



LOCATION SKETCH

INFORMATION INDICATED ON THE LOCATION SKETCH SHALL BE CONSIDERED GENERAL INFORMATION ONLY. CONTRACTOR SHALL CONFIRM, THROUGH OTHER SOURCES, SPECIFIC INFORMATION REGARDING THE BRIDGES, ROADWAYS, UTILITIES, THE SURROUNDING AREA, AND ANY OTHER ASPECTS THAT MAY BE NECESSARY TO PERFORM AND COMPLETE THE PROJECT.

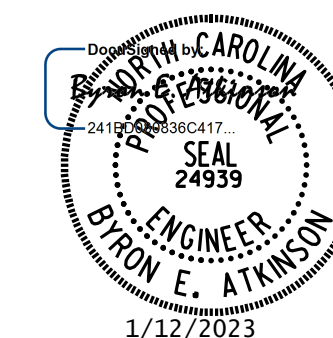
BRIDGE COORDINATES	
LATITUDE	LONGITUDE
35°-14'-36.56"	80°-50'-48.86"

NOTES:

- EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE 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.
- FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLANS.
- EXISTING JOINTS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THERE IS UNDER BRIDGE LIGHTING ATTACHED TO THE STRUCTURE.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
- FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.
- WORK ON BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE TO THE PROJECT SPECIAL PROVISION.
- PRIOR TO BEGINNING WORK, CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPLETE SEQUENCE OF TASKS FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC.
- ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST.
- FOR POLLUTION CONTROL, SEE SPECIAL PROVISIONS.
- FOR CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA, SEE SPECIAL PROVISIONS.
- FOR BEAM REPAIR PLATING, SEE SPECIAL PROVISIONS.
- FOR BEAM REPAIR CUT-OUT, SEE SPECIAL PROVISIONS.
- FOR BOLTED BEAM REPAIR, SEE SPECIAL PROVISIONS.
- FOR CLEANING AND REPAINTING OF BRIDGE, AND PAINTING CONTAINMENT FOR BRIDGE, SEE "PAINTING EXISTING STRUCTURE" SPECIAL PROVISION.
- FOR TYPE I BRIDGE JACKING, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590339

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE ON
 I-277/NC 16 SBL
 OVER I-77/US 21 NBL

**DOCUMENT NOT CONSIDERED FINAL
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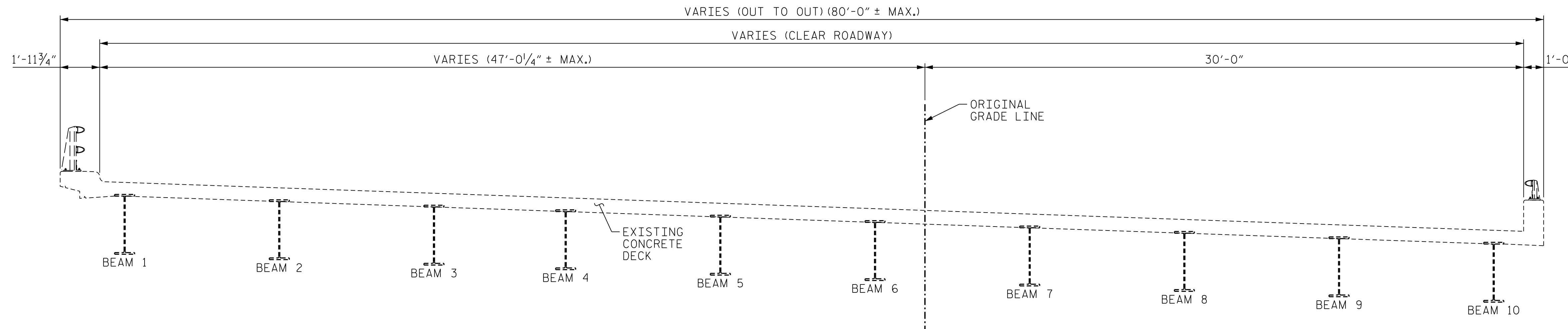
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-2
1			3			TOTAL SHEETS 108
2			4			

DRAWN BY : B.E. LANNING	DATE : 10/2022
CHECKED BY : B.E. ATKINSON	DATE : 10/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 10/2022

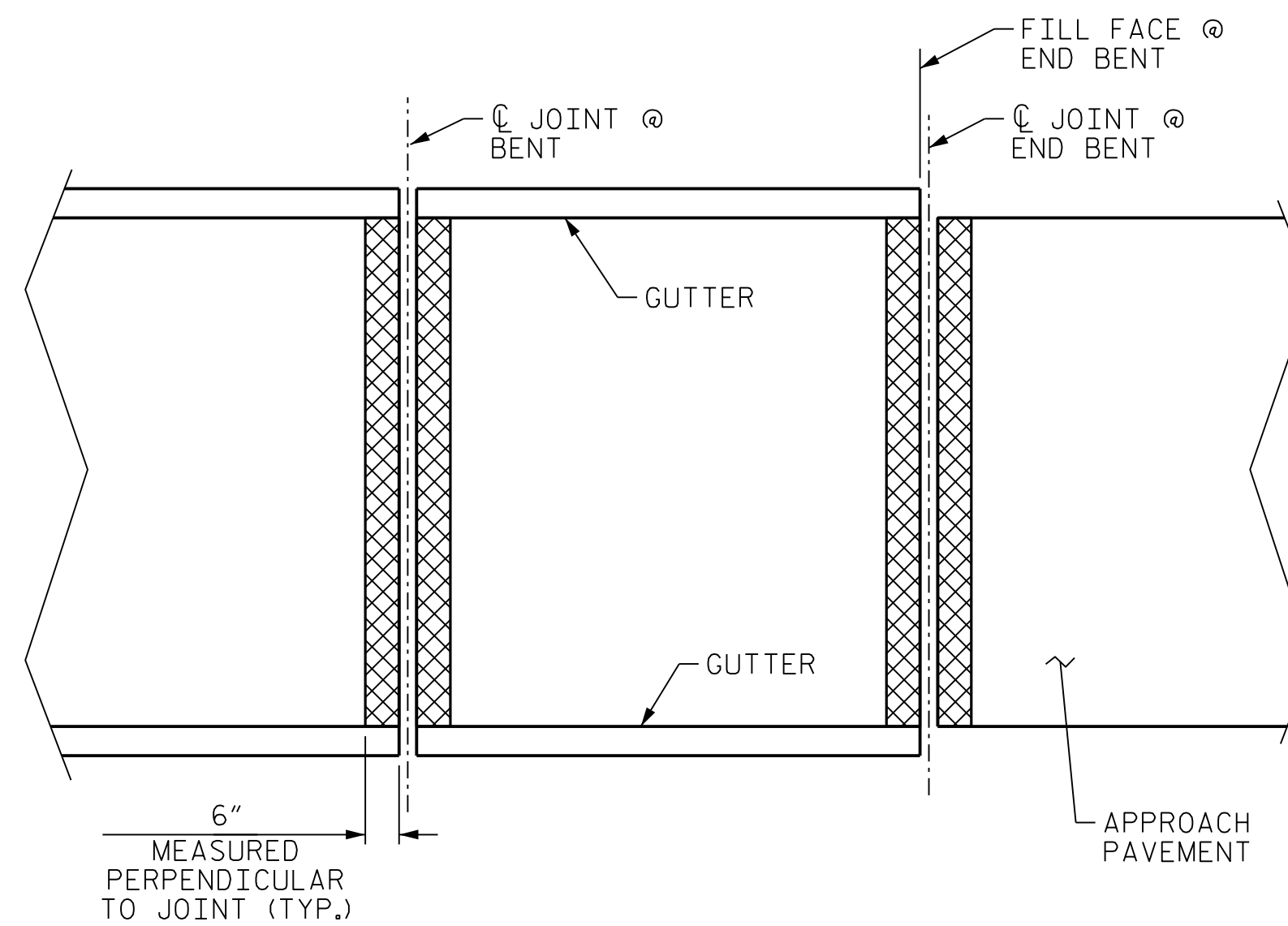
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NOTES:
 SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING.



TYPICAL SECTION

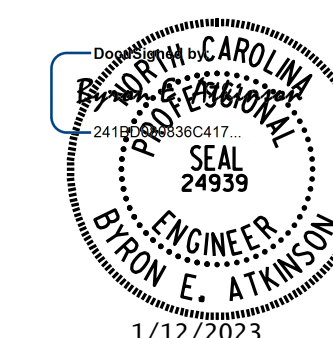
(ALL DIMENSIONS ARE NORMAL OR RADIAL TO ORIGINAL GRADE LINE)



**PAY LIMITS FOR
 BRIDGE JOINT DEMOLITION**



PROJECT NO. I-6052
 MECKLENBURG COUNTY
 BRIDGE NO. 590339



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION
 &
 DETAILS

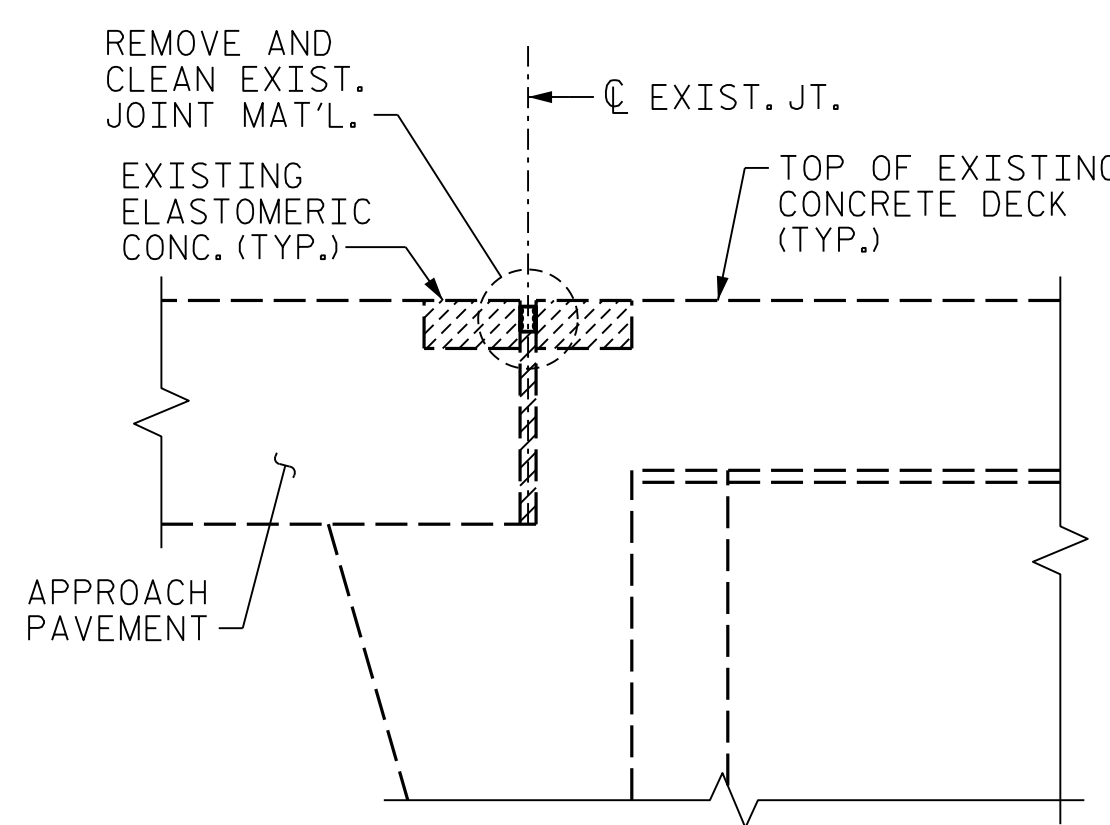
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 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

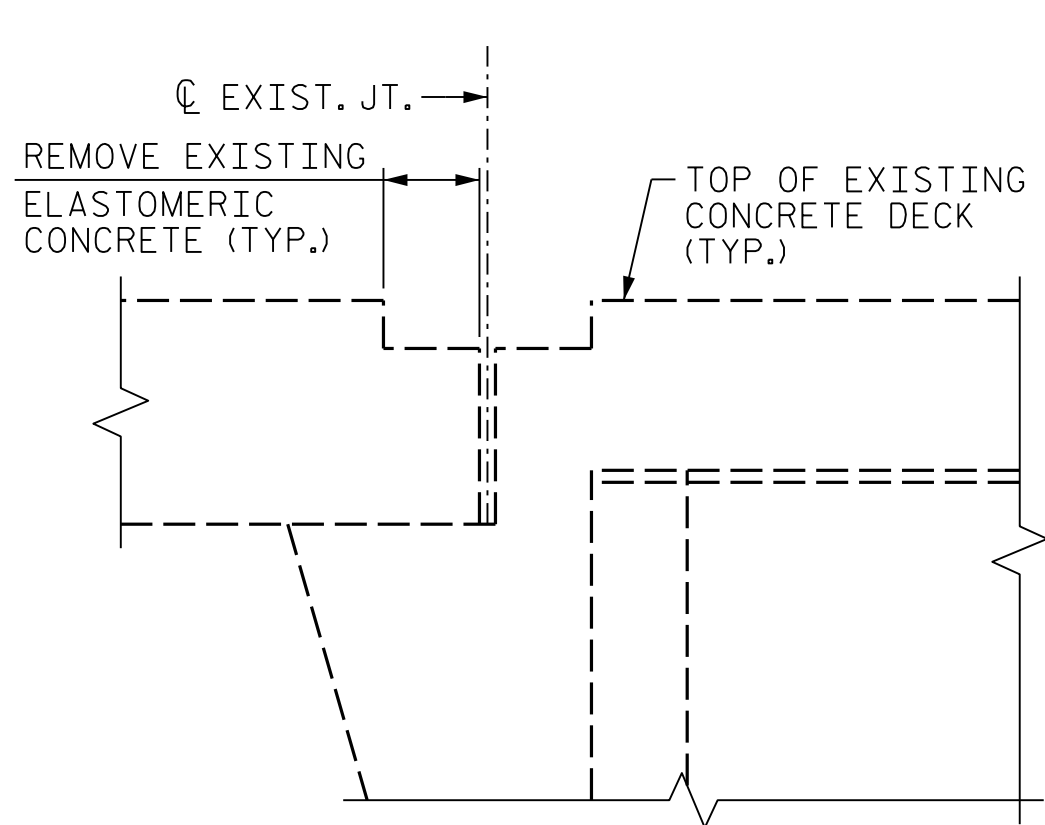
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NO.	BY:	DATE:	NO.	BY:	DATE:	S6-3
1			3			TOTAL SHEETS
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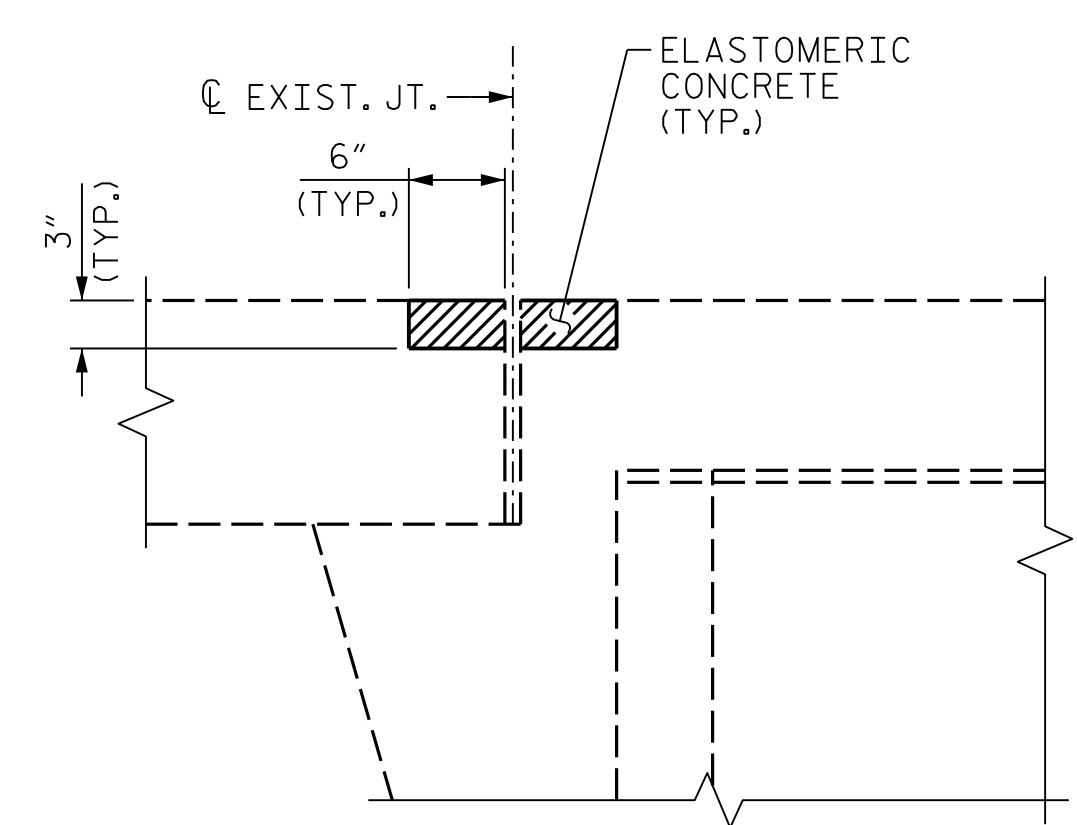
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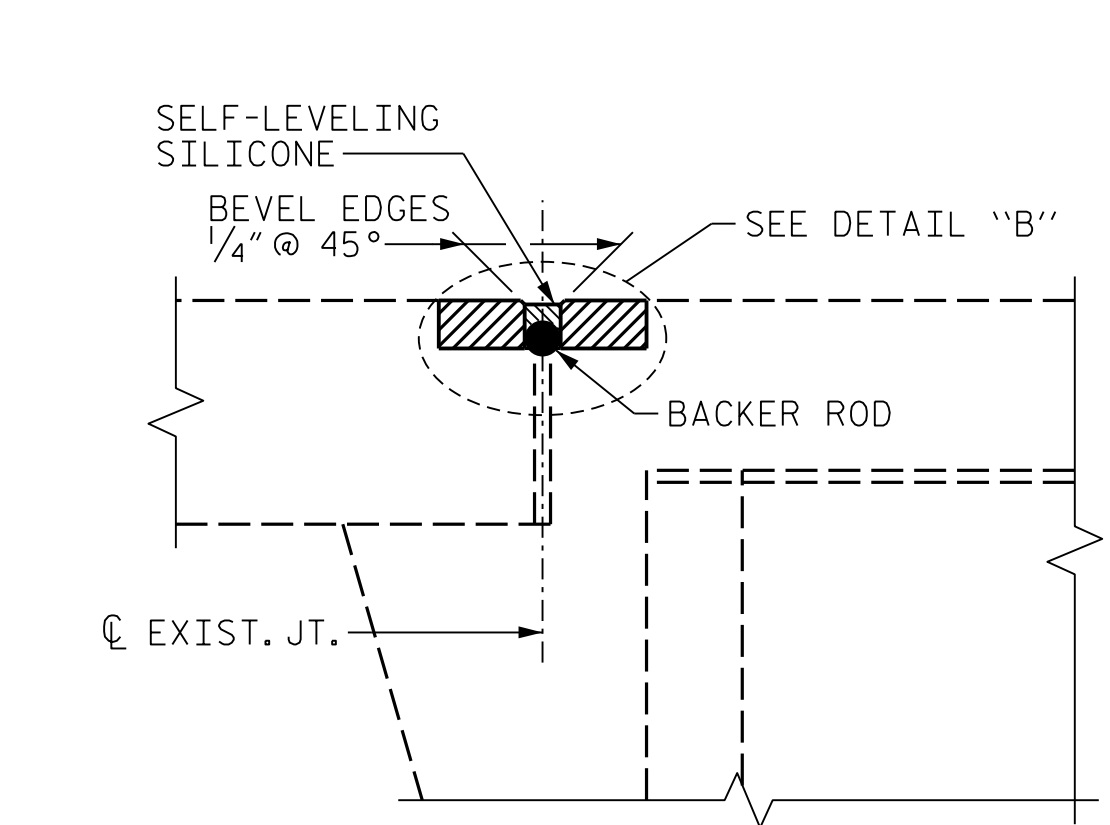
EXISTING JOINT AT END BENT



MINIMUM EXISTING JOINT DEMOLITION AT END BENT

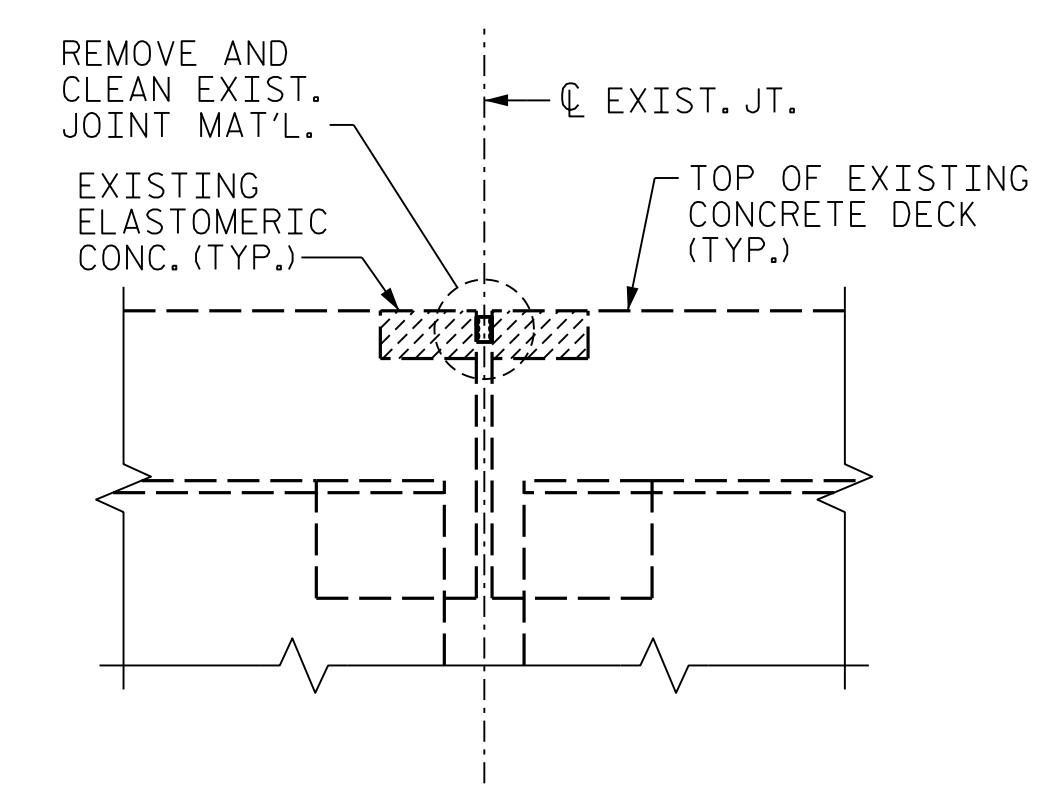


PROPOSED JOINT PRE-SAWED DIMENSIONS

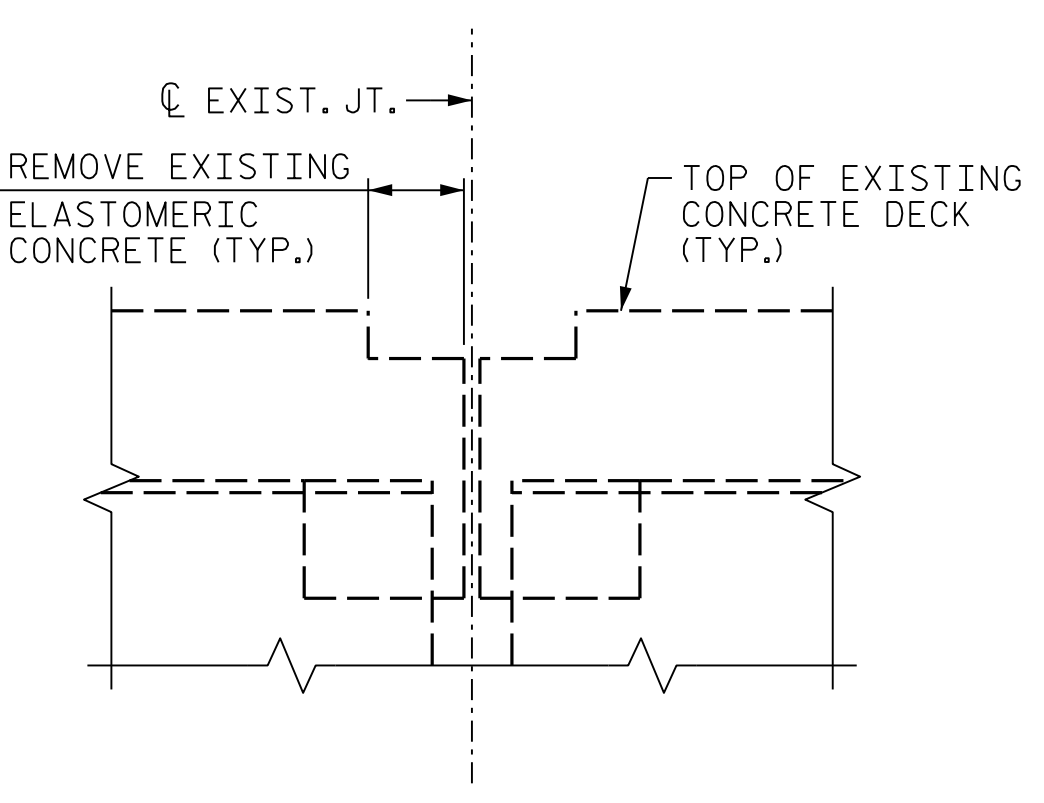


PROPOSED JOINT

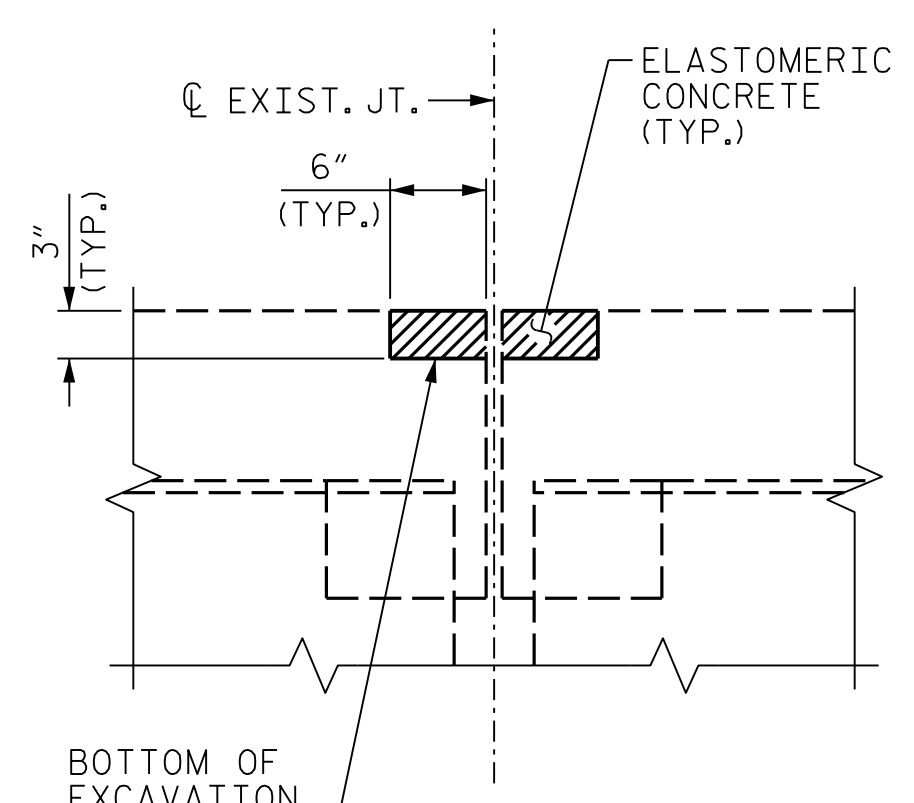
SECTION A-A



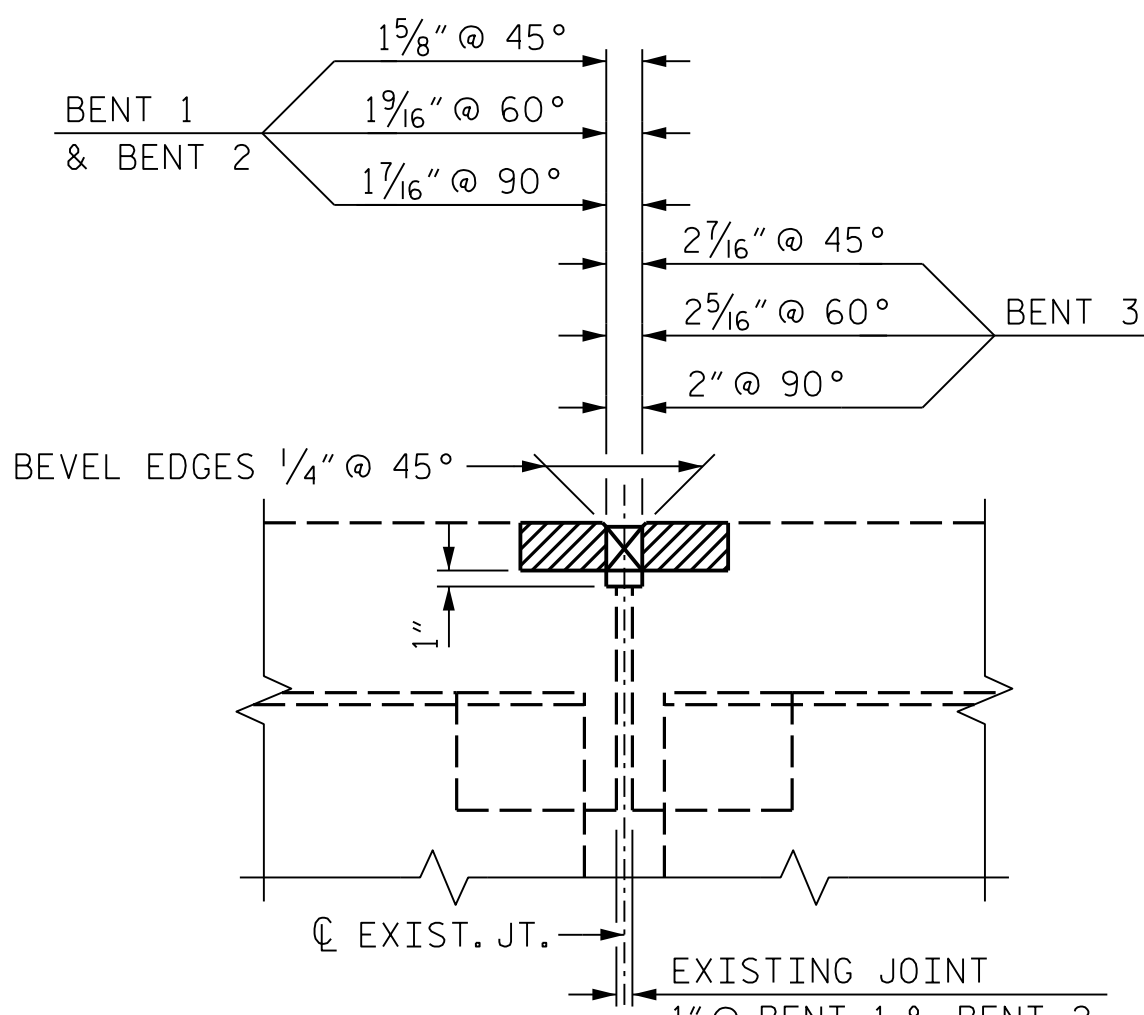
EXISTING JOINT



MINIMUM EXISTING JOINT DEMOLITION AT BENT

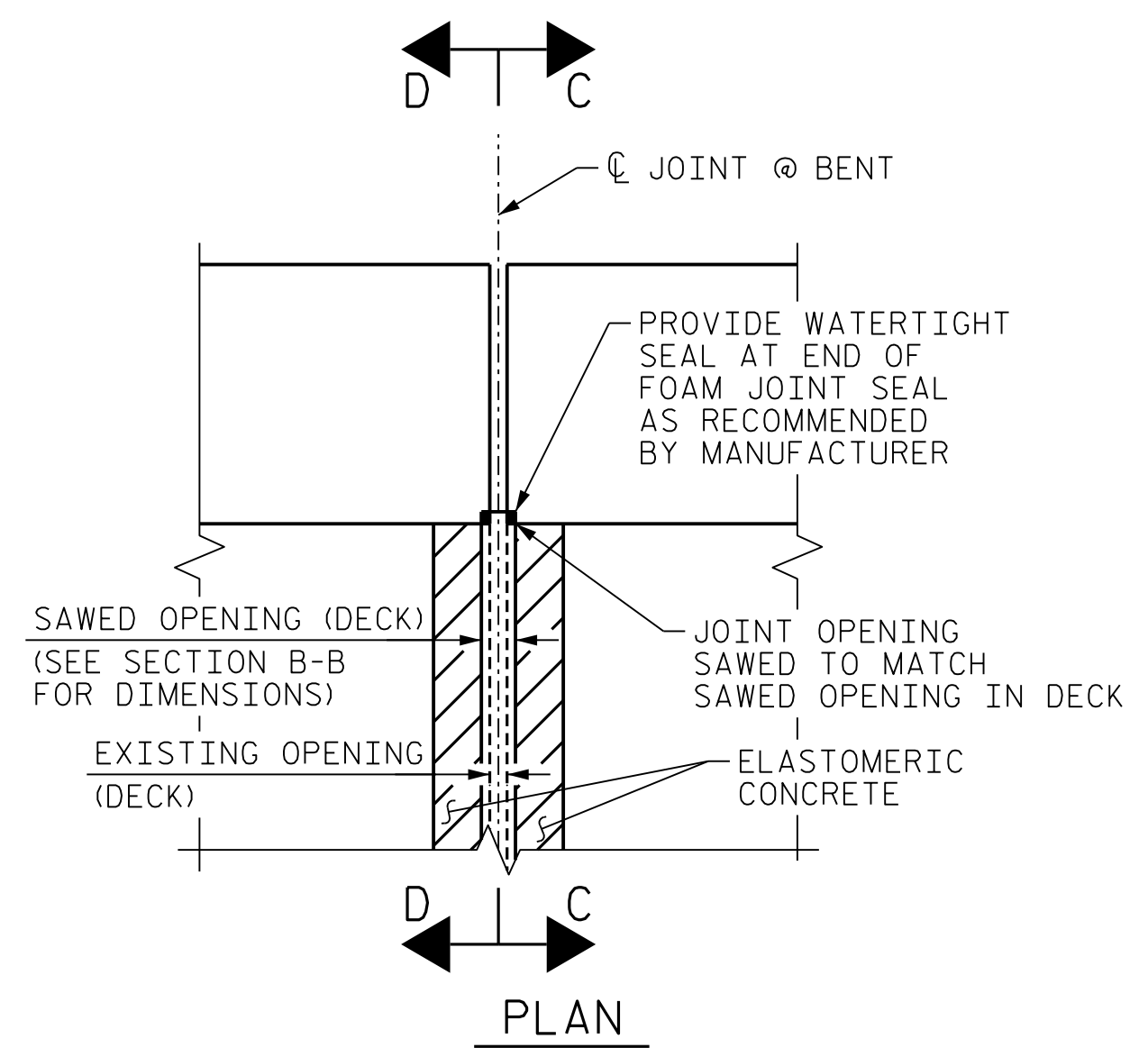


PROPOSED JOINT PRE-SAWED DIMENSIONS

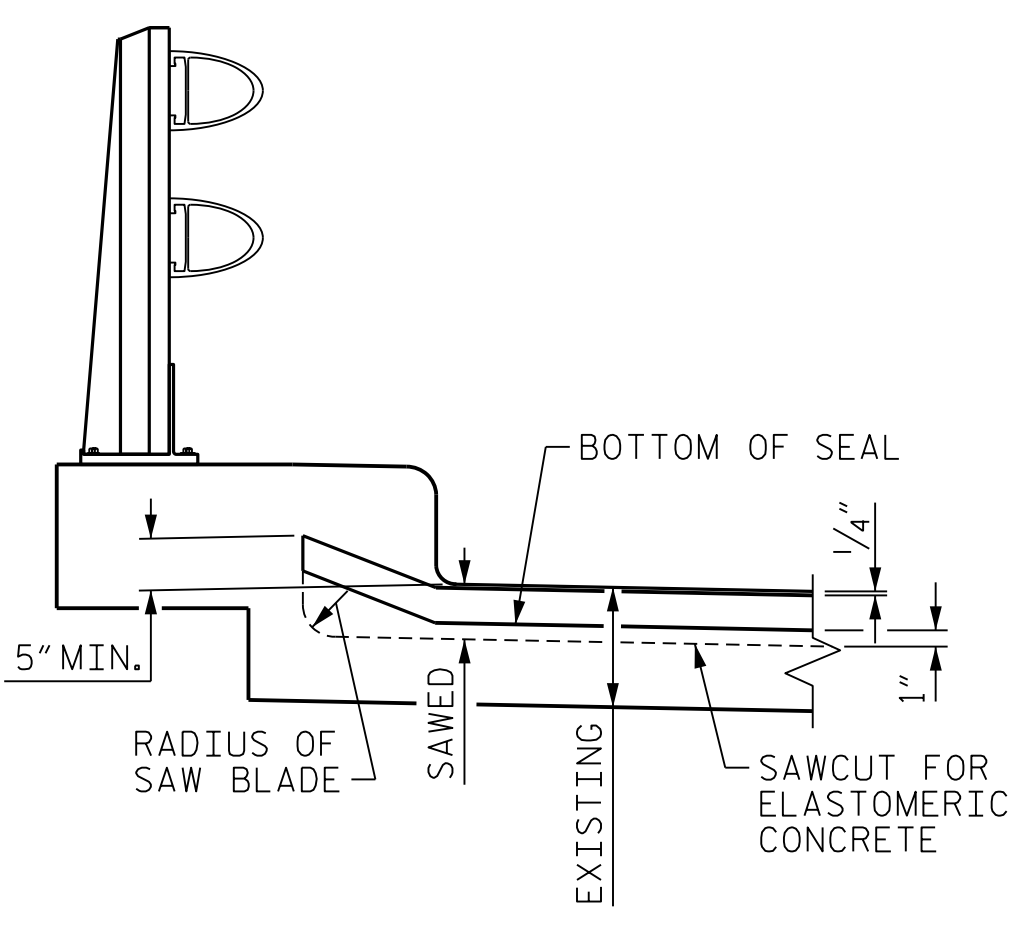


PROPOSED FOAM JOINT SEAL EXPANSION

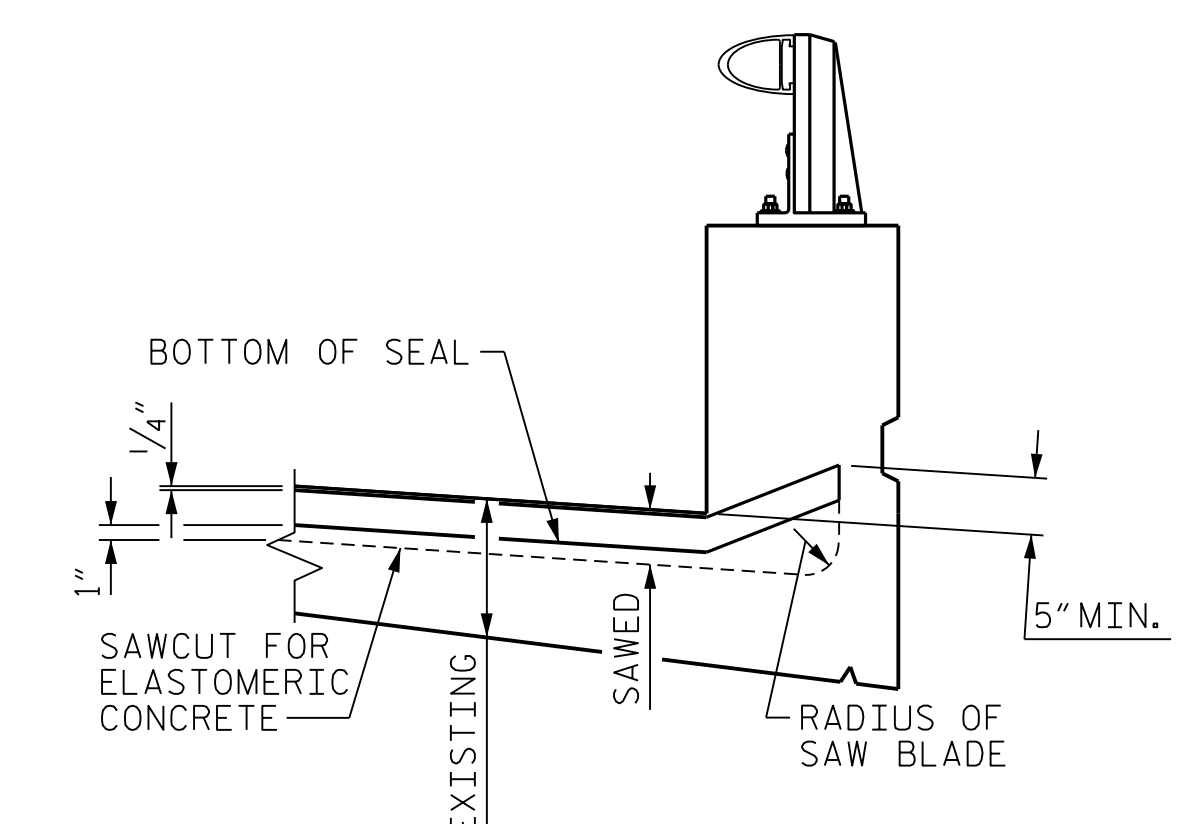
SECTION B-B



PLAN

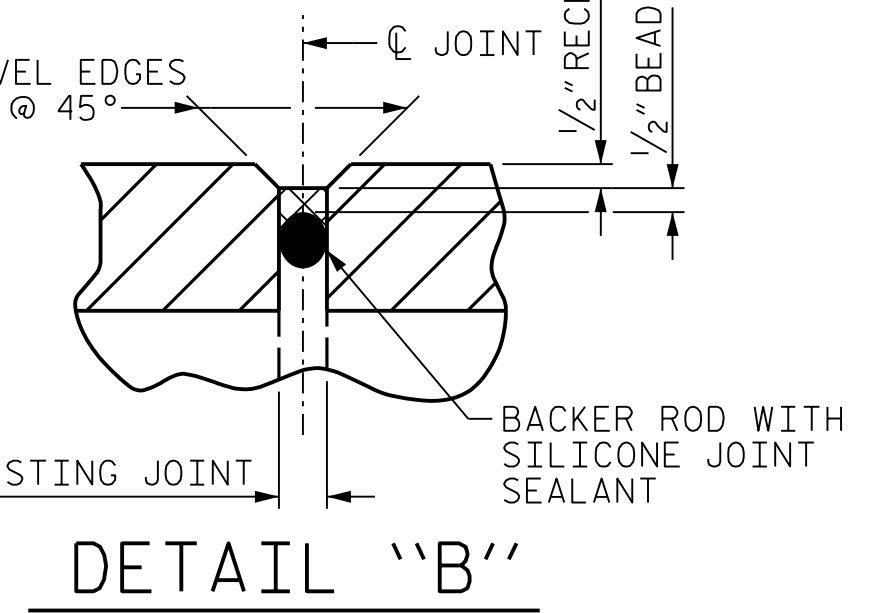


SECTION C-C (LEFT SIDE)



SECTION D-D (RIGHT SIDE)

JOINT DETAILS AT CURB



DETAIL "B"

NOTES:

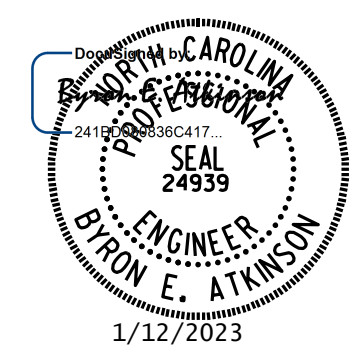
- REMOVAL OF EXISTING JOINT SHALL RESULT IN THE BOTTOM OF THE BLOCKOUT BEING REASONABLY FLAT AND LEVEL, TO PROVIDE SUFFICIENT SUBSTRATE FOR PLACEMENT AND SUPPORT OF ELASTOMERIC CONCRETE.
- RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS NEEDED.
- THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN 1/4", NOTIFY THE ENGINEER.
- THE MANUFACTURER IS TO PROVIDE THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL FOR THE SIZE OF THE OPENING ON THE PLANS AND ACCOMMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.
- FOAM JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.
- THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.
- THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.
- THE INSTALLED FOAM JOINT SEALS SHALL BE WATER TIGHT.
- QUANTITIES SHOWN IN THE ELASTOMERIC CONCRETE FOR PRESERVATION TABLE ARE BASED ON THE MINIMUM JOINT DEMOLITION SHOWN.
- FINAL SURFACE OF THE JOINT DEMOLITION AREA PRIOR TO PLACEMENT OF CONCRETE REPAIR MATERIAL OR ELASTOMERIC CONCRETE SHOULD BE REASONABLY FLAT AND LEVEL. ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF THE SURFACE PRIOR TO PLACEMENT OF REPAIR CONCRETE OR ELASTOMERIC CONCRETE.
- FOR EXCAVATION BELOW THE BOTTOM OF THE PLANNED JOINT DEMOLITION, CONCRETE FOR DECK REPAIR SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT BOTTOM OF THE PROPOSED ELASTOMERIC CONCRETE FOR PRESERVATION HEADERS SHOWN.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

	ESTIMATED	ACTUAL
BRIDGE JOINT DEMOLITION	357.6 SF	
FOAM JOINT SEALS FOR PRESERVATION	219.0 LF	
POURABLE SILICONE JOINT SEALANT	148.6 LF	

Location	Quantity	Unit
END BENT 1	18.8	CF
BENT 1	18.4	CF
BENT 2	17.5	CF
BENT 3	17.4	CF
END BENT 2	17.4	CF
* TOTAL	89.5	CF

* BASED ON MINIMUM BLOCKOUT SHOWN.

PROJECT NO. I-6052
 MECKLENBURG COUNTY
 BRIDGE NO. 590339



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MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

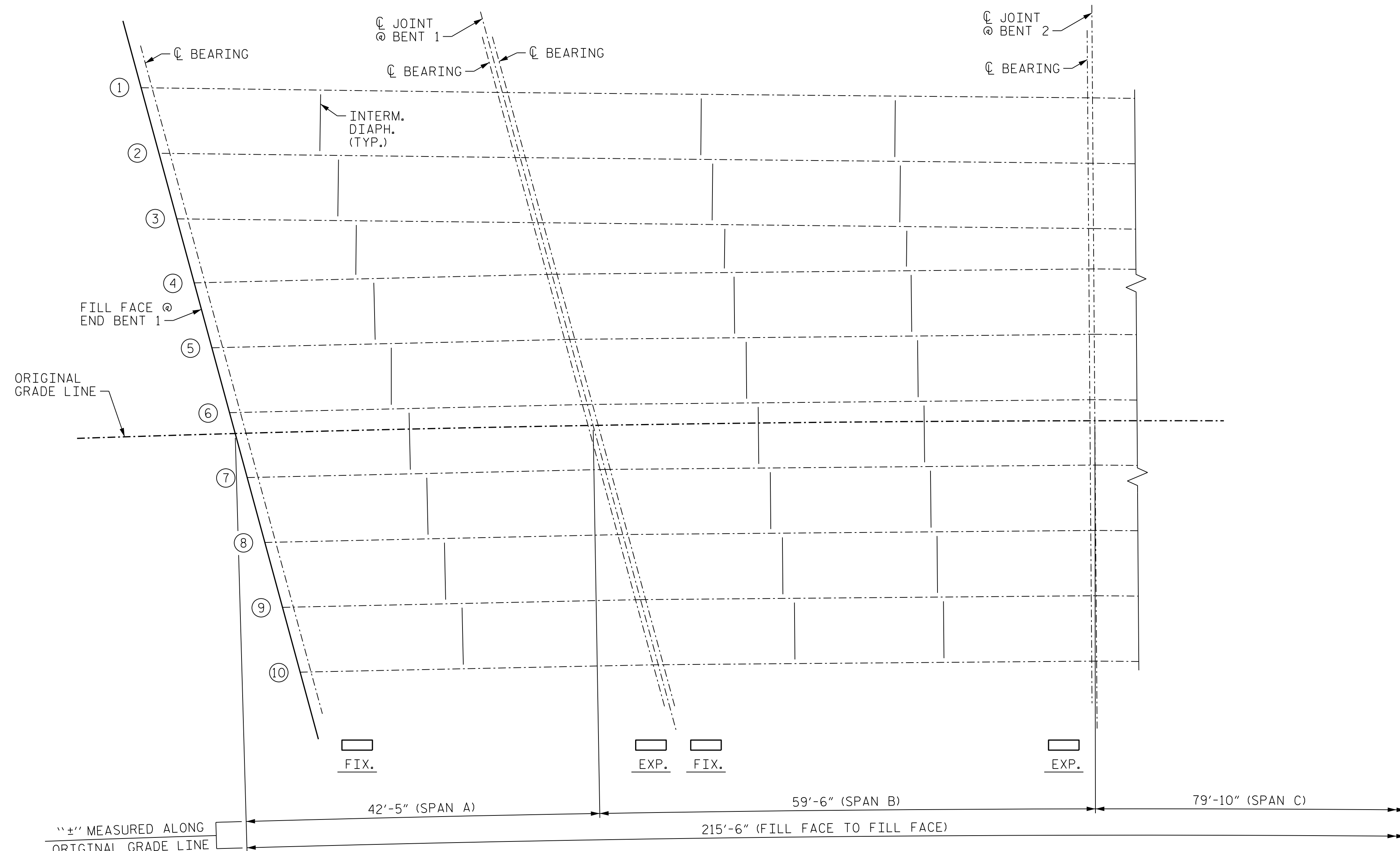
JOINT DETAILS

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1			3		
2			4		

SHEET NO. **S6-4**
 TOTAL SHEETS 108

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FRAMING PLAN - SPANS A & B

ANTICIPATED BEAM REPAIR LOCATIONS								
SPAN	BEAM	LOCATION	DETAIL TYPE	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"
-	-	-	-	-	-	-	-	-

BEAM REPAIR QUANTITY TABLE SPANS A THRU D					
STEEL PLATES		STIFFENER		STEEL BEARING KEEPER ANGLE ASSEMBLY	
LBS.		LBS.		EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
-	-	-	-	-	-
BEAM REPAIR CUT-OUT		BOLTED BEAM REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
-	-	-	-		

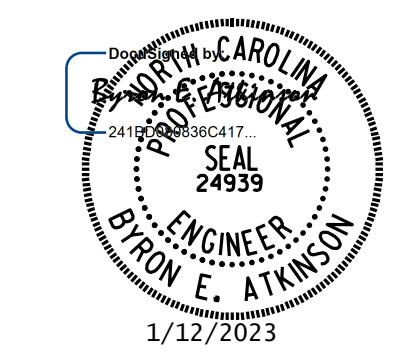
NOTES:

- 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 AFTER THE STRUCTURAL STEEL HAS BEEN CLEANED, BLASTED, AND PRIMED, THE CONTRACTOR AND ENGINEER SHALL REVIEW THE STEEL TO VERIFY NOTED REPAIR LOCATIONS AND TO IDENTIFY ANY ADDITIONAL REPAIR LOCATIONS. THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.
- FOR REPAIR DETAILS, SEE "BEAM REPAIR DETAILS" AND "STEEL KEEPER ANGLE ASSEMBLY DETAILS" SHEETS.
- THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR STEEL BEAM REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENTS OF REPAIR AREAS PRIOR TO STEEL FABRICATION.
- FOR CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA, SEE SPECIAL PROVISIONS.
- STRUCTURAL STEEL REPAIRS SHALL BE COMPLETED BEFORE FINAL CLEANING AND PAINTING OF STRUCTURAL STEEL.
- FOR BEAM REPAIR PLATING, SEE SPECIAL PROVISIONS.
- FOR BEAM REPAIR CUT-OUT, SEE SPECIAL PROVISIONS.
- FOR BOLTED BEAM REPAIR, SEE SPECIAL PROVISIONS.

KEY	
#	BEAM NUMBER
W	WEB PLATING REPAIR
S	STIFFENER REPAIR
F	BOTTOM FLANGE PLATING REPAIR
I	INTERMEDIATE BEAM PLATING REPAIR
BE	BEAM END REPAIR
BW	BOLTED WEB PLATE REPAIR
K	STEEL BEARING KEEPER ANGLE ASSEMBLY

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590339

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BEAM REPAIR
 LOCATIONS
 SPANS A & B

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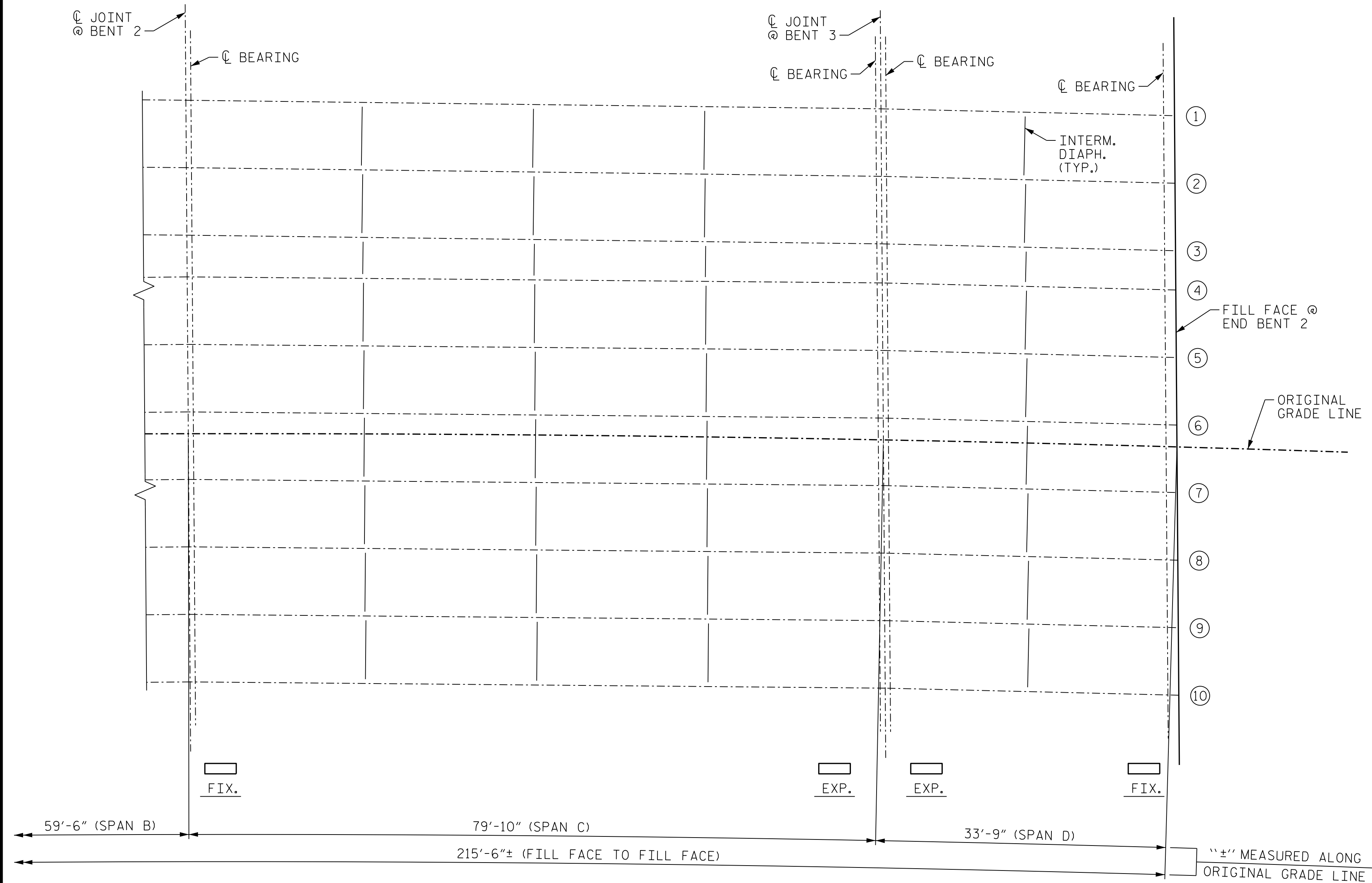
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S6-5
2			4			TOTAL SHEETS 108

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NOTES:
FOR NOTES AND QUANTITIES, SEE SHEET 1 OF 2.



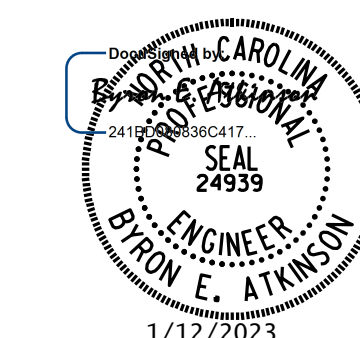
FRAMING PLAN - SPANS C & D

ANTICIPATED BEAM REPAIR LOCATIONS								
SPAN	BEAM	LOCATION	DETAIL TYPE	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"
-	-	-	-	-	-	-	-	-

KEY	
⊕	BEAM NUMBER
Ⓜ	WEB PLATING REPAIR
Ⓢ	STIFFENER REPAIR
ⓕ	BOTTOM FLANGE PLATING REPAIR
ⓐ	INTERMEDIATE BEAM PLATING REPAIR
Ⓟ	BEAM END REPAIR
Ⓜ	BOLTED WEB PLATE REPAIR
Ⓚ	STEEL BEARING KEEPER ANGLE ASSEMBLY

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590339

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BEAM REPAIR
 LOCATIONS
 SPANS C & D

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1			3			S6-6
2			4			TOTAL SHEETS 108

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AS-BUILT REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.0	0.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
CURTAIN WALL	42.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	125.2			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

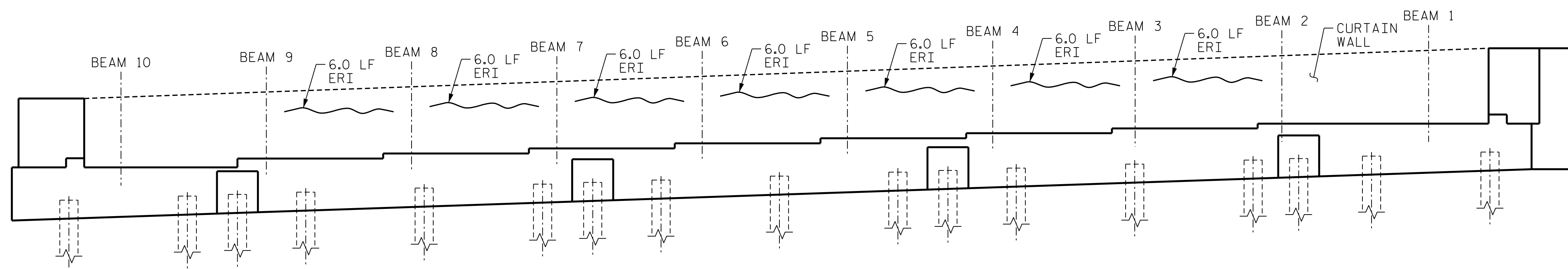
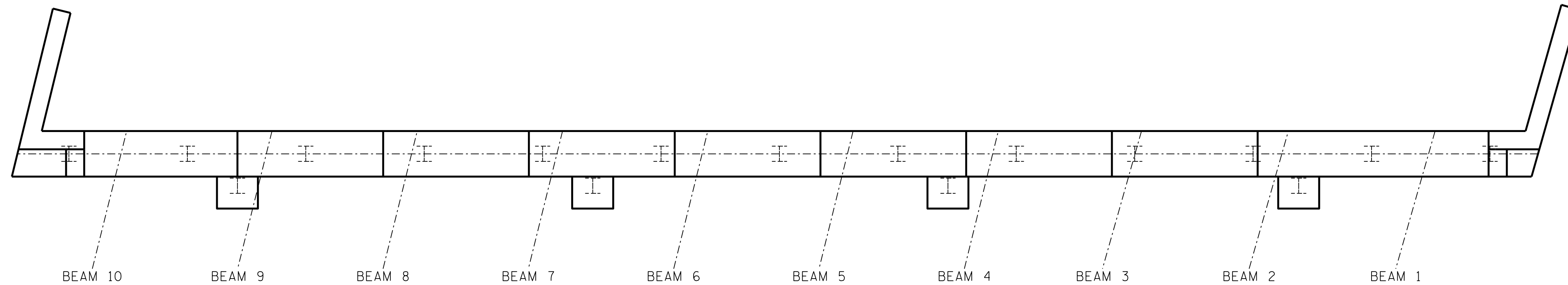
SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

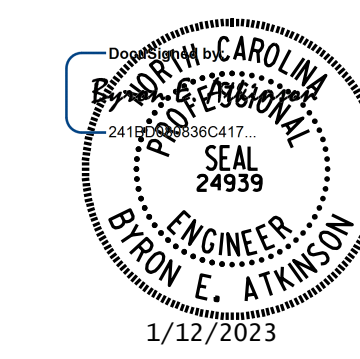
FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.



KEY	
	SHOTCRETE REPAIR
	ERI EPOXY RESIN INJECTION
	CONCRETE REPAIR



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1011 SCHAUB DRIVE, SUITE 100
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(919) 851-6606
FIRM PE NUMBER: P-0671

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590339

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. **S6-7**
TOTAL SHEETS 108

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AS-BUILT REPAIR QUANTITY TABLE

BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	27.9	14.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	2.6	1.3		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	232.8			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.




FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

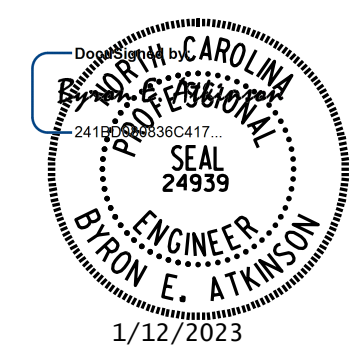
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

KEY

-  SHOTCRETE REPAIR
-  ERI EPOXY RESIN INJECTION
-  CONCRETE REPAIR

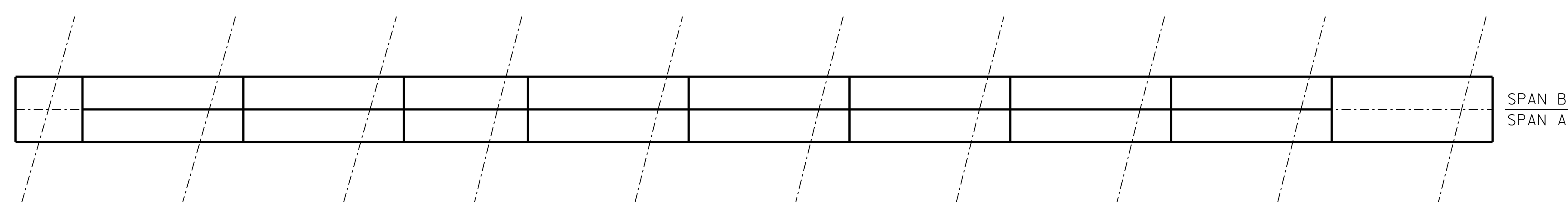
PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590339



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT 1

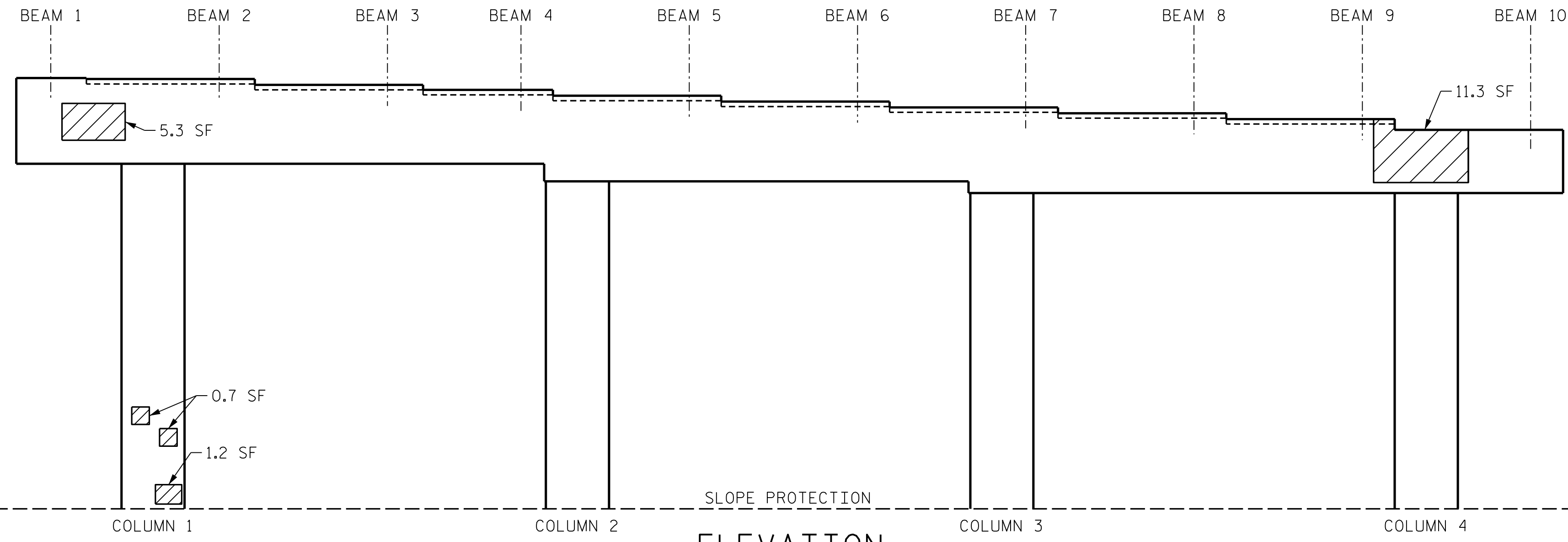
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-8
1			3			
2			4			TOTAL SHEETS 108



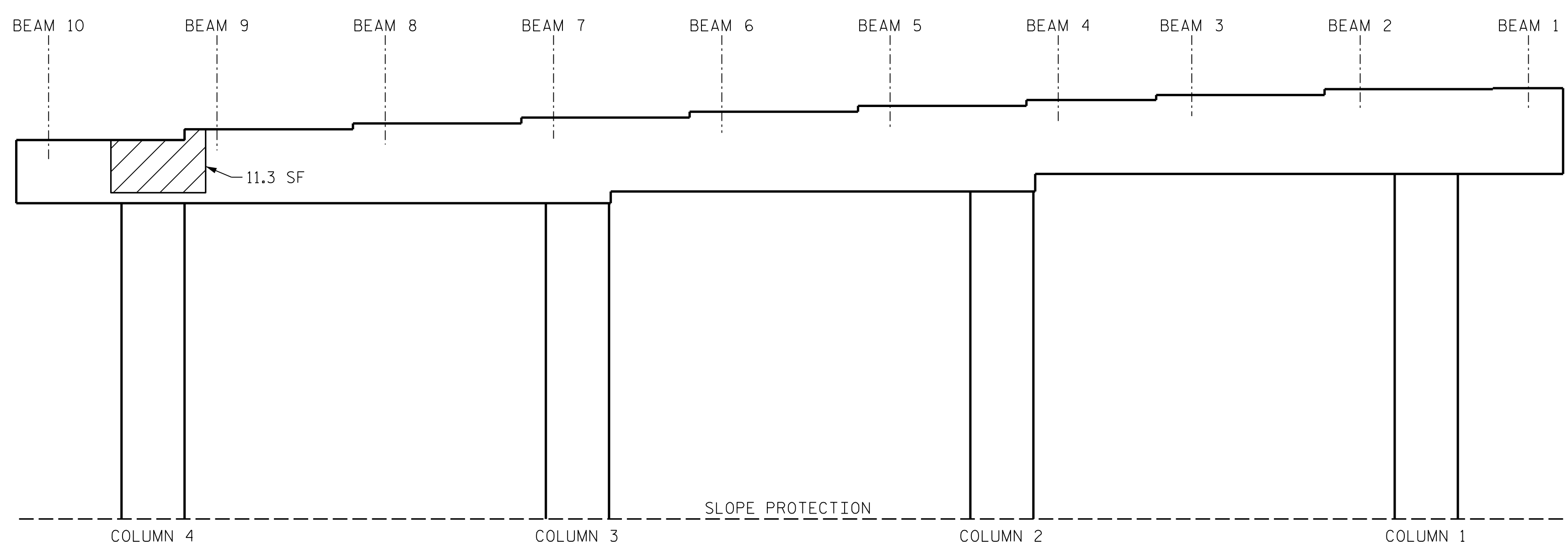
PLAN

TOP OF CAP



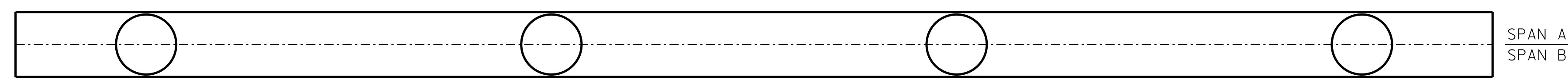
ELEVATION

SPAN A



ELEVATION

SPAN B



PLAN

BOTTOM OF CAP
 (LOOKING UP)

1/12/2023 9:19:11 AM User: blanning
 Filenamer: N:\NC Bridges\W21001.39-I-6052-101 Meck. Co. Br. Preservation\Structures\406-015-I-6052-SMU.BT1.590339.dgn

DRAWN BY : B.E. LANNING DATE : 10/2022
 CHECKED BY : B.E. ATKINSON DATE : 10/2022
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 10/2022

MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

AS-BUILT REPAIR QUANTITY TABLE

BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.0	0.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	2.0	1.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
EPOXY COATING	AREA SF	AREA SF		
TOP OF CAP	220.2			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

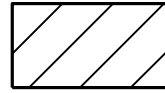


FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

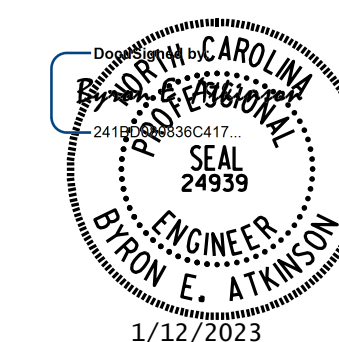
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

KEY

	SHOTCRETE REPAIR
	EPOXY RESIN INJECTION
	CONCRETE REPAIR

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590339

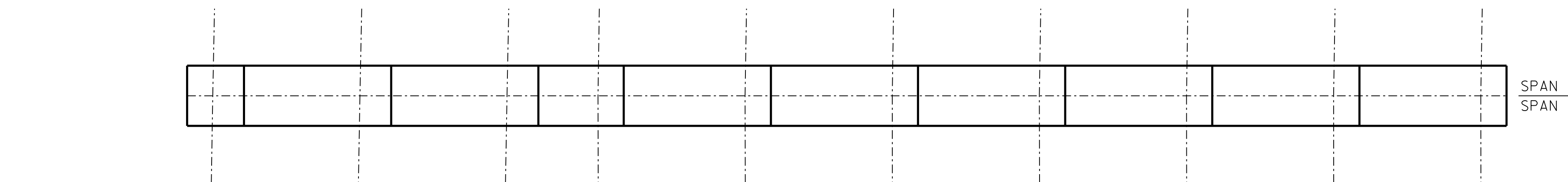


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT 2

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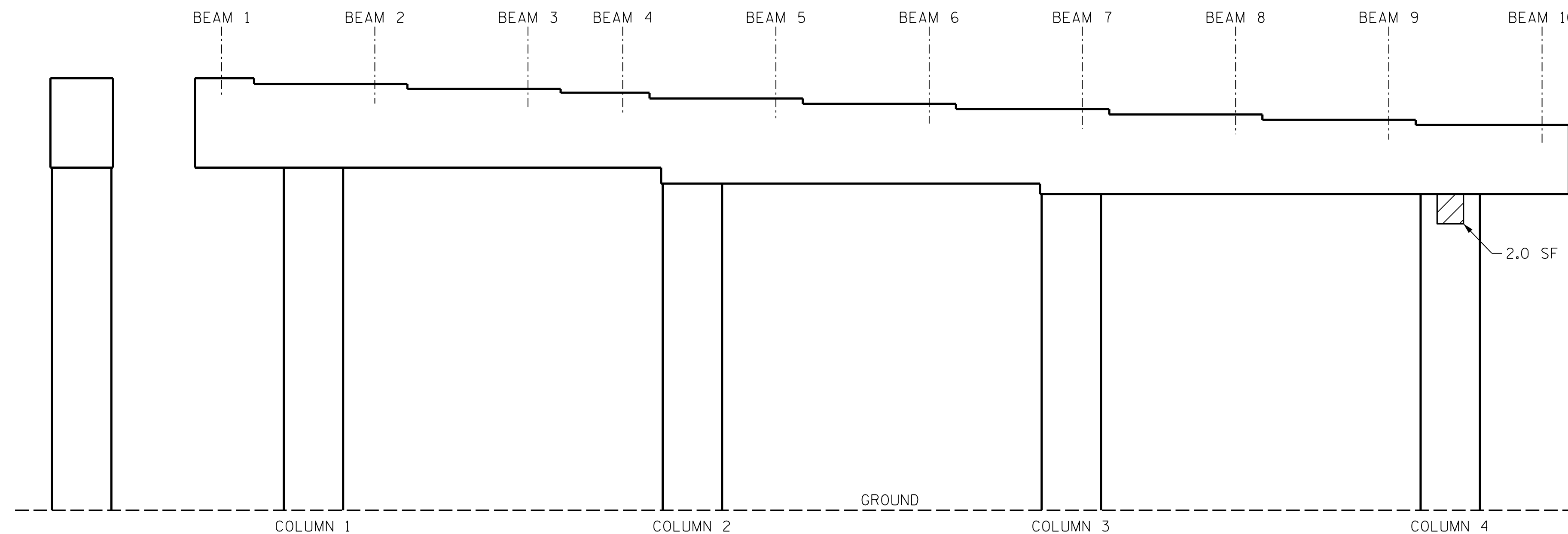
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.
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1			3			S6-9 TOTAL SHEETS 108
2			4			



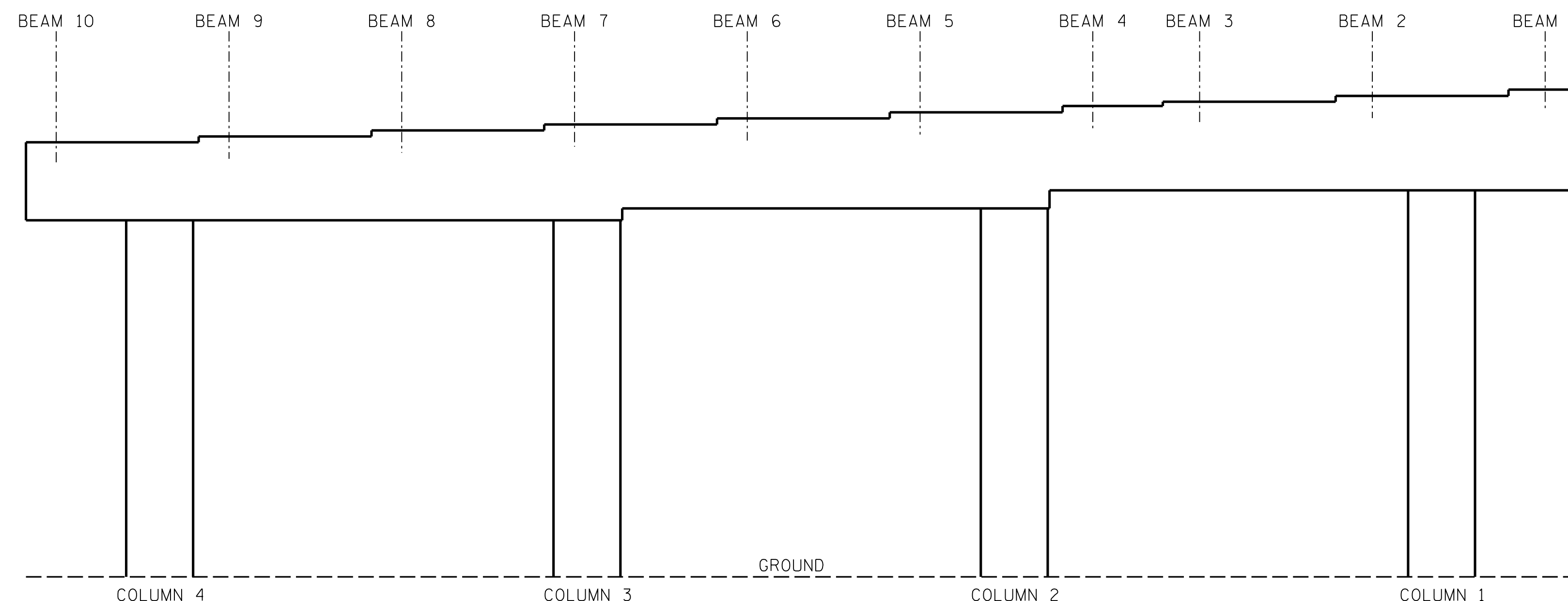
PLAN

TOP OF CAP



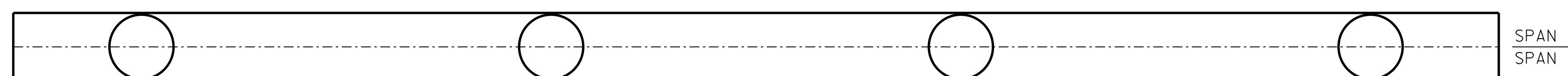
ELEVATION

SPAN B



ELEVATION

SPAN C



PLAN

BOTTOM OF CAP
 (LOOKING UP)

DRAWN BY : B.E. LANNING DATE : 10/2022
 CHECKED BY : B.E. ATKINSON DATE : 10/2022
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 10/2022

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AS-BUILT REPAIR QUANTITY TABLE

BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	7.6	3.8		
CAP (HORIZONTAL FACE)	20.0	10.0		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	8.9	4.5		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	14.3			
COLUMN	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	220.2			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

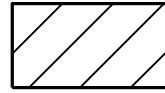

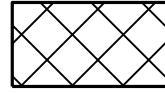

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

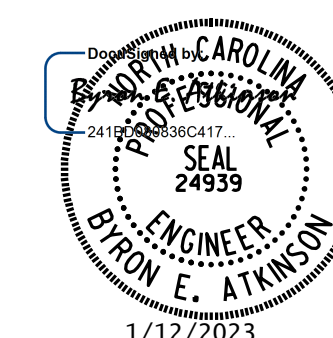
CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE "JACKING DETAIL" SHEET.

KEY

-  SHOTCRETE REPAIR
-  ERI EPOXY RESIN INJECTION
-  CONCRETE REPAIR
-  PEDESTAL WALL REPAIR

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590339

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 3

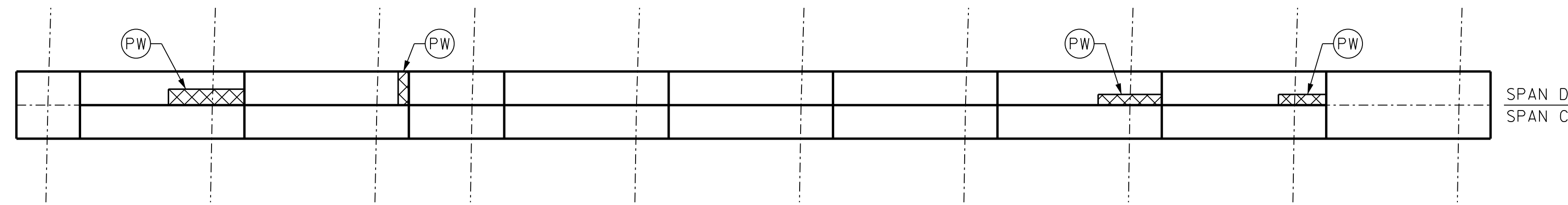


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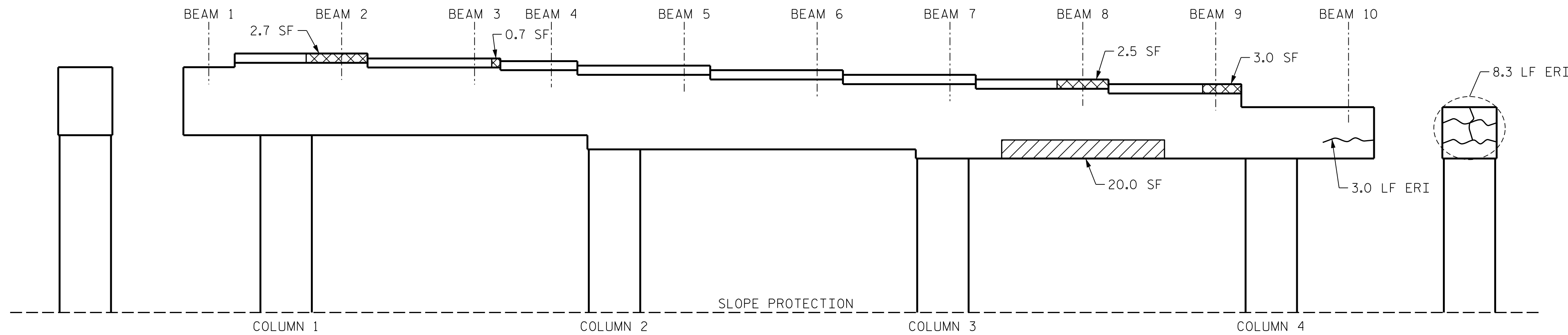
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S6-10 TOTAL SHEETS 108
2			4			



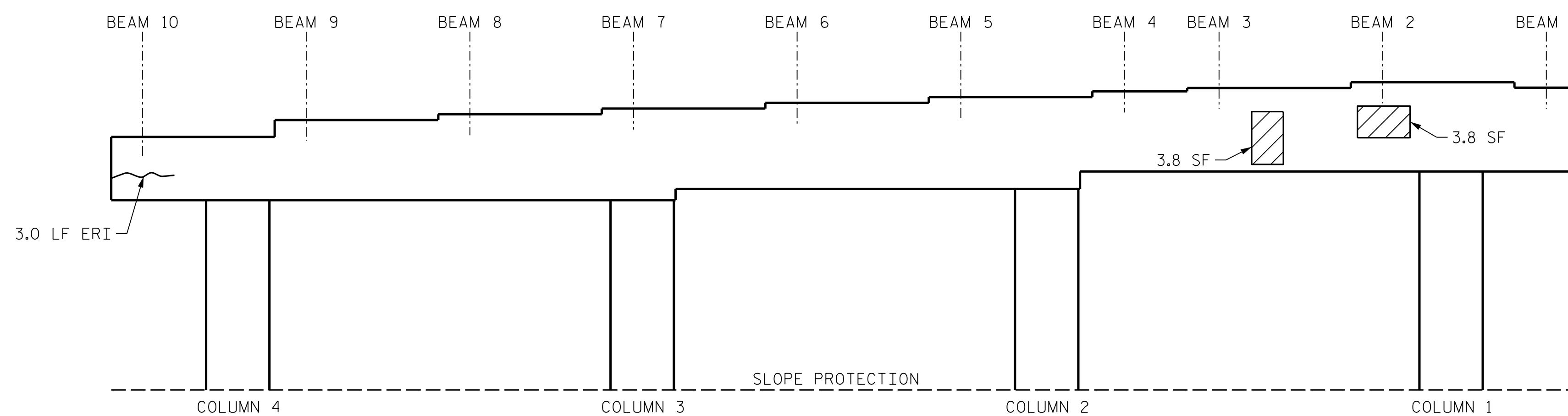
PLAN

TOP OF CAP



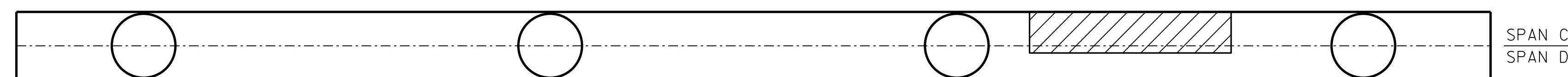
ELEVATION

SPAN C



ELEVATION

SPAN D



PLAN

BOTTOM OF CAP
 (LOOKING UP)

1/12/2023
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DRAWN BY : B.E. LANNING DATE : 10/2022
 CHECKED BY : B.E. ATKINSON DATE : 10/2022
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 10/2022

AS-BUILT REPAIR QUANTITY TABLE

END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.0	0.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
CURTAIN WALL	17.7	8.9		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
CURTAIN WALL	25.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	116.8			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

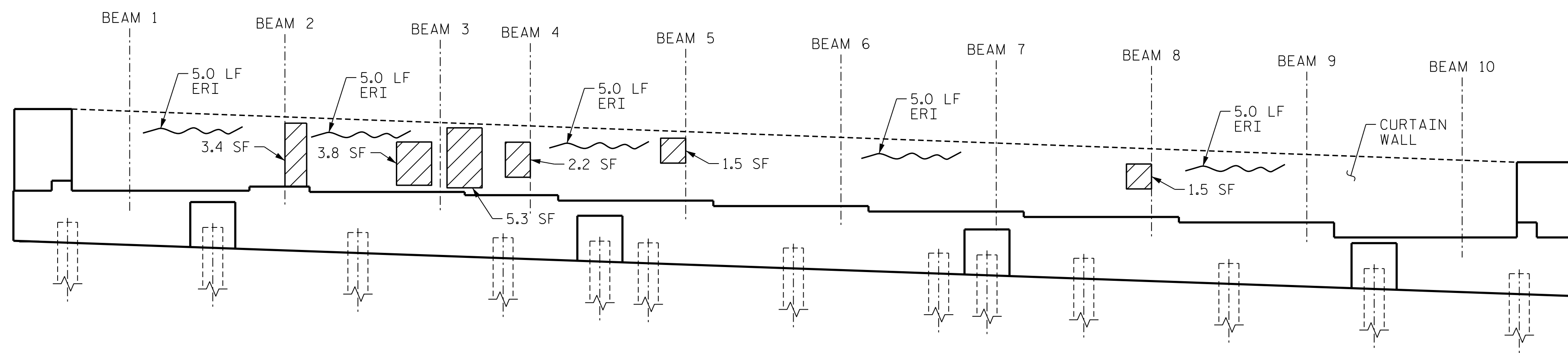
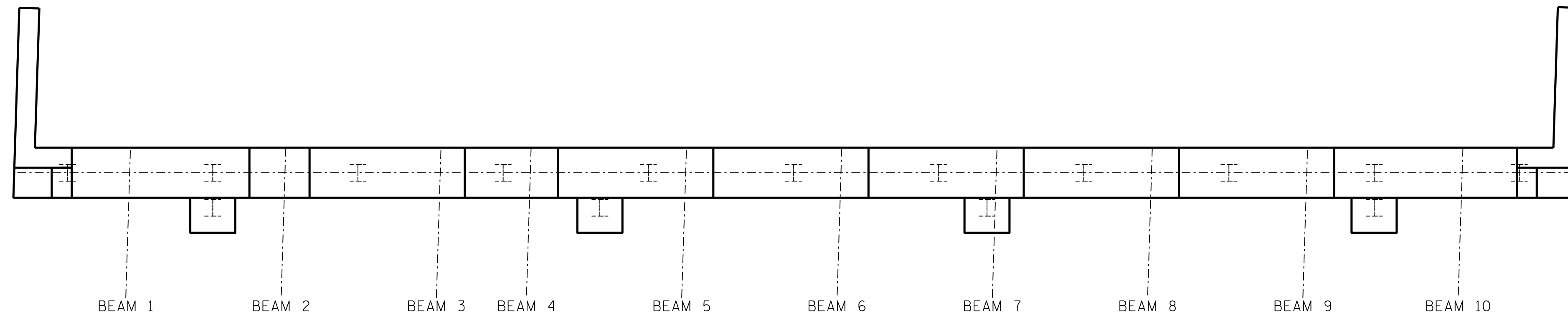
SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

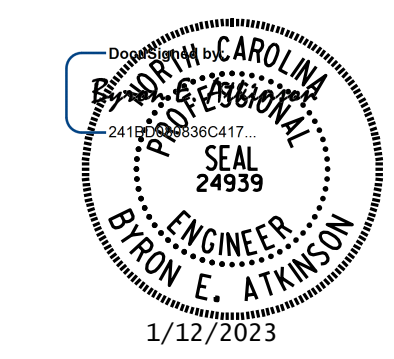
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.



KEY

	SHOTCRETE REPAIR
	ERI EPOXY RESIN INJECTION
	CONCRETE REPAIR



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

PROJECT NO. I-6052
MECKLENBURG COUNTY
BRIDGE NO. 590339

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S6-11 TOTAL SHEETS 108

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CHECKED BY : B.E. ATKINSON	DATE : 10/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 10/2022

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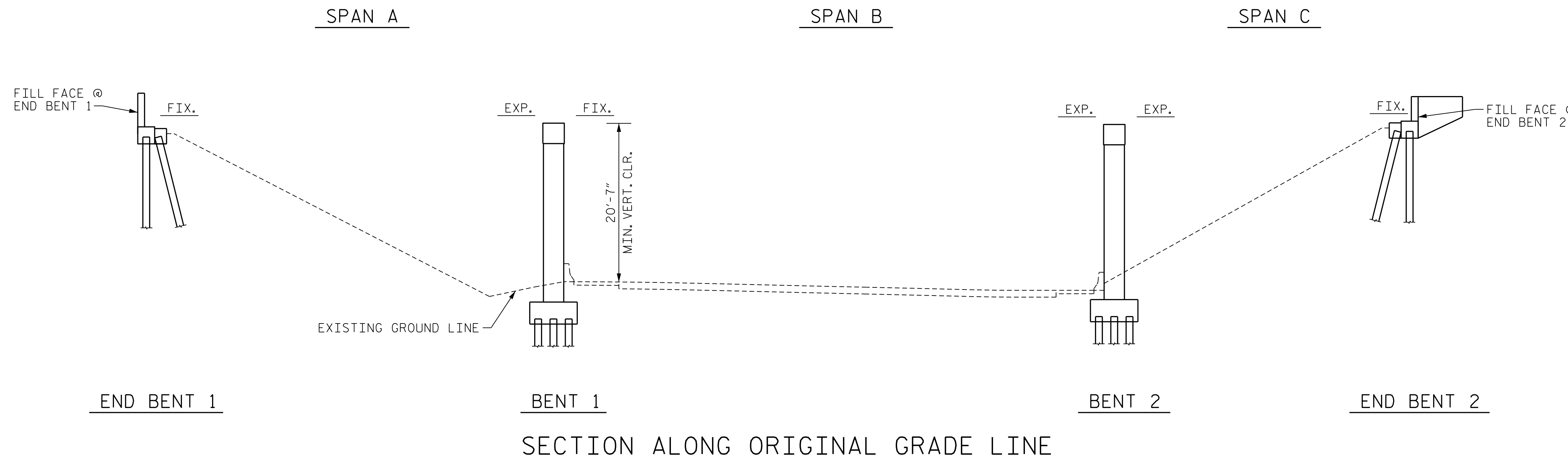
NOTES:

PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 09/06/2022.

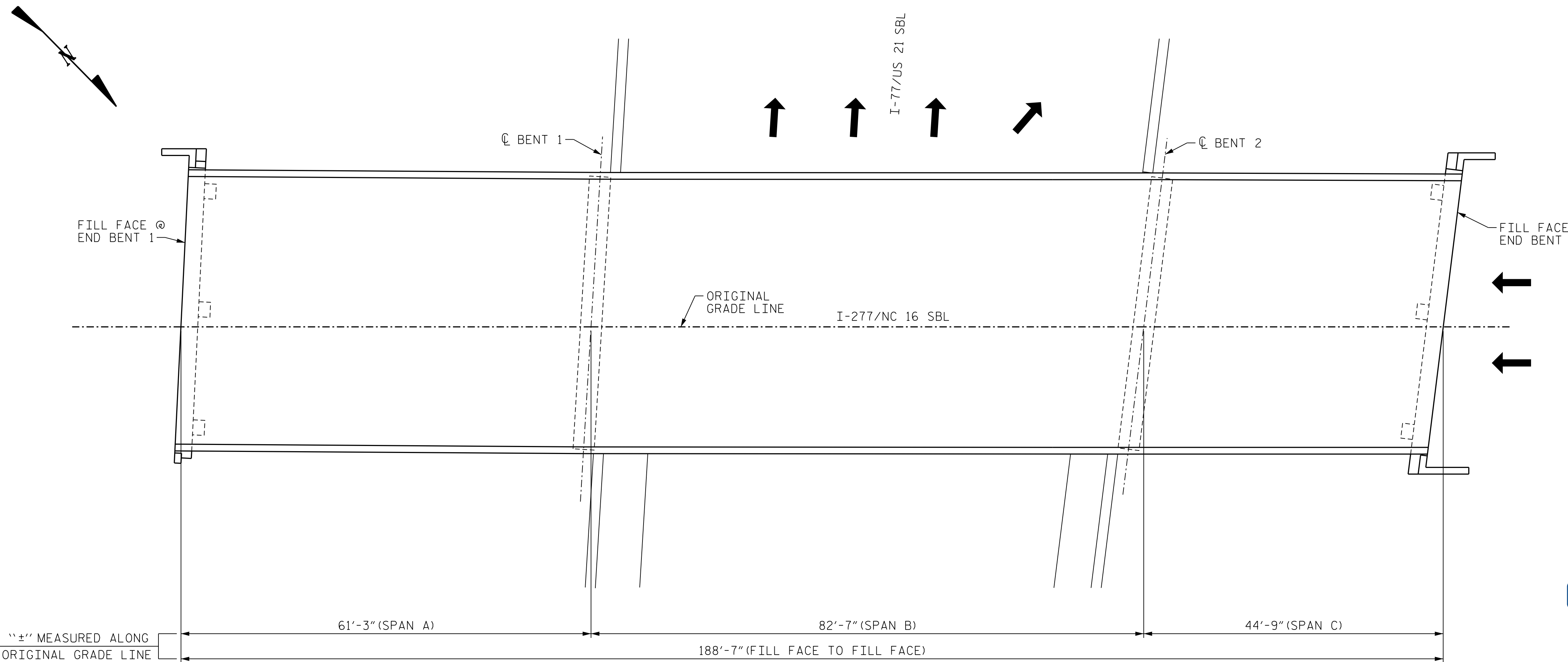
BRIDGE ORIENTATION CONFORMS TO ROUTINE INSPECTION REPORT.

SCOPE OF WORK:

- PARTIALLY REMOVE BRIDGE DECK CONCRETE USING SCARIFICATION AND HYDRO-DEMOLITION METHODS.
- PERFORM CLASS II SURFACE PREPARATION AND REPAIR ON DECK SURFACES.
- OVERLAY PREPARED BRIDGE DECK WITH LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH (LMC-VES).
- RECONSTRUCT BRIDGE DECK JOINT AND INSTALL JOINT SEALS.
- GROOVE LMC-VES BRIDGE DECK.
- SUBSTRUCTURE REPAIRS USING EPOXY RESIN INJECTION AND SHOTCRETE.
- EPOXY COATING OF TOP OF CAPS.
- STRUCTURAL STEEL REPAIRS.
- CLEANING AND PAINTING STEEL BEAMS.
- CLEANING AND PAINTING BEARINGS WITH HRCSA.



SECTION ALONG ORIGINAL GRADE LINE



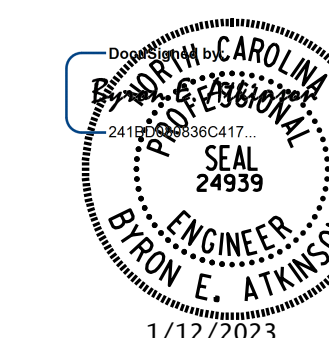
PLAN

I HEREBY CERTIFY THAT THIS STRUCTURE HAS REHABILITATED ACCORDING TO THESE PLANS OR AS NOTED HEREIN.

RESIDENT ENGINEER _____ DATE _____

PROJECT NO. I-6052
 MECKLENBURG COUNTY
 BRIDGE NO. 590341

SHEET 1 OF 2



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MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

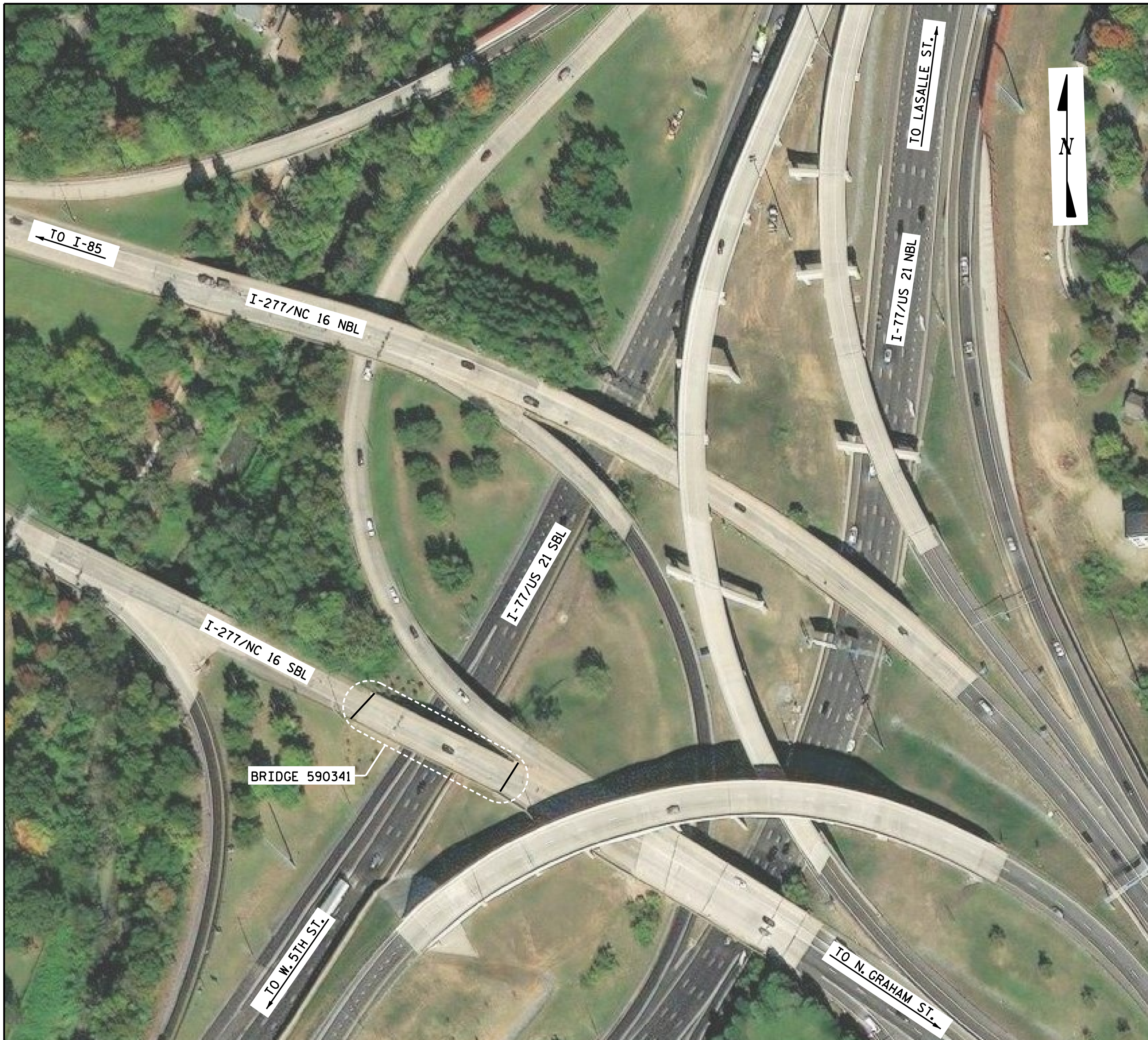
GENERAL DRAWING

FOR BRIDGE ON
 I-277/NC 16 SBL
 OVER I-77/US 21 SBL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-1
1			3			TOTAL SHEETS 108
2			4			

DRAWN BY : B.E. LANNING DATE : 10/2022
 CHECKED BY : B.E. ATKINSON DATE : 10/2022
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LOCATION SKETCH

INFORMATION INDICATED ON THE LOCATION SKETCH SHALL BE CONSIDERED GENERAL INFORMATION ONLY. CONTRACTOR SHALL CONFIRM, THROUGH OTHER SOURCES, SPECIFIC INFORMATION REGARDING THE BRIDGES, ROADWAYS, UTILITIES, THE SURROUNDING AREA, AND ANY OTHER ASPECTS THAT MAY BE NECESSARY TO PERFORM AND COMPLETE THE PROJECT.

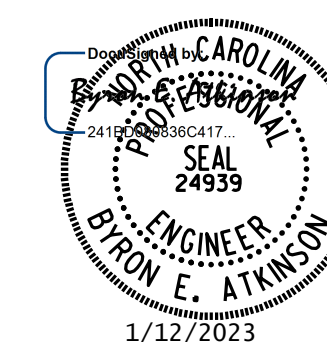
BRIDGE COORDINATES	
LATITUDE	LONGITUDE
35°-14'-38.54"	80°-50'-53.37"

NOTES:

- EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE 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.
- FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLANS.
- DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT FLOW OR MIGRATE INTO ACTIVE TRAVEL LANES.
- EXISTING JOINTS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.
- FOR CLASS II SURFACE PREPARATION, SCARIFYING BRIDGE DECK AND HYDRO-DEMOLITION OF BRIDGE DECK, SEE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.
- THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS, SEE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISION.
- LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
- FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.
- WORK ON BRIDGE SHALL BE PREFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE TO THE PROJECT SPECIAL PROVISION.
- PRIOR TO BEGINNING WORK, CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPLETE SEQUENCE OF TASKS FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC.
- ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST.
- FOR POLLUTION CONTROL, SEE SPECIAL PROVISIONS.
- FOR CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA, SEE SPECIAL PROVISIONS.
- FOR BEAM REPAIR PLATING, SEE SPECIAL PROVISIONS.
- FOR BEAM REPAIR CUT-OUT, SEE SPECIAL PROVISIONS.
- FOR BOLTED BEAM REPAIR, SEE SPECIAL PROVISIONS.
- FOR CLEANING AND REPAINTING OF BRIDGE, AND PAINTING CONTAINMENT FOR BRIDGE, SEE "PAINTING EXISTING STRUCTURE" SPECIAL PROVISION.
- FOR TYPE I BRIDGE JACKING, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6052
 MECKLENBURG COUNTY
 BRIDGE NO. 590341

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE ON
 I-277/NC 16 SBL
 OVER I-77/US 21 SBL

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 FIRM PE NUMBER: P-0671

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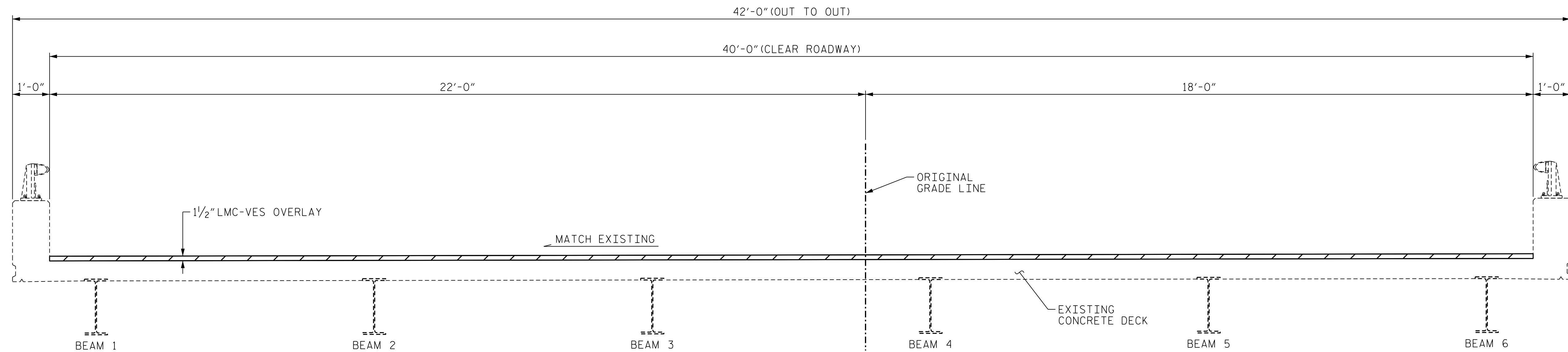
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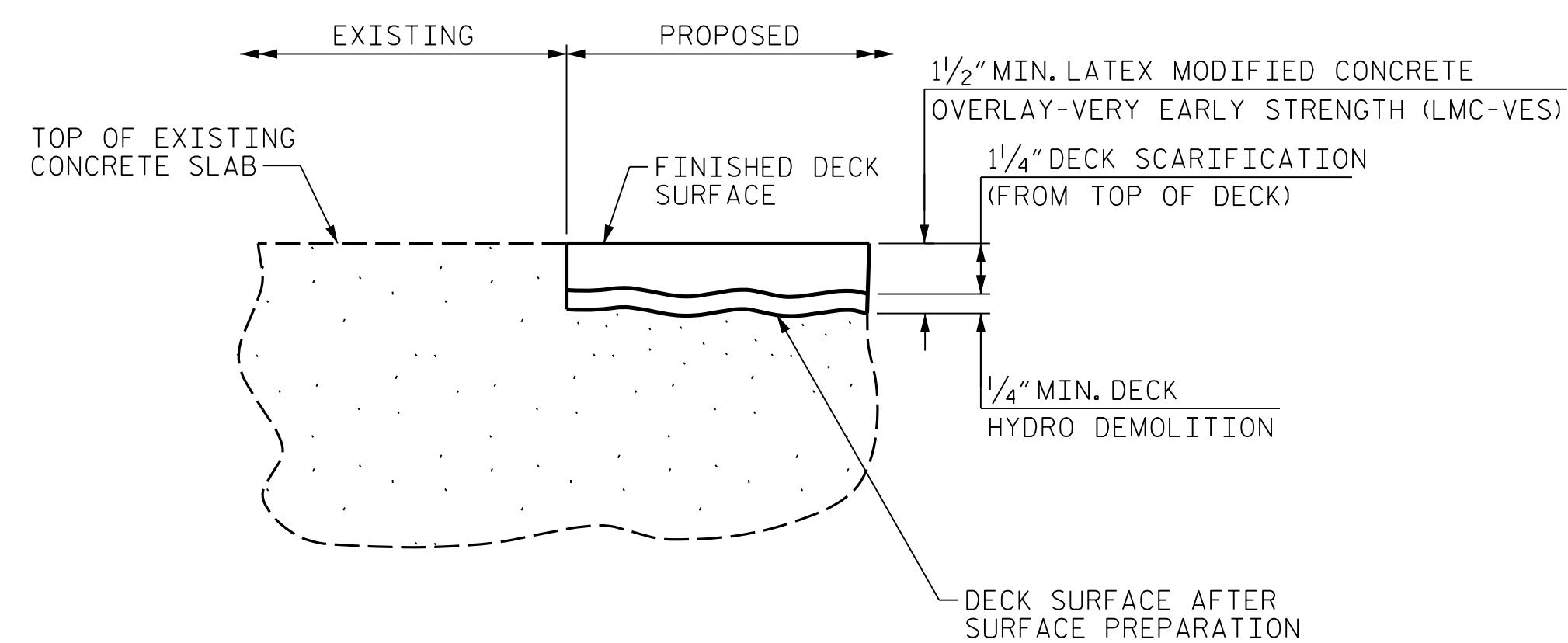
WHEN PREPARING THE SURFACE FOR LMC OVERLAY-VES ADJACENT TO A PREVIOUSLY PLACED LMC-VES STAGE, THE PREVIOUSLY PLACED LMC-VES SHALL BE REMOVED FOR A DISTANCE OF 4-INCHES FROM THE LMC-VES EDGE. THE SURFACE OF THE NEW STAGE AREA, ALONG WITH THE 4 INCH OVERLAY AREA, SHALL BE PREPARED AS PER THE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS. NEW LMC-VES SHALL BE PLACED IN THE 4-INCH OVERLAP, AS PART OF NEW LMC-VES STAGE PLACEMENT.

SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND LMC-VES PLACEMENT.

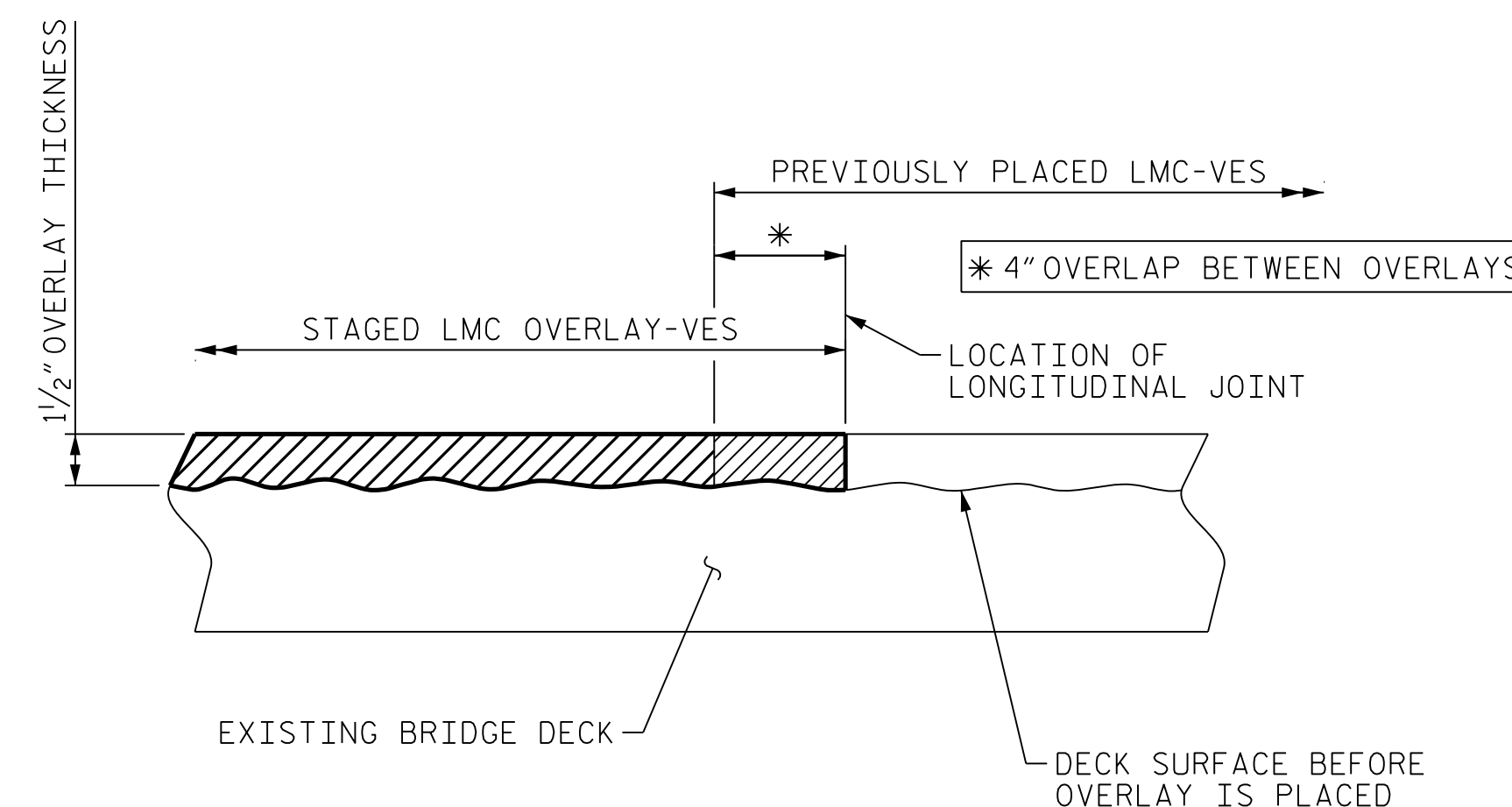


TYPICAL SECTION

(ALL DIMENSIONS ARE RADIAL)



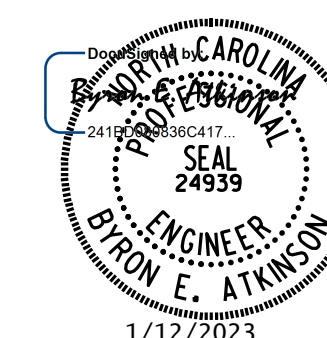
DETAIL FOR LMC-VES OVERLAY



SECTION THRU DECK

STAGED LMC-VES OVERLAY JOINT

PROJECT NO. I-6052
 MECKLENBURG COUNTY
 BRIDGE NO. 590341



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION
 &
 OVERLAY DETAILS

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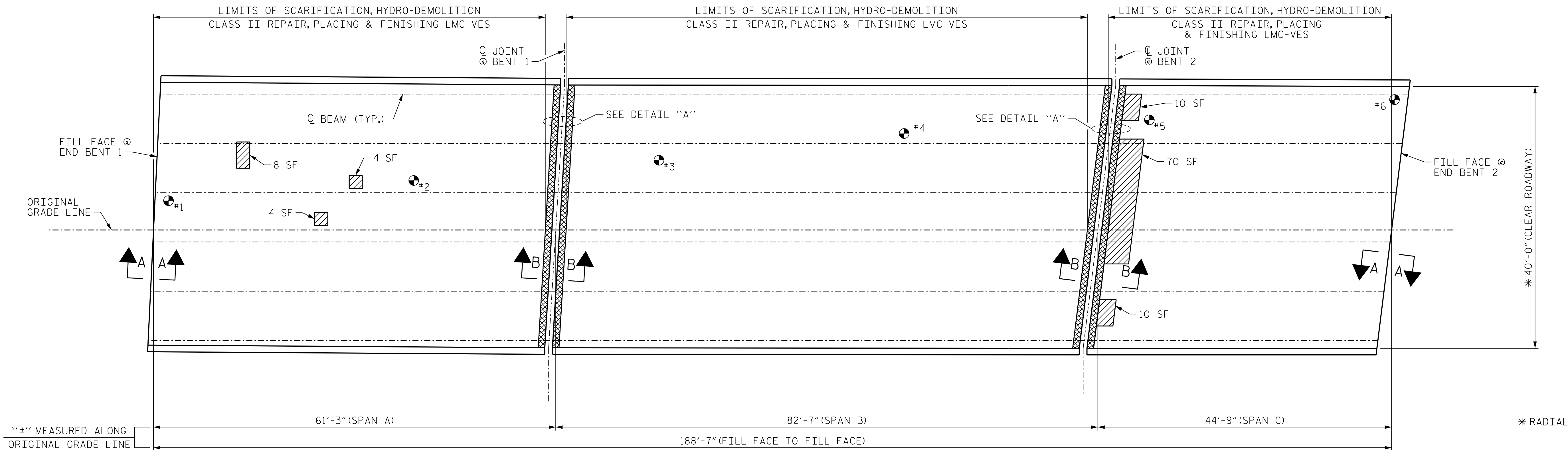
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 TOTAL SHEETS
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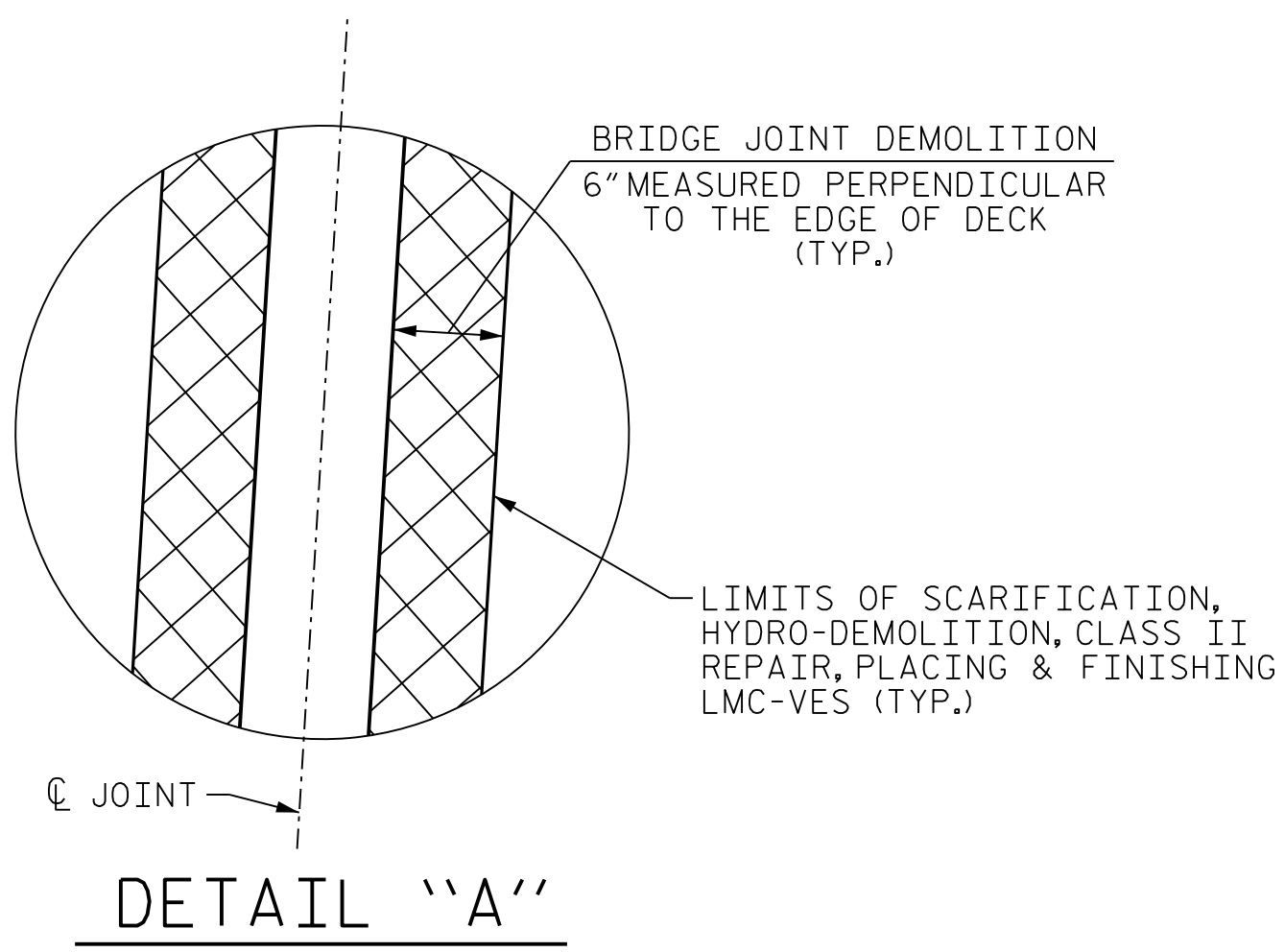
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PLAN OF SPANS

- BRIDGE JOINT DEMOLITION
- CLASS II SURFACE PREPARATION
- DECK SCARIFICATION, HYDRO-DEMOLITION AND LATEX MODIFIED CONCRETE OVERLAY-VES
- #X TEST HOLE LOCATION



NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED ON THE SQUARE YARDS OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "LMC OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

FOR SECTIONS A-A AND B-B, SEE "JOINT DETAILS" SHEET.

AS-BUILT REPAIR QUANTITY TABLE SPANS A, B AND C				
TOP OF DECK REPAIRS				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	829.3 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	829.3 SY			
CLASS II SURFACE PREPARATION	11.8 SY			
LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	40.5 CY			
PLACING & FINISHING LMC-VES OVERLAY	829.3 SY			
BRIDGE JOINT DEMOLITION	80.6 SF			
GROOVING BRIDGE FLOORS	6830 SF			
UNDERSIDE OF DECK REPAIRS				
SHOTCRETE REPAIRS	QUANTITIES			
	ESTIMATE	ACTUAL		
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
	ESTIMATE	ACTUAL		
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF			

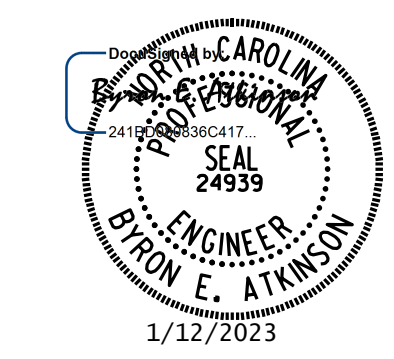
VALUES IN CHART REPRESENT ESTIMATED UNDERSIDE OF DECK REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEAR TO SAW CUT. SEE REPAIR DETAILS.

TEST LOCATION	*CONCRETE COVER (INCH)	ESTIMATED CONCRETE STRENGTH (PSI)
#1	1 3/8"	4500
#2	2 3/8"	4500
#3	2 1/4"	4900
#4	2 1/8"	4300
#5	2 1/8"	4300
#6	2 3/8"	4700

INFORMATION IN CHART TAKEN FROM DECK EVALUATION DATED 08/30/22.

* CONCRETE COVER FOR TOP BARS IN THE DECK ARE BASED ON DECK EVALUATION DATED 08/30/22. EXISTING BRIDGE PLANS INDICATE 1 1/2" CONCRETE COVER.

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590341



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 SURFACE PREPARATION
 SPANS A, B AND C

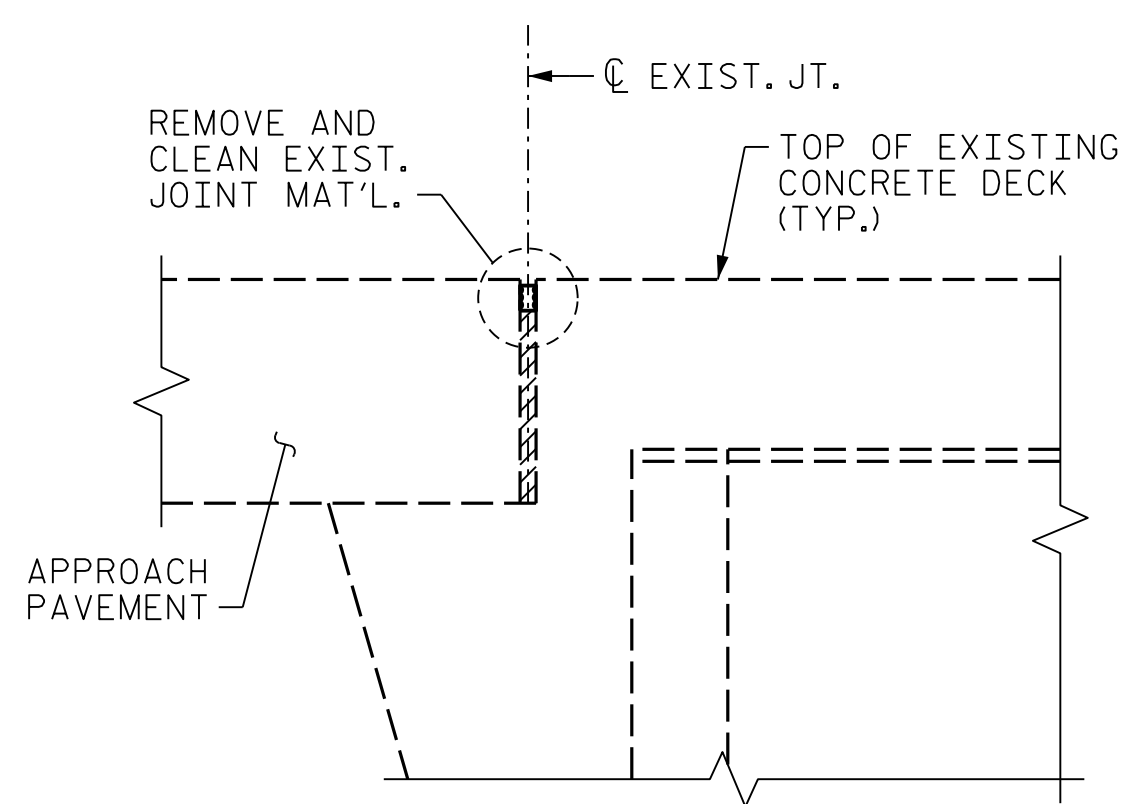
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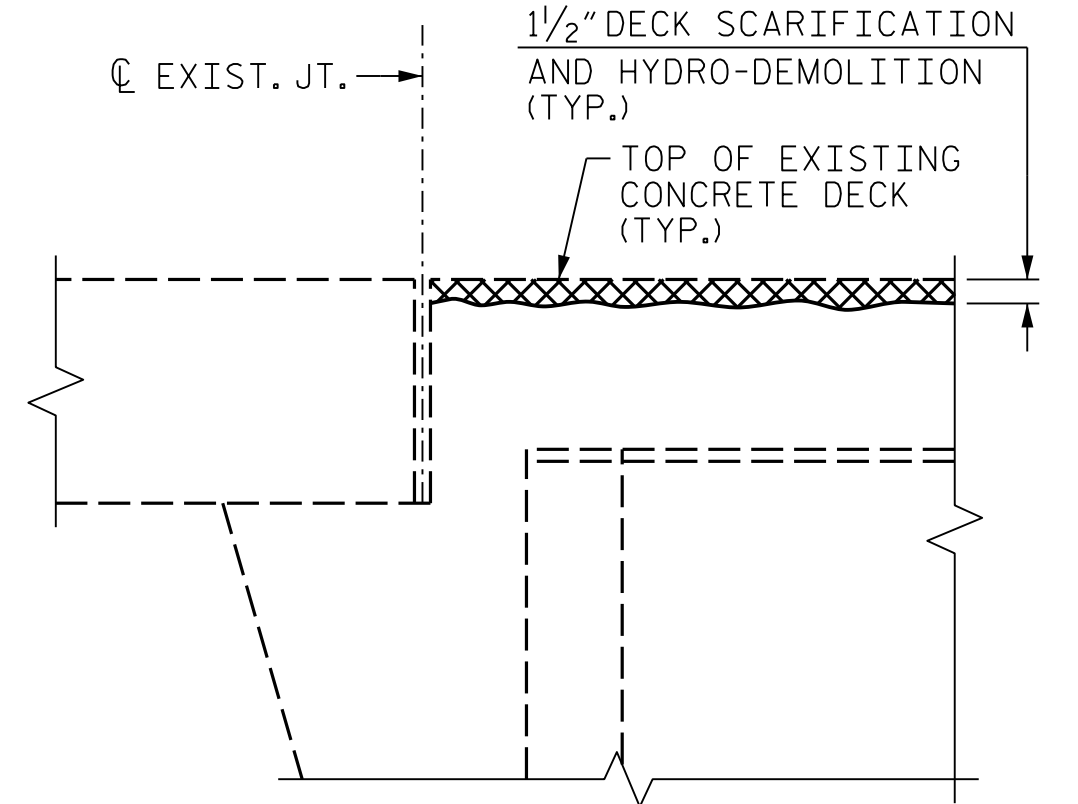
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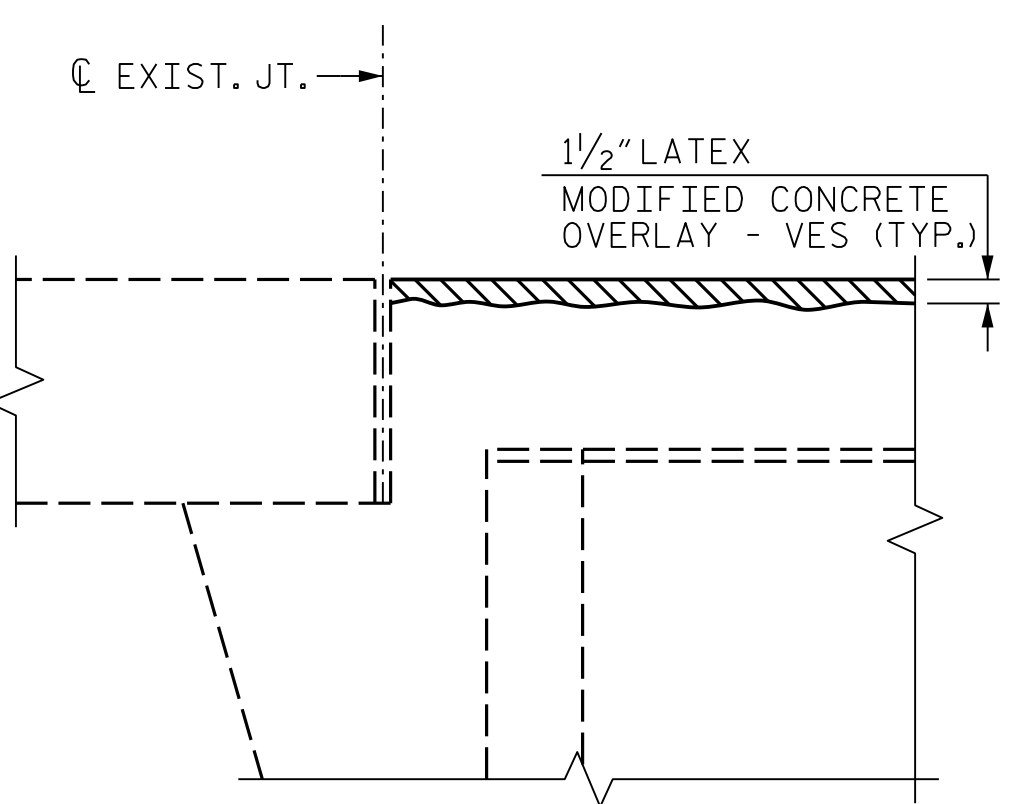
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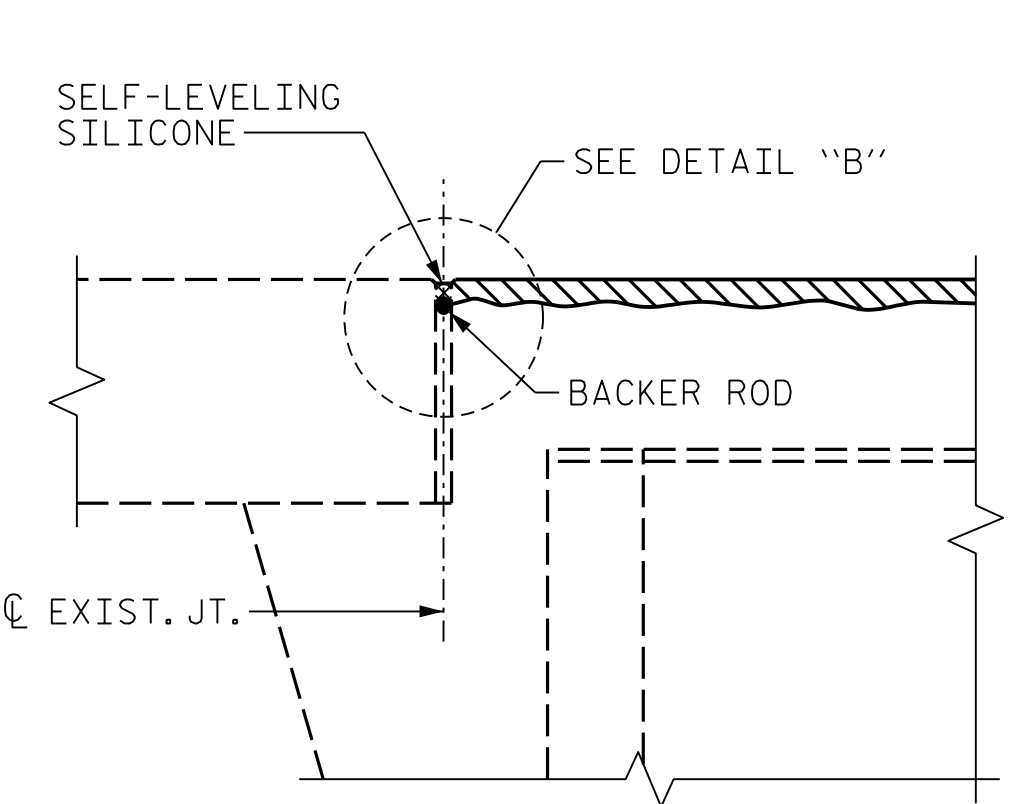
EXISTING JOINT AT END BENT



MINIMUM EXISTING JOINT DEMOLITION AT END BENT

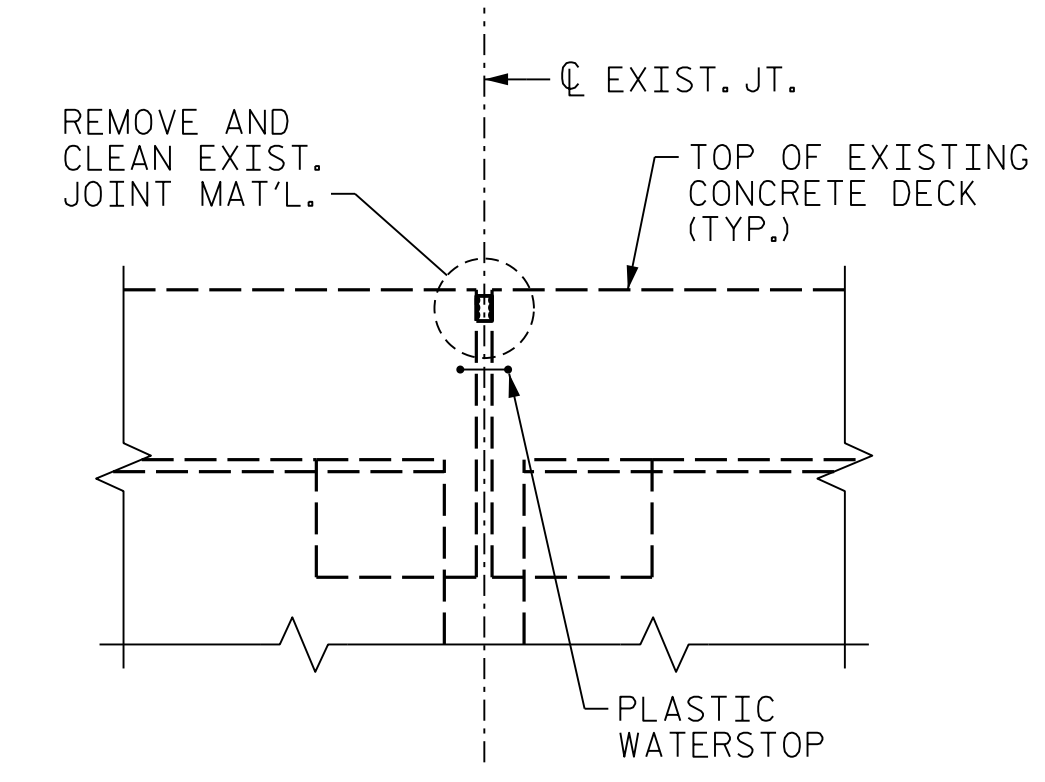


PROPOSED JOINT PRE-INSTALL DIMENSIONS

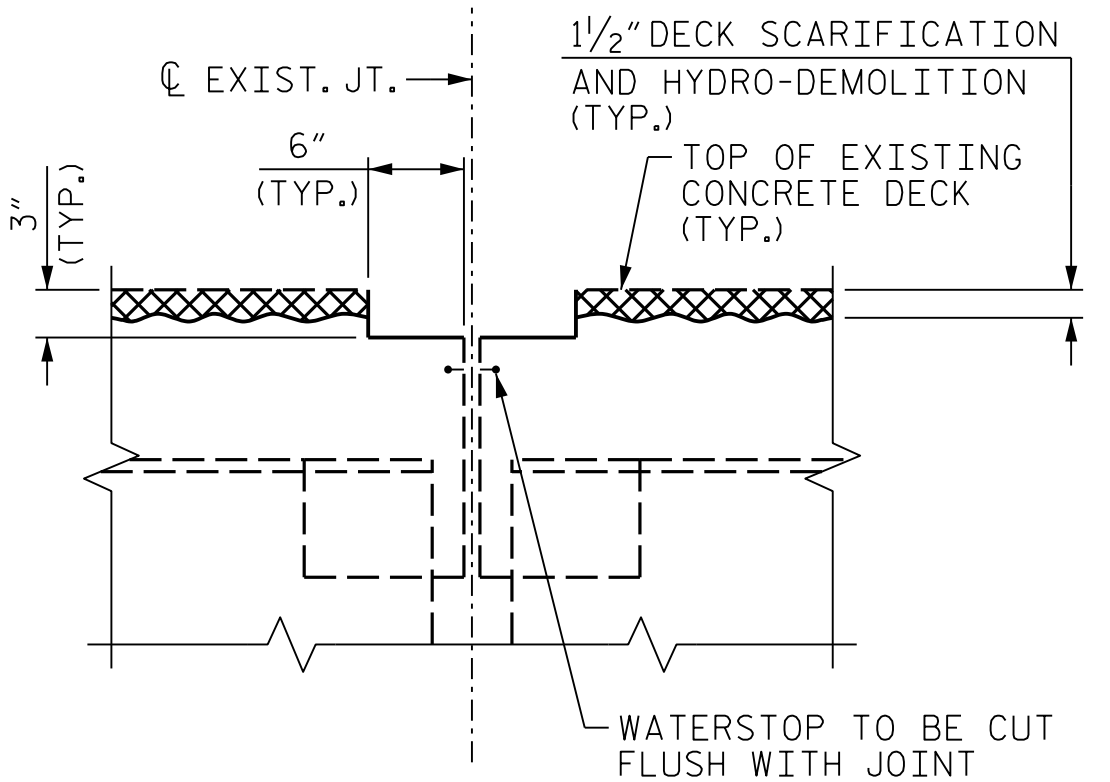


PROPOSED JOINT

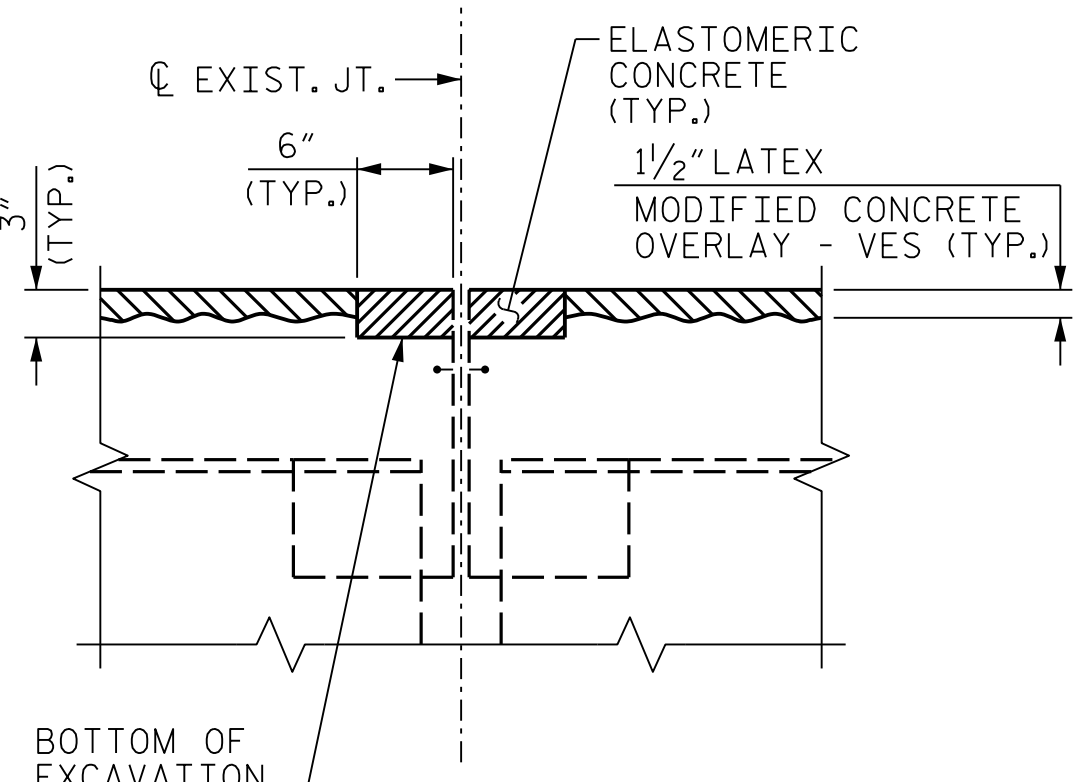
SECTION A-A



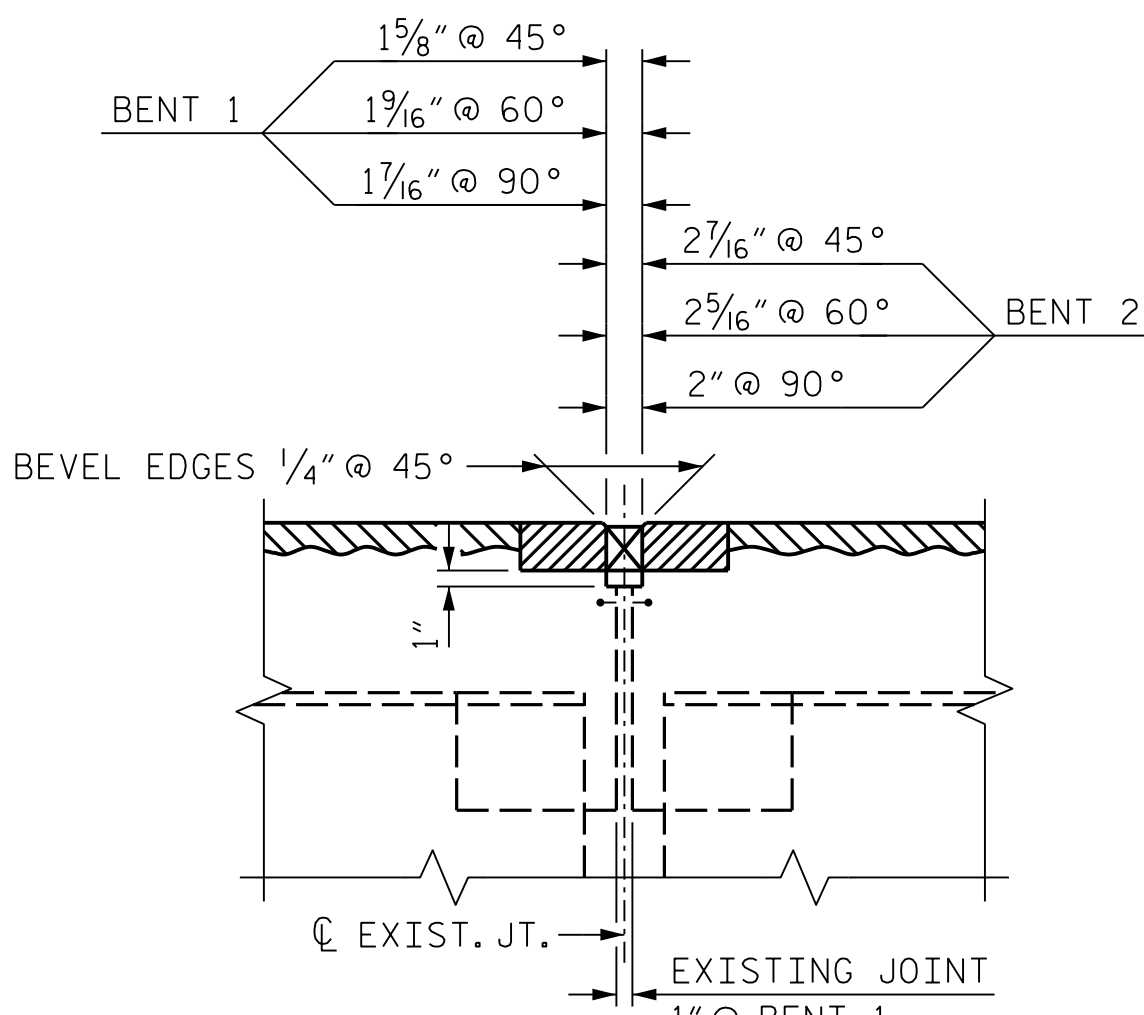
EXISTING JOINT



MINIMUM EXISTING JOINT DEMOLITION AT BENT

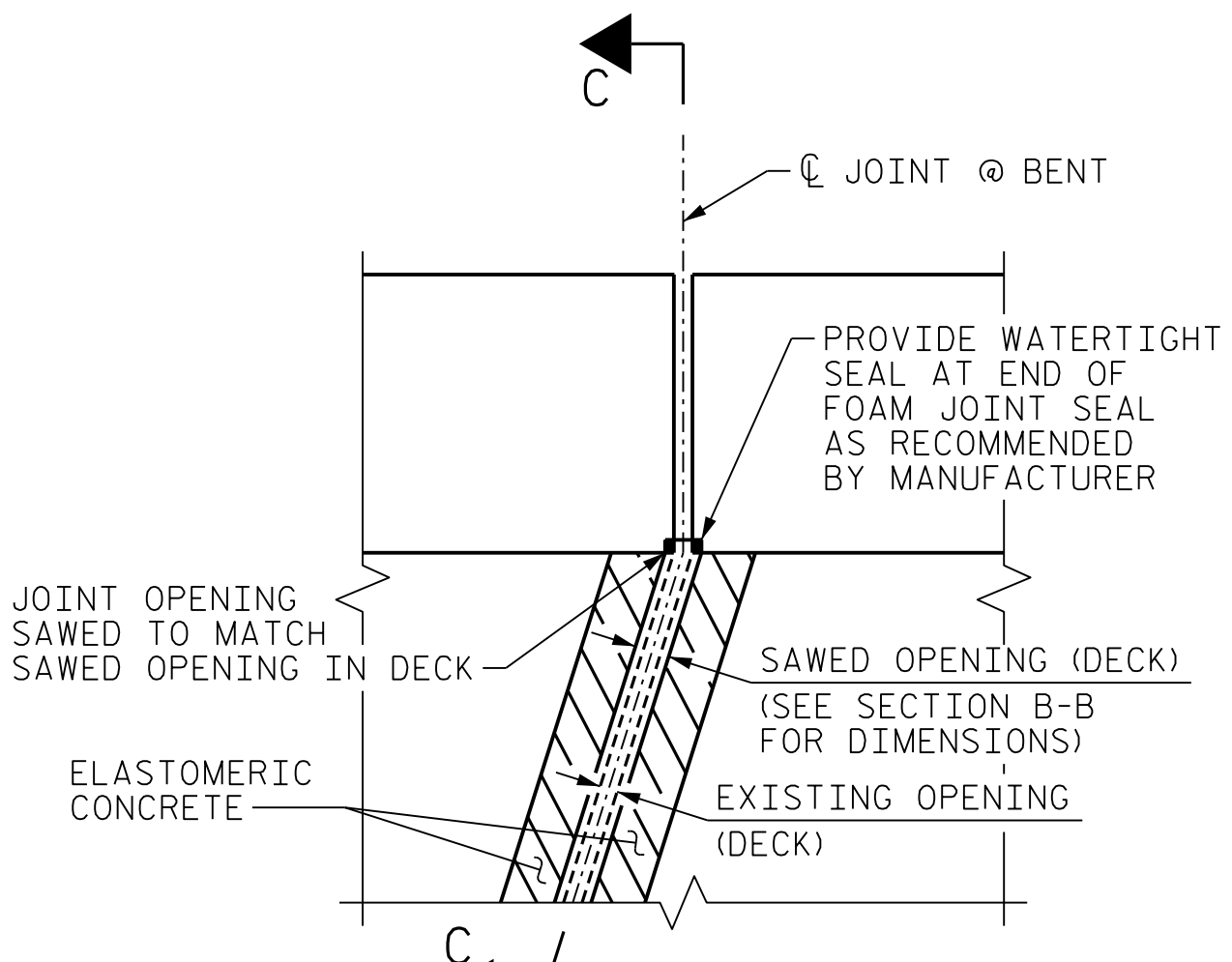


PROPOSED JOINT PRE-SAWED DIMENSIONS

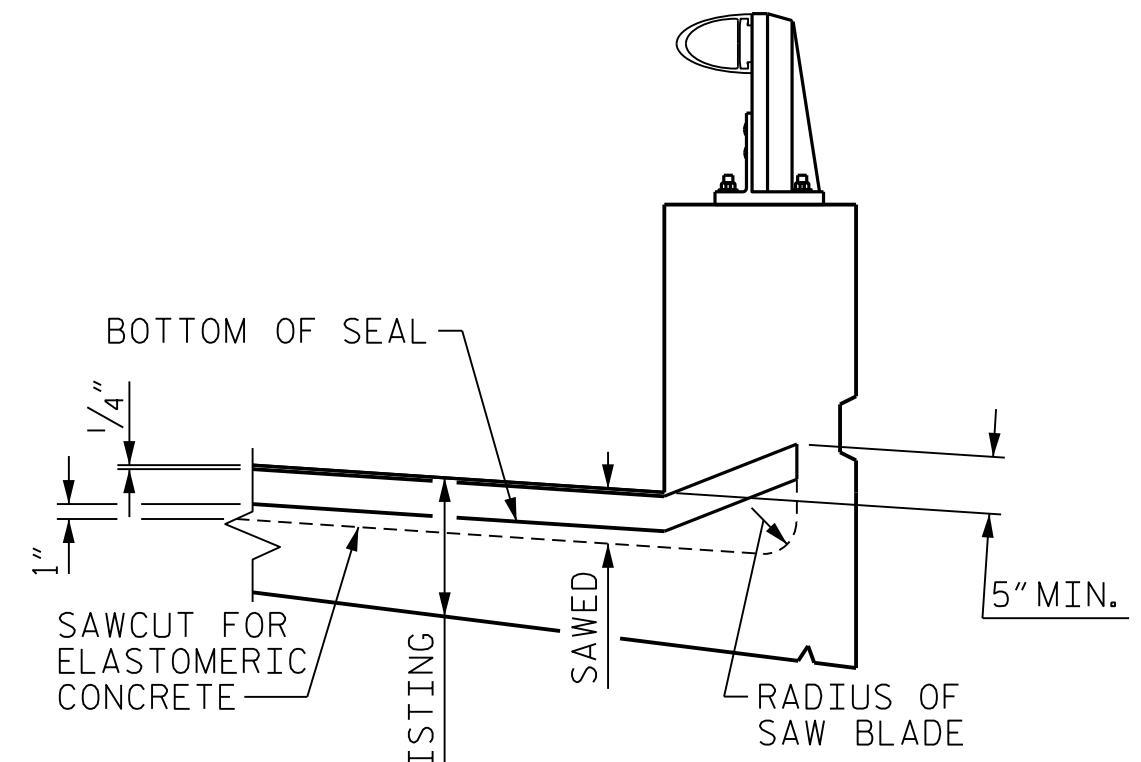


PROPOSED FOAM JOINT SEAL EXPANSION

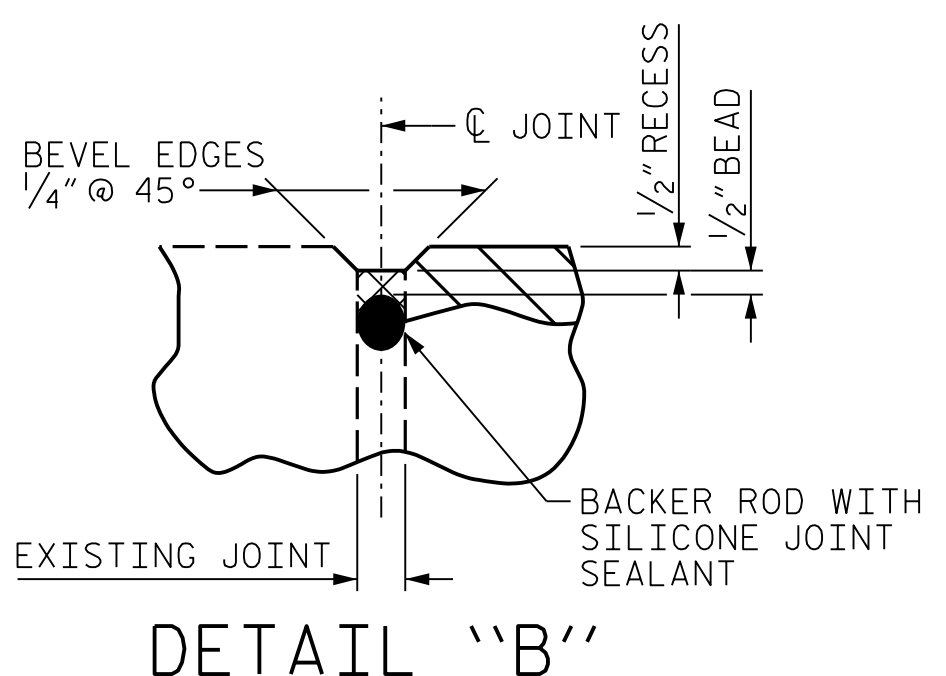
SECTION B-B



PLAN



SECTION C-C



DETAIL "B"

JOINT DETAILS AT CURB

NOTES:

HYDRO-DEMOLITION OR EXCAVATION OF CONCRETE AT THE EXISTING JOINT SHALL RESULT IN THE BOTTOM OF THE EXCAVATION BEING REASONABLY FLAT AND LEVEL, TO PROVIDE SUFFICIENT SUBSTRATE FOR PLACEMENT AND SUPPORT OF ELASTOMERIC CONCRETE.

RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS NEEDED.

FINAL JOINT SEALS SHALL NOT BE INSTALLED UNTIL THE LMC OVERLAY IS COMPLETE.

THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN 1/4", NOTIFY THE ENGINEER.

THE MANUFACTURER IS TO PROVIDE THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL FOR THE SIZE OF THE OPENING ON THE PLANS AND ACCOMMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.

FOAM JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.

THE INSTALLED FOAM JOINT SEALS SHALL BE WATER TIGHT.

QUANTITIES SHOWN IN THE ELASTOMERIC CONCRETE FOR PRESERVATION TABLE ARE BASED ON THE MINIMUM JOINT DEMOLITION SHOWN.

FINAL SURFACE OF THE JOINT DEMOLITION AREA PRIOR TO PLACEMENT OF CONCRETE REPAIR MATERIAL OR ELASTOMERIC CONCRETE SHOULD BE REASONABLY FLAT AND LEVEL. ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF THE SURFACE PRIOR TO PLACEMENT OF REPAIR CONCRETE OR ELASTOMERIC CONCRETE.

FOR EXCAVATION BELOW THE BOTTOM OF THE PLANNED JOINT DEMOLITION, CONCRETE FOR DECK REPAIR SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT BOTTOM OF THE PROPOSED ELASTOMERIC CONCRETE FOR PRESERVATION HEADERS SHOWN.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.

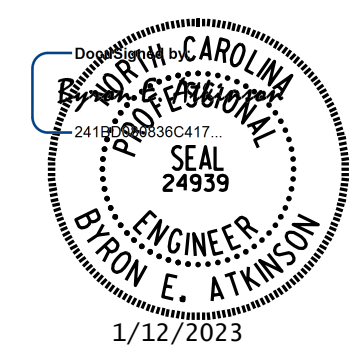
FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

ELASTOMERIC CONCRETE FOR PRESERVATION		
BENT 1	10.1	CF
BENT 2	10.1	CF
* TOTAL	20.2	CF

* BASED ON MINIMUM BLOCKOUT SHOWN.

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	84.5	LF
POURABLE SILICONE JOINT SEALANT	66.3	LF

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590341



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

JOINT DETAILS

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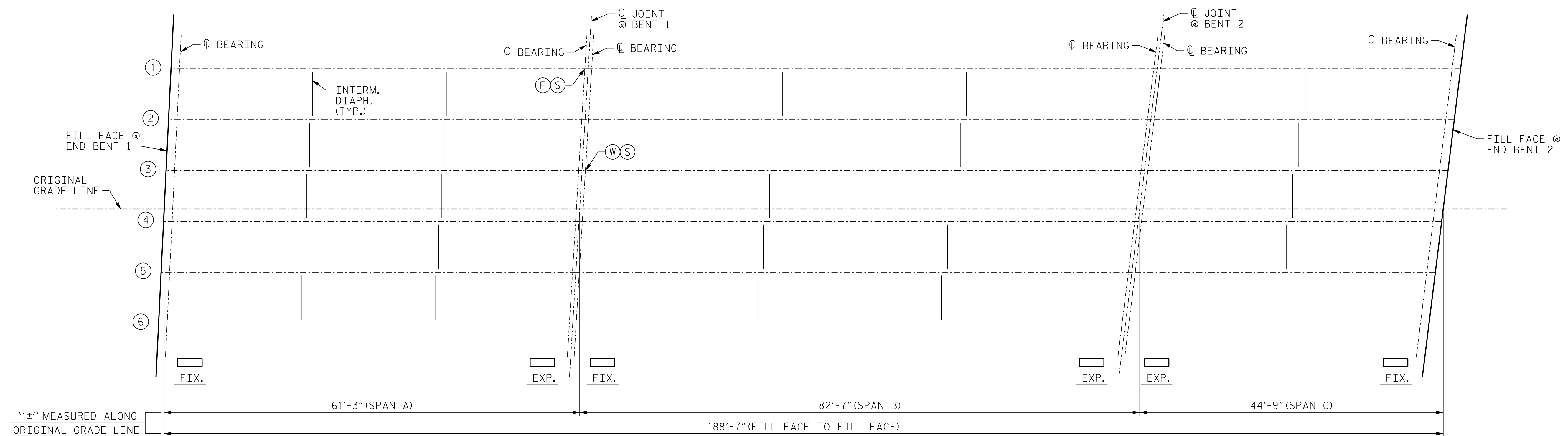
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FRAMING PLAN

KEY	
(+)	BEAM NUMBER
(W)	WEB PLATING REPAIR
(S)	STIFFENER REPAIR
(F)	BOTTOM FLANGE PLATING REPAIR
(I)	INTERMEDIATE BEAM PLATING REPAIR
(BE)	BEAM END REPAIR
(BW)	BOLTED WEB PLATE REPAIR
(K)	STEEL BEARING KEEPER ANGLE ASSEMBLY

ANTICIPATED BEAM REPAIR LOCATIONS								
SPAN	BEAM	LOCATION	DETAIL TYPE	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"
A	1	BENT 1	D	5 3/4"	0"	-	24"	-
B	3	BENT 1	A	12"	24"	-	-	-

BEAM REPAIR QUANTITY TABLE SPANS A THRU C					
STEEL PLATES		STIFFENER		STEEL BEARING KEEPER ANGLE ASSEMBLY	
LBS.		LBS.		EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
125		20		-	
BEAM REPAIR CUT-OUT		BOLTED BEAM REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
-		-			

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 AFTER THE STRUCTURAL STEEL HAS BEEN CLEANED, BLASTED, AND PRIMED, THE CONTRACTOR AND ENGINEER SHALL REVIEW THE STEEL TO VERIFY NOTED REPAIR LOCATIONS AND TO IDENTIFY ANY ADDITIONAL REPAIR LOCATIONS. THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIR DETAILS, SEE "BEAM REPAIR DETAILS" AND "STEEL KEEPER ANGLE ASSEMBLY DETAILS" SHEETS.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR STEEL BEAM REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENTS OF REPAIR AREAS PRIOR TO STEEL FABRICATION.

FOR CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA, SEE SPECIAL PROVISIONS.

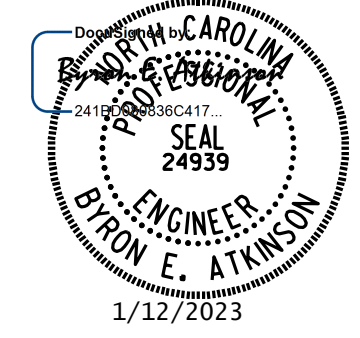
STRUCTURAL STEEL REPAIRS SHALL BE COMPLETED BEFORE FINAL CLEANING AND PAINTING OF STRUCTURAL STEEL.

FOR BEAM REPAIR PLATING, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIR CUT-OUT, SEE SPECIAL PROVISIONS.

FOR BOLTED BEAM REPAIR, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590341



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUPERSTRUCTURE
 BEAM REPAIR
 LOCATIONS**

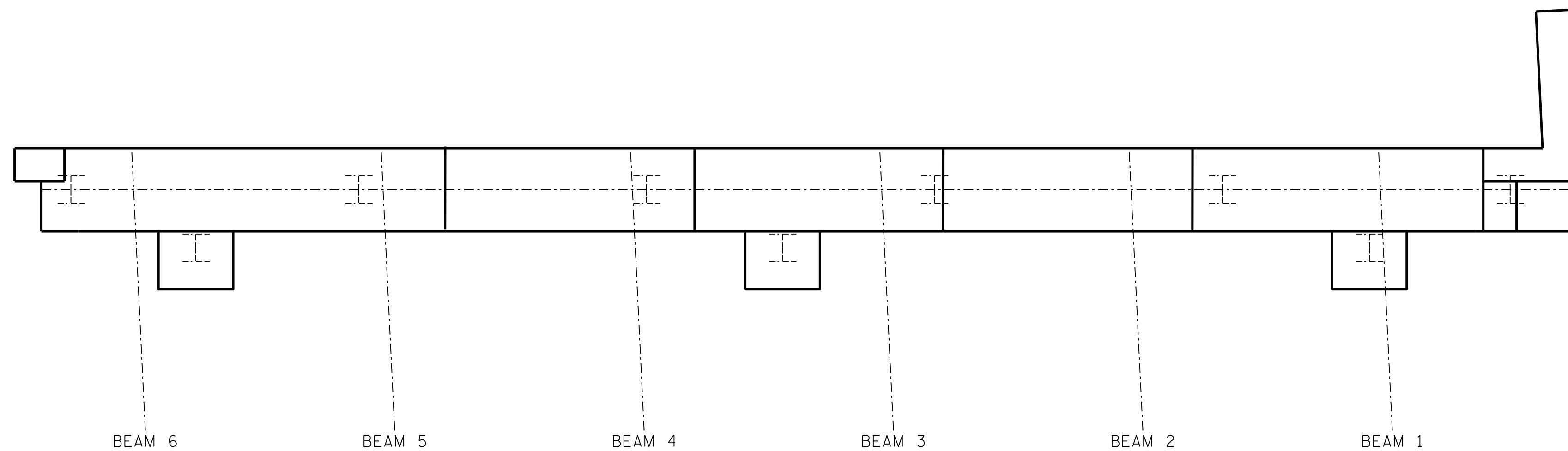
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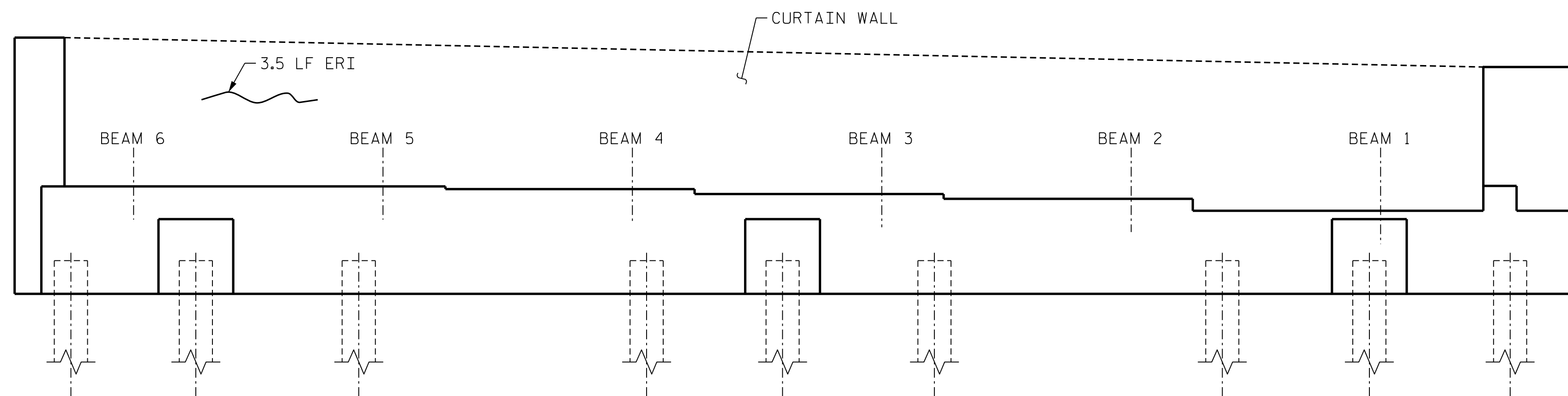
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PLAN

END BENT 1



ELEVATION

END BENT 1

AS-BUILT REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.0	0.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
CURTAIN WALL	3.5			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	72.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

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FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

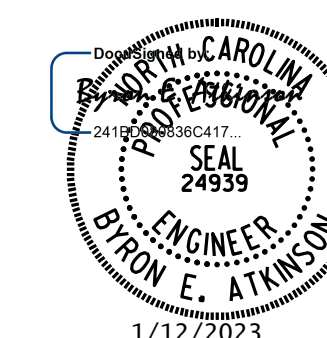
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590341



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1

KEY

	SHOTCRETE REPAIR
	ERI EPOXY RESIN INJECTION
	CONCRETE REPAIR

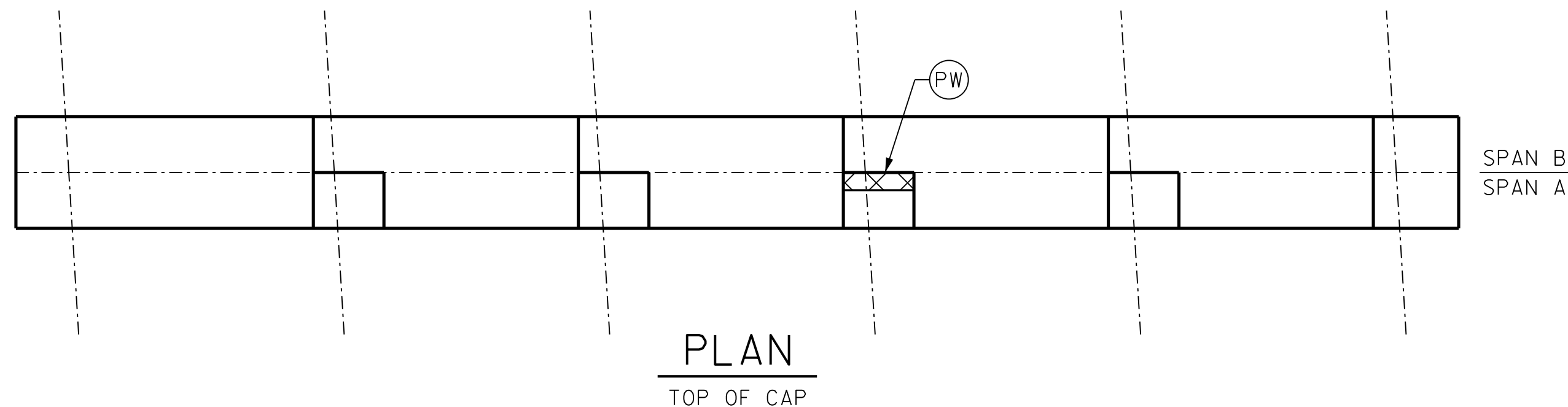
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FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

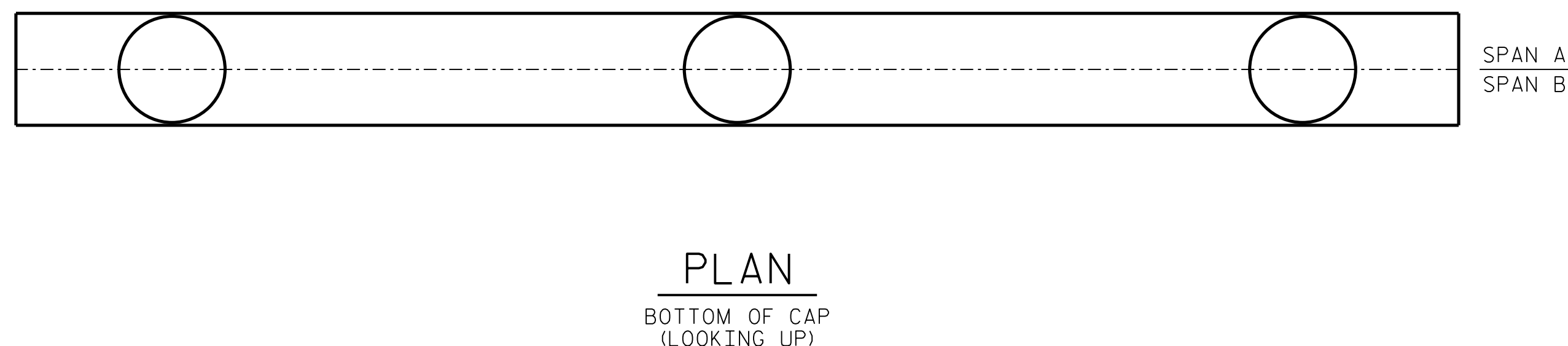
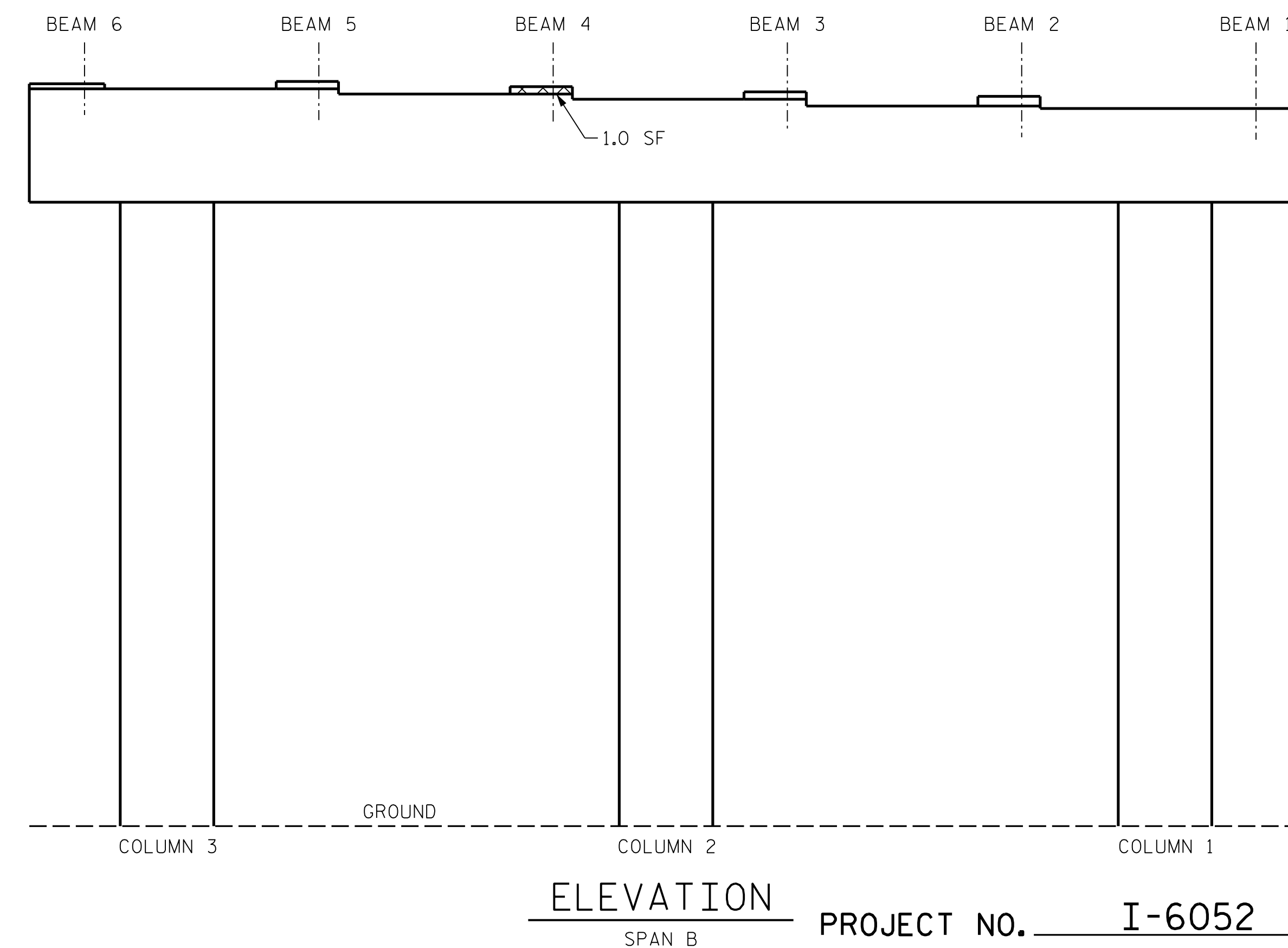
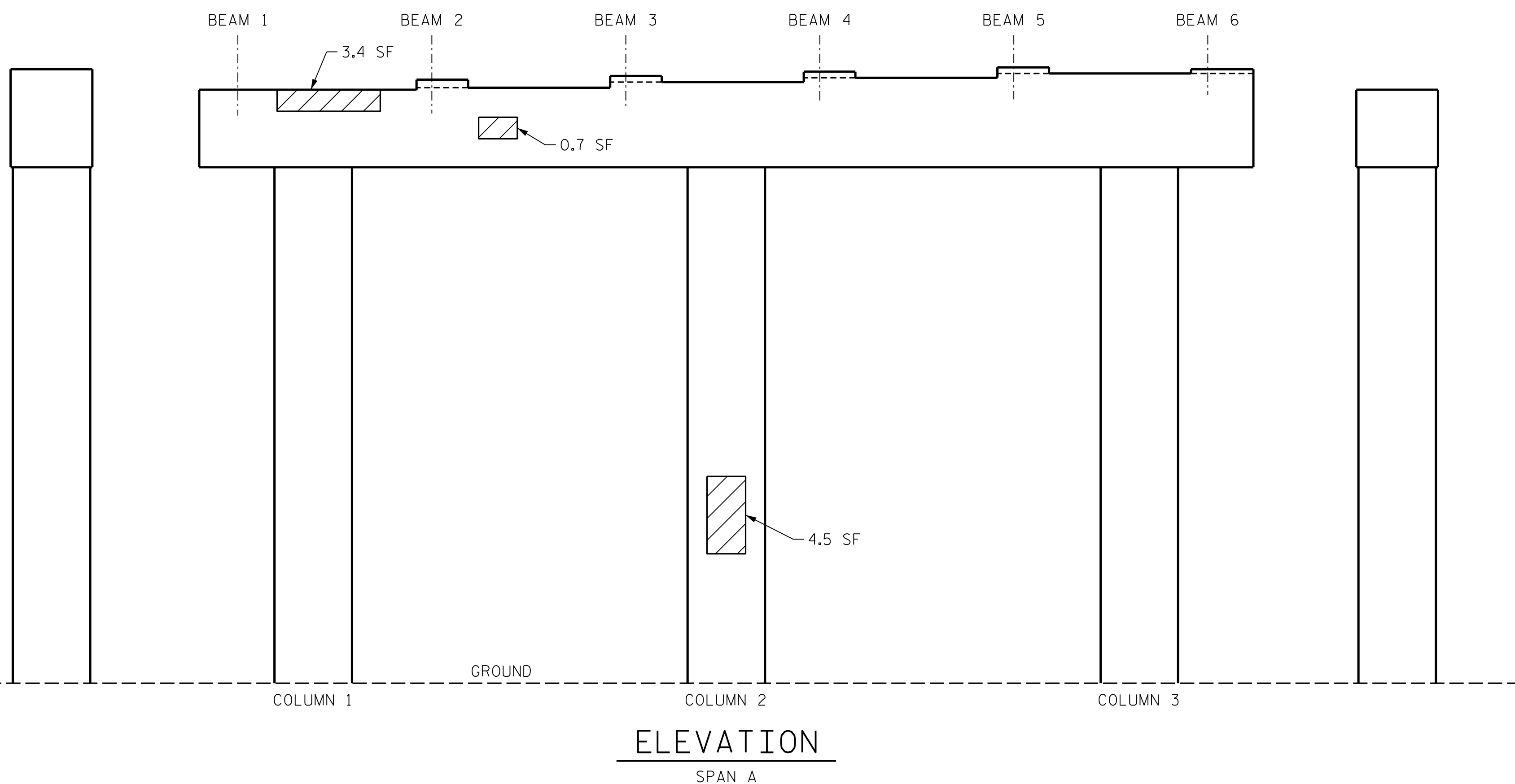
CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE "JACKING DETAIL" SHEET.

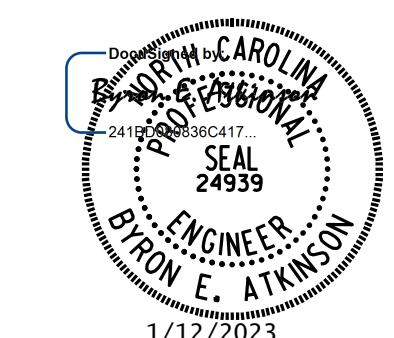
AS-BUILT REPAIR QUANTITY TABLE

BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	4.1	2.1		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	4.5	2.3		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	1.0	0.5		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
EPOXY COATING	AREA SF	AREA SF		
TOP OF CAP	129.4			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.



- KEY**
- SHOTCRETE REPAIR
 - ERI EPOXY RESIN INJECTION
 - CONCRETE REPAIR
 - PEDESTAL WALL REPAIR



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

PROJECT NO. I-6052
MECKLENBURG COUNTY
BRIDGE NO. 590341

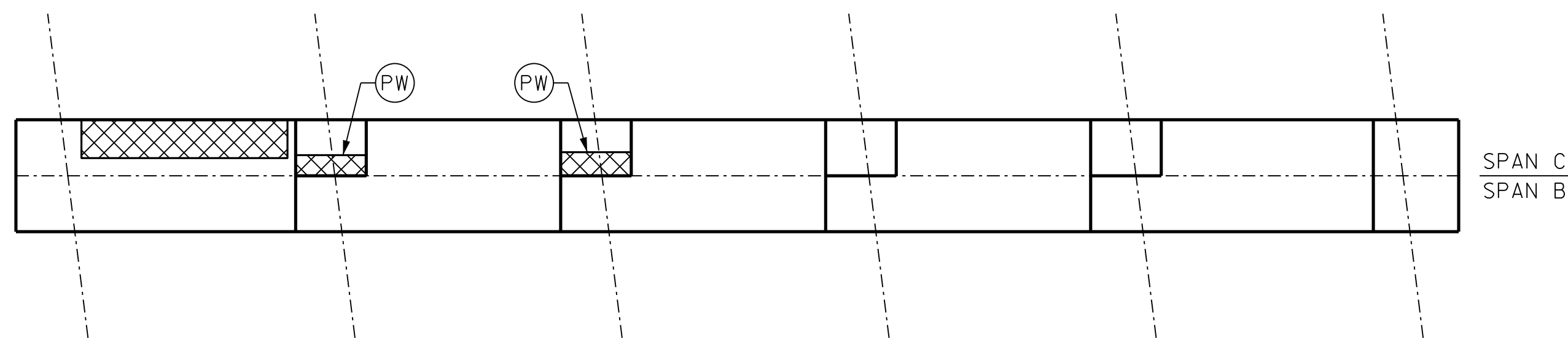
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S7-8 TOTAL SHEETS 108
2			4			

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PLAN
TOP OF CAP

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

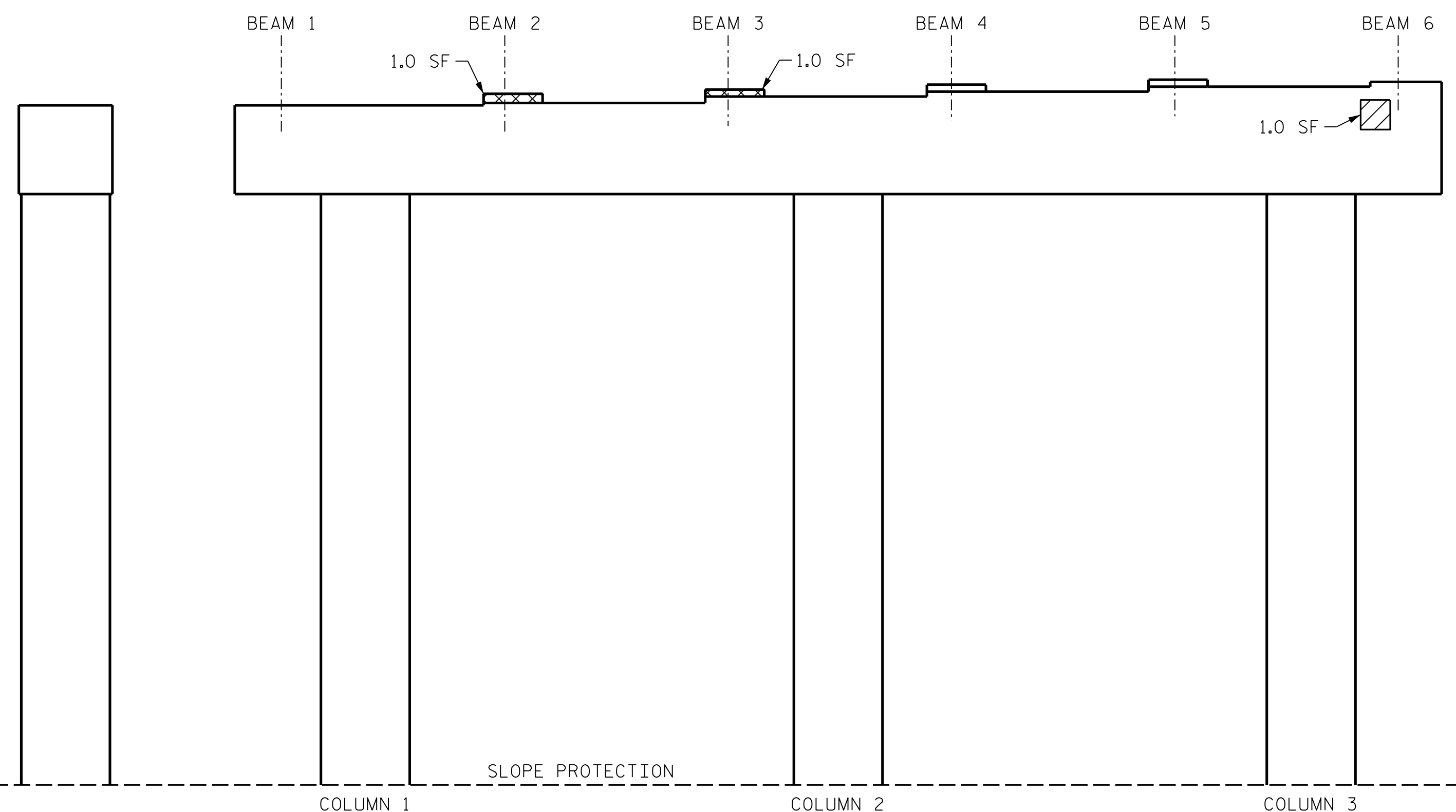
CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE "JACKING DETAIL" SHEET.

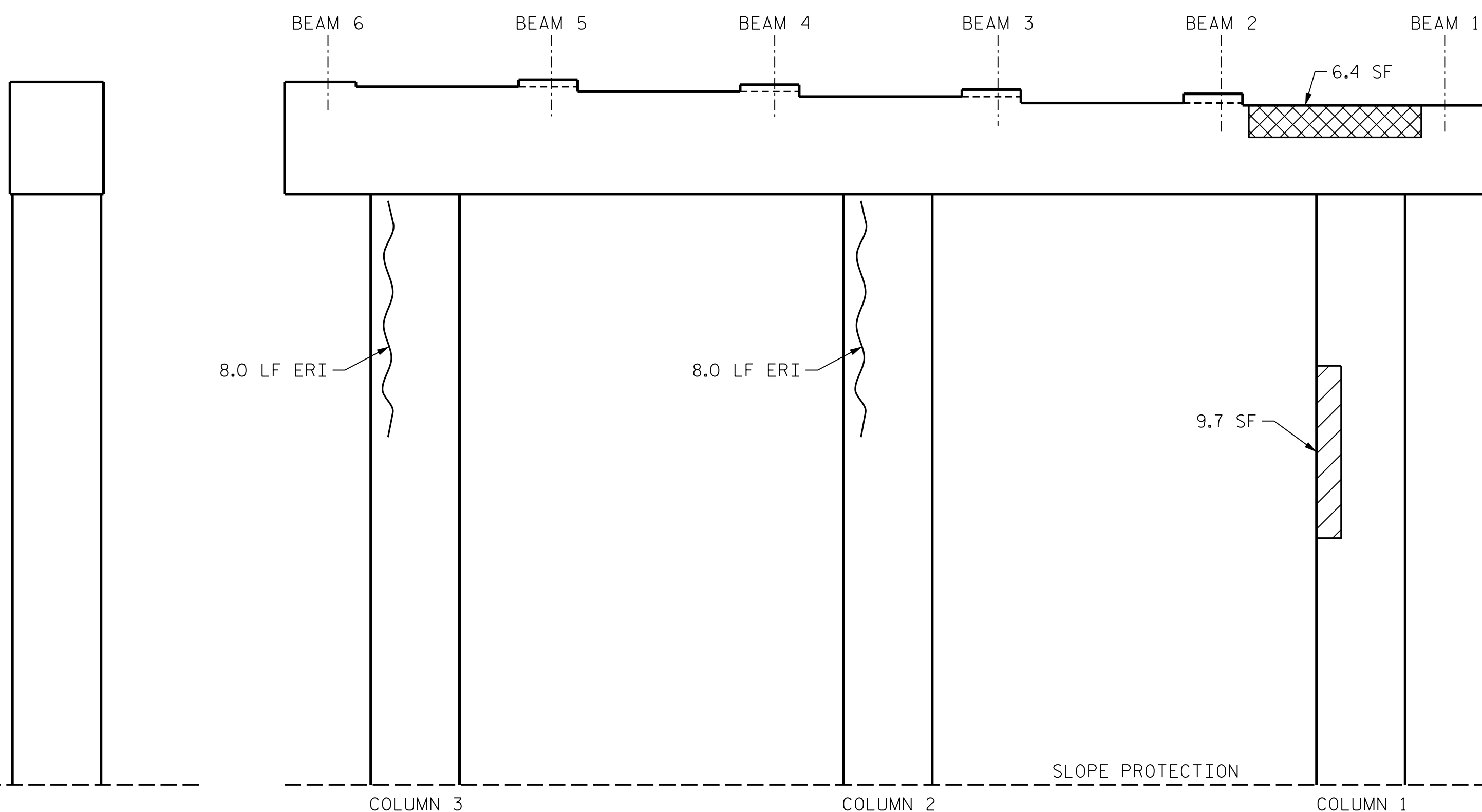
AS-BUILT REPAIR QUANTITY TABLE

BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	1.0	0.5		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	9.7	4.9		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	8.4	4.2		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	16.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	129.4			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

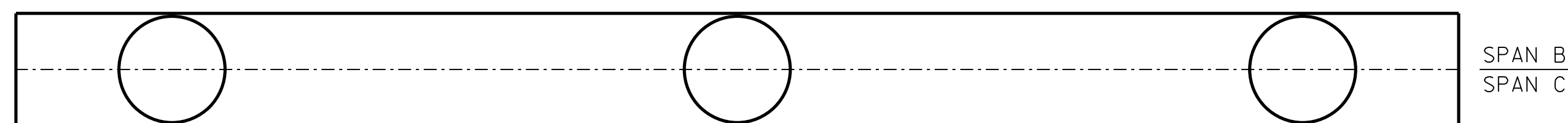


ELEVATION
SPAN B



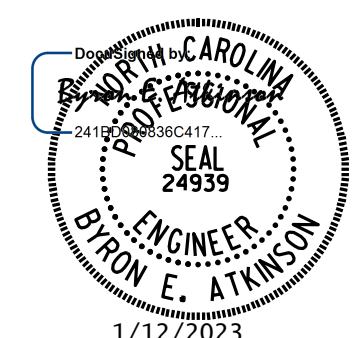
ELEVATION
SPAN C

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590341



PLAN
BOTTOM OF CAP
(LOOKING UP)

- KEY
- SHOTCRETE REPAIR
 - ERI EPOXY RESIN INJECTION
 - CONCRETE REPAIR
 - PEDESTAL WALL REPAIR



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 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 2

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2			4			

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AS-BUILT REPAIR QUANTITY TABLE				
END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.0	0.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
CURTAIN WALL	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	72.5			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:
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FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

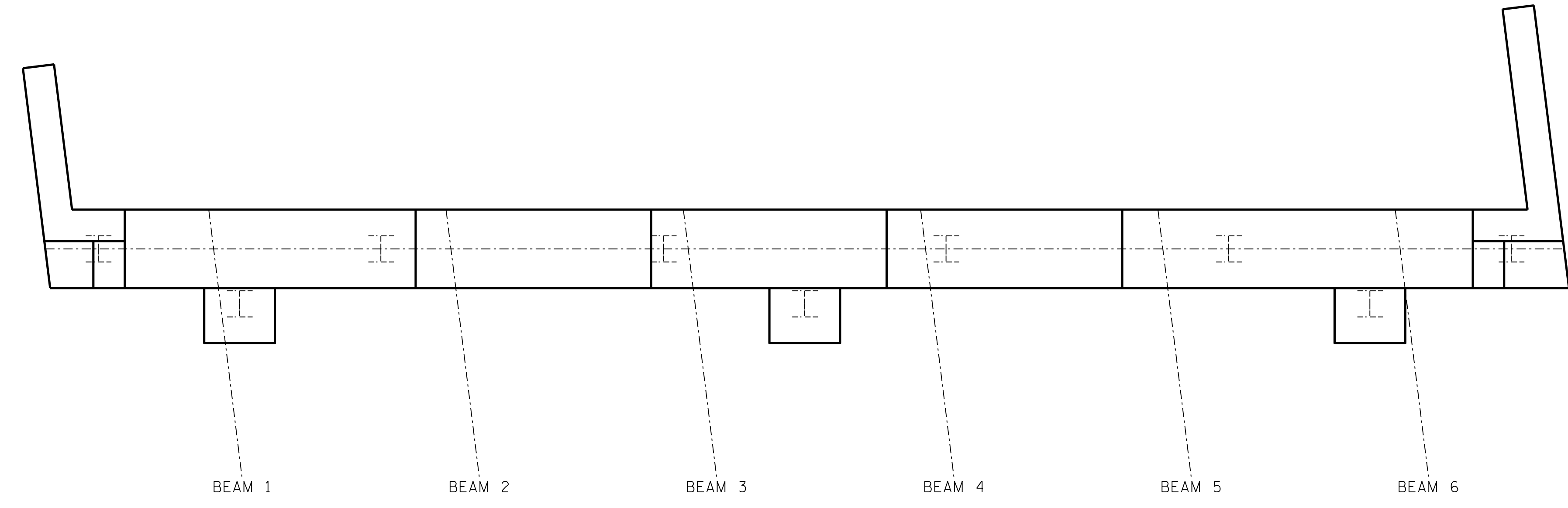
SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

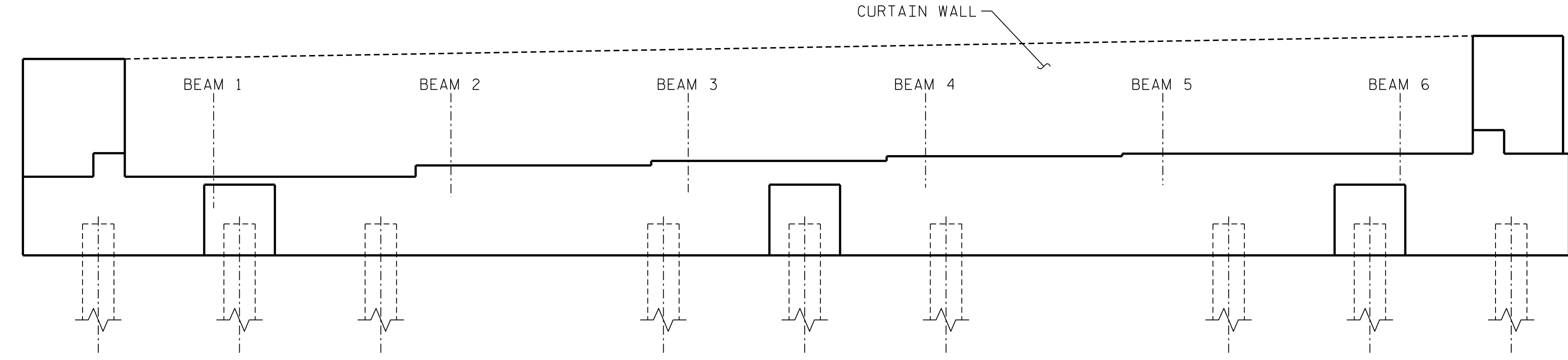
FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.


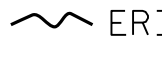
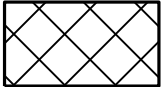
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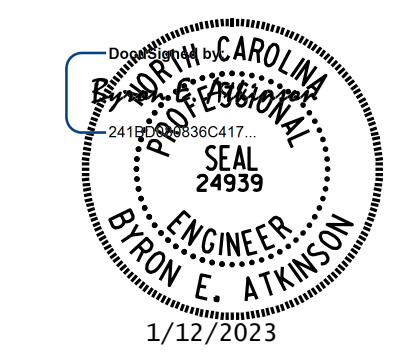


PLAN
END BENT 2



ELEVATION
END BENT 2

- KEY**
-  SHOTCRETE REPAIR
 -  ERI EPOXY RESIN INJECTION
 -  CONCRETE REPAIR



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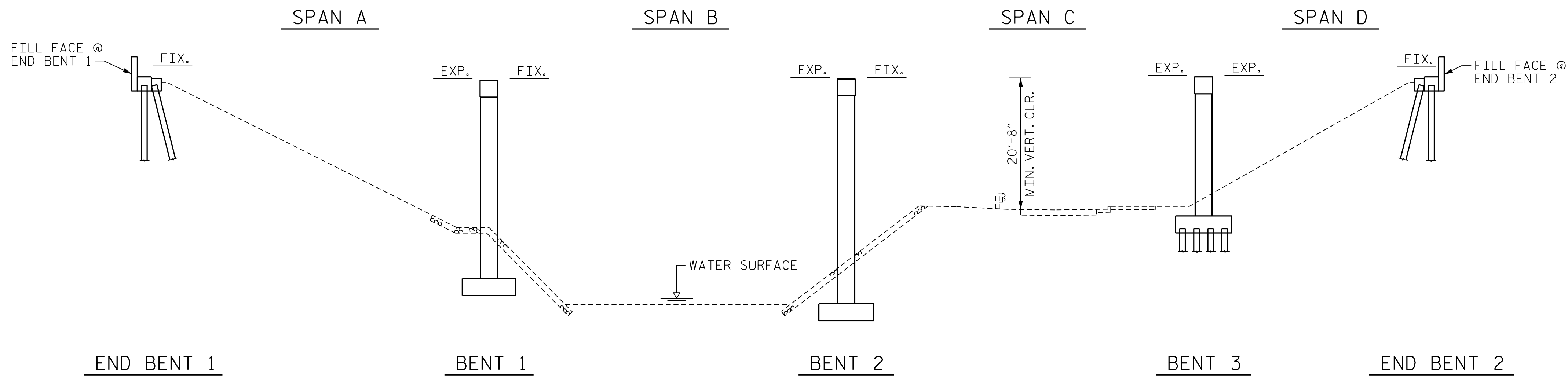
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590341

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2					
SHEET NO. S7-10					
TOTAL SHEETS 108					
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NOTES:

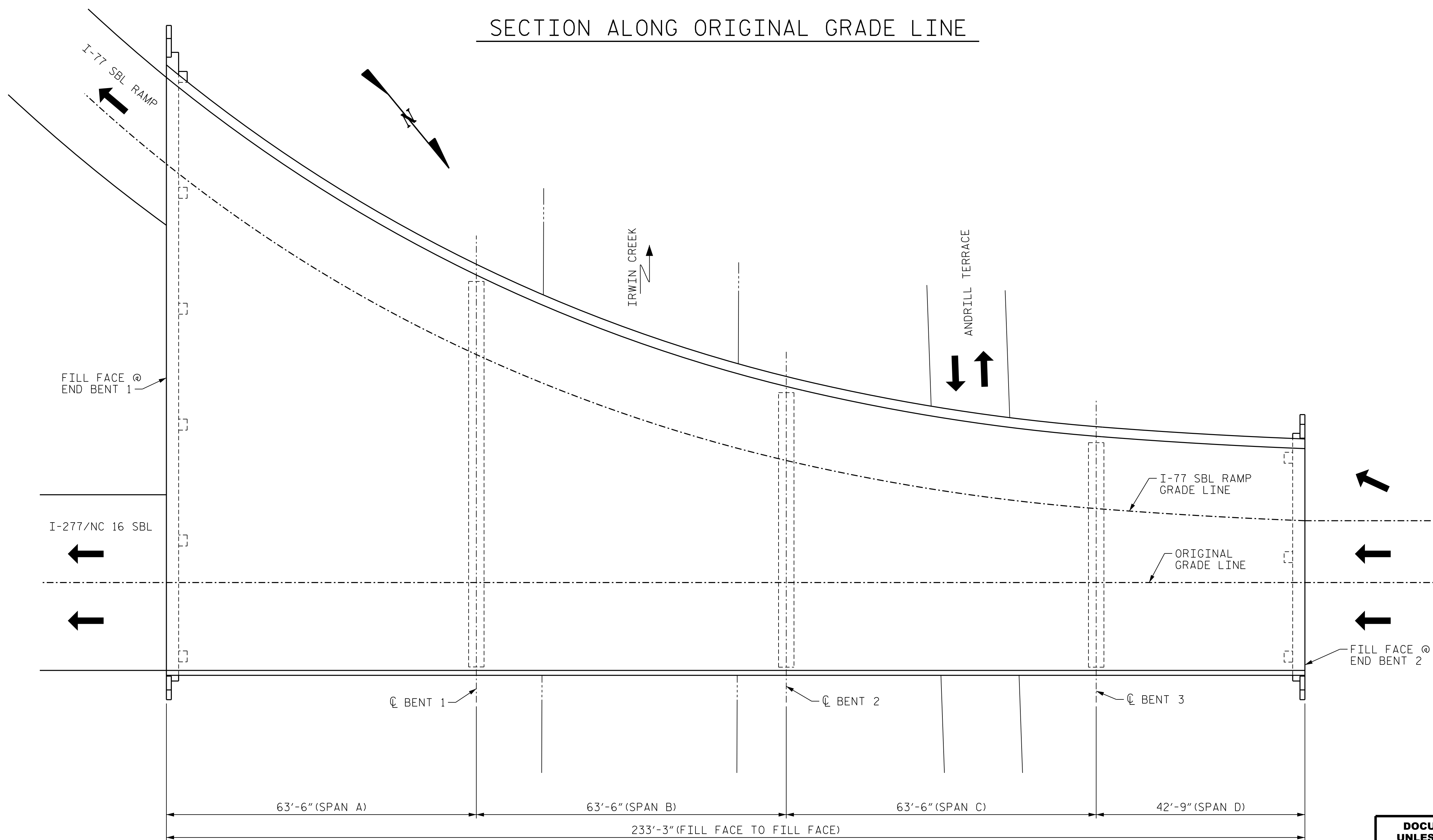
PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 09/17/2022.

BRIDGE ORIENTATION CONFORMS TO ROUTINE INSPECTION REPORT.

SCOPE OF WORK:

- PARTIALLY REMOVE BRIDGE DECK CONCRETE USING SCARIFICATION AND HYDRO-DEMOLITION METHODS.
- PERFORM CLASS II SURFACE PREPARATION AND REPAIR ON DECK SURFACES.
- OVERLAY PREPARED BRIDGE DECK WITH LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH (LMC-VES).
- RECONSTRUCT BRIDGE DECK JOINT AND INSTALL JOINT SEALS.
- GROOVE LMC-VES BRIDGE DECK.
- SUBSTRUCTURE REPAIRS USING EPOXY RESIN INJECTION AND SHOTCRETE.
- EPOXY COATING OF TOP OF CAPS.
- STRUCTURAL STEEL REPAIRS.
- INSTALL STEEL BEARING KEEPER ANGLE ASSEMBLY.
- CLEANING AND PAINTING STEEL BEAMS.
- CLEANING AND PAINTING BEARINGS WITH HRCSA.

SECTION ALONG ORIGINAL GRADE LINE

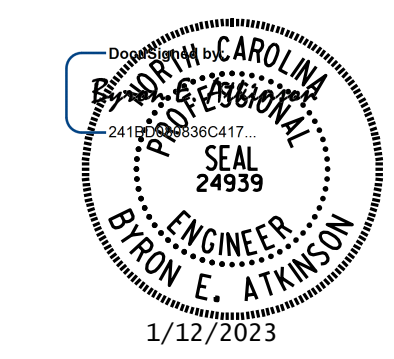


I HEREBY CERTIFY THAT THIS STRUCTURE HAS REHABILITATED ACCORDING TO THESE PLANS OR AS NOTED HEREIN.

RESIDENT ENGINEER _____ DATE _____

PROJECT NO. I-6052
 MECKLENBURG COUNTY
 BRIDGE NO. 590342

SHEET 1 OF 2



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MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE ON
 I-277/NC 16 SBL
 OVER ANDRILL TERRACE
 AND IRWIN CREEK

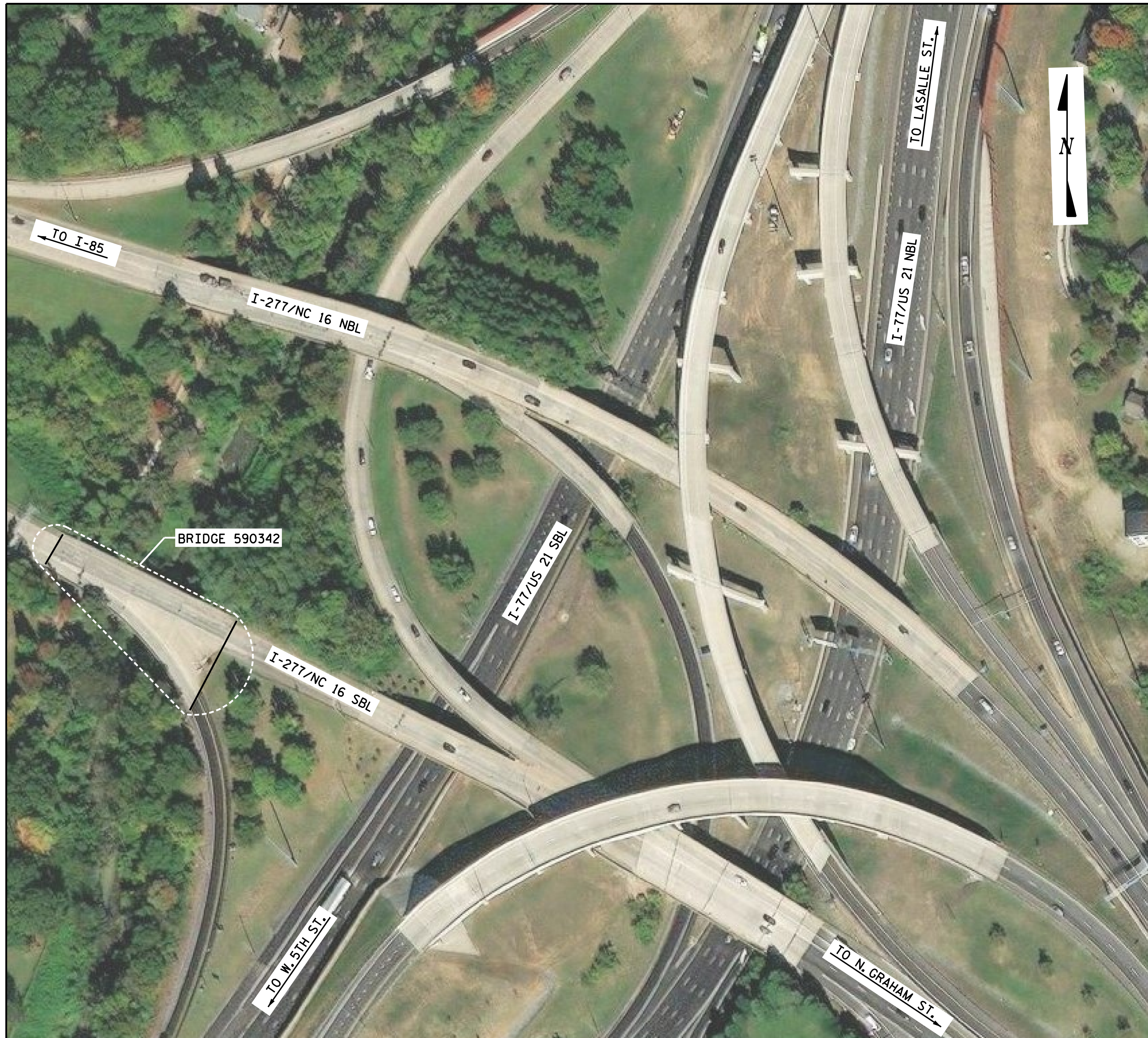
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2			4		

SHEET NO. **S8-1**
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PLAN

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LOCATION SKETCH

INFORMATION INDICATED ON THE LOCATION SKETCH SHALL BE CONSIDERED GENERAL INFORMATION ONLY. CONTRACTOR SHALL CONFIRM, THROUGH OTHER SOURCES, SPECIFIC INFORMATION REGARDING THE BRIDGES, ROADWAYS, UTILITIES, THE SURROUNDING AREA, AND ANY OTHER ASPECTS THAT MAY BE NECESSARY TO PERFORM AND COMPLETE THE PROJECT.

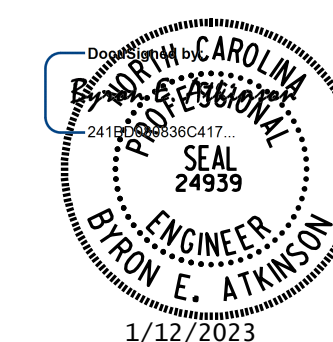
BRIDGE COORDINATES	
LATITUDE	LONGITUDE
35°-14'-40.21"	80°-50'-57.51"

NOTES:

- EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE 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.
- FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLANS.
- DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT FLOW OR MIGRATE INTO ACTIVE TRAVEL LANES.
- EXISTING JOINTS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.
- FOR CLASS II SURFACE PREPARATION, SCARIFYING BRIDGE DECK AND HYDRO-DEMOLITION OF BRIDGE DECK, SEE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.
- THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS, SEE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISION.
- LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
- FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.
- WORK ON BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE TO THE PROJECT SPECIAL PROVISION.
- PRIOR TO BEGINNING WORK, CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPLETE SEQUENCE OF TASKS FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC.
- ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST.
- FOR POLLUTION CONTROL, SEE SPECIAL PROVISIONS.
- FOR CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA, SEE SPECIAL PROVISIONS.
- FOR BEAM REPAIR PLATING, SEE SPECIAL PROVISIONS.
- FOR BEAM REPAIR CUT-OUT, SEE SPECIAL PROVISIONS.
- FOR BOLTED BEAM REPAIR, SEE SPECIAL PROVISIONS.
- FOR STEEL BEARING KEEPER ANGLE ASSEMBLY, SEE SPECIAL PROVISIONS.
- FOR CLEANING AND REPAINTING OF BRIDGE, AND PAINTING CONTAINMENT FOR BRIDGE, SEE "PAINTING EXISTING STRUCTURE" SPECIAL PROVISION.
- FOR TYPE I BRIDGE JACKING, SEE SPECIAL PROVISIONS.

PROJECT NO. I-6052
 MECKLENBURG COUNTY
 BRIDGE NO. 590342

SHEET 2 OF 2



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MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE ON
 I-277/NC 16 SBL
 OVER ANDRILL TERRACE
 AND IRWIN CREEK

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1			3			TOTAL SHEETS 108
2			4			

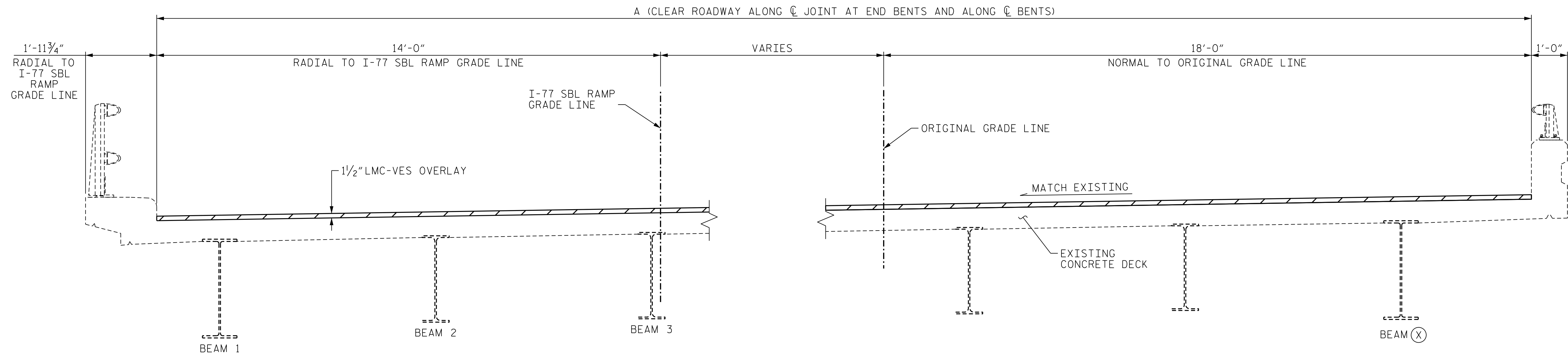
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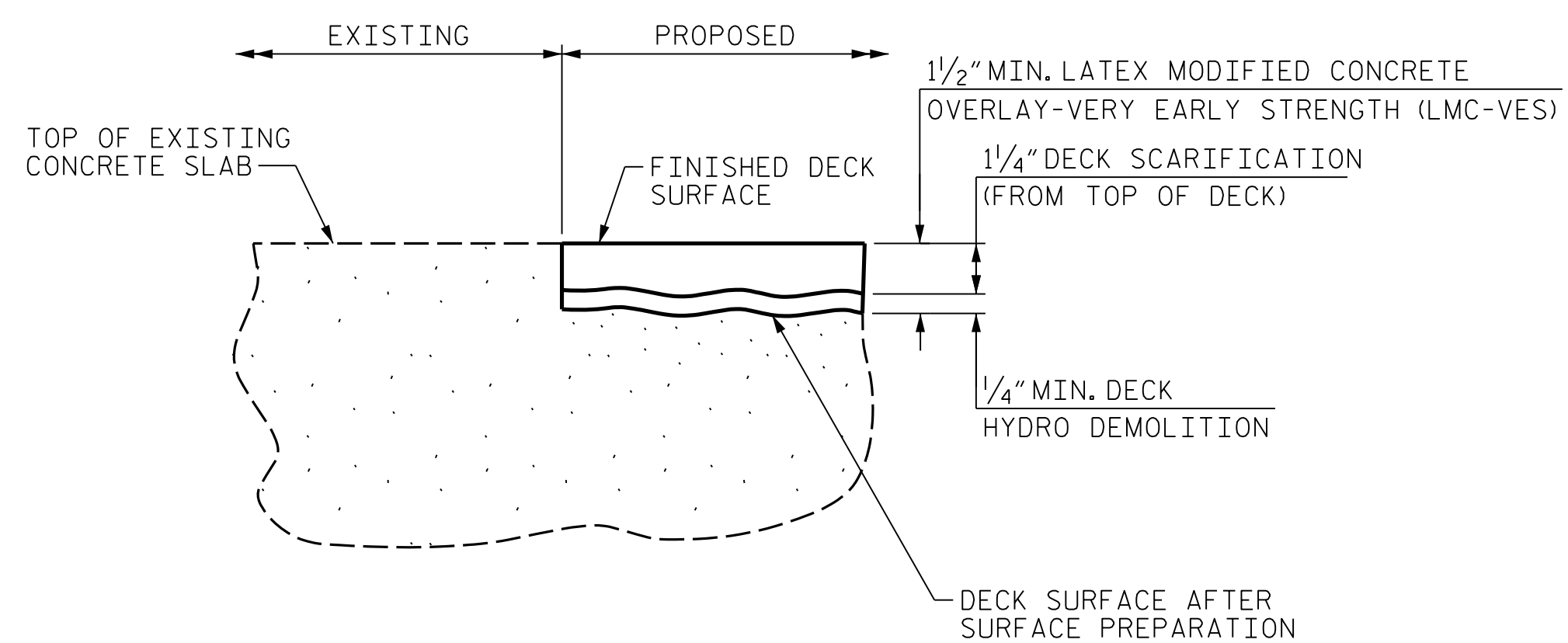
WHEN PREPARING THE SURFACE FOR LMC OVERLAY-VES ADJACENT TO A PREVIOUSLY PLACED LMC-VES STAGE, THE PREVIOUSLY PLACED LMC-VES SHALL BE REMOVED FOR A DISTANCE OF 4-INCHES FROM THE LMC-VES EDGE. THE SURFACE OF THE NEW STAGE AREA, ALONG WITH THE 4 INCH OVERLAY AREA, SHALL BE PREPARED AS PER THE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS. NEW LMC-VES SHALL BE PLACED IN THE 4-INCH OVERLAP, AS PART OF NEW LMC-VES STAGE PLACEMENT.

SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND LMC-VES PLACEMENT.

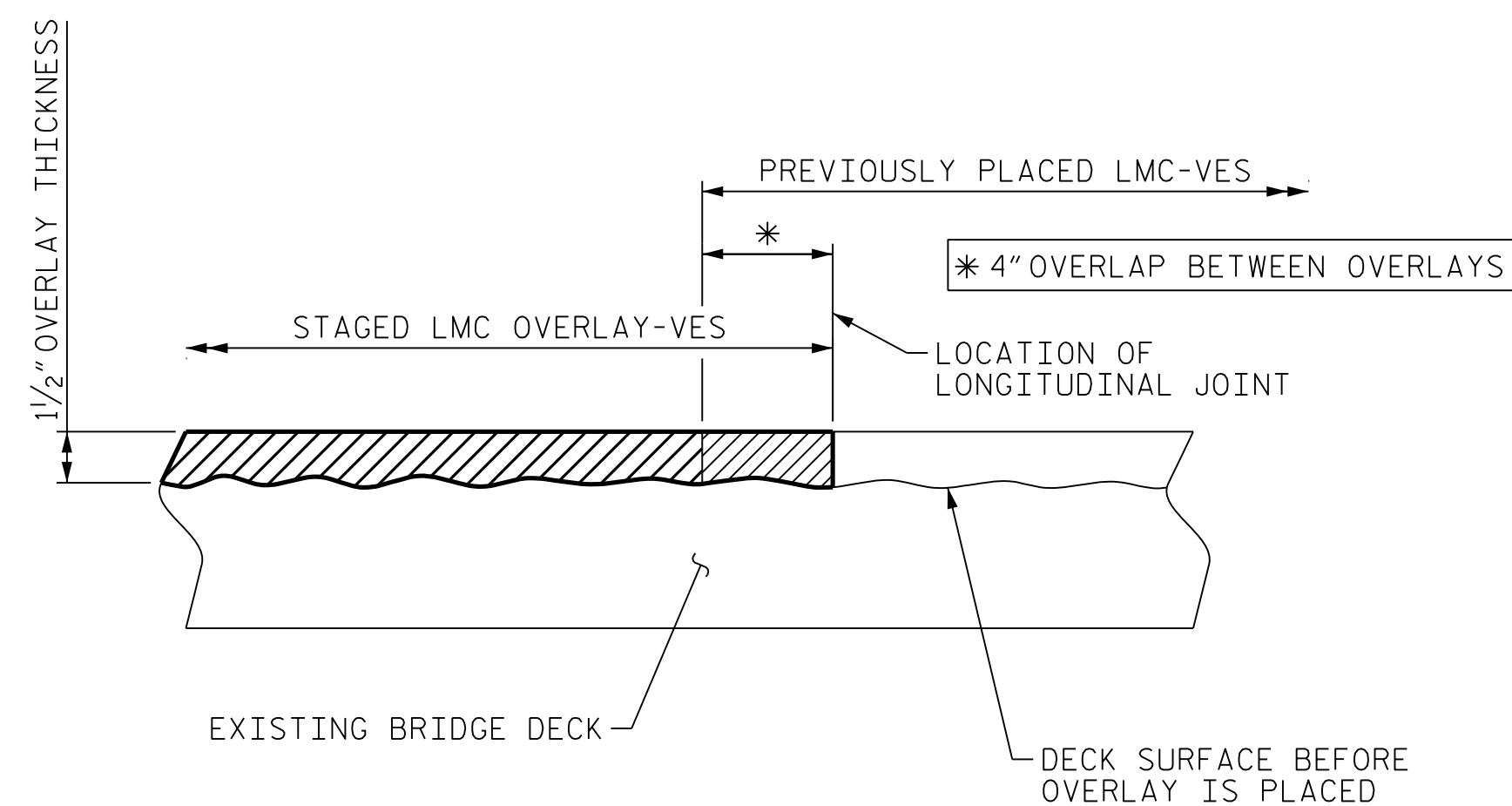


TYPICAL SECTION

TABLE OF DIMENSIONS		BEAM (X)	
LOCATION	A	BENT BACK	BENT AHEAD
C JOINT @ END BENT 1	122'-10 7/16" ±	-	17
C JOINT @ BENT 1	81'-0 13/16" ±	13	13
C JOINT @ BENT 2	58'-2 1/4" ±	10	10
C JOINT @ BENT 3	47'-11 1/2" ±	9	8
C JOINT @ END BENT 2	45'-5 1/4" ±	8	-

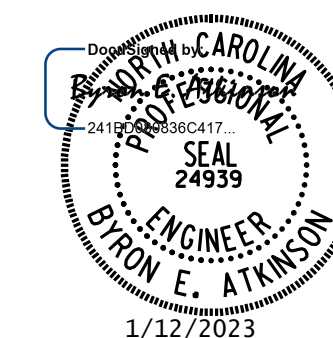


DETAIL FOR LMC-VES OVERLAY



SECTION THRU DECK
STAGED LMC-VES OVERLAY JOINT

PROJECT NO. I-6052
MECKLENBURG COUNTY
BRIDGE NO. 590342



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
&
OVERLAY DETAILS

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RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

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1			3			S8-3
2			4			TOTAL SHEETS 108

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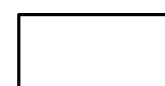
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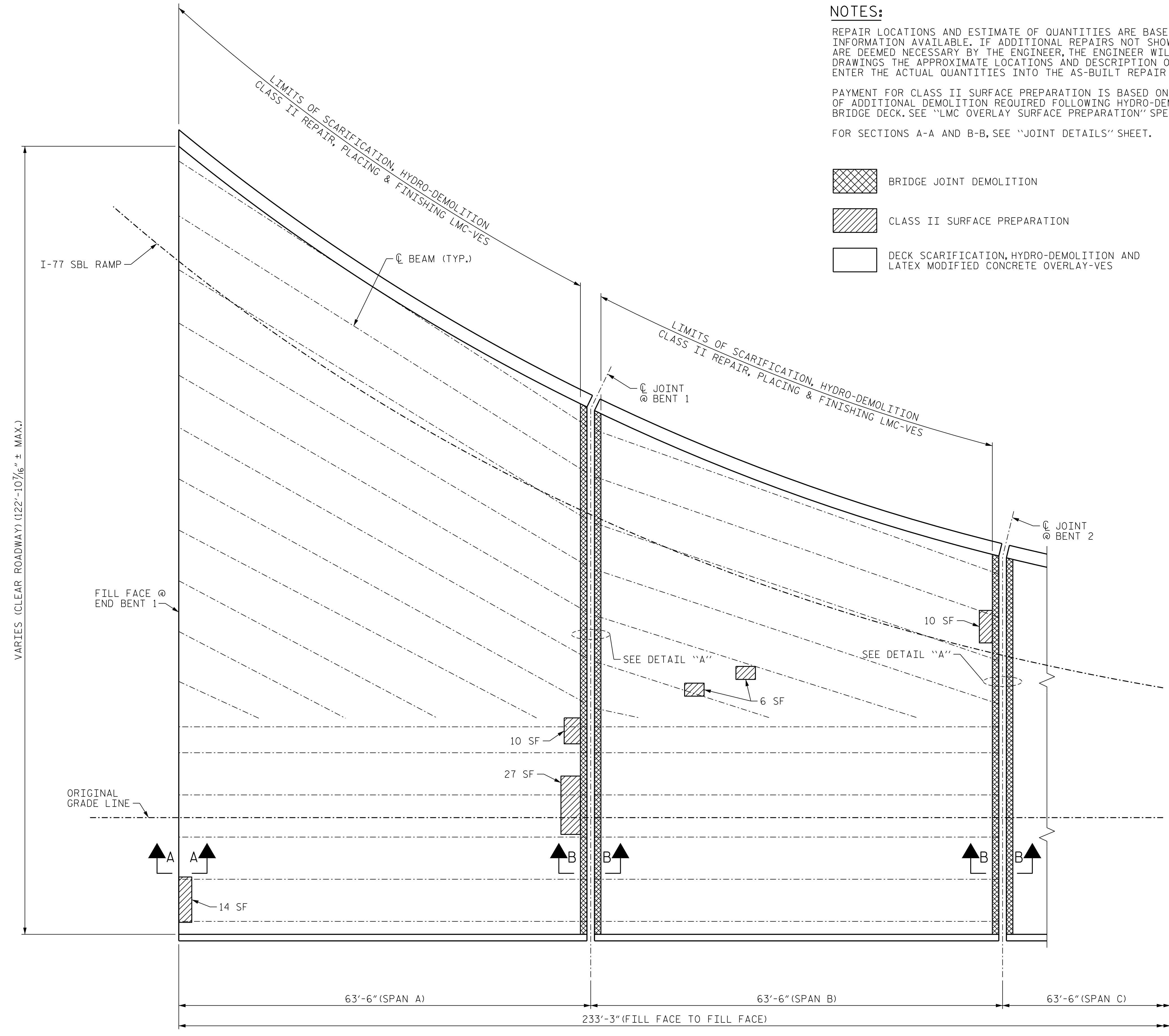
NOTES:

REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED ON THE SQUARE YARDS OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "LMC OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

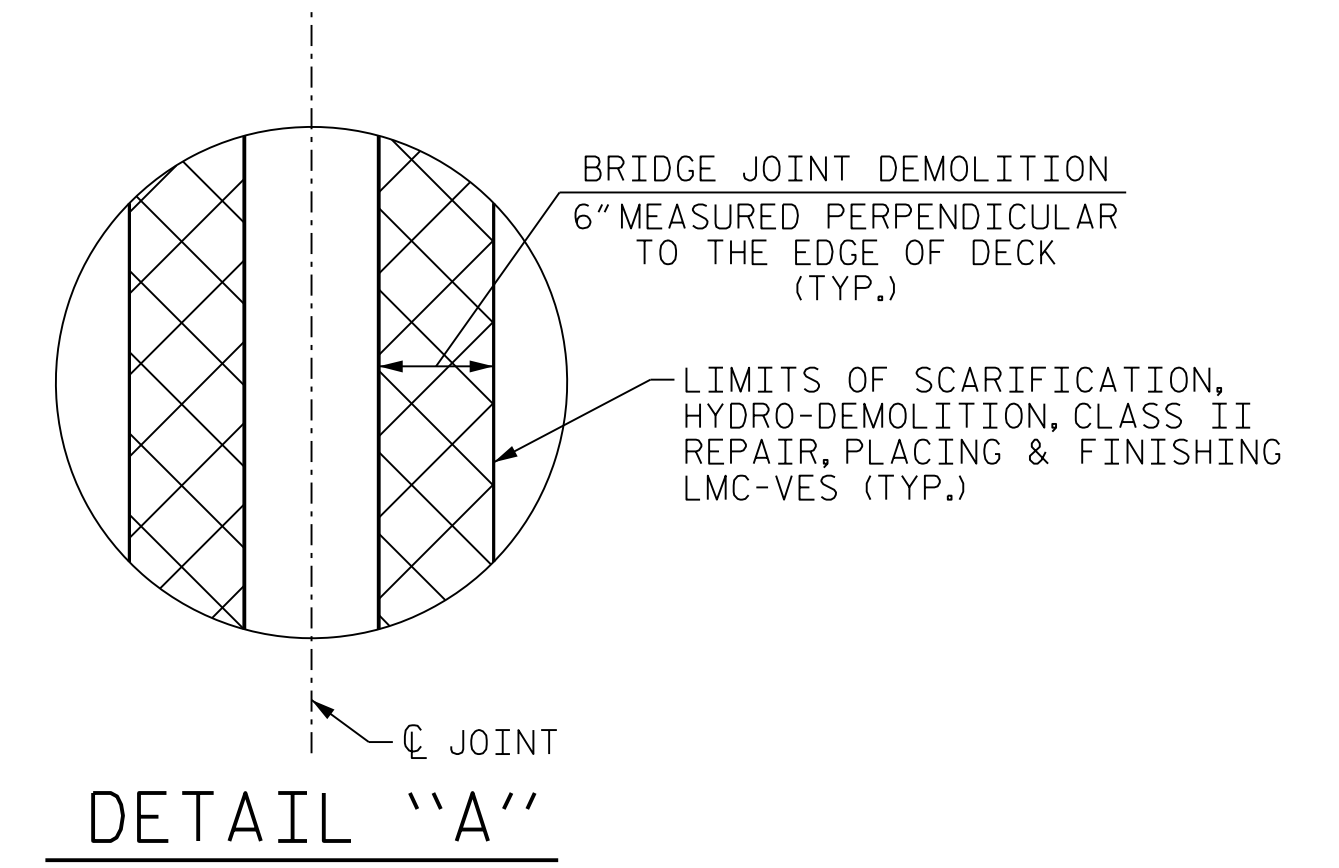
FOR SECTIONS A-A AND B-B, SEE "JOINT DETAILS" SHEET.

-  BRIDGE JOINT DEMOLITION
-  CLASS II SURFACE PREPARATION
-  DECK SCARIFICATION, HYDRO-DEMOLITION AND LATEX MODIFIED CONCRETE OVERLAY-VES



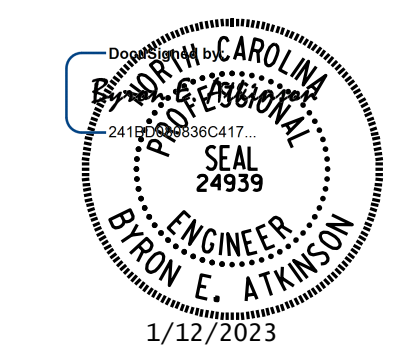
AS-BUILT REPAIR QUANTITY TABLE SPANS A AND B				
TOP OF DECK REPAIRS				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	1171.8 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	1171.8 SY			
CLASS II SURFACE PREPARATION	8.2 SY			
LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	57.1 CY			
PLACING & FINISHING LMC-VES OVERLAY	1171.8 SY			
BRIDGE JOINT DEMOLITION	110.3 SF			
GROOVING BRIDGE FLOORS	10,060 SF			
UNDERSIDE OF DECK REPAIRS				
SHOTCRETE REPAIRS	QUANTITIES			
	ESTIMATE AREA SF	VOLUME CF	ACTUAL AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
	ESTIMATE	ACTUAL		
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF			

VALUES IN CHART REPRESENT ESTIMATED UNDERSIDE OF DECK REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEAR TO SAW CUT. SEE REPAIR DETAILS.



PROJECT NO. I-6052
 MECKLENBURG COUNTY
 BRIDGE NO. 590342

SHEET 1 OF 2



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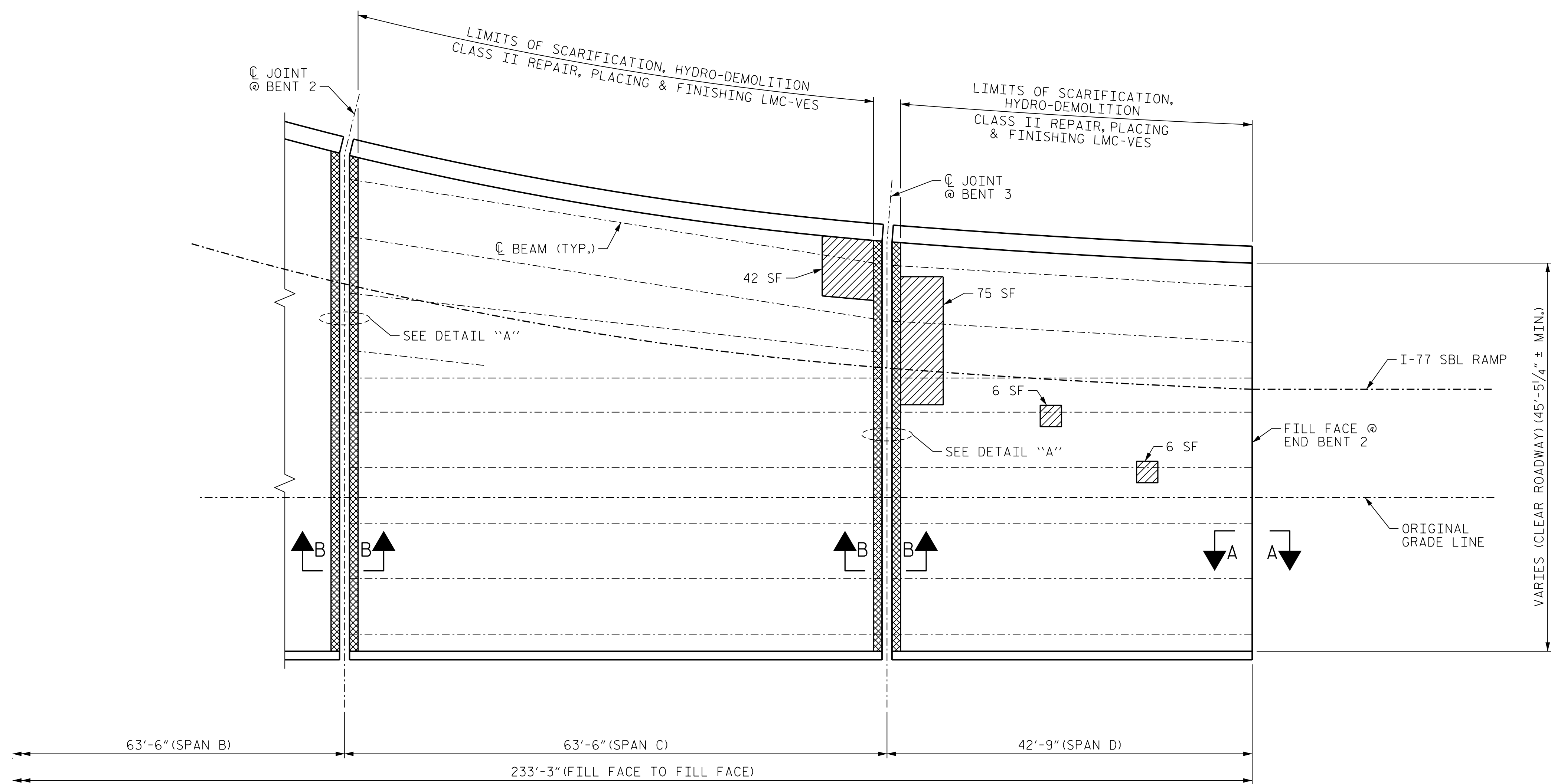
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 SURFACE PREPARATION
 SPANS A AND B

DRAWN BY : B.E. LANNING DATE : 10/2022
 CHECKED BY : B.E. ATKINSON DATE : 10/2022
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 10/2022

MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

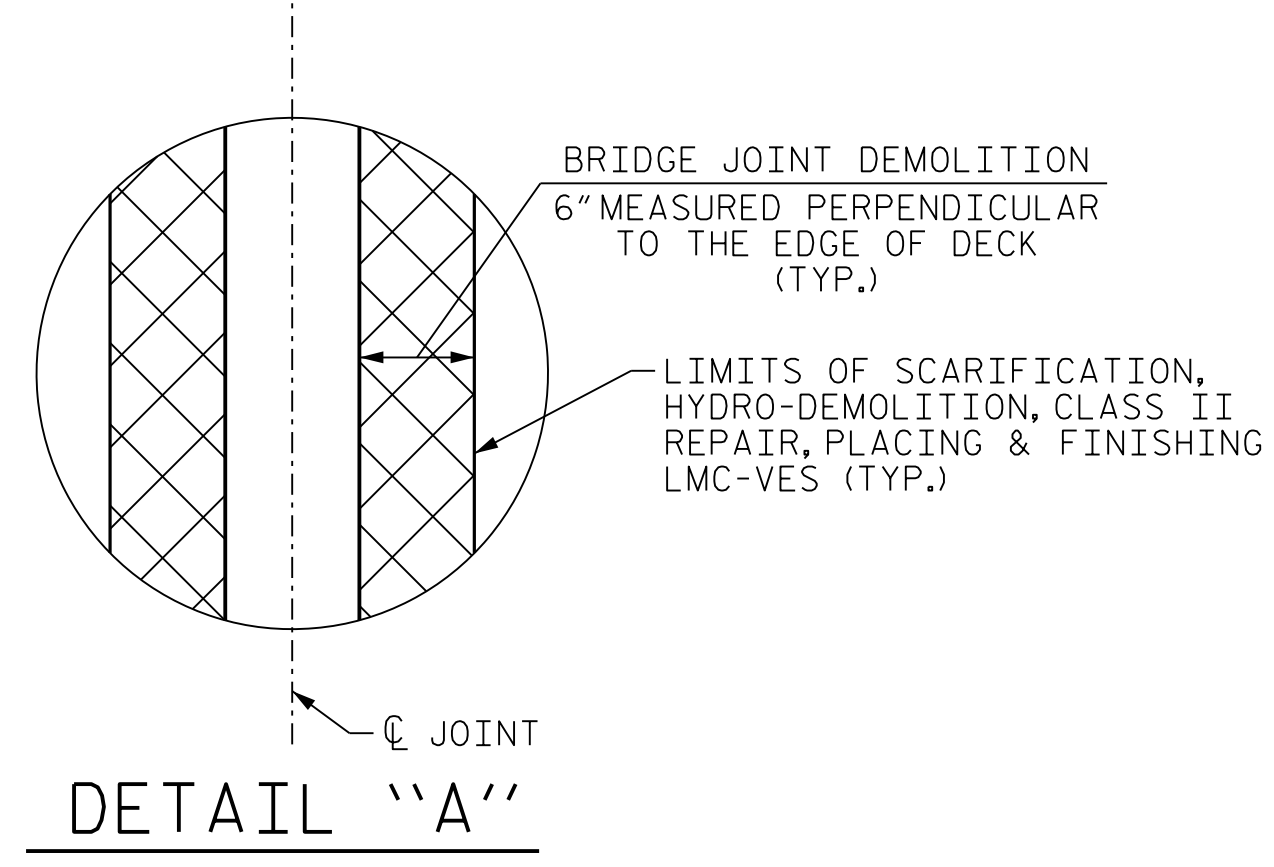
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1			3			S8-4 TOTAL SHEETS 108
2			4			

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PLAN OF SPANS C AND D

- BRIDGE JOINT DEMOLITION
- CLASS II SURFACE PREPARATION
- DECK SCARIFICATION, HYDRO-DEMOLITION AND LATEX MODIFIED CONCRETE OVERLAY-VES



AS-BUILT REPAIR QUANTITY TABLE SPANS C AND D				
TOP OF DECK REPAIRS				
	ESTIMATE	ACTUAL		
SCARIFYING BRIDGE DECK	587.6 SY			
HYDRO-DEMOLITION OF BRIDGE DECK	587.6 SY			
CLASS II SURFACE PREPARATION	14.4 SY			
LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	28.7 CY			
PLACING & FINISHING LMC-VES OVERLAY	587.6 SY			
BRIDGE JOINT DEMOLITION	77.1 SF			
GROOVING BRIDGE FLOORS	4923 SF			
UNDERSIDE OF DECK REPAIRS				
SHOTCRETE REPAIRS	QUANTITIES			
	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	0.0	0.0		
UNDERSIDE OF OVERHANG	0.0	0.0		
INTERIOR DIAPHRAGMS	0.0	0.0		
	ESTIMATE		ACTUAL	
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF			

VALUES IN CHART REPRESENT ESTIMATED UNDERSIDE OF DECK REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEAR TO SAW CUT. SEE REPAIR DETAILS.

NOTES:

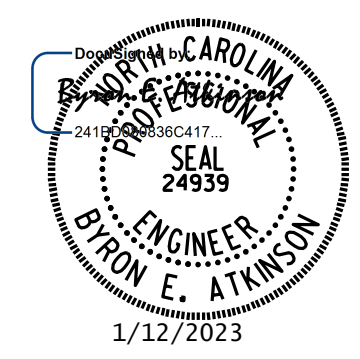
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED ON THE SQUARE FEET OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "LMC OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

FOR SECTIONS A-A AND B-B, SEE "JOINT DETAILS" SHEET.

PROJECT NO. I-6052
 MECKLENBURG COUNTY
 BRIDGE NO. 590342

SHEET 2 OF 2



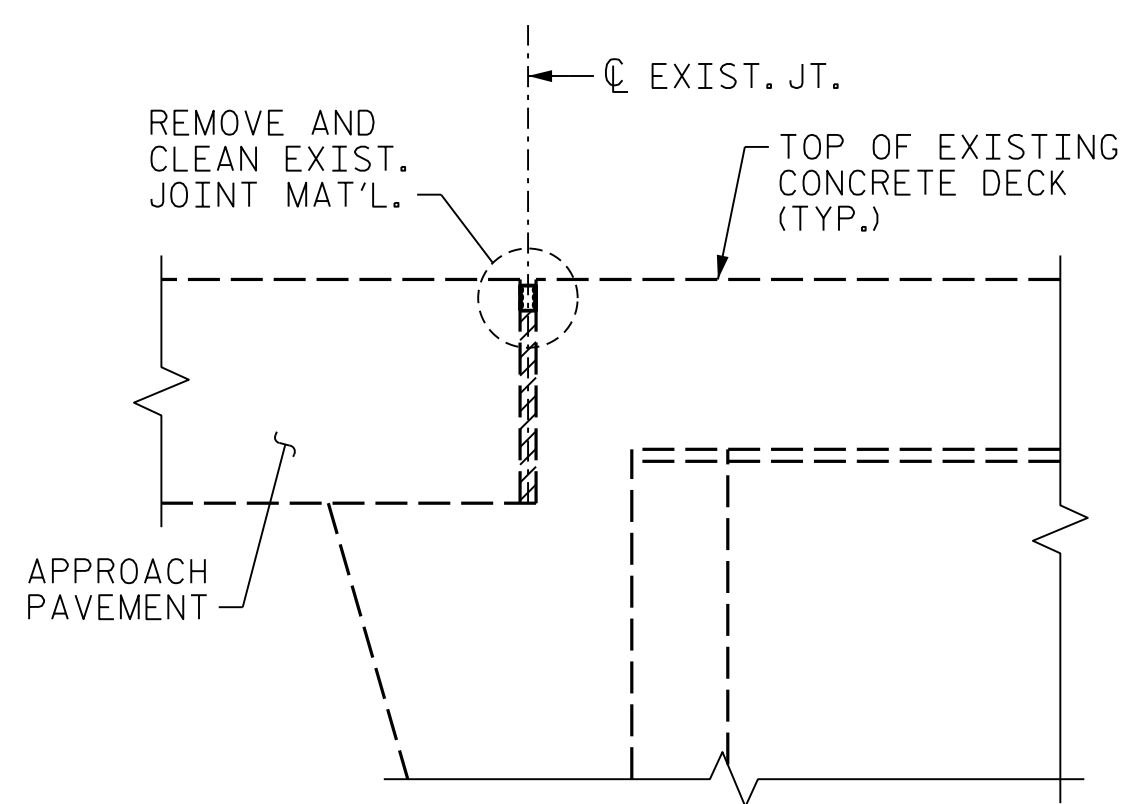
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 SURFACE PREPARATION
 SPANS C AND D

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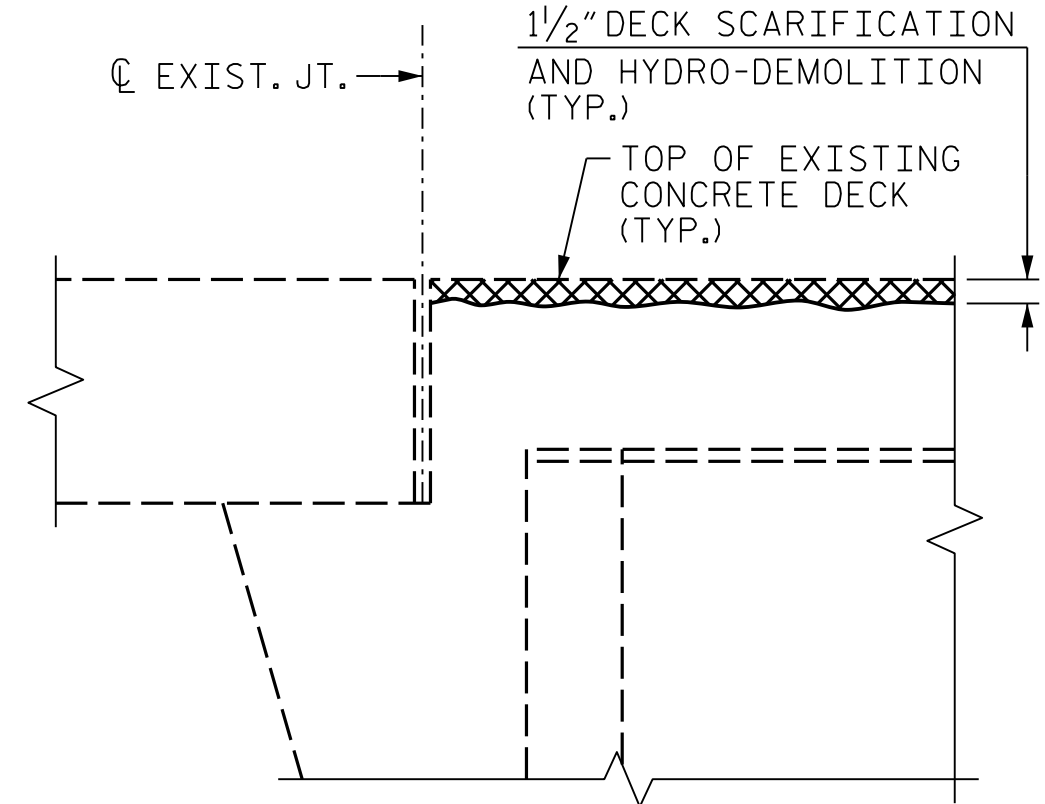
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

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2			4			

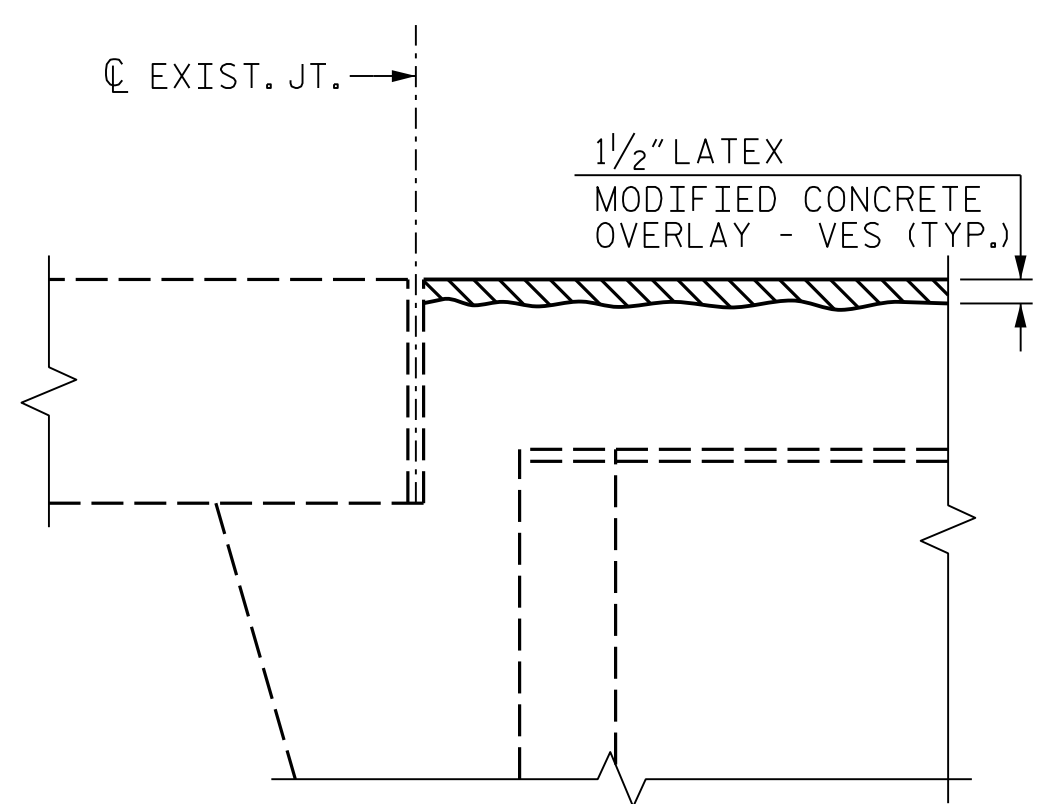
DRAWN BY : B.E. LANNING DATE : 10/2022
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 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 10/2022



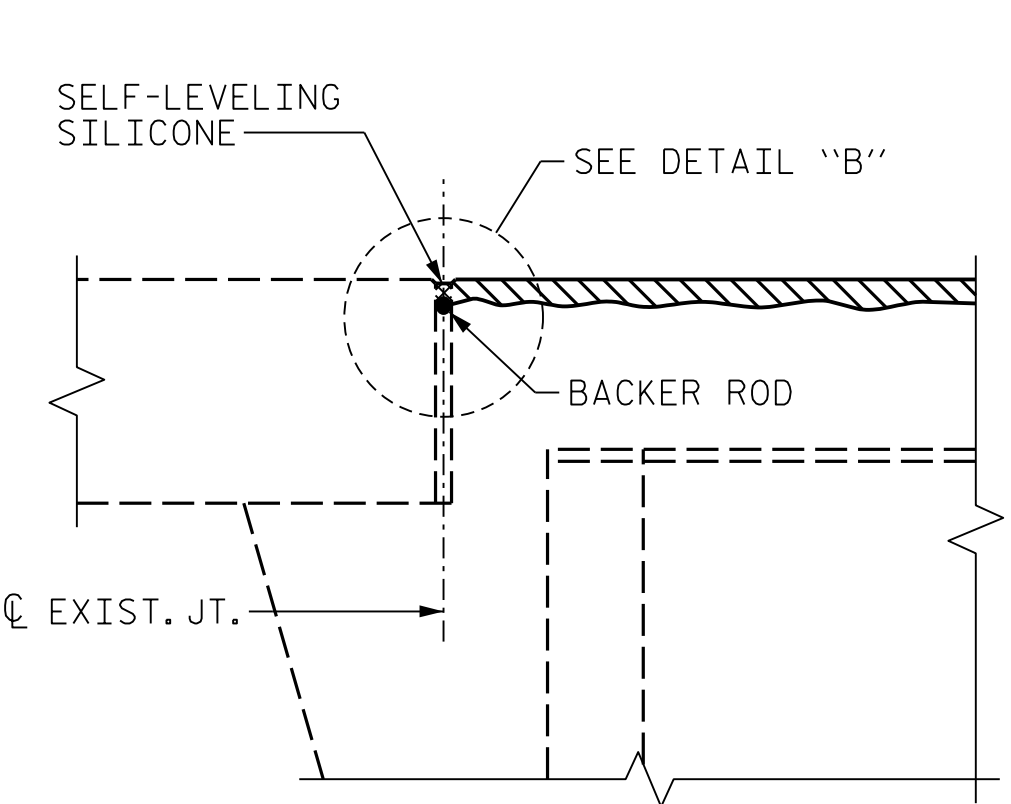
EXISTING JOINT AT END BENT



MINIMUM EXISTING JOINT DEMOLITION AT END BENT

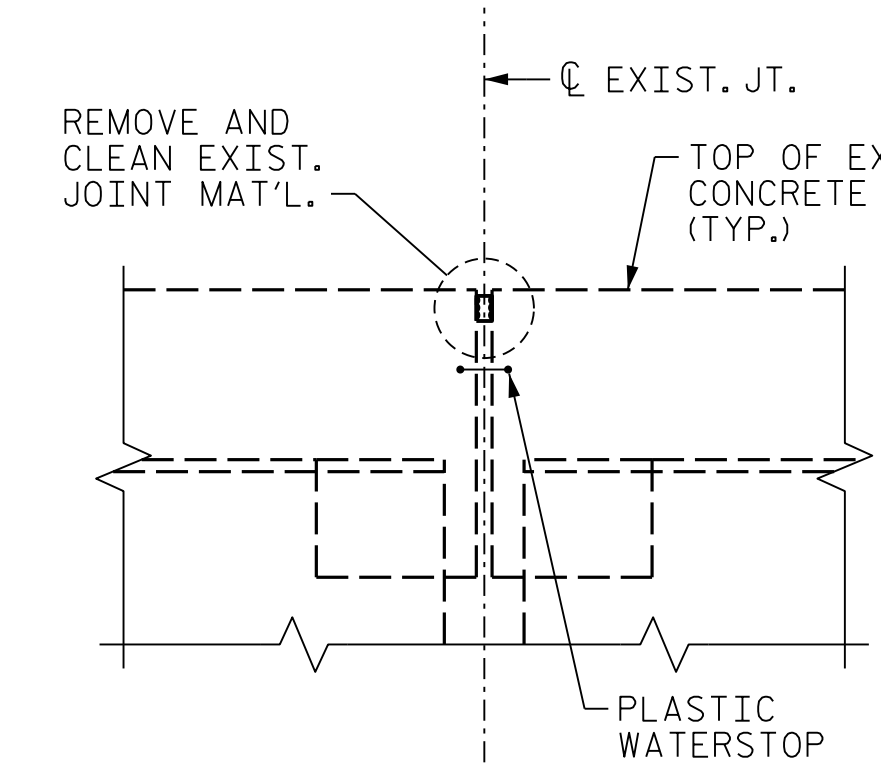


PROPOSED JOINT PRE-INSTALL DIMENSIONS

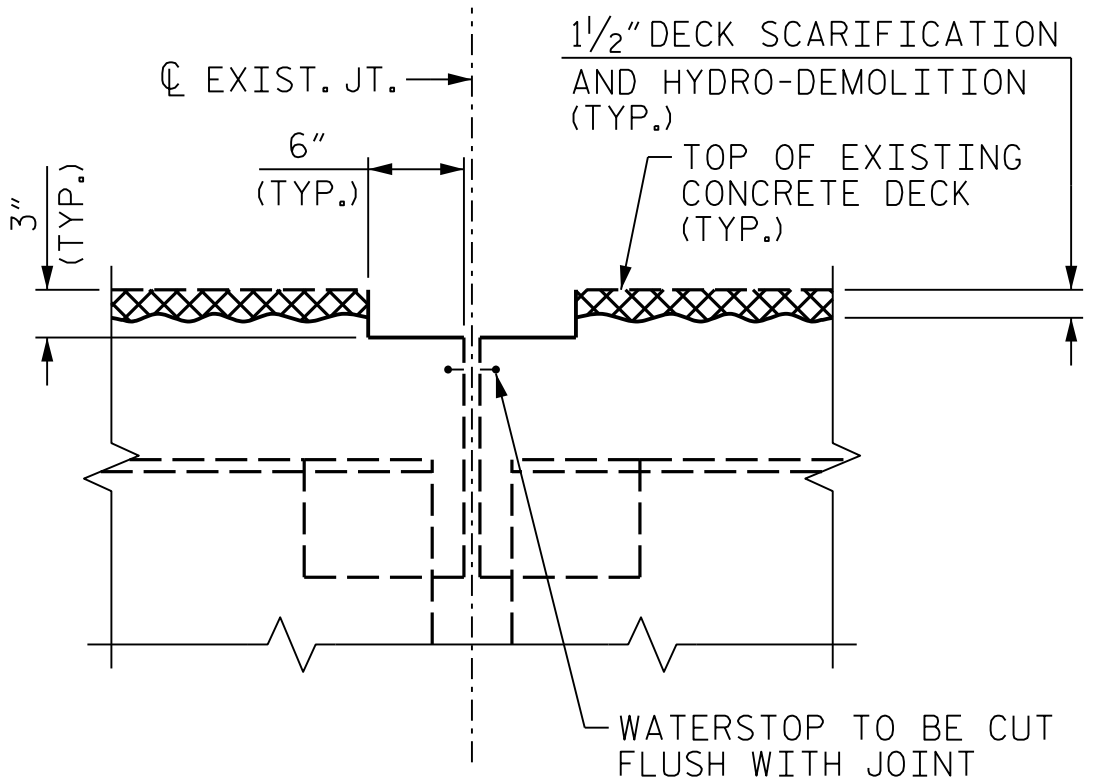


PROPOSED JOINT

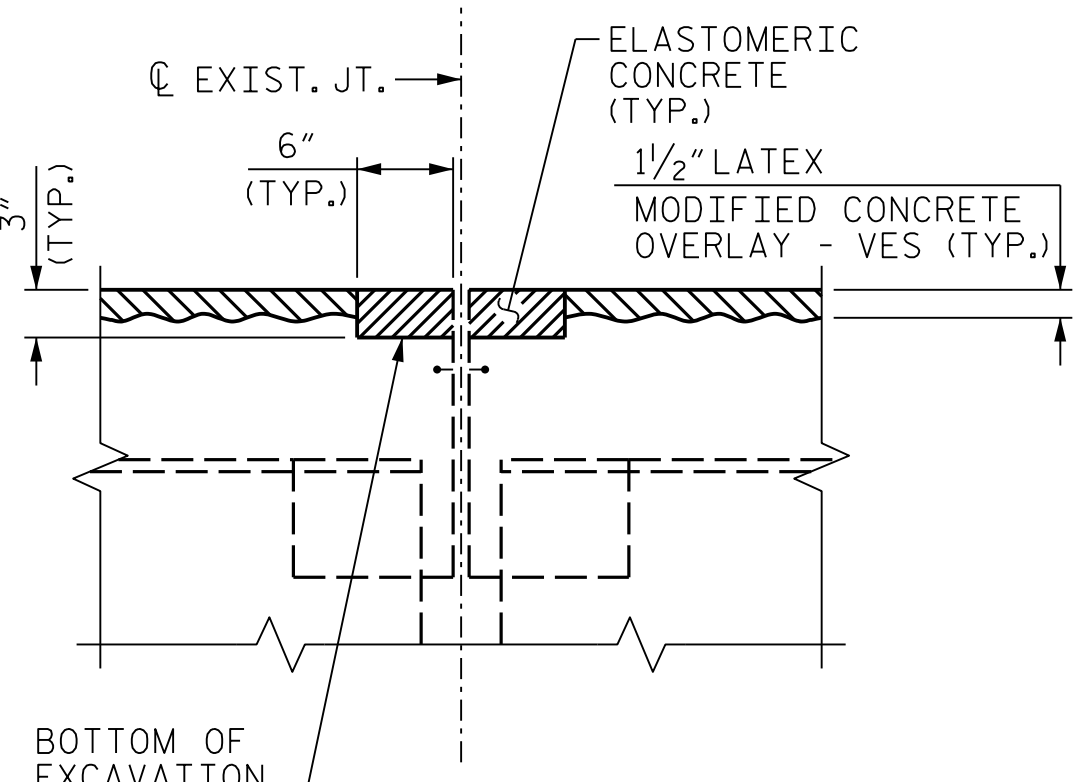
SECTION A-A



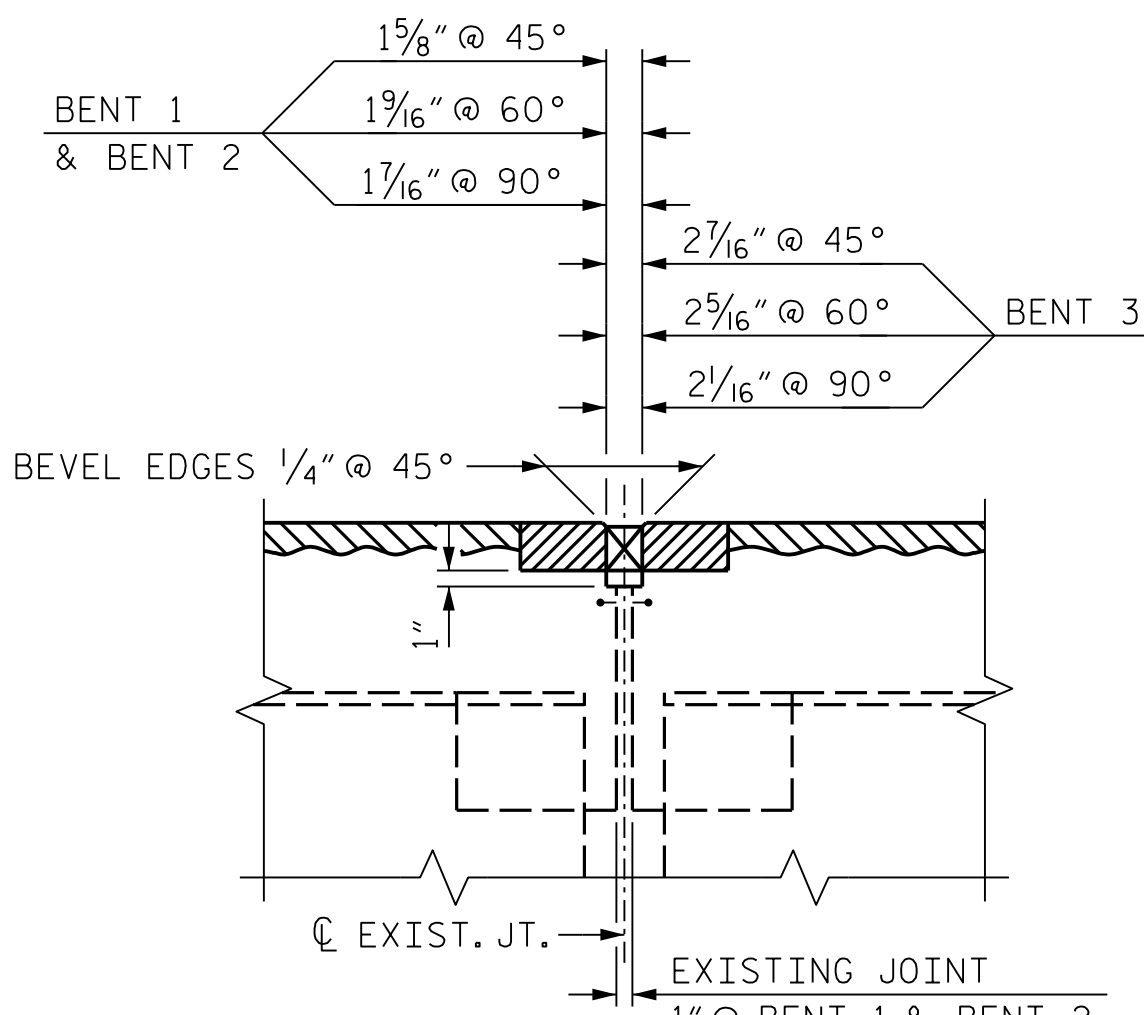
EXISTING JOINT



MINIMUM EXISTING JOINT DEMOLITION AT BENT

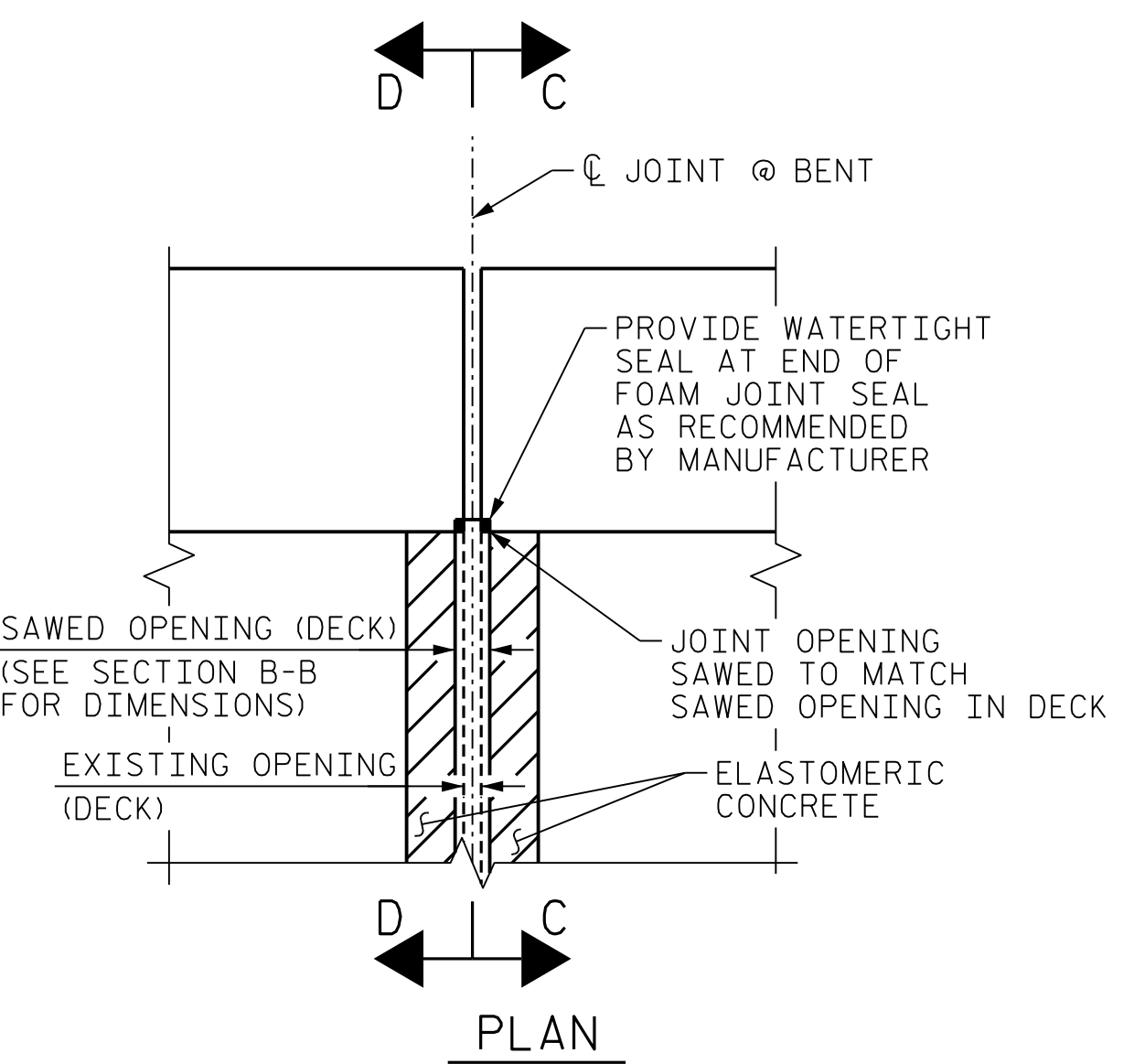


PROPOSED JOINT PRE-SAWED DIMENSIONS

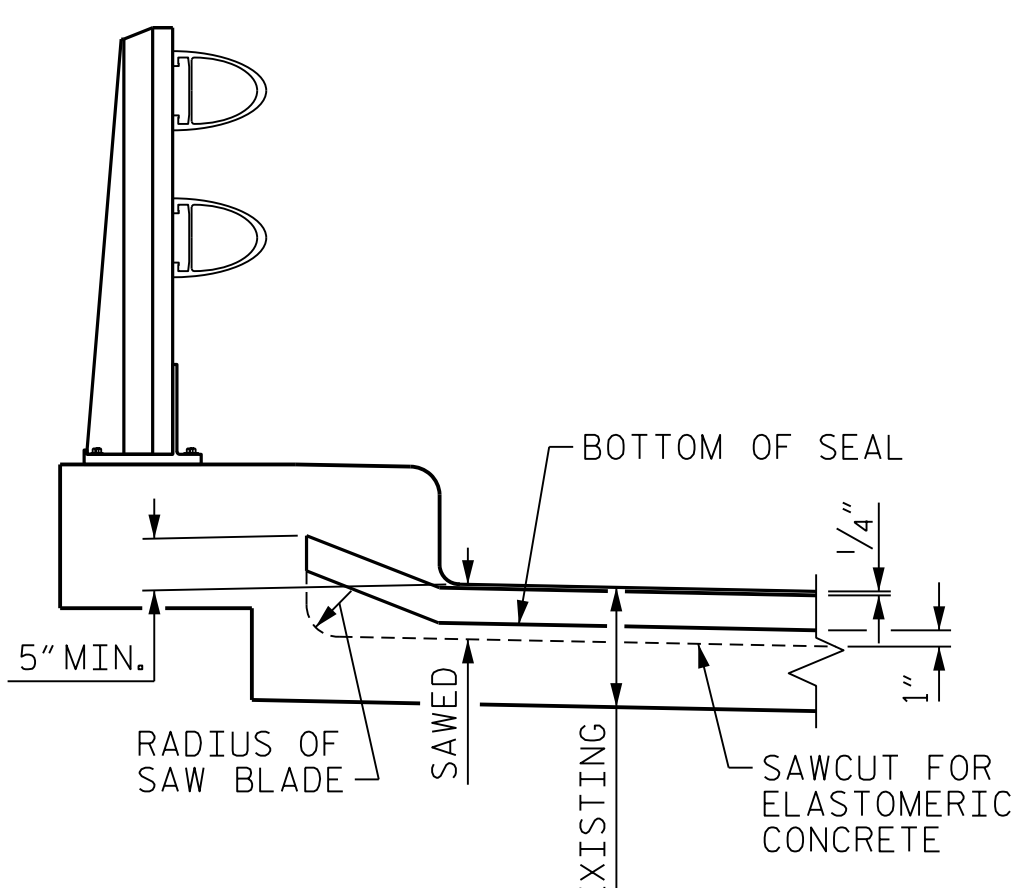


PROPOSED FOAM JOINT SEAL EXPANSION

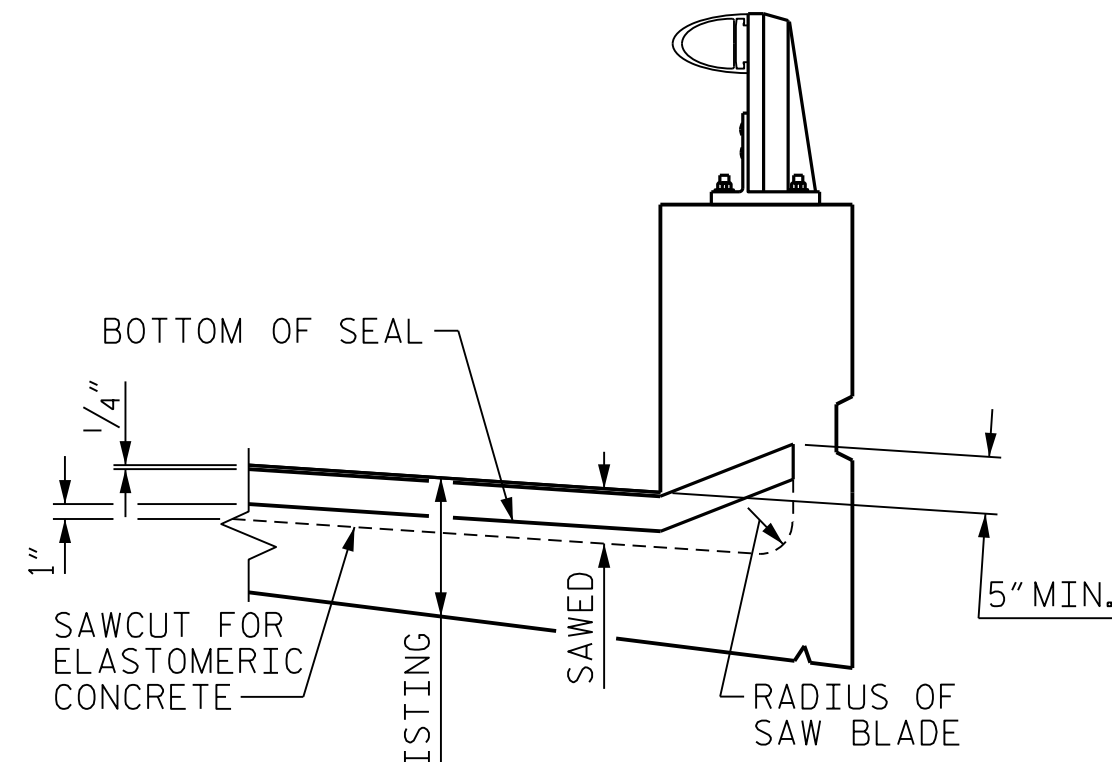
SECTION B-B



PLAN



SECTION C-C (LEFT SIDE)



SECTION D-D (RIGHT SIDE)

JOINT DETAILS AT CURB

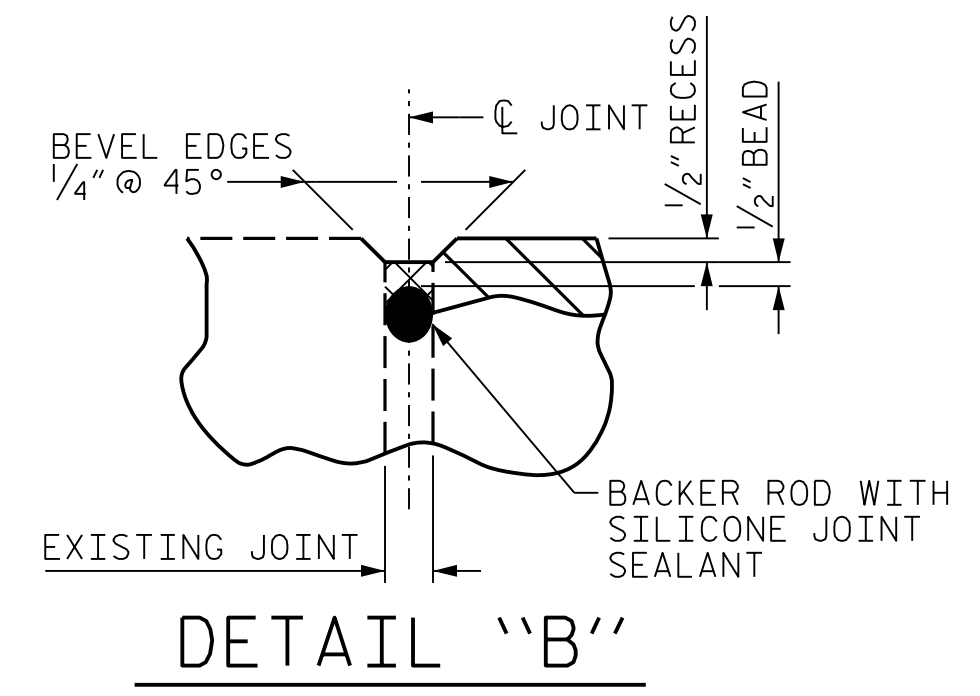
ELASTOMERIC CONCRETE FOR PRESERVATION		
BENT 1	20.3	CF
BENT 2	14.6	CF
BENT 3	12.0	CF
* TOTAL	46.9	CF

* BASED ON MINIMUM BLOCKOUT SHOWN.

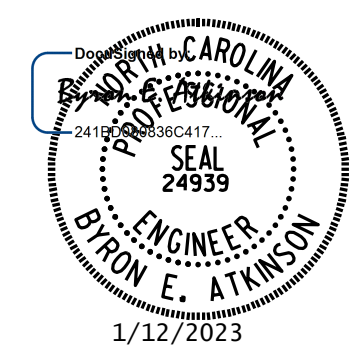
JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	193.3 LF	
POURABLE SILICONE JOINT SEALANT	87.3 LF	

NOTES:

- HYDRO-DEMOLITION OR EXCAVATION OF CONCRETE AT THE EXISTING JOINT SHALL RESULT IN THE BOTTOM OF THE EXCAVATION BEING REASONABLY FLAT AND LEVEL, TO PROVIDE SUFFICIENT SUBSTRATE FOR PLACEMENT AND SUPPORT OF ELASTOMERIC CONCRETE.
- RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS NEEDED.
- FINAL JOINT SEALS SHALL NOT BE INSTALLED UNTIL THE LMC OVERLAY IS COMPLETE.
- THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN 1/4", NOTIFY THE ENGINEER.
- THE MANUFACTURER IS TO PROVIDE THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL FOR THE SIZE OF THE OPENING ON THE PLANS AND ACCOMMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.
- FOAM JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.
- THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.
- THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.
- THE INSTALLED FOAM JOINT SEALS SHALL BE WATER TIGHT.
- QUANTITIES SHOWN IN THE ELASTOMERIC CONCRETE FOR PRESERVATION TABLE ARE BASED ON THE MINIMUM JOINT DEMOLITION SHOWN.
- FINAL SURFACE OF THE JOINT DEMOLITION AREA PRIOR TO PLACEMENT OF CONCRETE REPAIR MATERIAL OR ELASTOMERIC CONCRETE SHOULD BE REASONABLY FLAT AND LEVEL. ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF THE SURFACE PRIOR TO PLACEMENT OF REPAIR CONCRETE OR ELASTOMERIC CONCRETE.
- FOR EXCAVATION BELOW THE BOTTOM OF THE PLANNED JOINT DEMOLITION, CONCRETE FOR DECK REPAIR SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT BOTTOM OF THE PROPOSED ELASTOMERIC CONCRETE FOR PRESERVATION HEADERS SHOWN.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.



DETAIL "B"



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

PROJECT NO. I-6052
MECKLENBURG COUNTY
BRIDGE NO. 590342

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

JOINT DETAILS

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1			3			S8-6
2			4			

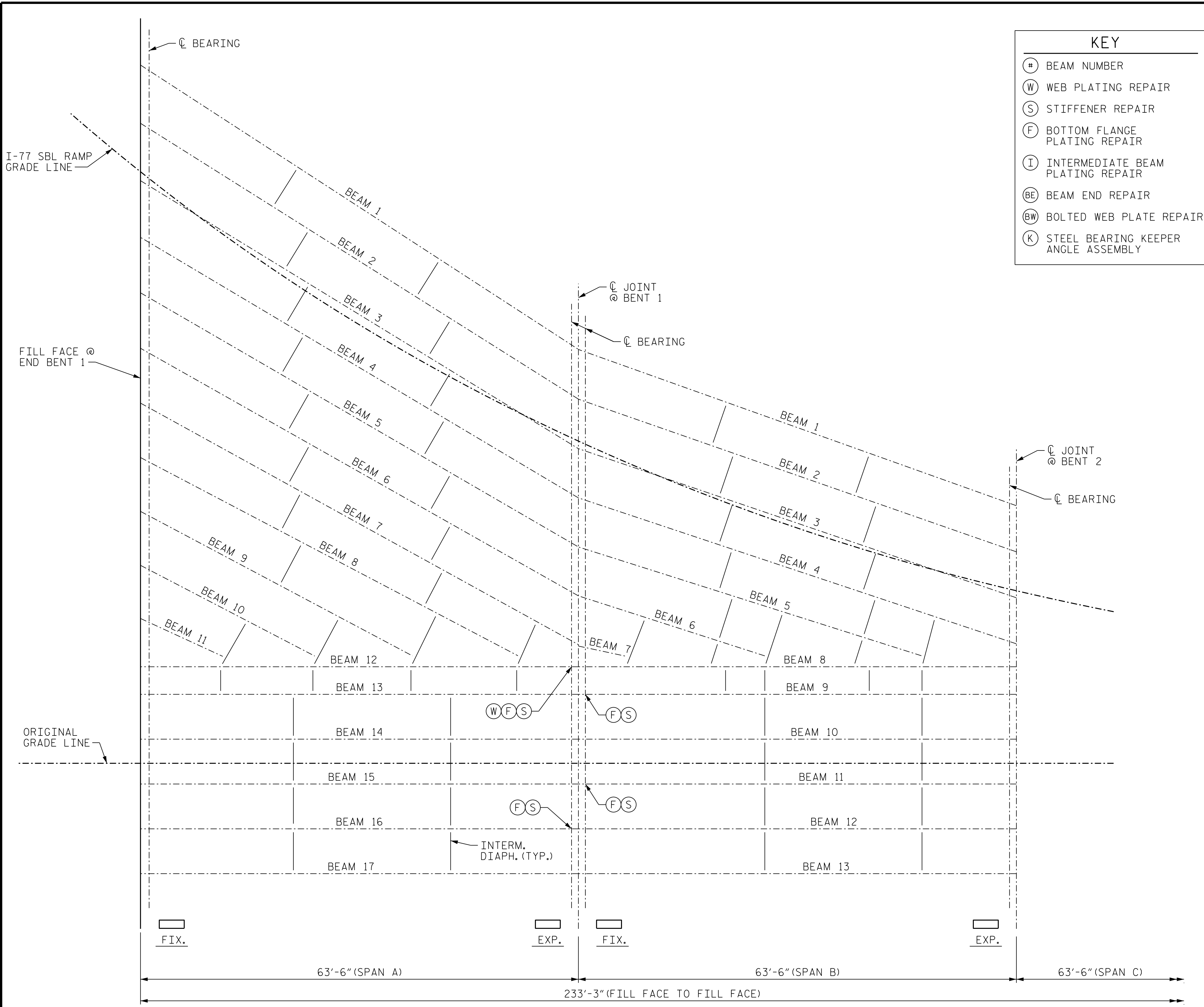
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TOTAL SHEETS 108

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KEY	
(#)	BEAM NUMBER
(W)	WEB PLATING REPAIR
(S)	STIFFENER REPAIR
(F)	BOTTOM FLANGE PLATING REPAIR
(I)	INTERMEDIATE BEAM PLATING REPAIR
(BE)	BEAM END REPAIR
(BW)	BOLTED WEB PLATE REPAIR
(K)	STEEL BEARING KEEPER ANGLE ASSEMBLY

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 AFTER THE STRUCTURAL STEEL HAS BEEN CLEANED, BLASTED, AND PRIMED, THE CONTRACTOR AND ENGINEER SHALL REVIEW THE STEEL TO VERIFY NOTED REPAIR LOCATIONS AND TO IDENTIFY ANY ADDITIONAL REPAIR LOCATIONS. THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

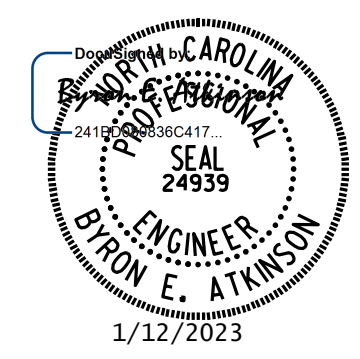
FOR REPAIR DETAILS, SEE "BEAM REPAIR DETAILS" AND "STEEL KEEPER ANGLE ASSEMBLY DETAILS" SHEETS.
THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR STEEL BEAM REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENTS OF REPAIR AREAS PRIOR TO STEEL FABRICATION.
FOR CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA, SEE SPECIAL PROVISIONS.
STRUCTURAL STEEL REPAIRS SHALL BE COMPLETED BEFORE FINAL CLEANING AND PAINTING OF STRUCTURAL STEEL.
FOR BEAM REPAIR PLATING, SEE SPECIAL PROVISIONS.
FOR BEAM REPAIR CUT-OUT, SEE SPECIAL PROVISIONS.
FOR BOLTED BEAM REPAIR, SEE SPECIAL PROVISIONS.

ANTICIPATED BEAM REPAIR LOCATIONS								
SPAN	BEAM	LOCATION	DETAIL TYPE	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"
A	12	BENT 1	A	9"	55"	-	-	-
A	16	BENT 1	D	5 1/2"	0"	-	48"	-
B	9	BENT 1	D	5 1/2"	0"	-	66"	-
B	11	BENT 1	D	5 1/2"	0"	-	66"	-

BEAM REPAIR QUANTITY TABLE SPANS A THRU D					
STEEL PLATES		STIFFENER		STEEL BEARING KEEPER ANGLE ASSEMBLY	
LBS.		LBS.		EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
815		105		1	
BEAM REPAIR CUT-OUT		BOLTED BEAM REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
150		-			

PROJECT NO. I-6052
MECKLENBURG COUNTY
BRIDGE NO. 590342

SHEET 1 OF 2



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(919) 851-6606
FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
BEAM REPAIR
LOCATIONS
SPANS A & B**

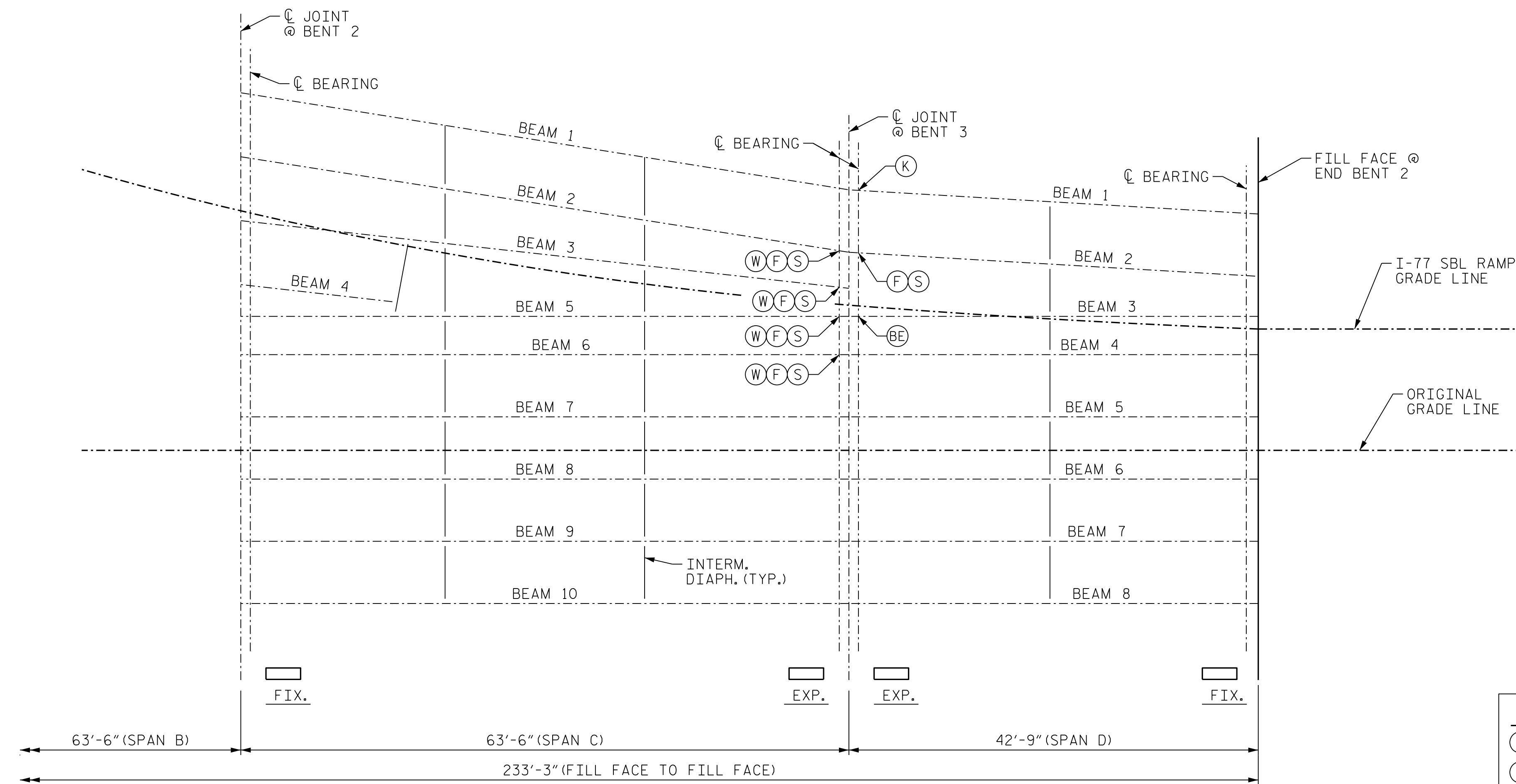
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1			3			S8-7
2			4			

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DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 10/2022

NOTES:

FOR NOTES AND QUANTITIES, SEE SHEET 1 OF 2.
 BEAM END REPAIR AT SPAN D BEAM 3 MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE "JACKING DETAIL" SHEET.



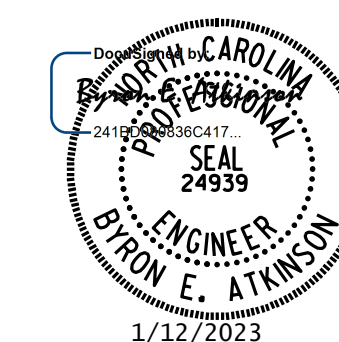
FRAMING PLAN - SPANS C AND D

KEY	
#	BEAM NUMBER
W	WEB PLATING REPAIR
S	STIFFENER REPAIR
F	BOTTOM FLANGE PLATING REPAIR
I	INTERMEDIATE BEAM PLATING REPAIR
BE	BEAM END REPAIR
BW	BOLTED WEB PLATE REPAIR
K	STEEL BEARING KEEPER ANGLE ASSEMBLY

ANTICIPATED BEAM REPAIR LOCATIONS								
SPAN	BEAM	LOCATION	DETAIL TYPE	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"
C	2	BENT 3	A	6"	36"	-	-	-
C	3	BENT 3	A	5"	34"	-	-	-
C	5	BENT 3	A	4"	12"	-	-	-
C	6	BENT 3	A	8"	36"	-	-	-
D	2	BENT 3	D	4 3/8"	0"	-	24"	-
D	3	BENT 3	E	17"	36"	-	-	-

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590342

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BEAM REPAIR
 LOCATIONS
 SPANS C & D

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 1011 SCHAUB DRIVE, SUITE 100
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 (919) 851-6606
 FIRM PE NUMBER: P-0671

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2			4			TOTAL SHEETS 108

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AS-BUILT REPAIR QUANTITY TABLE

END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.0	0.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
CURTAIN WALL	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	193.3			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

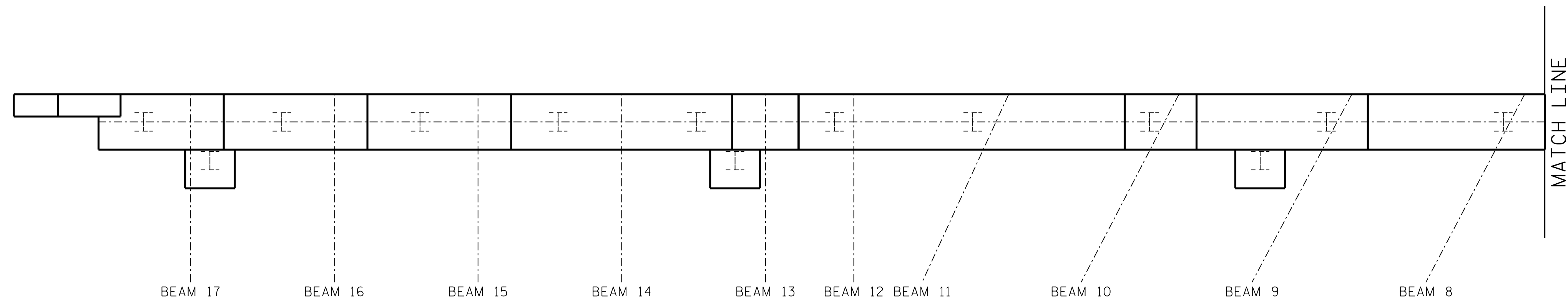
SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

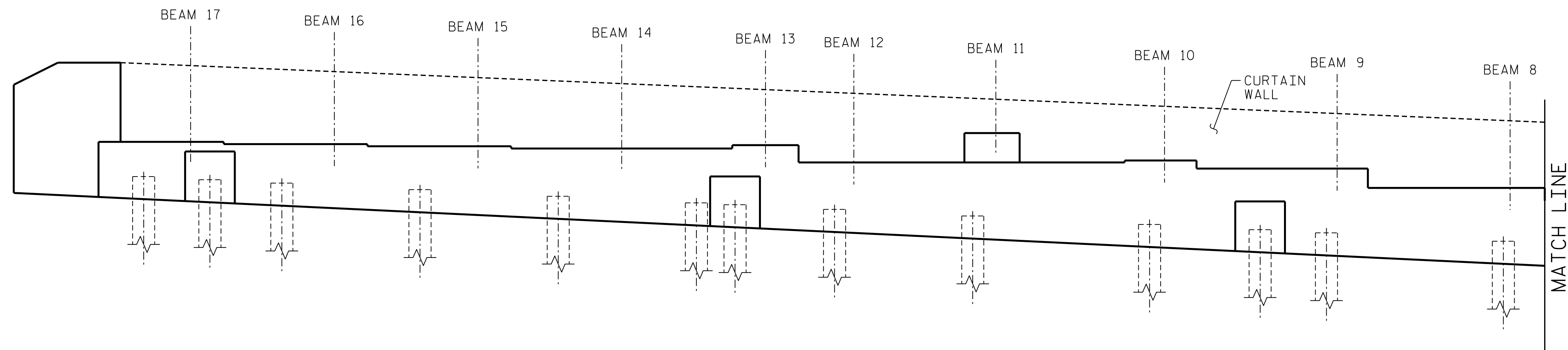
FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.



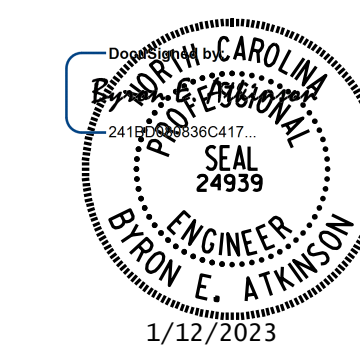
PLAN
END BENT 1



ELEVATION
END BENT 1

KEY

	SHOTCRETE REPAIR
	ERI EPOXY RESIN INJECTION
	CONCRETE REPAIR



**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

PROJECT NO. I-6052
MECKLENBURG COUNTY
BRIDGE NO. 590342

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

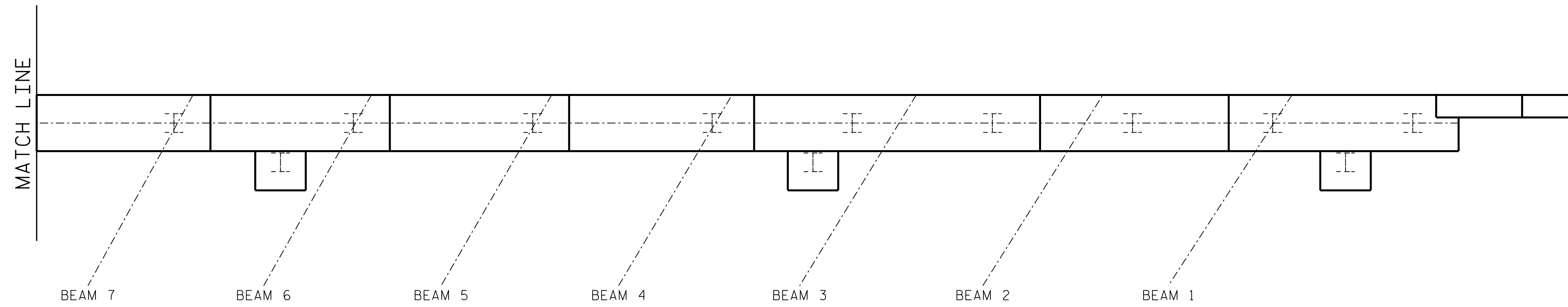
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			

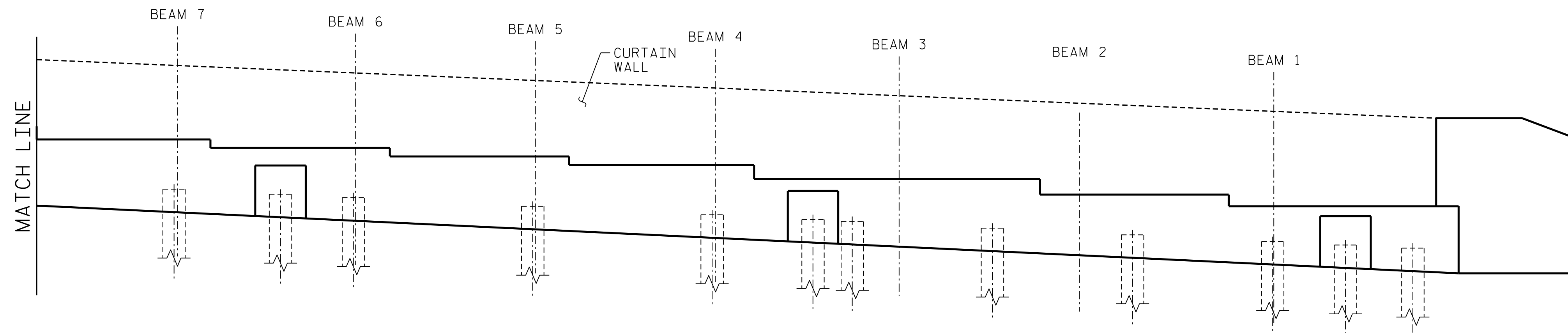
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CHECKED BY : B.E. ATKINSON	DATE : 10/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 10/2022

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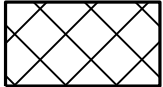
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FOR NOTES AND QUANTITIES, SEE SHEET 1 OF 2.

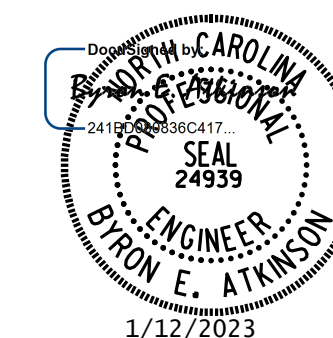


PLAN
END BENT 1



ELEVATION
END BENT 1

- KEY
-  SHOTCRETE REPAIR
 -  ERI EPOXY RESIN INJECTION
 -  CONCRETE REPAIR



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1011 SCHAUB DRIVE, SUITE 100
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(919) 851-6606
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MECKLENBURG COUNTY
BRIDGE NO. 590342

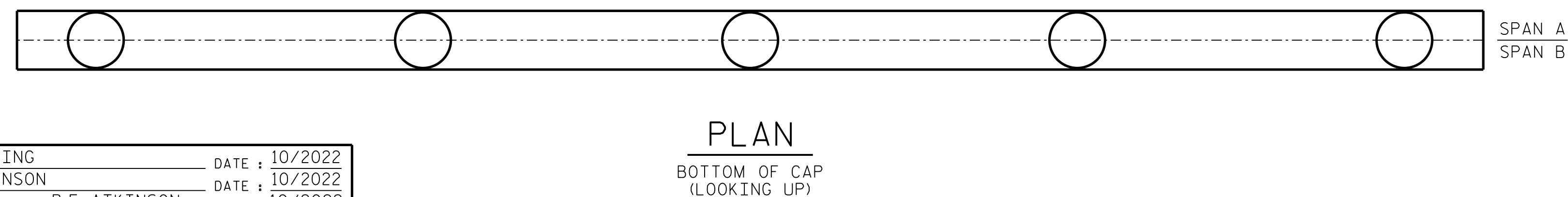
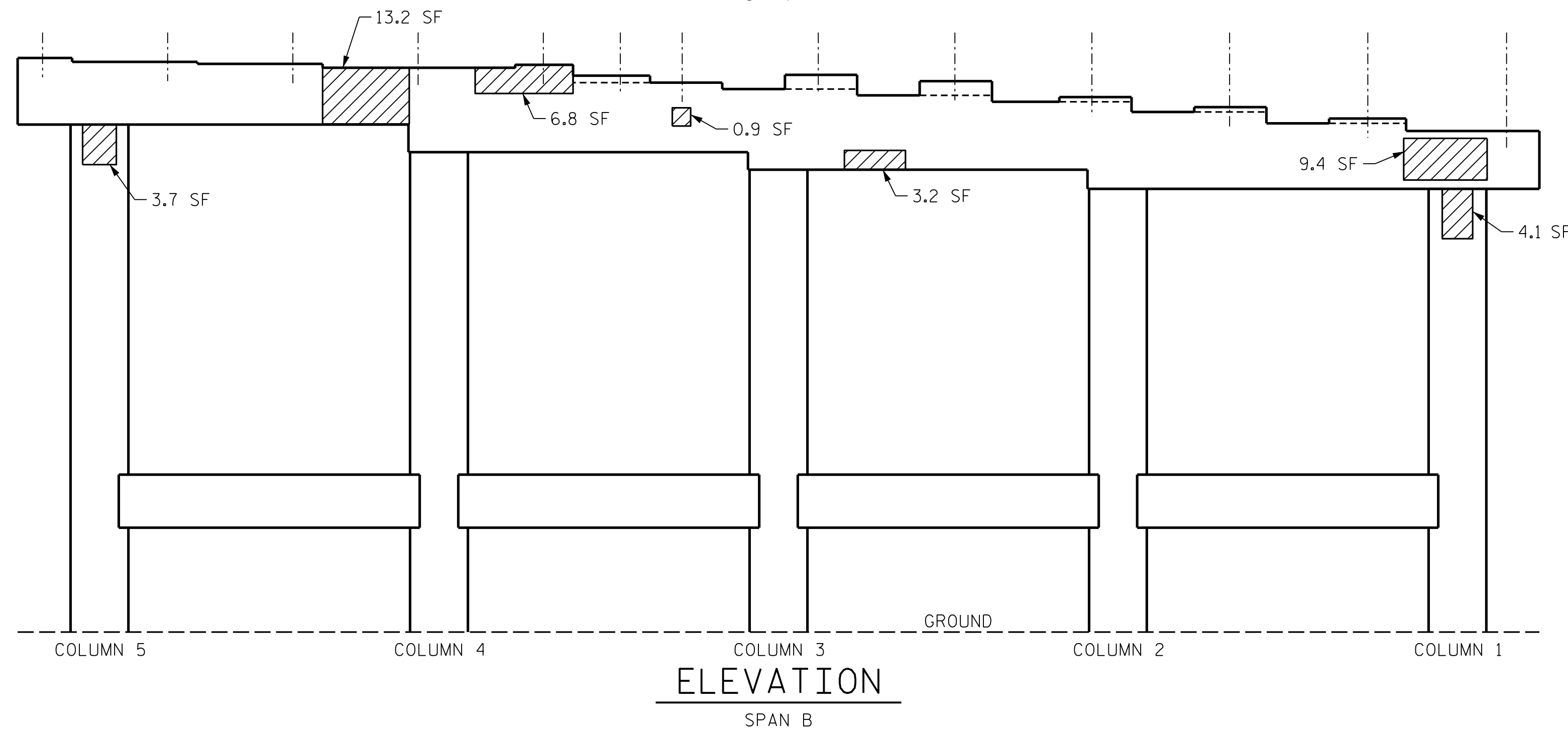
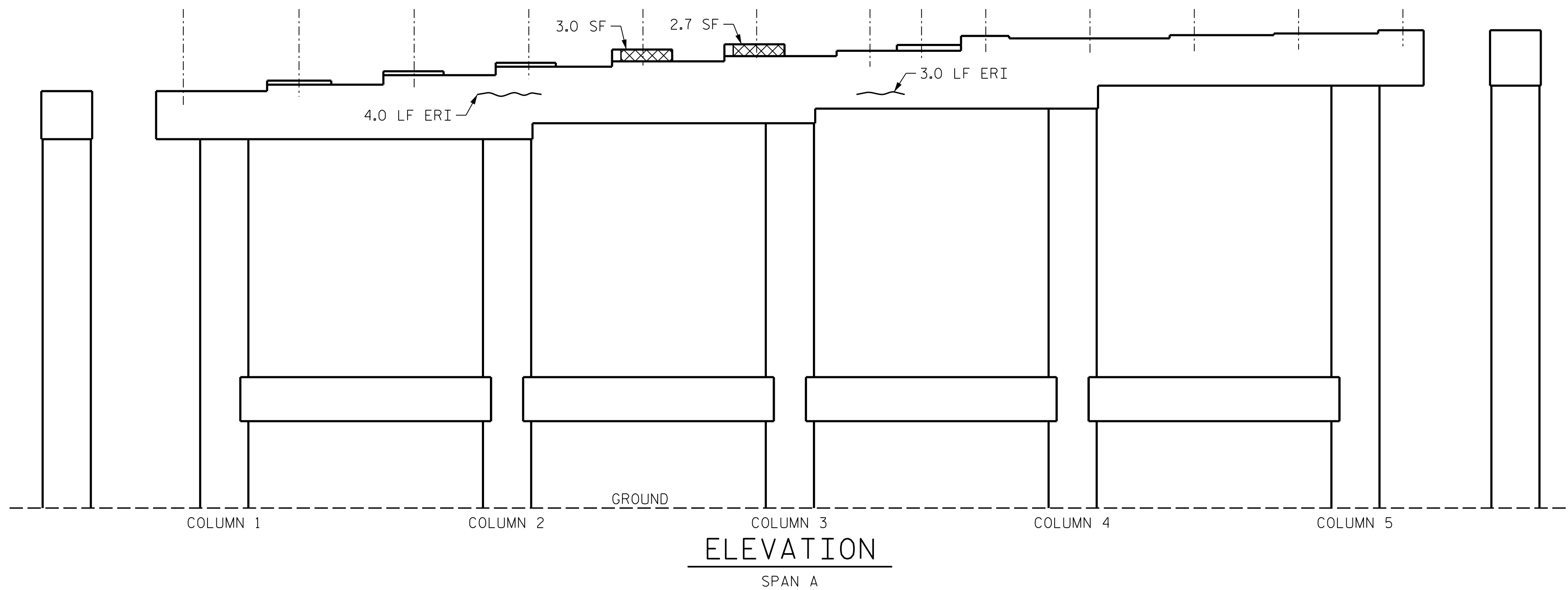
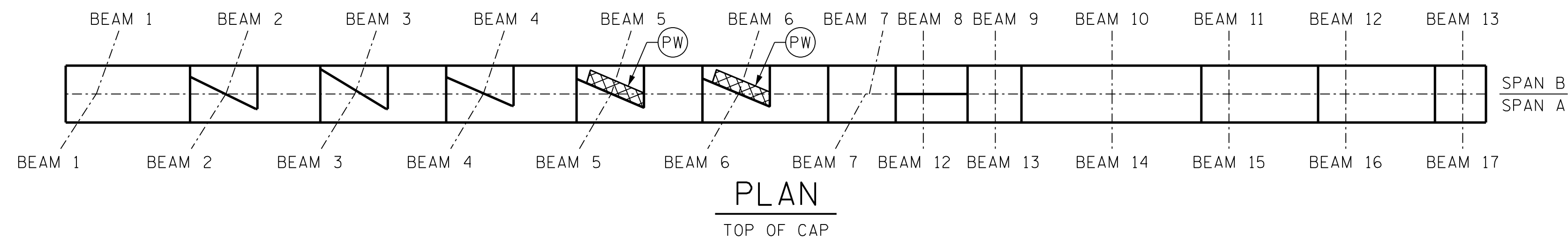
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			

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AS-BUILT REPAIR QUANTITY TABLE

BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	33.5	16.8		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	7.8	3.9		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	5.7	2.9		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	7.0			
COLUMN	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	250.2			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

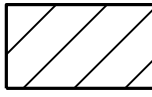

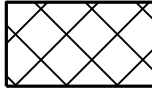

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

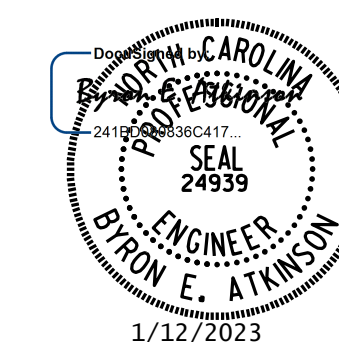
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CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE "JACKING DETAIL" SHEET.

KEY

-  SHOTCRETE REPAIR
-  ERI EPOXY RESIN INJECTION
-  CONCRETE REPAIR
-  PEDESTAL WALL REPAIR

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590342



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1

**DOCUMENT NOT CONSIDERED FINAL
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MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

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2			4		

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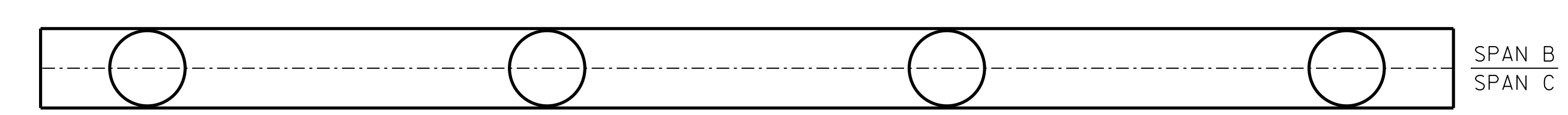
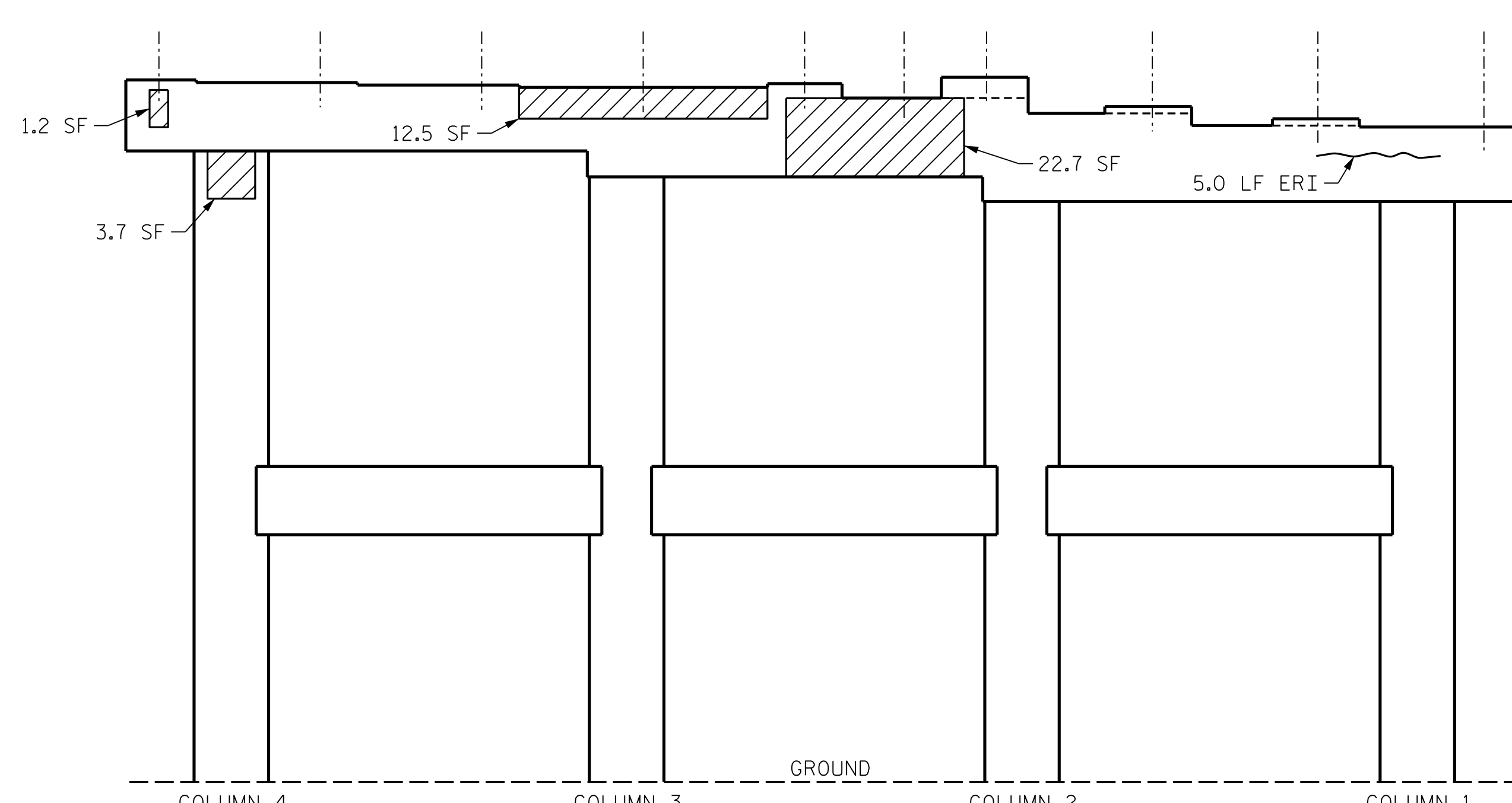
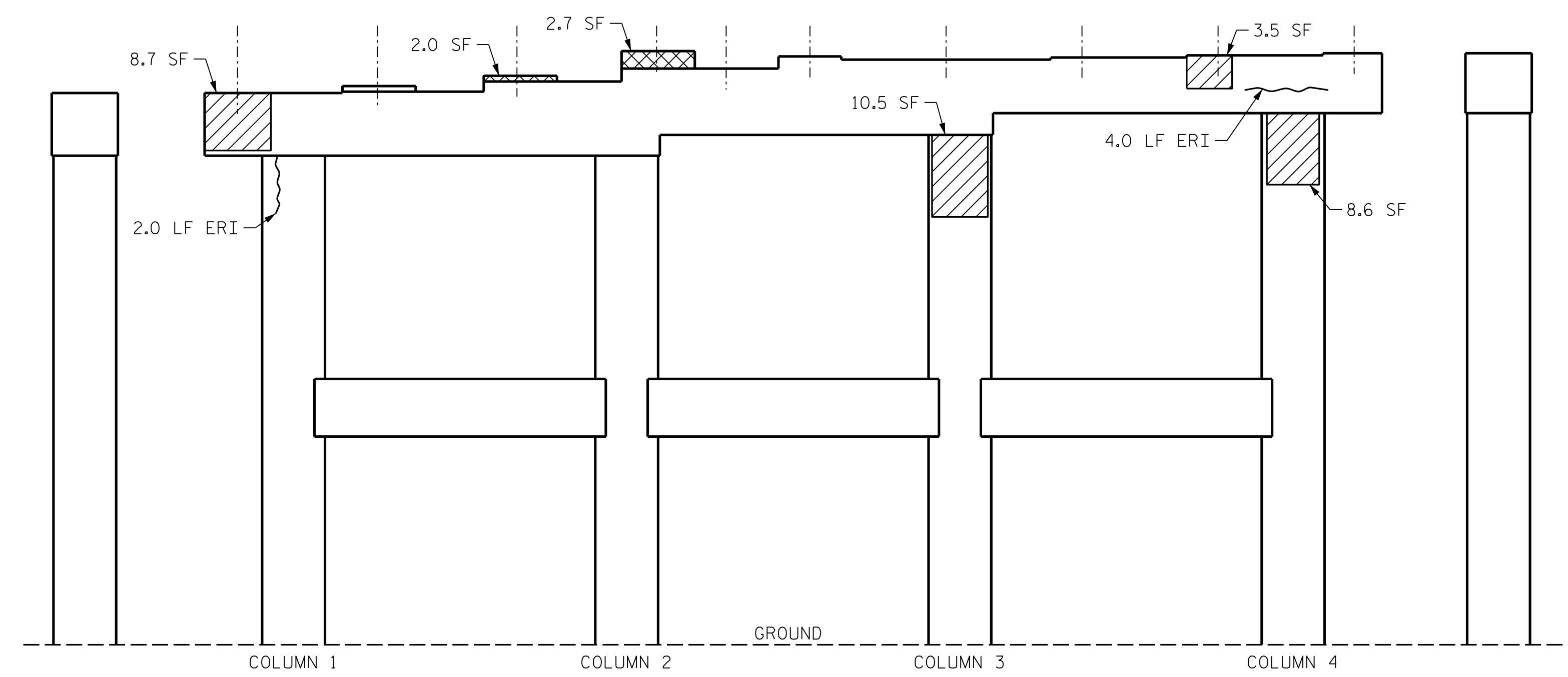
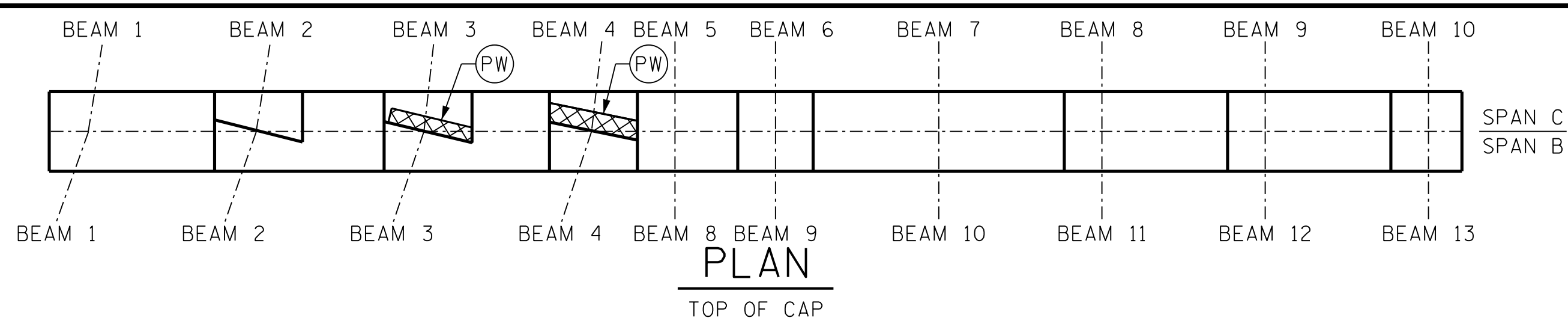
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AS-BUILT REPAIR QUANTITY TABLE

BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	48.6	24.3		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	22.8	11.4		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	4.7	2.4		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	9.0			
COLUMN	2.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	178.2			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

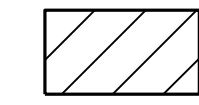

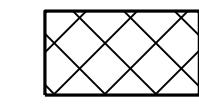

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

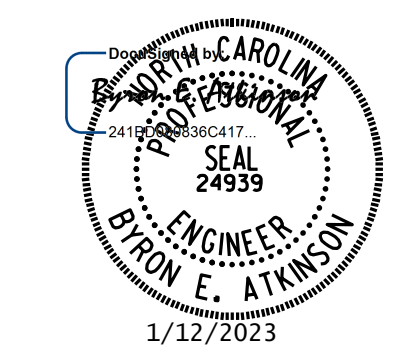
CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE "JACKING DETAIL" SHEET.

KEY

-  SHOTCRETE REPAIR
-  ERI EPOXY RESIN INJECTION
-  CONCRETE REPAIR
-  PEDESTAL WALL REPAIR

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590342



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 2

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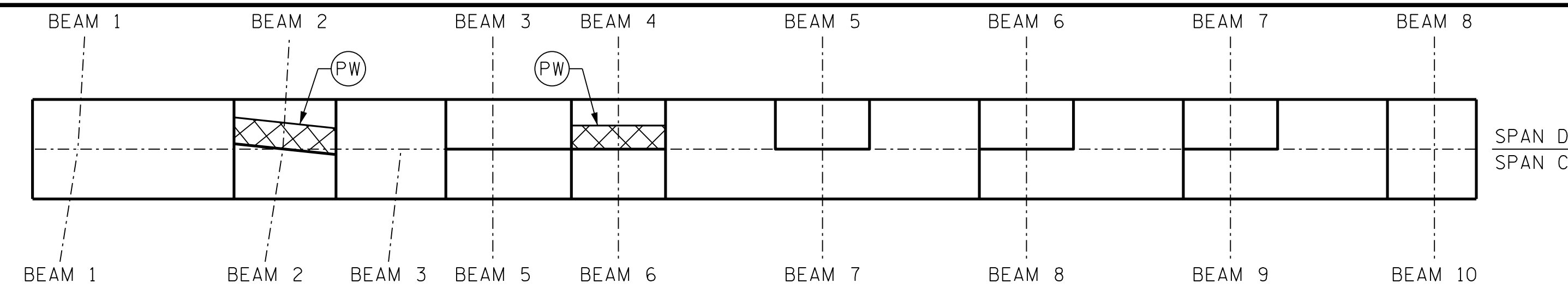
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

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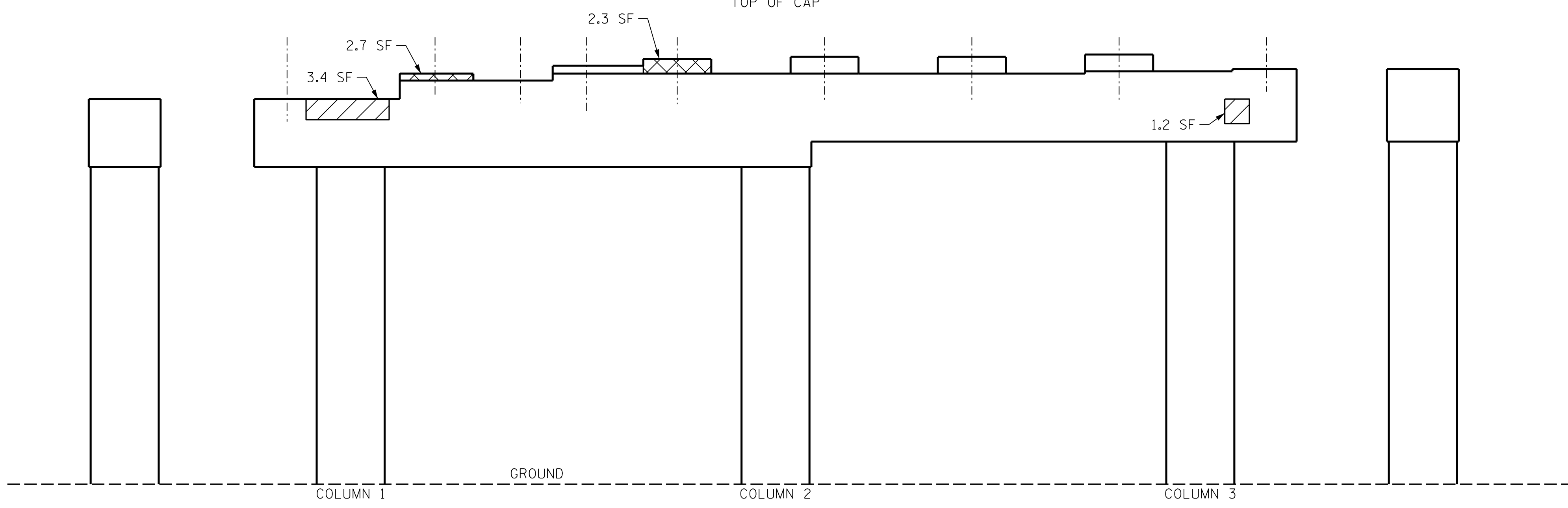
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CHECKED BY : B.E. ATKINSON	DATE : 10/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 10/2022

PLAN
 BOTTOM OF CAP
 (LOOKING UP)

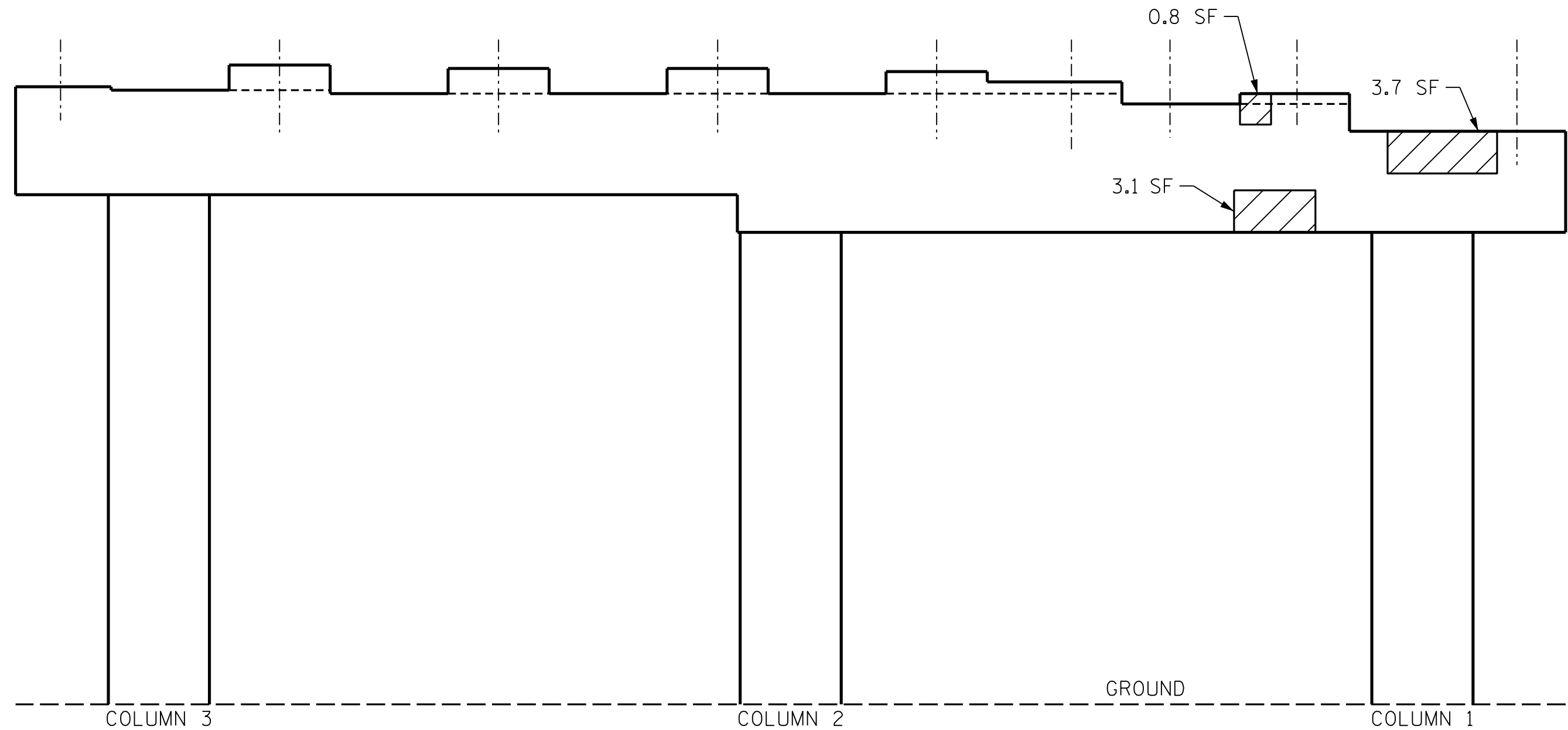
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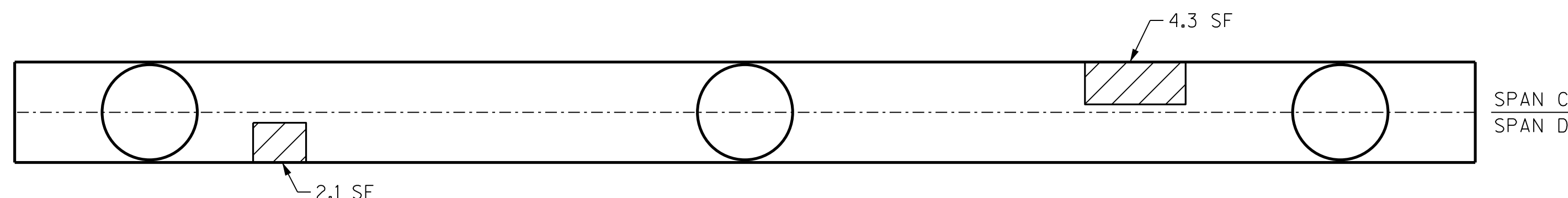
PLAN
TOP OF CAP



ELEVATION
SPAN C



ELEVATION
SPAN D



PLAN
BOTTOM OF CAP
(LOOKING UP)

AS-BUILT REPAIR QUANTITY TABLE

BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	12.2	6.1		
CAP (HORIZONTAL FACE)	6.4	3.2		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	5.0	2.5		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
EPOXY COATING	AREA SF	AREA SF		
TOP OF CAP	145.7			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES:

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FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

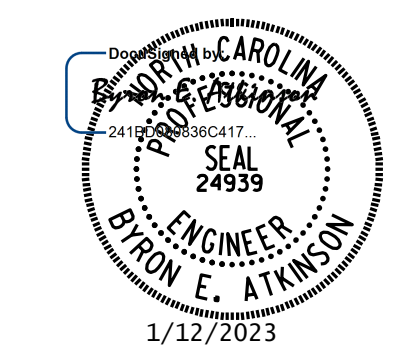
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CONCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR BRIDGE JACKING, SEE "JACKING DETAIL" SHEET.

KEY

- SHOTCRETE REPAIR
- ERI EPOXY RESIN INJECTION
- CONCRETE REPAIR
- PEDESTAL WALL REPAIR

PROJECT NO. I-6052
MECKLENBURG COUNTY
 BRIDGE NO. 590342



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 3

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 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.
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1			3			S8-13 TOTAL SHEETS 108
2			4			

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 CHECKED BY : B.E. ATKINSON DATE : 10/2022
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 10/2022

AS-BUILT REPAIR QUANTITY TABLE

END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.0	0.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
CURTAIN WALL	8.6	4.3		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
CURTAIN WALL	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	76.2			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

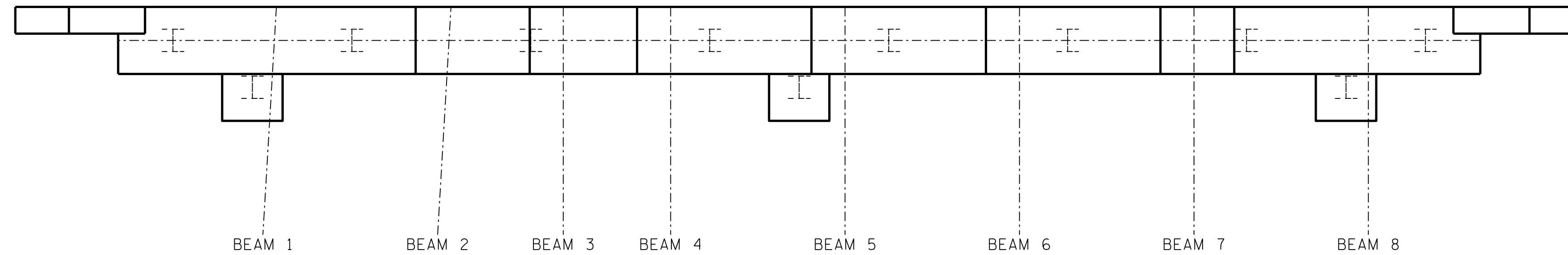
SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

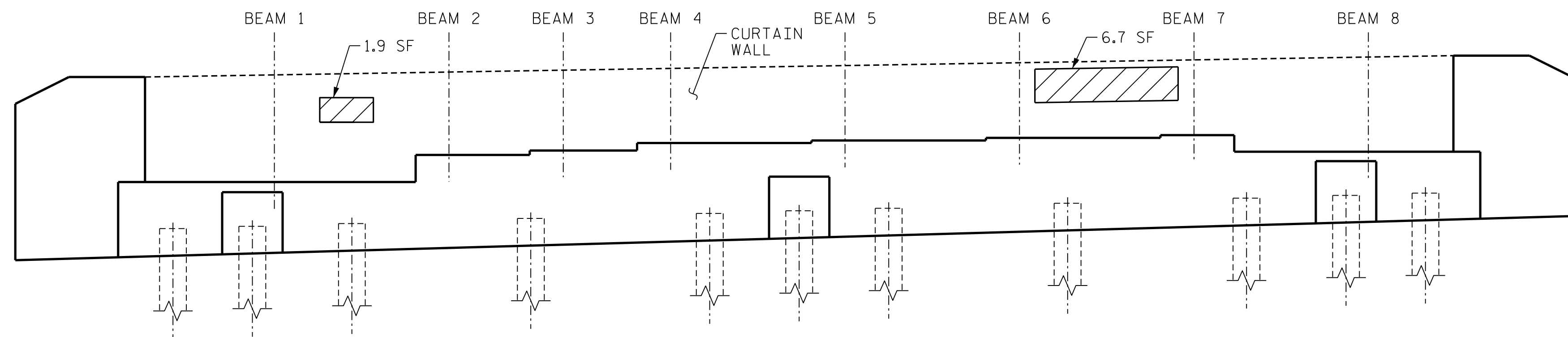
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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PLAN

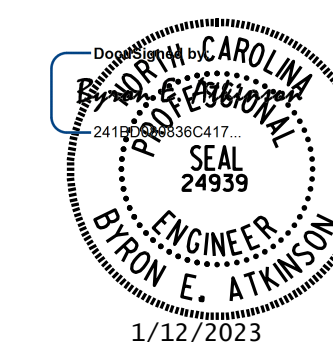
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ELEVATION

END BENT 2

KEY	
	SHOTCRETE REPAIR
	ERI EPOXY RESIN INJECTION
	CONCRETE REPAIR



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MECKLENBURG COUNTY
 BRIDGE NO. 590342

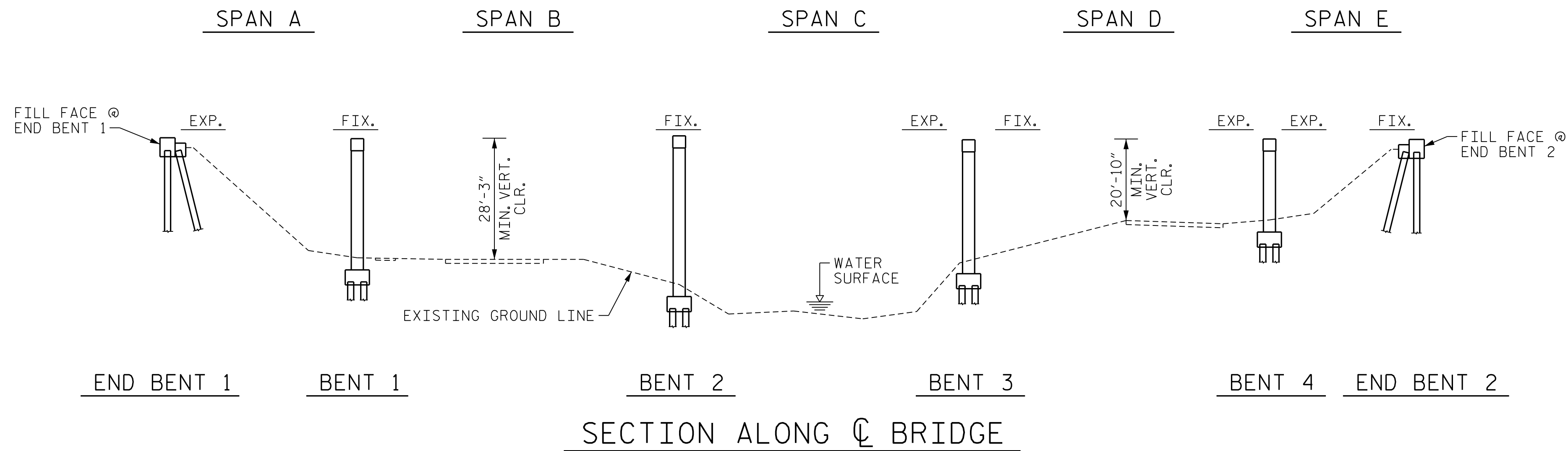
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 108
1			3			
2			4			

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NOTES:

PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 9/17/2022.

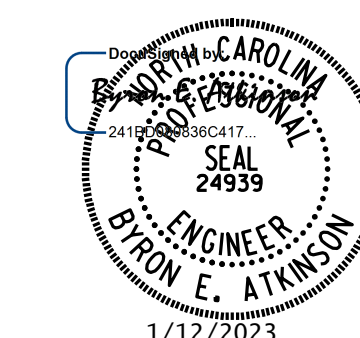
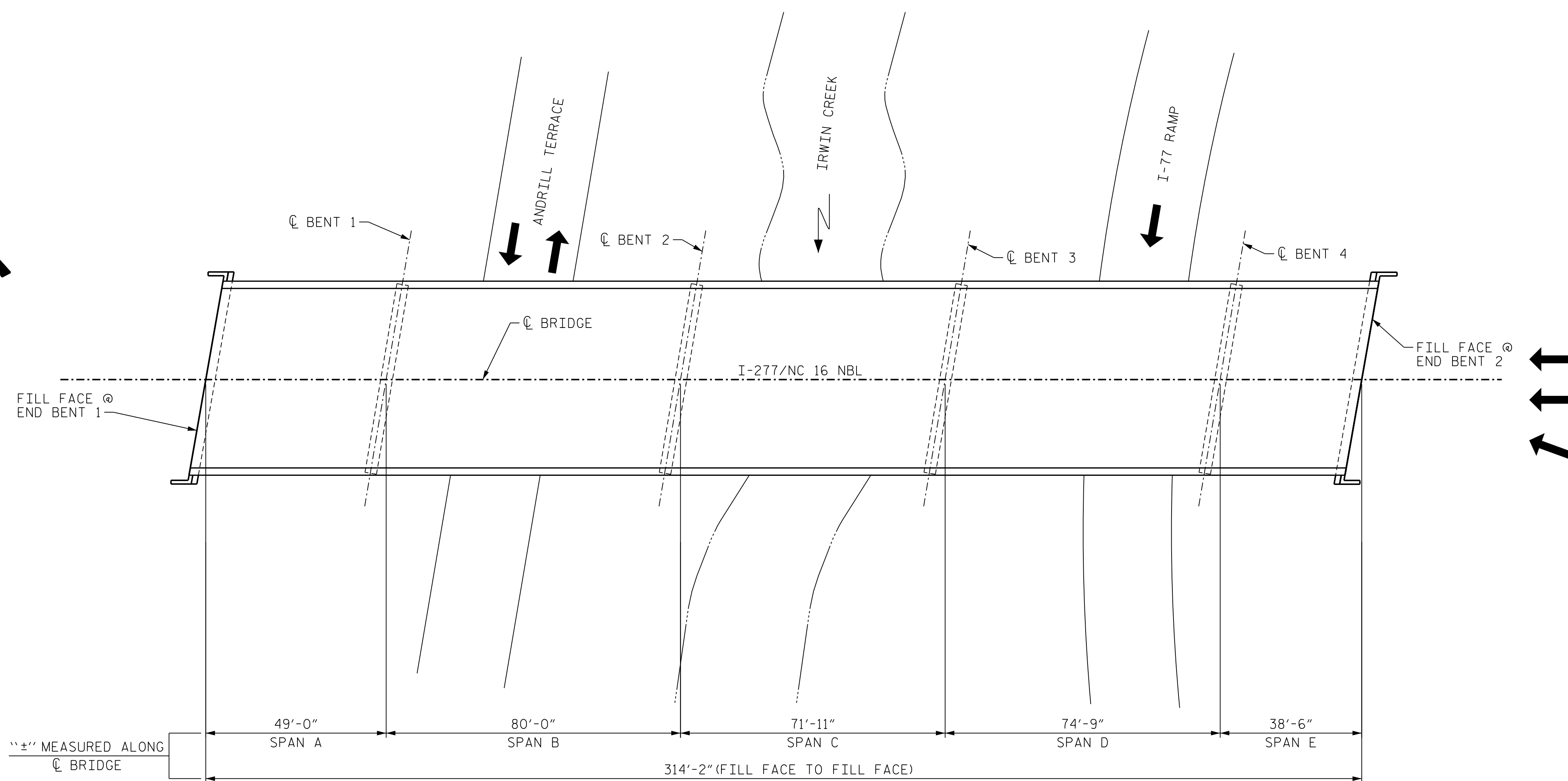
BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS AND ROUTINE INSPECTION REPORT.

SCOPE OF WORK:

- PARTIALLY REMOVE BRIDGE DECK CONCRETE USING SCARIFICATION AND HYDRO-DEMOLITION METHODS.
- PERFORM CLASS II SURFACE PREPARATION AND REPAIR ON DECK SURFACES.
- OVERLAY PREPARED BRIDGE DECK WITH LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH (LMC-VES).
- RECONSTRUCT BRIDGE DECK JOINT AND INSTALL JOINT SEALS.
- GROOVE LMC-VES BRIDGE DECK.
- SUBSTRUCTURE REPAIRS USING EPOXY RESIN INJECTION AND SHOTCRETE.
- EPOXY COATING OF TOP OF CAPS.
- STRUCTURAL STEEL REPAIRS.
- CLEANING AND PAINTING STEEL BEAMS.
- CLEANING AND PAINTING BEARINGS WITH HRCSA.

I HEREBY CERTIFY THAT THIS STRUCTURE HAS REHABILITATED ACCORDING TO THESE PLANS OR AS NOTED HEREIN.

RESIDENT ENGINEER _____ DATE _____



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

PROJECT NO. 15BPR.35
MECKLENBURG COUNTY
BRIDGE NO. 590345

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON
I-277/NC 16 NBL
OVER I-77 RAMP/IRWIN CREEK/
ANDRILL TERRACE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S9-1
2			4			

TOTAL SHEETS: 108

DRAWN BY : B.E. LANNING DATE : 10/2022
CHECKED BY : B.E. ATKINSON DATE : 10/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 10/2022

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LOCATION SKETCH

INFORMATION INDICATED ON THE LOCATION SKETCH SHALL BE CONSIDERED GENERAL INFORMATION ONLY. CONTRACTOR SHALL CONFIRM, THROUGH OTHER SOURCES, SPECIFIC INFORMATION REGARDING THE BRIDGES, ROADWAYS, UTILITIES, THE SURROUNDING AREA, AND ANY OTHER ASPECTS THAT MAY BE NECESSARY TO PERFORM AND COMPLETE THE PROJECT.

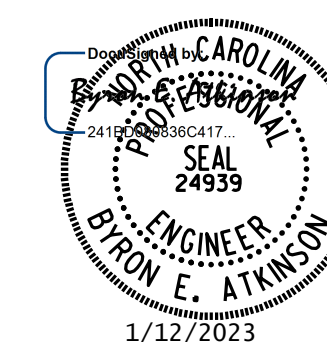
BRIDGE COORDINATES	
LATITUDE	LONGITUDE
35°-14'-43.23"	80°-50'-54.22"

NOTES:

- EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE 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.
- FOR CONTROL OF TRAFFIC AND LIMITS ON PHASING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLANS.
- DURING CONSTRUCTION, BERMS OR APPROPRIATE MEASURES SHALL BE USED TO ENSURE HYDRO-DEMOLITION WATER DOES NOT FLOW OR MIGRATE INTO ACTIVE TRAVEL LANES.
- EXISTING JOINTS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.
- FOR CLASS II SURFACE PREPARATION, SCARIFYING BRIDGE DECK AND HYDRO-DEMOLITION OF BRIDGE DECK, SEE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS.
- THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS, SEE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISION.
- LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR VOLUMETRIC MIXER, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.
- FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.
- WORK ON BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL BELOW. THE CONTRACTOR SHALL SUBMIT PLANS FOR CONSTRUCTION IN ACCORDANCE TO THE PROJECT SPECIAL PROVISION.
- PRIOR TO BEGINNING WORK, CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPLETE SEQUENCE OF TASKS FOR EACH OPERATION AFFECTING THE BRIDGE SURFACE AND/OR TRAFFIC.
- ANY DAMAGE TO EXISTING REINFORCING STEEL, DURING CONTRACTOR'S OPERATIONS, SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AND PERFORMED AT NO ADDITIONAL COST.
- FOR POLLUTION CONTROL, SEE SPECIAL PROVISIONS.
- FOR CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA, SEE SPECIAL PROVISIONS.
- FOR BEAM REPAIR PLATING, SEE SPECIAL PROVISIONS.
- FOR BEAM REPAIR CUT-OUT, SEE SPECIAL PROVISIONS.
- FOR BOLTED BEAM REPAIR, SEE SPECIAL PROVISIONS.
- FOR STEEL BEARING KEEPER ANGLE ASSEMBLY, SEE SPECIAL PROVISIONS.
- FOR CLEANING AND REPAINTING OF BRIDGE, AND PAINTING CONTAINMENT FOR BRIDGE, SEE "PAINTING EXISTING STRUCTURE" SPECIAL PROVISION.
- FOR TYPE I BRIDGE JACKING, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.35
MECKLENBURG COUNTY
 BRIDGE NO. 590345

SHEET 2 OF 2



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UNLESS ALL SIGNATURES COMPLETED**

MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE ON
 I-277/NC 16 NBL
 OVER I-77 RAMP/IRWIN CREEK/
 ANDRILL TERRACE

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS 108
2			4			

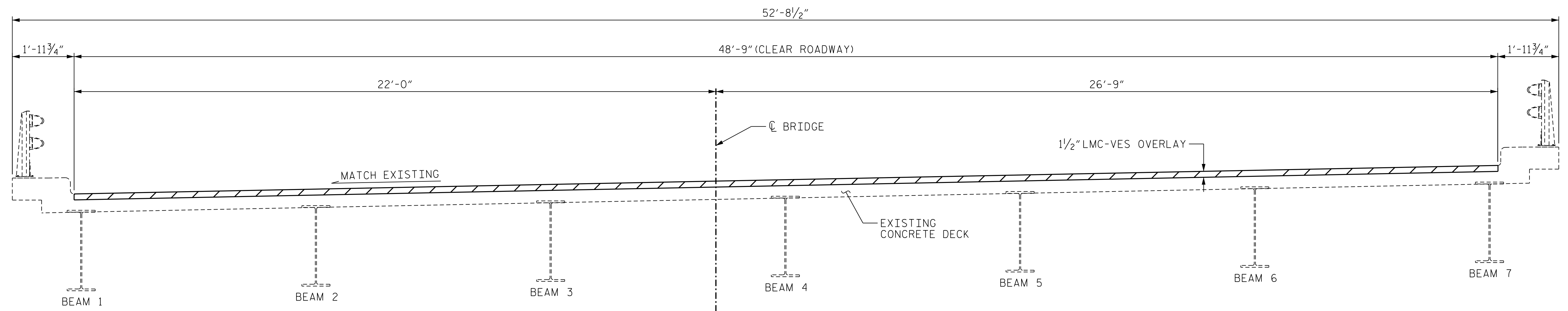
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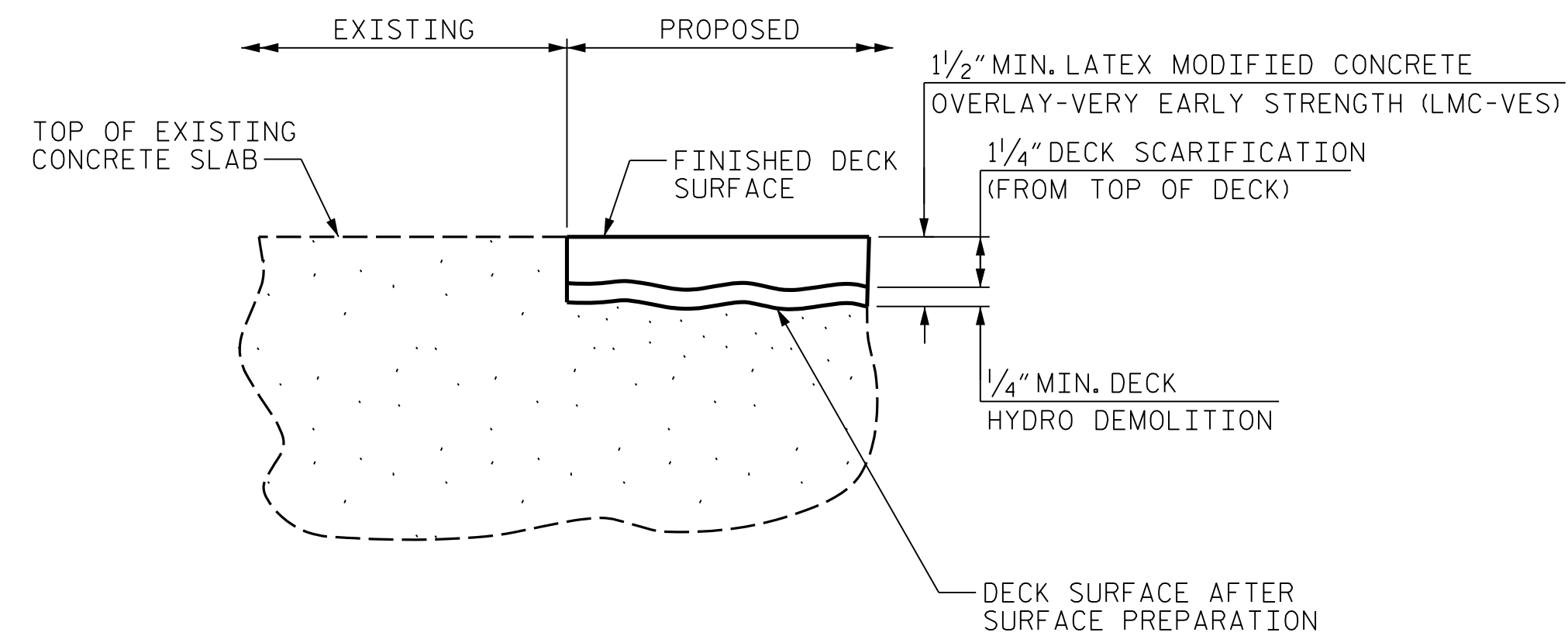
NOTE

WHEN PREPARING THE SURFACE FOR LMC OVERLAY-VES ADJACENT TO A PREVIOUSLY PLACED LMC-VES STAGE, THE PREVIOUSLY PLACED LMC-VES SHALL BE REMOVED FOR A DISTANCE OF 4-INCHES FROM THE LMC-VES EDGE. THE SURFACE OF THE NEW STAGE AREA, ALONG WITH THE 4 INCH OVERLAY AREA, SHALL BE PREPARED AS PER THE LMC OVERLAY SURFACE PREPARATION SPECIAL PROVISIONS. NEW LMC-VES SHALL BE PLACED IN THE 4-INCH OVERLAP, AS PART OF NEW LMC-VES STAGE PLACEMENT.

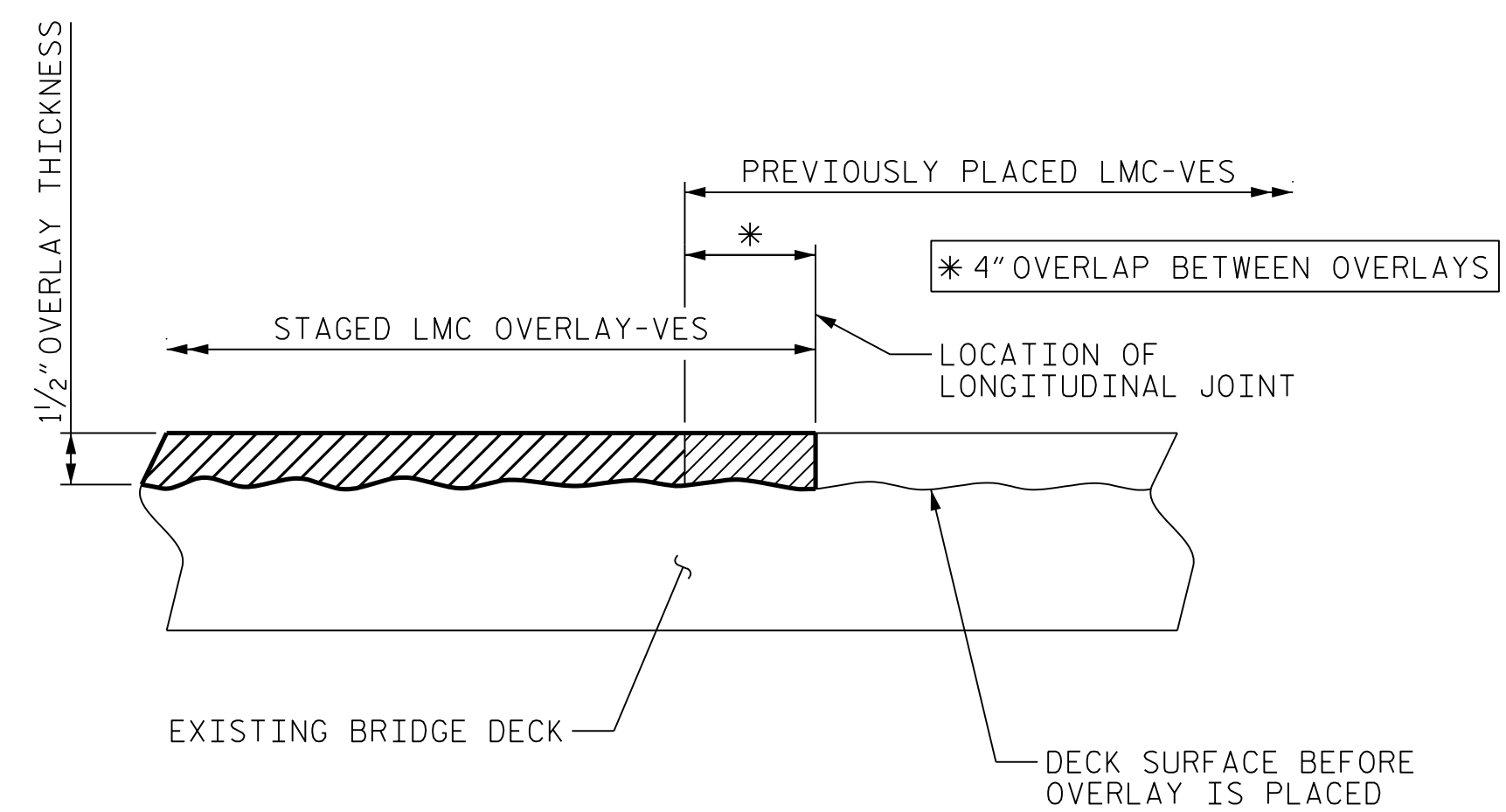
SEE TRAFFIC MANAGEMENT PLANS FOR LANE WIDTHS, SEQUENCING, AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF OVERLAY SURFACE PREPARATION AND LMC-VES PLACEMENT.



TYPICAL SECTION

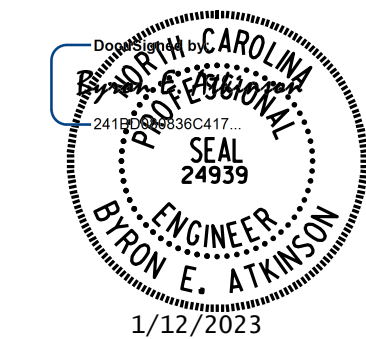


DETAIL FOR LMC-VES OVERLAY



**SECTION THRU DECK
STAGED LMC-VES OVERLAY JOINT**

PROJECT NO. 15BPR.35
MECKLENBURG COUNTY
 BRIDGE NO. 590345



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION
 &
 OVERLAY DETAILS

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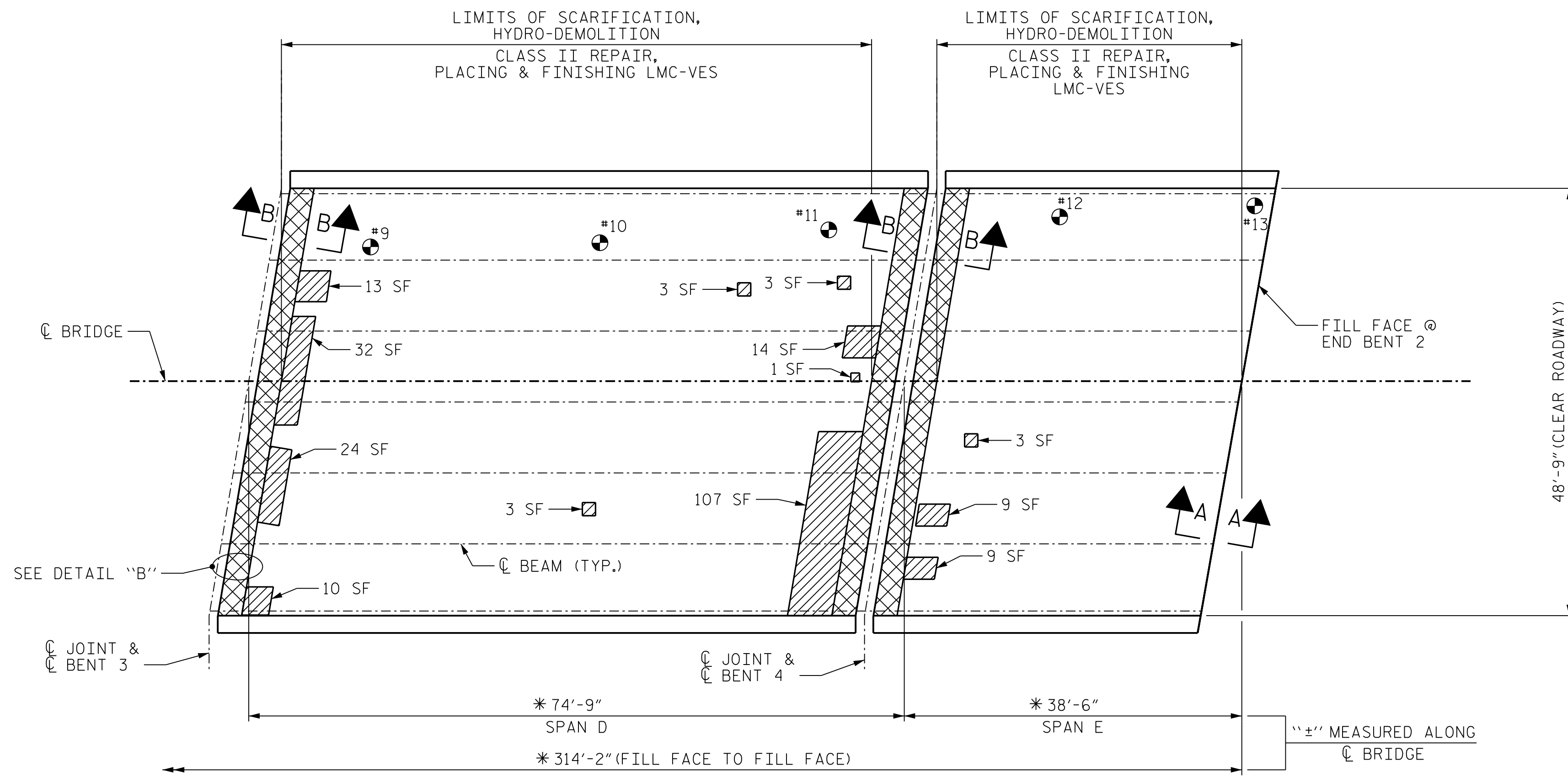
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

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2			4		

SHEET NO.
S9-3
 TOTAL SHEETS
108

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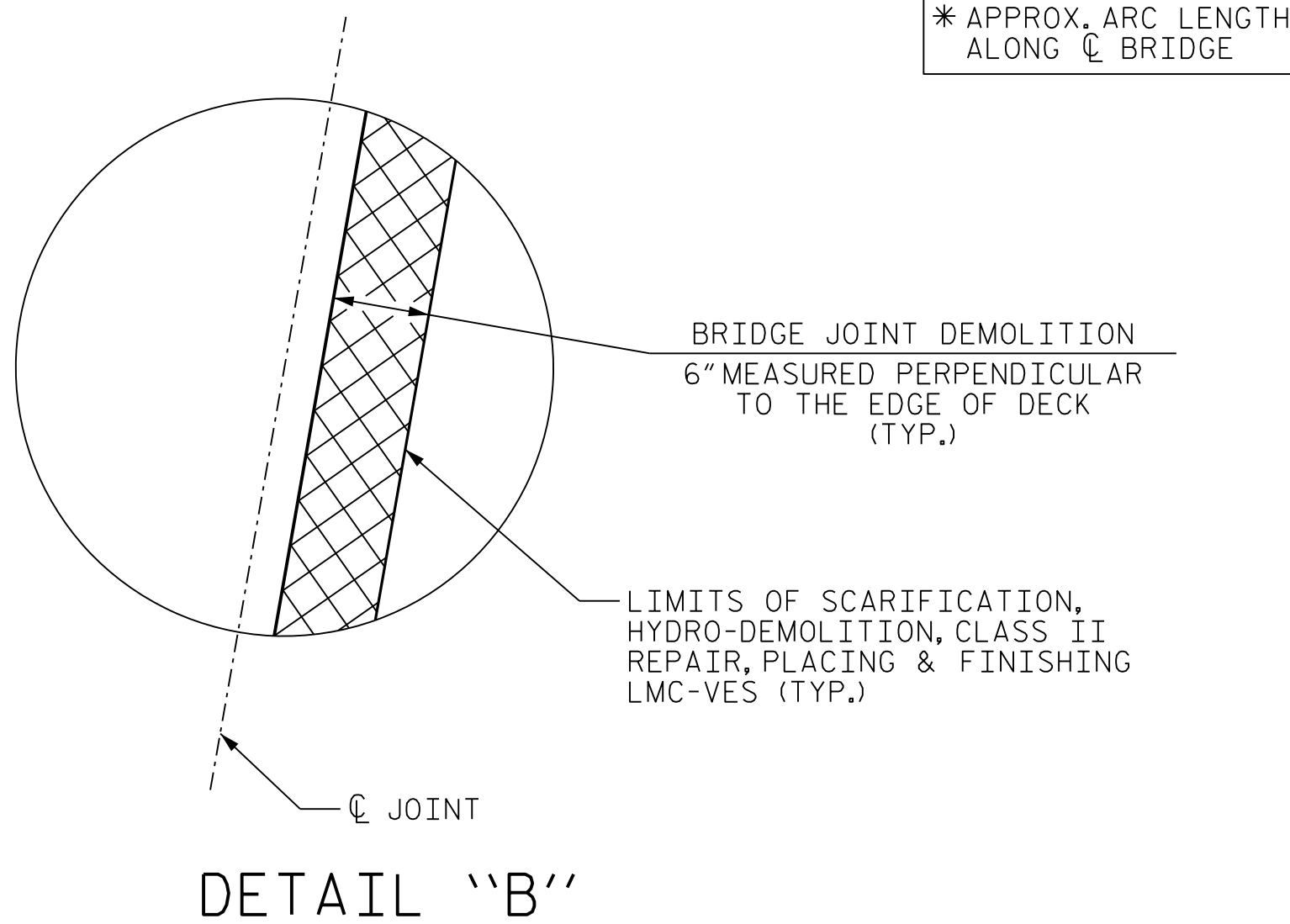
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TEST LOCATION	*CONCRETE COVER	ESTIMATED CONCRETE STRENGTH
	(INCH)	(PSI)
#9	1 3/4"	4500
#10	1 7/8"	4900
#11	2 1/4"	5300
#12	1 3/4"	5700
#13	1 3/8"	5300

INFORMATION IN CHART TAKEN FROM DECK EVALUATION DATED 03/23/18.
 * CONCRETE COVER FOR TOP BARS IN THE DECK ARE BASED ON DECK EVALUATION DATED 03/23/18. EXISTING BRIDGE PLANS INDICATE 1/2" CONCRETE COVER.

PLAN OF SPANS



- BRIDGE JOINT DEMOLITION
- CLASS II SURFACE PREPARATION
- DECK SCARIFICATION, HYDRO-DEMOLITION AND LATEX MODIFIED CONCRETE OVERLAY-VES
- #X TEST HOLE LOCATION

TOP OF DECK REPAIRS		
	ESTIMATE	ACTUAL
SCARIFYING BRIDGE DECK	606 SY	
HYDRO-DEMOLITION OF BRIDGE DECK	606 SY	
CLASS II SURFACE PREPARATION	25.8 SY	
LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	29.6 CY	
PLACING & FINISHING LMC-VES OVERLAY	606 SY	
BRIDGE JOINT DEMOLITION	75 SF	
GROOVING BRIDGE FLOORS	5082 SF	

NOTES:

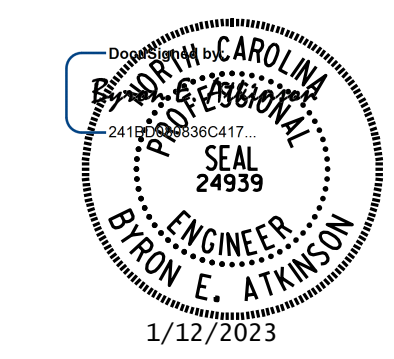
REPAIR LOCATIONS AND ESTIMATE OF QUANTITIES ARE BASED ON THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ENTER THE ACTUAL QUANTITIES INTO THE AS-BUILT REPAIR QUANTITY TABLE.

PAYMENT FOR CLASS II SURFACE PREPARATION IS BASED ON THE SQUARE YARDS OF ADDITIONAL DEMOLITION REQUIRED FOLLOWING HYDRO-DEMOLITION OF THE BRIDGE DECK. SEE "LMC OVERLAY SURFACE PREPARATION" SPECIAL PROVISIONS.

FOR SECTIONS A-A AND B-B, SEE "JOINT DETAILS" SHEET.

FOR UNDERSIDE OF DECK REPAIRS, SEE "BEAM REPAIR LOCATIONS" SHEET.

PROJECT NO. 15BPR.35
 MECKLENBURG COUNTY
 BRIDGE NO. 590345



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 SURFACE PREPARATION
 SPANS D AND E

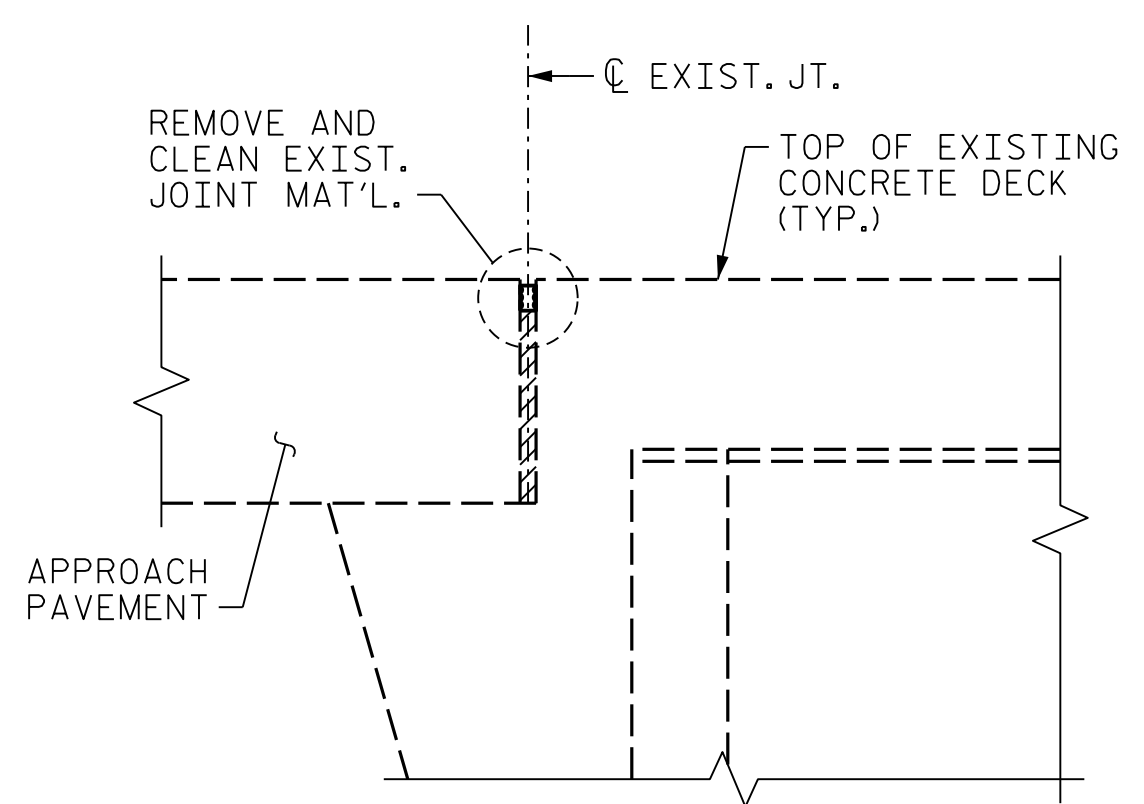
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 FIRM PE NUMBER : P-0671

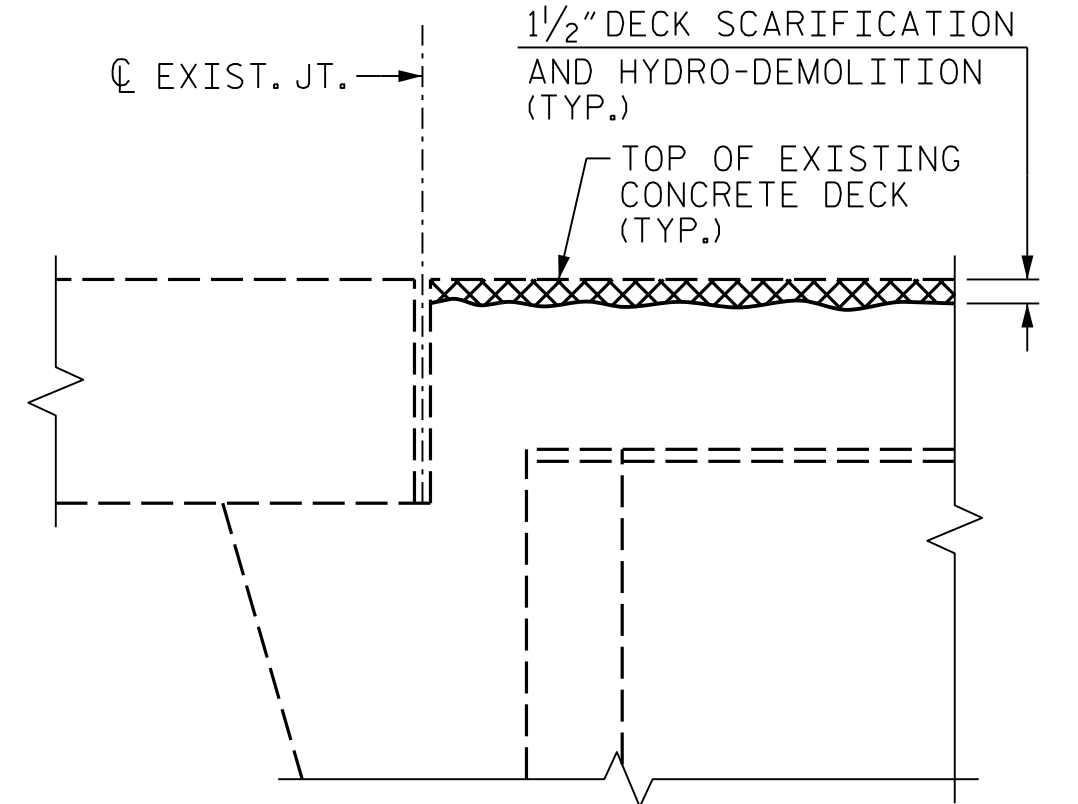
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2			4			

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 CHECKED BY : B.E. ATKINSON DATE : 10/2022
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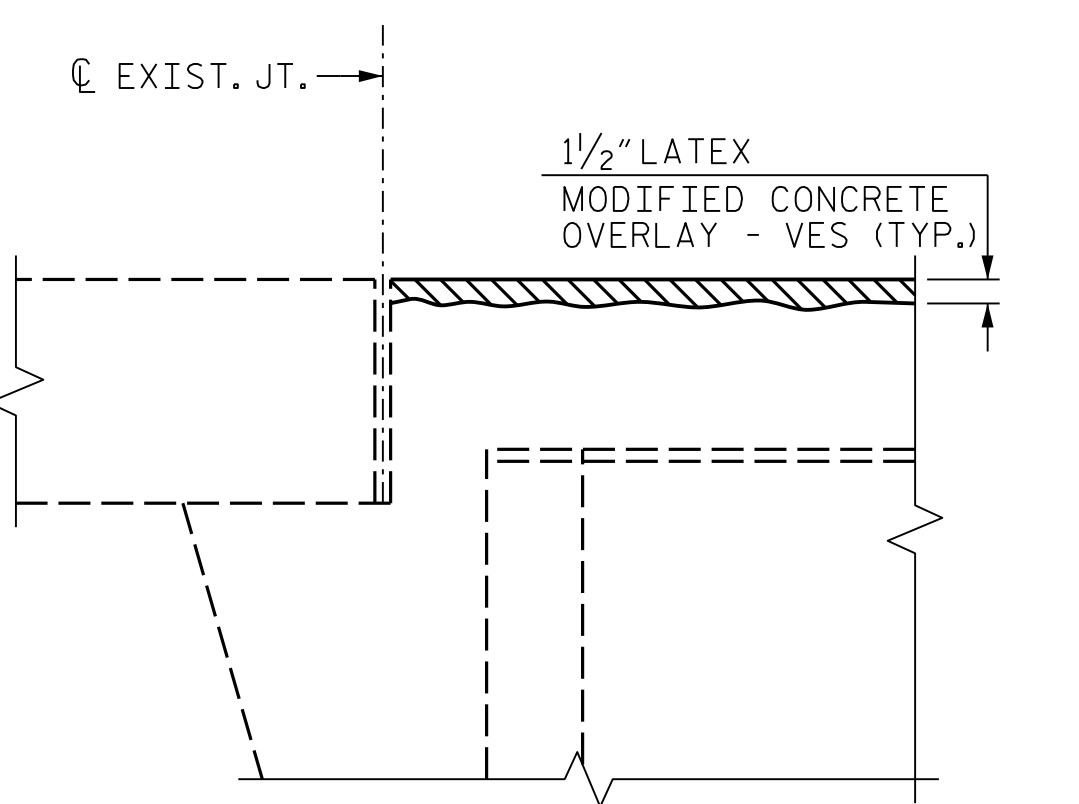
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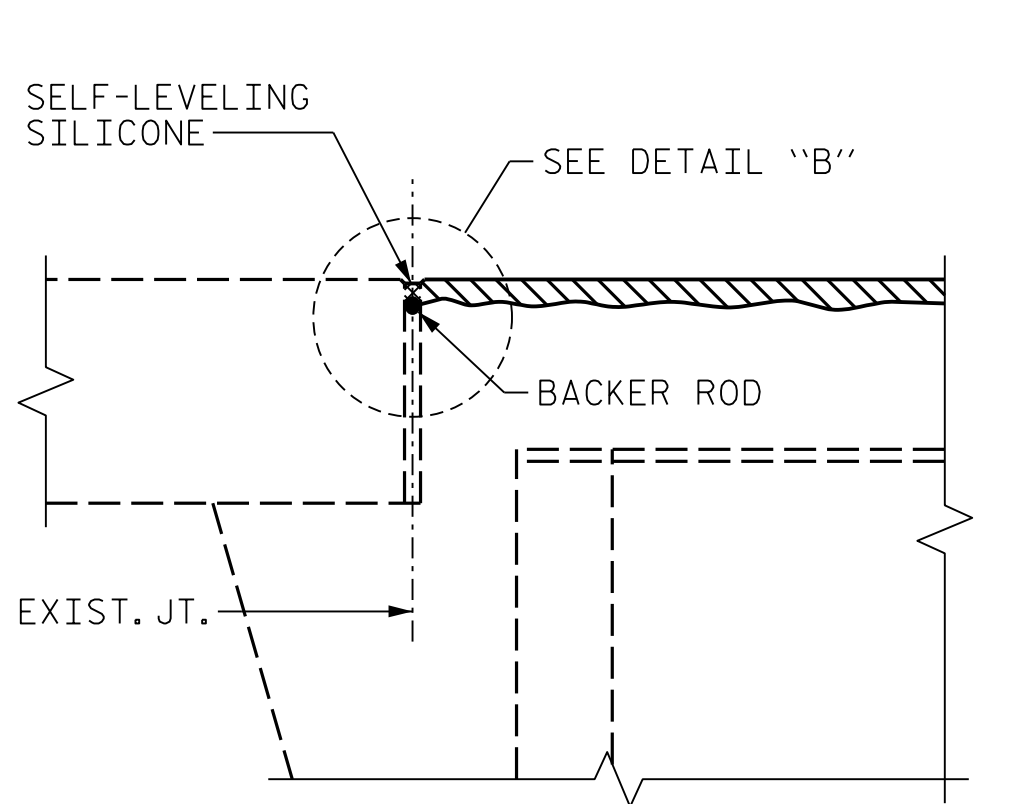
EXISTING JOINT AT END BENT



MINIMUM EXISTING JOINT DEMOLITION AT END BENT

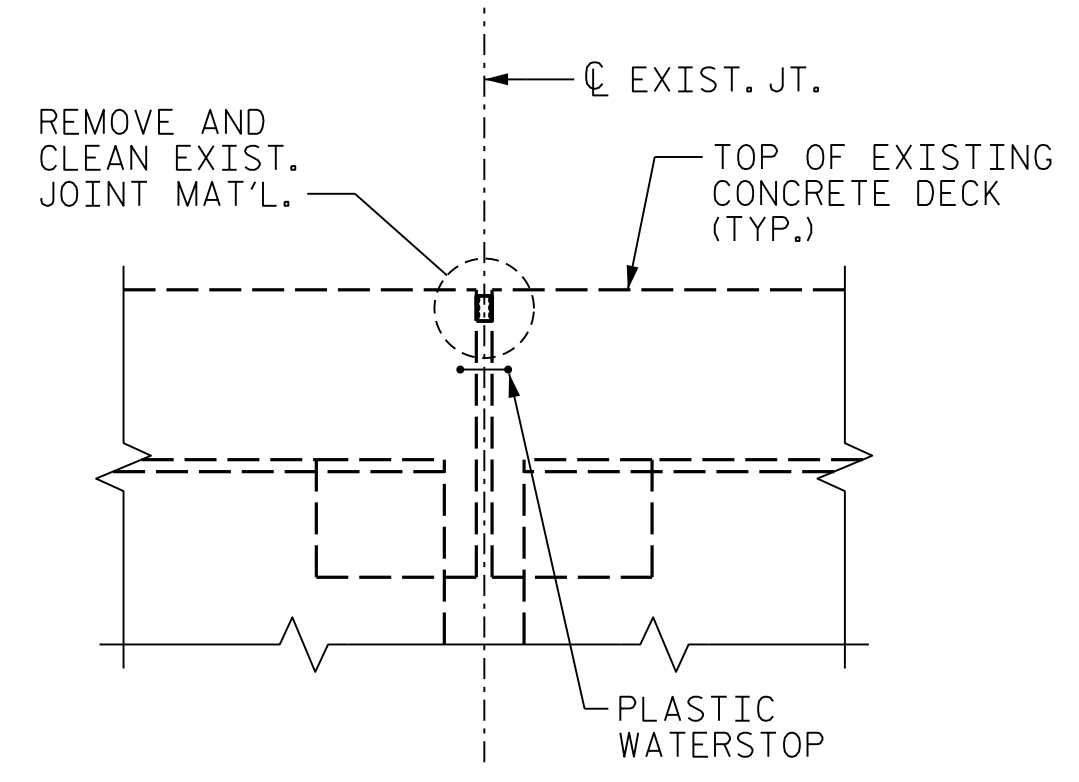


PROPOSED JOINT PRE-INSTALL DIMENSIONS

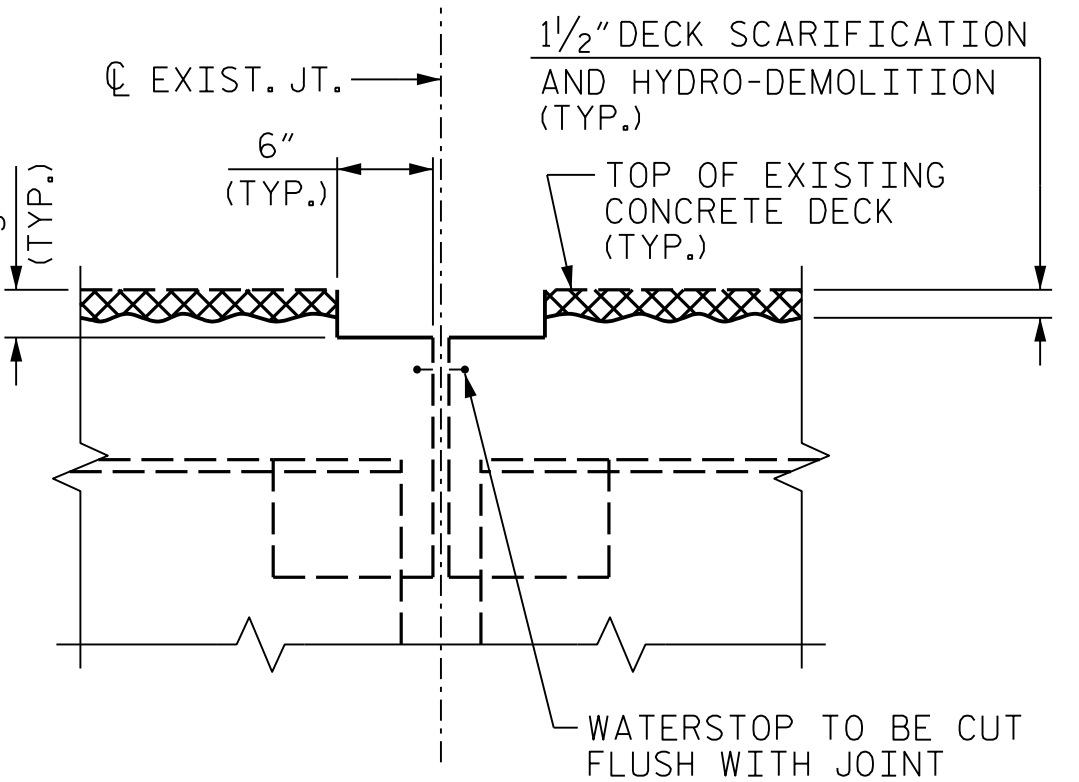


PROPOSED JOINT

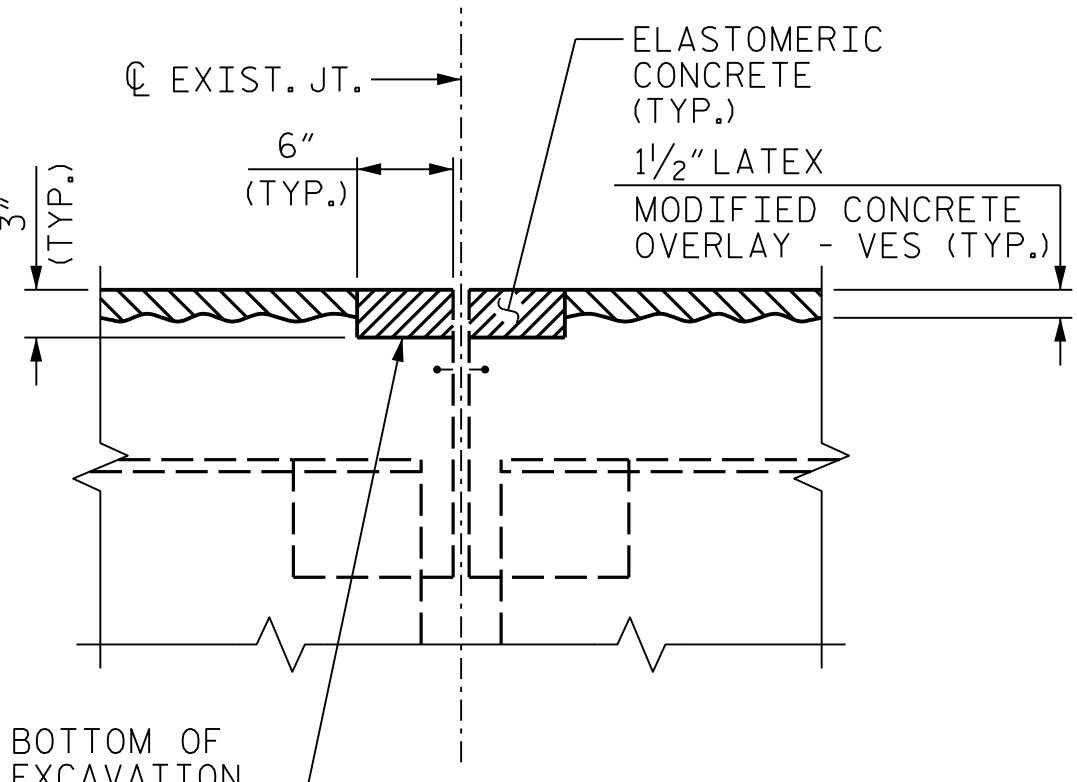
SECTION A-A



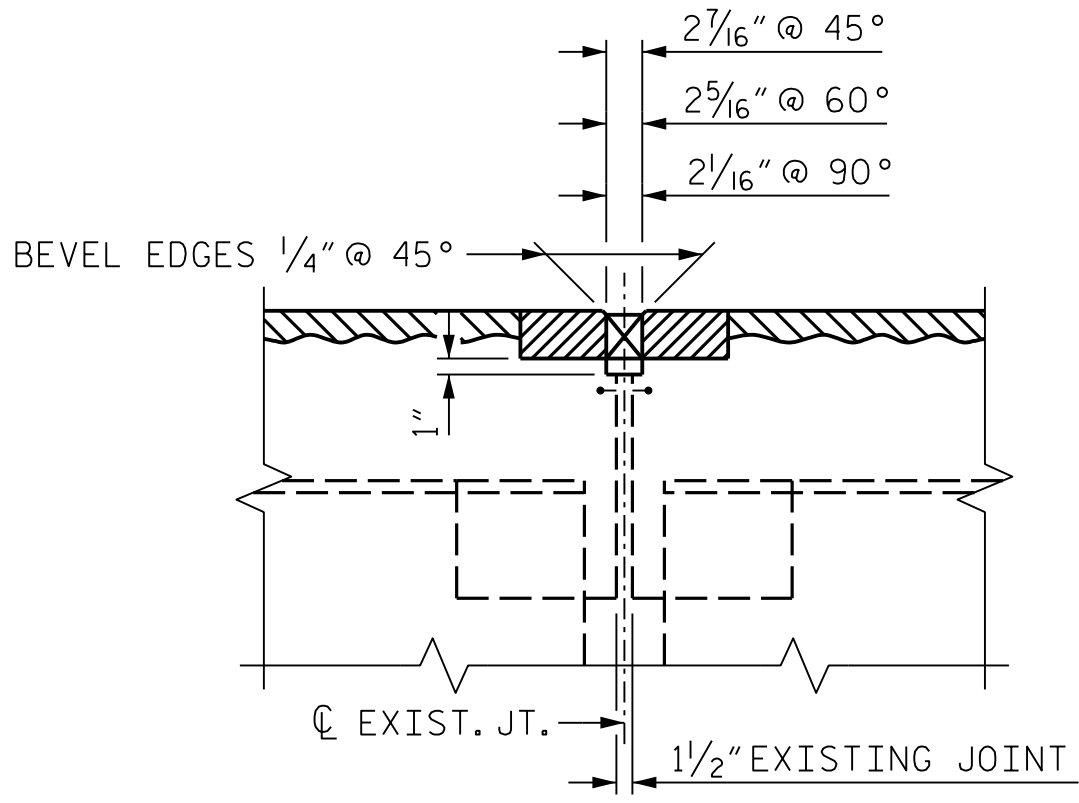
EXISTING JOINT



MINIMUM EXISTING JOINT DEMOLITION AT BENT

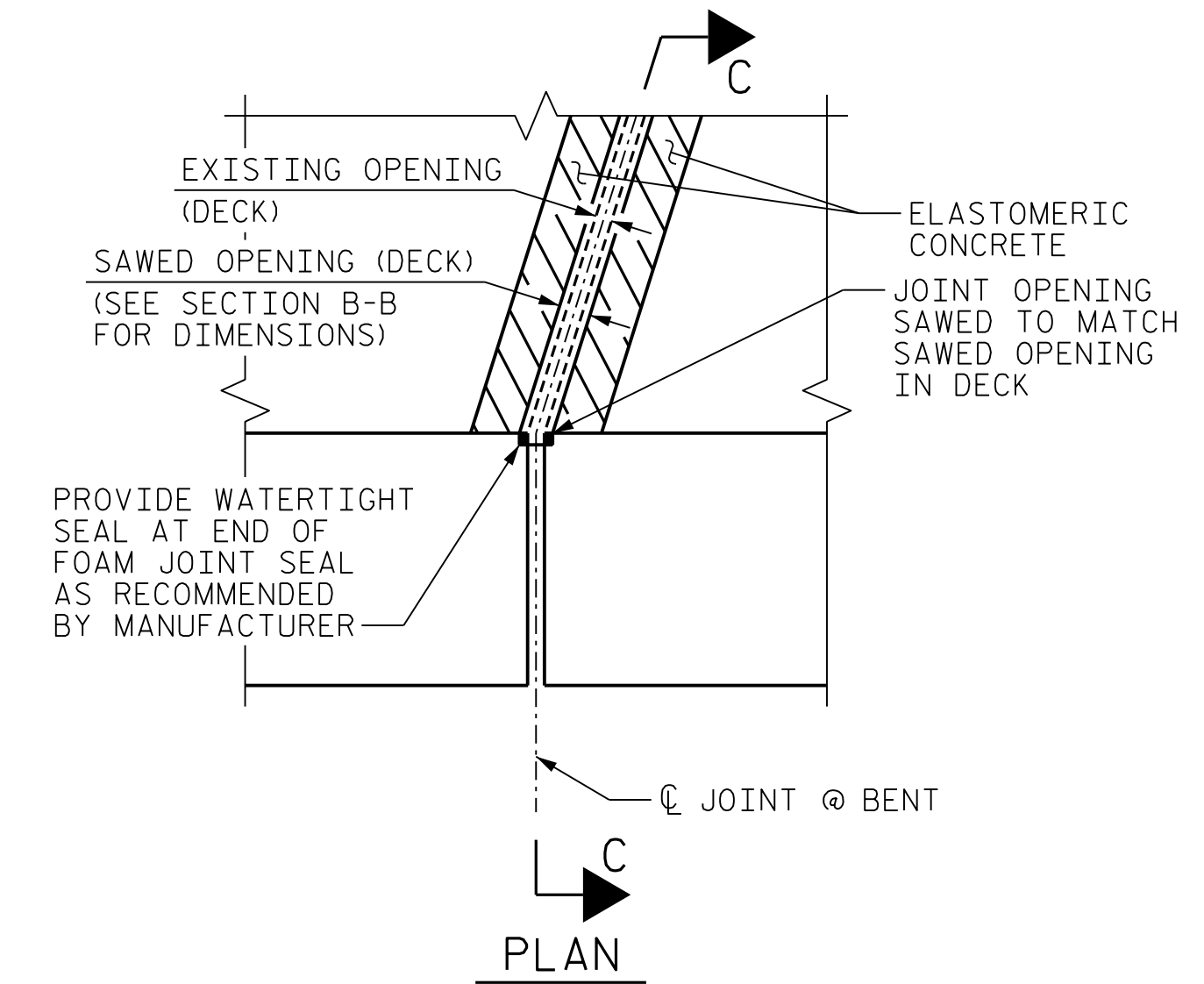


PROPOSED JOINT PRE-SAWED DIMENSIONS

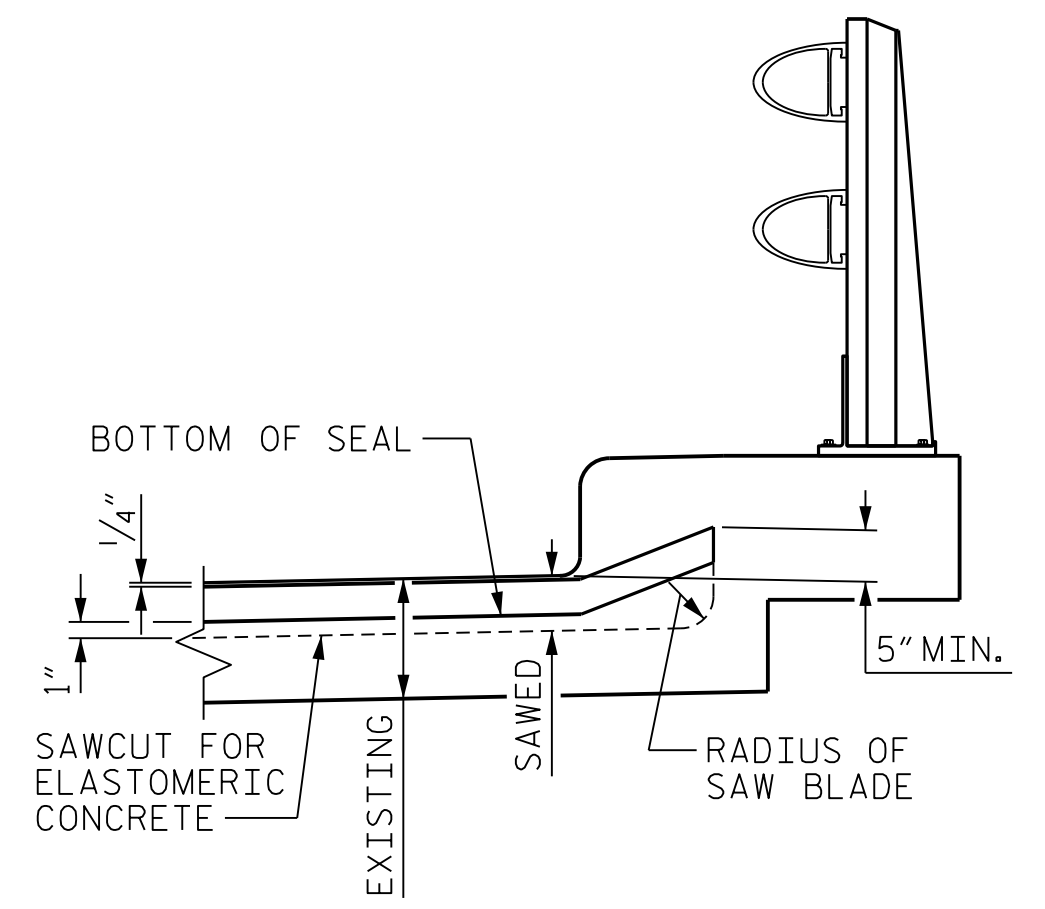


PROPOSED FOAM JOINT SEAL EXPANSION

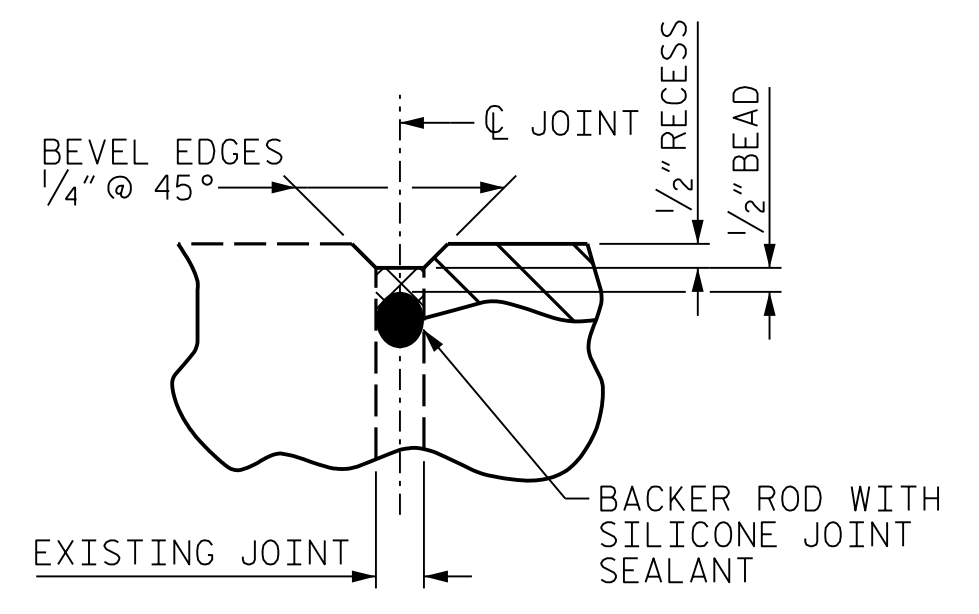
SECTION B-B



JOINT DETAILS AT CURB



SECTION C-C



DETAIL "B"

ELASTOMERIC CONCRETE FOR PRESERVATION		
BENT 3	12.5	CF
BENT 4	12.5	CF
* TOTAL	25.0	CF

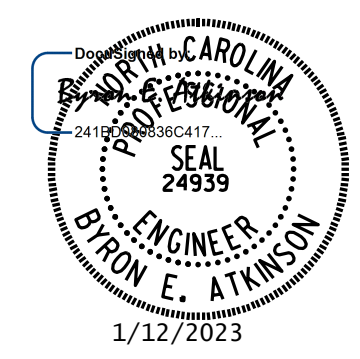
* BASED ON MINIMUM BLOCKOUT SHOWN.

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	104 LF	
POURABLE SILICONE JOINT SEALANT	73 LF	

NOTES

- HYDRO-DEMOLITION OR EXCAVATION OF CONCRETE AT THE EXISTING JOINT SHALL RESULT IN THE BOTTOM OF THE EXCAVATION BEING REASONABLY FLAT AND LEVEL, TO PROVIDE SUFFICIENT SUBSTRATE FOR PLACEMENT AND SUPPORT OF ELASTOMERIC CONCRETE.
- RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS NEEDED.
- FINAL JOINT SEALS SHALL NOT BE INSTALLED UNTIL THE LMC OVERLAY IS COMPLETE.
- THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN 1/4", NOTIFY THE ENGINEER.
- THE MANUFACTURER IS TO PROVIDE THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL FOR THE SIZE OF THE OPENING ON THE PLANS AND ACCOMMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.
- FOAM JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.
- THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.
- THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.
- THE INSTALLED FOAM JOINT SEALS SHALL BE WATER TIGHT.
- QUANTITIES SHOWN IN THE ELASTOMERIC CONCRETE FOR PRESERVATION TABLE ARE BASED ON THE MINIMUM JOINT DEMOLITION SHOWN.
- FINAL SURFACE OF THE JOINT DEMOLITION AREA PRIOR TO PLACEMENT OF CONCRETE REPAIR MATERIAL OR ELASTOMERIC CONCRETE SHOULD BE REASONABLY FLAT AND LEVEL. ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF THE SURFACE PRIOR TO PLACEMENT OF REPAIR CONCRETE OR ELASTOMERIC CONCRETE.
- FOR EXCAVATION BELOW THE BOTTOM OF THE PLANNED JOINT DEMOLITION, CONCRETE FOR DECK REPAIR SHALL BE PLACED IN THE EXCAVATED AREA TO THE ELEVATION AT BOTTOM OF THE PROPOSED ELASTOMERIC CONCRETE FOR PRESERVATION HEADERS SHOWN.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR CONCRETE FOR DECK REPAIR, SEE SPECIAL PROVISIONS.
- FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

PROJECT NO. 15BPR.35
 MECKLENBURG COUNTY
 BRIDGE NO. 590345



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

JOINT DETAILS

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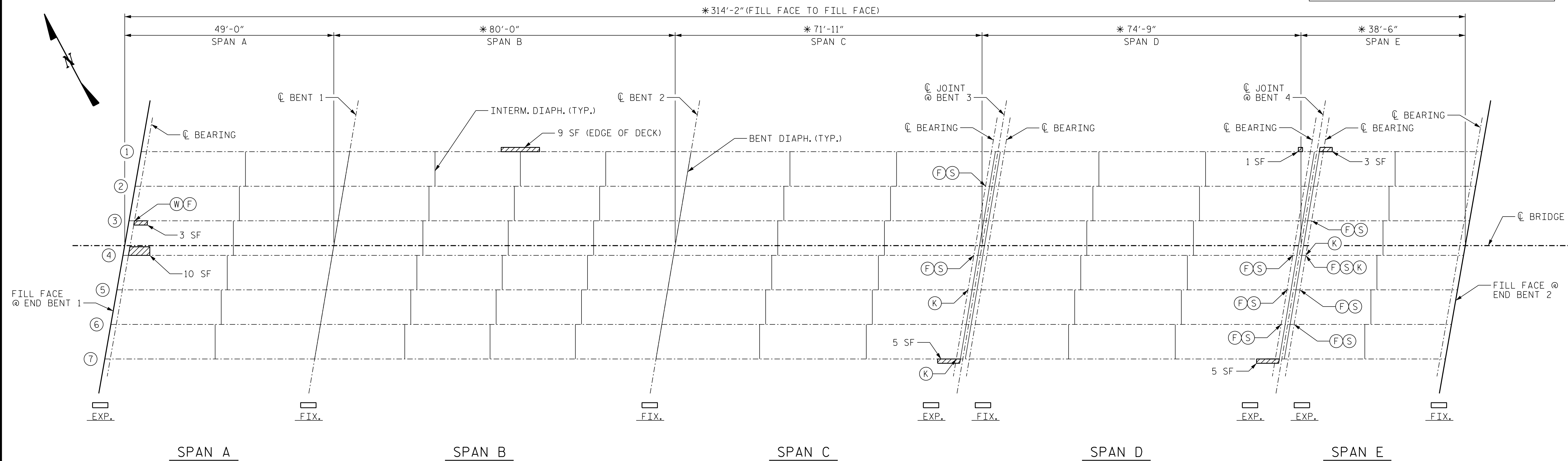
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CHECKED BY : B.E. ATKINSON	DATE : 10/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 10/2022

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* APPROXIMATE ARC LENGTHS ALONG C BRIDGE.



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KEY	
(+)	BEAM NUMBER
(W)	WEB PLATING REPAIR
(S)	STIFFENER REPAIR
(F)	BOTTOM FLANGE PLATING REPAIR
(I)	INTERMEDIATE BEAM PLATING REPAIR
(BE)	BEAM END REPAIR
(BW)	BOLTED WEB PLATE REPAIR
(K)	STEEL BEARING KEEPER ANGLE ASSEMBLY
(Hatched)	UNDERSIDE OF DECK REPAIR

FRAMING PLAN

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 AFTER THE STRUCTURAL STEEL HAS BEEN CLEANED, BLASTED, AND PRIMED, THE CONTRACTOR AND ENGINEER SHALL REVIEW THE STEEL TO VERIFY NOTED REPAIR LOCATIONS AND TO IDENTIFY ANY ADDITIONAL REPAIR LOCATIONS. THE ENGINEER SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIR DETAILS, SEE "BEAM REPAIR DETAILS", "STEEL KEEPER ANGLE ASSEMBLY DETAILS" AND "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEETS.

THE LOCATIONS AND DIMENSIONS OF THE AREAS FOR STEEL BEAM REPAIR ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR, IN CONJUNCTION WITH THE ENGINEER, SHALL VERIFY THE LOCATION AND EXTENTS OF REPAIR AREAS PRIOR TO STEEL FABRICATION.

FOR CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA, SEE SPECIAL PROVISIONS.

STRUCTURAL STEEL REPAIRS SHALL BE COMPLETED BEFORE FINAL CLEANING AND PAINTING OF STRUCTURAL STEEL.

FOR BEAM REPAIR PLATING, SEE SPECIAL PROVISIONS.

FOR BEAM REPAIR CUT-OUT, SEE SPECIAL PROVISIONS.

FOR BOLTED BEAM REPAIR, SEE SPECIAL PROVISIONS.

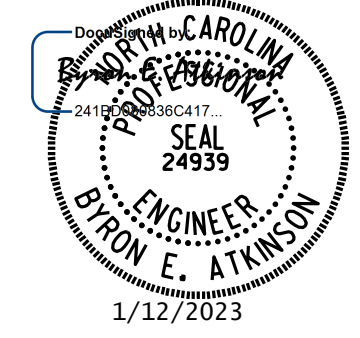
PROJECT NO. 15BPR.35
 MECKLENBURG COUNTY
 BRIDGE NO. 590345

UNDERSIDE OF DECK REPAIRS				
SHOTCRETE REPAIRS	QUANTITIES			
	ESTIMATE		ACTUAL	
	AREA SF	VOLUME CF	AREA SF	VOLUME CF
UNDERSIDE OF DECK	0.0	0.0		
OVERHANG DIAPHRAGMS	13.0	6.5		
UNDERSIDE OF OVERHANG	10.0	5.0		
INTERIOR DIAPHRAGMS	13.0	6.5		
	ESTIMATE		ACTUAL	
UNDERSIDE EPOXY RESIN INJECTION	0.0 LF			

VALUES IN CHART REPRESENT ESTIMATED UNDERSIDE OF DECK REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MINIMUM OF 1" BEHIND REBAR AND MINIMUM 2" CLEAR TO SAW CUT. SEE REPAIR DETAILS.

ANTICIPATED BEAM REPAIR LOCATIONS								
SPAN	BEAM	LOCATION	DETAIL TYPE	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "D"	DIM. "E"
A	3	END BENT 1	A	3"	18"	-	-	-
C	2	BENT 3	D	5 1/2"	0"	-	60"	-
C	4	BENT 3	D	5 1/2"	0"	-	69"	-
D	4	BENT 4	D	5 1/2"	0"	-	48"	-
D	5	BENT 4	D	5 1/2"	0"	-	60"	-
D	6	BENT 4	D	5 1/2"	0"	-	58"	-
E	3	BENT 4	D	5 1/2"	0"	-	21"	-
E	4	BENT 4	D	5 1/2"	0"	-	55"	-
E	5	BENT 4	D	5 1/2"	0"	-	36"	-
E	6	BENT 4	D	5 1/2"	0"	-	31"	-

BEAM REPAIR QUANTITY TABLE SPANS A THRU E					
STEEL PLATES		STIFFENER		STEEL BEARING KEEPER ANGLE ASSEMBLY	
LBS.		LBS.		EA.	
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL	ESTIMATE	ACTUAL
740		40		4	
BEAM REPAIR CUT-OUT		BOLTED BEAM REPAIR			
LBS.		LBS.			
ESTIMATE	ACTUAL	ESTIMATE	ACTUAL		
-		-			



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MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE BEAM REPAIR LOCATIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S9-7 TOTAL SHEETS 108
2			4			

DRAWN BY: B.E. LANNING DATE: 10/2022
 CHECKED BY: B.E. ATKINSON DATE: 10/2022
 DESIGN ENGINEER OF RECORD: B.E. ATKINSON DATE: 10/2022

AS-BUILT REPAIR QUANTITY TABLE				
END BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	35.0	17.5		
CAP (HORIZONTAL FACE)	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	2.0			
CURTAIN WALL	11.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	89.5			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

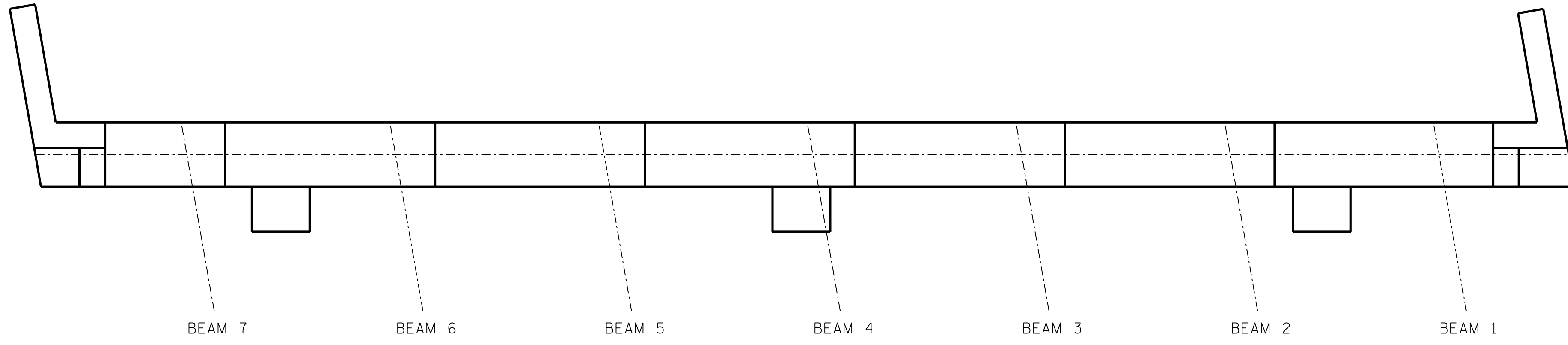
SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

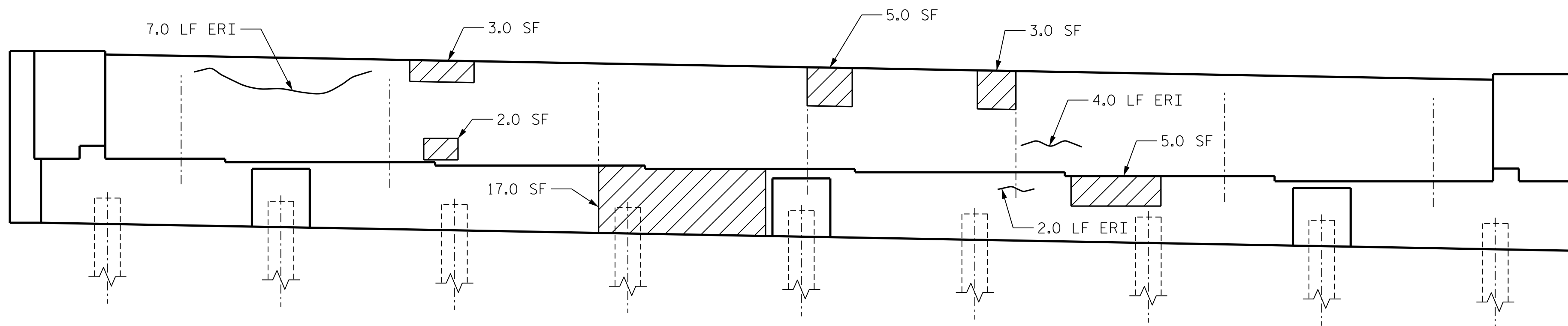
FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.



PLAN
END BENT 1

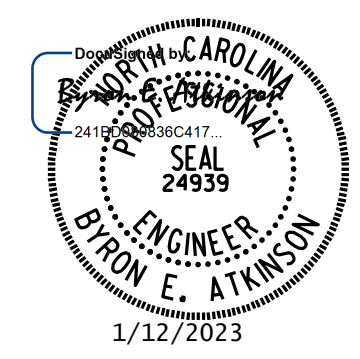


ELEVATION
END BENT 1

KEY

- SHOTCRETE REPAIR
- ERI EPOXY RESIN INJECTION
- CONCRETE REPAIR

PROJECT NO. 15BPR.35
MECKLENBURG COUNTY
 BRIDGE NO. 590345



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MI ENGINEERING
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 RALEIGH, NC 27606
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
END BENT 1**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S9-8 TOTAL SHEETS 108
2			4			

DRAWN BY : B.E. LANNING DATE : 10/2022
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9:20:09 AM
User: blanning
Filename: N:\NC Bridges\W21001.39-I-6052-101\Meck. Co. Br. Preservation\Structures\409.017.15BPR35-SMU.BT1.590345.dgn

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

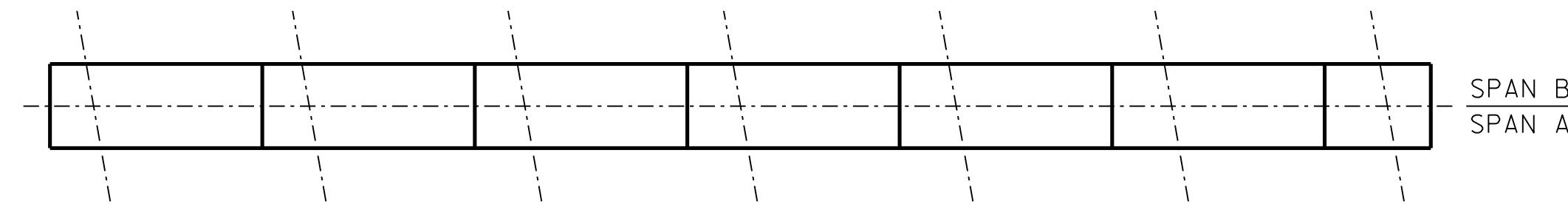
FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

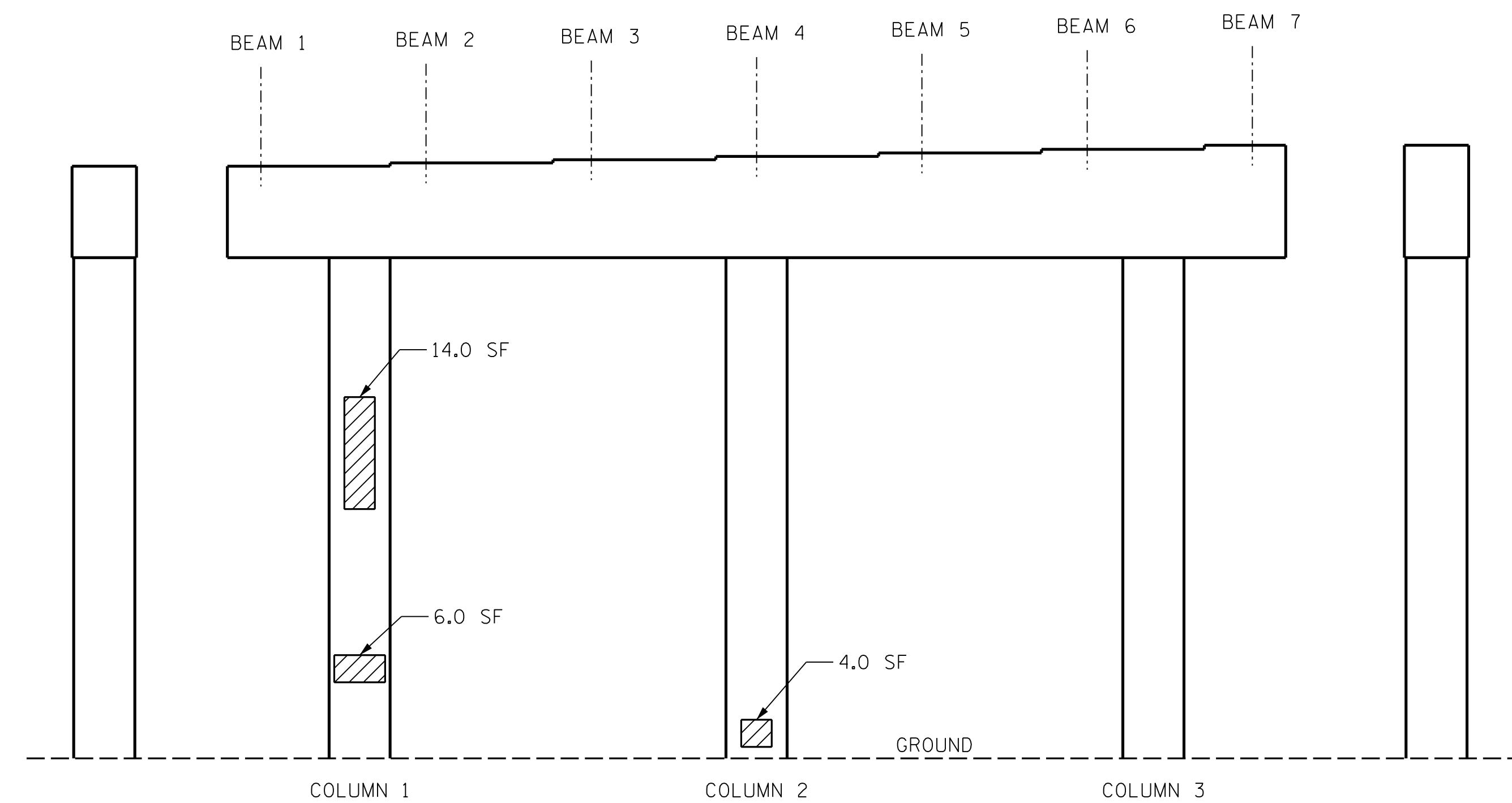
AS-BUILT REPAIR QUANTITY TABLE

BENT 1	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.0	0.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	24.0	12.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	0.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.



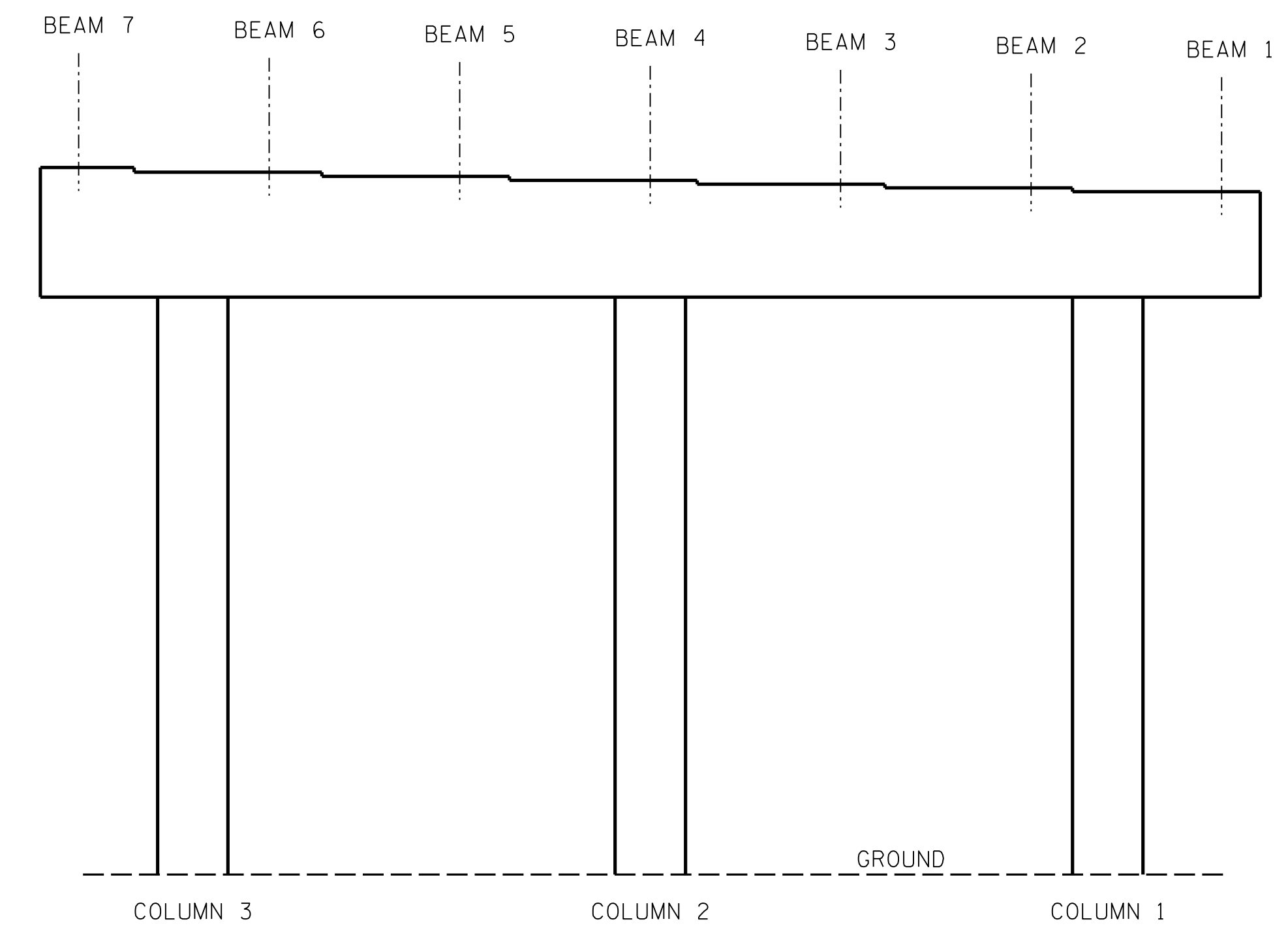
PLAN
TOP OF CAP



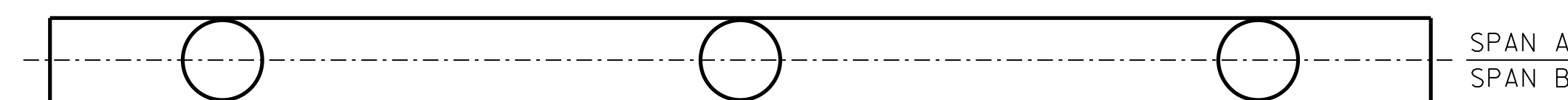
END VIEW
EAST SIDE

ELEVATION
SPAN A

END VIEW
WEST SIDE



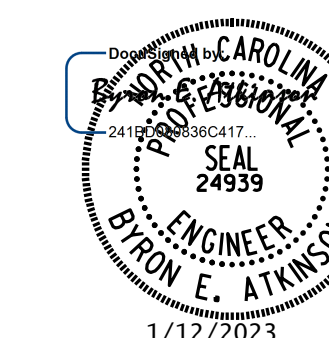
ELEVATION
SPAN B



PLAN
BOTTOM OF CAP
(LOOKING UP)

KEY

- SHOTCRETE REPAIR
- ERI EPOXY RESIN INJECTION
- CONCRETE REPAIR



PROJECT NO. 15BPR.35
MECKLENBURG COUNTY
 BRIDGE NO. 590345

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S9-9 TOTAL SHEETS 108
2			4			

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MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

DRAWN BY : B.E. LANNING	DATE : 10/2022
CHECKED BY : B.E. ATKINSON	DATE : 10/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 10/2022

NO DEFECTS NOTED DURING INSPECTION BY THE INSPECTION TEAM. THE CONTRACTOR SHALL REINSPECT AND REPORT TO THE ENGINEER ANY UNNOTICED DEFECTS.

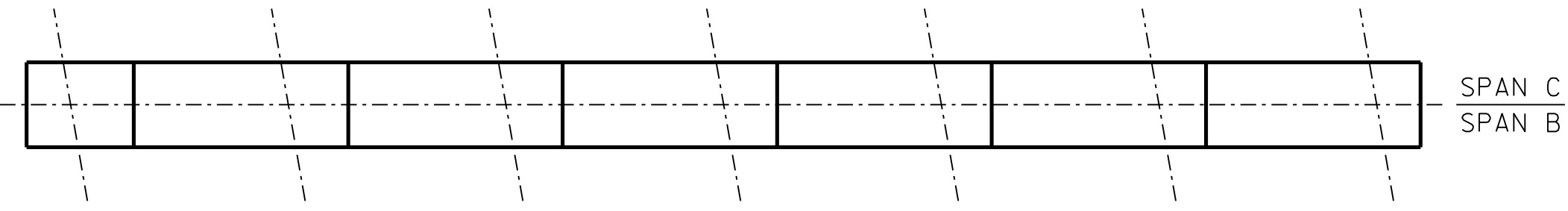
NOTES

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

AS-BUILT REPAIR QUANTITY TABLE

BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	0.0	0.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
COLUMN	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	0.0			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.



PLAN

TOP OF CAP



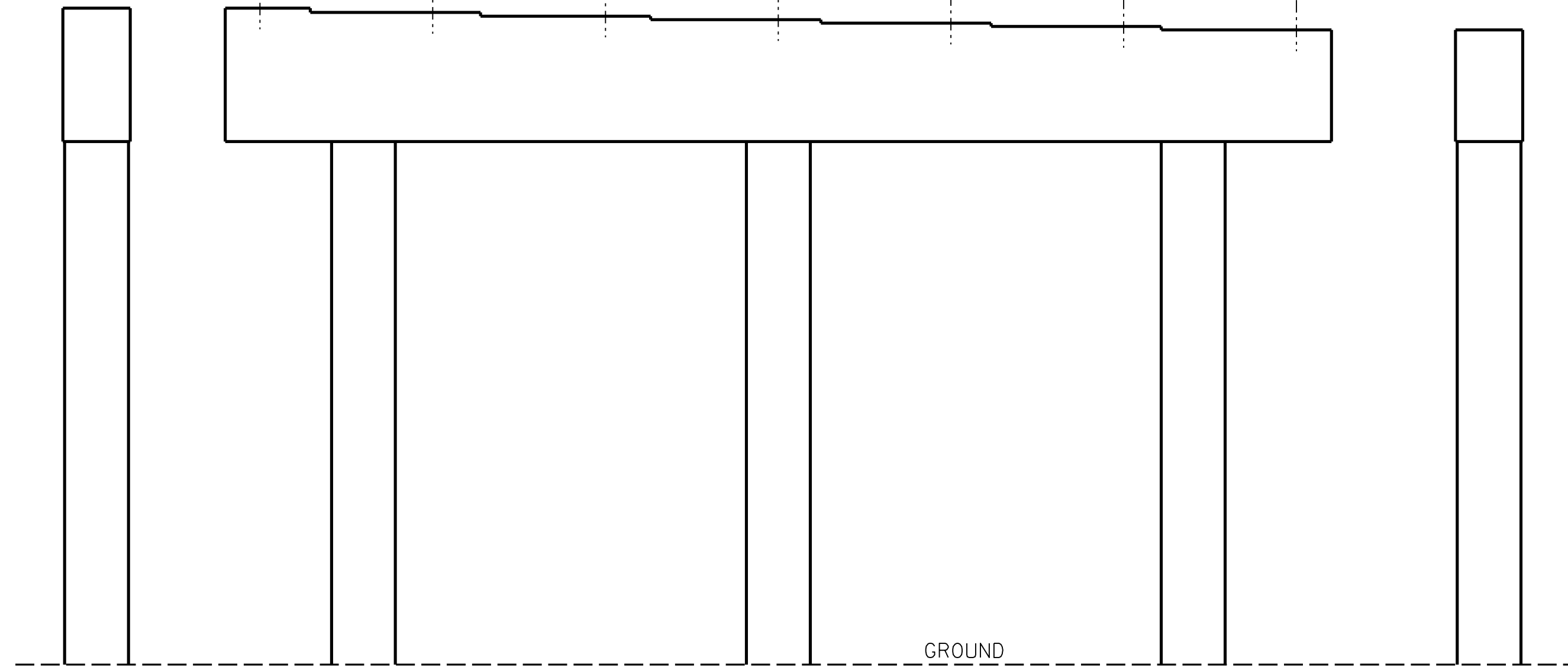
ELEVATION

SPAN B



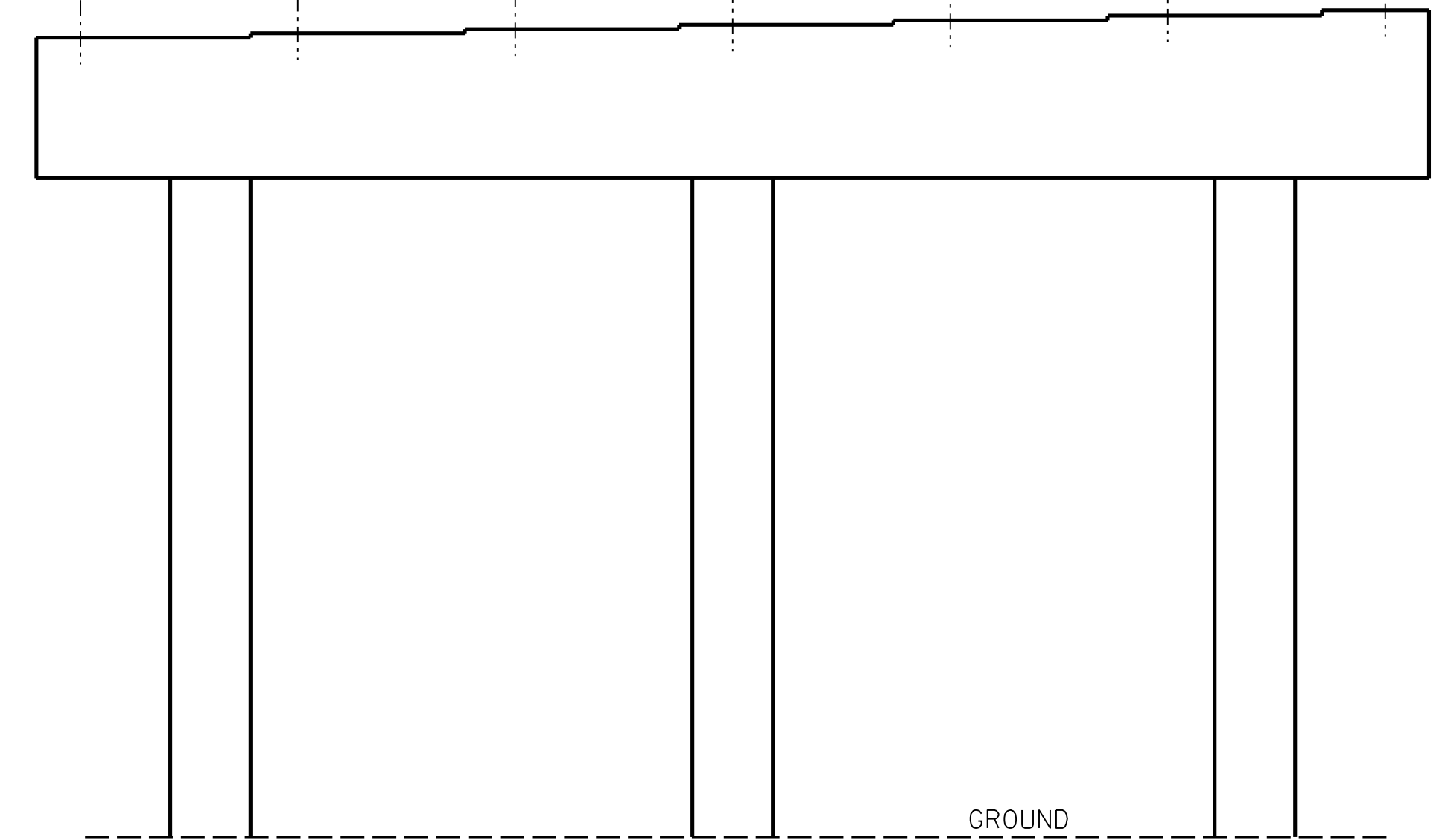
ELEVATION

SPAN C



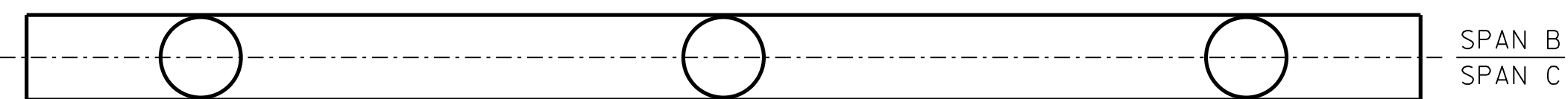
END VIEW

EAST SIDE



END VIEW

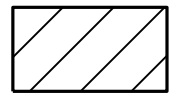

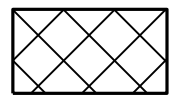
WEST SIDE

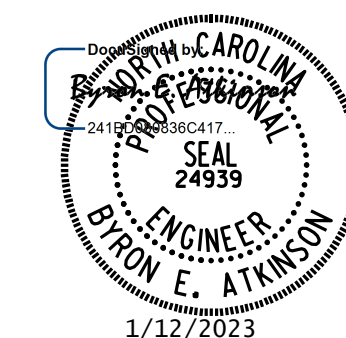


PLAN

BOTTOM OF CAP (LOOKING UP)

KEY

-  SHOTCRETE REPAIR
-  ERI EPOXY RESIN INJECTION
-  CONCRETE REPAIR



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

PROJECT NO. 15BPR.35
MECKLENBURG COUNTY
BRIDGE NO. 590345

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 2

REVISIONS						SHEET NO.
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1			3			S9-10 TOTAL SHEETS 108
2			4			

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AS-BUILT REPAIR QUANTITY TABLE

BENT 3	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	75.0	37.5		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	29.0	14.5		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	10.5			
COLUMN	0.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	163.7			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

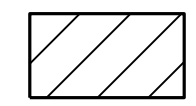

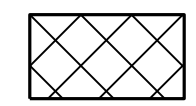
FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

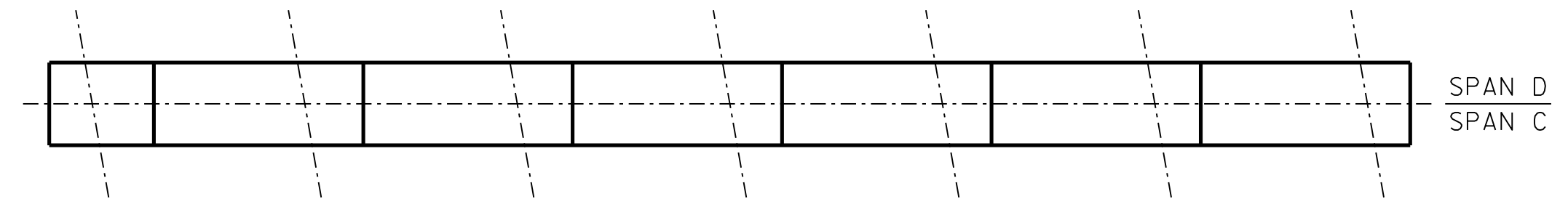
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR TYPE I BRIDGE JACKING, SEE SPECIAL PROVISIONS.

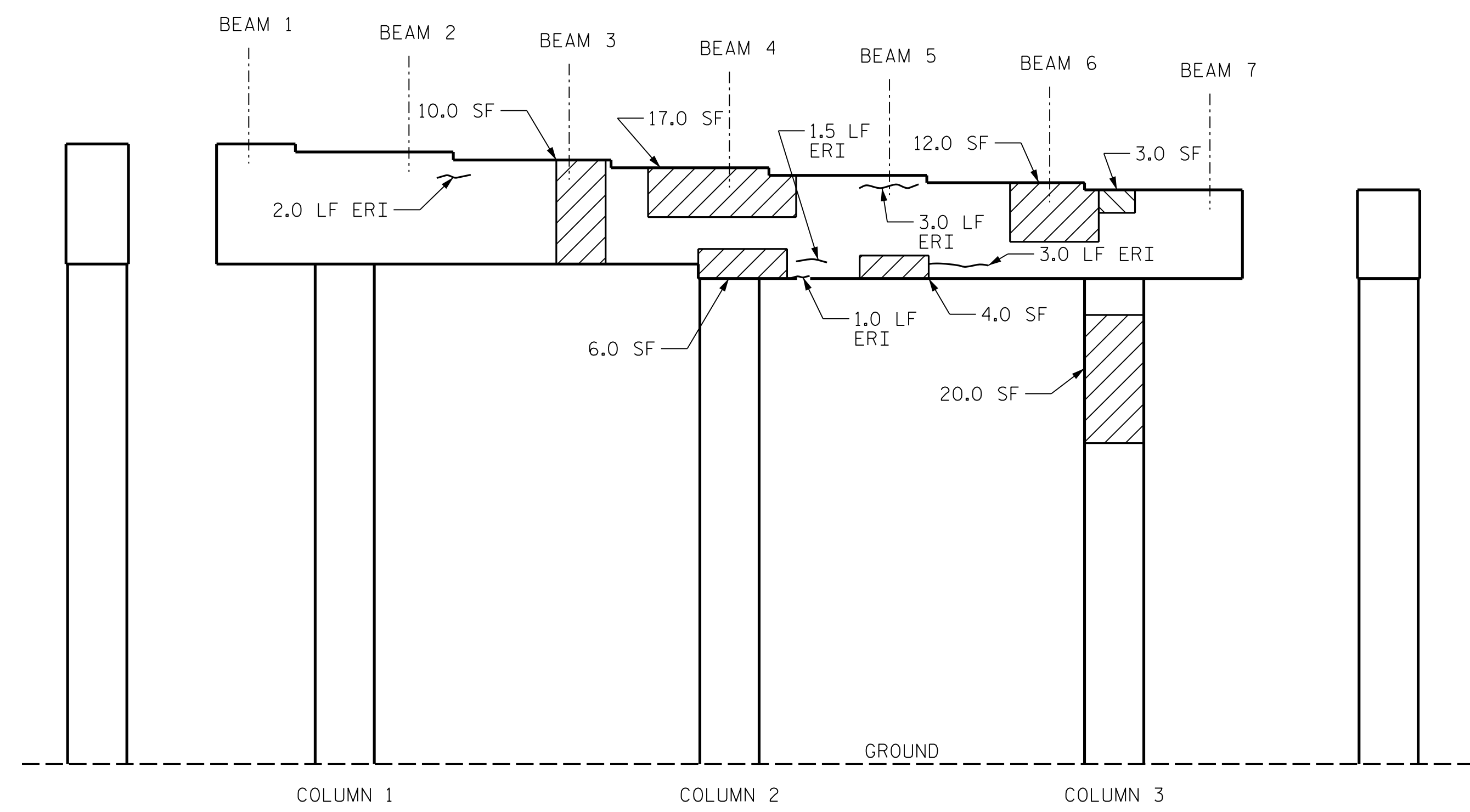
KEY

-  SHOTCRETE REPAIR
-  ERI EPOXY RESIN INJECTION
-  CONCRETE REPAIR



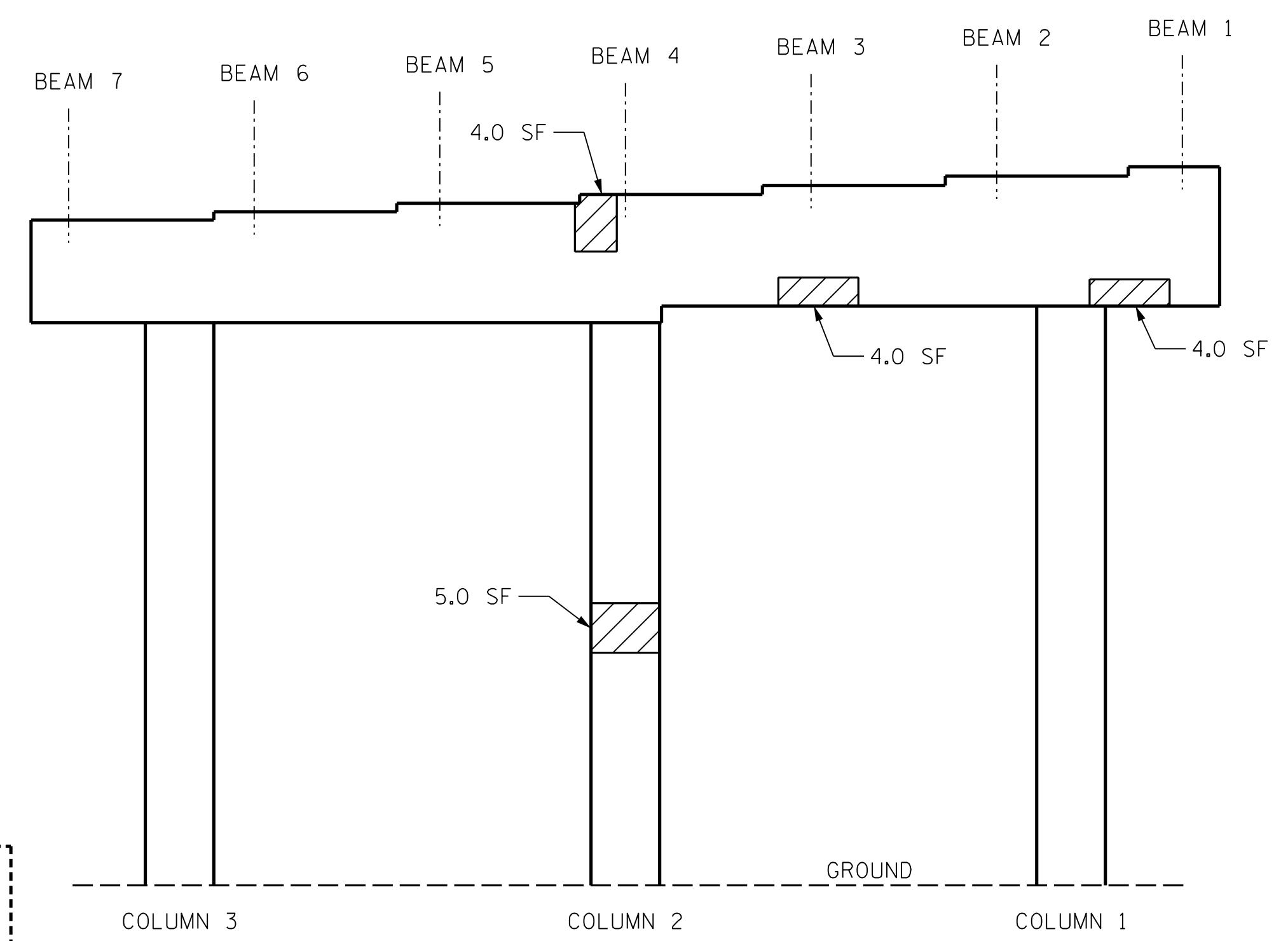
PLAN

TOP OF CAP



ELEVATION

SPAN C



ELEVATION

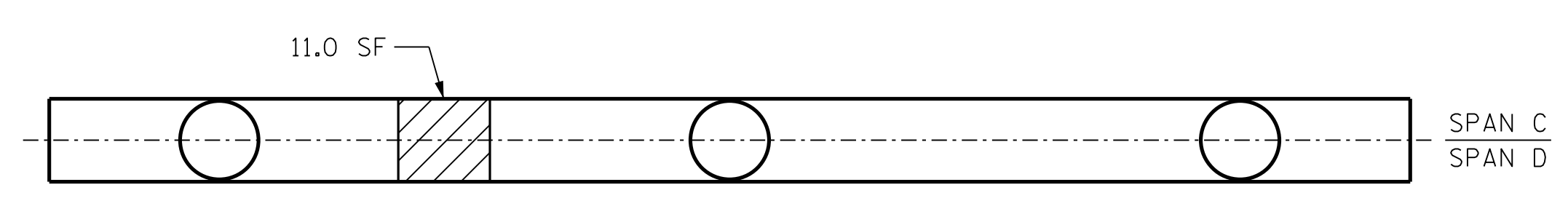
SPAN D

END VIEW

EAST SIDE

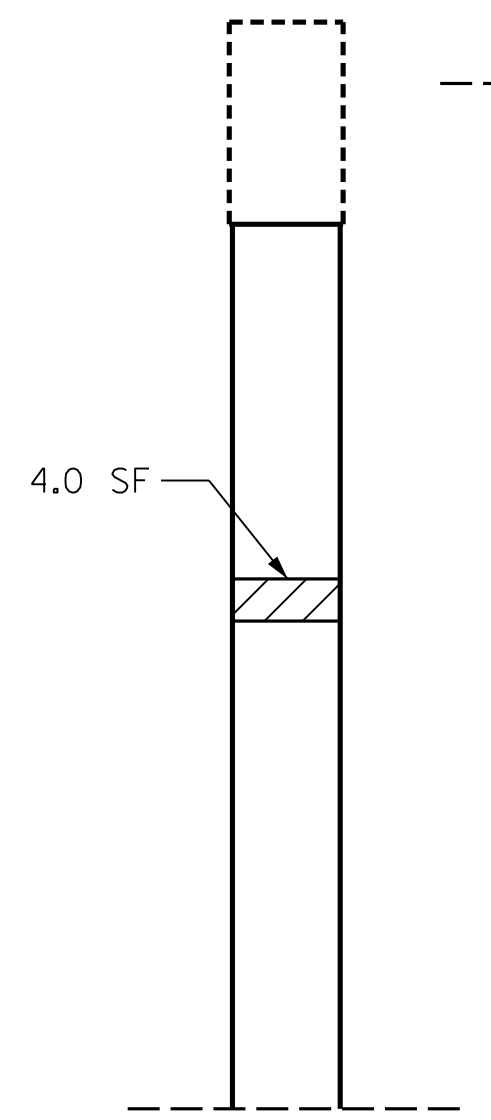
END VIEW

WEST SIDE



PLAN

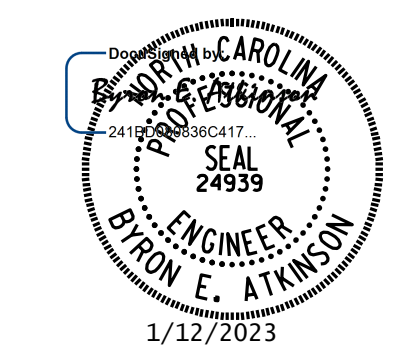
BOTTOM OF CAP (LOOKING UP)



COLUMN 2

WEST SIDE

PROJECT NO. 15BPR.35
MECKLENBURG COUNTY
 BRIDGE NO. 590345



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 3

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MI ENGINEERING
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 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

REVISIONS						SHEET NO.
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AS-BUILT REPAIR QUANTITY TABLE

BENT 4	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	77.0	38.5		
CAP (HORIZONTAL FACE)	0.0	0.0		
COLUMN	22.0	11.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	8.0			
COLUMN	6.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	163.1			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

NOTES

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SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

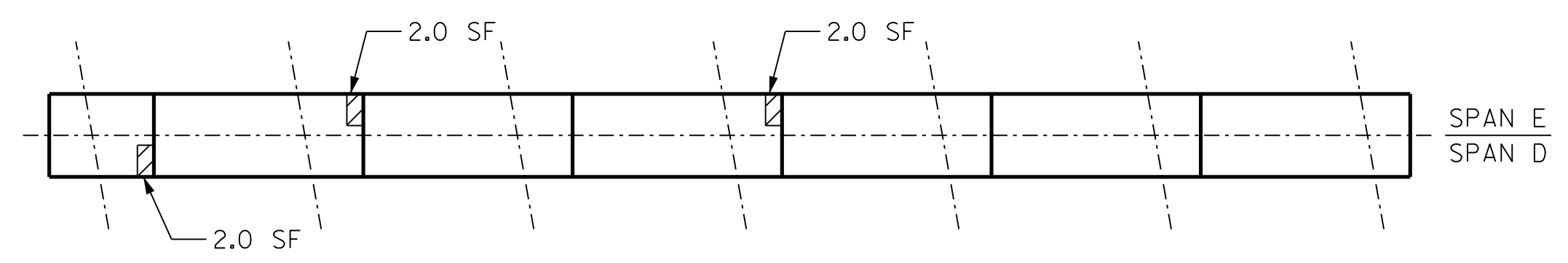
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

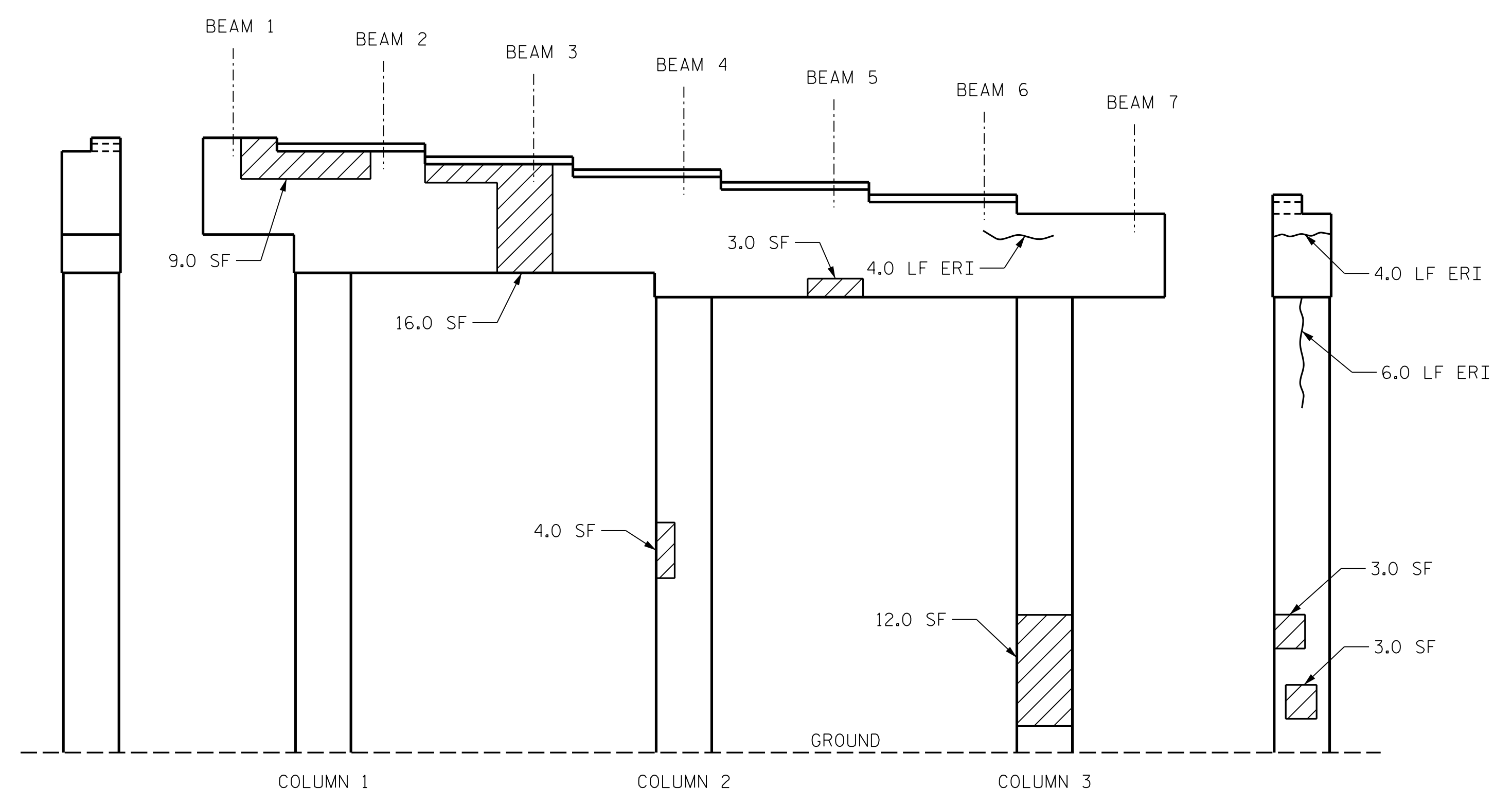
FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIRS TO THE BENT CAP MAY REQUIRE BRIDGE JACKING. FOR TYPE I BRIDGE JACKING, SEE SPECIAL PROVISIONS.



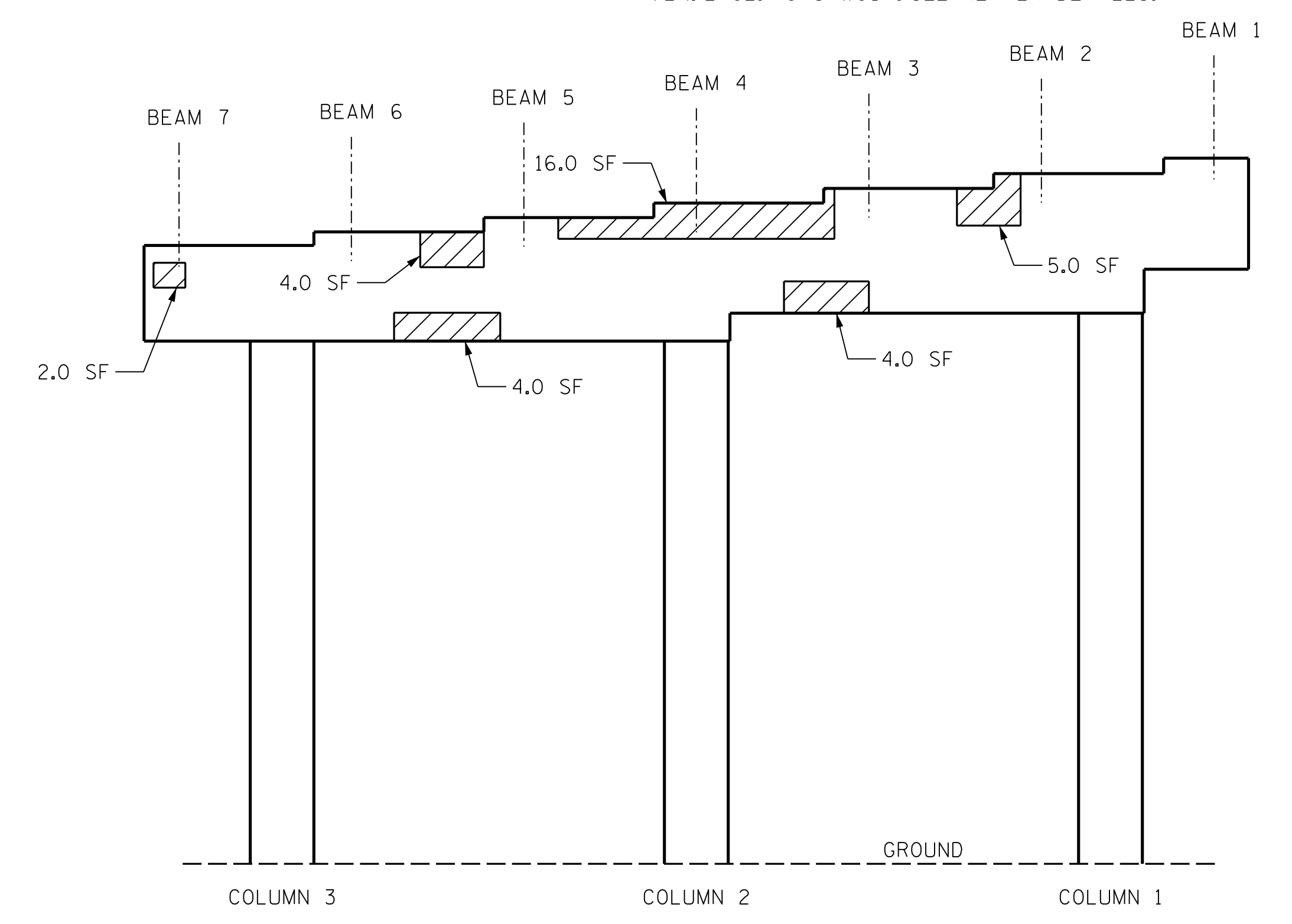
PLAN
TOP OF CAP



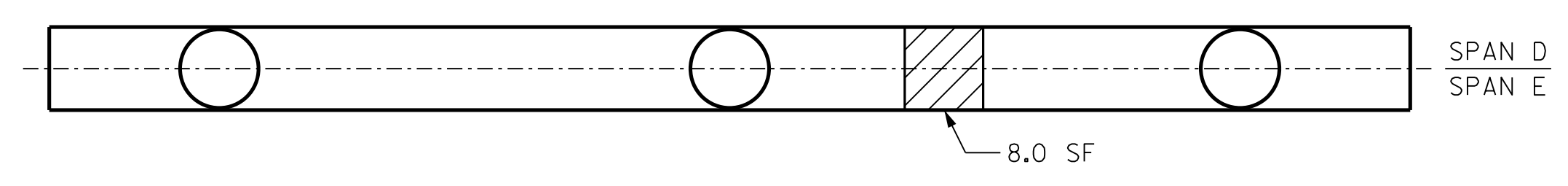
END VIEW
EAST SIDE

ELEVATION
SPAN D

END VIEW
WEST SIDE



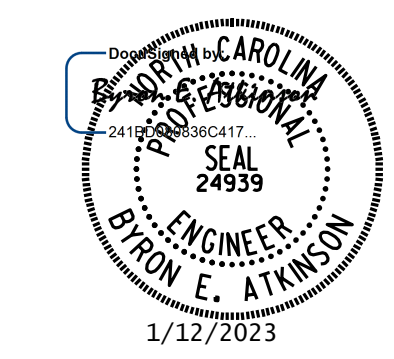
ELEVATION
SPAN E



PLAN
BOTTOM OF CAP
(LOOKING UP)

KEY

- SHOTCRETE REPAIR
- ERI EPOXY RESIN INJECTION
- CONCRETE REPAIR



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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
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FIRM PE NUMBER: P-0671

PROJECT NO. 15BPR.35
MECKLENBURG COUNTY
BRIDGE NO. 590345

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 4

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S9-12 TOTAL SHEETS 108
2			4			

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CHECKED BY : B.E. ATKINSON DATE : 10/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 10/2022

AS-BUILT REPAIR QUANTITY TABLE				
END BENT 2	QUANTITIES			
	ESTIMATE		ACTUAL	
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP (VERTICAL FACE)	30.0	15.0		
CAP (HORIZONTAL FACE)	0.0	0.0		
CONCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CAP	0.0	0.0		
EPOXY RESIN INJECTION	LIN. FT.		LIN. FT.	
CAP	0.0			
CURTAIN WALL	24.0			
EPOXY COATING	AREA SF		AREA SF	
TOP OF CAP	88.9			

VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE. MIN. OF 1" BEHIND REBAR AND MIN. 2" CL. TO SAWCUT. SEE REPAIR DETAILS.

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 INSPECTOR OR ENGINEER THE CONTRACTOR SHALL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATION AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE REPAIR QUANTITY TABLE.

FOR REPAIRS, SEE "TYPICAL CAP, COLUMN AND UNDERDECK REPAIR DETAILS" SHEET.

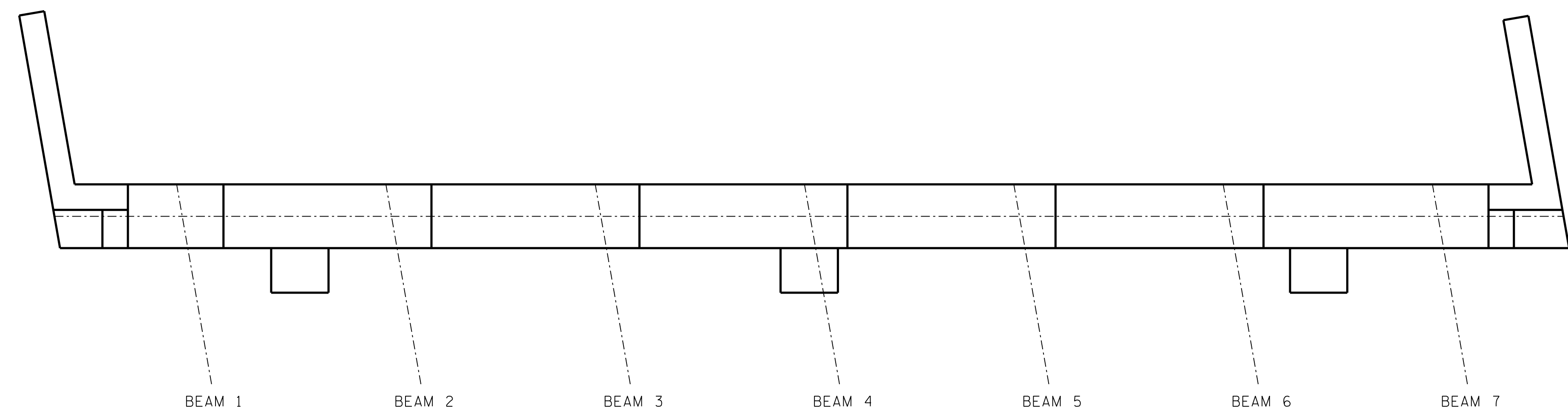
SHOTCRETE REPAIRS MAY BE REPLACED WITH CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

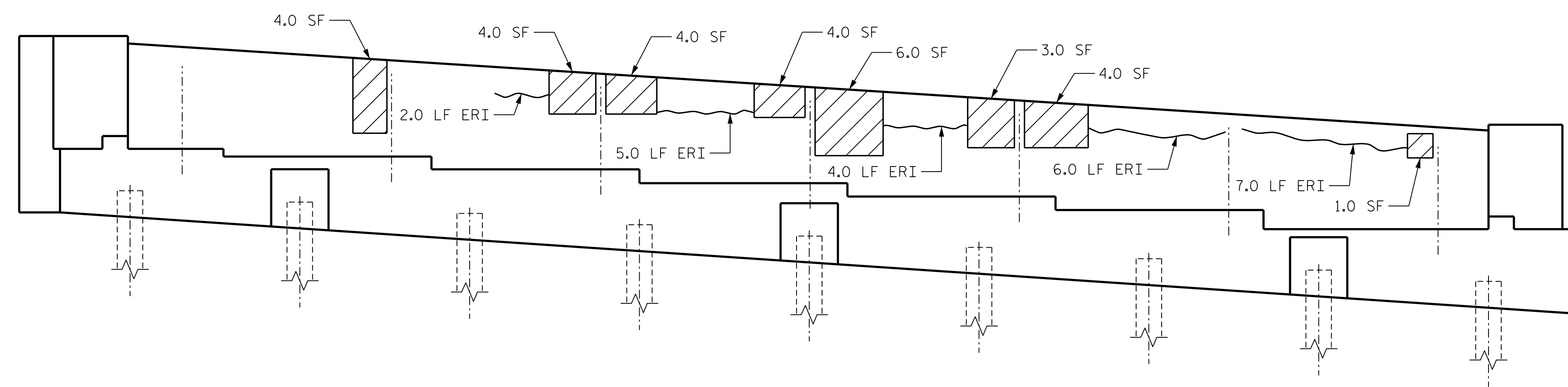
FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING TO THE TOP SURFACES OF THE CAP. THE CONTRACTOR SHALL NOT COAT THE AREA OF THE CAP BENEATH THE MASONRY PLATES. FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.



PLAN
END BENT 2

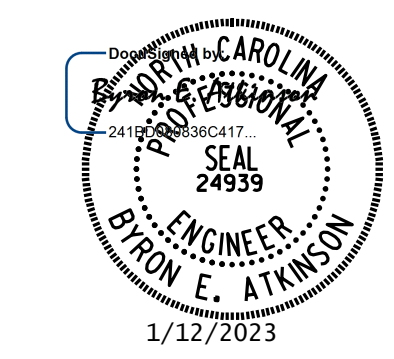


ELEVATION
END BENT 2

KEY

- SHOTCRETE REPAIR
- ERI EPOXY RESIN INJECTION
- CONCRETE REPAIR

PROJECT NO. 15BPR.35
MECKLENBURG COUNTY
 BRIDGE NO. 590345



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2

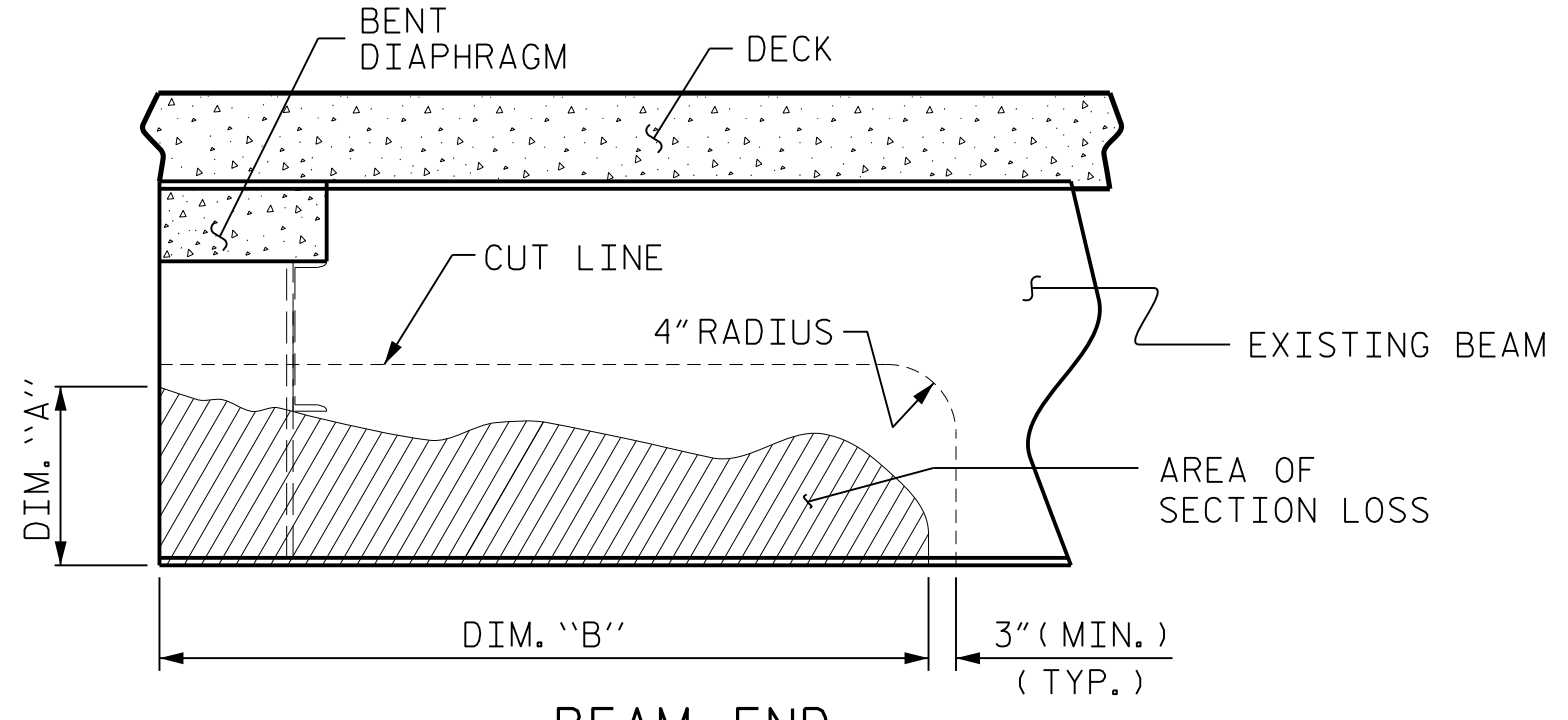
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 FIRM PE NUMBER: P-0671

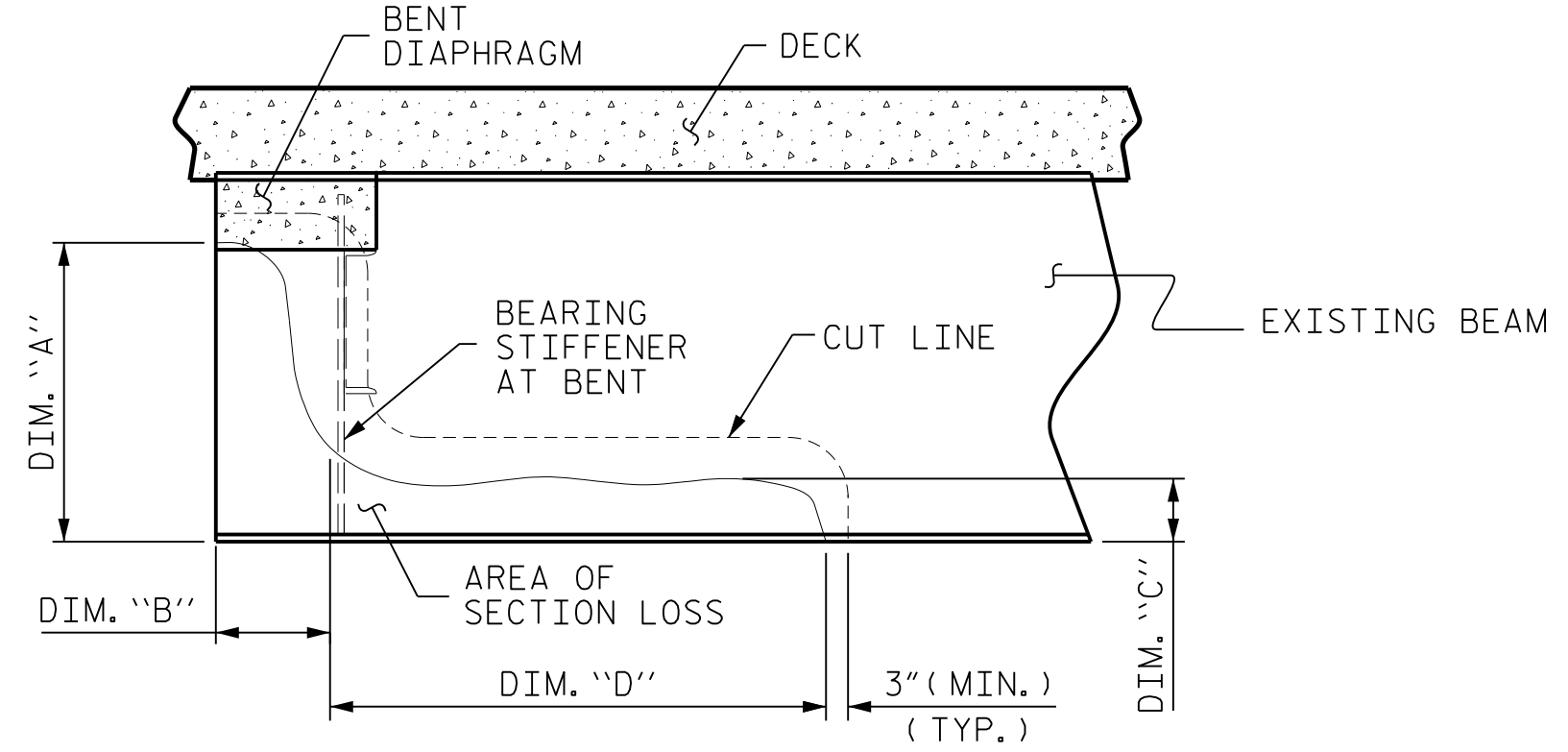
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1			3			S9-13 TOTAL SHEETS 108
2			4			

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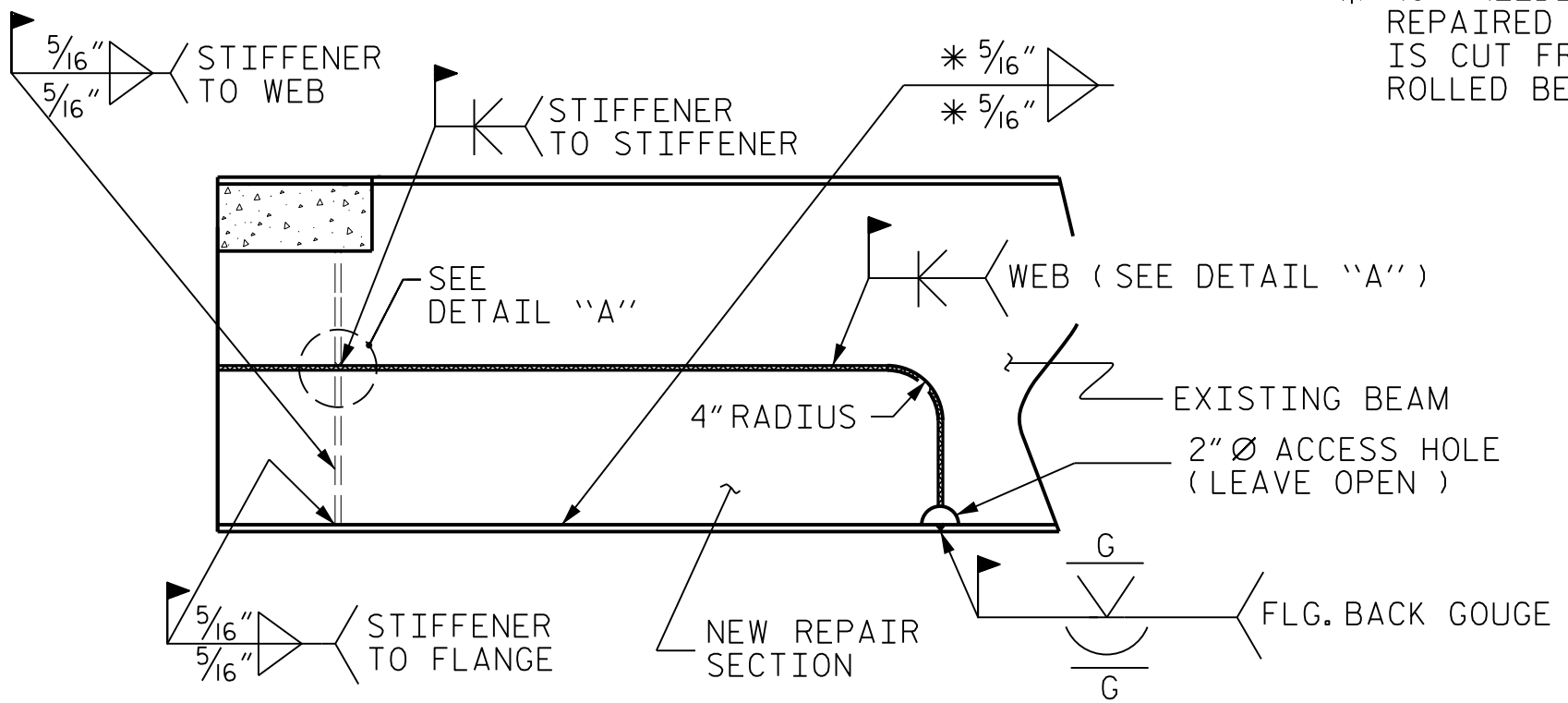
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BEAM END SECTION LOSS

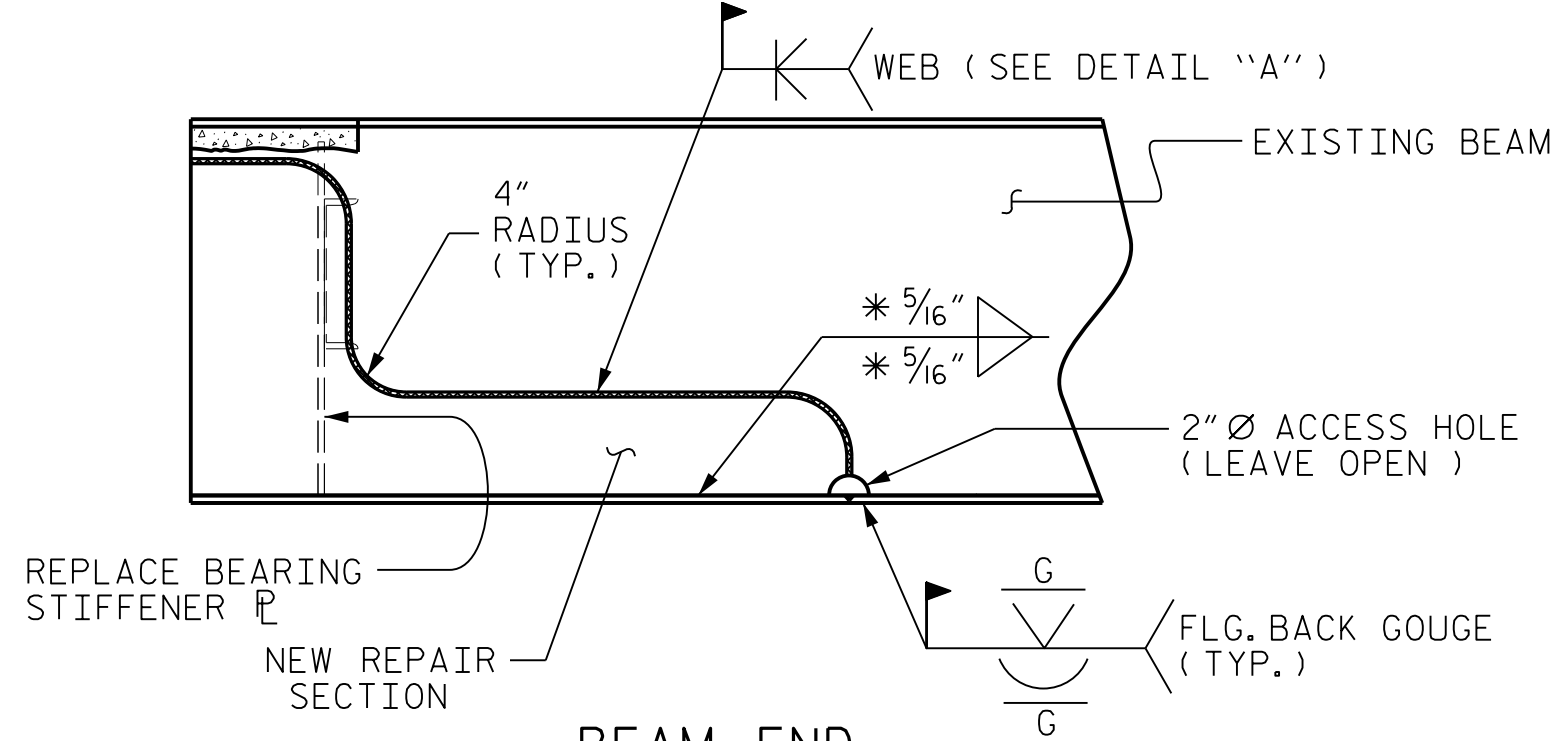


BEAM END SECTION LOSS



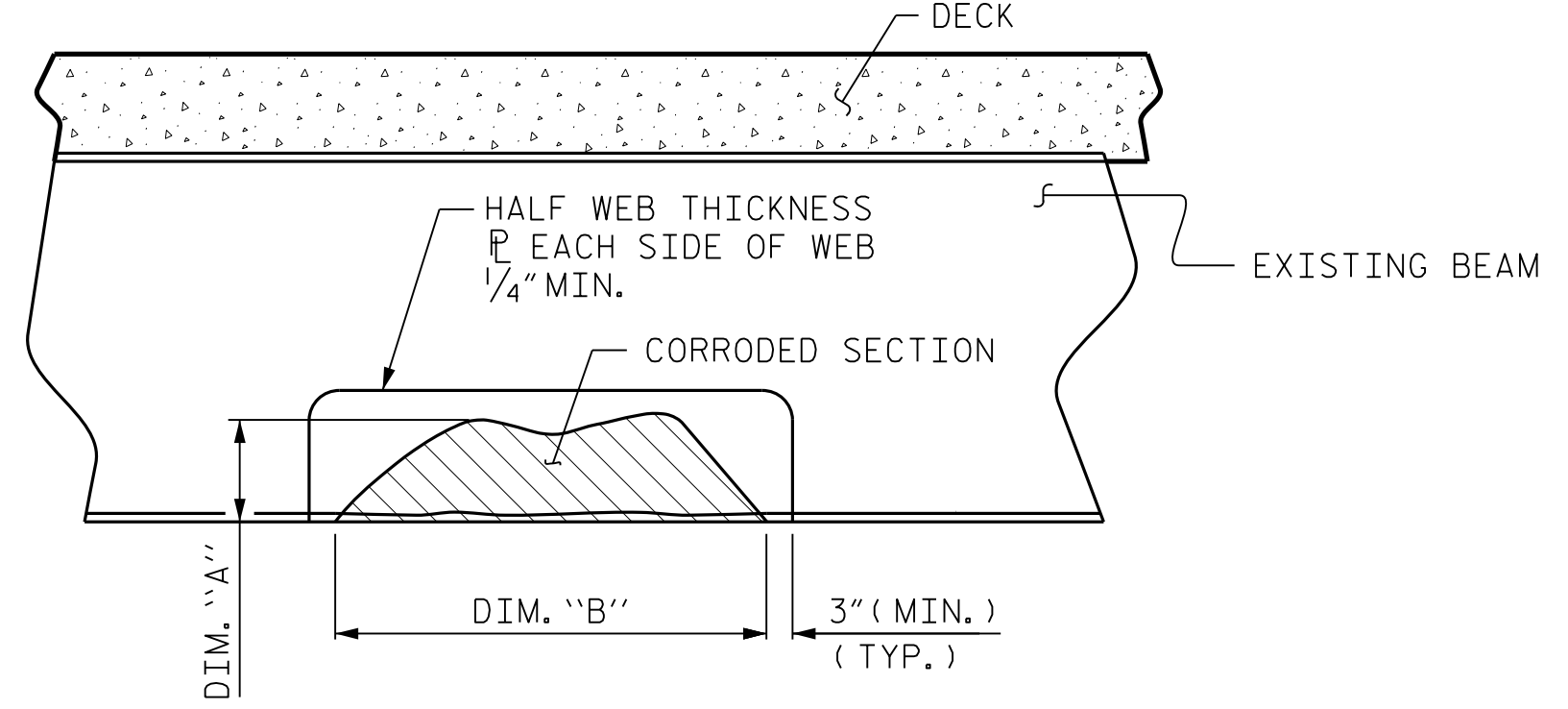
BEAM END SECTION REPAIR TYPE "E"

* NOT NEEDED IF REPAIRED SECTION IS CUT FROM A ROLLED BEAM

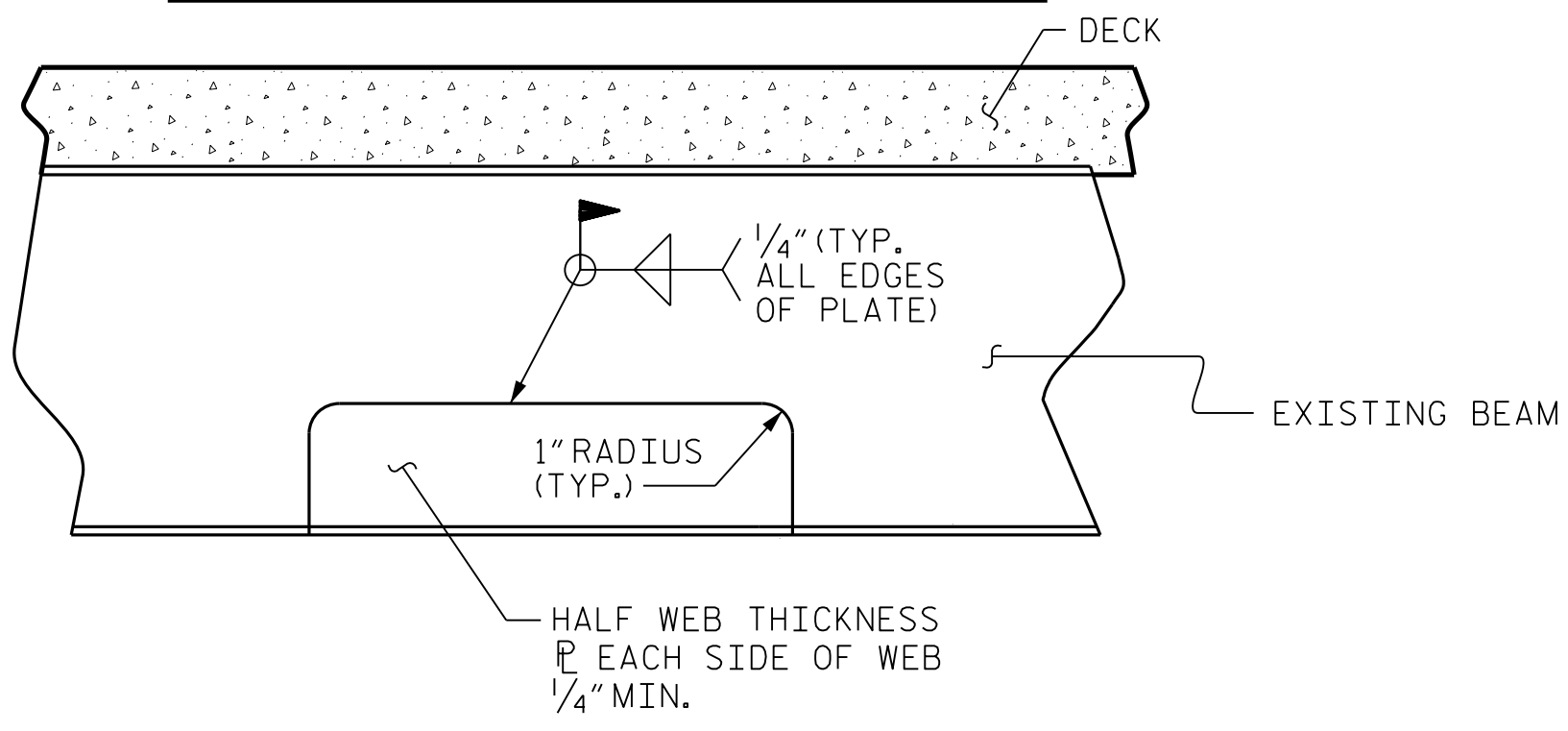


BEAM END SECTION REPAIR TYPE "F"

BEAM END SECTION REPAIR



INTERMEDIATE SECTION LOSS BEAM PLATING REPAIR



INTERMEDIATE BEAM PLATING REPAIR TYPE "G"

INTERMEDIATE BEAM PLATING REPAIR

FOR BEAM PLATING REPAIR NOTES, SEE SHEET 1 OF 3

BEAM SECTION REPAIR NOTES

AFTER THE STRUCTURAL STEEL HAS BEEN BLASTED AND PRIMED, THE STRUCTURAL STEEL AND BEARING SHALL BE INSPECTED FOR EXCESSIVE SECTION LOSS. AREAS THAT EXHIBIT AN EXCESS OF 35% SECTION LOSS SHALL BE REVIEWED BY THE ENGINEER TO DETERMINE IF AREA OF SECTION LOSS SHOULD BE REPAIRED.

AS DETERMINED BY THE ENGINEER, AREAS WITH EXCESSIVE SECTION LOSS OR AREAS WITH TEMPORARY REPAIRS SHALL BE REMOVED AND THE BEAMS SHALL BE REPAIRED AS INDICATED ON THIS PLAN SHEET. CONTRACTOR AND ENGINEER TO DETERMINE ACTUAL DIMENSIONS OF AREA TO BE REMOVED AND REPLACED. REMOVE CONCRETE BENT DIAPHRAGMS AS NEEDED TO EVALUATE LIMITS OF REPAIR.

PAYMENT FOR THE SECTION REPAIR SHALL BE BASED ON THAT AMOUNT OF REPAIR ACTUALLY PERFORMED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

GOUGES AND INDENTIONS FROM IMPACT ON GIRDERS SHALL BE GROUND SMOOTH PRIOR TO BLASTING AND PAINTING OPERATION.

REPAIR SEQUENCE:

REMOVE LIVE LOAD FROM REPAIR AREA BY EITHER CLOSING BRIDGE TO TRAFFIC OR SHIFTING TRAFFIC AWAY FROM REPAIR AREA.

REMOVE DEAD LOAD FROM BEAM BY JACKING AND BLOCKING. CONTRACTOR SHALL SUBMIT JACKING PLAN FOR APPROVAL, PRIOR TO BEGINNING WORK. FOR BRIDGE JACKING, SEE SPECIAL PROVISIONS.

STEEL DIAPHRAGM CHANNELS AND/OR STIFFENERS MAY BE TEMPORARILY REMOVED, IF NECESSARY, AND RESET AFTER BEAM REPAIR.

IF BEAM DETERIORATION EXTENDS INTO THE CONCRETE DIAPHRAGM THEN CHIP AWAY CONCRETE TO DETERMINE THE EXTENT OF THE DAMAGE. CUT OUT BY APPROPRIATE MEANS THE DAMAGED BEAM AREA AND/OR BEARING STIFFENER.

IF PAINTING THE STEEL, CLEAN AND BLAST STEEL AS REQUIRED, PRIOR TO PERFORMING STEEL REPAIRS. OTHERWISE, MECHANICALLY CLEAN RUST, SCALE, AND EXISTING PAINT TO AT LEAST 3" BEYOND REPAIR AREA.

REPLACEMENT CUT-TO-FIT BEAM SECTION SHALL BE NEW AND FROM SIMILAR SIZE ROLLED BEAM OR APPROVED EQUIVALENT PLATES. THE GRADE OF STEEL SHALL BE SAME GRADE OF EXISTING MEMBER OR BETTER.

INSTALL THE CUT-TO-FIT SECTION, FULLY WELD ALONG TOP AND SIDES OF PLATE USING FULL PENETRATION WELDS.

ALL WELDING SHALL BE IN ACCORDANCE WITH CURRENT APPLICABLE AWS AND NCDOT STANDARD SPECIFICATIONS.

ALL WELDS SHALL BE INSPECTED AND TESTED BY THE NCDOT MATERIALS AND TEST UNIT IN ACCORDANCE WITH THE CURRENT AWS BRIDGE WELDING CODE AND STANDARD SPECIFICATIONS.

IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, AFTER REPAIR, GRIND ALL WELDS FLUSH, AND THOROUGHLY CLEAN AREA TO REMOVE DEBRIS AND OILS FROM REPAIR PROCESS.

CLEANING AND PAINTING OF REPAIRED STRUCTURAL STEEL SHALL BE PERFORMED AS PART OF THE OVERALL CLEANING AND PAINTING CONTRACT.

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

AFTER BEAMS ARE REPAIRED AND PAINTED, ANY CONCRETE REMOVED FROM THE BENT DIAPHRAGMS SHALL BE RECAST. ANY REINFORCING STEEL CUT DURING THE REMOVAL PROCESS SHALL BE SPLICED WITH A SIMILAR SIZE BAR WITH AT LEAST A ONE FOOT SPLICE TO THE EXISTING STEEL. NO SEPARATE PAYMENT SHALL BE MADE FOR CONCRETE AND REINFORCING STEEL AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM "BEAM REPAIR". FOR BEAM REPAIR, SEE SPECIAL PROVISIONS.

LOWER SPAN TO BEAR; CHECK FOR DISTRESS.

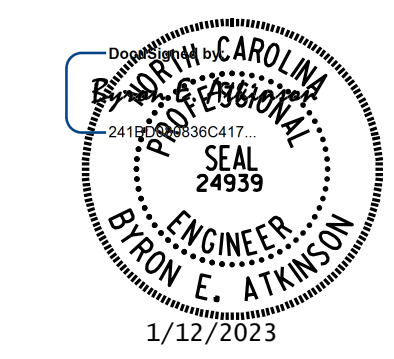
REMOVE JACKING EQUIPMENT AND TEMPORARY SUPPORTS.

REMOVE ALL TRAFFIC CONTROL DEVICES.

FOR STIFFENER/CONNECTOR PLATE REPAIR DETAILS, SEE SHEET 1 OF 3.

PROJECT NO. I-6052
 MECKLENBURG COUNTY
 BRIDGE NO. 590338, 590342

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BEAM REPAIR DETAILS

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 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

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BEAM BOLTED PLATING REPAIR NOTES:

▲ FOR EACH BEAM BEING REPAIRED, CONTRACTOR SHALL FIELD VERIFY DIMENSIONS. PLATE DIMENSIONS SHALL BE ADJUSTED TO FIT IN THE SPACE FROM BEAM END TO 1/2" FROM STIFFENER / CONNECTOR PLATE.

THE ENGINEER SHALL BE NOTIFIED IF DIMENSION "B" EXCEEDS 12". IF SO, AN ADDITIONAL COLUMN OF BOLTS SHALL BE ADDED.

THE PLATES FOR DIM "E" SHALL BE PLACED SNUG TO THE BOTTOM OF THE DIAPHRAGM.

DIMENSION "Y" SHALL BE A MINIMUM OF 3/4" AND A MAXIMUM OF 6".

EACH PLATE SHALL BE APPROXIMATELY ONE-HALF THE ORIGINAL THICKNESS OF THE BEAM WEB AND SHALL BE APPROVED BY THE ENGINEER.

PLATES SHALL BE SHOP PRIMED PRIOR TO DELIVERY.

PLATES SHALL BE NEW, AND SHALL BE THE SAME GRADE OF THE EXISTING STEEL MEMBER OR BETTER.

ALL BOLTS SHALL MEET ASTM A325.

ALL NUTS SHALL MEET ASTM A194.

ALL FLAT WASHERS SHALL MEET ASTM F436.

IF STEEL IS WEATHER, ALL BOLTS, NUT, AND WASHERS SHALL BE AASHTO M163 TYPE 3.

THE EPOXY MASTIC USED FOR THIS WORK SHALL BE COMPATIBLE WITH THE PAINT SYSTEM USED FOR THE PAINTING OF EXISTING STEEL AND SHALL BE APPROVED BY THE NCDOT MATERIALS AND TEST UNIT. THE EPOXY MASTIC WILL BE ACCEPTED ON THE BASIS OF THE MANUFACTURER'S WRITTEN CERTIFICATION THAT THE BATCH PRODUCED MEETS THEIR PRODUCT SPECIFICATION.

REPAIR SEQUENCE:

REMOVE LIVE LOAD FROM REPAIR AREA BY EITHER CLOSING BRIDGE TO TRAFFIC OR SHIFTING TRAFFIC AWAY FROM REPAIR AREA.

IF PAINTING THE STEEL, CLEAN AND BLAST STEEL AS REQUIRED, PRIOR TO PERFORMING STEEL REPAIRS. OTHERWISE, MECHANICALLY CLEAN RUST, SCALE, AND EXISTING PAINT TO AT LEAST 3" BEYOND REPAIR AREA.

PRIME ENTIRE REPAIR AREA AND REPAIR PLATES WITH AN ORGANIC ZINC PRIMER PRIOR TO ATTACHING NEW PLATES

ONE PLATE SHALL BE PLACED, ON EACH SIDE OF THE BEAM ENDS.

PRIOR TO PLACEMENT OF THE PLATES, APPLY WET EPOXY MASTIC AROUND THE TOP AND SIDE PERIMETERS ON THE PLATE FACE THAT IS TO BE IN CONTACT WITH THE BEAM. AMOUNT OF EPOXY MASTIC SHALL BE SUFFICIENT TO SEAL THE INTERFACE OF THE PLATE AND THE BEAM AFTER BOLTS ARE TIGHTENED. NO EPOXY MASTIC SHALL BE PLACED ALONG THE BOTTOM PERIMETER ON THE PLATE, WHILE THE MASTIC IS STILL WET, PLATES SHALL BE PUT IN PLACE AND BOLTS PROPERLY TIGHTENED.

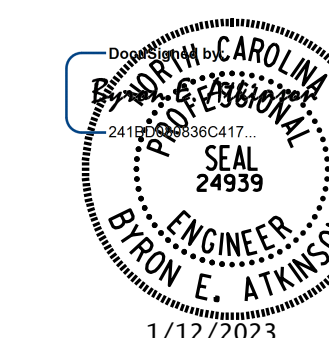
TENSION ON THE BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS (DTIS) IN ACCORDANCE WITH ARTICLE 440-8 OF THE NCDOT STANDARD SPECIFICATIONS. DTIS SHALL MEET ASTM F959.

AFTER PLACEMENT OF THE PLATES AND TIGHTENING OF THE BOLTS, PLATES, BOLTS, AND SURROUNDING AREA SHALL BE PAINTED OR PAINT SHALL BE REPAIRED AS PER PROJECT REQUIREMENTS AND NCDOT STANDARD SPECIFICATIONS.

PAYMENT WILL BE MADE AT CONTRACT PRICE BID PER POUNDS STRUCTURAL STEEL USED FOR GIRDER REPAIR. SUCH PAYMENTS WILL BE FULL COMPENSATION FOR ALL MATERIALS, EQUIPMENT, TOOLS, LABOR, MISCELLANEOUS STEEL, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

PROJECT NO. I-6052
 MECKLENBURG COUNTY
 BRIDGE NO. 590338

SHEET 3 OF 3



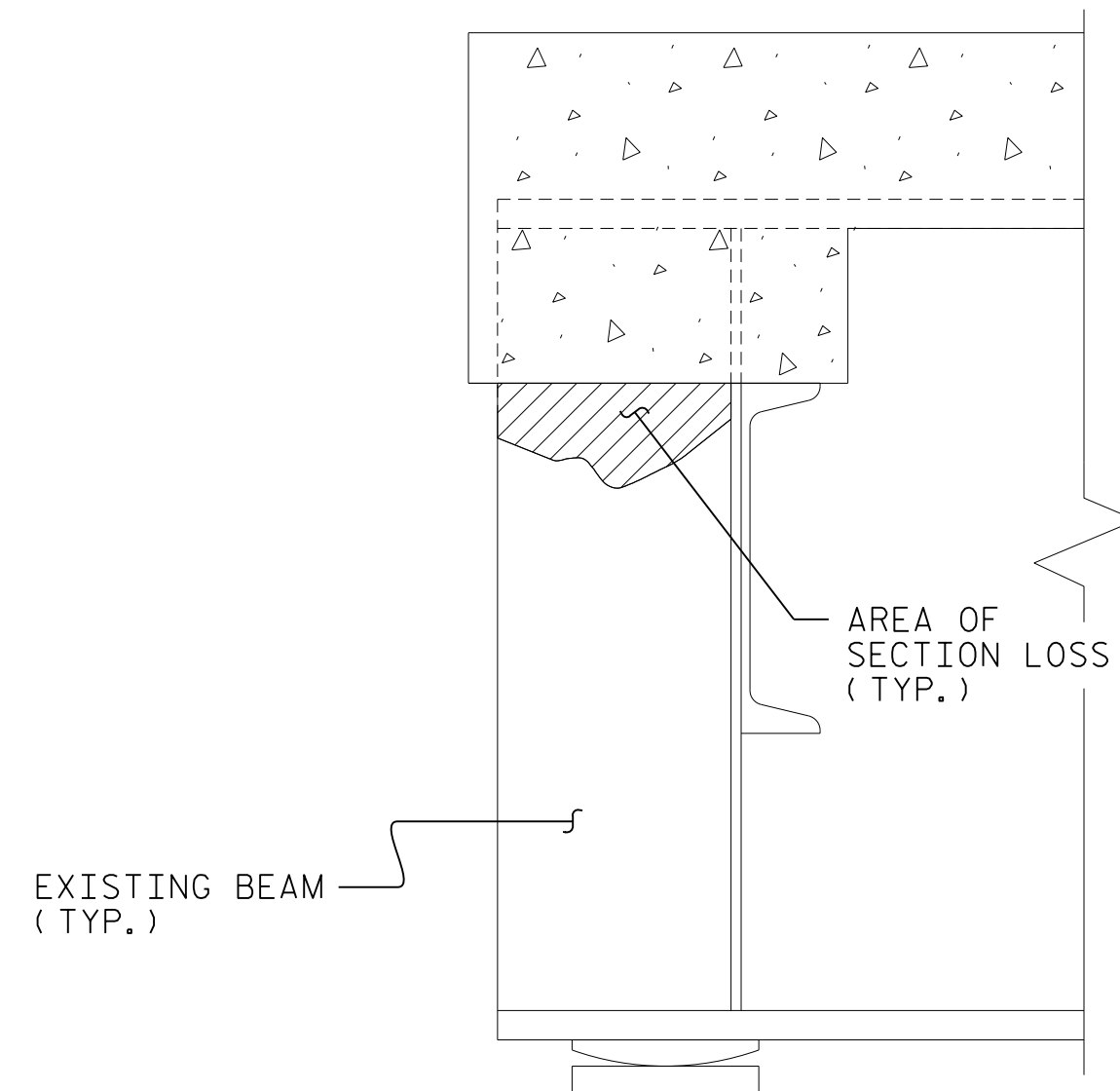
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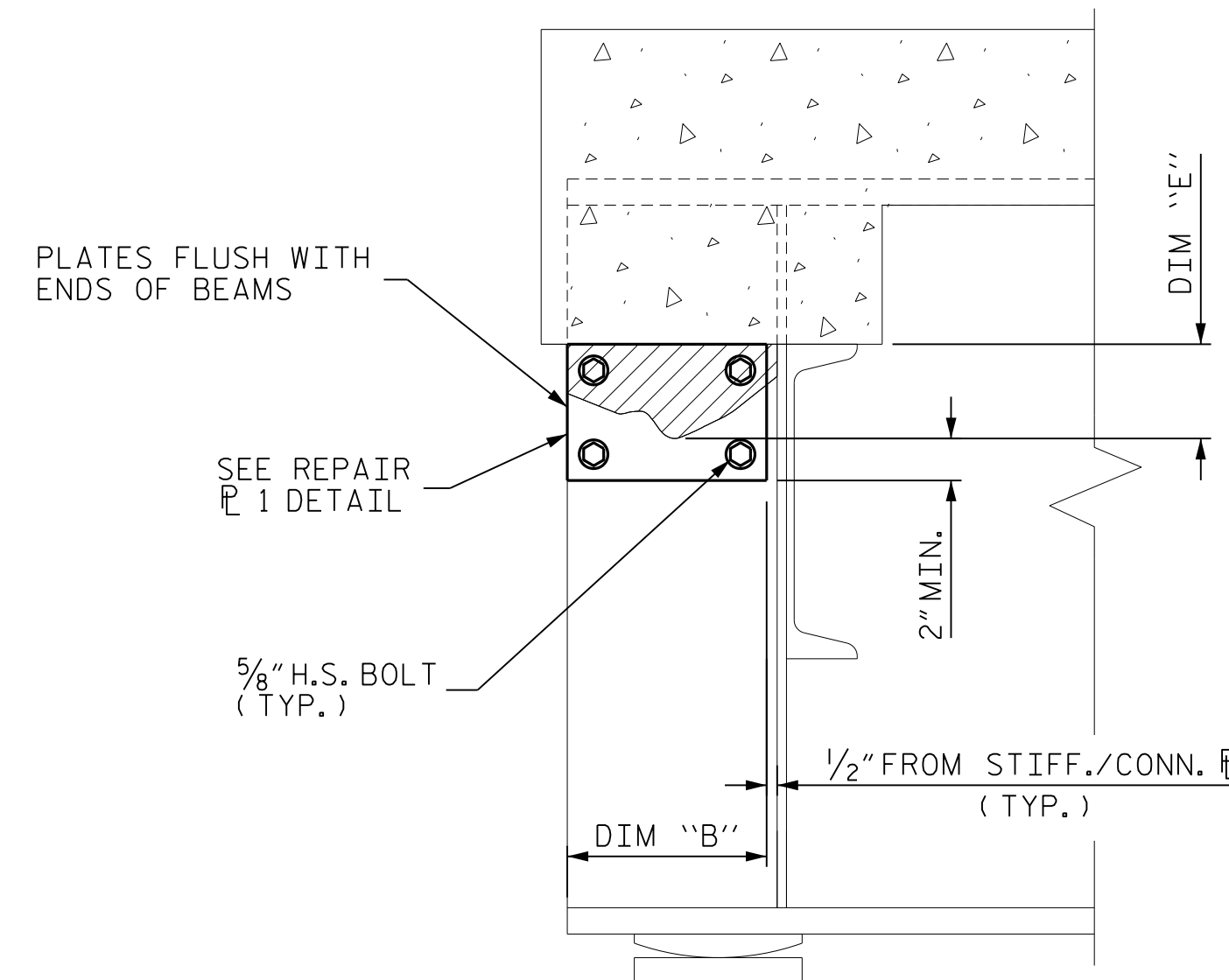
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BEAM REPAIR
DETAILS**

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NO.	BY:	DATE:	NO.	BY:	DATE:	SD-3
1			3			TOTAL SHEETS 108
2			4			

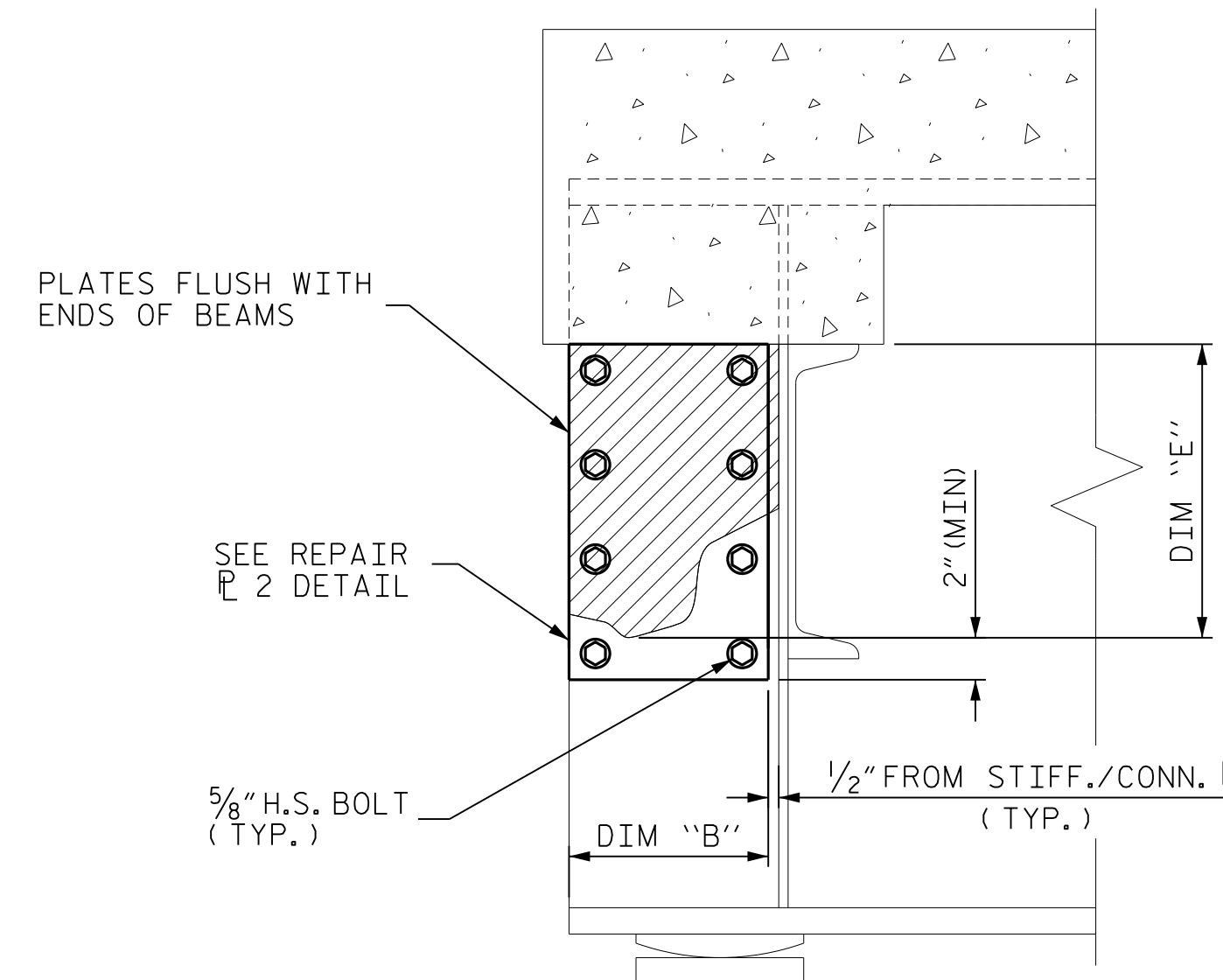


BEAM END SECTION LOSS
(EXISTING)



BEAM END SECTION LOSS PLATING REPAIR
(DIMENSION "E" 3" TO 6 1/2" USE REPAIR P 1)

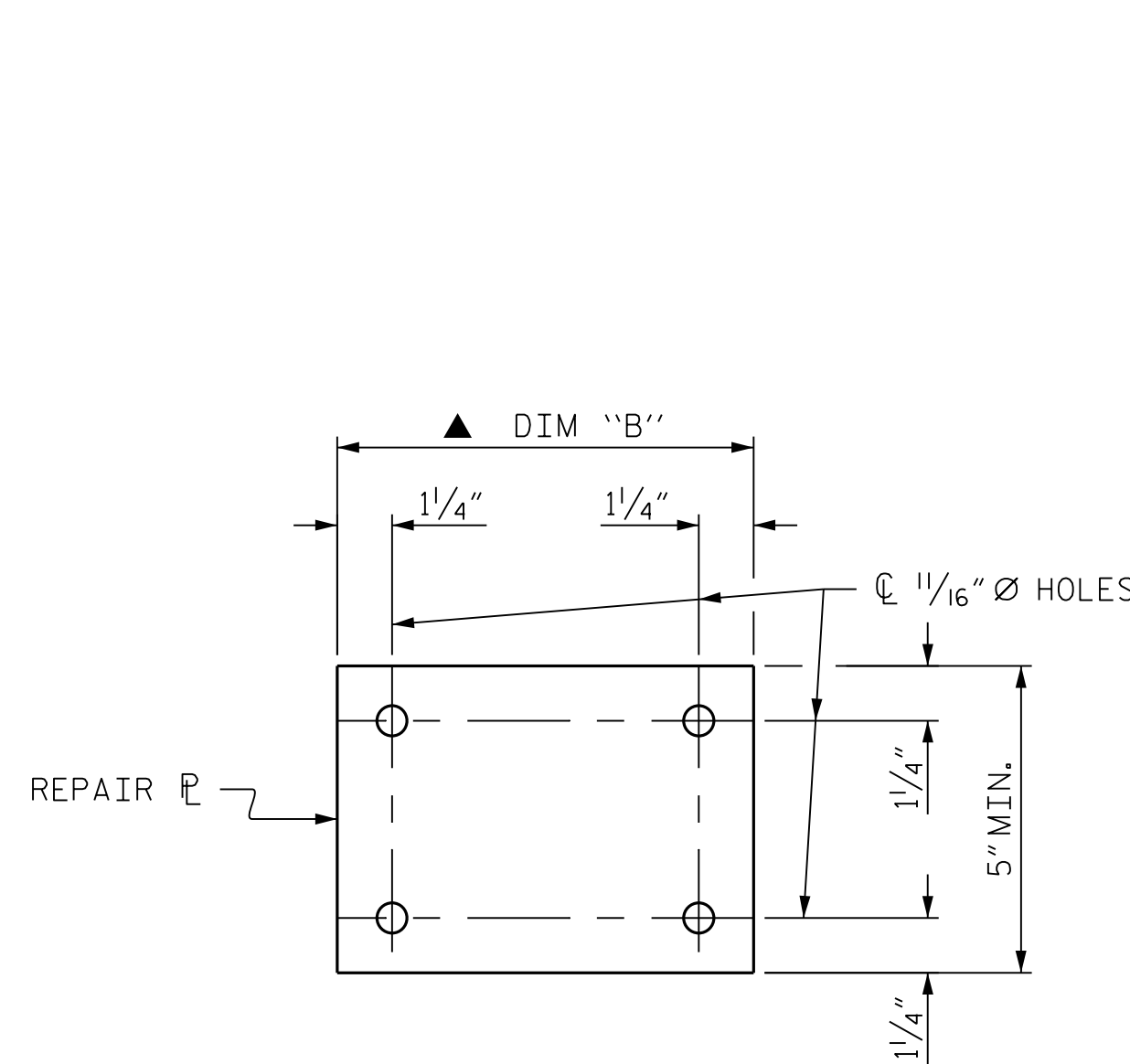
TYPE "H"



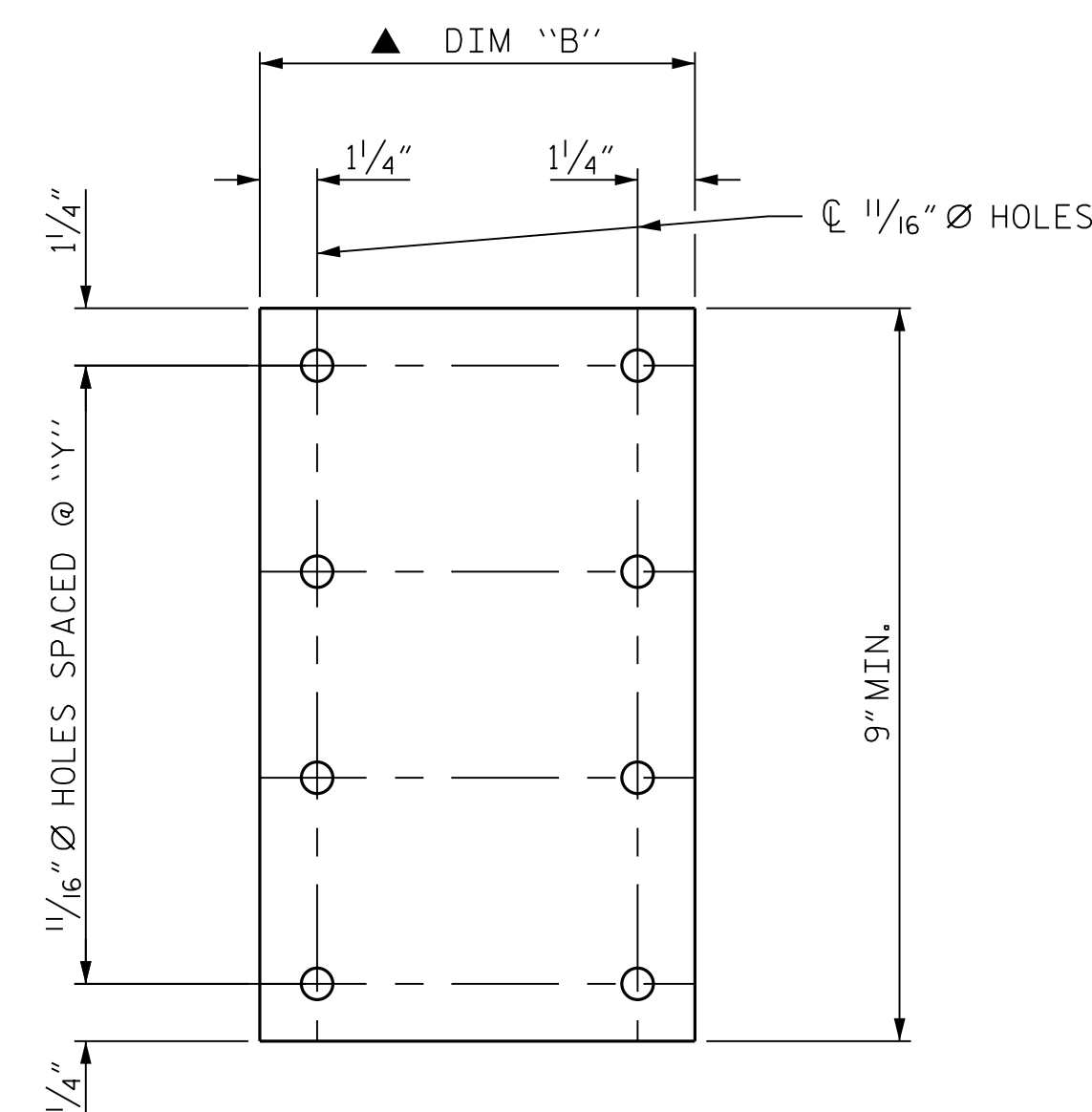
BEAM END SECTION LOSS PLATING REPAIR
(DIMENSION "E" GREATER THAN 6 1/2" USE REPAIR P 2)

TYPE "I"

BEAM BOLTED PLATING REPAIR



REPAIR P 1 DETAIL
(2-PLATES REQ'D PER REPAIR)



REPAIR P 2 DETAIL
(2-PLATES REQ'D PER REPAIR)

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NOTES:

STRUCTURAL STEEL SHALL BE AASHTO GRADE 36 OR GREATER.
ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

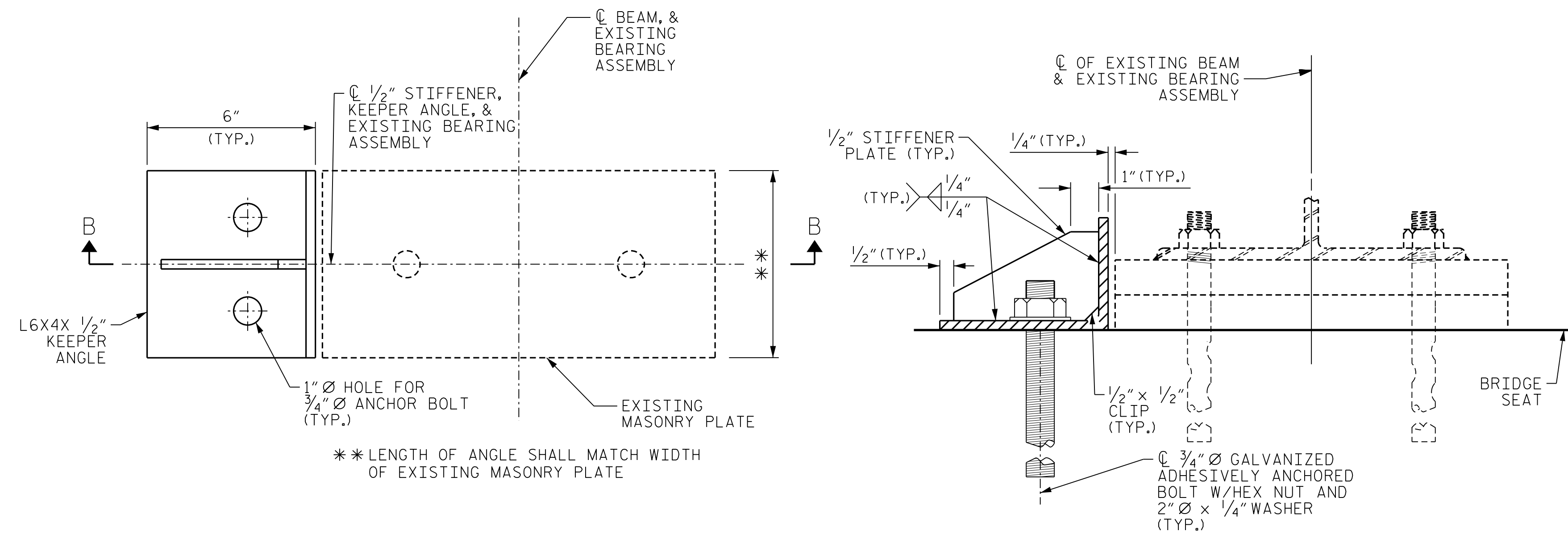
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ADHESIVELY ANCHORED ANCHOR BOLTS SHALL HAVE MINIMUM EMBEDMENT OF 12" WITH SUFFICIENT PROJECTION TO PROVIDE FULL NUT ENGAGEMENT ABOVE KEEPER ASSEMBLY. SEE STANDARD SPECIFICATIONS FOR ADHESIVE ANCHOR REQUIREMENTS. NO FIELD TESTING REQUIRED.

AFTER INSTALLATION, ASSEMBLIES ARE TO BE CLEANED AND PAINTED ACCORDING TO THE SPECIAL PROVISION "CLEANING AND PAINTING EXISTING BEARINGS WITH HRCSA".

THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF PROPOSED ANCHOR BOLTS AND EXISTING CAP REINFORCING STEEL TO ENSURE NO CONFLICTS.

THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS SHOWING LOCATIONS OF ANCHOR BOLTS AND EXISTING CAP REINFORCEMENT TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION OF ASSEMBLIES.



PLAN

SECTION B-B

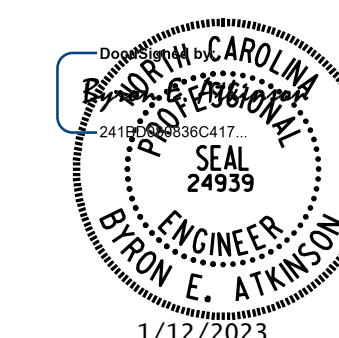
(LOCATION OF EXISTING ANCHOR BOLTS AS SHOWN IS FOR ILLUSTRATION ONLY)

STEEL BEARING ANGLE KEEPER OPTION

ANTICIPATED STEEL KEEPER ANGLE ASSEMBLY LOCATIONS				
BRIDGE NO.	SPAN	BEAM	LOCATION	NO. OF ASSEMBLIES
590281	C	4	BENT 2	1
590282	A	1	BENT 1	2
590337	A	2	BENT 1	1
590337	A	3	BENT 1	1
590337	C	3	BENT 2	1
590337	C	4	BENT 2	1
590337	C	5	BENT 2	1
590337	C	6	BENT 2	1
590338	C	4	BENT 2	1
590342	D	1	BENT 3	1
590345	C	5	BENT 3	1
590345	C	7	BENT 3	1
590345	E	4	BENT 4	2

FOR PLACEMENT OF ASSEMBLIES ON LEFT OR RIGHT SIDE OF BEAM, SEE "BEAM REPAIR LOCATIONS" SHEET.

I-6052 &
PROJECT NO. 15BPR.35
MECKLENBURG COUNTY
BRIDGE NO. 590281, 590282
590337, 590338
590342, 590345



STATE OF NORTH CAROLINA
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RALEIGH

**STEEL BEARING
KEEPER ANGLE
ASSEMBLY DETAILS**

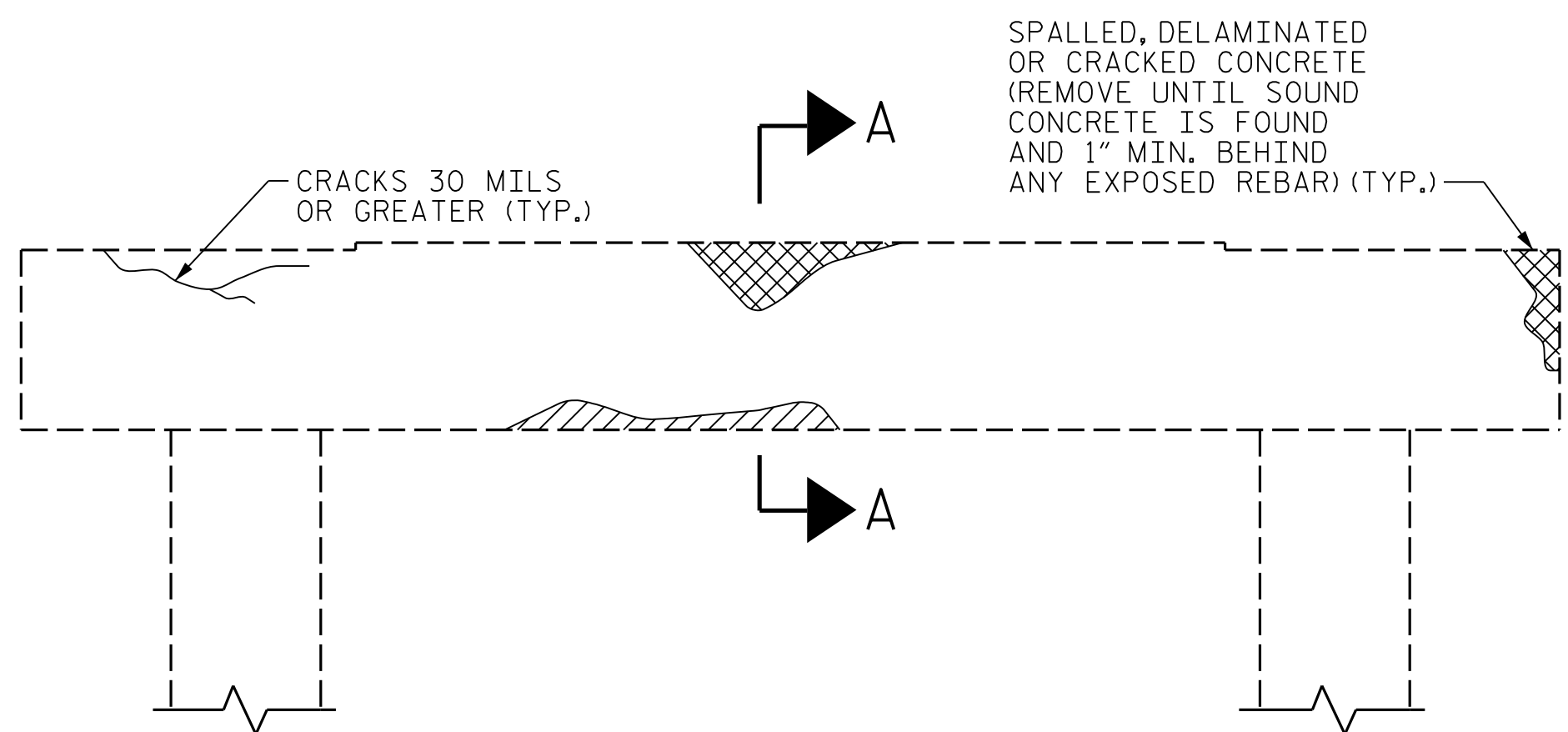
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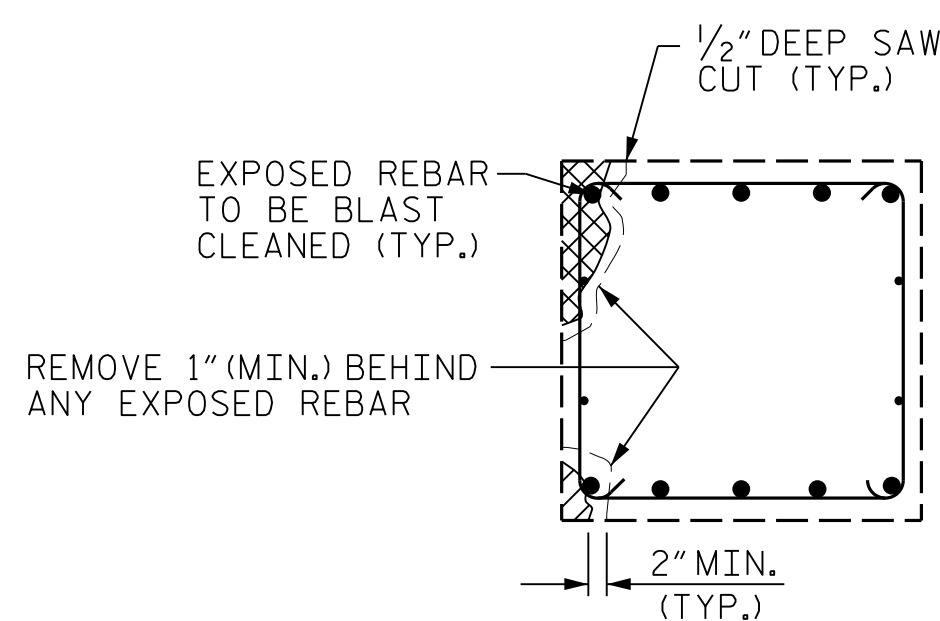
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BENT CAP REPAIRS



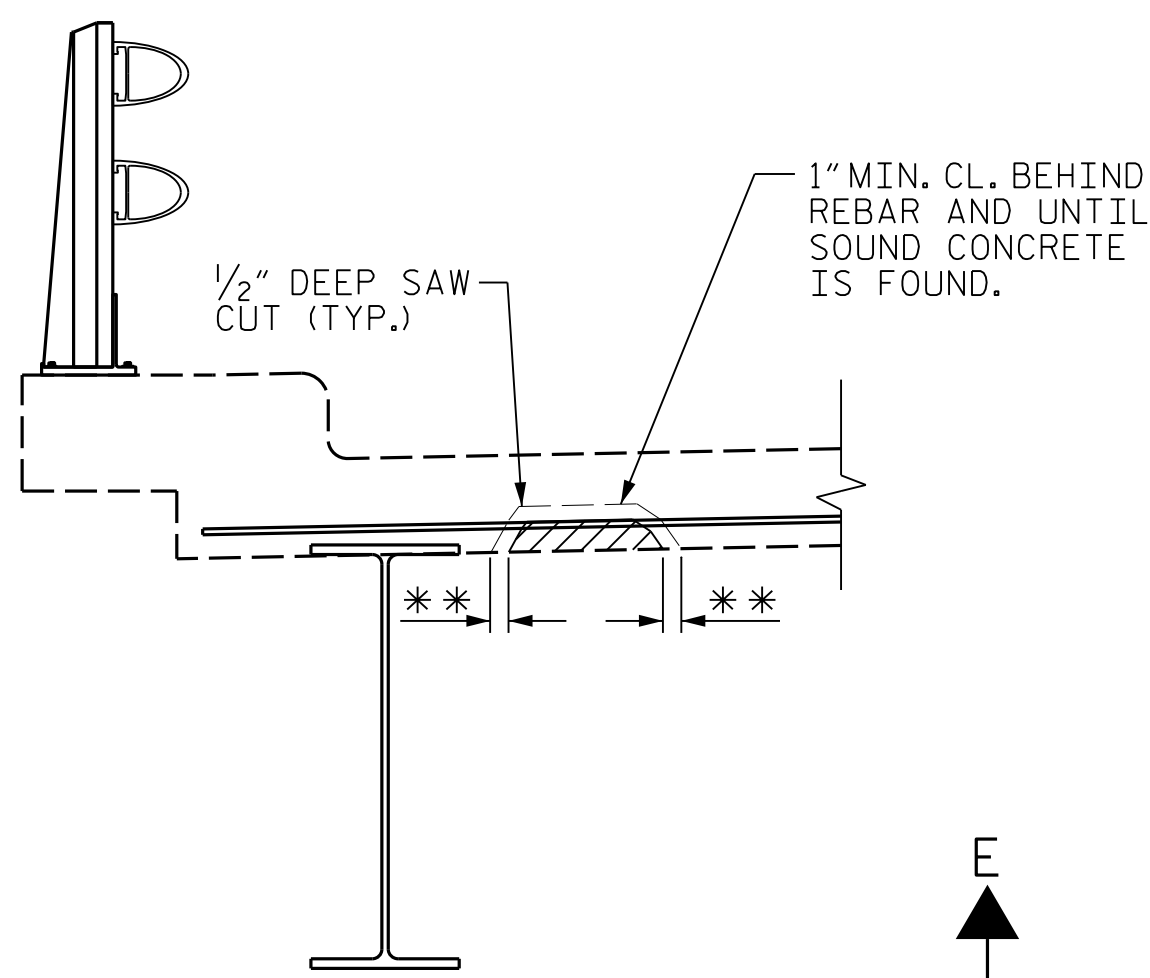
**SECTION A-A
CAP REPAIR**

REPAIR KEY

- SHOTCRETE REPAIR AREA
- CONCRETE REPAIR AREA (FORM AND POUR)
- EPOXY RESIN INJECTION (REI)

SPLICE LENGTH TABLE

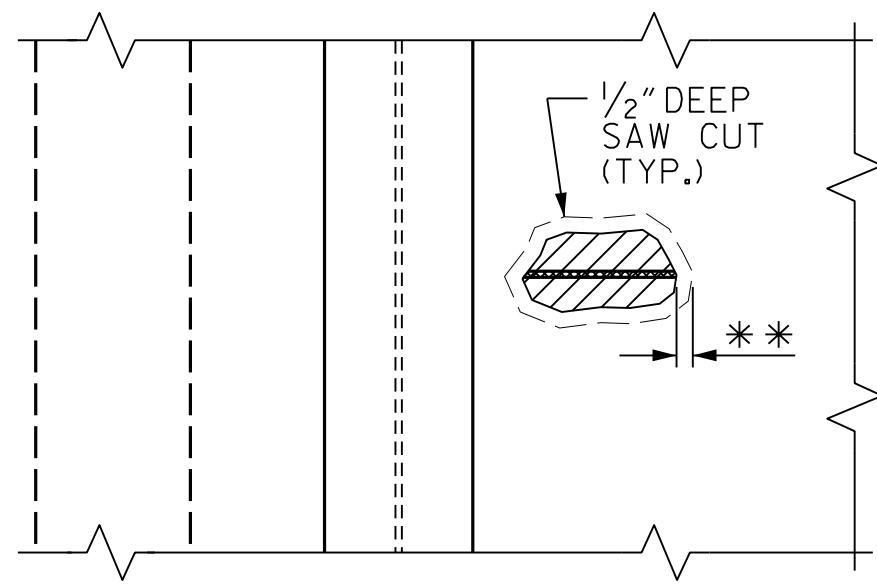
BAR SIZE	MIN. SPLICE LENGTH
#4	2'-4"
#5	2'-9"
#6	4'-0"
#7	5'-3"
#8	6'-9"
#9	8'-6"
#10	10'-11"
#11	13'-4"



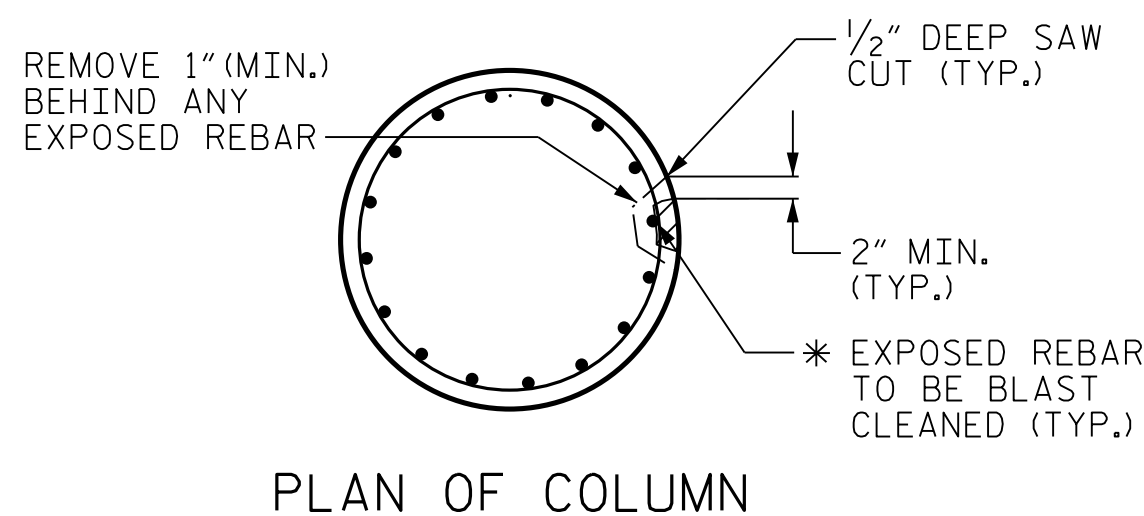
TYPICAL SECTION

** REMOVE CONCRETE UNTIL SOUND CONCRETE IS FOUND (MIN. 2" BEYOND EDGE OF SPALL)

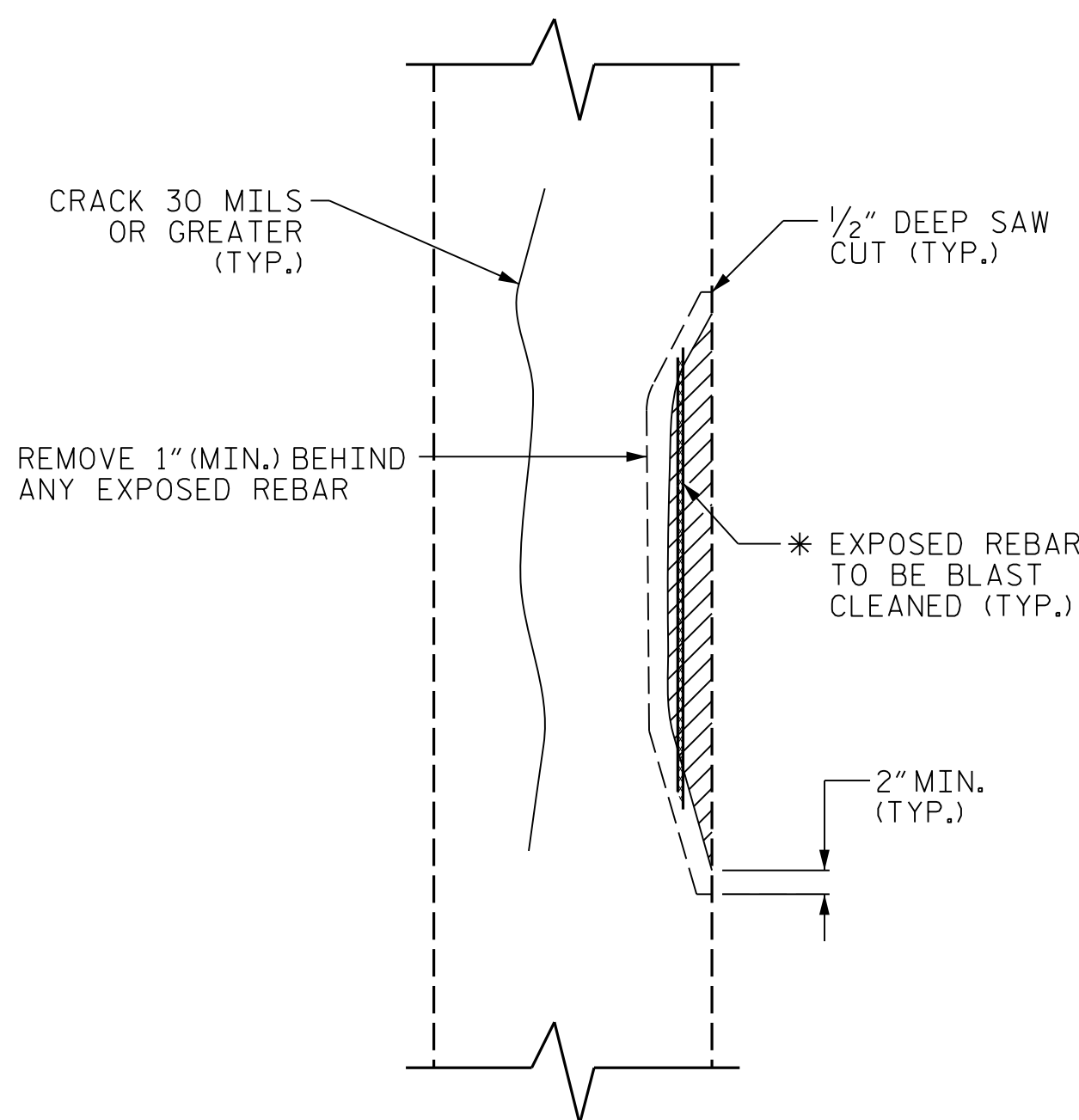
UNDERDECK REPAIR



SECTION E-E

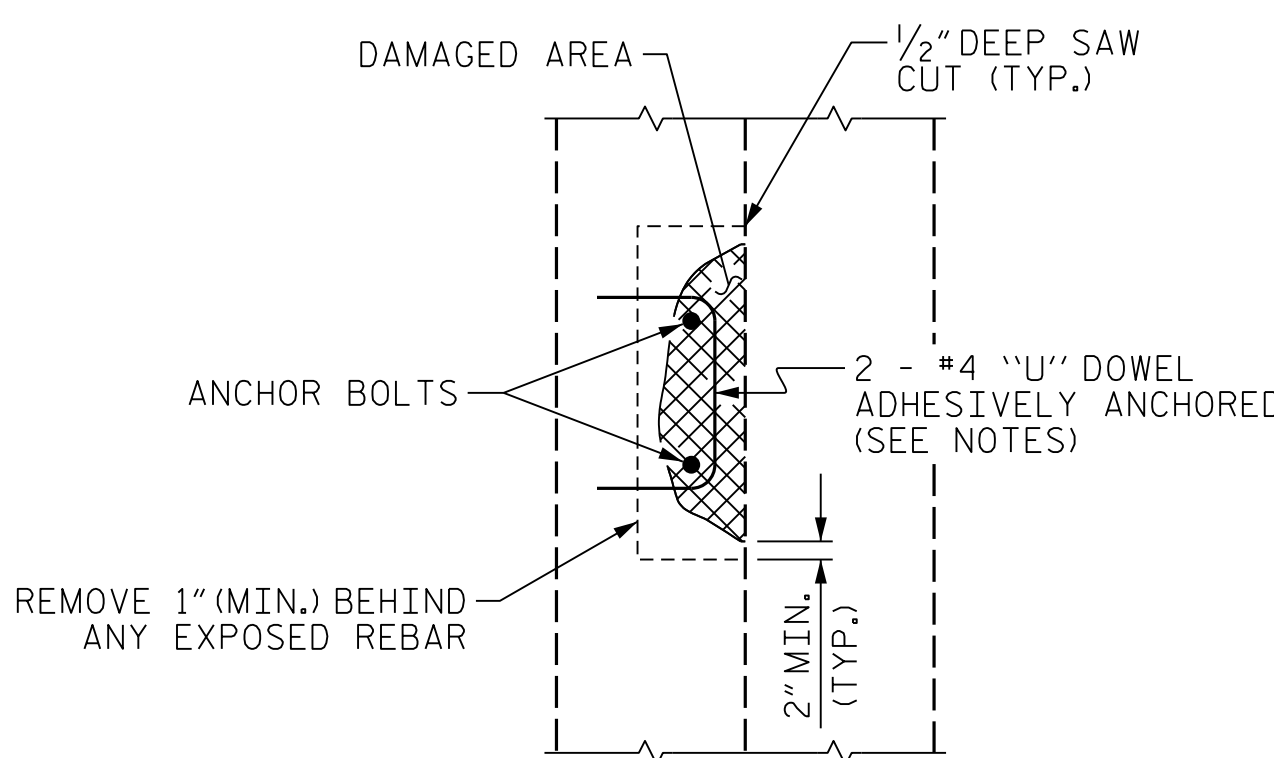


PLAN OF COLUMN

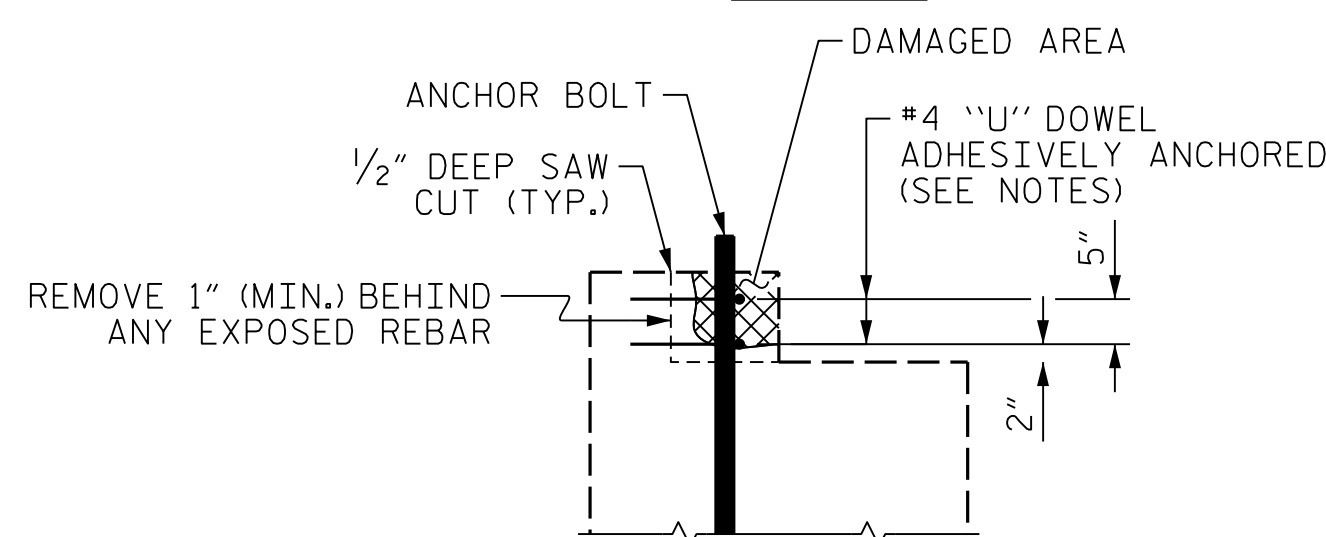


**ELEVATION OF COLUMN
COLUMN REPAIR**

* REPAIR LENGTH SHALL NOT EXCEED 10 FEET.



PLAN



ELEVATION

PEDESTAL WALL REPAIR

NOTES:

- CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF 1/2" BUT REINFORCING STEEL SHALL NOT BE DAMAGED.
- CONTRACTOR SHALL REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL.
- CONTRACTOR SHALL SAW CUT THE REPAIR AREAS SO THAT THE CORNERS ARE SQUARE AS INDICATED ON THE DETAILS.
- CONCRETE REPAIRS MAY BE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.
- TYPICAL BENT CAP REPAIRS ARE SHOWN. REPAIR DETAILS SIMILAR FOR END BENT CAPS AND STRUTS.
- THE METHOD USED TO DELINEATE THE AREAS OF UNSOUND CONCRETE TO BE REPAIRED SHALL NOT PERMANENTLY MARK THE CONCRETE, LEAVE ANY RESIDUE AFTER REMOVAL OR REQUIRE HARSH CHEMICALS TO REMOVE.
- THE CONTRACTOR SHALL REMOVE THE DETERIORATED CONCRETE IN ACCORDANCE WITH THE GUIDELINES SET IN THESE NOTES, IN THE SPECIAL PROVISIONS AND THE STANDARD SPECIFICATIONS.
- REMOVE UNSOUND CONCRETE TO THE EXTENT NECESSARY, MINIMUM OF 1" BEHIND REBAR AND MINIMUM OF 2" CLEARANCE TO SAWCUT.
- NO MORE THAN ONE-THIRD OF THE CAP OR COLUMN CROSS SECTIONAL AREA SHALL BE REMOVED AT ONE TIME. SHOULD IT BECOME NECESSARY TO REMOVE MORE THAN 30% OF A CAP OR COLUMN CROSS SECTIONAL AREA, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.
- SIMULTANEOUS REMOVAL OF UNSOUND CONCRETE MAY BE PERMITTED ON MORE THAN ONE FACE OF A CAP AND/OR COLUMN, IF THE AREAS OF REMOVAL ARE NOT ADJACENT TO OR DIRECTLY OPPOSITE ONE ANOTHER. IF REMOVAL EXTENDS MORE THAN 11*2" BEHIND THE MAIN REINFORCING BARS, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.
- REINFORCING STEEL WHICH IS DETERMINED BY THE ENGINEER TO BE REPLACED, SHALL BE REMOVED TO A POINT WHERE IT IS SOUND. THE PATCH SHALL EXTEND A SUFFICIENT DISTANCE BEYOND THIS POINT TO DEVELOP A SPLICE LENGTH SPECIFIED IN THE TABLE ON THIS SHEET.
- THE #4 "U" DOWELS ARE REQUIRED ONLY AROUND THE ANCHOR BOLTS. THE EXISTING REINFORCING STEEL IN THE PEDESTAL WALL SHALL BE CLEANED, STRAIGHTENED AND REMAIN IN PLACE.

FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

COAT ALL REPAIR SURFACE AREAS ON THE TOP OF CAPS, INCLUDING CHAMFERS, WITH EPOXY PROTECTIVE COATING, OVERLAPPING THE REPAIR AREA BY A MINIMUM OF 3" ON ALL POSSIBLE SIDES.

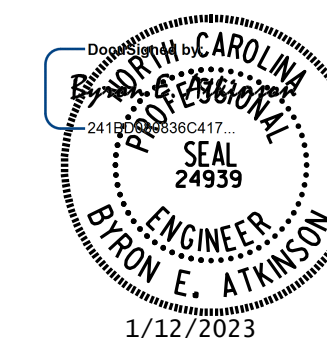
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY PROTECTIVE COATING, SEE EPOXY COATING AND DEBRIS REMOVAL SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

I-6052 &
15BPR.35
PROJECT NO. _____
MECKLENBURG COUNTY
BRIDGE NO. 590281, 590282
590283, 590337
590338, 590339
590341, 590342
590345



**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

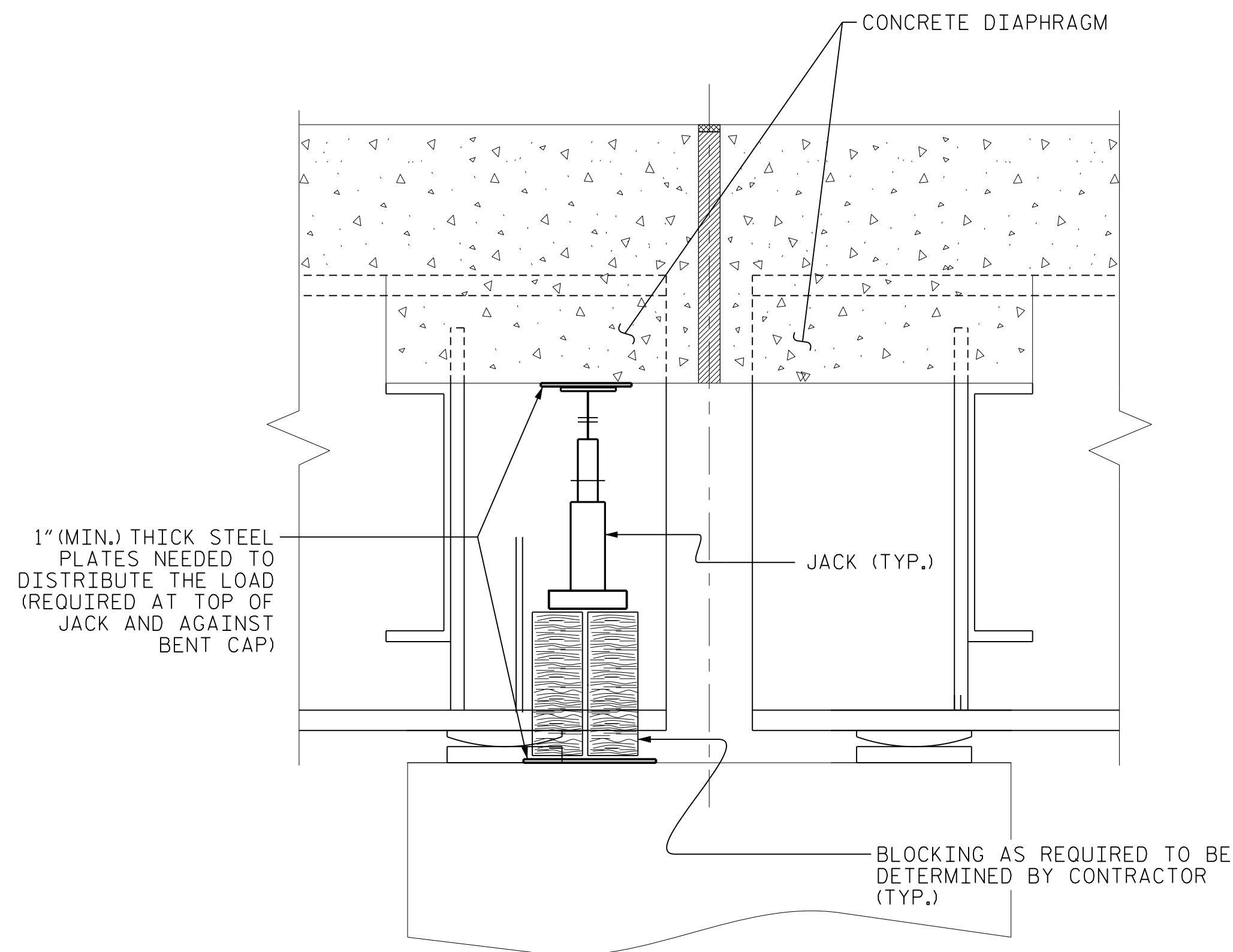
**TYPICAL CAP, COLUMN
AND UNDERDECK
REPAIR DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SD-5
1			3			TOTAL SHEETS 108
2			4			

DRAWN BY : B.E. LANNING	DATE : 10/2022
CHECKED BY : B.E. ATKINSON	DATE : 10/2022
DESIGN ENGINEER OF RECORD : B.E. ATKINSON	DATE : 10/2022

1/12/2023 9:20:22 AM User: blanning
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SECTION THRU DIAPHRAGM

THIS DETAIL IS A GENERIC EXAMPLE OF A JACKING SCHEME AND DOES NOT NECESSARILY REPRESENT SPECIFIC CONDITIONS AT A PARTICULAR BRIDGE. ACTUAL BRIDGE GEOMETRIES, DIMENSIONS, AND CONDITIONS MAY DIFFER FROM THIS DETAIL. PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL INVESTIGATE THE BRIDGES ON THE PROJECT AND DEVELOP A JACKING PLAN TO BE SUBMITTED FOR REVIEW AND APPROVAL. SEE BRIDGE JACKING SPECIAL PROVISION.

BRIDGE JACKING NOTES:

THE BEAM SHALL BE LIFTED ENOUGH THAT THE BEAM CLEARS THE BEARINGS AND ALL LOAD IS SUPPORTED BY THE JACKS. AFTER JACKING IS COMPLETE, THE CONTRACTOR SHALL PROVIDE FOR A METHOD TO REMOVE THE JACKS AND SUPPORT THE BEAM FOR DEAD AND LIVE LOAD DURING THE REPAIR OPERATIONS. IF THE JACKS REMAIN IN PLACE DURING THE ENTIRE JACKING AND REPAIR OPERATION, THEY SHALL HAVE MECHANICAL LOCK OFF CAPABILITIES.

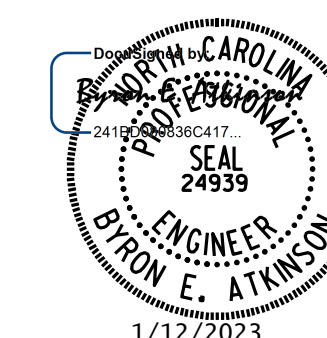
IF, DURING THE JACKING PROCESS, OR WHILE THE BEAM IS BEING SUPPORTED, THE BEAM SHIFTS FROM ITS ORIGINAL POSITION, ALL WORK SHALL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

PRIOR TO JACKING, THE CONTRACTOR SHALL ENSURE THERE ARE NO OBSTACLES PREVENTING THE BEAM FROM BEING LIFTED.

BEARINGS ADJACENT TO THE BEAM BEING JACKED MAY BE LOOSENED TO DECREASE THE RESISTANCE OF THE DECK SLAB DURING JACKING. ALL BEARINGS LOOSENED SHALL BE TIGHTENED BACK AFTER REPAIR OPERATIONS ARE COMPLETED AND THE JACKS AND BLOCKING HAVE BEEN REMOVED.

THE MAXIMUM DIFFERENTIAL BETWEEN ADJACENT BEAMS THAT ARE BEING JACKED IS 1/8\"

I-6052 &
 PROJECT NO. 15BPR.35
 MECKLENBURG COUNTY
 BRIDGE NO. 590281, 590282
 590339, 590341
 590342, 590345



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

JACKING DETAILS

**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

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

SHEET NO.
 SD-6
 TOTAL SHEETS
 108

DRAWN BY : B.E. LANNING DATE : 10/2022
 CHECKED BY : B.E. ATKINSON DATE : 10/2022
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 10/2022

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 $\frac{1}{2}$ " 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 $\frac{3}{16}$ " 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

STD. NO. SN