FRONT

3. INSTALL BEVELED SHIM UNDER EXISTING SHIM PLATES AND

4. PRIOR TO LOWERING SUPERSTRUCTURE BACK ONTO BEARING, TACK WELD NEW BEVELED SHIM TO EXISTING SHIM PLATE

5. REMOVE APPROXIMATELY $\frac{1}{2}$ " OF CONCRETE AROUND ANCHOR

6. REINSTALL EXISTING OUTBOARD Z-CLIP ONTO ANCHOR

STRUCTURAL STEEL: ASTM A709, GRADE 50, UNPAINTED.

OFF $\frac{1}{2}$ TURN AND PLACE JAM NUT.

THREADED ROD: ASTM F1554, GRADE 55.

BOLTS AT OUTBOARD Z-CLIP AND WELD NEW ANCHOR BOLT

EXTENSIONS TO THE EXISTING ANCHOR BOLTS USING A FULL

BOLTS. TIGHTEN NUTS FINGER TIGHT AND THEN BACK THEM

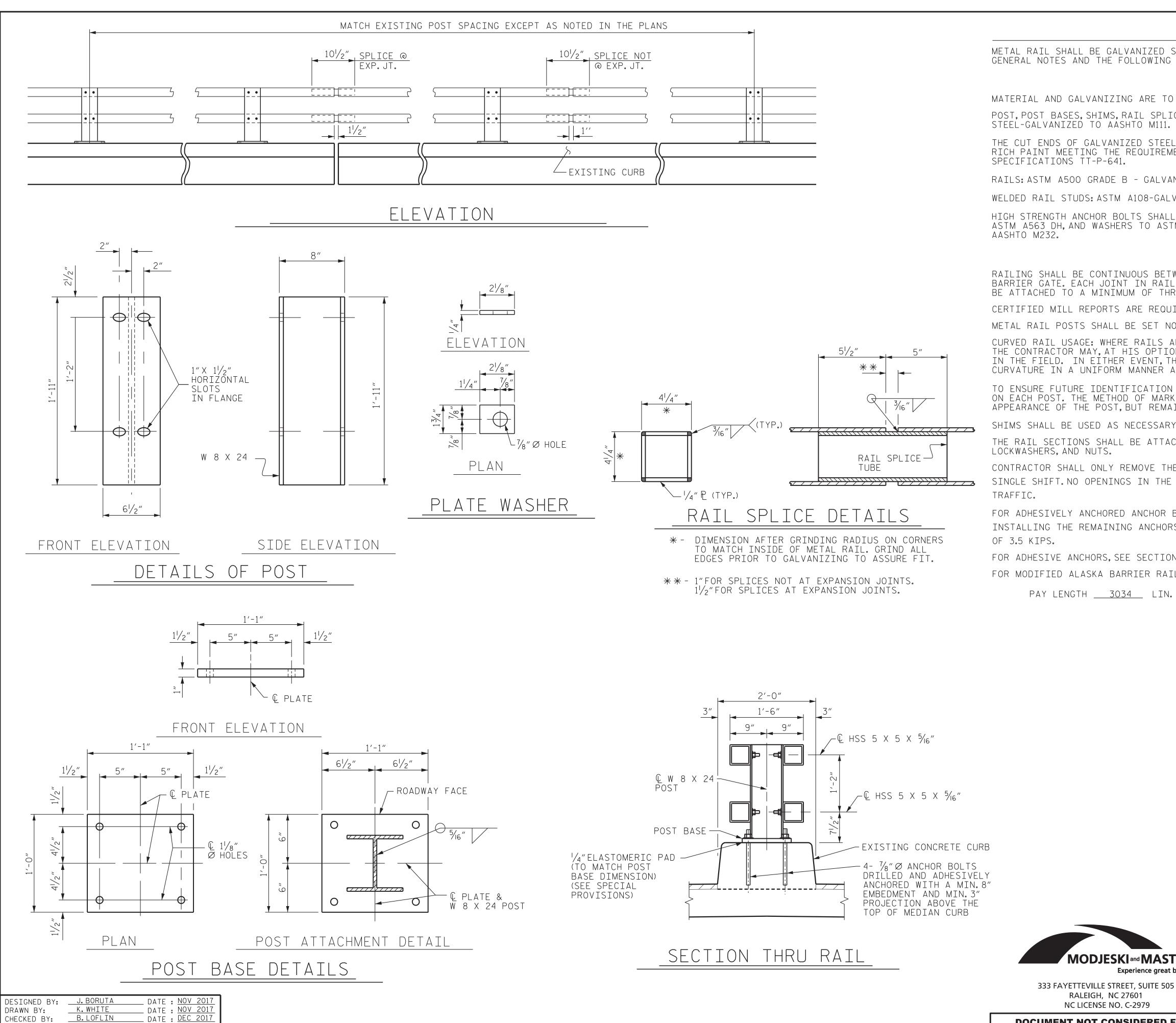
WELDING: PROVIDE MATERIAL AND WORK IN ACCORDANCE WITH

ANSI/AASHTO/AWS D1.5-2015 BRIDGE WELDING CODE.

LOWER BEARING TO REST ON BEVELED SHIM.

1. CUT OFF OUTBOARD Z-CLIP BOLTS FLUSH WITH TOP OF CONCRETE PAD UNDER Z-CLIP AND REMOVE Z-CLIP.

NO. BY: BY: DATE:



DESIGN ENGINEER OF RECORD:

_ DATE : <u>DEC 2017</u>

NOTES

METAL RAIL SHALL BE GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS. ALUMINUM RAIL WILL NOT BE AN OPTION.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, SHIMS, RAIL SPLICE TUBES AND OTHER RAIL COMPONENTS: AASHTO M270 GRADE 36 STRUCTURAL STEEL-GALVANIZED TO AASHTO M111.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

RAILS: ASTM A500 GRADE B - GALVANIZED TO AASHTO M111.

WELDED RAIL STUDS: ASTM A108-GALVANIZED TO AASHTO M232.

HIGH STRENGTH ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 105. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563 DH, AND WASHERS TO ASTM F436, TYPE 1. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED TO AASHTO M232.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS BETWEEN GUARD RAIL TRANSITIONS AT END OF BRIDGE AND LIFT SPAN OR BARRIER GATE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EÍTHER EVENT, THÉ RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO ENSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

THE RAIL SECTIONS SHALL BE ATTACHED TO THE POSTS BY TWO THREADED $\frac{3}{4}$ " \varnothing welded studs, plate washers, LOCKWASHERS, AND NUTS.

CONTRACTOR SHALL ONLY REMOVE THE AMOUNT OF EXISTING BRIDGE RAILING THAT WILL BE REPLACED IN A SINGLE SHIFT.NO OPENINGS IN THE MEDIAN BARRIER RAILING ARE PERMITTED WHEN THE BRIDGE IS OPEN TO

FOR ADHESIVELY ANCHORED ANCHOR BOLTS, FIELD TESTING IS REQUIRED. TEST THE FIRST 6 ANCHORS BEFORE INSTALLING THE REMAINING ANCHORS, THEN TEST 10% OF THE NUMBER IN EXCESS OF 60 ANCHORS TO A LOAD

FOR ADHESIVE ANCHORS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

FOR MODIFIED ALASKA BARRIER RAIL, SEE THE SPECIAL PROVISIONS.

PAY LENGTH <u>3034</u> LIN.FT.

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

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MEDIAN BARRIER REPLACEMENT DETAILS

NO. BY:

DATE:

TOTAL SHEETS

Jason R Doughty 5F73FA2DEA974E8...

SEAL 7 SHEET NO REVISIONS S-30

DATE:

DOCUMENT NOT CONSIDERED FINAL

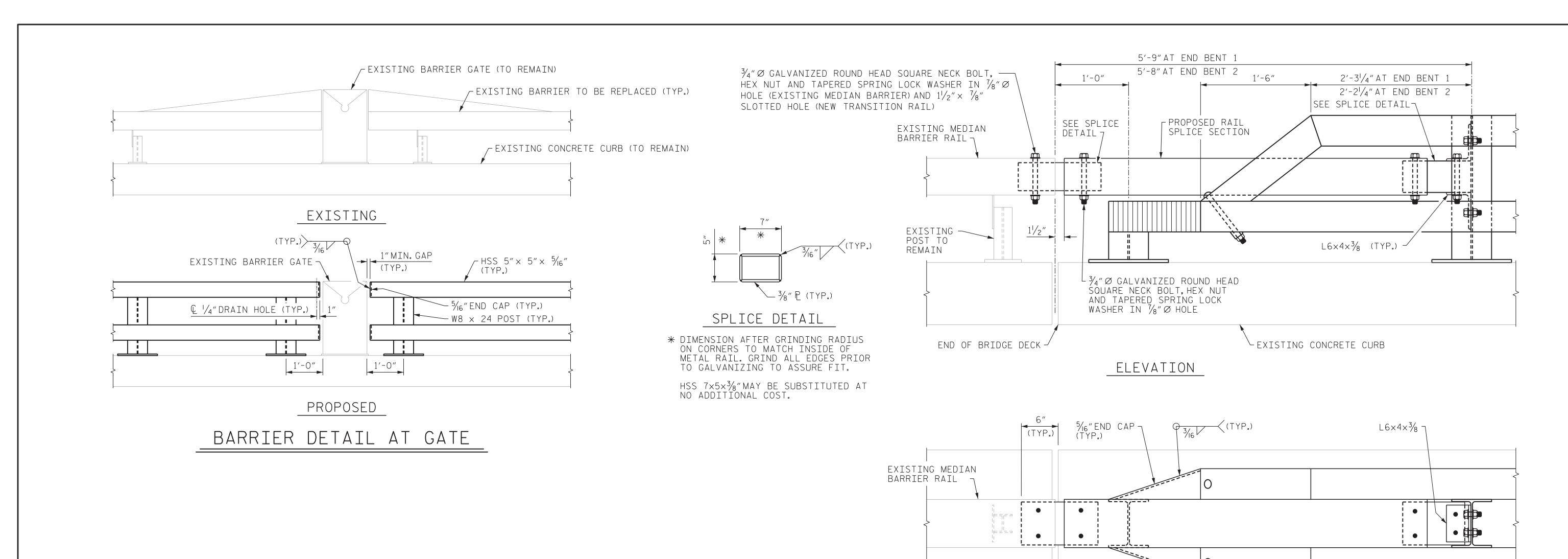
RALEIGH, NC 27601

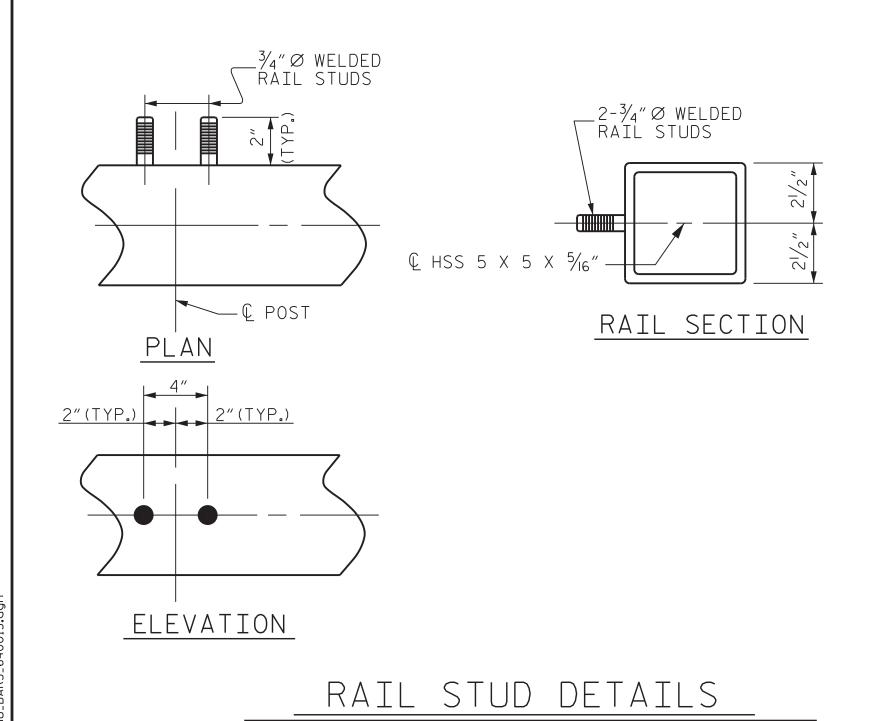
NC LICENSE NO. C-2979

UNLESS ALL SIGNATURES COMPLETED

Experience great bridges.

MODJESKI and MASTERS





_ DATE : <u>DEC 2017</u>

DATE : DEC 2017
DATE : DEC 2017

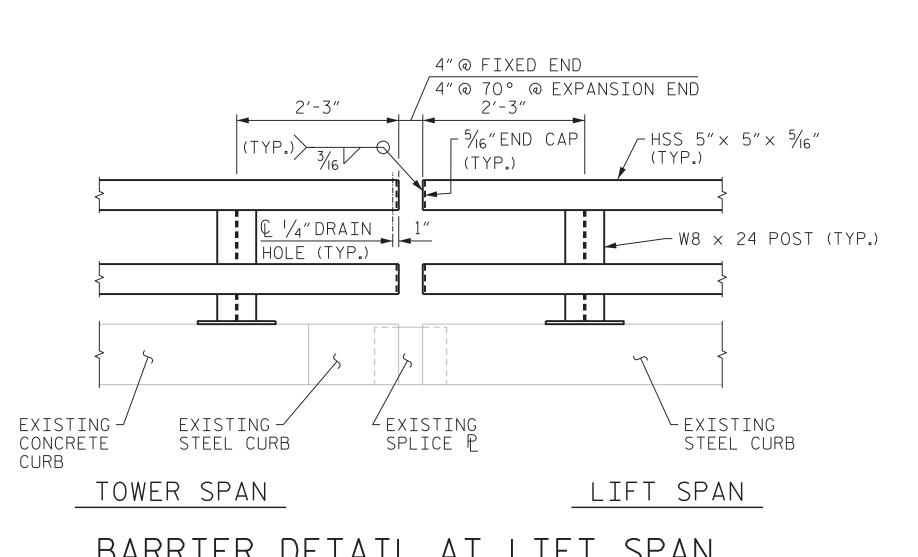
_ DATE : <u>DEC 2017</u>

DESIGNED BY: C.CORMAN DRAWN BY: K.WHITE

DESIGN ENGINEER
OF RECORD: J. DOUGHTY

CHECKED BY:

B.LOFLIN



BARRIER DETAIL AT LIFT SPAN

PROJECT NO. 15BPR.15 NEW HANOVER COUNTY

STATION:_

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MEDIAN BARRIER

Jason R Doughty ----5F73FA2DEA974E8...

SEAL 032967 REPLACEMENT DETAILS

> REVISIONS SHEET NO. S-31 NO. BY: DATE: TOTAL SHEETS

MODJESKI and MASTERS Experience great bridges.

PLAN

END OF APPROACH BARRIER DETAIL

EAST AND WEST APPROACH SLAB JOINTS

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

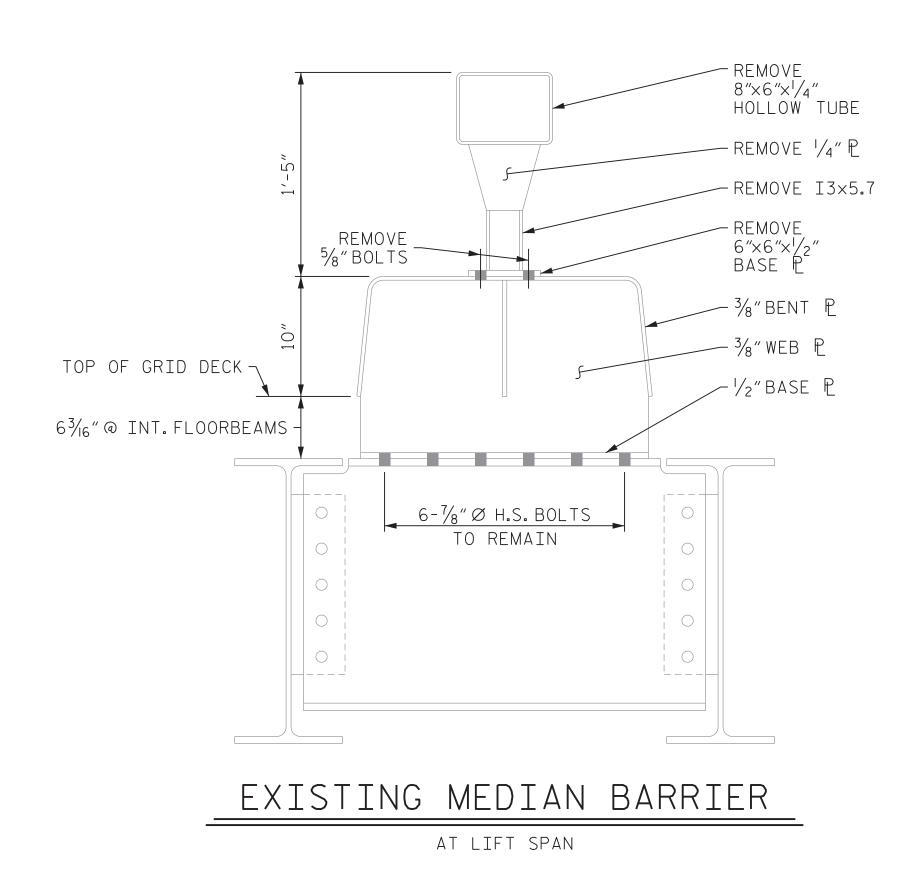
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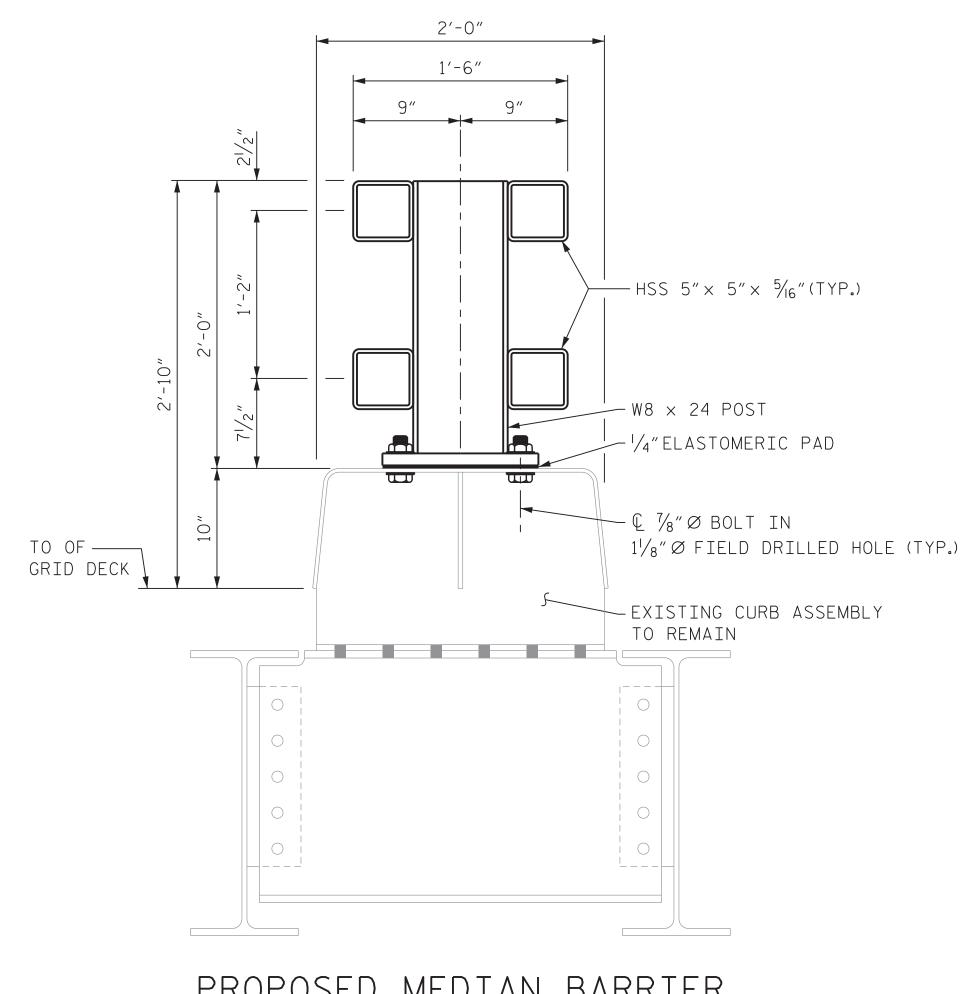


BOLTS, NUTS AND WASHERS SHALL CONFORM TO SECTION 1072-5(F) OF THE STANDARD SPECIFICATIONS.

NEW POST LOCATIONS SHALL MATCH EXISTING POST LOCATIONS.

FOR DETAILS AND ADDITIONAL NOTES, SEE SHEET 1 OF 3.





PROPOSED MEDIAN BARRIER

AT LIFT SPAN

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

SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

----5F73FA2DEA974E8...

SEAL 032967

MEDIAN	BARRIER
REPLACEMEN	NT DETAILS

	REVIS	SIO	NS		SHEET NO.
BY:	DATE:	NO.	BY:	DATE:	S-32
		8			TOTAL SHEETS
		<u> </u>			66

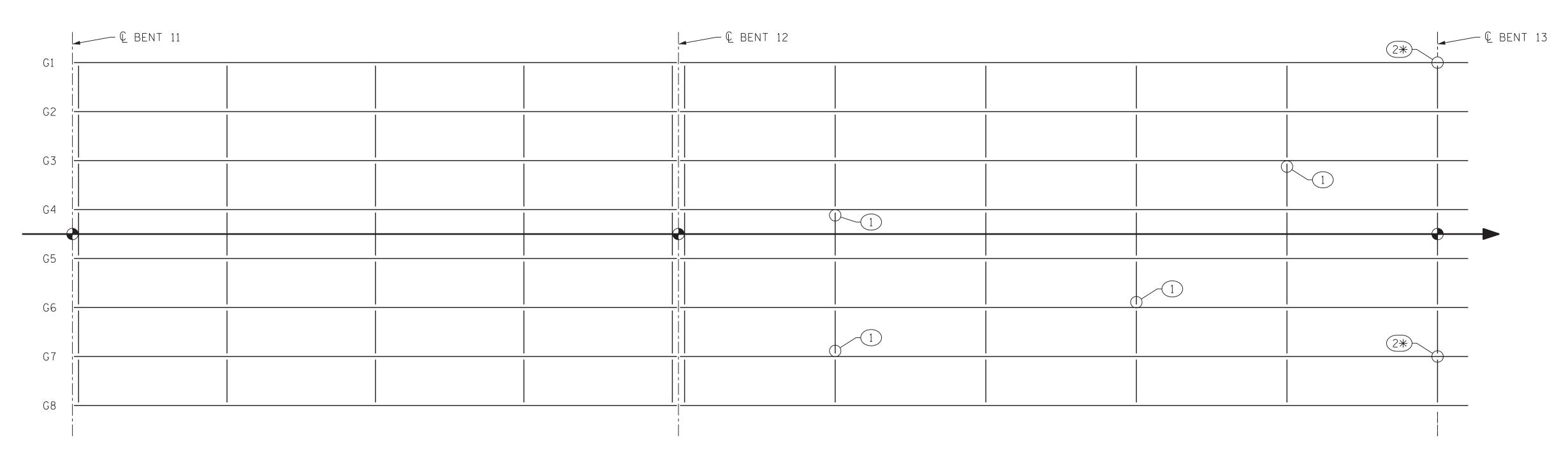
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DESIGNED BY: B.LOFLIN
DRAWN BY: K.WHITE
CHECKED BY: J.BORUTA DATE : NOV 2017
DATE : NOV 2017
DATE : DEC 2017 DESIGN ENGINEER
OF RECORD:

J. DOUGHTY _ DATE : DEC 2017



REPAIR TYPES

- CROSSFRAME / CONNECTION PLATE REPAIR

SPAN 13

- NUT AND BOLT REPAIR AT ANCHOR BOLT

- NUT AND BOLT REPAIR AT PARKING BRACKET CONNECTION PLATE

(2***) - NUT AND BOLT REPAIR AT CROSSFRAME CONNECTION PLATE

- PARKING AREA BRACKET CONNECTION PLATE REPAIR

- CROSSFRAME / FILL PLATE REPAIR

- PARKING AREA BRACKET DRIP BEAD ADDITION

MODJESKI and MASTERS

333 FAYETTEVILLE STREET, SUITE 505

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

SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

APPROACH SPANS

SEAL 032967 WGINE PARTY

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12/20/17			
DocuSigned by:			
Jason R Doughty	NO.	BY:	DA
Justin & Doughing	វា		

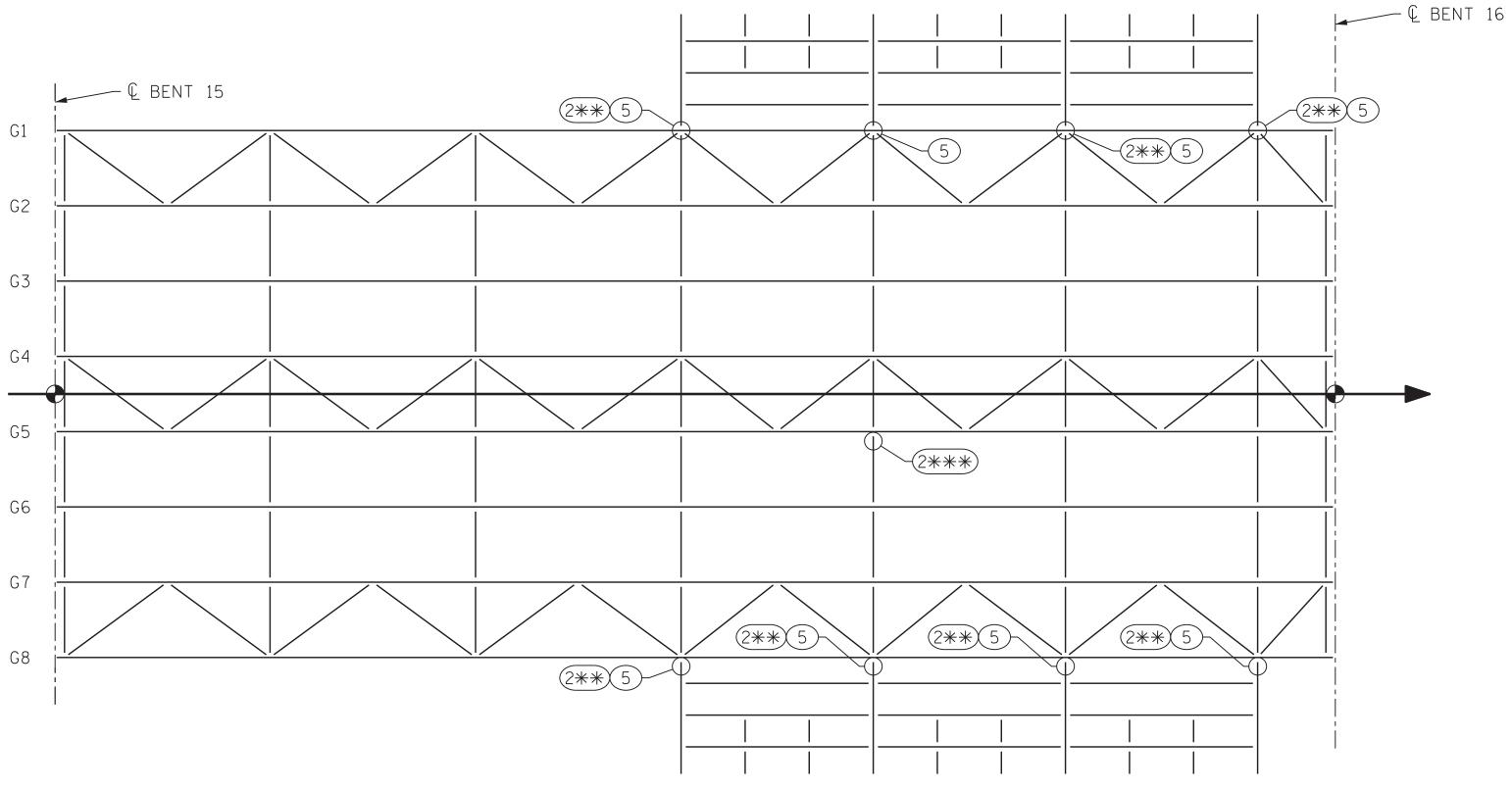
STRUCTURAL STEEL REPAIR LOCATIONS

	SHEET NO.				
BY:	DATE:	NO.	BY:	DATE:	S-33
		3			TOTAL SHEETS
		4			66

DESIGNED BY: J.BORUTA
DRAWN BY: K.WHITE
CHECKED BY: B.LOFLIN DESIGN ENGINEER
OF RECORD:
J. DOUGHTY _ DATE : <u>DEC 2017</u>

DATE : NOV 2017
DATE : NOV 2017
DATE : DEC 2017

SPAN 12



SPAN 16

REPAIR TYPES

- CROSSFRAME / CONNECTION PLATE REPAIR
- NUT AND BOLT REPAIR AT ANCHOR BOLT
 - NUT AND BOLT REPAIR AT PARKING BRACKET CONNECTION PLATE
- (2***) NUT AND BOLT REPAIR AT CROSSFRAME CONNECTION PLATE
 - PARKING AREA BRACKET CONNECTION PLATE REPAIR
 - CROSSFRAME / FILL PLATE REPAIR
 - PARKING AREA BRACKET DRIP BEAD ADDITION

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

SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION APPROACH SPANS

STRUCTURAL STEEL REPAIR LOCATIONS

SHEET NO.

S-34

TOTAL SHEETS

DATE:

REVISIONS DocuSigned by: NO. BY: DATE: Jason R Doughty ----5F73FA2DEA974E8...

SEAL 032967

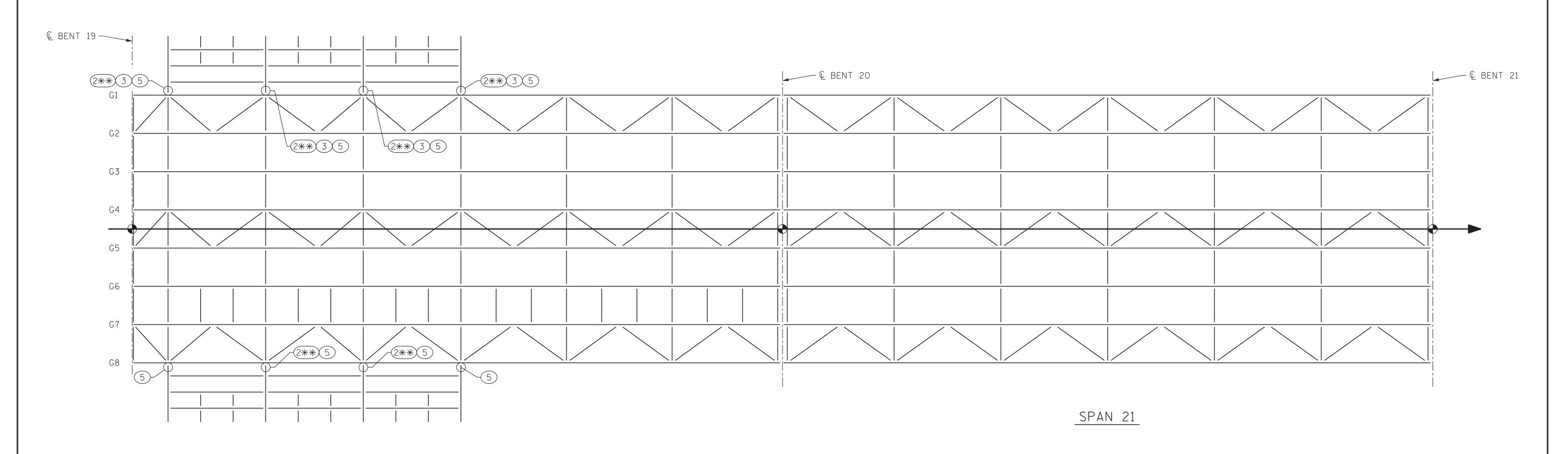
MODJESKI and MASTERS Experience great bridges. 333 FAYETTEVILLE STREET, SUITE 505

RALEIGH, NC 27601 NC LICENSE NO. C-2979

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DESIGNED BY: J.BORUTA
DRAWN BY: K.WHITE
CHECKED BY: B.LOFLIN DATE : NOV 2017
DATE : NOV 2017
DATE : DEC 2017 DESIGN ENGINEER
OF RECORD:
J. DOUGHTY __ DATE : <u>DEC 2017</u>

G6 G7



SPAN 20

REPAIR TYPES

- CROSSFRAME / CONNECTION PLATE REPAIR
- NUT AND BOLT REPAIR AT ANCHOR BOLT
- NUT AND BOLT REPAIR AT PARKING BRACKET CONNECTION PLATE
- (2***) NUT AND BOLT REPAIR AT CROSSFRAME CONNECTION PLATE
- PARKING AREA BRACKET CONNECTION PLATE REPAIR
- CROSSFRAME / FILL PLATE REPAIR
- PARKING AREA BRACKET DRIP BEAD ADDITION

MODJESKI and MASTERS

333 FAYETTEVILLE STREET, SUITE 505

RALEIGH, NC 27601 NC LICENSE NO. C-2979

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Experience great bridges.

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

SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL

APPROACH SPANS

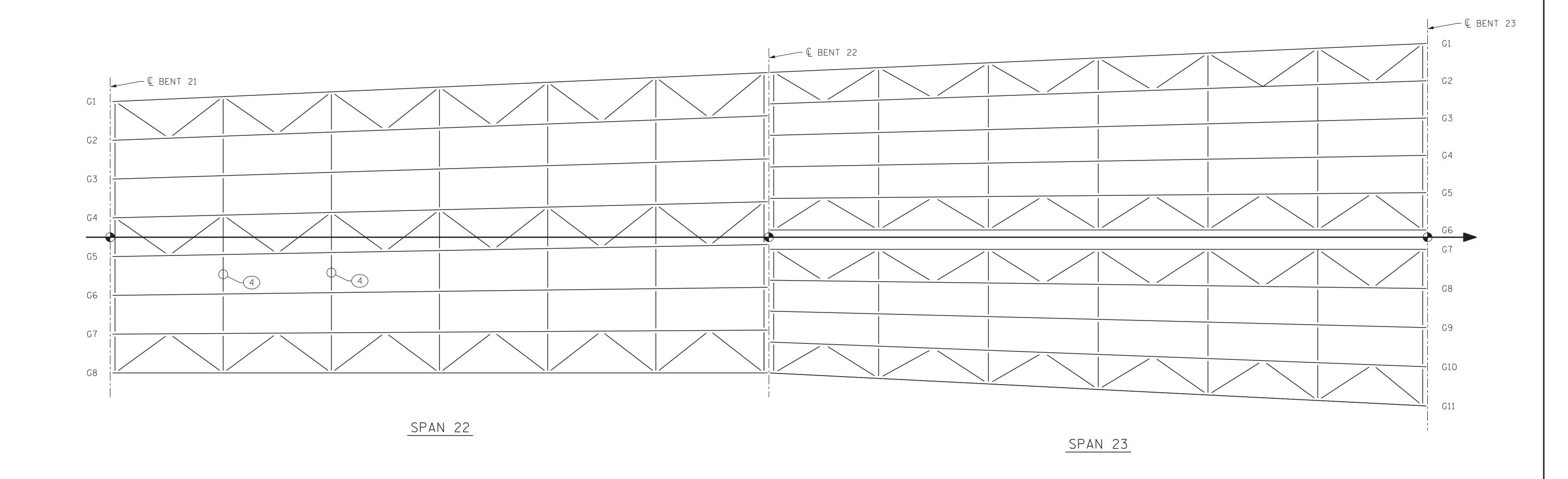
SEAL 032967

REPAIR LOCATIONS

VGINE CHILING							
DocuSigned by:	REVISIONS						SHEET NO
1	NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
Jason R Doughty	1			3			TOTAL SHEETS
5F73FA2DEA974E8	2			4			66

DESIGNED BY: J.BORUTA
DRAWN BY: K.WHITE
CHECKED BY: B.LOFLIN

DATE : NOV 2017
DATE : NOV 2017
DATE : DEC 2017 DESIGN ENGINEER
OF RECORD:
J. DOUGHTY _ DATE : <u>DEC 2017</u>



REPAIR TYPES

- CROSSFRAME / CONNECTION PLATE REPAIR

- NUT AND BOLT REPAIR AT ANCHOR BOLT

- NUT AND BOLT REPAIR AT PARKING BRACKET CONNECTION PLATE

(2***) - NUT AND BOLT REPAIR AT CROSSFRAME CONNECTION PLATE

- PARKING AREA BRACKET CONNECTION PLATE REPAIR

- CROSSFRAME / FILL PLATE REPAIR

DOCUMENT NOT CONSIDERED FINAL

UNLESS ALL SIGNATURES COMPLETED

- PARKING AREA BRACKET DRIP BEAD ADDITION

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

SHEET 4 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL

REPAIR LOCATIONS

APPROACH SPANS



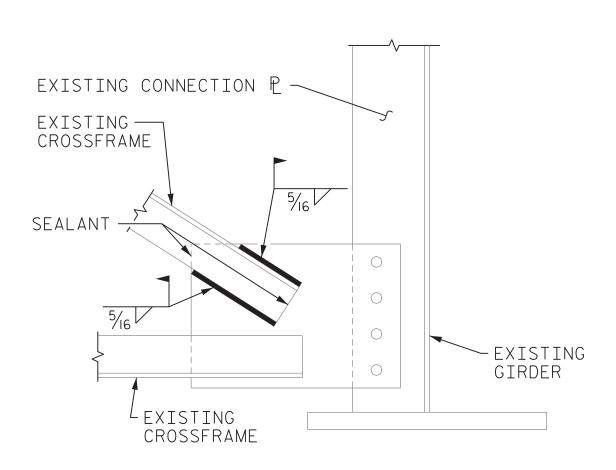
Jason R Doughty ----5F73FA2DEA974E8...

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' '			REVIS	SIO	NS		SHEET NO
,	NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
•	1			3			TOTAL SHEETS
۰	2			4			66

DESIGNED BY: J.BORUTA
DRAWN BY: K.WHITE
CHECKED BY: B.LOFLIN DESIGN ENGINEER
OF RECORD:

J. DOUGHTY __ DATE : <u>DEC 2017</u>

DATE : NOV 2017
DATE : NOV 2017
DATE : DEC 2017



REPAIR(1)

CLEAN AND RE-WELD CONNECTION BETWEEN CROSSFRAME ANGLES AND CONNECTION PLATE.

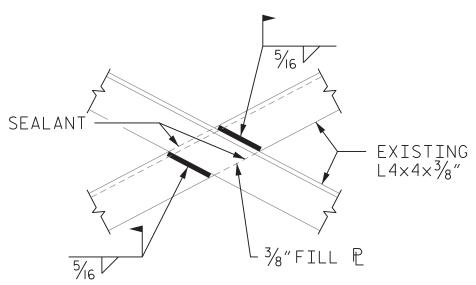
NO LIVE LOAD IN BAY OF REPAIR OR EITHER ADJACENT BAY DURING WELDING.

(4 REQUIRED)

REPAIR(2)

AS NECESSARY, REPLACE CORRODED/MISSING NUTS AND BOLTS, AND TIGHTEN LOOSE NUTS AND BOLTS. IF REPAIR OCCURS AT ANCHOR BOLT LOCATION, BUR THREADS AFTER NUTS HAVE BEEN TIGHTENED.

(APPROX. 90 TOTAL BOLTS TO BE REPLACED ON APPROACH SPANS)

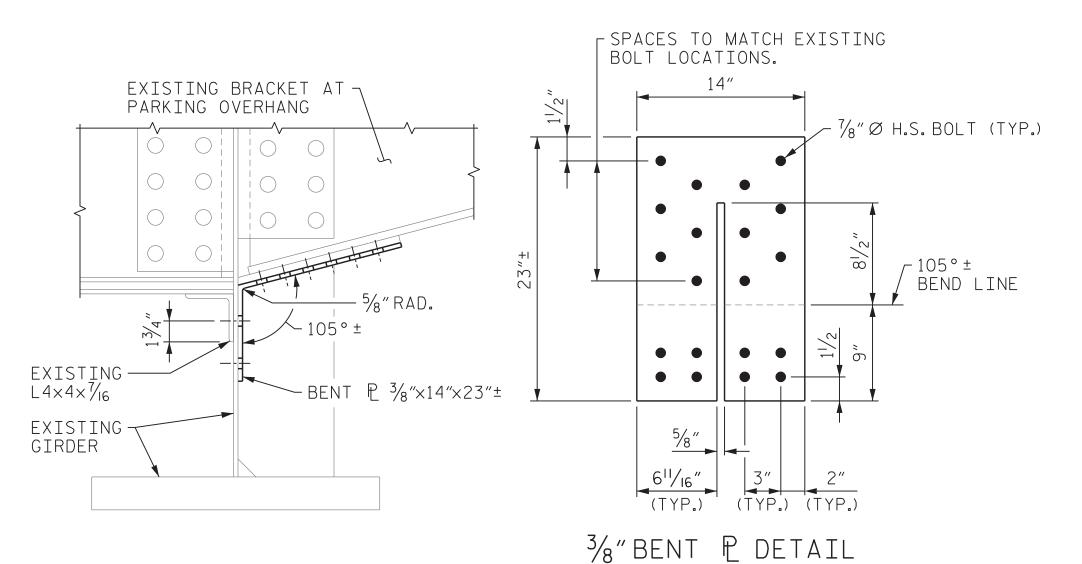


REPAIR (4)

CLEAN AND RE-WELD CONNECTION BETWEEN ANGLES AND/OR FILL P.

NO LIVE LOAD IN BAY OF REPAIR OR EITHER ADJACENT BAY DURING WELDING.

(2 REQUIRED)



REPAIR(3)

LOCATED AT PARKING AREAS

CLOSE PARKING AREA TO TRAFFIC WHILE PERFORMING REPAIR (3).

REPAIR ONE BRACKET AT A TIME.

BEFORE PAINTING, APPLY SEALANT AROUND BENT PLATE.

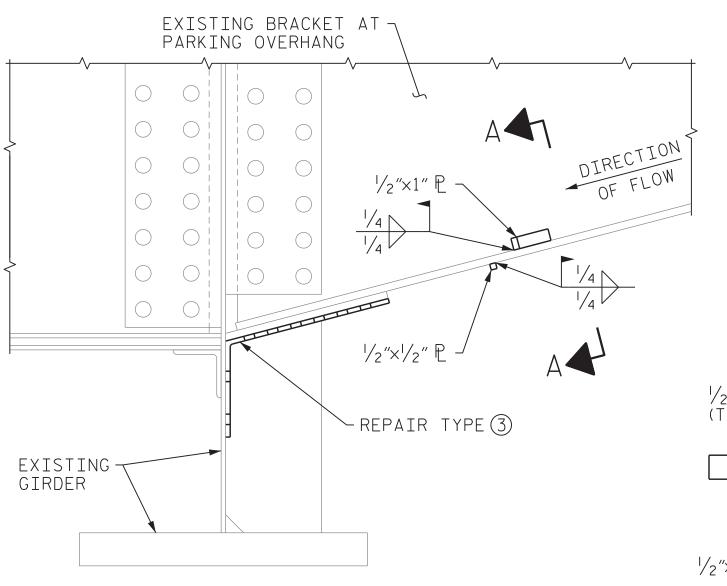
(4 REQUIRED)

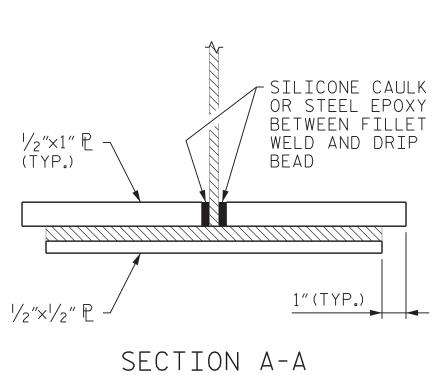
BOLT LEGEND

- EXISTING FASTENER
- - NEW H.S. BOLT IN EXISTING HOLE
- - NEW H.S. BOLT IN NEW HOLE

NOTES:

PERFORM ALL REPAIRS PRIOR TO OVERALL CLEANING AND PAINTING.





ELEVATION

ALONG BOTTOM FLANGE

2"(TYP.)

DIRECTION

OF FLOW

DRIP BEAD (TYP.)

PART PLAN - BOTTOM FLANGE

REPAIR(5)

REPAIR TO BE MADE AT ALL CANTILEVERED BRACKETS.

CLOSE PARKING AREA TO TRAFFIC WHILE PERFORMING REPAIR 3.

AFTER WELDING AND BEFORE PAINTING, PLACE SEALANT AROUND DRIP BEADS.

(16 REQUIRED)

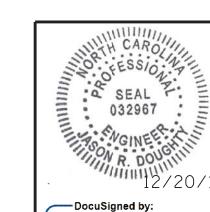
PROJECT NO. 15BPR.15

NEW HANOVER COUNTY

STATION:



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



Jason R Doughty

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DEPARTMENT OF TRANSPORTATION
RALEIGH
APPROACH SPANS
STRUCTURAL STEEL

STATE OF NORTH CAROLINA

REPAIR DETAILS

REVISIONS

BY: DATE: NO. BY: DATE: S-37

TOTAL SHEETS
66

DESIGNED BY: J.BORUTA DATE: NOV 2017
DRAWN BY: K.WHITE DATE: NOV 2017
CHECKED BY: B.LOFLIN DATE: DEC 2017
DESIGN ENGINEER
OF RECORD: J.DOUGHTY DATE: DEC 2017

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		GIRDER, DIAPHRAC	GM, & UNDI	ERDECK REPAIR TABLES	
SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
1	DECK	@ BENT 1	27"× 18"	BOTTOM OF DECK	LT.EXT.
1	G5	33.6' FROM BENT 1	10"× 9"	BOTTOM FLANGE	
1	G7	28' FROM END BENT	11.5" × 8.5"	BOTTOM FLANGE	
2	DECK	34' FROM BENT 1	31"× 22"	BOTTOM OF DECK	RT. EXT.
2	G1	2.5' FROM BENT CAP 2	10"× 9"	BOTTOM FLANGE	
2	G1	1.5"FROM BENT CAP 2	11"× 8"	BOTTOM FLANGE	
2	G1	11' FROM BENT CAP 1	9"× 7"	BOTTOM FLANGE	
2	G1	22.5' FROM BENT CAP 2	14"× 10"	BOTTOM FLANGE	
2	G1	20.5' FROM BENT CAP 1	360"× 12"	BOTTOM FLANGE	
2	G1	26.0' FROM BENT CAP 2	14"× 10"	BOTTOM FLANGE	
2	G2	BRG.PLATE.@ BENT 2	18"× 10"	BOTTOM FLANGE	
2	G7	2' FROM FACE OF BENT 1	20"× 7	BOTTOM FLANGE	
2	G7	24"FROM BENT 1	120"× 10"	BOTTOM FLANGE	
2	G7	1.5' FROM BENT 1	3 @ 10" × 10"	BOTTOM FLANGE	
3	DECK	16' FROM BENT 2	10"× 8"	BOTTOM OF DECK	6
3	END DIAPHRAGM	@ BENT 2	14"× 10"	FACE OF DIAPHRAGM	1
3	G2	24' FROM BENT 2	4 @ 12"× 7"	BOTTOM FLANGE	
3	G2	24' FROM BENT 2	12"× 10"	BOTTOM FLANGE	
3	G3	2.5' FROM BENT 3	13"× 7"	BOTTOM FLANGE	
3	G4	1.75' FROM BENT 3	17"× 13"	BOTTOM FLANGE	
3	G5	1' FROM BENT 3	35"× 15"	BOTTOM FLANGE	
3	G5	@ BENT 3	10"× 6"	BOTTOM RT. CHAMFER	
3	G7	@ BENT 2	11"× 7"	BOTTOM FLANGE AND RT.FACE	
3	G7	2.75' FROM BENT 3	17"× 9"	BOTTOM FLANGE	
4	DECK	@ BENT 4	21"× 10"	BOTTOM OF DECK	LT.EXT.
4	G1	13' FROM BENT 4	8"× 7"	BOTTOM FLANGE	
4	G3	28' FROM BENT 3	8"× 7"	BOTTOM FLANGE	
4	G4	2' FROM BENT 3	8 @ 11"× 8"	BOTTOM FLANGE	
4	G5	1' FROM BENT 4	37"× 14"	*BOTTOM FLANGE & RT.FACE OF BOTTOM FLANGE	
5	DECK	34' FROM BENT 4	24"× 21"	BOTTOM OF DECK	RT. EXT.
5	G2	6' FROM BENT 4	9 @ 13"× 7"	BOTTOM FLANGE	
5	G2	14' FROM BENT 4	12"× 8"	BOTTOM FLANGE	
5	G2	24' FROM BENT 4	10"× 6"	BOTTOM FLANGE	
5	G2	34' FROM BENT 4	9 @ 16"× 6"	BOTTOM FLANGE	
5	G2	11' FROM BENT 5	13 @ 18"× 6"	BOTTOM FLANGE	
5	G2	0.5' FROM BENT 5	30"× 13"	BOTTOM FLANGE	
5	G5	5' FROM BENT 5	24"× 6"	BOTTOM FLANGE AND RT. FACE	
6	G1	19' FROM BENT 6	8"× 7"	BOTTOM FLANGE	
6	G2	22' FROM BENT 5	3 @ 20"× 9"	BOTTOM FLANGE	
6	G5	26' FROM BENT 5	432"× 17"	BOTTOM FLANGE	
6	G6	0.5' FROM BENT 5	10"× 6"	BOTTOM FLANGE	
6	G8	24.5 FROM BENT 5	4 @ 11"× 8"	BOTTOM FLANGE	
7	G5	@ BENT 7	12"× 6"	BOTTOM FLANGE	

		GIRDER, DIAPHRAC	GM, & UNDE	ERDECK REPAIR TABLES	
SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	ВАҮ
8	DECK	34' FROM BENT 7	29"× 20"	BOTTOM OF DECK	RT. EXT.
8	DECK	34' FROM BENT 7	23"× 16"	BOTTOM OF DECK	RT. EXT.
8	DECK	15.5' FROM BENT 8	24"× 13"	BOTTOM OF DECK	4
8	DECK	17.5' FROM BENT 8	19"× 13"	BOTTOM OF DECK	5
8	G1	@ BENT 7	17"× 7"	TOP LEFT CHAMFER	
8	G1	@ BENT 8	20" × 5"	TOP LEFT CHAMFER	
8	G2	17' FROM BENT 7	13"× 11"	BOTTOM FLANGE	
8	G2	24' FROM BENT 7	10"× 10"	BOTTOM FLANGE	
8	G2	28' FROM BENT 8	12"× 9"	BOTTOM FLANGE	
8	G2	26' FROM BENT 8	10"× 7"	BOTTOM FLANGE	
8	G2	23' FROM BENT 8	9"× 9"	BOTTOM FLANGE	
8	G2	16' FROM BENT 8	10"× 8"	BOTTOM FLANGE	
8	G2	13' FROM BENT 8	13"× 11"	BOTTOM FLANGE	
8	G3	21' FROM BENT 7	12"× 9"	BOTTOM FLANGE	
8	G3	34' FROM BENT 7	24"× 12"	BOTTOM FLANGE	
8	G5	@ BENT 8	31"× 24"	BOTTOM FLANGE	
8	G5	@ BENT 8	18"× 9"	RT.FACE OF BOTTOM FLANGE	
8	G5	3.5' FROM BENT 8	11"× 10"	BOTTOM FLANGE	
8	G6	20' FROM BENT 7	11"× 8"	BOTTOM FLANGE	
8	G7	13' FROM BENT 7	12"× 10"	BOTTOM FLANGE	
8	G7	23' FROM BENT 8	12"× 10"	BOTTOM FLANGE	
8	G7	23' FROM BENT 8	11"× 10"	BOTTOM FLANGE	
8	G9	13' FROM BENT 7	24"× 11"	BOTTOM FLANGE	
9	DECK	13' FROM BENT 9	10"× 9"	BOTTOM OF DECK	5
9	G1	7' FROM BENT 9	24"× 14"	BOTTOM FLANGE	
9	G5	1' FROM BENT 9	73"× 24"	BOTTOM FLANGE & RT.FACE OF BOTTOM FLANGE	
9	G5	1' FROM BENT 9	50" × 24"	BOTTOM FLANGE	
9	G9	14' FROM BENT 8	22"× 11"	BOTTOM FLANGE	
9	G9	19' FROM BENT 8	12" × 12"	BOTTOM FLANGE	
9	G9	22' FROM BENT 8	19"× 16"	BOTTOM FLANGE	
9	G9	4' FROM BENT 8	24" × 24"	BOTTOM FLANGE	
9	G9	10' FROM BENT 8	9"× 8"	BOTTOM FLANGE	
9	G9	11' FROM BENT 8	10"× 6"	BOTTOM FLANGE	
9	G9	17' FROM BENT 8	12"× 11"	BOTTOM FLANGE	
9	 G9	20' FROM BENT 9	18"× 16"	BOTTOM FLANGE	

NOTES:

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. REPAIR DEPTHS VARY FROM $1\frac{1}{2}$ "TO $3\frac{1}{2}$ "DEPENDING ON LOCATION.

* REPAIR IS CLASSIFIED UNDER "REPAIRS TO CONCRETE GIRDERS" SPECIAL PROVISION.



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	REPA	IR (TNAUC	ITY	TABI	_E
		EST:	IMATE		ACTUAL	
	SHOTCRETE	AREA	VOLUME	AREA	DEPTH	VOLUME
		SF	CF	SF	FT	CF
	GIRDERS	1.30	0.16			
SPAN	DIAPHRAGMS					
1	DECK	3.38	1.41			
	GIRDERS	46.26	6.15			
SPAN	DIAPHRAGMS					
2	DECK	4.74	1.58			
	GIRDERS	10.99	1.98			
SPAN	DIAPHRAGMS	0.97	0.12			
3	DECK	0.56	0.14			
	GIRDERS	5.67	0.71			
SPAN	DIAPHRAGMS					
4	DECK	1.46	0.61			
	GIRDERS	26.23	3.67			
SPAN	DIAPHRAGMS					
5	DECK	3.50	0.88			
	GIRDERS	58.00	7.25			
SPAN	DIAPHRAGMS					
6	DECK					
	GIRDERS	0.50	0.10			
SPAN	DIAPHRAGMS					
7	DECK					
	GIRDERS	21.24	3.83			
SPAN	DIAPHRAGMS					
8	DECK	10.47	1.74			
	GIRDERS	34.54	5.07			
SPAN	DIAPHRAGMS					
9	DECK	0.63	0.10			

	REPAIRS TO	ESTIMATE		ACTUAL		
	P/S CONC.	AREA	VOLUME	AREA	DEPTH	VOLUME
	GDRS		CF	SF	FT	CF
SPAN 4	GIRDERS	3.60	1.50			

PROJECT NO. 15BPR.15 NEW HANOVER

STATION:___

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER, DIAPHRAGM AND UNDERDECK REPAIRS

SEAL 032967 SEAL 0 ----5F73FA2DEA974E8...

	REVIS	SIO	NS		SHEET NO
Y:	DATE:	NO.	BY:	DATE:	S-38
		3			TOTAL SHEETS
		4			66

DESIGNED BY: J.BORUTA
DRAWN BY: C.CORMAN
CHECKED BY: C.CORMAN
DESIGN ENGINEER
OF RECORD: J.DOUGHTY DATE : OCT 2017
DATE : OCT 2017
DATE : DEC 2017 __ DATE : DEC 2017

		GIRDER, DIAPHRAG			
SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
10	G1	@ BENT 10	28"× 5"	TOP LEFT CHAMFER	
10	G2	19' FROM BENT 9	36"× 9"	BOTTOM FLANGE	
10	G3	17' FROM BENT 10	16 @ 16"× 6"	BOTTOM FLANGE	
10	G3	12' FROM BENT 10	8"× 8"	BOTTOM FLANGE	
10	G3	6.5' FROM BENT 10	30"× 14"	BOTTOM FLANGE	
10	G3	18' FROM BENT 10	30"× 14"	BOTTOM FLANGE	
10	G5	22' FROM BENT 10	6"× 6"	BOTTOM FLANGE	
10	G7	22' FROM BENT 10	18"× 11"	BOTTOM FLANGE	
10	G8	7' FROM BENT 9	12"× 12"	BOTTOM FLANGE	
10	G8	14' FROM BENT 9	36"× 14"	BOTTOM FLANGE	
10	G8	10'FROM BENT 9	144′ × 17″	BOTTOM FLANGE	
10	END DIAPHRAGM	@ BENT 10	12"× 10"	FACE OF DIAPHRAGM	8
10	G9	12' FROM BENT 9	18"× 10"	BOTTOM FLANGE	
10	G9	12' FROM BENT 9	9"× 8"	BOTTOM FLANGE	
10	G9	18' FROM BENT 9	27"× 13"	BOTTOM FLANGE	
10	G9	20'FROM BENT 9	18"× 14"	BOTTOM FLANGE	
10	G9	7' FROM BENT 9	16"× 9"	BOTTOM FLANGE	
10	G9	14' FROM BENT 9	4 @ 13″× 6″	BOTTOM FLANGE	
10	G9	25' FROM BENT 9	14"× 9"	BOTTOM FLANGE	
10	G9	32' FROM BENT 9	30"× 16"	BOTTOM FLANGE	
10	G9	21.5' FROM BENT 10	5 @ 13"× 8"	BOTTOM FLANGE	
10	G9	11' FROM BENT 10	8"× 8"	BOTTOM FLANGE	
10	G9	@ BENT 10 DIAPHRAGM	30"× 5"	TOP LEFT CHAMFER	
11	G1	@ BENT 11	21"× 7"	TOP RIGHT CHAMFER	
11	G2	1"FROM BENT 11	15"× 14"	BOTTOM FLANGE	
11	G4	14' FROM BENT 10	9"× 9"	BOTTOM FLANGE	
11	G4	31' FROM BENT 10	12"× 10"	BOTTOM FLANGE	
11	G4	27' FROM BENT 11	11"× 10"	BOTTOM FLANGE	
11	G5	16.5' FROM BENT 11	13 @ 22"× 9"	BOTTOM FLANGE	
11	G5	12' FROM BENT 11	9"× 9"	BOTTOM FLANGE	
11	G6	15' FROM BENT 10	39"× 13"	BOTTOM FLANGE	
11	G6	BEARING PLATE @ BENT 10	8"× 8"	BOTTOM FLANGE	
11	G6	13' FROM BENT 10	9"× 8"	BOTTOM FLANGE	
11	G6	16' FROM BENT 10	38"× 11"	BOTTOM FLANGE	
11	G6	14' FROM BENT 10	20"× 9"	BOTTOM FLANGE	
11	G6	18' FROM BENT 10	21 @ 20"× 10"	BOTTOM FLANGE	
11	G6	11' FROM BENT CAP 11	21"× 12"	BOTTOM FLANGE	
11	G6	2' FROM BENT CAP 11	12"× 12"	BOTTOM FLANGE	
11	G6	2'FROM BENT CAP 11	10"× 10"	BOTTOM FLANGE	
11	G7	11' FROM BENT CAP 11	10"× 8"	BOTTOM FLANGE	
11	G8	21' FROM BENT 11	24"× 9"	BOTTOM FLANGE	
11	G9	14' FROM BENT 10	24" × 12"	BOTTOM FLANGE	

		GIRDER, DIAPHRAGN	M, & UNDERD	ECK REPAIR TABLES	
SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
12	DECK	2' FROM BENT 11	14"× 7"	BOTTOM OF DECK	RT.EXT.
12	DECK	1' FROM BENT 12	14"× 8"	BOTTOM OF DECK	RT.EXT.
13	DECK	25' FROM BENT 13	24"× 6"	BOTTOM OF DECK	4
19	DECK	2' FROM EAST END OF SPAN	7'-2"× 14"	BOTTOM OF DECK	5
21	DECK	@ BENT 20	16"× 10"	BOTTOM OF DECK	LT.EXT.
23	DECK	54' FROM BENT 22	27"× 11"	BOTTOM OF DECK	6
27	G1	@ BENT 26	24"× 6"	LEFT WEB	
27	G1	28' FROM BENT 26	9"× 6"	BOTTOM FLANGE	
27	G1	23' FROM BENT 27	6 @ 9"× 8"	BOTTOM FLANGE	
27	G4	19' FROM BENT 26	4 @ 13"× 9"	BOTTOM FLANGE	
27	G4	28' FROM BENT 26	9"× 7"	BOTTOM FLANGE	
27	G5	23' FROM BENT 27	11"× 9"	BOTTOM FLANGE	
27	G6	@ BENT 26	36"× 8"	BOTTOM FLANGE	
27	G6	4' FROM BENT 26	11"× 9"	BOTTOM FLANGE	
27	G6	10' FROM BENT 26	400" × 22"	BOTTOM FLANGE	
27	G6	16' FROM BENT 26	8"× 7"	BOTTOM FLANGE	
27	G11	21' FROM BENT 26	2 @ 12" × 7"	BOTTOM FLANGE	
27	G11	34' FROM BENT 26	48" × 10"	BOTTOM FLANGE	
27	G13	10' FROM BENT 26	12 @ 22"× 6"	BOTTOM FLANGE	
27	G14	10' FROM BENT 26	13 @ 14"× 7"	BOTTOM FLANGE	
27	G15	21' FROM BENT 26	7" × 7"	BOTTOM FLANGE	

		ESTIMATE		ACTUAL			
	SHOTCRETE	AREA	VOLUME	AREA	DEPTH	VOLUME	
		SF	CF	SF	FT	CF	
SPAN	GIRDERS	68.72	9.36				
10	DIAPHRAGMS	0.83	0.10				
	DECK						
SPAN	GIRDERS	68.36	9.32				
11	DIAPHRAGMS						
	DECK						
SPAN	GIRDERS						
12	DIAPHRAGMS						
1 ∠	DECK	1.46	0.24				
CD V VI	GIRDERS						
SPAN	DIAPHRAGMS						
13	DECK	1.00	0.42				
	GIRDERS						
SPAN 15	DIAPHRAGMS						
	DECK						
	GIRDERS						
SPAN	DIAPHRAGMS						
16	DECK						
	GIRDERS						
SPAN	DIAPHRAGMS						
19	DECK						
	GIRDERS						
SPAN	DIAPHRAGMS						
20	DECK						
	GIRDERS						
SPAN	DIAPHRAGMS						
21	DECK	1.11	0.28				
	GIRDERS						
SPAN	DIAPHRAGMS						
23	DECK	2.06	0.86				
	GIRDERS	97.63	12.20				
SPAN	DIAPHRAGMS						
27	DECK						

REPAIR QUANTITY TABLE

PROJECT NO. 15BPR.15

NEW HANOVER COUNTY

STATION:

SHEET 2 OF 3

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

GIRDER, DIAPHGRAM AND UNDERDECK REPAIRS

SHEET NO.

S-39

TOTAL SHEETS

MODJESKI and MASTERS
Experience great bridges.

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

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DESIGNED BY:	J. BORUTA	DATE	: OCT	201
DRAWN BY:	C. CORMAN	DATE		
CHECKED BY:	C. CORMAN	DATE		
DESIGN ENGINEE	 R			
OF RECORD:	J. DOUGHTY	DATE	. DEC	201

		GIRDER, DIAPHRAC	GM, & UNDE	ERDECK REPAIR TABLES	
SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	ВАҮ
28	G1	28' FROM BENT 27	36″×10″	BOTTOM FLANGE	
28	G1	18.5' FROM BENT 28	6 @ 12"×11"	BOTTOM FLANGE	
28	G1	30"FROM BENT 28	2 @ 12"x9"	BOTTOM FLANGE	
28	G3	16' FROM BENT 27	7 @ 18″×10″	BOTTOM FLANGE	
28	G3	24' FROM BENT 27	4 @ 11"x7"	BOTTOM FLANGE	
28	G3	34' FROM BENT 27	4 @ 13"×7"	BOTTOM FLANGE	
28	G3	22.5' FROM BENT 28	11″×10″	BOTTOM FLANGE	
28	G5	22' FROM BENT 27	16″×12″	BOTTOM FLANGE	
28	G5	2' FROM BENT 27	2 @ 11"×11"	BOTTOM FLANGE	
28	G5	8.5' FROM BENT 27	196″×22″	BOTTOM FLANGE	
28	G5	34' FROM BENT 27	3 @ 9″x5″	BOTTOM FLANGE	
28	G5	22.5' FROM BENT 28	5 @ 10″x8″	BOTTOM FLANGE	
28	G5	23.5' FROM BENT 28	16″×10″	BOTTOM FLANGE	
28	G9	18' FROM BENT 27	5 @ 10″x8″	BOTTOM FLANGE	
28	G9	21' FROM BENT 27	14"×8"	BOTTOM FLANGE	
28	G9	27' FROM BENT 27	22″×11″	BOTTOM FLANGE	
28	G9	34' FROM BENT 27	4 @ 20"×14"	BOTTOM FLANGE	
28	G9	25' FROM BENT 28	17"×10"	BOTTOM FLANGE	
28	G9	23' FROM BENT 28	12"×22"	BOTTOM FLANGE	
28	G10	@ BENT 27	10″×8″	BOTTOM FLANGE	
28	G10	12' FROM BENT 28	3 @ 9″×9″	BOTTOM FLANGE	
28	G12	23' FROM BENT 27	2 @ 11"x6"	BOTTOM FLANGE	
28	G14	2' FROM BENT 27	24"×7"	BOTTOM FLANGE	
28	G15	15' FROM BENT 28	16″×10″	BOTTOM FLANGE	
29	G1	@ BENT 29	7"×7"	BOTTOM FLANGE	
29	G2	28' FROM BENT 29	12"×10"	BOTTOM FLANGE	
29	G2	28' FROM BENT 29	7"×7"	BOTTOM FLANGE	
29	G2	18' FROM BENT 29	11"×9"	BOTTOM FLANGE	
29	G7	35.5' FROM BENT 28	13″×10″	BOTTOM FLANGE	
29	G7	26' FROM BENT 29	4 @ 17"×11"	BOTTOM FLANGE	
29	G7	23' FROM BENT 29	10″×9″	BOTTOM FLANGE	
29	G7	17' FROM BENT 29	3 @ 9″×7″	BOTTOM FLANGE	
30	G1	22' FROM BENT 30	13″×8″	BOTTOM FLANGE	
30	G2	24' FROM BENT 29	16"×10"	BOTTOM FLANGE	
30	G2	16' FROM BENT 29	11″×6″	BOTTOM FLANGE	
30	G3	18' FROM BENT 29	14"×13"	BOTTOM FLANGE	
30	G4	32' FROM BENT 29	14"×12"	BOTTOM FLANGE	
30	G4	38' FROM BENT 29	3 @ 17″×10″	BOTTOM FLANGE	
30	G7	24.5' FROM BENT 29	16″×13″	BOTTOM FLANGE	
30	G7	23.5' FROM BENT 29	10"×10"	BOTTOM FLANGE	
30	G7	25' FROM BENT 29	10"×10"	BOTTOM FLANGE	
30	G8	28' FROM BENT 29	16″×8″	BOTTOM FLANGE	
30	 G9	30' FROM BENT 29	4 @ 17"×7"	BOTTOM FLANGE	

		GIRDER, DIAPHRAGN	M, & UNDEI	RDECK REPAIR TABLES	
SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	ВАҮ
30	G9	34' FROM BENT 29	15"×9"	BOTTOM FLANGE	
30	G9	7' FROM BENT 30	10″×10″	BOTTOM FLANGE	
30	G10	1' FROM BENT 30	12"×7"	BOTTOM FLANGE	
30	G10	20' FROM BENT 30	14"×7"	BOTTOM FLANGE	
30	G11	24' FROM BENT 30	10″×5″	BOTTOM FLANGE	
30	G11	22' FROM BENT 30	16″×10″	BOTTOM FLANGE	
30	G11	6' FROM BENT 30	10″×10″	BOTTOM FLANGE	
31	DECK	2' FROM BENT 30	22"×9"	BOTTOM OF DECK	7
31	G2	30' FROM BENT 30	12″×9″	BOTTOM FLANGE	
31	G2	47.5' FROM BENT 30	300″×26″	BOTTOM FLANGE	
31	G2	14' FROM BENT 31	14"×8"	BOTTOM FLANGE	
31	G2	21' FROM BENT 31	14"×8"	BOTTOM FLANGE	
31	G3	47.5' FROM BENT 30	10″×7″	BOTTOM FLANGE	
31	G4	47.5' FROM BENT 30	10″x5″	BOTTOM FLANGE	
31	G5	16' FROM BENT 30	9″×8″	BOTTOM FLANGE	
31	G7	1.5' FROM BENT 30	11"×7"	BOTTOM FLANGE	
31	G8	1' FROM BENT 30	18″×12″	BOTTOM FLANGE	
31	G9	47.5' FROM BENT 30	4 @ 11"×8"	BOTTOM FLANGE	
31	G11	4' FROM BENT 30	8″×8″	BOTTOM FLANGE	
31	G12	6' FROM BENT 30	19″×10″	BOTTOM FLANGE	
32	G9	@ BENT 31	9″×6″	BOTTOM FLANGE	
32	G10	@ END BENT 2	10″×8″	BOTTOM FLANGE	
32	G10	3' FROM BENT 31	7"×7"	TOP RT. CHAMFER	
32	G11	@ END BENT 2	9″x7″	BOTTOM FLANGE	
33	G1	VARIOUS LOCATIONS	48″×9″	BOTTOM FLANGE	
33	G1	30' FROM BENT 33	12″×9″	BOTTOM FLANGE	
34	G1	16' FROM BENT 32	49″×11″	BOTTOM FLANGE	
34	G1	30' FROM BENT 32	9 @ 20″×10″	BOTTOM FLANGE	
34	G1	14' FROM BENT 32	10″×10″	BOTTOM FLANGE	
34	G1	18' FROM BENT 32	10″×10″	BOTTOM FLANGE	
34	G2	@ BENT 32	10"×9"	BOTTOM FLANGE	
35	G1	9"FROM END BENT 2 RAMP	10"×6"	TOP LT. CHAMFER	
35	G2	9"FROM END BENT 2 RAMP	10"×6"	TOP LT. FLANGE	
35	G4	12"FROM BENT 33	11"×10"	BOTTOM FLANGE	
35	G4	19' FROM BENT 33	14"×11"	BOTTOM FLANGE	
35	G5	5"FROM END BENT 2 RAMP	14"×11"	BOTTOM FLANGE	
35	G5	5"FROM END BENT 2 RAMP	13″×10″	BOTTOM FLANGE	
35	G5	19" FROM END BENT 2 RAMP	17"×5"	TOP LT. FLANGE	

	REPAIR QUANTITY TABLE								
		EST	IMATE	ACTUAL					
	SHOTCRETE	AREA	VOLUME	AREA	DEPTH	VOLUME			
		SF	CF	SF	FT	CF			
65.44	GIRDERS	82.89	10.48						
SPAN	DIAPHRAGMS								
28	DECK								
	GIRDERS	10.24	1.28						
SPAN	DIAPHRAGMS								
29	DECK								
65.44	GIRDERS	20.34	2.89						
SPAN	DIAPHRAGMS								
30	DECK								
65.44	GIRDERS	63.30	8.13						
SPAN	DIAPHRAGMS								
31	DECK	1.38	0.23						
65.44	GIRDERS	1.71	0.21						
SPAN	DIAPHRAGMS								
32	DECK								
	GIRDERS	3.75	0.47						
SPAN	DIAPHRAGMS								
33	DECK								
	GIRDERS	18.26	2.91						
SPAN	DIAPHRAGMS								
34	DECK								
C D A A A	GIRDERS	5.23	0.65						
SPAN	DIAPHRAGMS								
35	DECK								

PROJECT NO. 15BPR.15 NEW HANOVER COUNTY

STATION:____

SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RALEIGH

SEAL 032967

12/20/17	<u> </u>	
DocuSigned by:		
	NO.	
Jason R Doughty	1	
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GIRDER, DIAPHRAGM AND UNDERDECK REPAIRS

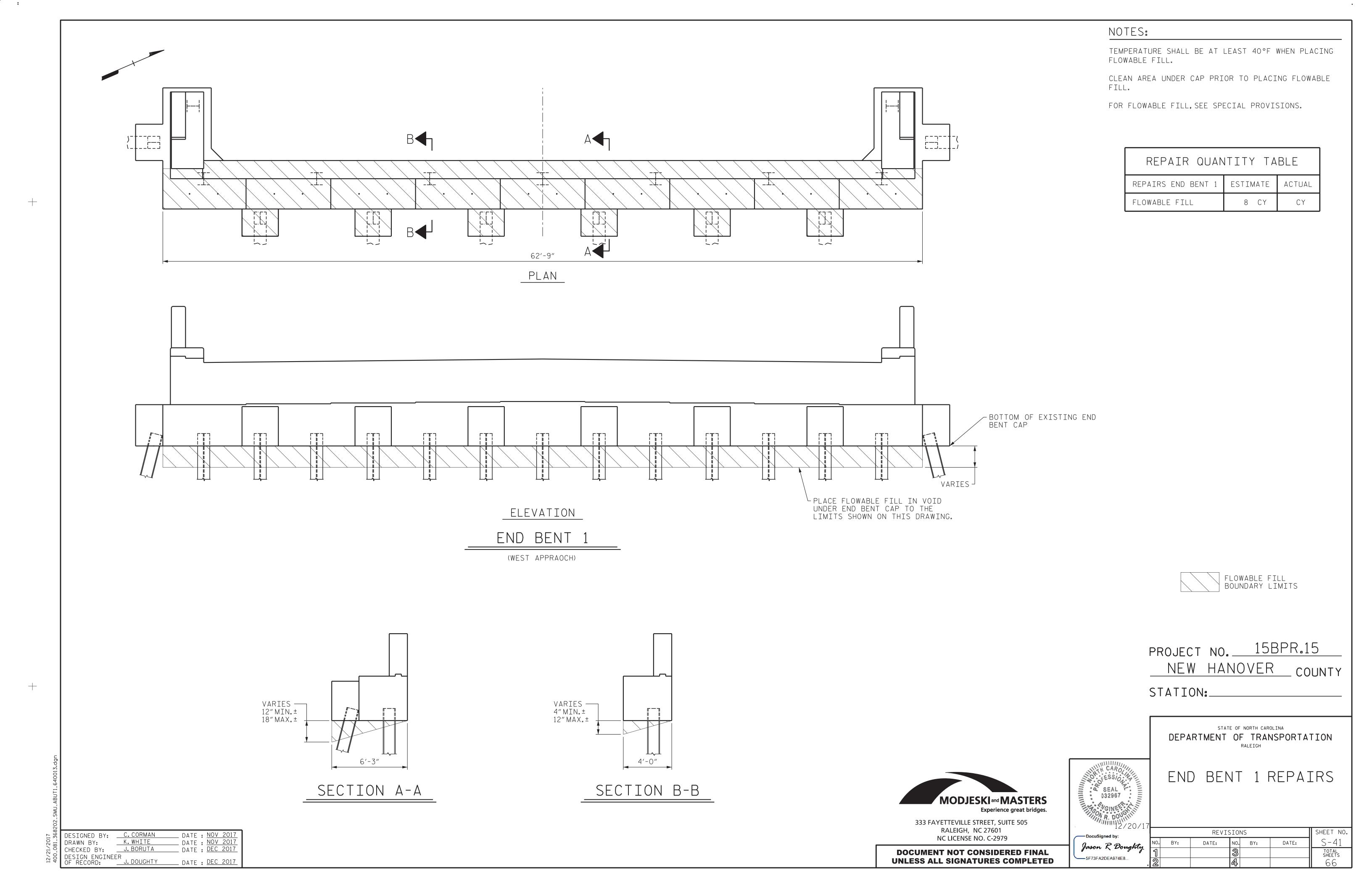
REVISIONS SHEET NO. NO. BY: DATE: S-40 DATE: TOTAL SHEETS

MODJESKI and MASTERS Experience great bridges.

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

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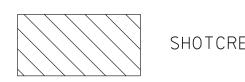
DESIGNED BY: J. BORUTA
DRAWN BY: C. CORMAN
CHECKED BY: C. CORMAN
DESIGN ENGINEER
OF RECORD: J. DOUGHTY DATE : OCT 2017
DATE : OCT 2017
DATE : DEC 2017 __ DATE : DEC 2017



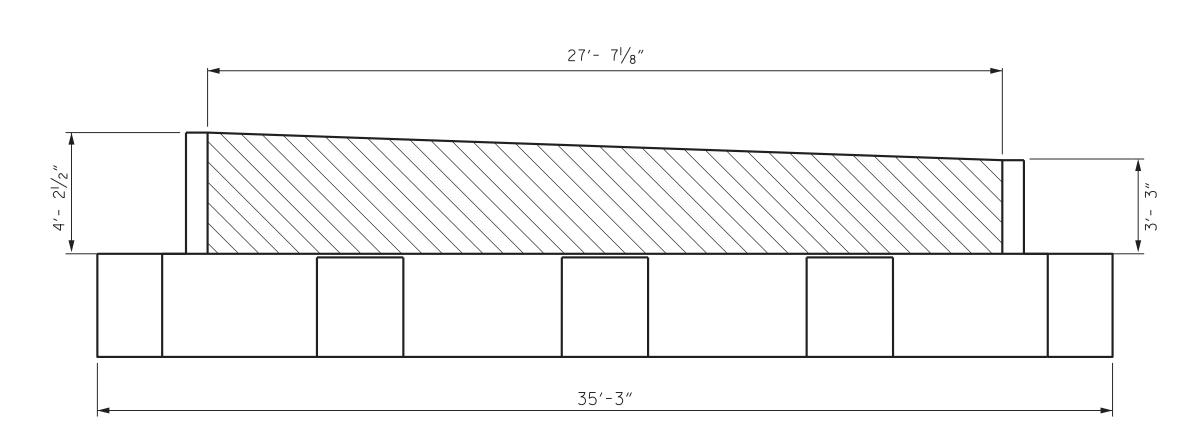
NOTES:

FOR SHOTCRETE REPAIRS SEE SPECIAL PROVISIONS.

REPAIR QUANTITY	TABLE
END BENT REPAIRS RAMP B	CU.FT.
SHOTCRETE	26



SHOTCRETE REPAIR



28'-0" +/-

<u>PLAN</u>

ELEVATION RAMP B END BENT

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

> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
> RALEIGH

RAMP B END BENT REPAIRS

SHEET NO.

S-42

TOTAL SHEETS

DocuSigned by: Jason R Doughty ----5F73FA2DEA974E8...

REVISIONS

NO. BY: DATE: DATE:

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RALEIGH, NC 27601 NC LICENSE NO. C-2979

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DESIGNED BY: C.CORMAN
DRAWN BY: C.CORMAN
CHECKED BY: J.BORUTA
DESIGN ENGINEER
OF RECORD: J.DOUGHTY DATE : NOV 2017
DATE : NOV 2017
DATE : DEC 2017 ___ DATE : <u>DEC 2017</u>

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. 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 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 11/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT,

ETC. IN CASTING SUPERSTRUCTURES:

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE $\frac{7}{8}$ " \varnothing SHEAR STUDS FOR THE $\frac{3}{4}$ " \varnothing STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF $3-\frac{7}{8}$ " \varnothing STUDS FOR $4-\frac{3}{4}$ " \varnothing STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$ " \varnothing STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \varnothing STUDS BASED ON THE RATIO OF $3-\frac{7}{8}$ " \varnothing STUDS FOR $4-\frac{3}{4}$ " \varnothing 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

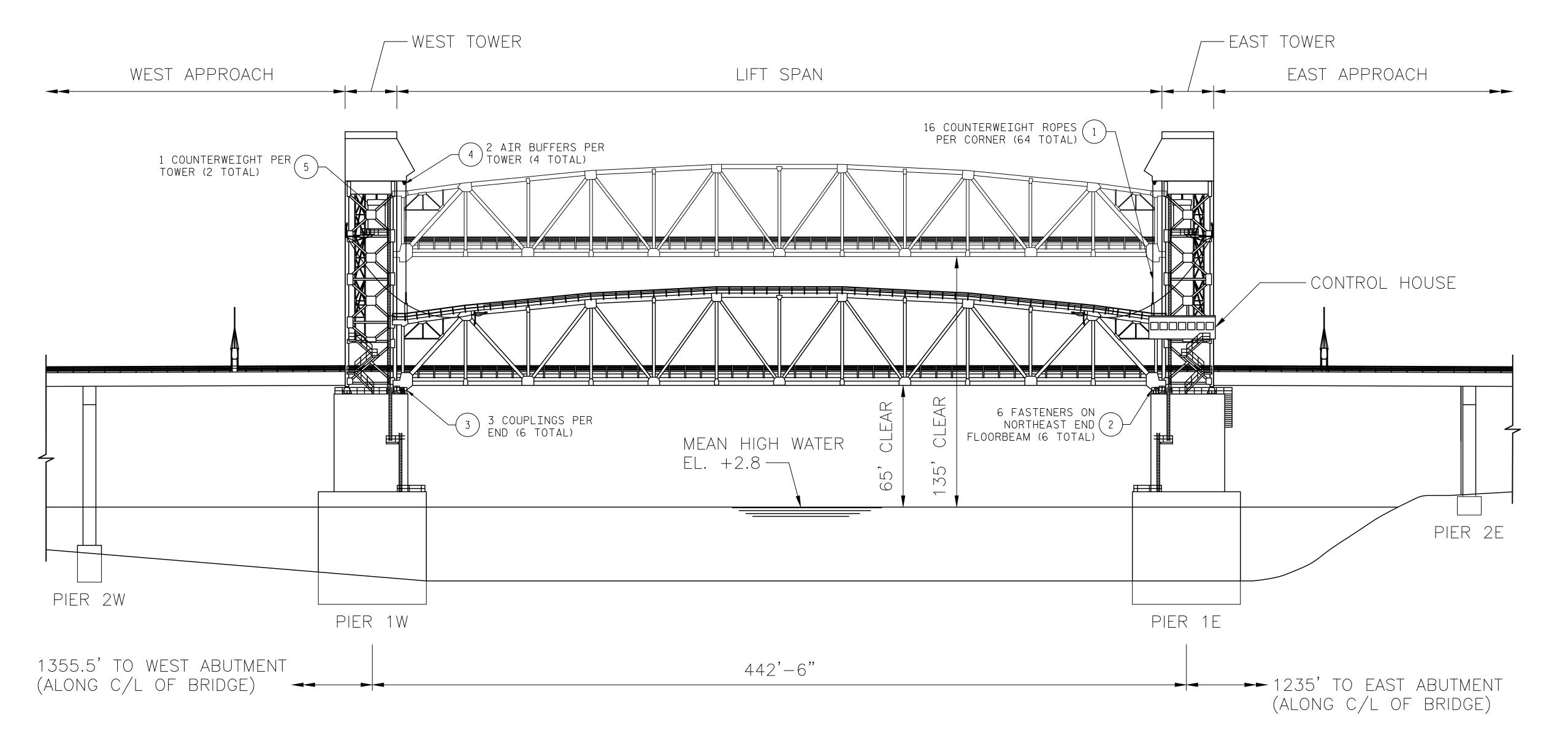
JANUARY, 1990

MECHANICAL SCOPE ITEM SHEET NO. DESCRIPTION NO. CLEAN AND LUBRICATE ALL COUNTERWEIGHT ROPES M01 M02 REPLACE CORRODED FASTENERS AT SPAN LOCK RECEIVER REPLACE ALL SPAN LOCK MACHINERY SHAFT COUPLING SEALS, GASKETS, AND FASTENERS M02 REMOVE UPPER AIR BUFFERS AND REPLACE WITH MARINE FENDER-TYPE BUMPERS ON NEW BRACKETS MO3 AND MO4 SEE SPECIFICATIONS

ADD NEW COUNTERWEIGHT PLATES TO BALANCE BRIDGE

NOTE:

1. FOR ADDITIONAL MECHANICAL SCOPE OF WORK, SEE SHEETS MA-1 THROUGH MA-10.



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

> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
> RALEIGH MECHANICAL

MECHANICAL SCOPE

REVISIONS SHEET NO MO1 NO. BY: DATE: DATE: BY: TOTAL SHEETS

DESIGNED BY:

DRAWN BY:

CHECKED BY:

R. C. HOFFMAN

DATE: DEC. 2017

DEC. 2017

DEC. 2017

DEC. 2017

DEC. 2017

DEC. 2017 DESIGN ENGINEER
OF RECORD: L. R. LENTZ DATE : JAN. 2018

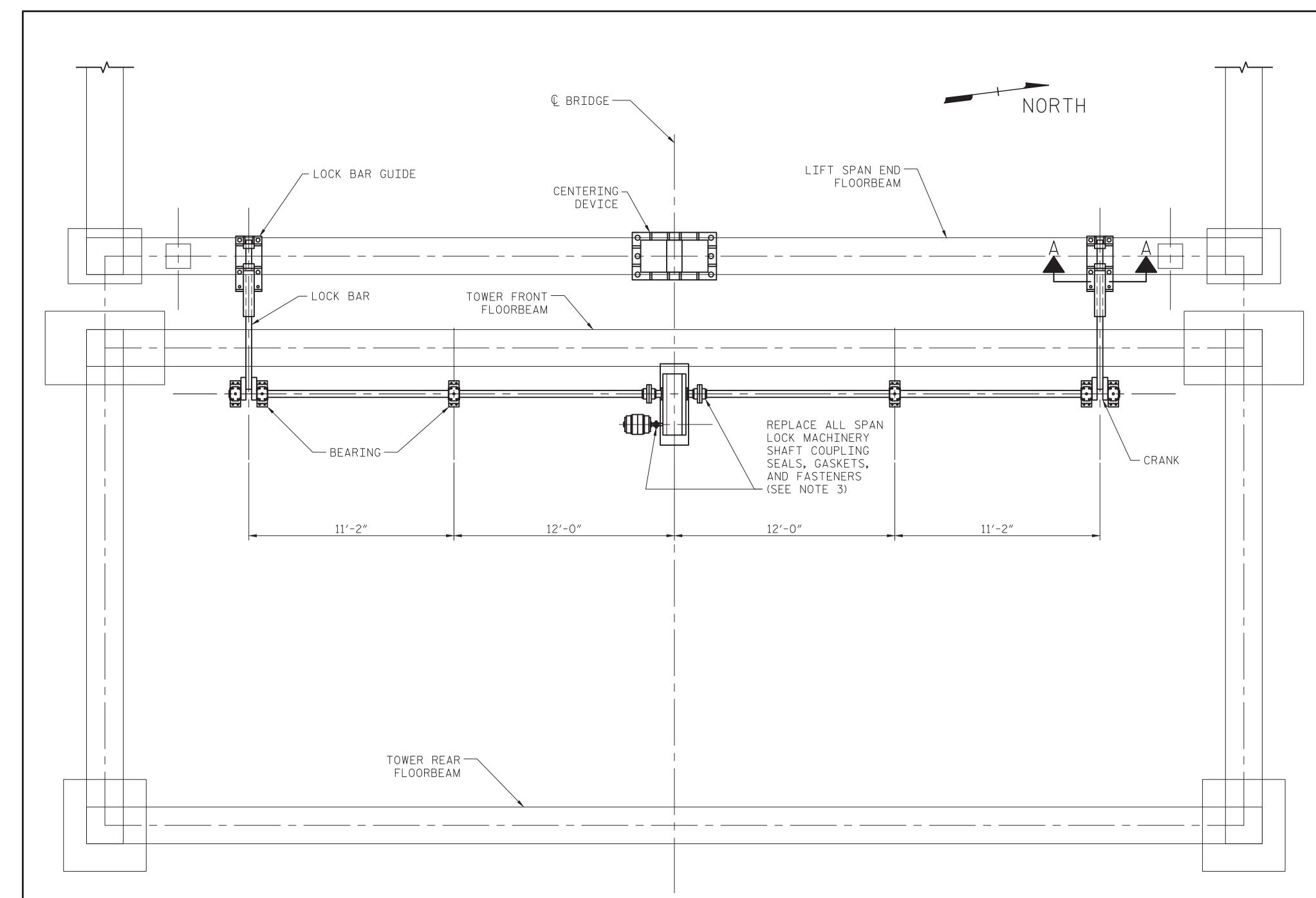
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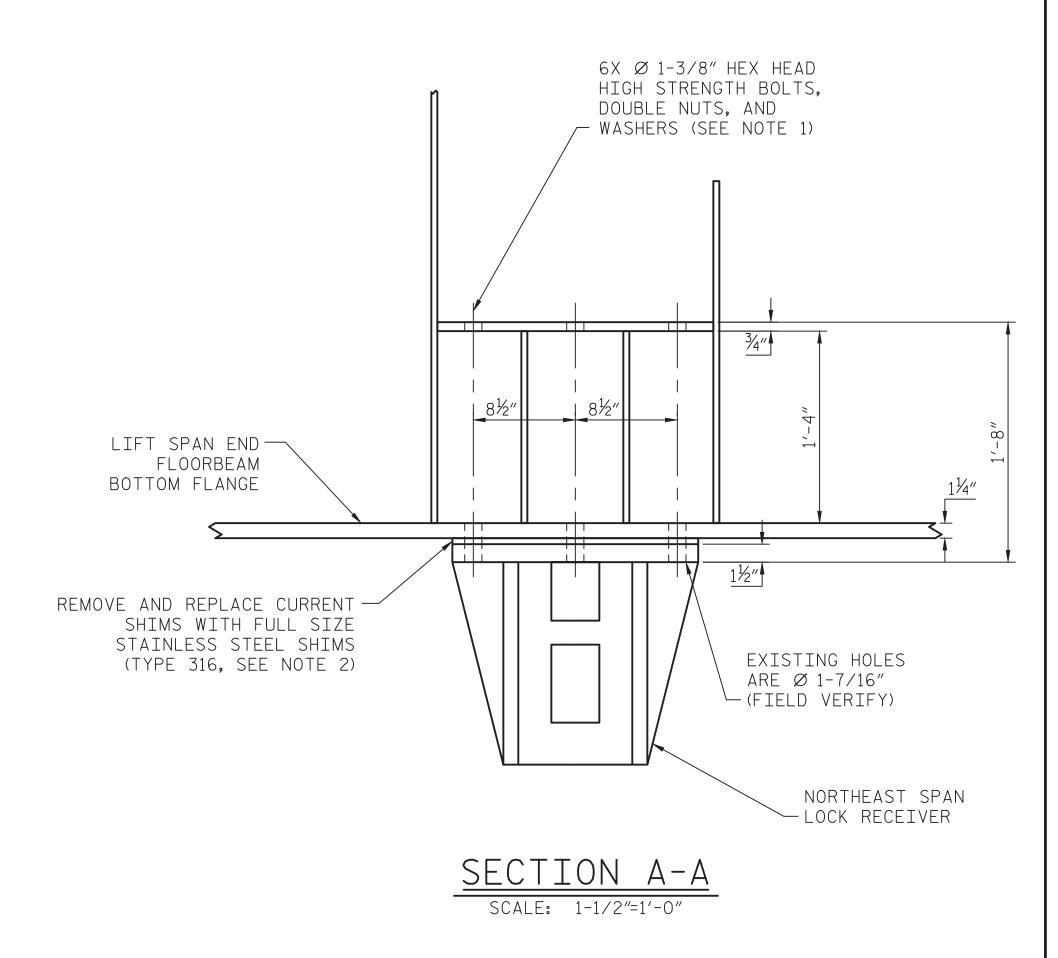
MODJESKI and MASTERS

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<u>PLAN VIEW - EAST REST PIER MACHINERY</u>

SCALE: 0.3"=1'-0" (WEST REST PIER MACHINERY SIMILAR)

NOTES:

- 1. REMOVE AND REPLACE NORTHEAST SPAN LOCK RECEIVER MOUNTING BOLTS (6 TOTAL). CONTRACTOR MUST FIELD-VERIFY ALL DIMENSIONS.
- 2. NEW SPAN LOCK RECEIVER MOUNTING SHIMS MUST PROVIDE FULL BEARING AND BE NEATLY TRIMMED TO THE FOOTPRINT OF THE RECEIVER.
- 3. REBUILD COUPLINGS WITH NEW OEM SEALS, GASKETS AND FASTENERS.



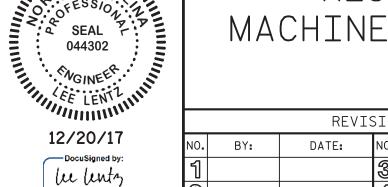
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> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

> > MECHANICAL

REST PIER MACHINERY REPAIRS



REVISIONS SHEET NO M02 NO. BY: DATE: TOTAL SHEETS

DESIGNED BY:

R. C. HOFFMAN

DATE: DEC. 2017

R. C. HOFFMAN

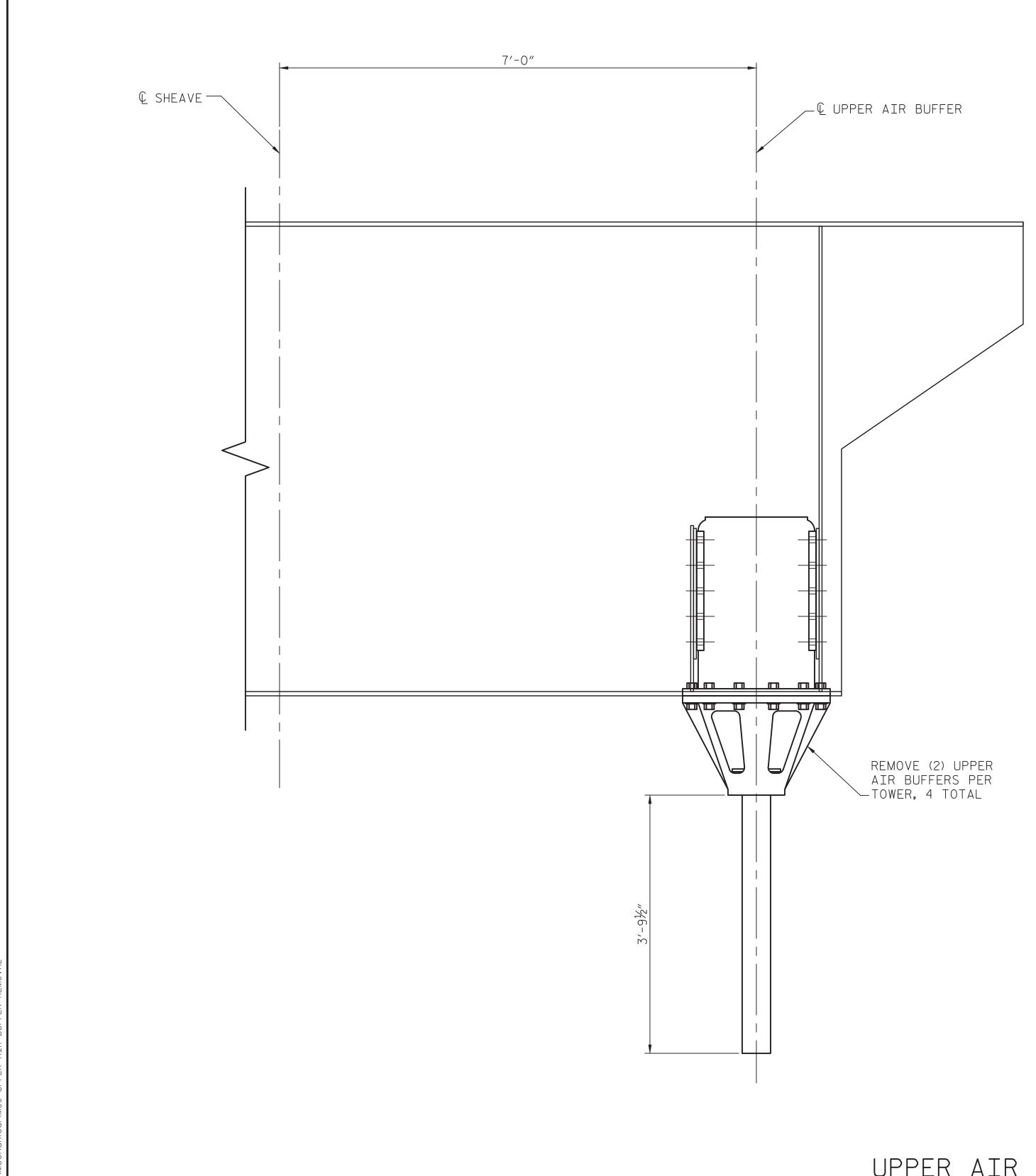
DATE: DEC. 2017

CHECKED BY:

L. R. LENTZ

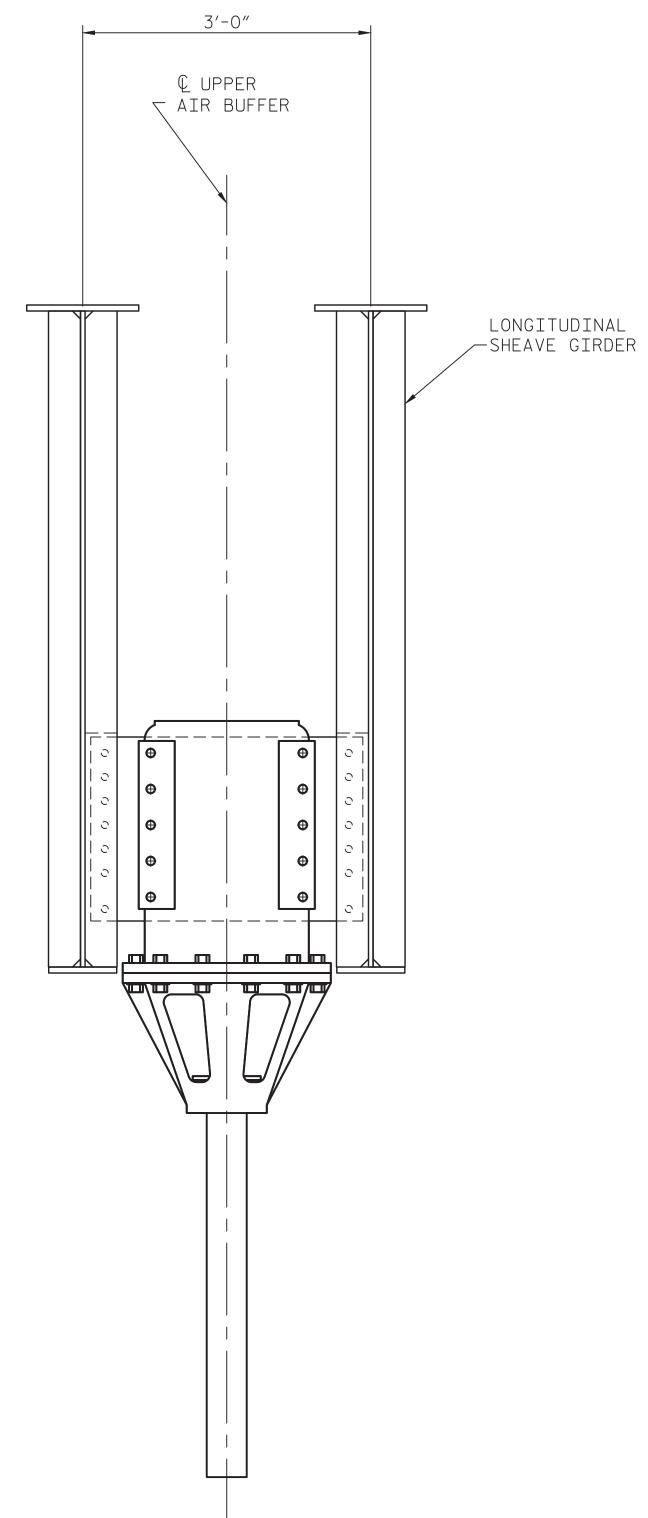
DATE: DEC. 2017

DESIGN ENGINEER OF RECORD: L. R. LENTZ DATE : DEC. 2017



UPPER AIR BUFFER REMOVAL

SCALE: 1"=1'-0" (ALL 4 CORNERS OF THE SPAN SIMILAR)



NOTES:

1. THE CONTRACTOR SHALL REMOVE AND DELIVER UPPER AIR BUFFERS TO LOCATION PROVIDED BY NCDOT.

> PROJECT NO. 15BPR.15 NEW HANOVER COUNTY

STATION: ___

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

MECHANICAL

UPPER AIR BUFFER

12/20/17 be lents

SEAL 044302	REMOVAL
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REVISIONS SHEET NO. МОЗ NO. BY: DATE: DATE: BY: TOTAL SHEETS

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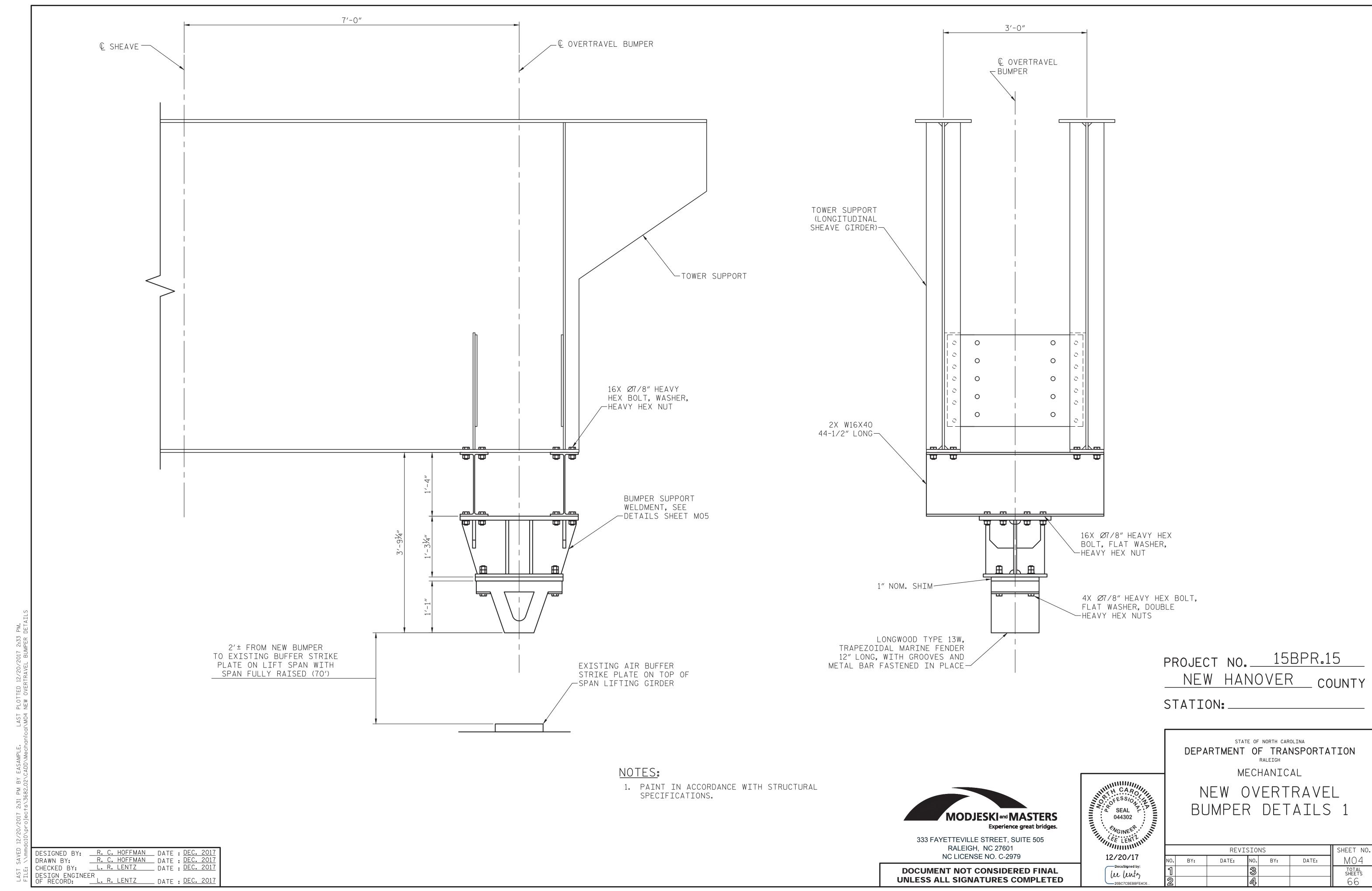
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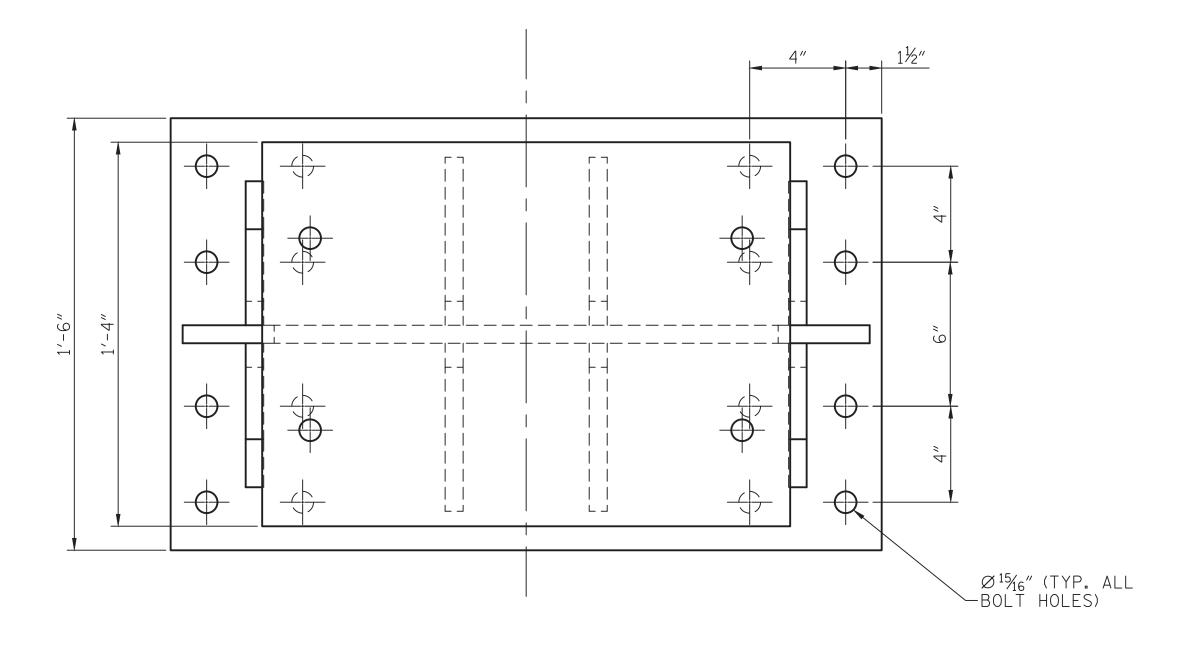
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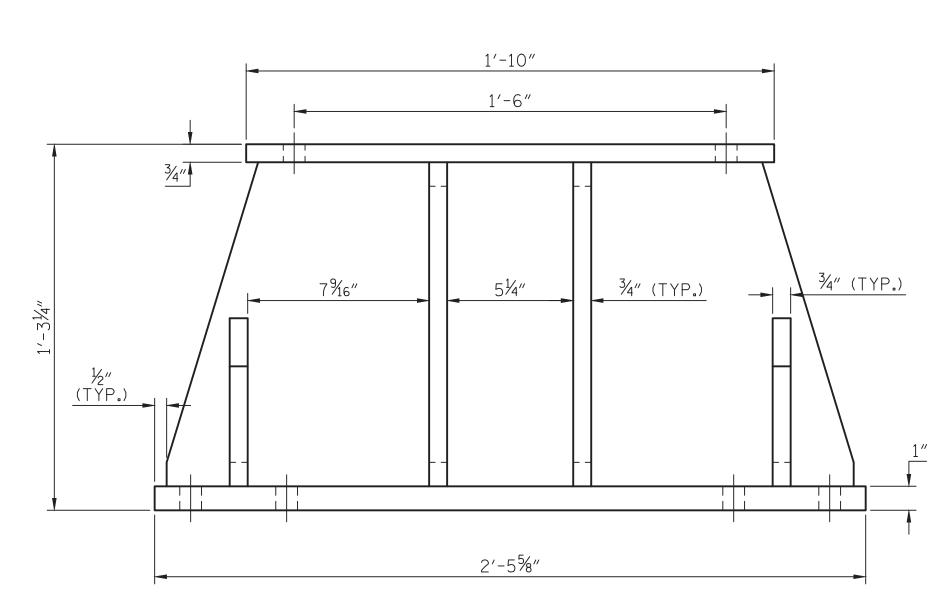
DESIGNED BY: R. C. HOFFMAN DATE: DEC. 2017
DRAWN BY: R. C. HOFFMAN DATE: DEC. 2017
CHECKED BY: L. R. LENTZ DATE: DEC. 2017 DESIGN ENGINEER
OF RECORD:

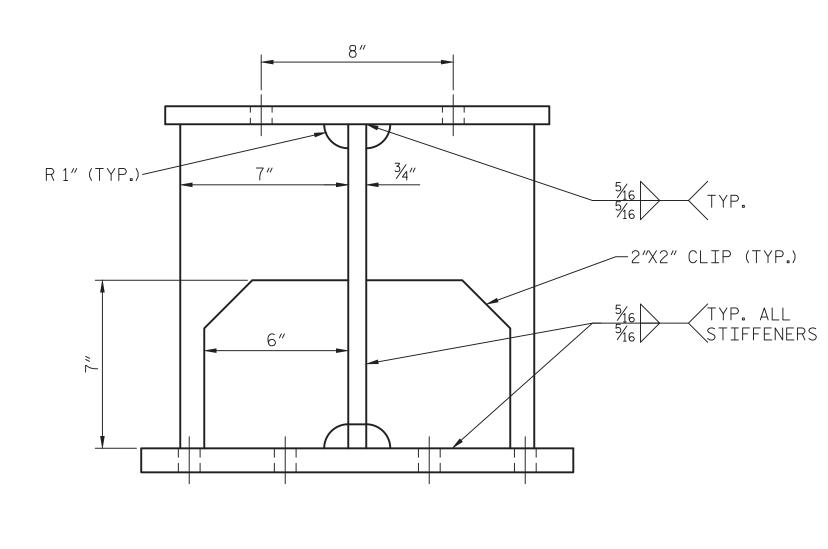
L. R. LENTZ

DATE: DEC. 2017









BUMPER SUPPORT WELDMENT

SCALE: 3"=1'-0"

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

MODJESKI and MASTERS

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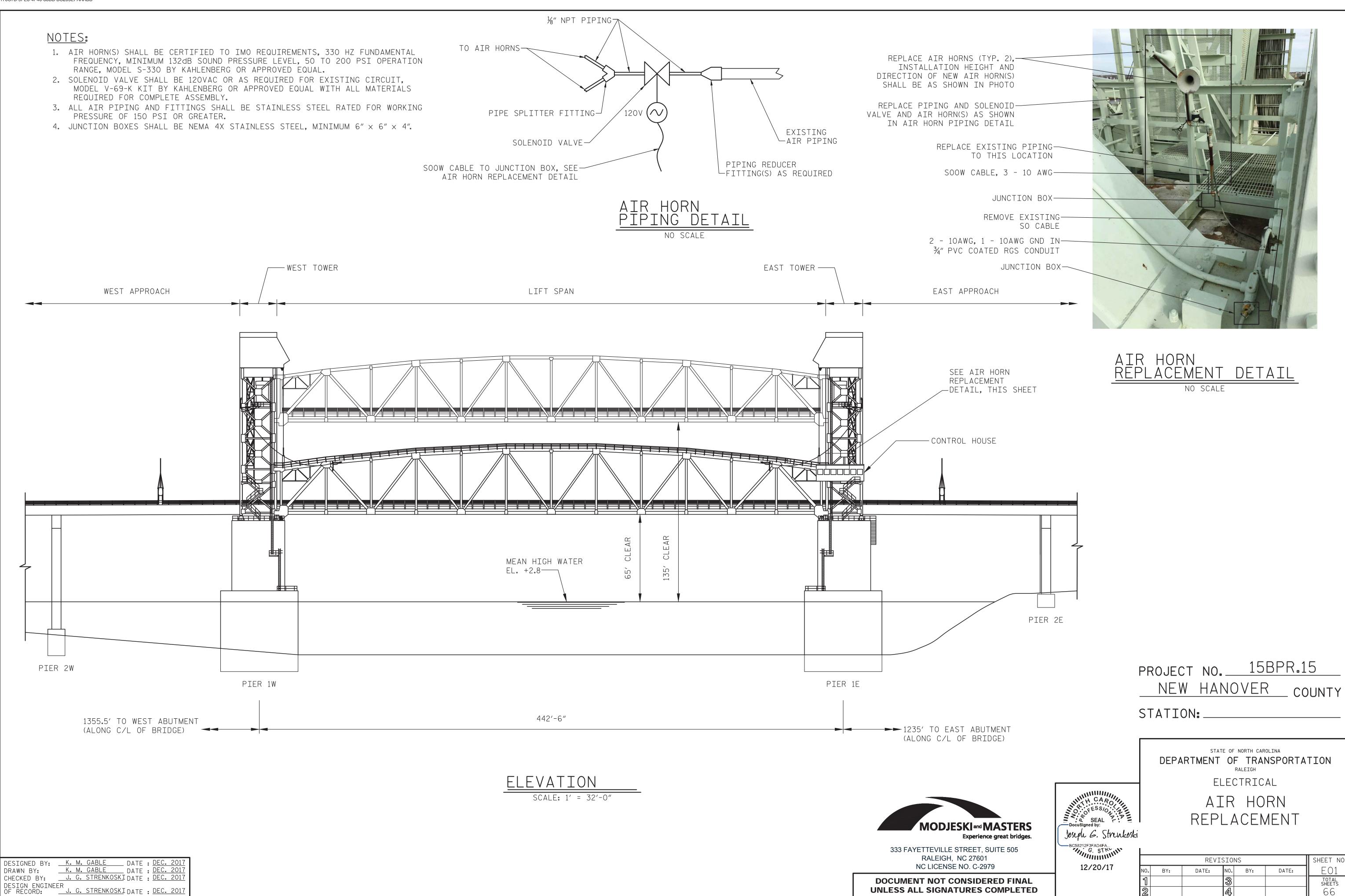
SEAL PARAMETER LENT LINE 12/20/17
Docusigned by: We limby

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RALEIGH MECHANICAL

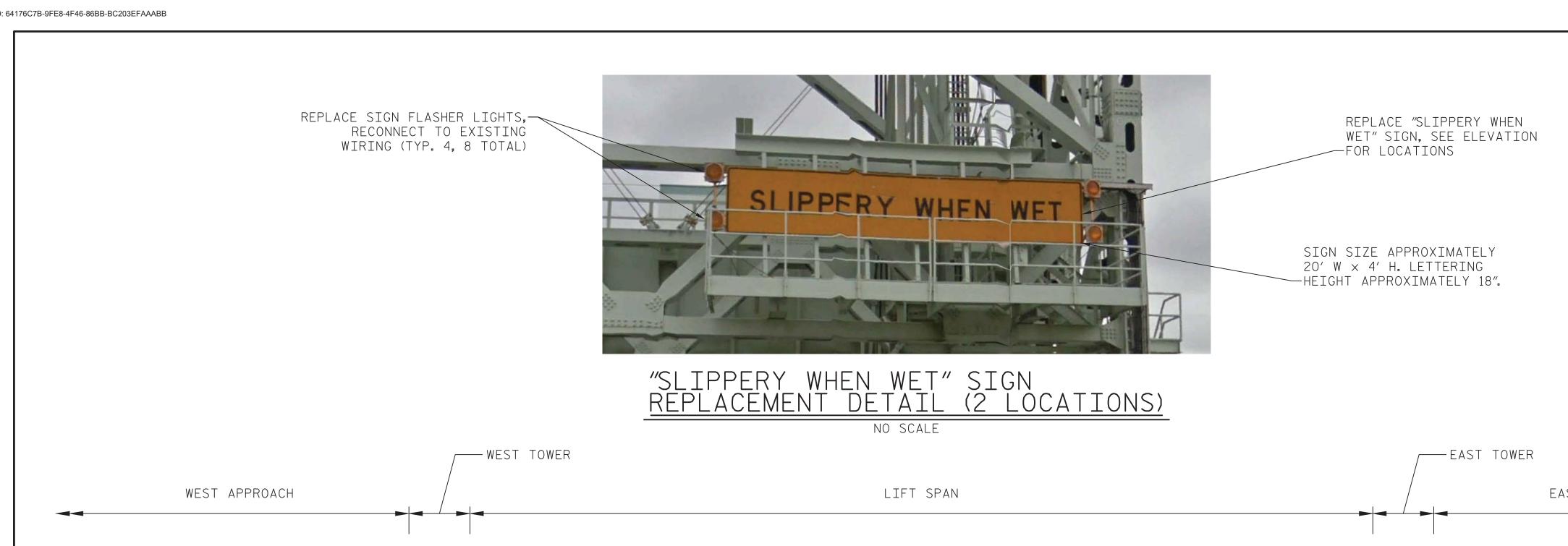
NEW OVERTRAVEL BUMPER DETAILS 2

REVISIONS SHEET NO. M05 NO. BY: DATE: DATE: TOTAL SHEETS

эI					
	DESIGNED BY:	G. L. FOREST	DATE	: DEC.	2017
	LCHECKED BY:	L. R. LENIZ	DATE	. DEC.	2017
LTC	DESIGN ENGINEE OF RECORD:	ER L. R. LENTZ	DATE	. DEC.	2017

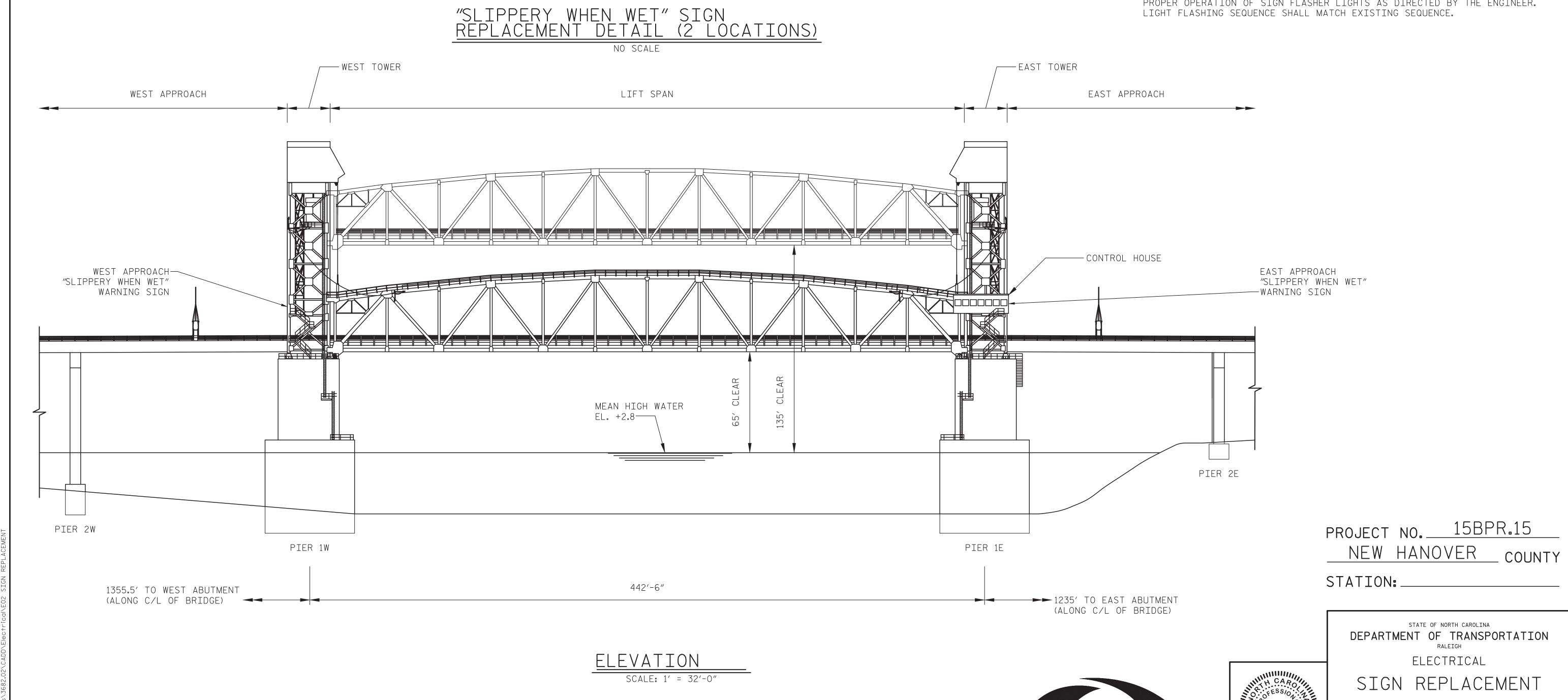


UNLESS ALL SIGNATURES COMPLETED



NOTES:

- 1. FABRICATION AND ERECTION OF SIGNS SHALL BE PER THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES DIVISION 9 SIGNING.
- 2. FIELD VERIFY EXACT SIZE OF EXISTING SIGNS AND LETTERING AND MATCH NEW SIGNS TO EXISTING. SIGNS SHALL BE TYPE A.
- 3. SIGNS RETROREFLECTIVE SHEETING SHALL BE AS FOLLOWS:
- 3.1. TYPE III (HIGH INTENSITY) 3.2. LEGEND & BORDER: GRADE A
- 3.3. BACKGROUND: GRADE C
- 4. SIGNS BORDER SHALL BE PER NCDOT HIGHWAY SIGN BORDER AND CORNER RADIUS STANDARD.
- 5. SIGN FLASHER LIGHTS SHALL BE SINGLE 200mm (8") AMBER LED TRAFFIC STYLE LIGHT. LIGHT HOUSING SHALL BE UV RESISTANT POLYCARBONATE WITH SUN VISOR. ADDITIONAL REQUIREMENTS SHALL INCLUDE 85-265VAC OPERATING VOLTAGE, -40 TO 80 DEGREES CELCIUS OPERATING TEMPERATURE, IP65 RATED, AND 80,000 HOUR MINIMUM AVERAGE LIFE.
- 6. EXISTING FLASHER LIGHTS CONTROL/FLASHER MODULE AND WIRING TO REMAIN. FOLLOWING SIGN FLASHER LIGHT REPLACEMENT, PERFORM TESTING TO VERIFY PROPER OPERATION OF SIGN FLASHER LIGHTS AS DIRECTED BY THE ENGINEER.



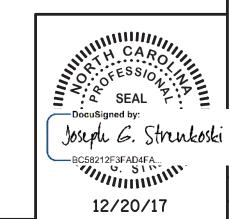
DESIGNED BY: K. M. GABLE DATE: DEC. 2017
DRAWN BY: K. M. GABLE DATE: DEC. 2017
CHECKED BY: J. G. STRENKOSKI DATE: DEC. 2017 DESIGN ENGINEER ,

J. G. STRENKOSKIDATE : DEC. 2017

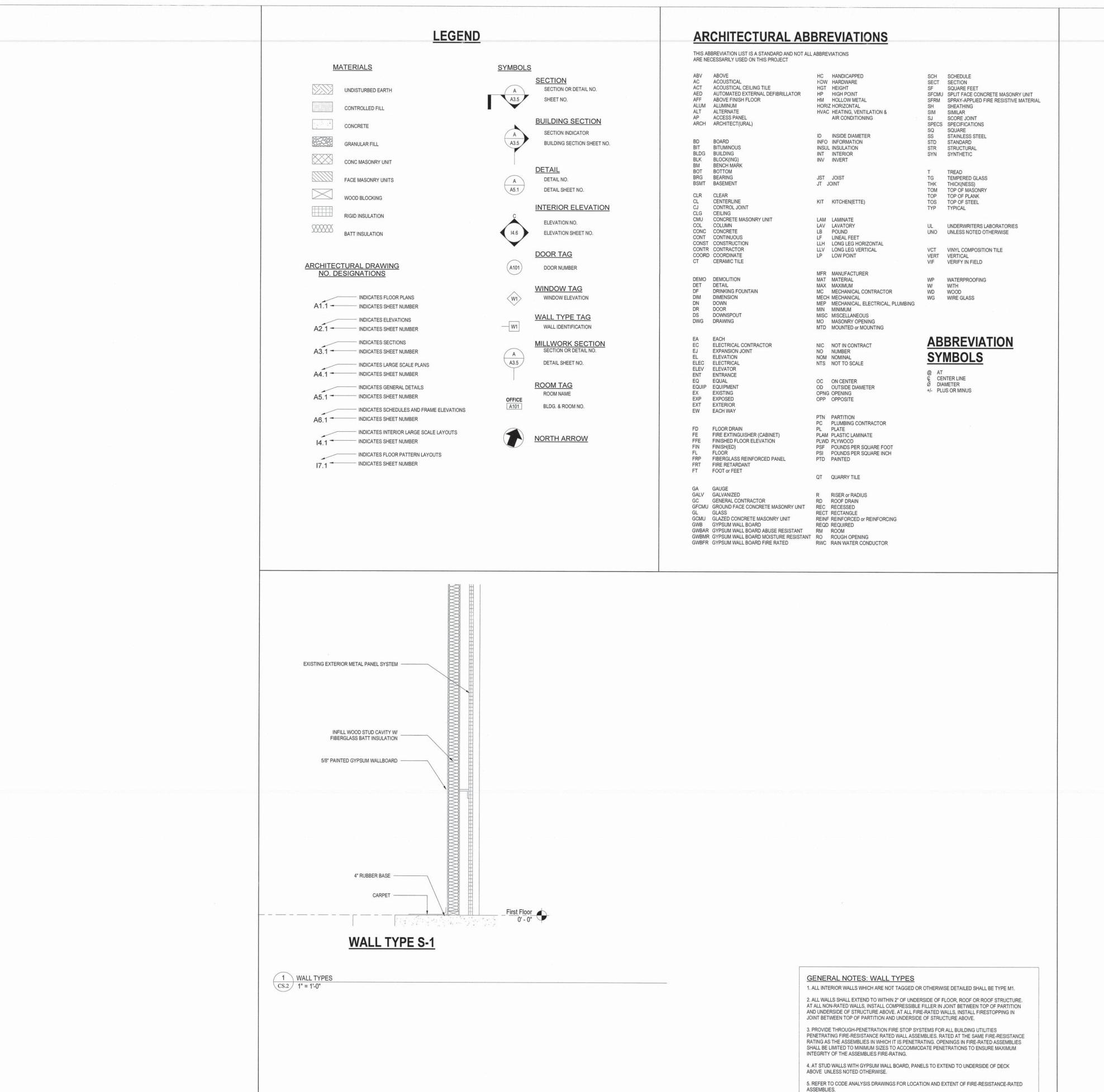
MODJESKI and MASTERS Experience great bridges.

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REVISIONS SHEET NO E02 NO. BY: DATE: DATE: BY: TOTAL SHEETS



6. SEE SECTIONS, STRUCTURAL DRAWINGS AND ELEVATIONS FOR FURTHER DETAIL OF WALL

01 MM-DD-YR NAME DESCRIPTION OF CHANGES

REVISIONS

CUMENTS

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CONSTRUCTION

100%

RCHITECTS

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LIFT BRIDGE ISPORTATION

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PROJECT

GENERAL INFORMATION

1" = 1'-0"

15BPR.15

PHASE 2

OPERATOR HOUSE

OPERATOR HOUSE

UPPER HOUSE - EAST

PHASE 3

2 PH1 - PHASING PLAN A1.1 1/8" = 1'-0"

OPERATOR HOUSE

1 DP01 - Demolition Plan 1/8" = 1'-0"

UPPER HOUSE - WEST

PHASE 1

PHASING SCHEDULE

PHASE 1 - ASBESTOS ABATEMENT WINDOW REPLACEMENT INTERIOR WALL CONSTRUCTION FLOOR TILE INSTALLATION

MECHANICAL AND ELECTRICAL EQUIPMENT ROOF REPLACEMENT ASBESTOS ABATEMENT PHASE 2 -WINDOW REPLACEMENT

INTERIOR WALL CONSTRUCTION

FLOOR TILE INSTALLATION MECHANICAL AND ELECTRICAL EQUIPMENT PHASE 3 -ASBESTOS ABATEMENT

WINDOW REPLACEMENT INTERIOR WALL CONSTRUCTION ACOUSTICAL TILE CEILING INSTALLATION FLOOR TILE INSTALLATION CARPET INSTALLATION

MECHANICAL, PLUMBING AND ELECTRICAL EQUIPMENT

PHASE 4 -WINDOW REPLACEMENT ELEVATOR REPLACEMENT

PHASE 5 - WINDOW REPLACEMENT

CONSTRUCTION PHASING GENERAL NOTES

1. THE OWNER WILL OCCUPY THE BUILDING DURING THE ENTIRE PROJECT. CONTRACTOR TO PRESENT A PHASING SCHEDULE TIMELINE TO THE OWNER FOR REVIEW ADN APPROVAL PRIOR TO PROCEEDING WITH THE PROJECT. THE CONTRACOR WILL PROVIDE A MINIMUM OF 5 DAYS OF TIME BETWEEN EACH PHASE FOR THE OWNER TO MOVE FURNISHINGS AND EQUIPMENT FROM EACH AREA.

2. THE CONTRACTOR WILL PROVIDE AND INSTALL PARTITION BARRIERS BETWEEN THE CONSTRUCTION ZONE AND OWNER OCCUPIED AREAS. A DOOR WILL BE PLACED IN THE BARRIER FOR ACCESS.

100% CONSTRUCTION

REVISIONS

01 MM-DD-YR NAME DESCRIPTION OF CHANGES

LIFT BRIDGE USPORTATION

ARCHITECTS

CIATES

ASSO(ROHRBAUGH &

CAPE FEAR RIVER MEMORIAL NORTH CAROLINA DEPT. OF TRANS

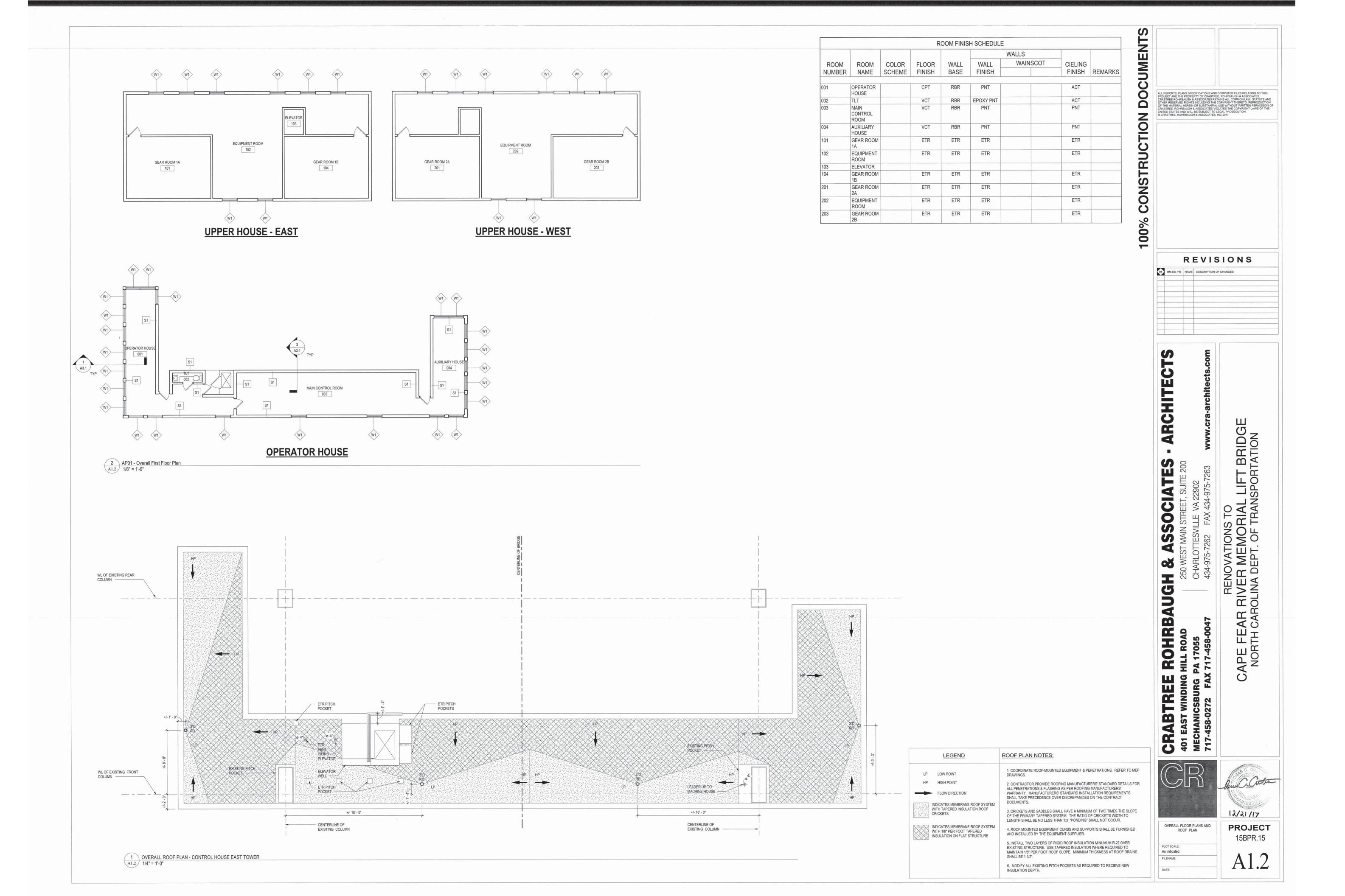
PLOT SCALE: 1/8" = 1'-0"

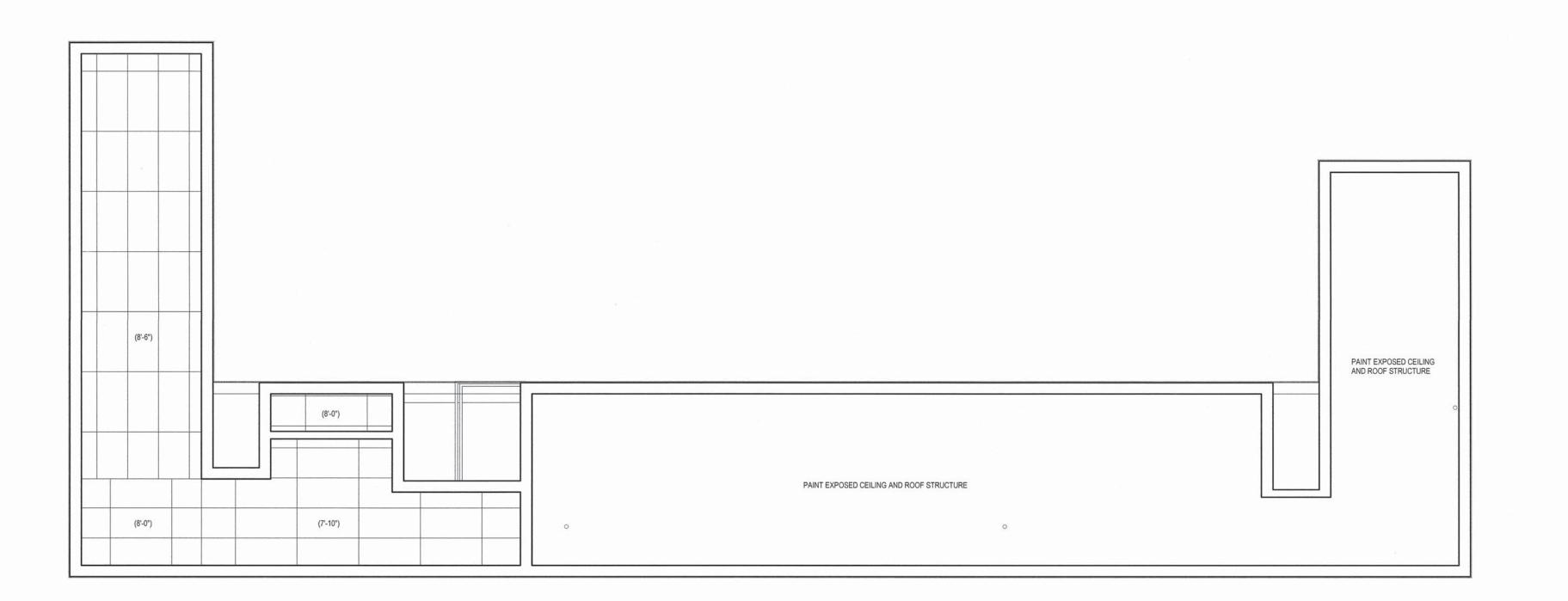
OVERALL PHASING AND DEMOLITION PLAN

PROJECT 15BPR.15

 Φ Φ \triangle \triangle Δ Δ DEMOLISH AND REPLACE DEMOLISH AND REPLACE ELEVATOR EQUIPMENT ROOM EQUIPMENT ROOM 102 202 GEAR ROOM 2B GEAR ROOM 1A 104 201 203 101 **UPPER HOUSE - EAST UPPER HOUSE - WEST** A2.1 * CONTRACTOR SHALL DEMOLISH EXISTING BUILT-UP ROOF SYSTEM, FASCIAS AND CURBING TO EXISTING ROOF DECK AND STRUCTURE AUXILIARY HOUSE 004

DEMOLITION LEGEND TAG **DEMOLITION NOTE** DEMOLISH CARPET DEMOLISH WOOD WALL PANELING INCLUSIVE OF ABATEMENT PROCESS ABATE TRANSITE WALL PANELS AND BATT INSULATION DEMOLISH ACOUSTICAL TILE CEILING ASSEMBLY DEMOLISH FLOOR TILE AND PREPARE TO RECEIVE FLOOR FINISH DEMOLISH ENTIRE ELEVATOR ASSEMBLY AND ELEVATOR GEAR ON MEZZANINE OF UPPER HOUSE





1 OVERALL REFLECTED CEILING PLAN
1/4" = 1'-0"

LEGEND REFLECTED CEILING PLAN GENERAL NOTES: 1. UNLESS NOTED OTHERWISE, GYPSUM BULKHEADS TO BE 3 5/8" METAL STUDS AT 16" O/C WITH 5/8" GWB EACH SIDE, EXTENDING MIN. 1" BELOW ADJACENT CEILING. 2' X 4' SUSPENDED CEILING SYSTEM 2' X 4' LIGHT FIXTURE 2. CEILING GRID SHALL BE COORDINATED WITH MEP EQUIPMENT AND DEVICES. 3. UNLESS NOTED OTHERWISE, ALL VISIBLE STRUCTURAL STEEL, ROOF/ FLOOR DECK, DUCTWORK, PIPING, CONDUIT, HANGER WIRES, ETC. AT EXPOSED LOCATIONS OR ABOVE CEILING CLOUDS SHALL BE PAINTED. 1' X 4' LIGHT FIXTURE 2' X 4' SECOND LOOK SUSPENDED CEILING SYSTEM 1' X 8' LIGHT FIXTURE 4. REFER TO ROOM FINISH SCHEDULE FOR CEILING TYPES. 5. ALL VISIBLE HANGER WIRES, STRUCTURE AND BRACING AT EXPOSED CEILING GRID OR CEILING CLOUD LOCATIONS SHALL BE INSTALLED PLUMB AND LEVEL. 2' X 2' LIGHT FIXTURE 6. FOR WINDOWS THAT REQUIRE TWO OR MORE ROLLER SHADES, EACH ROLLER SHADE SHALL TERMINATE AT THE CENTER OF THE WINDOW MULLION. REFER TO HOLLOW METAL AND ALUMINUM FRAME ELEVATIONS FOR FOR DIMENSIONS AND WINDOW MULLION DESIGN AND ROLLER SHADE BRAKES. 2' X 2' SUSPENDED CEILING SYSTEM SEE MEP DRAWINGS SEE MEP DRAWINGS RECESSED DOWN LIGHT GYPSUM WALLBOARD PENDANT LIGHT LINEAR METAL SOFFIT ROLLER SHADE -ROLLER SHADE - MANUAL BLACKOUT W/ DUAL ROLLER ROLLER SHADE - MOTORIZED ROLLER SHADE - MOTORIZED BLACKOUT W/ DUAL ROLLER

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	PROJECT ARE TH CRABTREE ROHR OTHER RESERVE OF THE MATERIAL CRABTREE, ROHF UNITED STATES A	E PROPERTY OF CRABTRE BAUGH & ASSOCIATES RET D RIGHTS INCLUDING THE (L. HEREIN OR SUBSTANTIAL RBAUGH & ASSOCIATES VIC IND WILL BE SUBJECT TO L	E, ROHRBAUGH & ASSOCIATE FAINS ALL COMMON LAW, STA COPYRIGHT THERETO, REPRIC USE WITHOUT WRITTEN PER SLATES THE COPYRIGHT LAW LEGAL PROSECUTION.	ES. ATUTE AND ODUCTION RMISSION OF

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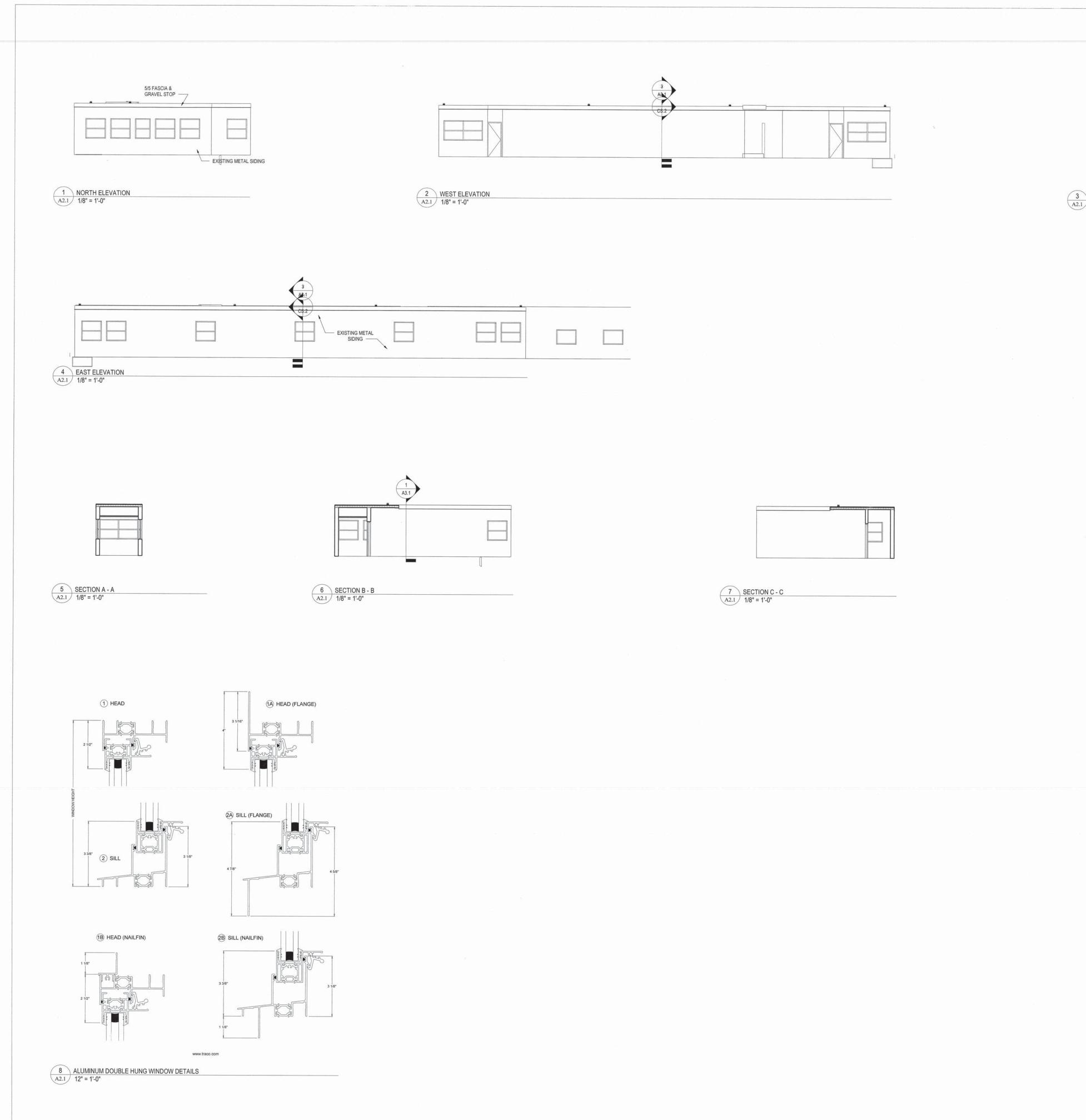
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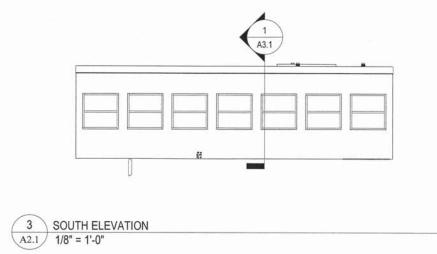
401 EAST WINDING HILL ROAD
MECHANICSBURG PA 17055
717-458-0272 FAX 717-458-0047
434-9

12/21/17

1/4" = 1'-0"

OVERALL REFLECTED CEILING PLAN **PROJECT** 15BPR.15





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O1 MM-DD-YR NAME DESCRIPTION OF CHANGES

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CRABTREE ROHRBAUGH & ASSOCIATES - ARCHITECTS

401 EAST WINDING HILL ROAD

MECHANICSBURG PA 17055

717-458-0272 FAX 717-458-0047

CAPE FEAR RIVER MEMORIAL LIFT BRIDGE

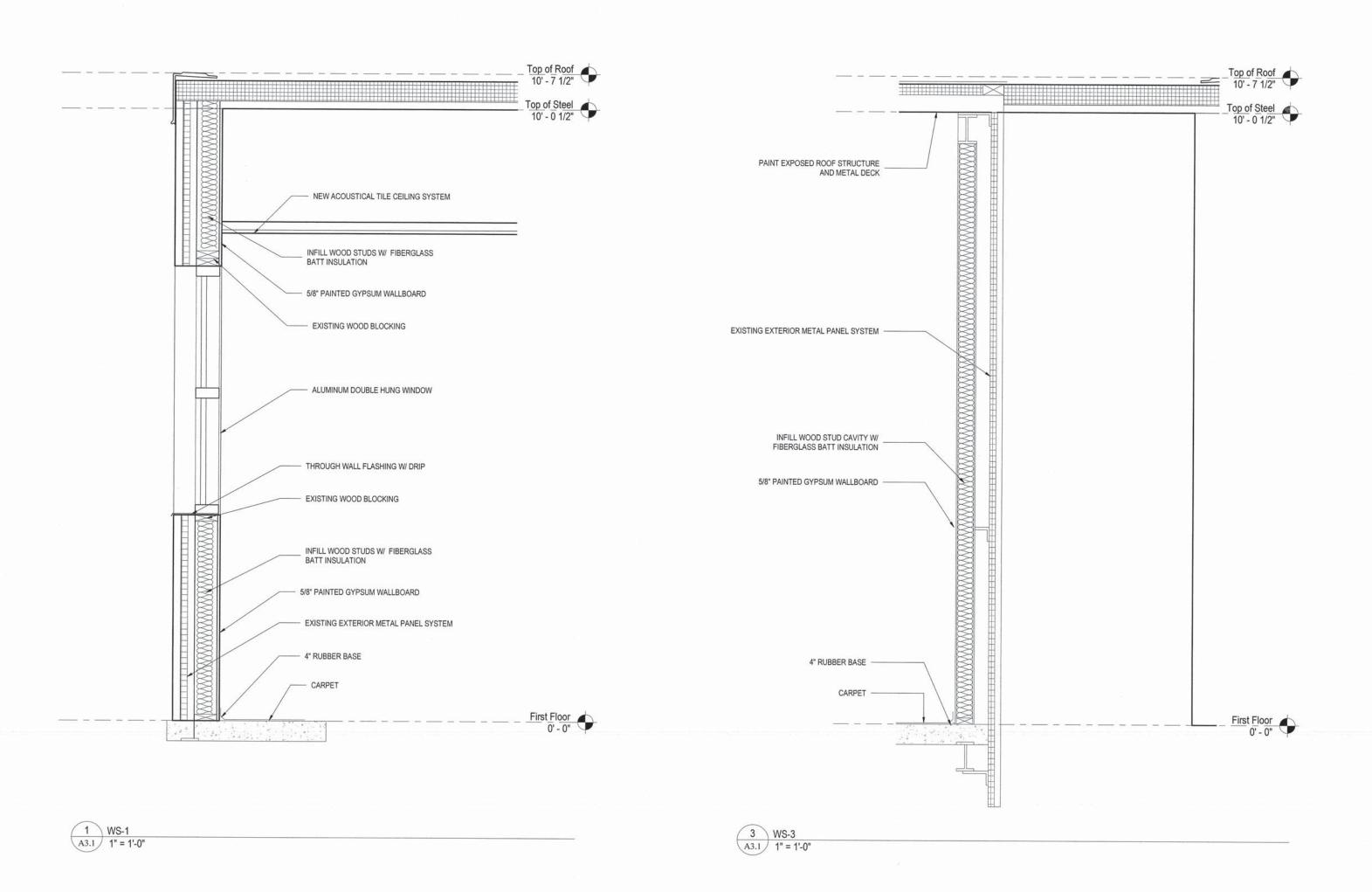
NORTH CAROLINA DEPT. OF TRANSPORTATION



PROJECT 15BPR.15

A2.

PLOT SCALE: As indicated



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ARCHITECTS CIATES REET, SUITE 200 CRABTREE ROHRBAUGH & ASSO

REVISIONS

01 MM-DD-YR NAME DESCRIPTION OF CHANGES

BUILDING SECTIONS

PLOT SCALE: 1" = 1'-0"

FILENAME:

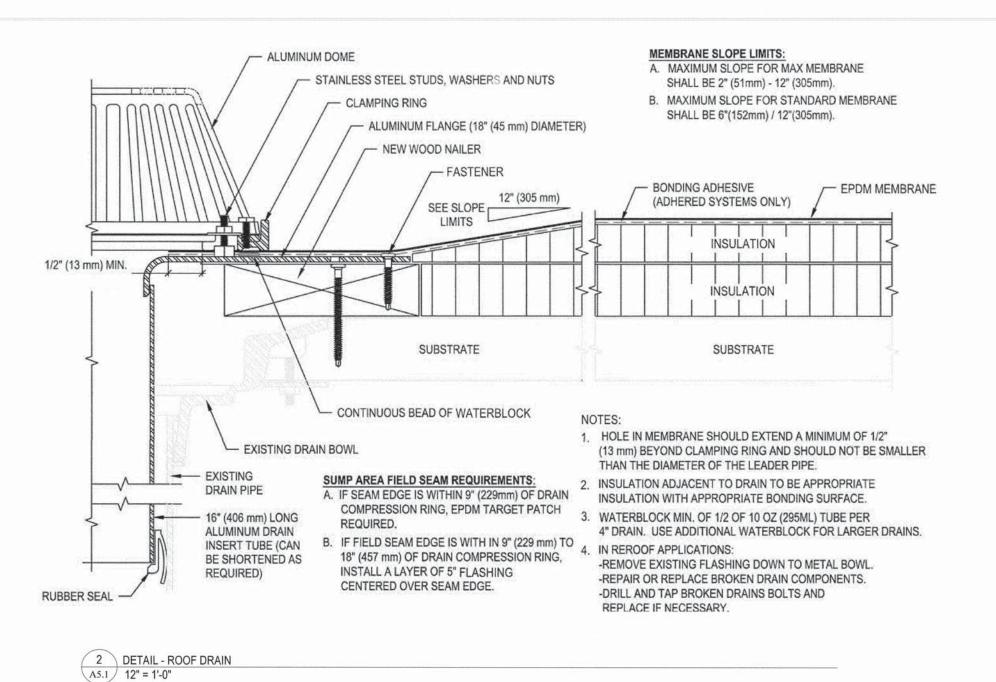
12/21/17

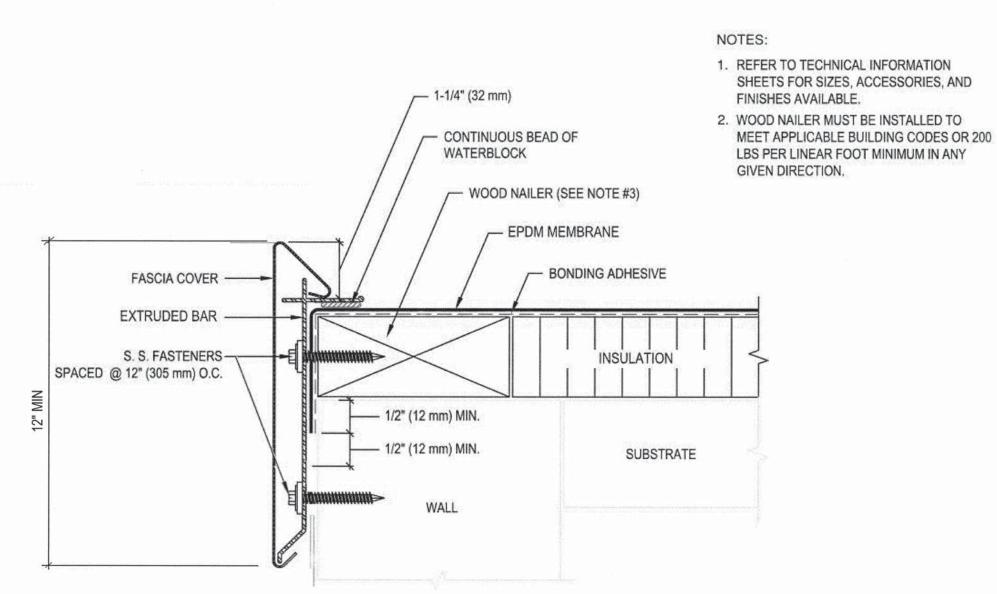
CAPE FEAR RIVER MEMORIAL LIFT BRIDGE NORTH CAROLINA DEPT. OF TRANSPORTATION

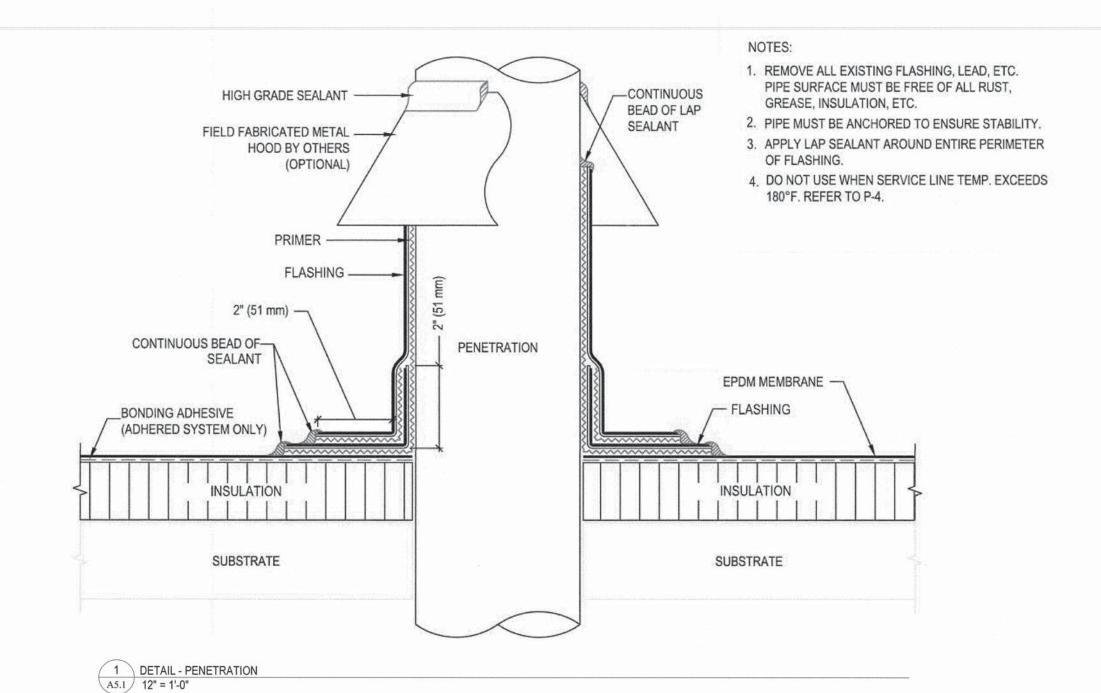
PROJECT

A3.1

15BPR.15







WALL/CURB ATTACHMENT NOTES: MAXIMUM 6" (152 mm) LONG FASTENERS. (NOTE: WOOD BLOCKING MAY BE SUBSTITUTED FOR INSULATION TO REDUCE FASTENERS LENGTH REQUIREMENTS. - 1-1/4" (32 mm) TO 2. WHEN BATTEN STRIP IS USED TO 1-1/2" (38 mm) SECURE THE EPDM MEMBRANE TO THE WALL. -POLYMER OR METAL BATTEN STRIP MAY BE USED FOR WOOD OR METAL SUBSTRATE. -METAL BATTEN MUST BE USED WITH MASONRY SUBSTRATE. 3. BATTEN STRIP OR 2" METAL PLATES ARE ACCEPTABLE FOR FASTENING OF EPDM FASTENED 12" (305 mm) O.C. MEMBRANE. BOTH ARE SHOWN IN ORDER TO MAX WITH ILLUSTRATE REQUIRED LAYOUT DIMENSIONS. FASTENERS (AP SEALANT OVER FASTENERS HEADS) **DECK ATTACHMENT** EPDM MEMBRANE -AND 2" METAL PLATE AT 12" (305 mm) O.C. MAX. **EPDM MEMBRANE**

4 DETAIL - WALL/CURB 12" = 1'-0"

CONSTRUCTION

100% REVISIONS 01 MM-DD-YR NAME DESCRIPTION OF CHANGES

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LIFT BRIDGE USPORTATION

CIATES ASSO

ROHRBAUGH &

RENOVATIONS TO CAPE FEAR RIVER MEMORIA NORTH CAROLINA DEPT. OF TRA



12" = 1'-0"

PROJECT

15BPR.15

"TYPICAL", INDICATE COMMON NON-SPECIFIC DIMENSIONS, MORE ACCURATELY SHOWN AS PART OF INDIVIDUAL SECTIONS AND DETAILS

THROUGHOUT THE CONSTRUCTION DOCUMENTS.

NOTE: DETAILS WITHIN THIS DRAWING, TITLED AS CONDITIONS OCCURRING THROUGHOUT BUILDING. THE LARGE SCALE ALLOWS A MORE COMPREHENSIVE LEVEL OF DETAIL TO BE SHOWN. SPECIFIC CONSTRUCTION CONDITIONS WILL VARY ACCORDING TO MATERIAL AND

1. PROVIDE A THERMAL BREAK (RIGID INSULATION INSERTS), CALCIUM SILICATE OR FOAM GLASS BETWEEN PIPE AND HANGERS. DO NOT USE WOOD.

2. APPLY INSULATION OVER FITTINGS, VALVES, AND SPECIALTIES, WITH CONTINUOUS THERMAL AND VAPOR-RETARDER INTEGRITY.

1. REMOVE SCALE, SLAG, DIRT, AND DEBRIS FROM INSIDE AND OUTSIDE OF PIPE AND FITTINGS BEFORE ASSEMBLY.

PROVIDE A GALVANIZED STEEL SLEEVE BETWEEN HANGER AND OUTSIDE OF INSULATION JACKET.

B. ALL SYSTEMS SHALL BE IN COMPLIANCE WITH THE FOLLOWING GENERAL REQUIREMENTS.

AIR DISTRIBUTION SYSTEMS

A. THIS SECTION ADDRESSES AIR DISTRIBUTION, EXHAUST FOR NEW AND RENOVATED SYSTEMS.

GENERALLY, USE GALVANIZED SHEET METAL DUCTWORK. CONSTRUCTION IS TO BE PER SMACNA STANDARD.

EFFECTIVENESS, AND ALL SEAMS AND JOINTS SHALL BE SEALED, INCLUDING LONGITUDINAL SEAMS.

2. ALL FITTINGS ON DUCTWORK (ON ALL SYSTEMS - SUPPLY, MAKE-UP, RETURN, EXHAUST) SHALL BE SEALED.

ON THE UPSTREAM SIDE AND LESS THAN 30 DEGREES ON THE DOWNSTREAM SIDE. AVOID TRANSITIONS IN ELBOWS

CLEARLY LABELED WITH LETTERING NOT LESS THAN ONE HALF INCH (.5") IN HEIGHT.

D. MEDIUM AND LOW PRESSURE DUCTWORK, 4" CLASS AND UNDER

c. CONTROLS (DAMPERS, SWITCHES, RELAYS, SENSING DEVICES, ETC.)

PRESSURE CLASS CONSTRUCTION SHALL BE USED.

1. DUCTWORK AND RELATED EQUIPMENT SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE AND SHALL BE ISOLATED FROM VIBRATION.

1. ALL DUCTWORK SHALL BE SPECIFIED TO BE SEALED USING MINERAL IMPREGNATED WOVEN FIBER TAPE OR OTHER SEALER OF EQUIVALENT

1. PROVIDE MANUAL VOLUME DAMPERS IN EVERY AIR DISTRIBUTION DEVICE BRANCH DUCT AND WHERE IT IS NECESSARY TO OBTAIN PROPER

1. RECTANGULAR: RECTANGULAR DUCTWORK SHALL BE FABRICATED IN ACCORDANCE WITH SMACNA USING APPROPRIATE GAUGES. MINIMUM 2"

1. PROVIDE ACCESS DOORS OR PANELS NO SMALLER THAN 18" X 18" IN DUCTWORK FOR MAINTENANCE, INSPECTION, AND SERVICE FOR:

1. ALL NEW DUCTWORK INCLUDING LOW PRESSURE DUCT OVER 15 FEET IN LENGTH SHALL BE LEAK TESTED USING THE METHOD PRESCRIBED BY

2. LOCATE FIRE DAMPERS (DYNAMIC) IN ACCORDANCE WITH NFPA; REFER TO LOCAL FIRE CODES FOR USE, LOCATION, AND CONSTRUCTION. SHOW
FIRE DAMPERS ON DRAWINGS, WITH ACCESS DOORS. THE LOCAL AUTHORITY HAVING JURISDICTION SHALL VERIFY FIRE DAMPER ACCESS DOORS ARE

WHERE DUCTS ARE CONNECTED TO EQUIPMENT FITTINGS, TRANSITION SHOULD BE SMOOTH, WITH A TRANSITION NO GREATER THAN 15 DEGREES

PART 1 GENERAL

1.01 SCOPE

PART 2 MATERIALS

2.01 DUCTWORK

PART 3 EXECUTION

3.01 DUCTWORK

AABC STANDARDS

B. ACCESS DOORS OR PANELS

. FIRE AND SMOKE DAMPERS

BASIC MECHANICAL MATERIALS AND METHODS

A. PIPING INSULATION

MECHANICAL GENERAL NOTES (APPLY TO ALL DRAWINGS)

- 1. ALL WORK AND EQUIPMENT SHALL COMPLY WITH ALL APPLICABLE LAWS, CODES, AND REQUIREMENTS, OF ALL AUTHORITIES HAVING JURISDICTION. INCLUDING BUT NOT LIMITED TO THE INTERNATIONAL MECHANICAL CODE, THE INTERNATIONAL PLUMBING CODE, THE INTERNATIONAL ENERGY CODE, THE LOCAL FIRE MARSHALL. UNDERWRITERS LABORATORY, IRI, FM. OSHA, AND THE NATIONAL ELECTRICAL CODE. MODIFICATIONS REQUIRED BY THE ABOVE AUTHORITIES IN ORDER TO BRING THE PROJECT INTO CODE COMPLIANCE SHALL BE MADE AT NO ADDITIONAL COST TO OWNER. IF CONTRACT DOCUMENTS
- ARE MORE STRINGENT THAN CODE REQUIREMENTS. THE CONTRACT DOCUMENTS SHALL GOVERN 2. ALL SPECIFICATIONS AND DRAWINGS ARE COMPLIMENTARY AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION. ANY CONFLICTING INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER, AND WORK SHALL CEASE ON THAT PORTION OF THE
- PROJECT UNTIL CLARIFICATIONS ARE ISSUED 3. CONTRACTOR SHALL CONFIRM THE REQUIREMENTS FOR PREMIUM TIME OR SPECIAL PROCEDURES WITH THE OWNER. CONTRACT SHALL INCLUDE LONG LEAD EQUIPMENT SUBMITTALS WITH BID
- PROPOSALS. CONTRACTOR SHALL COORDINATE, PREPARE AND SUBMIT SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER FOR APPROVAL. SHOP DRAWINGS TO BE SUBMITTED INCLUDE: SHEET METAL, DIFFUSERS, GRILLES, REGISTERS, FIRE DAMPERS, AND ALL EQUIPMENT. SHEET METAL SHOP DRAWINGS SHALL BE COORDINATED AND SHOW DUCT ELEVATIONS. INCLUDE RISES, DROPS, AND OFFSETS TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM. AREAS OF POTENTIAL CONFLICT SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION.
- 5. A SET OF MEP RECORD/COORDINATION DRAWINGS SHALL BE MAINTAINED BY THE CONTRACTOR AT THE JOB SITE ACTUAL LOCATIONS OF ALL EQUIPMENT, PIPING, DUCTWORK, AND ALL OTHER ITEMS INCLUDED IN THIS CONTRACT, AND ALL DEVIATIONS OF THE WORK FROM THAT SHOWN ON THE CONTRACT DOCUMENTS SHALL BE MARKED ON THE RECORD/COORDINATION DRAWINGS. EACH TRADE SHALL REVIEW THE COORDINATION DRAWINGS AND RESOLVE ANY POTENTIAL CONFLICTS WITH OTHER
- RADES PRIOR TO INSTALLING ANY PORTION OF THEIR WORK. 6. WORK SHALL BE EXECUTED IN A GOOD WORKMANLIKE MANNER USING MECHANICS IN THEIR RESPECTIVE TRADES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES FOR COORDINATING THE WORK UNDER THIS CONTRACT. UPON COMPLETION OF CONSTRUCTION, CONTRACTOR SHALL DELIVER COMPLETE AND FUNCTIONAL SYSTEMS AS ENCOMPASSED BY THE CONTRACT. ALL EQUIPMENT SHALL BE INSTALLED
- 7. WHEREVER FIRE RATED ASSEMBLIES ARE PENETRATED FOR WIRE, DUCT OR PIPE PASSAGE, SEAL AROUND PASSAGES WITH CODE APPROVED, LABORATORY TESTED AND LABELED SEALANT OF FIRE RESISTANCE RATING NOT LESS THAN THAT OF PENETRATED ASSEMBLY THAT WILL PREVENT PASSAGE OF FIRE AND SMOKE. INSTALL APPROPRIATELY RATED FIRE, SMOKE OR COMBINATION DAMPERS IN ALL DUCT THAT PENETRATES RATED ASSEMBLIES WHETHER SHOWN OR NOT. DRAWING SYMBOLS ARE
- JSED AS AN AIDE, NOT TO DEFINE AN EXACT NUMBER OF PIECES OF EQUIPMENT 8. WIRING OF ALL MOTORIZED OPERATORS AND THERMOSTATS, REGARDLESS OF VOLTAGE ARE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. 9. CONTRACTOR SHALL MAKE ALL FINAL EQUIPMENT CONNECTIONS AND PROVIDE THE NECESSARY ADAPTERS FITTINGS VALVES AND DEVICES FOR A COMPLETE OPERABLE SYSTEM COORDINATE
- REQUIREMENT FOR PROVISION OF CONTACTORS. AND CONTROL WIRING FOR PROPER FUNCTIONING SYSTEM WITH ELECTRICAL CONTRACTOR. MOTOR STARTERS, AND DISCONNECTS ARE TO BE PROVIDED BY THIS CONTRACTOR FOR INSTALLATION BY OTHERS. 10. CLEAN ALL MECHANICAL EQUIPMENT AND DUCTWORK OF ALL CONSTRUCTION DUST AT PROJECT COMPLETION. REPLACE ALL FILTERS PRIOR TO AIR BALANCING. PROVIDE ONE SPARE SET OF FILTERS
- FOR EACH PIECE OF EQUIPMENT TO OWNER. NEWLY INSTALLED HVAC EQUIPMENT SHALL NOT BE USED AT ANY TIME FOR TEMPORARY CONDITIONING OF THE SPACE DURING CONSTRUCTION. 11. COORDINATE INSTALLATION OF NEW WORK WITH ARCHITECTURAL PLANS, STRUCTURAL PLANS, AND LIGHTING PLANS, CONTRACTOR SHALL TAKE ALL INTERFERENCES INTO CONSIDERATION PROVIDE ALL NECESSARY OFFSETS OR TRANSITIONS WITH EQUIVALENT AREAS TO MATCH SIZES AS INDICATED ON
- 12. HEATING CONTRACTOR (H.C.) AND MECHANICAL CONTRACTOR (M.C.) TERMINOLOGY IS INTERCHANGEABLE 13. DO NOT INSTALL ANY MECHANICAL WORK ABOVE ELECTRICAL PANELS.

14 ALL DIMENSIONS AND PIPE SIZES ARE IN INCHES LINEESS NOTED OTHERWISE

DISCONNECTS SHALL BE PROVIDED BY EQUIPMENT MANUFACTURER.

PER MANUFACTURER'S RECOMMENDATIONS AND CODE REQUIREMENTS.

- 15. SLEEVE AND SEAL ALL PIPE, OR DUCT PENETRATIONS OF WALLS AND FLOORS. PACK VOID BETWEEN PIPE, OR DUCT AND SLEEVE WITH INSULATION IN NON-RATED WALLS AND FLOORS. PACK VOID BETWEEN PIPE OR DUCT AND SLEEVE WITH INSUITATION IN FIRE-BATED WALLS AND FLOORS, APPLY INTUMESCENT FIRE SAFING COMPOUND AT PENETRATION, MAINTAINING INTEGRITY AND RATING OF FIRE SEPARATION. SLEEVES THROUGH FLOORS SHALL EXTEND 2" ABOVE FLOOR, BE GROUTED INTO PLACE AND WATERPROOFED. PIPING THROUGH EXTERIOR WALLS SHALL BE SLEEVED AND SEALED
- 16. M.C. SHALL FURNISH AND INSTALL IDENTIFICATION TAGS FOR ALL H.V.A.C. EQUIPMENT. TAGS SHALL BE RIVETED TO ASSOCIATED PIECE OF EQUIPMENT, TAGS SHALL BE CLEAR WITH BLACK LETTERING THAT IDENTIFIES UNIT VALVE SERVES. TAGS SHALL TRANSPARENT TO BLEND IN WITH CEILING TILE. M.C. SHALL CONSULT WITH OWNER TO SHOW SAMPLE TAGS BEFORE PURCHASING TAGS. 17 FURNISH AND INSTALL ALL EQUIPMENT ELECTRICAL DISCONNECTS UNLESS INDICATED OTHERWISE

ELECTRIC WALL HEATER SCHEDULE	

1. PROVIDE WITH ACCESSORY SURFACE MOUNTING FRAME.

MFG

SYMBOL

				EXI	HAUS	ST FAN	SCHEDULE				
							ELECTRICAL	DATA		WEIGHT	
SYMBOL	TYPE	MFG	MODEL	CFM	ESP	FAN RPM	MOTOR - HP/WATTS-(W)	V/P/H	CONTROLS	(LBS)	REMARKS
EF-1	CABINET	GREENHECK	SP-80-VG	75	0.375	935	(6)	120/1/60	ACC. MOTION SENSOR	20	1,2

CWH1101DSAF

PROVIDE WITH FACTORY DISCONNECT SWITCH AND ACCESSORY MOTION SENSOR. 2. PROVIDE WITH ACCESSORY WALL CAP AND BACKDRAFT DAMPER.

	SPLIT SYSTEM UNIT SCHEDULE													
INDOOR UNIT	MFG	MODEL	SUPPL	Y FAN	OUTDOOR	COOL / HEAT	NOM.	SEER	REFRIG. TYPE	E	LECTRICAL DAT	Α	WEIGHT	REMARKS
SYMBOL	IVIFG	WODEL	AIR FLOW	FLA	UNIT SYMBOL	(MBH)	TONS	SEER	nernig. Tipe	MCA	MOP	V/P/H	(LBS.)	NEWARKS
MSI-1	LG	LS363HLV	530	1	MSO-1	33.0 / 35.2	3	15	R-410A	19	30	208/1/60	125	1,2,3,4,5
MSI-2	LG	LS363HLV	530	1	MSO-2	33.0 / 35.2	3	15	R-410A	19	30	208/1/60	125	1,2,3,4,5
MSI-3	LG	LS363HLV	530	1	MSO-3	33.0 / 35.2	3	15	R-410A	19	30	208/1/60	125	1,2,3,4,5
MSI-4	LG	LS363HLV	530	1	MSO-4	33.0 / 35.2	3	15	R-410A	19	30	208/1/60	125	1,2,3,4,5

- PROVIDE UNIT WITH LOW AMBIENT KIT AND WIND BAFFLE. SINGLE POINT POWER CONNECTION TO OUTDOOR UNIT. EC TO PROVIDE DISCONNECT SWITCH FOR OUTDOOR AND INDOOR UNIT. EC TO PROVIDE CONDUIT AND WIRE FROM
- OUTDOOR UNIT TO INDOOR UNIT. PROVIDE UNIT WITH ACCESSORY MINI CONDENSATE PUMP
- OUTDOOR UNIT MOUNTED ON EXISTING STRUCTURE

4 S S **5** H 0

REMARKS

120/1/60

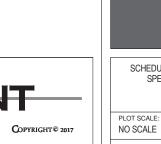
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REVISIONS

01 MM-DD-YR NAME DESCRIPTION OF CHANGES

ED STATES AND WILL BE SUBJECT TO LEGAL PROSECUTION. ABTREE, ROHRBAUGH & ASSOCIATES, INC 2017



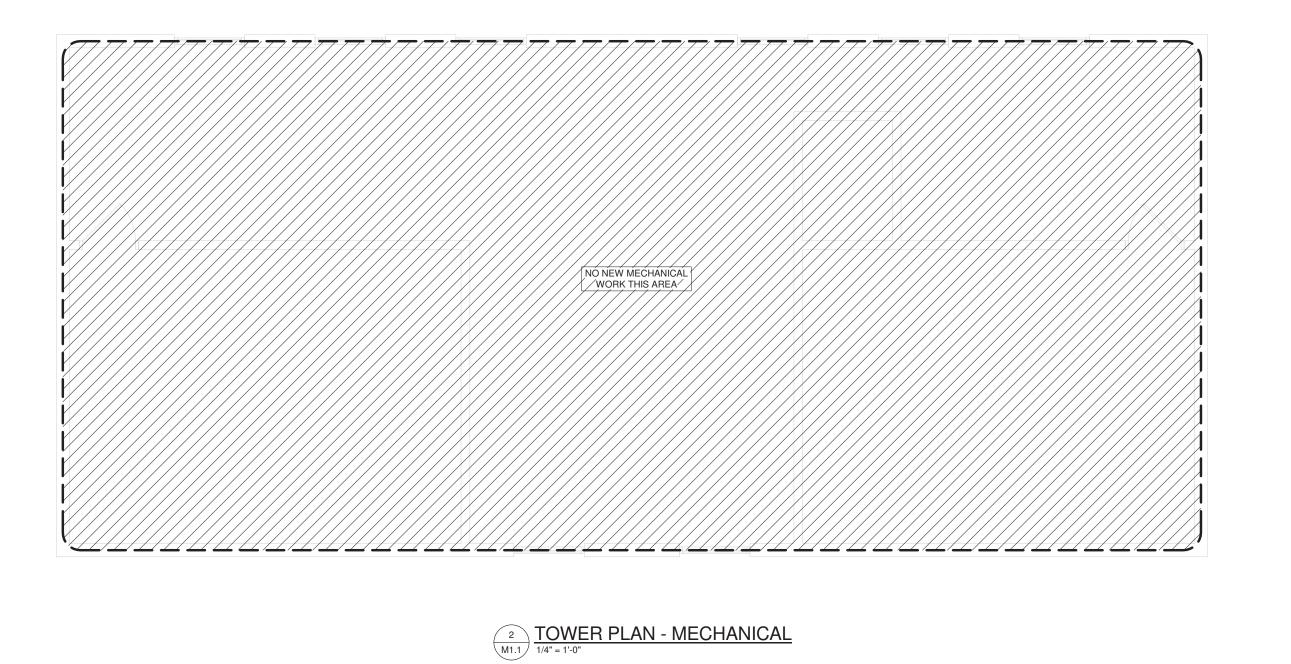
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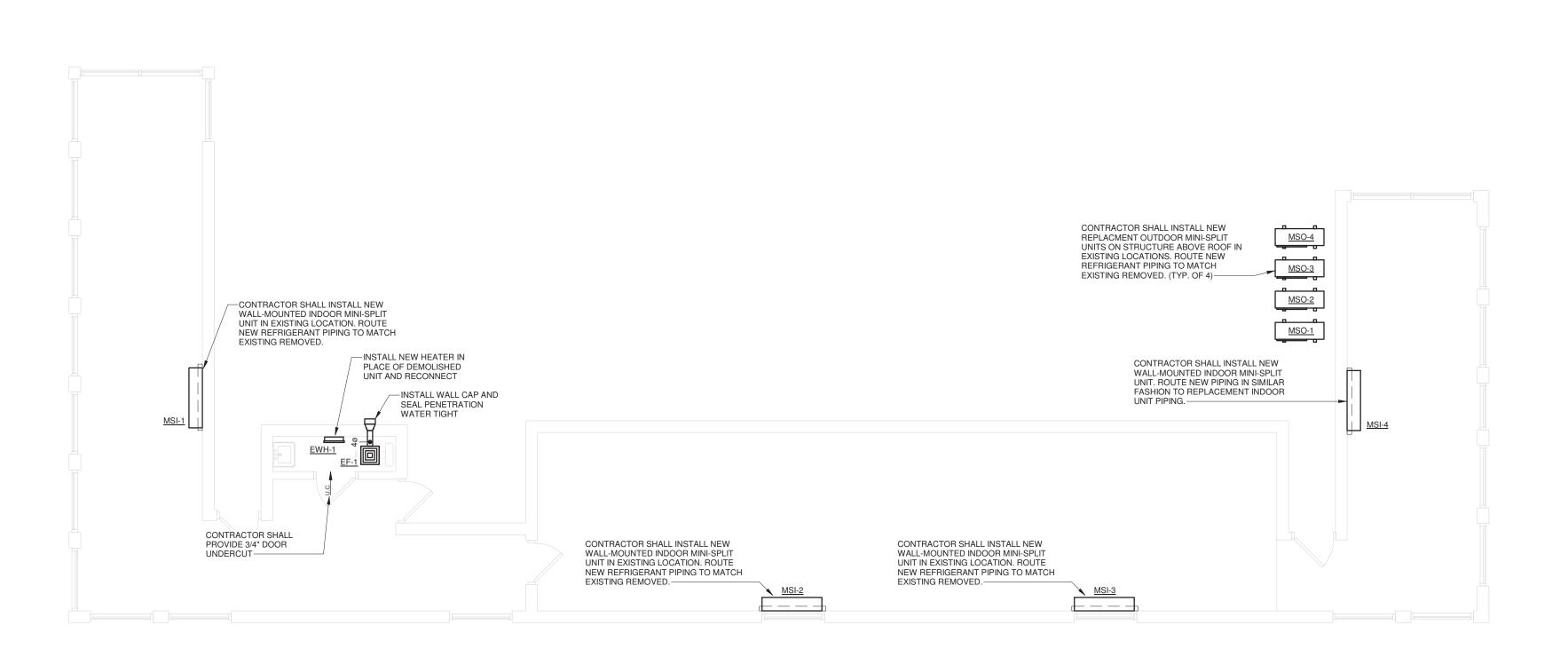
DECEMBER 20, 2017

PROJECT

ENGINEERING, INC. MARKET PLAZA WAY MECHANICSBURG, PA 17055 FAX: (717) 795-9110

DESIGNED BY: RWR | FUNCTIONAL LEAD: JBL | PROJECT NO. 17066





(M1.1) CONTROL HOUSE PLAN - EAST TOWER - MECHANICAL



CENTERPOINT ENGINEERING, INC. 2 MarketPlazaWay PHONE:(717) 795-8575 MECHANICSBURG, PA 17055 FAX: (717) 795-9110



TOWER AND CONTROL HOUSE PLANS - MECHANICAL PLOT SCALE: 1/4" = 1'-0"

FILENAME: 17066 Memorial Bridge NC Revit-17 HVAC.rvt

PROJECT 15BPR.15 DECEMBER 20, 2017

01 MM-DD-YR NAME DESCRIPTION OF CHANGES ARCHITE APE FEAR RIVER MEMORIAL LIFT BRIDGE NORTH CAROLINA DEPT. OF TRANSPORTATION **SSO** MAIN STB E ROHRBAUGH & HILL ROAD | 250 CRABTREE ROHR
401 EAST WINDING HILL ROAD
MECHANICSBURG PA 17055
717-458-0272 FAX 717-458-00

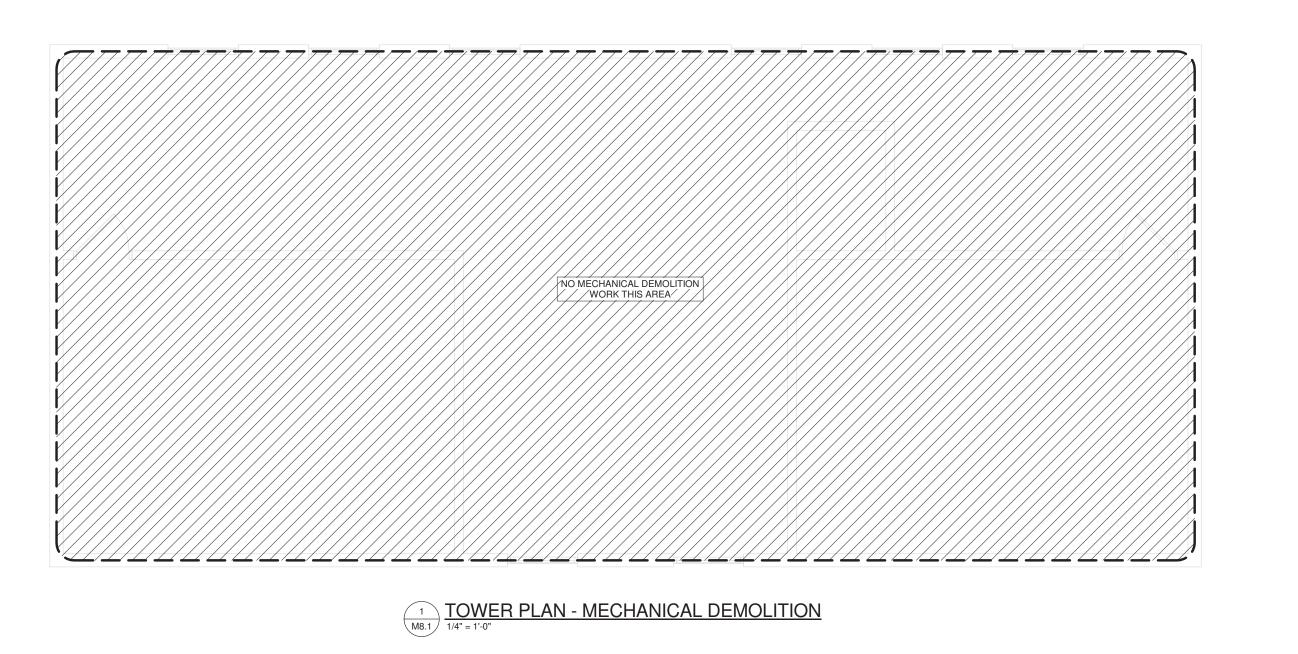
DOCUMENTS

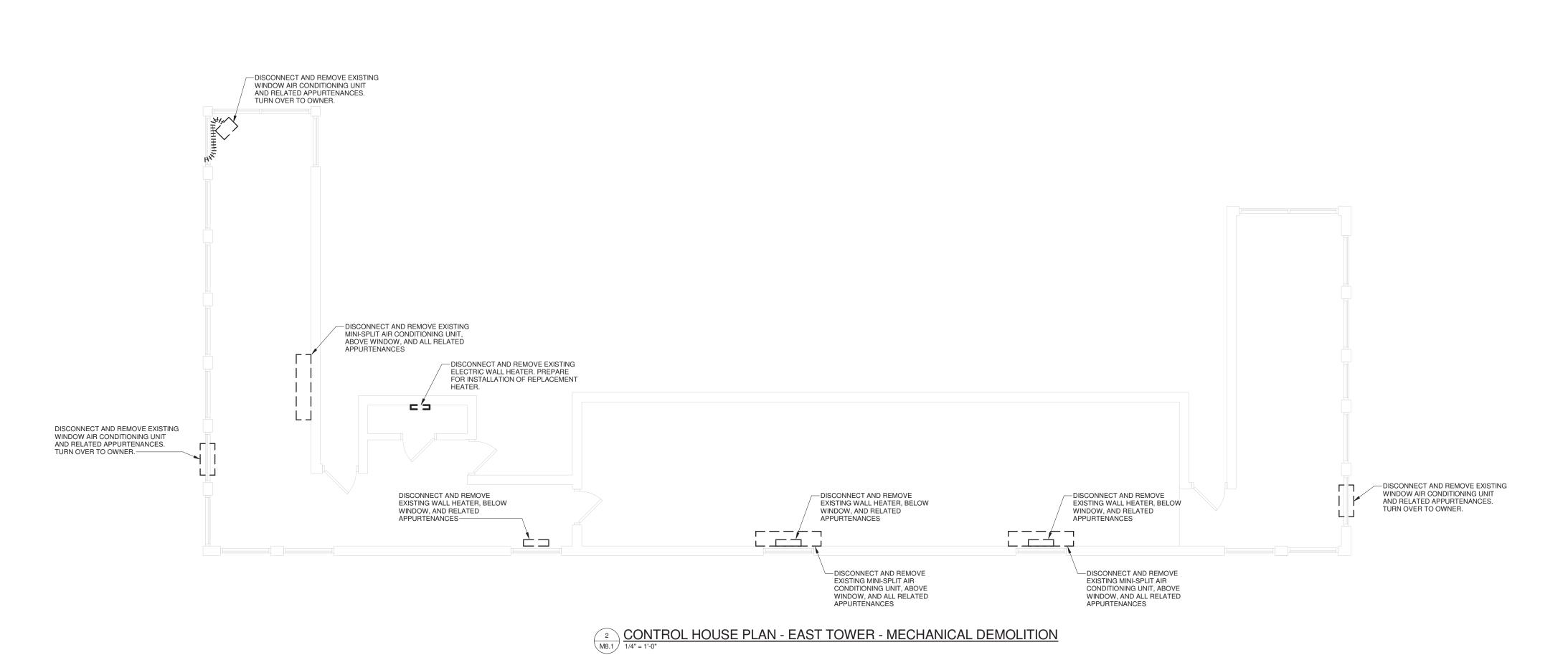
CONSTRUCTION

100%

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REVISIONS 01 MM-DD-YR NAME DESCRIPTION OF CHANGES

ARCHITE

CIATES
REET, SUITE 200

SSO MAIN STB

E ROHRBAUGH

RENOVATIONS TO ARRIDGE ARRIDGE CAROLINA DEPT. OF TRANSPORTATION

APE FE/

CRABTREE ROHR 401 EAST WINDING HILL ROAD MECHANICSBURG PA 17055 717-458-0272 FAX 717-458-00

TOWER AND CONTROL HOUSE PLANS - MECHANICAL DEMOLITION

DECEMBER 20, 2017

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

PROJECT 15BPR.15 FILENAME: 17066 Memorial Bridge NC Revit-17 HVAC.rvt



	PLUMBING SYMBOLS								
, ,	GATE VALVE								
— 	GLOBE VALVE								
—\—	CHECK VALVE								
—II—	BUTTERFLY VALVE								
<u> </u>	BALL VALVE								
<u> </u>	PLUG VALVE								
——————————————————————————————————————	CALIBRATED BALANCING SHUT-OFF VALVE & GPM SETTING								
₽ —	ANGLE VALVE								
— \$ —	TWO-WAY CONTROL VALVE								
——————————————————————————————————————	THREE-WAY CONTROL VALVE								
	SOLENOID VALVE								
	STRAINER								
<u> </u>	PRESSURE REGULATING VALVE								
\$	SAFETY RELIEF VALVE								
	VENTURI FLOW MEASURING DEVICE								
—[AS]—	AIR SEPARATOR								
 	UNION								
	TEMPERATURE/PRESSURE TEST PLUG								
<u> </u>	PRESSURE GAUGE WITH GAUGE COCK								
<u> </u>	THERMOMETER								
•—————————————————————————————————————	WALL HYDRANT (NON-FREEZE)								
C—— <u>NFRH</u>	ROOF HYDRANT (NON-FREEZE)								
<u> </u>	HOSE BIBB								
<u>CP-#</u>	PUMP								
<u>CP-#</u>	CIRCULATOR PUMP								
WHA	WATER HAMMER ARRESTER								
○ <u>FD-#</u>	FLOOR DRAIN								
O AD-#	AREA DRAIN (STORM WATER)								
○ <u>RD-#</u>	PIPE ANCHOR								
	PIPE GUIDE								
<u> </u>	PIPE TRANSITION								
	EXPANSION COMPENSATOR								
——————————————————————————————————————									
	EXPANSION COMPENSATOR FLEXIBLE CONNECTION								
_	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN								
_	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP								
o——	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN								
o——	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN TEE UP								
	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN TEE UP FLOW ARROW								
	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN TEE UP FLOW ARROW FLOOR CLEANOUT FLUSH WITH FINISH FLOOR								
	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN TEE UP FLOW ARROW FLOOR CLEANOUT FLUSH WITH FINISH FLOOR YARD CLEANOUT FLUSH IN GRASS OR PAVED AREA								
—————————————————————————————————————	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN TEE UP FLOW ARROW FLOOR CLEANOUT FLUSH WITH FINISH FLOOR YARD CLEANOUT FLUSH IN GRASS OR PAVED AREA CLEANOUT IN HORIZONTAL RUN								
—————————————————————————————————————	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN TEE UP FLOW ARROW FLOOR CLEANOUT FLUSH WITH FINISH FLOOR YARD CLEANOUT FLUSH IN GRASS OR PAVED AREA CLEANOUT IN HORIZONTAL RUN CLEANOUT IN VERTICAL DROP EXPOSED								
—————————————————————————————————————	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN TEE UP FLOW ARROW FLOOR CLEANOUT FLUSH WITH FINISH FLOOR YARD CLEANOUT FLUSH IN GRASS OR PAVED AREA CLEANOUT IN HORIZONTAL RUN CLEANOUT IN VERTICAL DROP EXPOSED CLEANOUT IN VERTICAL DROP WITH EXTENSION THROUGH WALL								
—————————————————————————————————————	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN TEE UP FLOW ARROW FLOOR CLEANOUT FLUSH WITH FINISH FLOOR YARD CLEANOUT FLUSH IN GRASS OR PAVED AREA CLEANOUT IN HORIZONTAL RUN CLEANOUT IN VERTICAL DROP EXPOSED CLEANOUT IN VERTICAL DROP WITH EXTENSION THROUGH WALL PIPE CAP								
	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN TEE UP FLOW ARROW FLOOR CLEANOUT FLUSH WITH FINISH FLOOR YARD CLEANOUT FLUSH IN GRASS OR PAVED AREA CLEANOUT IN HORIZONTAL RUN CLEANOUT IN VERTICAL DROP EXPOSED CLEANOUT IN VERTICAL DROP WITH EXTENSION THROUGH WALL PIPE CAP CONTINUATION BREAK								
	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN TEE UP FLOW ARROW FLOOR CLEANOUT FLUSH WITH FINISH FLOOR YARD CLEANOUT FLUSH IN GRASS OR PAVED AREA CLEANOUT IN HORIZONTAL RUN CLEANOUT IN VERTICAL DROP EXPOSED CLEANOUT IN VERTICAL DROP WITH EXTENSION THROUGH WALL PIPE CAP CONTINUATION BREAK ACCESS DOOR IN WALL OR CEILING								
	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN TEE UP FLOW ARROW FLOOR CLEANOUT FLUSH WITH FINISH FLOOR YARD CLEANOUT FLUSH IN GRASS OR PAVED AREA CLEANOUT IN HORIZONTAL RUN CLEANOUT IN VERTICAL DROP EXPOSED CLEANOUT IN VERTICAL DROP WITH EXTENSION THROUGH WALL PIPE CAP CONTINUATION BREAK ACCESS DOOR IN WALL OR CEILING CONNECT TO EXISTING								
	EXPANSION COMPENSATOR FLEXIBLE CONNECTION ELBOW DOWN ELBOW UP TEE DOWN TEE UP FLOW ARROW FLOOR CLEANOUT FLUSH WITH FINISH FLOOR YARD CLEANOUT FLUSH IN GRASS OR PAVED AREA CLEANOUT IN HORIZONTAL RUN CLEANOUT IN VERTICAL DROP EXPOSED CLEANOUT IN VERTICAL DROP WITH EXTENSION THROUGH WALL PIPE CAP CONTINUATION BREAK ACCESS DOOR IN WALL OR CEILING CONNECT TO EXISTING LIMIT OF DEMOLITION								

	EXISTING PIPING SYMBOLS							
	EXISTING PIPING TO BE REMOVED							
XXX	EXISTING PIPING TO REMAIN - SERVICE IS SAME DESIGNATION AS NEW							
	EXISTING PIPING NOTED AS CAPPED AND PORTION REMOVED							

SLOPING PIPE (.01 = 1%) & DIRECTION OF SLOPE

GENERAL SYMBOLS					
Х	SECTION MARKER				
X P-X	PARTIAL PLAN / DETAIL MARKER				
XX XX	RISER TYPE: S:SANITARY/W:WASTE/V:VENT/CW:COLD WATER/HW:HOT WATER RISER NUMBER				

	PLUMBING LINE TYPES
	POTABLE DOMESTIC COLD WATER
NP	NON-POTABLE DOMESTIC COLD WATER
	DOMESTIC HOT WATER (120°F)
	DOMESTIC HOT WATER RECIRCULATION (120°F)
140°	DOMESTIC HOT WATER (140°F)
140°	DOMESTIC HOT WATER RECIRCULATION (140°F)
——————————————————————————————————————	SANITARY SEWER (GRAVITY)
VSAN	SANITARY SEWER (VACUUM)
w	WASTE
———AW———	ACID WASTE
——————————————————————————————————————	SLURRY SUPPLY/RETURN FOR PULPER
	VENT
AV	ACID VENT
SD	STORM DRAIN
OSD	OVERFLOW (SECONDARY) STORM DRAIN
SSD	SIPHONIC STORM DRAIN SYSTEM
——ID——	INDIRECT DRAIN
—— G ——	NATURAL GAS
———GR———	GREASE (WASTE) LINE
IW	INDIRECT WASTE
———PD———	PUMP DISCHARGE

	ABBF	REVIATION	ONS
AD	ACCESS DOOR	IN WC	INCHES, WATER COLUMN
ADA	AMERICAN DISABILITY ACT	INV	INVERT
AFF	ABOVE FINISH FLOOR	KEC	KITCHEN EQUIPMENT CONTRACTOR
AMB	AMBIENT	L	LENGTH
AMP	AMPERE	LB	POUND
AV	ACID VENT	LF	LINEAR FEET
AW	ACID WASTE	LVR	LOUVER
BLDG	BUILDING	LWT	LEAVING WATER TEMPERATURE
BOT	BOTTOM	MAX	MAXIMUM
BTU	BRITISH THERMAL UNITS	MBH	BTUH x 1000
BTUH	BRITISH THERMAL UNITS PER HOUR	MC	MECHANICAL CONTRACTOR
CA CAP	COMPRESSED AIR CAPACITY	MFR MIN	MANUFACTURER MINIMUM
CD	CONDENSATE DRAIN	MTD	MOUNTED
CI	CAST IRON	NC	NORMALLY CLOSED
CLG	CEILING	NERH	NON-FREEZE BOOF HYDRANT
CO	CLEAN OUT	NFWH	NON-FREEZE WALL HYDRANT
CP	CONDENSATE PUMP	NIC	NOT IN CONTRACT
CW.	COLD WATER	OC	ON CENTER
DDC	DIRECT DIGITAL CONTROL	P	PUMP
DIA	DIAMETER	PC	PLUMBING CONTRACTOR
DN	DOWN	PD	PRESSURE DROP
DWG	DRAWING	PLBG	PLUMBING
E.C	ELECTRICAL CONTRACTOR	PRES	PRESSURE
EFF	EFFICIENCY	PSIG	POUNDS PER SQUARE INCH GAUGE
EL	ELEVATION	PVC	POLYVINYL CHLORIDE
EQUIP	EQUIPMENT	RD	ROOF DRAIN
ET	EXPANSION TANK	RH	RELATIVE HUMIDITY
ETR EWT	EXISTING TO REMAIN ENTERING WATER TEMPERATURE	RM	ROOM
EX	EXISTING WATER TEMPERATURE	RPM	REVOLUTIONS PER MINUTES
F	FAHRENHEIT	RWC	RAINWATER CONDUCTOR
FC	FLEXIBLE CONNECTION	SRWC SAN	SECONDARY ROOF DRAIN SANITARY
FCO	FLOOR CLEAN OUT	SD	STORM DRAIN
FD	FLOOR DRAIN	SHT	SHEET
FDC	FIRE DEPARTMENT CONNECTION	SPEC	SPECIFICATIONS
FT	FEET	TEMP	TEMPERATURE
FPM	FEET PER MINUTE	TYP	TYPICAL
FS	FLOOR SINK	VEL	VELOCITY
G	GAS	VFD	VARIABLE FREQUENCY DRIVE
GAL	GALLON	V	VENT
GC	GENERAL CONTRACTOR	VTR	VENT THROUGH ROOF
GR	GREASE WASTE LINE	VCO	VERTICAL CLEANOUT
GPM	GALLONS PER MINUTE	W	WASTE
HB	HOSE BIBB	WCO	WALL CLEANOUT
HP	HORSE POWER	WPD	WATER PRESSURE DROP
HR	HOUR	WTR	WATER
HT HW	HEIGHT HOT WATER	W/	WITH
HWR	HOT WATER HOT WATER RETURN	W/O	WITHOUT
mvvn	HOL WATER RETURN		

PLUMBING GENERAL NOTES:

- 1. FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE ORDERING EQUIPMENT OR FABRICATING COMPONENTS.
- 2. UNLESS NOTED OTHERWISE, CONSTRUCTION MATERIAL AND EQUIPMENT REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE LEGALLY DISPOSED OF OFF THE
- 3. INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT ACCORDANCE WITH RESPECTIVE MANUFACTURER'S WRITTEN INSTRUCTIONS UNLESS THERE IS A CONFLICT BETWEEN THESE INSTRUCTIONS AND THE IPC 2009. IF A CONFLICT OCCURS, THE MORE STRINGENT REQUIREMENT
- 4. COORDINATE WORK WITH STRUCTURAL AND ARCHITECTURAL FEATURES AND PROVIDE OFFSETS AND FITTINGS AS REQUIRED.
- 5. COORDINATE WORK WITH ALL OTHER TRADES. CEILING HEIGHTS ON ARCHITECTURAL PLANS ARE
- 6. ALL DIMENSIONS AND PIPE SIZES ARE IN INCHES UNLESS NOTED OTHERWISE. 7. RUN PIPING CONCEALED EXCEPT IN MECHANICAL ROOMS OR WHERE NOTED OTHERWISE.
- 8. PROVIDE ACCESS PANELS IN WALLS OR CEILINGS WHERE REQUIRED FOR ALL CONCEALED
- VALVES AND EQUIPMENT WHERE NO OTHER ACCESS IS PROVIDED. INSTALL RATED ACCESS PANELS IN FIRE RATED CONSTRUCTION TO MAINTAIN RATING.
- 9. RUN CONCEALED PIPING ON ROOM SIDE OF BUILDING INSULATION UNLESS NOTED OTHERWISE. 10. ALL EXPOSED PIPING SHALL BE CLEANED AND HAVE THE SURFACE PREPARED TO RECEIVE PAINTED FINISH. PRIME AND PAINT THE EXPOSED PIPING IN COLOR AS SELECTED BY THE
- 11. RUN 2" MINIMUM SIZE WASTE PIPING BELOW GRADE INSIDE BUILDING REGARDLESS OF SIZE NOTED ON FIXTURE SCHEDULE.
- 12. SLOPE ALL SOIL, WASTE AND STORM WATER LINES PER CODE.
- 13. CONNECT WATER, WASTE, AND VENT PIPING TO FIXTURES IN ACCORDANCE WITH SIZES INDICATED ON FIXTURE SCHEDULE. RUN-OUTS TO FIXTURES WITHOUT SIZES INDICATED ON DRAWINGS, SHALL BE THE SAME SIZE AS THE CONNECTOR SIZE FOR THE CORRESPONDING FIXTURE AS INDICATED ON THE FIXTURE SCHEDULE.
- 14. PLUMBING CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES AND PIPING BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ALL DAMAGES WHICH MIGHT OCCUR BY THE FAILURE TO EXACTLY LOCATE AND PRESERVE ANY UNDERGROUND
- 15. INSTALL ALL WORK IN ACCORDANCE WITH ALL APPLICABLE CODES AND REGULATIONS.
- 16. PATCH ALL OPENINGS IN BUILDING CONSTRUCTION WHERE PIPING, ETC. IS INSTALLED. MATERIAL AND FINISH TO MATCH EXISTING SURROUNDING CONSTRUCTION.
- 17. SEAL ALL FLOOR AND WALL PENETRATIONS IN FIRE RATED CEILINGS AND PARTITIONS TO MAINTAIN FIRE RATING. COORDINATE LOCATIONS WITH ARCHITECTURAL DRAWINGS.
- 18. PLUMBING CONTRACTOR SHALL PROVIDE PIPE SLEEVES IN ALL FOUNDATION WALLS FOR PIPING PENETRATIONS.
- 19. PLUMBING CONTRACTOR IS REQUIRED TO NOTIFY FACILITY OWNERS NOT LESS THAN 3 AND/OR NOT MORE THAN 10 WORKING DAYS PRIOR TO EXCAVATION OR DEMOLITION WORK WHEN USING POWERED EQUIPMENT ON PUBLIC OR PRIVATE PROPERTY.
- 21. PLUMBING CONTRACTOR SHALL VERIFY AND CONFIRM ALL PLUMBING FIXTURE LOCATIONS AND TYPES WITH ARCHITECTURAL PLANS, DETAILS AND ELEVATIONS. ANY DISCREPANCIES BETWEEN THE PLUMBING DRAWINGS AND THE ARCHITECTURAL DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR RESOLUTION, PRIOR TO INSTALLATION.
- 22. THE PLUMBING CONTRACTOR SHALL CUT ANY OPENING IN FLOORS, WALLS, ROOFS AND CEILINGS REQUIRED FOR INSTALLATION OF PLUMBING EQUIPMENT, PIPING, ETC.. THE CONTRACTOR SHALL ALSO PATCH AND REPAIR ANY EXISTING FLOORS, WALLS, AND CEILING OPENINGS LEFT BY THE REMOVAL OR INSTALLATION OF PLUMBING EQUIPMENT, PIPING, ETC.. PATCHING SHALL MATCH THE EXISTING ADJACENT SUBSTRATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FINISHES WHERE PATCHING MENTIONED ABOVE IS PROVIDED.

PLUMBING FIXTURE SCHEDULE							
			PIPE SIZE				
MARK	DESCRIPTION	DCW	DHW	W	V	RIM HEIGHT	COMMENTS
FD-1				3"	2"		
FPWH-1	Non Freeze Wall Hydrant	3/4"					With Self Draining Vacuum Breaker
LAV-1	LAVATORY	1/2"	1/2"	1 1/2"	1 1/2"	2' - 7"	
WC-1		0"		0"	0"	0' - 0"	

ELECTRIC WATER HEATER SCHEDULE							
MARK	INPUT	VOLTAGE	PHASE	AMPS	TANK VOLUME	UNIT WEIGHT	COMMENTS
EWH-1	4.5 W	208 V	1		20 gal		MOUNDED ON WALL ABOVE SINK

		ROOF	DRAIN SCHEDU	LE
MARK	OUTLET SIZE	DOME SIZE	DOME TYPE	COMMENTS
RD-1	3"	1' - 3"	CAST IRON	
RD-1	3"	1' - 3"	CAST IRON	
RD-1	3"	1' - 3"	CAST IRON	
RD-1	3"	1' - 3"	CAST IRON	
RD-1	3"	1' - 3"	CAST IRON	
RD-1	3"	1' - 3"	CAST IRON	

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REVISIONS

	01	MM-DD-YR	NAME	DESCRIPTION OF CHANGES

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CRABTREE ROHRBAUGH & ASSO 401 EAST WINDING HILL ROAD

A01 EAST WINDING HILL ROAD

CHARLOTTESVILLE

CHARLOTTESVILLE

434-975-7262 FAX

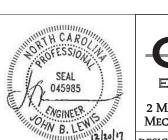
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SYMBOLS, ABBREVIATIONS, NOTES AND SCHEDULES -PLUMBING

15BPR.15

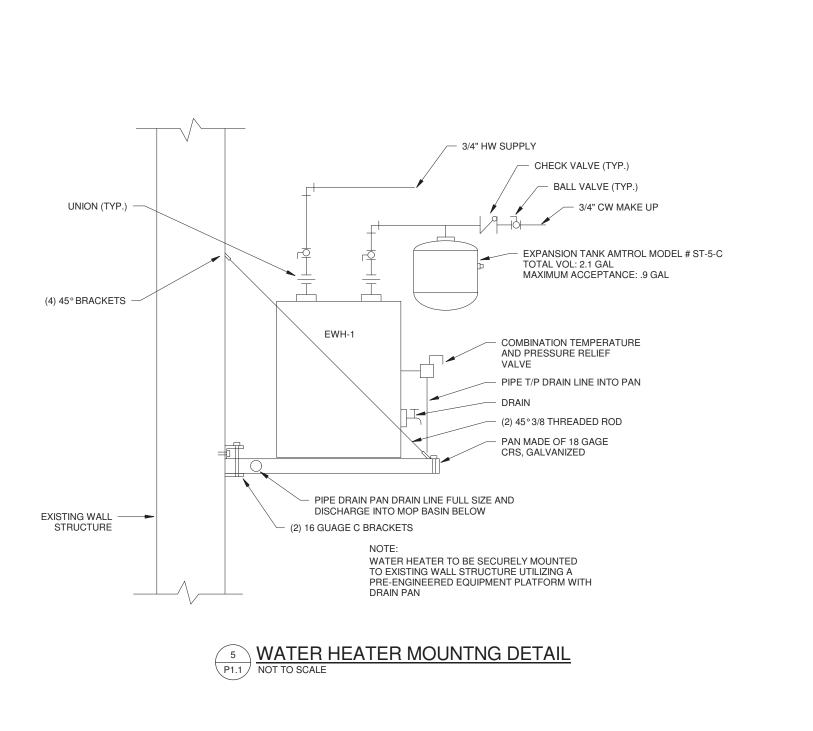
PROJECT

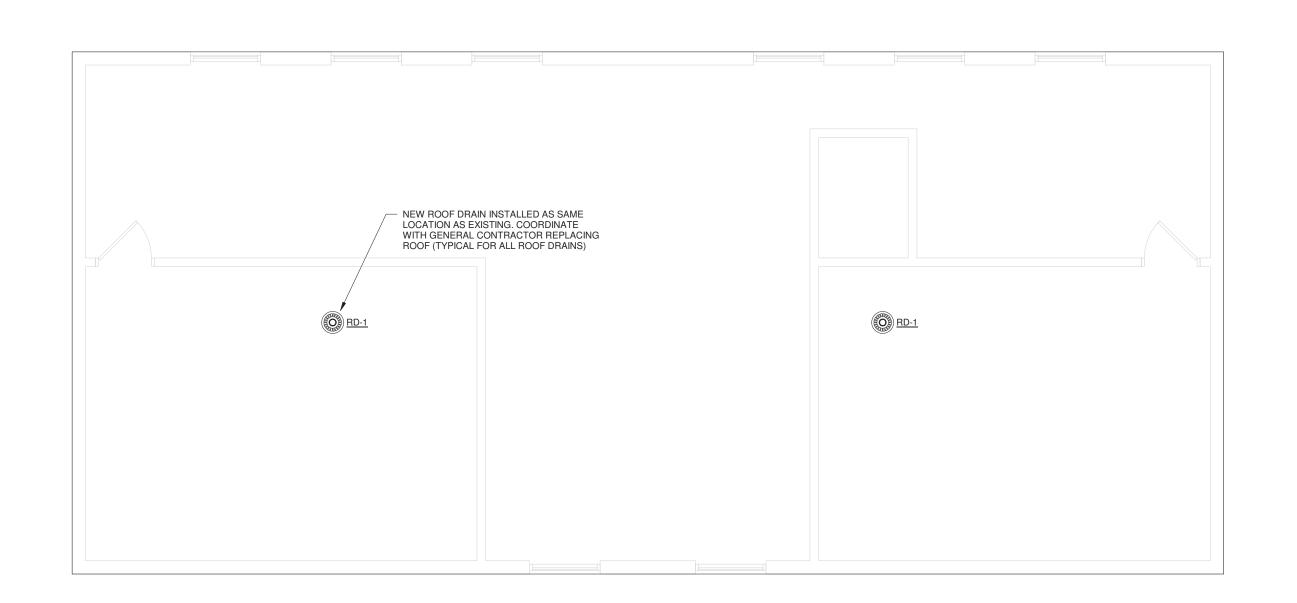


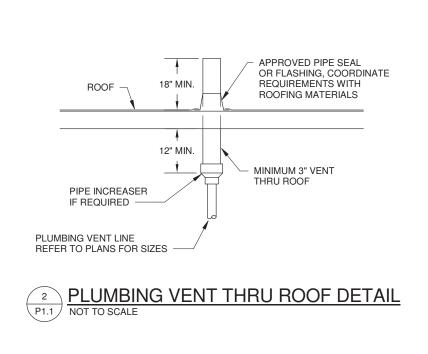
CENTERPOINT 2 MarketPlazaWay PHONE:(717) 795-8575 MECHANICSBURG, PA 17055

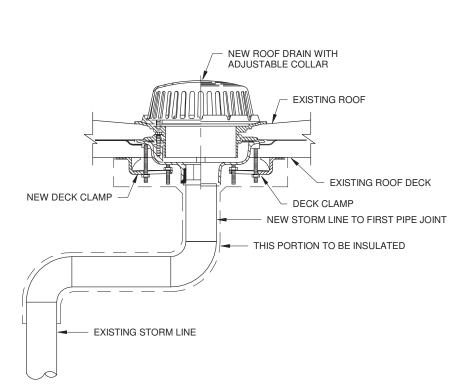
FAX: (717) 795-9110 DESIGNED BY: BFL FUNCTIONAL LEAD: JBL PROJECT NO. 17066

PLOT SCALE: 12" = 1'-0" DECEMBER 20, 2017









ROOF DRAIN REPLACEMENT DETAIL
NOT TO SCALE



CONTROL HOUSE PLAN - EAST TOWER - PLUMBING



CENTERPOINT 2 MarketPlazaWay PHONE:(717) 795-8575 MECHANICSBURG, PA 17055 FAX: (717) 795-9110 DESIGNED BY: BFL FUNCTIONAL LEAD: JBL PROJECT NO. 17066

As indicated FILENAME: 17066 Memorial Bridge NC Revit-17 PLBG.rvt

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RENOVATIONS TO
CAPE FEAR RIVER MEMORIAL LIFT BRIDGE
NORTH CAROLINA DEPT. OF TRANSPORTATION CRABTREE ROHRBA
401 EAST WINDING HILL ROAD
MECHANICSBURG PA 17055
717-458-0272 FAX 717-458-0047

FLOOR PLANS AND DETAILS -PLUMBING

DECEMBER 20, 2017



EXISTING CONDITIONS PHOTOGRAPH #6
NOT TO SCALE

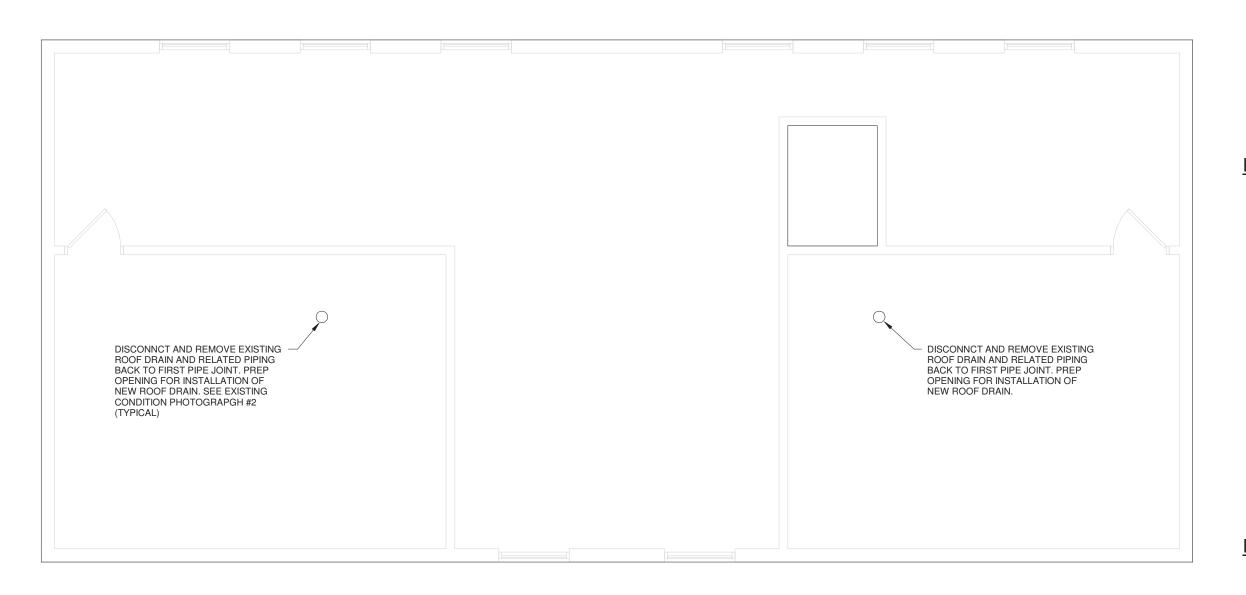


EXISTING CONDITIONS PHOTOGRAPH #7
NOT TO SCALE



EXISTING CONDITIONS PHOTOGRAPH #8

NOT TO SCALE



TOWER PLAN - PLUMBING DEMOLITION



EXISTING CONDITIONS PHOTOGRAPH #2



EXISTING CONDITIONS
PHOTOGRAPH #1

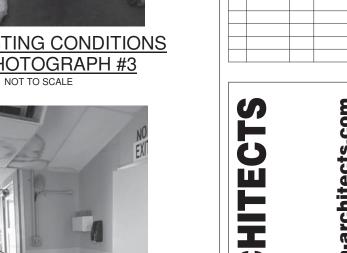


EXISTING CONDITIONS PHOTOGRAPH #4



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EXISTING CONDITIONS PHOTOGRAPH #3



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EXISTING SINK AND PIPING TO BE REMOVED

PHOTOGRAPH #5

EXISTING CONDITIONS

DISCONNECT AND REMOVE EXISTING SANITARY WASTE PIPING LOCATED UNDER CONTROL HOUSE BACK TO JUST ABOVE BRIDGE DECK. SEE EXISTING CONDITIONS PHOTGRAPH #8 DISCONNECT AND REMOVE EXISTING ELECTRIC WATER HEATER MOUNTED ON WALL ABOVE SINK AND ALL RELATED PIPING. SEE EXISTING CONDITIONS DISCONNECT AND REMOVE EXISTING SINK AND ALL RELATED PIPING. SEE EXISTING CONDITIONS PHOTOGRAPH #1 DISCONNECT AND REMOVE EXISTING FLOOR CLEANOUT AND ALL RELATED WASTE PIPING DISCONNECT AND REMOVE ALL EXISTING DOMESTIC WATER PIPING INCLUDING MAIN BACK DOWN TO JUST ABOVE BRIDGE DECK. SEE EXISTING CONDITIONS - DISCONNECT AND REMOVE EXISTING WATER CLOSET AND ALL RELATED PIPING. SEE EXISTING CONDITIONS PHOTOGRAPH #3 EXISTING STORMWATER PIPING FROM ROOF DRAIN TO REMAIN EXISTING STORMWATER PIPING FROM ROOF DRAIN TO REMAIN - DISCONNCT AND REMOVE EXISTING DISCONNCT AND REMOVE EXISTING -ROOF DRAIN AND RELATED PIPING BACK TO FIRST PIPE JOINT. PREP ROOF DRAIN AND RELATED PIPING BACK TO FIRST PIPE JOINT. PREP OPENING FOR INSTALLATION OF OPENING FOR INSTALLATION OF NEW ROOF DRAIN. NEW ROOF DRAIN. - DISCONNECT AND REMOVE DISCONNCT AND REMOVE EXISTING DISCONNCT AND REMOVE EXISTING ROOF DRAIN AND RELATED PIPING BACK TO FIRST PIPE JOINT. PREP ROOF DRAIN AND RELATED PIPING BACK TO FIRST PIPE JOINT. PREP OPENING FOR INSTALLATION OF NEW EXISTING FLOOR CLEANOUT - DISCONNECT AND REMOVE EXISTING OPENING FOR INSTALLATION OF NEW SINK AND ALL RELATED PIPING. SEE EXISTING CONDITIONS PHOTOGRAPH #5 ROOF DRAIN. ROOF DRAIN. - EXISTING STORMWATER PIPING FROM ROOF DRAIN TO REMAIN EXISTING STORMWATER PIPING FROM ROOF DRAIN TO REMAIN EXISTING CONDENSATE PIPING TO REMAIN

CONTROL HOUSE PLAN - EAST TOWER - PLUMBING
DEMOLITION
1/4" = 1'-0"





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RENOVATIONS TO AR RIVER MEMORIAL LIFT BRIDGE CAROLINA DEPT. OF TRANSPORTATION APE FE/ NORTH (

FLOOR PLANS AND EXISTING CONDITIONS PHOTOGRAPHS -DEMOLITION PLUMBING

1/4" = 1'-0"

FILENAME: 17066 Memorial Bridge NC Revit-17 PLBG.rvt

DECEMBER 20, 2017

PROJECT 15BPR.15

	DISTRIBUTION			
_	NEW 208Y/120 PANELBOARD			
[7777A	NEW 480Y/277 PANELBOARD			
←	HOMERUN TO PANELBOARD			
	EQUIPMENT ON SAME CIRCUIT BUT SEPARATELY CONTROLLED			
	CONDUIT CONCEALED IN WALL OR CEILING			
	CONDUIT RUN UNDERFLOOR OR UNDERGROUND			

	EQUIPMENT					
J	JUNCTION BOX					
Ŷ	JUNCTION BOX- WALL MOUNT					
	DISCONNECT SWITCH - MOUNTED 5' ABOVE FINISHED FLOOR OR ON EQUIPMENT					
\boxtimes_{J}	COMBINATION STARTER/DISCONNECT - 5' ABOVE FINISHED FLOOR OR ABOVE CEILING					
<i>\O</i> '	MOTOR					
S _T	MANUAL MOTOR STARTER					
TV	TV OUTLET - MOUNT 18" AFF UNLESS NOTED OTHERWISE.					
IDF	MAIN DISTRIBUTION FRAME					
Φ	WALL MOUNTED CLOCK - MOUNTING HT. TO CENTER OF DEVICE AS SPECIFIED ON 'E3' SERIES DRAWINGS					
<u>\$</u>	WALL MOUNTED PAGING HORN					
(\$)	CEILING MOUNTED PAGING SPEAKER					
® _L	CEILING MOUNTED LOCAL SPEAKER					
SO	SPEAKER/CLOCK COMBO					

FIRE ALARM				
F	FIRE ALARM PULL STATION - 42" ABOVE FINISHED FLOOR			
F◀	COMBINATION FIRE ALARM HORN W/ VISUAL UNIT (STROBE) - 80", BOTTOM OF LENS, AFF ALL DEVICES MUST HAVE ADJUSTABLE CANDELA RATINGS			
cF ◄	COMBINATION FIRE ALARM HORN W/ VISUAL UNIT (STROBE) - CEILING MOUNTED ALL DEVICES MUST HAVE ADJUSTABLE CANDELA RATINGS			
FX	VISUAL ONLY UNIT - 80", BOTTOM OF LENS, AFF ALL DEVICES MUST HAVE ADJUSTABLE CANDELA RATINGS			
cFX	VISUAL ONLY UNIT - CEILING MOUNTED ALL DEVICES MUST HAVE ADJUSTABLE CANDELA RATINGS			
D	MAGNETIC DOOR HOLD OPEN (24VAC) (FURNISHED BY OTHERS)			
(S)	SMOKE DETECTOR			
(D)	DUCT TYPE SMOKE DETECTOR - FURNISH AND INSTALLED BY MC, WIRED BY E.C			
H	HEAT DETECTOR			
©	CARBON MONOXIDE DETECTOR			

	RECEPTACLES
φ	DUPLEX RECEPTACLE - WALL MOUNTED
#	QUADRUPLEX RECEPTACLE - WALL MOUNTED
ф	DUPLEX RECEPTACLE - CEILING MOUNTED
igotimes	SPECIAL - SINGLE PHASE - WALL MOUNTED (SIZE AS INDICATED)
•	SPECIAL - THREE PHASE - WALL MOUNTED (SIZE AS INDICATED)
∇	DATA OUTLET
√4	DATA OUTLET (NUMBER DENOTES QUANTITY OF DEVICES)
$ \mathbf{V}^4 $	COMBINATION TELE/DATA OUTLET (NUMBER DENOTES QUANTITY OF DATA DEVICES)
▼WH	TELEPHONE OUTLET, WALL HUNG
∇^{W}	DATA OUTLET. WALL MOUNTED; FOR OWNER PROVIDED WIRELESS SYSTEM
\triangle^{C}	DATA OUTLET. CEILING MOUNTED; FOR OWNER PROVIDED WIRELESS SYSTEM
4 🗆 4	FLOOR BOX WITH DATA OUTLETS AND ELECTRICAL RECEPTACLES (NUMBER DENOTES QUANTITY OF DEVICES)
MI	MULTI-MEDIA INTERFACE: VGA W/ 3.5MM (AUDIO/VIDEO), HDMI, USB EXTENDER OUTLET
PL	PLUG LOAD CONTROLLER, WATTSTOPPER #LMPL-201. DEVICE SHALL BE MOUNTED ABOVE CEILING. PROVIDE A 4"x4" JUNCTION BOX FOR DEVICE MOUNTING.

NOTES:

1. DEVICES TO BE MOUNTED 18" ABOVE FINISHED FLOOR, UNLESS NOTED OTHERWISE. 2. A/C = ABOVE COUNTERTOP APPROXIMATELY 42" ABOVE FINISHED FLOOR. 3. GFI = GROUND FAULT INTERRUPTER

> PHASING PLAN: DESIGN IS BASED UPON ARCHITECTURAL PHASING PLAN AND CIVIL PHASING PLAN. IF CONSTRUCTION PHASING PLAN DIFFERS FROM ARCHITECTURAL PHASING PLAN AND CIVIL PHASING PLAN, THEN CONTRACTOR SHALL MAINTAIN EXISTING EQUIPMENT THROUGH CONSTRUCTION AS REQUIRED AT NO ADDITIONAL COST TO OWNER.

	LIGHTING CONTROL
S	SINGLE POLE LIGHT SWITCH - FLUSH MOUNTED
s ₃	THREE-WAY LIGHT SWITCH - FLUSH MOUNTED
S ₄	FOUR-WAY LIGHT SWITCH - FLUSH MOUNTED
W	OCCUPANCY SENSOR - WALLSTATION, WATTSTOPPER #LMDW-100-W
S 1	LOW-VOLTAGE 1-BUTTON WALLSTATION, WATTSTOPPER #LMSW-101-W (PROVIDE W/ ENGRAVING)
S 3	LOW-VOLTAGE 3-BUTTON WALLSTATION, WATTSTOPPER #LMSW-103-W (PROVIDE W/ ENGRAVING)
S 4	LOW-VOLTAGE 4-BUTTON WALLSTATION, WATTSTOPPER #LMSW-104-W (PROVIDE W/ ENGRAVING)
SD	LOW-VOLTAGE DIMMING WALLSTATION, WATTSTOPPER #LMDM-101-W (PROVIDE W/ ENGRAVING)
SP	DIGITAL PARTITION SWITCH, WATTSTOPPER #LMPS-104-W (PROVIDE WITH ENGRAVING)
(OS)	LOW-VOLTAGE VACANCY/OCCUPANCY SENSOR - DUAL TECHNOLOGY, CEILING MOUNTED WATTSTOPPER #LMDC-100 (REFER TO SEQUENCE OF OPERATIONS FOR VAC/OCC MODE)
PS	PHOTOSENSOR - SINGLE ZONE SWITCHING AND DIMMING, CLOSED LOOP WATTSTOPPER #LMLS-400
RC	ROOM CONTROLLER, 1-LOAD, 2-LOAD, OR 3-LOAD AS REQUIRED PER ROOM, DEVICE SHALL BE MOUNTED ABOVE CEILING. WATTSTOPPER #LMRC-210 FOR ALL LED LUMINAIRES, WATTSTOPPER #LMRC-220 FOR LED RETROFIT LUMINAIRES.
EL	EMERGENCY LIGHTING CONTROL UNIT, DEVICE SHALL BE MOUNTED ABOVE CEILING. WATTSTOPPER #ELCU200
NB	NETWORK BRIDGE CONTROLLER (NOT SHOWN ON PLANS), PROVIDE (1) ONE PER ROOM, DEVICE SHALL BE MOUNTED ABOVE CEILING. WATTSTOPPER #LMBC-300
PI	PARTITION INTERFACE, WATTSTOPPER #LMIO-102. DEVICE SHALL BE MOUNTED ABOVE CEILING.
(IR)	ISOLATED RELAY INTERFACE, WATTSTOPPER #LMRL-100. DEVICE SHALL BE MOUNTED ABOVE CEILING. TIES INTO ROOM VAV BOXES. NOT SHOWN ON DRAWINGS.
	LOW-VOLTAGE WIRING PER MANUFACTURER'S RECOMMENDATIONS

ABBREVIATIONS:

ABOVE FINISHED FLOOR ABOVE FINISHED GRADE AIR HANDLING UNIT ALTERNATE AREA PROTECTION PANEL

ELECTRICAL CONTRACTOR

EXISTING BACK BOX TO REMAIN

EXISTING DEVICE TO BE RELOCATED

HEATING, VENTILATION & AIR CONDITIONING

TRANSIENT VOLTAGE SURGE SUPPRESSOR

NATIONAL ELECTRIC MANUFACTURER'S ASSOCIATION

MODEL NO.

EU2-LED-M12

LHQM-LED-R-HO

ELA-T-QWP-L0309

VXBRLED26NDG/PCS

2GTL-4-40L-EZ1-LP840

FEML48-4000LM-LPAFL-MD-MVOLT-GZ10-40K-80CRI

FEML48-4000LM-LPAFL-MD-MVOLT-GZ10-40K-80CRI

FEML48-6000LM-LPAFL-MD-MVOLT-GZ10-40K-80CRI-

DIAMETER DIGITAL METER

EXHAUST FAN ELECTRICAL FI EVATION EXPLOSION PROOF

FAN COIL UNIT FULL LOAD AMPERES

GROUND

KILOWATT

OVERHEAD FIBER

UNIT HEATER

WIRE GUARD WEATHERPROOF

MANUFACTURER

LITHONIA

LITHONIA

LITHONIA

RAB LIGHTING

LITHONIA

LITHONIA

LITHONIA

LITHONIA

G, GND, GRD

EXISTING TO REMAIN

GENERAL CONTRACTOR HEATING CONTRACTOR HIGH INTENSITY DISCHARGE

THOUSAND CIRCULAR MILS KILOVOLT AMPERES

MECHANICAL CONTRACTOR NATIONAL ELECTRIC CODE

PLUMBING CONTRACTOR

UNDERGROUND FIBER

THE SYMBOLS AND ABBREVIATIONS SHOWN ARE STANDARDS

AND DO NOT NECESSARILY APPEAR ON THE DRAWINGS.

AUTOMATIC TEMPERATURE CONTROL AUTOMATIC TRANSFER SWITCH BELOW FINISHED FLOOR BELOW FINISHED GRADE CONDENSING UNIT CABINET UNIT HEATER

GENERAL LIGHTING CONTROL NOTES:

- 1. CONTRACTOR TO FIELD VERIFY NUMBER OF RELAYS REQUIRED PER CIRCUIT AND PROVIDE APPROPRIATE
- 2. PROVIDE A 4"x4" JUNCTION BOX FOR DEVICE MOUNTING.
- PROVIDE A 4"x4" JUNCTION BOX IF DEVICE IS BEING MOUNTED WITHOUT THE ROOM CONTROLLER. DEVICE MOUNTING BRACKET SHALL BE ZIP TIED TO STRUCTURE.
- MOUNT SWITCHES AND WALLSTATIONS 48" AFF. REFER TO LIGHTING CONTROL SEQUENCE OF OPERATIONS ON 'E5' SERIES DRAWINGS FOR WALLSTATION ENGRAVING SCHEDULE.

GENERAL NOTES:

- VERIFY ALL CONDITIONS AND MEASUREMENTS ON SITE PRIOR TO THE INSTALLATION OF ANY EQUIPMENT. INSTALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND EQUIPMENT MANUFACTURER'S
- RECOMMENDED INSTRUCTIONS.
 CONTACT THE UTILITY COMPANIES PRIOR TO BEGINNING WORK.
- 4. INSTALL FIRE ALARM SYSTEMS IN ACCORDANCE WITH NFPA 72.
 5. THE INTENT OF THE FIRE ALARM AUDIBLE DEVICES IS TO PROVIDE A SOUND LEVEL OF +15db OVER AMBIENT IN ALL

ARE SUPPORTED FROM CONDUIT. THE MINIMUM SIZE SHALL BE 1"

- OCCUPIED AREAS OF THE BUILDING. PROVIDE DEVICES IN A QUANTITY AND CAPACITY TO MEET THIS REQUIREMENT.
- 6. INSTALL CONDUIT AND BOXES ABOVE SUSPENDED CEILING OR CONCEALED IN WALLS. 7. WHERE NOTED ON THE DRAWINGS, INSTALL WIRE AND DEVICES IN SURFACE MOUNTED RACEWAY. EXTEND
- CONDUIT TO RACEWAY ENTRANCE. 8. THE DRAWINGS DO NOT INDICATE PULL/SPLICE BOXES. INSTALL BOXES TO MEET JOB CONDITIONS AND NEC
- REQUIREMENTS. 9. FASTEN HORIZONTAL CONDUIT TO THE BUILDING PERMANENT STRUCTURE AT A SPACING NOT MORE THAN 7'-6".
 FASTEN EXPOSED CONDUIT ON MASONRY AT A SPACING NOT MORE THAN 5'-0". USE BEAM CLAMPS AND STUD
- ANCHORS, DO NOT USE FRICTION CLAMPS. 10. INSTALL EXPANSION FITTINGS WITH BONDING JUMPERS WHERE CONDUITS PASS THROUGH EXPANSION OR CONTROL JOINTS.
- 11. INSTALL AN INDEPENDENT GROUND WIRE FOR ALL FEEDERS AND SUBFEEDERS SHOWN ON THE ONE-LINE DIAGRAM. INSTALL AN INDEPENDENT GROUND IN ALL CONDUITS, WHETHER INDICATED OR NOT ON THE DRAWINGS. SIZE WIRE PER NEC REQUIREMENTS.
- 12. GROUND ALL ELECTRICAL EQUIPMENT PER THE NATIONAL ELECTRICAL CODE. DO NOT EXCEED 10 OHMS. 13. COORDINATE THE INSTALLATION OF LIGHTING FIXTURES, RECEPTACLES, DISCONNECT SWITCHES, AND SWITCHES WITH THE INSTALLATION OF OTHER EQUIPMENT.
- 14. THE LOCATION OF SWITCHES, BOXES, AND CONDUITS PROVIDING POWER TO EQUIPMENT SHOWN ON THE DRAWINGS IS APPROXIMATE. COORDINATE FINAL LOCATION OF ELECTRICAL DEVICES WITH THE INSTALLATION OF OTHER EQUIPMENT. DO NOT MOUNT ELECTRICAL DEVICES TO INTERFERE WITH EQUIPMENT ACCESS.
- 15. WHEREVER THE INSTALLATION OF ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS IS IMPRACTICAL DUE TO LOCAL INTERFERENCE OR OTHER REASONS, CONTACT THE ENGINEER AND INSTALL THE EQUIPMENT AT NEW LOCATIONS AS DIRECTED. 16. SIZE CONDUITS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE BUT NOT LESS THAN 3/4". WHERE FIXTURES
- 17. MOUNT PANELBOARDS WITH TOP OF ENCLOSURE AT 6'-0" ABOVE FINISHED FLOOR. 18. PROVIDE ALL PANELBOARDS WITH SOLID NEUTRAL AND EQUIPMENT GROUND BUS.

 19. COORDINATE CABLE LENGTH AND VOLTAGE DROP LIMITATIONS FOR ALL SYSTEMS AND MAKE ANY ADJUSTMENTS
- NECESSARY, INCLUDING, BUT NOT LIMITED TO, WIRE AND CONDUIT SIZE INCREASE AND/OR ADDING EQUIPMENT TO MAKE A COMPLETE AND OPERABLE SYSTEM AND TO MEET REFERENCED CODE AND STANDARDS REQUIREMENTS. THIS SHALL BE DONE AT NO ADDITIONAL COST.
- THE E.C. IS RESPONSIBLE FOR PHASING WORK ACCORDING TO THE ARCHITECTURAL PHASING PLAN. COORDINATE WITH THE G.C. AND ALL DISCIPLINES.
- 21. INSTALL PLENUM RATED CABLE FOR ALL SYSTEMS INCLUDING FIRE ALARM, SOUND, TELEPHONE, DATA, CLOCK, 22. THE OWNER WILL RETAIN SALVAGE RIGHTS TO ALL LIGHT FIXTURES PRIOR TO DISPOSAL BY THE CONTRACTOR. 23. FURNISH AND INSTALL J-HOOKS 4'-0" ON CENTER OR OTHER APPROPRIATE SUPPORT SYSTEM FOR ALL SYSTEMS
- CABLES NOT INSTALLED IN CONDUIT 24. ALL EXISTING OR NEW EXPOSED CONDUIT SHALL BE PAINTED THE SAME COLOR OF THE CEILING OR WALL COORDINATE WITH THE ARCHITECTURAL PLANS FOR PROPER PAINT COLORS NEEDED.
- 25. MEASURE STEADY STATE LOAD CURRENTS AT EACH PANELBOARD FEEDER; RE-ARRANGE CIRCUITS IN THE
- PANELBOARD TO BALANCE THE PHASE LOADS TO WITHIN 5 PERCENT OF EACH OTHER. MAINTAIN PROPER PHASING FOR MULTI-WIRE BRANCH CIRCUITS. 26. CUT OPENINGS IN FLOORS, WALLS, ROOFS, AND CEILINGS REQUIRED FOR INSTALLATION OF ELECTRICAL EQUIPMENT, WIRING, CONDUIT, ETC. PATCH AND REPAIR ANY EXISTING FLOORS, WALLS, ROOF, AND CEILING OPENINGS LEFT BY REMOVAL OR INSTALLATION OF ELECTRICAL EQUIPMENT, WIRING, CONDUIT, ETC. PATCHING
- SHALL MATCH THE EXISTING ADJACENT SUBSTRATE. 27. THE FOLLOWING INSTALLATION STANDARDS SHALL BE FOLLOWED ON ALL WALL MOUNTED DEVICES, UNLESS NOTED OTHERWISE: (A) EXISTING MASONRY WALLS: SURFACE MOUNTED RACEWAY. RUN FEED FROM CEILING IN
- RACEWAY; (B) EXISTING STUD WALLS: FLUSH MOUNTED WALL DEVICES, CUT WALL AND FISH AS REQUIRED; (C) NEW WALLS: FLUSH MOUNTED WALL DEVICES.
 28. FIRE ALARM CABLING ABOVE RECESSED CEILINGS AND IN INACCESSIBLE LOCATIONS MAY BE ROUTED EXPOSED. ALL OTHER AREAS SHALL HAVE CABLE IN CONDUIT.
- 29. THE CONTRACTOR IS RESPONSIBLE FOR HANGING ALL CONDUITS, LIGHT FIXTURES, AND OPEN AIR SYSTEMS CABLING LOCATED ABOVE THE EXISTING ACCESSIBLE CEILING SYSTEMS TO THE EXISTING STRUCTURE TO FACILITATE THE CEILING REMOVAL. THE CONTRACTOR IS ALSO RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF THIS CABLING AND ALL ASSOCIATED EXISTING SYSTEM FUNCTIONS UNTIL SUCH A TIME THAT PHASING AND NEW SYSTEM INSTALLATION ALLOWS FOR REMOVAL.
- 30. INCLUDE THE FOLLOWING ADDITIONAL EQUIPMENT AND DEVICES IN THE BASE BID FOR INSTALLATION AS DIRECTED BY THE AUTHORITY HAVING JURISDICTION REVIEW: (5) UNIVERSAL EXIT SIGNS, (5) COMBINATION FIRE ALARM HORN/STROBES, (5) FIRE ALARM SMOKE DETECTORS.

GENERAL LIGHTING FIXTURE NOTES:

- COORDINATE MOUNTING HEIGHTS WITH 'A' SERIES DRAWINGS PRIOR TO INSTALLATION. VERIFY ALL CEILING TYPES SHOWN ON THE 'A' SERIES DRAWINGS AND PROVIDE ALL NECESSARY MOUNTING
- 3. EXIT SIGNS SHALL BE CEILING, WALL, OR END MOUNTED. FIELD COORDINATE FINAL MOUNTING
- REQUIREMENTS. 4. EXIT SIGNS SHALL HAVE DIRECTIONAL CHEVRONS AS REQUIRED. FIELD COORDINATE FINAL CHEVRON

- PROVIDE FIXTURES WITH DLC LISTING OR ENERGY STAR.
 PROVIDE APPROPRIATE CABLE/CORD LENGTH FOR ALL PENDANT MOUNTED FIXTURES. REFER TO 'A' SERIES FLOOR PLANS, SECTIONS, AND INTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION. WHEN MOUNTING HEIGHT OF ANY LIGHT FIXTURES IS NOT CLEARLY STATED OR SHOWN ON DRAWINGS, CONTACT ENGINEER FOR APPROPRIATE LENGTH PRIOR TO INSTALLATION.

DRAWING LIST

LIGHTING FIXTURE SCHEDULE

DESCRIPTION

DUAL HEAD EMERGENCY BATTERY FIXTURE

DUAL HEAD COMBINATION EXIT AND EMERGENCY

WEATHERPROOF DUAL HEAD REMOTE LAMP

2X4 LENSED TROFFER

4' GASKETED AND LENSED SURFACE FIXTURE

WALL MOUNT VAPORTIGHT LED FIXTURE

4' GASKETED AND LENSED SURFACE FIXTURE LED 31 W MVOLT 4' GASKETED AND LENSED SURFACE FIXTURE LED 31 W MVOLT

4' GASKETED AND LENSED SUSPENDED FIXTURE LED 44 W

- **GENERAL NOTES** E3.1
- FLOOR PLANS LIGHTING FLOOR PLANS - FIRE ALARM FLOOR PLANS - DEMO

LAMP WATTAGE VOLTAGE MOUNTING

MVOLT

MVOLT

UNIVERSAL

RECESSED

SURFACE

LED 10 W

LED 2 W 9.6V LED 26 W 120V LED 31 W MVOLT

REMARKS

PROVIDE WITH UL924 COMPLIANT

PROVIDE WITH UL924 COMPLIANT

FED FROM FIXTURE E2 BATTERY PACK

PROVIDE WITH INTEGRAL PHOTOCELL

CONTROL HOUSE RECESSED

CONTROL HOUSE SURFACE

TOILET ROOM

SUSPENDED | PROVIDE WITH CHAIN SUSPENSION KIT

30% CONSTRUCTION DOCUMENT	
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REVISIONS

01	MM-DD-YR	NAME	DESCRIPTION OF CHANGES

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ROHRBAI HILL ROAD

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CRABTREE 401 EAST WINDING I



GENERAL NOTES

DECEMBER 20, 2017

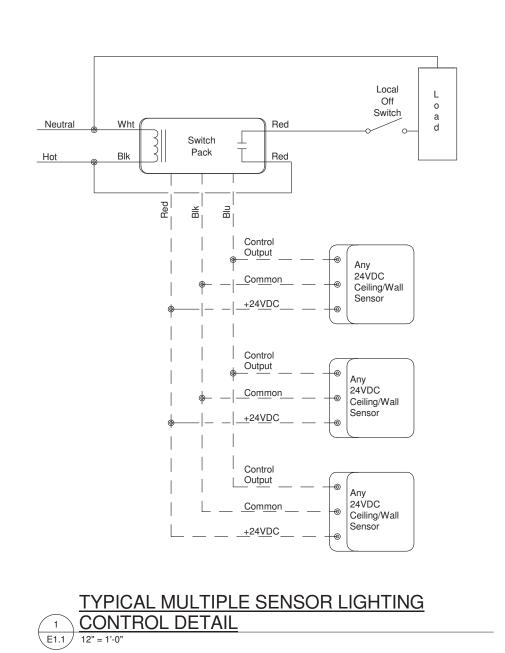
PROJECT 15BPR.15

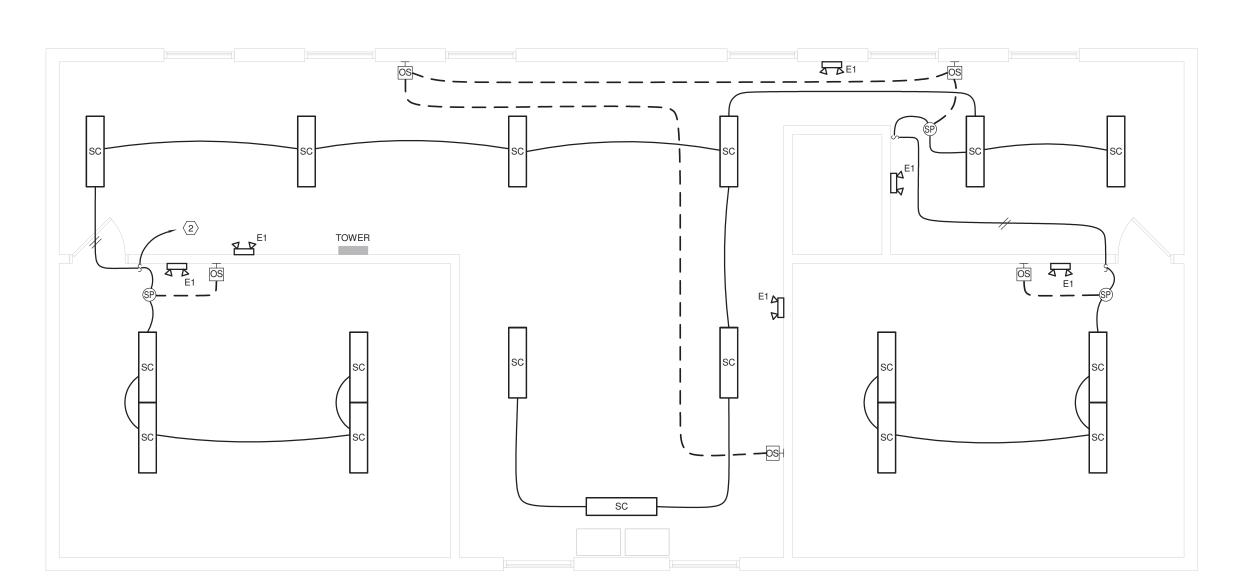
ENGINEERING, INC. 2 MarketPlaza Way MECHANICSBURG, PA 17055

CENTERPOINT

PHONE:(717) 795-8575 FAX: (717) 795-9110 DESIGNED BY: GLM | FUNCTIONAL LEAD: JBL | PROJECT NO. 17066

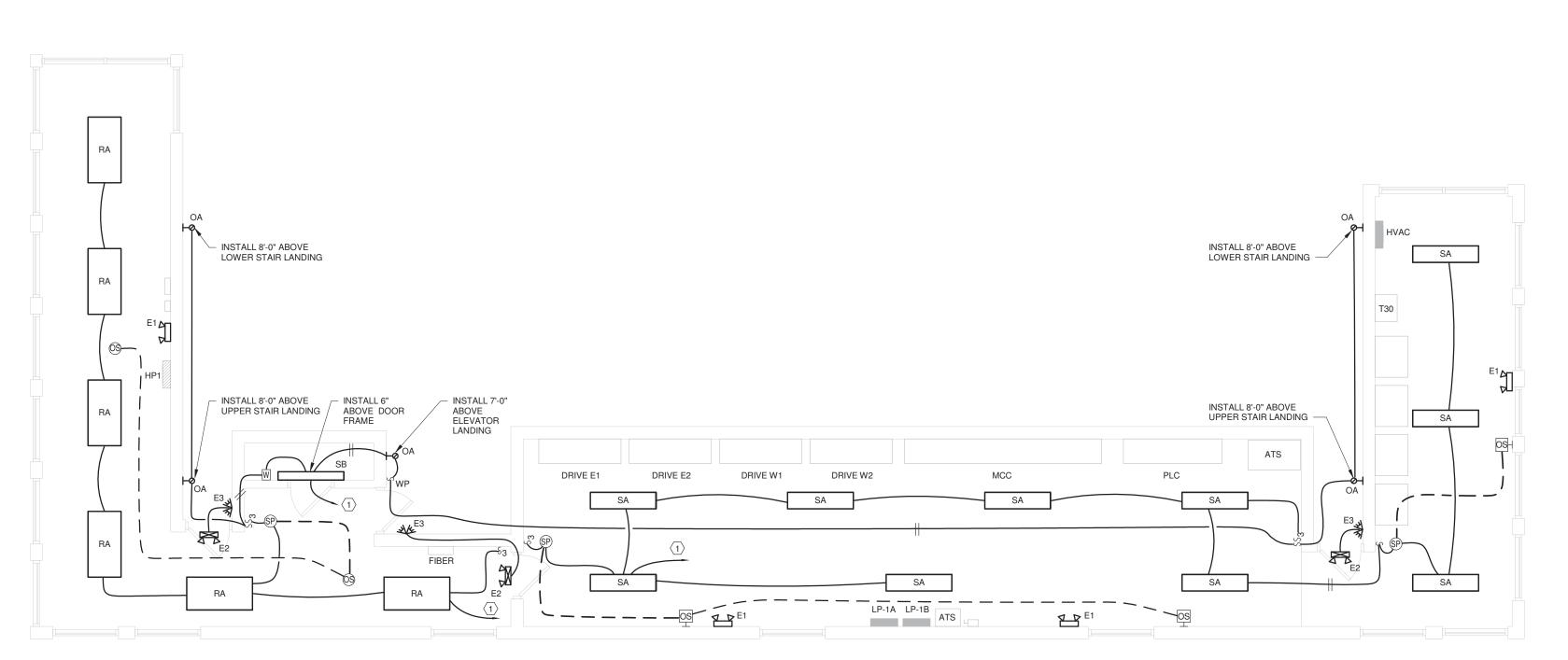
12" = 1'-0" FILENAME: 17066 Memorial Bridge NC Revit-17





TOWER PLAN

NOTE: UNLESS NOTED OTHERWISE, ALL ELECTRICAL DEVICES AND EQUIPMENT ARE EXISTING TO REMAIN.



CONTROL HOUSE PLAN

CONTROL HOUSE AND TOWER PLANS LIGHTING
1/4" = 1'-0"



GENERAL PLAN NOTES:

DRAWING NOTES:

1. CONNECT EMERGENCY LIGHTING TO LOCAL NORMAL LIGHTING CIRCUIT, AHEAD OF SWITCHING, WITH 2 #12 AND 1 #12 GROUND IN 3/4" CONDUIT.

EXTEND TO EXISTING 20A,1 POLE CIRCUIT BREAKER IN PANEL LP1 THAT PREVIOUSLY FED LIGHT FIXTURES IN THIS SPACE UTILIZLING 2 #12 AND 1 #12 GROUND IN 3/4" CONDUIT.

 $\fbox{2}$ EXTEND TO EXISTING 20A,1 POLE CIRCUIT BREAKER IN TOWER PANEL THAT PREVIOUSLY FED LIGHT FIXTURES IN THIS SPACE UTILIZLING 2 #12 AND 1 #12 GROUND IN 3/4" CONDUIT.

CENTERPOINT

2 MarketPlazaWay PHONE:(717) 795-8575 MECHANICSBURG, PA 17055 FAX: (717) 795-9110

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REVISIONS

CONSTRUCTION

01	MM-DD-YR	NAME	DESCRIPTION OF CHANGES

ARCHITECTS

ASSO

ROHRBAUGH & 111L ROAD | 250 WE

RENOVATIONS TO
CAPE FEAR RIVER MEMORIAL LIFT BRIDGE
NORTH CAROLINA DEPT. OF TRANSPORTATION

CRABTREE ROHR
401 EAST WINDING HILL ROAD
MECHANICSBURG PA 17055
717-458-0272 FAX 717-458-00

FLOOR PLANS - LIGHTING

As indicated

FILENAME: 17066 Memorial Bridge NC Revit-17 ELECT.rvt

DECEMBER 20, 2017

PROJECT 15BPR.15

FIRE ALARM RISER DIAGRAM NO SCALE

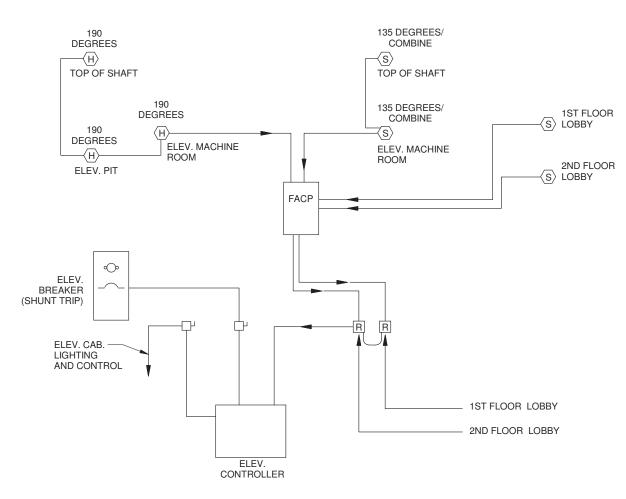
NOTE:

1. NUMBER AND SIZE OF CONDUCTORS AND CONDUIT SHALL BE AS RECOMMENDED BY MANUFACTURER.

2. ALL RELAYS REQUIRED SHALL BE ADDRESSABLE.

3. FURNISH AND INSTALL 20A/1P BREAKER IN NEAREST EXISTING PANEL (RUN 2#12, 1#12GRD IN 3/4"C) FOR

POWERING CONTROL PANEL. BREAKER SHALL BE COMPATIBLE WITH EXISTING PANEL. BREAKER AIC RATING SHALL MATCH EXISTING.



3 ELEVATOR RECALL AND DETECTION DETAIL 1)
NO SCALE

GENERAL PLAN NOTES:

PROVIDE PLENUM RATED CABLE ABOVE CEILINGS. PROVIDE CABLE IN CONDUIT IN ALL EXPOSED AREAS.

DRAWING NOTES:

(1) COORDINATE EXACT REQUIREMENTS WITH ELEVATOR MANUFACTURER.

CUMENTS

CONSTRUCTION

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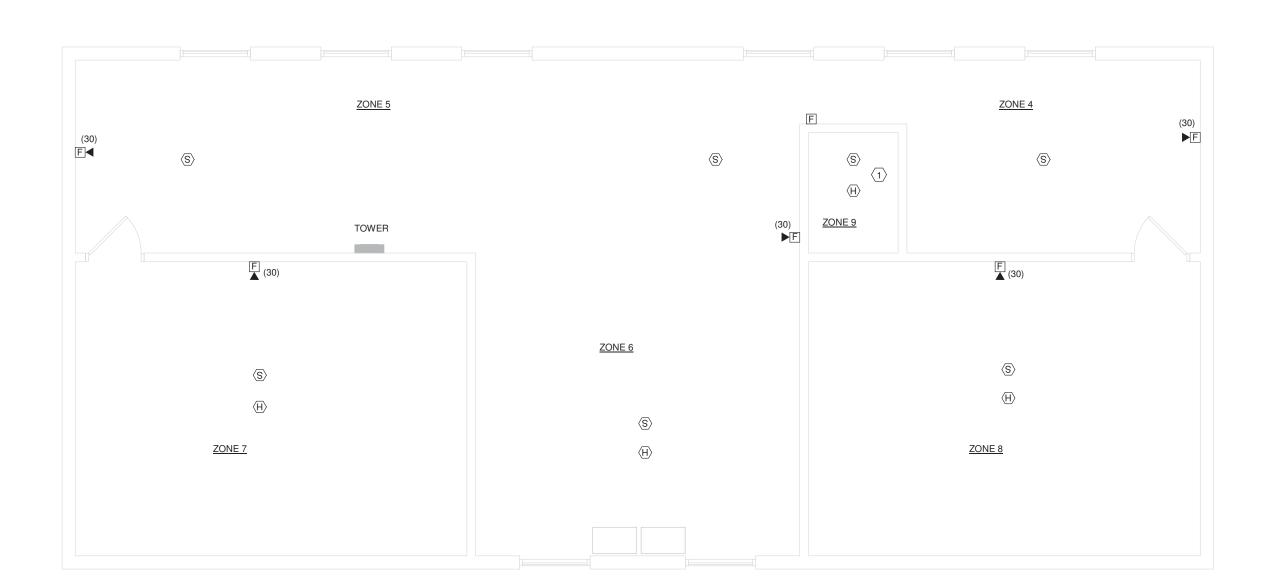
REVISIONS

01 MM-DD-YR NAME DESCRIPTION OF CHANGES

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ASSO(EST MAY)

ROHRBAUGH & HILL ROAD | 250 WE



TOWER PLAN

NOTE: UNLESS NOTED OTHERWISE, ALL ELECTRICAL DEVICES AND EQUIPMENT ARE EXISTING TO REMAIN.



CONTROL HOUSE PLAN

CONTROL HOUSE AND TOWER PLANS - FIRE

ALARM

1/4" = 1'-0"



CENTERPOINT 2 MarketPlazaWay PHONE:(717) 795-8575

As indicated FILENAME: 17066 Memorial Bridge NC Revit-17 ELECT.rvt

FAX: (717) 795-9110

CRABTREE ROHR
401 EAST WINDING HILL ROAD
MECHANICSBURG PA 17055
717-458-0272 FAX 717-458-00 FLOOR PLANS - FIRE ALARM **PROJECT** 15BPR.15

DECEMBER 20, 2017

RENOVATIONS TO
CAPE FEAR RIVER MEMORIAL LIFT BRIDGE
NORTH CAROLINA DEPT. OF TRANSPORTATION

HVAC DISCONNECT AND REMOVE ALL EXISTING LIGHT FIXTURES, SWITCHES, FIRE ALARM DEVICES, AND ASSOCIATED BRANCH CIRCUIT WIRING AND CABLING BACK TO SOURCE. T30 ATS PLC DRIVE E2 DRIVE W2 DRIVE E1 DRIVE W1 MCC FACP | ---FIBER LP-1B ATS LP-1A DISCONNECT AND REMOVE EXISTING FIRE ALARM CONTROL PANEL. REMOVE ALL ASSOCIATED FIRE ALARM CABLING. RETAIN 120V BRANCH CIRCUIT FOR RECONNECTION UNDER NEW WORK.

CONTROL HOUSE PLAN

CONTROL HOUSE AND TOWER PLANS DEMOLITION - ELECTRICAL

1/4" = 1'-0"



GENERAL PLAN NOTES:

UNLESS NOTED OTHERWISE, ALL ELECTRICAL DEVICES AND EQUIPMENT ARE EXISTING TO REMAIN.

CENTERPOINT ENGINEERING, INC.

2 MarketPlaza Way PHONE:(717) 795-8575

FAX: (717) 795-9110

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CAPE FEAR RIVER MEMORIAL LIFT BRIDGE NORTH CAROLINA DEPT. OF TRANSPORTATION



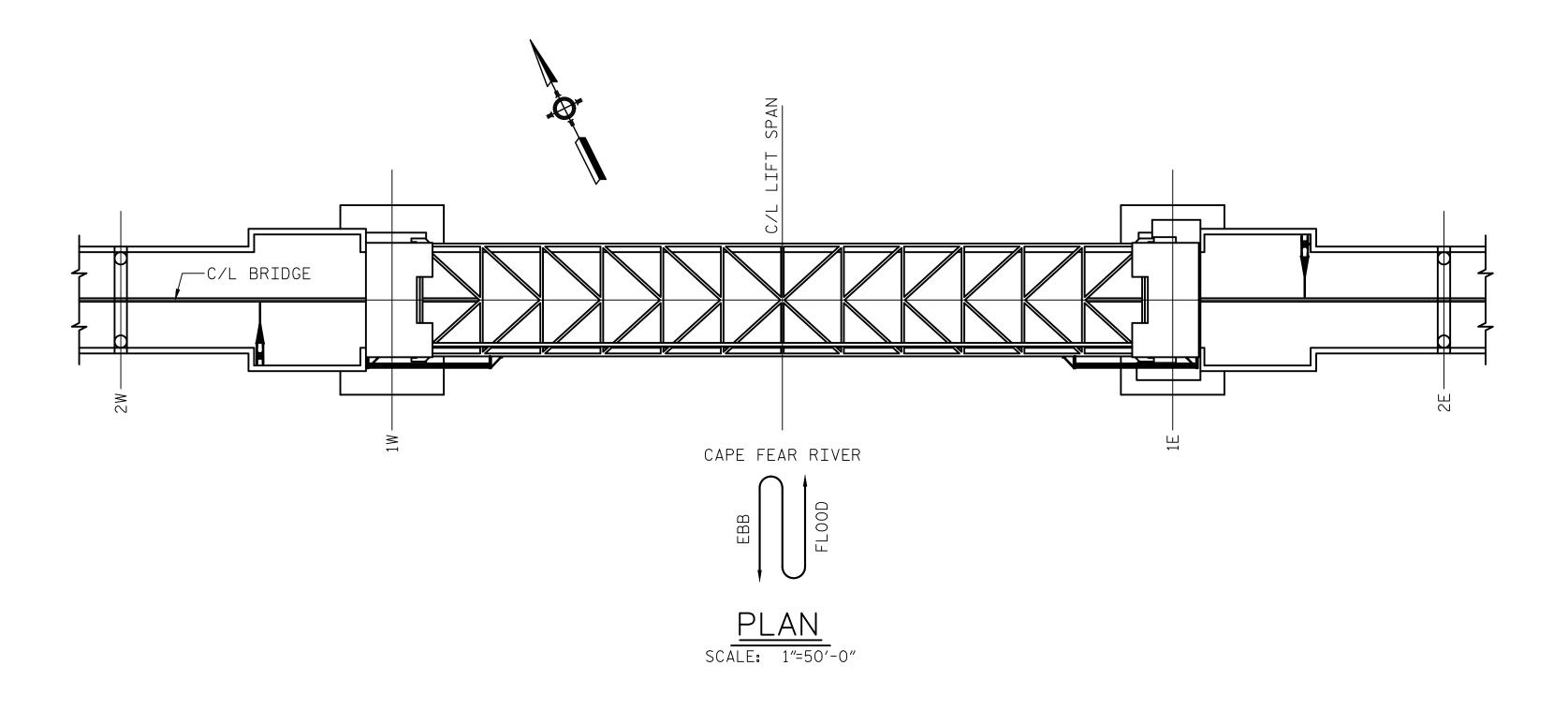
PLOT SCALE: 1/4" = 1'-0"

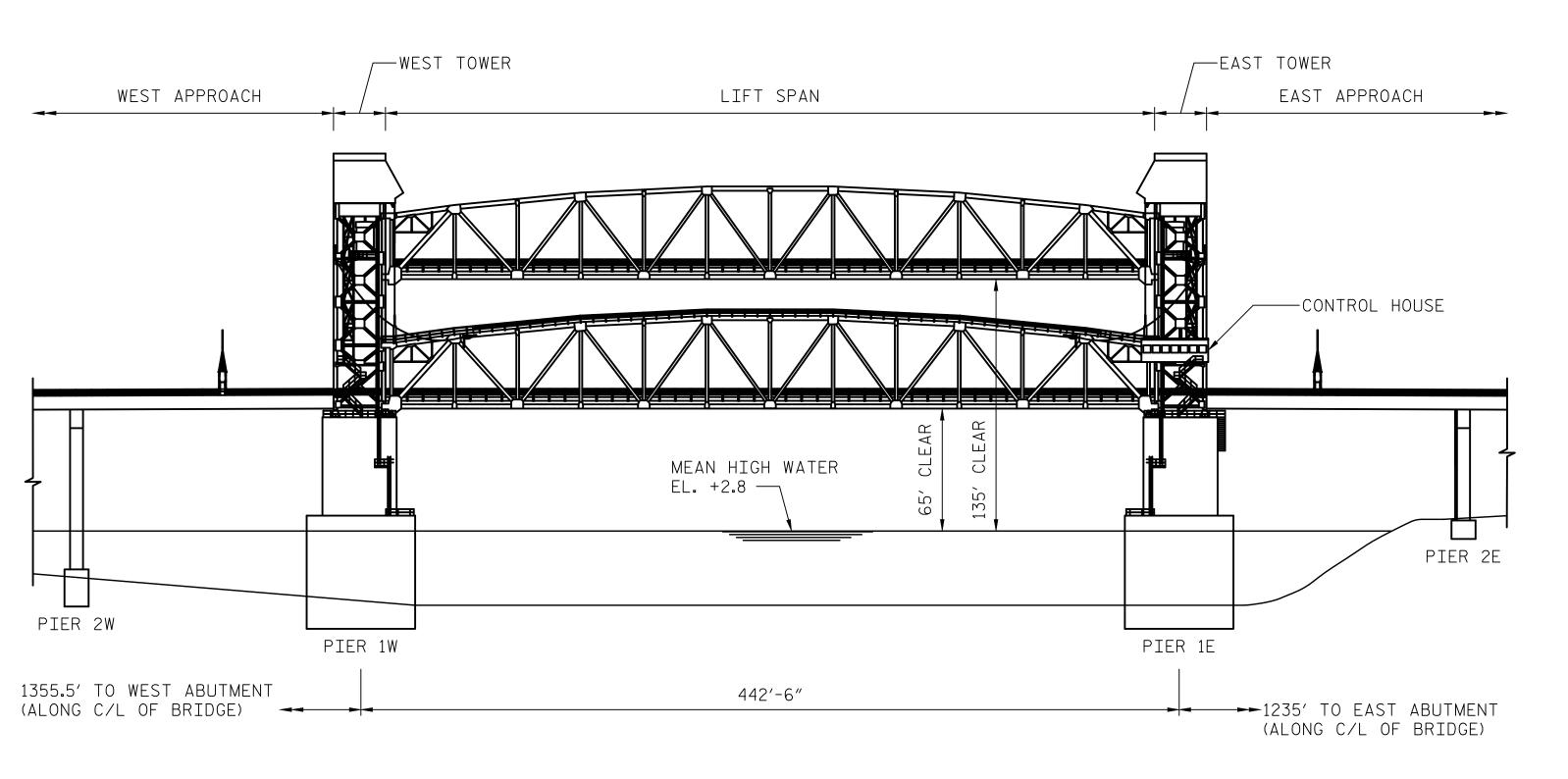
FLOOR PLANS - DEMO **PROJECT**

15BPR.15 FILENAME: 17066 Memorial Bridge NC Revit-17 ELECT.rvt DECEMBER 20, 2017

SCOPE OF MECHANICAL WORK - AUXILIARY COUNTERWEIGHT AND SPAN GUIDE ROLLERS

- 1. REHABILITATION OF THE EXISTING LONGITUDINAL SPAN GUIDE ASSEMBLIES AND AUXILIARY COUNTERWEIGHT ASSEMBLY COMPONENTS.
- 2. ALL INCIDENTAL WORK RELATED TO THE ITEMS LISTED ABOVE, AS WELL AS ALL MISCELLANEOUS WORK SHOWN OR IMPLIED HEREIN.
- 3. FOR ADDITIONAL REQUIREMENTS, SEE SHEETS MA-2 THROUGH MA-10 AND THE SPECIAL PROVISIONS.





PROJECT NO. 15BPR.15

NEW HANOVER COUNTY

STATION: _____

ELEVATION

SCALE: 1"=50'-0"

MODJESKI and MASTERS
Experience great bridges.

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

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01/29/18

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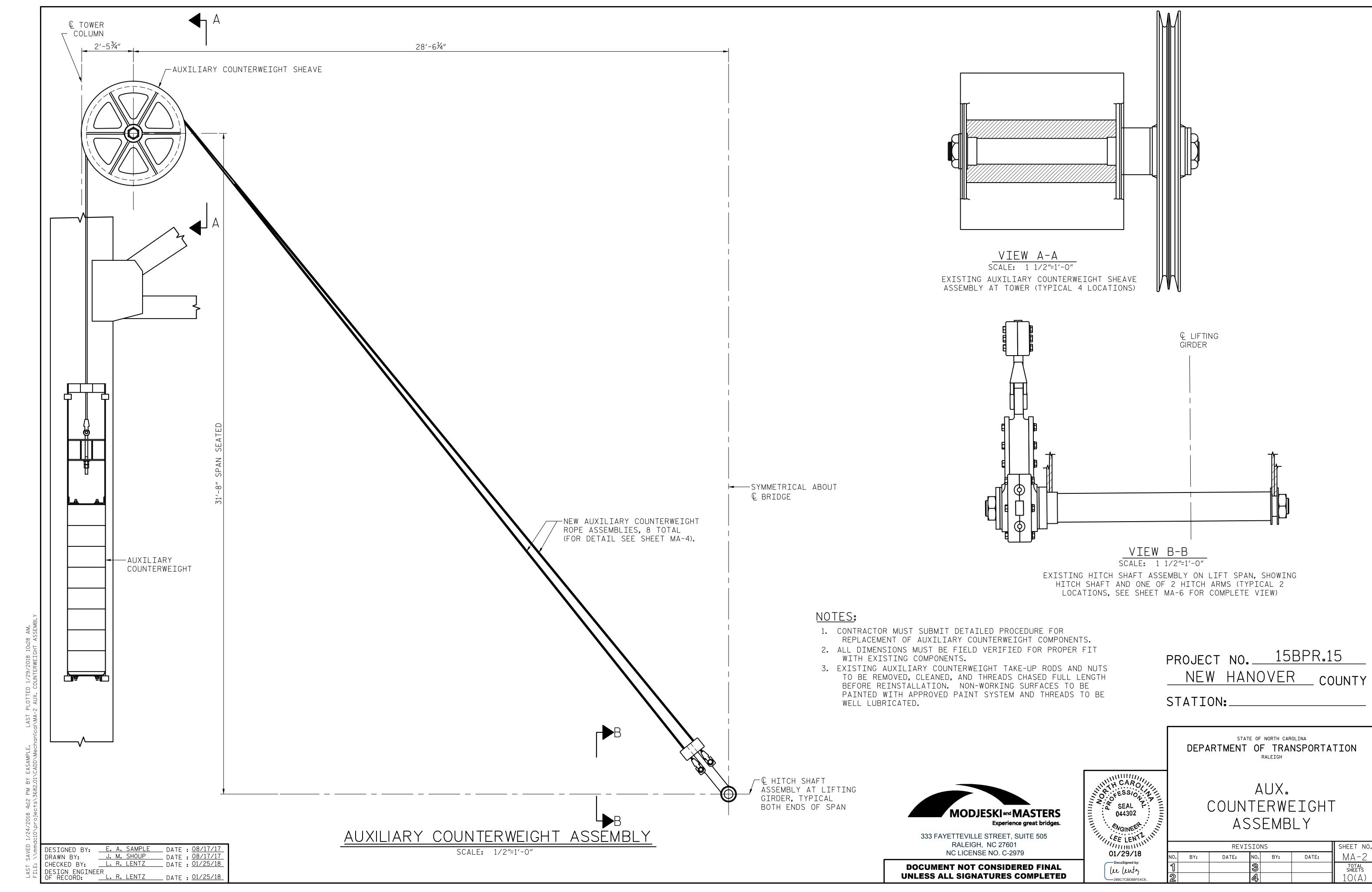
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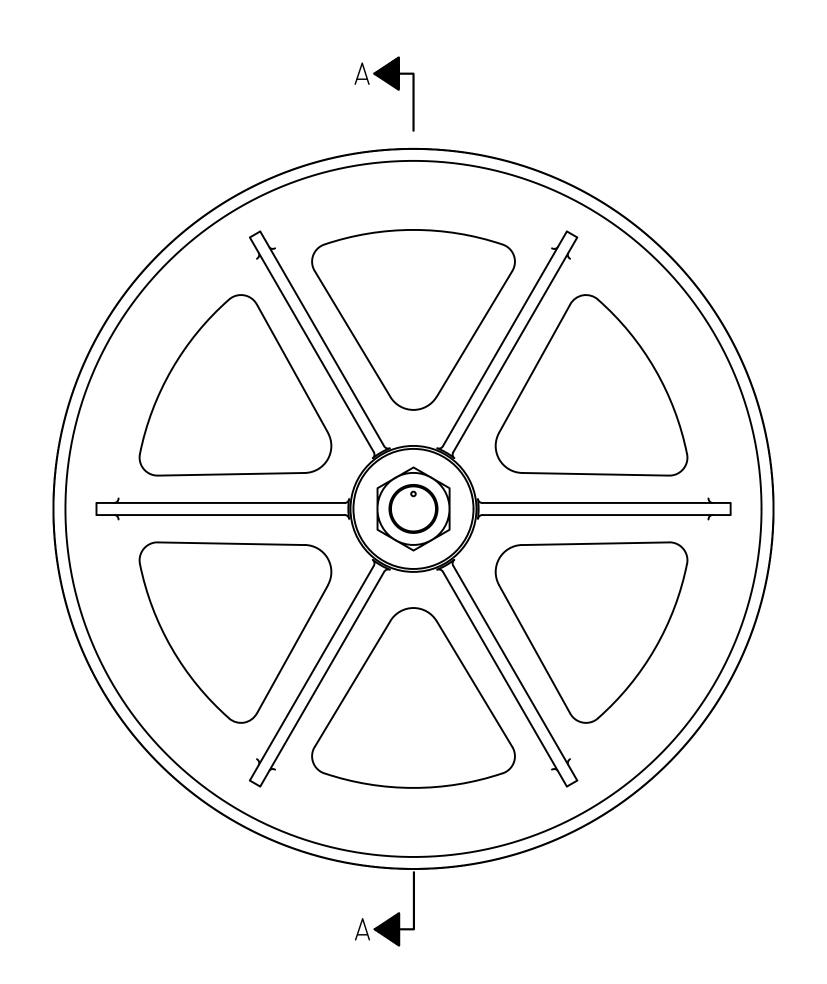
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL PLAN AND ELEVATION

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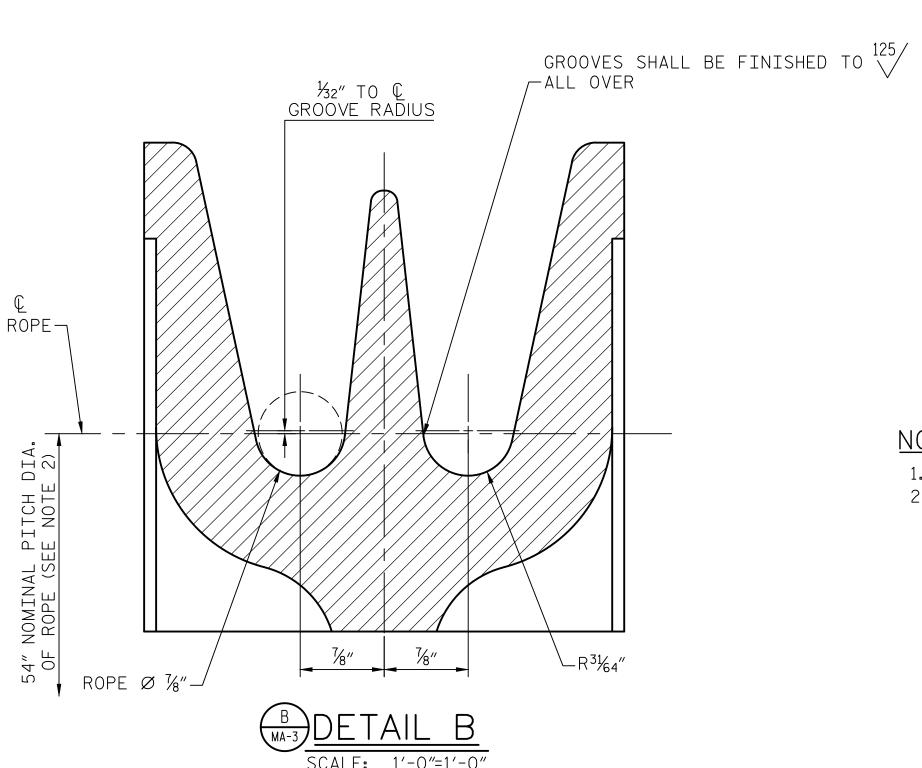
DESIGNED BY: E. A. SAMPLE DATE: 08/17/17
DRAWN BY: J. M. SHOUP DATE: 08/17/17
CHECKED BY: L. R. LENTZ DATE: 01/25/18
DESIGN ENGINEER
OF RECORD: L. R. LENTZ DATE: 01/25/18

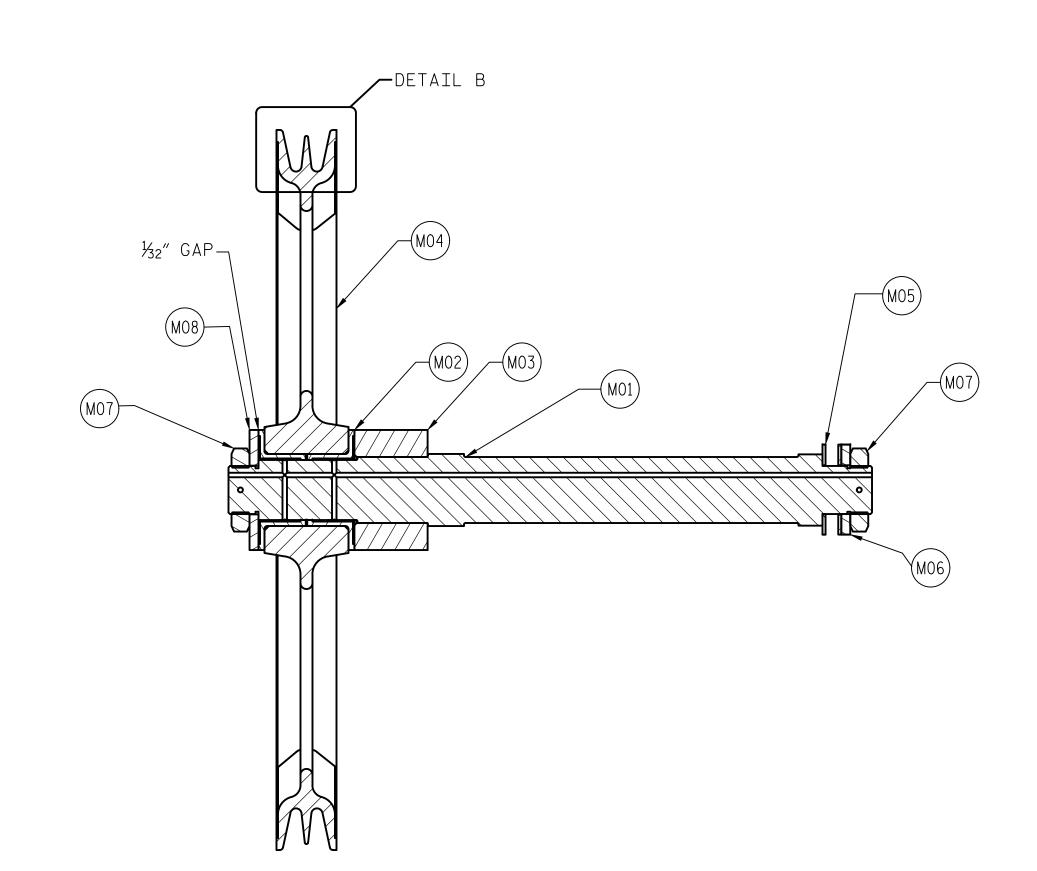


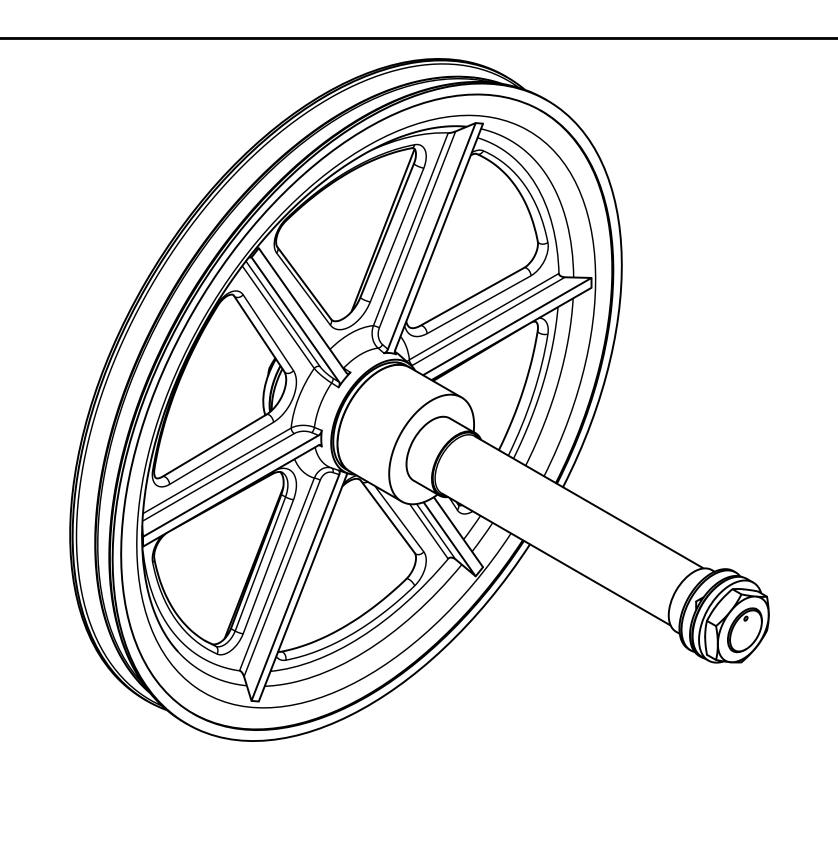


AUXILIARY COUNTERWEIGHT SHEAVE ASSEMBLY

SCALE: NTS







SECTION A-A

			4.1.0
		BILL OF MATERIA	ALS
ITEM NO.	QTY.	DESCRIPTION	MATERIAL/MANUFACTURER
MO1	4	NEW SHEAVE SHAFT	STEEL, ASTM A291, CLASS 3 OR A311 GR. 4140 COLD DRAWN
M02	8	NEW SHEAVE SHAFT BUSHING	BRONZE, ASTM B22 ALLOY C91100
M03	4	NEW SHEAVE THRUST COLLAR	STEEL, ASTM A311 GR. 1045, HOT ROLLED
M04	4	EXISTING AUXILIARY COUNTERWEIGHT SHEAVE	-
M05	8	NEW SHIM	STAINLESS, ASTM A240 TYPE 316
M06	4	NEW 7.5" THRUST WASHER	STEEL, ASTM A36
М07	8	NEW LOCK NUT WITH SS COTTER PIN	STEEL, ASTM A563, GR. 18-8 COTTER
M08	4	NEW 10" THRUST WASHER	STEEL, ASTM A36

* NOTE: MINIMUM PROPERTIES OF 90 KSI YIELD, 223 BHN

NOTES:

- 1. ALL COMPONENTS TO BE NEW EXCEPT FOR THE AUXILIARY COUNTERWEIGHT SHEAVE.
- 2. AUXILIARY COUNTERWEIGHT SHEAVES TO BE CLEANED, PAINTED AND MACHINED TO CLEAN UP THE ROPE GROOVES. GROOVES SHALL BE MACHINED WITH MINIMAL MATERIAL REMOVED, TO A MAXIMUM OF $\frac{1}{16}$ " ON THE RADIUS. GROOVE MACHINING SHALL BE CONCENTRIC TO THE BORE WITHIN ±0.010". THERE SHALL BE A SMOOTH TRANSITION FROM THE GROOVE UP THROUGH ALL TAPERED SIDE WALLS. BOTH GROOVES ON A SINGLE SHEAVE SHALL BE MACHINED TO THE SAME PITCH DIAMETER, AND THE PITCH DIAMETER OF ALL 4 SHEAVES AFTER MACHINING SHALL BE THE SAME, TO WITHIN 1/16".



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

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

> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

> > SHEET NO.

MA-3

TOTAL SHEETS

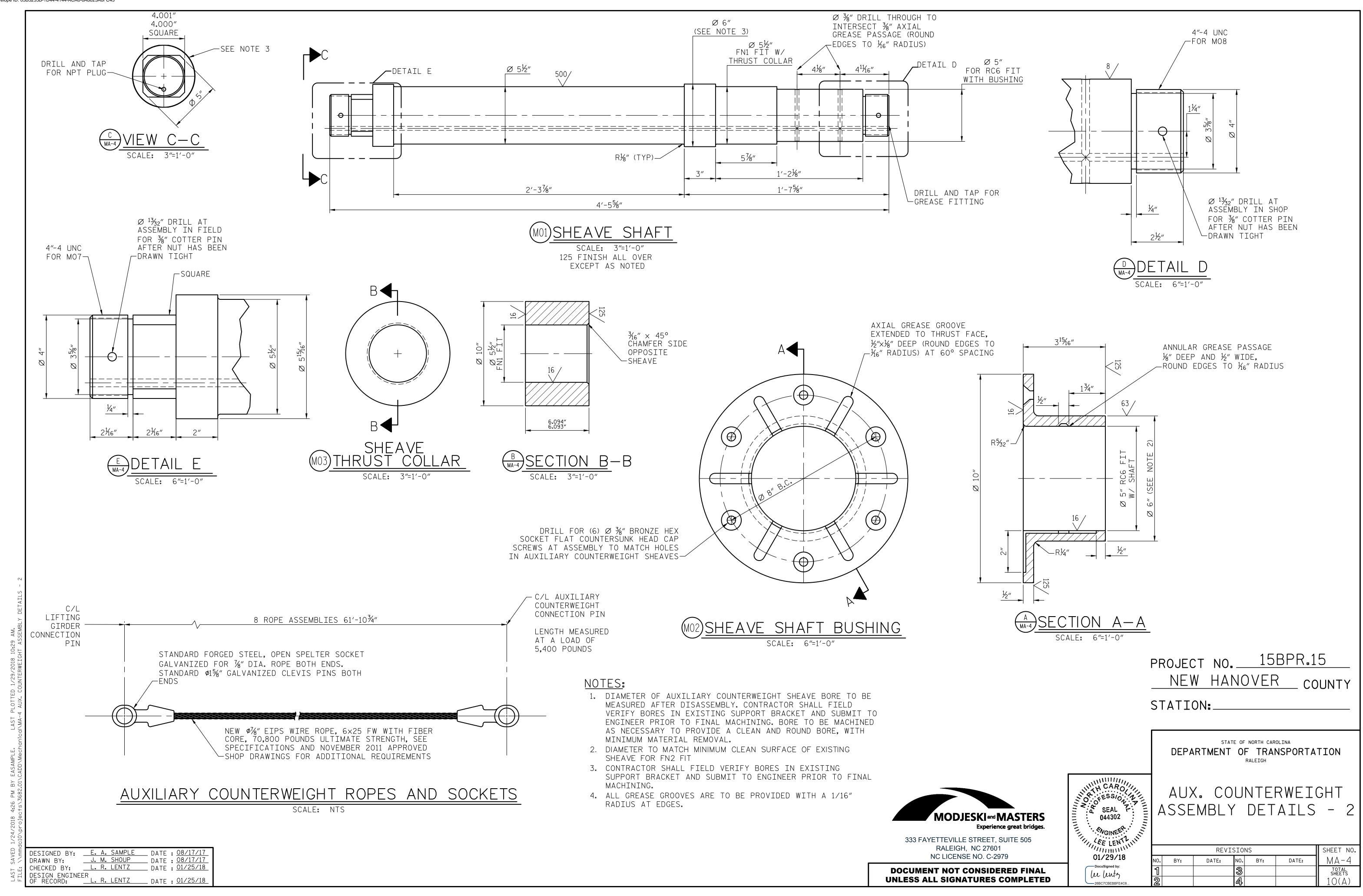
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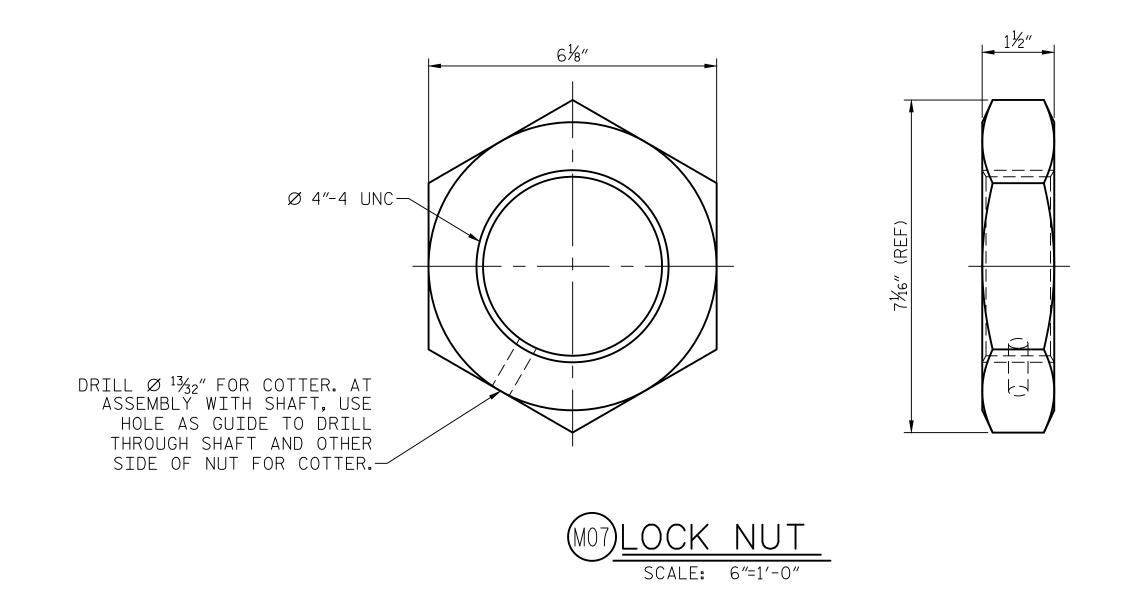
AUX. COUNTERWEIGHT ASSEMBLY DETAILS - 1

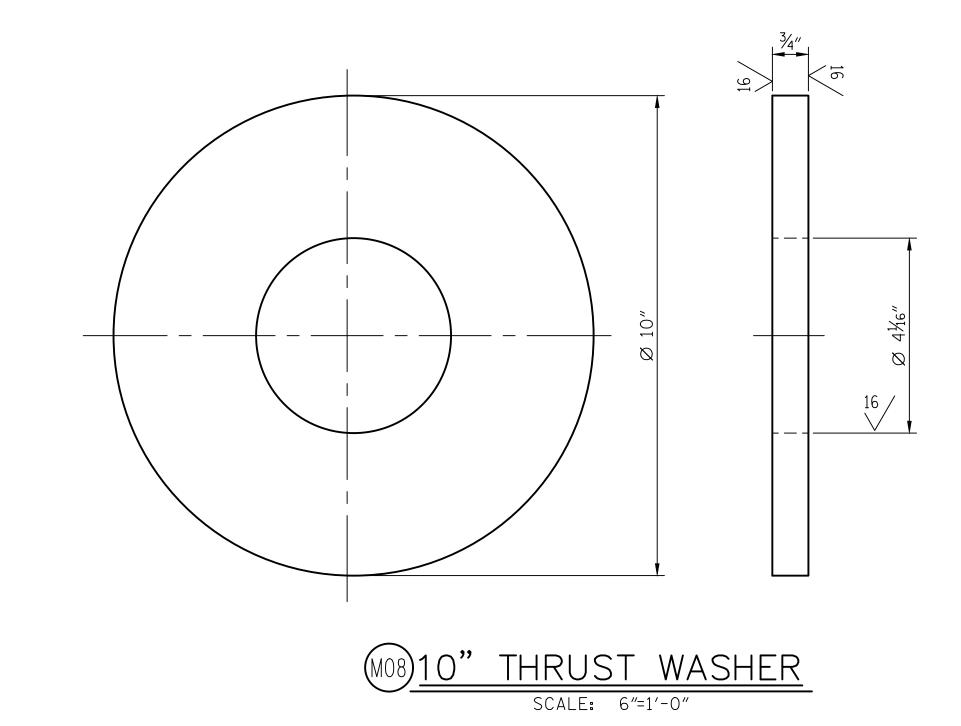
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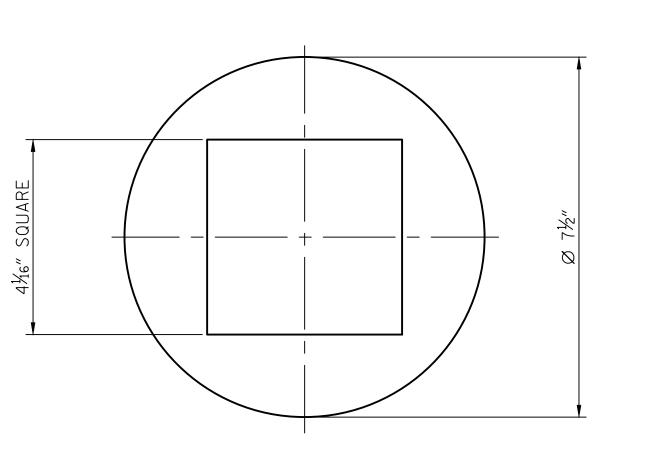
DESIGNED BY: E. A. SAMPLE DATE: 08/17/17
DRAWN BY: J. M. SHOUP DATE: 08/17/17
CHECKED BY: L. R. LENTZ DATE: 01/25/18 DESIGN ENGINEER OF RECORD: L. L. R. LENTZ DATE: 01/25/18

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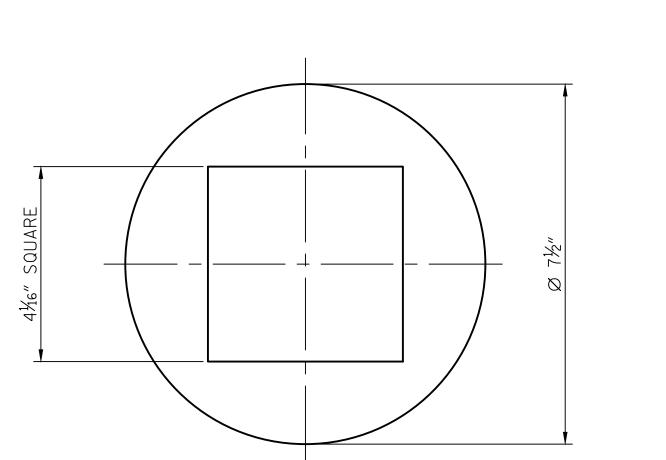


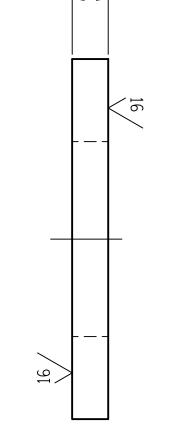






* EACH SHIM PACK SHALL BE PROVIDED WITH THE FOLLOWING THICKNESSES QTY: THICKNESS:





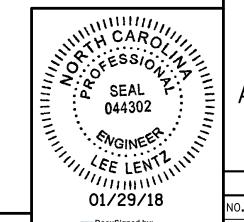
1/2" THRUST WASHER

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



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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

AUX. COUNTERWEIGHT ASSEMBLY DETAILS - 3

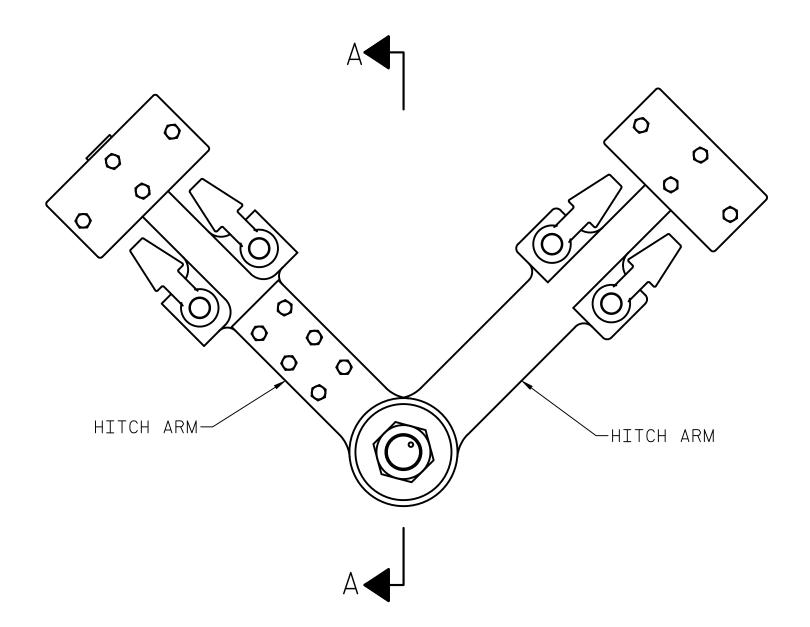
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DRAWN BY: J. M. SHOUP DATE: 08/17/17
CHECKED BY: L. R. LENTZ DATE: 01/25/18

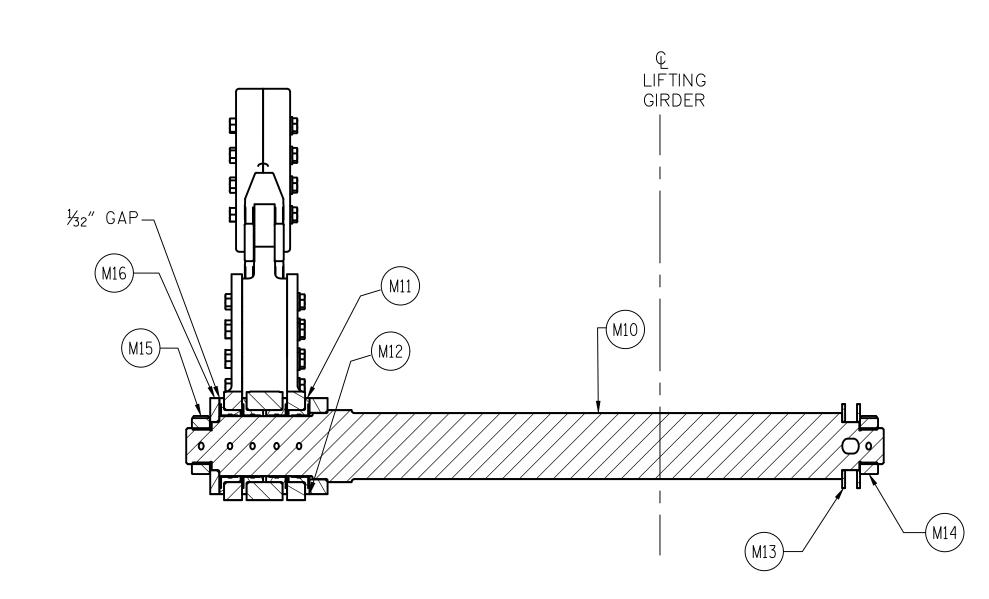
DESIGN ENGINEER
OF RECORD:

L. R. LENTZ

DATE: 01/25/18



HITCH SHAFT ASSEMBLY SCALE: 1 1/2"=1'-0"



SECTION A-A

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

NOTES:

1. ALL COMPONENTS TO BE NEW EXCEPT FOR THE HITCH ARMS.

	BILL OF MATERIALS						
ITEM NO.	QTY.	DESCRIPTION	MATERIAL/MANUFACTURER				
M10	2	NEW HITCH SHAFT	STEEL, ASTM A291, CLASS 3 OR ASTM A311 GR. 4140 COLD DRAWN				
M11	8	NEW HITCH SHAFT BUSHING	BRONZE, ASTM B22 ALLOY C91100				
M12	2	NEW HITCH THRUST COLLAR	STEEL, ASTM A311 GR. 1045, HOT ROLLED				
M13	4	NEW SHIM	STAINLESS, ASTM A240 TYPE 316				
M14	4	NEW LOCK NUT WITH SS COTTER PIN	STEEL, ASTM A563, GR. 18-8 COTTER				
M15	2	NEW THRUST WASHER	STEEL, ASTM A36				

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

MODJESKI and MASTERS

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

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DEPARTMENT OF TRANSPORTATION
RALEIGH

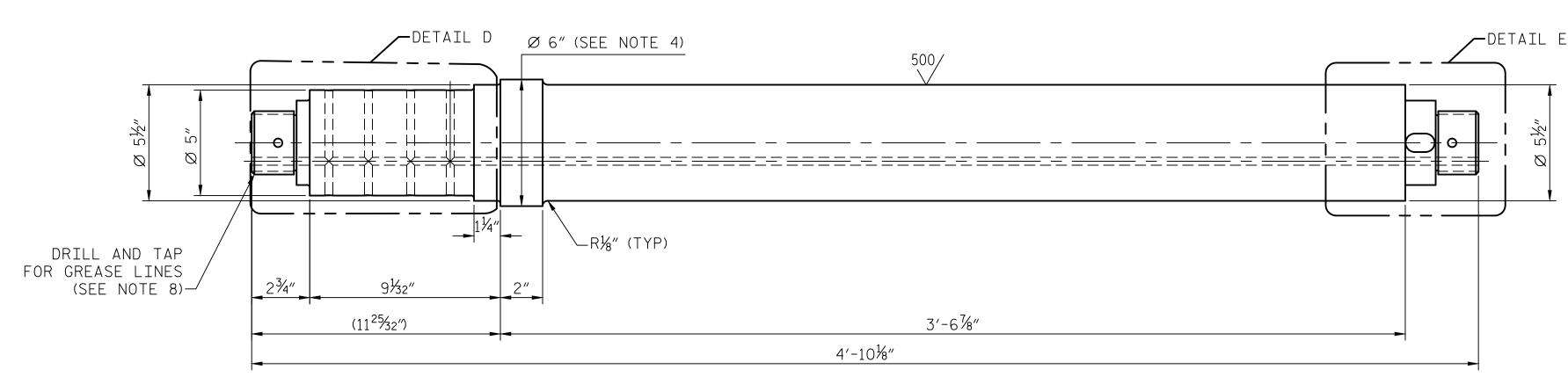
STATE OF NORTH CAROLINA

AUX. COUNTERWEIGHT ASSEMBLY DETAILS - 4

REVISIONS					SHEET NO.
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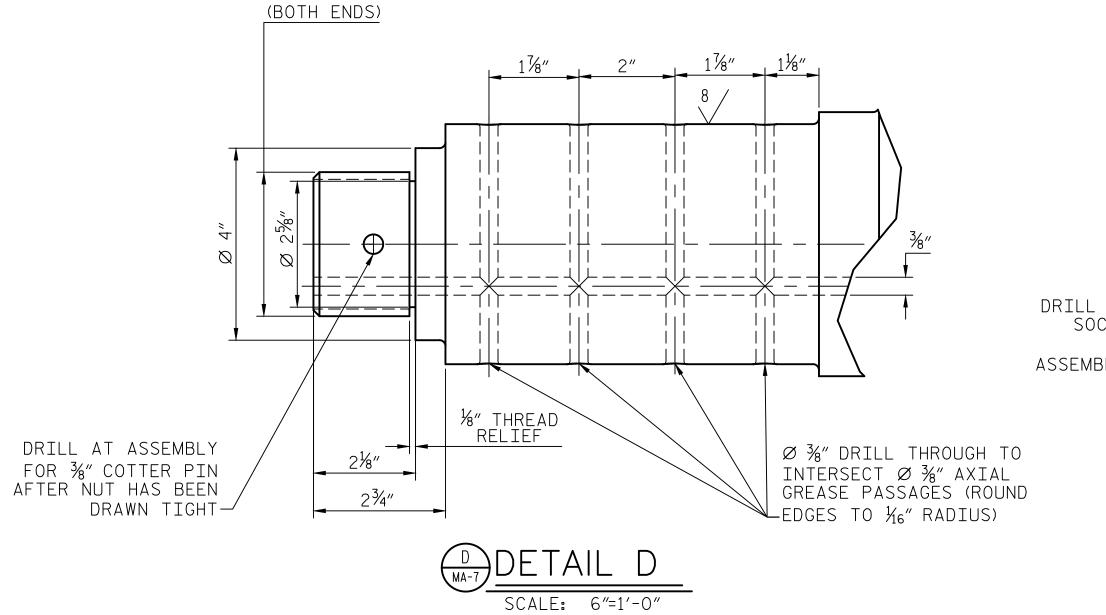
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CHECKED BY: L. R. LENTZ DATE: 01/25/18
DESIGN ENGINEER
OF RECORD: L. R. LENTZ DATE: 01/25/18

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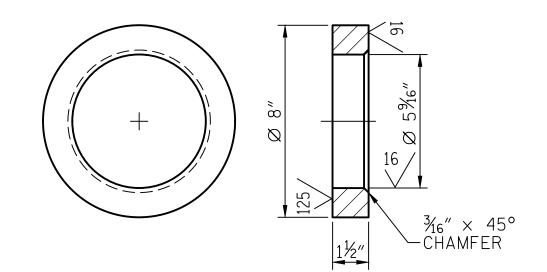
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3″-4 TPI

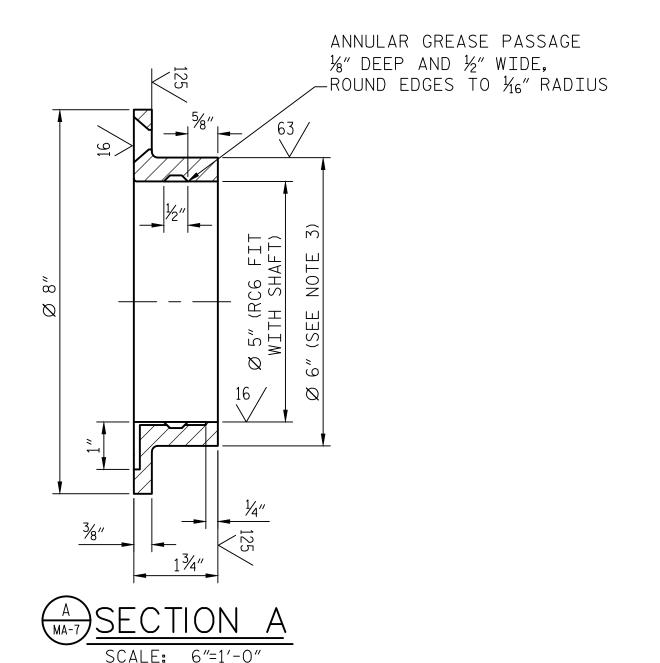
 \bigcirc DRILL FOR (4) %" BRONZE HEX SOCKET FLAT COUNTERSUNK HEAD CAP SCREWS AT ASSEMBLY TO MATCH HOLES IN HITCH SHAFT ARMS-Ø 6¾″ B.C.-







- 1. DIAMETER OF AUXILIARY HITCH ARM BORE TO BE MEASURED AFTER DISASSEMBLY.
- 2. BORE TO BE MACHINED AS NECESSARY TO PROVIDE A CLEAN AND ROUND BORE, WITH ONLY THE MINIMAL MATERIAL REMOVED TO ACHIEVE THIS.
- 3. SURFACE TO MATCH MINIMUM CLEAN SURFACE OF EXISTING HITCH ARMS FOR FN2 FIT
- 4. CONTRACTOR SHALL FIELD VERIFY BORES IN EXISTING SUPPORT BRACKET AND SUBMIT TO ENGINEER PRIOR TO FINAL MACHINING.
- 5. CONTRACTOR SHALL SUPPLY A NEW KEY.
- 6. ALL GREASE GROOVES ARE TO BE PROVIDED WITH A $\frac{1}{16}$ " RADIUS AT
- 7. CONTRACTOR SHALL INSTALL AND RUN LUBRICATION LINES FROM THE HITCH ARM SHAFTS TO AN ACCESSIBLE LOCATION AT THE TOP OF THE LIFTING GIRDER.
- 8. LUBRICATION LINES SHALL BE MINIMUM 10,000 PSI BURST PRESSURE WIRE REINFORCED FLEXIBLE HOSE THAT IS EXTENDED TO AN EASILY ACCESSED LOCATION AND ATTACHES TO RIGIDLY MOUNTED GREASE FITTINGS FOR FUTURE MAINTENANCE.



Ø 4" (SEE NOTE 4)

1″× ½″ KYW.

/—(SEE NOTE 5)

(3¹⁵⁄₃₂″)

SCALE: 6"=1'-0"

DRILL AND TAP FOR NPT PLUG

1/4" WALL

THICKNESS

Ø ¹¾₂″ DRILL AT

ASSEMBLY FOR %" COTTER PIN AFTER

NUT HAS BEEN DRAWN

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

> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

AUX. COUNTERWEIGHT ASSEMBLY DETAILS - 5

REVISIONS SHEET NO MA-7 DATE: BY: DATE: BY: TOTAL SHEETS

CAROLLI CAROLL SEAL 7 MODJESKI and MASTERS Experience great bridges. NGINEER. 01/29/18

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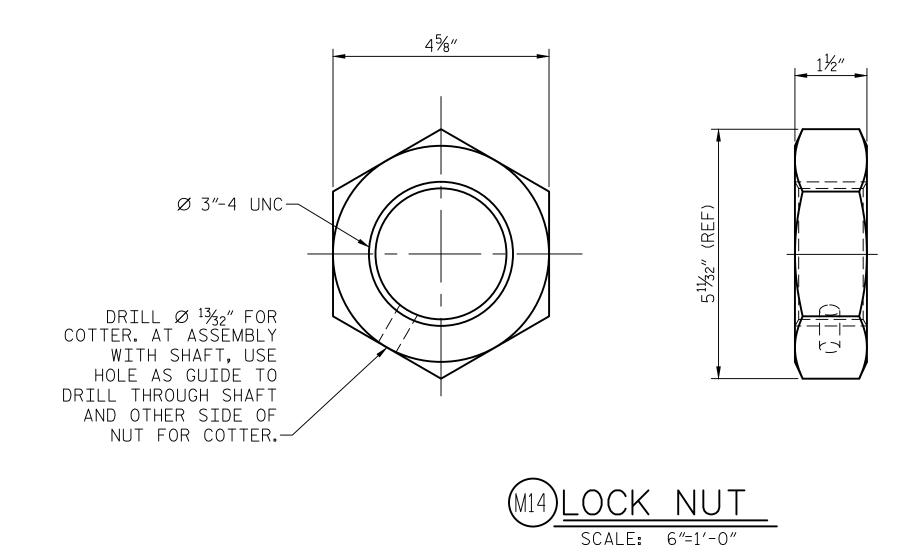
333 FAYETTEVILLE STREET, SUITE 505 RALEIGH, NC 27601 NC LICENSE NO. C-2979

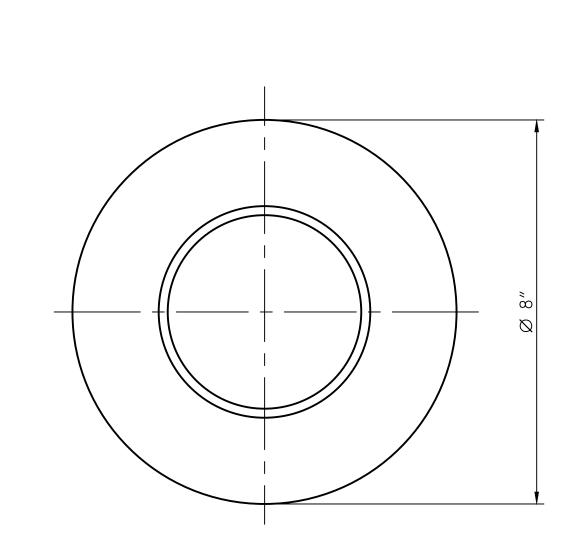
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

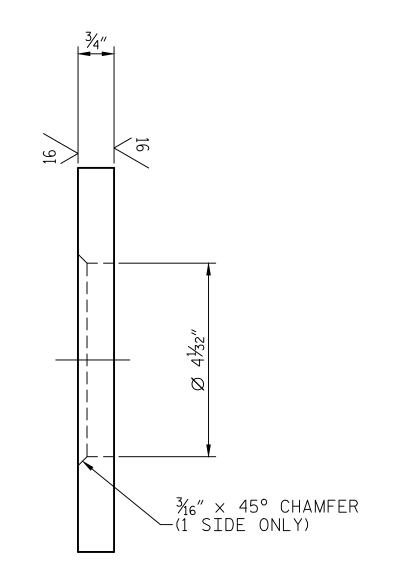
DESIGNED BY: E. A. SAMPLE DATE: 08/17/17
DRAWN BY: J. M. SHOUP DATE: 08/17/17
CHECKED BY: L. R. LENTZ DATE: 01/25/18 DESIGN ENGINEER OF RECORD: L L. R. LENTZ DATE : 01/25/18

AXIAL GREASE GROOVE EXTENDED TO THRUST FACE, ½"x%" DEEP (ROUND EDGES TO 1/6" RADIUS) AT 90° SPACING-

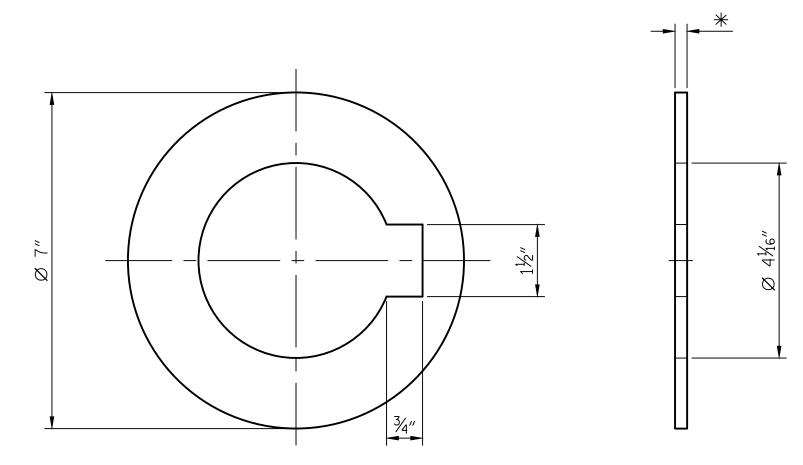
NOTES:







SCALE: 6"=1'-0"



* EACH SHIM PACK SHALL BE PROVIDED WITH THE FOLLOWING THICKNESSES QTY: THICKNESS:

MODJESKI and MASTERS

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lu lents

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> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

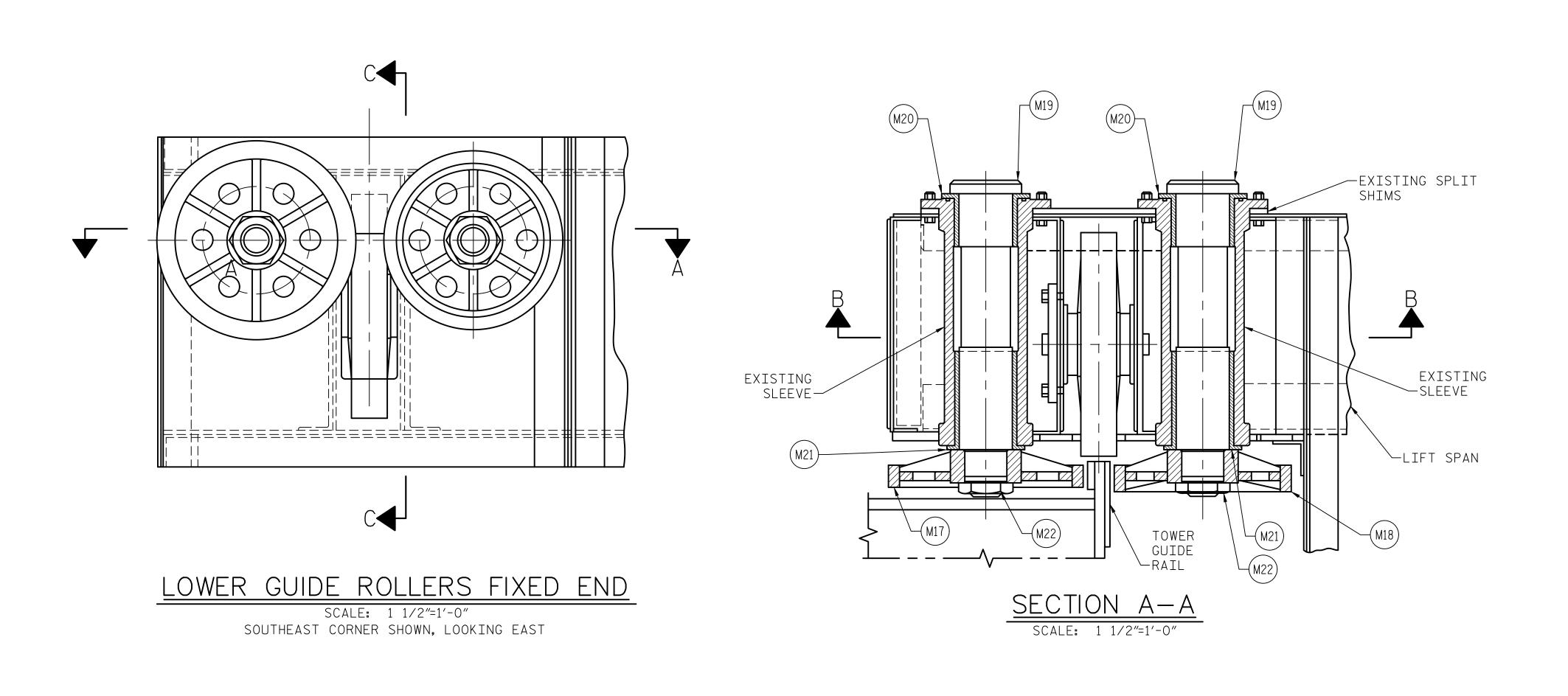
CAROLLING SEAL POLICE OF SEAL POLICE AUX. COUNTERWEIGHT ASSEMBLY DETAILS - 6

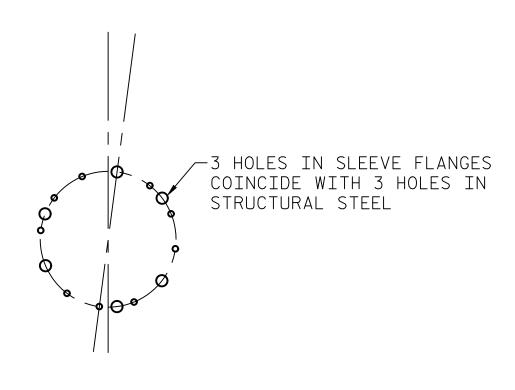
SEAL 7
044302

NGINEER
01/29/18 REVISIONS SHEET NO. NO. BY: DATE: MA-8 DATE: BY: TOTAL SHEETS

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ШШ	DESIGNED BY: .	E. A. SAMPLE	DATE :	08/17/17
$\overline{/}$	DRAWN BY:	J. M. SHOUP		08/17/17
	CHECKED BY:	L. R. LENTZ		01/25/18
	DESIGN ENGINEE	i.R		

DESIGN ENGINEER
OF RECORD:
L. R. LENTZ
DATE: 01/25/18



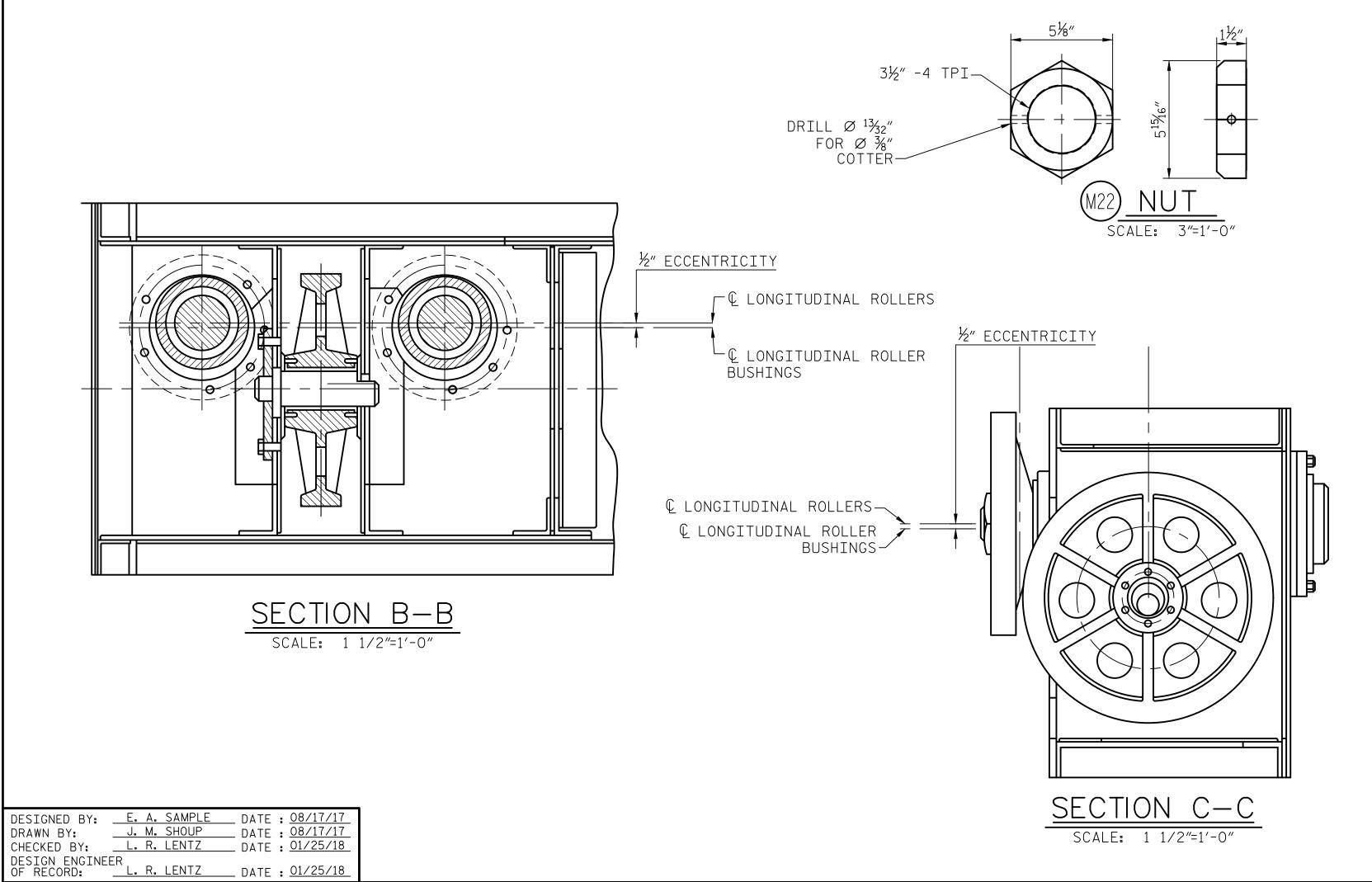


HOLE SPACING FOR ECENTRIC ADJUSTEMENT

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

REPLACE ALL ECCENTRIC CONNECTION BOLTS IN KIND. (12) ¾" TURNED BOLTS TOTAL - 2 TURNED TAP BOLTS WITH LOCK WASHERS

- 2 TURNED BOLTS WITH LOCK WASHER AND NUT, 3¾" LG. - 8 TURNED BOLTS WITH LOCK WASHER AND NUT, 31/4" LG.



BILL OF MATERIALS				
ITEM NO.	QTY.	DESCRIPTION	MATERIAL/MANUFACTURER	
M17	2	NEW 22" OD LONGITUDINAL ROLLER	STEEL, ASTM A668, CL D*	
M18	2	NEW 20" OD LONGITUDINAL ROLLER	STEEL, ASTM A668, CL D*	
M19	4	NEW LONGITUDINAL ROLLER SHAFT	STEEL, ASTM A291, CLASS 3 OR ASTM A311 GR. 4140, COLD DRAWN	
M20	4	NEW OUTBOARD LONGITUDINAL ROLLER BUSHING	BRONZE, ASTM B22 ALLOY C91100	
M21	4	NEW INBOARD LONGITUDINAL ROLLER BUSHING	BRONZE, ASTM B22 ALLOY C91100	
M22	4	NEW NUT WITH SS COTTER PIN	STEEL, ASTM A563, GR. 18-8 COTTER	

* NOTE: THE ROLLERS MAY BE MACHINED FROM SOLID, A FABRICATED WELDMENT, OR A CASTING.

NOTES:

- 1. CONTRACTOR SHALL SUBMIT DETAILED PROCEDURE FOR REPLACEMENT OF THE LONGITUDINAL SPAN GUIDE ROLLER ASSEMBLIES.
- 2. CONTRACTOR TO PROVIDE TEMPORARY SPAN GUIDES TO MAINTAIN BRIDGE OPERATIONS DURING FINAL MACHINING.

PROJECT	NO	15BF	PR.15
<u>NEW</u>	HANO	VER	_ COUNTY
STATION	o		

MODJESKI and MASTERS Experience great bridges.

RALEIGH, NC 27601 NC LICENSE NO. C-2979

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SEAL PAROLINA SE
Docusigned by: We levely
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

> SPAN GUIDE ASSEMBLY

	SHEET NO.				
BY:	DATE:	NO.	BY:	DATE:	MA-9
		3			TOTAL SHEETS
		4			10(A)

333 FAYETTEVILLE STREET, SUITE 505

