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PROJECT: 15BPR.15

CONTRACT:



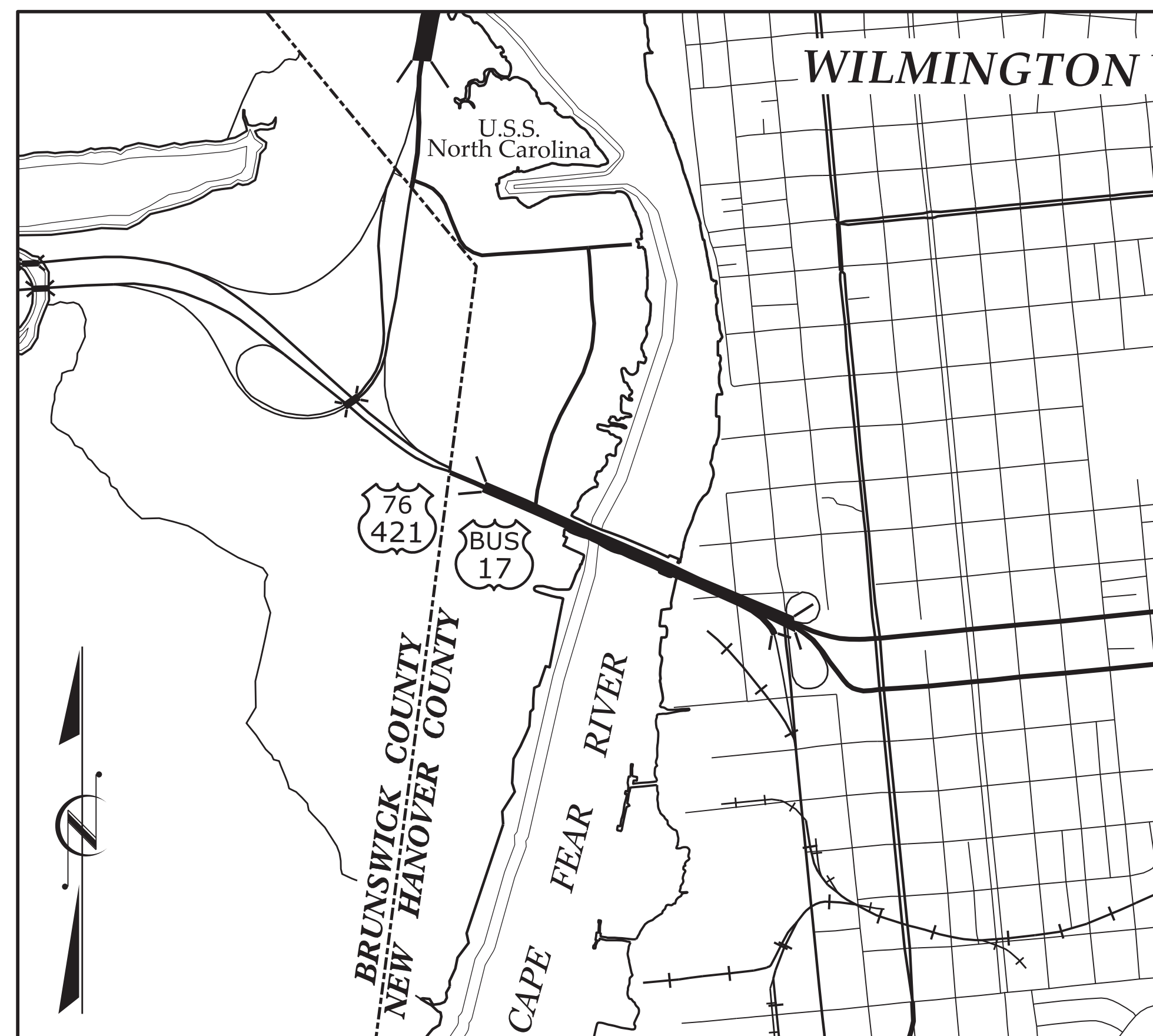
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NEW HANOVER COUNTY

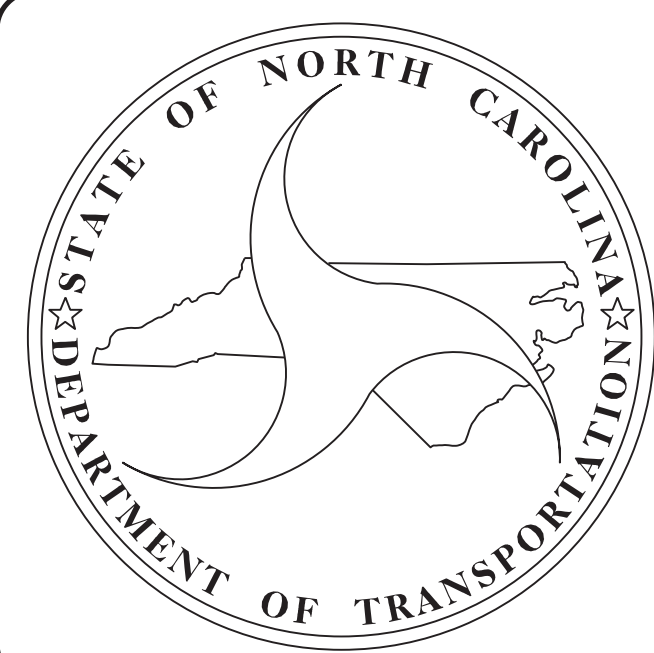
**LOCATION: MEMORIAL LIFT BRIDGE ON
US 76, US 421, BUS. 17 (OCEAN HWY)
OVER CAPE FEAR RIVER**

TYPE OF WORK: BRIDGE PRESERVATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	15BPR.15	1	66
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
15BPR.15		CONSTRUCTION	



VICINITY MAP



DESIGN DATA

DESIGN DATA

LENGTH OF STRUCTURE = 0.575 MI

2018 STANDARD SPECIFICATIONS

LETTING DATE:
FEBRUARY 20, 2018

Prepared for the Office of:

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

Prepared in the Office of:



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

JASON R. DOUGHTY, PE
DESIGN ENGINEER OF RECORD



12/20/2017
DocuSigned by:
Jason R. Doughty

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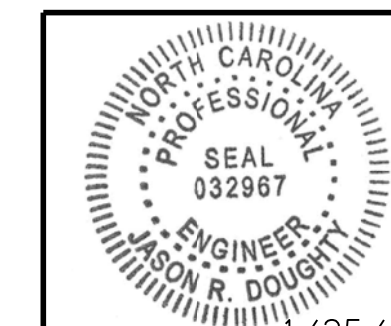
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SHEET INDEX



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1/25/18

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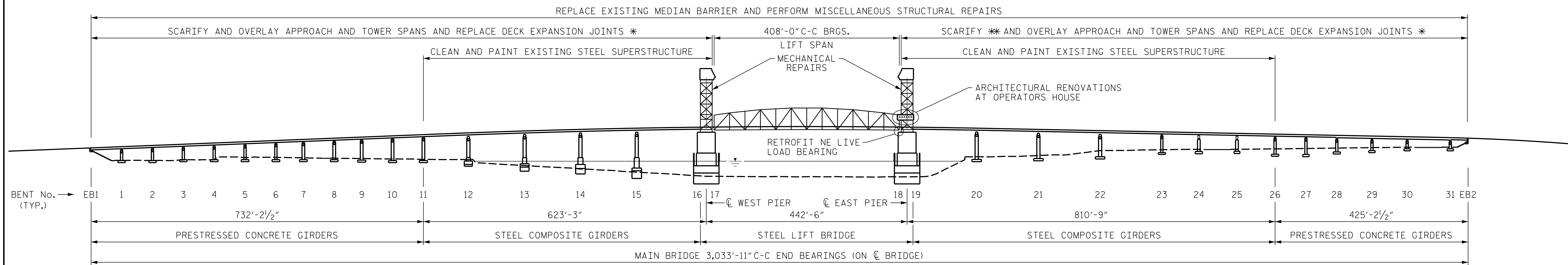
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1			3			S-2
2			4			TOTAL SHEETS 66

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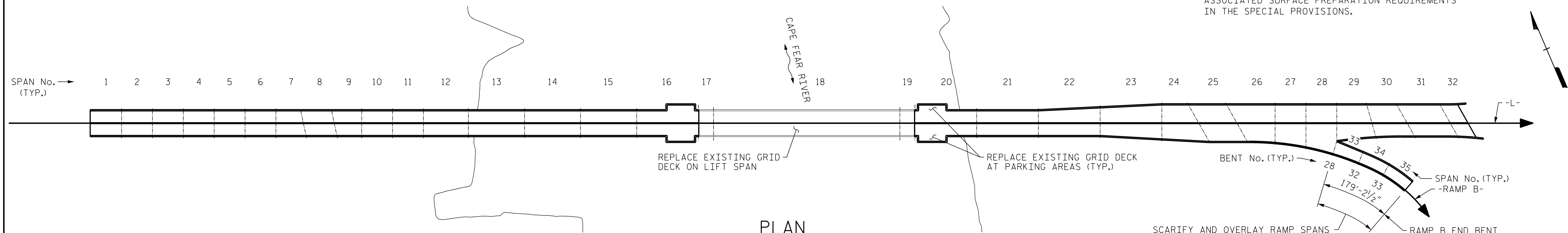
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 CHECKED BY: J. DOUGHTY DATE : JAN 2018
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE : JAN 2018



ELEVATION

BENT NUMBERS SHOWN MATCH BENT NUMBERING USED IN BRIDGE INSPECTION REPORTS

* EXISTING FINGER JOINTS WILL NOT BE REPLACED.
 ** SCARIFYING BRIDGE DECK SHALL NOT BE PERFORMED IN SPAN 20. REFER TO EPOXY OVERLAY SYSTEM AND ASSOCIATED SURFACE PREPARATION REQUIREMENTS IN THE SPECIAL PROVISIONS.



PLAN

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

SCOPE OF WORK

STRUCTURAL:

- GRID DECK REPLACEMENT ON LIFT SPAN AND AT PARKING AREAS AT ENDS OF LIFT SPAN.
- REPLACE EXISTING MEDIAN BARRIER ON APPROACH SPANS AND LIFT SPAN,
- SCARIFY AND OVERLAY APPROACH SPANS AND TOWER SPANS.
- EXCEPT FINGER JOINTS AT BENT 15, REPLACE DECK EXPANSION JOINTS ON APPROACH SPANS.
- RETROFIT EXISTING LIVE LOAD BEARING AT NORTHEAST CORNER OF LIFT SPAN.
- PERFORM SUPERSTRUCTURE AND SUBSTRUCTURE REPAIRS AS SHOWN IN THE PLANS.

MECHANICAL:

- REPLACE CORRODED FASTENERS AT REST PIER MACHINERY AREAS AND LIFTING GIRDERS.
- REPLACE ALL SPAN LOCK SHAFT COUPLING SEALS, GASKETS AND FASTENERS.
- REPLACE UPPER AIR BUFFERS.
- CLEAN AND LUBRICATE COUNTERWEIGHT ROPES.
- PERFORM AUXILIARY COUNTERWEIGHT AND SPAN GUIDE REPAIRS. SEE "MA" SHEETS.

CLEANING AND PAINTING:

- EXISTING STEEL SUPERSTRUCTURE APPROACH SPANS AND EXISTING STEEL SUPERSTRUCTURE TOWER SPANS (STRINGERS AND FLOORBEAMS) SHALL BE CLEANED AND PAINTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS. TOWER MEMBERS AND LIFT SPAN MEMBERS SHALL NOT BE CLEANED AND PAINTED EXCEPT AS NOTED IN THE PLANS OR SPECIAL PROVISIONS.
- WITHIN THE SPANS TO BE CLEANED AND PAINTED, CLEAN AND PAINT EXISTING STRINGERS, FLOORBEAMS, GIRDERS, DIAPHRAGMS, CROSS FRAMES, STIFFENERS, CONNECTION PLATES, CANTILEVERED BRACKETS, EXTERIOR SURFACES OF TRANSVERSE STEEL CAP GIRDERS, ASSOCIATED CONNECTIONS, AND BEARINGS.

ARCHITECTURAL:

- REPLACE CONTROL HOUSE ROOF.
- ASBESTOS ABATEMENT AT CONTROL HOUSE.
- INSTALL NEW CONTROL HOUSE INTERIOR FINISHES, PLUMBING, FIXTURES, LIGHTING, AND WINDOWS.
- REPLACE CONTROL HOUSE HVAC.
- INSTALL NEW CONTROL HOUSE FIRE ALARM SYSTEM.
- REPLACE TOWER ELEVATORS.

MISCELLANEOUS:

- REPLACE "SLIPPERY WHEN WET" WARNING SIGNS AS SHOWN IN THE PLANS.
- INSTALL NEW AIR HORN.

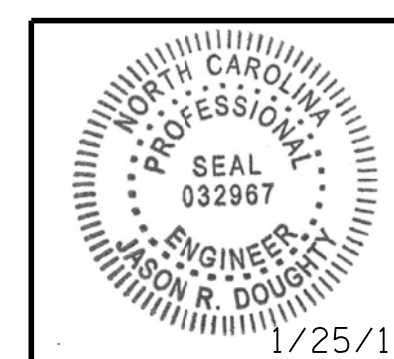
PROJECT NO. 15BPR.15
 NEW HANOVER COUNTY
 STATION: _____

STATE OF NORTH CAROLINA
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GENERAL PLAN AND ELEVATION



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2			4			66

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 DRAWN BY: K. WHITE DATE: NOV 2017
 CHECKED BY: B. LOFLIN DATE: DEC 2017
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: JAN 2018



LOCATION SKETCH

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

TOTAL BILL OF MATERIAL

	GROOVING BRIDGE FLOORS	SHOTCRETE REPAIRS	REPAIRS TO PRESTRESSED CONCRETE GIRDERS	*** SPICING OF PRESTRESSING STRAND	* CLASS II SURFACE PREPARATION	* CLASS III SURFACE PREPARATION	* HYDRO-DEMOLITION OF BRIDGE DECK	** SCARIFYING BRIDGE DECK	SHOTBLASTING BRIDGE DECK	CONCRETE DECK REPAIR FOR PPC OVERLAY
	SO. 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 REPLACEMENT	INSTALL NEW SIGNS	MECHANICAL OPERATING MACHINERY	AUXILIARY COUNTERWEIGHT AND SPAN GUIDE REPAIRS	POLLUTION CONTROL	CONC. DECK REPAIR FOR EPOXY OVERLAY	UNDER STRUCTURE WORK PLATFORM	OPERATOR HOUSE RENOVATION
	CY	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	LUMP SUM	LUMP SUM
TOTAL	8	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	52	LUMP SUM	LUMP SUM

* 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.

DESIGNED BY: J. BORUTA DATE: NOV 2017
 DRAWN BY: C. CORMAN DATE: NOV 2017
 CHECKED BY: J. DOUGHTY DATE: JAN 2018
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: JAN 2018

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.

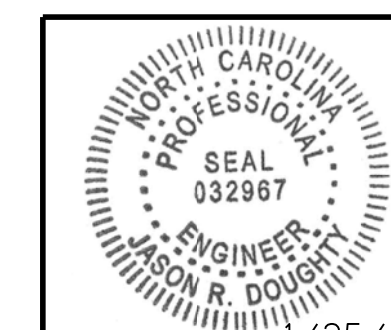
FOR REPAIRS TO PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.15
 NEW HANOVER COUNTY
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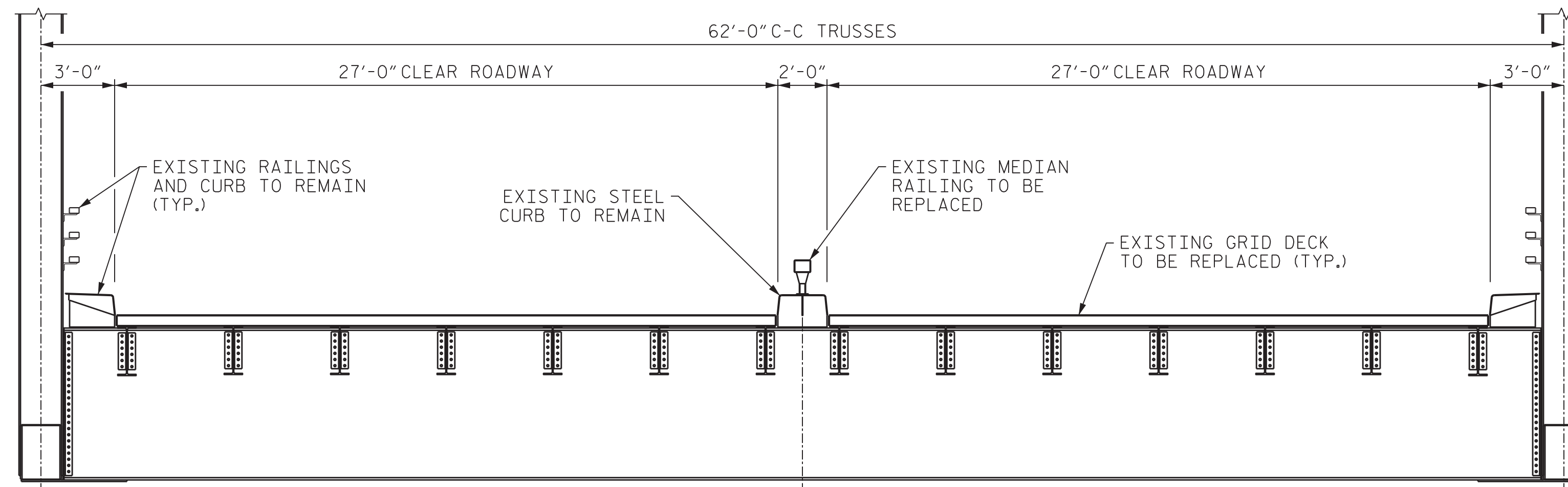
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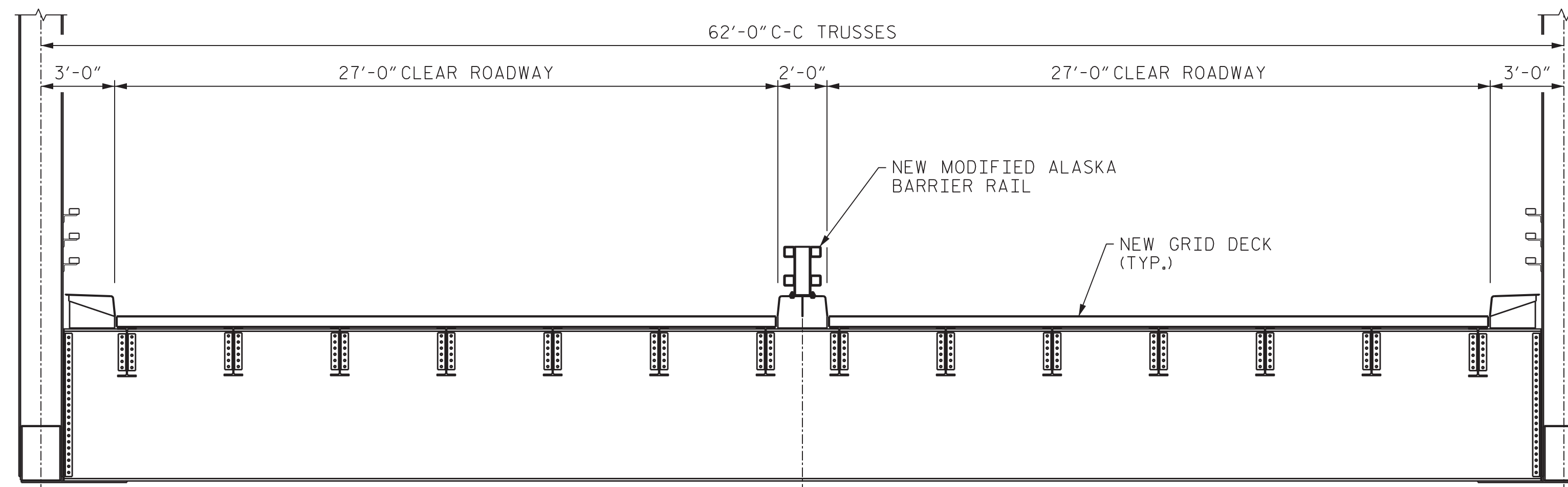
GENERAL NOTES
 AND TOTAL BILL
 OF MATERIAL

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

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.



EXISTING TYPICAL SECTION



PROPOSED TYPICAL SECTION

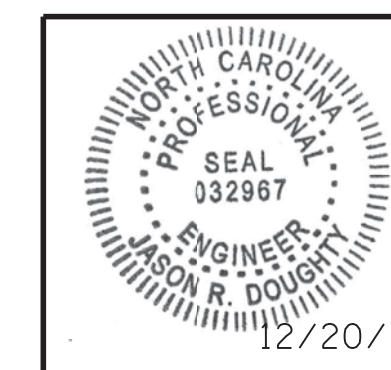
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LIFT SPAN
 TYPICAL SECTION



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SHEET NO.
S-5
 TOTAL SHEETS
 66

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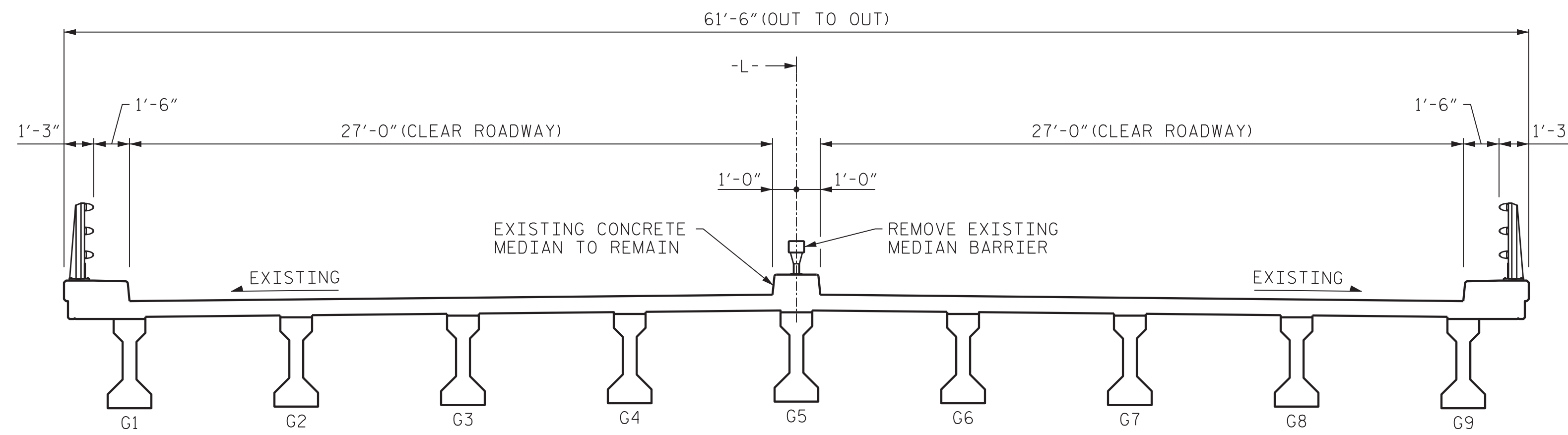
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 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: DEC 2017

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NOTE:

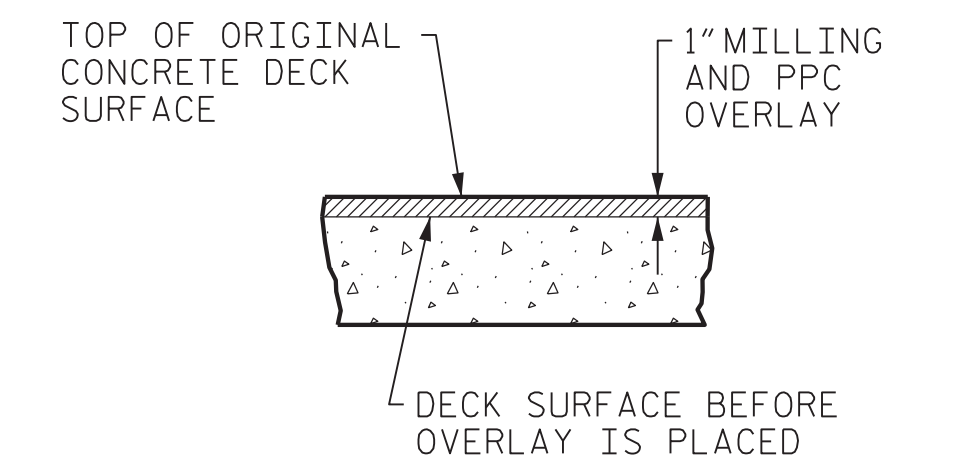
REFER TO TRANSPORTATION MANAGEMENT PLANS FOR TRAFFIC PHASING AND WORK ZONE INFORMATION.

EXISTING SCUPPERS NOT SHOWN

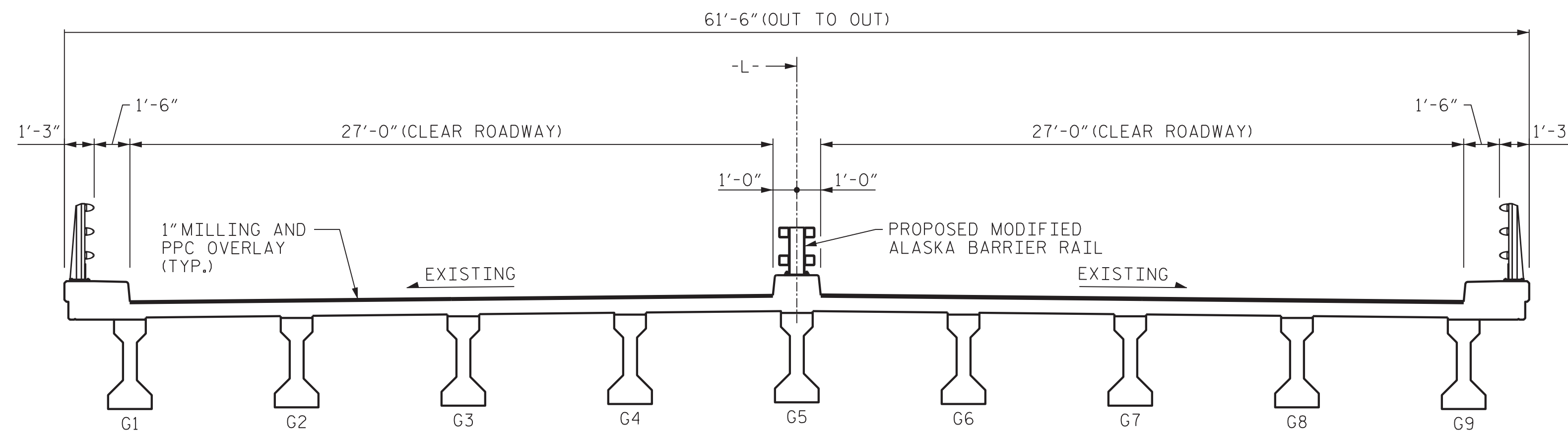


TYPICAL SECTION - EXISTING

(WEST APPROACH SPANS 1 THROUGH 11)



DETAIL FOR MILLING AND PPC OVERLAY



TYPICAL SECTION - FINAL

(WEST APPROACH SPANS 1 THROUGH 11)

PROJECT NO. 15BPR.15
NEW HANOVER COUNTY

STATION: _____

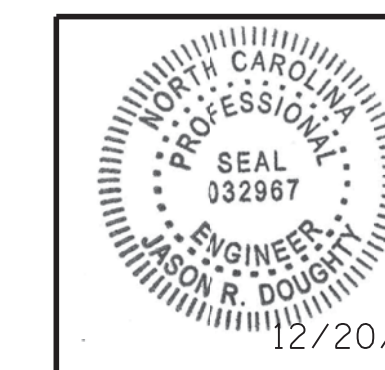
SHEET 1 OF 6

STATE OF NORTH CAROLINA
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TYPICAL SECTION AND OVERLAY DETAILS



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1			3		
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SHEET NO.
 S-6
 TOTAL SHEETS
 66

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 DRAWN BY: K. WHITE DATE: SEPT 2017
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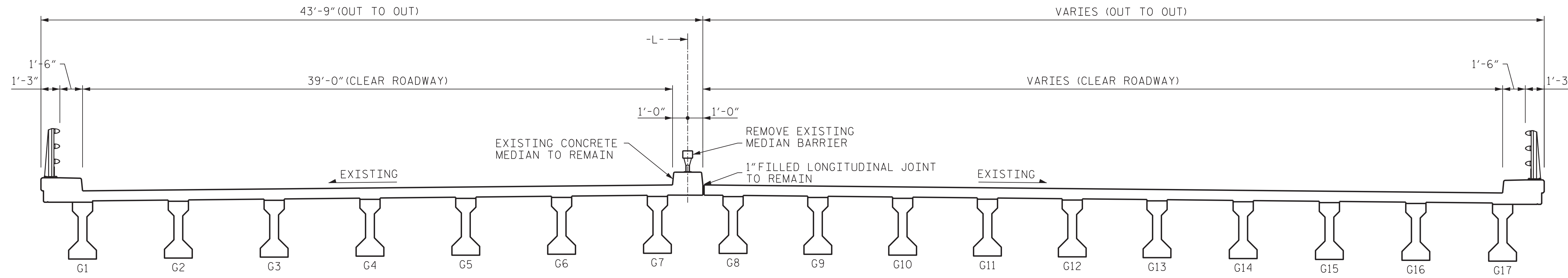
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NOTE:

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

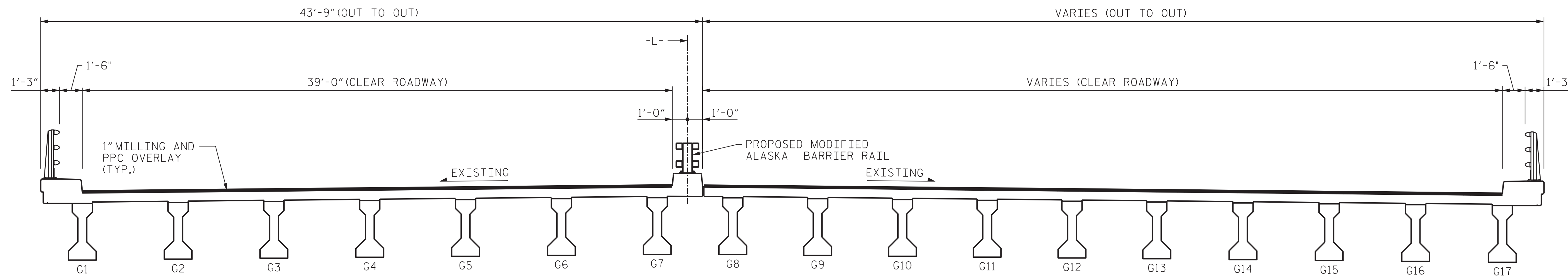
REFER TO TRANSPORTATION MANAGEMENT PLANS FOR TRAFFIC PHASING AND WORK ZONE INFORMATION.

EXISTING SCUPPERS NOT SHOWN.



TYPICAL SECTION - EXISTING

(EAST APPROACH - SPANS 27 AND 28)
(SPAN 28 SHOWN)



TYPICAL SECTION - FINAL

(EAST APPROACH - SPANS 27 AND 28)
(SPAN 28 SHOWN)

PROJECT NO. 15BPR.15

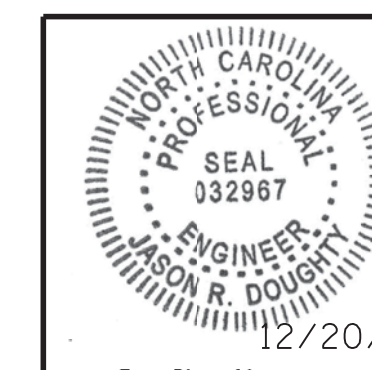
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STATION: _____

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION AND OVERLAY DETAILS



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Jason R Doughty
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2			4		

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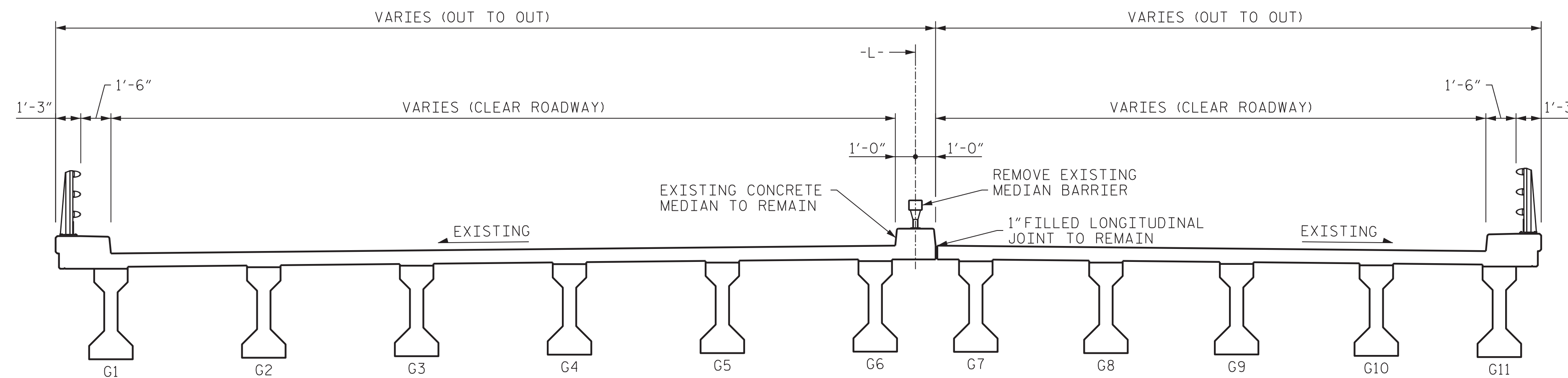
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 CHECKED BY: B. LOFLIN DATE: DEC 2017
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: DEC 2017

NOTE:

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

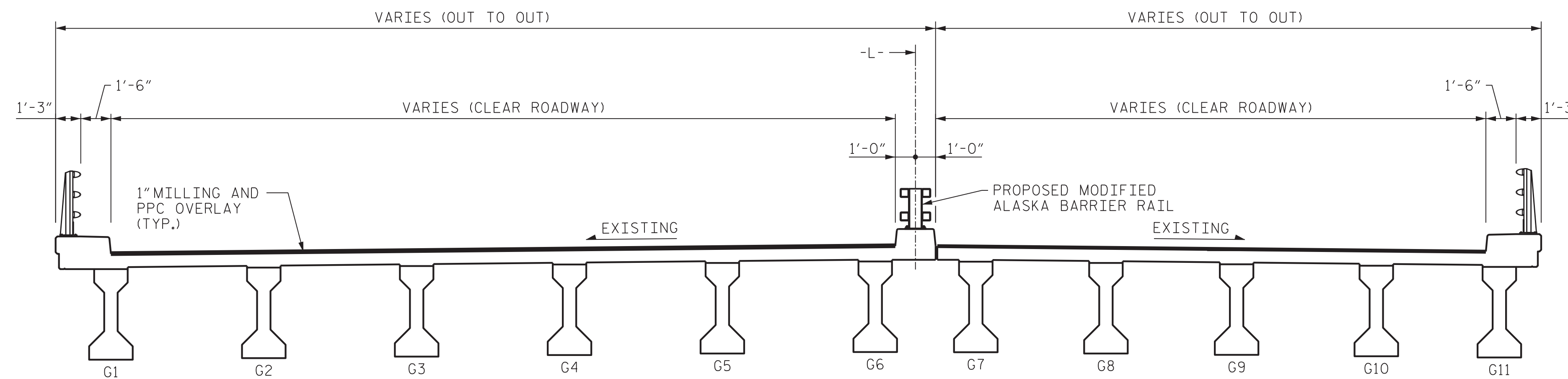
REFER TO TRANSPORTATION MANAGEMENT PLANS FOR TRAFFIC PHASING AND WORK ZONE INFORMATION.

EXISTING SCUPPERS NOT SHOWN.



TYPICAL SECTION - EXISTING

(EAST APPROACH - SPANS 29 THROUGH 32)
(SPAN 30 SHOWN)



TYPICAL SECTION - FINAL

(EAST APPROACH - SPANS 29 THROUGH 32)
(SPAN 30 SHOWN)

PROJECT NO. 15BPR.15

NEW HANOVER COUNTY

STATION: _____

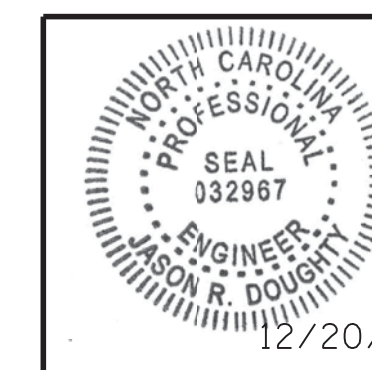
SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION AND OVERLAY DETAILS



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



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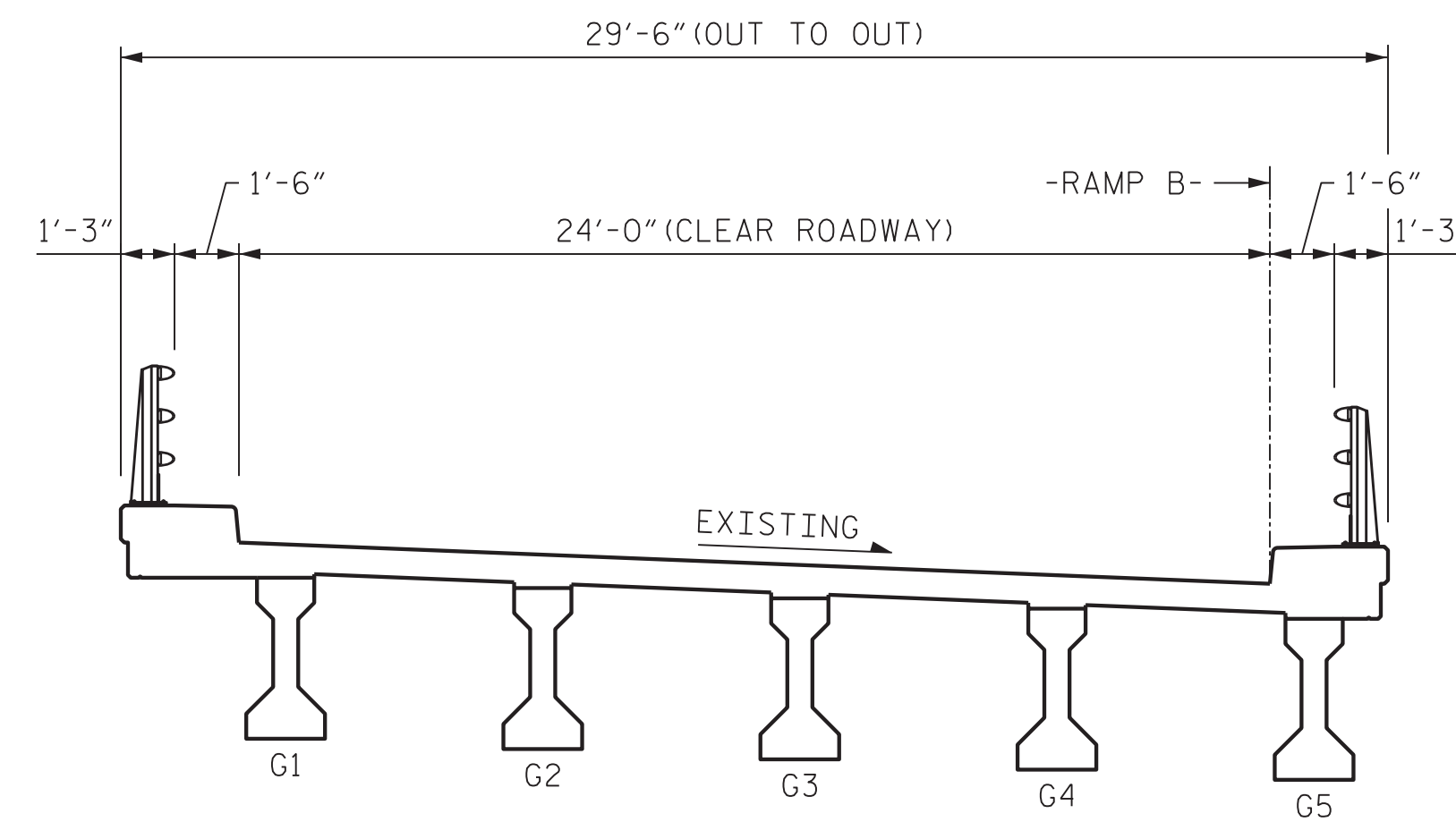
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DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: DEC 2017

NOTE:

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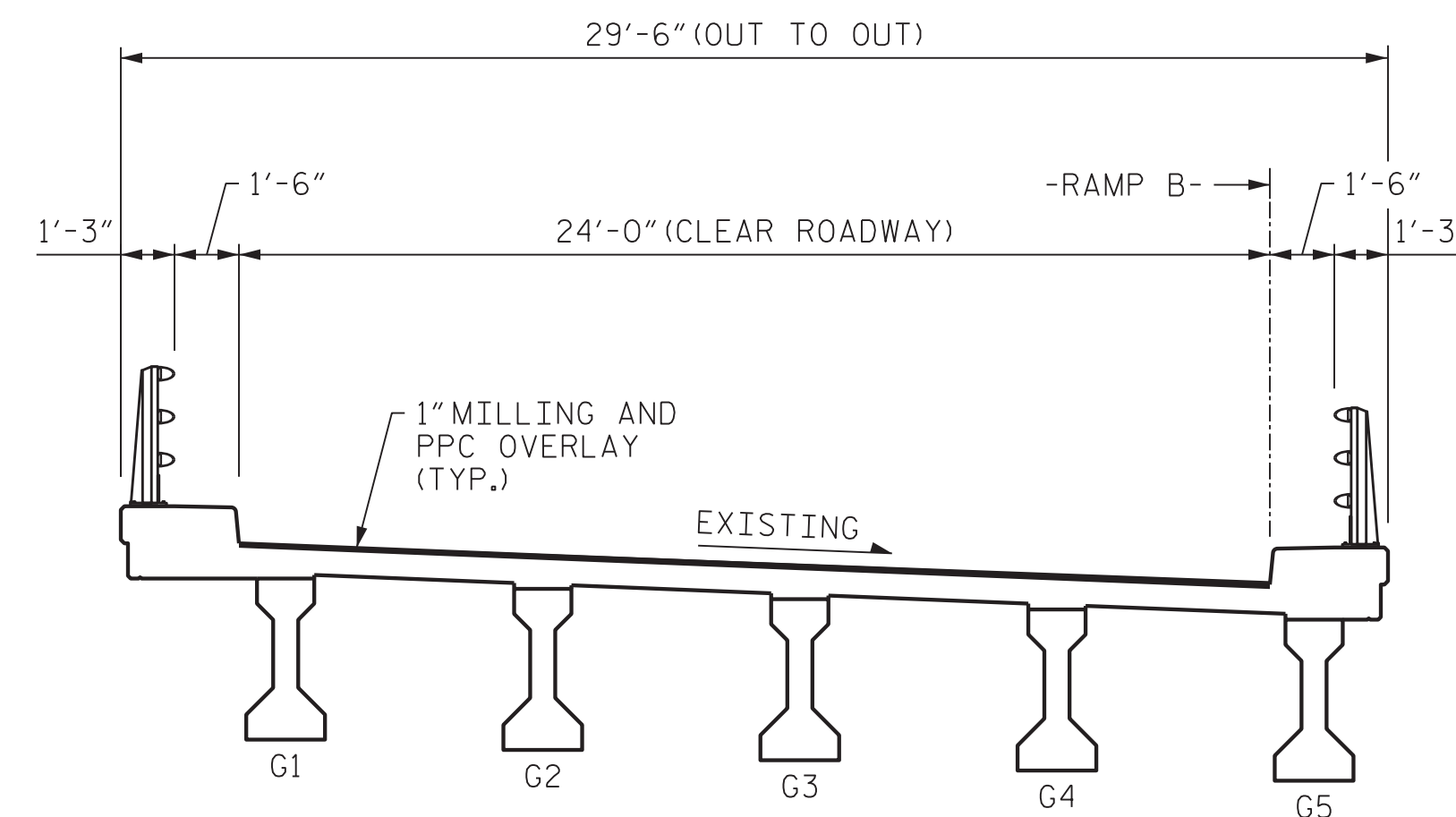
REFER TO TRANSPORTATION MANAGEMENT PLANS FOR TRAFFIC PHASING AND WORK ZONE INFORMATION.

EXISTING SCUPPERS NOT SHOWN.



TYPICAL SECTION - EXISTING

(RAMP B - SPANS 33 THROUGH 35)



TYPICAL SECTION - FINAL

(RAMP B - SPANS 33 THROUGH 35)

PROJECT NO. 15BPR.15

NEW HANOVER COUNTY

STATION: _____

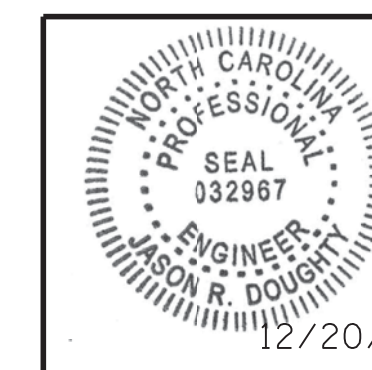
SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION AND OVERLAY DETAILS



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NC LICENSE NO. C-2979



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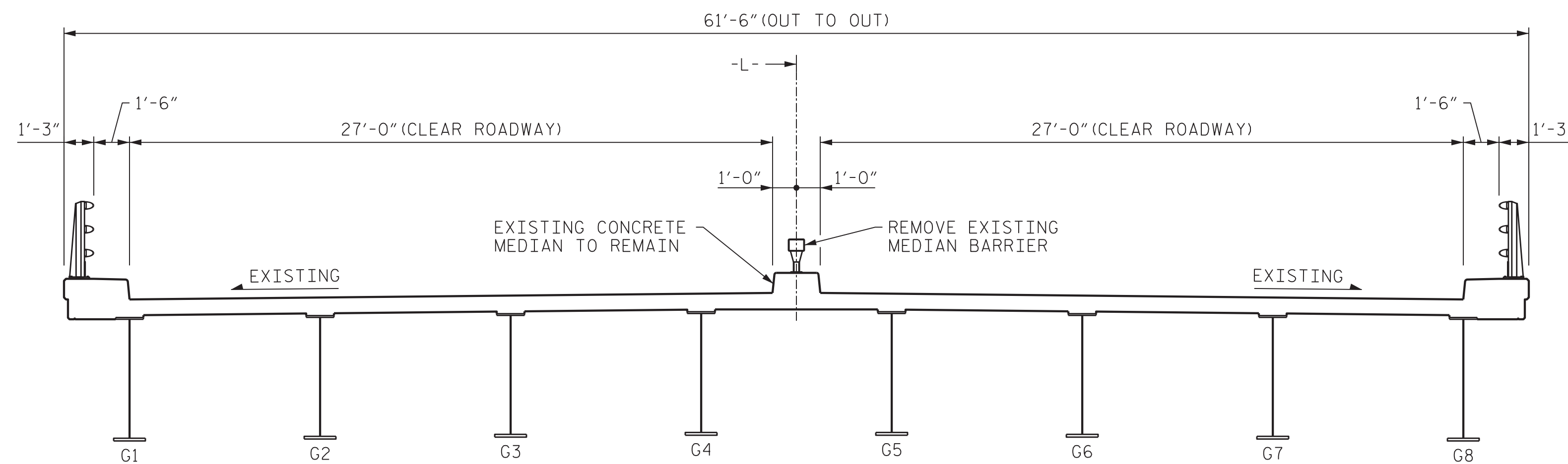
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 CHECKED BY: B. LOFLIN DATE: DEC 2017
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: DEC 2017

NOTES:

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

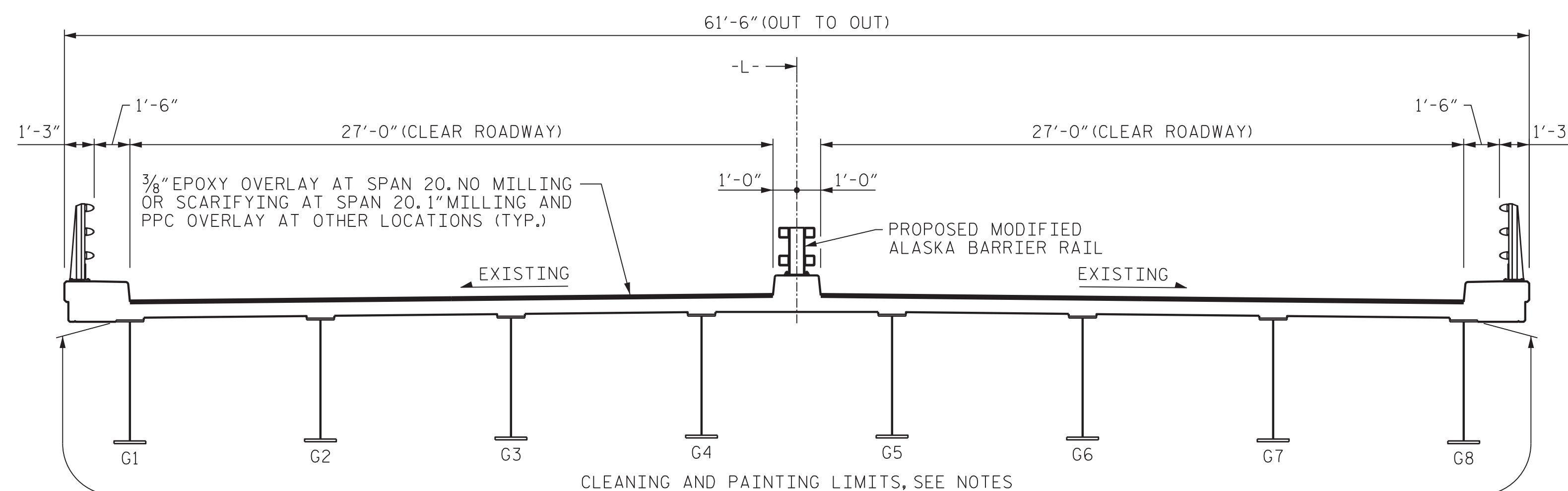
REFER TO TRANSPORTATION MANAGEMENT PLANS FOR TRAFFIC PHASING AND WORK ZONE INFORMATION.

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.



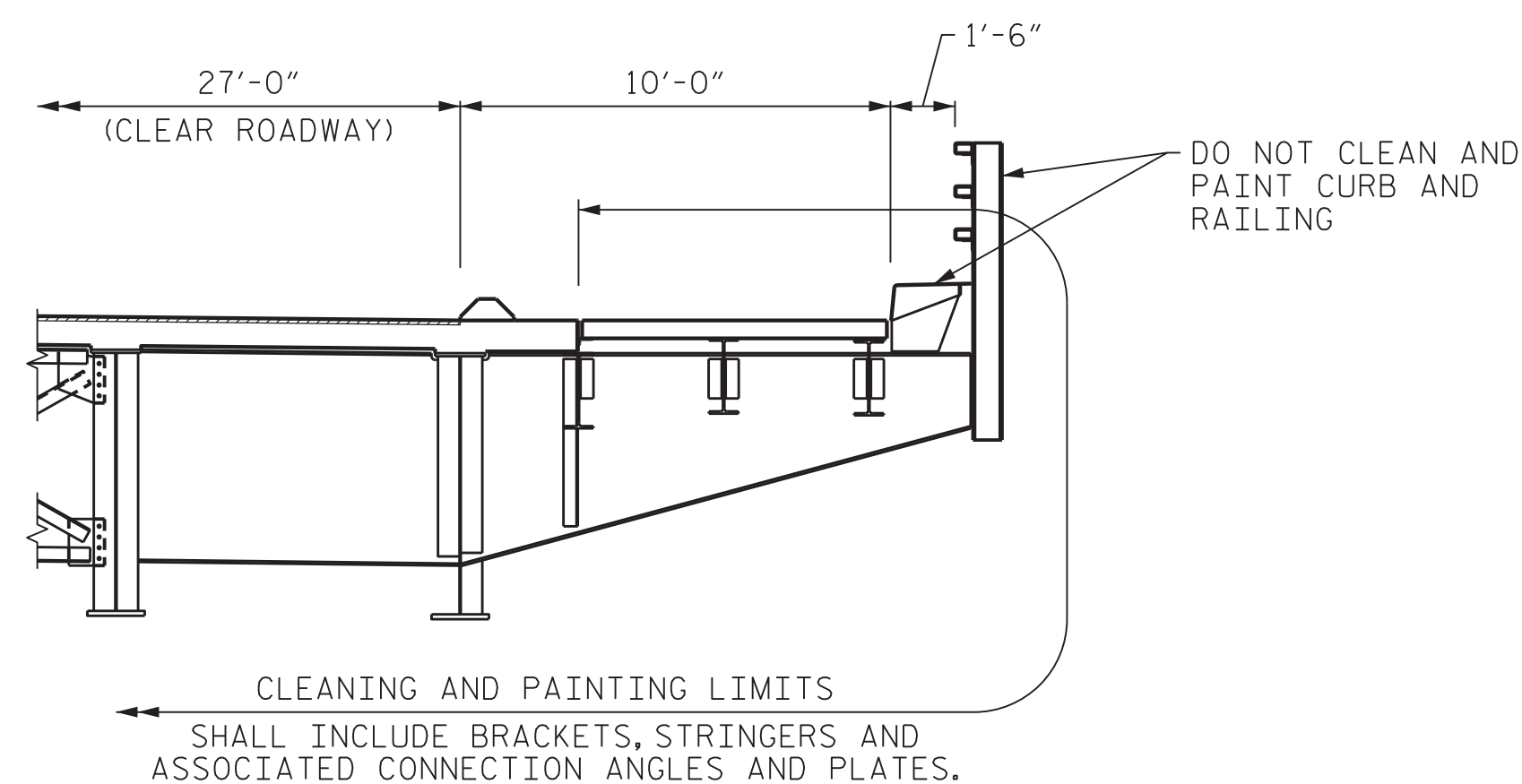
TYPICAL SECTION - EXISTING

(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.



PARKING AREA BRACKET

CLEANING AND PAINTING LIMITS SHALL INCLUDE BRACKETS, STRINGERS AND ASSOCIATED CONNECTION ANGLES AND PLATES.

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NEW HANOVER COUNTY

STATION: _____

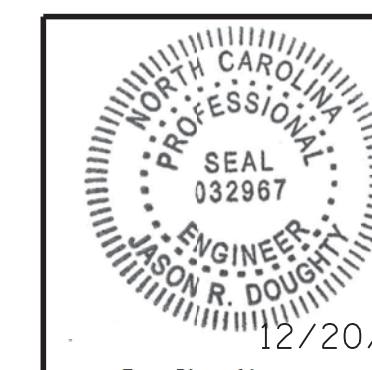
SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION AND OVERLAY DETAILS



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NC LICENSE NO. C-2979



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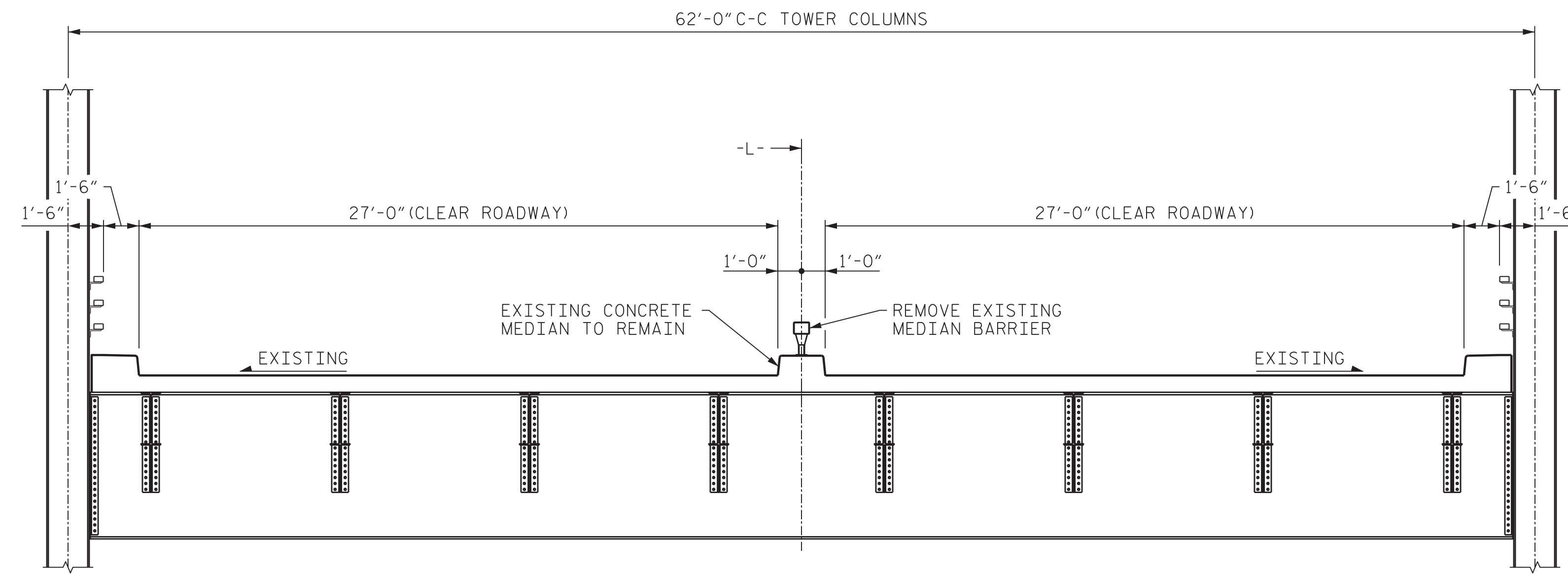
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DRAWN BY:	K. WHITE	DATE:	SEPT 2017
CHECKED BY:	B. LOFLIN	DATE:	DEC 2017
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE:	DEC 2017

NOTE:

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

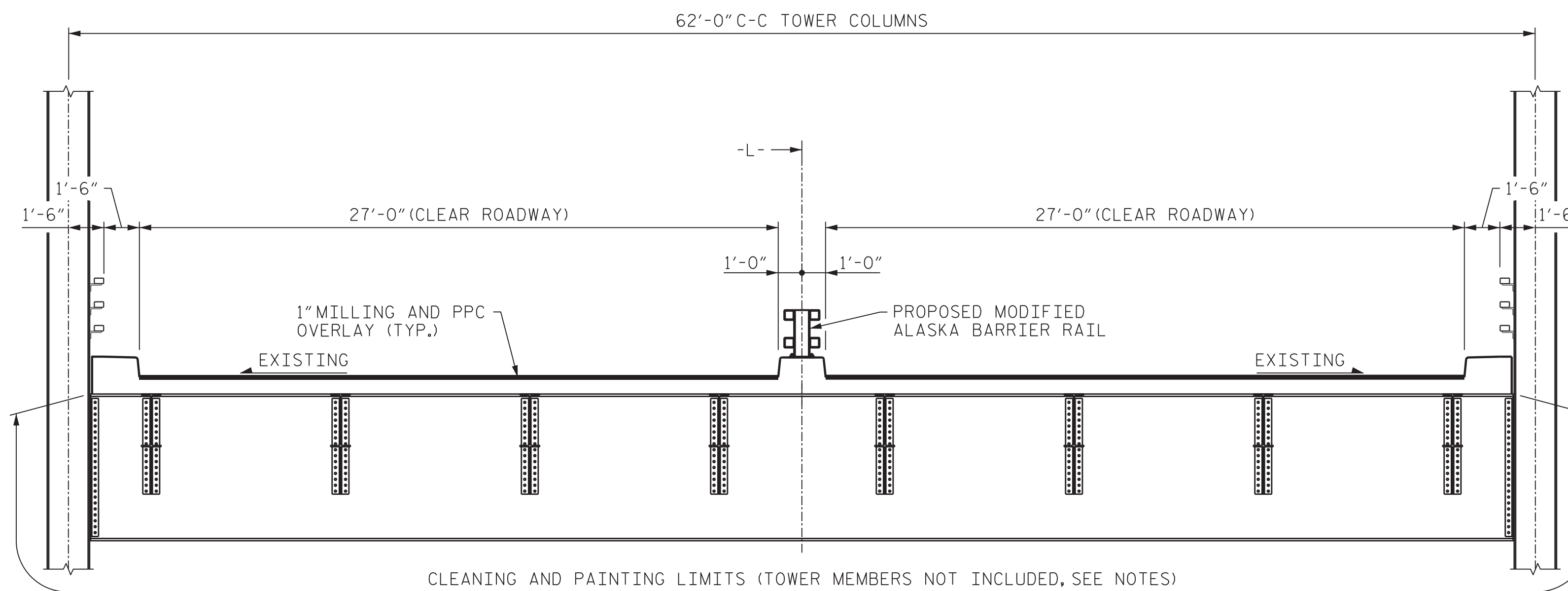
REFER TO TRANSPORTATION MANAGEMENT PLANS FOR TRAFFIC PHASING AND WORK ZONE INFORMATION.

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



TYPICAL SECTION - EXISTING

WEST TOWER SPAN SHOWN,
EAST TOWER SPAN SIMILAR



TYPICAL SECTION - FINAL

WEST TOWER SPAN SHOWN,
EAST TOWER SPAN SIMILAR

CLEANING AND PAINTING LIMITS (TOWER MEMBERS NOT INCLUDED, SEE NOTES)

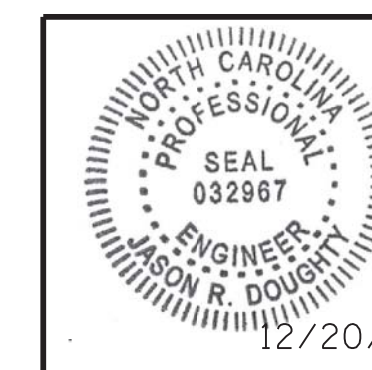
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NEW HANOVER COUNTY

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SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION AND OVERLAY DETAILS



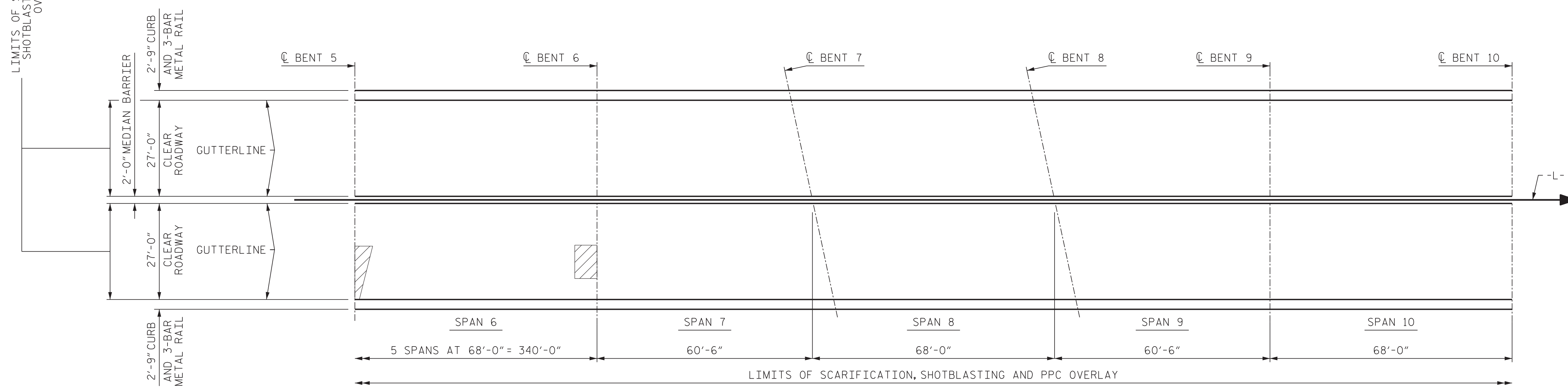
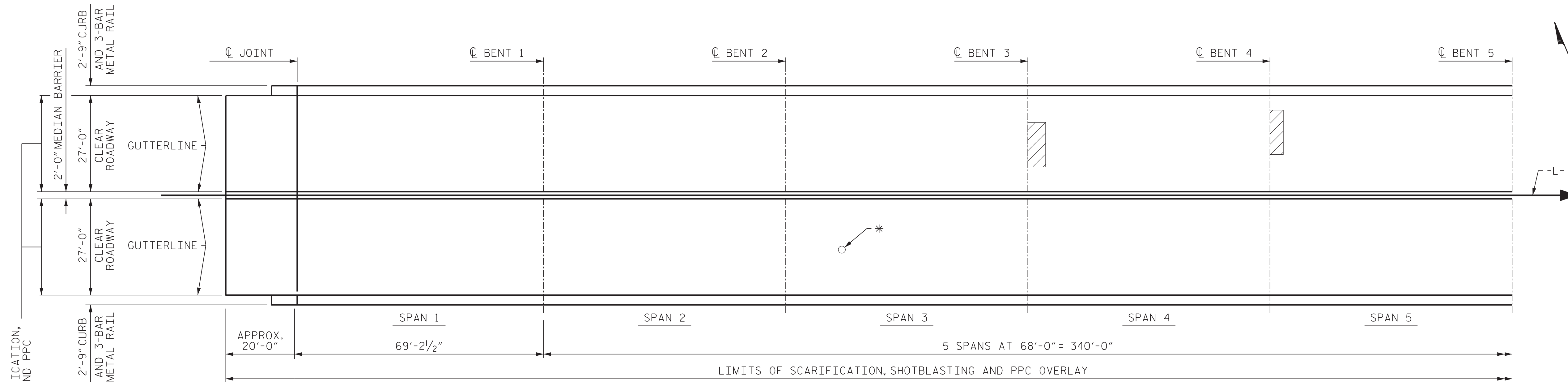
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PLAN OF SPANS

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."

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

* 1" DIAMETER, FULL DEPTH HOLE TO BE FILLED WITH APPROVED NON-SHRINK GROUT, AFTER SCARIFICATION OF BRIDGE DECK, BEFORE PPC OVERLAY. COST TO BE INCIDENTAL TO CLASS II SURFACE PREPARATION.

- SCARIFICATION, SHOTBLASTING AND POLYESTER POLYMER CONCRETE (PPC) OVERLAY
- CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR PPC OVERLAY
- CLASS III SURFACE PREPARATION AND HYDRO-DEMOLITION OF BRIDGE DECK
- SHOTBLASTING AND EPOXY OVERLAY

PROJECT NO. 15BPR.15
NEW HANOVER COUNTY

STATION: _____
 SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SURFACE PREPARATION AND PPC OVERLAY

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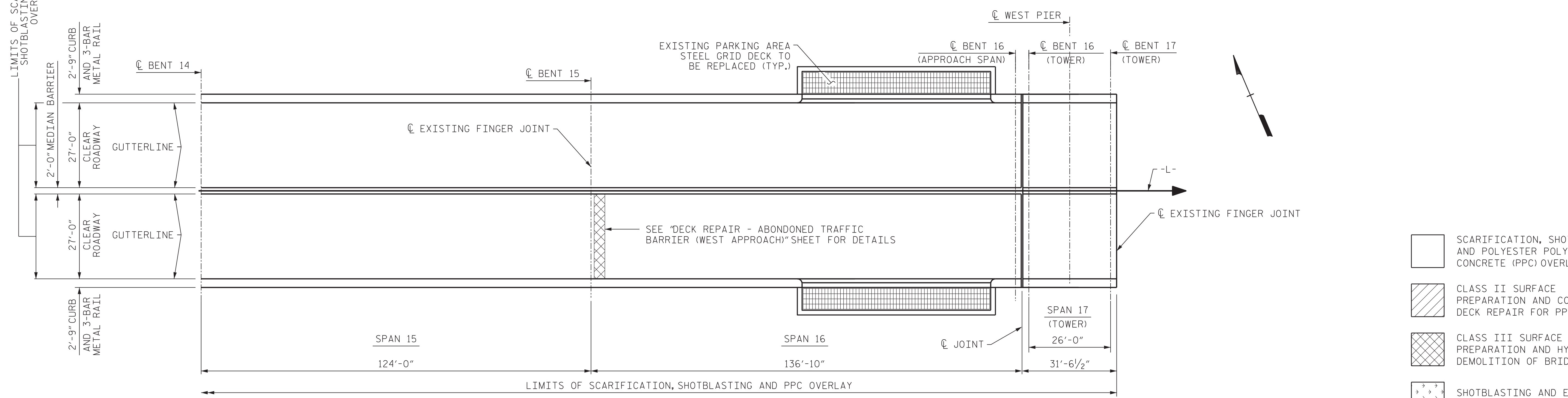
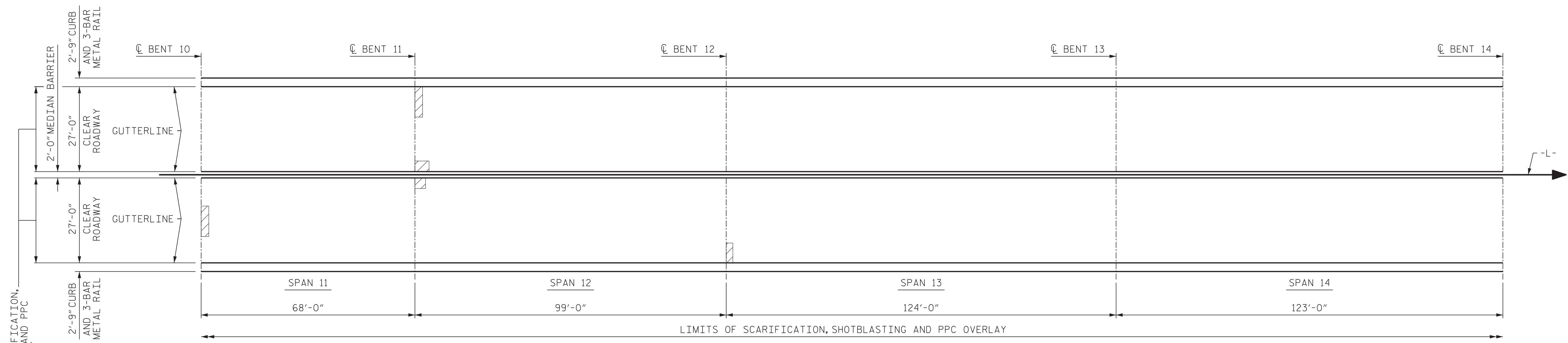
MODJESKI and MASTERS
 Experience great bridges.
 333 FAYETTEVILLE STREET, SUITE 505
 RALEIGH, NC 27601
 NC LICENSE NO. C-2979

Professional Engineer Seal for Jason R. Doughty, License No. 032967, dated 12/20/17.


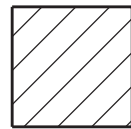
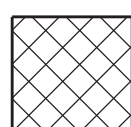
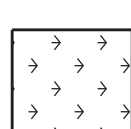
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PLAN OF SPANS

-  SCARIFICATION, SHOTBLASTING AND POLYESTER POLYMER CONCRETE (PPC) OVERLAY
-  CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR PPC OVERLAY
-  CLASS III SURFACE PREPARATION AND HYDRO-DEMOLITION OF BRIDGE DECK
-  SHOTBLASTING AND EPOXY OVERLAY

PROJECT NO. 15BPR.15
 NEW HANOVER COUNTY

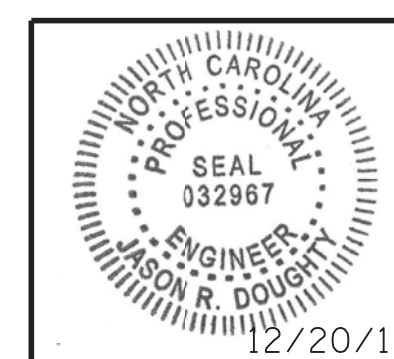
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 SHEET 2 OF 5

STATE OF NORTH CAROLINA
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SURFACE PREPARATION AND PPC OVERLAY



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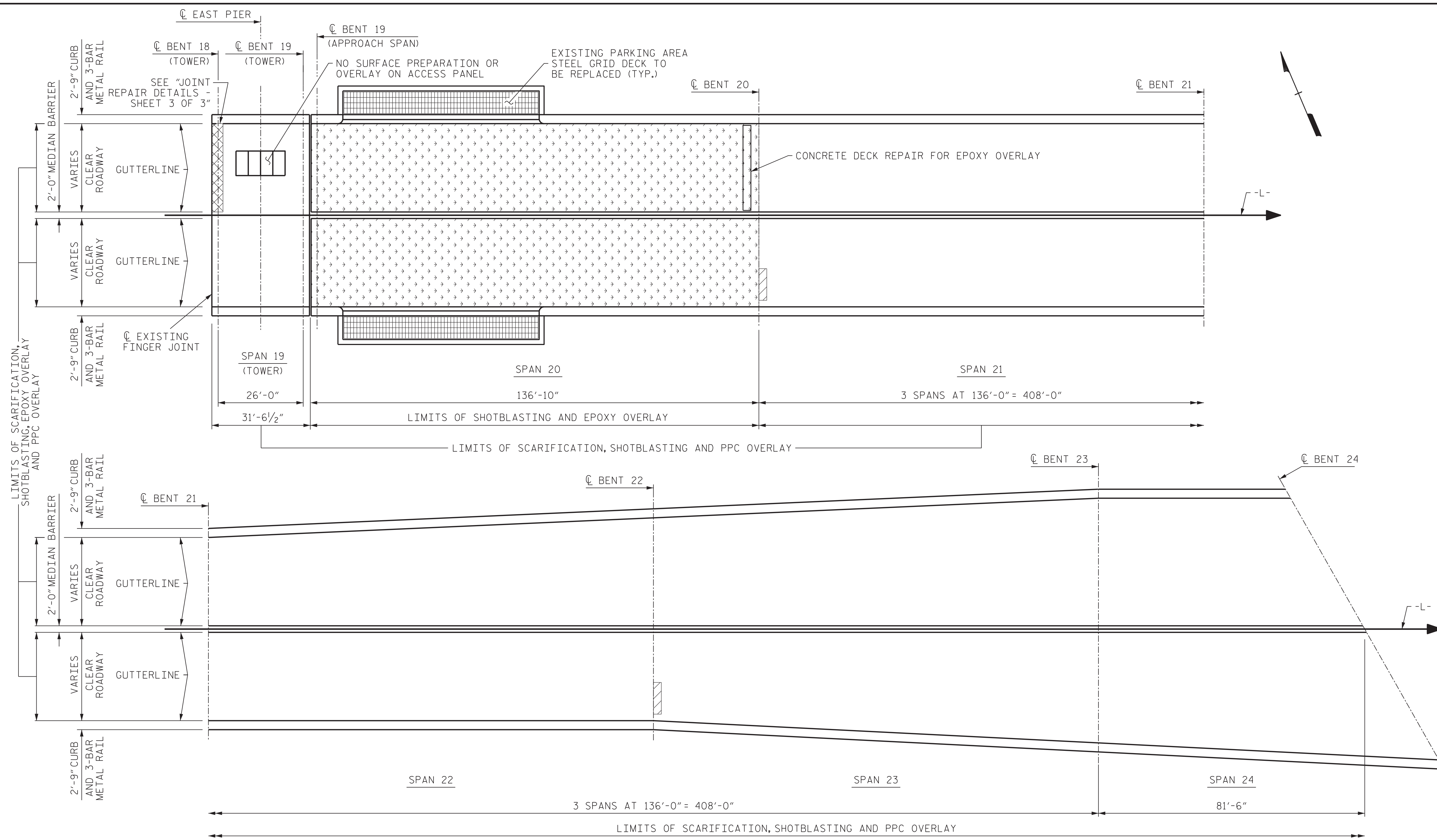
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PLAN OF SPANS

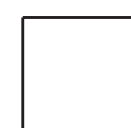
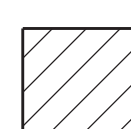
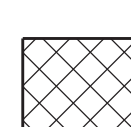
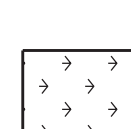
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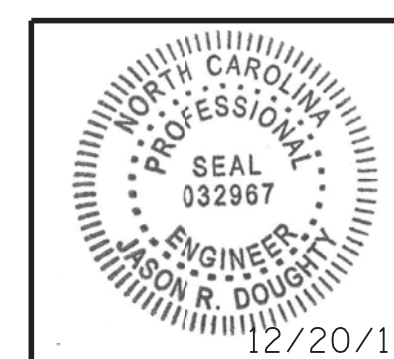
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SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SURFACE PREPARATION AND PPC OVERLAY

-  SCARIFICATION, SHOTBLASTING AND POLYESTER POLYMER CONCRETE (PPC) OVERLAY
-  CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR PPC OVERLAY
-  CLASS III SURFACE PREPARATION AND HYDRO-DEMOLITION OF BRIDGE DECK
-  SHOTBLASTING AND EPOXY OVERLAY



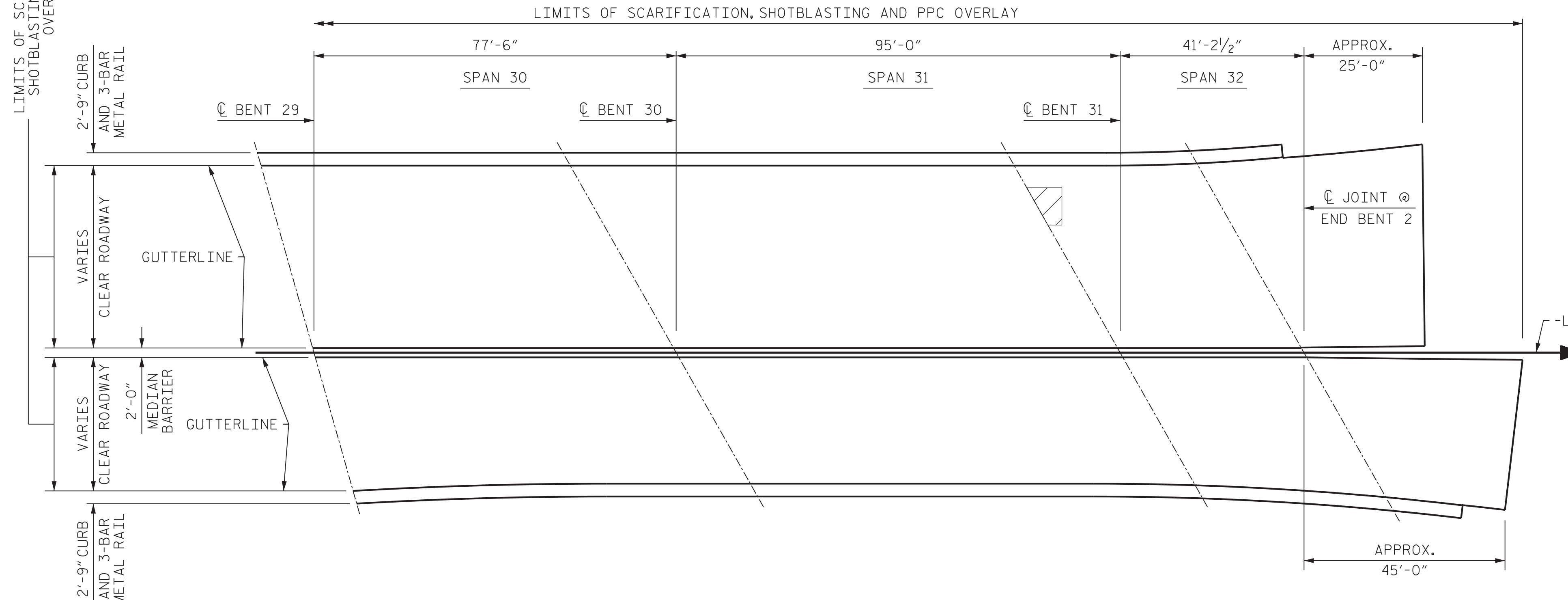
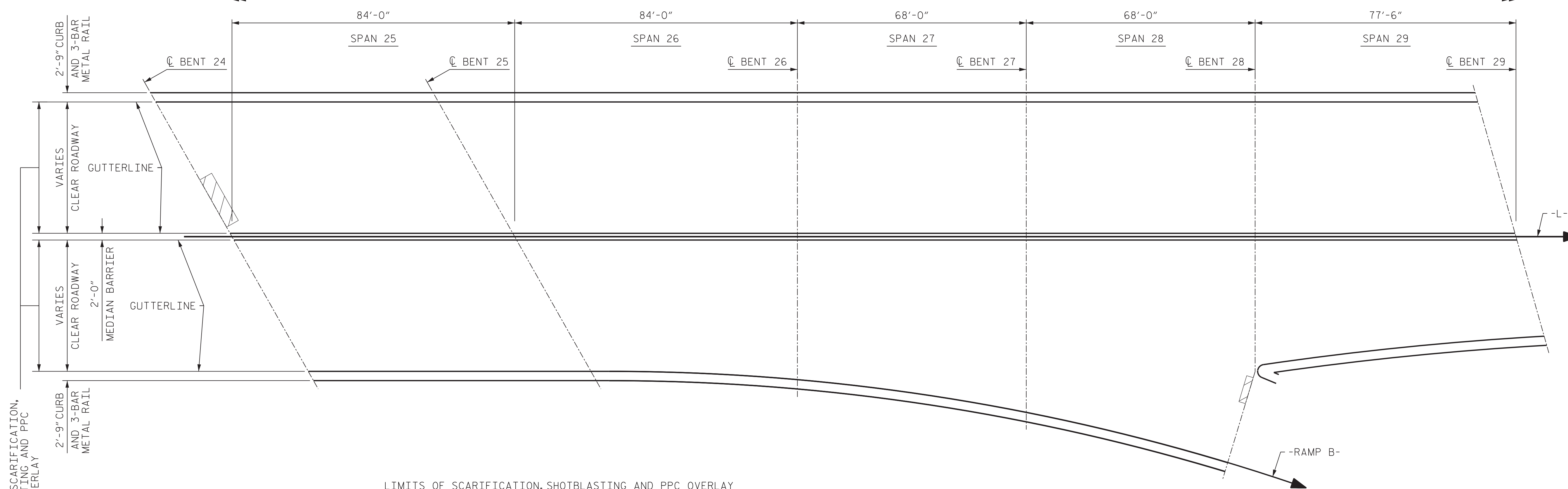
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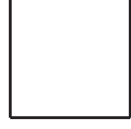
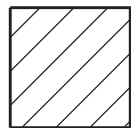
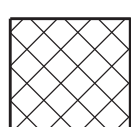
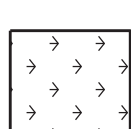
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LIMITS OF SCARIFICATION, SHOTBLASTING AND PPC OVERLAY



PLAN OF SPANS

-  SCARIFICATION, SHOTBLASTING AND POLYESTER POLYMER CONCRETE (PPC) OVERLAY
-  CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR FOR PPC OVERLAY
-  CLASS III SURFACE PREPARATION AND HYDRO-DEMOLITION OF BRIDGE DECK
-  SHOTBLASTING AND EPOXY OVERLAY

PROJECT NO. 15BPR.15
NEW HANOVER COUNTY

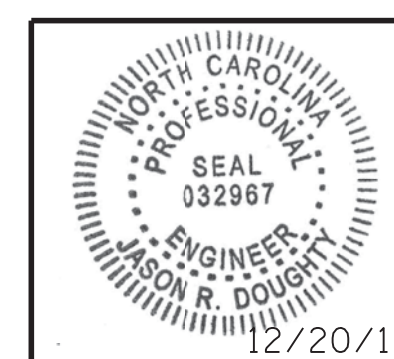
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 SHEET 4 OF 5

STATE OF NORTH CAROLINA
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 RALEIGH

**SURFACE PREPARATION
 AND PPC OVERLAY**



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 NC LICENSE NO. C-2979



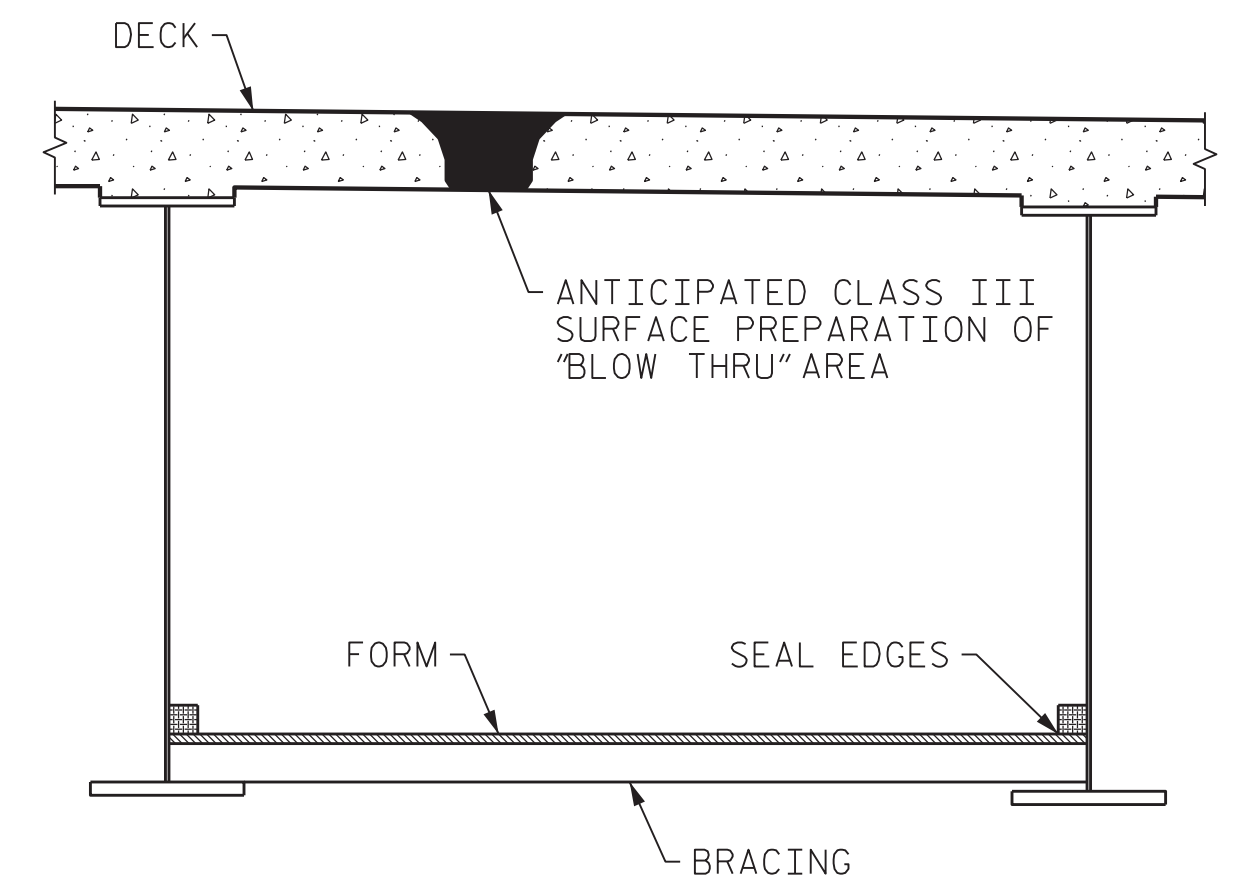
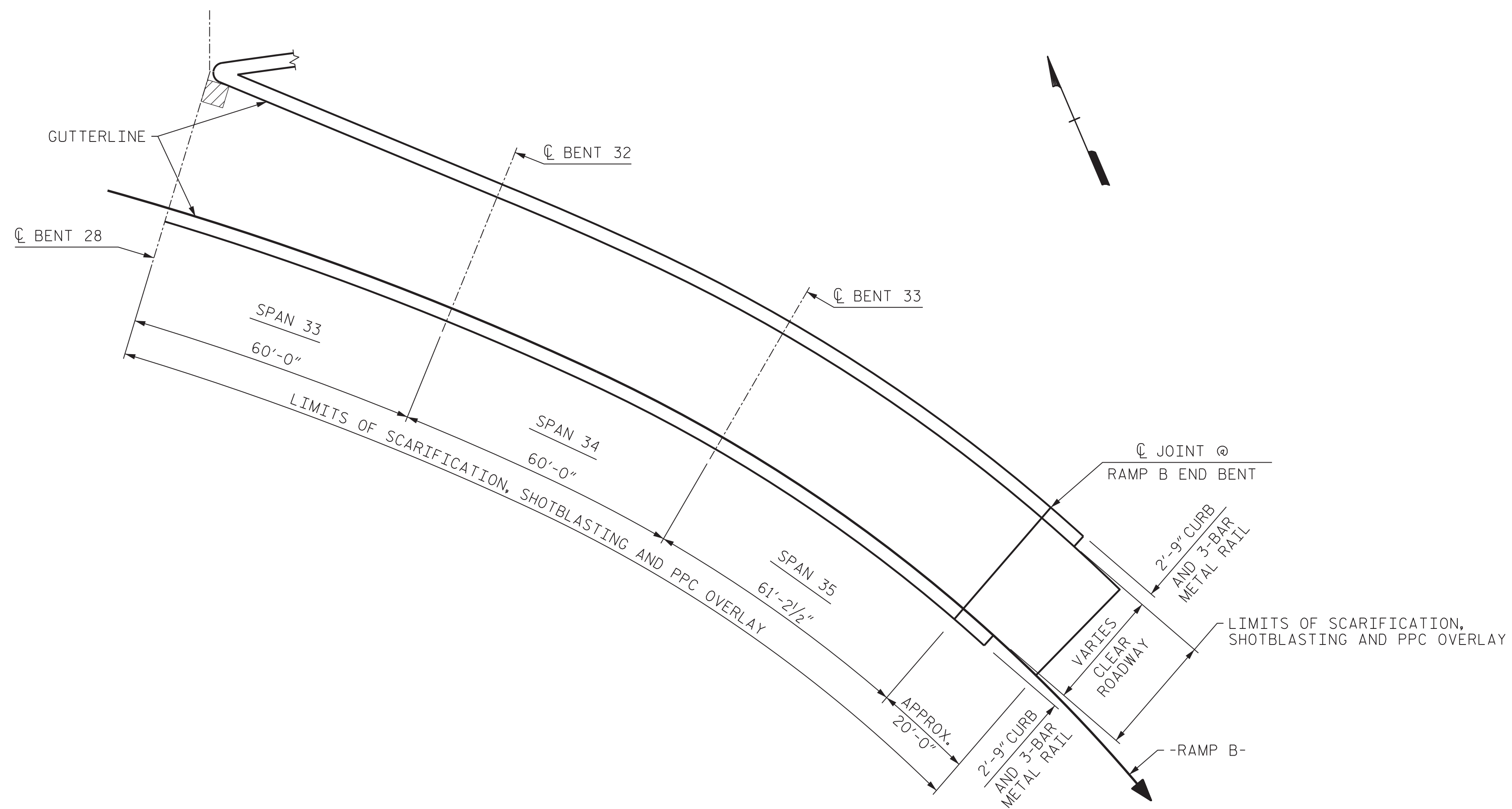
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Jason R Doughty
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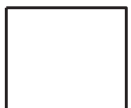
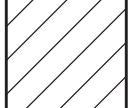

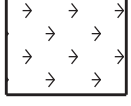


TYPICAL "BLOW THRU" CONTAINMENT AND FORMWORK

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

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 DECK REPAIR FOR PPC OVERLAY
-  CLASS III SURFACE PREPARATION AND HYDRO-DEMOLITION OF BRIDGE DECK
-  SHOTBLASTING AND EPOXY OVERLAY

PROJECT NO. 15BPR.15
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SHEET 5 OF 5

STATE OF NORTH CAROLINA
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SURFACE PREPARATION AND PPC OVERLAY



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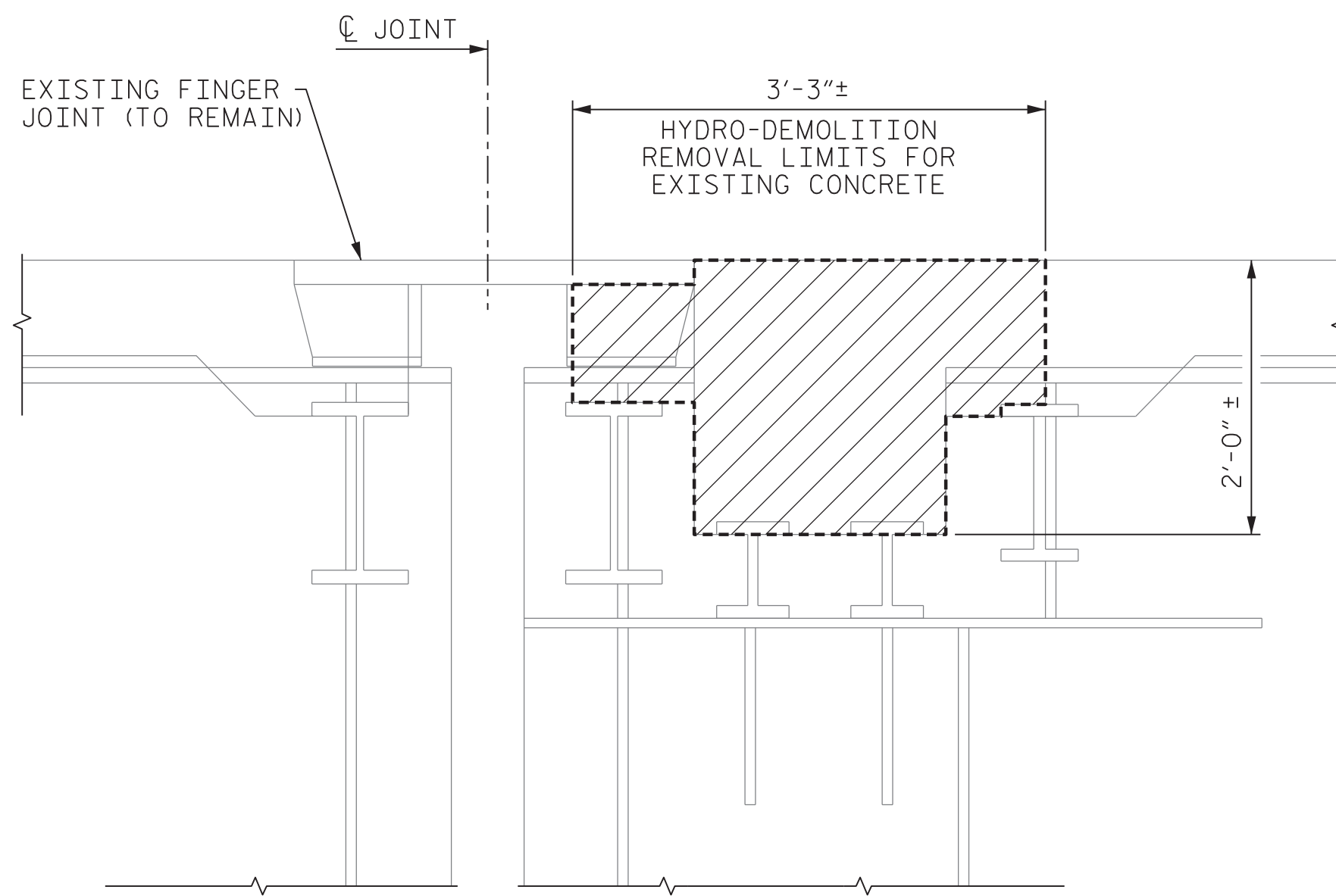
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 Jason R Doughty
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2			4			

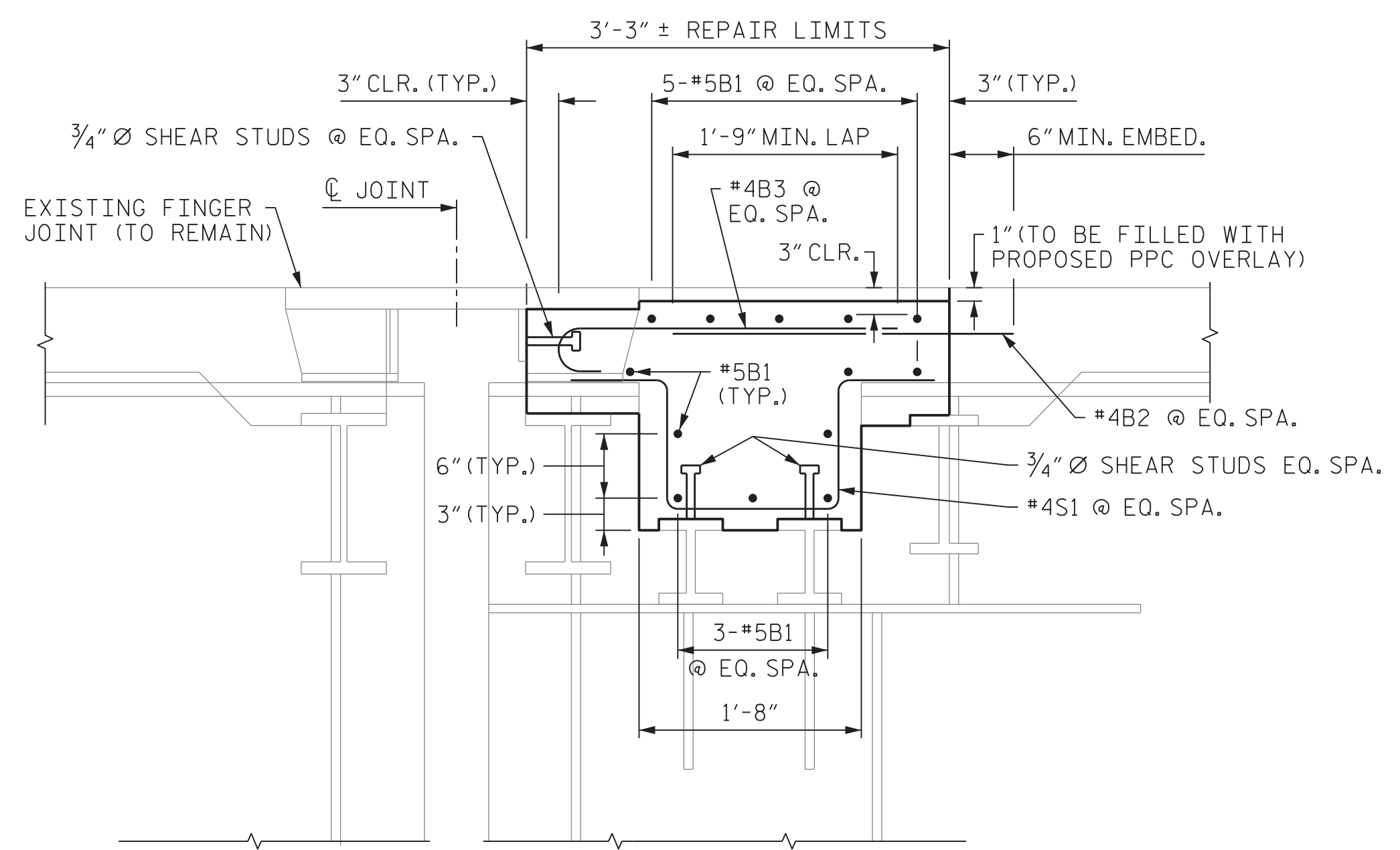
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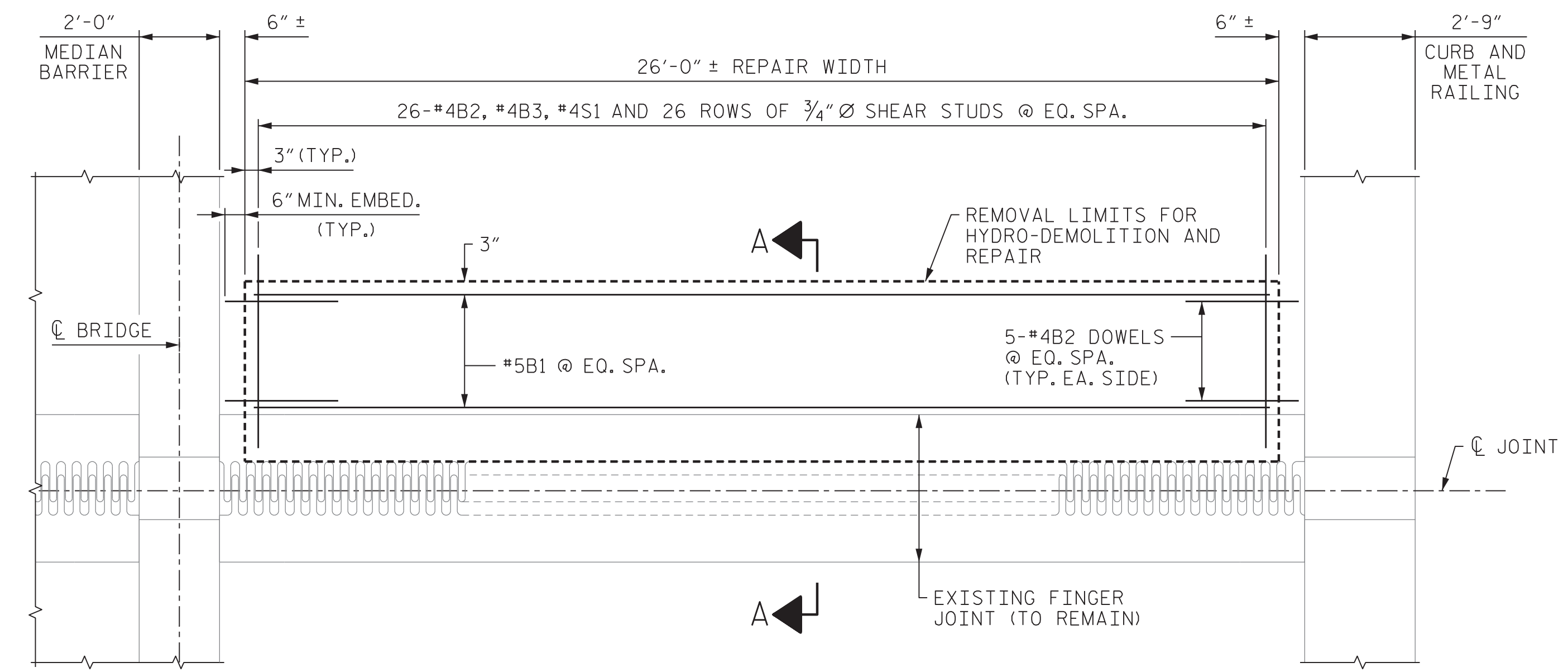
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SECTION A-A
EXISTING REPAIR

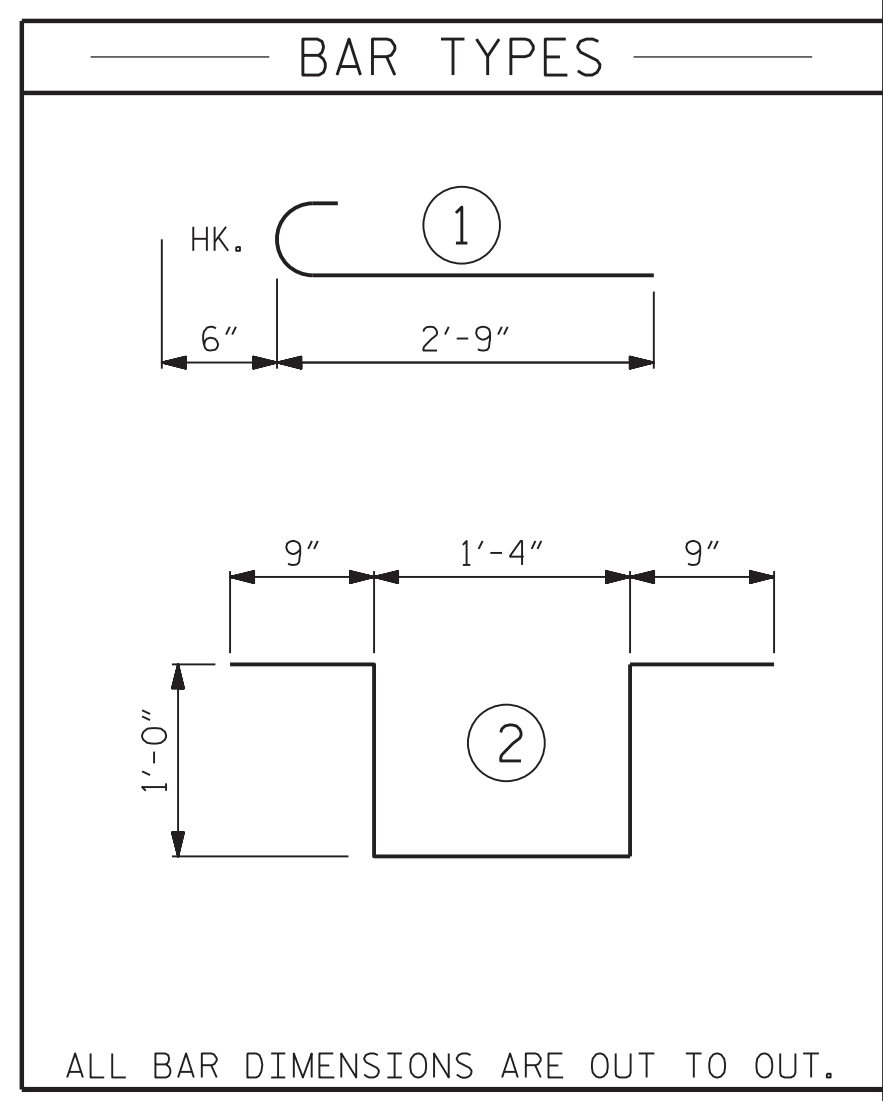


SECTION A-A
PROPOSED REPAIR



PLAN OF TRAFFIC BARRIER REPAIR LOCATION

BILL OF MATERIAL					
WEST APPROACH					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	13	#5	STR	25'-6"	346
B2	36	#4	STR	2'-9"	66
B3	26	#4	1	3'-3"	56
S1	26	#4	2	4'-10"	84
EPOXY-COATED REINFORCING STEEL					552 LBS.
CLASS AA CONCRETE					4 C.Y.
78-3/4" Ø x 5" SHEAR STUDS					50 LBS.



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.

PROJECT NO. 15BPR.15
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 STATION: _____

STATE OF NORTH CAROLINA
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 RALEIGH

**DECK REPAIR
 ABANDONED TRAFFIC
 BARRIER
 (WEST APPROACH)**

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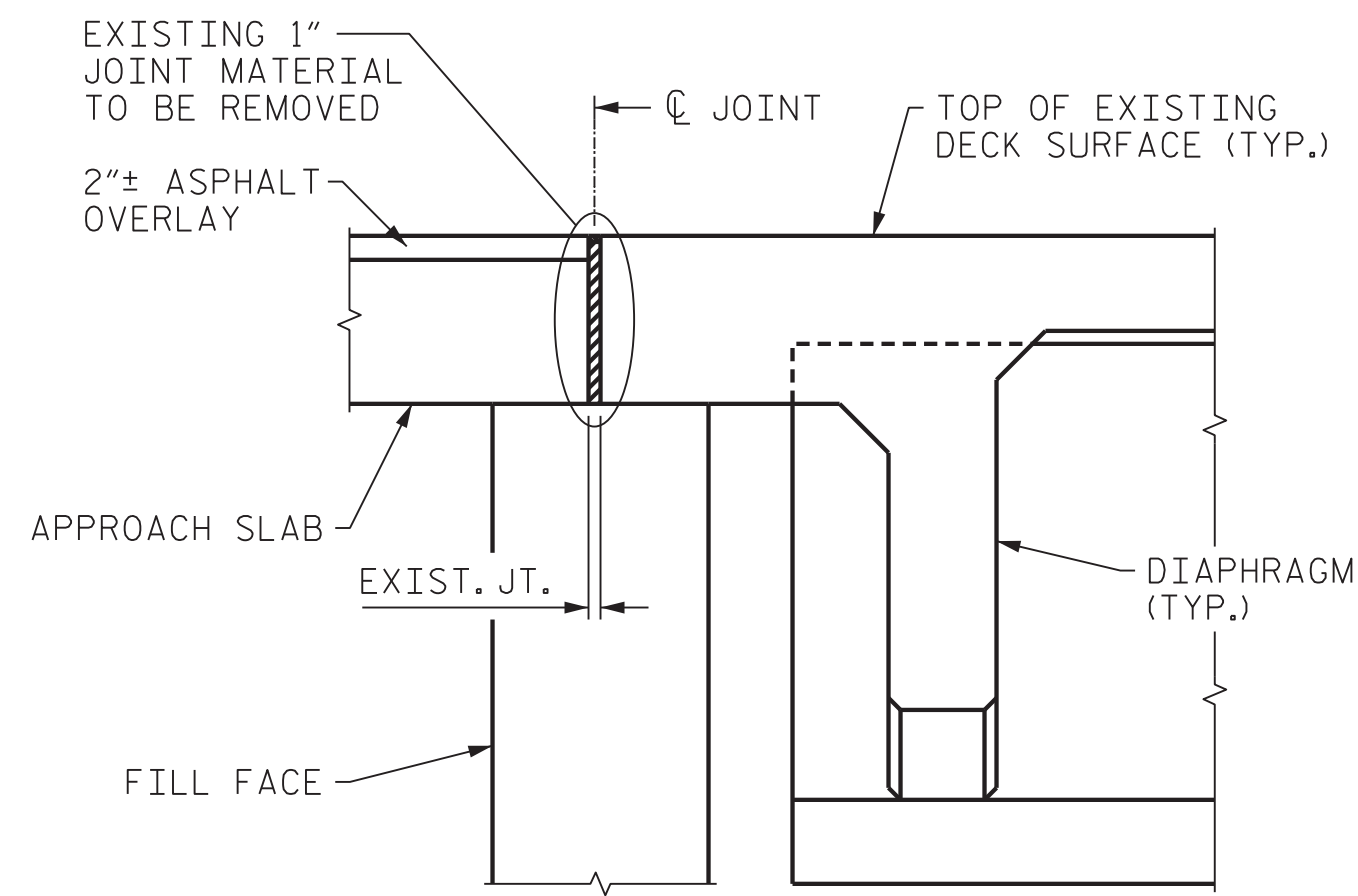
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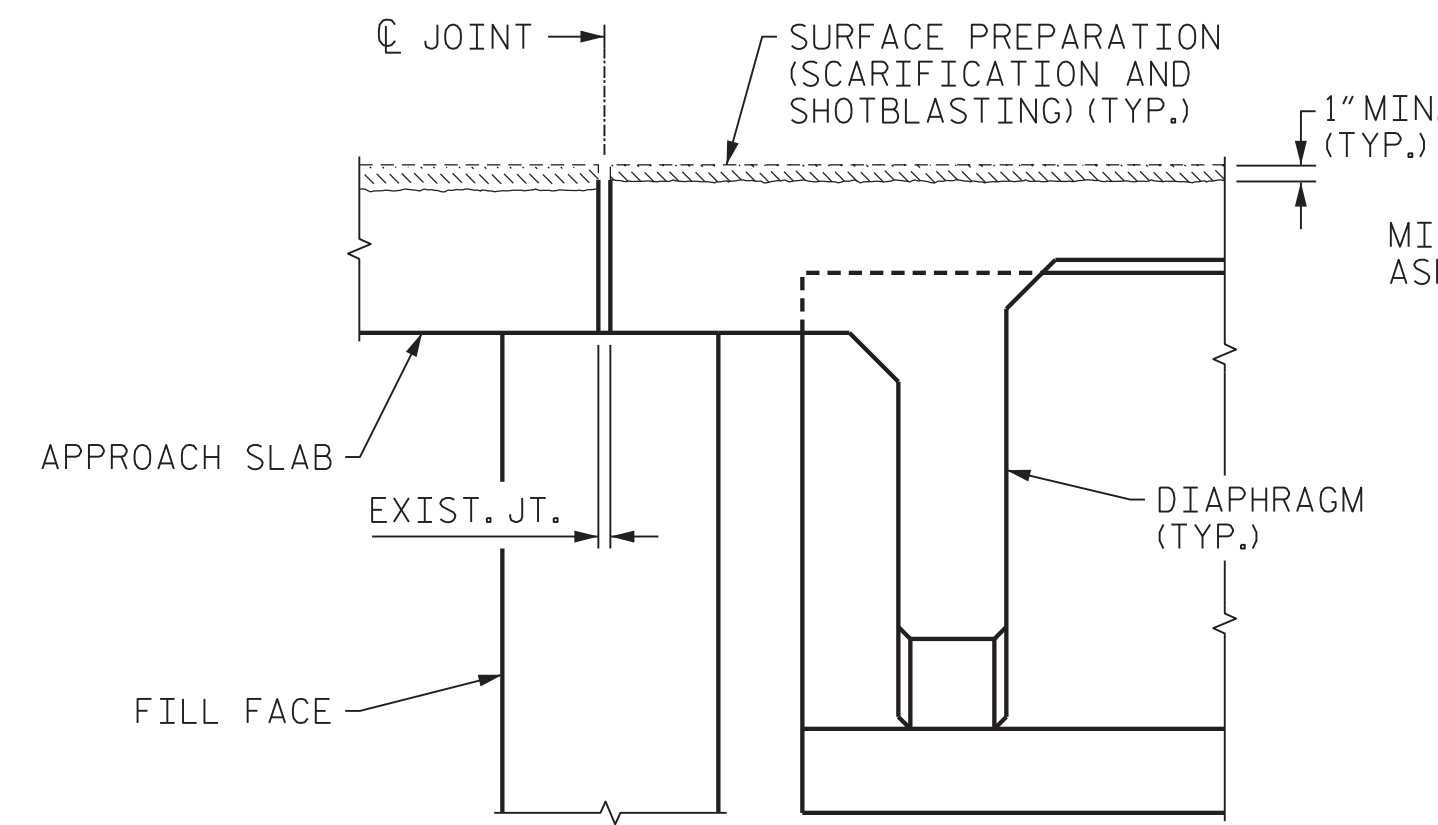
NOTES:

THE INSTALLED FOAM JOINT SEAL SHALL BE WATER TIGHT.

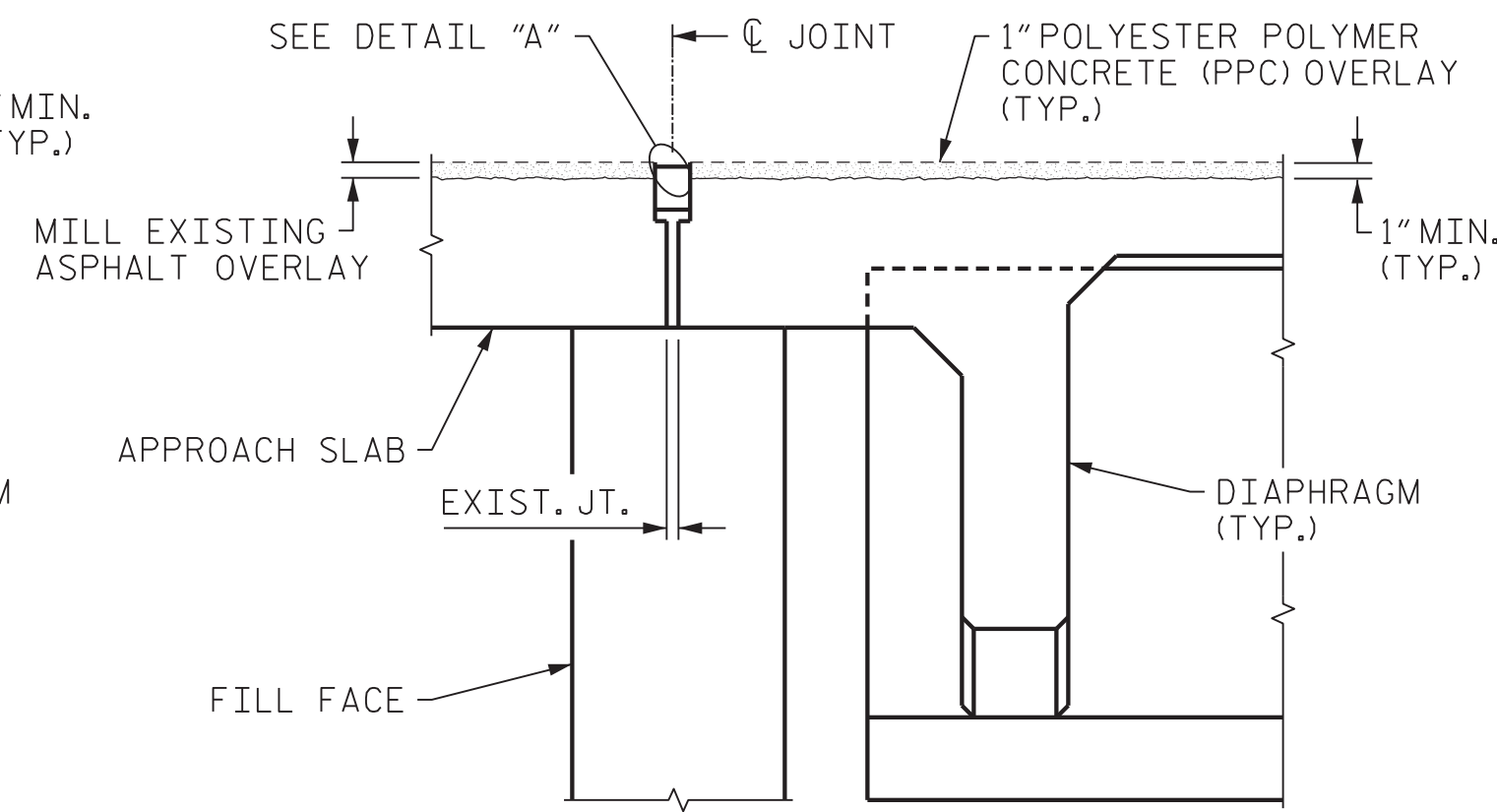
IF CONCRETE REPAIRS ARE REQUIRED AT THE JOINT, THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINT FOR THE FOAM JOINT SEAL IN LIEU OF SAWING THE JOINT.



EXISTING JOINT

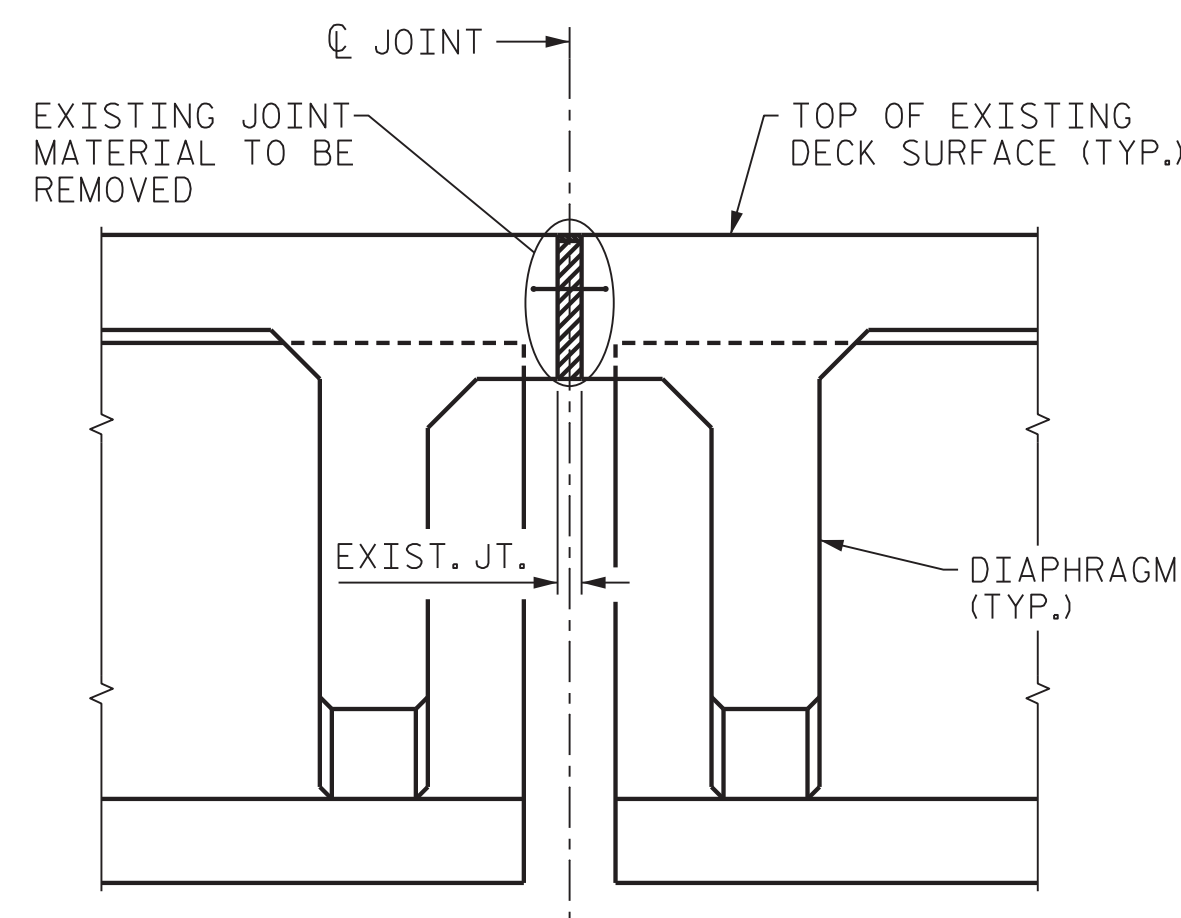


MINIMUM EXISTING JOINT DEMOLITION

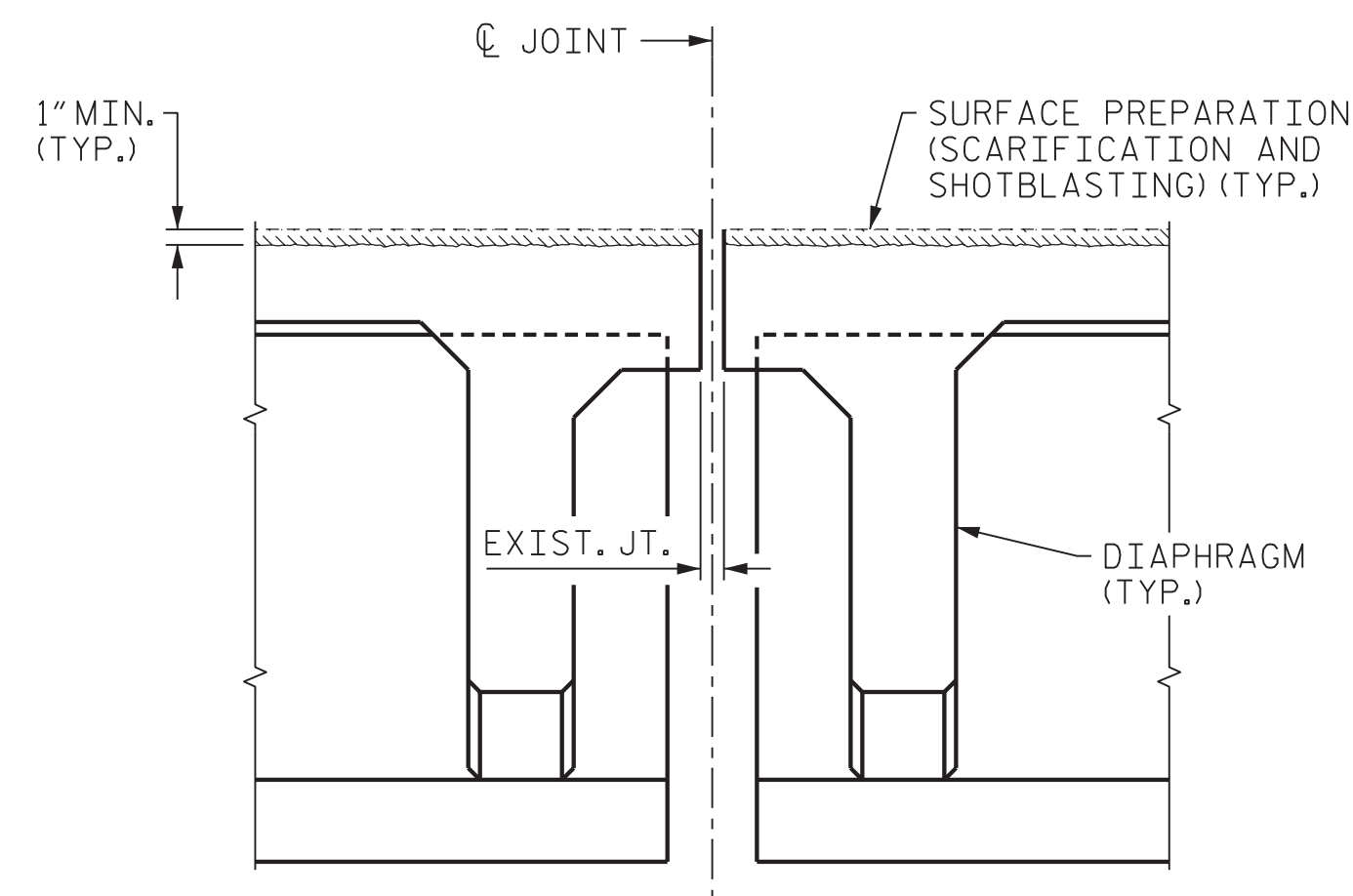


PROPOSED JOINT

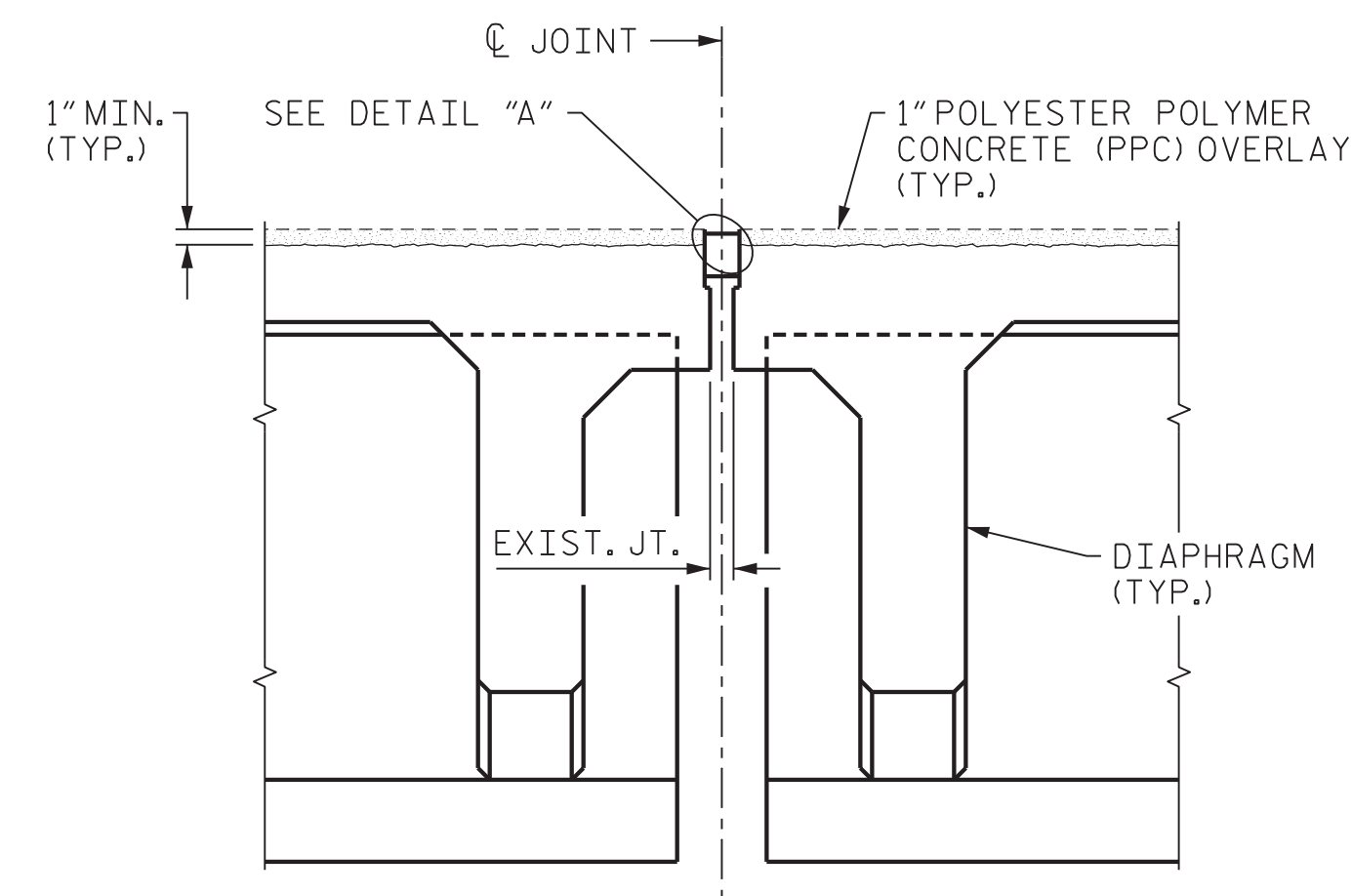
JOINT INSTALLATION SEQUENCE AT END BENTS



EXISTING JOINT



MINIMUM EXISTING JOINT DEMOLITION



PROPOSED JOINT

JOINT INSTALLATION SEQUENCE AT BENTS WITHOUT DECK REPAIRS

CONCRETE GIRDER LOCATION SHOWN, STEEL GIRDER LOCATION SIMILAR

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NEW HANOVER COUNTY

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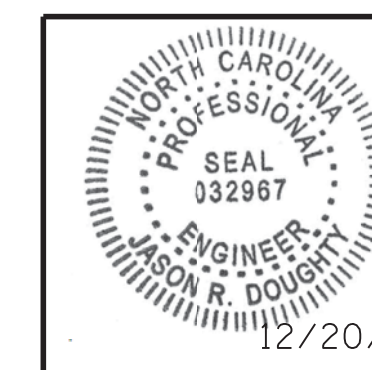
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STATE OF NORTH CAROLINA
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JOINT REPAIR DETAILS



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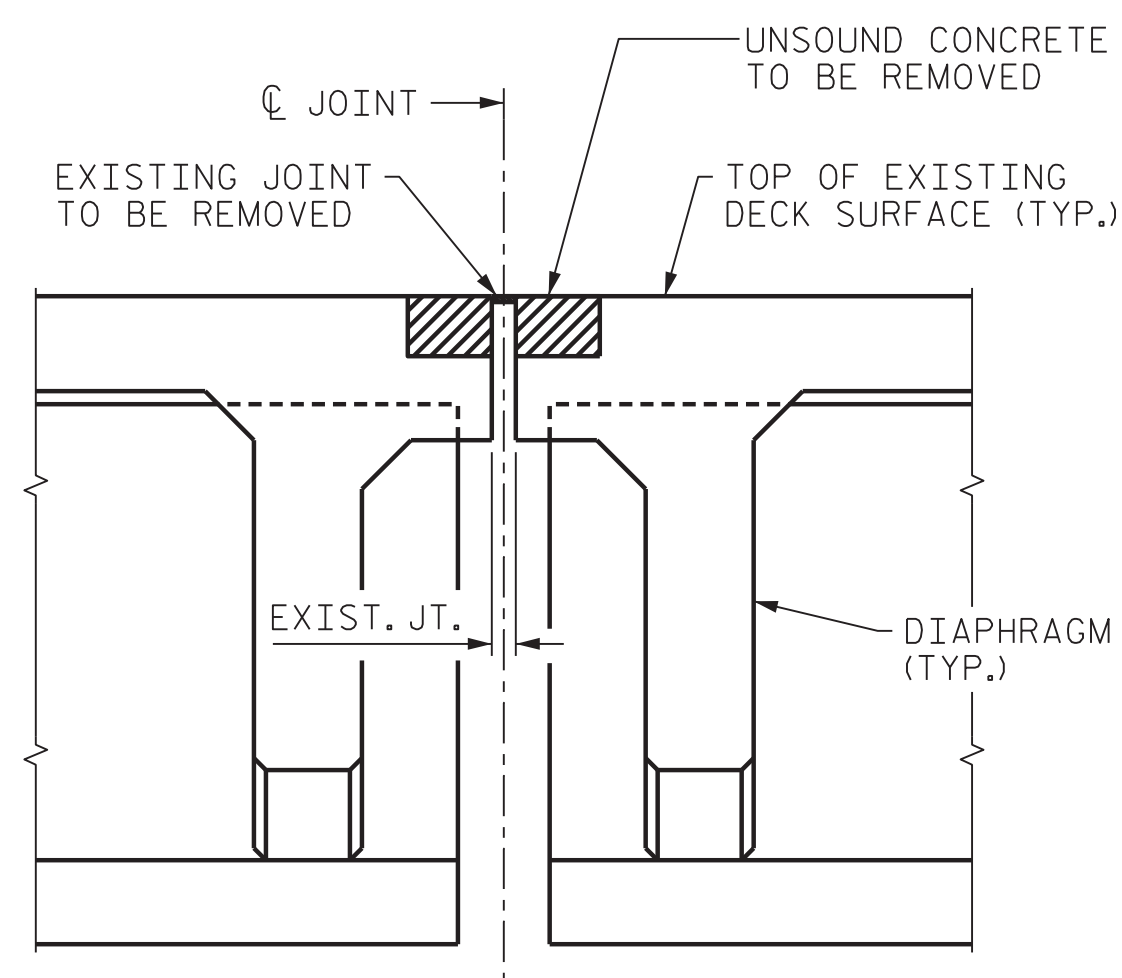
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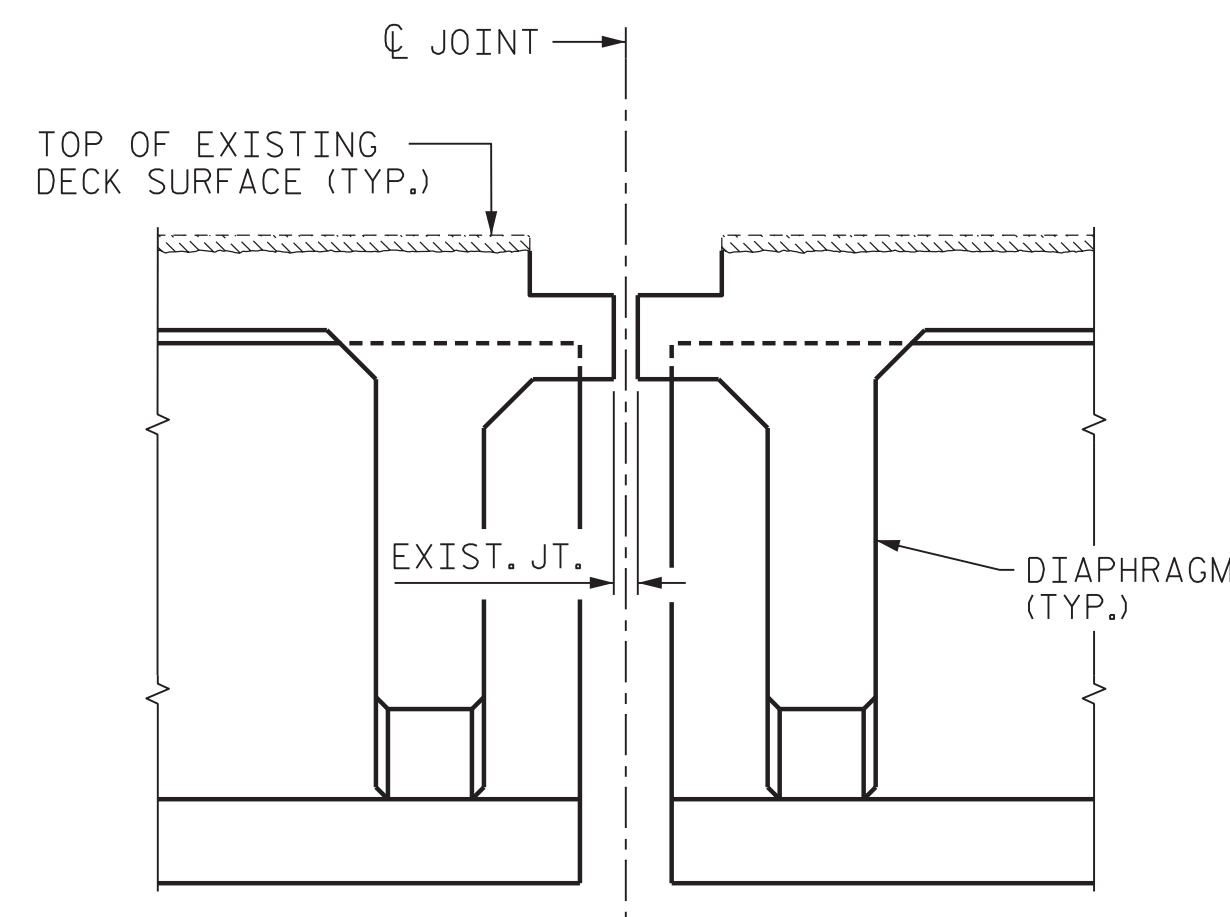
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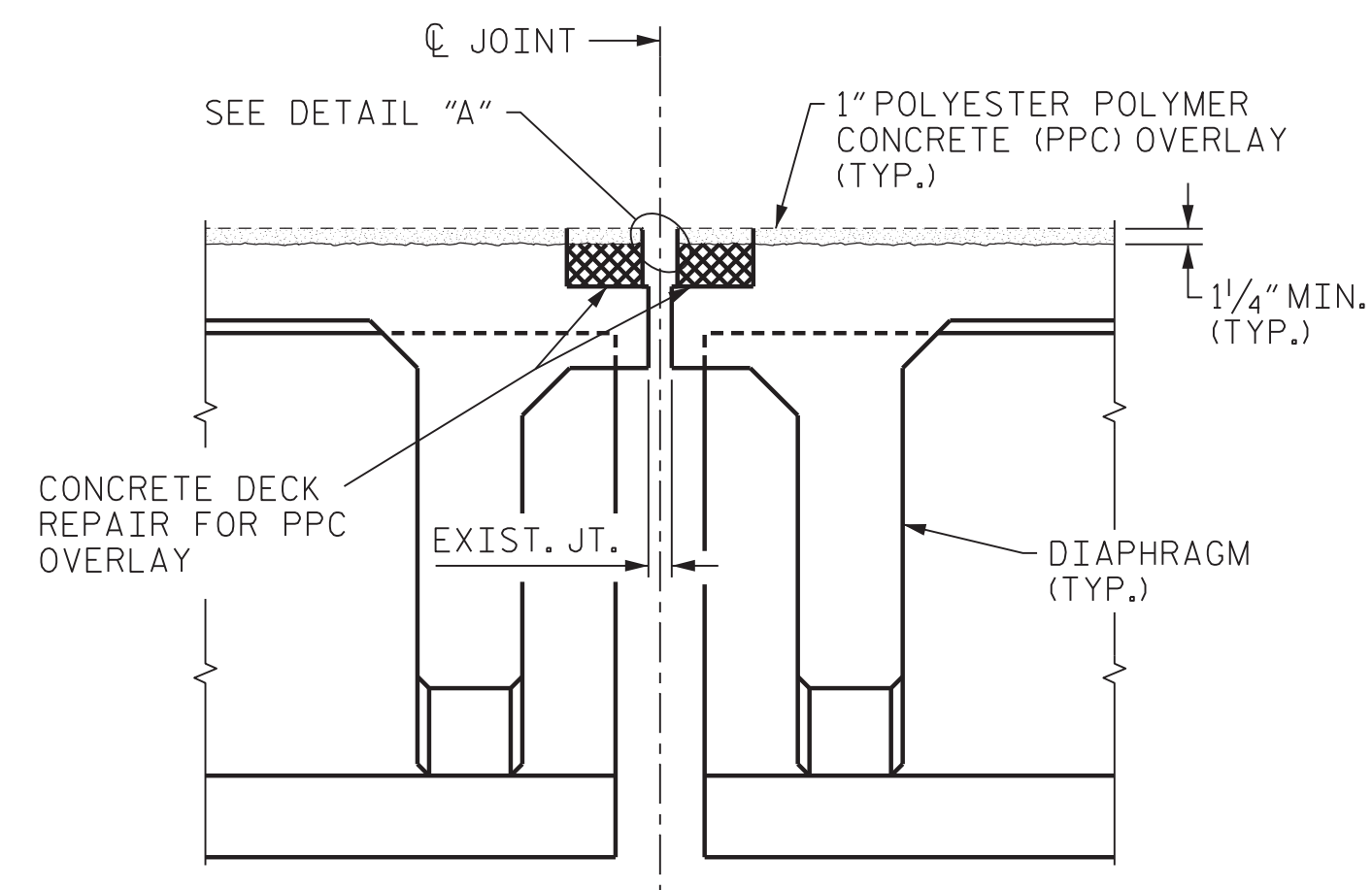
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EXISTING JOINT



EXISTING JOINT AND DECK DEMOLITION



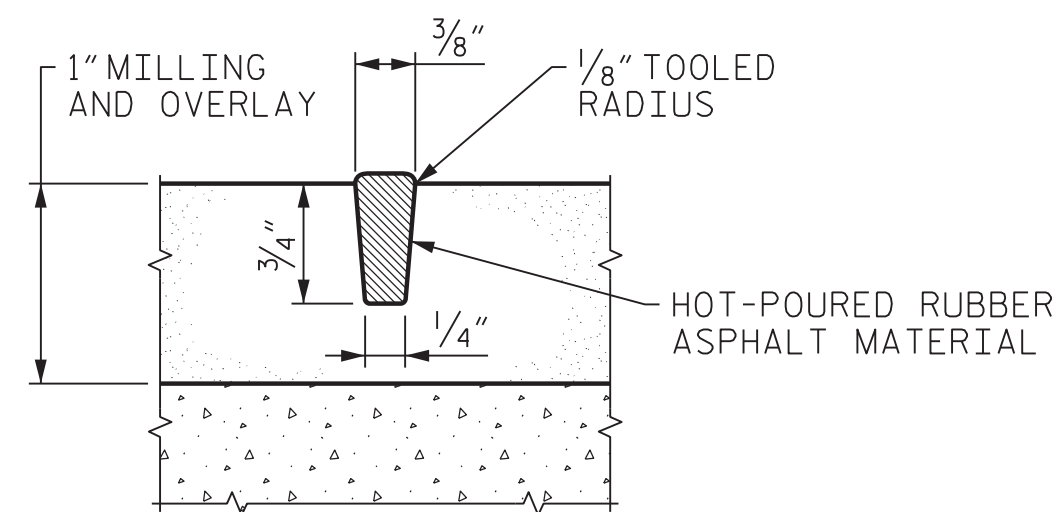
PROPOSED JOINT

JOINT INSTALLATION SEQUENCE AT JOINT LOCATIONS WITH DECK REPAIRS

CONCRETE GIRDER LOCATION SHOWN, STEEL GIRDER LOCATION SIMILAR

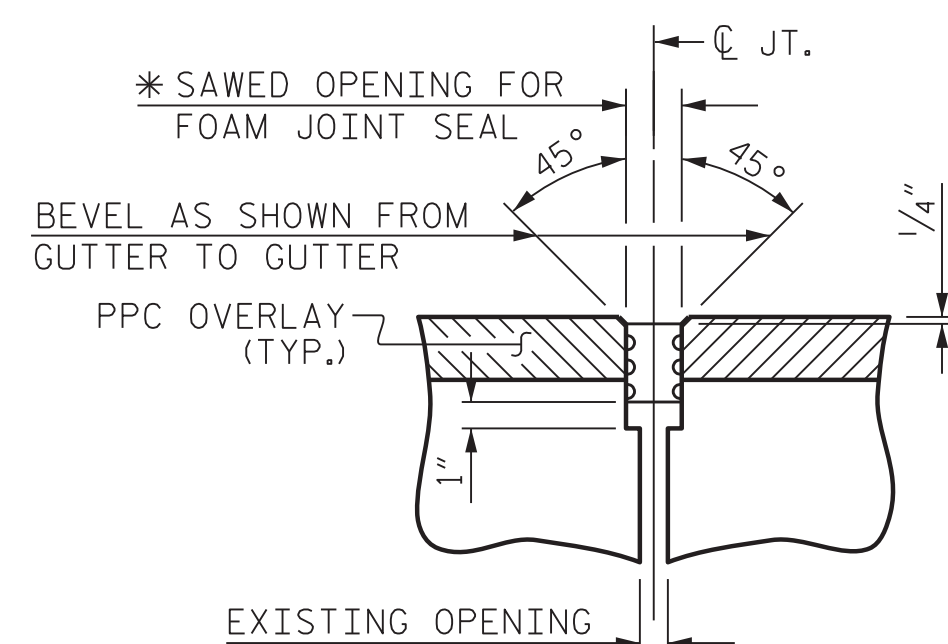
BENT NO.	SAWED JOINT OPENING @ 70°F [IN]	UNCOMPRESSED SEAL WIDTH [IN]
EB1, 2-11, 16, 19, 22-33, EB2, RAMP B EB	1.75	2.25
1, 12, 20, 21	2.5	3

SAWED JOINT OPENINGS



TYPICAL JOINT 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

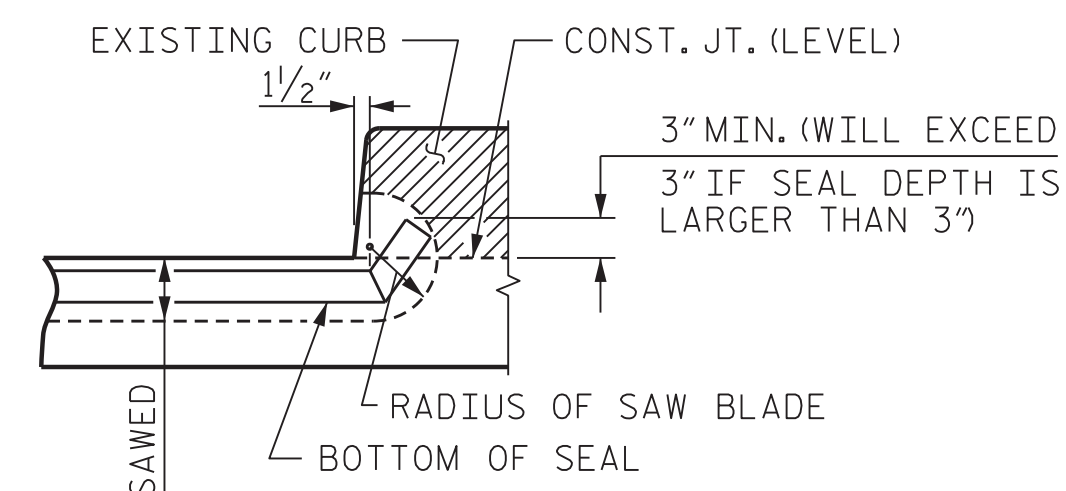


DETAIL A

* SAWED OPENING SHALL BE THE GREATER OF THE OPENING SHOWN IN THE TABLE OR THE EXISTING JOINT OPENING PLUS 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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NEW HANOVER COUNTY
STATION: _____

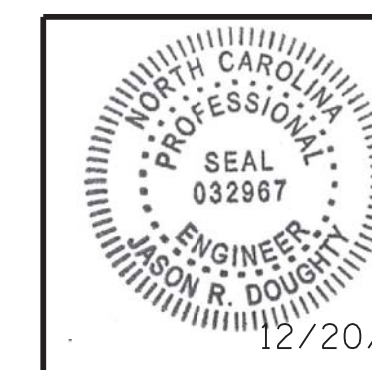
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT REPAIR DETAILS



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



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DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: DEC. 2017

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 3/4" AT THE OUTSIDE CURB AND 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) 3/4" Ø 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.

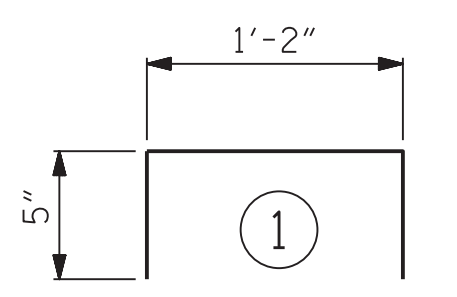
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#5	STR	26'-6"	55
S1	41	#4	1	2'-0"	55

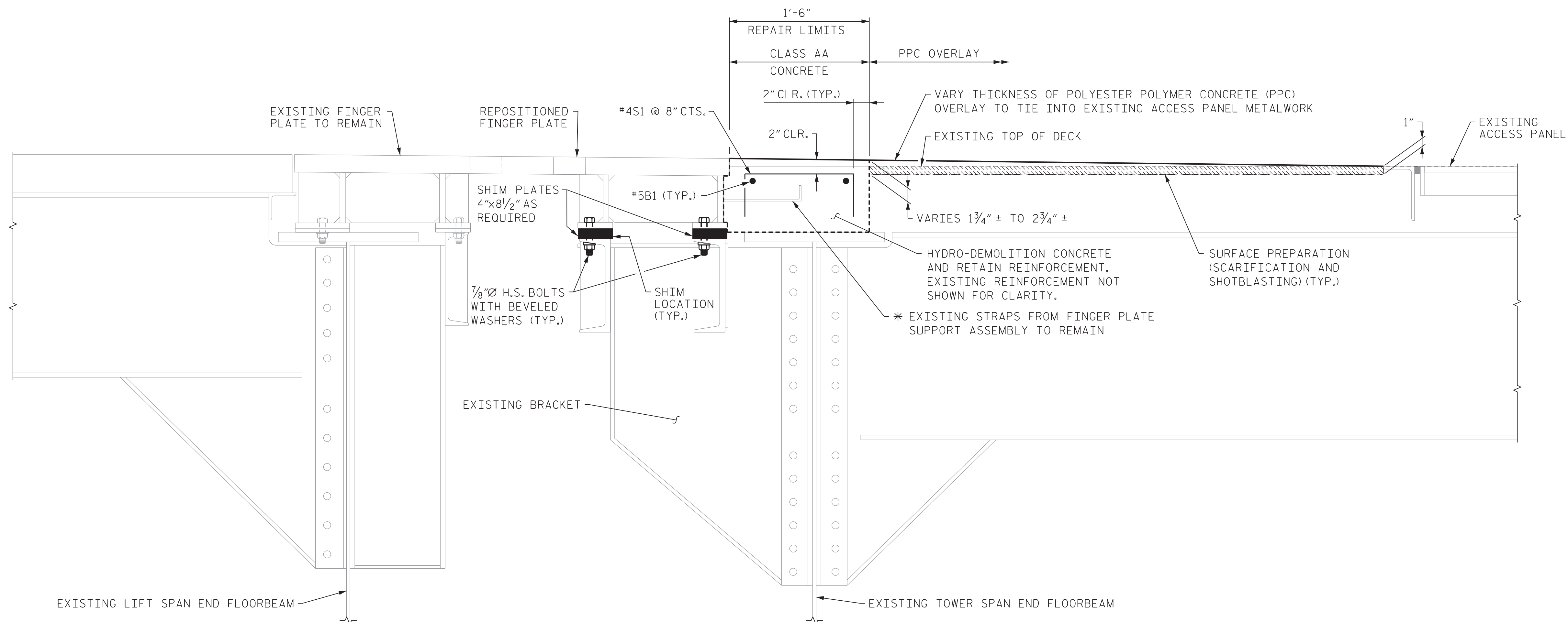
EPOXY-COATED REINFORCING STEEL	110 LBS.
CLASS AA CONCRETE	1.3 C.Y.

CLASS III SURFACE PREPARATION	4.5 S.Y.
HYDRO-DEMOLITION	4.5 S.Y.
STRUCTURAL STEEL FOR REPAIRS	350 LBS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



SECTION THROUGH FINGER JOINT AT EAST TOWER

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NEW HANOVER COUNTY

STATION: _____

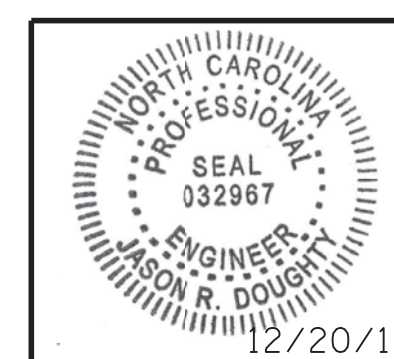
SHEET 3 OF 3

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JOINT REPAIR DETAILS



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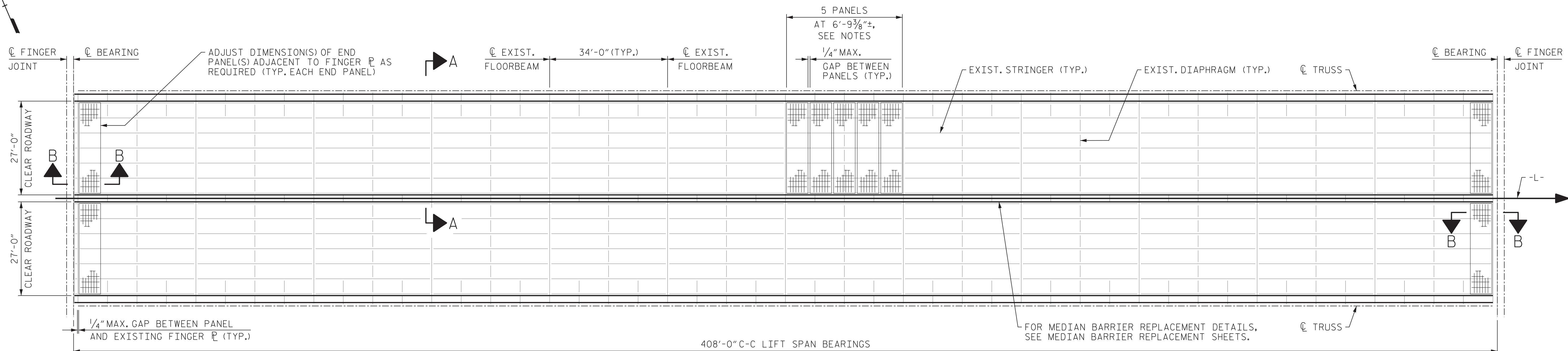
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CHECKED BY:	J. DOUGHTY	DATE:	DEC 2017
DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE:	DEC 2017

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PLAN - LIFT SPAN GRID DECK

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'-0" 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.

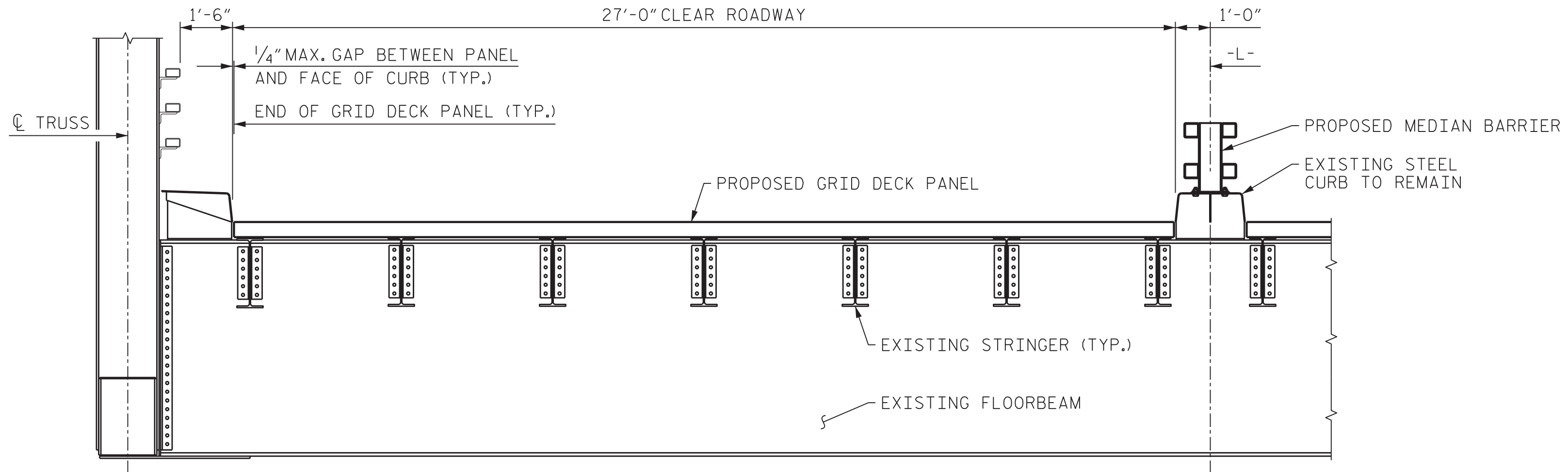
CONTRACTOR SHALL SUBMIT A PANEL REMOVAL AND REPLACEMENT SEQUENCE TO THE ENGINEER FOR REVIEW PRIOR TO IMPLEMENTING THE TOTAL BRIDGE CLOSURE.

- 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.

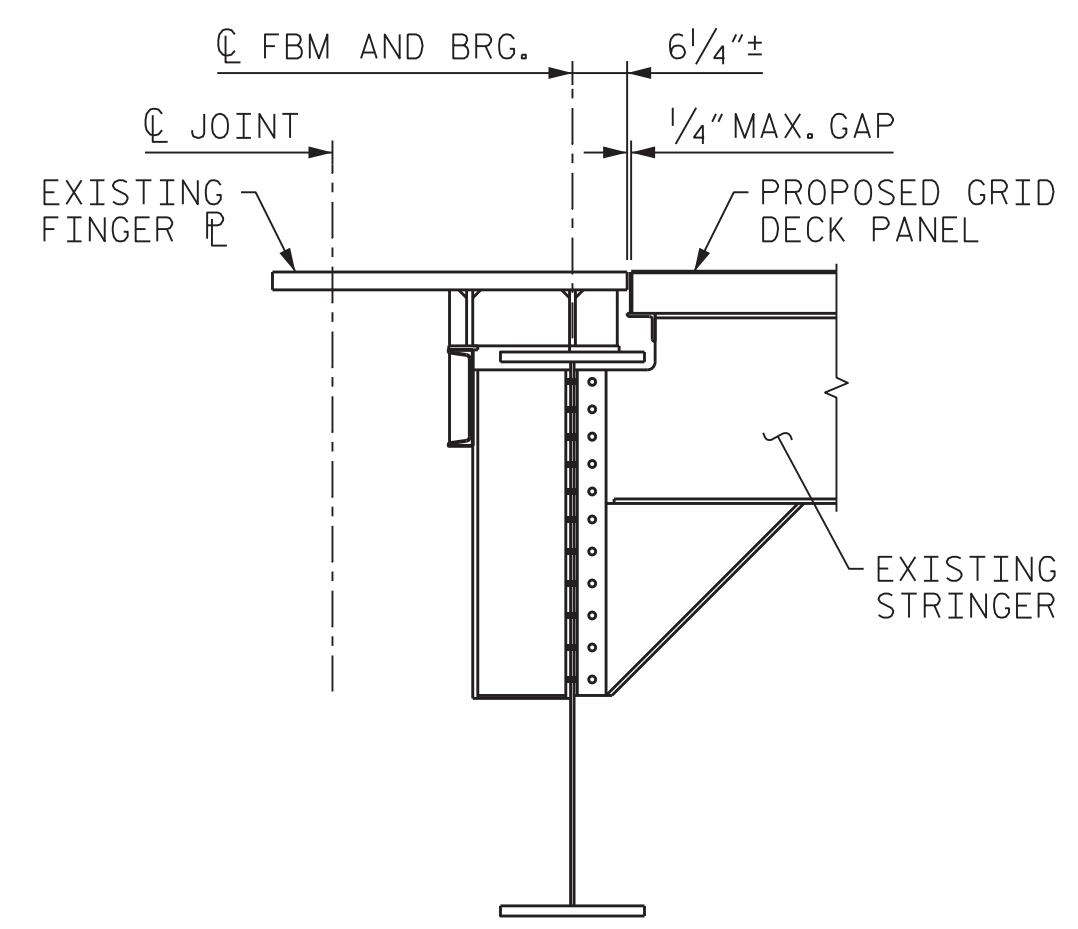
ONCE ALL NEW GRID DECK PANELS ARE SET IN PLACE ON ENTIRE SPAN WITH MINIMAL WELDS OR CLAMPS, MAKE FINAL ADJUSTMENTS BEFORE COMMENCING FINAL WELDING TO STRINGERS.

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.



SECTION A-A



SECTION B-B

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 RALEIGH

GRID DECK REPLACEMENT



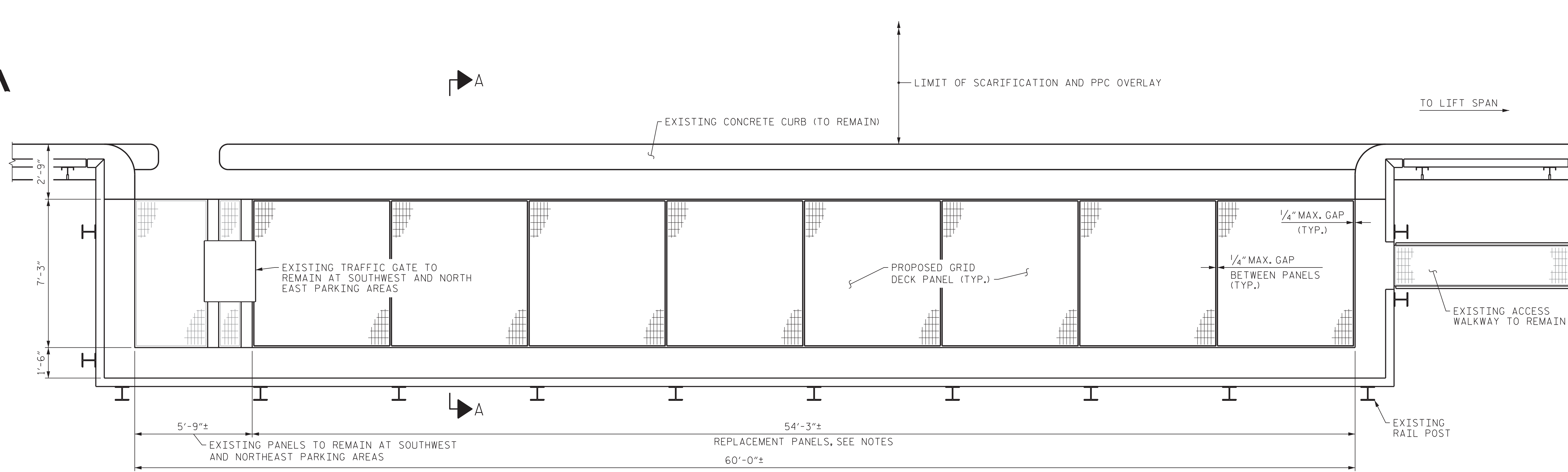
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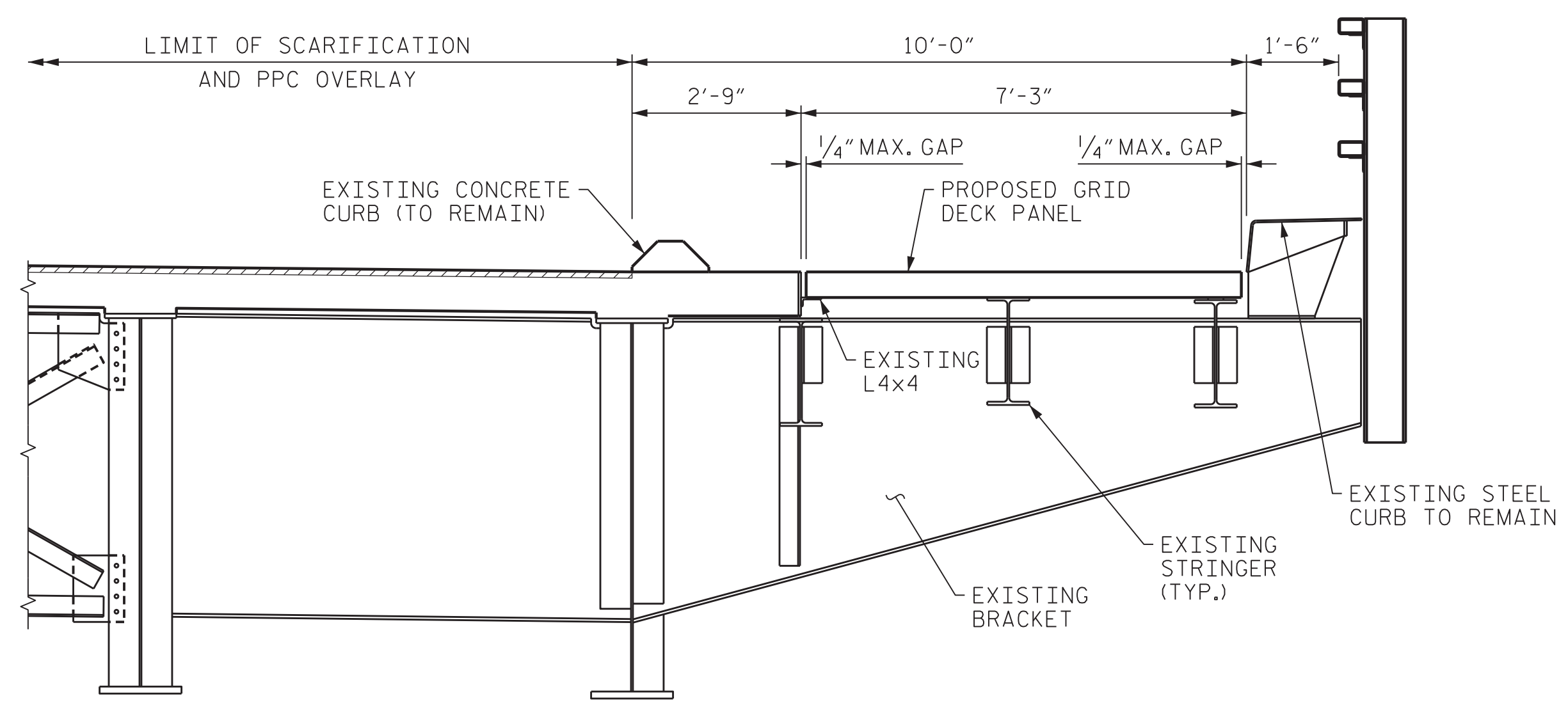
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PLAN - PARKING AREA

SOUTHWEST PARKING AREA SHOWN, NORTHEAST PARKING AREA SIMILAR



SECTION A-A

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.

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NEW HANOVER COUNTY

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SHEET 2 OF 3

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GRID DECK REPLACEMENT



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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 (1/4" x 2 1/2") TO BE A.S.T.M. A588
 DIAGONAL BARS (1/4" x 1") TO BE A.S.T.M. A588
 SUPPLEMENTAL BARS (1/4" x 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.

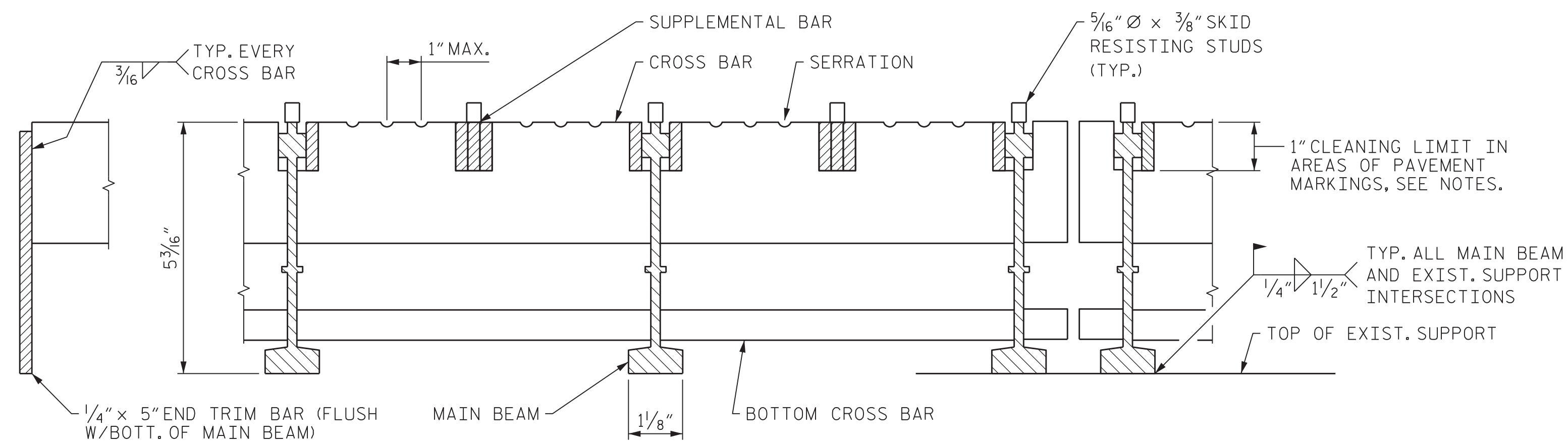
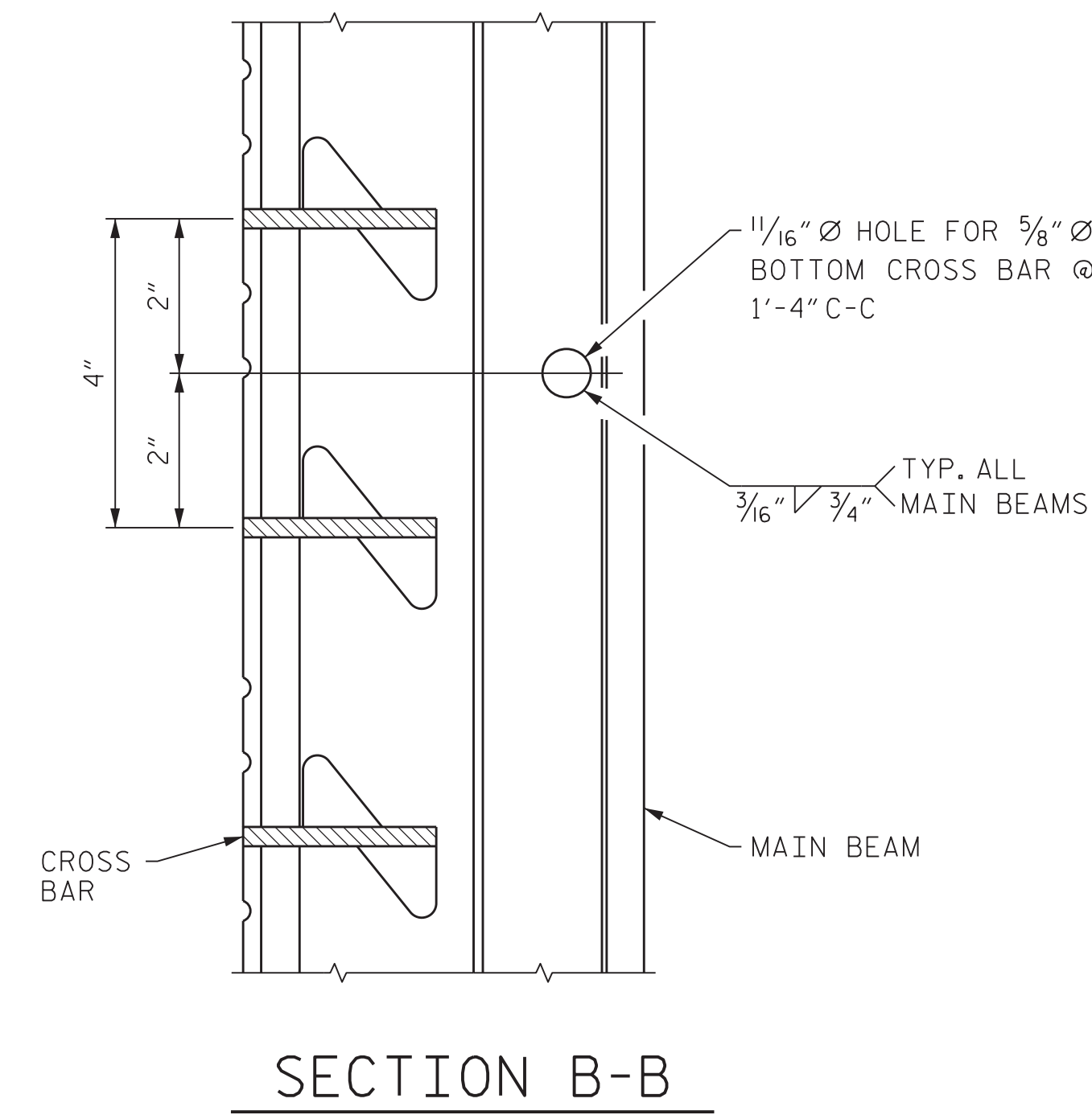
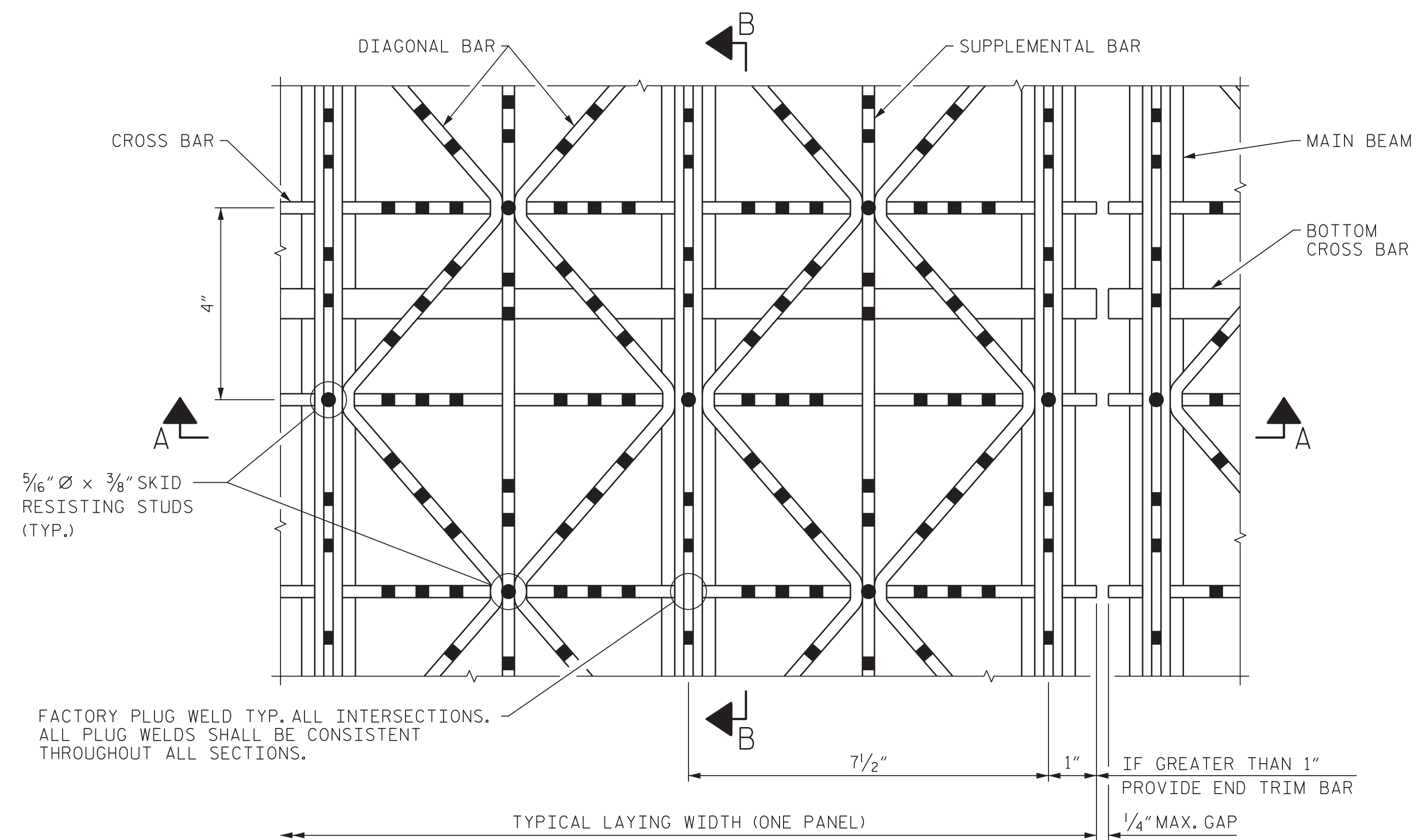
ALL MATERIAL SUBJECT TO MILL/SHOP TOLERANCES.

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

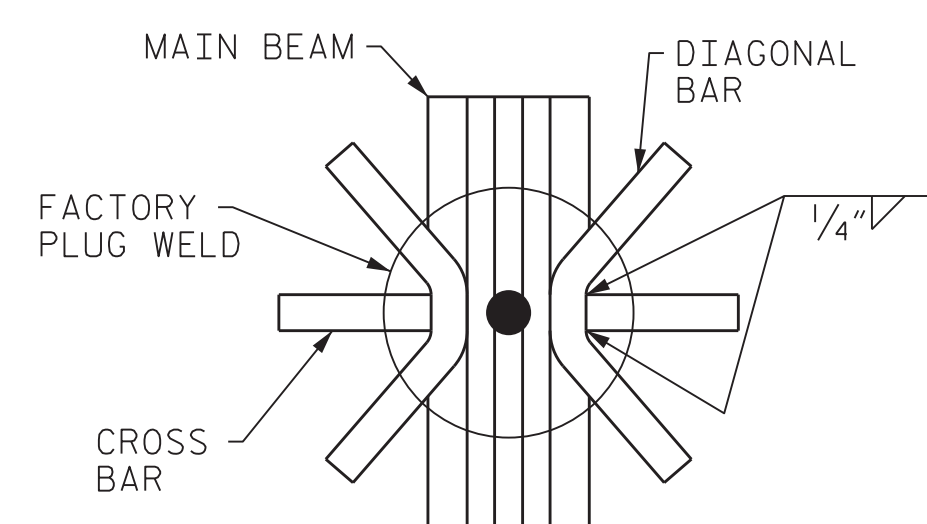
PROVIDE END TRIM BAR AT ALL MAIN BEAM ENDS.

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.

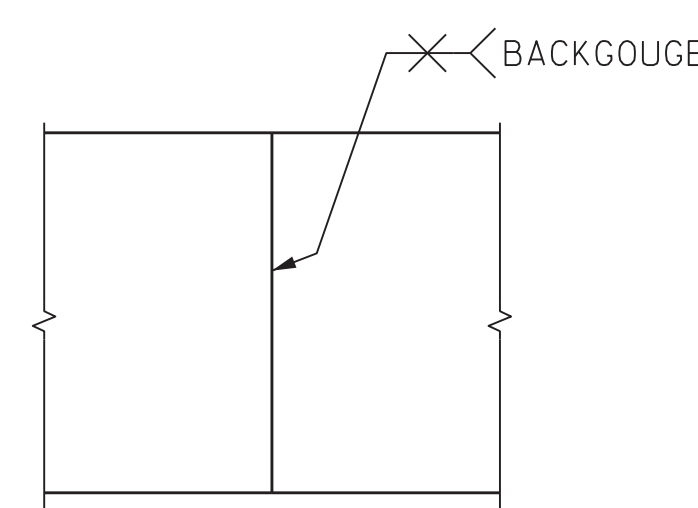


SECTION A-A



TYP. DIAG. BAR SPLICE

(WHERE REQ'D.)



TYP. SHOP TRIM SPLICE

(WHERE REQ'D.)

GRID DECK PROPERTIES		
SECTION MODULUS * (IN ³ / FT)		APPROX. GRID WEIGHT (LBS / SF) **
TOP STEEL	BOTTOM STEEL	18.5
4.038	4.321	

* 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: _____

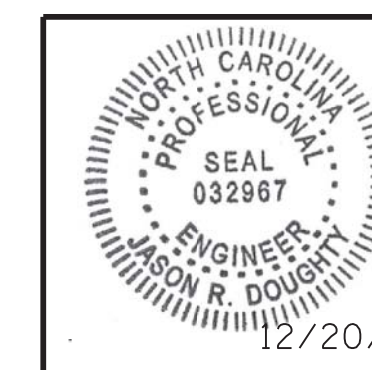
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GRID DECK REPLACEMENT



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



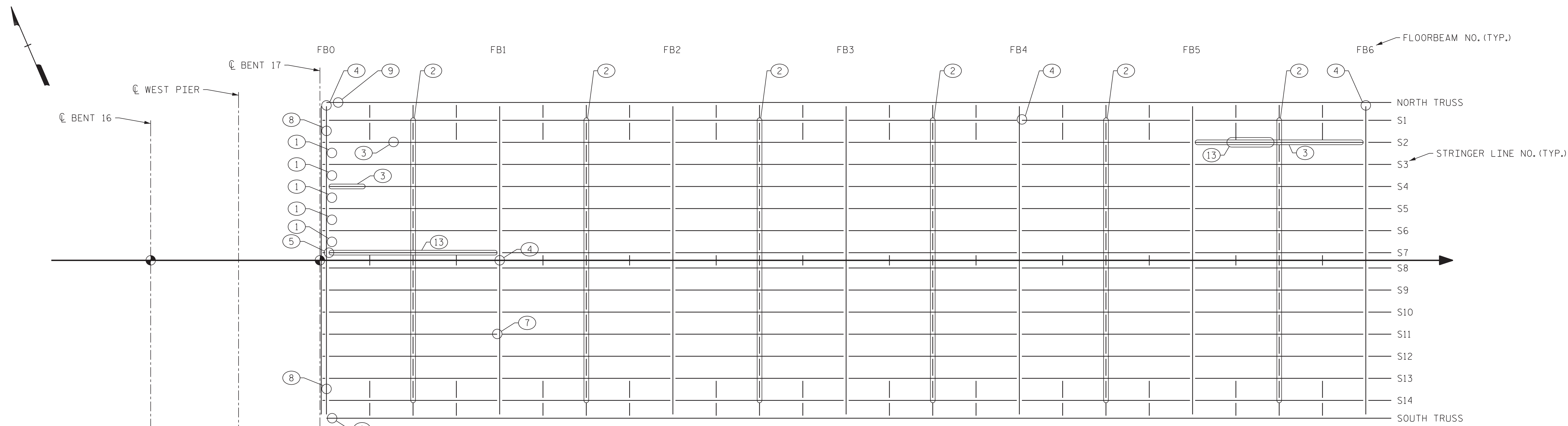
DocuSigned by:
 Jason R Doughty
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1			3			5-23
2			4			66

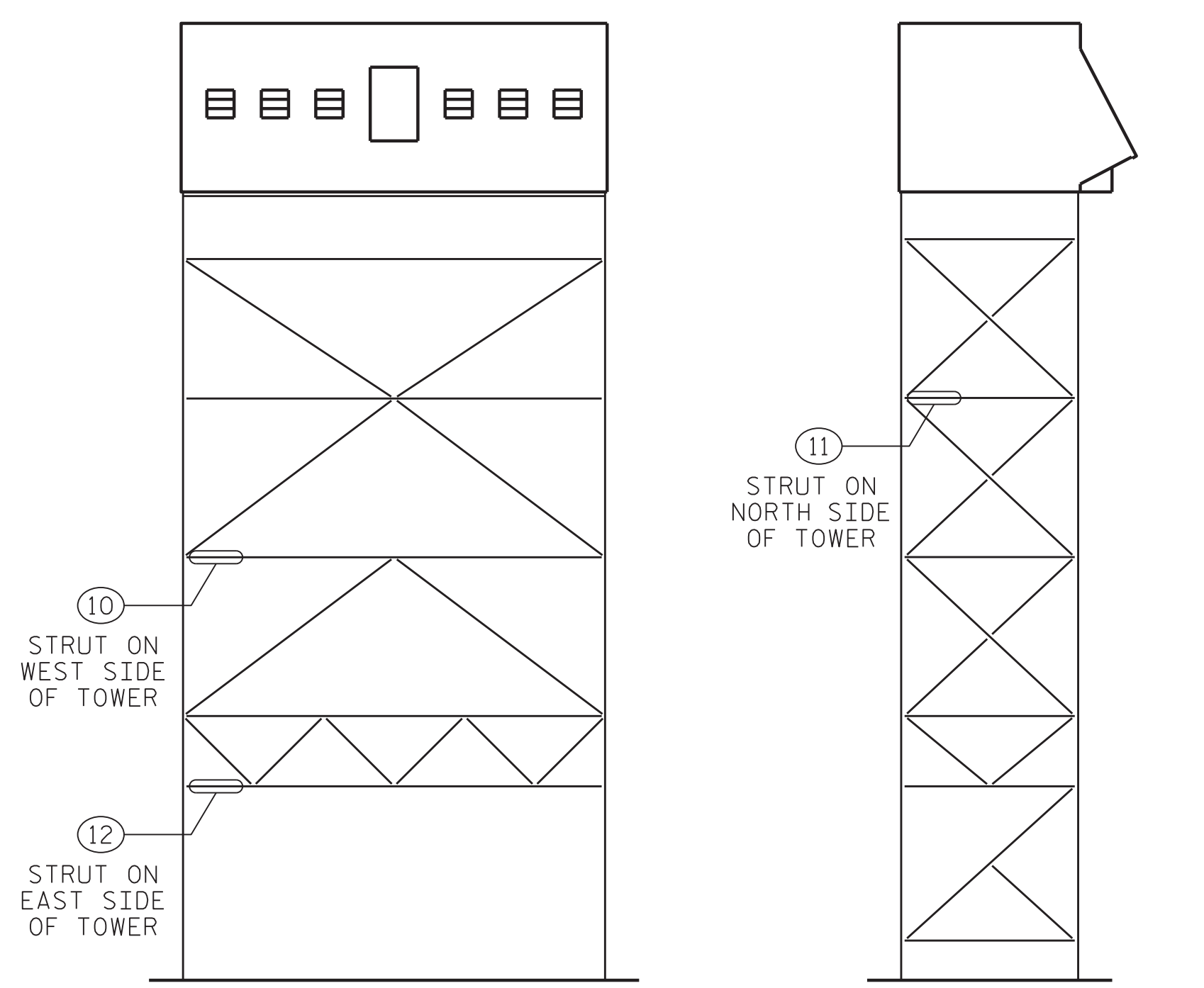
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12/21/2017 400_045_368202_SML_GRID3_640013.dgn

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



LIFT SPAN FRAMING PLAN



WEST TOWER

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

PROJECT NO. 15BPR.15
NEW HANOVER COUNTY

STATION: _____
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 LIFT SPAN
 STRUCTURAL STEEL
 REPAIR LOCATIONS



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 RALEIGH, NC 27601
 NC LICENSE NO. C-2979



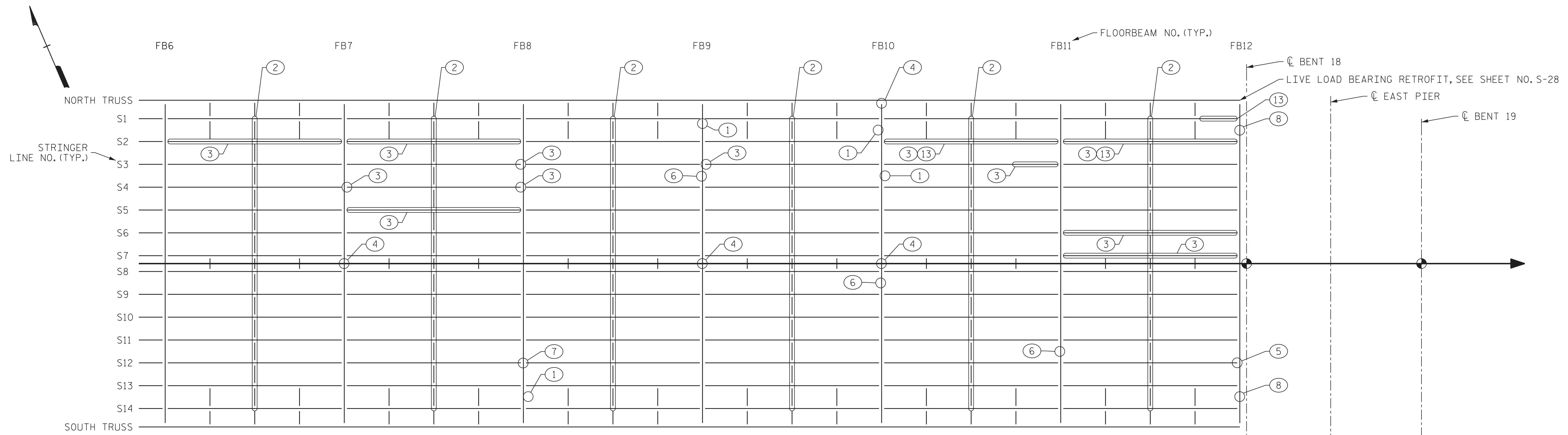
DocuSigned by:
 Jason R. Doughty
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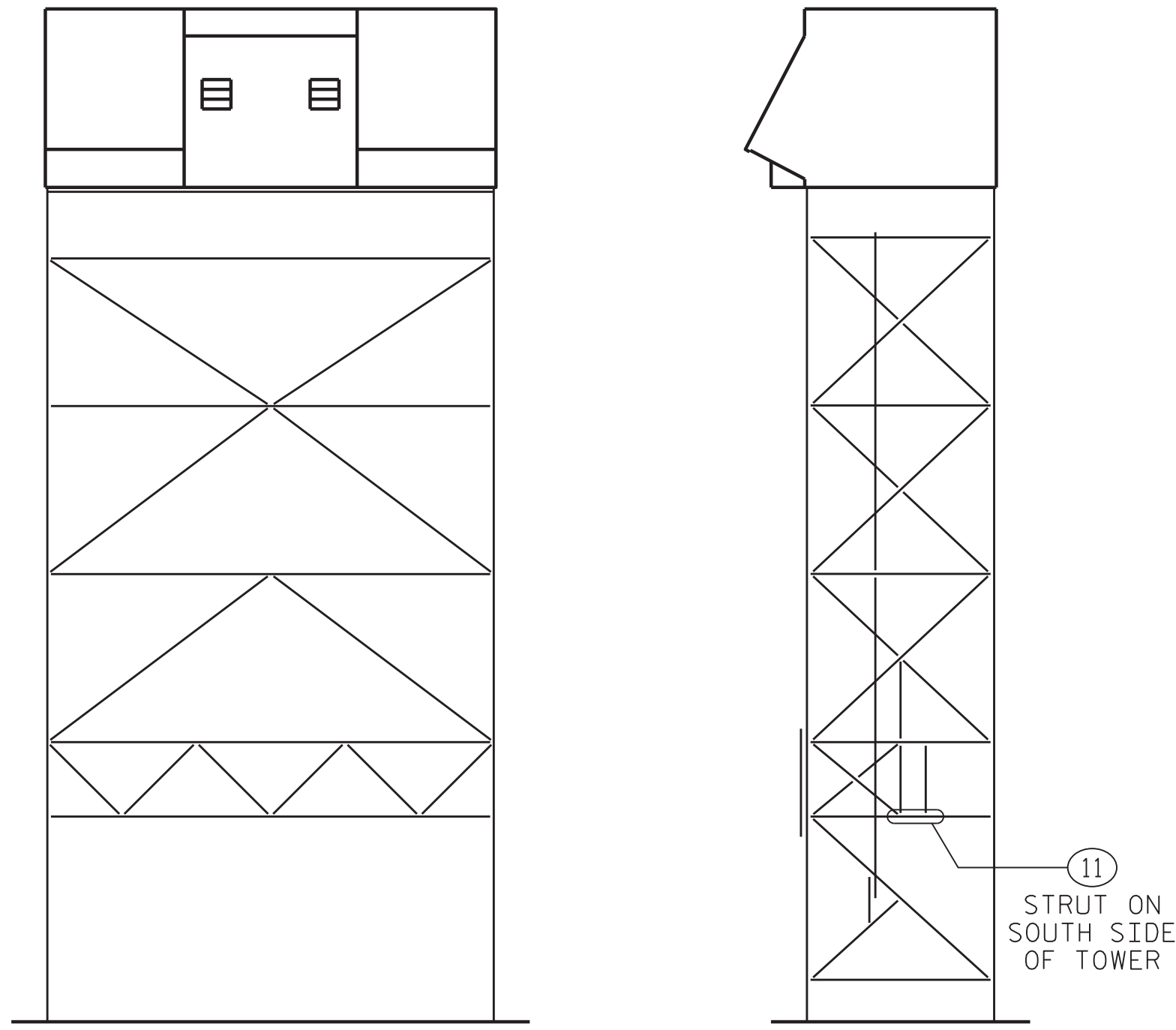
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 DRAWN BY: K. WHITE DATE: NOV 2017
 CHECKED BY: J. DOUGHTY DATE: DEC 2017
 DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: DEC 2017



LIFT SPAN FRAMING PLAN



WEST ELEVATION SOUTH ELEVATION
EAST TOWER

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

PROJECT NO. 15BPR.15
NEW HANOVER COUNTY
 STATION: _____
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 LIFT SPAN
 STRUCTURAL STEEL
 REPAIR LOCATIONS



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 RALEIGH, NC 27601
 NC LICENSE NO. C-2979



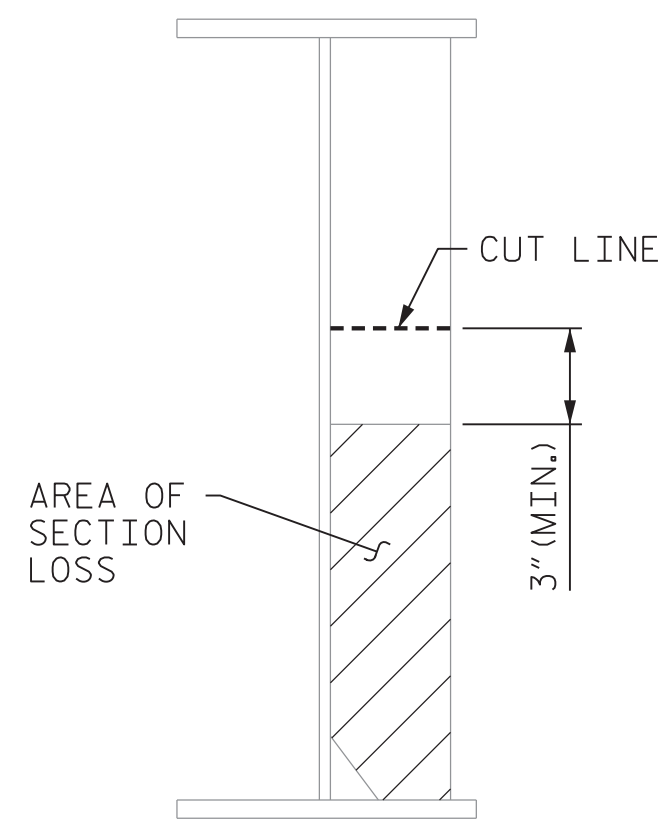
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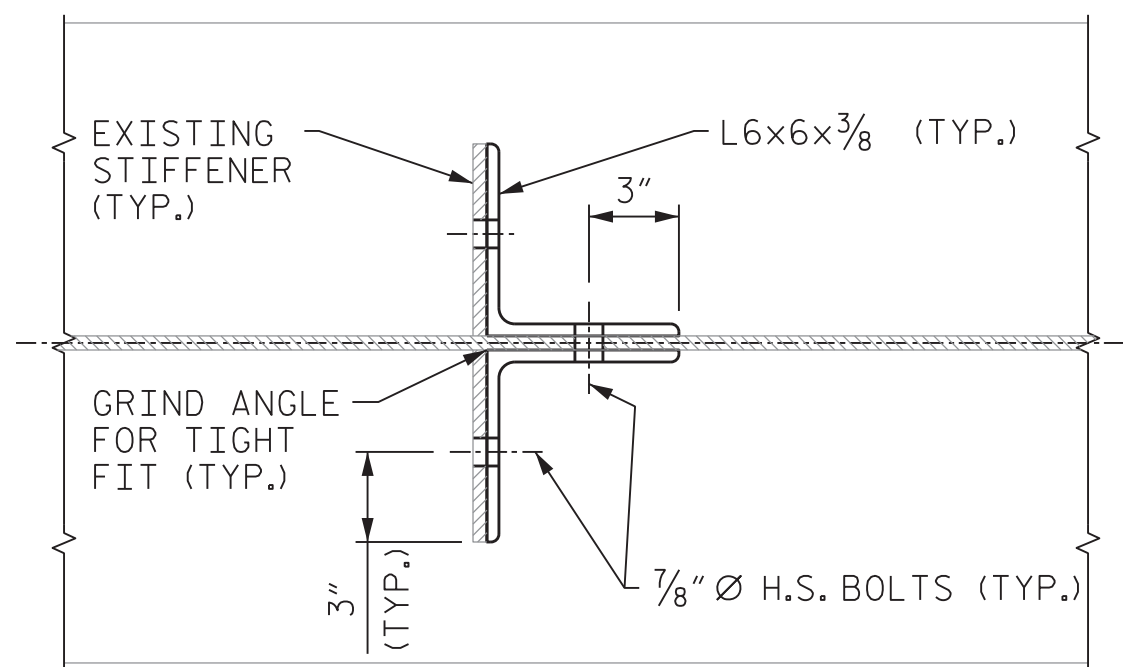
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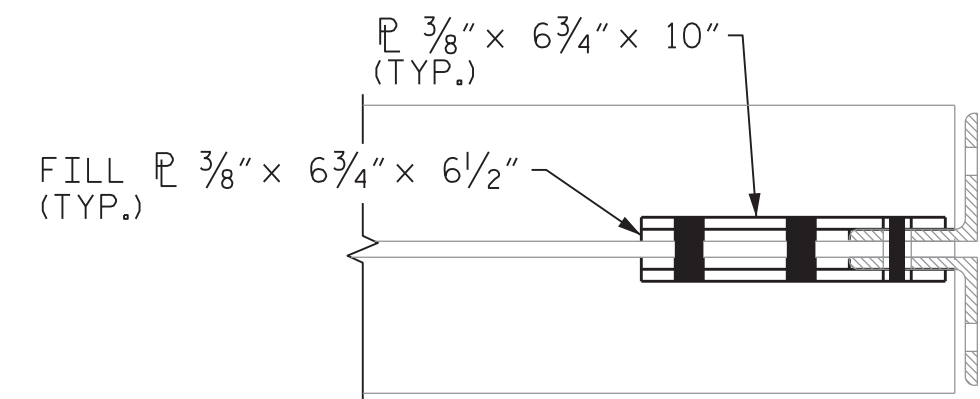
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FLOORBEAM STIFFENER \bar{P} REMOVAL



SECTION X-X



SECTION A-A

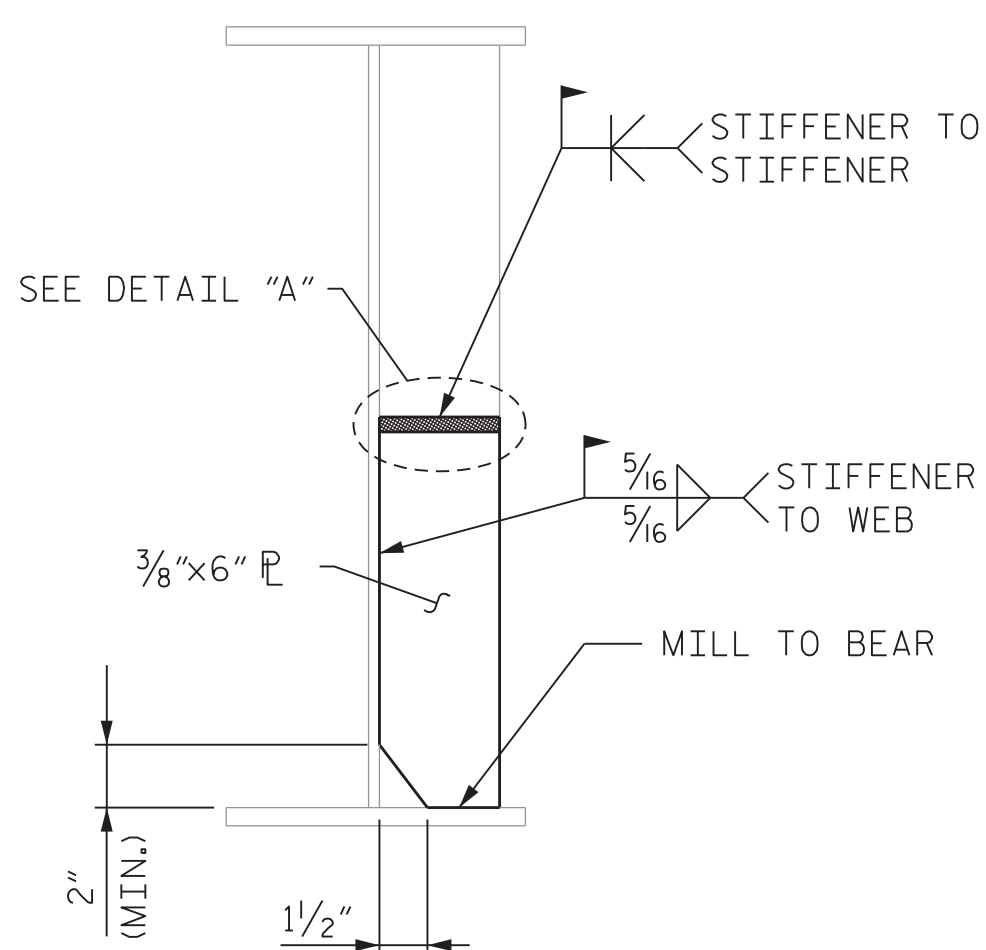
NOTES:

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

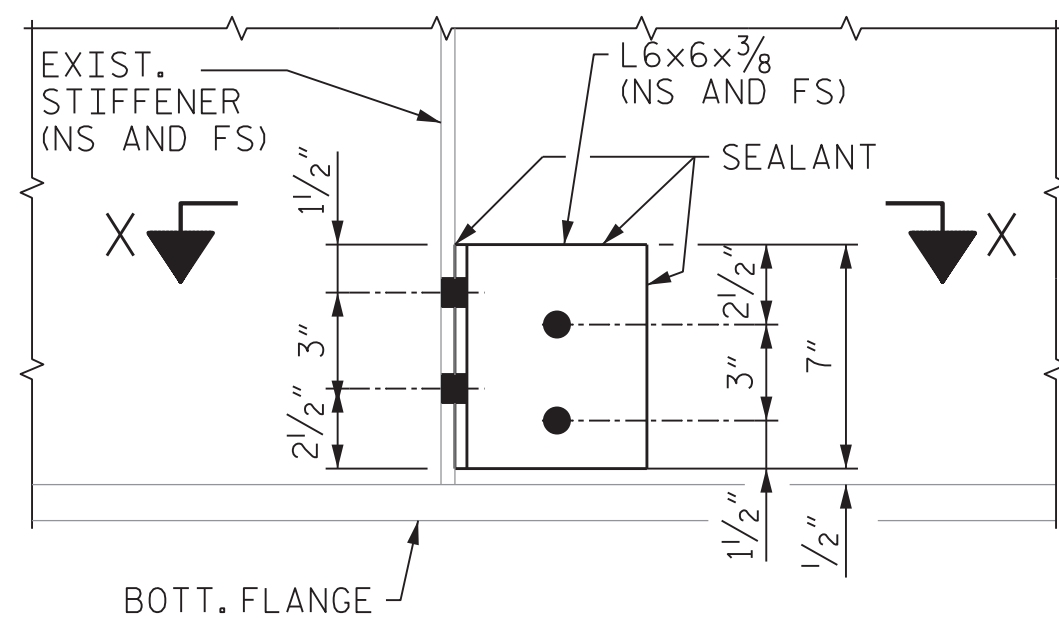
FOR CLEANING AND PAINTING AND MATERIAL REQUIREMENTS, SEE SPECIAL PROVISION FOR STRUCTURAL STEEL FOR REPAIRS.

BOLT LEGEND

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



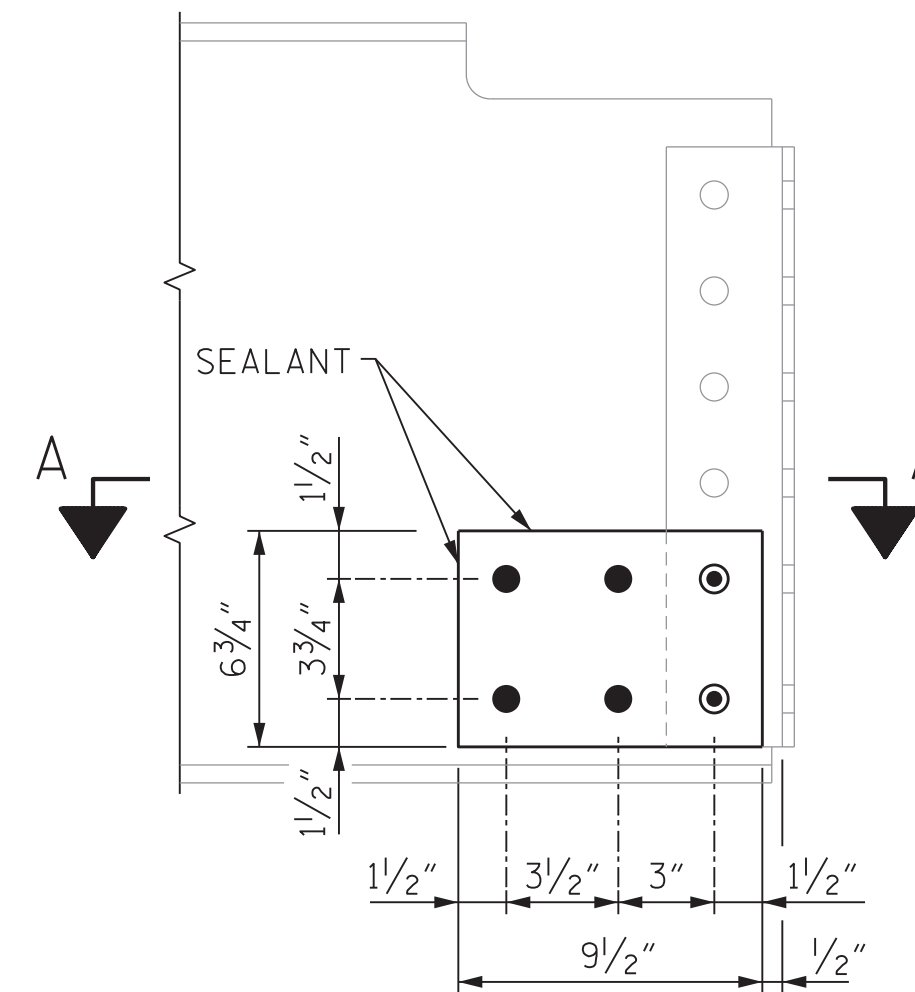
FLOORBEAM STIFFENER \bar{P} REPAIR



ELEVATION
FLOORBEAM WEB REPAIR

REPAIR 6

3 LOCATIONS

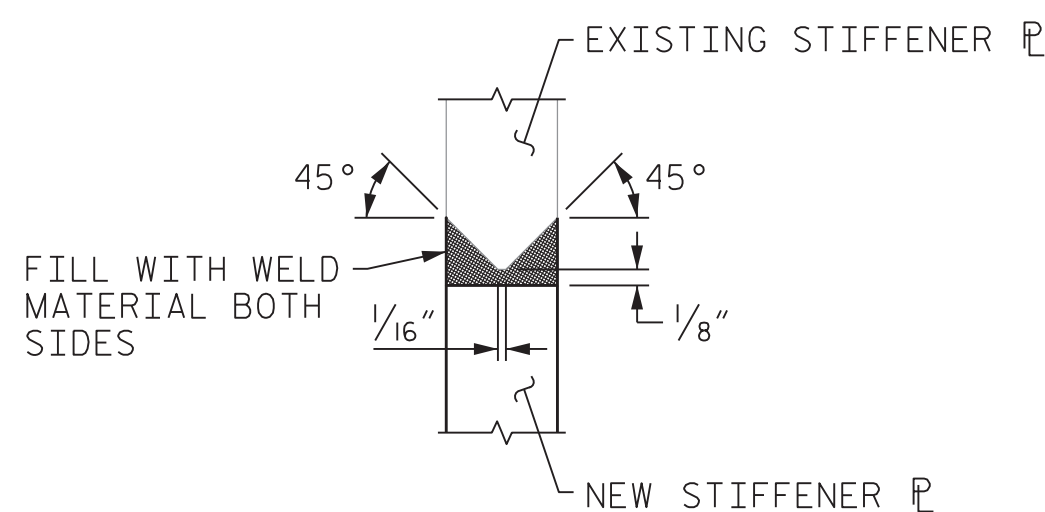


ELEVATION
STRINGER END REPAIR

REPAIR 7

2 LOCATIONS

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

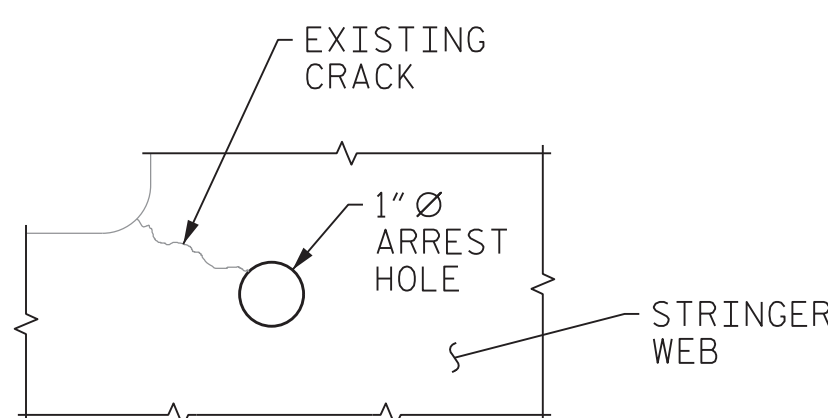


DETAIL A

REPAIR 1

9 LOCATIONS

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



CRACK ARREST HOLE

REPAIR 5

EDGE OF 1" \varnothing FIELD-DRILLED HOLE SHALL INTERSECT END OF CRACK

2 LOCATIONS

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

PROJECT NO. 15BPR.15
NEW HANOVER COUNTY

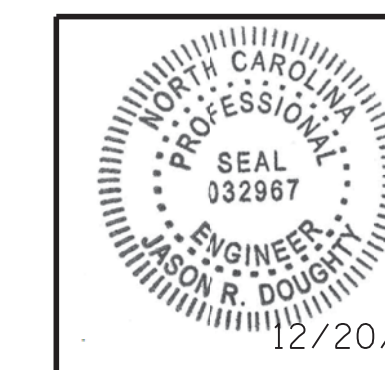
STATION: _____

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
LIFT SPAN
STRUCTURAL STEEL
REPAIRS



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



DocuSigned by:
Jason R Doughty

REVISIONS

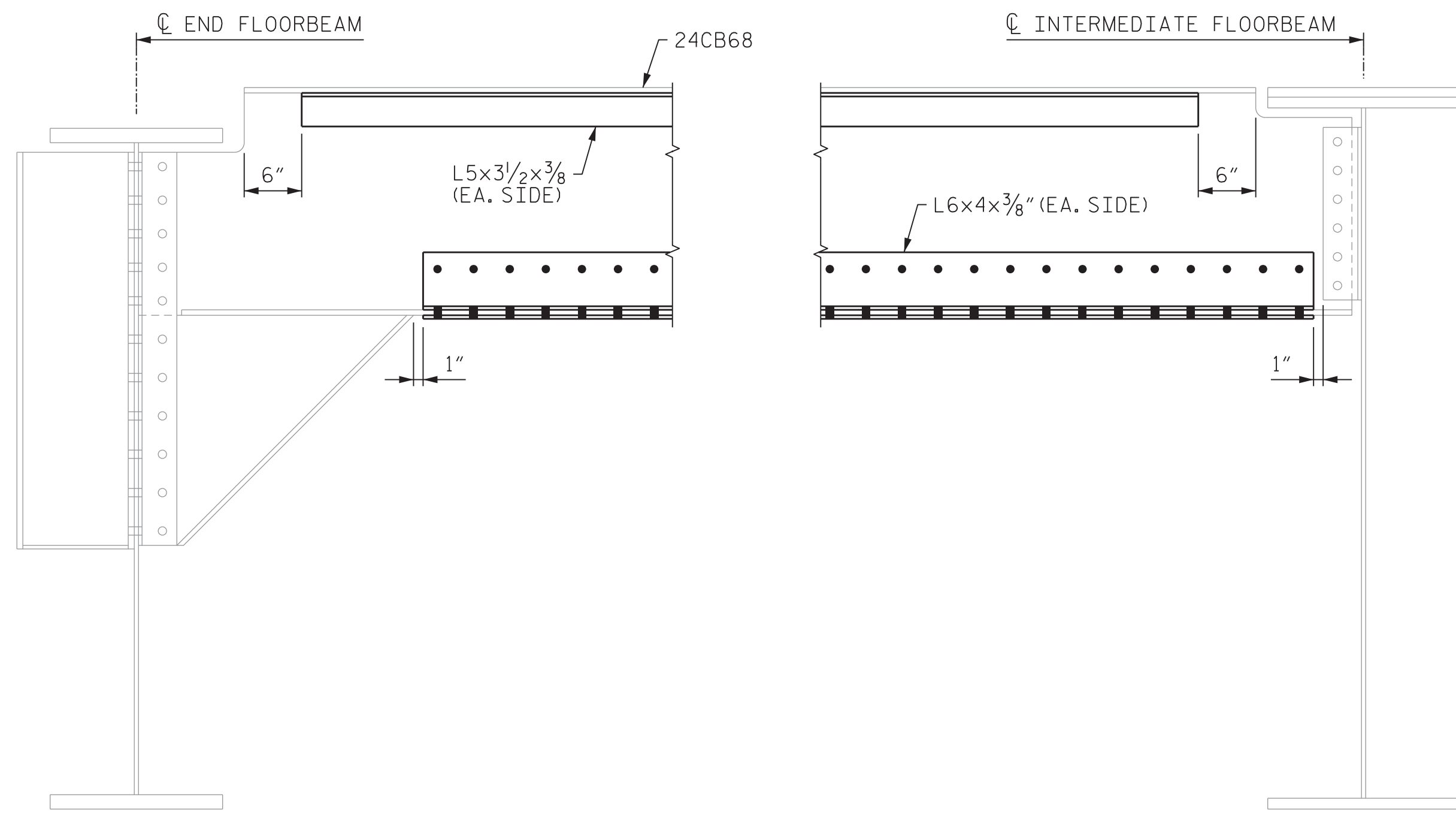
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SHEET NO.
S-26
TOTAL SHEETS
66

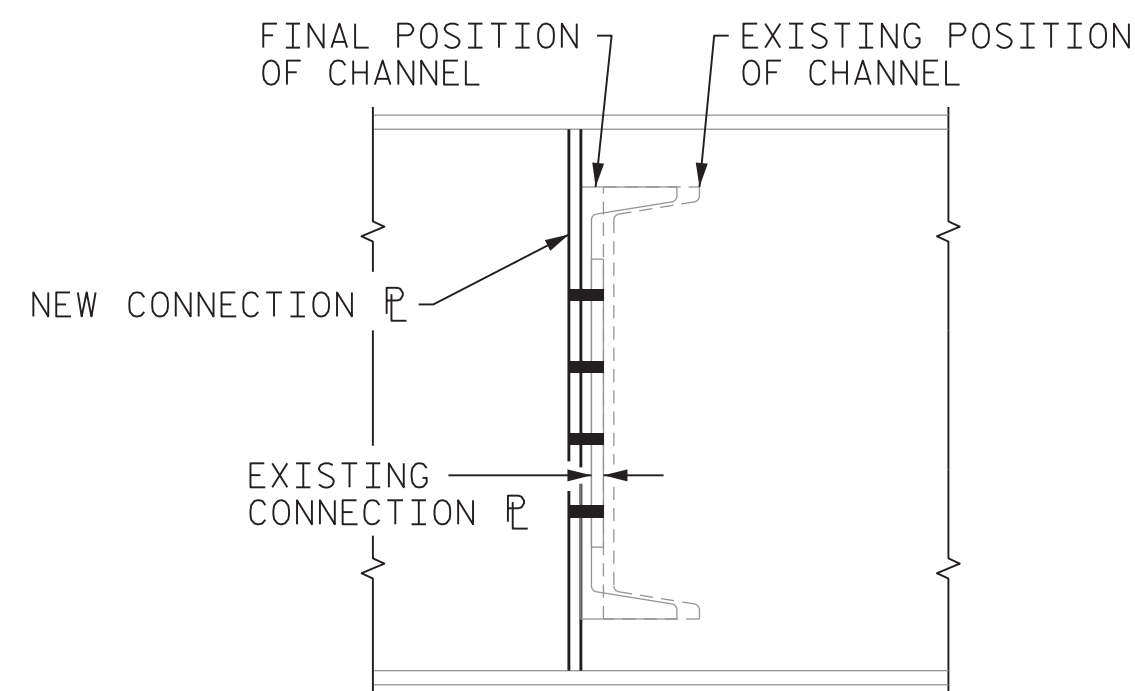
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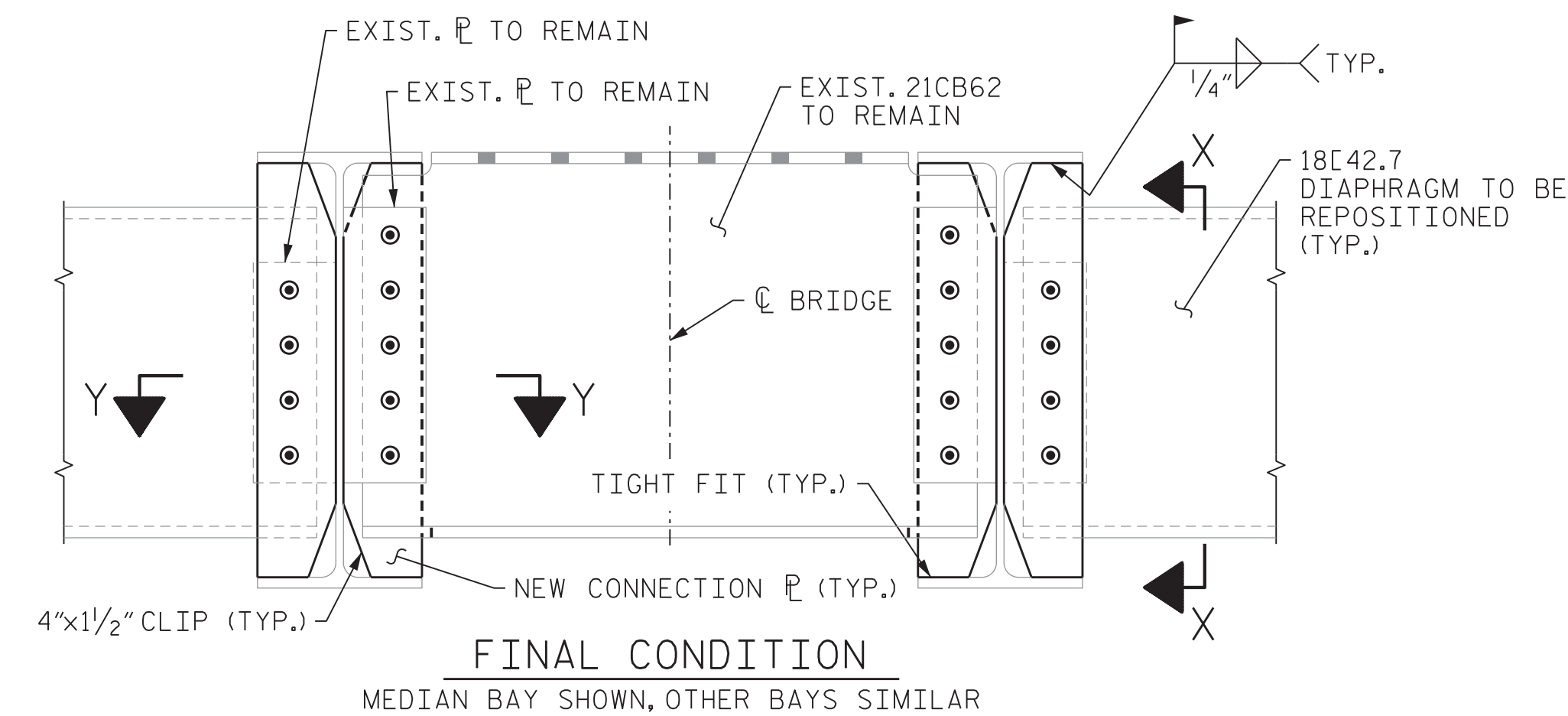
DESIGNED BY: B. LOFLIN DATE: NOV 2017
DRAWN BY: K. WHITE DATE: NOV 2017
CHECKED BY: J. DOUGHTY DATE: DEC 2017
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: DEC 2017



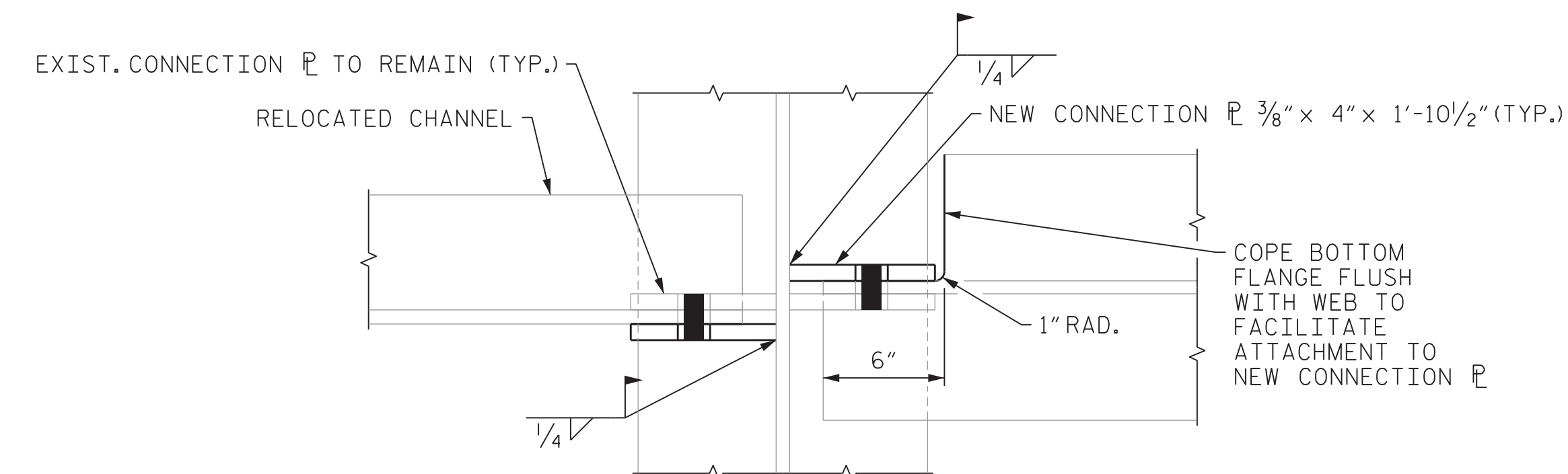
STRINGER END DETAILS



SECTION X-X



FINAL CONDITION
MEDIAN BAY SHOWN, OTHER BAYS SIMILAR



SECTION Y-Y

STRINGER WEB CRACK RETROFIT

REPAIR ②

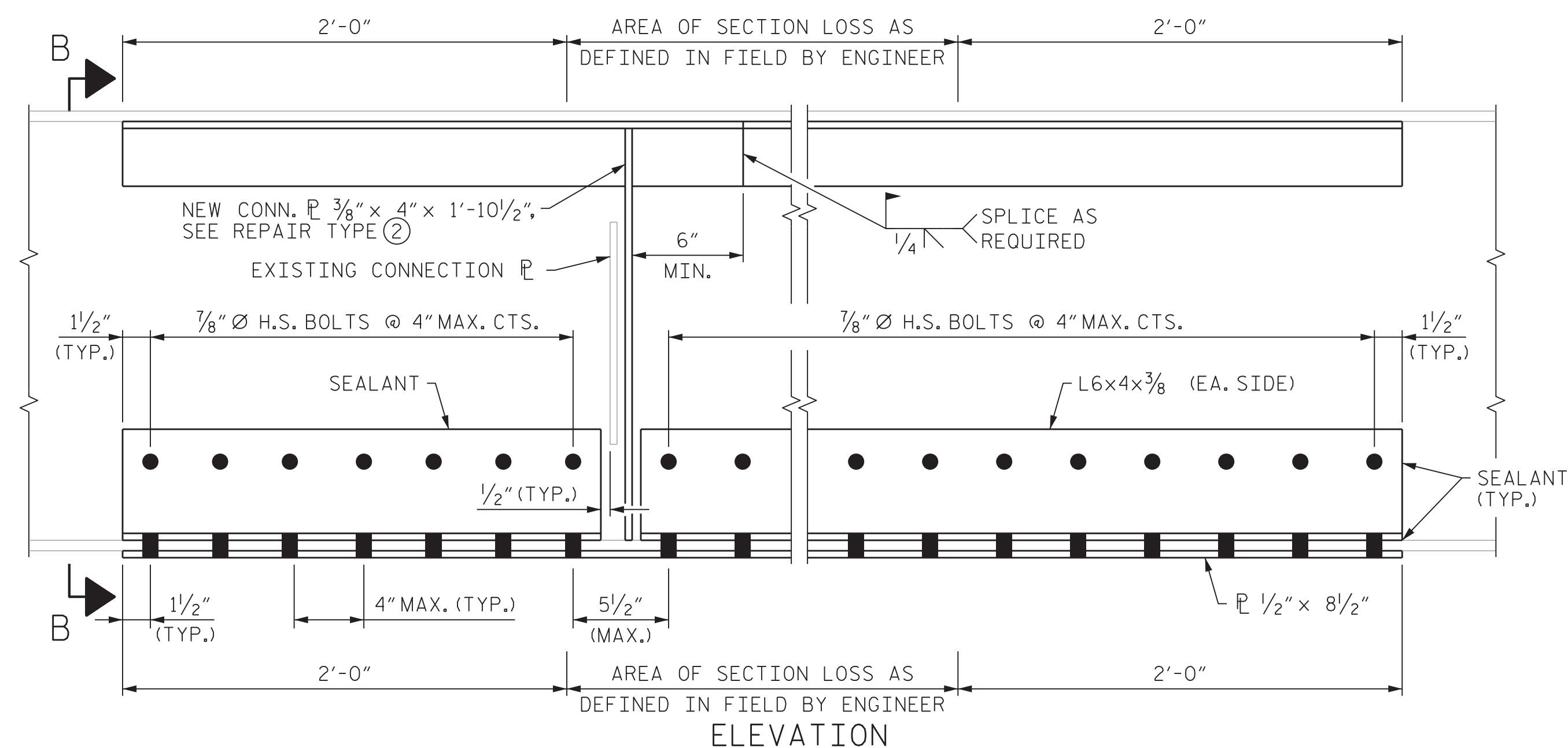
168 LOCATIONS

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

IF REPAIR ② OCCURS AT THE SAME LOCATION AS REPAIR ③, INSTALL REPAIR ③ 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 P.
4. INSTALL NEW CONNECTION P.
5. INSTALL NEW BOLTS AND REMOVE TEMPORARY SUPPORT.



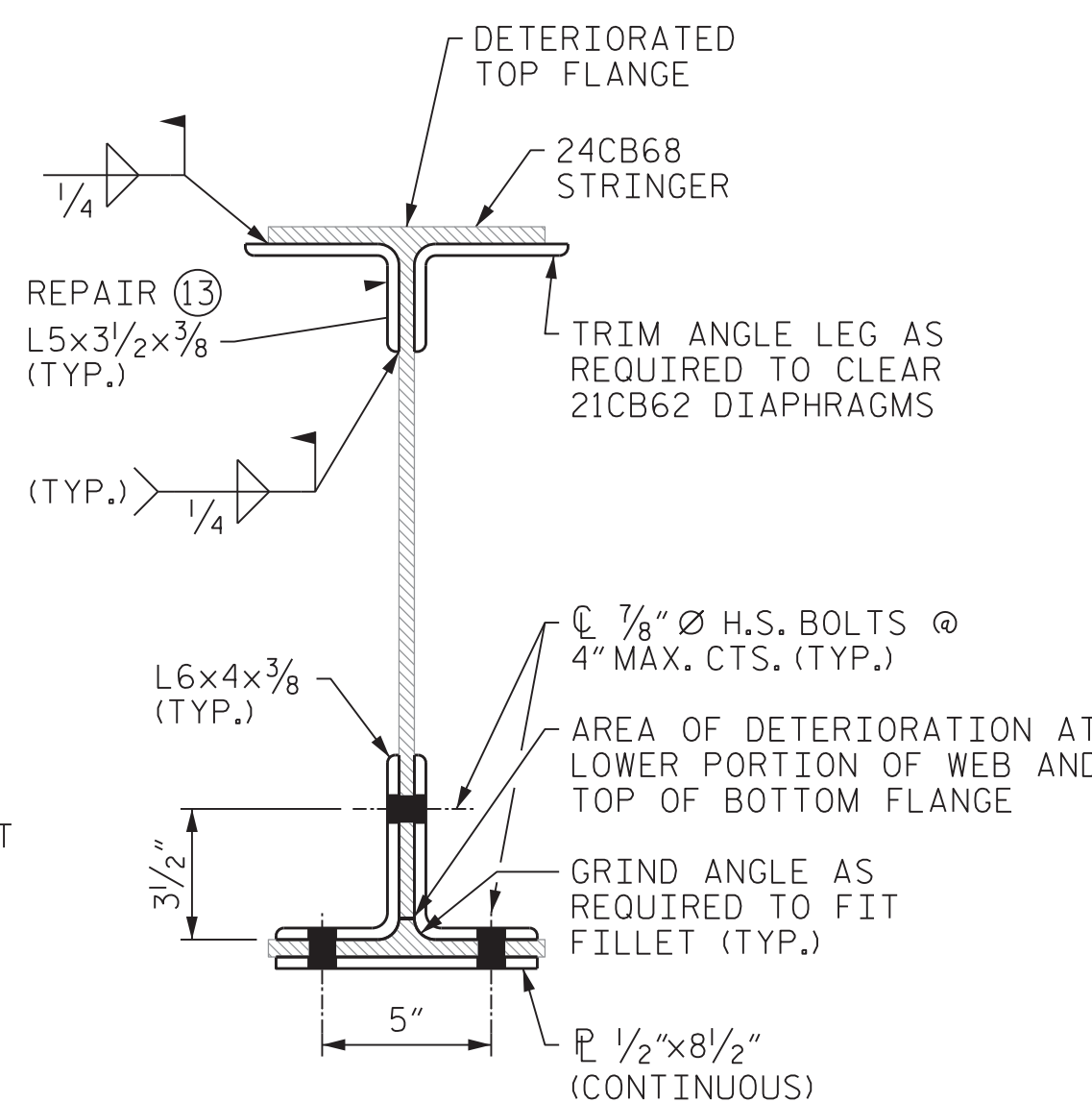
STRINGER WEB REPAIR

REPAIR ③

15 LOCATIONS (BOTTOM)

REPAIR ⑬

5 LOCATIONS (TOP)



SECTION B-B

NO LIVE LOAD IS PERMITTED WITHIN 6 FEET OF STRINGER BEING REPAIRED. AFTER FIELD DRILLING AND BOLTING OF REPAIR ANGLES AND PLATES IS COMPLETE LIVE LOAD CAN BE PLACED OVER STRINGER BEING REPAIRED.

IN LIEU OF REPAIR ③ AND/OR ⑬, THE CONTRACTOR MAY REPLACE THE STRINGER WITH A W24x68 WITH THE SAME LENGTH AND DETAILS AS THE EXISTING STRINGERS EXCEPT THAT THE 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 AND ⑬ MAY OR MAY NOT OCCUR AT THE SAME LOCATION.

NOTES:

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

PROJECT NO. 15BPR.15

NEW HANOVER COUNTY

STATION: _____

SHEET 2 OF 3



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



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Jason R. Doughty
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
LIFT SPAN
STRUCTURAL STEEL
REPAIRS

REVISIONS

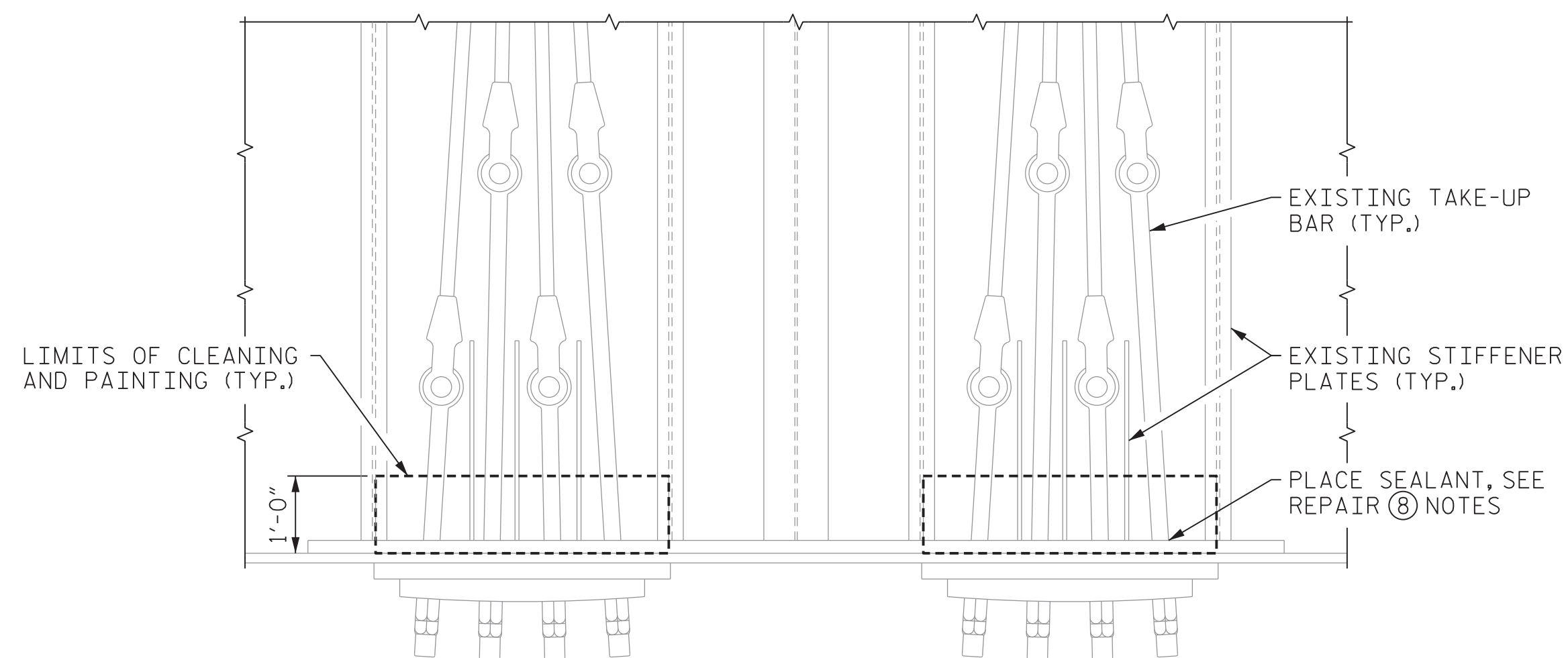
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SHEET NO.
S-27
TOTAL SHEETS
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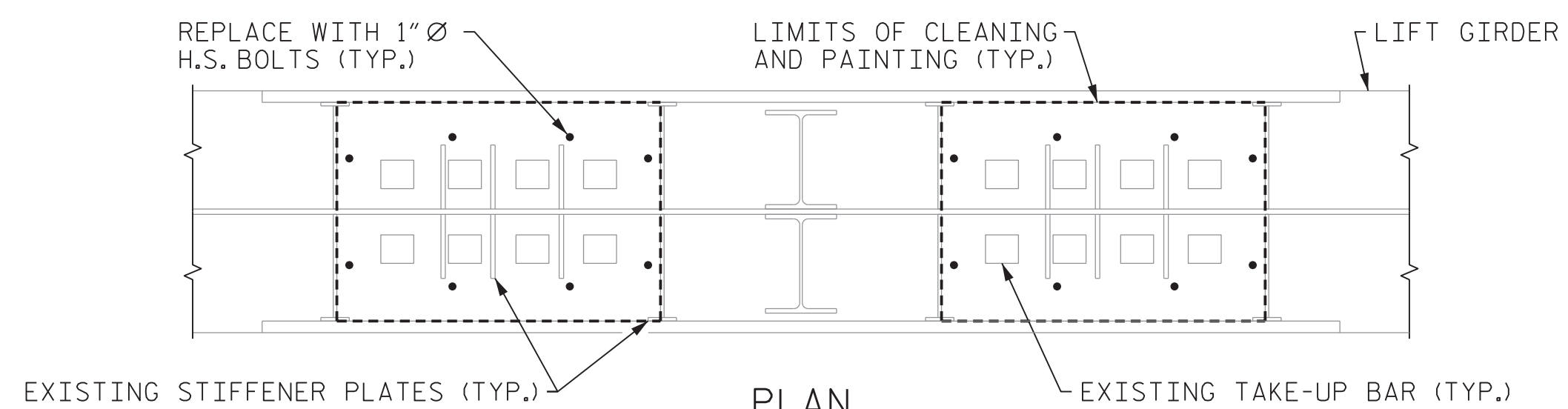
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DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: DEC 2017

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ELEVATION



PLAN

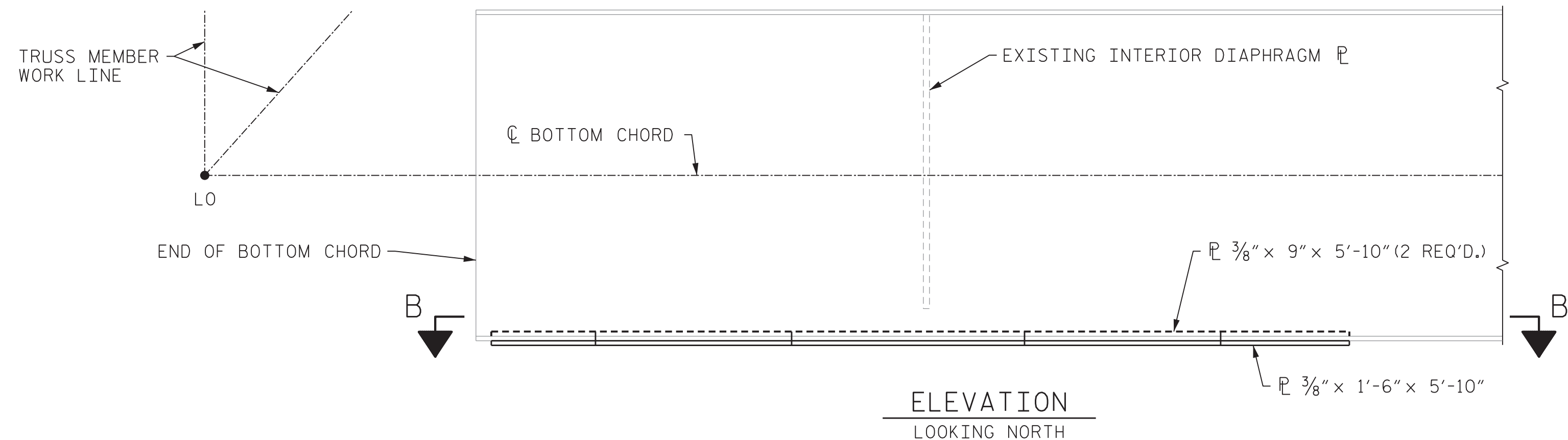
REPAIR (8)

4 LOCATIONS

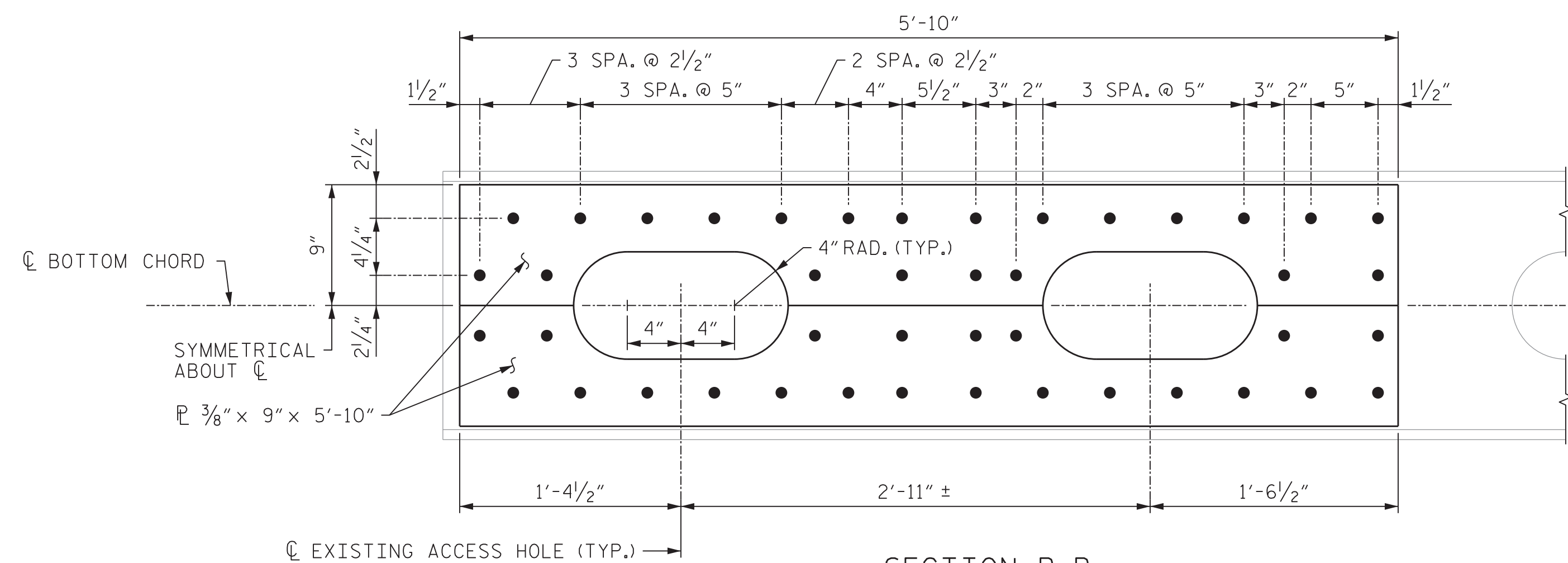
WITHIN LIMITS SHOWN, CLEAN AND PAINT TOP OF BOTTOM FLANGE, GIRDER WEB, STIFFENER PLATES, TAKE-UP BARS, AND NEW FASTENERS.

AFTER CLEANING AND PRIOR TO PAINTING, PLACE SEALANT AROUND TAKE-UP BARS AT BOTTOM FLANGE. REMOVE ANY EXISTING SEALANT PRIOR TO PLACING NEW SEALANT.

BOLTS SHALL BE REPLACED ONE AT A TIME.



ELEVATION
LOOKING NORTH



SECTION B-B

LO-L1 TRUSS REPAIR

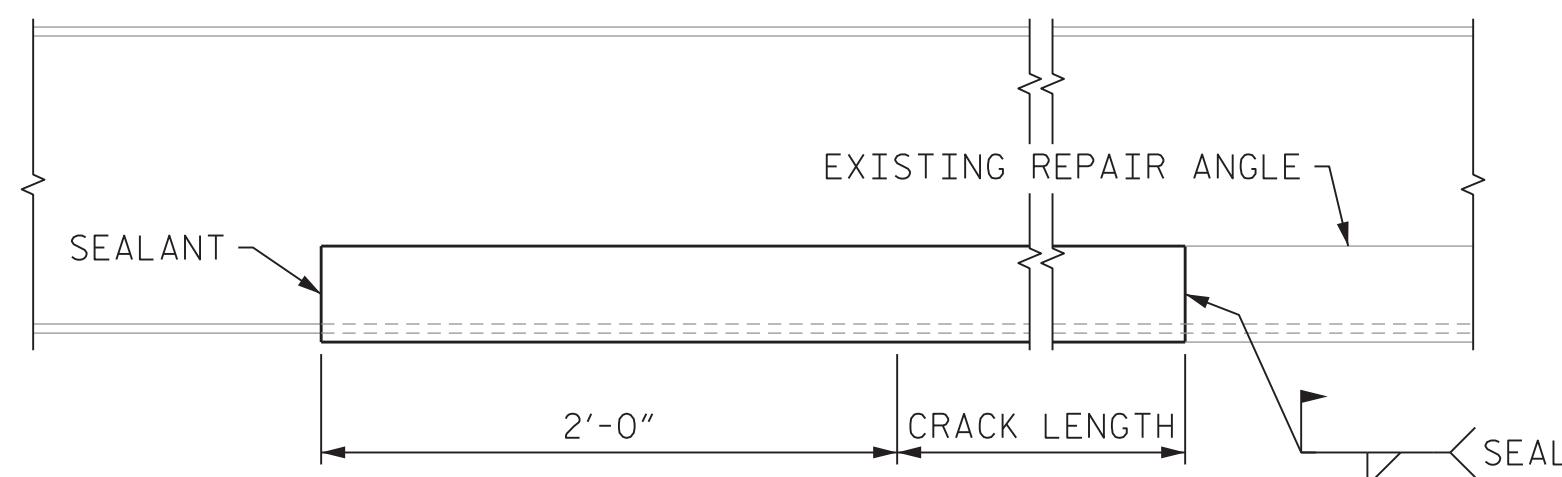
GUSSET PLATES AND FASTENERS NOT SHOWN FOR CLARITY

REPAIR (9)

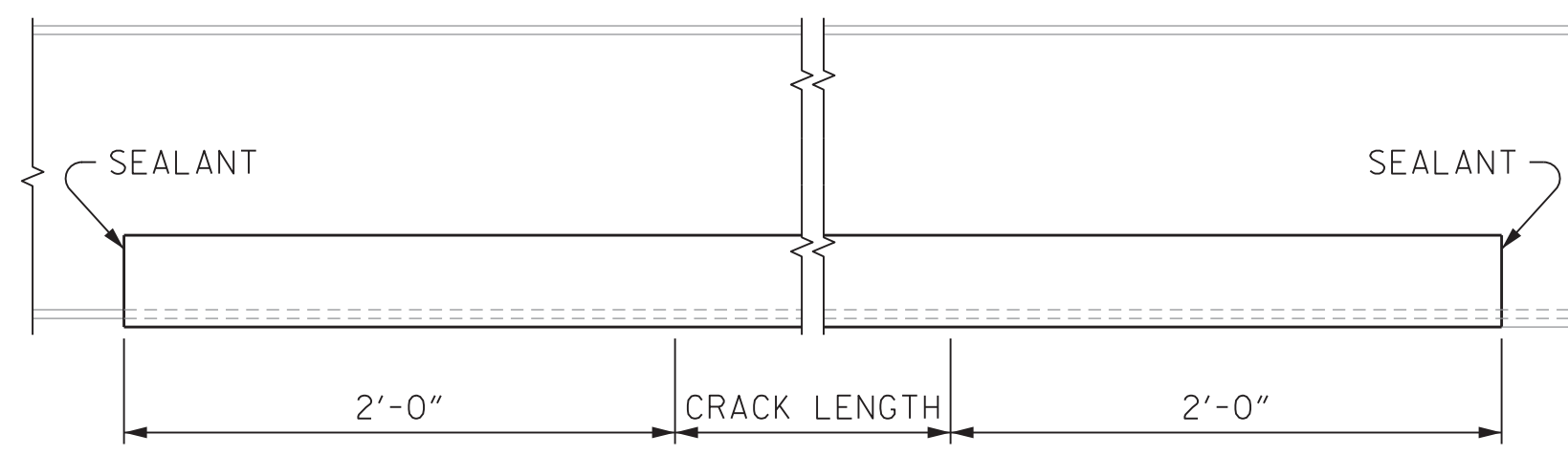
2 LOCATIONS

NOTES:

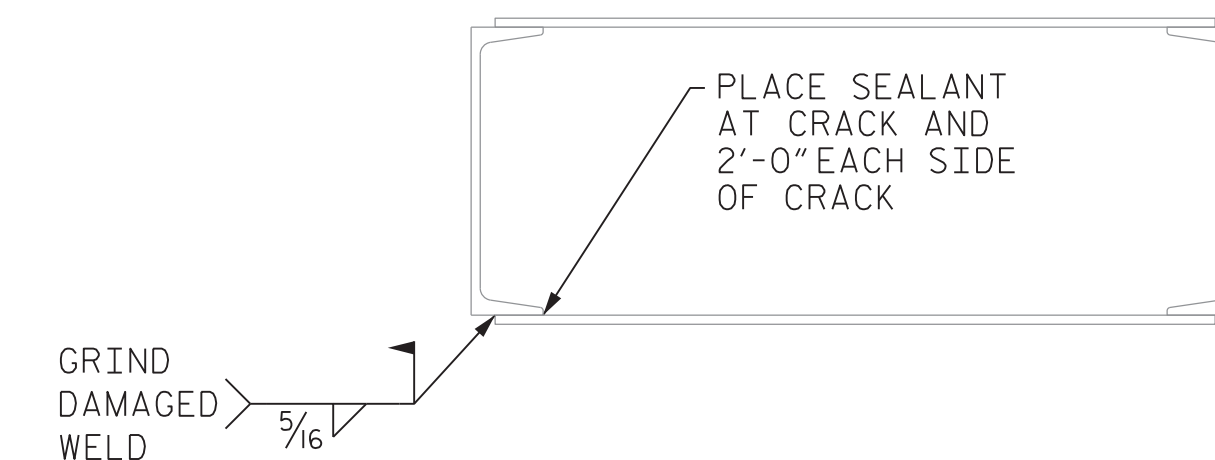
FOR NOTES AND BOLT LEGEND, SEE SHEET 1 OF 3



TOWER LATERAL REPAIR 1

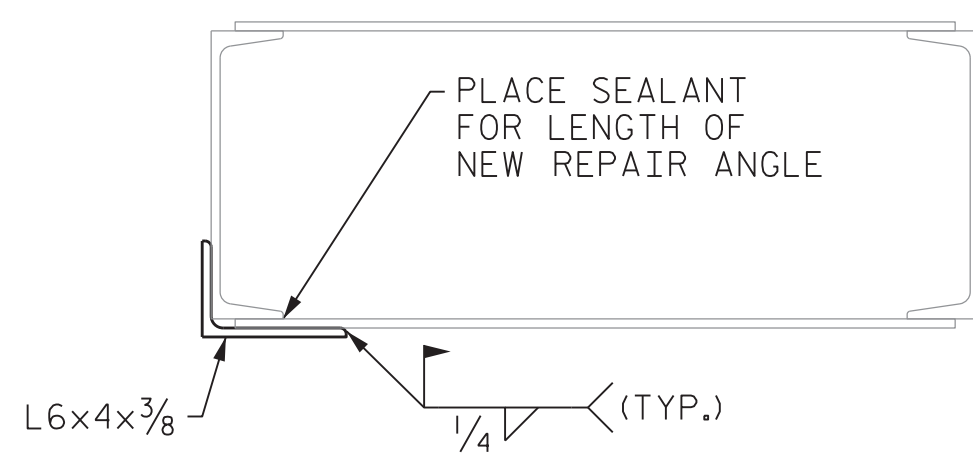


TOWER LATERAL REPAIR 2

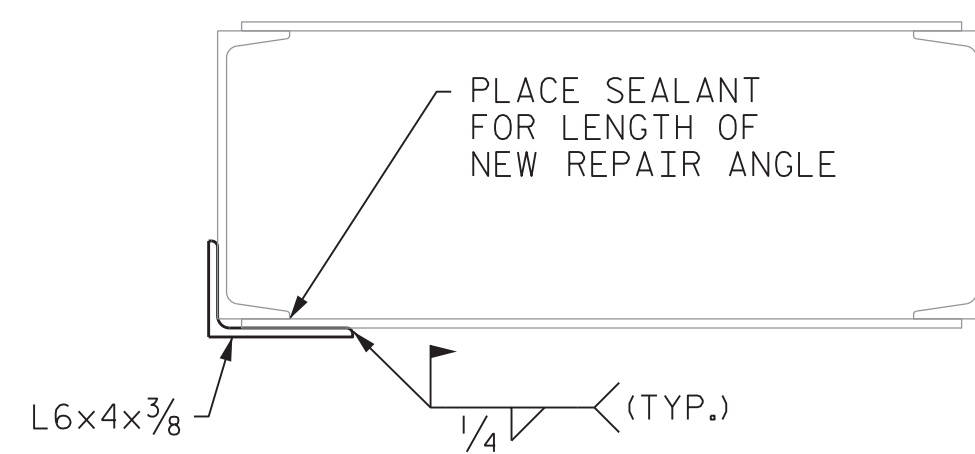


REPAIR (11)

2 LOCATIONS



TOWER LATERAL REPAIR 1



TOWER LATERAL REPAIR 3

REPAIR (12)

1 LOCATION

REPAIR (10)

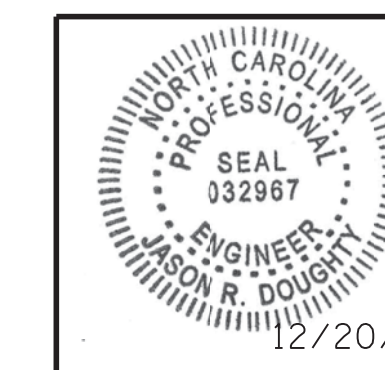
1 LOCATION

PROJECT NO. 15BPR.15
NEW HANOVER COUNTY

STATION: _____

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
LIFT SPAN
STRUCTURAL STEEL
REPAIRS



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

NOTES:

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

BEVELED SHIM INSTALLATION PROCEDURE:

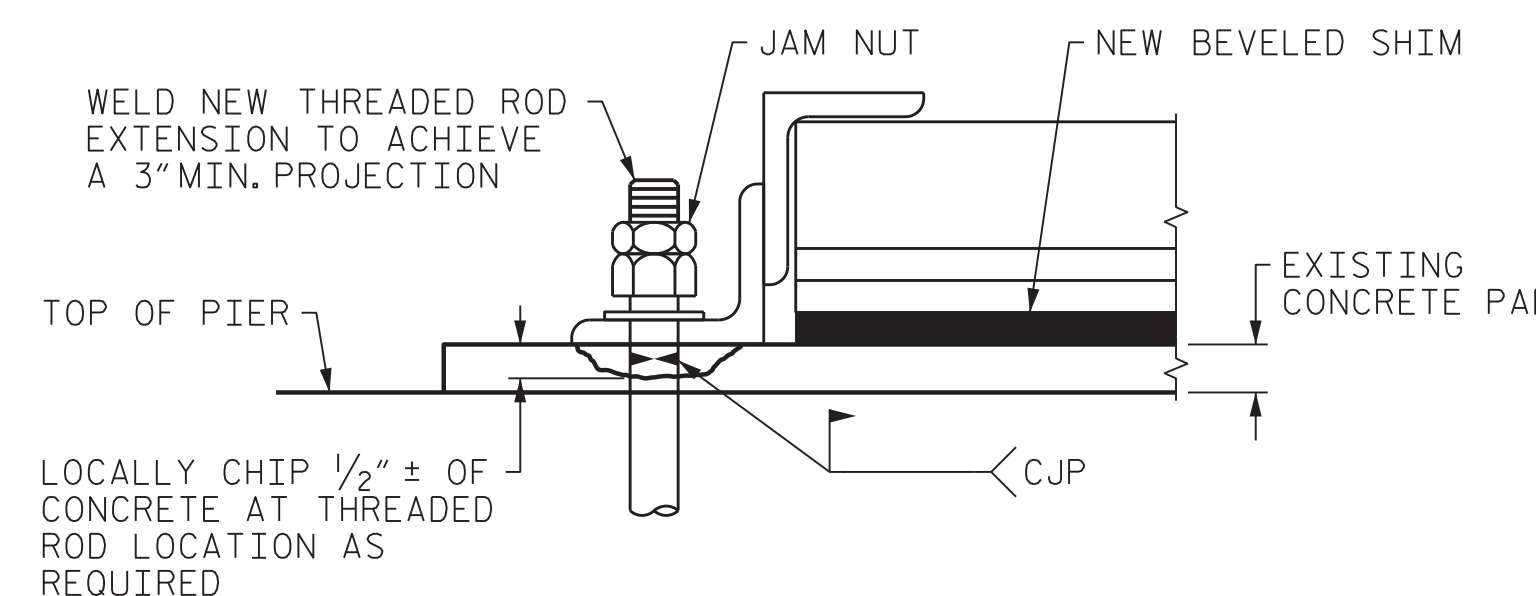
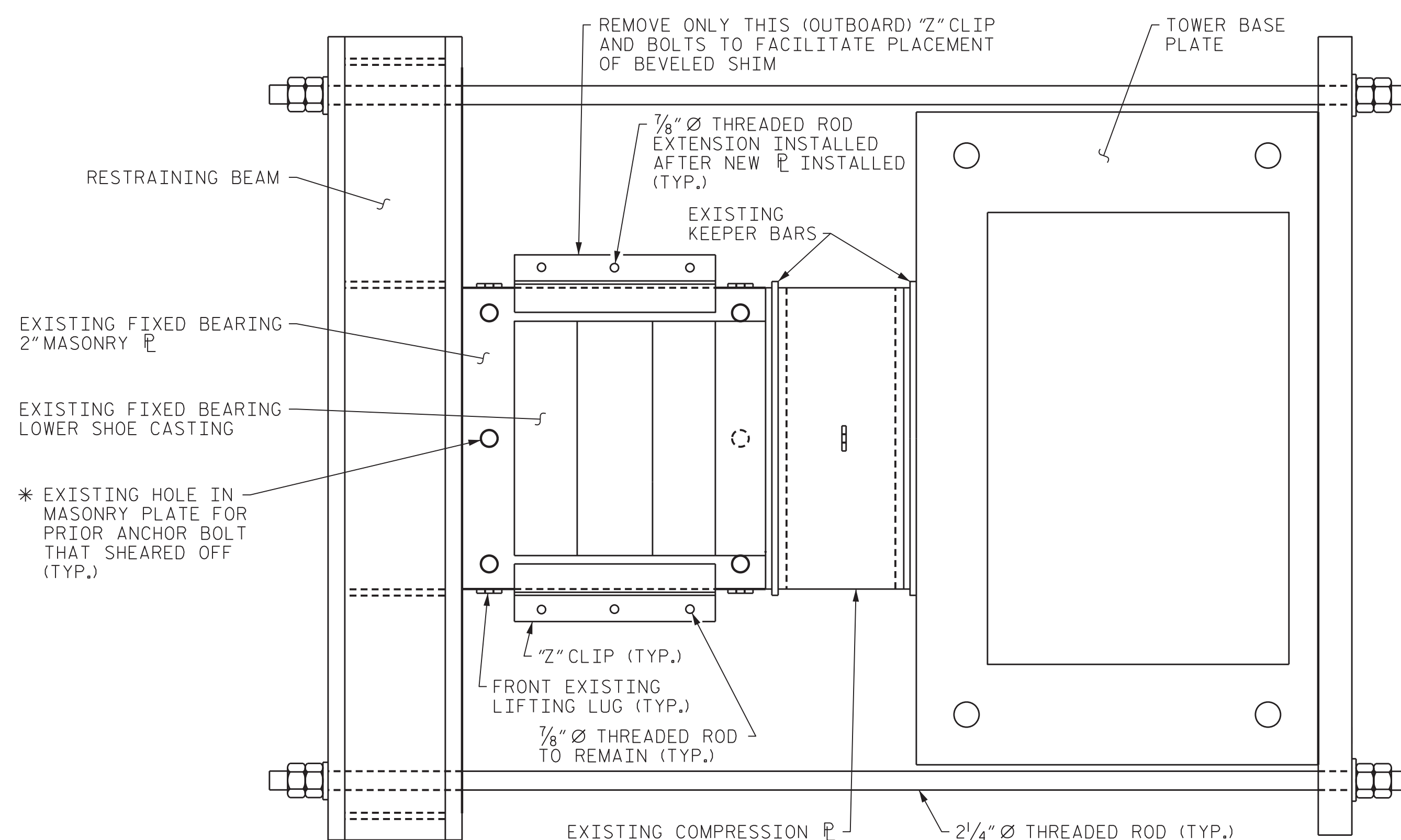
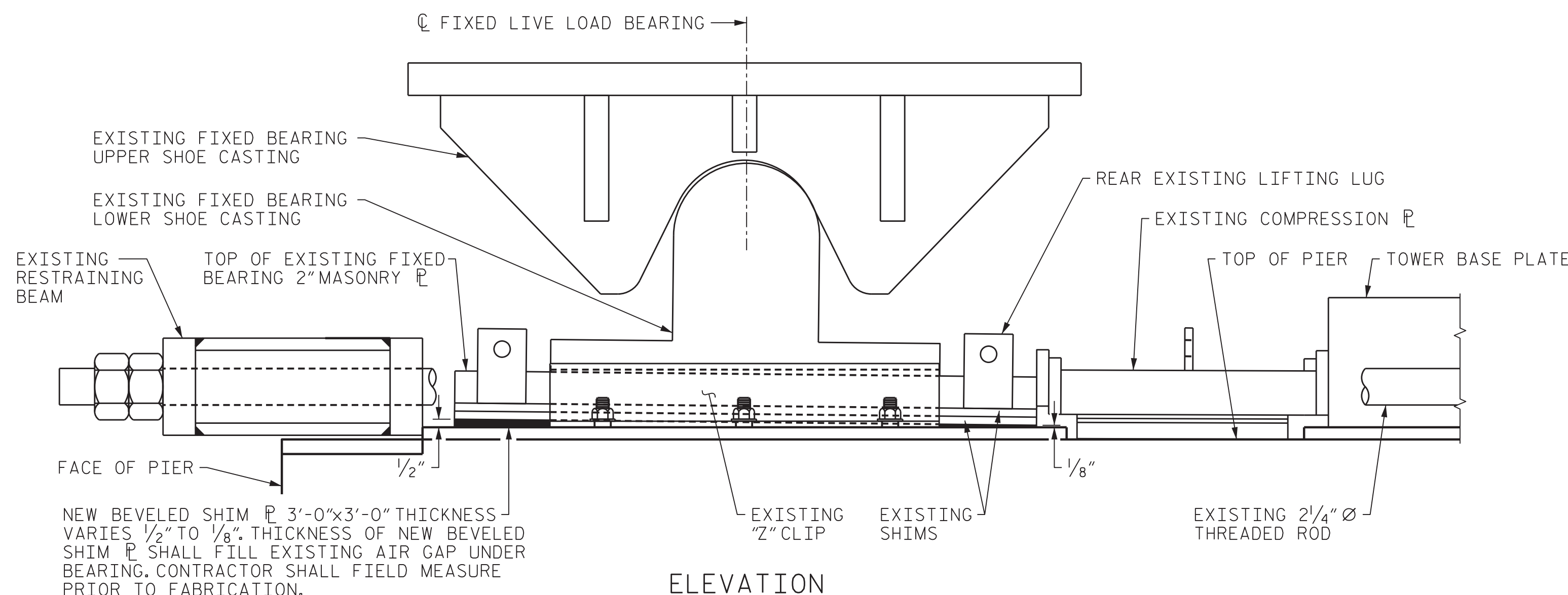
1. CUT OFF OUTBOARD Z-CLIP BOLTS FLUSH WITH TOP OF CONCRETE PAD UNDER Z-CLIP AND REMOVE Z-CLIP.
2. WHILE SUPERSTRUCTURE IS LIFTED OFF OF TOP OF BEARING, LIFT FRONT OF BEARING APPROXIMATELY 1/8" USING FRONT EXISTING LIFTING LUGS
3. INSTALL BEVELED SHIM UNDER EXISTING SHIM PLATES AND LOWER BEARING TO REST ON BEVELED SHIM.
4. PRIOR TO LOWERING SUPERSTRUCTURE BACK ONTO BEARING, TACK WELD NEW BEVELED SHIM TO EXISTING SHIM PLATE
5. REMOVE APPROXIMATELY 1/2" OF CONCRETE AROUND ANCHOR BOLTS AT OUTBOARD Z-CLIP AND WELD NEW ANCHOR BOLT EXTENSIONS TO THE EXISTING ANCHOR BOLTS USING A FULL PENETRATION WELD.
6. REINSTALL EXISTING OUTBOARD Z-CLIP ONTO ANCHOR BOLTS, TIGHTEN NUTS FINGER TIGHT AND THEN BACK THEM OFF 1/2 TURN AND PLACE JAM NUT.

MATERIAL:

STRUCTURAL STEEL: ASTM A709, GRADE 50, UNPAINTED.

THREADED ROD: ASTM F1554, GRADE 55.

WELDING: PROVIDE MATERIAL AND WORK IN ACCORDANCE WITH ANSI/AASHTO/AWS D1.5-2015 BRIDGE WELDING CODE.



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

NORTHEAST FIXED LIVE LOAD BEARING

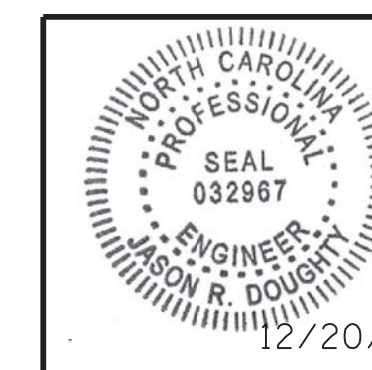
* IF EXISTING SHEARED ANCHOR BOLTS PREVENT THE INSTALLATION OF THE SINGLE BEVELED SHIM, THE CONTRACTOR MAY, AT NO ADDITIONAL COST TO THE DEPARTMENT, USE THREE BEVELED SHIM PLATES WHERE TWO OF THE PLATES ARE FABRICATED TO SLIDE AND FIT AROUND THE REMAINING PORTIONS OF THE ANCHOR BOLTS.

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

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 LIFT SPAN
FIXED LIVE LOAD BEARING RETROFIT



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 RALEIGH, NC 27601
 NC LICENSE NO. C-2979



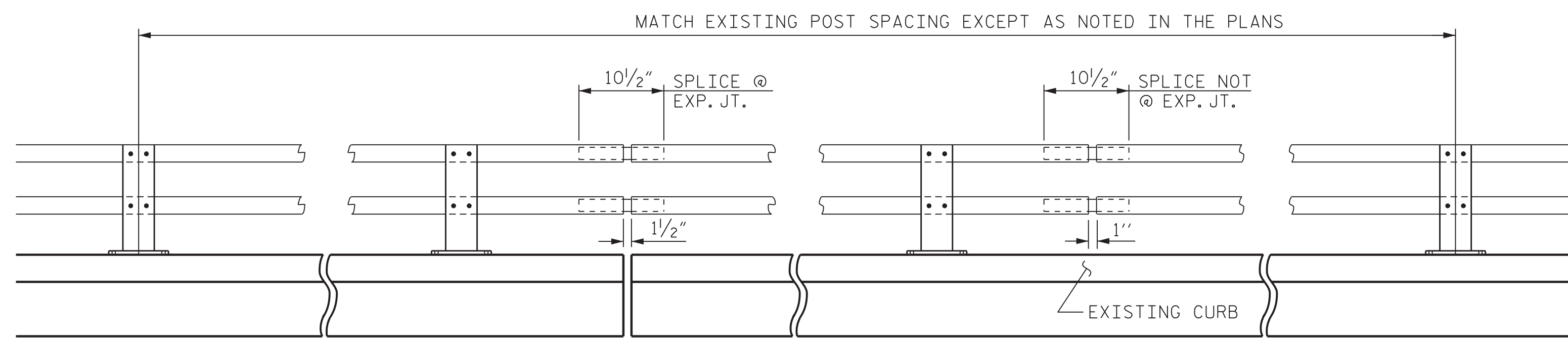
DocuSigned by:
 Jason R Doughty
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2			4			66

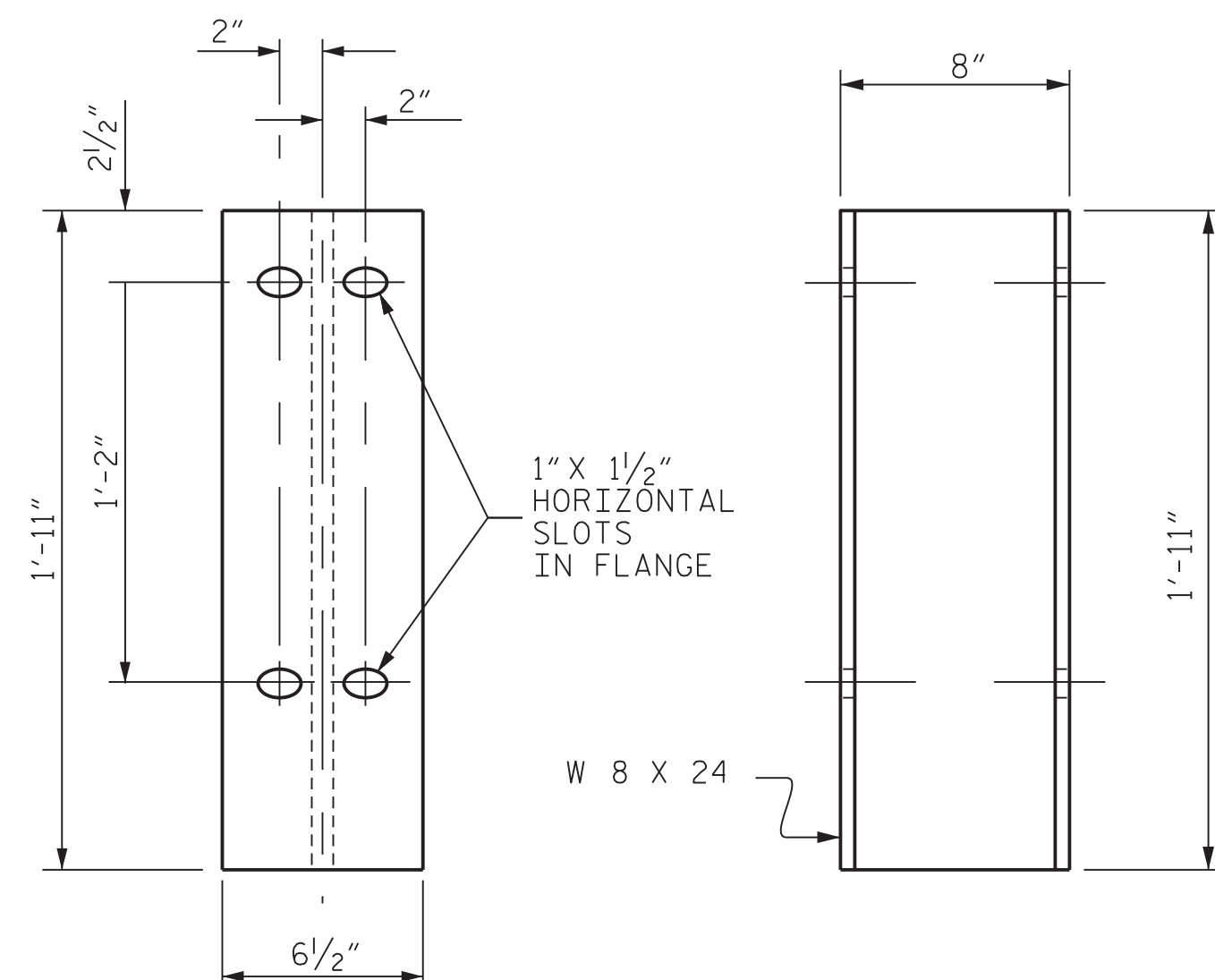
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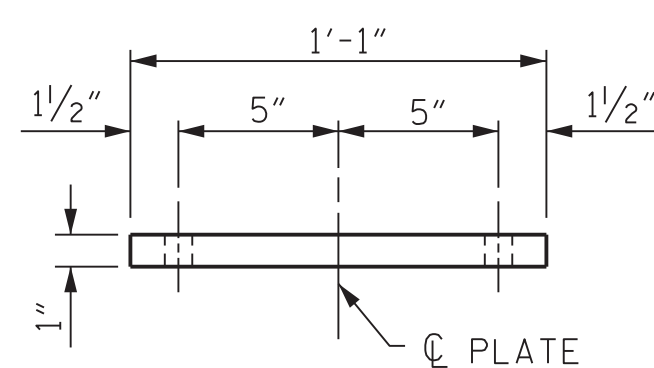


ELEVATION

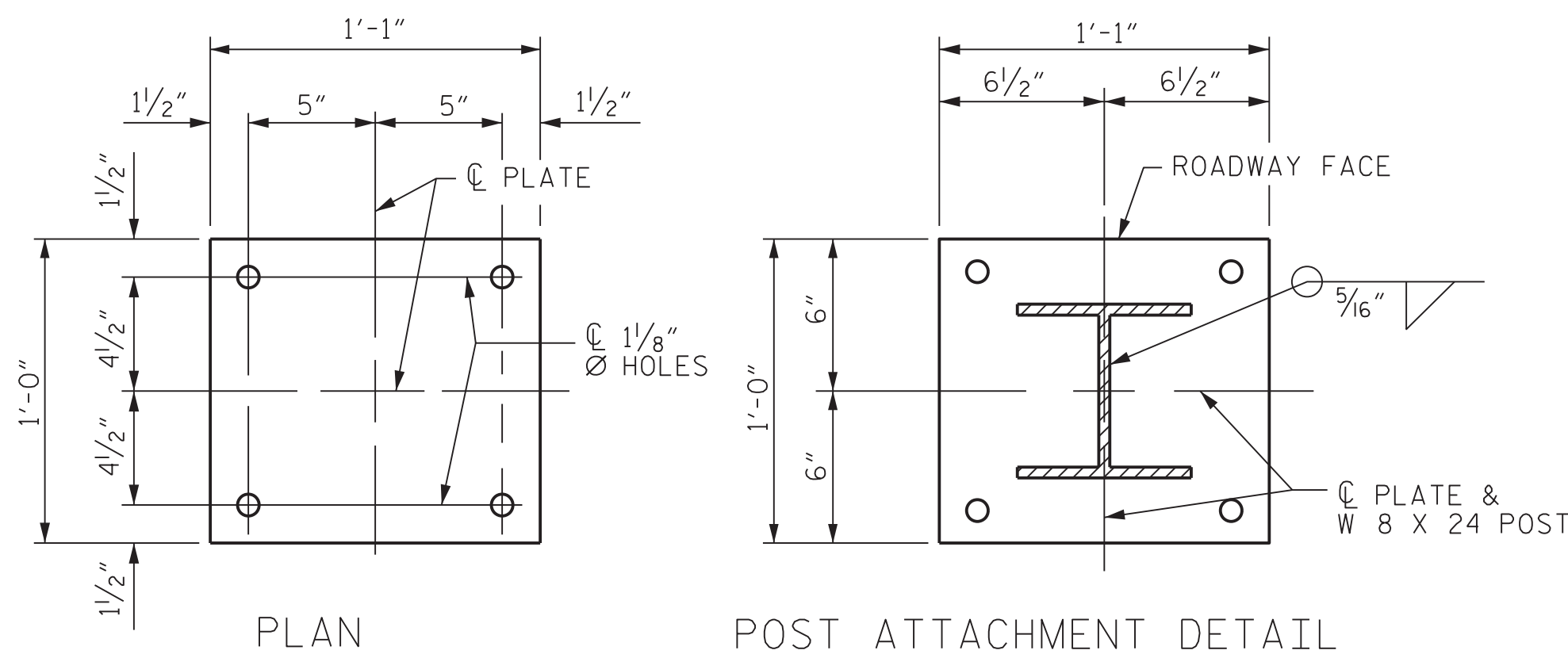


FRONT ELEVATION SIDE ELEVATION

DETAILS OF POST

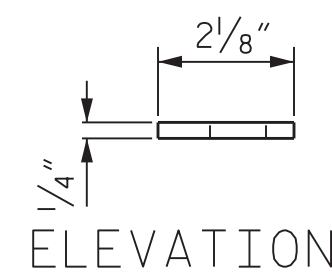


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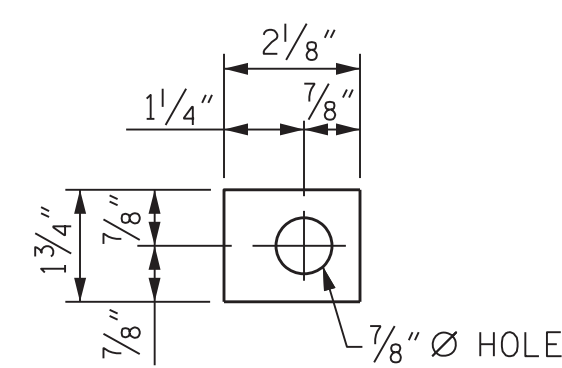


PLAN POST ATTACHMENT DETAIL

POST BASE DETAILS

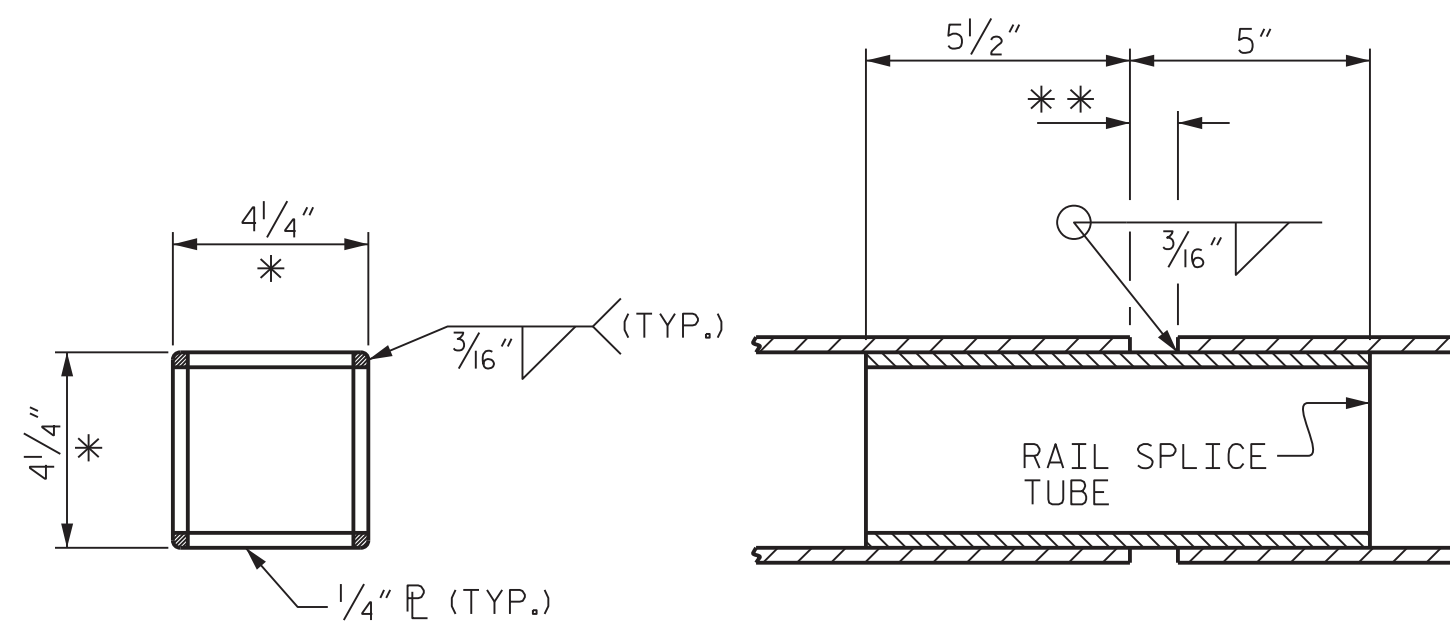


ELEVATION



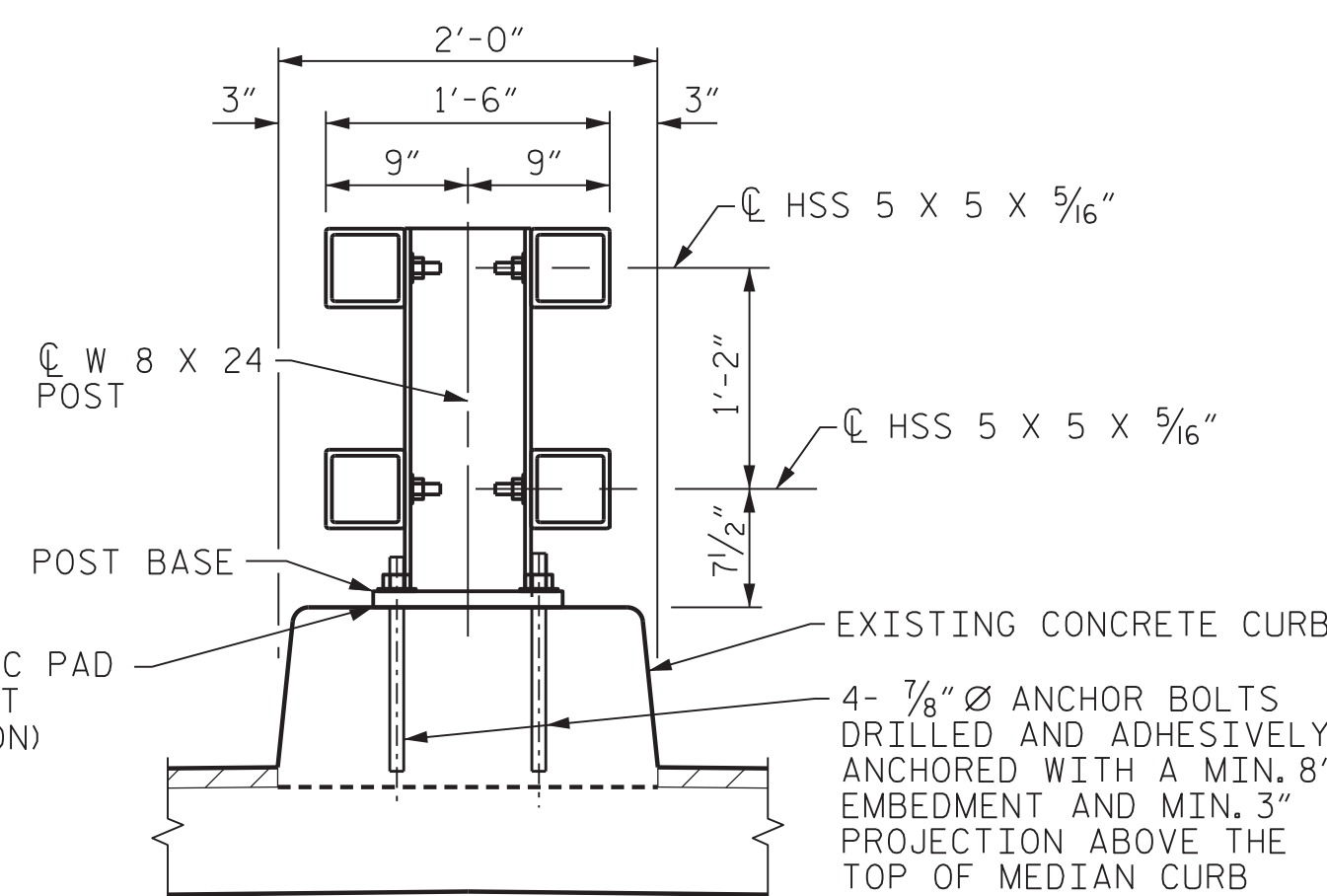
PLAN

PLATE WASHER



RAIL SPLICE DETAILS

- * - DIMENSION AFTER GRINDING RADIUS ON CORNERS TO MATCH INSIDE OF METAL RAIL. GRIND ALL EDGES PRIOR TO GALVANIZING TO ASSURE FIT.
- ** - 1" FOR SPLICES NOT AT EXPANSION JOINTS. 1/2" FOR SPLICES AT EXPANSION JOINTS.



SECTION THRU RAIL

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 EITHER EVENT, THE 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 3/4" Ø 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 TRAFFIC.

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 OF 3.5 KIPS.

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

FOR MODIFIED ALASKA BARRIER RAIL, SEE THE SPECIAL PROVISIONS.

PAY LENGTH 3034 LIN. FT.

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

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MEDIAN BARRIER
REPLACEMENT DETAILS



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



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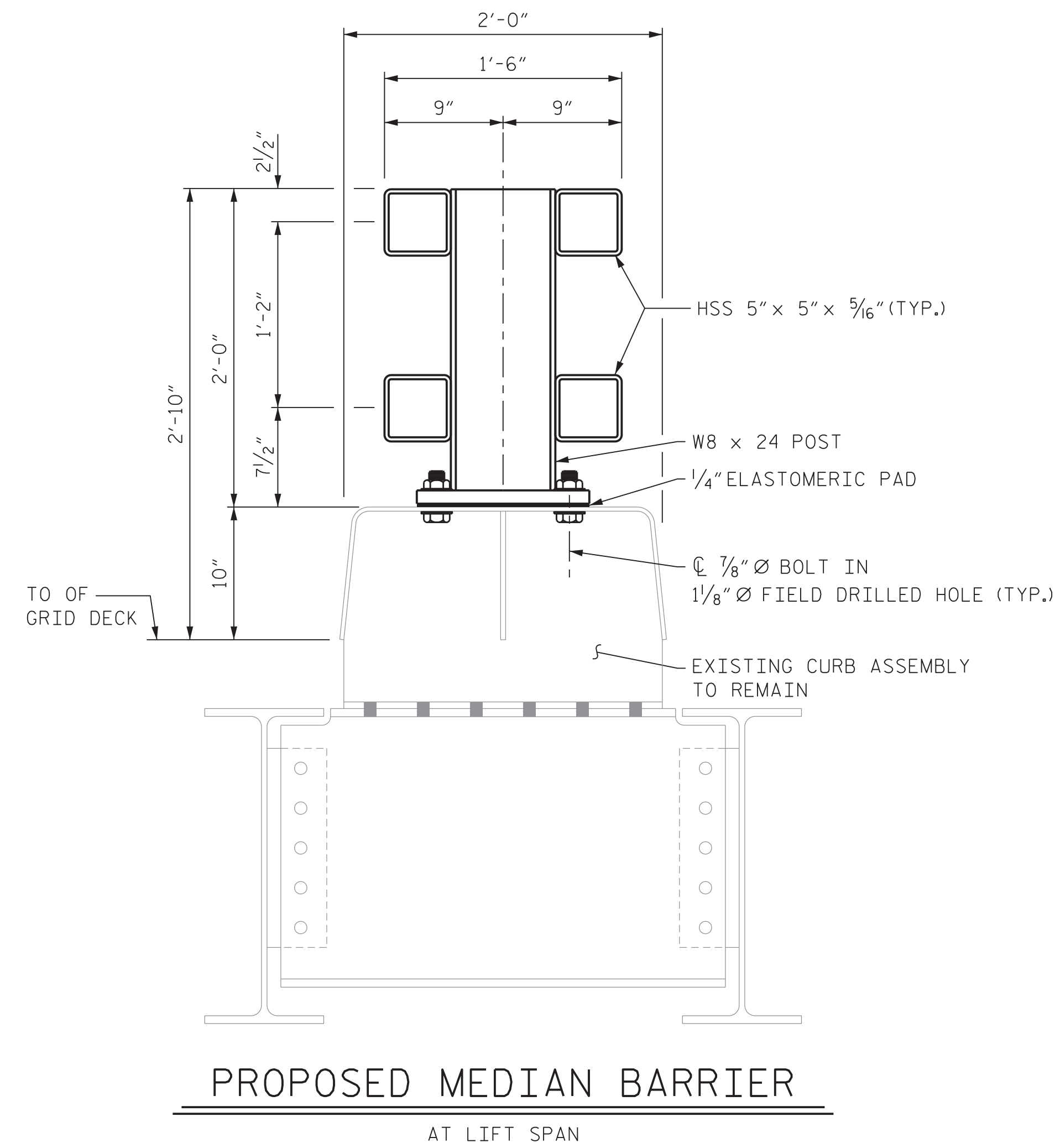
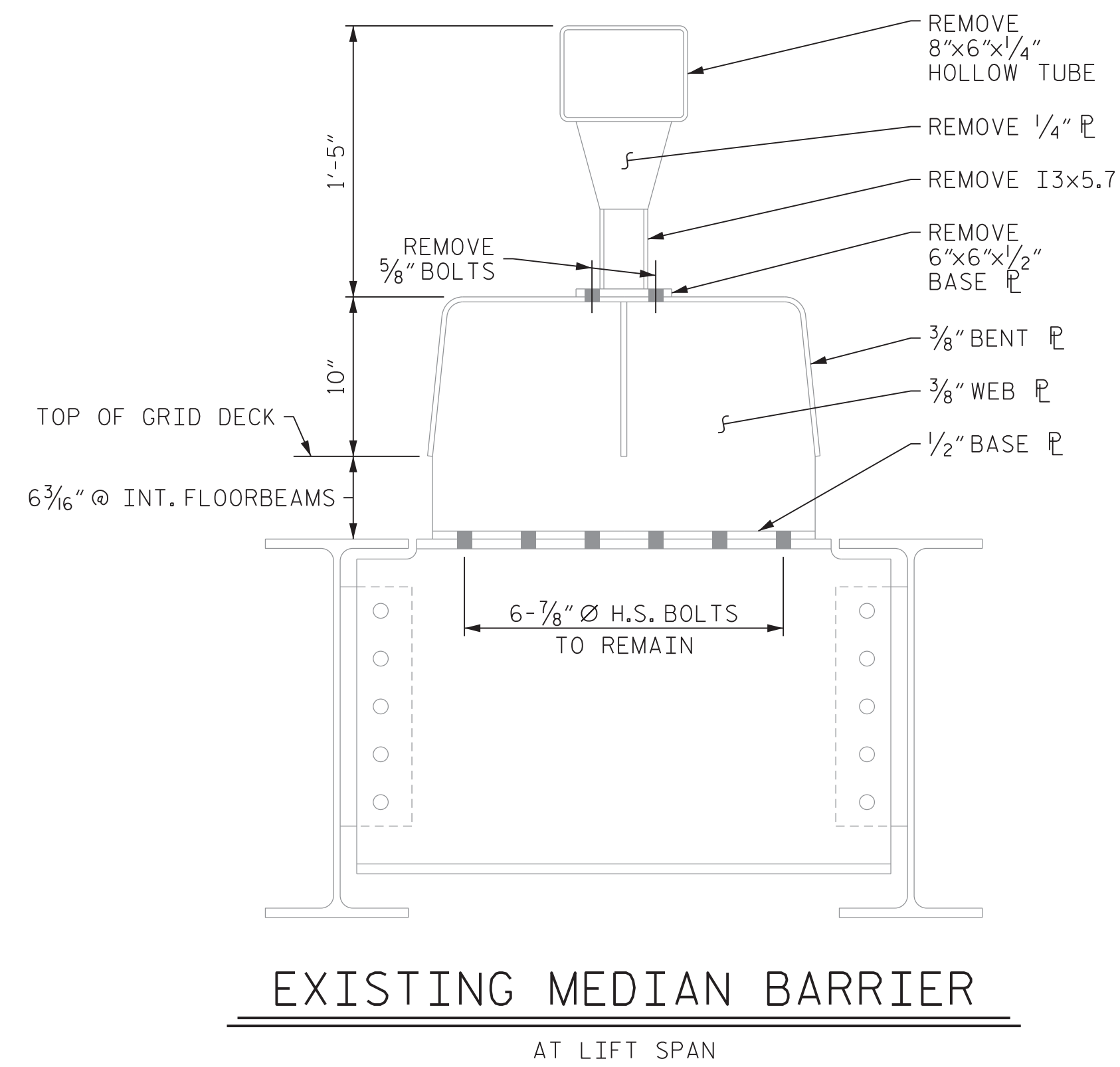
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DRAWN BY: K. WHITE DATE: NOV 2017
CHECKED BY: B. LOFLIN DATE: DEC 2017
DESIGN ENGINEER OF RECORD: J. DOUGHTY DATE: DEC 2017

NOTES:

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.



PROJECT NO. 15BPR.15
NEW HANOVER COUNTY

STATION: _____

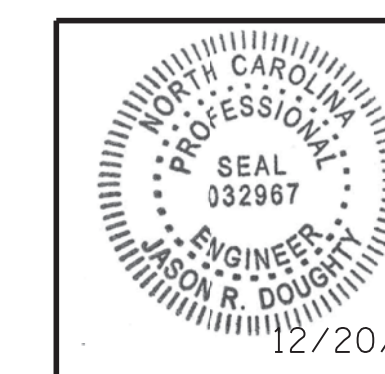
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**MEDIAN BARRIER
 REPLACEMENT DETAILS**



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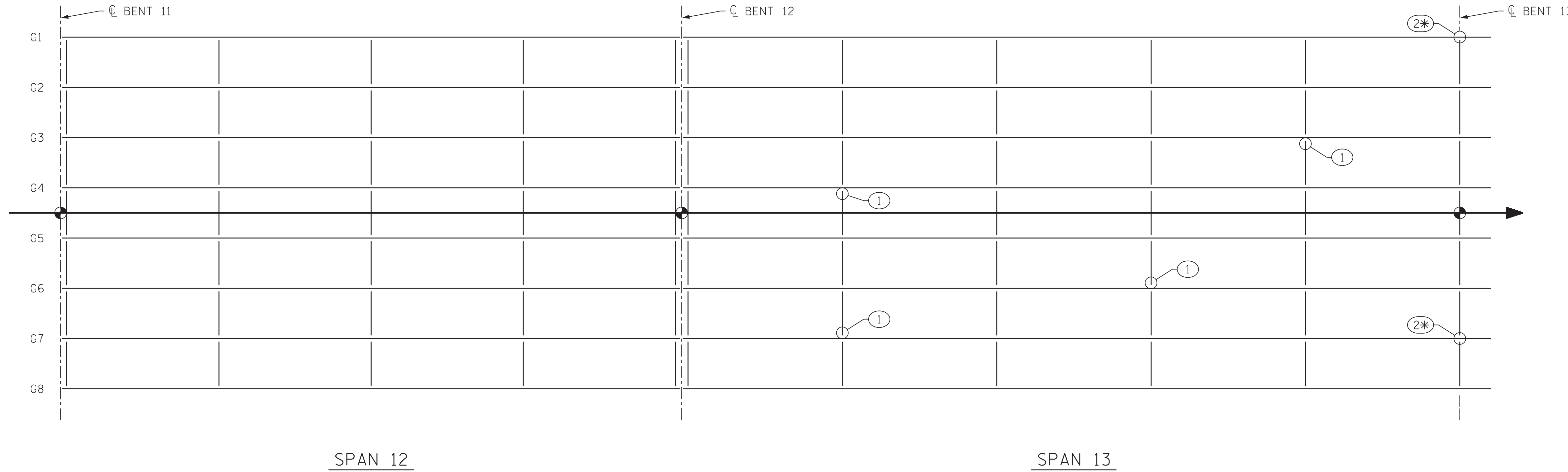
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REPAIR TYPES

- ① - CROSSFRAME / CONNECTION PLATE REPAIR
- ②* - NUT AND BOLT REPAIR AT ANCHOR BOLT
- ②** - NUT AND BOLT REPAIR AT PARKING BRACKET CONNECTION PLATE
- ②*** - NUT AND BOLT REPAIR AT CROSSFRAME CONNECTION PLATE
- ③ - PARKING AREA BRACKET CONNECTION PLATE REPAIR
- ④ - CROSSFRAME / FILL PLATE REPAIR
- ⑤ - PARKING AREA BRACKET DRIP BEAD ADDITION

PROJECT NO. 15BPR.15
NEW HANOVER COUNTY

STATION: _____

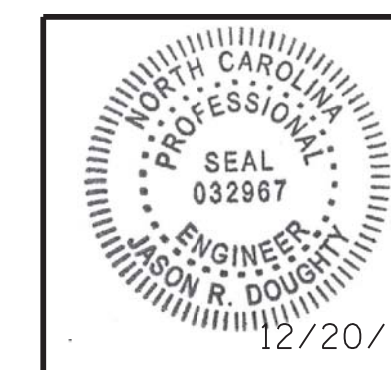
SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

APPROACH SPANS
 STRUCTURAL STEEL
 REPAIR LOCATIONS



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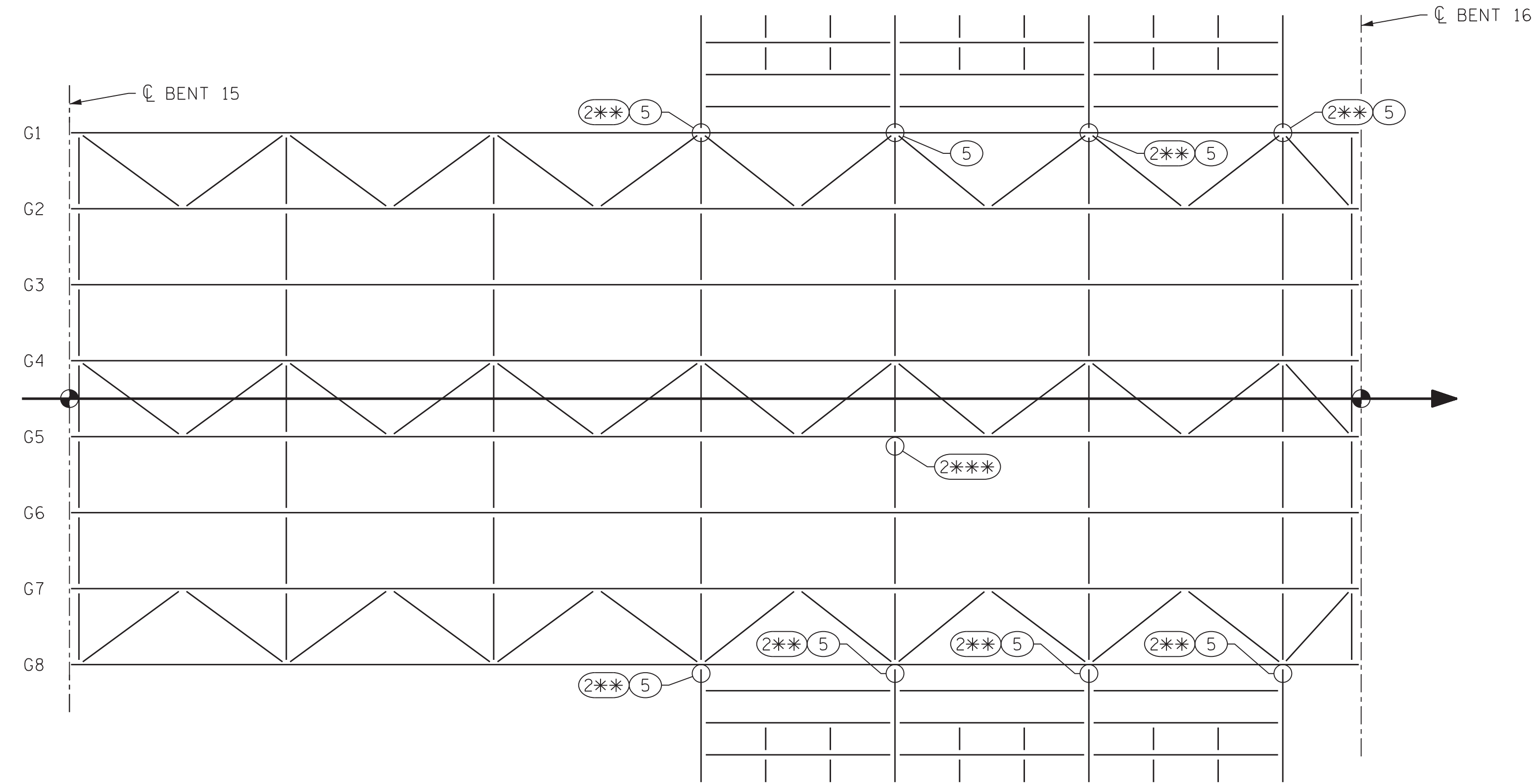
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SPAN 16

REPAIR TYPES

- ① - CROSSFRAME / CONNECTION PLATE REPAIR
- 2* - NUT AND BOLT REPAIR AT ANCHOR BOLT
- 2** - NUT AND BOLT REPAIR AT PARKING BRACKET CONNECTION PLATE
- 2*** - NUT AND BOLT REPAIR AT CROSSFRAME CONNECTION PLATE
- ③ - PARKING AREA BRACKET CONNECTION PLATE REPAIR
- ④ - CROSSFRAME / FILL PLATE REPAIR
- ⑤ - 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
 RALEIGH
 APPROACH SPANS
 STRUCTURAL STEEL
 REPAIR LOCATIONS



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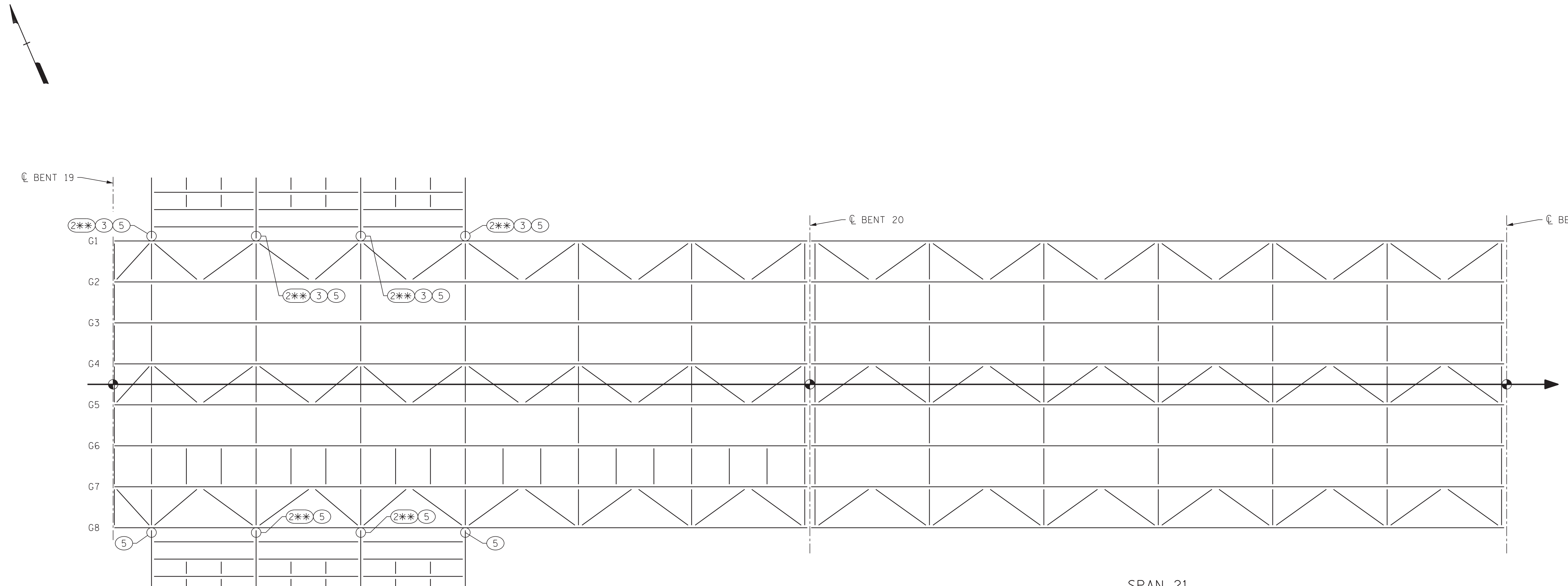
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SPAN 21

SPAN 20

REPAIR TYPES

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

PROJECT NO. 15BPR.15
NEW HANOVER COUNTY

STATION: _____

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 APPROACH SPANS
 STRUCTURAL STEEL
 REPAIR LOCATIONS



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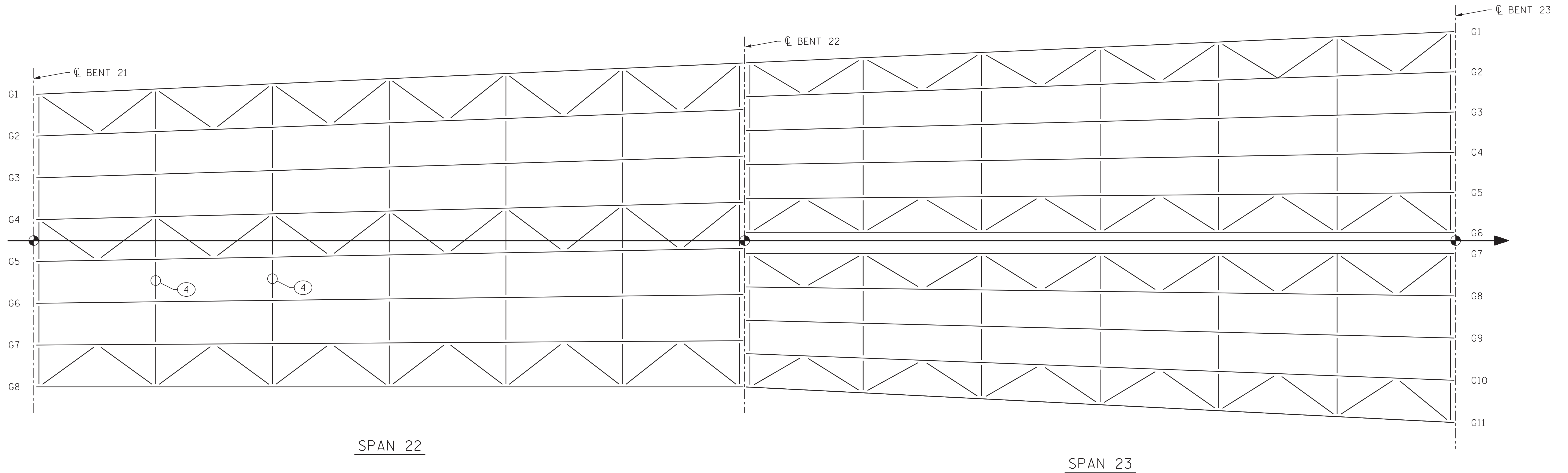
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- ④ - CROSSFRAME / FILL PLATE REPAIR
- ⑤ - PARKING AREA BRACKET DRIP BEAD ADDITION

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NEW HANOVER COUNTY

STATION: _____

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

APPROACH SPANS
 STRUCTURAL STEEL
 REPAIR LOCATIONS



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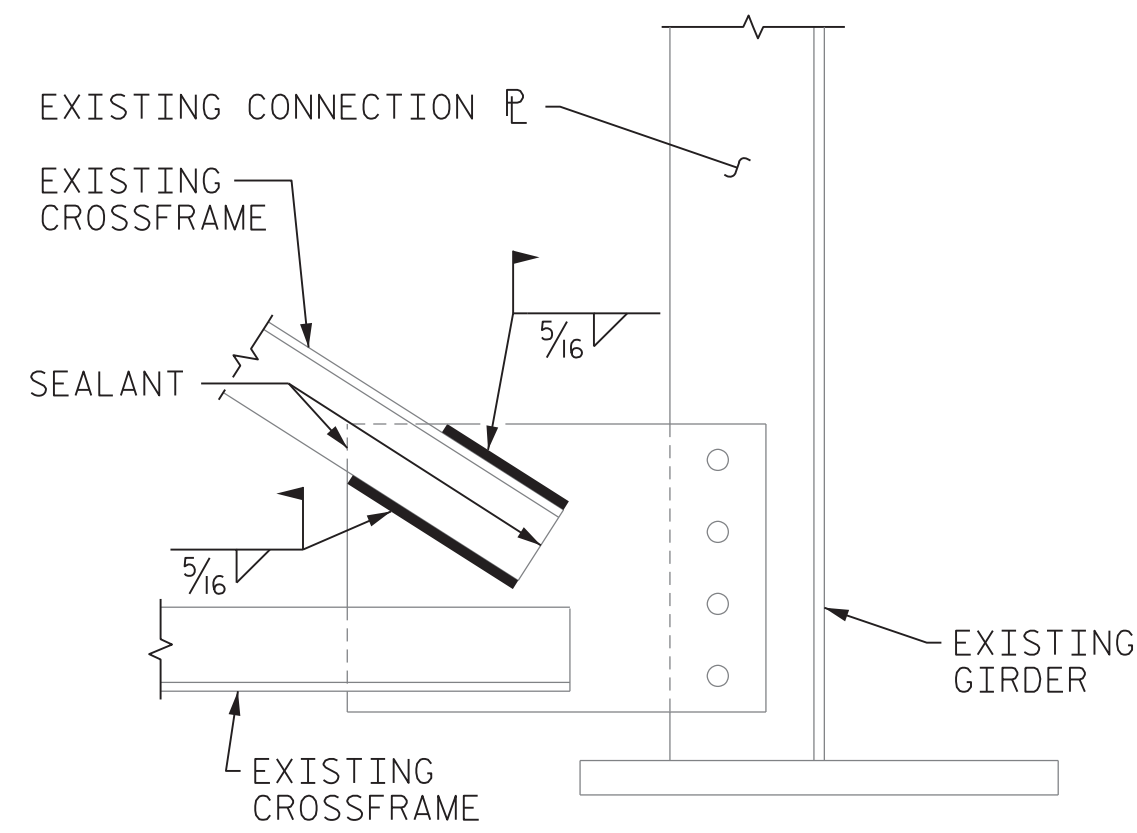
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REPAIR ①

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

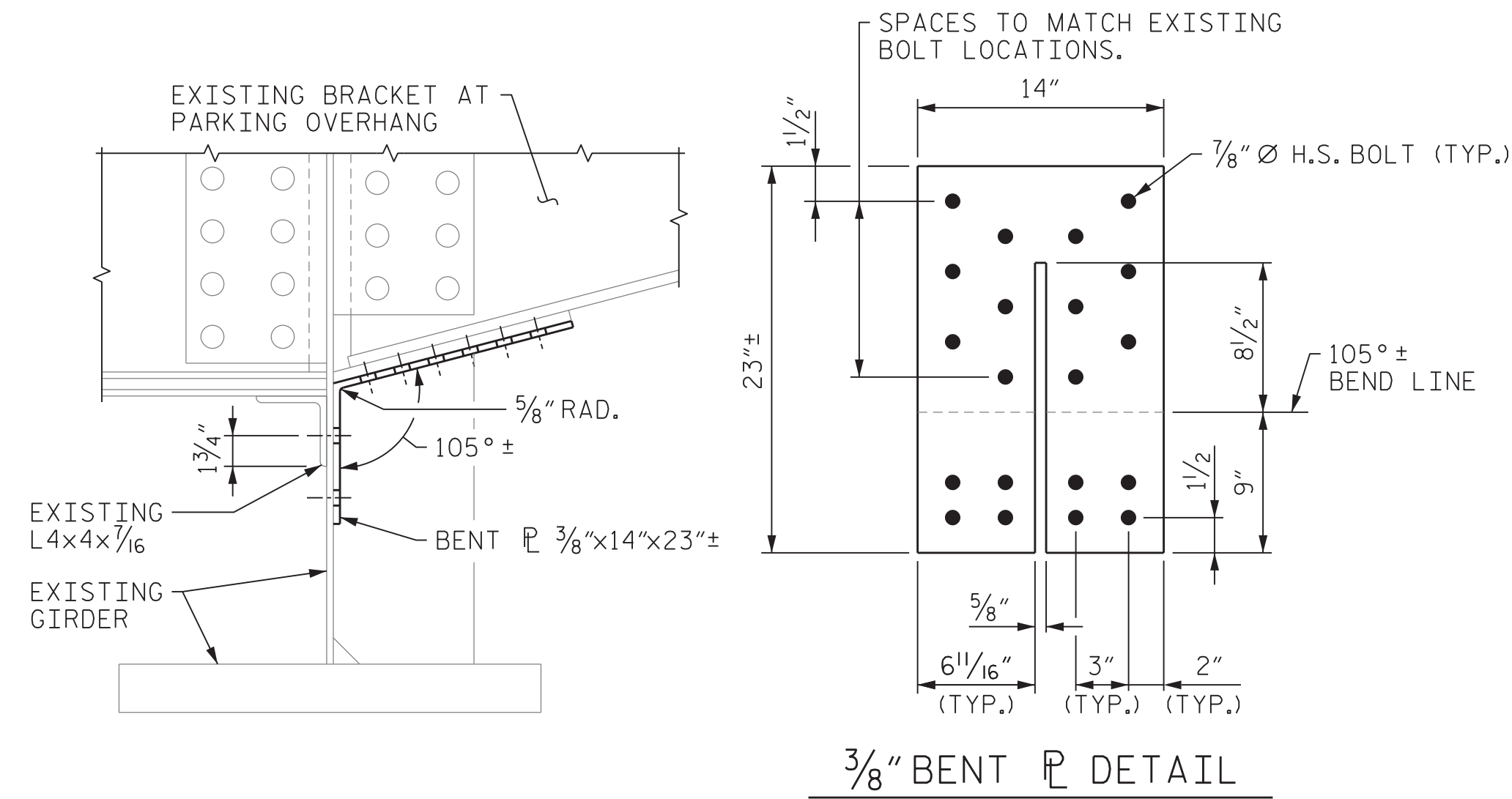
NO LIVE LOAD IN BAY OF REPAIR OR EITHER ADJACENT BAY DURING WELDING.

(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 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.

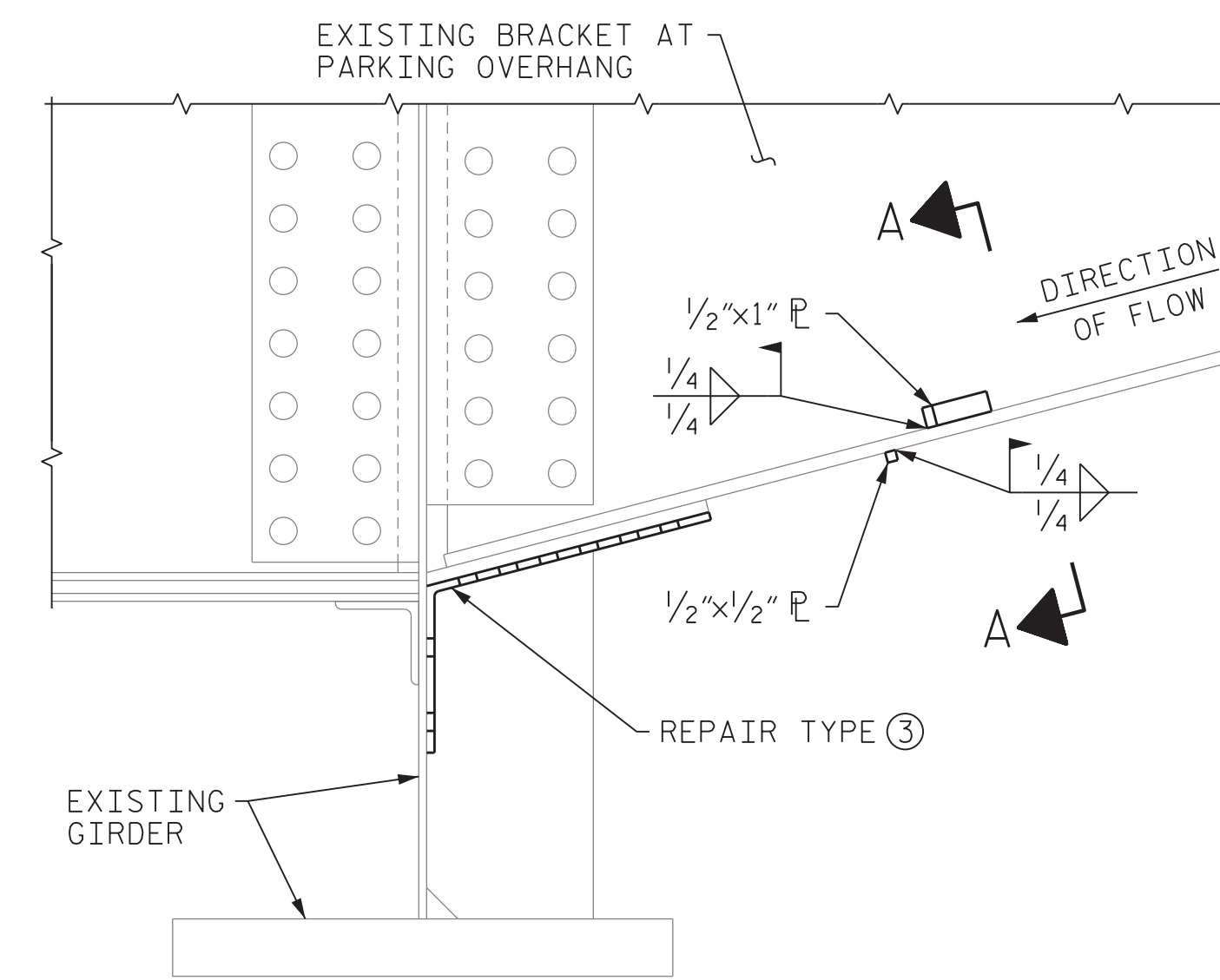
(4 REQUIRED)

BOLT LEGEND

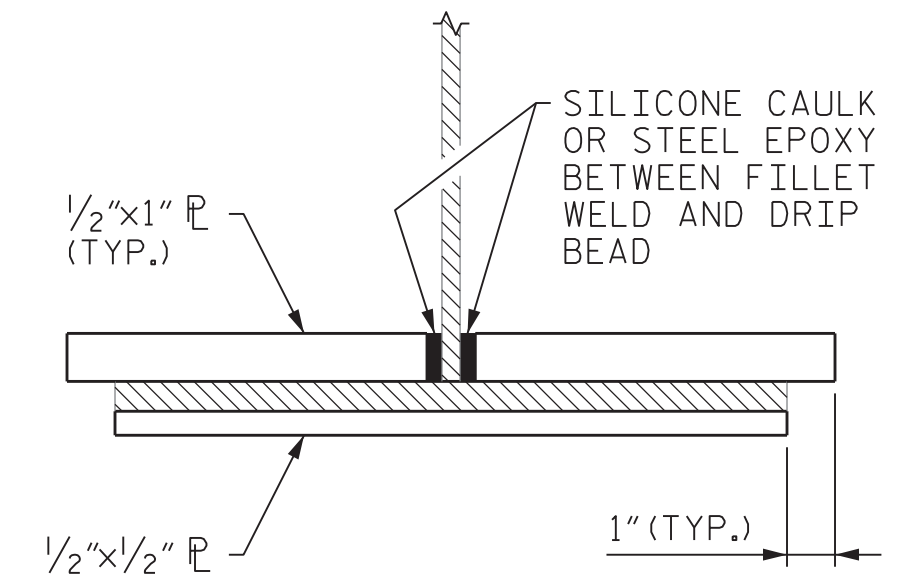
- - EXISTING FASTENER
- - NEW H.S. BOLT IN EXISTING HOLE
- - NEW H.S. BOLT IN NEW HOLE

NOTES:

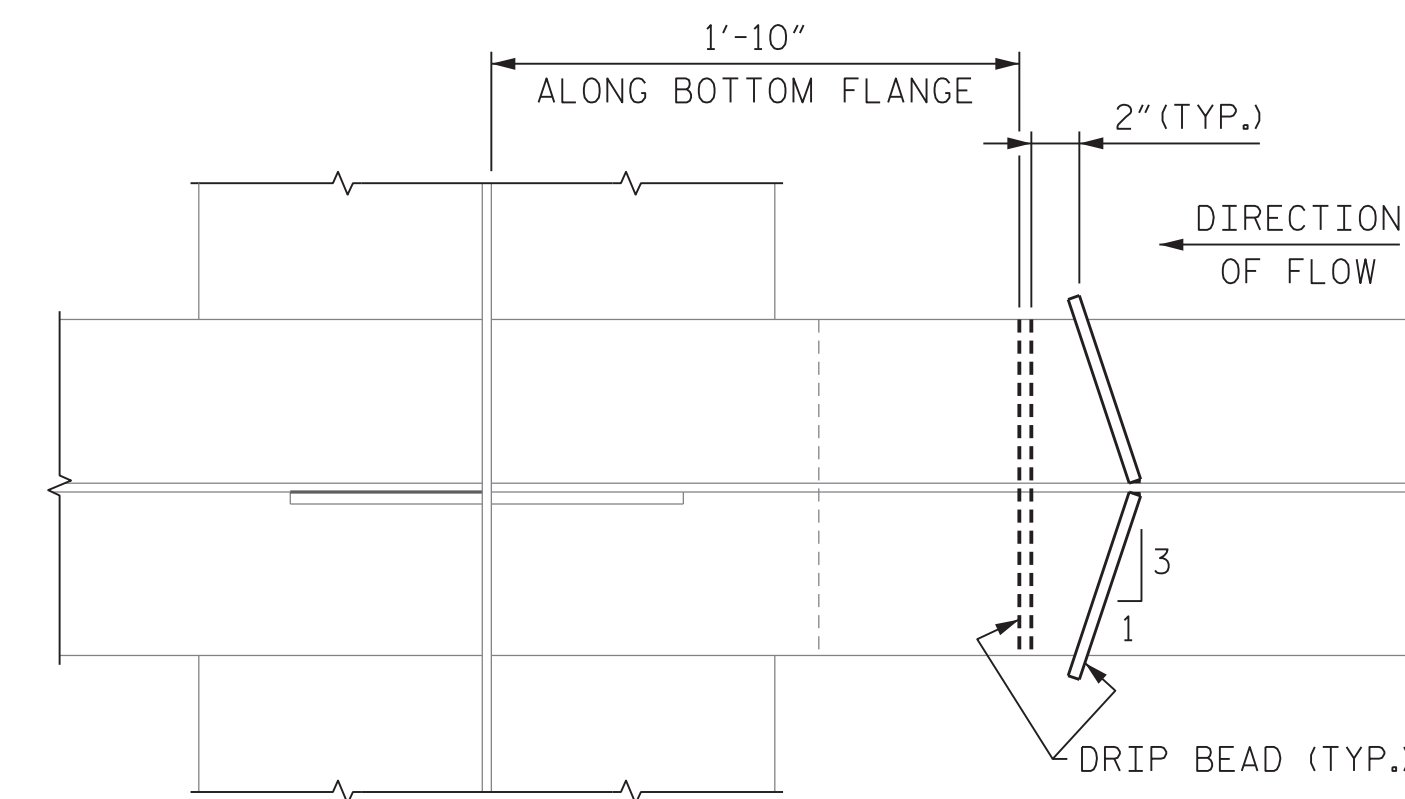
PERFORM ALL REPAIRS PRIOR TO OVERALL CLEANING AND PAINTING.



ELEVATION



SECTION A-A



PART PLAN - BOTTOM FLANGE

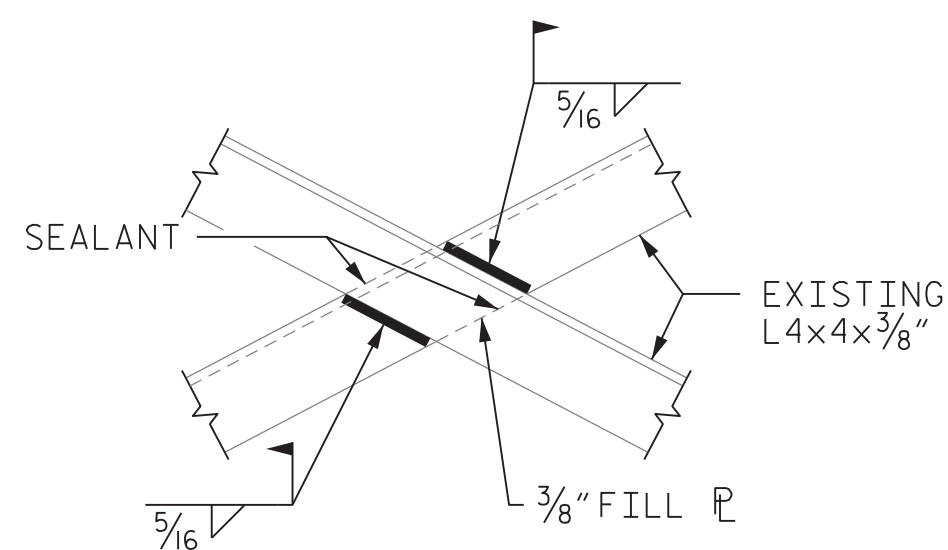
REPAIR ⑤

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)



REPAIR ④

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

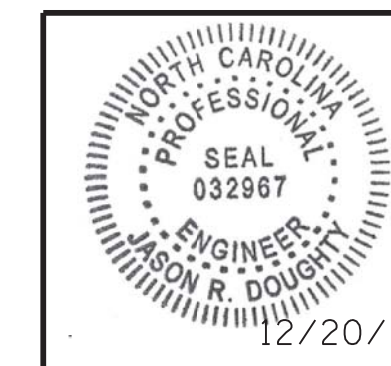
NO LIVE LOAD IN BAY OF REPAIR OR EITHER ADJACENT BAY DURING WELDING.

(2 REQUIRED)

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



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 NC LICENSE NO. C-2979



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 Jason R. Doughty
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
APPROACH SPANS					
STRUCTURAL STEEL REPAIR DETAILS					
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2			4		
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TOTAL SHEETS					66

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DESIGN ENGINEER OF RECORD:	J. DOUGHTY	DATE:	DEC 2017

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GIRDER, DIAPHRAGM, & UNDERDECK REPAIR TABLES

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

GIRDER, DIAPHRAGM, & UNDERDECK REPAIR TABLES

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

NOTES:

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

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

REPAIR QUANTITY TABLE

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

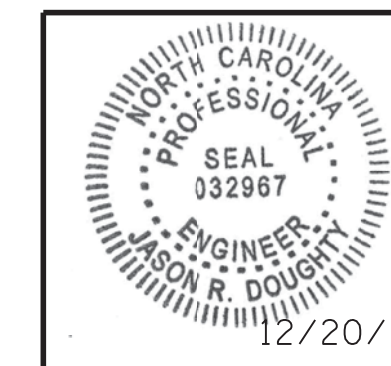
REPAIRS TO P/S CONC.	ESTIMATE		ACTUAL		
	AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
SPAN 4	GIRDERS	3.60	1.50		

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

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GIRDER, DIAPHRAGM
 AND UNDERDECK
 REPAIRS



DocuSigned by:
 Jason R Doughty
 SF73FA2DEA974E8..

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-38
2			4			TOTAL SHEETS 66

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

GIRDER, DIAPHRAGM, & UNDERDECK REPAIR TABLES

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

GIRDER, DIAPHRAGM, & UNDERDECK REPAIR TABLES

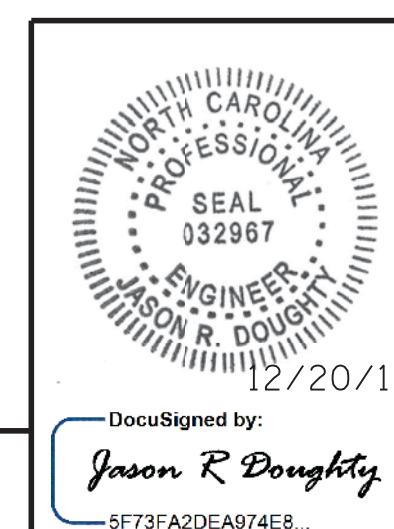
SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
12	DECK	2' FROM BENT 11	14" x 7"	BOTTOM OF DECK	RT. EXT.
12	DECK	1' FROM BENT 12	14" x 8"	BOTTOM OF DECK	RT. EXT.
13	DECK	25' FROM BENT 13	24" x 6"	BOTTOM OF DECK	4
19	DECK	2' FROM EAST END OF SPAN	7'-2" x 14"	BOTTOM OF DECK	5
21	DECK	@ BENT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

REPAIR QUANTITY TABLE

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

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



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

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GIRDER, DIAPHRAGM AND UNDERDECK REPAIRS

REVISIONS						SHEET NO.
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1			3			5-39
2			4			TOTAL SHEETS 66

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GIRDER, DIAPHRAGM, & UNDERDECK REPAIR TABLES

SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
28	G1	28' FROM BENT 27	36"x10"	BOTTOM FLANGE	---
28	G1	18.5' FROM BENT 28	6 @ 12"x11"	BOTTOM FLANGE	---
28	G1	30" FROM BENT 28	2 @ 12"x9"	BOTTOM FLANGE	---
28	G3	16' FROM BENT 27	7 @ 18"x10"	BOTTOM FLANGE	---
28	G3	24' FROM BENT 27	4 @ 11"x7"	BOTTOM FLANGE	---
28	G3	34' FROM BENT 27	4 @ 13"x7"	BOTTOM FLANGE	---
28	G3	22.5' FROM BENT 28	11"x10"	BOTTOM FLANGE	---
28	G5	22' FROM BENT 27	16"x12"	BOTTOM FLANGE	---
28	G5	2' FROM BENT 27	2 @ 11"x11"	BOTTOM FLANGE	---
28	G5	8.5' FROM BENT 27	196"x22"	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"x10"	BOTTOM FLANGE	---
28	G9	18' FROM BENT 27	5 @ 10"x8"	BOTTOM FLANGE	---
28	G9	21' FROM BENT 27	14"x8"	BOTTOM FLANGE	---
28	G9	27' FROM BENT 27	22"x11"	BOTTOM FLANGE	---
28	G9	34' FROM BENT 27	4 @ 20"x14"	BOTTOM FLANGE	---
28	G9	25' FROM BENT 28	17"x10"	BOTTOM FLANGE	---
28	G9	23' FROM BENT 28	12"x22"	BOTTOM FLANGE	---
28	G10	@ BENT 27	10"x8"	BOTTOM FLANGE	---
28	G10	12' FROM BENT 28	3 @ 9"x9"	BOTTOM FLANGE	---
28	G12	23' FROM BENT 27	2 @ 11"x6"	BOTTOM FLANGE	---
28	G14	2' FROM BENT 27	24"x7"	BOTTOM FLANGE	---
28	G15	15' FROM BENT 28	16"x10"	BOTTOM FLANGE	---
29	G1	@ BENT 29	7"x7"	BOTTOM FLANGE	---
29	G2	28' FROM BENT 29	12"x10"	BOTTOM FLANGE	---
29	G2	28' FROM BENT 29	7"x7"	BOTTOM FLANGE	---
29	G2	18' FROM BENT 29	11"x9"	BOTTOM FLANGE	---
29	G7	35.5' FROM BENT 28	13"x10"	BOTTOM FLANGE	---
29	G7	26' FROM BENT 29	4 @ 17"x11"	BOTTOM FLANGE	---
29	G7	23' FROM BENT 29	10"x9"	BOTTOM FLANGE	---
29	G7	17' FROM BENT 29	3 @ 9"x7"	BOTTOM FLANGE	---
30	G1	22' FROM BENT 30	13"x8"	BOTTOM FLANGE	---
30	G2	24' FROM BENT 29	16"x10"	BOTTOM FLANGE	---
30	G2	16' FROM BENT 29	11"x6"	BOTTOM FLANGE	---
30	G3	18' FROM BENT 29	14"x13"	BOTTOM FLANGE	---
30	G4	32' FROM BENT 29	14"x12"	BOTTOM FLANGE	---
30	G4	38' FROM BENT 29	3 @ 17"x10"	BOTTOM FLANGE	---
30	G7	24.5' FROM BENT 29	16"x13"	BOTTOM FLANGE	---
30	G7	23.5' FROM BENT 29	10"x10"	BOTTOM FLANGE	---
30	G7	25' FROM BENT 29	10"x10"	BOTTOM FLANGE	---
30	G8	28' FROM BENT 29	16"x8"	BOTTOM FLANGE	---
30	G9	30' FROM BENT 29	4 @ 17"x7"	BOTTOM FLANGE	---

GIRDER, DIAPHRAGM, & UNDERDECK REPAIR TABLES

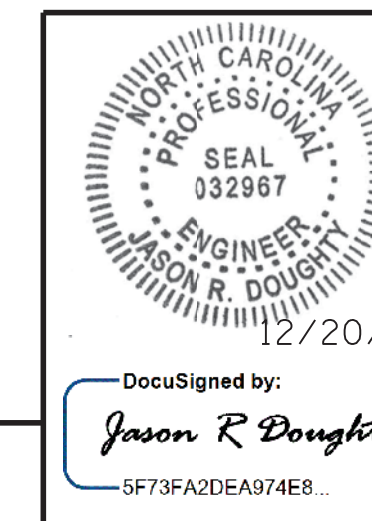
SPAN	MEMBER	LENGTH FROM BENT (FT.)	REPAIR SIZE	LOCATION	BAY
30	G9	34' FROM BENT 29	15"x9"	BOTTOM FLANGE	---
30	G9	7' FROM BENT 30	10"x10"	BOTTOM FLANGE	---
30	G10	1' FROM BENT 30	12"x7"	BOTTOM FLANGE	---
30	G10	20' FROM BENT 30	14"x7"	BOTTOM FLANGE	---
30	G11	24' FROM BENT 30	10"x5"	BOTTOM FLANGE	---
30	G11	22' FROM BENT 30	16"x10"	BOTTOM FLANGE	---
30	G11	6' FROM BENT 30	10"x10"	BOTTOM FLANGE	---
31	DECK	2' FROM BENT 30	22"x9"	BOTTOM OF DECK	7
31	G2	30' FROM BENT 30	12"x9"	BOTTOM FLANGE	---
31	G2	47.5' FROM BENT 30	300"x26"	BOTTOM FLANGE	---
31	G2	14' FROM BENT 31	14"x8"	BOTTOM FLANGE	---
31	G2	21' FROM BENT 31	14"x8"	BOTTOM FLANGE	---
31	G3	47.5' FROM BENT 30	10"x7"	BOTTOM FLANGE	---
31	G4	47.5' FROM BENT 30	10"x5"	BOTTOM FLANGE	---
31	G5	16' FROM BENT 30	9"x8"	BOTTOM FLANGE	---
31	G7	1.5' FROM BENT 30	11"x7"	BOTTOM FLANGE	---
31	G8	1' FROM BENT 30	18"x12"	BOTTOM FLANGE	---
31	G9	47.5' FROM BENT 30	4 @ 11"x8"	BOTTOM FLANGE	---
31	G11	4' FROM BENT 30	8"x8"	BOTTOM FLANGE	---
31	G12	6' FROM BENT 30	19"x10"	BOTTOM FLANGE	---
32	G9	@ BENT 31	9"x6"	BOTTOM FLANGE	---
32	G10	@ END BENT 2	10"x8"	BOTTOM FLANGE	---
32	G10	3' FROM BENT 31	7"x7"	TOP RT. CHAMFER	---
32	G11	@ END BENT 2	9"x7"	BOTTOM FLANGE	---
33	G1	VARIOUS LOCATIONS	48"x9"	BOTTOM FLANGE	---
33	G1	30' FROM BENT 33	12"x9"	BOTTOM FLANGE	---
34	G1	16' FROM BENT 32	49"x11"	BOTTOM FLANGE	---
34	G1	30' FROM BENT 32	9 @ 20"x10"	BOTTOM FLANGE	---
34	G1	14' FROM BENT 32	10"x10"	BOTTOM FLANGE	---
34	G1	18' FROM BENT 32	10"x10"	BOTTOM FLANGE	---
34	G2	@ BENT 32	10"x9"	BOTTOM FLANGE	---
35	G1	9" FROM END BENT 2 RAMP	10"x6"	TOP LT. CHAMFER	---
35	G2	9" FROM END BENT 2 RAMP	10"x6"	TOP LT. FLANGE	---
35	G4	12" FROM BENT 33	11"x10"	BOTTOM FLANGE	---
35	G4	19' FROM BENT 33	14"x11"	BOTTOM FLANGE	---
35	G5	5" FROM END BENT 2 RAMP	14"x11"	BOTTOM FLANGE	---
35	G5	5" FROM END BENT 2 RAMP	13"x10"	BOTTOM FLANGE	---
35	G5	19" FROM END BENT 2 RAMP	17"x5"	TOP LT. FLANGE	---

REPAIR QUANTITY TABLE

SPAN	SHOTCRETE	ESTIMATE		ACTUAL		
		AREA SF	VOLUME CF	AREA SF	DEPTH FT	VOLUME CF
SPAN 28	GIRDERS	82.89	10.48			
	DIAPHRAGMS	---	---			
	DECK	---	---			
SPAN 29	GIRDERS	10.24	1.28			
	DIAPHRAGMS	---	---			
	DECK	---	---			
SPAN 30	GIRDERS	20.34	2.89			
	DIAPHRAGMS	---	---			
	DECK	---	---			
SPAN 31	GIRDERS	63.30	8.13			
	DIAPHRAGMS	---	---			
	DECK	1.38	0.23			
SPAN 32	GIRDERS	1.71	0.21			
	DIAPHRAGMS	---	---			
	DECK	---	---			
SPAN 33	GIRDERS	3.75	0.47			
	DIAPHRAGMS	---	---			
	DECK	---	---			
SPAN 34	GIRDERS	18.26	2.91			
	DIAPHRAGMS	---	---			
	DECK	---	---			
SPAN 35	GIRDERS	5.23	0.65			
	DIAPHRAGMS	---	---			
	DECK	---	---			

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PROJECT NO. 15BPR.15
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SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GIRDER, DIAPHRAGM
 AND UNDERDECK
 REPAIRS

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 TOTAL SHEETS 66

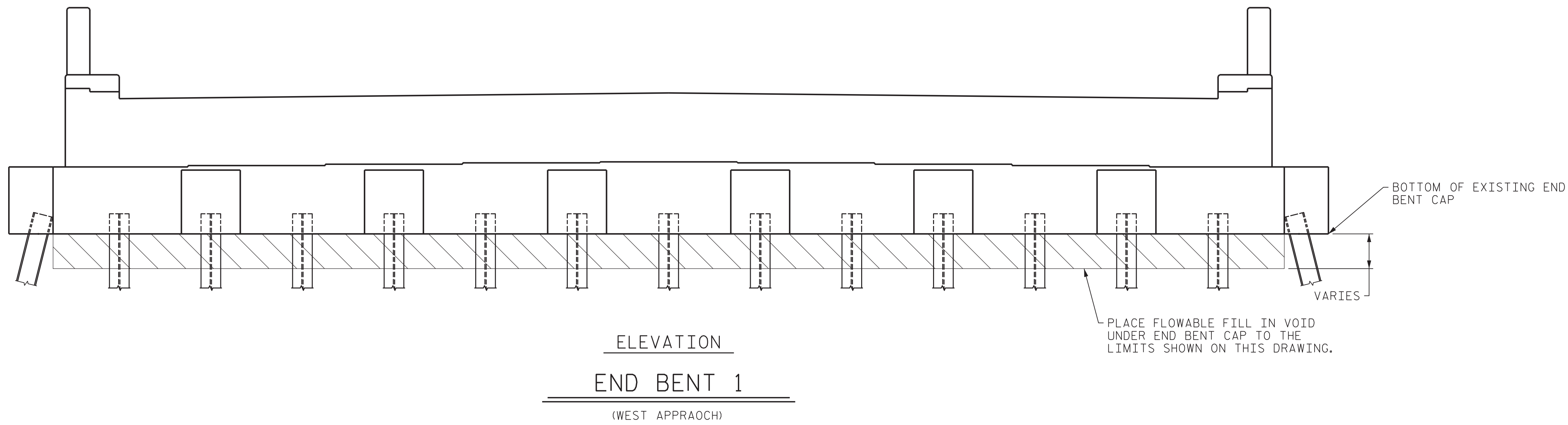
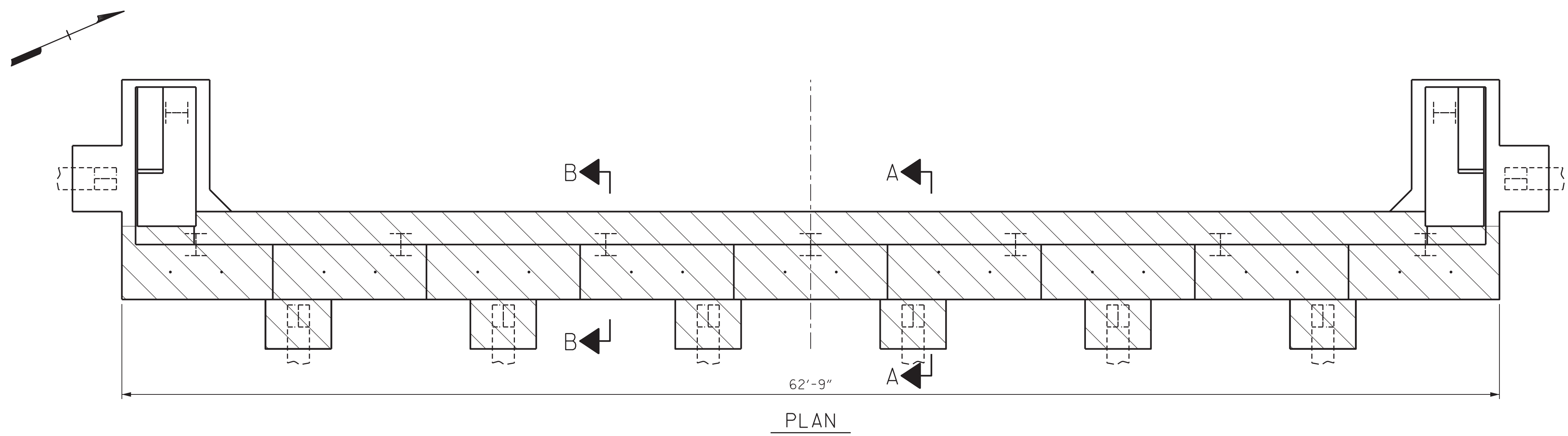
NOTES:

TEMPERATURE SHALL BE AT LEAST 40°F WHEN PLACING FLOWABLE FILL.

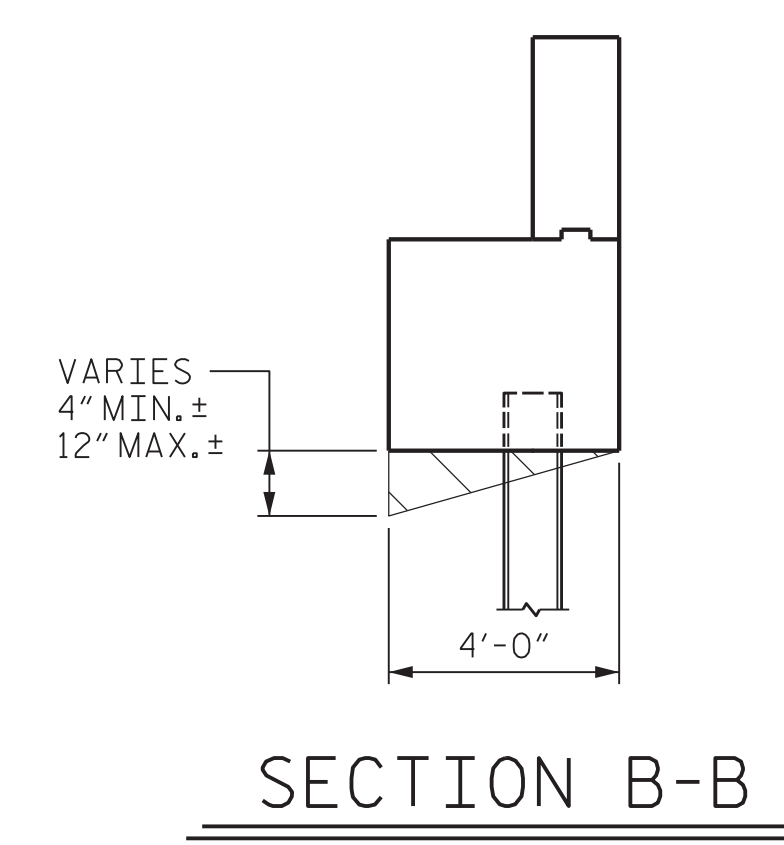
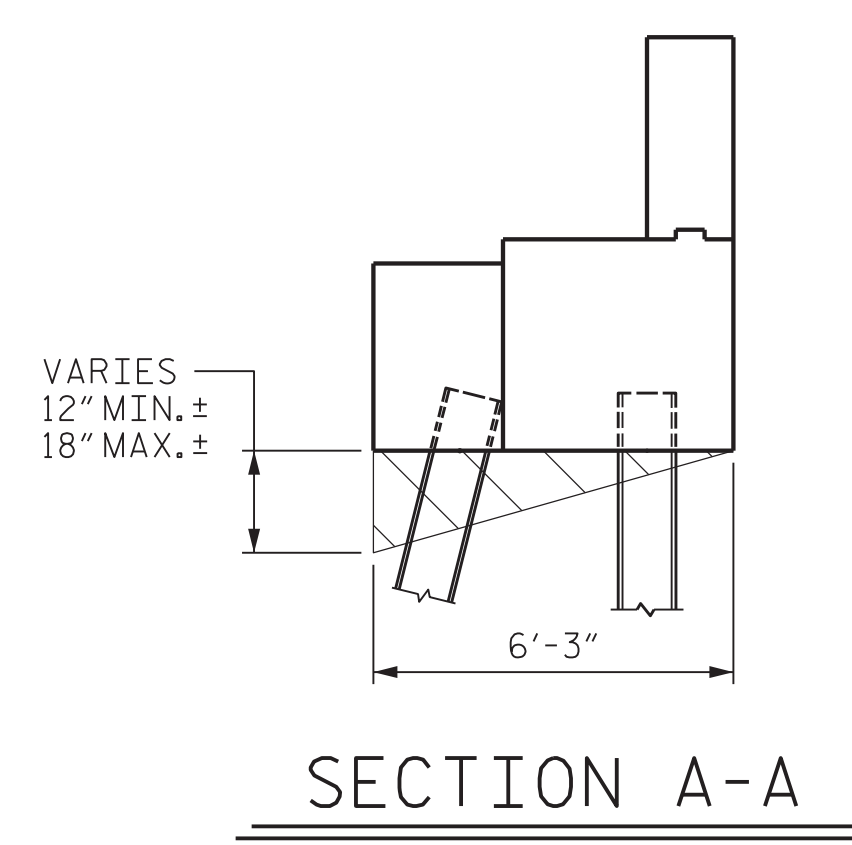
CLEAN AREA UNDER CAP PRIOR TO PLACING FLOWABLE FILL.

FOR FLOWABLE FILL, SEE SPECIAL PROVISIONS.

REPAIR QUANTITY TABLE		
REPAIRS END BENT 1	ESTIMATE	ACTUAL
FLOWABLE FILL	8 CY	CY



FLOWABLE FILL BOUNDARY LIMITS



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

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

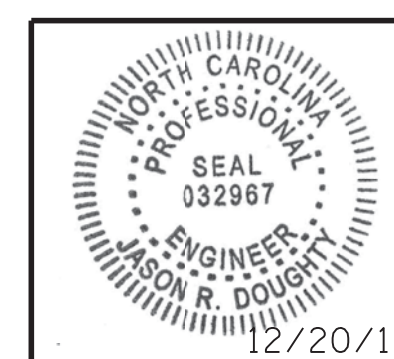
END BENT 1 REPAIRS

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

TOTAL SHEETS: 66



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



DocuSigned by:
 Jason R Doughty
 5F73FA2DEA674E8..

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 UNLESS ALL SIGNATURES COMPLETED**

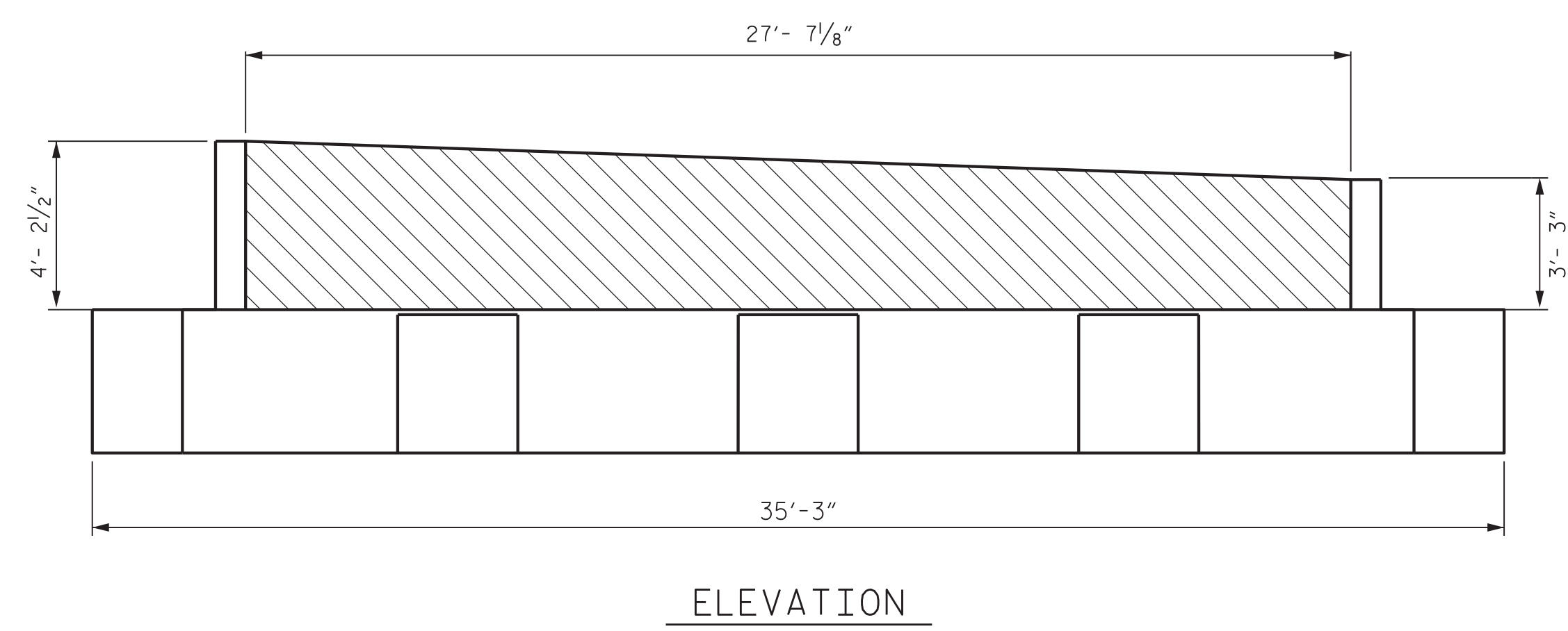
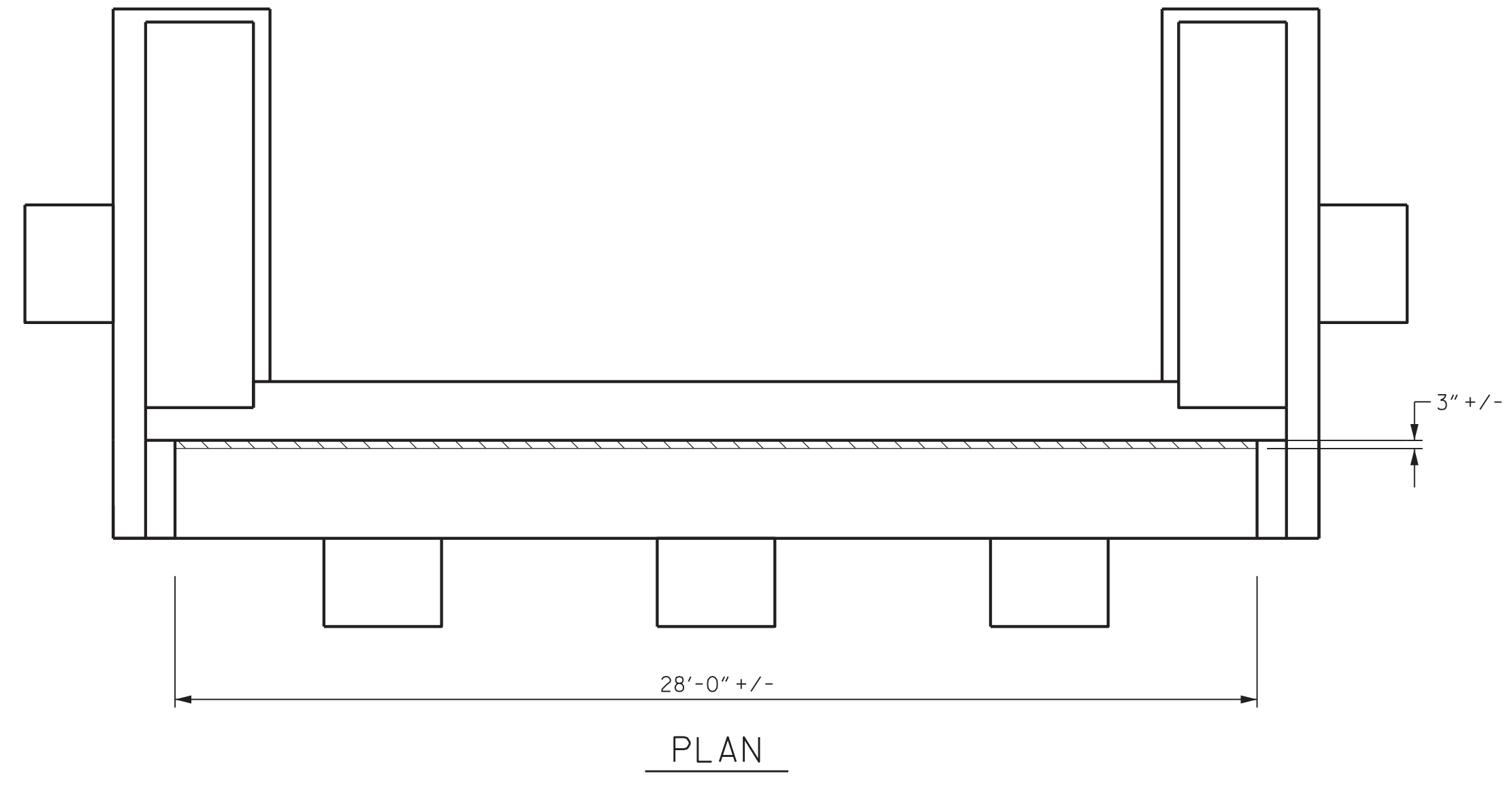
12/21/2017 4:00:08 PM 368202_SMU_ABU11.640013.dgn

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

NOTES:

FOR SHOTCRETE REPAIRS SEE SPECIAL PROVISIONS.

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

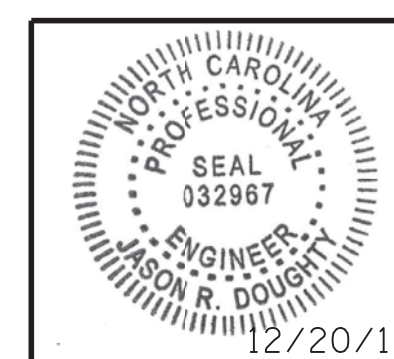


ELEVATION
RAMP B END BENT

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RAMP B
END BENT REPAIRS



DocuSigned by:
Jason R Doughty
5F73FA2DEA974E8...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-42
2			4			TOTAL SHEETS 66

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12/21/2017 400_083_368202_SMU_ABUT2_640013.dgn

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

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $1\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$ " 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 $\frac{1}{4}$ " 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 $\frac{7}{8}$ " \emptyset SHEAR STUDS FOR THE $\frac{3}{4}$ " \emptyset STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$ " \emptyset STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \emptyset STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset 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 $\frac{5}{16}$ " 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 $\frac{1}{16}$ " 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. FINIS 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.

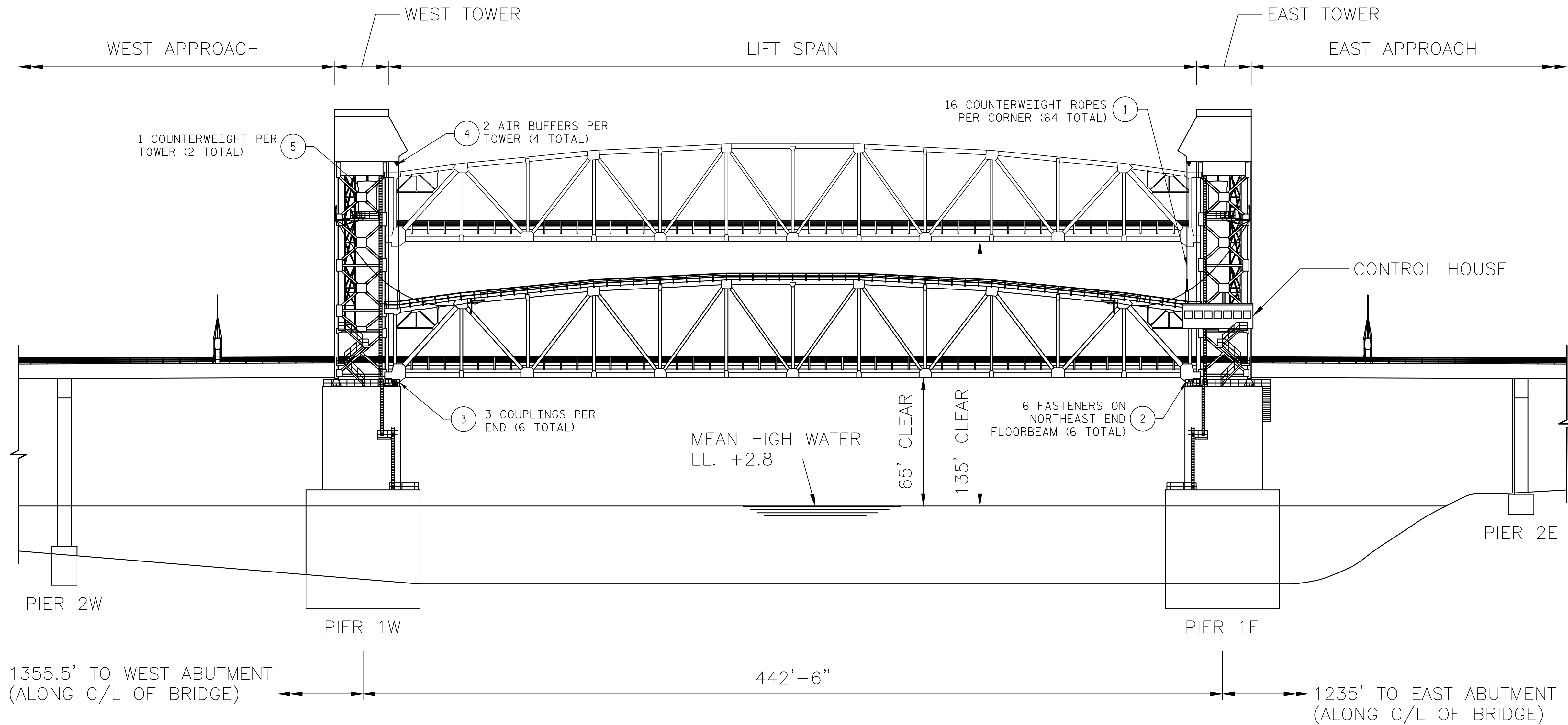
ENGLISH

JANUARY, 1990

MECHANICAL SCOPE		
ITEM NO.	DESCRIPTION	SHEET NO.
1	CLEAN AND LUBRICATE ALL COUNTERWEIGHT ROPES	M01
2	REPLACE CORRODED FASTENERS AT SPAN LOCK RECEIVER	M02
3	REPLACE ALL SPAN LOCK MACHINERY SHAFT COUPLING SEALS, GASKETS, AND FASTENERS	M02
4	REMOVE UPPER AIR BUFFERS AND REPLACE WITH MARINE FENDER-TYPE BUMPERS ON NEW BRACKETS	M03 AND M04
5	ADD NEW COUNTERWEIGHT PLATES TO BALANCE BRIDGE	SEE SPECIFICATIONS

NOTE:

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



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

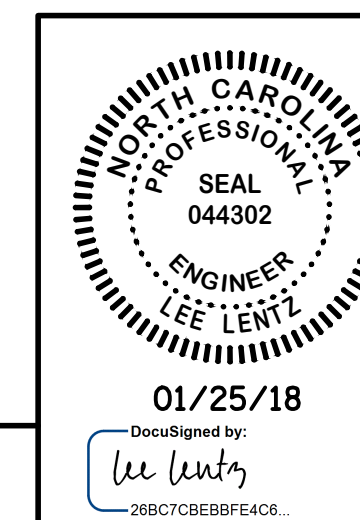
LAST SAVED 1/25/2018 9:07 AM BY EASAMPLE
 LAST PLOTTED 1/25/2018 9:08 AM
 FILE: \\mimdd01\proj\projects\15682.02\CADD\Mechanical\M01 MECHANICAL SCOPE

DESIGNED BY: R. C. HOFFMAN DATE : DEC. 2017
 DRAWN BY: R. C. HOFFMAN DATE : DEC. 2017
 CHECKED BY: L. R. LENTZ DATE : JAN. 2018
 DESIGN ENGINEER OF RECORD: L. R. LENTZ DATE : JAN. 2018



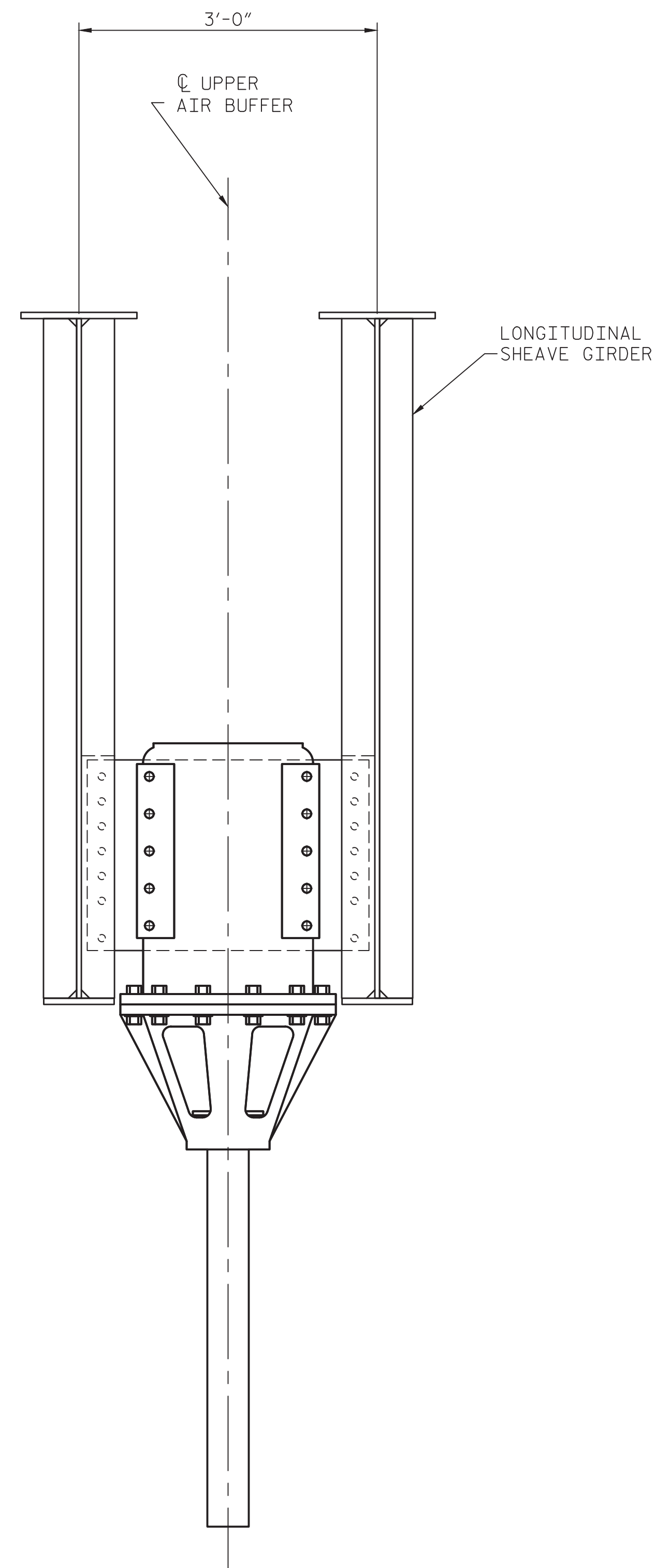
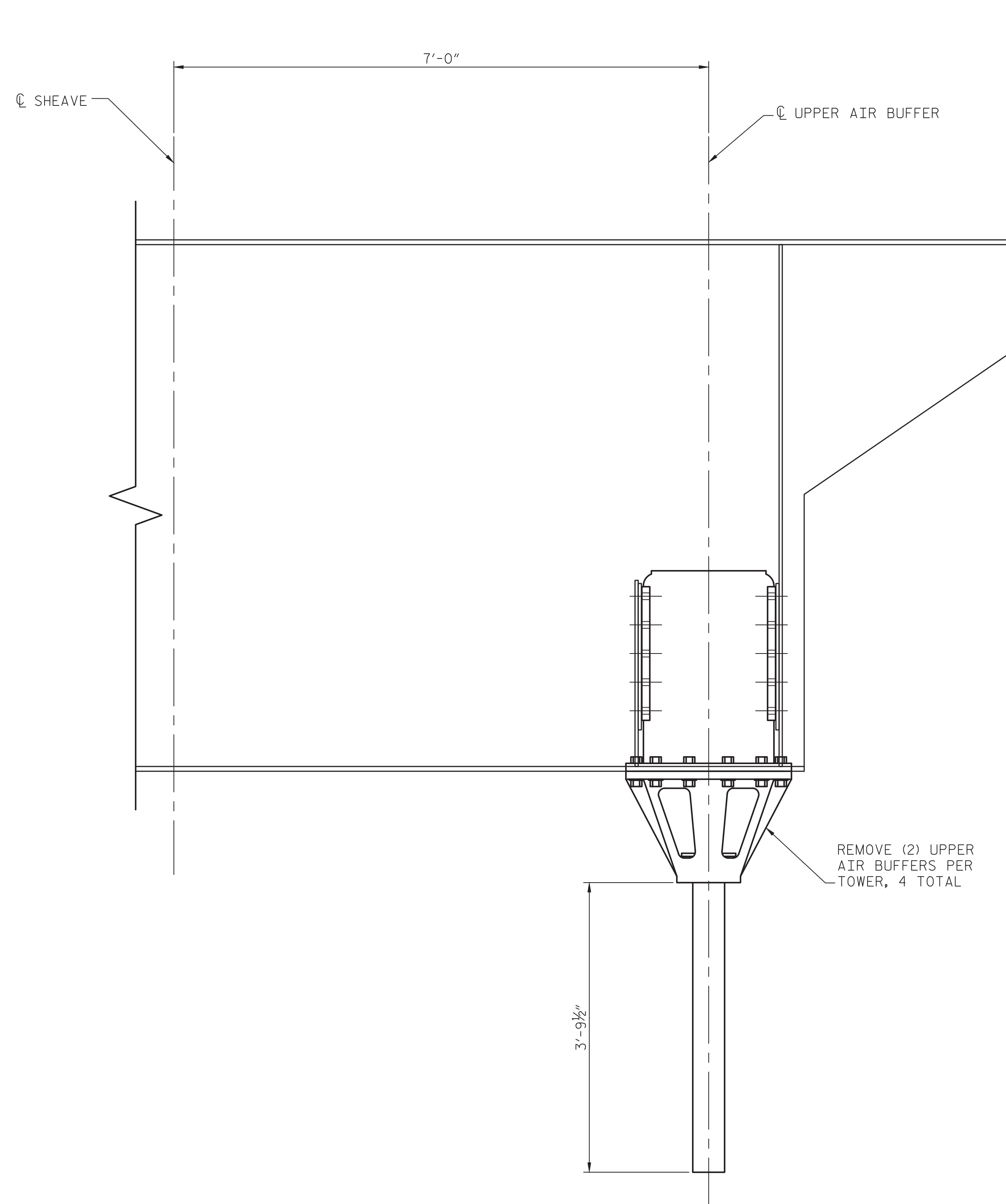
333 FAYETTEVILLE STREET, SUITE 505
 RALEIGH, NC 27601
 NC LICENSE NO. C-2979

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 MECHANICAL
 MECHANICAL SCOPE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			M01
2			4			66



NOTES:

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

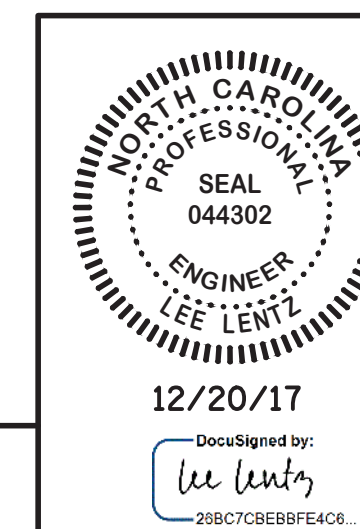
PROJECT NO. 15BPR.15
NEW HANOVER COUNTY
 STATION: _____

UPPER AIR BUFFER REMOVAL

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



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



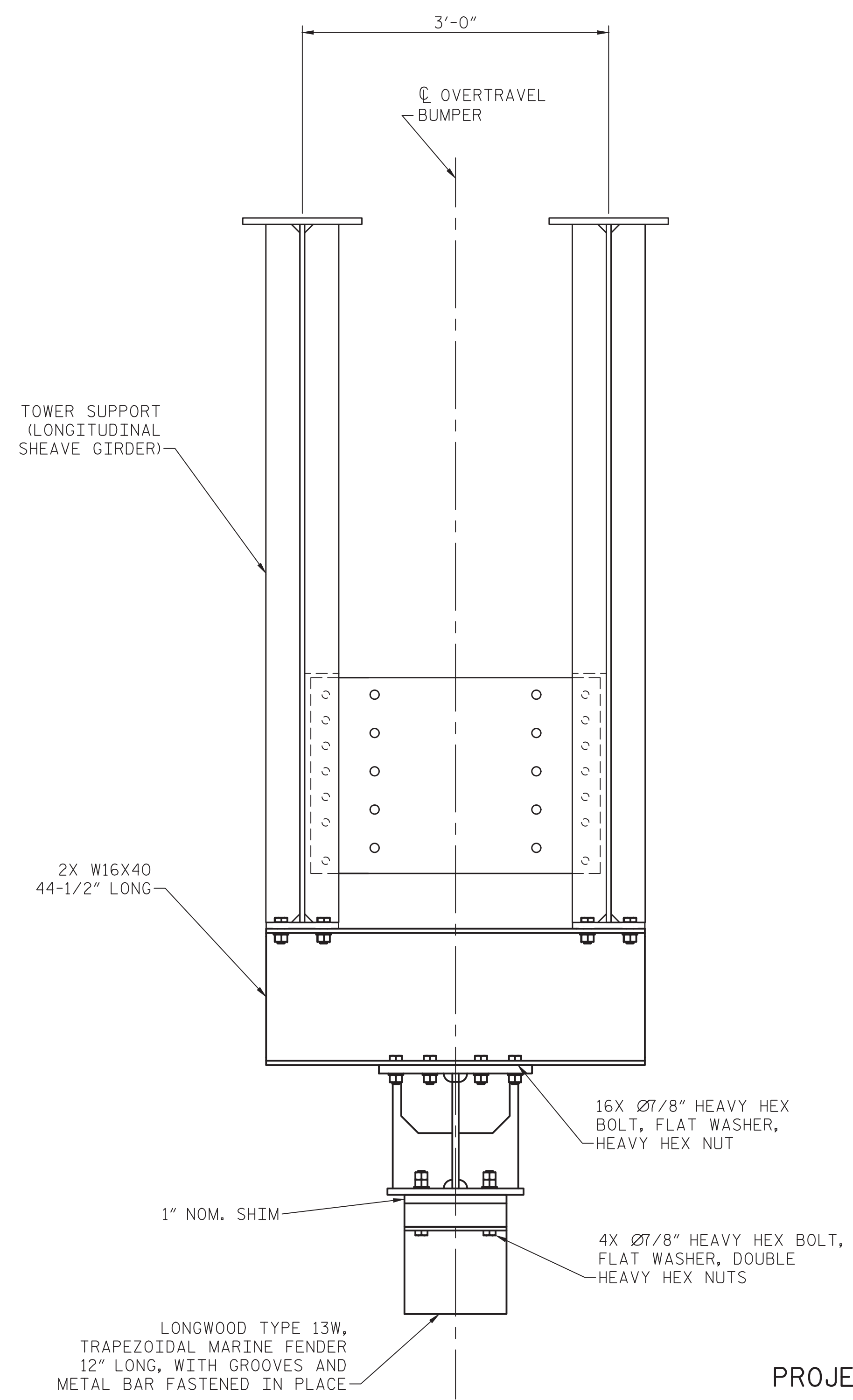
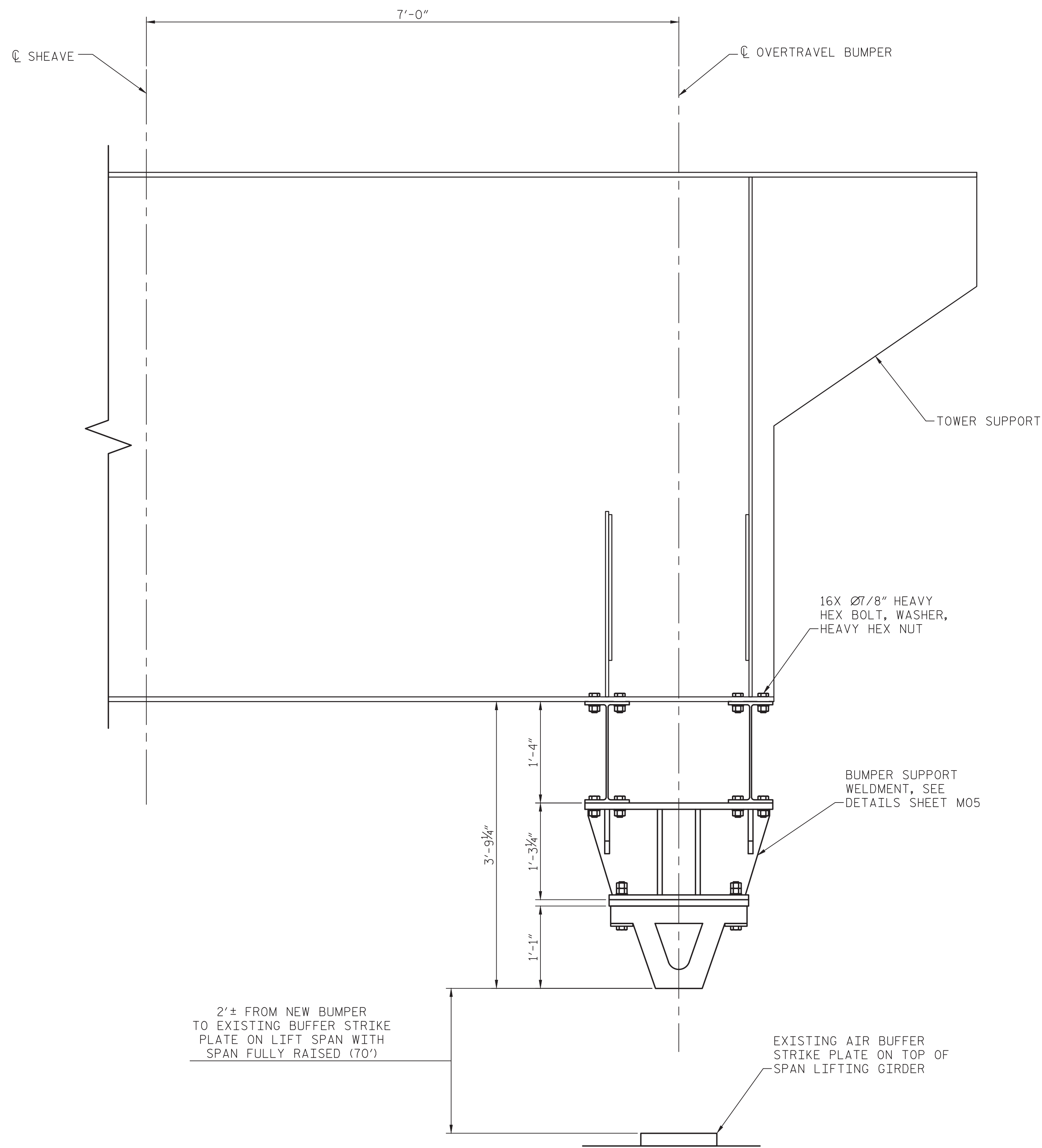
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 MECHANICAL
**UPPER AIR BUFFER
 REMOVAL**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			MO3
2			4			66

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LAST SAVED 12/20/2017 2:30 PM BY EASAMPLE. LAST PLOTTED 12/20/2017 2:33 PM.
 FILE: \\mimddj01p01\proj\15\15682\02\CADD\Mechanical\MO3 UPPER AIR BUFFER REMOVAL

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

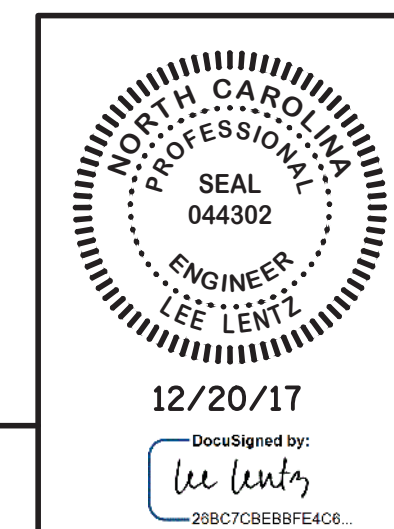


- NOTES:**
1. PAINT IN ACCORDANCE WITH STRUCTURAL SPECIFICATIONS.

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

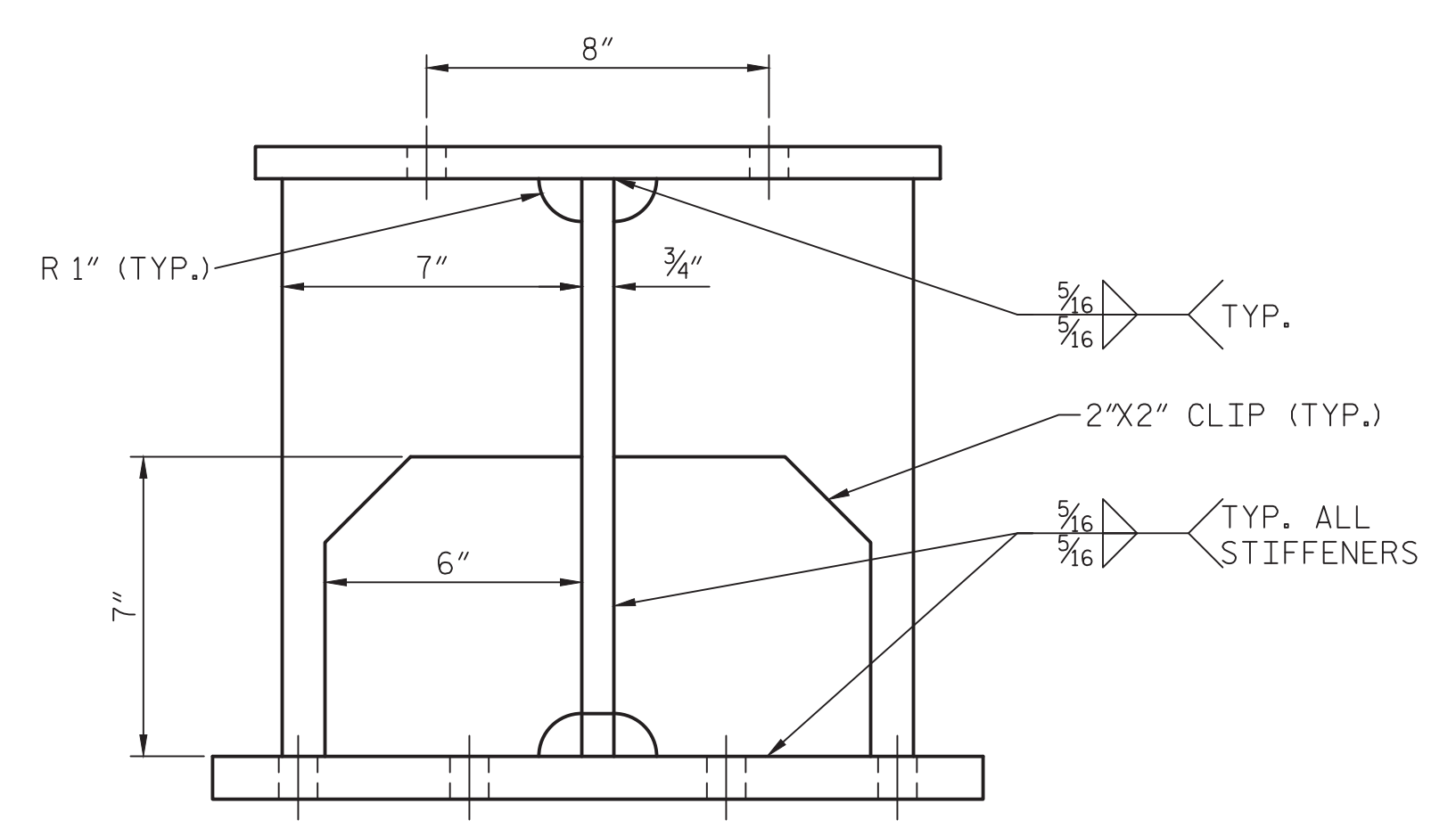
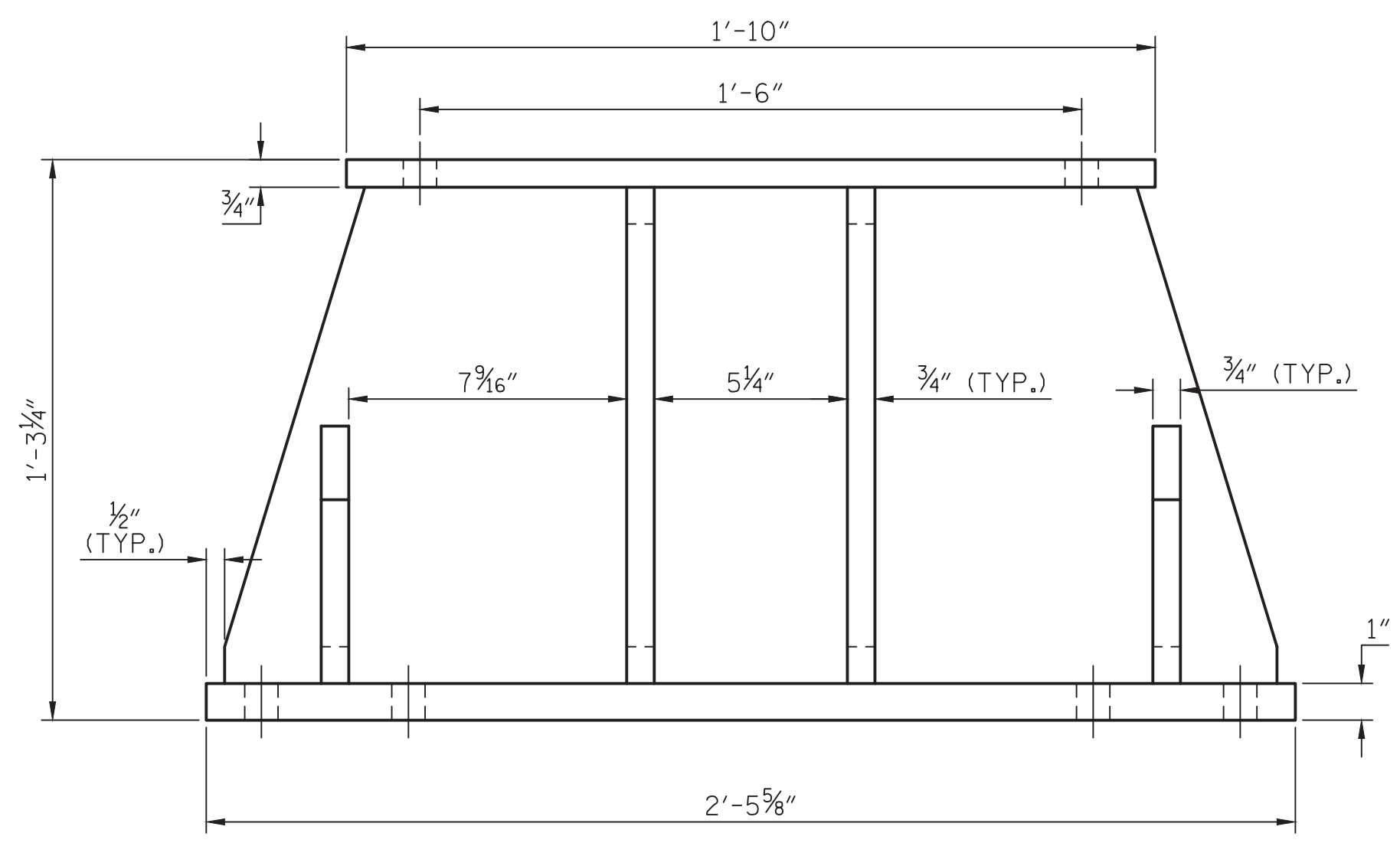
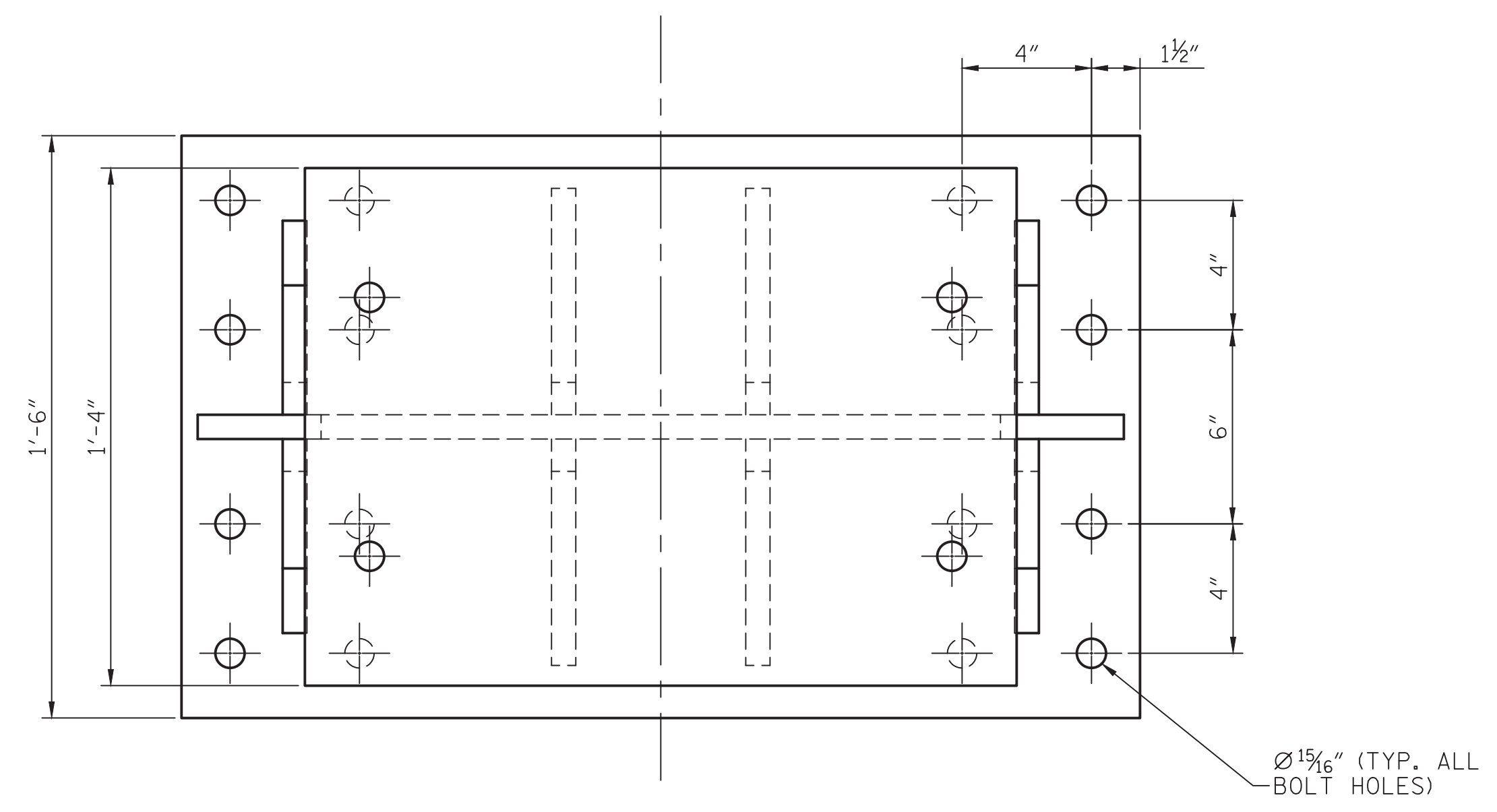
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 FILE: \\mimdd01\p\proj\15\15682.02\CADD\Mechanical\M04 NEW OVERTRAVEL BUMPER DETAILS

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



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH MECHANICAL NEW OVERTRAVEL BUMPER DETAILS 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. M04
					TOTAL SHEETS 66

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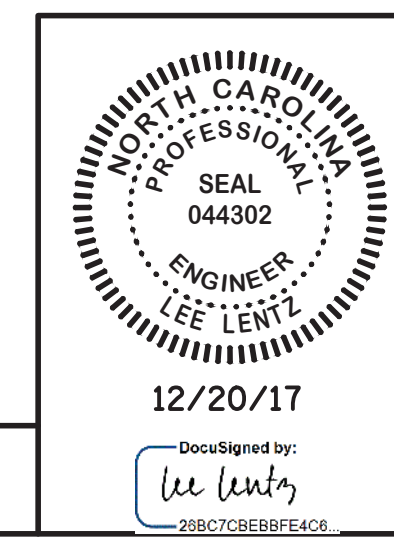


BUMPER SUPPORT WELDMENT
SCALE: 3/8"=1'-0"

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

LAST SAVED 12/20/2017 2:31 PM BY: EASAMPLE. LAST PLOTTED 12/20/2017 2:33 PM. FILE: \\mimddj01p01\proj\15\15682.02\CADD\Mechanical\MO5 NEW OVERTRAVEL BUMPER DETAILS 2

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



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
MECHANICAL
NEW OVERTRAVEL
BUMPER DETAILS 2

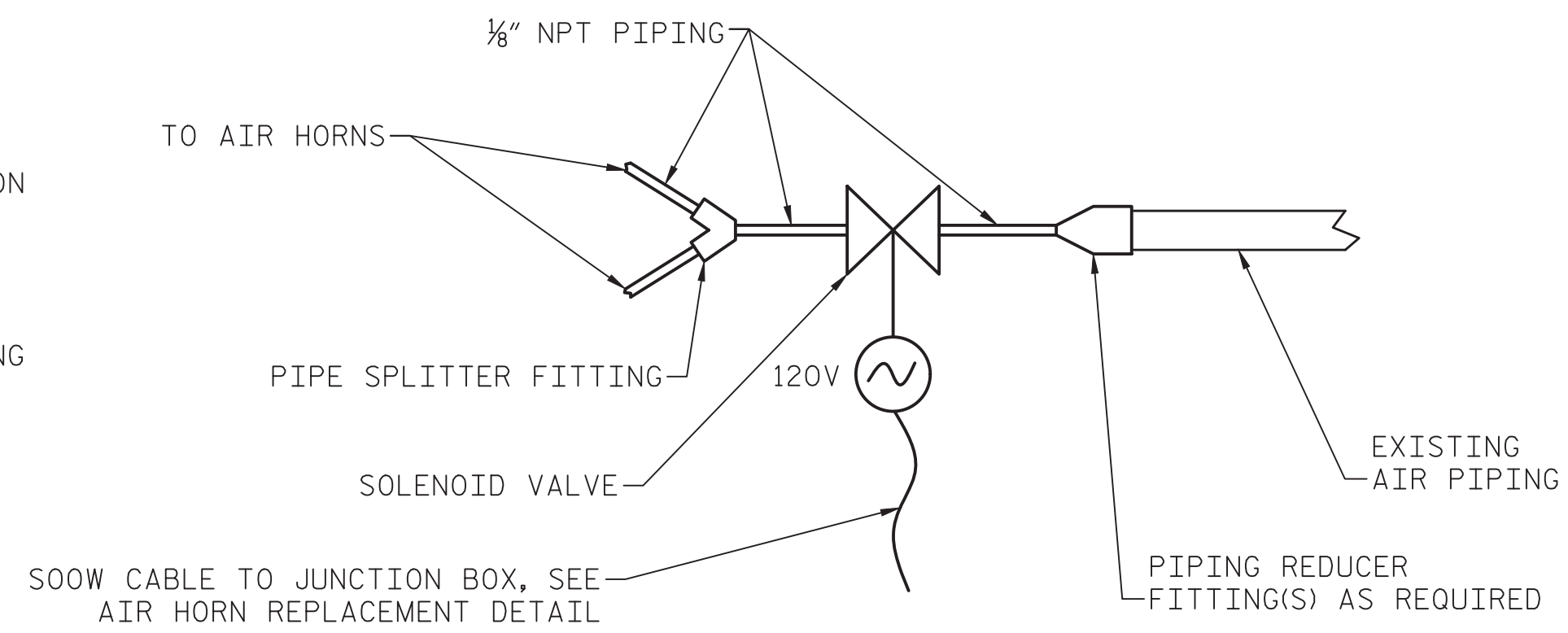
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			66
2			4			

DOCUMENT NOT CONSIDERED FINAL
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12/20/17
DocuSigned by:
Lee Lentz
298C7C8E88FE4C6

NOTES:

1. AIR HORN(S) SHALL BE CERTIFIED TO IMO REQUIREMENTS, 330 HZ FUNDAMENTAL FREQUENCY, MINIMUM 132dB SOUND PRESSURE LEVEL, 50 TO 200 PSI OPERATION RANGE, MODEL S-330 BY KAHLBERG OR APPROVED EQUAL.
2. SOLENOID VALVE SHALL BE 120VAC OR AS REQUIRED FOR EXISTING CIRCUIT, MODEL V-69-K KIT BY KAHLBERG OR APPROVED EQUAL WITH ALL MATERIALS REQUIRED FOR COMPLETE ASSEMBLY.
3. ALL AIR PIPING AND FITTINGS SHALL BE STAINLESS STEEL RATED FOR WORKING PRESSURE OF 150 PSI OR GREATER.
4. JUNCTION BOXES SHALL BE NEMA 4X STAINLESS STEEL, MINIMUM 6" x 6" x 4".



AIR HORN PIPING DETAIL
NO SCALE

REPLACE AIR HORNS (TYP. 2), INSTALLATION HEIGHT AND DIRECTION OF NEW AIR HORN(S) SHALL BE AS SHOWN IN PHOTO

REPLACE PIPING AND SOLENOID VALVE AND AIR HORN(S) AS SHOWN IN AIR HORN PIPING DETAIL

REPLACE EXISTING PIPING TO THIS LOCATION

SOOW CABLE, 3 - 10 AWG

JUNCTION BOX

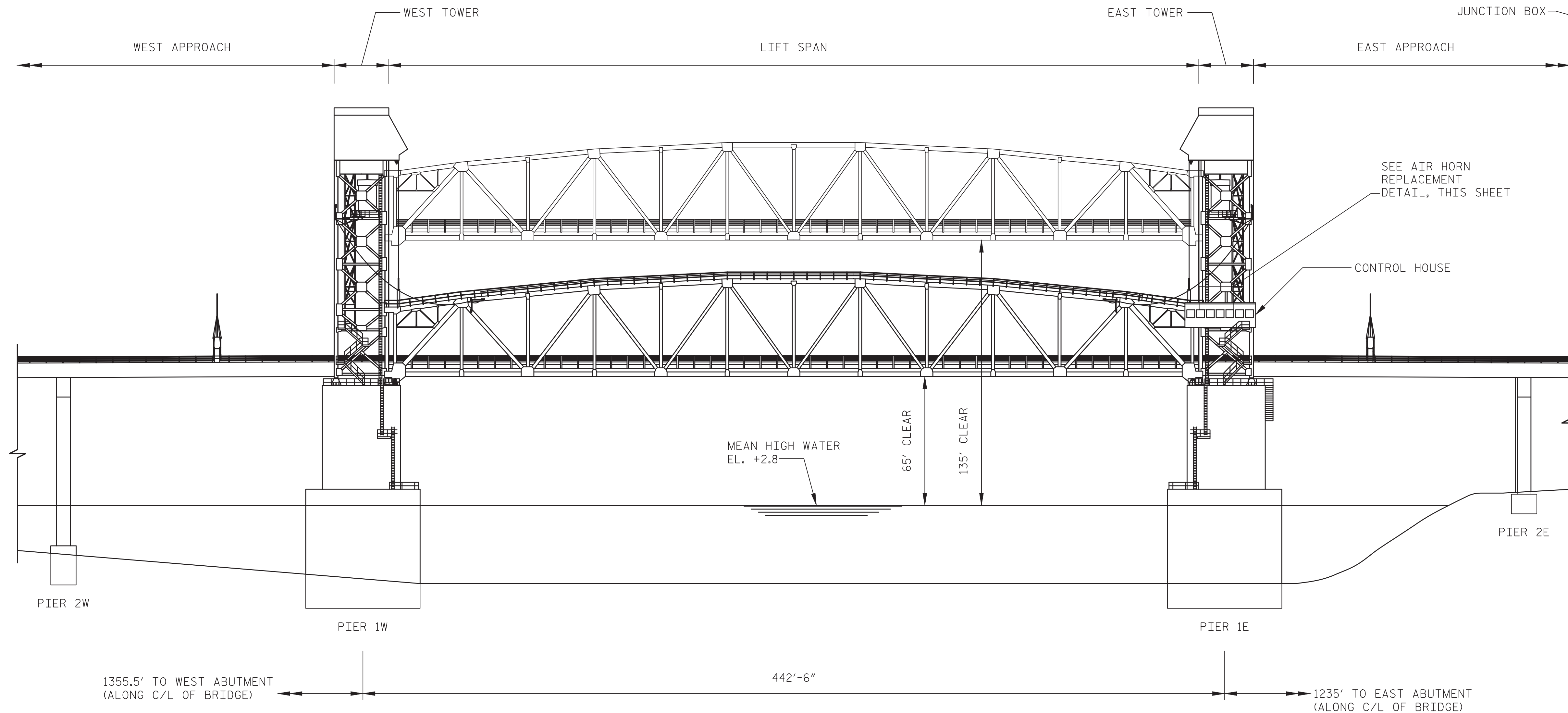
REMOVE EXISTING SO CABLE

2 - 10AWG, 1 - 10AWG GND IN 3/4" PVC COATED RGS CONDUIT

JUNCTION BOX



AIR HORN REPLACEMENT DETAIL
NO SCALE



ELEVATION
SCALE: 1" = 32'-0"

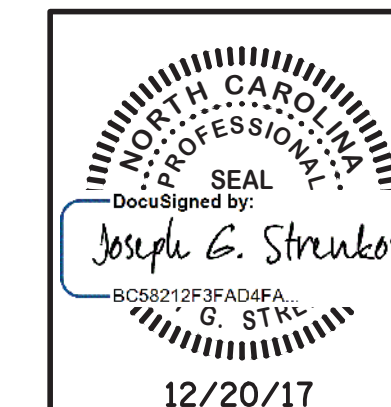
PROJECT NO. 15BPR.15
NEW HANOVER COUNTY
STATION: _____

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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 OF RECORD: J. G. STRENKOSKI DATE: DEC. 2017



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



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELECTRICAL
AIR HORN REPLACEMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E01
1			3			TOTAL SHEETS
2			4			66

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UNLESS ALL SIGNATURES COMPLETED

REPLACE SIGN FLASHER LIGHTS, RECONNECT TO EXISTING WIRING (TYP. 4, 8 TOTAL)



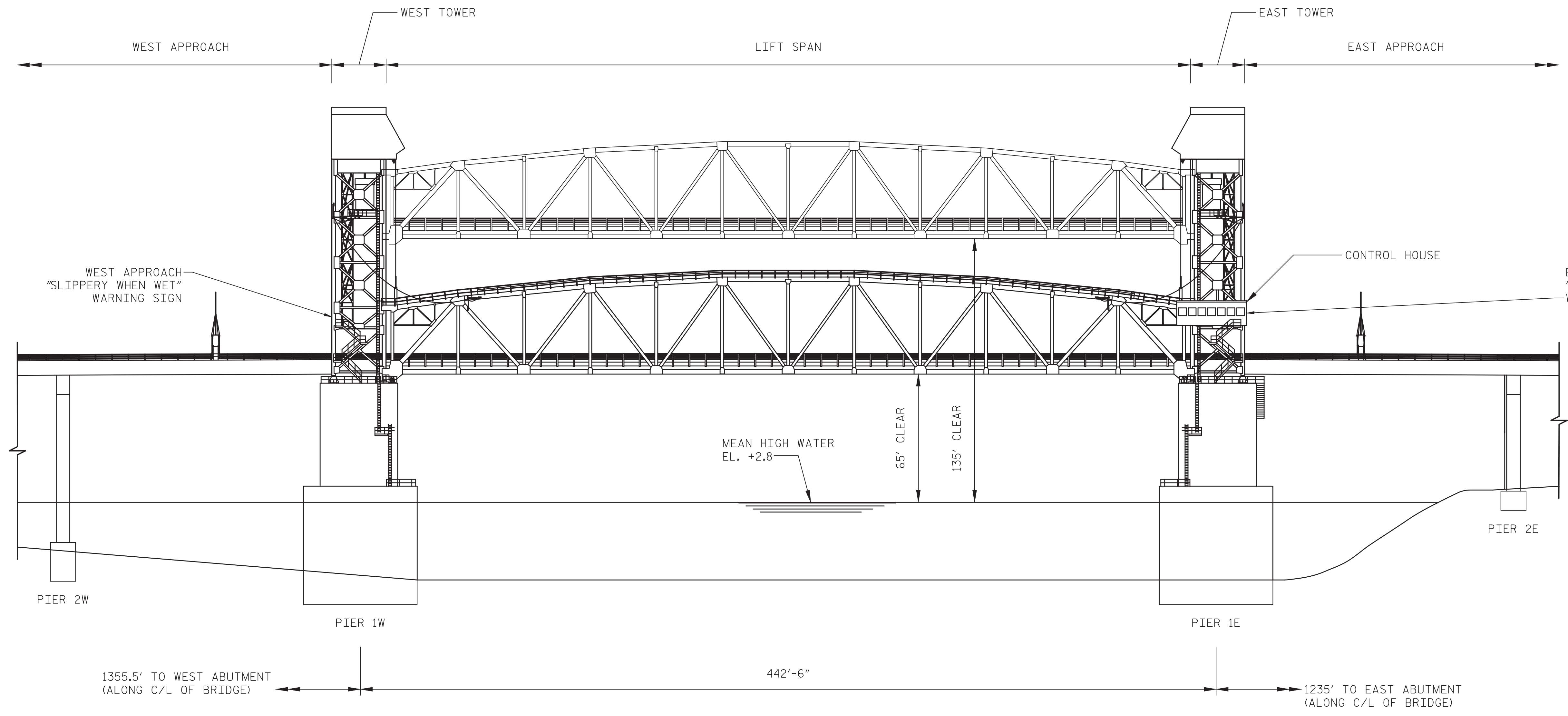
REPLACE "SLIPPERY WHEN WET" SIGN, SEE ELEVATION FOR LOCATIONS

SIGN SIZE APPROXIMATELY 20' W x 4' H. LETTERING HEIGHT APPROXIMATELY 18".

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. LIGHT FLASHING SEQUENCE SHALL MATCH EXISTING SEQUENCE.

"SLIPPERY WHEN WET" SIGN REPLACEMENT DETAIL (2 LOCATIONS)
NO SCALE



ELEVATION
SCALE: 1" = 32'-0"

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELECTRICAL
SIGN REPLACEMENT

MODJESKI and MASTERS
Experience great bridges.
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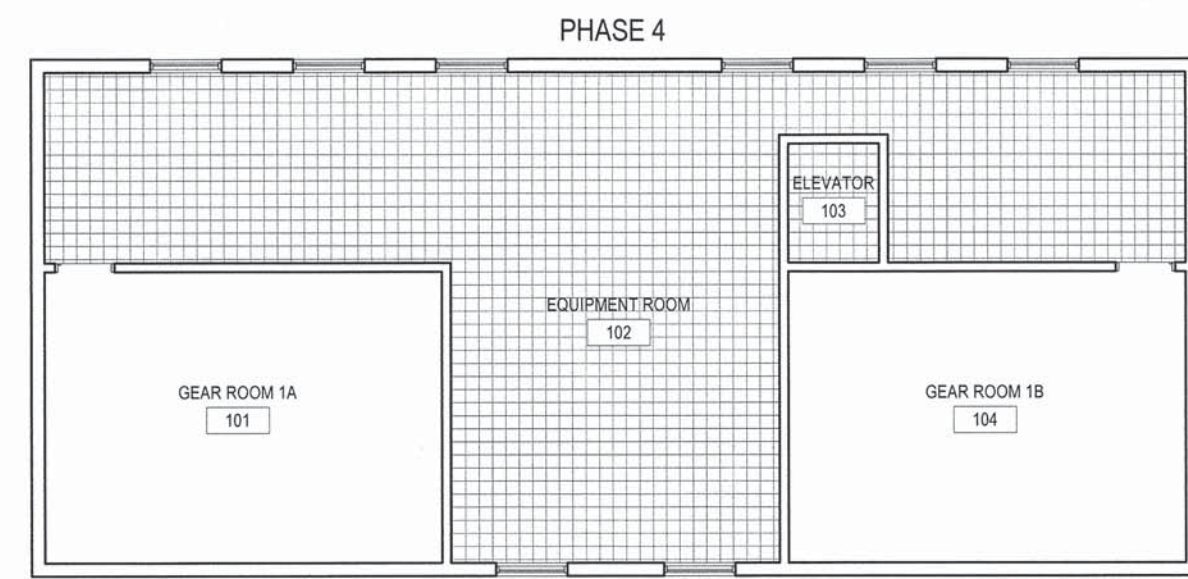
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
DocuSigned by:
Joseph G. Strunkoski
12/20/17

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 OF RECORD: J. G. STRENKOSKI DATE: DEC. 2017

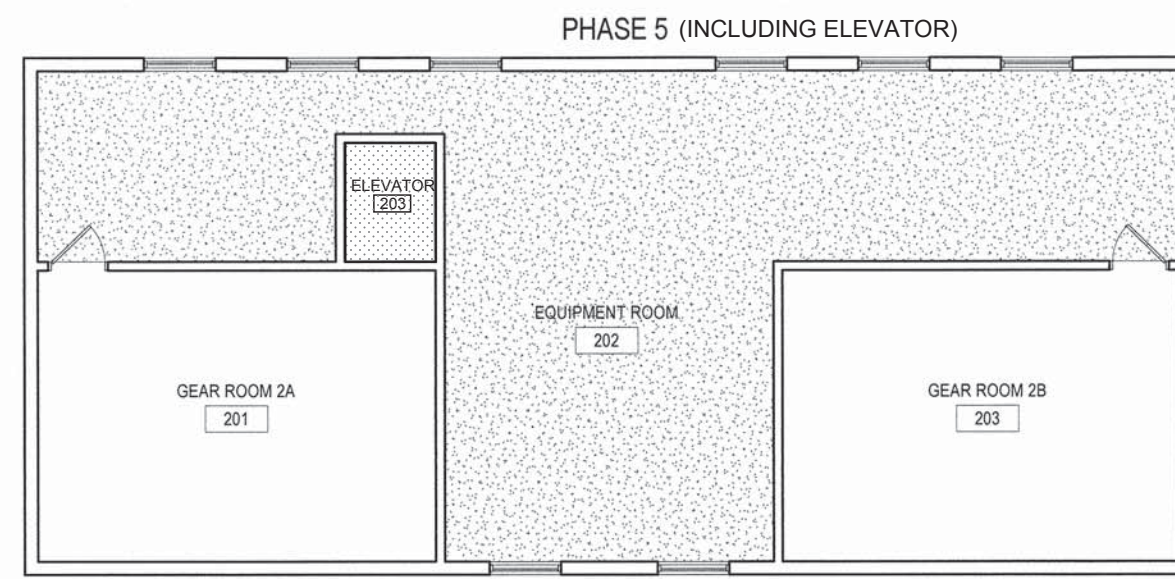
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	E02
1			3			TOTAL SHEETS
2			4			66

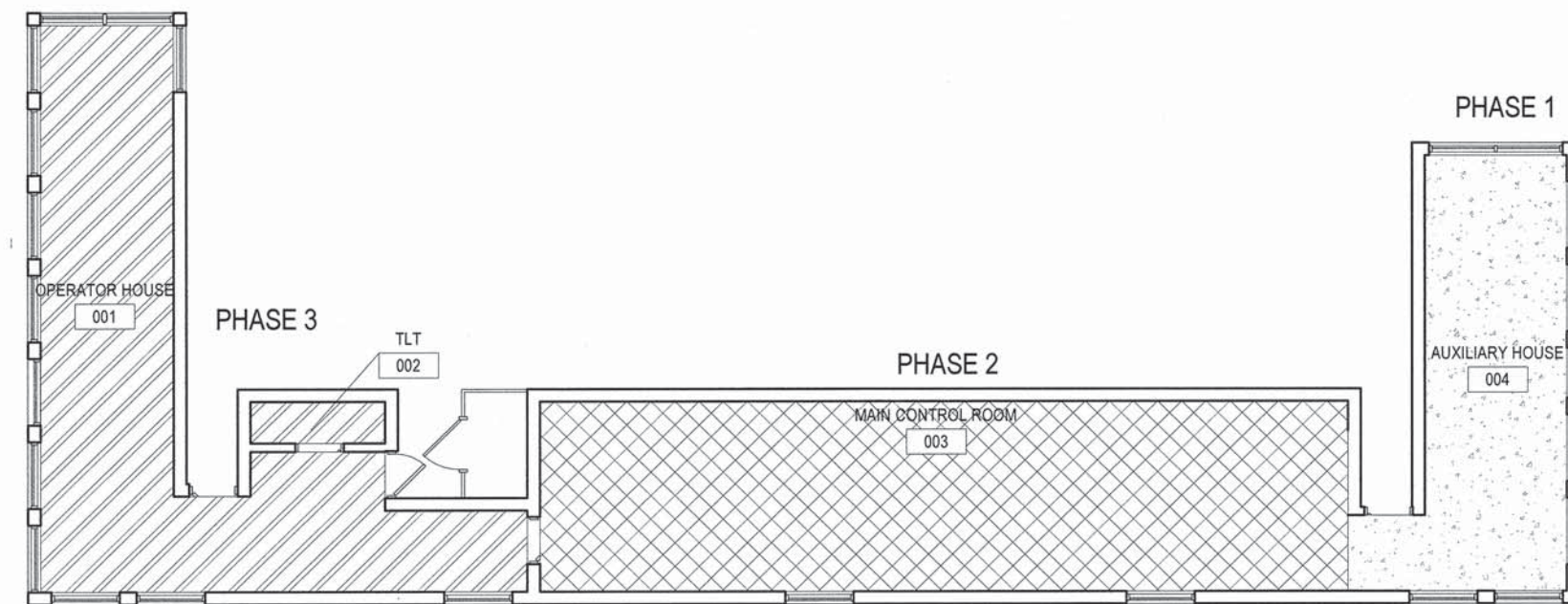
LAST SAVED 12/20/2017 2:28 PM BY: EASAMPLE. LAST PLOTTED 12/20/2017 2:33 PM. FILE: \\vmd\jg\p\Projects\15662.02\CADD\Electrical\EGS SIGN REPLACEMENT



UPPER HOUSE - EAST



UPPER HOUSE - WEST



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

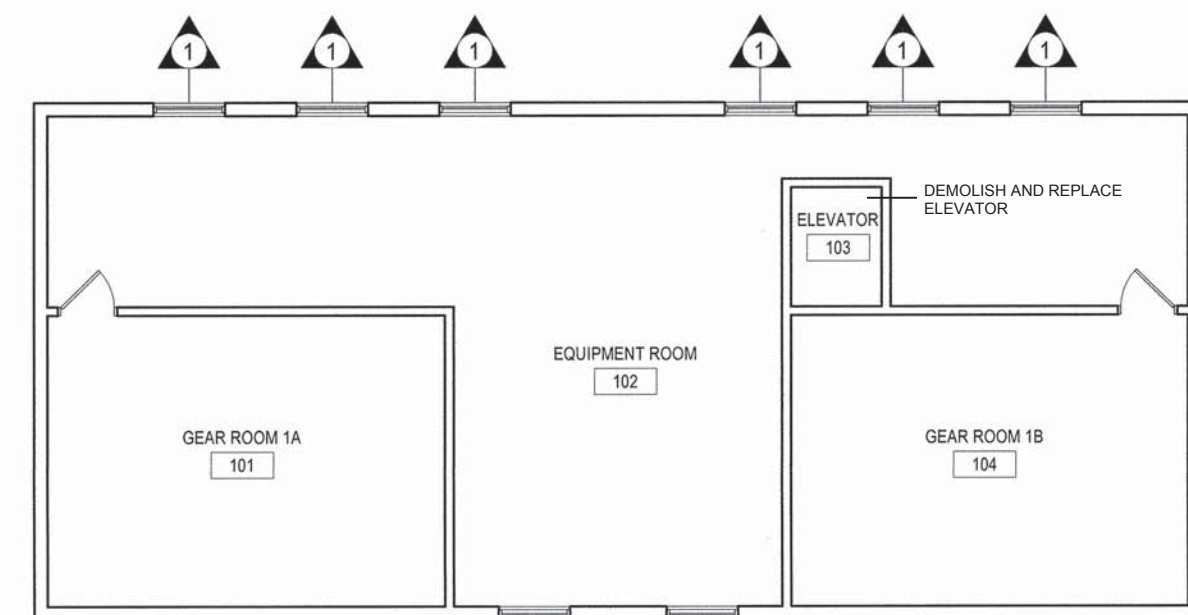
OPERATOR HOUSE

PHASING SCHEDULE

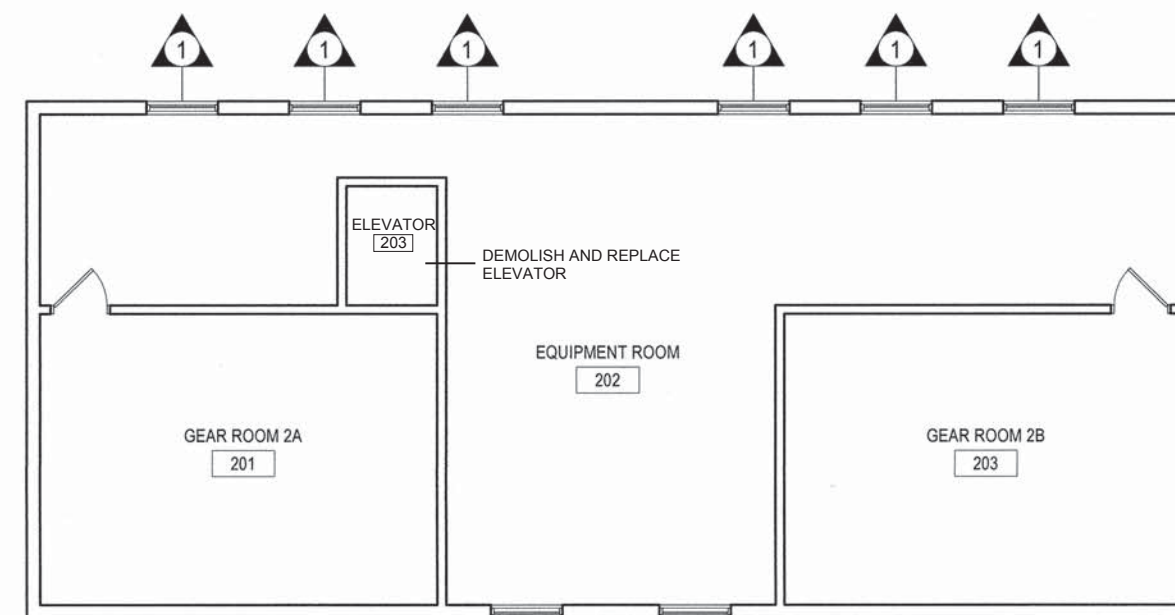
- PHASE 1 - ASBESTOS ABATEMENT
WINDOW REPLACEMENT
INTERIOR WALL CONSTRUCTION
PAINT
FLOOR TILE INSTALLATION
MECHANICAL AND ELECTRICAL EQUIPMENT
ROOF REPLACEMENT
- PHASE 2 - ASBESTOS ABATEMENT
WINDOW REPLACEMENT
INTERIOR WALL CONSTRUCTION
PAINT
FLOOR TILE INSTALLATION
MECHANICAL AND ELECTRICAL EQUIPMENT
- PHASE 3 - ASBESTOS ABATEMENT
WINDOW REPLACEMENT
INTERIOR WALL CONSTRUCTION
PAINT
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

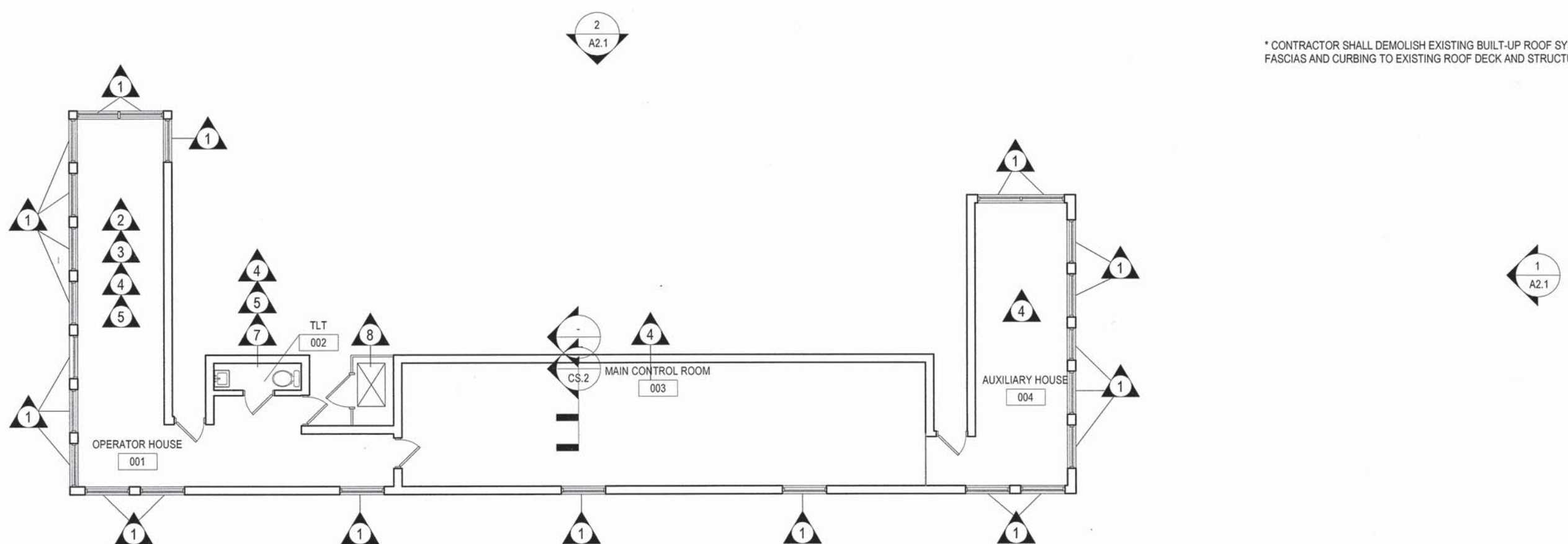
1. THE OWNER WILL OCCUPY THE BUILDING DURING THE ENTIRE PROJECT. CONTRACTOR TO PRESENT A PHASING SCHEDULE TIMELINE TO THE OWNER FOR REVIEW AND APPROVAL PRIOR TO PROCEEDING WITH THE PROJECT. THE CONTRACTOR WILL PROVIDE A MINIMUM OF 5 DAYS OF TIME BETWEEN EACH PHASE FOR THE OWNER TO MOVE FURNISHINGS AND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



UPPER HOUSE - EAST



UPPER HOUSE - WEST



OPERATOR HOUSE

* CONTRACTOR SHALL DEMOLISH EXISTING BUILT-UP ROOF SYSTEM, FASCIAS AND CURBING TO EXISTING ROOF DECK AND STRUCTURE

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

100% CONSTRUCTION DOCUMENTS

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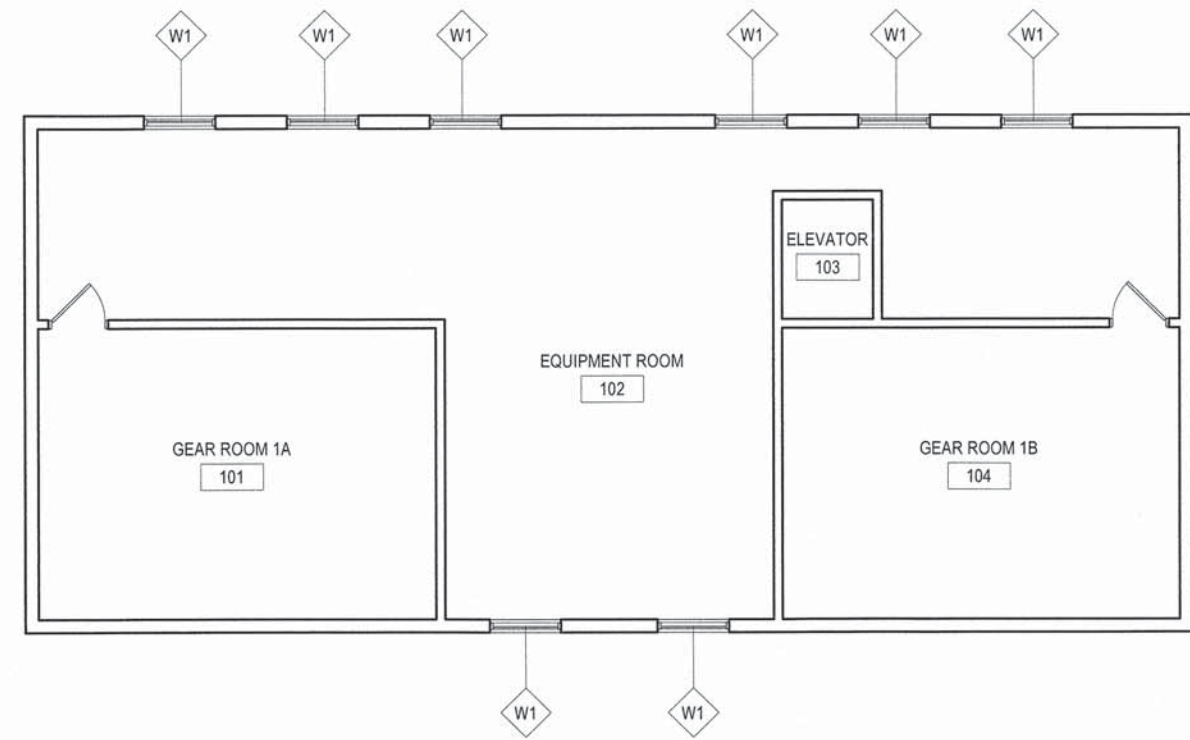


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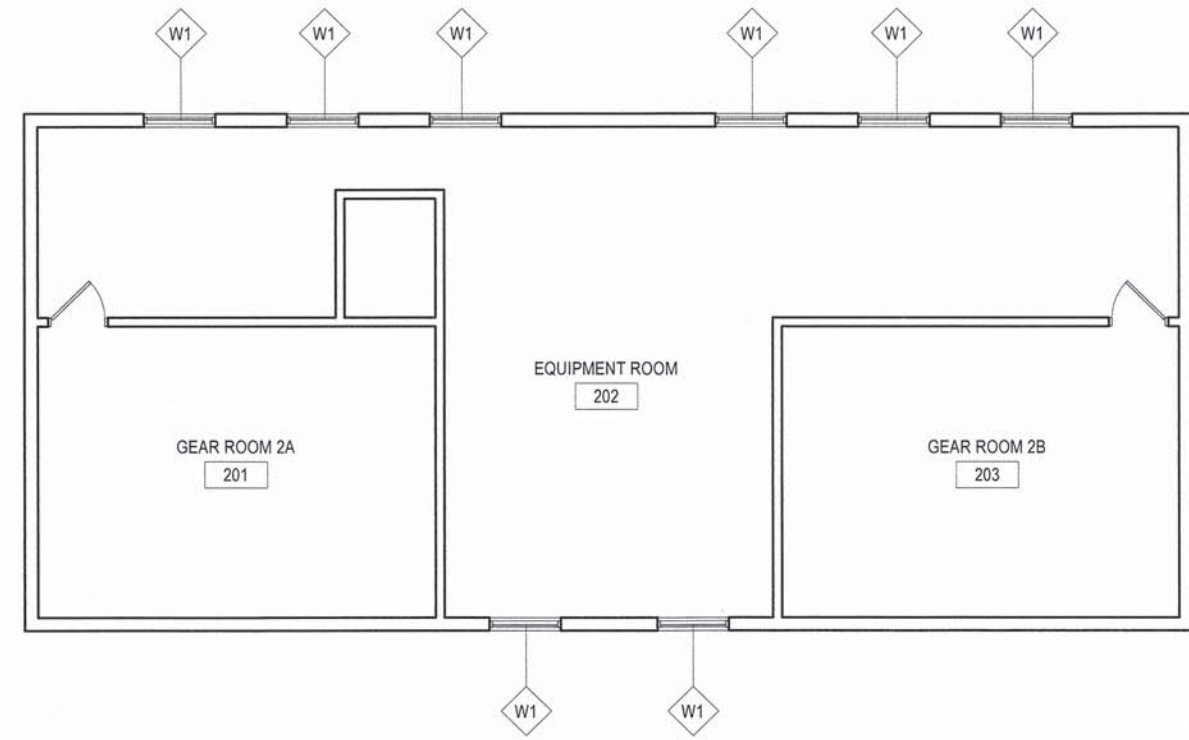
OVERALL PHASING AND DEMOLITION PLAN
 15BPR.15

PROJECT
 15BPR.15
A1.1

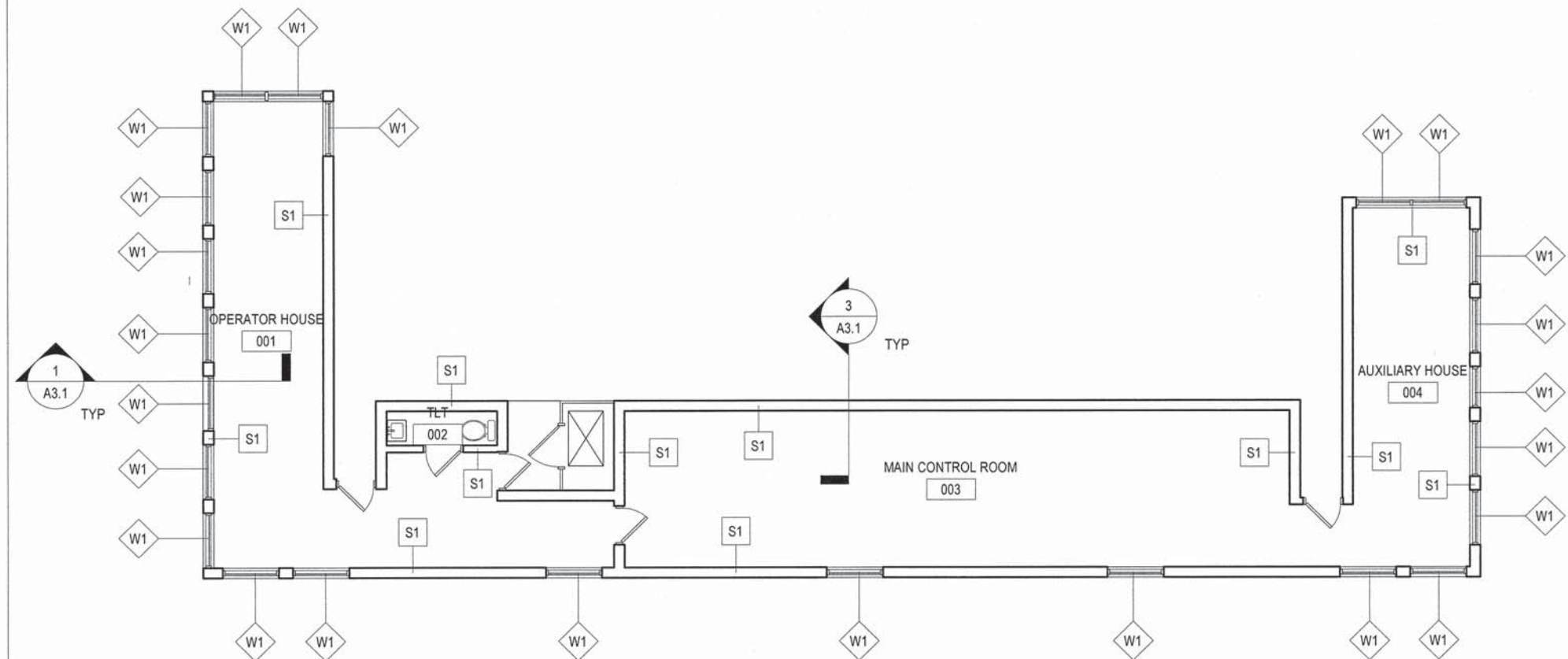
TAG	DEMOLITION NOTE
1	DEMOLISH CARPET
2	DEMOLISH WOOD WALL PANELING INCLUSIVE OF ABATEMENT PROCESS
3	ABATE TRANSITE WALL PANELS AND BATT INSULATION
4	DEMOLISH ACOUSTICAL TILE CEILING ASSEMBLY
5	DEMOLISH FLOOR TILE AND PREPARE TO RECEIVE FLOOR FINISH
7	DEMOLISH ENTIRE ELEVATOR ASSEMBLY AND ELEVATOR GEAR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



UPPER HOUSE - EAST



UPPER HOUSE - WEST



OPERATOR HOUSE

2 AP01 - Overall First Floor Plan
A1.2 1/8" = 1'-0"

ROOM FINISH SCHEDULE									
ROOM NUMBER	ROOM NAME	COLOR SCHEME	FLOOR FINISH	WALL BASE	WALLS		CEILING FINISH	REMARKS	
					WALL FINISH	WAINSCOT			
001	OPERATOR HOUSE		CPT	RBR	PNT		ACT		
002	TLT		VCT	RBR	EPOXY PNT		ACT		
003	MAIN CONTROL ROOM		VCT	RBR	PNT		PNT		
004	AUXILIARY HOUSE		VCT	RBR	PNT		PNT		
101	GEAR ROOM 1A		ETR	ETR	ETR		ETR		
102	EQUIPMENT ROOM		ETR	ETR	ETR		ETR		
103	ELEVATOR								
104	GEAR ROOM 1B		ETR	ETR	ETR		ETR		
201	GEAR ROOM 2A		ETR	ETR	ETR		ETR		
202	EQUIPMENT ROOM		ETR	ETR	ETR		ETR		
203	GEAR ROOM 2B		ETR	ETR	ETR		ETR		

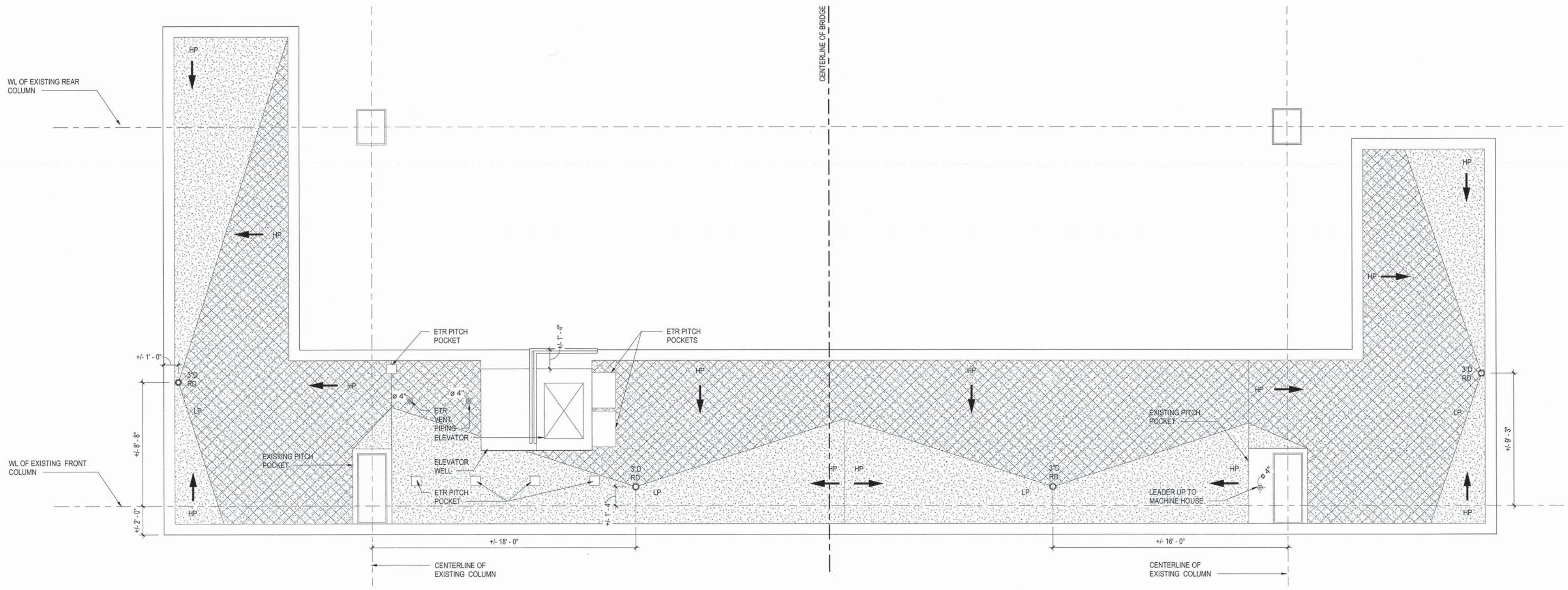
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1 OVERALL ROOF PLAN - CONTROL HOUSE EAST TOWER
A1.2 1/4" = 1'-0"

LEGEND	ROOF PLAN NOTES:
LP LOW POINT	1. COORDINATE ROOF-MOUNTED EQUIPMENT & PENETRATIONS. REFER TO MEP DRAWINGS.
HP HIGH POINT	2. CONTRACTOR PROVIDE ROOFING MANUFACTURERS' STANDARD DETAILS FOR ALL PENETRATIONS & FLASHING AS PER ROOFING MANUFACTURERS' WARRANTY. MANUFACTURERS' STANDARD INSTALLATION REQUIREMENTS SHALL TAKE PRECEDENCE OVER DISCREPANCIES ON THE CONTRACT DOCUMENTS.
→ FLOW DIRECTION	3. CRICKETS AND SADDLES SHALL HAVE A MINIMUM OF TWO TIMES THE SLOPE OF THE PRIMARY TAPERED SYSTEM. THE RATIO OF CRICKETS WIDTH TO LENGTH SHALL BE NO LESS THAN 1:3. "PONDING" SHALL NOT OCCUR.
[Pattern] INDICATES MEMBRANE ROOF SYSTEM WITH TAPERED INSULATION ROOF CRICKETS	4. ROOF MOUNTED EQUIPMENT CURBS AND SUPPORTS SHALL BE FURNISHED AND INSTALLED BY THE EQUIPMENT SUPPLIER.
[Pattern] INDICATES MEMBRANE ROOF SYSTEM WITH 1/8" PER FOOT TAPERED INSULATION ON FLAT STRUCTURE	5. INSTALL TWO LAYERS OF RIGID ROOF INSULATION MINIMUM R-22 OVER EXISTING STRUCTURE. USE TAPERED INSULATION WHERE REQUIRED TO MAINTAIN 1/8" PER FOOT ROOF SLOPE. MINIMUM THICKNESS AT ROOF DRAINS SHALL BE 1 1/2".
	6. MODIFY ALL EXISTING PITCH POCKETS AS REQUIRED TO RECEIVE NEW INSULATION DEPTH.

CR

12/21/17

OVERALL FLOOR PLANS AND ROOF PLAN

PLOT SCALE:
As Indicated

FILENAME:

DATE:

PROJECT
15BPR.15

A1.2



1 OVERALL REFLECTED CEILING PLAN
A1.10 1/4" = 1'-0"

- REFLECTED CEILING PLAN GENERAL NOTES:**
- UNLESS NOTED OTHERWISE, GYPSUM BULKHEADS TO BE 3/8" METAL STUDS AT 16" O/C WITH 5/8" GWB EACH SIDE, EXTENDING MIN. 1" BELOW ADJACENT CEILING.
 - CEILING GRID SHALL BE COORDINATED WITH MEP EQUIPMENT AND DEVICES.
 - 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.
 - REFER TO ROOM FINISH SCHEDULE FOR CEILING TYPES.
 - ALL VISIBLE HANGER WIRES, STRUCTURE AND BRACING AT EXPOSED CEILING GRID OR CEILING CLOUD LOCATIONS SHALL BE INSTALLED PLUMB AND LEVEL.
 - 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 DIMENSIONS AND WINDOW MULLION DESIGN AND ROLLER SHADE BRAKES.

LEGEND	
	2' X 4' SUSPENDED CEILING SYSTEM
	2' X 4' SECOND LOOK SUSPENDED CEILING SYSTEM
	2' X 2' SUSPENDED CEILING SYSTEM
	GYPSUM WALLBOARD
	LINEAR METAL SOFFIT
	2' X 4' LIGHT FIXTURE
	1' X 4' LIGHT FIXTURE
	1' X 8' LIGHT FIXTURE
	2' X 2' LIGHT FIXTURE
	SEE MEP DRAWINGS
	SEE MEP DRAWINGS
	RECESSED DOWN LIGHT
	PENDANT LIGHT FIXTURES
	ROLLER SHADE - MANUAL
	ROLLER SHADE - MANUAL BLACKOUT W/ DUAL ROLLER
	ROLLER SHADE - MOTORIZED
	ROLLER SHADE - MOTORIZED BLACKOUT W/ DUAL ROLLER

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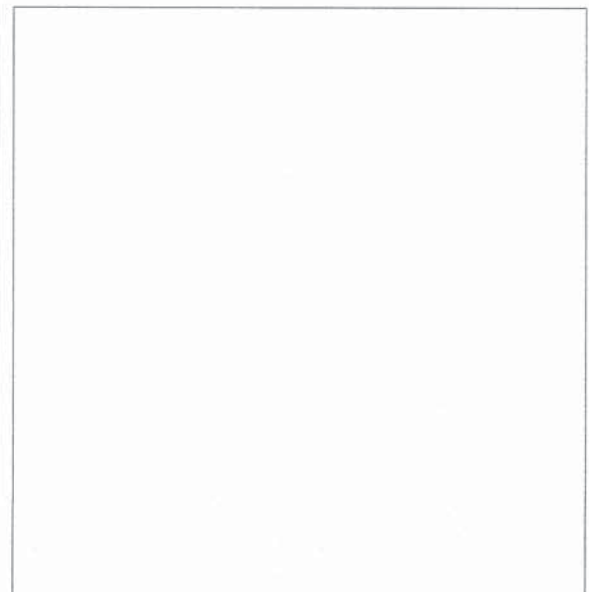


RENOVATIONS TO
 CAPE FEAR RIVER MEMORIAL LIFT BRIDGE
 NORTH CAROLINA DEPT. OF TRANSPORTATION

OVERALL REFLECTED CEILING PLAN
 PLOT SCALE: 1/4" = 1'-0"
 FILENAME:
 DATE:

PROJECT
 15BPR.15
 A1.10

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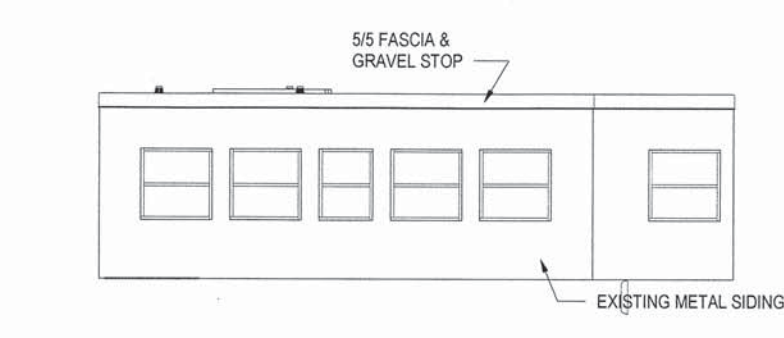
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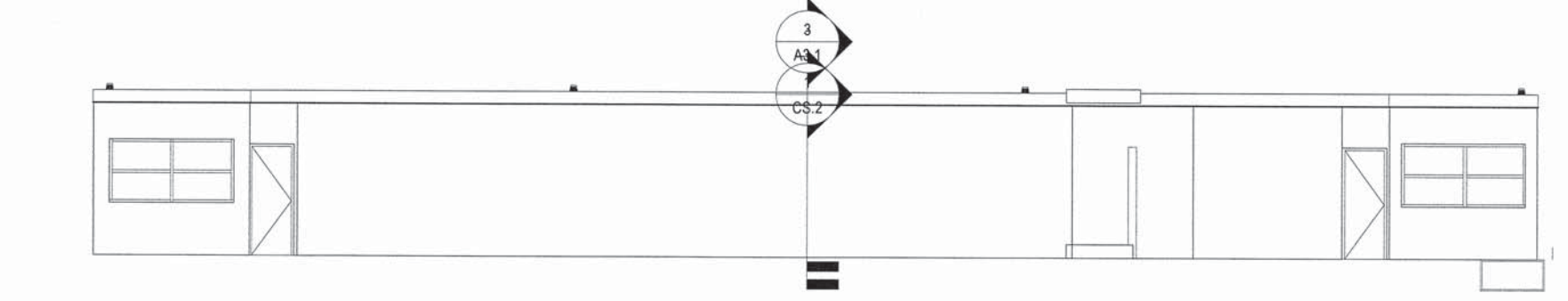
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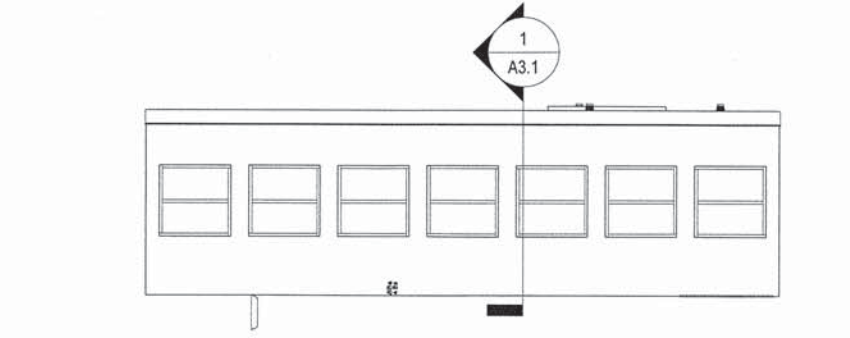
OVERALL EXTERIOR ELEVATIONS
 PROJECT 15BPR.15
 A2.1



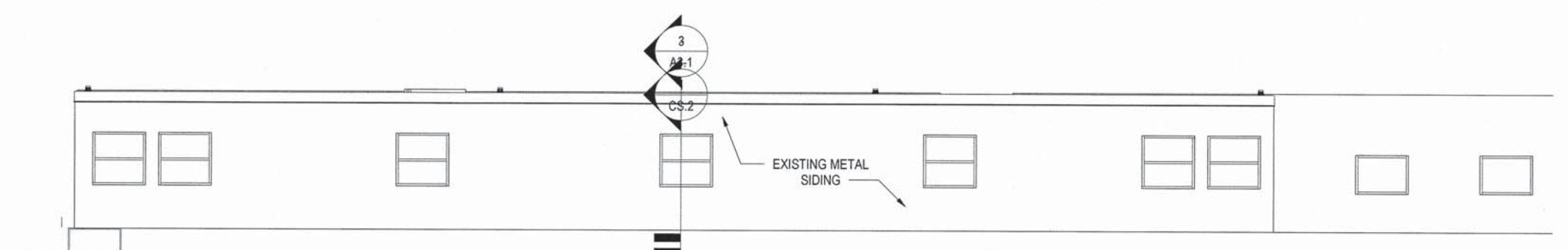
1 NORTH ELEVATION
 A2.1 1/8" = 1'-0"



2 WEST ELEVATION
 A2.1 1/8" = 1'-0"



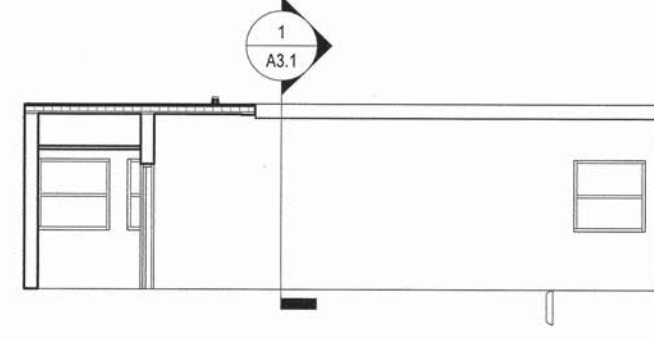
3 SOUTH ELEVATION
 A2.1 1/8" = 1'-0"



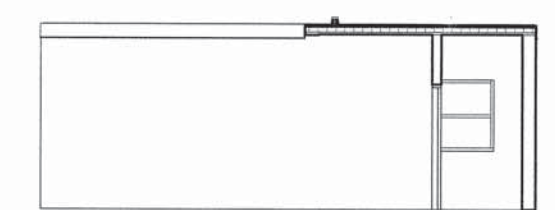
4 EAST ELEVATION
 A2.1 1/8" = 1'-0"



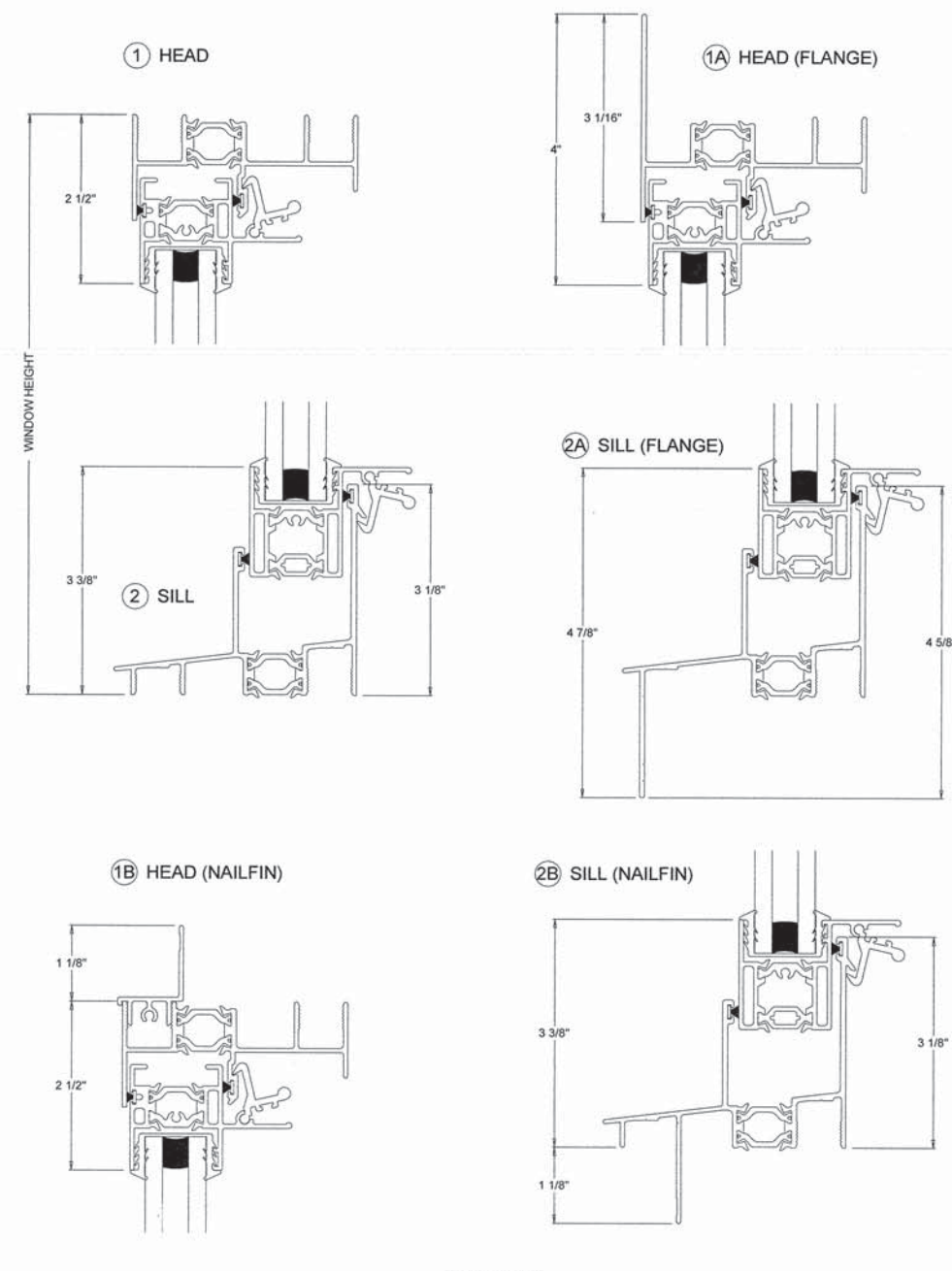
5 SECTION A - A
 A2.1 1/8" = 1'-0"



6 SECTION B - B
 A2.1 1/8" = 1'-0"

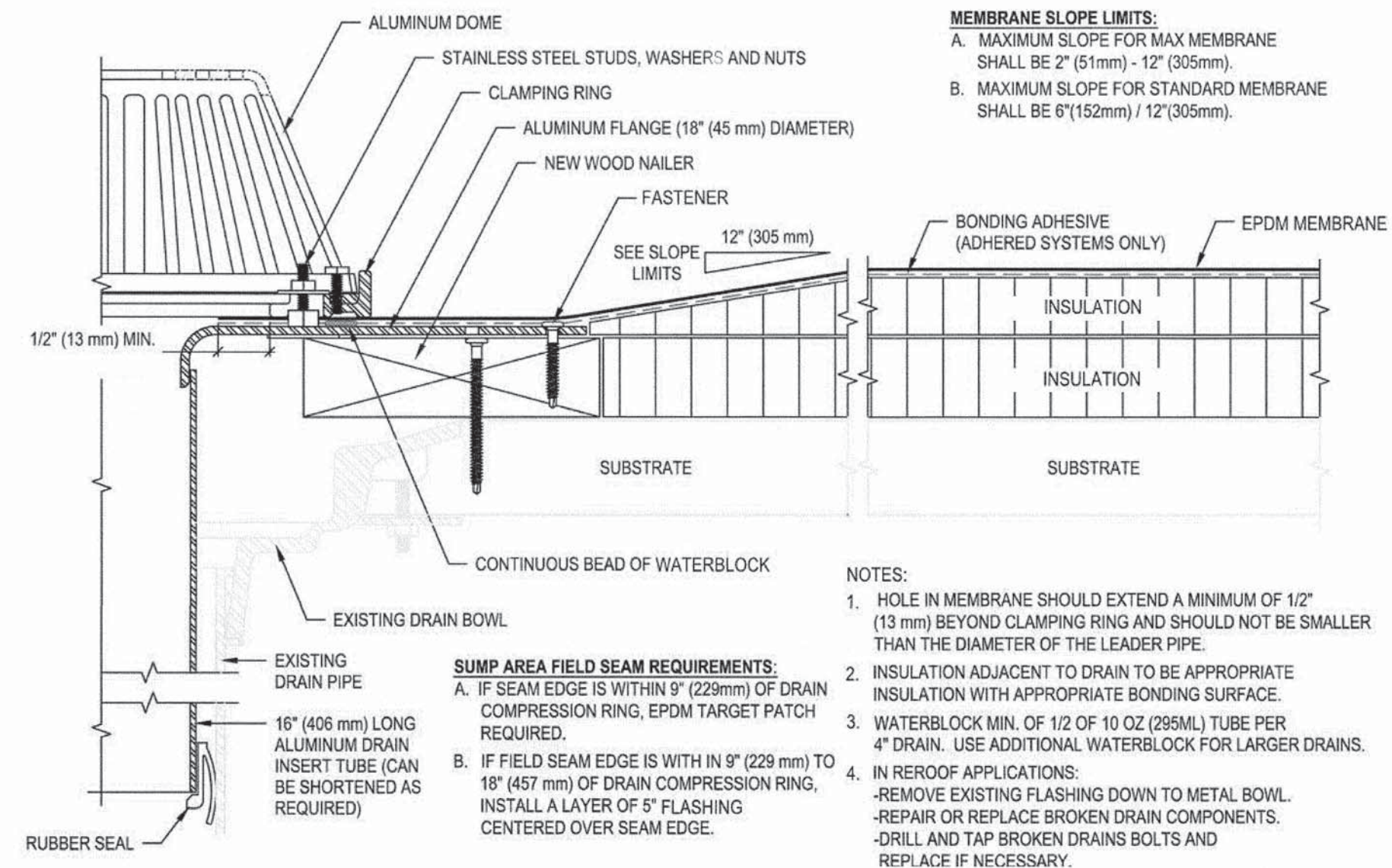


7 SECTION C - C
 A2.1 1/8" = 1'-0"



8 ALUMINUM DOUBLE HUNG WINDOW DETAILS
 A2.1 1/2" = 1'-0"

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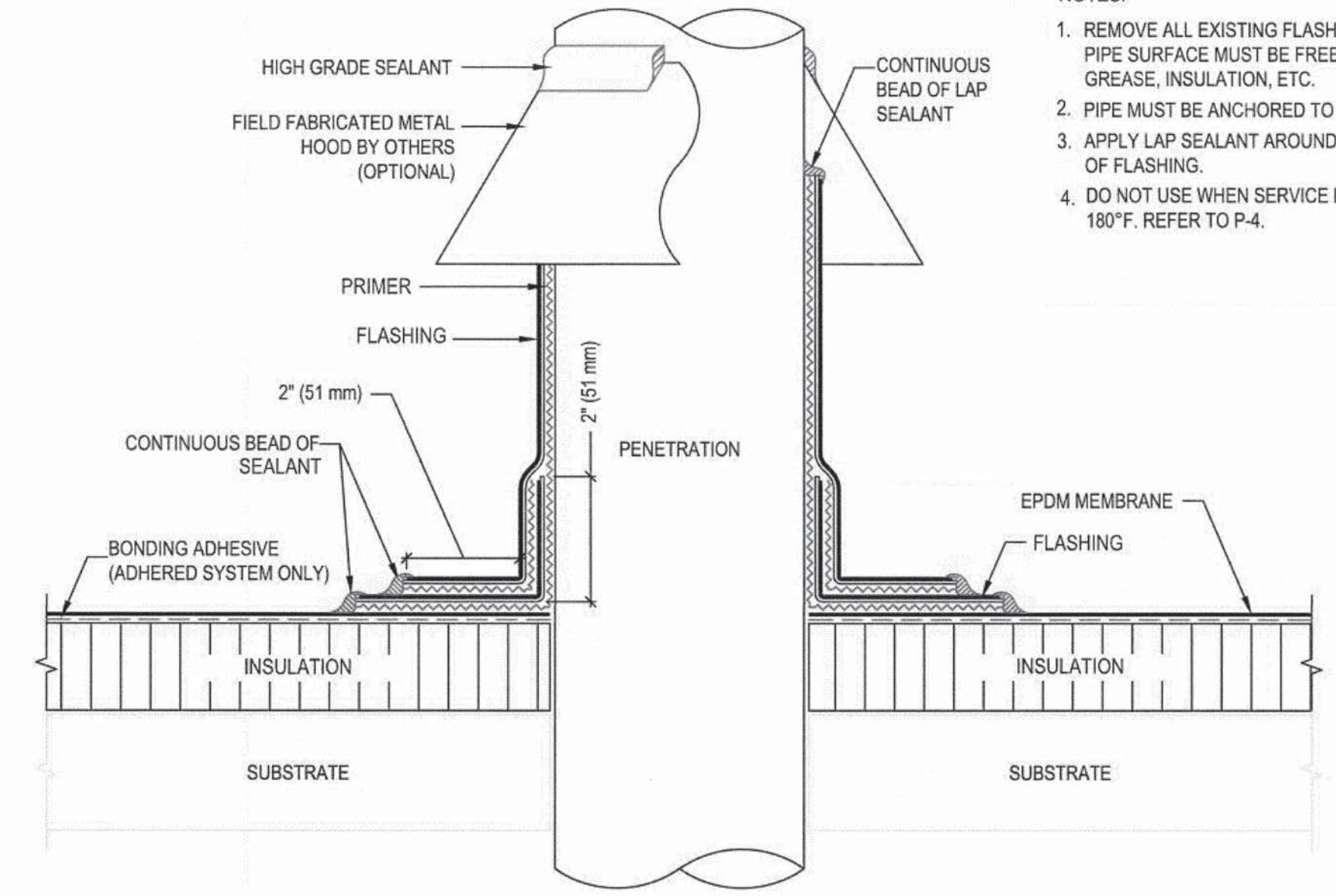


MEMBRANE SLOPE LIMITS:
 A. MAXIMUM SLOPE FOR MAX MEMBRANE SHALL BE 2" (51mm) / 12" (305mm).
 B. MAXIMUM SLOPE FOR STANDARD MEMBRANE SHALL BE 6" (152mm) / 12" (305mm).

- NOTES:**
- HOLE IN MEMBRANE SHOULD EXTEND A MINIMUM OF 1/2" (13 mm) BEYOND CLAMPING RING AND SHOULD NOT BE SMALLER THAN THE DIAMETER OF THE LEADER PIPE.
 - INSULATION ADJACENT TO DRAIN TO BE APPROPRIATE INSULATION WITH APPROPRIATE BONDING SURFACE.
 - WATERBLOCK MIN. OF 1/2 OF 10 OZ (295ML) TUBE PER 4" DRAIN. USE ADDITIONAL WATERBLOCK FOR LARGER DRAINS.
 - IN REROOF APPLICATIONS:
 -REMOVE EXISTING FLASHING DOWN TO METAL BOWL.
 -REPAIR OR REPLACE BROKEN DRAIN COMPONENTS.
 -DRILL AND TAP BROKEN DRAINS BOLTS AND REPLACE IF NECESSARY.

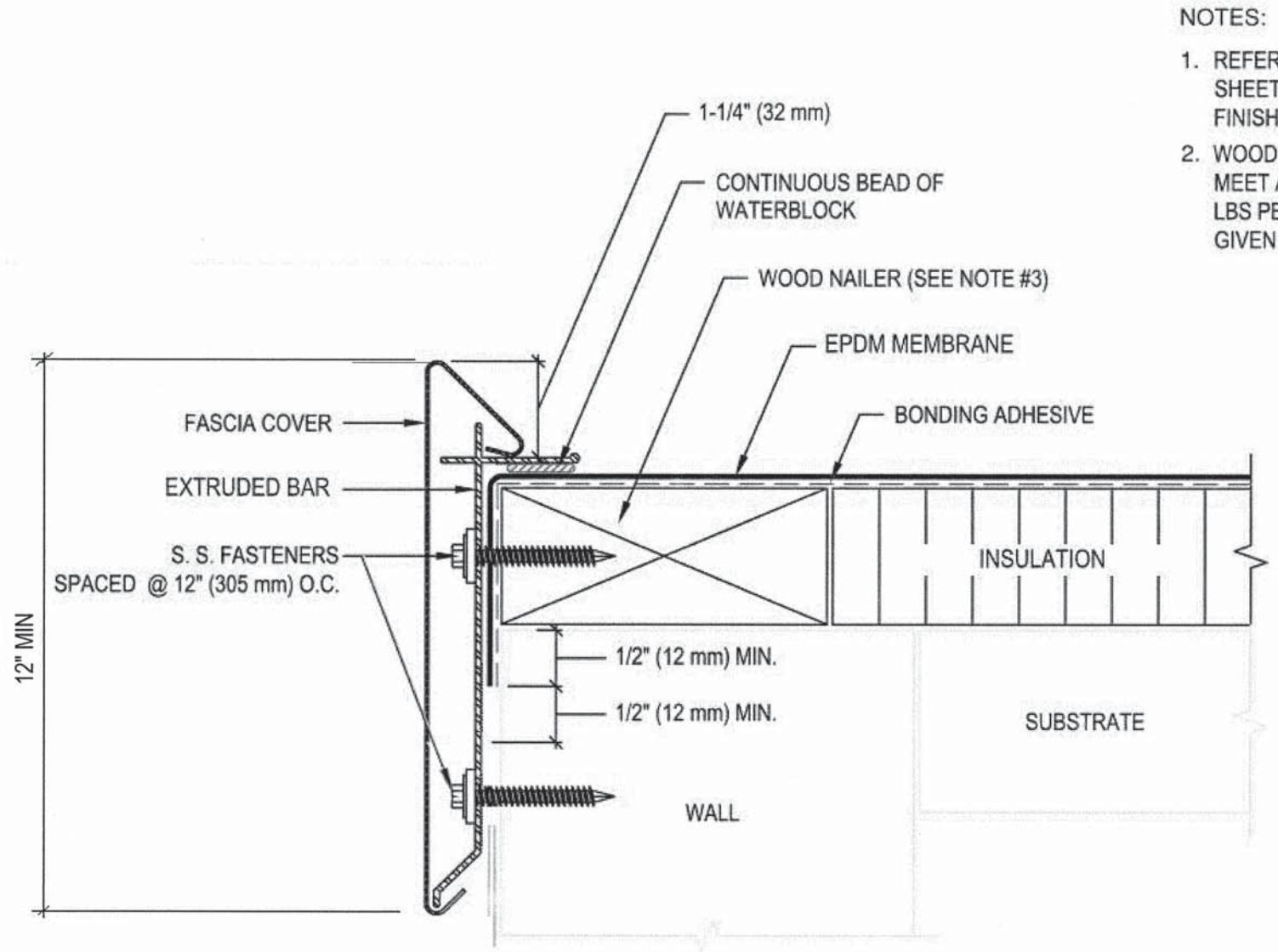
SUMP AREA FIELD SEAM REQUIREMENTS:
 A. IF SEAM EDGE IS WITHIN 9" (229mm) OF DRAIN COMPRESSION RING, EPDM TARGET PATCH REQUIRED.
 B. IF FIELD SEAM EDGE IS WITHIN 9" (229 mm) TO 18" (457 mm) OF DRAIN COMPRESSION RING, INSTALL A LAYER OF 5" FLASHING CENTERED OVER SEAM EDGE.

2 DETAIL - ROOF DRAIN
 12" = 1'-0"



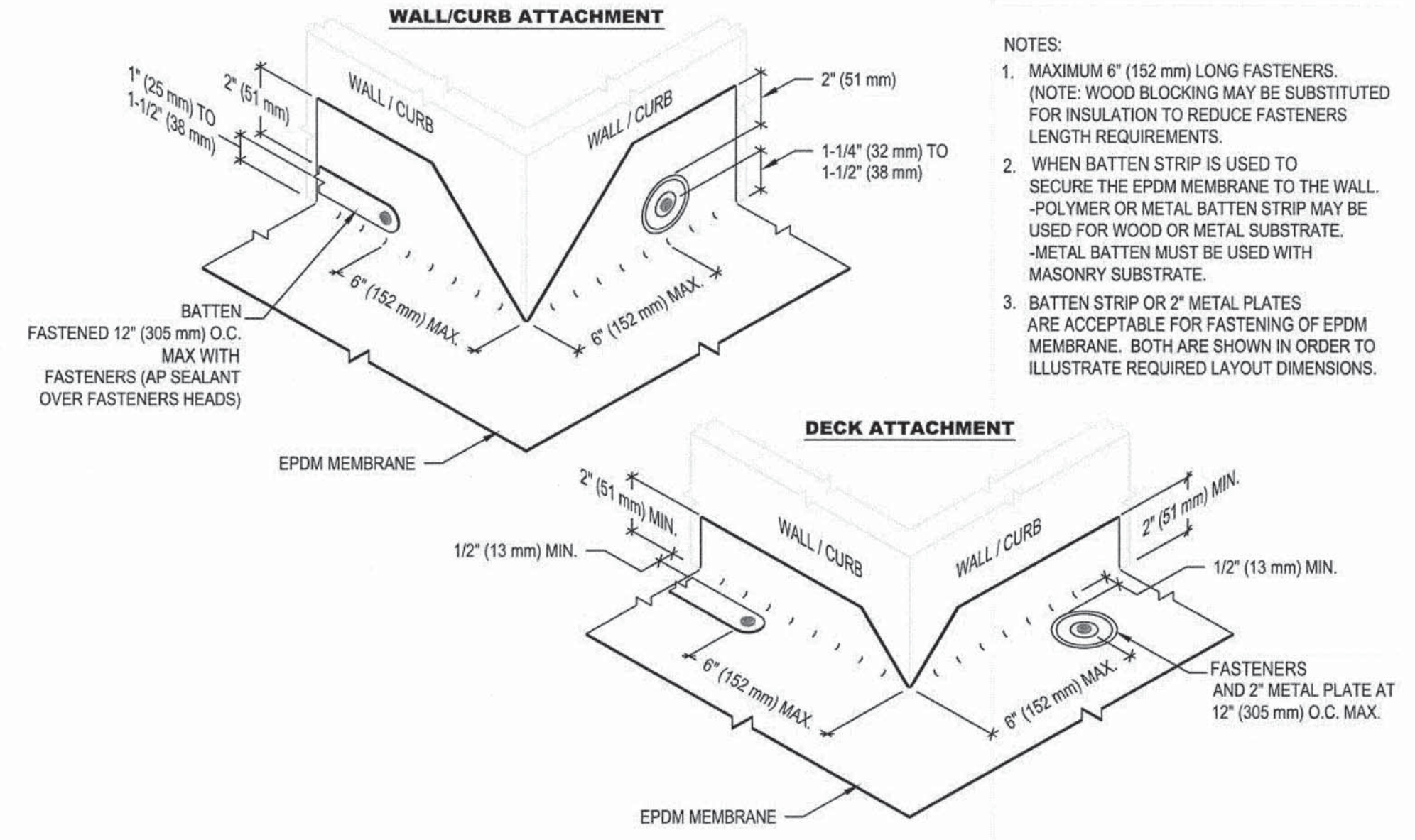
- NOTES:**
- REMOVE ALL EXISTING FLASHING, LEAD, ETC. PIPE SURFACE MUST BE FREE OF ALL RUST, GREASE, INSULATION, ETC.
 - PIPE MUST BE ANCHORED TO ENSURE STABILITY.
 - APPLY LAP SEALANT AROUND ENTIRE PERIMETER OF FLASHING.
 - DO NOT USE WHEN SERVICE LINE TEMP. EXCEEDS 180°F. REFER TO P-4.

1 DETAIL - PENETRATION
 12" = 1'-0"



- NOTES:**
- REFER TO TECHNICAL INFORMATION SHEETS FOR SIZES, ACCESSORIES, AND FINISHES AVAILABLE.
 - WOOD NAILER MUST BE INSTALLED TO MEET APPLICABLE BUILDING CODES OR 200 LBS PER LINEAR FOOT MINIMUM IN ANY GIVEN DIRECTION.

3 DETAIL - ROOF EDGE
 12" = 1'-0"



- NOTES:**
- MAXIMUM 6" (152 mm) LONG FASTENERS. (NOTE: WOOD BLOCKING MAY BE SUBSTITUTED FOR INSULATION TO REDUCE FASTENERS LENGTH REQUIREMENTS.)
 - WHEN BATTEN STRIP IS USED TO 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.
 - BATTEN STRIP OR 2" METAL PLATES ARE ACCEPTABLE FOR FASTENING OF EPDM MEMBRANE. BOTH ARE SHOWN IN ORDER TO ILLUSTRATE REQUIRED LAYOUT DIMENSIONS.

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

NOTE: DETAILS WITHIN THIS DRAWING, TITLED AS "TYPICAL", INDICATE COMMON NON-SPECIFIC 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 DIMENSIONS, MORE ACCURATELY SHOWN AS PART OF INDIVIDUAL SECTIONS AND DETAILS THROUGHOUT THE CONSTRUCTION DOCUMENTS.

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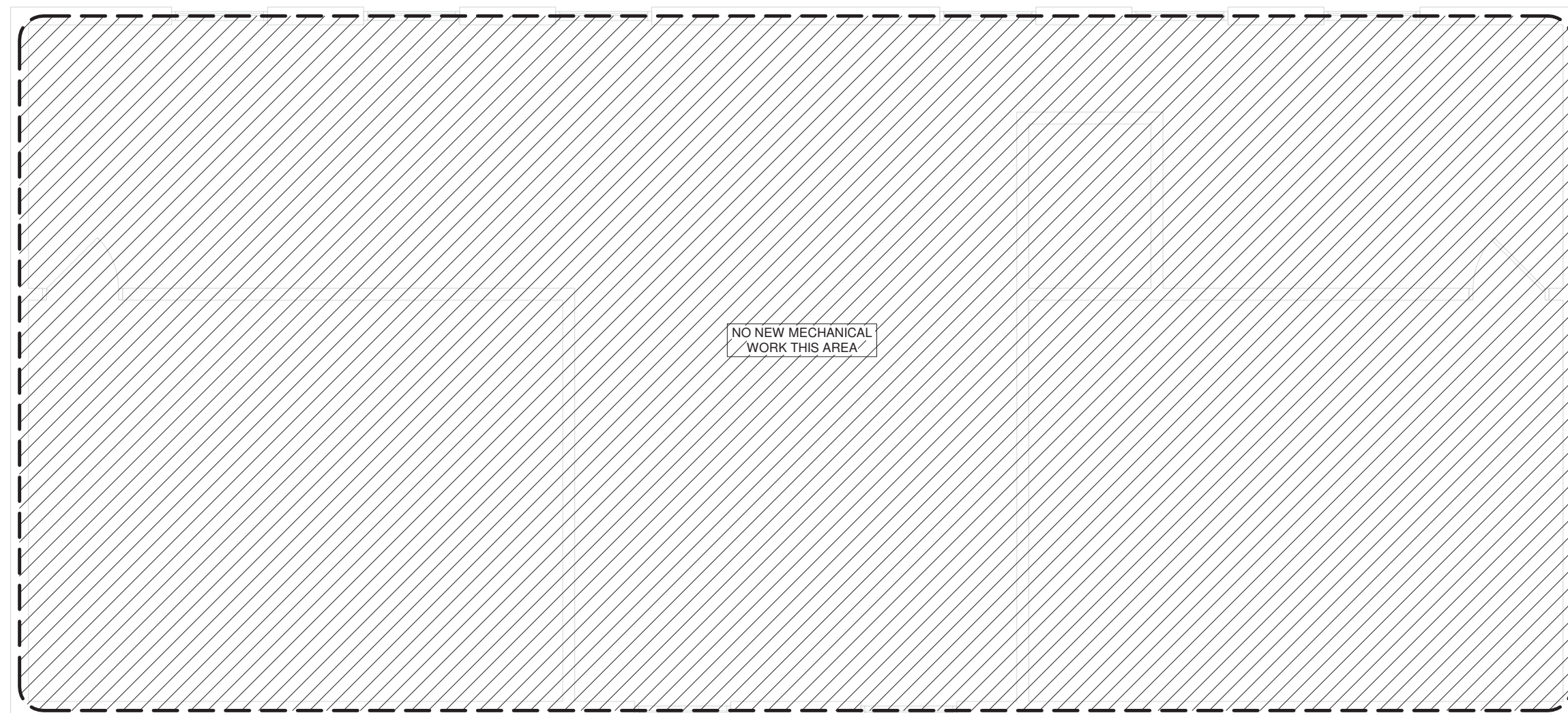
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DETAILS
PLOT SCALE 12" = 1'-0"
FILENAME
DATE

PROJECT
 15BPR.15
A5.1



2 TOWER PLAN - MECHANICAL
M1.1 1/4" = 1'-0"



1 CONTROL HOUSE PLAN - EAST TOWER - MECHANICAL
M1.1 1/4" = 1'-0"

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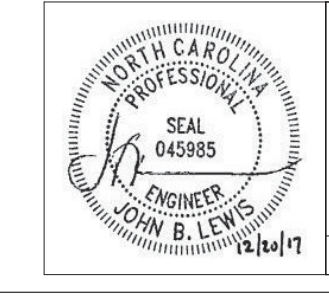
RENOVATIONS TO
 CAPE FEAR RIVER MEMORIAL LIFT BRIDGE
 NORTH CAROLINA DEPT. OF TRANSPORTATION



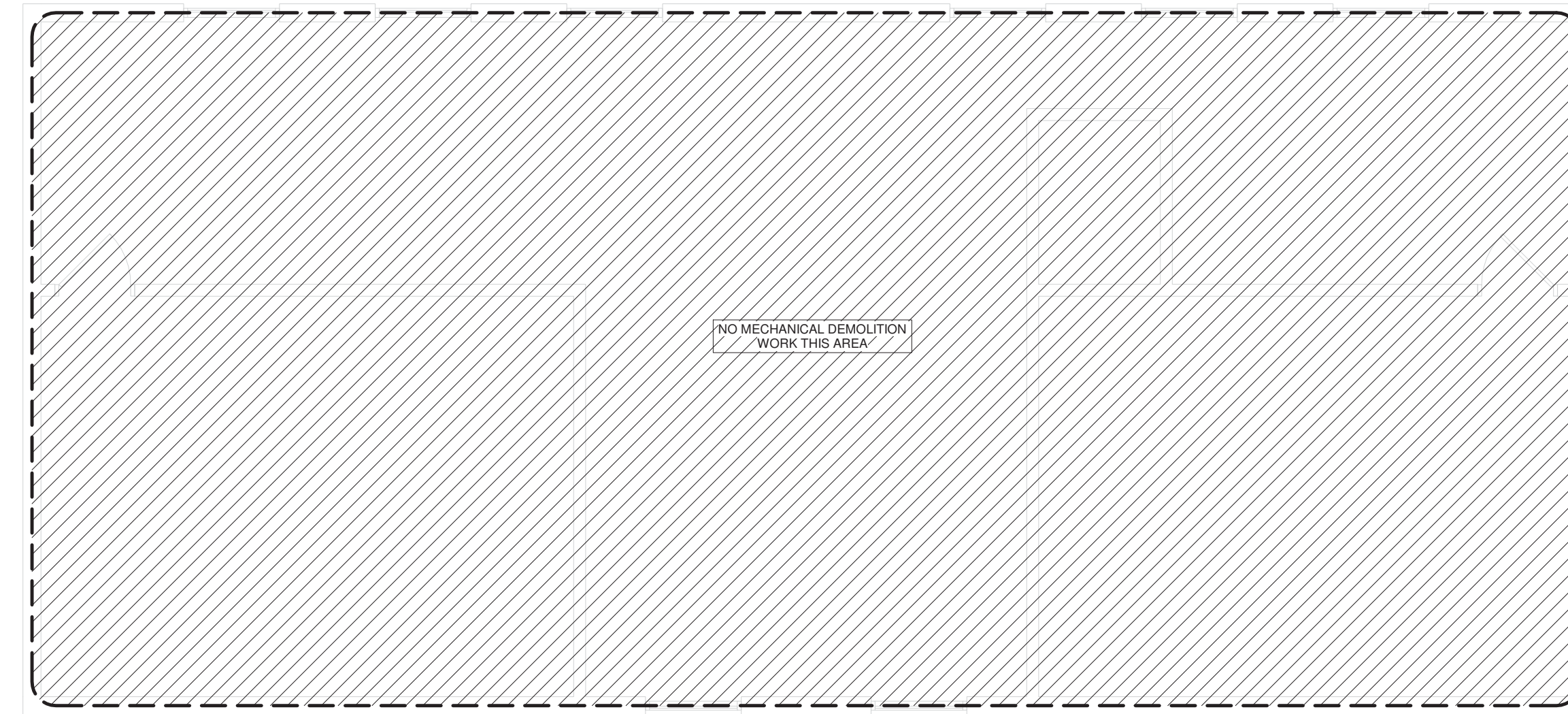
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 PHONE: (717) 795-8575
 FAX: (717) 795-9110
 DESIGNED BY: RWR | FUNCTIONAL LEAD: JBL | PROJECT NO. 17096

TOWER AND CONTROL HOUSE PLANS - MECHANICAL
 PLOT SCALE: 1/4" = 1'-0"
 FILENAME: 17096 Memorial Bridge NC Rev01.rvt
 DATE: DECEMBER 20, 2017

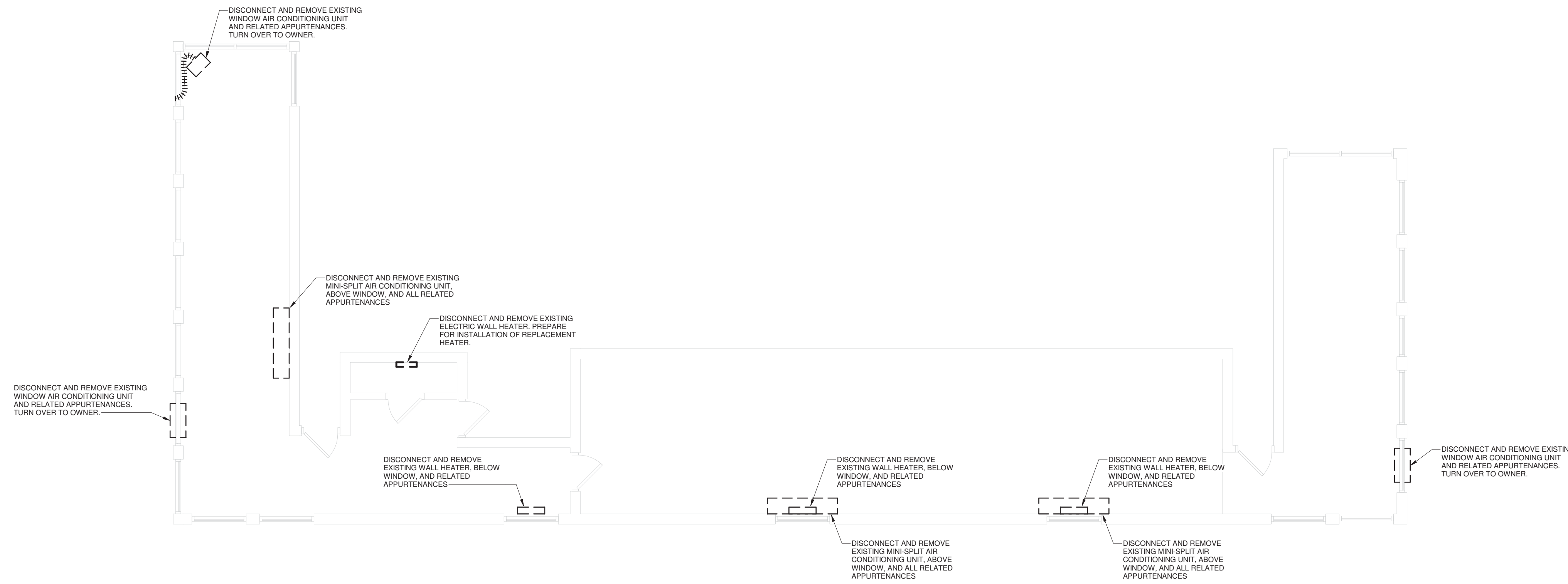
PROJECT 15BPR.15
M1.1



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1 TOWER PLAN - MECHANICAL DEMOLITION
M8.1 1/4" = 1'-0"



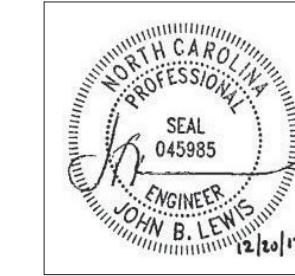
2 CONTROL HOUSE PLAN - EAST TOWER - MECHANICAL DEMOLITION
M8.1 1/4" = 1'-0"

REVISIONS

NO.	DATE	NAME	DESCRIPTION OF CHANGES

CRABTREE ROHRBAUGH & ASSOCIATES - ARCHITECTS
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 MECHANICSBURG, PA 17055
 717-458-0272 FAX 717-458-0047
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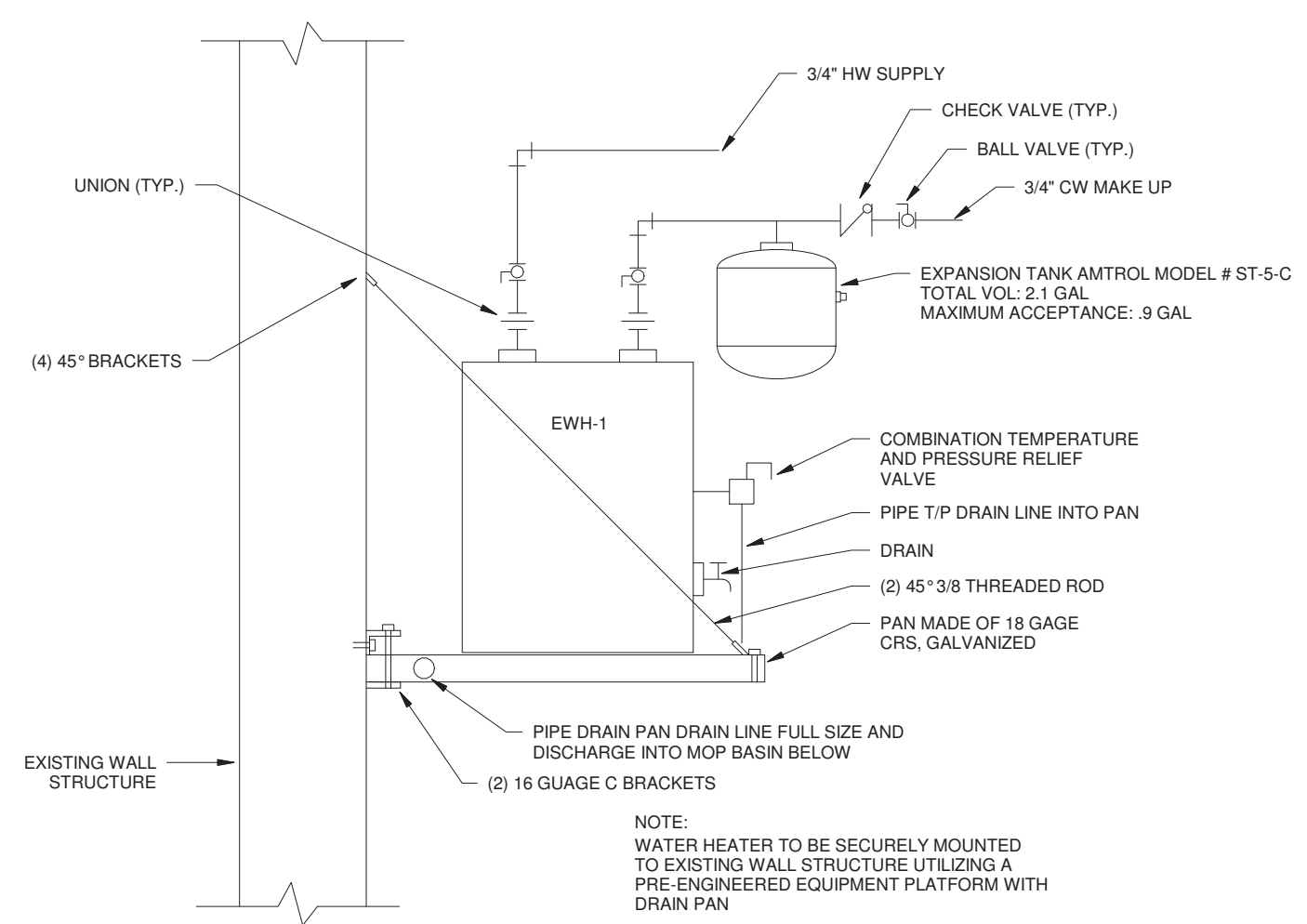


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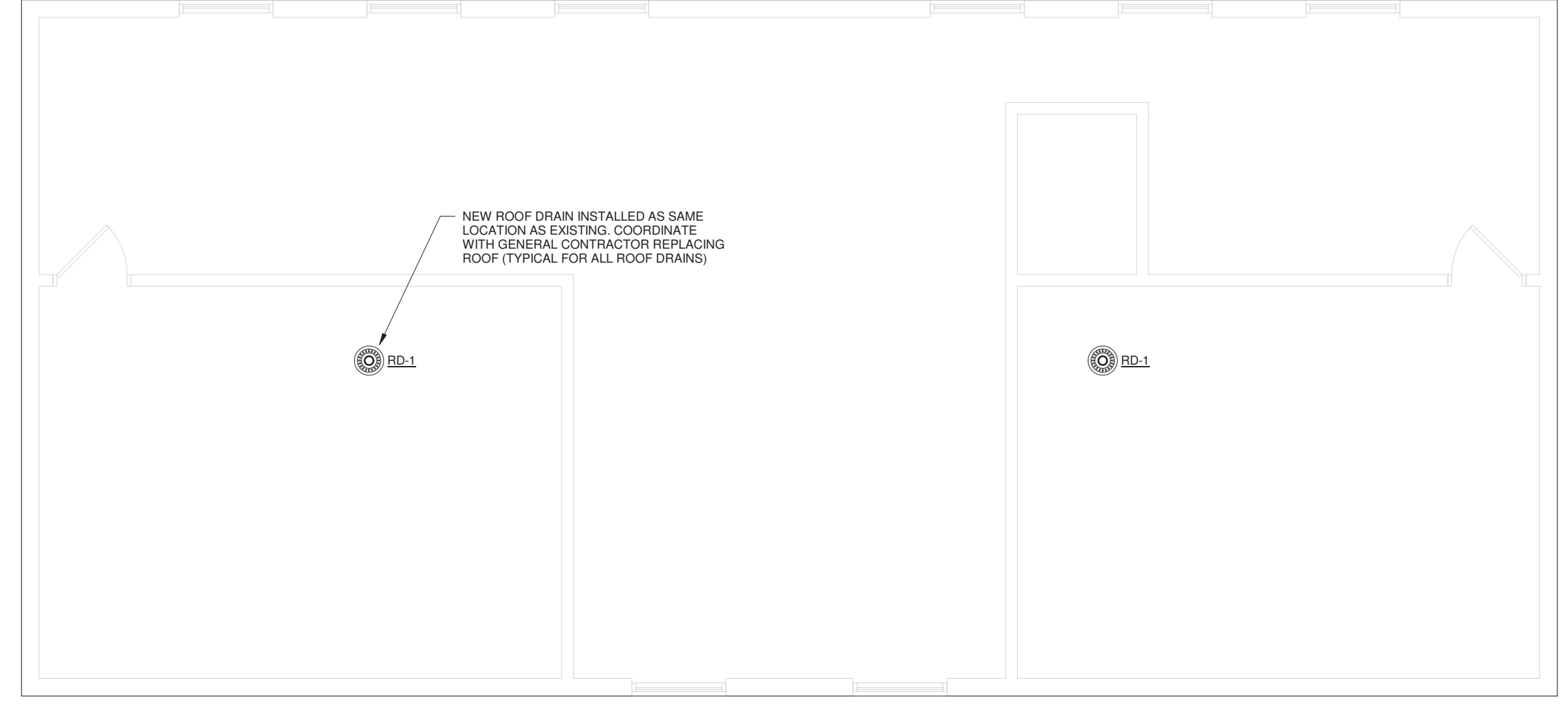
TOWER AND CONTROL HOUSE
 PLANS - MECHANICAL
 DEMOLITION
 PLOT SCALE:
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 FILENAME:
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 M8.1.dwg
 DATE:
 DECEMBER 20, 2017

PROJECT
 15BPR.15
M8.1

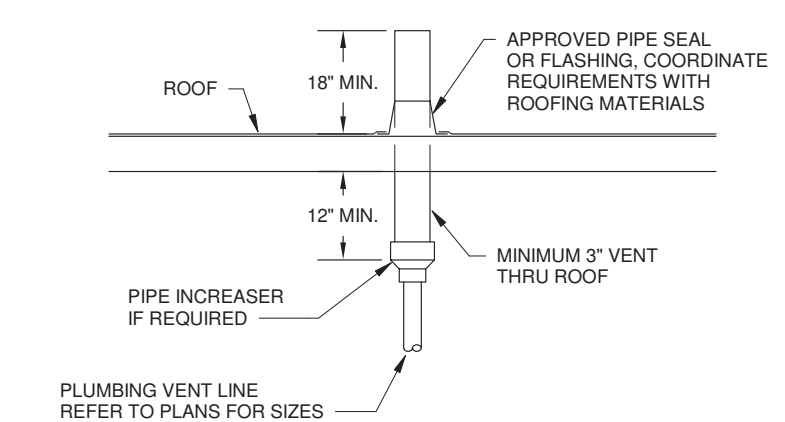
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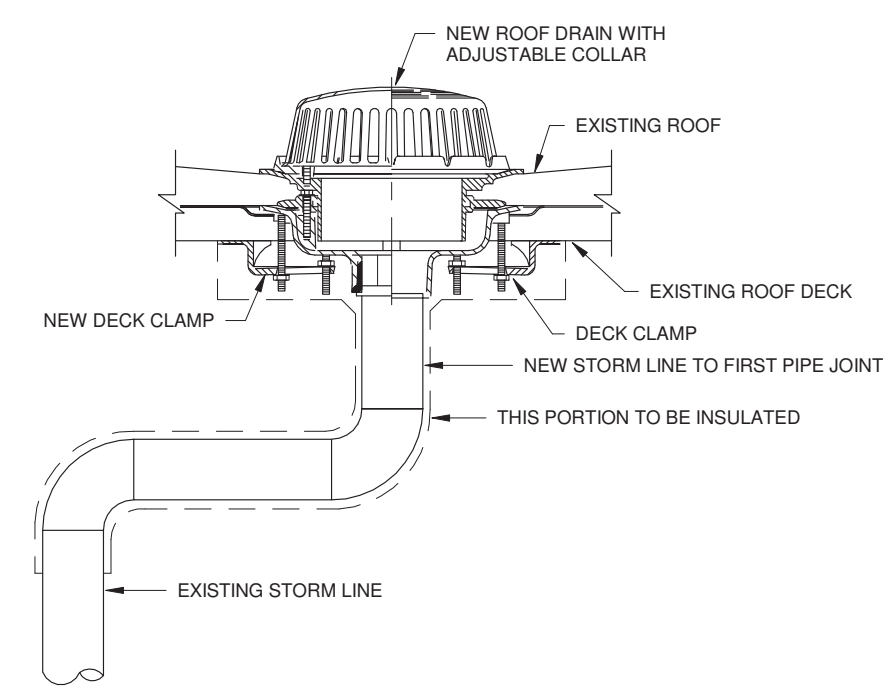
5 WATER HEATER MOUNTNG DETAIL
P1.1 NOT TO SCALE



4 TOWER PLAN - PLUMBING
P1.1 1/4" = 1'-0"



2 PLUMBING VENT THRU ROOF DETAIL
P1.1 NOT TO SCALE



3 ROOF DRAIN REPLACEMENT DETAIL
P1.1 NOT TO SCALE



1 CONTROL HOUSE PLAN - EAST TOWER - PLUMBING
P1.1 1/4" = 1'-0"

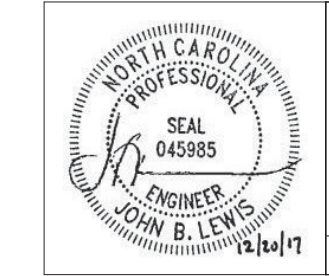
REVISIONS

NO.	DATE	NAME	DESCRIPTION OF CHANGES

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FLOOR PLANS AND DETAILS - PLUMBING

PILOT SCALE:
 As indicated

FILENAME:
 17096 Memorial Bridge NC Rev01.rvt

DATE:
 DECEMBER 20, 2017

PROJECT
 15BPR.15
P1.1

DRAWING LIST

- E0.1 GENERAL NOTES
E1.1 FLOOR PLANS - LIGHTING
E3.1 FLOOR PLANS - FIRE ALARM
E8.1 FLOOR PLANS - DEMO

DISTRIBUTION table with symbols and descriptions for panelboards, homeruns, and conduits.

EQUIPMENT table with symbols and descriptions for junction boxes, disconnect switches, starters, and frames.

FIRE ALARM table with symbols and descriptions for pull stations, horns, and detectors.

RECEPTACLES table with symbols and descriptions for duplex, quadruplex, and data outlets.

- NOTES: 1. DEVICES TO BE MOUNTED 18" ABOVE FINISHED FLOOR... 2. A-C = ABOVE COUNTERTOP... 3. GFI = GROUND FAULT INTERRUPTER

PHASING PLAN: DESIGN IS BASED UPON ARCHITECTURAL PHASING PLAN AND CIVIL PHASING PLAN...

LIGHTING CONTROL table with symbols and descriptions for switches, sensors, and dimming controls.

GENERAL LIGHTING CONTROL NOTES:

- 1. CONTRACTOR TO FIELD VERIFY NUMBER OF RELAYS REQUIRED PER CIRCUIT... 2. PROVIDE A 4"x4" JUNCTION BOX FOR DEVICE MOUNTING...

GENERAL NOTES:

- 1. VERIFY ALL CONDITIONS AND MEASUREMENTS ON SITE PRIOR TO THE INSTALLATION OF ANY EQUIPMENT... 2. INSTALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE...

GENERAL LIGHTING FIXTURE NOTES:

- 1. COORDINATE MOUNTING HEIGHTS WITH 'A' SERIES DRAWINGS... 2. VERIFY ALL CEILING TYPES SHOWN ON THE 'A' SERIES DRAWINGS...

ABBREVIATIONS:

Table of abbreviations for electrical symbols such as AMP, AC, AFF, AFG, AHU, ALT, APP, etc.

THE SYMBOLS AND ABBREVIATIONS SHOWN ARE STANDARDS AND DO NOT NECESSARILY APPEAR ON THE DRAWINGS

LIGHTING FIXTURE SCHEDULE table with columns for MARK, MANUFACTURER, MODEL NO., DESCRIPTION, LAMP, WATTAGE, VOLTAGE, MOUNTING, and REMARKS.

REVISIONS

Table for tracking revisions with columns for NO., DATE, NAME, and DESCRIPTION OF CHANGES.

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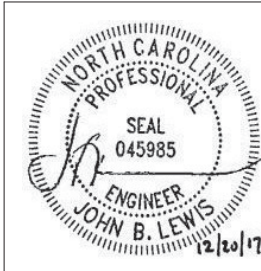


GENERAL NOTES

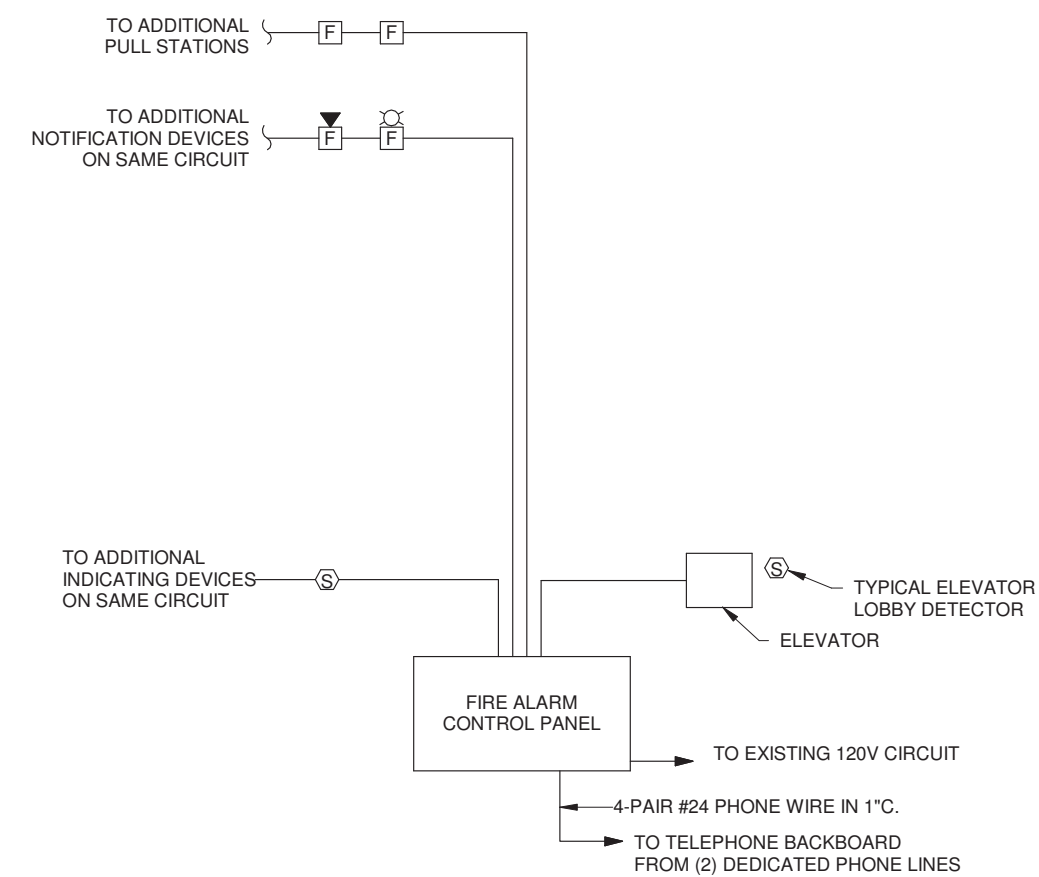
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PROJECT 15BPP.15

E0.1

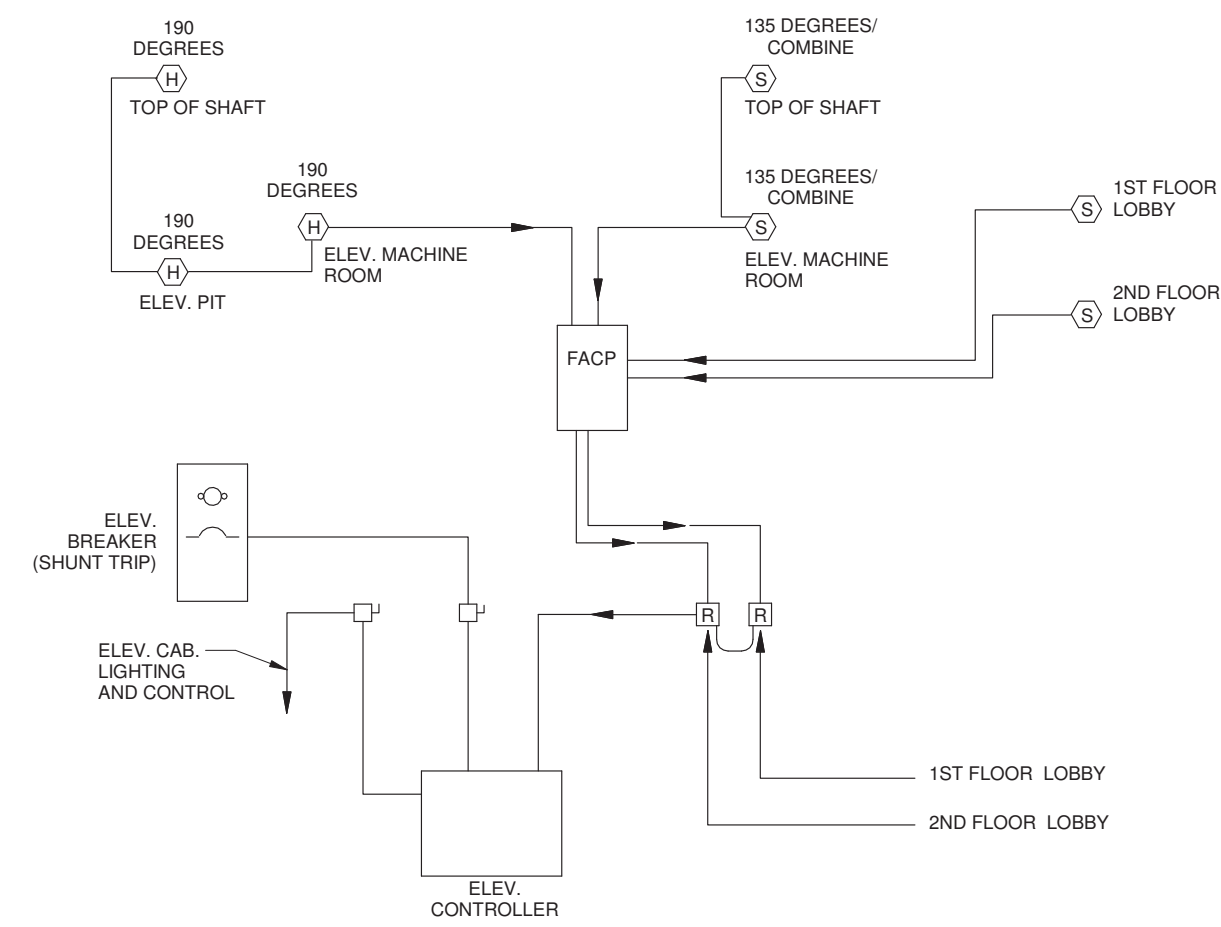


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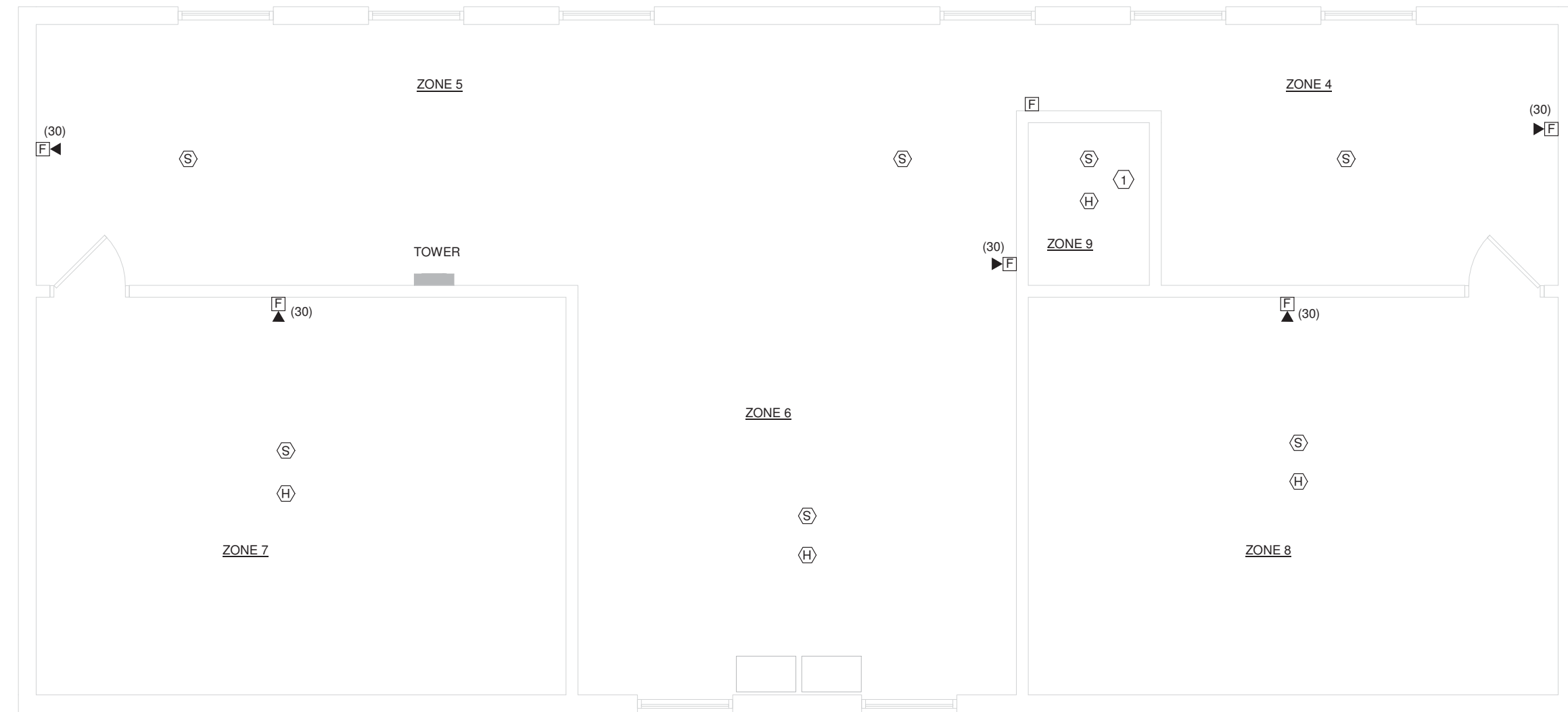


NOTE:
 1. NUMBER AND SIZE OF CONDUCTORS AND CONDUIT SHALL BE AS RECOMMENDED BY MANUFACTURER.
 2. ALL RELAYS REQUIRED SHALL BE ADDRESSABLE.
 3. FURNISH AND INSTALL 20A/1P BREAKER IN NEAREST EXISTING PANEL (RUN 2#12, 1#12GRD IN 3/4" C) FOR POWERING CONTROL PANEL. BREAKER SHALL BE COMPATIBLE WITH EXISTING PANEL. BREAKER AIC RATING SHALL MATCH EXISTING.

2 FIRE ALARM RISER DIAGRAM
 E3.1 NO SCALE



3 ELEVATOR RECALL AND DETECTION DETAIL
 E3.1 NO SCALE



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 E3.1 1/4" = 1'-0"

GENERAL PLAN NOTES:

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

DRAWING NOTES:

1. COORDINATE EXACT REQUIREMENTS WITH ELEVATOR MANUFACTURER.

100% CONSTRUCTION DOCUMENTS

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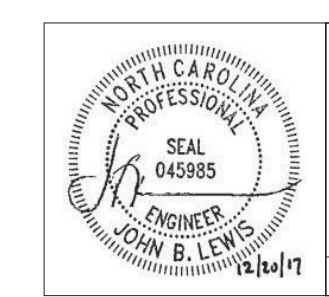
REVISIONS

NO.	DATE	NAME	DESCRIPTION OF CHANGES

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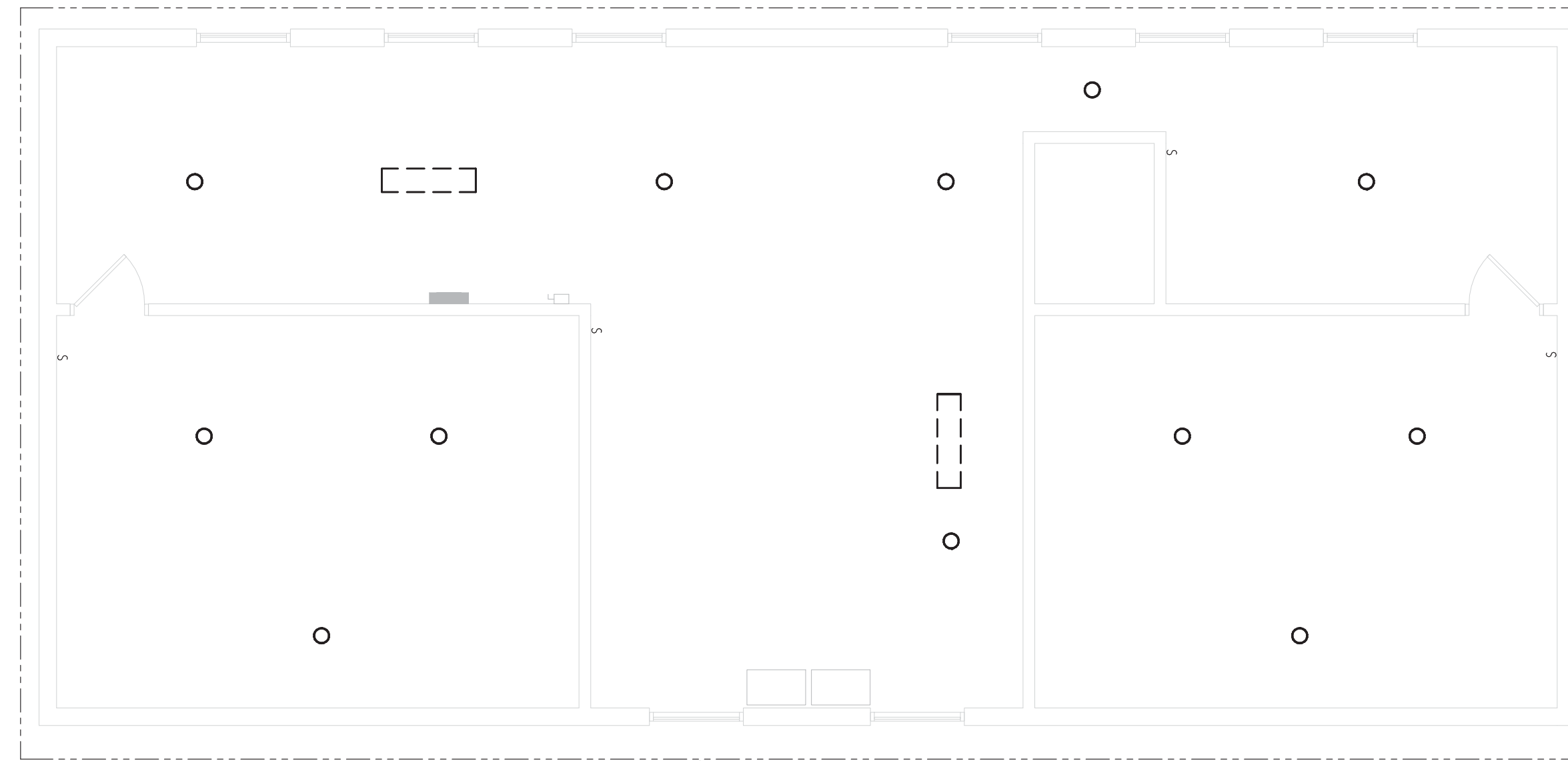
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FLOOR PLANS - FIRE ALARM
 PROJECT SCALE: As Indicated
 FILENAME: 15BPR Memorial Bridge NC Rev02.rvt
 ELECT: JAL
 DATE: DECEMBER 20, 2017

PROJECT
 15BPR.15
E3.1

GENERAL PLAN NOTES:

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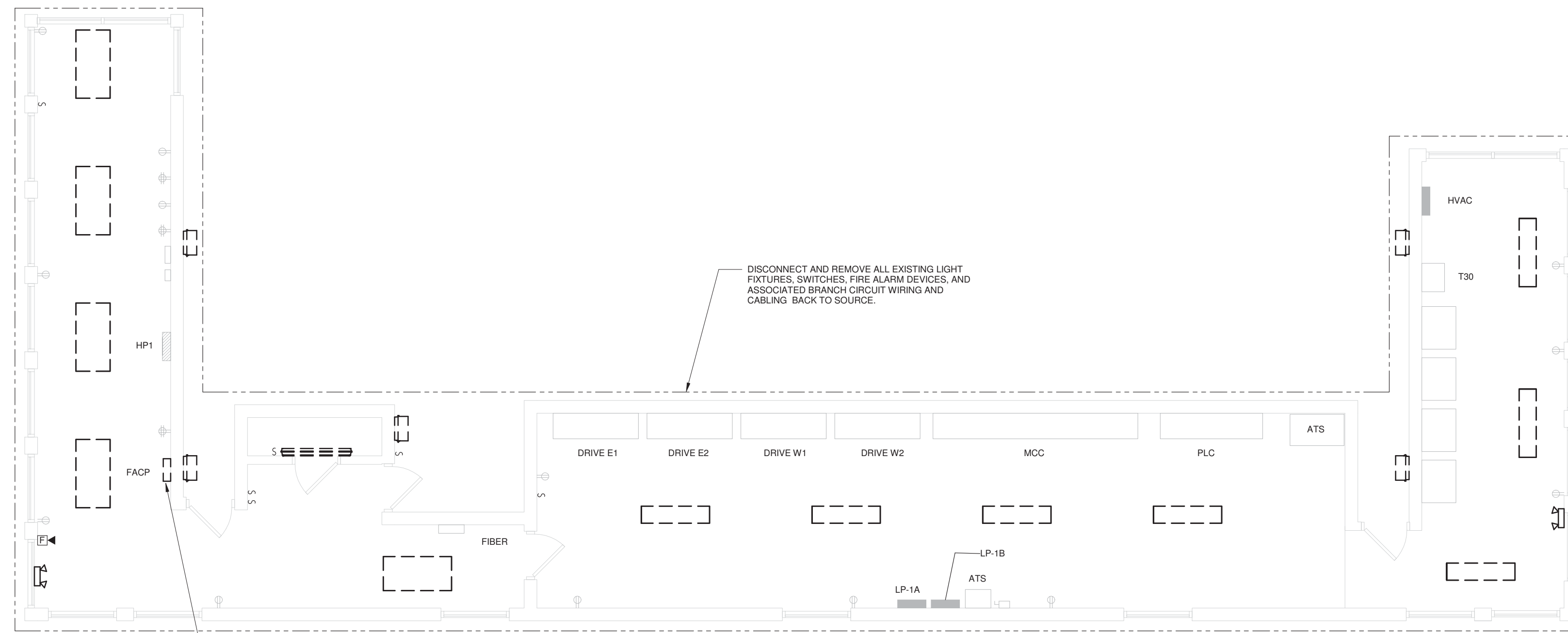


TOWER PLAN

DISCONNECT AND REMOVE ALL EXISTING LIGHT FIXTURES, SWITCHES, AND ASSOCIATED BRANCH CIRCUIT WIRING BACK TO SOURCE.

NOTE:

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



CONTROL HOUSE PLAN

DISCONNECT AND REMOVE ALL EXISTING LIGHT FIXTURES, SWITCHES, FIRE ALARM DEVICES, AND ASSOCIATED BRANCH CIRCUIT WIRING AND CABLING BACK TO SOURCE.

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 AND TOWER PLANS - DEMOLITION - ELECTRICAL

1
E8.1
1/4" = 1'-0"

100% CONSTRUCTION DOCUMENTS

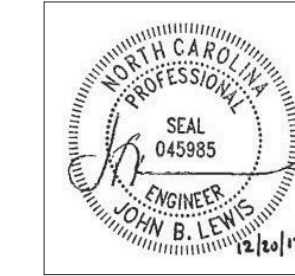
REVISIONS

NO.	DATE	BY	DESCRIPTION OF CHANGES

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FLOOR PLANS - DEMO

PROJECT
 15BPR.15

E8.1

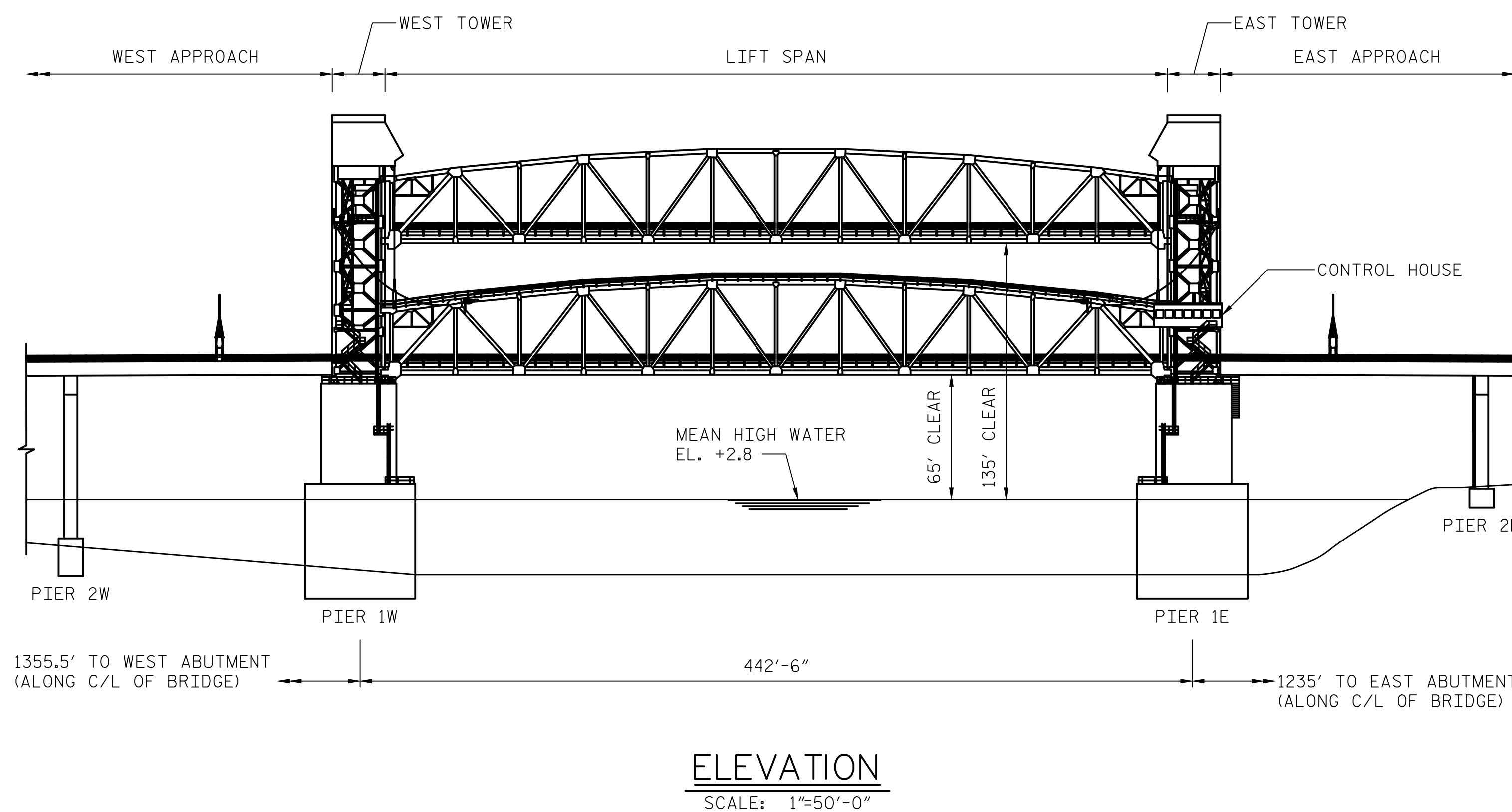
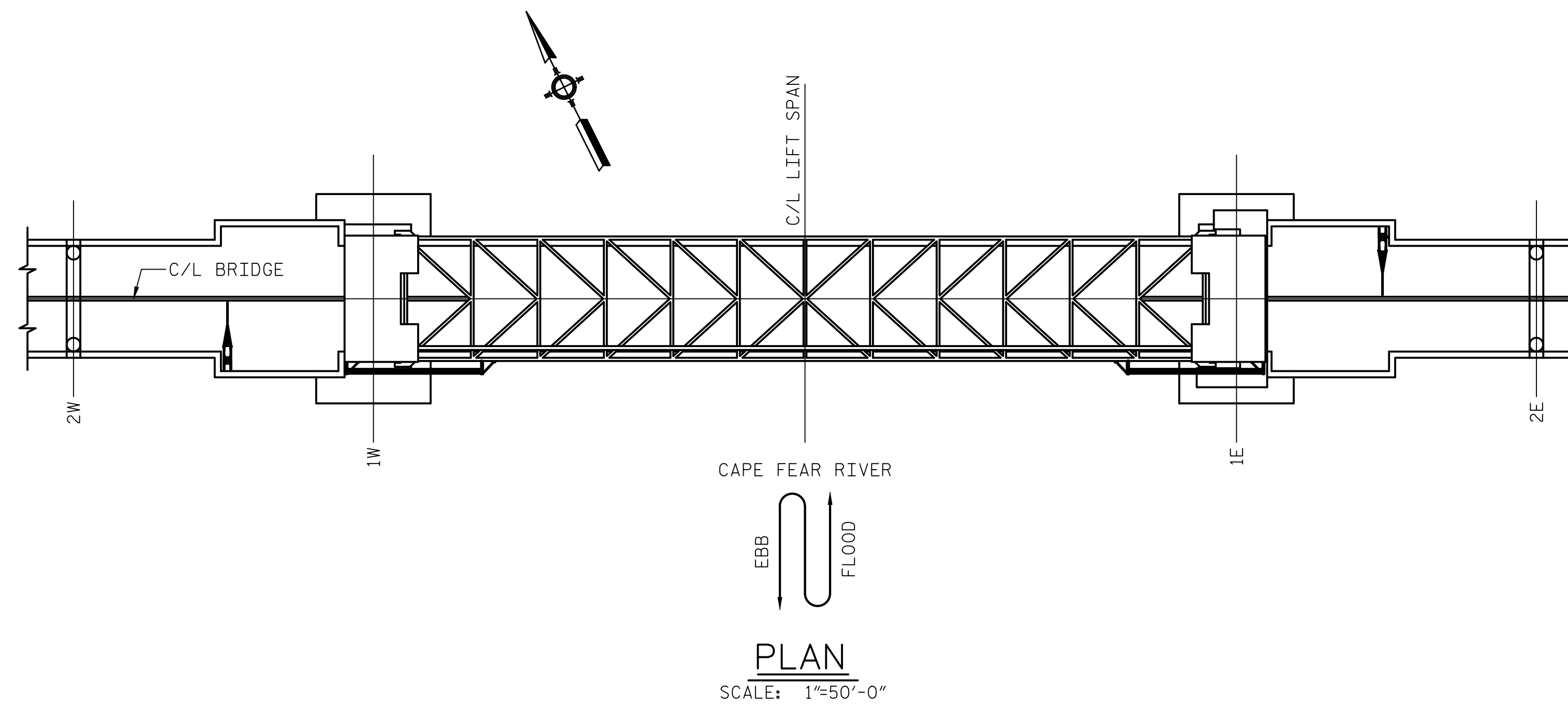
1/4" = 1'-0"

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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: _____

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			MA-1
2			4			10(A)

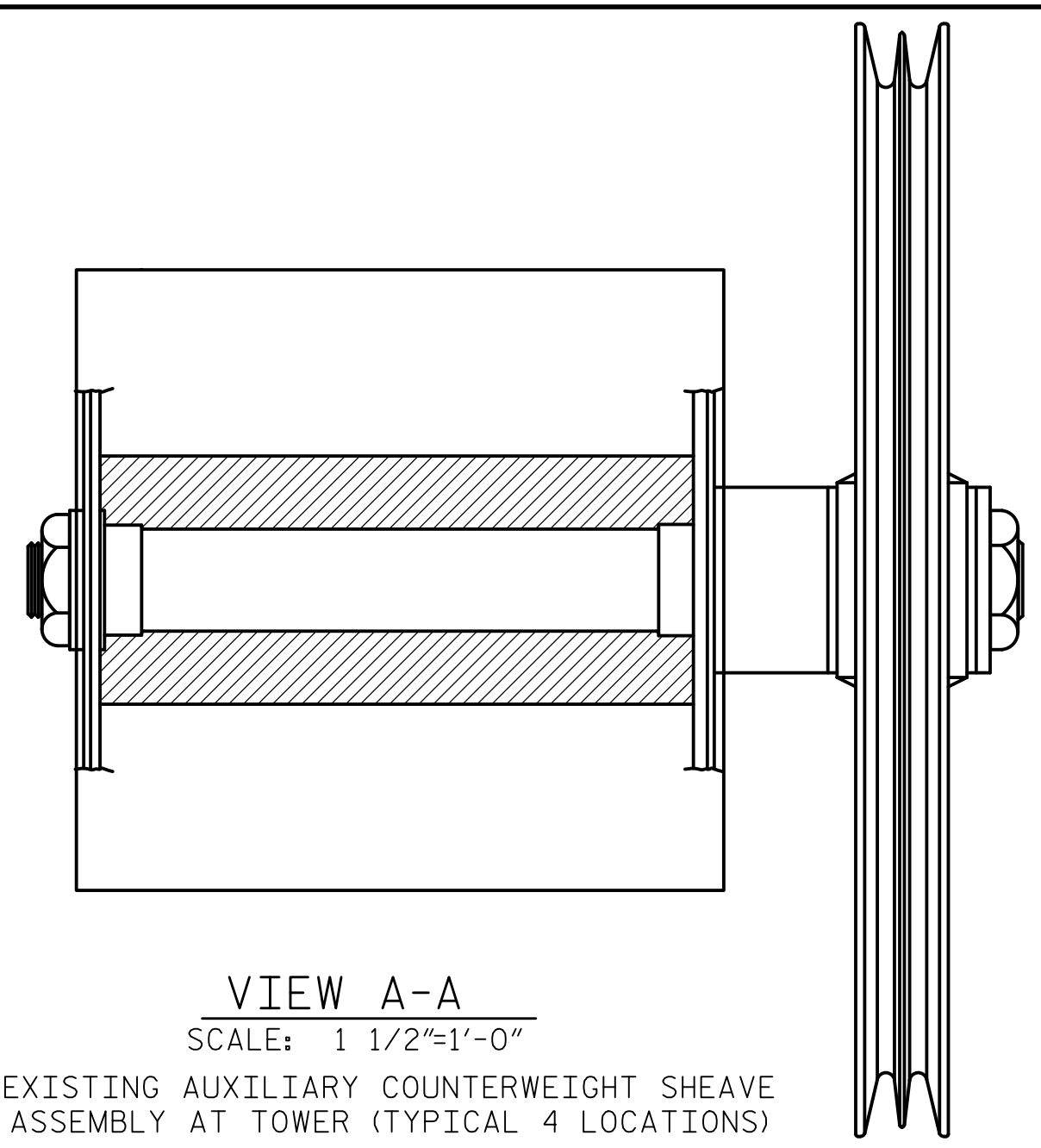
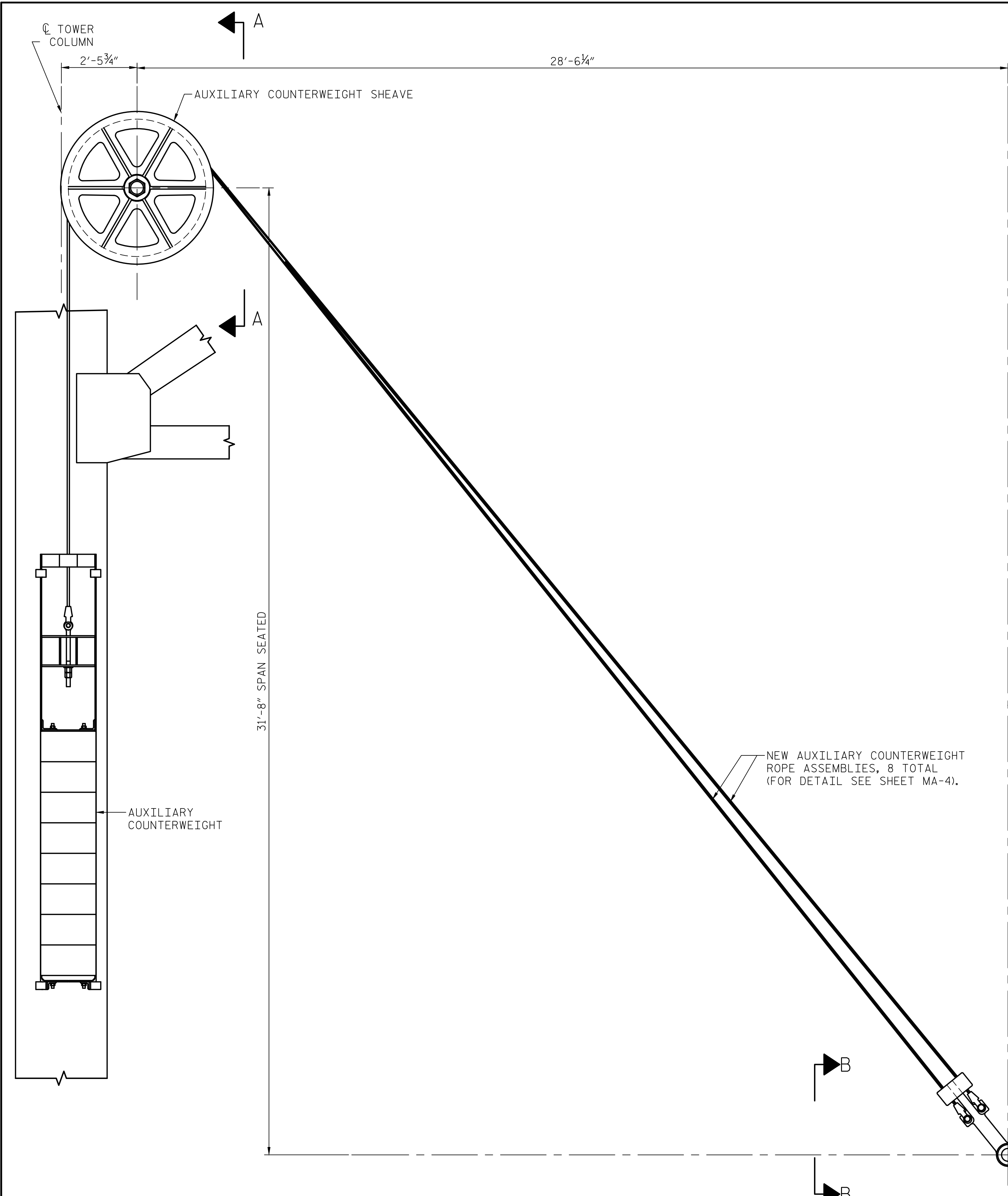
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 ENGINEER
 LEE LENTZ
 01/29/18
 DocuSigned by:
 Lee Lentz
 288C708E8BF6A0C

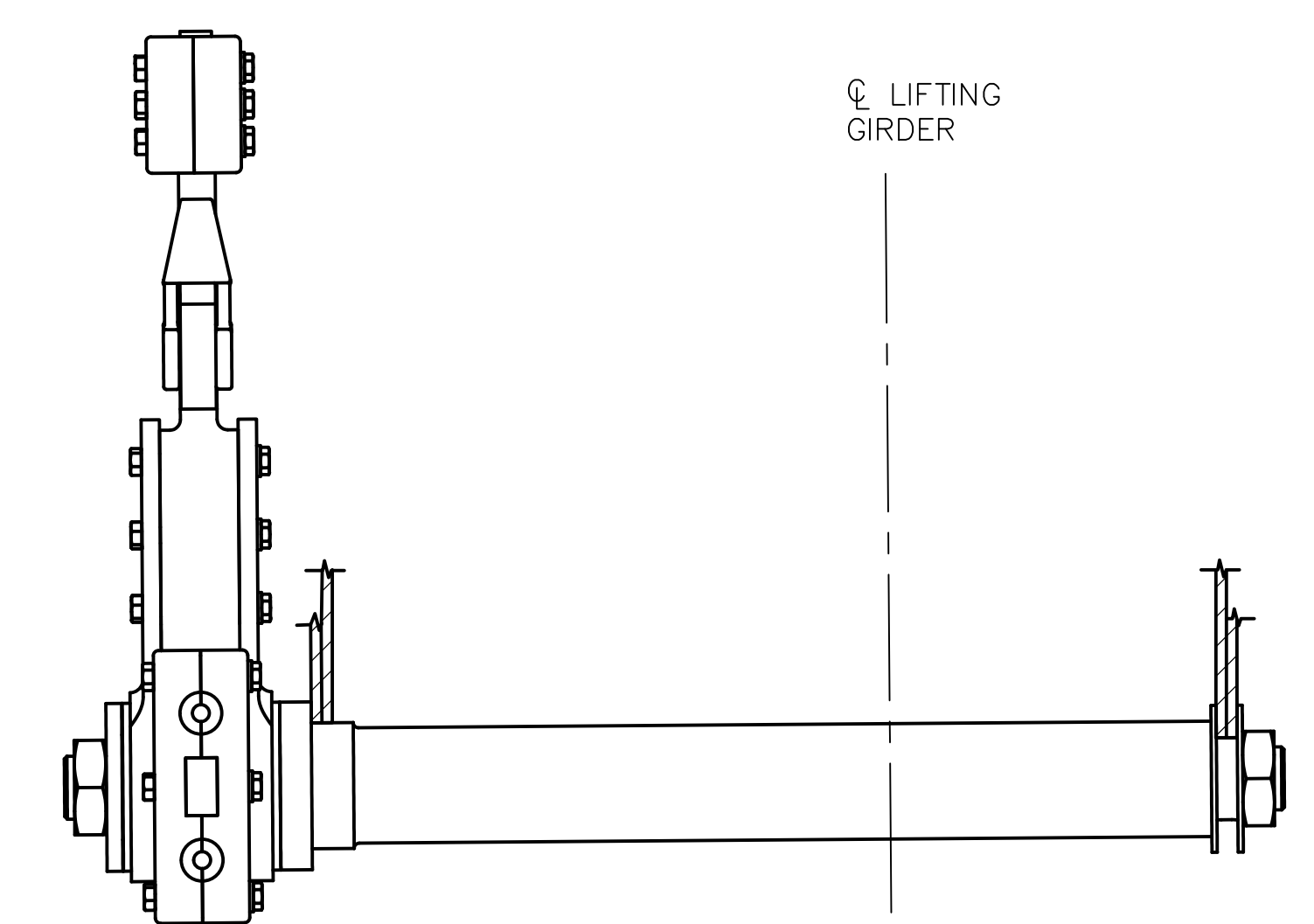
DESIGNED BY: E. A. SAMPLE	DATE: 08/17/17
DRAWN BY: J. M. SHOUP	DATE: 08/17/17
CHECKED BY: L. R. LENTZ	DATE: 01/25/18
DESIGN ENGINEER OF RECORD: L. R. LENTZ	DATE: 01/25/18

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VIEW A-A
SCALE: 1 1/2"=1'-0"
EXISTING AUXILIARY COUNTERWEIGHT SHEAVE ASSEMBLY AT TOWER (TYPICAL 4 LOCATIONS)



VIEW B-B
SCALE: 1 1/2"=1'-0"
EXISTING HITCH SHAFT ASSEMBLY ON LIFT SPAN, SHOWING HITCH SHAFT AND ONE OF 2 HITCH ARMS (TYPICAL 2 LOCATIONS, SEE SHEET MA-6 FOR COMPLETE VIEW)

NOTES:

1. CONTRACTOR MUST SUBMIT DETAILED PROCEDURE FOR REPLACEMENT OF AUXILIARY COUNTERWEIGHT COMPONENTS.
2. ALL DIMENSIONS MUST BE FIELD VERIFIED FOR PROPER FIT WITH EXISTING COMPONENTS.
3. EXISTING AUXILIARY COUNTERWEIGHT TAKE-UP RODS AND NUTS TO BE REMOVED, CLEANED, AND THREADS CHASED FULL LENGTH BEFORE REINSTALLATION. NON-WORKING SURFACES TO BE PAINTED WITH APPROVED PAINT SYSTEM AND THREADS TO BE WELL LUBRICATED.

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

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AUX. COUNTERWEIGHT ASSEMBLY

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	MA-2
1			3			TOTAL SHEETS
2			4			10(A)

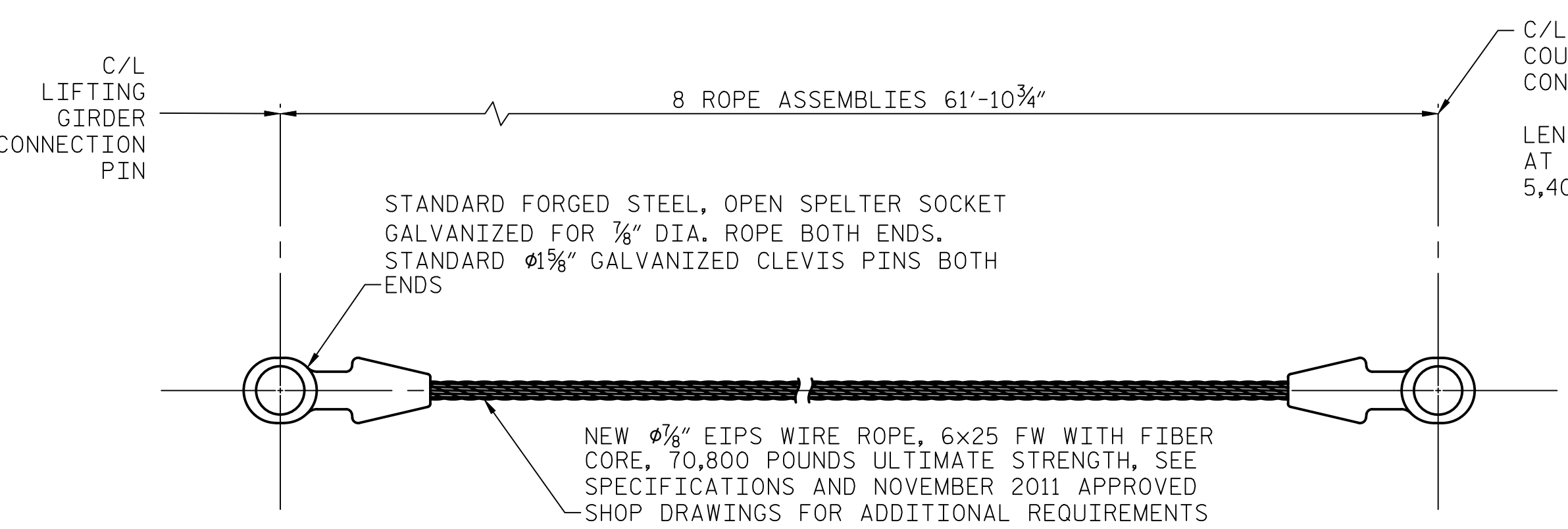
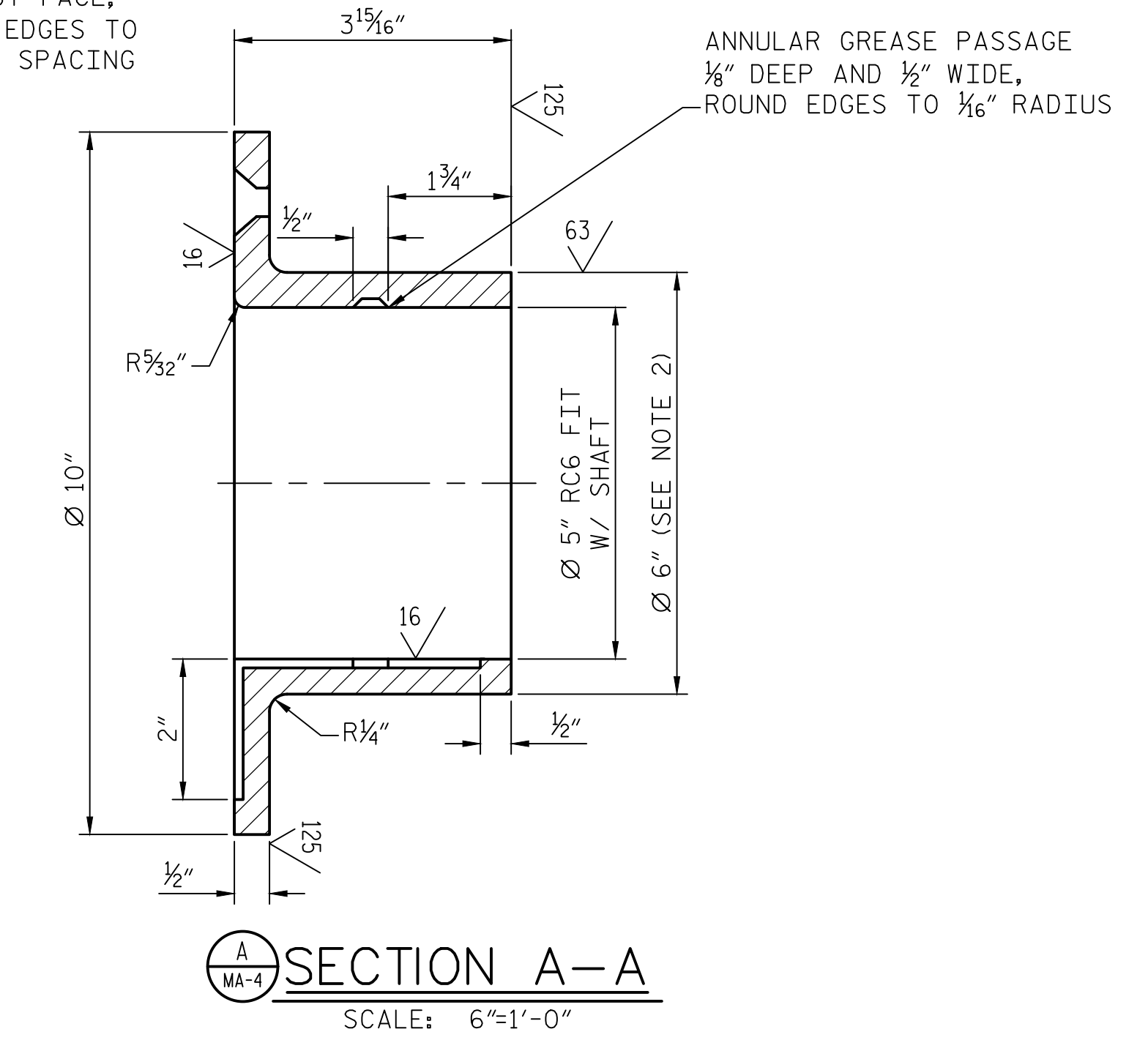
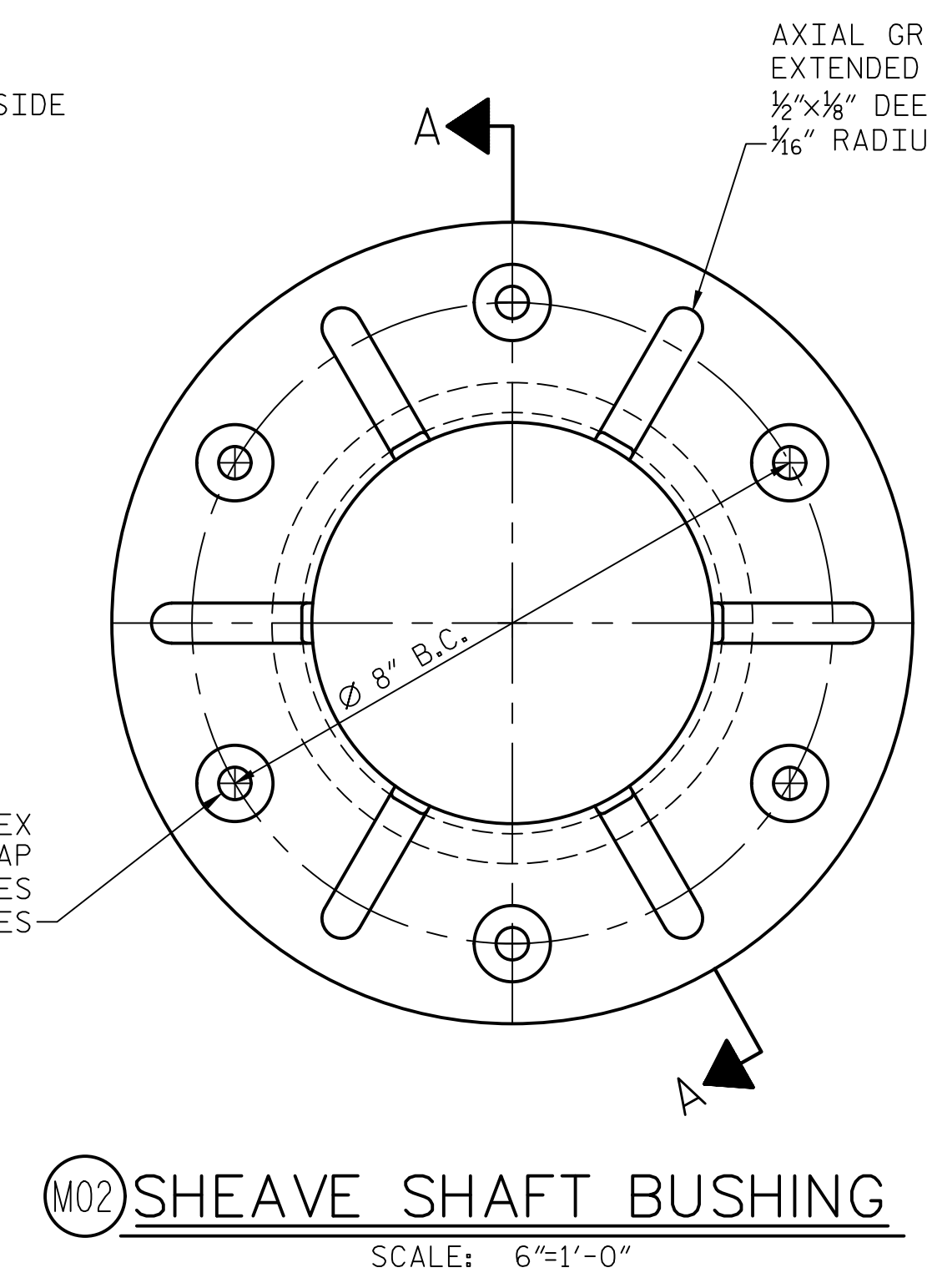
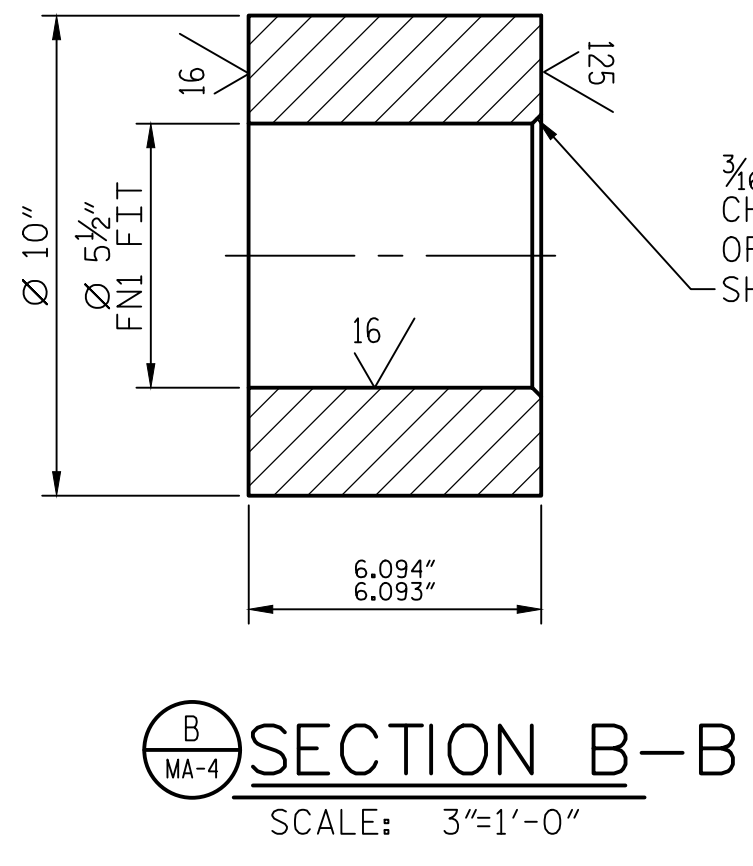
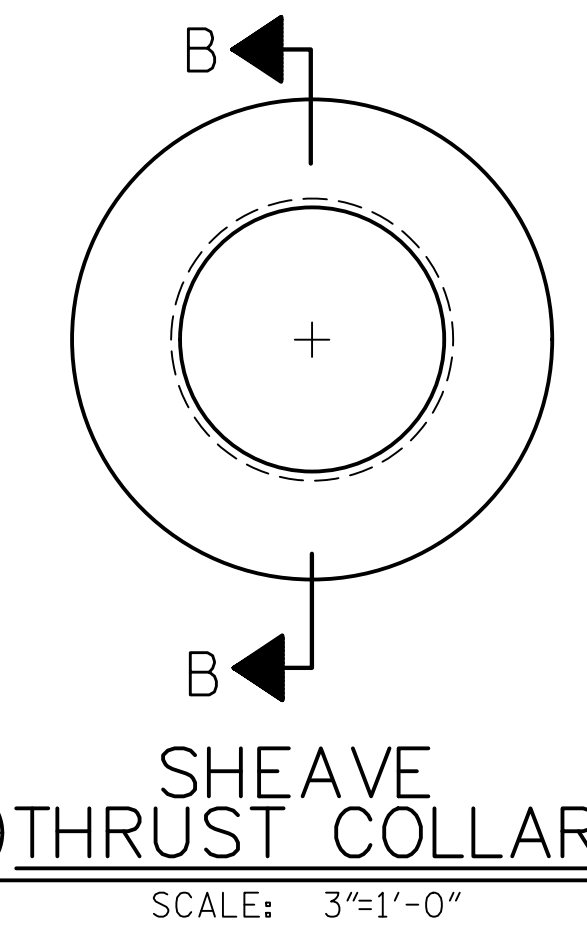
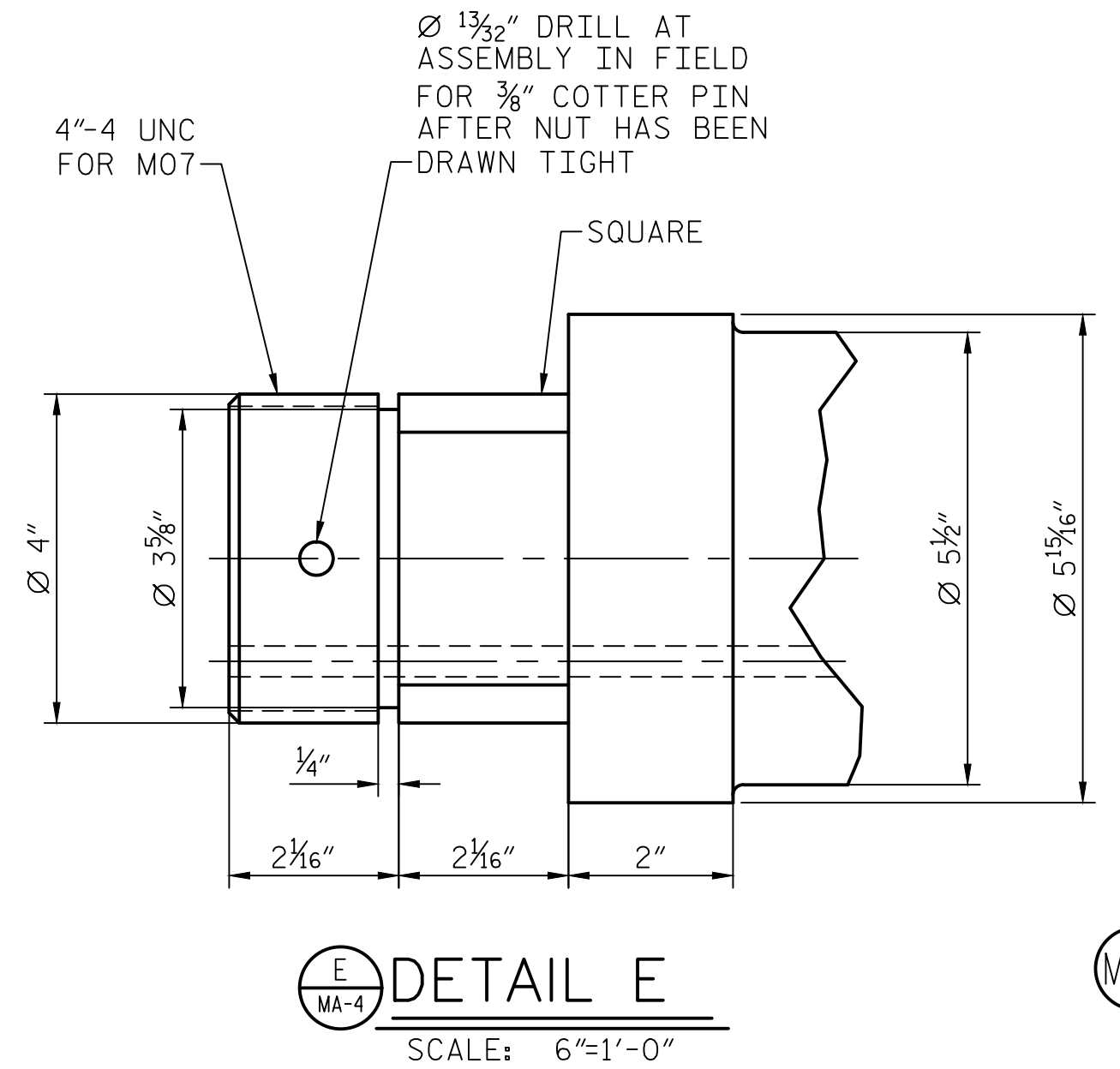
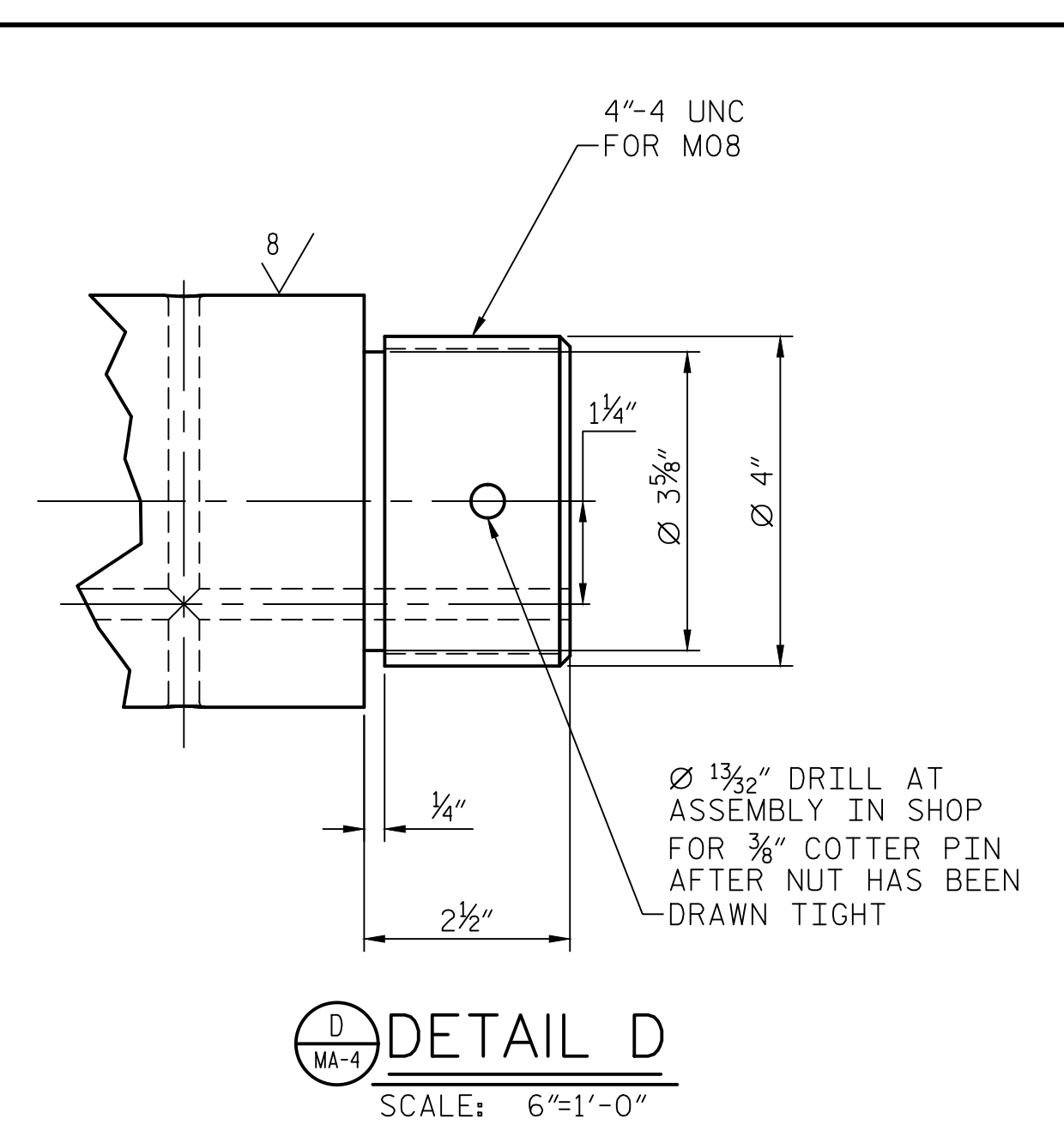
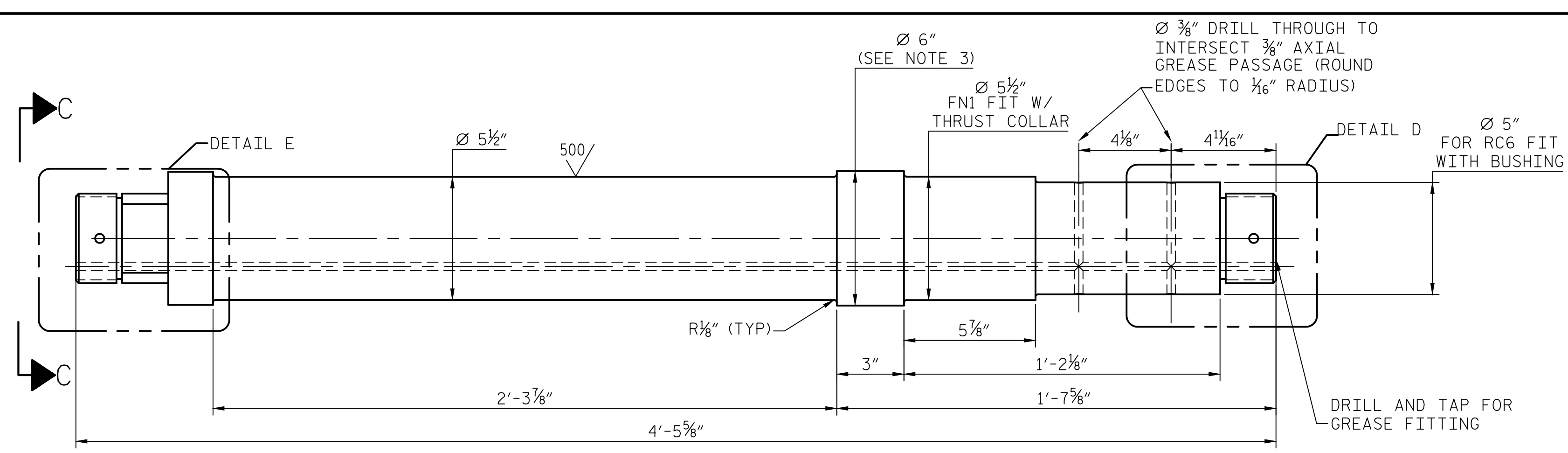
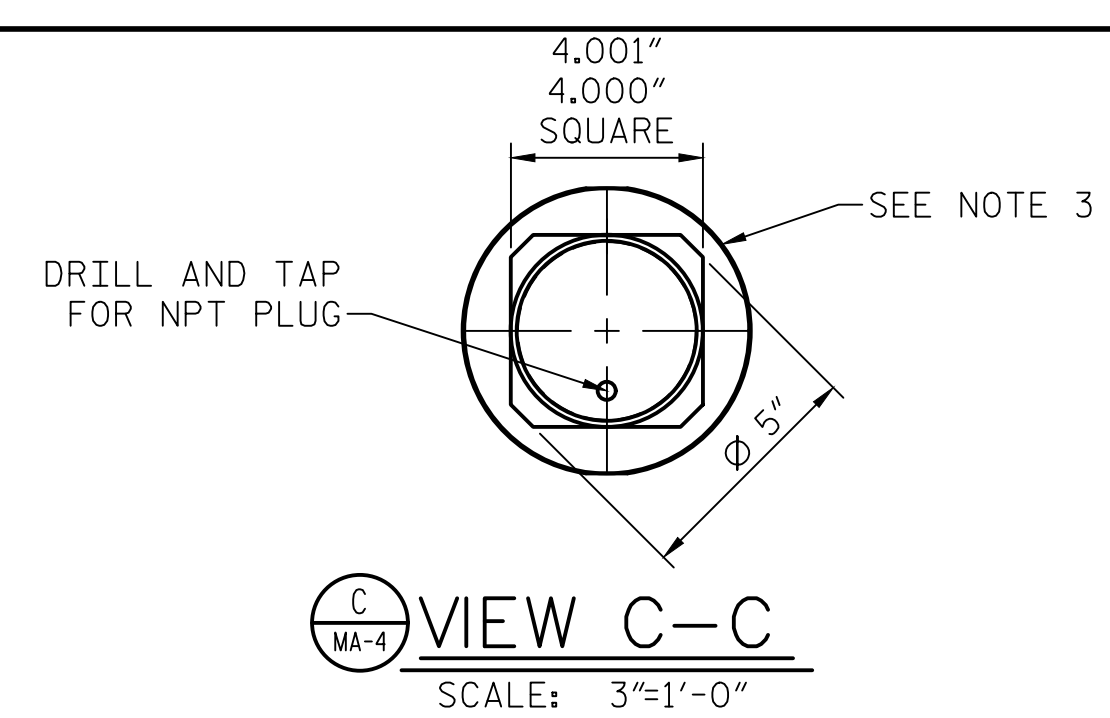
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AUXILIARY COUNTERWEIGHT ASSEMBLY

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

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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



- NOTES:**
1. DIAMETER OF AUXILIARY COUNTERWEIGHT SHEAVE BORE TO BE MEASURED AFTER DISASSEMBLY. CONTRACTOR SHALL FIELD VERIFY BORES IN EXISTING SUPPORT BRACKET AND SUBMIT TO ENGINEER PRIOR TO FINAL MACHINING. BORE TO BE MACHINED AS NECESSARY TO PROVIDE A CLEAN AND ROUND BORE, WITH MINIMUM MATERIAL REMOVAL.
 2. DIAMETER TO MATCH MINIMUM CLEAN SURFACE OF EXISTING SHEAVE FOR FN2 FIT
 3. CONTRACTOR SHALL FIELD VERIFY BORES IN EXISTING SUPPORT BRACKET AND SUBMIT TO ENGINEER PRIOR TO FINAL MACHINING.
 4. ALL GREASE GROOVES ARE TO BE PROVIDED WITH A 1/16" RADIUS AT EDGES.

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

STATE OF NORTH CAROLINA
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AUX. COUNTERWEIGHT ASSEMBLY DETAILS - 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	MA-4
1			3			TOTAL SHEETS
2			4			10(A)

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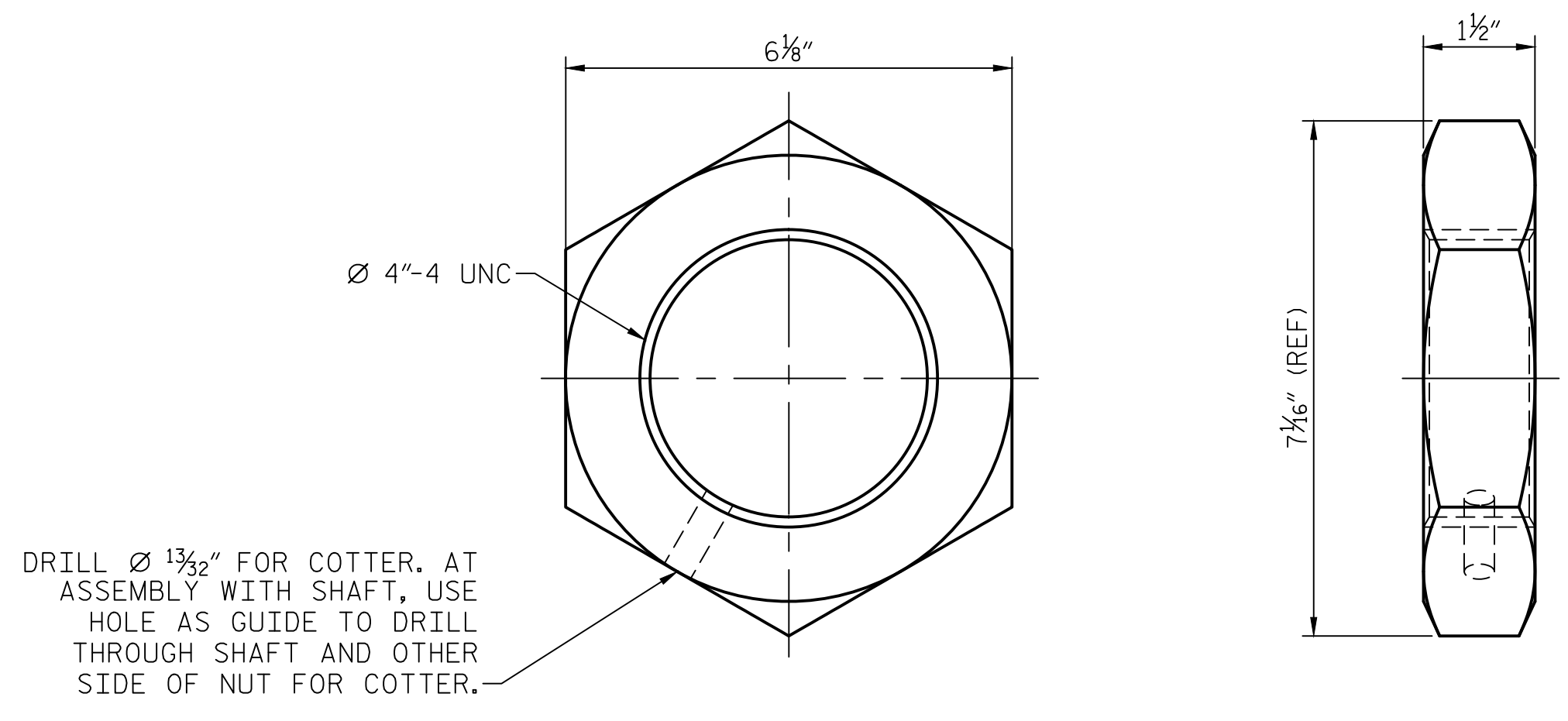
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RALEIGH, NC 27601
NC LICENSE NO. C-2979

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044302
ENGINEER
LEE LENTZ
01/29/18
Designed by: *Lee Lentz*

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FILE: \\vmd\01\p\projects\15682\01\CADD\Mechanical\MA-4 AUX. COUNTERWEIGHT ASSEMBLY DETAILS - 2

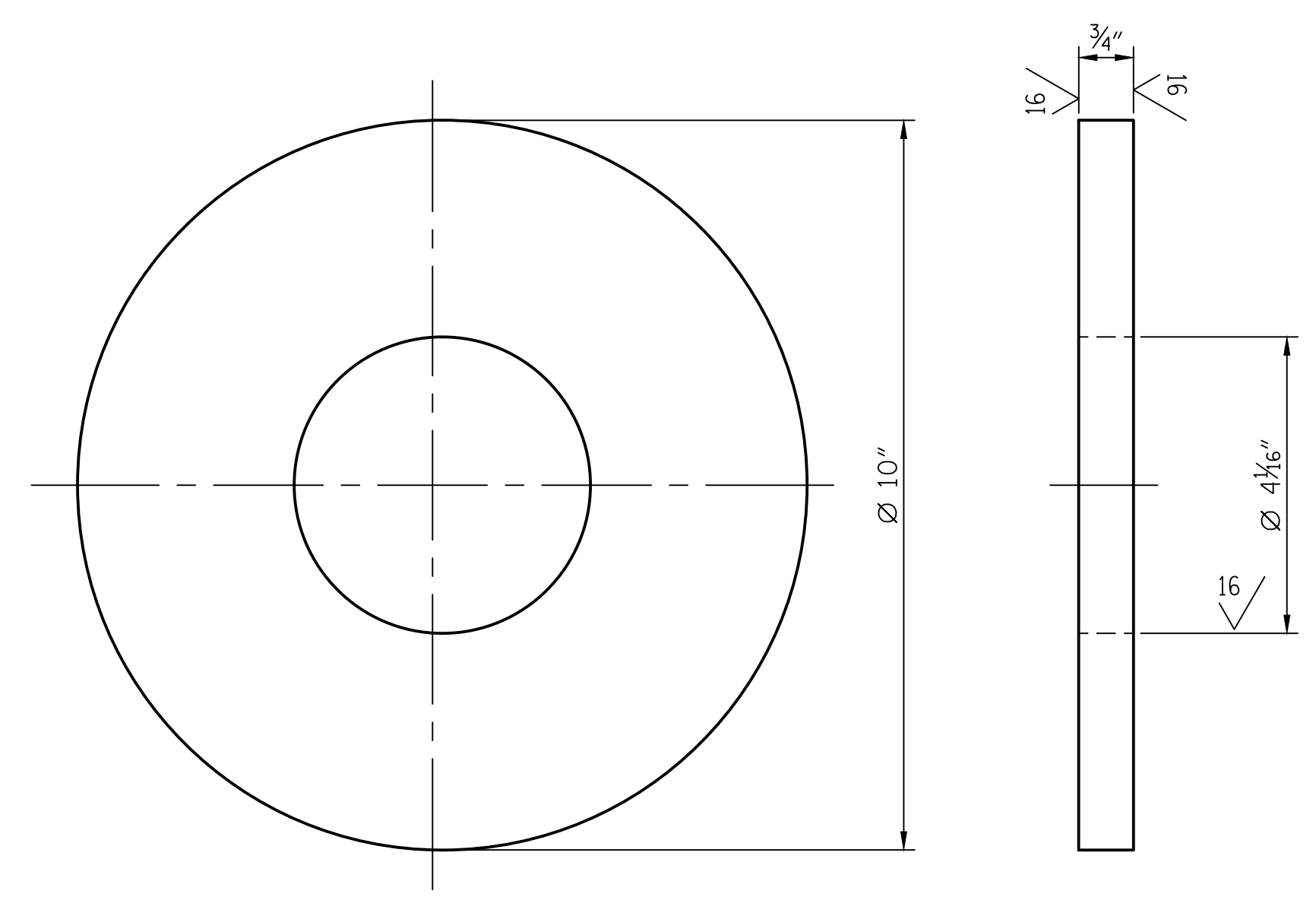
DESIGNED BY: E. A. SAMPLE DATE: 08/17/17
DRAWN BY: J. M. SHOUP DATE: 08/17/17
CHECKED BY: L. R. LENTZ DATE: 01/25/18
DESIGN ENGINEER OF RECORD: L. R. LENTZ DATE: 01/25/18

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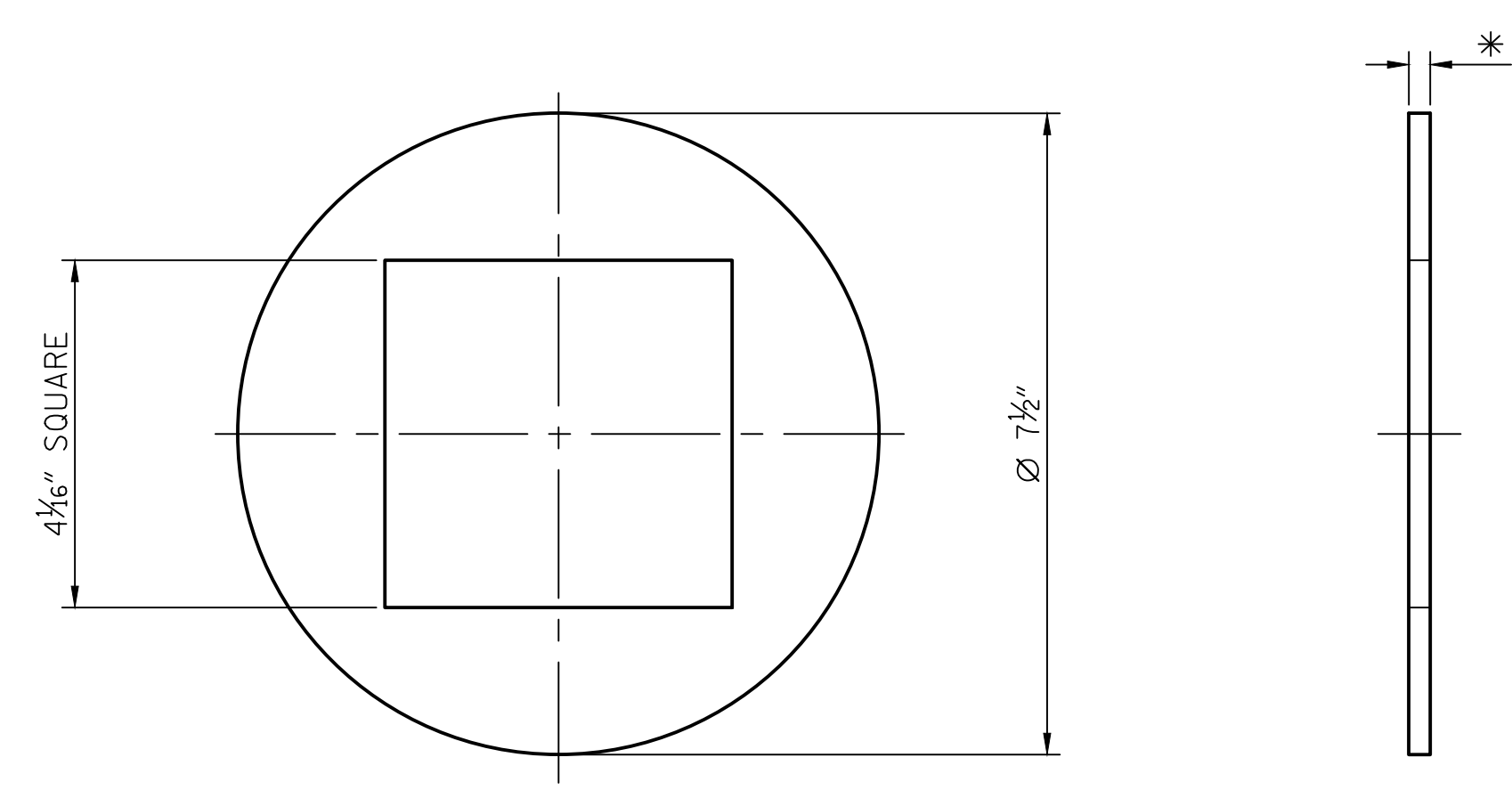


DRILL $\varnothing 1\frac{3}{32}$ " FOR COTTER. AT ASSEMBLY WITH SHAFT, USE HOLE AS GUIDE TO DRILL THROUGH SHAFT AND OTHER SIDE OF NUT FOR COTTER.

(M07) LOCK NUT
SCALE: 6"=1'-0"



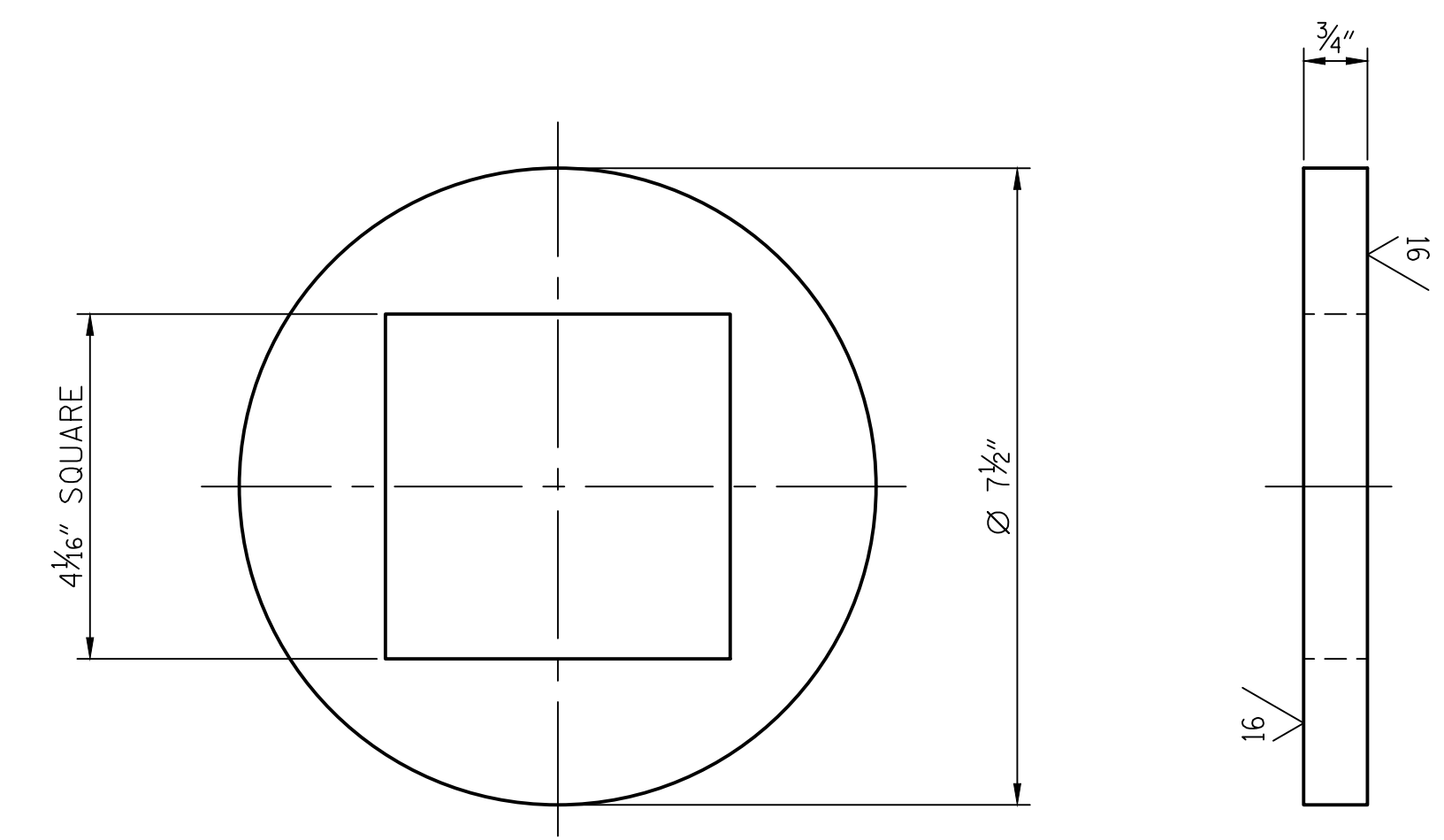
(M08) 10" THRUST WASHER
SCALE: 6"=1'-0"



(M05) SHIM
SCALE: 6"=1'-0"

* EACH SHIM PACK SHALL BE PROVIDED WITH THE FOLLOWING THICKNESSES

QTY:	THICKNESS:
1	1/4"
1	1/8"
1	1/16"
1	1/32"
2	1/64"



(M06) 7 1/2" THRUST WASHER
SCALE: 6"=1'-0"

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

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

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NC LICENSE NO. C-2979

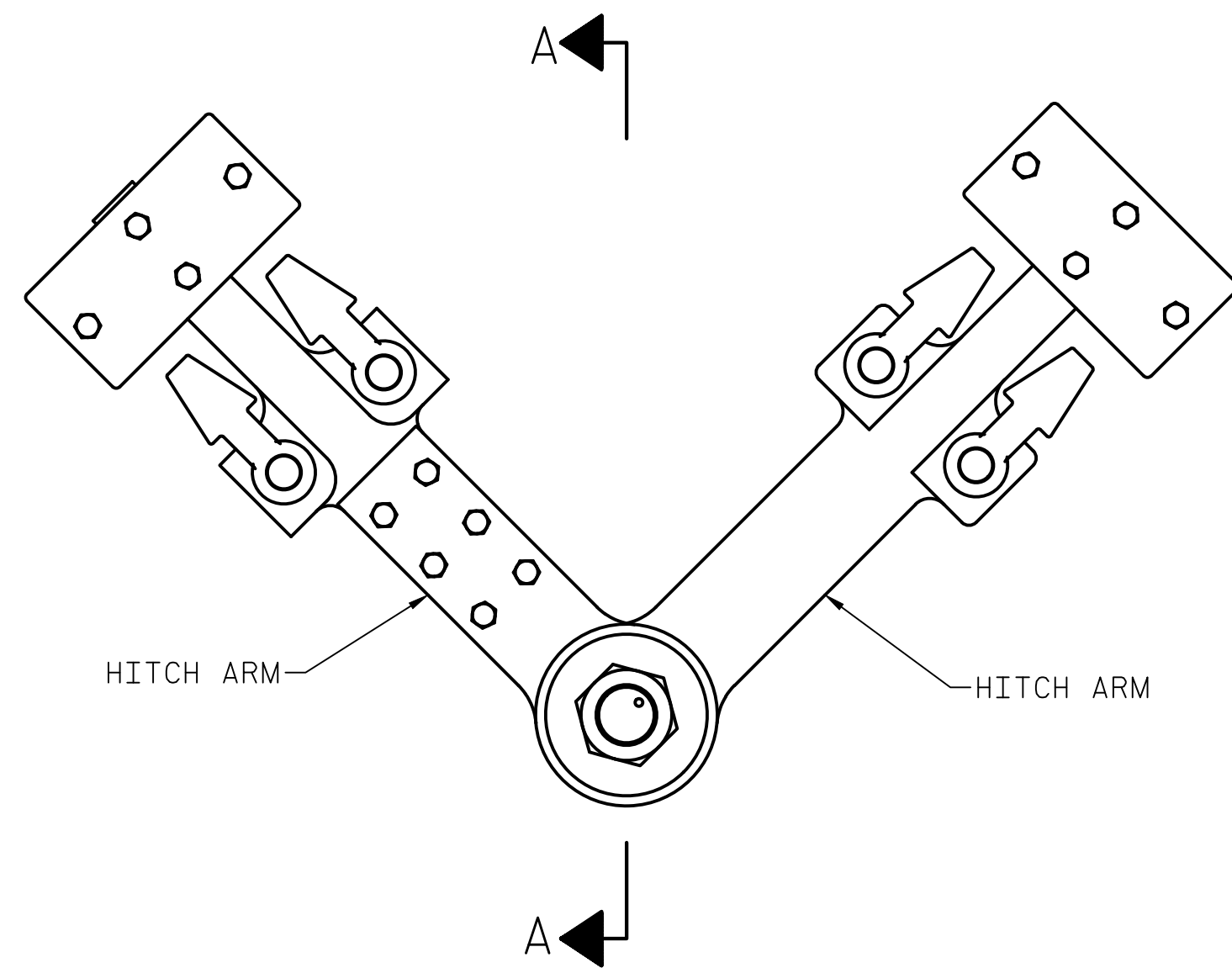
NORTH CAROLINA PROFESSIONAL SEAL
SEAL 044302
ENGINEER
LEE LENTZ
01/29/18
DocuSigned by:
Lee Lentz
286C7C8E8BF64C8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

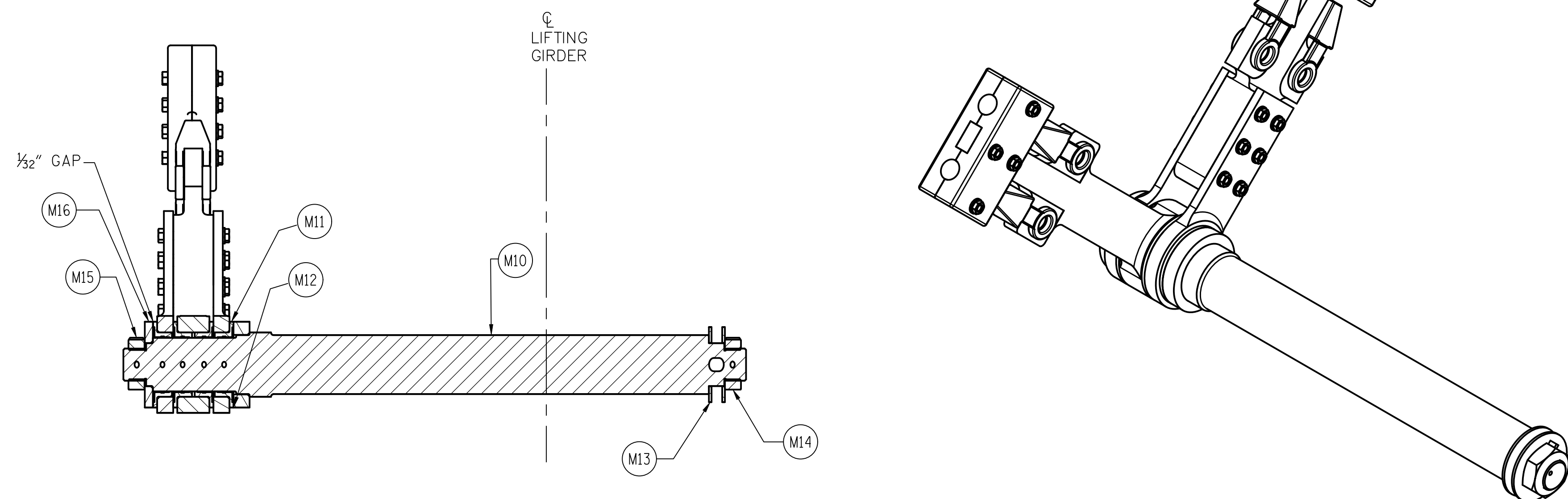
AUX. COUNTERWEIGHT ASSEMBLY DETAILS - 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			10(A)
2			4			

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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.

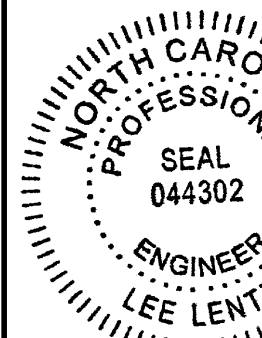

BILL OF MATERIALS			
ITEM NO.	QTY.	DESCRIPTION	MATERIAL/MANUFACTURER
M10	2	NEW HITCH SHAFT	STEEL, ASTM A291, CLASS 3 OR ASTM A311 GR. 4140 COLD DRAWN
M11	8	NEW HITCH SHAFT BUSHING	BRONZE, ASTM B22 ALLOY C91100
M12	2	NEW HITCH THRUST COLLAR	STEEL, ASTM A311 GR. 1045, HOT ROLLED
M13	4	NEW SHIM	STAINLESS, 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: _____

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


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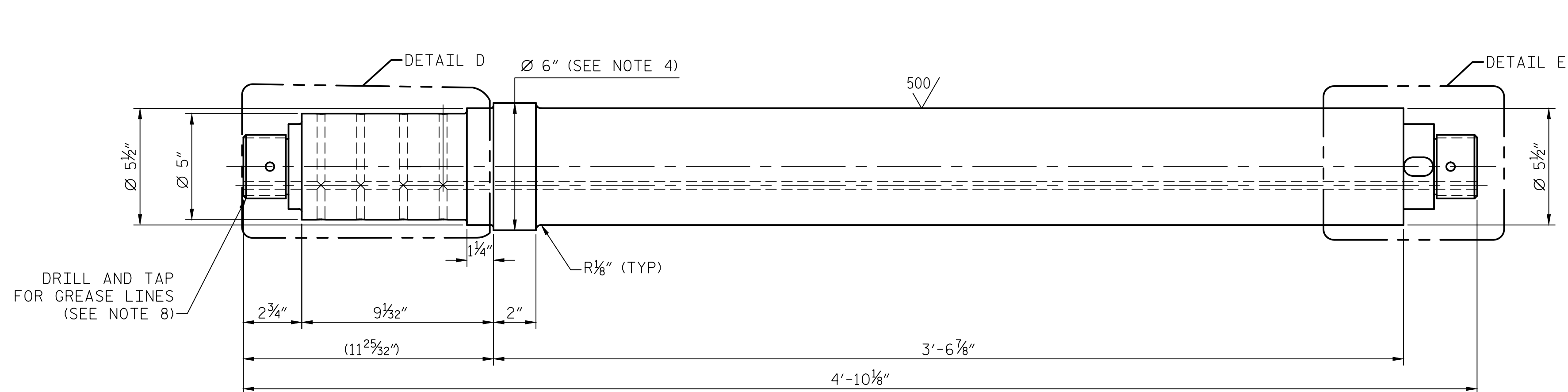

 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 044302
 ENGINEER
 LEE LENTZ
 01/29/18
 DocuSigned by:

 286C7C8EBBF64C8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

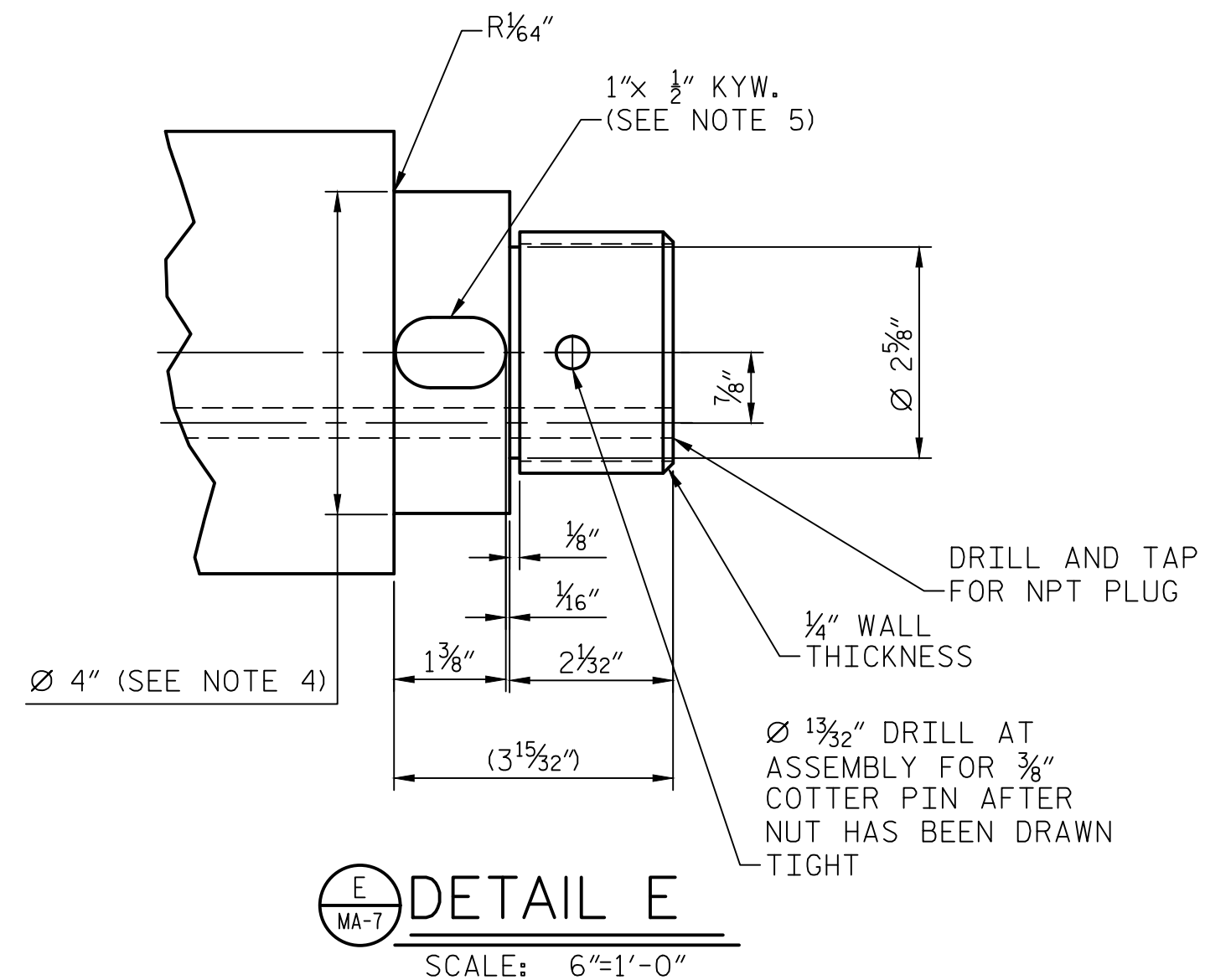
**AUX. COUNTERWEIGHT
 ASSEMBLY DETAILS - 4**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	MA-6
1			3			TOTAL SHEETS
2			4			10(A)

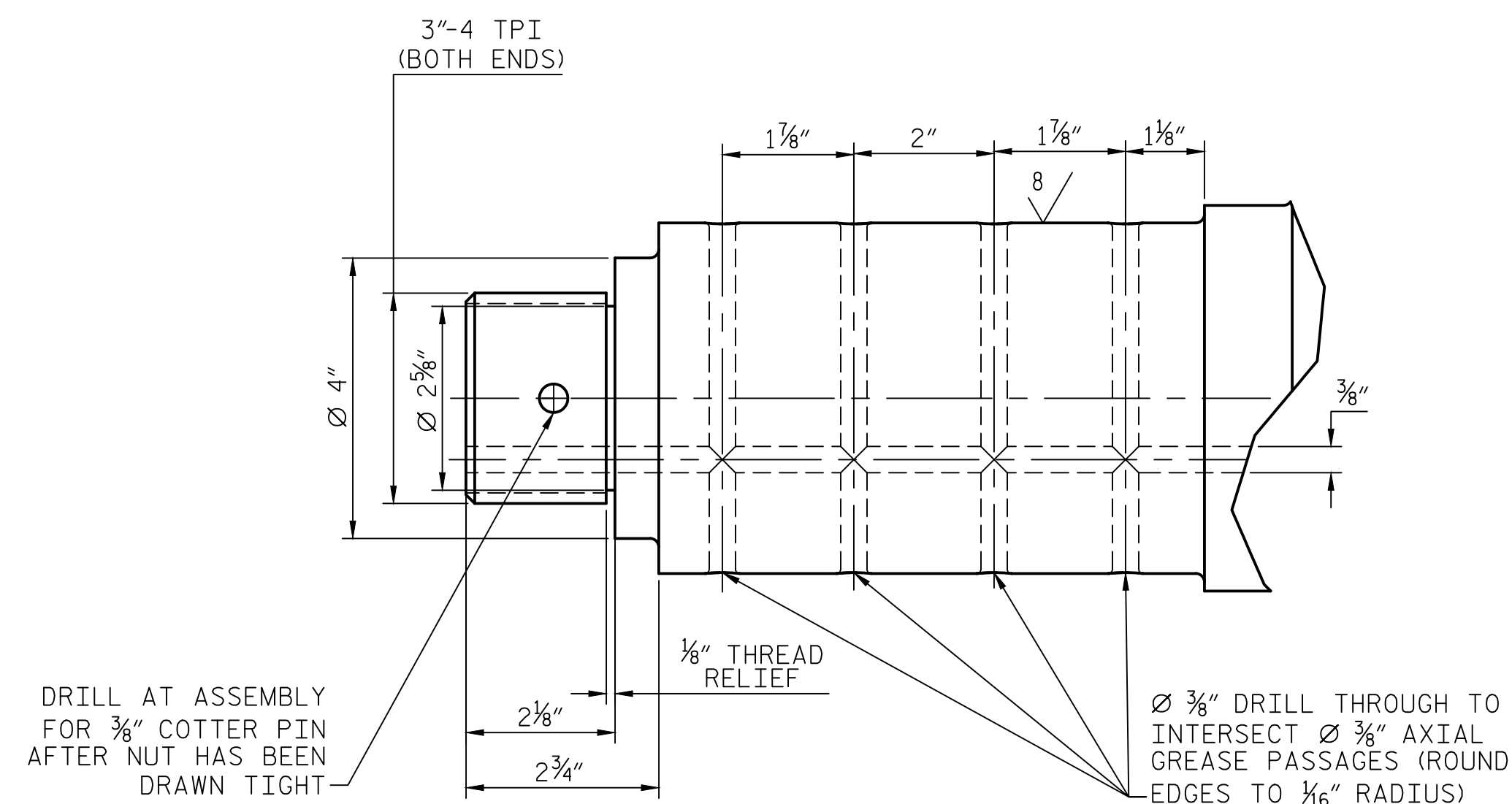
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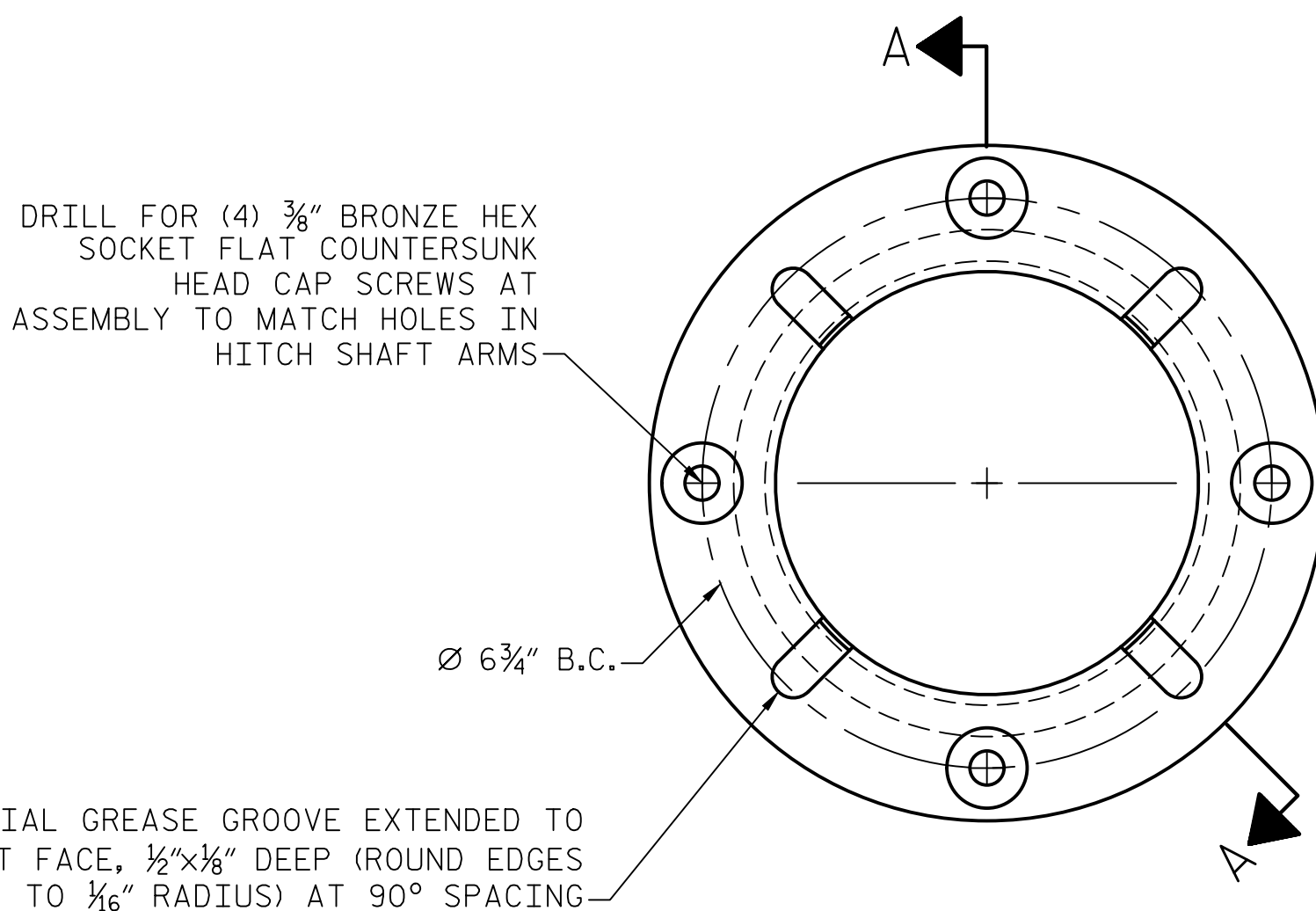
M10 HITCH SHAFT
 SCALE: 3"=1'-0"
 125/ FINISH ALL OVER EXCEPT AS NOTED



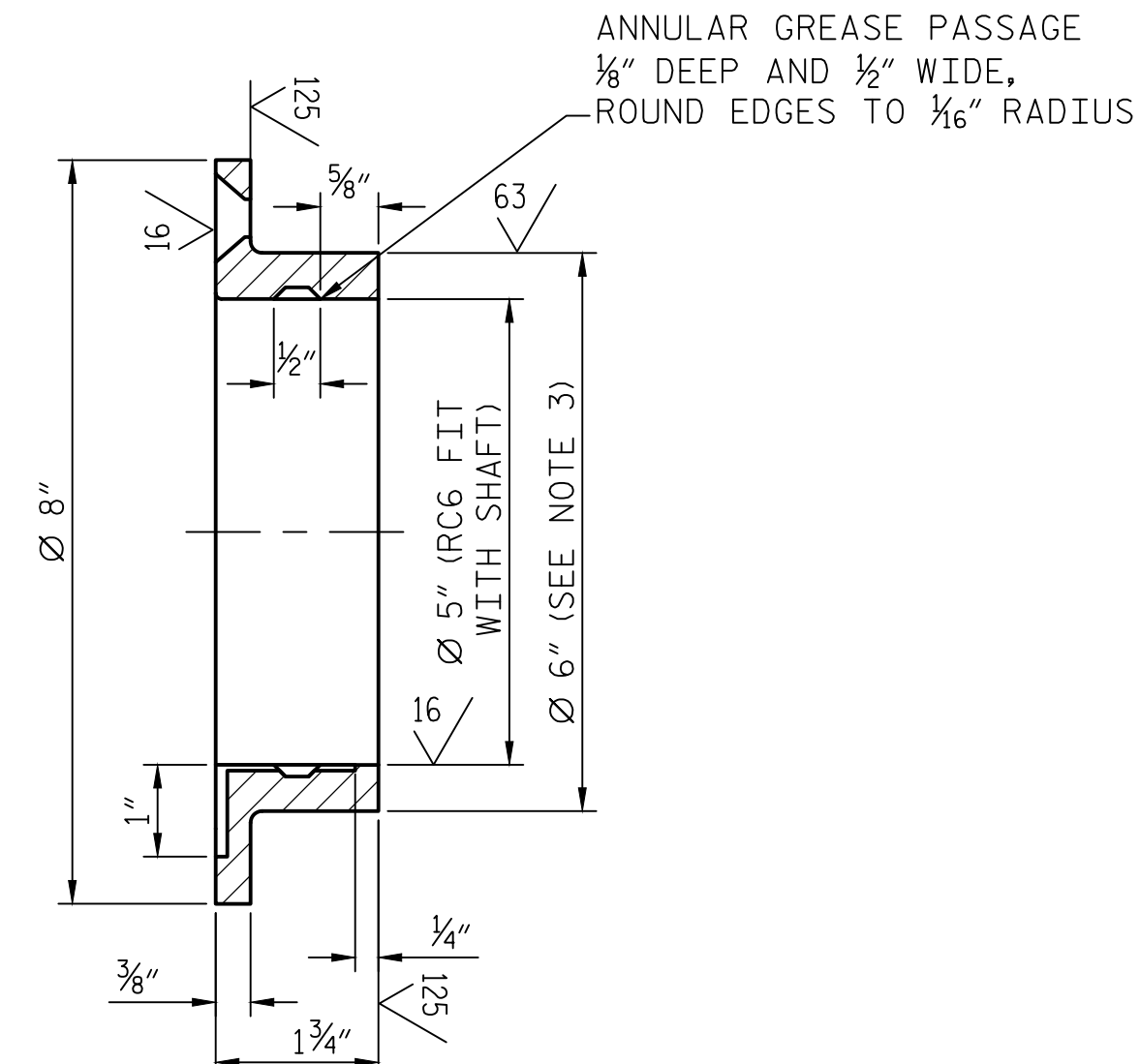
E MA-7 DETAIL E
 SCALE: 6"=1'-0"



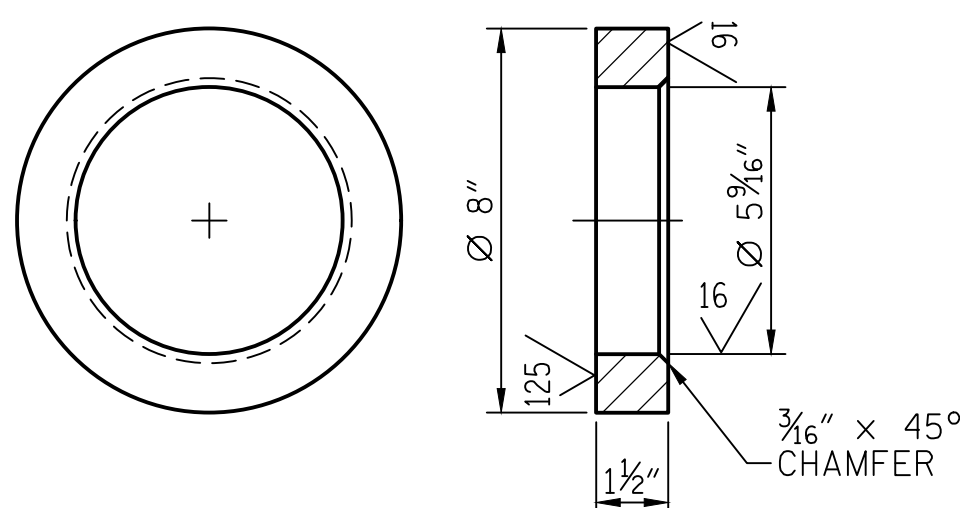
D MA-7 DETAIL D
 SCALE: 6"=1'-0"



M11 HITCH SHAFT BUSHING
 SCALE: 6"=1'-0"



A MA-7 SECTION A
 SCALE: 6"=1'-0"



M12 HITCH THRUST COLLAR
 SCALE: 3"=1'-0"

NOTES:

- DIAMETER OF AUXILIARY HITCH ARM BORE TO BE MEASURED AFTER DISASSEMBLY.
- BORE TO BE MACHINED AS NECESSARY TO PROVIDE A CLEAN AND ROUND BORE, WITH ONLY THE MINIMAL MATERIAL REMOVED TO ACHIEVE THIS.
- SURFACE TO MATCH MINIMUM CLEAN SURFACE OF EXISTING HITCH ARMS FOR FN2 FIT
- CONTRACTOR SHALL FIELD VERIFY BORES IN EXISTING SUPPORT BRACKET AND SUBMIT TO ENGINEER PRIOR TO FINAL MACHINING.
- CONTRACTOR SHALL SUPPLY A NEW KEY.
- ALL GREASE GROOVES ARE TO BE PROVIDED WITH A 1/16" RADIUS AT EDGES.
- CONTRACTOR SHALL INSTALL AND RUN LUBRICATION LINES FROM THE HITCH ARM SHAFTS TO AN ACCESSIBLE LOCATION AT THE TOP OF THE LIFTING GIRDER.
- 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.

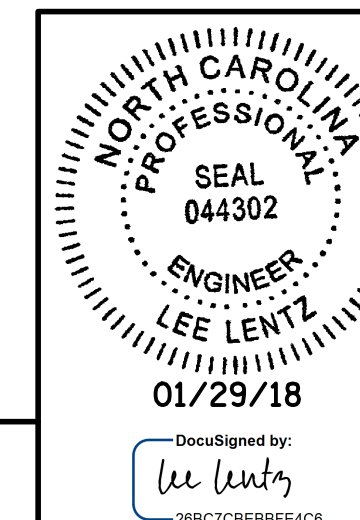
PROJECT NO. 15BPR.15
 NEW HANOVER COUNTY
 STATION: _____

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

AUX. COUNTERWEIGHT
 ASSEMBLY DETAILS - 5



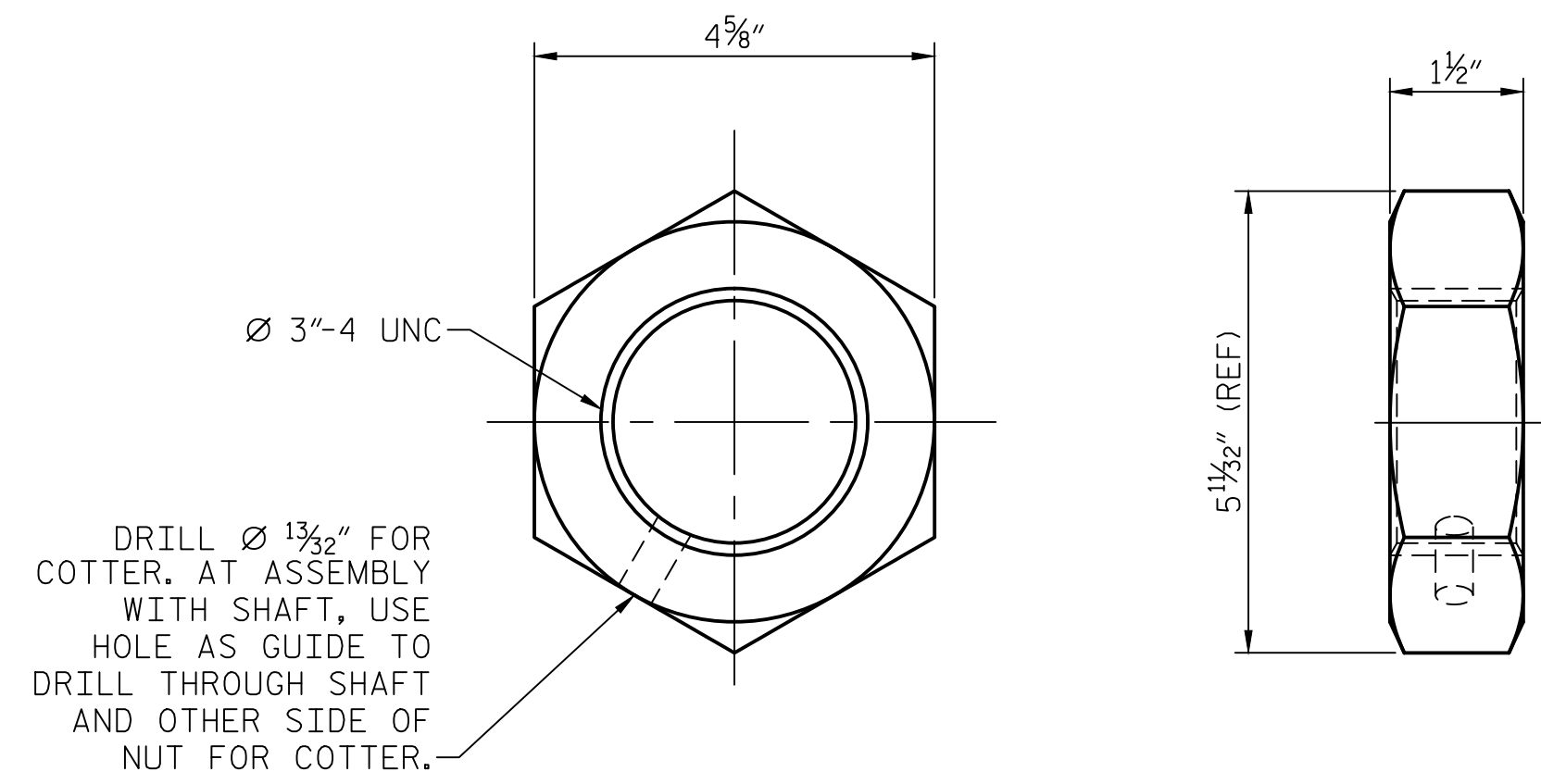
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 NC LICENSE NO. C-2979



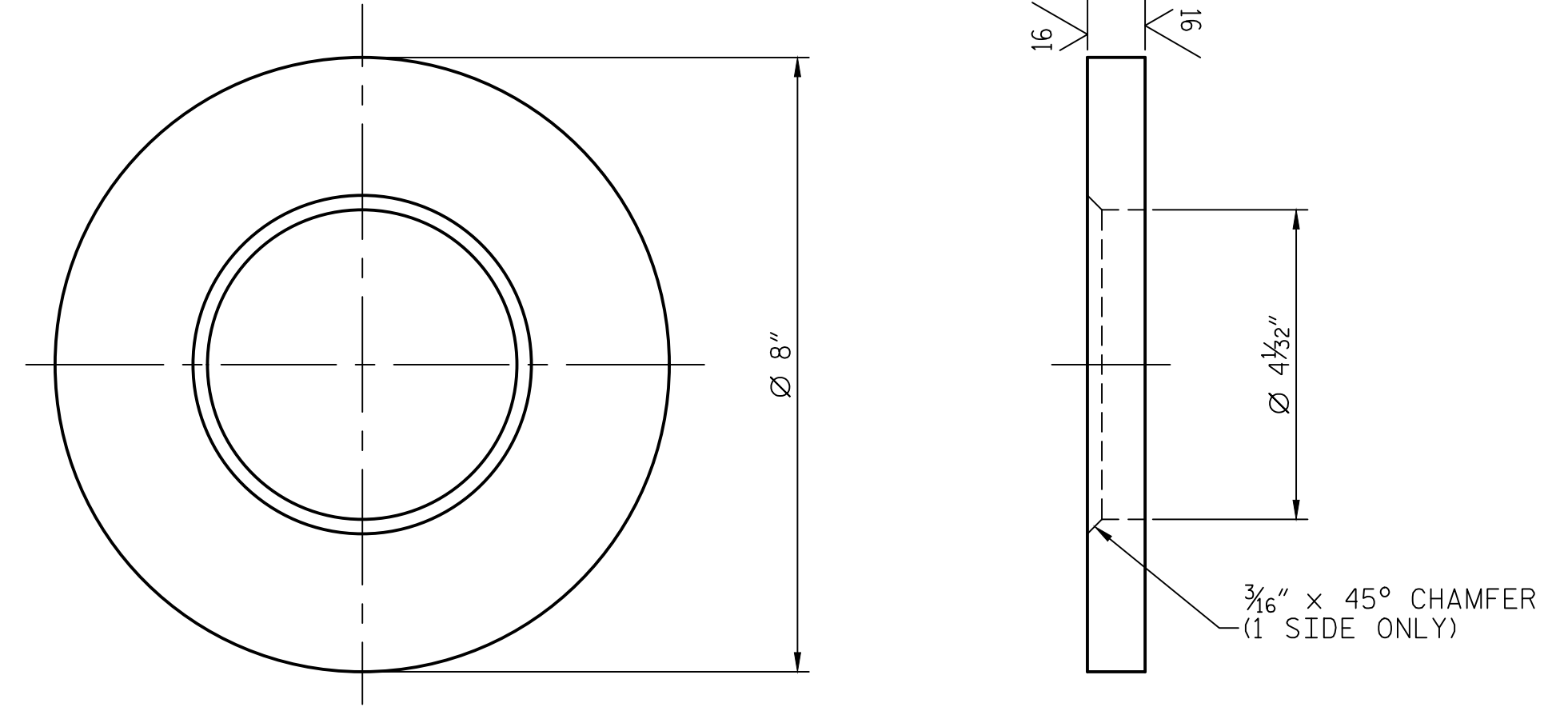
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1			3			TOTAL SHEETS
2			4			10(A)

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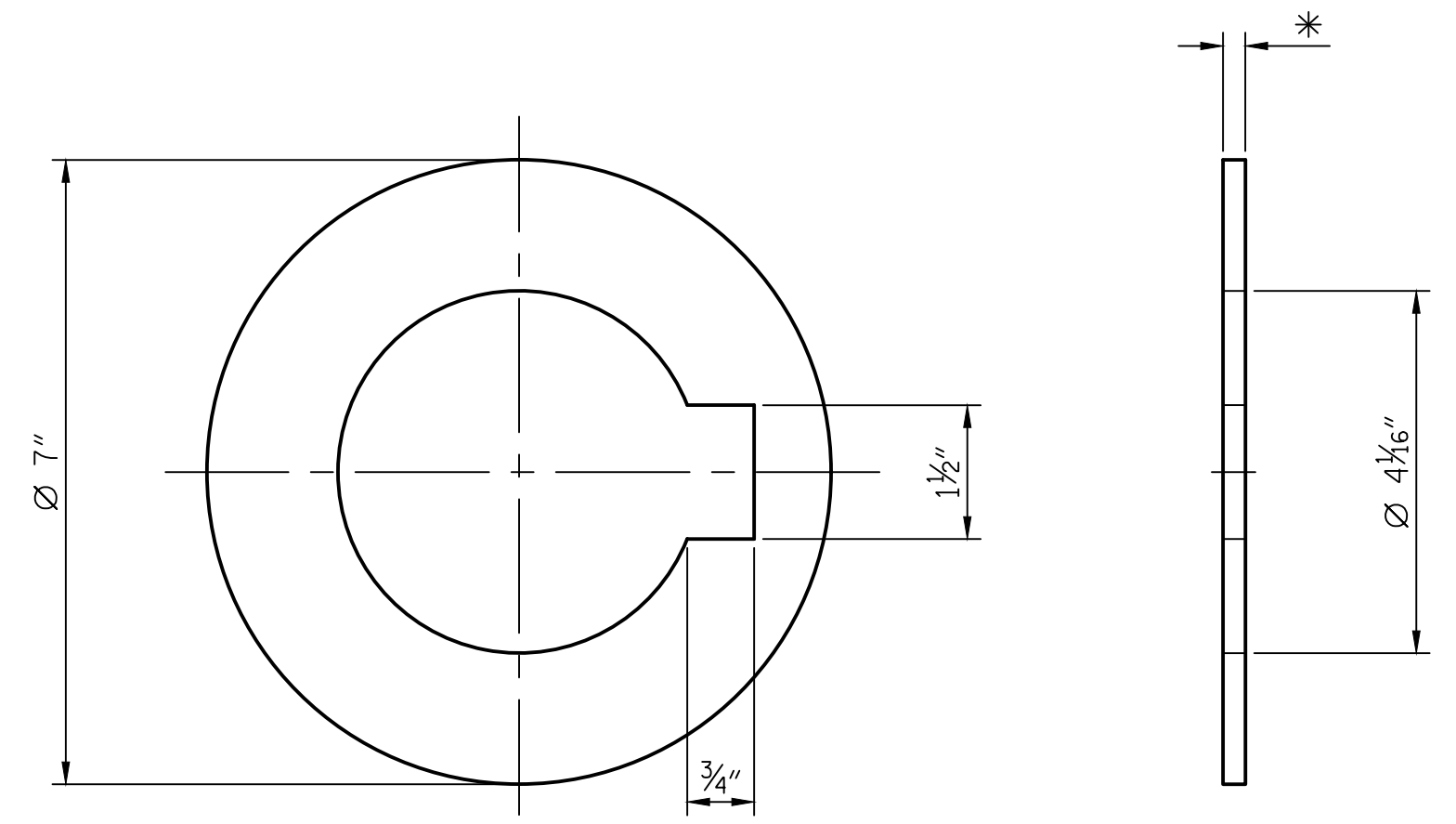
DESIGNED BY:	E. A. SAMPLE	DATE :	08/17/17
DRAWN BY:	J. M. SHOUP	DATE :	08/17/17
CHECKED BY:	L. R. LENTZ	DATE :	01/25/18
DESIGN ENGINEER OF RECORD:	L. R. LENTZ	DATE :	01/25/18



M14 LOCK NUT
SCALE: 6"=1'-0"



M15 THRUST WASHER
SCALE: 6"=1'-0"



M13 SHIM
SCALE: 6"=1'-0"

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

1	1/4"
1	1/8"
1	1/16"
1	1/32"
1	1/64"

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

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DEPARTMENT OF TRANSPORTATION
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**AUX. COUNTERWEIGHT
ASSEMBLY DETAILS - 6**

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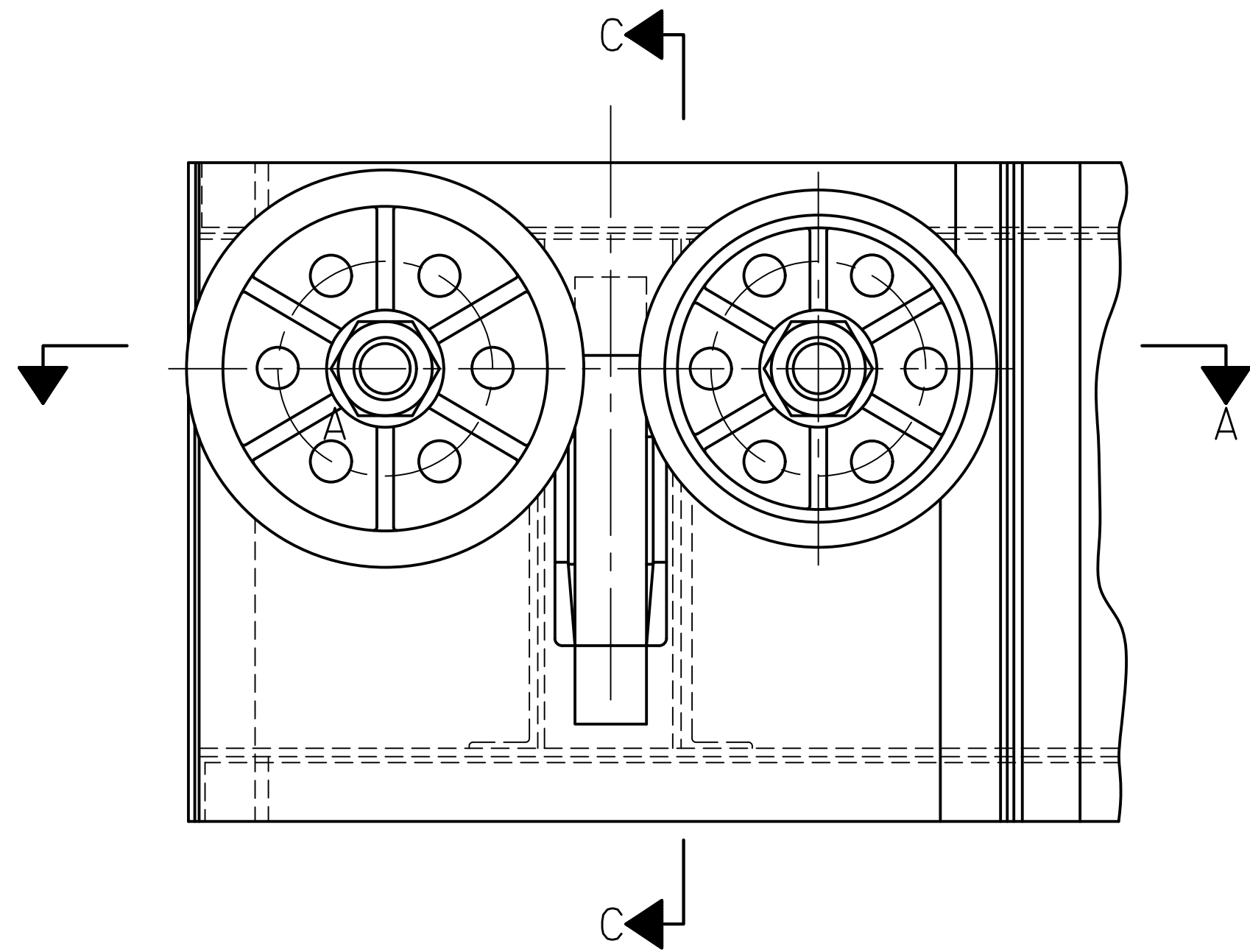
**NORTH CAROLINA
PROFESSIONAL
SEAL
044302
ENGINEER
LEE LENTZ
01/29/18**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			MA-8
2			4			10(A)

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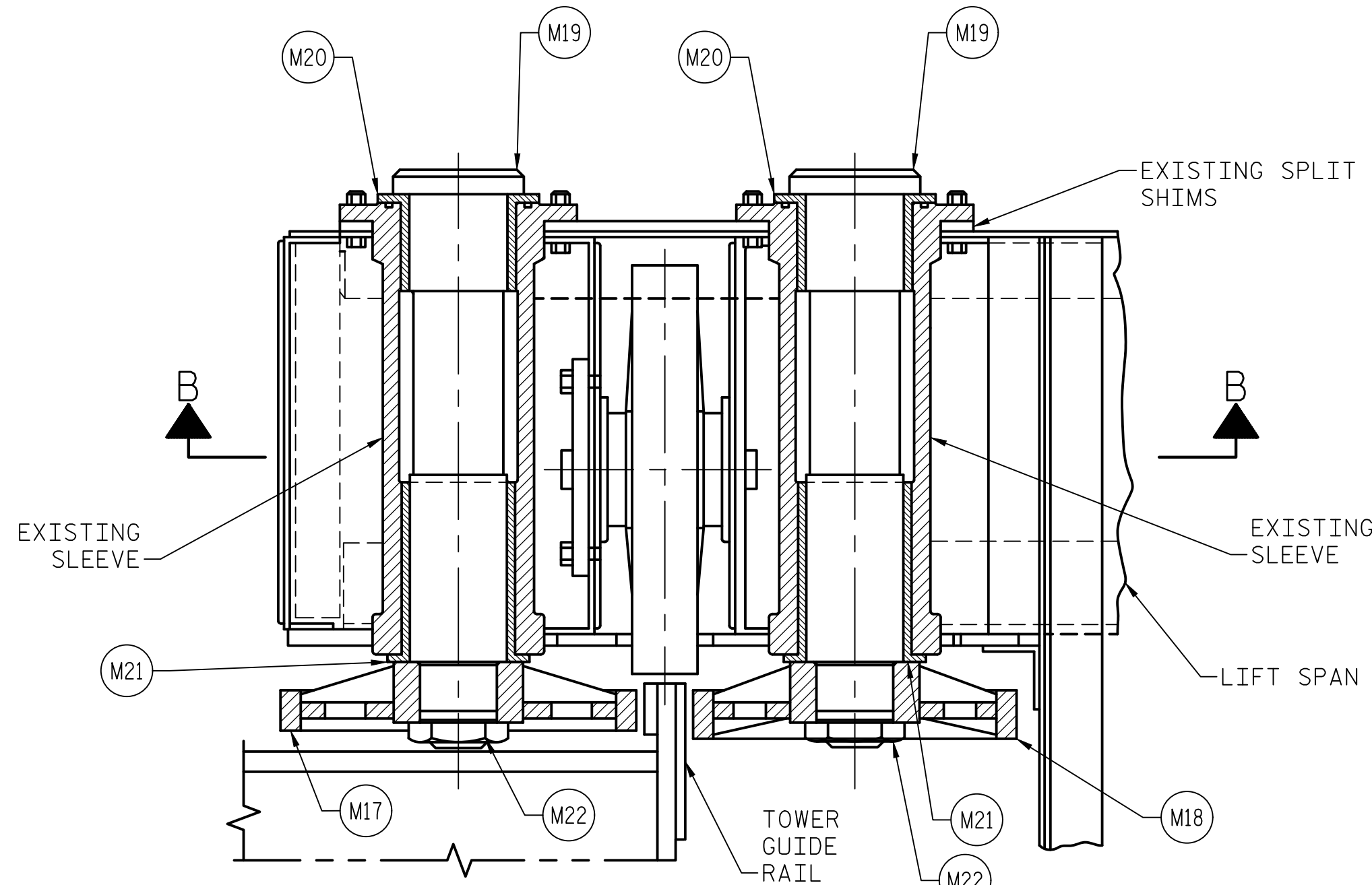
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FILE: \\mimdd01\proj\objects\15682\01\CADD\Mechanical\MA-8 AUX. COUNTERWEIGHT ASSEMBLY DETAILS - 6

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



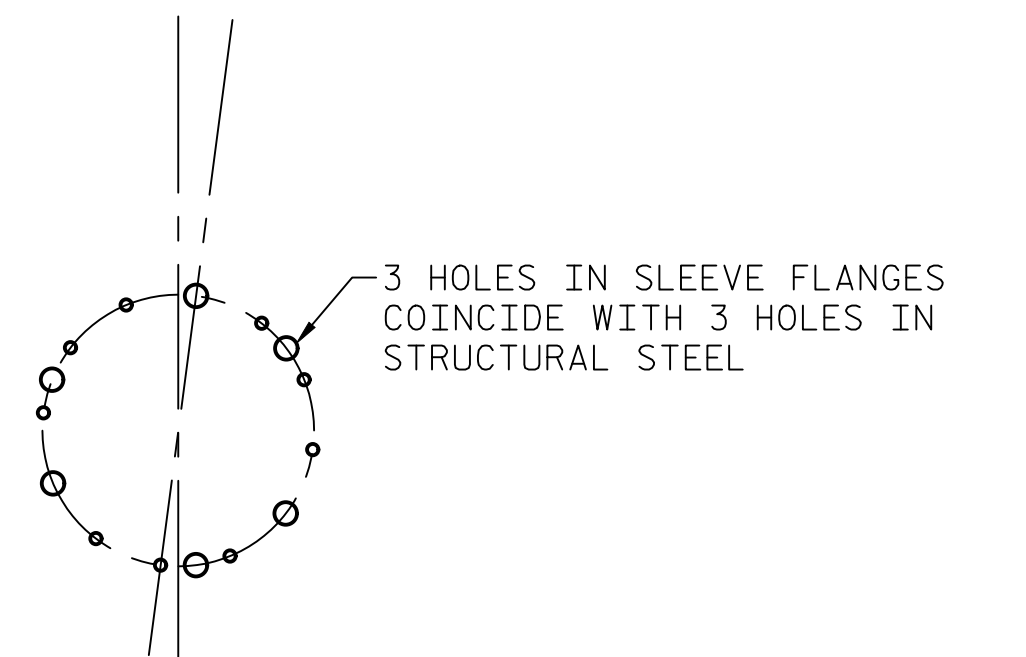
LOWER GUIDE ROLLERS FIXED END

SCALE: 1 1/2"=1'-0"
SOUTHEAST CORNER SHOWN, LOOKING EAST



SECTION A-A

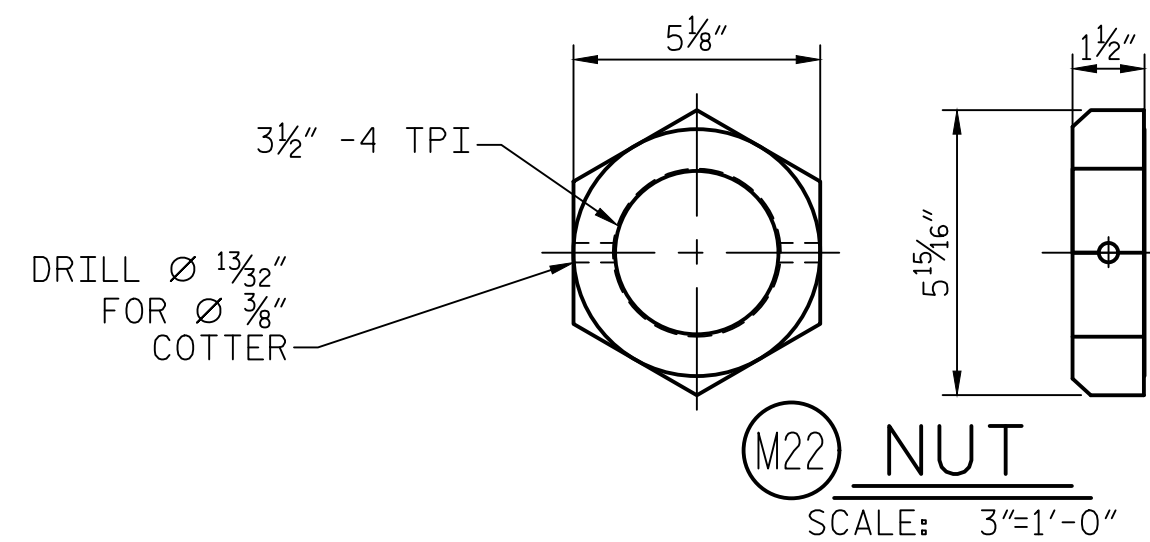
SCALE: 1 1/2"=1'-0"



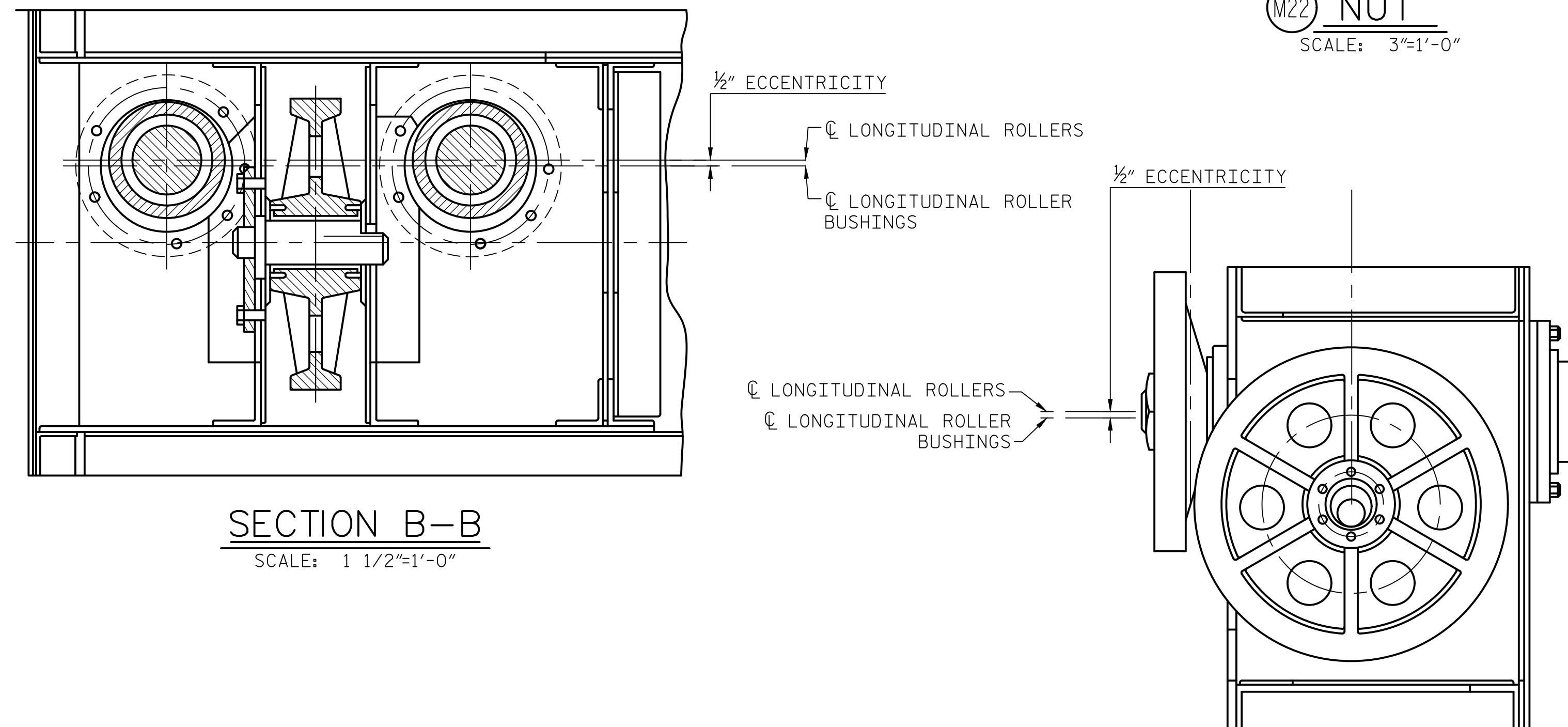
HOLE SPACING FOR ECCENTRIC ADJUSTMENT

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

- REPLACE ALL ECCENTRIC CONNECTION BOLTS IN KIND.
 (12) 3/4" TURNED BOLTS TOTAL
 - 2 TURNED TAP BOLTS WITH LOCK WASHERS
 - 2 TURNED BOLTS WITH LOCK WASHER AND NUT, 3/4" LG.
 - 8 TURNED BOLTS WITH LOCK WASHER AND NUT, 3/4" LG.



M22 NUT
SCALE: 3"=1'-0"



SECTION B-B

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

SECTION C-C

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

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:

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

PROJECT NO. 15BPR.15
NEW HANOVER COUNTY
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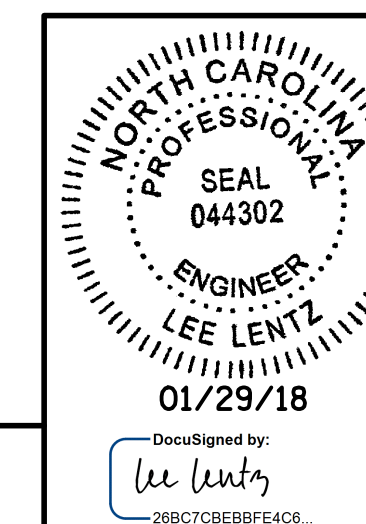
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 FILE: \\mtd01\proj\objects\3682\01\CADD\Mechanical\MA-9 SPAN GUIDE ASSEMBLY

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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



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 RALEIGH, NC 27601
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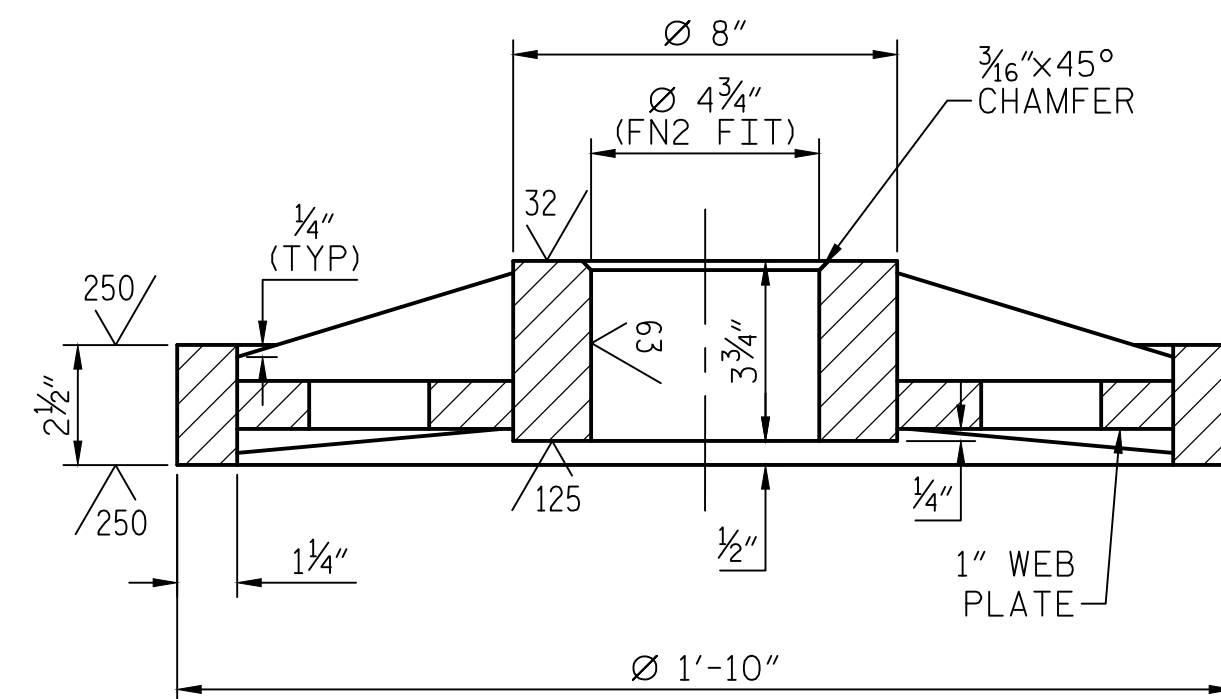
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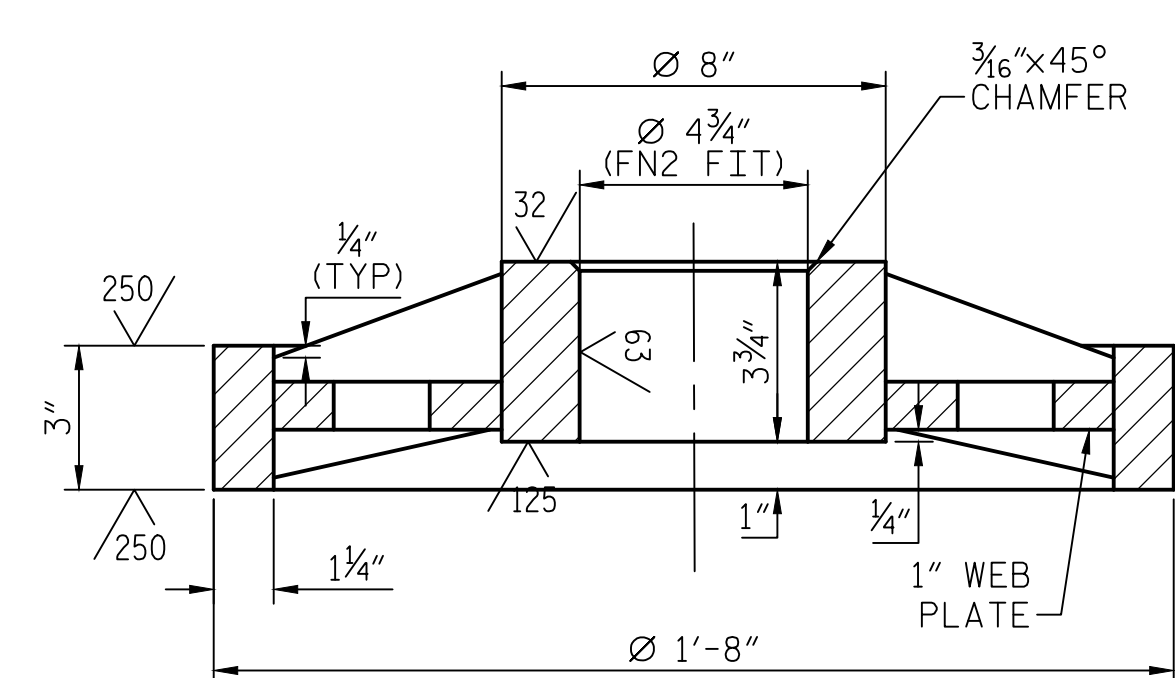
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SPAN GUIDE ASSEMBLY

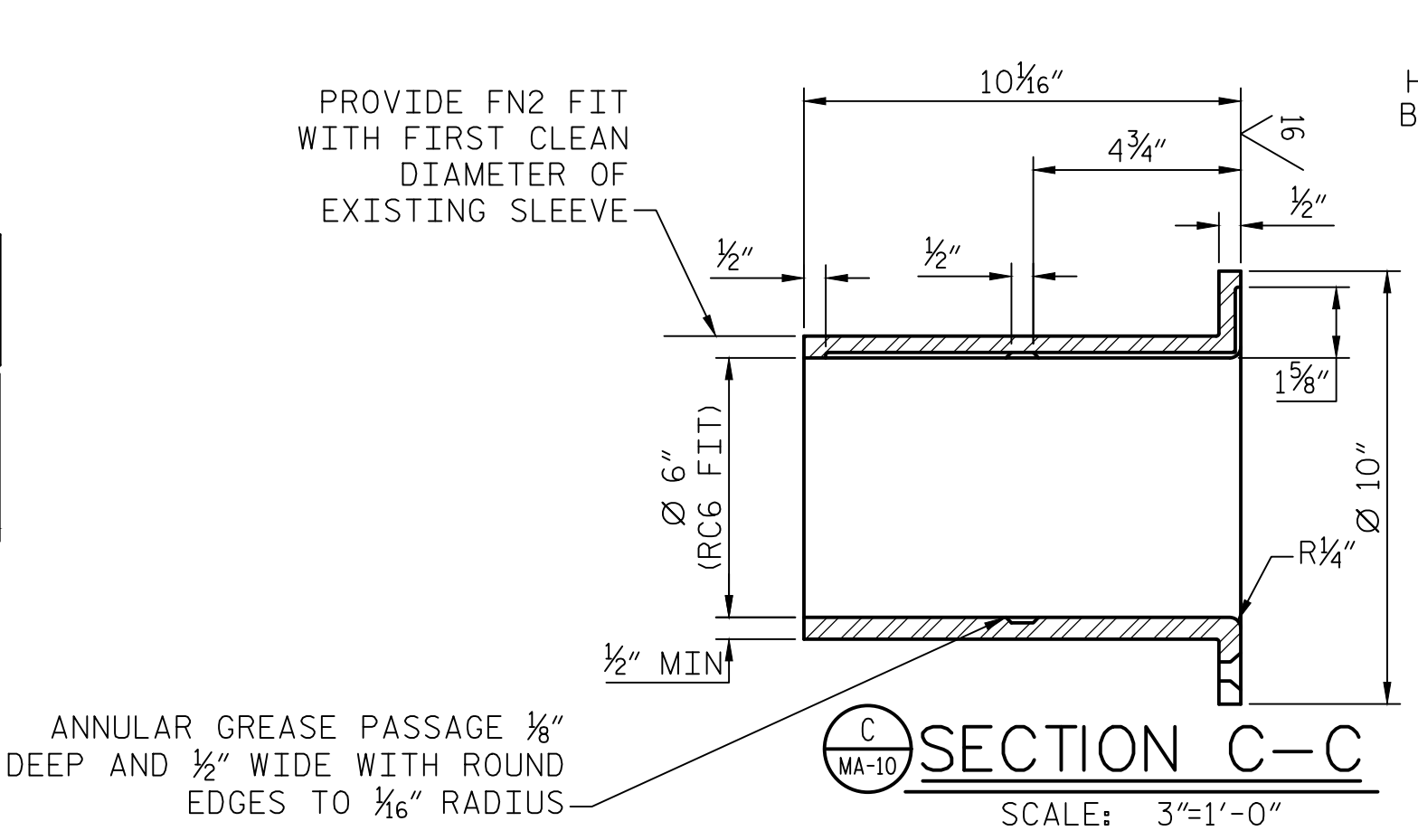
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	MA-9
1			3			TOTAL SHEETS
2			4			10(A)



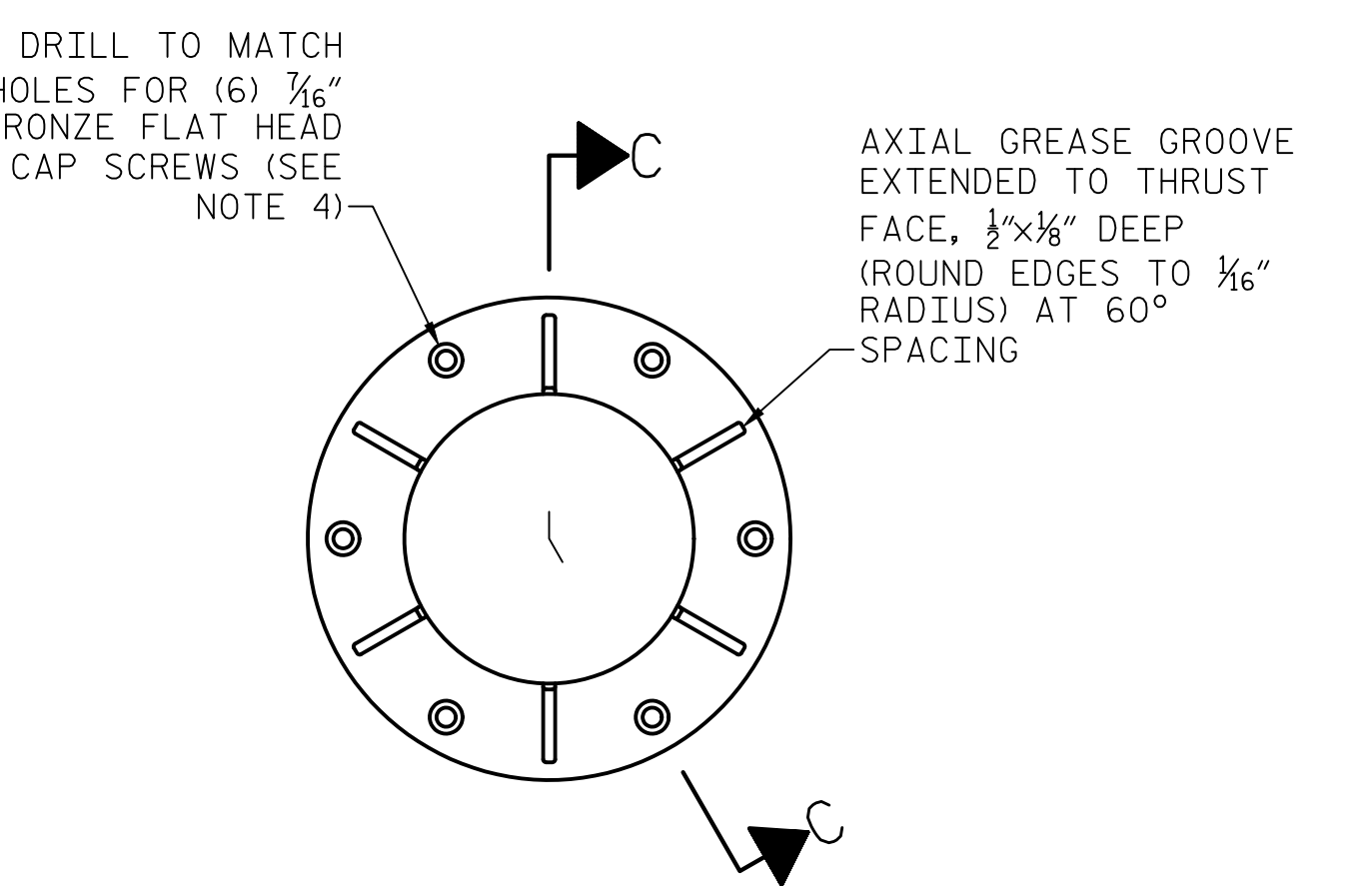
M17 SECTION A-A
SCALE: 3"=1'-0"



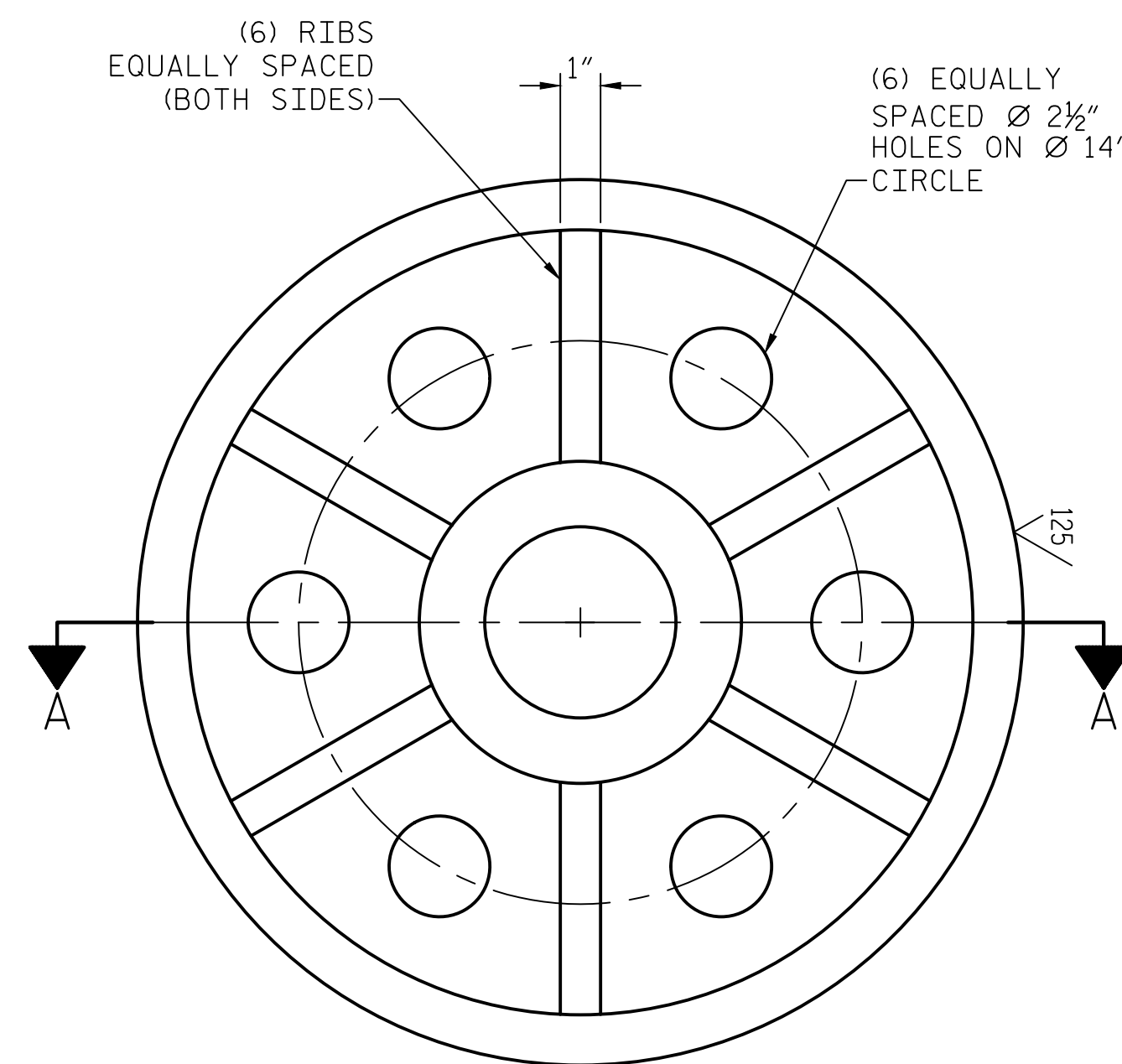
M18 SECTION B-B
SCALE: 3"=1'-0"



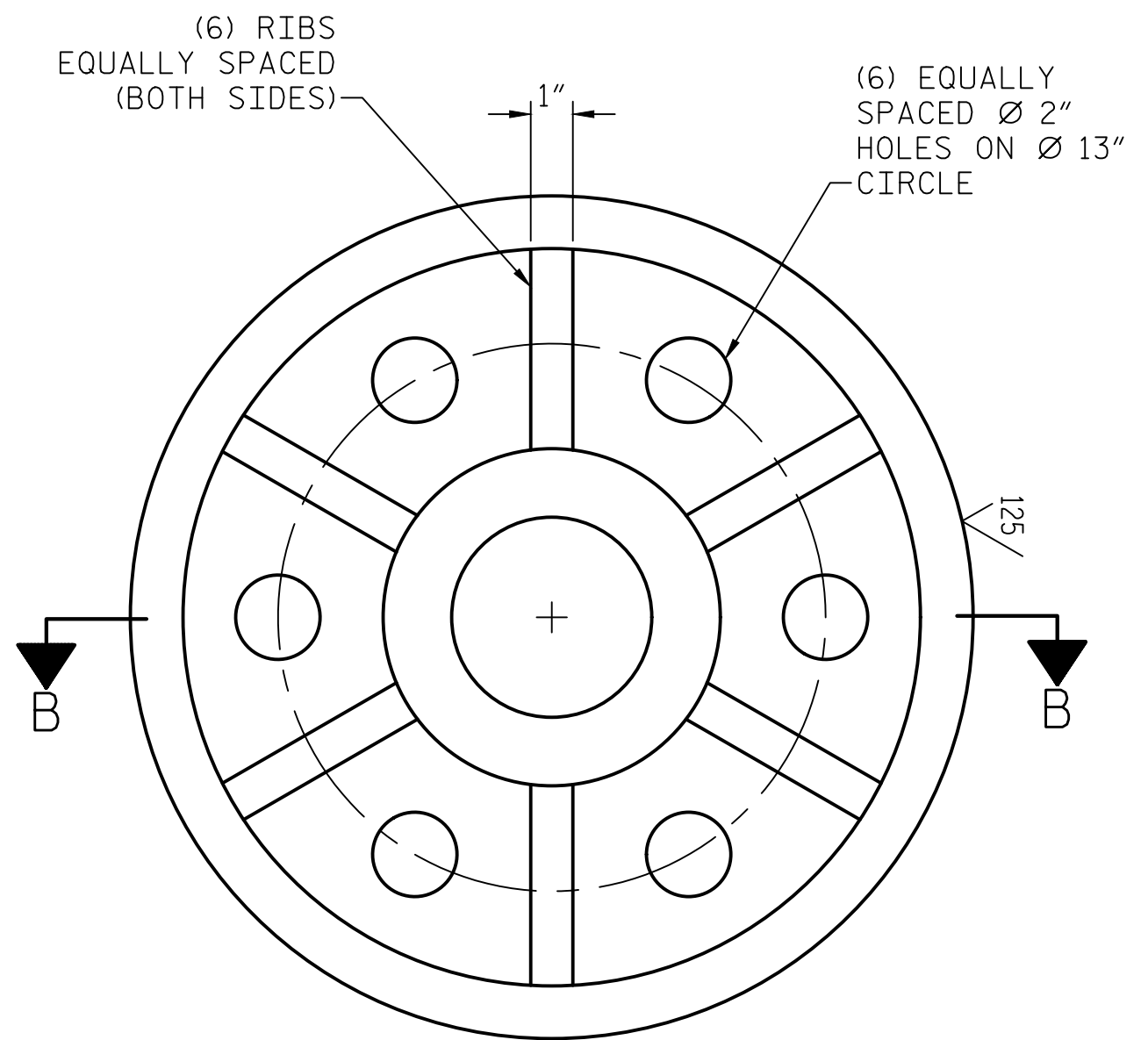
M21 SECTION C-C
SCALE: 3"=1'-0"



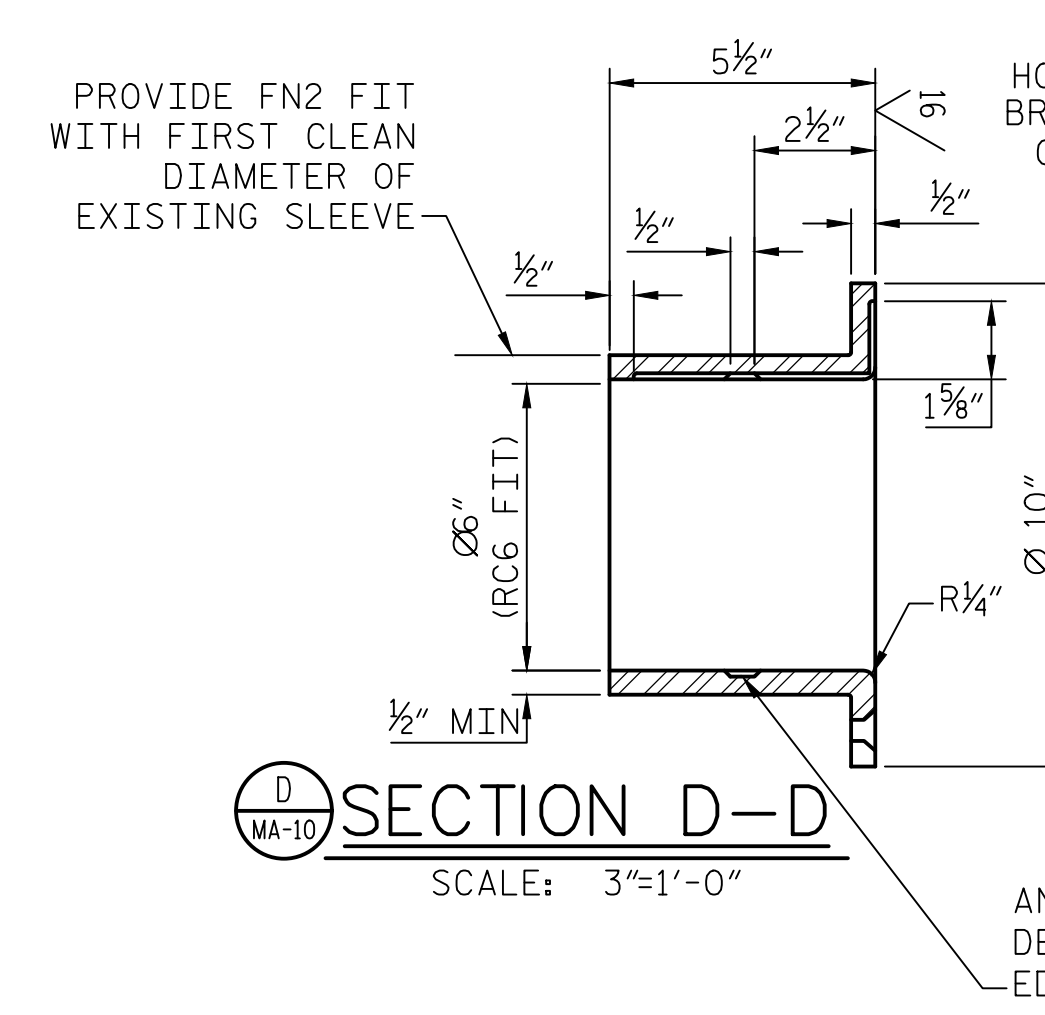
M21 INBOARD LONGITUDINAL ROLLER BUSHING
SCALE: 3"=1'-0"



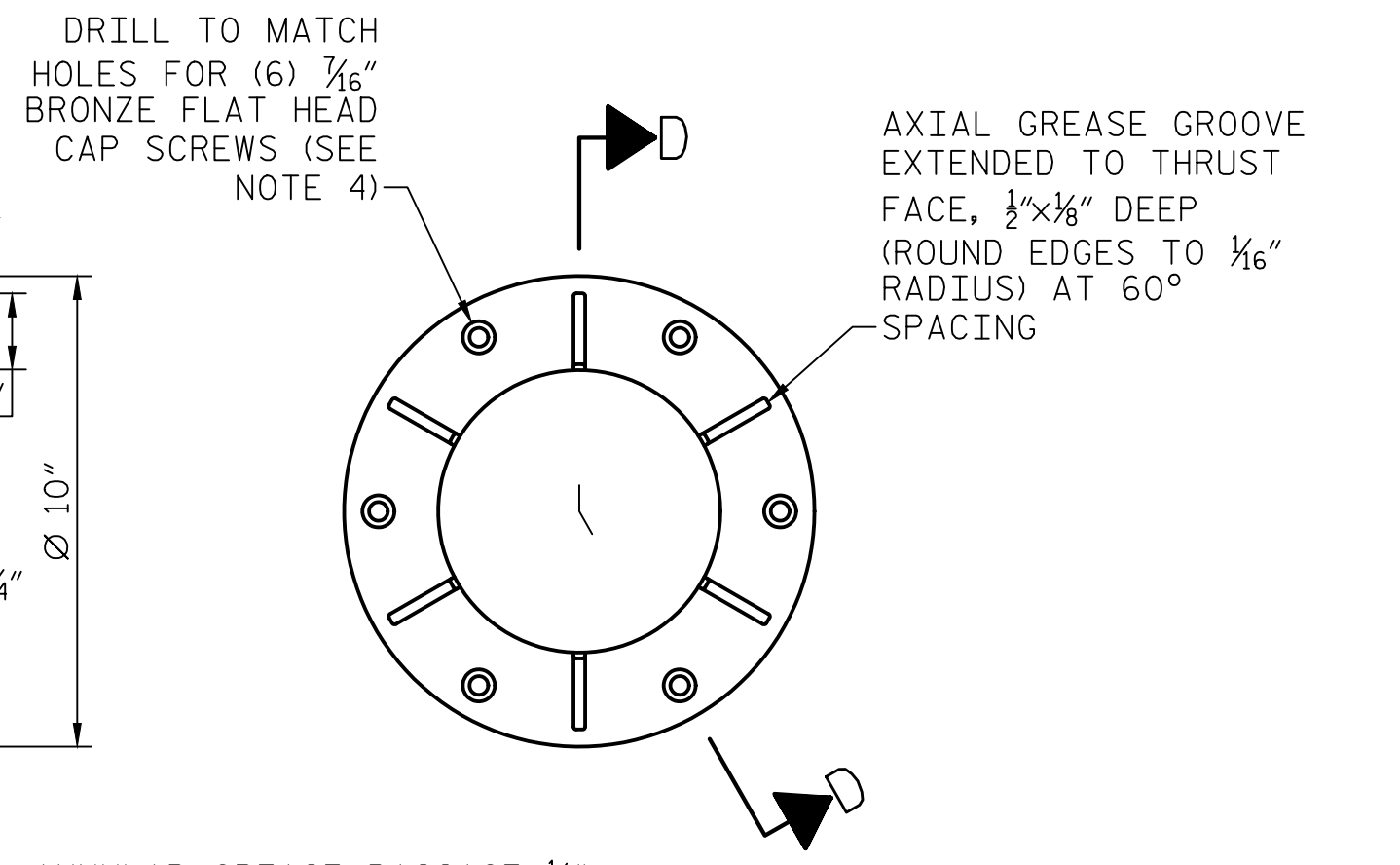
M17 22" O.D. LONGITUDINAL ROLLER
SCALE: 3"=1'-0"



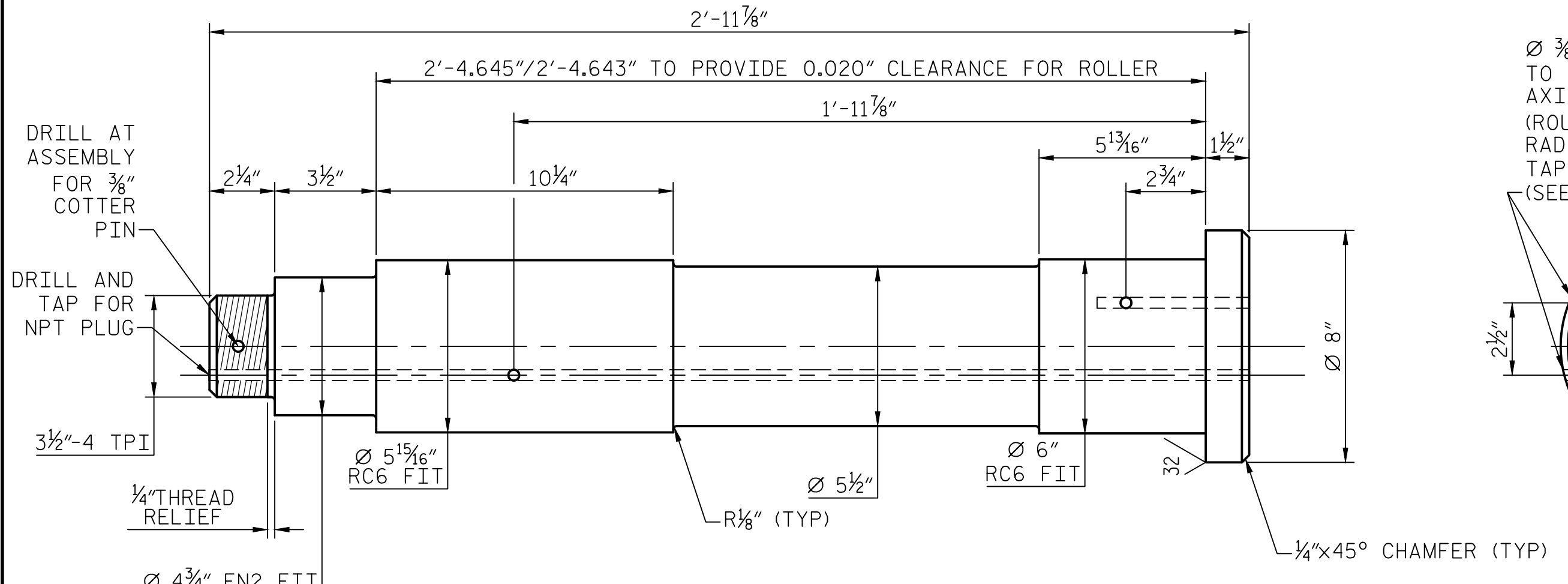
M18 20" O.D. LONGITUDINAL ROLLER
SCALE: 3"=1'-0"



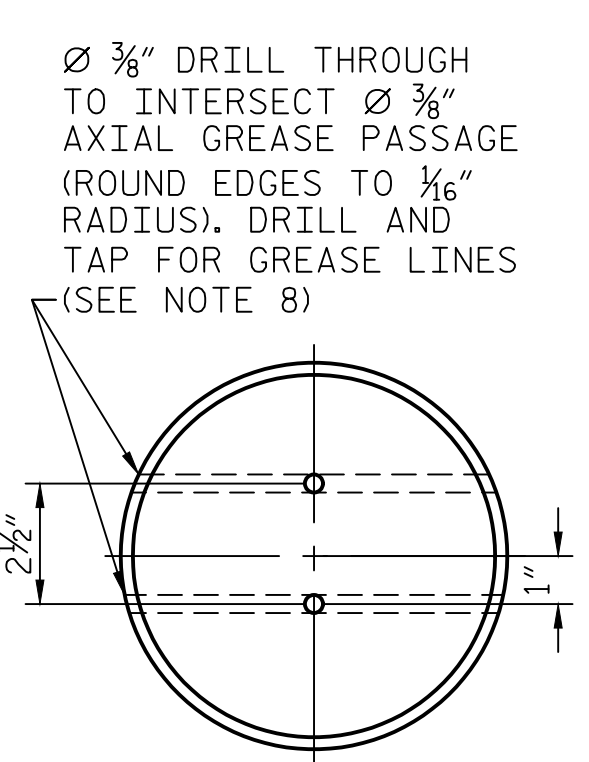
M20 SECTION D-D
SCALE: 3"=1'-0"



M20 OUTBOARD LONGITUDINAL ROLLER BUSHING
SCALE: 3"=1'-0"



M19 LONGITUDINAL ROLLER SHAFT
SCALE: 3"=1'-0"



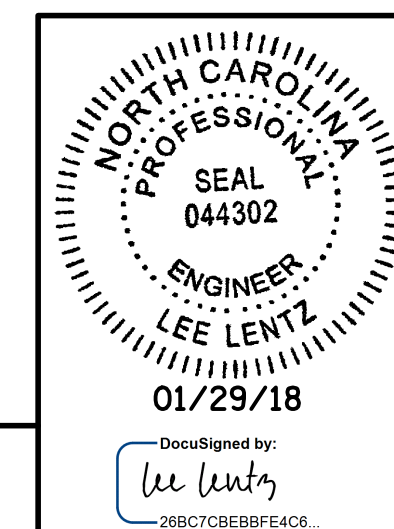
Ø 3/8" DRILL THROUGH TO INTERSECT Ø 3/8" AXIAL GREASE PASSAGE (ROUND EDGES TO 1/16" RADIUS). DRILL AND TAP FOR GREASE LINES (SEE NOTE 8)

NOTES:

1. ALL DIMENSIONS FOR NEW COMPONENTS MUST BE FIELD VERIFIED FOR PROPER FIT WITH EXISTING COMPONENTS.
2. LONGITUDINAL DRILLED GREASE PASSAGES MAY BE 1/2"Ø IF TAPPED AND ADAPTED FOR GREASE HOSE CONNECTION OR NPT PLUG.
3. SURFACE FINISHES ARE TO BE PER THE SPECIFICATIONS, WITH 8 MICROINCHES FOR SHAFT JOURNALS, 16 MICROINCHES FOR JOURNAL BUSHINGS AND THRUST FACES, AND 63 MICROINCHES FOR BUSHING/BASE CONTACT SURFACES.
4. PROVIDE NEW BRONZE FLAT HEAD CAP SCREWS TO MATCH EXISTING.
5. ALL GREASE GROOVES ARE TO BE PROVIDED WITH A 1/16" RADIUS AT EDGES.
6. ALL COMPONENTS NEW THIS SHEET.
7. CONTRACTOR SHALL INSTALL AND RUN LUBRICATION LINES FROM EACH NEW AND EXISTING SPAN GUIDE ROLLER TO AN ACCESSIBLE LOCATION ON THE LIFT SPAN.
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.

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

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SPAN GUIDE DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. MA-10 TOTAL SHEETS 10(A)



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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

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