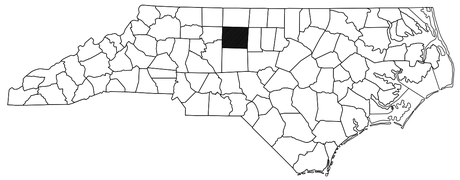
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| N.C. | U-6018 | 1 | 1 |

| STATE PROJ. NO. | F. A. PROJ. NO. | DESCRIPTION |
|---|---|---|
| 47163.1.1 | – | P.E. |
| 47163.3.1 | – | CONST. |

PROJECT: U-6018

CONTRACT NO.: C204798

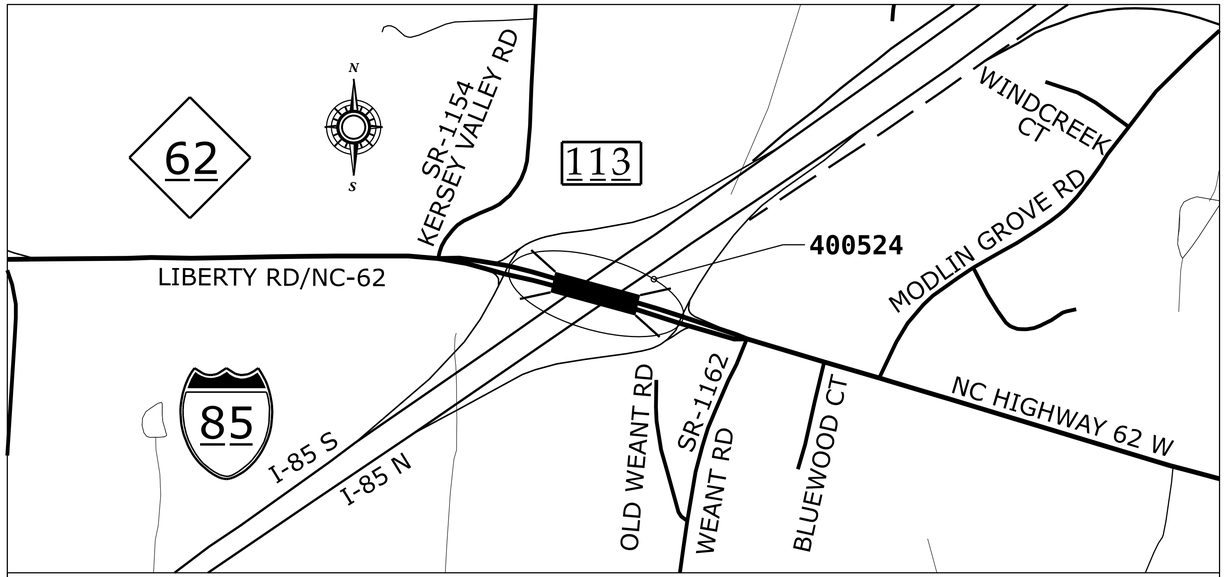


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

# GUILFORD COUNTY

***LOCATION:*** ***BRIDGE NO. 400524 ON NC–62 OVER INTERSTATE 85***

***TYPE OF WORK:*** ***BRIDGE PRESERVATION – DECK REPAIR, POLYESTER POLYMER CONCRETE (PC) OVERLAY, FOAM JOINT SEALS FOR PRESERVATION, POURABLE SILICONE JOINT SEALANT, PAINTING EXISTING WEATHERING STEEL BEAMS, PAINTING EXISTING BEARINGS, EPOXY COATING AND DEBRIS REMOVAL AND SUBSTRUCTURE REPAIR.***




VICINITY MAP - GUILFORD CO.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

***DESIGN DATA***

GUILFORD COUNTY
BRIDGE No. 400524 – ADT 2018 – 11,000

***PROJECT LENGTH***

GUILFORD COUNTY
BRIDGE No. 400524 – 0.075 MILES

*Prepared In the Office of:*
***DIVISION OF HIGHWAYS***
***STRUCTURES MANAGEMENT UNIT***
*1000 BIRCH RIDGE DR.*
*RALEIGH, N.C. 27610*

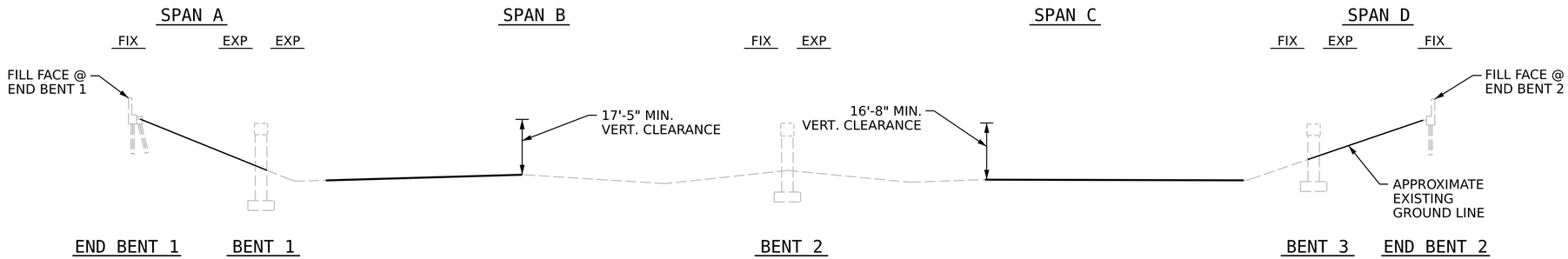
*2024 STANDARD SPECIFICATIONS*

***LETTING DATE :***

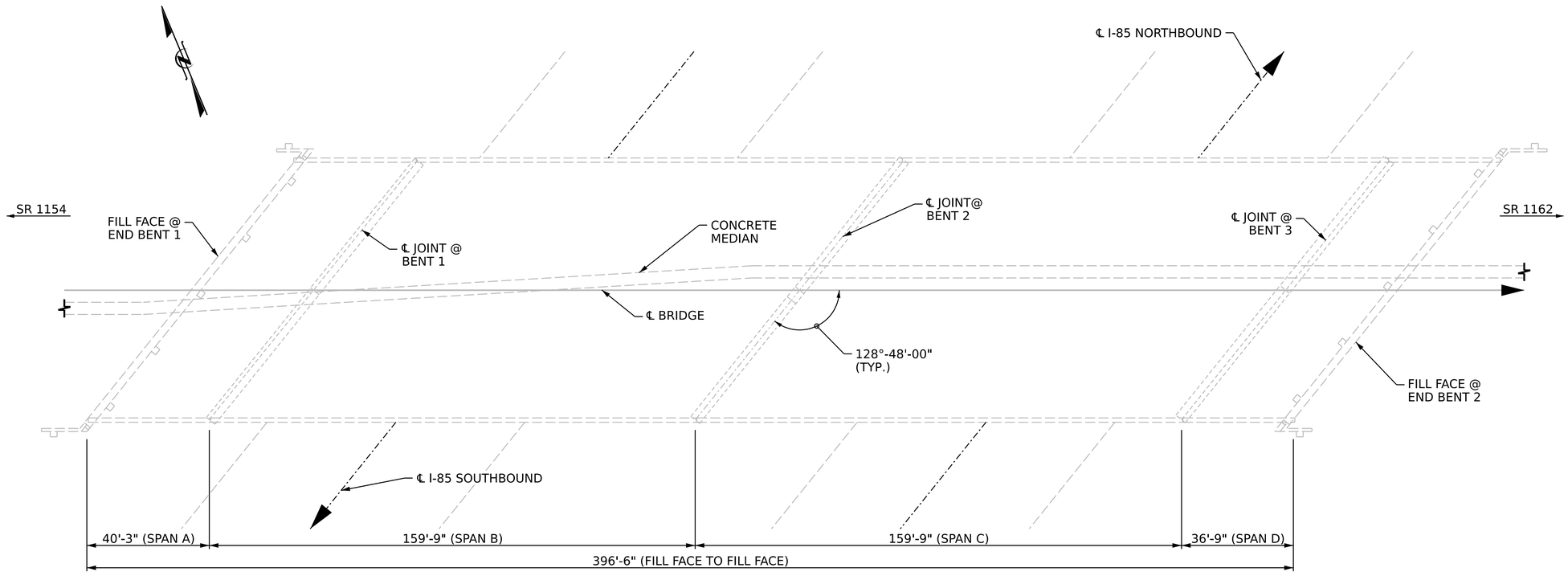
JUNE 17, 2025

KRISTY W. ALFORD, PE
*PROJECT ENGINEER*

FRANCESCA LEA, PE
*PROJECT DESIGN ENGINEER*




## SECTION ALONG ℄ BRIDGE




## PLAN

## NOTES

GENERAL DRAWING INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 08/01/2022.

BRIDGE ORIENTATION CONFORMS TO THE EXISTING BRIDGE PLANS/ROUTINE INSPECTION.

## SCOPE OF WORK

PARTIALLY REMOVE TOP OF BRIDGE DECK CONCRETE BY SCARIFICATION AND SHOTBLASTING METHODS.

OVERLAY PREPARED TOP OF BRIDGE DECK WITH POLYESTER POLYMER CONCRETE (PC).

REMOVE EXISTING JOINT MATERIAL AND INSTALL FOAM JOINT SEALS FOR PRESERVATION AT BENTS.

REMOVE EXISTING END BENT JOINT MATERIAL AND INSTALL SILICONE JOINT SEALS FOR PRESERVATION AT END BENTS.

GROOVE PC BRIDGE DECK

CLEAN AND ZONE PAINT EXISTING WEATHERING STEEL BEAMS.

CLEAN AND PAINT EXISTING STEEL BEARINGS.

REMOVE DEBRIS FROM TOP OF EXISTING END BENT AND BENT CAPS AND APPLY EPOXY COATING.

SILANE BARRIER RAIL TREATMENT.

EPOXY RESIN INJECTION OF CONCRETE CRACKS.

REMOVE UNSOUND CONCRETE AND PROPERLY PREPARE EXISTING END BENTS, BENT, AND SUPERSTRUCTURE AREAS FOR SHOTCRETE AND CONCRETE REPAIRS.

PROPERLY PREPARE SPALLED AREAS IN EXISTING END BENT AND BENTS AND PERFORM SHOTCRETE AND CONCRETE REPAIRS.

REMOVE AND REPLACE CONCRETE MEDIAN.

FILL VOIDS UNDER APPROACH SLAB.

PERFORM WELDED BEAM REPAIR.

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

RESIDENT ENGINEER DATE

NORTH CAROLINA PROFESSIONAL SEAL 29441 ENGINEER KRISTY W. ALFORD

DocuSigned by: F24583B930BF40E...

03/27/2025

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: B79DADB65D584EF...

03/27/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

# GENERAL DRAWING

FOR BRIDGE ON NC-62
OVER I-85
BETWEEN SR 1154 AND SR 1162

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-01 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 35 |

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 11/2024

3/24/2025
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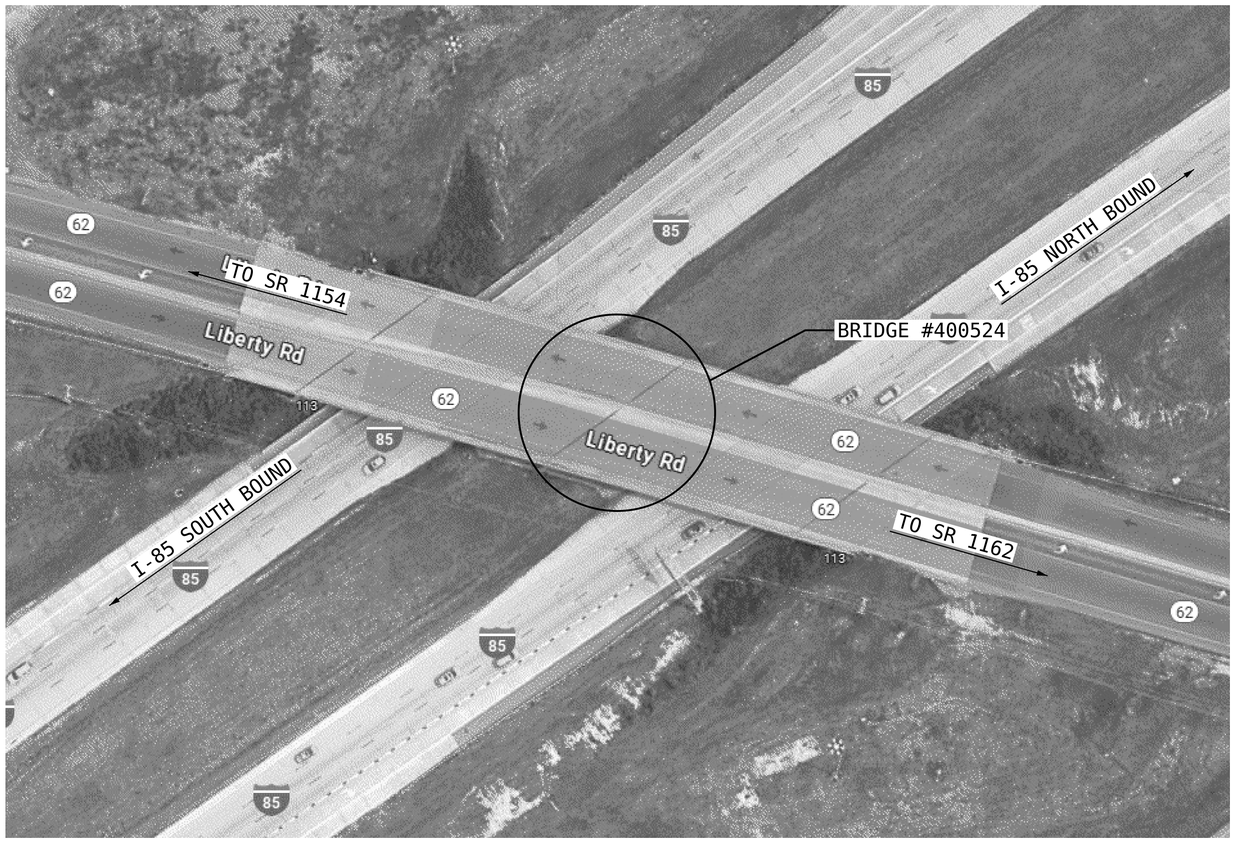


## BRIDGE 400524 LOCATION SKETCH

## BRIDGE COORDINATES

| BRIDGE No. | LATITUDE | LONGITUDE |
|---|---|---|
| 400524 | 35° 55' 21.57" | 79° 56' 07.46" |

## NOTES

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

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.

THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOVER AGAINST THE DEPARTMENT FOR ANY DELAYS OF ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN WHAT IS SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

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

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATIONS OF THE BRIDGE DECK. THE CONTRACTOR SHALL TAKE CARE THAT ANY CONSTRUCTION DEBRIS THAT COLLECTS IN THE DRAINS IS CONTAINED. DRAINS IN SHOULDERS OF ADJACENT TRAVEL LANE(S) SHALL BE KEPT FREE AND CLEAR OF DEBRIS.

LONGITUDINAL CONSTRUCTION JOINTS OF OVERLAYS SHALL BE LOCATED ALONG THE CENTERLINE OR EDGE OF TRAVEL LANES.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR PAINTING OF EXISTING WEATHERING STEEL STRUCTURE, SEE SPECIAL PROVISIONS.

FOR APPROACH SLAB VOID FILLING, SEE SPECIAL PROVISIONS.

WHEN PC OVERLAYS ARE TO BE USED ON THE EXISTING APPROACH SLABS, ALL EDGES OF THE PC OVERLAY ON THE APPROACH SLAB SHOULD PROVIDE A NEAT, UNIFORM STRAIGHTLINE.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

FOR TYPE I BRIDGE JACKING, SEE "BRIDGE JACKING" SPECIAL PROVISIONS.

FOR SURFACE PREPARATION FOR CONCRETE BARRIER AND SILANE BARRIER RAIL TREATMENT, SEE "SILANE BARRIER RAIL TREATMENT" SPECIAL PROVISIONS.

FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

FOR SCARIFYING BRIDGE DECK, SHOT BLASTING BRIDGE DECK, AND CLASS II SURFACE PREPARATION, SEE "OVERLAY SURFACE PREPARATION FOR POLYMER CONCRETE" SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR CONCRETE MEDIAN REPLACEMENT, SEE SPECIAL PROVISIONS.

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

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

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

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

THE EXISTING BRIDGE DECK SHALL BE REPAIRED AS SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER AFTER SCARIFICATION AND PRIOR TO THE SURFACE PREPARATION AND APPLICATION OF THE PC OVERLAY. UNLESS OTHERWISE APPROVED, SUCH LOCATIONS SHALL BE REPAIRED WITH POLYMER CONCRETE.

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

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

FOR STEEL BEARING KEEPER ANGLE ASSEMBLY, SEE SPECIAL PROVISIONS.

FOR CONCRETE DECK REPAIR FOR POLYMER CONCRETE OVERLAY, PLACING AND FINISHING POLYMER CONCRETE OVERLAY, GROOVING BRIDGE FLOORS, POLYESTER POLYMER CONCRETE MATERIALS, AND EPOXY POLYMER CONCRETE MATERIALS, SEE "POLYMER CONCRETE BRIDGE DECK OVERLAY" SPECIAL PROVISIONS.

FOR BEAM REPAIR PLATING, SEE SPECIAL PROVISIONS.

FOR PVC DRAINAGE PIPE, SEE SPECIAL PROVISIONS.

## TOTAL BILL OF MATERIALS

| BRIDGE No. 400524 | GROOVING BRIDGE FLOORS | CLASS AA CONCRETE | EPOXY COATED REINFORCING STEEL | POLLUTION CONTROL | CLASS II SURFACE PREPARATION | CONCRETE REPAIRS | SHOTCRETE REPAIRS | EPOXY RESIN INJECTION | FOAM JOINT SEALS FOR PRESERVATION | PAINTING CONTAINMENT FOR BRIDGE No. 400524 | CLEANING AND PAINTING OF EXISTING WEATHERING STEEL FOR BRIDGE 400524 | PVC DRAINAGE PIPE | TWO BAR METAL RAIL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UNITS | SQ. FT. | CU. YDS. | LBS. | LUMP SUM | SQ. YD. | CU. FT. | CU. FT. | LIN. FT. | LIN. FT. | LUMP SUM | LUMP SUM | LUMP SUM | LIN. FT. |
| TOTAL | 33939.4 | 95.0 | 6133 | LUMP SUM | 5.3 | 47.9 | 517.9 | 15.7 | 323.4 | LUMP SUM | LUMP SUM | LUMP SUM | 779.4 |

## TOTAL BILL OF MATERIALS

| POURABLE SILICONE JOINT SEALANT | POLYESTER POLYMER CONCRETE MATERIALS | EPOXY POLYMER CONCRETE MATERIALS (ALTERNATE) | BRIDGE JOINT DEMOLITION | ELASTOMERIC CONCRETE FOR PRESERVATION | APPROACH SLAB VOID FILLING | BEAM REPAIR PLATING | CONCRETE MEDIAN REPLACEMENT | EPOXY COATING | SURFACE PREPARATION FOR CONCRETE BARRIER | SILANE BARRIER RAIL TREATMENT | CONCRETE DECK REPAIR FOR POLYMER CONCRETE OVERLAY | PLACING & FINISHING POLYMER CONCRETE OVERLAY | SCARIFYING BRIDGE DECK | SHOT-BLASTING BRIDGE DECK | TYPE I BRIDGE JACKING | STEEL BEARING KEEPER ANGLE ASSEMBLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LIN. FT. | CU. YDS. | CU. YDS. | CU. FT. | CU. FT. | LBS. | LBS. | SQ. FT. | SQ. FT. | SQ. FT. | SQ. FT. | SQ. YDS. | SQ. YDS. | SQ. YDS. | SQ. YDS. | EA. | EA. |
| 268.6 | 139.0 | 139.0 | 81.0 | 81.0 | 456.0 | 54.9 | 1933.6 | 2725.2 | 3753.8 | 3753.8 | 5.3 | 3978.1 | 3978.1 | 3978.1 | 29 | 1 |

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 11/2024

4/21/2025
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PROJECT NO. U-6018
GUILFORD COUNTY
BRIDGE NO. 400524

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B790ADB65D584EF...
04/21/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

# GENERAL DRAWING
LOCATION SKETCH
&
BILL OF MATERIAL

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-02 |
| 1 | | | 3 | | | TOTAL SHEETS |
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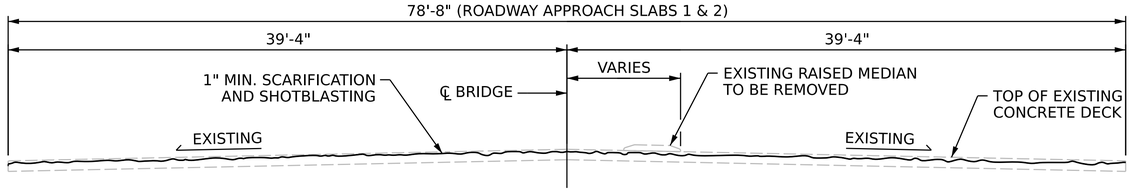
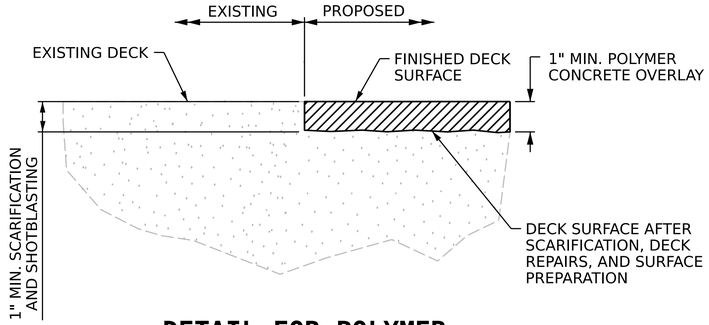



## TYPICAL SECTION - APPROACH SLAB

(EXISTING)




## DETAIL FOR POLYMER CONCRETE OVERLAY

FINISHED SURFACE ELEVATION SHALL MATCH EXISTING CONCRETE SURFACE ELEVATION. ACTUAL THICKNESS OF PC OVERLAY MAY VARY.

### NOTES

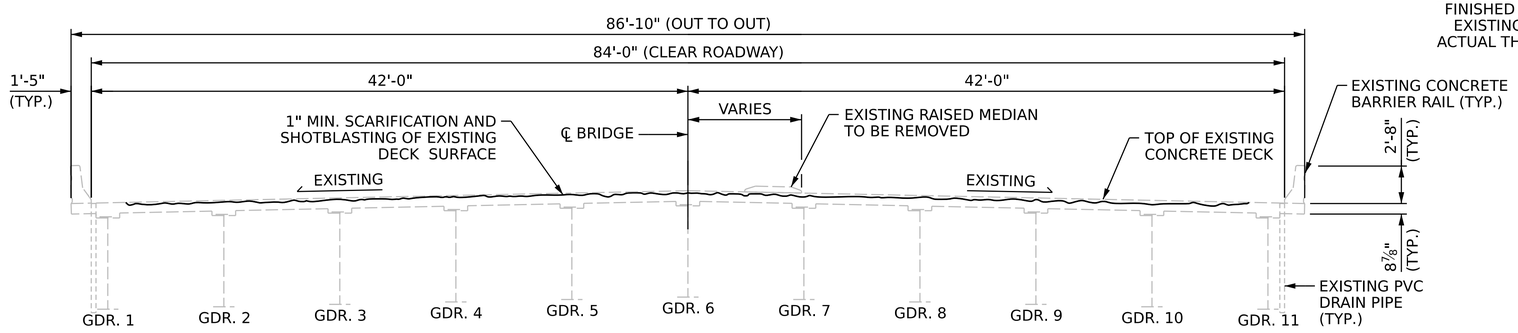
SEE CONTRACT DOCUMENTS FOR LANE WIDTHS, SEQUENCING AND OTHER TRAFFIC CONTROL MEASURES FOR STAGING OF POLYMER CONCRETE (PC) OVERLAY SURFACE PREPARATION.

FOR REMOVING AND REPLACING RAISED MEDIAN, SEE DETAIL "A" AND SPECIAL PROVISIONS

PROTECT TRAFFIC FROM REBOUND, DUST, OVERSPRAY, AND CONSTRUCTION ACTIVITIES. PROVIDE APPROPRIATE SHIELDING, AS REQUIRED AND/OR DIRECTED BY THE ENGINEER.

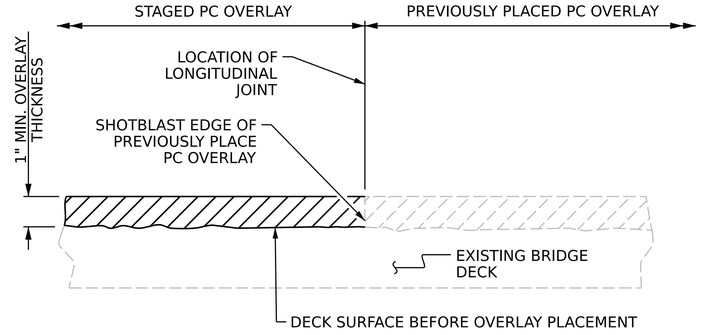
"M" BARS TO BE FIELD BENT AS NEEDED.

BLOCKOUTS SHALL BE FORMED IN THE SIDEWALK TO ALLOW WATER TO FLOW TO THE EXISTING DECK DRAINS AS SHOWN.

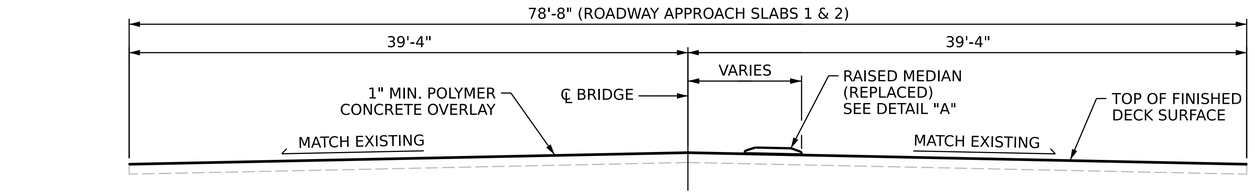



## TYPICAL SECTION

(EXISTING)

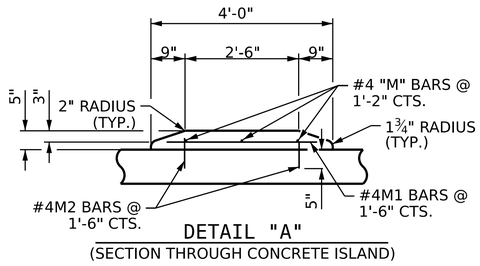



## STAGED PC OVERLAY JOINT



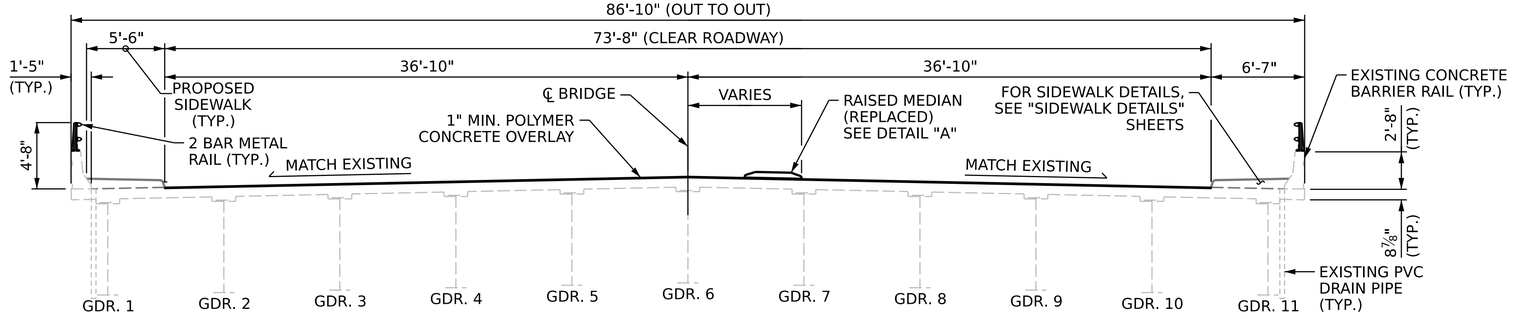

## TYPICAL SECTION - APPROACH SLAB

(PROPOSED)



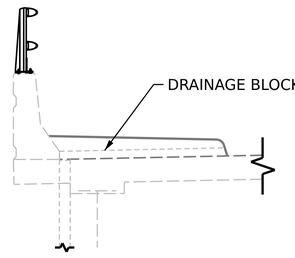

## DETAIL "A"

(SECTION THROUGH CONCRETE ISLAND)




## TYPICAL SECTION

(PROPOSED)




## SIDEWALK DRAINAGE BLOCKOUT DETAIL

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

# TYPICAL SECTION AND SURFACE PREPARATION DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D584EF...

03/27/2025

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-03 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 35 |

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3/24/2025
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sbaguilar-hernandez

## NOTES

DECK SURFACE REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR AFTER REMOVAL OF UNSOUND CONCRETE MIN. 2" CLEAR TO SAWCUT.

REPAIR LOCATIONS AND ESTIMATED 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.

FOR CONCRETE DECK REPAIR FOR POLYMER CONCRETE OVERLAY, SEE "POLYMER CONCRETE BRIDGE DECK OVERLAY" SPECIAL PROVISIONS.

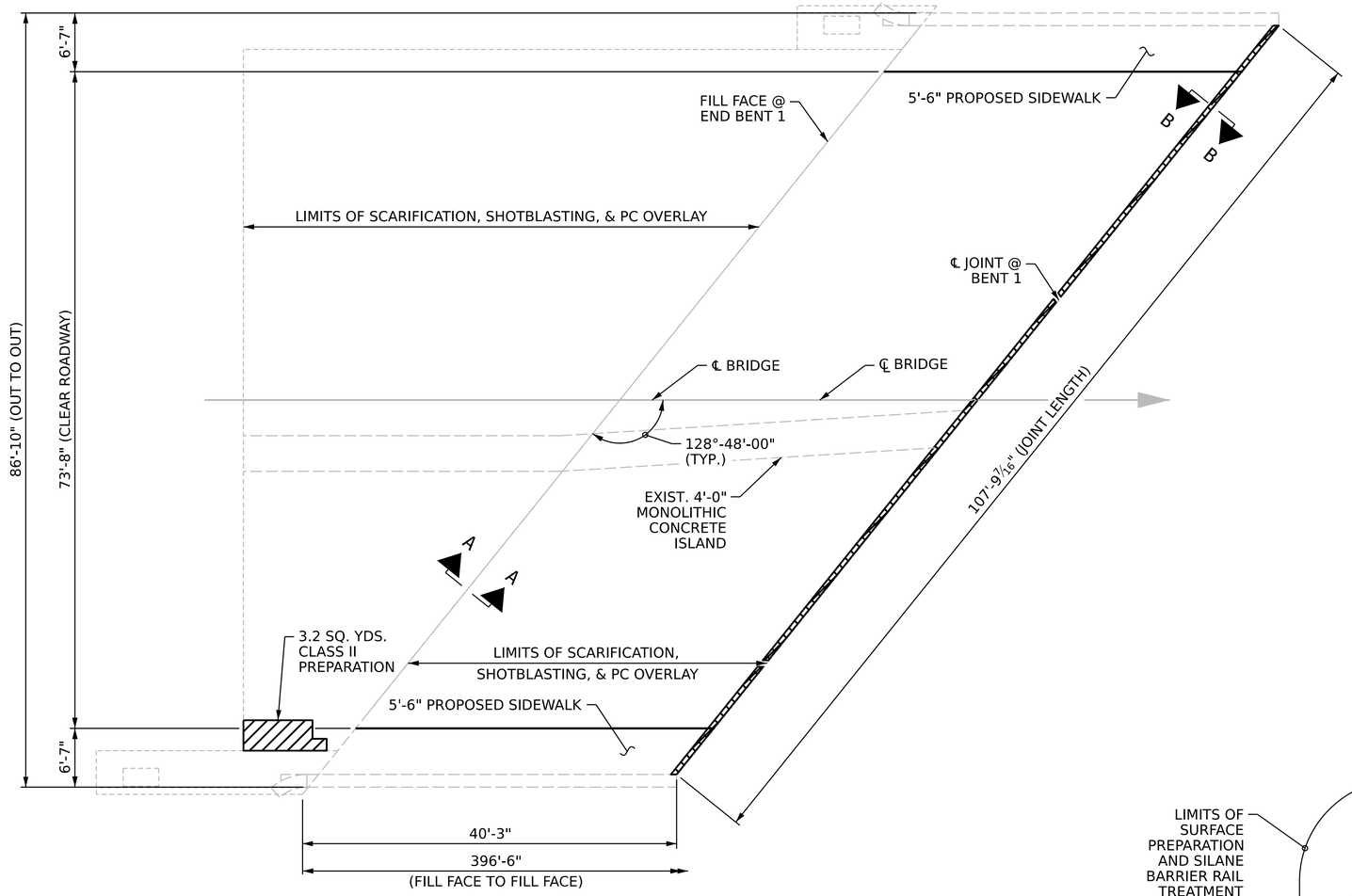
FOR SILANE BARRIER RAIL TREATMENT, SEE SPECIAL PROVISIONS.

FOR SECTION A-A, SEE "END BENT 1" SHEET.

FOR SECTION B-B, SEE "JOINT DETAILS" SHEET.

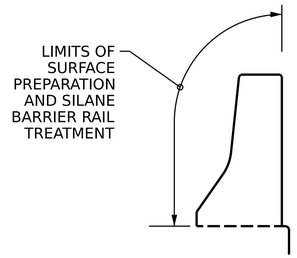
CLASS II PREPARATION REPAIR AREA

BRIDGE JOINT DEMOLITION




## APPROACH SLAB A

## SPAN A




## DETAIL FOR SILANE BARRIER TREATMENT

## AS-BUILT REPAIR QUANTITY TABLE

### DECK SURFACE REPAIR - SPAN A

| | ESTIMATE | ACTUAL |
|---|---|---|
| SCARIFYING BRIDGE DECK | 329.5 SQ. YDS. | |
| SHOTBLASTING BRIDGE DECK | 329.5 SQ. YDS. | |
| CLASS II SURFACE PREPARATION | 0.0 SQ. YDS. | |
| CONCRETE DECK REPAIR FOR PC OVERLAY | 0.0 SQ. YDS. | |
| POLYMER CONCRETE MATERIALS | 11.4 CU. YDS. | |
| PC OVERLAY | 329.5 SQ. YDS. | |
| GROOVING BRIDGE FLOORS | 2768.8 SQ. FT. | |
| SURFACE PREPARATION FOR CONCRETE BARRIER | 380.6 SQ. FT. | |
| SILANE BARRIER RAIL TREATMENT | 380.6 SQ. FT. | |
| BRIDGE JOINT DEMOLITION | 13.5 CU. FT. | |

### APPROACH SLAB

| | ESTIMATE | ACTUAL |
|---|---|---|
| SCARIFYING BRIDGE DECK | 369.0 SQ. YDS. | |
| SHOTBLASTING BRIDGE DECK | 369.0 SQ. YDS. | |
| CLASS II SURFACE PREPARATION | 3.2 SQ. YDS. | |
| CONCRETE DECK REPAIR FOR PC OVERLAY | 3.2 SQ. YDS. | |
| POLYMER CONCRETE MATERIALS | 12.8 CU. YDS. | |
| PC OVERLAY | 369.0 SQ. YDS. | |
| GROOVING BRIDGE FLOORS | 3193.7 SQ. FT. | |
| BRIDGE JOINT DEMOLITION | 0.0 CU. FT. | |

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

**APPROACH SLAB A AND SPAN A**

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D584EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 11/2024

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| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-04 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 35 |

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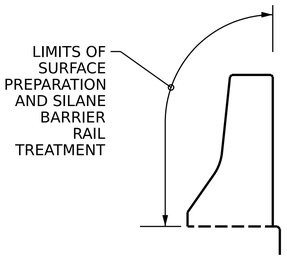
sbaguilar-hernandez




## DETAIL FOR SILANE BARRIER TREATMENT

### 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.

FOR CONCRETE DECK REPAIR FOR POLYMER CONCRETE OVERLAY, SEE "POLYMER CONCRETE BRIDGE DECK OVERLAY" SPECIAL PROVISIONS.

THE BOUNDARIES OF AREAS IDENTIFIED FOR CLASS II (PARTIAL DEPTH) SURFACE PREPARATION ARE APPROXIMATE AND MAY NOT REFLECT ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED AT THE PROJECT SITE.

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

DECK SURFACE REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR AFTER REMOVAL OF UNSOUND CONCRETE, MIN. 2" CLEAR TO SAWCUT.

REPAIR LOCATIONS AND ESTIMATED 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 REPAIR QUANTITY TABLE.

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

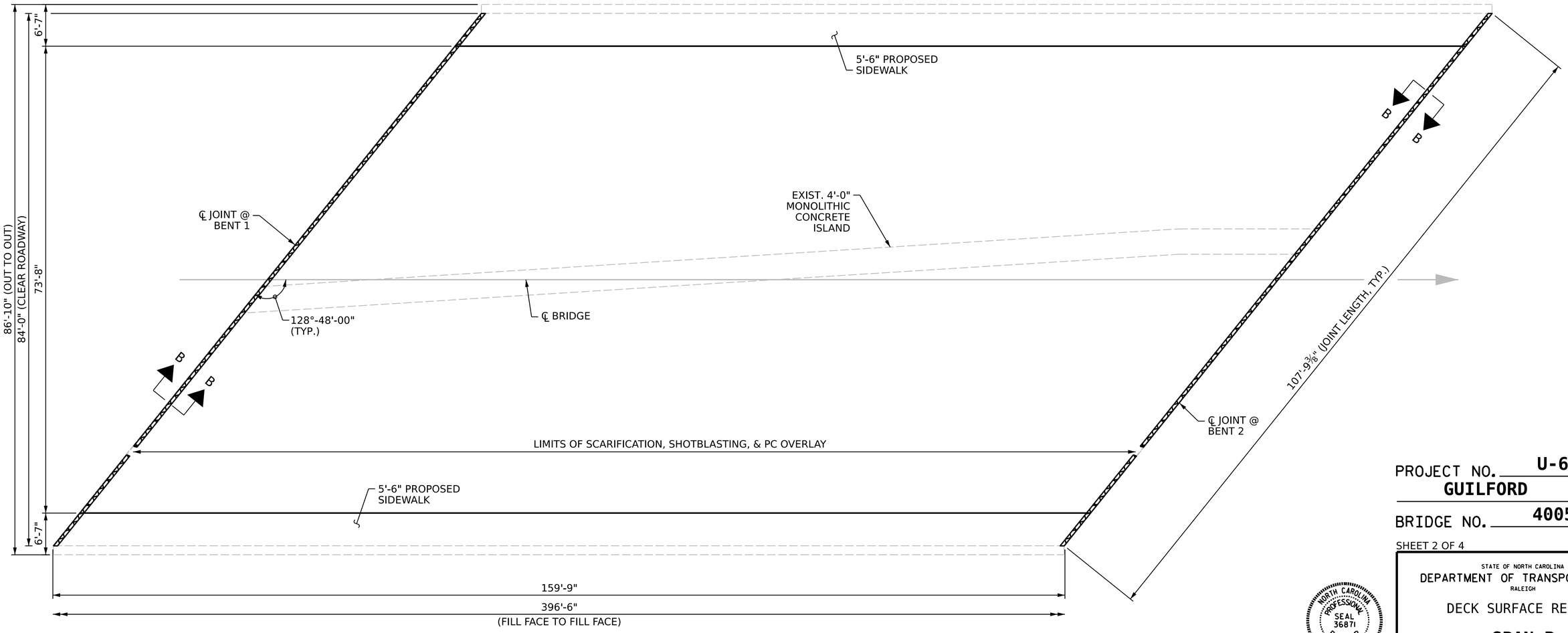
CLASS II PREPARATION REPAIR AREA

BRIDGE JOINT DEMOLITION

## AS-BUILT REPAIR QUANTITY TABLE

DECK SURFACE REPAIR - SPAN B

| | ESTIMATE | ACTUAL |
|---|---|---|
| SCARIFYING BRIDGE DECK | 1307.5 SQ. YDS. | |
| SHOTBLASTING BRIDGE DECK | 1307.5 SQ. YDS. | |
| CLASS II SURFACE PREPARATION | 0.0 SQ. YDS. | |
| CONCRETE DECK REPAIR FOR PC OVERLAY | 0.0 SQ. YDS. | |
| POLYMER CONCRETE MATERIALS | 45.8 CU. YDS. | |
| PC OVERLAY | 1307.0 SQ. YDS. | |
| GROOVING BRIDGE FLOORS | 11183.2 SQ. FT. | |
| SURFACE PREPARATION FOR CONCRETE BARRIER | 1510.4 SQ. FT. | |
| SILANE BARRIER RAIL TREATMENT | 1510.4 SQ. FT. | |
| BRIDGE JOINT DEMOLITION | 27.0 CU. FT. | |




## SPAN B

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D584EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 11/2024

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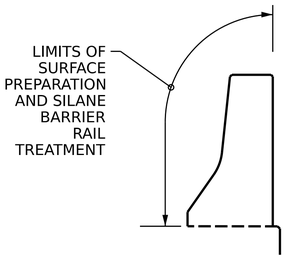



## DETAIL FOR SILANE BARRIER TREATMENT

### 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.

FOR CONCRETE DECK REPAIR FOR POLYMER CONCRETE OVERLAY, SEE "POLYMER CONCRETE BRIDGE DECK OVERLAY" SPECIAL PROVISIONS.

THE BOUNDARIES OF AREAS IDENTIFIED FOR CLASS II (PARTIAL DEPTH) SURFACE PREPARATION ARE APPROXIMATE AND MAY NOT REFLECT ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED AT THE PROJECT SITE.

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

DECK SURFACE REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR AFTER REMOVAL OF UNSOUND CONCRETE, MIN. 2" CLEAR TO SAWCUT.

REPAIR LOCATIONS AND ESTIMATED 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 REPAIR QUANTITY TABLE.

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

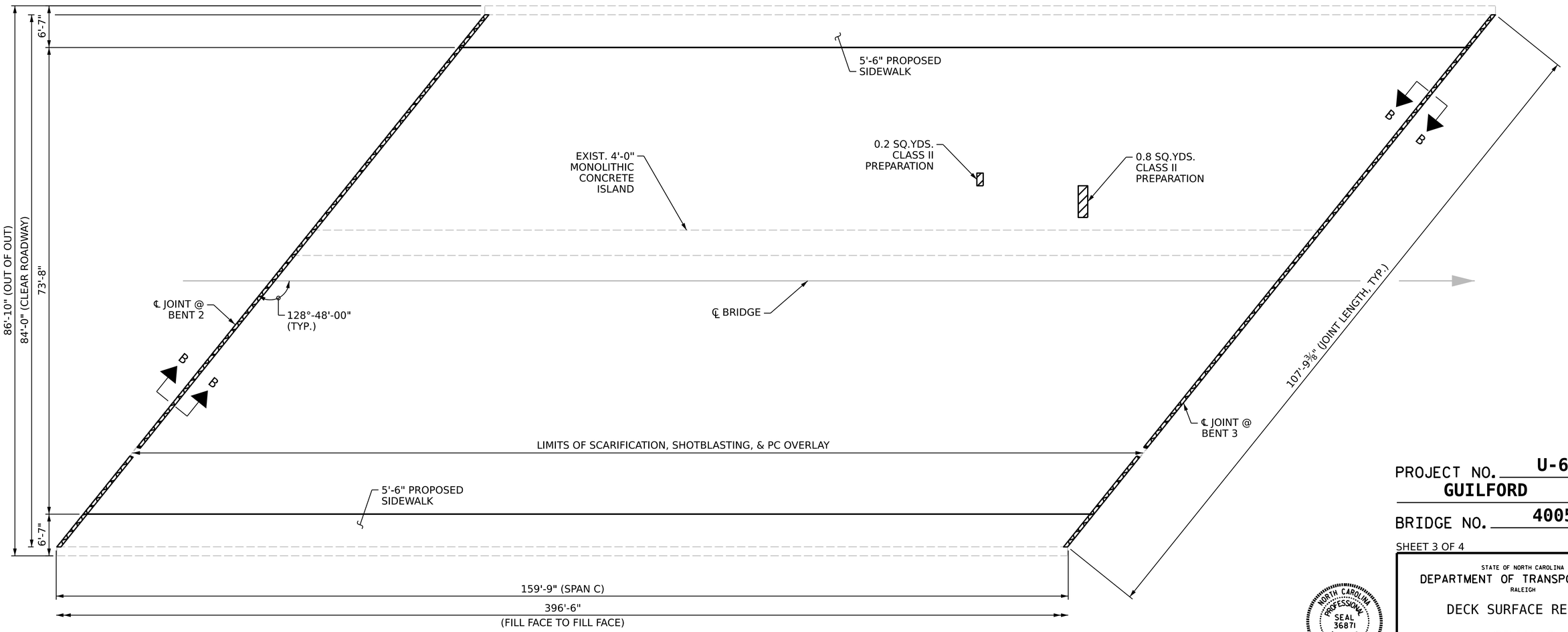
CLASS II PREPARATION REPAIR AREA

BRIDGE JOINT DEMOLITION

## AS-BUILT REPAIR QUANTITY TABLE

DECK SURFACE REPAIR - SPAN C

| | ESTIMATE | ACTUAL |
|---|---|---|
| SCARIFYING BRIDGE DECK | 1307.5 SQ. YDS. | |
| SHOTBLASTING BRIDGE DECK | 1307.5 SQ. YDS. | |
| CLASS II SURFACE PREPARATION | 1.0 SQ. YDS. | |
| CONCRETE DECK REPAIR FOR PC OVERLAY | 1.0 SQ. YDS. | |
| POLYMER CONCRETE MATERIALS | 45.8 CU. YDS. | |
| PC OVERLAY | 1307.0 SQ. YDS. | |
| GROOVING BRIDGE FLOORS | 11183.2 SQ. FT. | |
| SURFACE PREPARATION FOR CONCRETE BARRIER | 1510.4 SQ. FT. | |
| SILANE BARRIER RAIL TREATMENT | 1510.4 SQ. FT. | |
| BRIDGE JOINT DEMOLITION | 27.0 CU. FT. | |




## SPAN C

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D584EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 11/2024

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## NOTES

DECK SURFACE REPAIR QUANTITIES REPRESENT ESTIMATED VALUES OF CLASS II SURFACE PREPARATION AND CONCRETE DECK REPAIR AFTER REMOVAL OF UNSOUND CONCRETE, MIN. 2" CLEAR TO SAWCUT.

REPAIR LOCATIONS AND ESTIMATED 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.

FOR CONCRETE DECK REPAIR FOR POLYMER CONCRETE OVERLAY, SEE "POLYMER CONCRETE BRIDGE DECK OVERLAY" SPECIAL PROVISIONS.

FOR SILANE BARRIER RAIL TREATMENT, SEE SPECIAL PROVISIONS.

FOR SECTION B-B, SEE "JOINT DETAILS" SHEET.

FOR SECTION C-C, SEE "END BENT 2" SHEET.

CLASS II PREPARATION REPAIR AREA

BRIDGE JOINT DEMOLITION

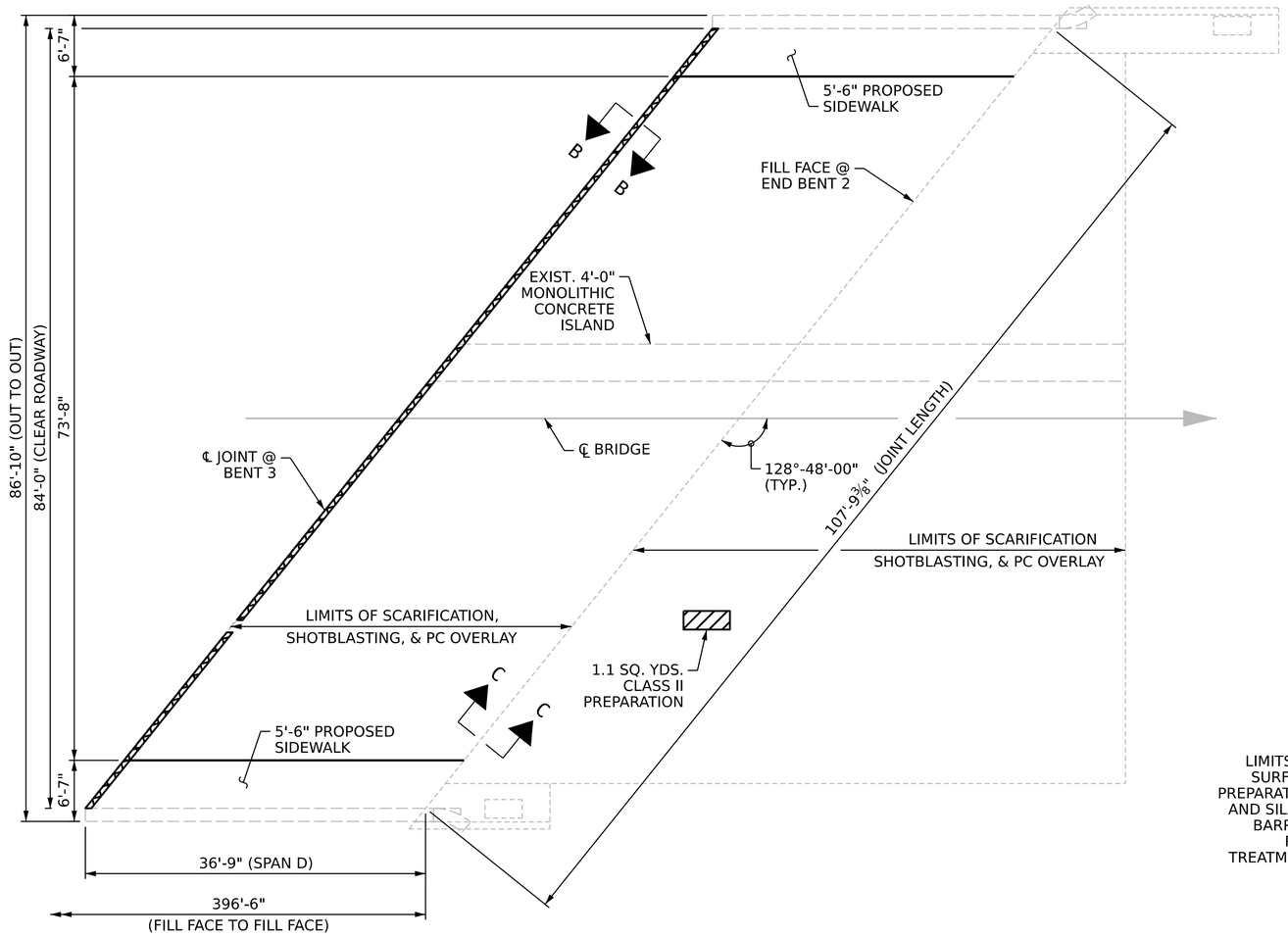
## AS-BUILT REPAIR QUANTITY TABLE

### DECK SURFACE REPAIR - SPAN D

| | ESTIMATE | ACTUAL |
|---|---|---|
| SCARIFYING BRIDGE DECK | 300.8 SQ. YDS. | |
| SHOTBLASTING BRIDGE DECK | 300.8 SQ. YDS. | |
| CLASS II SURFACE PREPARATION | 0.0 SQ. YDS. | |
| CONCRETE DECK REPAIR FOR PC OVERLAY | 0.0 SQ. YDS. | |
| POLYMER CONCRETE MATERIALS | 10.4 CU. YDS. | |
| PC OVERLAY | 300.8 SQ. YDS. | |
| GROOVING BRIDGE FLOORS | 2603.97 SQ. FT. | |
| SURFACE PREPARATION FOR CONCRETE BARRIER | 352.4 SQ. FT. | |
| SILANE BARRIER RAIL TREATMENT | 352.4 SQ. FT. | |
| BRIDGE JOINT DEMOLITION | 13.5 CU. FT. | |

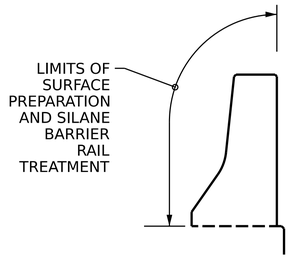
### APPROACH SLAB

| | ESTIMATE | ACTUAL |
|---|---|---|
| SCARIFYING BRIDGE DECK | 363.8 SQ. YDS. | |
| SHOTBLASTING BRIDGE DECK | 363.8 SQ. YDS. | |
| CLASS II SURFACE PREPARATION | 1.1 SQ. YDS. | |
| CONCRETE DECK REPAIR FOR PC OVERLAY | 1.1 SQ. YDS. | |
| POLYMER CONCRETE MATERIALS | 12.6 CU. YDS. | |
| PC OVERLAY | 363.8 SQ. YDS. | |
| GROOVING BRIDGE FLOORS | 3006.6 SQ. FT. | |
| BRIDGE JOINT DEMOLITION | 0.0 CU. FT. | |




**SPAN D**

**APPROACH SLAB B**




**DETAIL FOR SILANE BARRIER TREATMENT**

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK SURFACE REPAIR

**APPROACH SLAB B AND SPAN D**

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D584EF...
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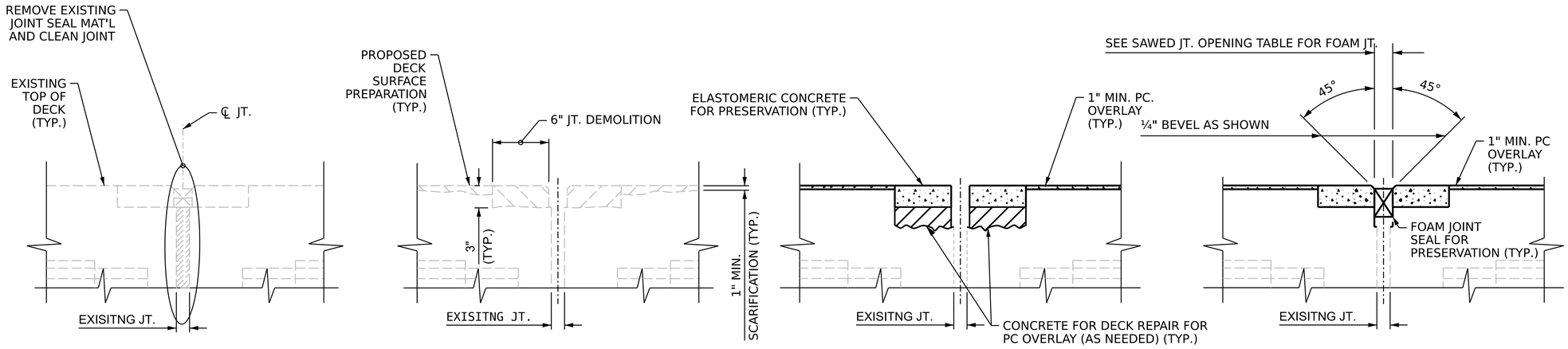



EXISTING JOINT | MINIMUM EXISTING JOINT DEMOLITION & SCARIFICATION | PROPOSED JOINT PRIOR TO SAWING | PROPOSED FOAM JOINT SEAL

## JOINT INSTALLATION SEQUENCE AT BENTS

(SECTIONS B-B)

### JOINT REPAIR QUANTITY TABLE

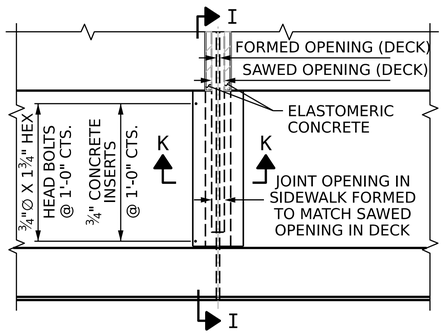
| | ESTIMATE | ACTUAL |
|---|---|---|
| FOAM JOINT SEAL FOR PRESERVATION | (LN. FT.) | (LN. FT.) |
| BENT 1 | 107.8 | |
| BENT 2 | 107.8 | |
| BENT 3 | 107.8 | |
| TOTAL | 323.4 | |

### SAWED JOINT OPENING TABLE

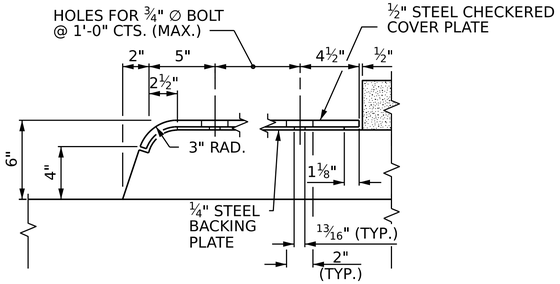
| | SAWED JT. OPENING (PERPENDICULAR TO JT.) | | |
|---|---|---|---|
| LOCATION | AT 45° | AT 60° | AT 90° |
| BENT 1 | 2-1/2" | 2-5/16" | 1-15/16" |
| BENT 2 | 1-3/4" | 1-9/16" | 1-5/16" |
| BENT 3 | 1-3/4" | 1-9/16" | 1-5/16" |

### ELASTOMERIC CONCRETE FOR PRESERVATION

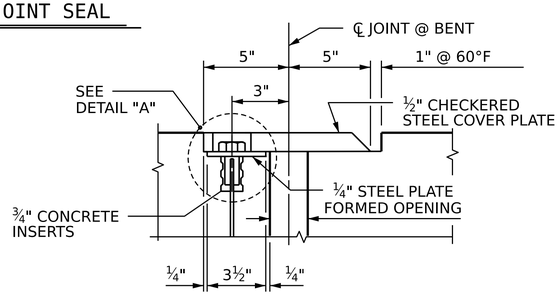
| LOCATION | ESTIMATED (CU.FT.) | ACTUAL (CU.FT.) |
|---|---|---|
| BENT 1 | 27.0 | |
| BENT 2 | 27.0 | |
| BENT 3 | 27.0 | |
| TOTAL | 81.0 | |



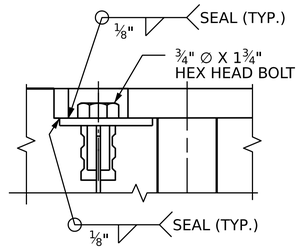

PLAN OF FOAM JOINT SEAL WITH COVER PLATE




SECTION I-I
SIDEWALK WITH FOAM JOINT SEAL




SECTION K-K




DETAIL "A"

## NOTES (CONT.)

THE STEEL PLATES SHALL CONFORM TO AASHTO MS270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALLY BLAST CLEANED AND COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE ¾" ∅ HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

THE ¾" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14, AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR FOAM JOINT SEALS.

## NOTES

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

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

FOAM JOINT SEALS FOR PRESERVATION SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.

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 THAT ACCOMMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.

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 INSTALLATION OF THE JOINT SEAL SHALL BE WATERTIGHT.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF ½" BUT REINFORCING STEEL SHALL NOT BE DAMAGED. CONTRACTOR SHALL REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL.

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

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR CONCRETE DECK REPAIR FOR POLYMER CONCRETE OVERLAY, SEE SPECIAL PROVISIONS.

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

DRAWN BY : N.S. HART DATE : 12/2022

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NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea
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03/27/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

# JOINT DETAILS

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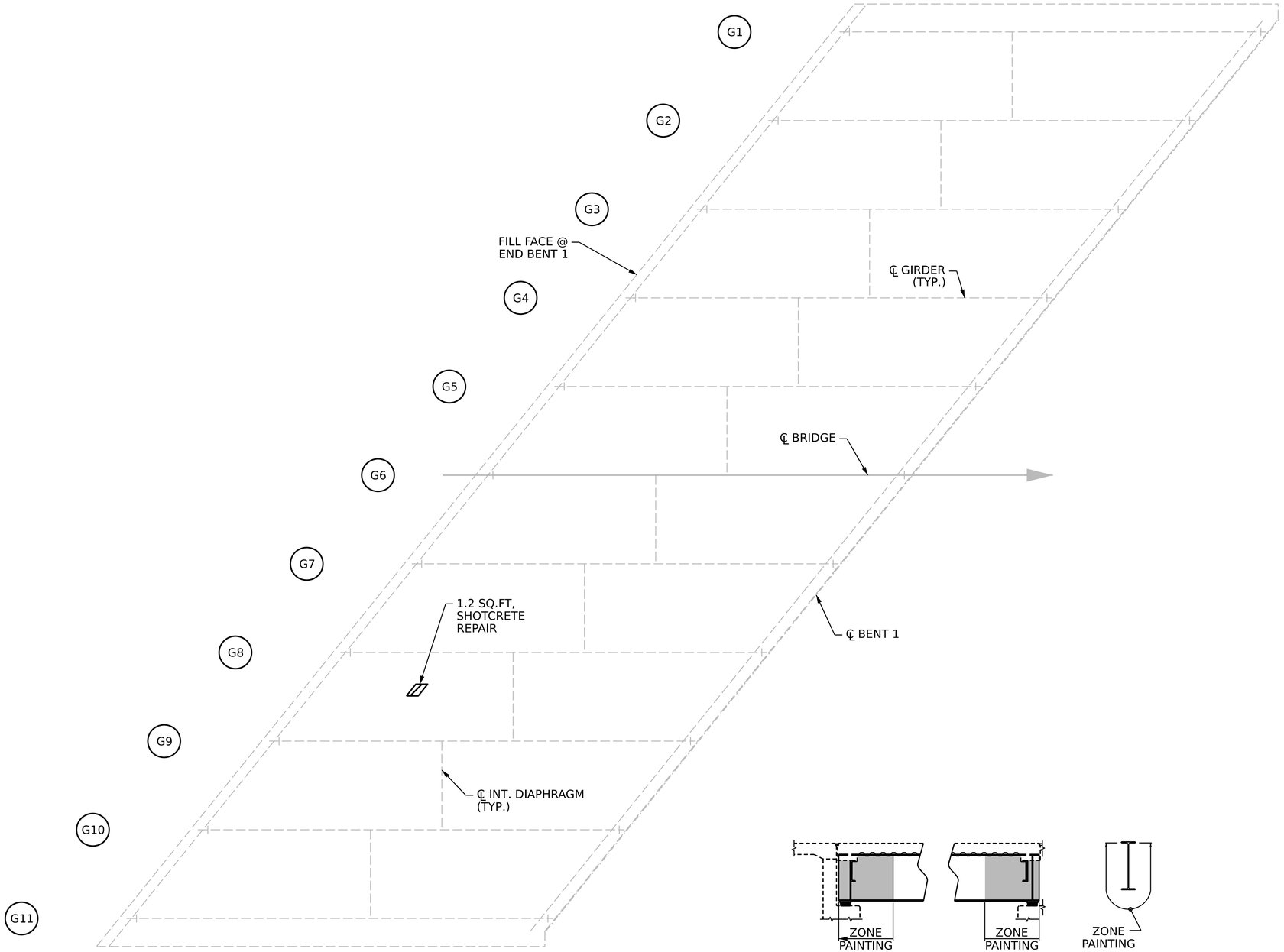





## LIMITS OF ZONE PAINTING

## SPAN A

## AS-BUILT REPAIR QUANTITY TABLE

| DECK UNDERSIDE REPAIRS SPAN A | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| SHOTCRETE REPAIRS | AREA SF | VOLUME CF | AREA SF | VOLUME CF |
| UNDERSIDE OF DECK | 1.2 | 0.6 | | |
| OVERHANG | 0 | 0 | | |
| | | | | |
| CONCRETE REPAIRS | AREA SF | VOLUME CF | AREA SF | VOLUME CF |
| UNDERSIDE OF DECK | 0 | 0 | | |
| OVERHANG | 0 | 0 | | |
| | | | | |

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

## NOTES

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

SHOTCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

CONTRACTOR SHALL SAWCUT 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.

FOR UNDERSIDE OF DECK REPAIRS, SEE "OVERHANG AND DIAPHRAGM REPAIR DETAILS'' SHEET.

FOR OVERHANG REPAIRS, SEE "OVERHANG AND DIAPHRAGM REPAIR DETAILS'' SHEET.

FOR ADDITIONAL ZONE PAINTING, SEE "ZONE PAINTING AND ADDITIONAL ZONE PAINTING" SHEET .

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

EPOXY RESIN INJECTION

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIR

SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B790ADB6505584EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 11/2024

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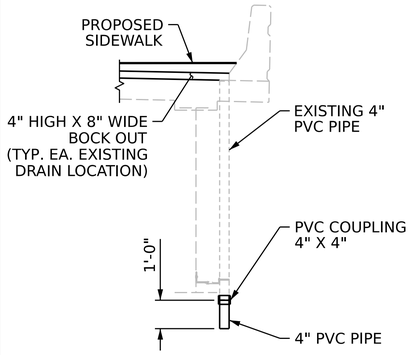



## PVC DRAINAGE PIPE EXTENSION

### NOTES

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

SHOTCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

CONTRACTOR SHALL SAWCUT 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.

FOR UNDERSIDE OF DECK REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS'' SHEET.

FOR OVERHANG REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS'' SHEET.

FOR ADDITIONAL ZONE PAINTING, SEE "ZONE PAINTING AND ADDITIONAL ZONE PAINTING" SHEET .

EXISTING DECK DRAINS TO BE EXTENDED BY A FOOT BELOW THE BOTTOM OF THE GIRDER.

SHOTCRETE REPAIR AREA

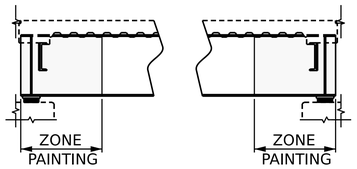
CONCRETE REPAIR AREA

EPOXY RESIN INJECTION

## AS-BUILT REPAIR QUANTITY TABLE

| DECK UNDERSIDE REPAIRS SPAN B | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| SHOTCRETE REPAIRS | AREA SF | VOLUME CF | AREA SF | VOLUME CF |
| UNDERSIDE OF DECK | 6.0 | 3.0 | | |
| OVERHANG | 0 | 0 | | |
| | | | | |
| CONCRETE REPAIRS | AREA SF | VOLUME CF | AREA SF | VOLUME CF |
| UNDERSIDE OF DECK | 0 | 0 | | |
| OVERHANG | 0 | 0 | | |
| | | | | |

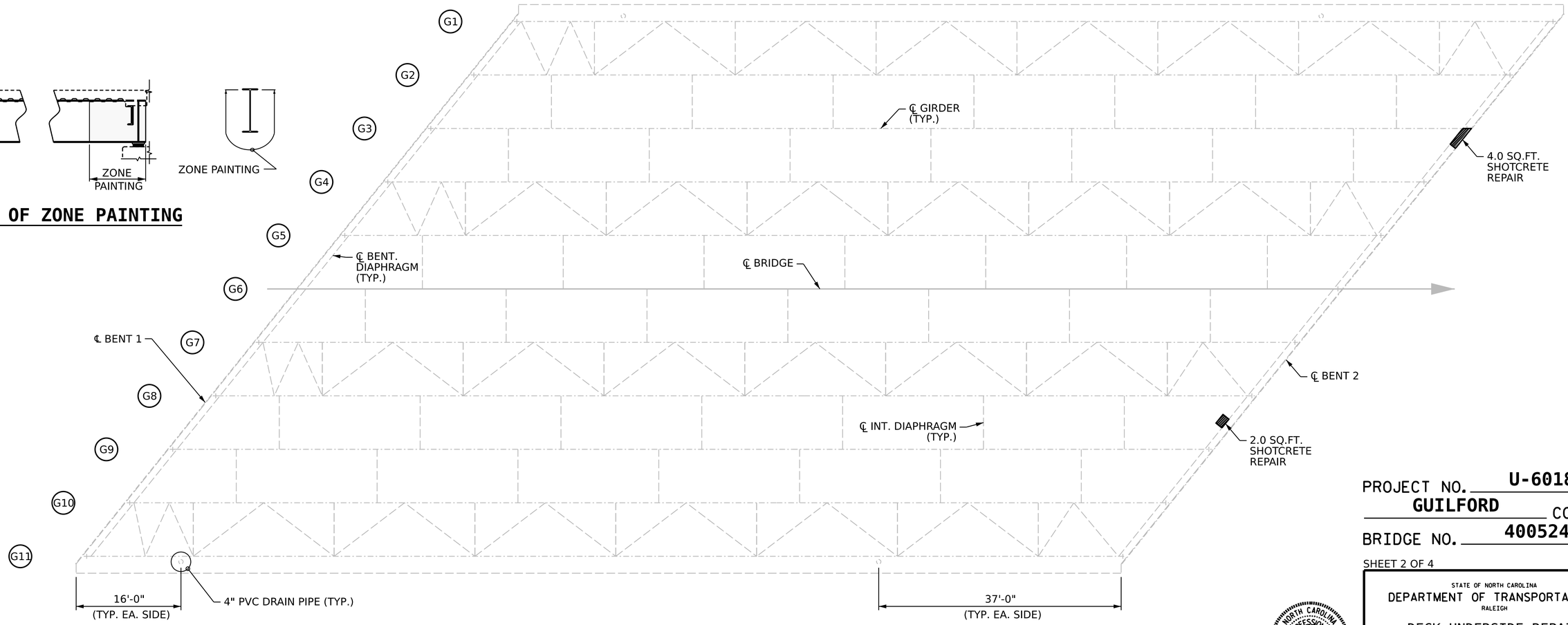
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT. SEE REPAIR DETAILS.







## LIMITS OF ZONE PAINTING




## SPAN B

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIR

SPAN B

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B70ADDB65D684EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 01/2025

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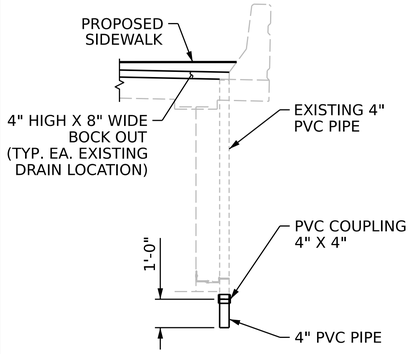
sbaguilar-hernandez




## PVC DRAINAGE PIPE EXTENSION

## NOTES

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

SHOTCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

CONTRACTOR SHALL SAWCUT 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.

FOR UNDERSIDE OF DECK REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS'' SHEET.

FOR OVERHANG REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS'' SHEET.

FOR ADDITIONAL ZONE PAINTING, SEE "ZONE PAINTING AND ADDITIONAL ZONE PAINTING" SHEET .

EXISTING DECK DRAINS TO BE EXTENDED BY A FOOT BELOW THE BOTTOM OF THE GIRDER.

SHOTCRETE REPAIR AREA

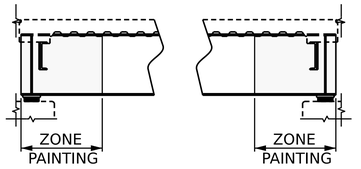
CONCRETE REPAIR AREA

EPOXY RESIN INJECTION

## AS-BUILT REPAIR QUANTITY TABLE

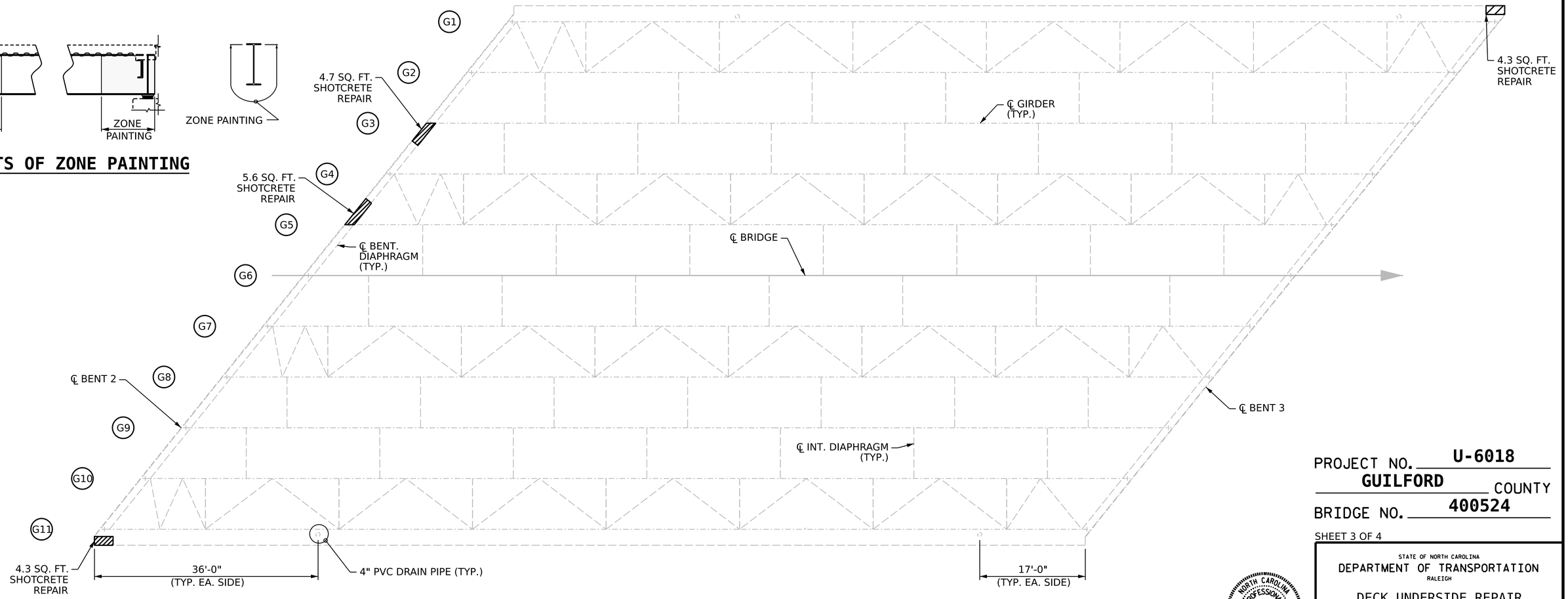
| DECK UNDERSIDE REPAIRS SPAN C | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| SHOTCRETE REPAIRS | AREA SF | VOLUME CF | AREA SF | VOLUME CF |
| UNDERSIDE OF DECK | 10.3 | 5.2 | | |
| OVERHANG | 8.6 | 4.3 | | |
| | | | | |
| CONCRETE REPAIRS | AREA SF | VOLUME CF | AREA SF | VOLUME CF |
| UNDERSIDE OF DECK | 0 | 0 | | |
| OVERHANG | 0 | 0 | | |
| | | | | |

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




## LIMITS OF ZONE PAINTING




## SPAN C

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIR

SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D584EF...
03/27/2025

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CHECKED BY : S.A. HERNANDEZ DATE : 11/2024

3/11/2025
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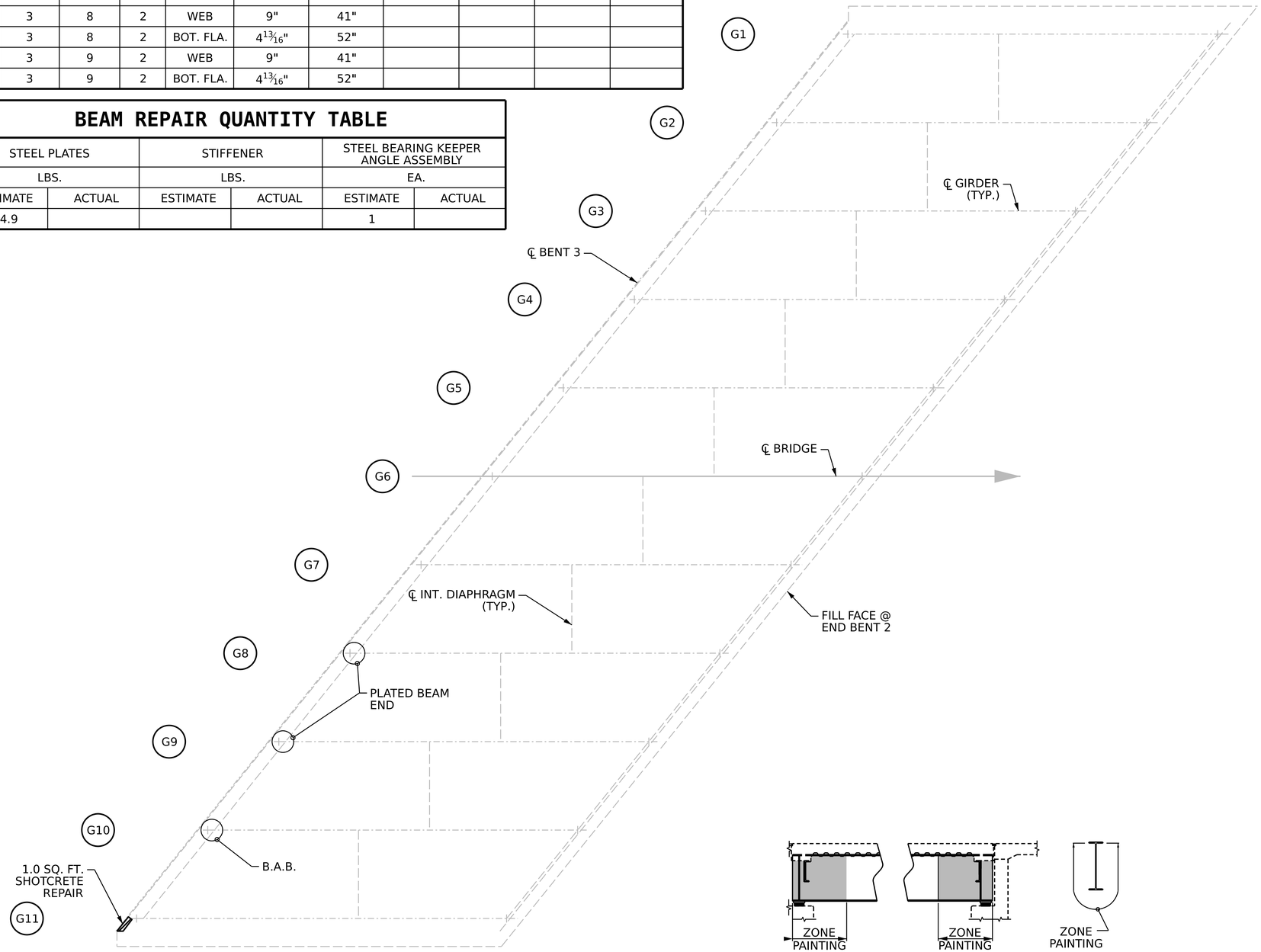
sbaguilar-hernandez

## ANTICIPATED BEAM REPAIR LOCATIONS

| SPAN | BENT | BEAM | QTY. | TYPE | DIM "A" | DIM "B" | DIM "C" | DIM "D" | DIM "E" | DIM "F" |
|---|---|---|---|---|---|---|---|---|---|---|
| D | 3 | 8 | 2 | WEB | 9" | 41" | | | | |
| D | 3 | 8 | 2 | BOT. FLA. | $4\frac{13}{16}$" | 52" | | | | |
| D | 3 | 9 | 2 | WEB | 9" | 41" | | | | |
| D | 3 | 9 | 2 | BOT. FLA. | $4\frac{13}{16}$" | 52" | | | | |

## BEAM REPAIR QUANTITY TABLE

| STEEL PLATES | | STIFFENER | | STEEL BEARING KEEPER ANGLE ASSEMBLY | |
|---|---|---|---|---|---|
| LBS. | | LBS. | | EA. | |
| ESTIMATE | ACTUAL | ESTIMATE | ACTUAL | ESTIMATE | ACTUAL |
| 54.9 | | | | 1 | |




## SPAN D




## LIMITS OF ZONE PAINTING

## AS-BUILT REPAIR QUANTITY TABLE

| DECK UNDERSIDE REPAIRS SPAN D | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| SHOTCRETE REPAIRS | AREA SF | VOLUME CF | AREA SF | VOLUME CF |
| UNDERSIDE OF DECK | 0 | 0 | | |
| OVERHANG | 1.0 | 0.5 | | |
| | | | | |
| CONCRETE REPAIRS | AREA SF | VOLUME CF | AREA SF | VOLUME CF |
| UNDERSIDE OF DECK | 0 | 0 | | |
| OVERHANG | 0 | 0 | | |
| | | | | |

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

## NOTES

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

SHOTCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

CONTRACTOR SHALL SAWCUT 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.

FOR UNDERSIDE OF DECK REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS'' SHEET.

FOR OVERHANG REPAIRS, SEE "OVERHANG, DIAPHRAGM AND BRIDGE RAIL REPAIR DETAILS'' SHEET.

FOR ANCHOR BOLT REPAIR, SEE "BEARING KEEPER DETAILS" SHEET.

FOR ADDITIONAL ZONE PAINTING, SEE "ZONE PAINTING AND ADDITIONAL ZONE PAINTING" SHEET .

FOR PLATED BEAM REPAIR, SEE "BEAM PLATING REPAIR DETAILS" SHEET.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

EPOXY RESIN INJECTION

**B.A.B** BROKEN ANCHOR BOLT

PROJECT NO. **U-6018**

**GUILFORD** COUNTY

BRIDGE NO. **400524**

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB650884EF...

03/27/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DECK UNDERSIDE REPAIR

**SPAN D**

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 11/2024

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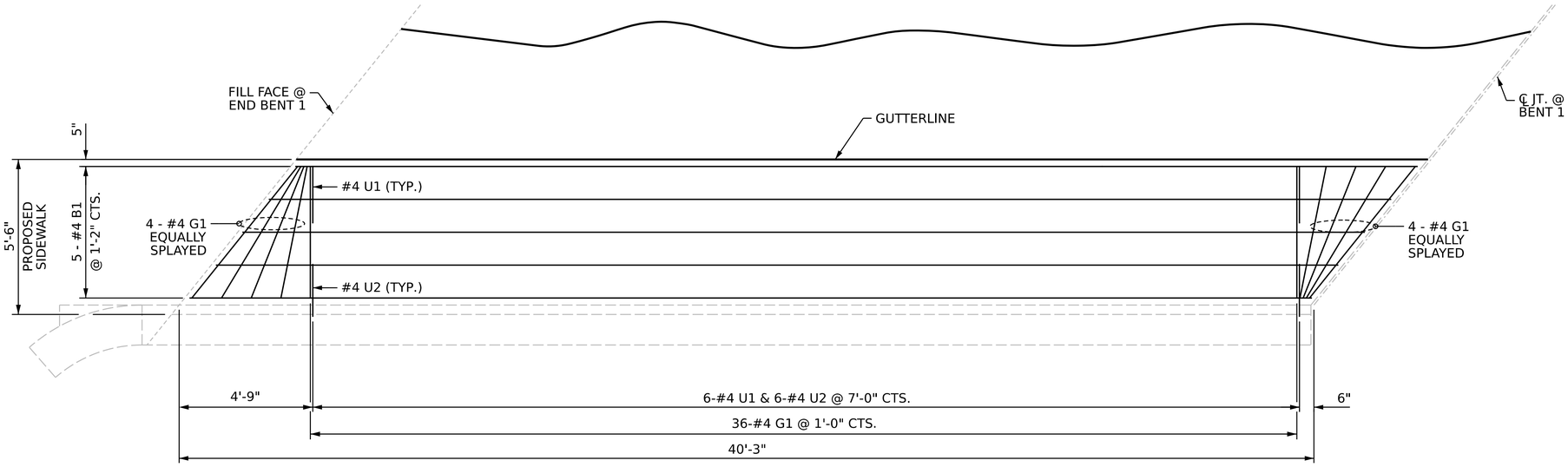
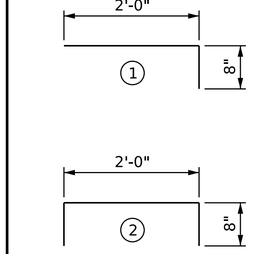
8/26/21




## PLAN OF SIDEWALK

(RIGHT SIDEWALK SHOWN, LEFT SIDEWALK SIMILAR)

## BAR TYPE




## BILL OF MATERIAL FOR SIDEWALK (ONE SIDE)

| BAR | NO | SIZE | TYPE | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| * B1 | 5 | 4 | STR | 39'-11" | 133 |
| * G1 | 44 | 4 | STR | 4'-11" | 145 |
| * U1 | 6 | 4 | 2 | 3'-4" | 13 |
| * U2 | 6 | 4 | 1 | 2'-8" | 11 |
| | | | | | |

| | | |
|---|---|---|
| * EPOXY COATED REINFORCING STEEL | LBS. | 302 |
| CLASS AA CONCRETE | CU. YDS. | 4.8 |
| SILICONE JOINT SEALANT | LIN. FT. | 6.6 |

## NOTES

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FT. IN LENGTH.

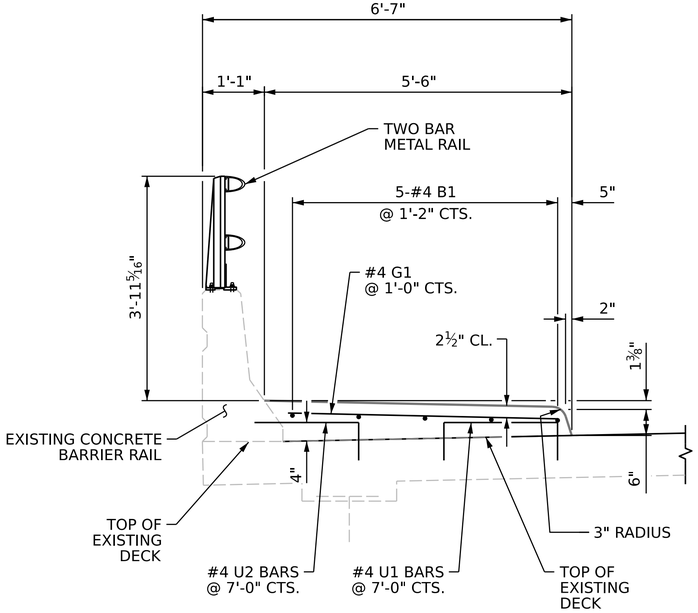
ALL REINFORCING STEEL IN THE SIDEWALK SHALL BE EPOXY COATED.

SEE "JOINT DETAILS" SHEETS FOR COVER PLATE DETAILS.

ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.

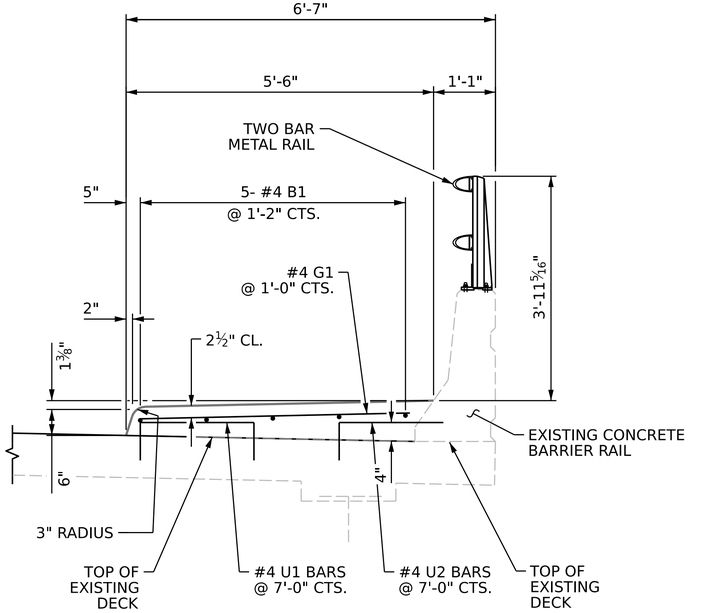
DOWEL U1 AND U2 BARS INTO EXISTING SLAB.

DOWEL U2 BARS INTO EXISTING CONCRETE BARRIER RAIL.




## SECTION THRU SIDEWALK

LEFTSIDE




## SECTION THRU SIDEWALK

RIGHTSIDE

PROJECT NO. **U-6018**

**GUILFORD** COUNTY

BRIDGE NO. **400524**

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

# SIDEWALK DETAILS
(SPAN A)

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by:
Francesca Lea
B75DAD86950884EF...
03/11/2025

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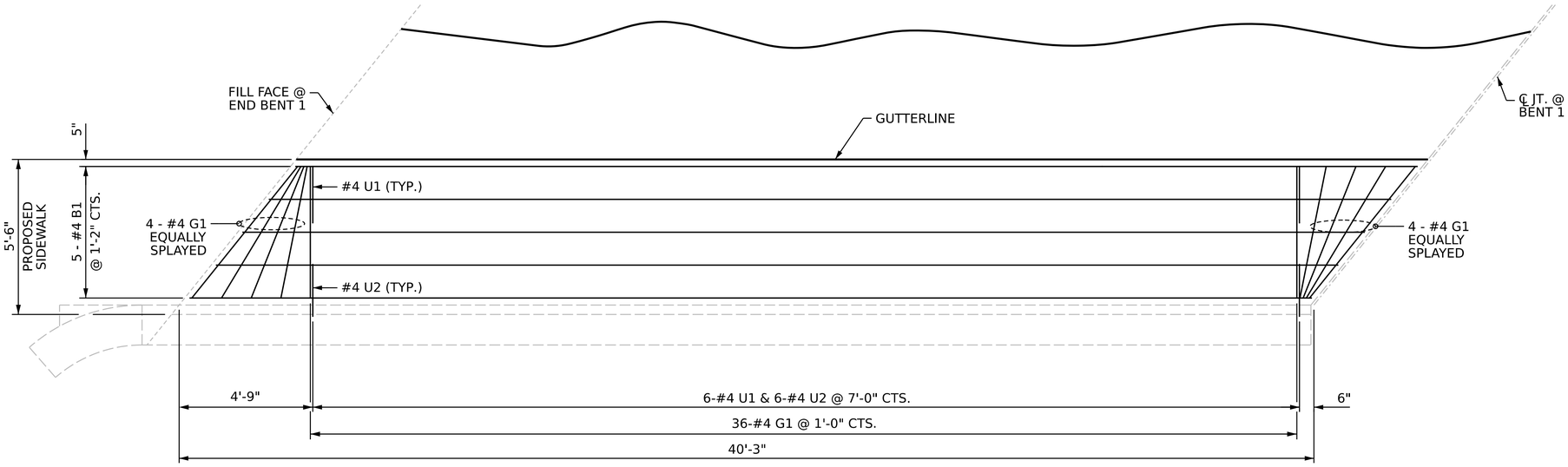
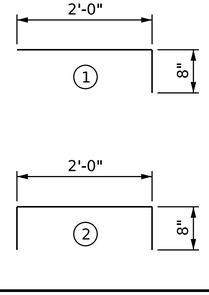



PLAN OF SIDEWALK

(RIGHT SIDEWALK SHOWN, LEFT SIDEWALK SIMILAR)

## BAR TYPE




## BILL OF MATERIAL FOR SIDEWALK (ONE SIDE)

| BAR | NO | SIZE | TYPE | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| * B1 | 5 | 4 | STR | 39'-11" | 133 |
| * G1 | 44 | 4 | STR | 4'-11" | 145 |
| * U1 | 6 | 4 | 2 | 3'-4" | 13 |
| * U2 | 6 | 4 | 1 | 2'-8" | 11 |
| | | | | | |

| | | |
|---|---|---|
| * EPOXY COATED REINFORCING STEEL | LBS. | 302 |
| CLASS AA CONCRETE | CU. YDS. | 4.8 |
| SILICONE JOINT SEALANT | LIN. FT. | 6.6 |

## NOTES

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FT. IN LENGTH.

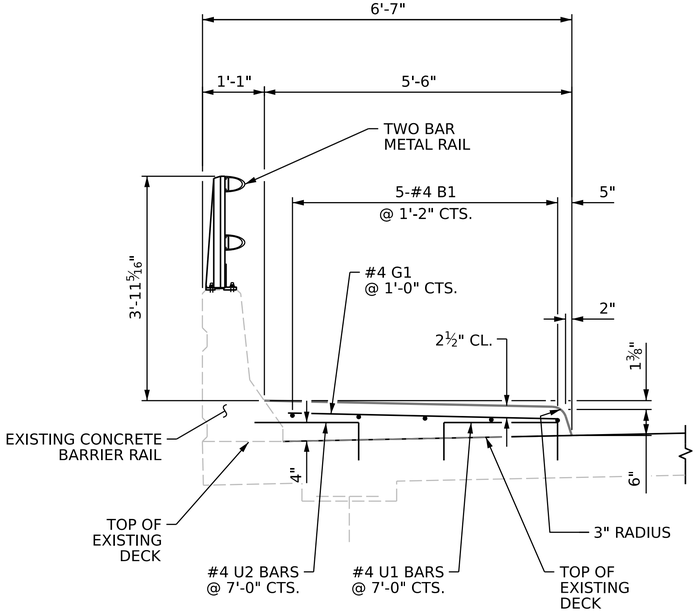
ALL REINFORCING STEEL IN THE SIDEWALK SHALL BE EPOXY COATED.

SEE "JOINT DETAILS" SHEETS FOR COVER PLATE DETAILS.

ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.

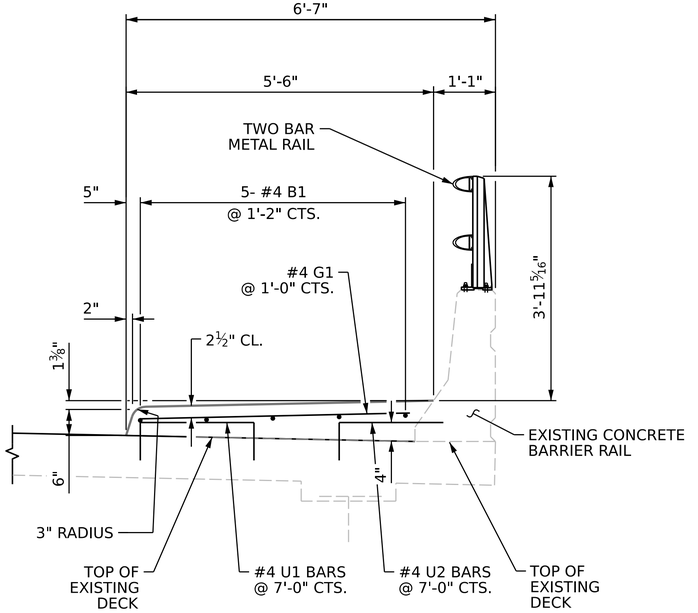
DOWEL U1 AND U2 BARS INTO EXISTING SLAB.

DOWEL U2 BARS INTO EXISTING CONCRETE BARRIER RAIL.




SECTION THRU SIDEWALK

LEFTSIDE




SECTION THRU SIDEWALK

RIGHTSIDE

PROJECT NO. **U-6018**

**GUILFORD** COUNTY

BRIDGE NO. **400524**

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

# SIDEWALK DETAILS
(SPAN A)

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea
03/27/2025

| REVISIONS | | | | | | SHEET NO. |
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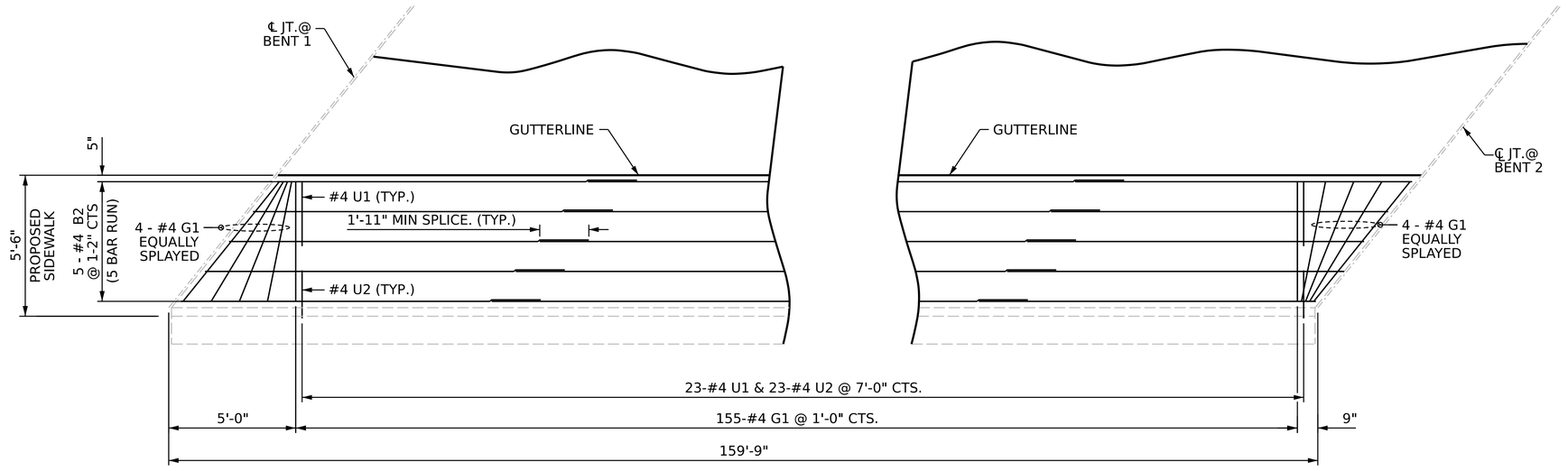
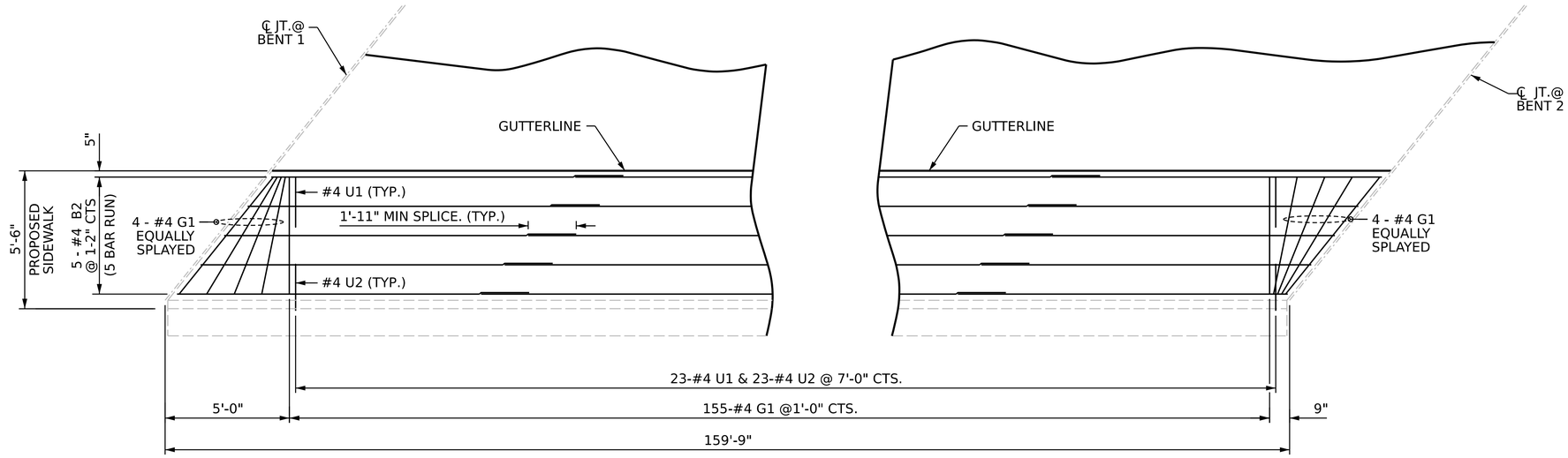



PLAN OF SIDEWALK (SPAN B)

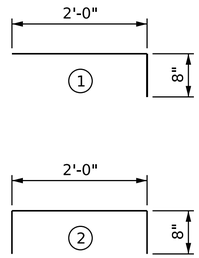
(RIGHT SIDEWALK SHOWN, LEFT SIDEWALK SIMILAR)




PLAN OF SIDEWALK (SPAN C)

(RIGHT SIDEWALK SHOWN, LEFT SIDEWALK SIMILAR)

## BAR TYPE




## BILL OF MATERIAL FOR SIDEWALK (ONE SIDE)

| BAR | NO | SIZE | TYPE | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| * B2 | 50 | 4 | STR | 33'-4" | 1116 |
| * G1 | 326 | 4 | STR | 4'-11" | 1071 |
| * U1 | 46 | 4 | 2 | 3'-4" | 102 |
| * U2 | 46 | 4 | 1 | 2'-8" | 82 |
| | | | | | |

| | | |
|---|---|---|
| * EPOXY COATED REINFORCING STEEL | LBS. | 2371 |
| CLASS AA CONCRETE | CU. YDS. | 37.9 |
| SILICONE JOINT SEALANT | LIN. FT. | 13.3 |

## NOTES

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FT. IN LENGTH.

ALL REINFORCING STEEL IN THE SIDEWALK SHALL BE EPOXY COATED.

SEE "JOINT DETAILS" SHEETS FOR COVER PLATE DETAILS.

DOWEL U1 AND U2 BARS INTO EXISTING SLAB.

DOWEL U2 BARS INTO EXISTING CONCRETE BARRIER RAIL.

"U" BARS MAY BE SHIFTED AS NECESSARY TO CLEAR DRAIN SLOTS.

BLOCK OUT 8" X 4" DRAIN SLOTS AT EACH EXISTING DECK DRAIN LOCATION.

INSTALL DRAIN SLOT COVERS AT EACH DECK DRAIN LOCATION.

PRIOR TO PLACING BLOCK OUTS OVER EXISTING DRAINS, EXISTING DRAINS SHALL BE CLEANED OF ANY DEBRIS.

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

# SIDEWALK DETAILS
(SPAN B & SPAN C)

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D584EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 08/2023
CHECKED BY : S.A HERNANDEZ DATE : 11/2024

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| NO. | BY: | DATE: | NO. | BY: | DATE: | S-14 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 35 |

3/24/2025
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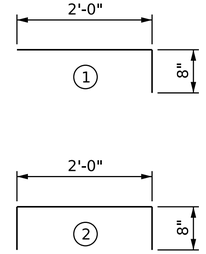
sbaguilar-hernandez

8/26/21

## BAR TYPE




## BILL OF MATERIAL FOR SIDEWALK (ONE SIDE)

| BAR | NO | SIZE | TYPE | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| * B3 | 5 | 4 | STR | 36'-5" | 112 |
| * G1 | 40 | 4 | STR | 4'-11" | 131 |
| * U1 | 6 | 4 | 2 | 3'-4" | 13 |
| * U2 | 6 | 4 | 1 | 2'-8" | 11 |
| | | | | | |

| | | |
|---|---|---|
| * EPOXY COATED REINFORCING STEEL | LBS. | 267 |
| CLASS AA CONCRETE | CU. YDS. | 4.4 |
| SILICONE JOINT SEALANT | LIN. FT. | 6.6 |

## NOTES

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FT. IN LENGTH.

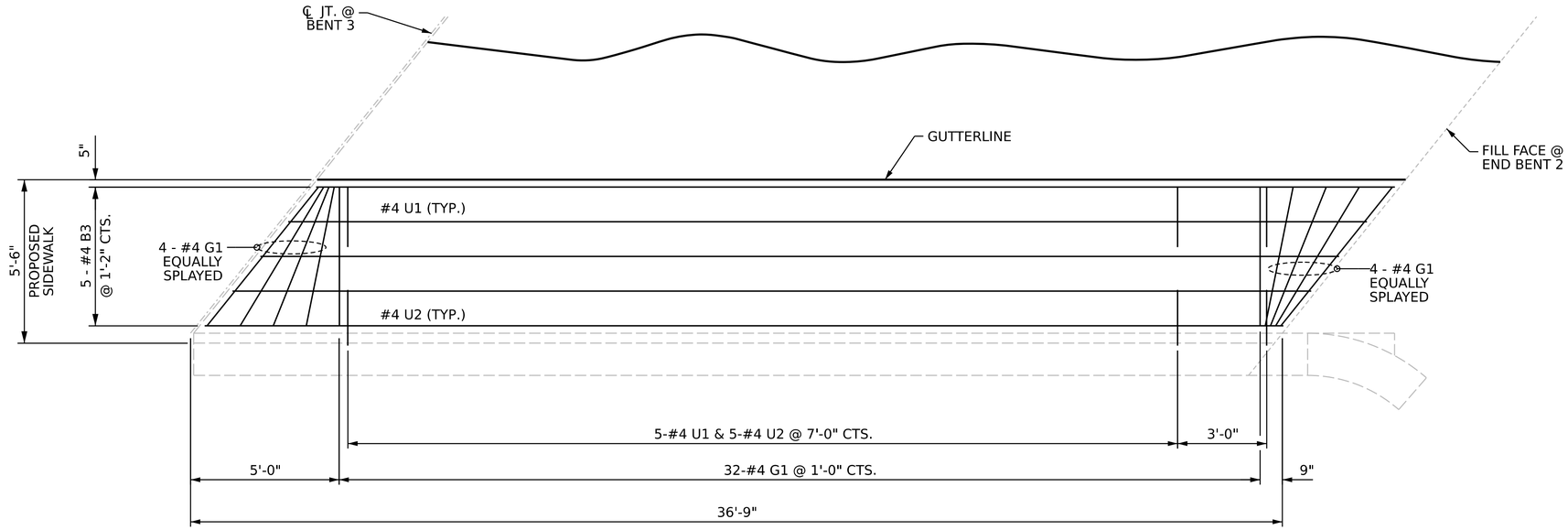
ALL REINFORCING STEEL IN THE SIDEWALK SHALL BE EPOXY COATED.

SEE "JOINT DETAILS" SHEETS FOR COVER PLATE DETAILS.

ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.

DOWEL U1 AND U2 BARS INTO EXISTING SLAB.

DOWEL U2 BARS INTO EXISTING CONCRETE BARRIER RAIL.




PLAN OF SIDEWALK

RIGHT SIDEWALK SHOWN, LEFT SIDEWALK SIMILAR

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

# SIDEWALK DETAILS
(SPAN D)

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B790ADB65D584EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 08/2023
CHECKED BY : S.A. HERNANDEZ DATE : 11/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-15 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 35 |

3/11/2025
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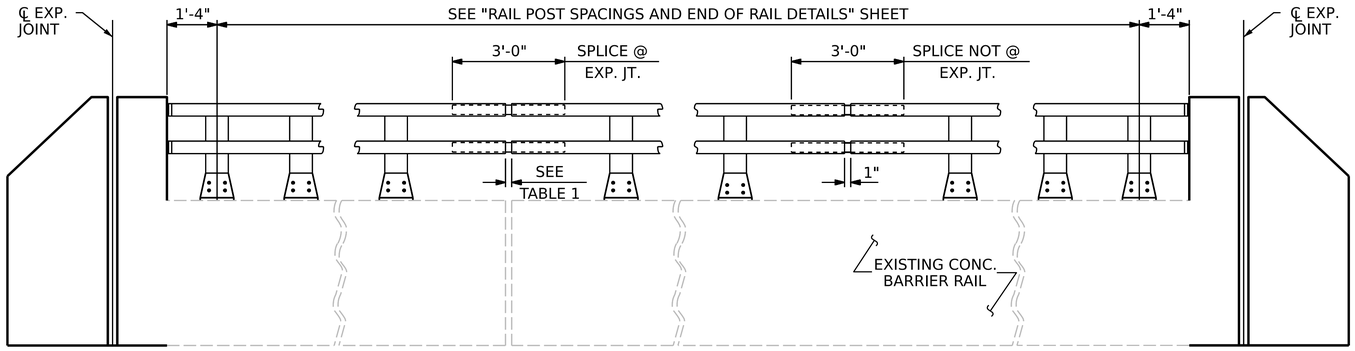
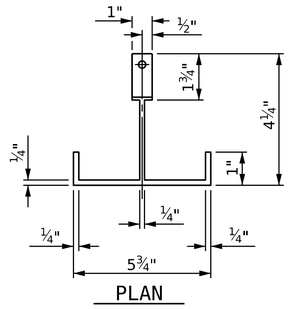
sbaguilar-hernandez



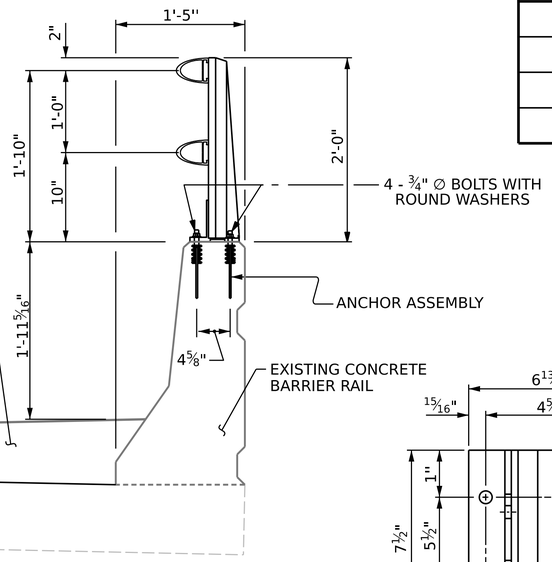

## ELEVATION

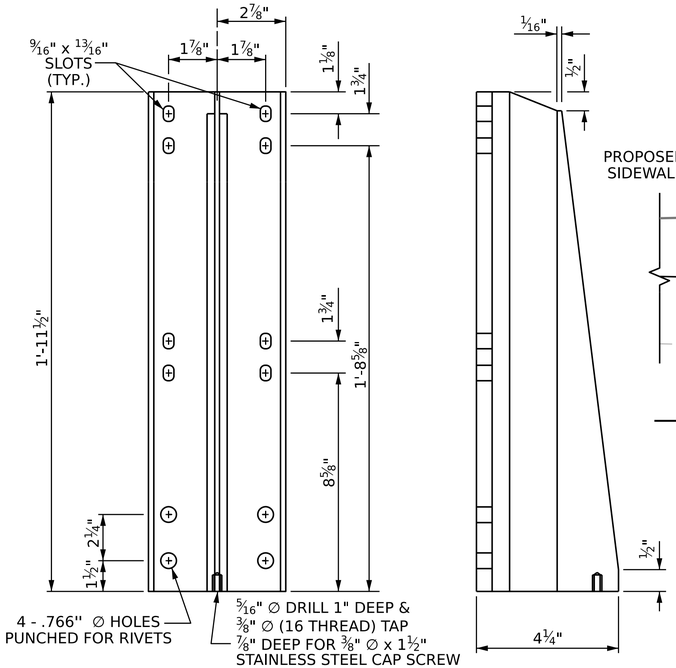
NOTE : FOR ATTACHEMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.




PLAN

| TABLE 1 | |
|---|---|
| ℄ EXP. JT. @ | RAIL OPENING |
| | |
| BENT 1 | 2-5/16" |
| BENT 2 | 1-9/16" |
| BENT 3 | 1-9/16" |



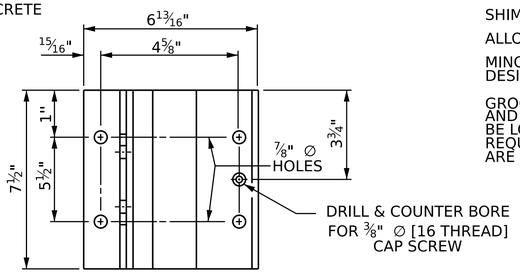




FRONT ELEVATION

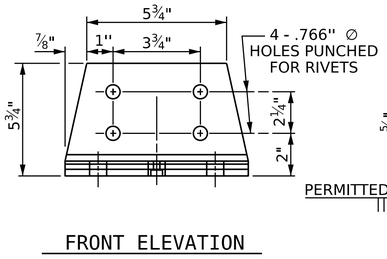
SIDE ELEVATION

## DETAILS OF POST

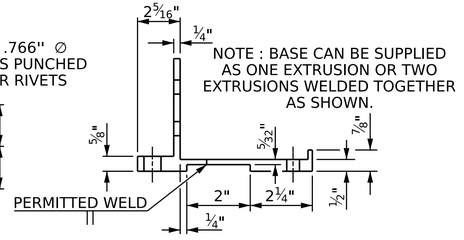
## SECTION THRU PARAPET AND RAIL



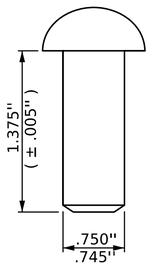

PLAN




FRONT ELEVATION




SIDE ELEVATION




RIVET DETAIL

## POST BASE DETAILS

## NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER ``2 BAR METAL RAIL ALTERNATE''. ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

### ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

### GALVANIZED STEEL RAILS

MATERIALS AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: ASTM A36 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO ASTM A123.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

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

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A1011 FOR GRADE 36, 40, 45 OR ASTM A1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A1011 FOR GRADE 36, 40, 45 OR ASTM A1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

### GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 389.7 LIN. FT.

PROJECT NO. U-6018

GUILFORD COUNTY

STATION: 400524

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

# 2 BAR METAL RAIL

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B790AD865D584EF...

03/27/2025

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-16 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 35 |

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| | | | |
|---|---|---|---|
| ASSEMBLED BY : N.S. HART | | DATE : 08/23 | |
| CHECKED BY : S.A. HERNANDEZ | | DATE : 11/24 | |
| DRAWN BY : EEM 6/94 | REV. 6/13 | MAA/GM | |
| CHECKED BY : RGW 6/94 | REV. 12/17 | MAA/THC | |
| | REV. 10/23 | BNB/SNM | |

3/24/2025
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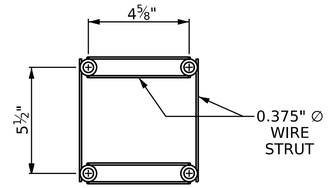
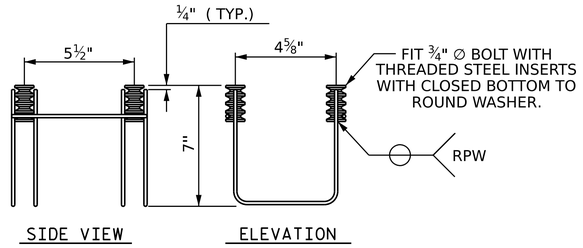
sbaguilar-hernandez

3/24/2025




PLAN




SIDE VIEW ELEVATION

## 4-BOLT METAL RAIL ANCHOR ASSEMBLY

( 68 ASSEMBLIES REQUIRED )

# NOTES

## STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR ¾" FERRULES.

B. 4 - ¾" ∅ x 2½" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ¾" ∅ x 2½" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" ∅ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

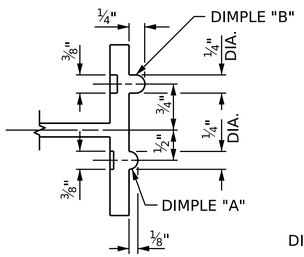
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF ASTM A123.

E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.

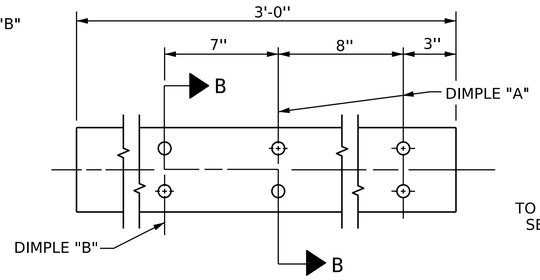
F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ¾" ∅ BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

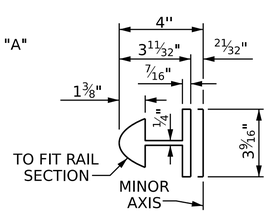
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



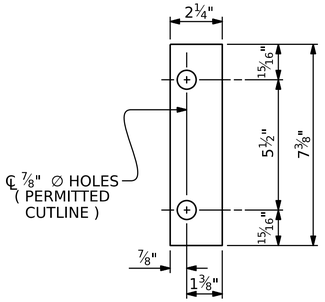

SECTION B-B



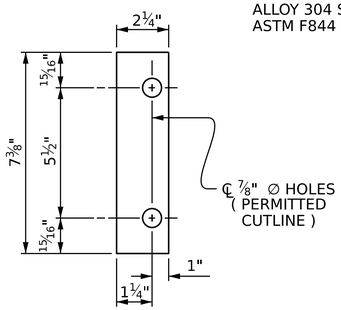

## EXPANSION BAR DETAILS




BAR SECTION



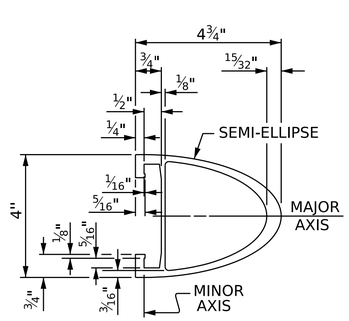

FRONT PLATE



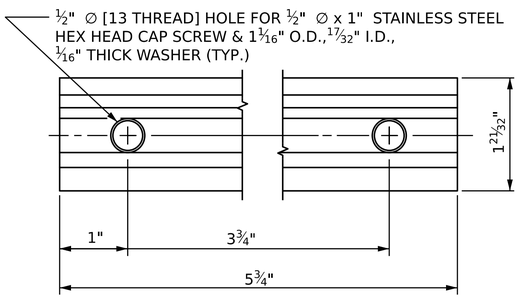

REAR PLATE

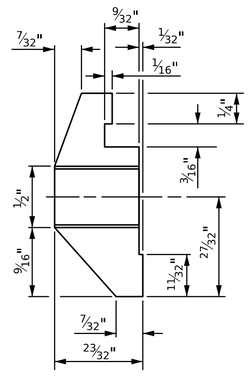
## SHIM DETAILS

NOTE :
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



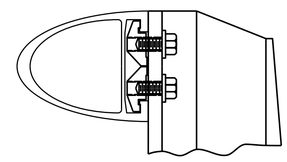

## RAIL SECTION



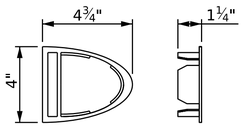




## CLAMP BAR DETAIL

( 4 REQUIRED PER POST )



## CLAMP ASSEMBLY




RAIL CAP

PROJECT NO. U-6018
GUILFORD COUNTY
STATION: 400524

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

## 2 BAR METAL RAIL

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB865D584EF...
03/27/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| | |
|---|---|
| ASSEMBLED BY : N.S. HART | DATE : 10/23 |
| CHECKED BY : S.A. HERNANDEZ | DATE : 11/24 |
| DRAWN BY : EEM 6/94 | REV. 10/11 MAA/GM |
| CHECKED BY : RGW 6/94 | REV. 12/17 MAA/THC |
| | REV. 10/23 BNB/SNM |

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-17 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 35 |

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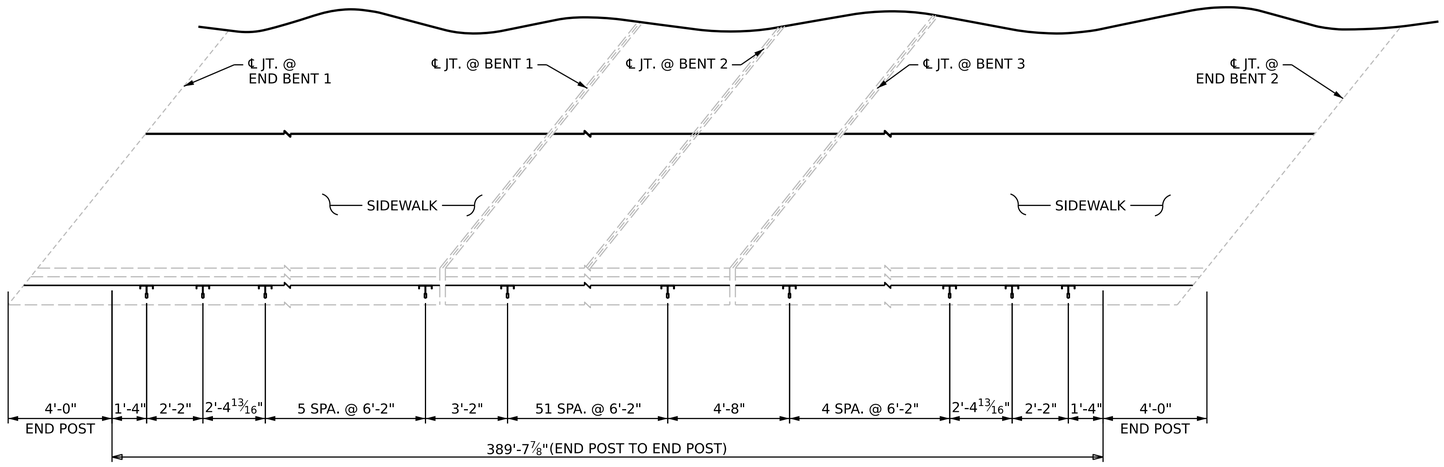
sbaguilar-hernandez




## PLAN OF RAIL POST SPACINGS

## NOTES

### STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

B. 1 - ¾" ∅ x 1⅝" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. ( AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾" ∅ x 1⅝" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" ∅ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

## NOTES

### METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. ½" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

B. ¾" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾" ∅ x 1⅜" BOLT WITH 2'' O.D. WASHER IN PLACE. THE ¾" ∅ x 1⅝" BOLT SHALL HAVE N. C. THREADS.

C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

D. STANDARD CLAMP BARS ( SEE METAL RAIL SHEET ).

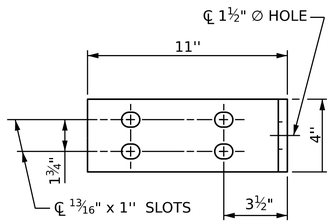
E. ½" ∅ PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

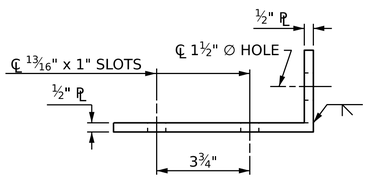
THE ¾" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE ½" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

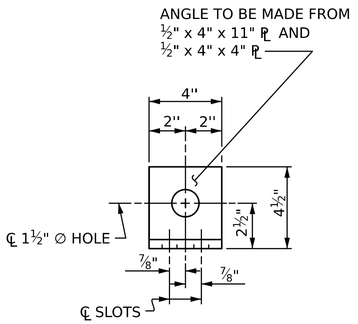
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" ∅ x 1⅝" BOLT WITH WASHER SHALL BE REPLACED WITH A ¾" ∅ x 6½" BOLT AND 2'' O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾" ∅ x 1⅝" BOLT SHALL APPLY TO THE ¾" ∅ x 6½" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



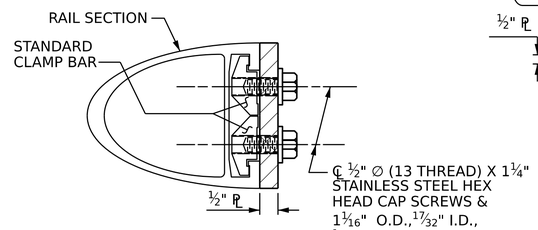

ELEVATION



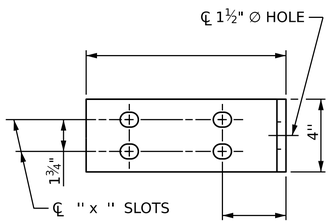

TOP VIEW




END VIEW (FIX AND EXP.)




SECTION H-H (FIX)

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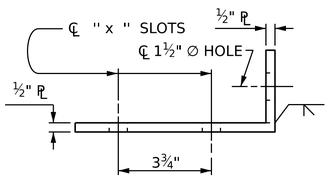
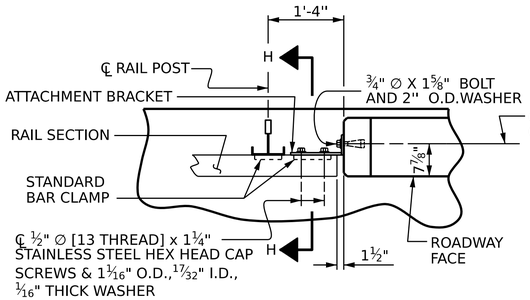



TOP VIEW

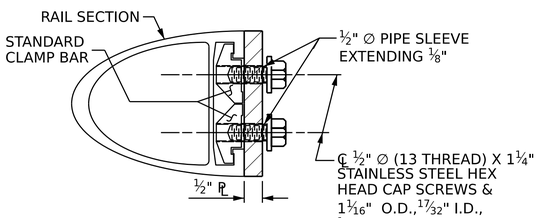
**FIXED**

**EXPANSION**

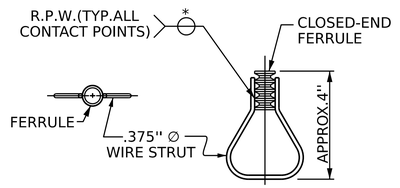
## DETAILS FOR ATTACHING METAL RAIL TO END POST




PLAN - RAIL AND END POST




SECTION H-H (EXP.)




PLAN ELEVATION

## STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. U-6018

GUILFORD COUNTY

STATION: 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

## RAIL POST SPACINGS AND END OF RAIL DETAILS

TWO BAR METAL RAILS

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB80D684EF...

03/27/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| ASSEMBLED BY : N.S. HART | DATE : 10/2023 |
|---|---|
| CHECKED BY : S. A. HERNANDEZ | DATE : 11/2024 |
| DRAWN BY : FCJ 1/88 | REV. 10/1/11 MAA/GM |
| CHECKED BY : CRK 3/89 | REV. 12/17 MAA/THC |
| | REV. 10/23 BNB/SNM |

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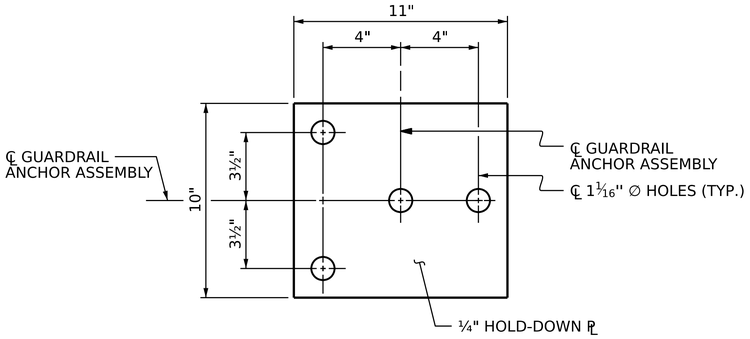
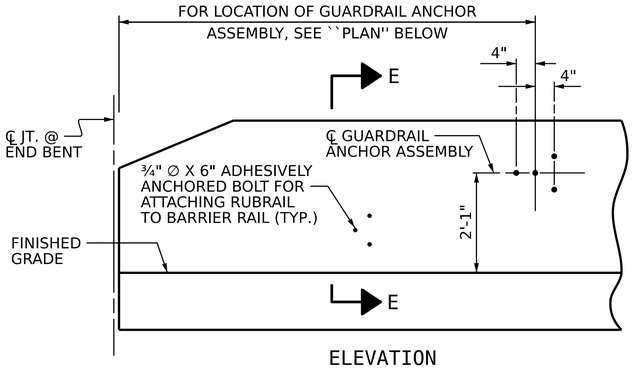



PLAN

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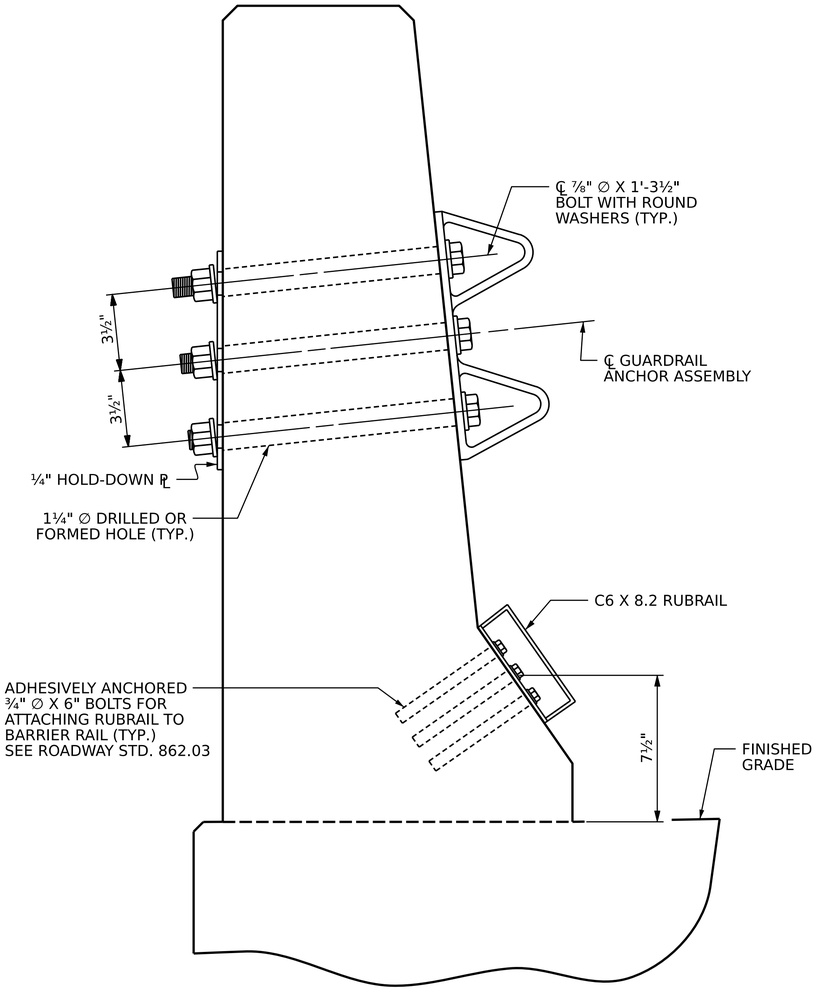
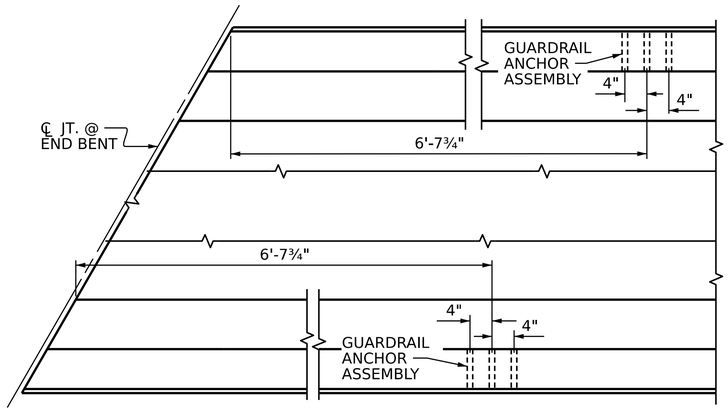
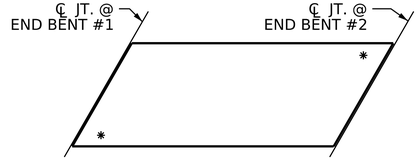



SECTION E-E

## GUARDRAIL ANCHOR ASSEMBLY DETAILS




PLAN




SKETCH SHOWING POINTS OF ATTACHMENTS

*DENOTES GUARDRAIL ANCHOR ASSEMBLY

## LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR

## NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼'' HOLD-DOWN PLATE AND 4 - ⅞'' ∅ BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ⅞'' ∅ GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

THE 1 ¼'' ∅ HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE ¾" ∅ X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ¾" ∅ BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

PROJECT NO. U-6018

GUILFORD COUNTY

STATION: 400524

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB6920584EF...

03/27/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

# GUARDRAIL ANCHORAGE FOR BARRIER RAIL

| REVISIONS | | | | | | SHEET NO. |
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|---|---|---|
| ASSEMBLED BY : N.S. HART | DATE : 10/23 | |
| CHECKED BY : F. LEA | DATE : 10/23 | |
| DRAWN BY : TLA 5/06 | REV. 7/12 | MAA/GM |
| CHECKED BY : GM 5/06 | REV. 6/13 | MAA/GM |
| | REV. 12/17 | MAA/THC |

3/24/2025
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STD. NO. GRA2

8/26/21

## NOTES

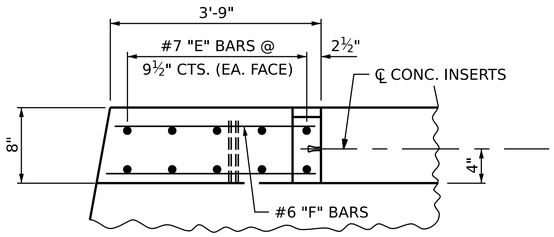
PAYMENT FOR PARAPET SHALL BE CONSIDERED INCIDENTAL TO OTHER PAY ITEMS.

BILL OF MATERIAL

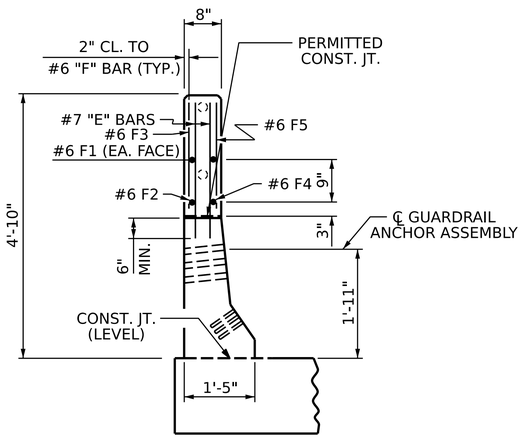
2 BAR PARAPETS AND 4 END POSTS

| BAR | NO | SIZE | TYPE | LENGTH | WEIGHT |
|---|---|---|---|---|---|
| * E1 | 8 | 7 | STR | 1'-0" | 16 |
| * E2 | 8 | 7 | STR | 1'-2" | 19 |
| * E3 | 8 | 7 | STR | 1'-8" | 27 |
| * E4 | 8 | 7 | STR | 2'-2" | 35 |
| * E5 | 8 | 7 | STR | 2'-6" | 41 |
| | | | | | |
| * F1 | 8 | 6 | STR | 2'-2" | 26 |
| * F2 | 4 | 6 | STR | 4'-2" | 25 |
| * F3 | 4 | 6 | STR | 3'-11" | 24 |
| * F4 | 4 | 6 | STR | 3'-5" | 21 |
| * F5 | 4 | 6 | STR | 3'-2" | 19 |

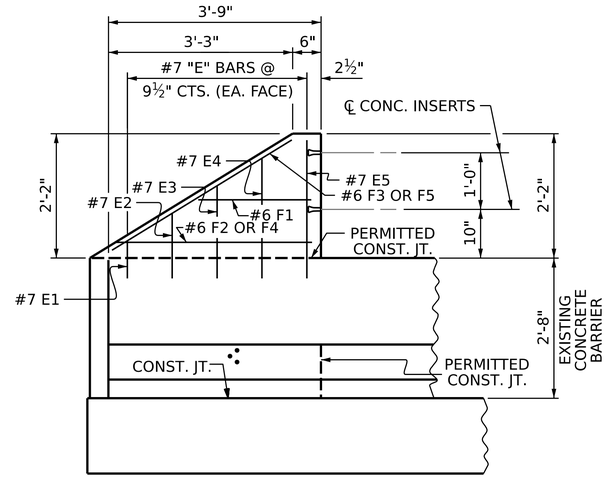
| | | |
|---|---|---|
| *EPOXY COATED REINFORCING STEEL | LBS. | 253 |
| CLASS AA CONCRETE | CU. YDS. | 0.81 |




PLAN OF END POST




END VIEW




ELEVATION

## PARAPET AND END POST FOR TWO BAR RAIL

PROJECT NO. U-6018

GUILFORD COUNTY

STATION: 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

**CONCRETE PARAPET DETAILS**

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B790ADB86D584EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 08/2023
CHECKED BY : S.A. HERNANDEZ DATE : 11/2024

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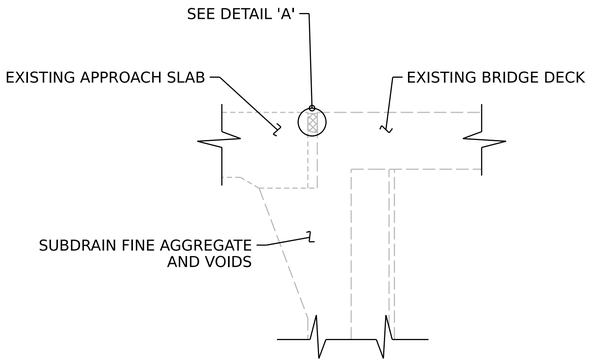
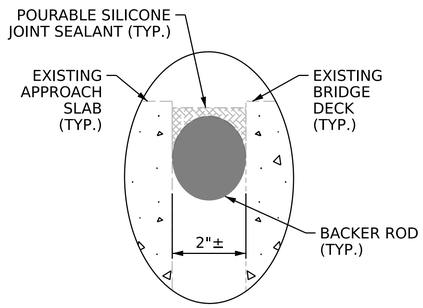



FIXED JOINT

( SECTION A-A @ END BENT 1 )




DETAIL 'A'

## NOTES

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

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE 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 MAYBE SUBSTITUTED IN LIEU OF CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

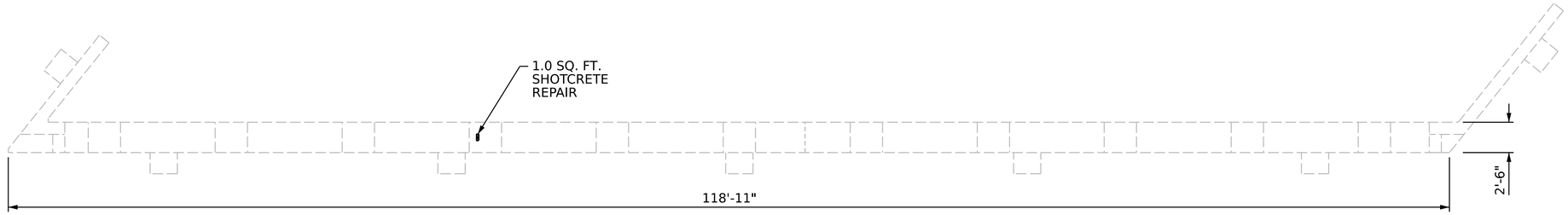
PREVIOUSLY ACCOUNTED FOR AREA

EPOXY RESIN INJECTION

## AS-BUILT REPAIR QUANTITY TABLE

| REPAIRS - END BENT 1 | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| SHOTCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 1.0 | 0.5 | | |
| CURTAIN WALL | 0 | 0 | | |
| WINGWALL | 0 | 0 | | |
| CONCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 0 | 0 | | |
| CURTAIN WALL | 0 | 0 | | |
| WINGWALL | 0 | 0 | | |
| EPOXY RESIN INJECTION | LIN. FT. | | LIN. FT. | |
| CAP | 0 | | | |
| CURTAIN WALL | 0 | | | |
| WINGWALL | 0 | | | |
| EPOXY COATING | AREA (SQ. FT.) | | AREA (SQ. FT.) | |
| CAP | 178.9 | | | |
| CURTAIN WALL | 546.5 | | | |
| POURABLE SILICONE JOINT SEALANT | LIN. FT. | | LIN. FT. | |
| JOINT | 107.8 | | | |

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




PLAN

ELEVATION

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

**END BENT 1**

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B70ADB65D684EF...
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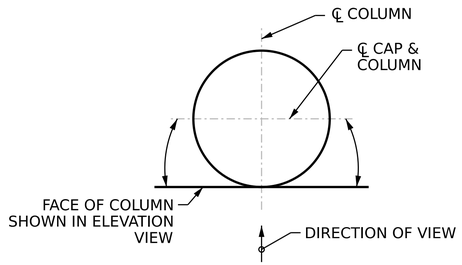



## UNWRAPPED COLUMN FACE DETAIL

## NOTES

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

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE 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 MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

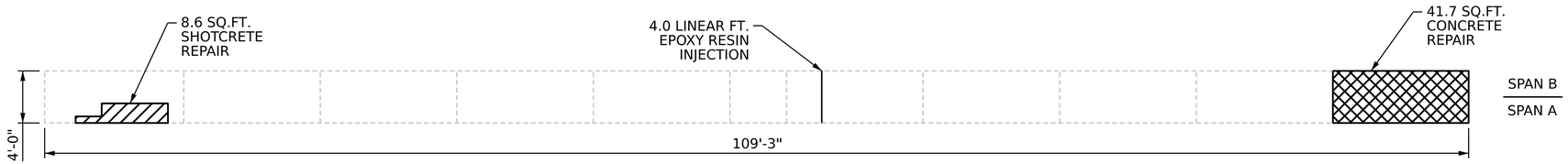
PREVIOUSLY ACCOUNTED FOR AREA

EPOXY RESIN INJECTION

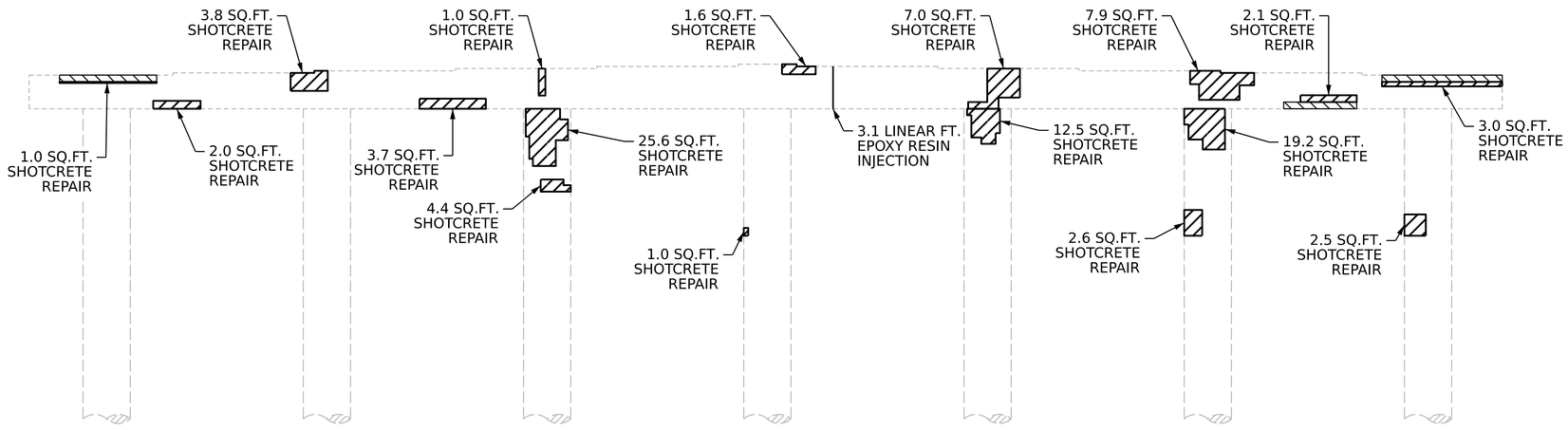
## AS-BUILT REPAIR QUANTITY TABLE

| REPAIRS - BENT 1 SPAN A | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| SHOTCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 41.7 | 20.9 | | |
| COLUMN | 67.8 | 33.9 | | |
| | | | | |
| CONCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 41.7 | 20.9 | | |
| COLUMN | 0 | 0 | | |
| | | | | |
| EPOXY RESIN INJECTION | LIN. FT. | | LIN. FT. | |
| CAP | 7.1 | | | |
| COLUMN | 0 | | | |
| | | | | |
| EPOXY COATING | AREA (SQ. FT.) | | AREA (SQ. FT.) | |
| CAP | 437.0 | | | |
| | | | | |

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




## PLAN
(TOP OF CAP)

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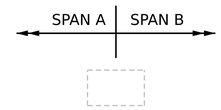


## END VIEW

PROJECT NO. U-6018
GUILFORD COUNTY
BRIDGE NO. 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIR
**BENT 1**
**SPAN A FACE**

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B790AD865D584EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 01/2025

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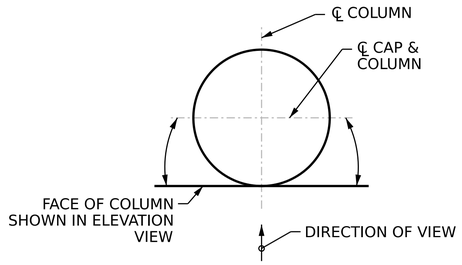
sbaguilar-hernandez




## UNWRAPPED COLUMN FACE DETAIL

## NOTES

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

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE 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 MAYBE SUBSTITUTED IN LIEU OF CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

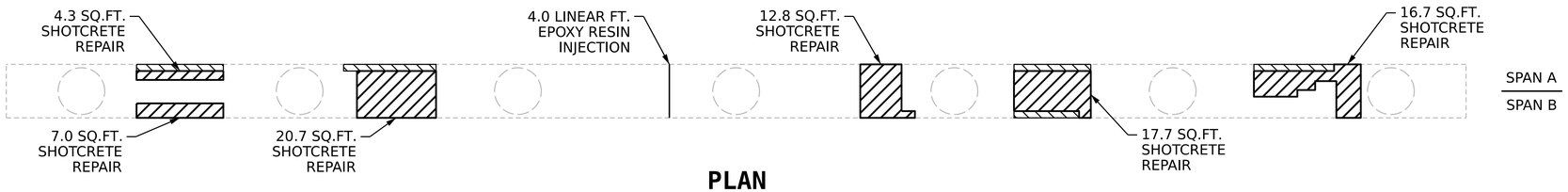
PREVIOUSLY ACCOUNTED FOR AREA

EPOXY RESIN INJECTION

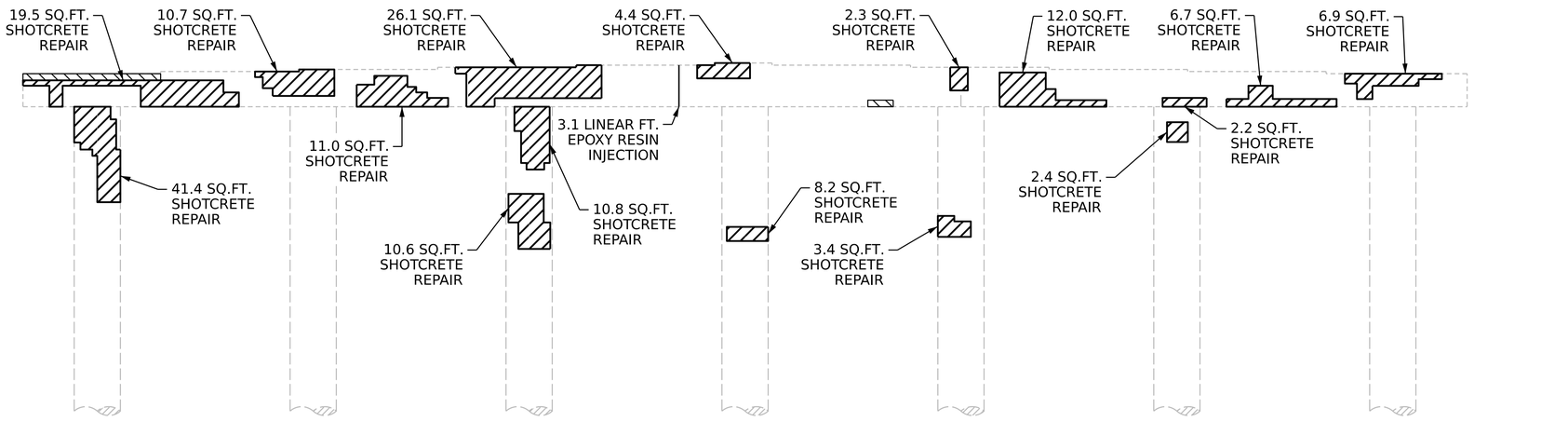
## AS-BUILT REPAIR QUANTITY TABLE

| REPAIRS - BENT 1 SPAN B | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| SHOTCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 181.0 | 90.5 | | |
| COLUMN | 76.8 | 38.4 | | |
| | | | | |
| CONCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 0 | 0 | | |
| COLUMN | 0 | 0 | | |
| | | | | |
| EPOXY RESIN INJECTION | LIN. FT. | | LIN. FT. | |
| CAP | 7.1 | | | |
| COLUMN | 0 | | | |
| | | | | |
| EPOXY COATING | AREA (SQ. FT.) | | AREA (SQ. FT.) | |
| CAP | 0 | | | |
| | | | | |

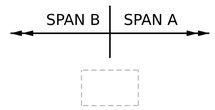
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT.
SEE REPAIR DETAILS.




## PLAN




## ELEVATION




## END VIEW

PROJECT NO. U-6018
GUILFORD COUNTY
BRIDGE NO. 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIR

# BENT 1
# SPAN B FACE

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D5B4EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 01/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-23 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 35 |

3/11/2025
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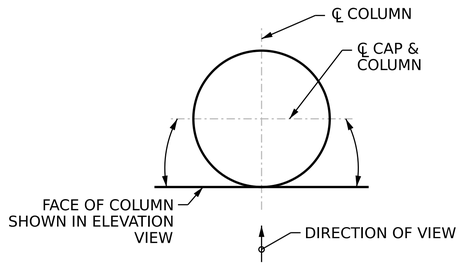
sbaguilar-hernandez




## UNWRAPPED COLUMN FACE DETAIL

## NOTES

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

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE 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 MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

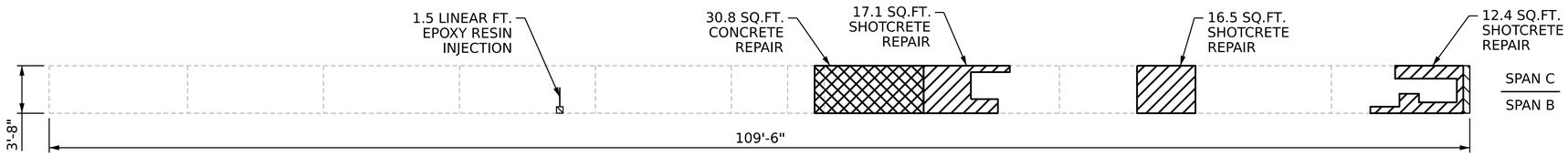
PREVIOUSLY ACCOUNTED FOR AREA

EPOXY RESIN INJECTION

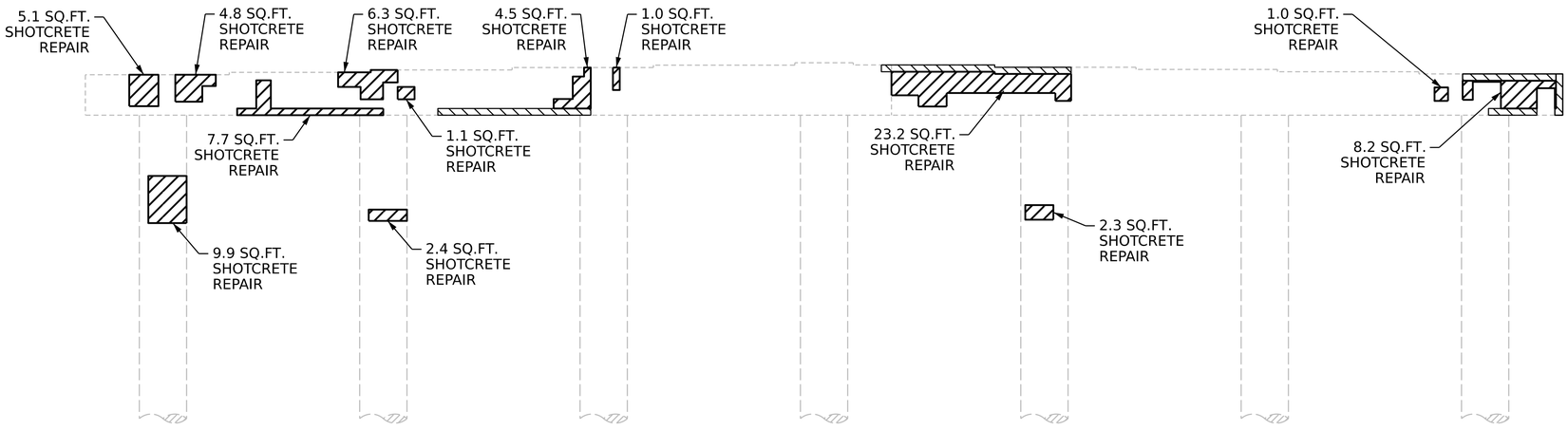
## AS-BUILT REPAIR QUANTITY TABLE

| REPAIRS - BENT 2 SPAN B | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| SHOTCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 120.1 | 60.1 | | |
| COLUMN | 14.6 | 7.3 | | |
| | | | | |
| CONCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 30.8 | 15.4 | | |
| COLUMN | 0 | 0 | | |
| | | | | |
| EPOXY RESIN INJECTION | LIN. FT. | | LIN. FT. | |
| CAP | 1.5 | | | |
| COLUMN | 0 | | | |
| | | | | |
| EPOXY COATING | AREA (SQ. FT.) | | AREA (SQ. FT.) | |
| CAP | 401.5 | | | |
| | | | | |

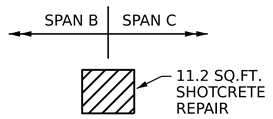
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT.
SEE REPAIR DETAILS.




## PLAN
(TOP OF CAP)




## ELEVATION




## END VIEW

PROJECT NO. U-6018
GUILFORD COUNTY
BRIDGE NO. 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIR
**BENT 2**
**SPAN B FACE**

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D584EF... 03/27/2025

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 01/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-24 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 35 |

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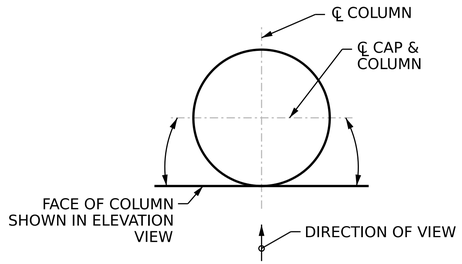


## UNWRAPPED COLUMN FACE DETAIL

## NOTES

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FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

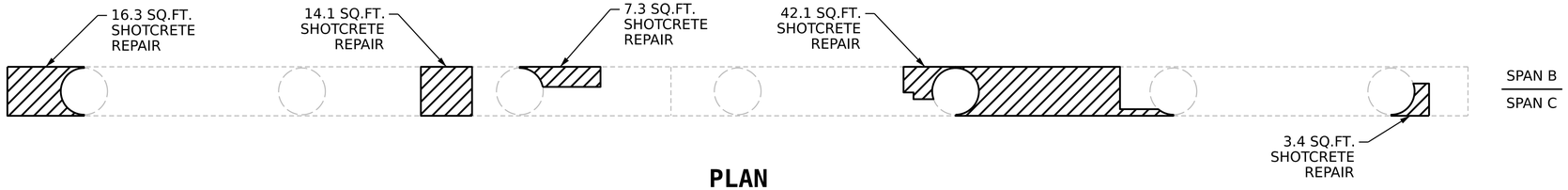
PREVIOUSLY ACCOUNTED FOR AREA

EPOXY RESIN INJECTION

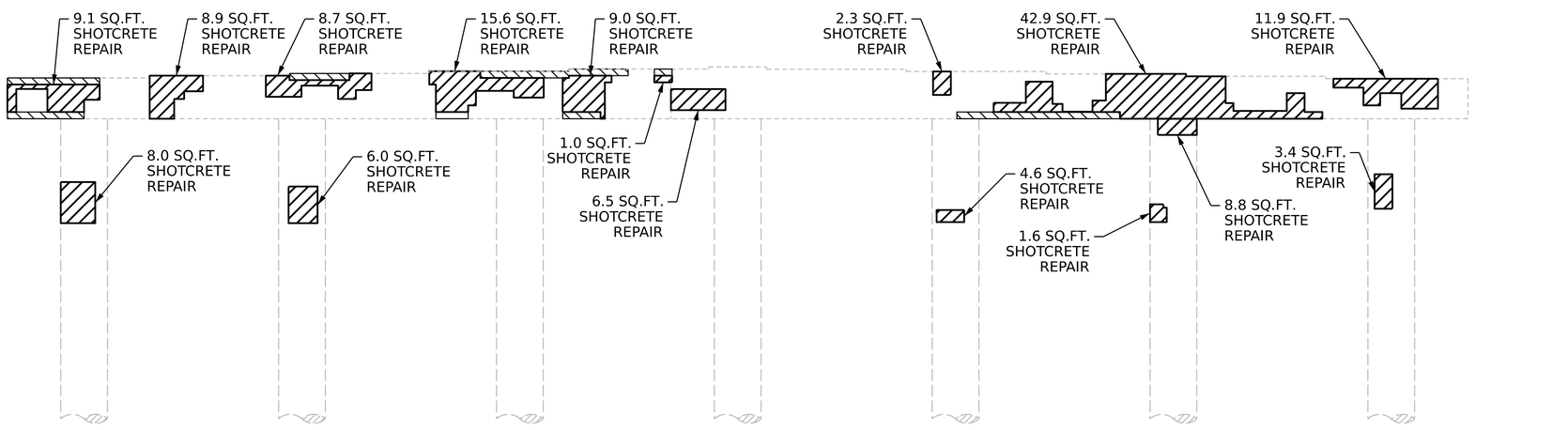
## AS-BUILT REPAIR QUANTITY TABLE

| REPAIRS - BENT 2 SPAN C | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| SHOTCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 199.1 | 99.5 | | |
| COLUMN | 32.4 | 16.2 | | |
| | | | | |
| CONCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 0 | 0 | | |
| COLUMN | 0 | 0 | | |
| | | | | |
| EPOXY RESIN INJECTION | LIN. FT. | | LIN. FT. | |
| CAP | 0 | | | |
| COLUMN | 0 | | | |
| | | | | |
| EPOXY COATING | AREA (SQ. FT.) | | AREA (SQ. FT.) | |
| CAP | 0 | | | |
| | | | | |

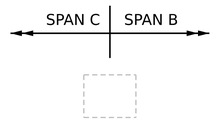
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT.
SEE REPAIR DETAILS.




## PLAN




## ELEVATION




## END VIEW

PROJECT NO. U-6018
GUILFORD COUNTY
BRIDGE NO. 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIR
**BENT 2**
**SPAN C FACE**

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea
B79DADB65D884EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 01/2025

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| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-25 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 35 |

3/11/2025
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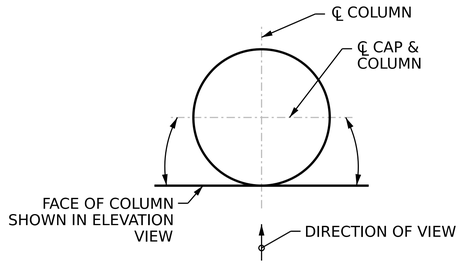
sbaguilar-hernandez




## UNWRAPPED COLUMN FACE DETAIL

### NOTES

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FOR EPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.

CONCRETE REPAIRS MAYBE SUBSTITUTED IN LIEU OF SHOTCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

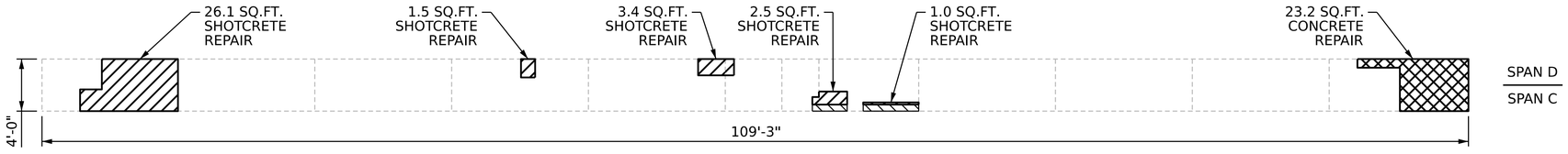
PREVIOUSLY ACCOUNTED FOR AREA

EPOXY RESIN INJECTION

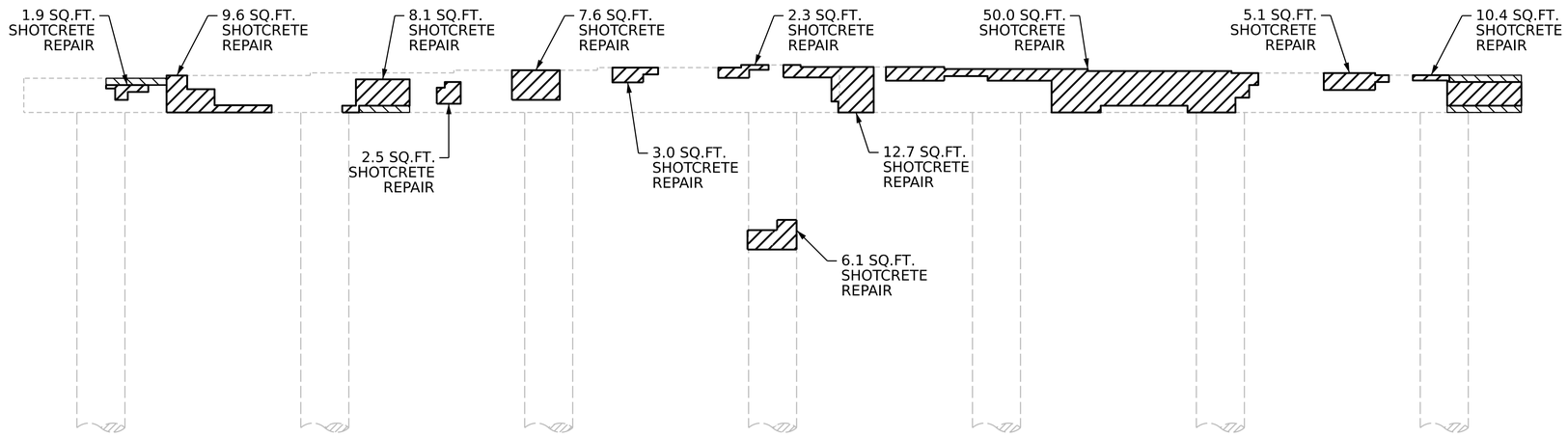
## AS-BUILT REPAIR QUANTITY TABLE

| REPAIRS - BENT 3 SPAN C | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| SHOTCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 147.7 | 73.3 | | |
| COLUMN | 6.1 | 3.1 | | |
| | | | | |
| CONCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 23.2 | 11.6 | | |
| COLUMN | 0 | 0 | | |
| | | | | |
| EPOXY RESIN INJECTION | LIN. FT. | | LIN. FT. | |
| CAP | 0 | | | |
| COLUMN | 0 | | | |
| | | | | |
| EPOXY COATING | AREA (SQ. FT.) | | AREA (SQ. FT.) | |
| CAP | 437.0 | | | |
| | | | | |

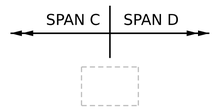
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT.
SEE REPAIR DETAILS.




## PLAN
(TOP OF CAP)




## ELEVATION




## END VIEW

PROJECT NO. U-6018
GUILFORD COUNTY
BRIDGE NO. 400524

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D584EF...
03/27/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE REPAIR

**BENT 3**
**SPAN C FACE**

| REVISIONS | | | | | | SHEET NO. |
|---|---|---|---|---|---|---|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-26 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 35 |

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 01/2025

3/5/2025
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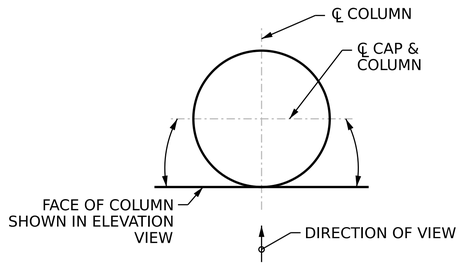
sbaguilar-hernandez




## UNWRAPPED COLUMN FACE DETAIL

## NOTES

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

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE 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.

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FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

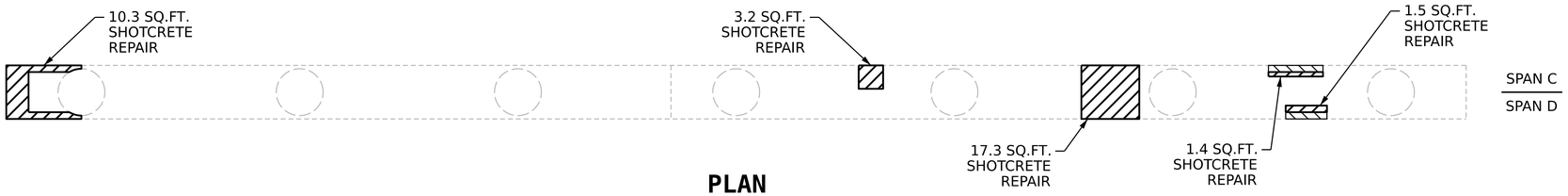
PREVIOUSLY ACCOUNTED FOR AREA

EPOXY RESIN INJECTION

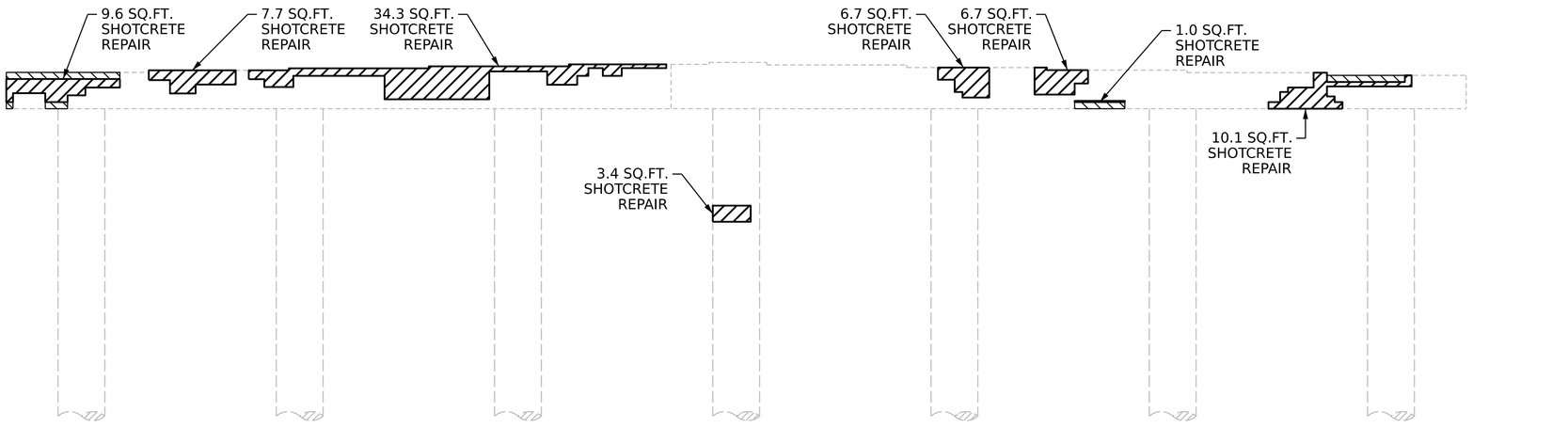
## AS-BUILT REPAIR QUANTITY TABLE

| REPAIRS - BENT 3 SPAN D | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| SHOTCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 109.8 | 54.9 | | |
| COLUMN | 3.4 | 1.7 | | |
| | | | | |
| CONCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 0 | 0 | | |
| COLUMN | 0 | 0 | | |
| | | | | |
| EPOXY RESIN INJECTION | LIN. FT. | | LIN. FT. | |
| CAP | 0 | | | |
| COLUMN | 0 | | | |
| | | | | |
| EPOXY COATING | AREA (SQ. FT.) | | AREA (SQ. FT.) | |
| CAP | 0 | | | |
| | | | | |

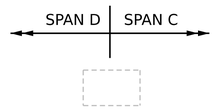
VALUES IN CHART REPRESENT ESTIMATED REPAIR TOTALS AFTER REMOVAL OF UNSOUND CONCRETE, MIN. OF 1" BEHIND REBAR AND MIN. 2" CLEAR TO SAWCUT.
SEE REPAIR DETAILS.




## PLAN




## ELEVATION




## END VIEW

PROJECT NO. U-6018
GUILFORD COUNTY
BRIDGE NO. 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE REPAIR

# BENT 3
# SPAN D FACE

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D584EF...
03/27/2025

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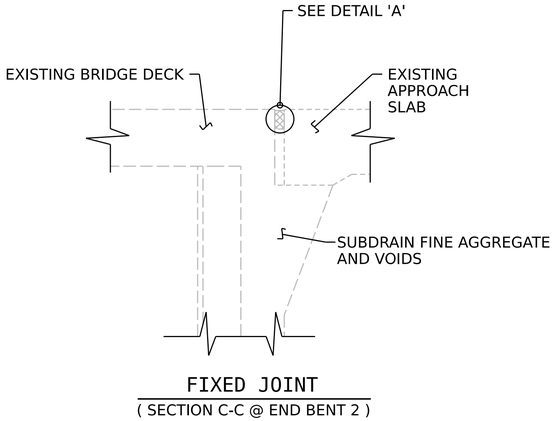
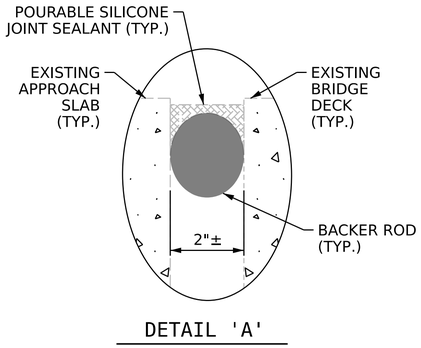



FIXED JOINT

( SECTION C-C @ END BENT 2 )




DETAIL 'A'

## NOTES

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

CLEAN AND REMOVE DEBRIS FROM THE TOP OF THE CAP AND APPLY EPOXY PROTECTIVE COATING. EPOXY COATING SHALL BE APPLIED TO THE TOP SURFACE 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 MAYBE SUBSTITUTED IN LIEU OF CONCRETE REPAIRS WITH THE APPROVAL OF THE ENGINEER.

FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

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

FOR EPOXY RESIN INJECTION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

SHOTCRETE REPAIR AREA

CONCRETE REPAIR AREA

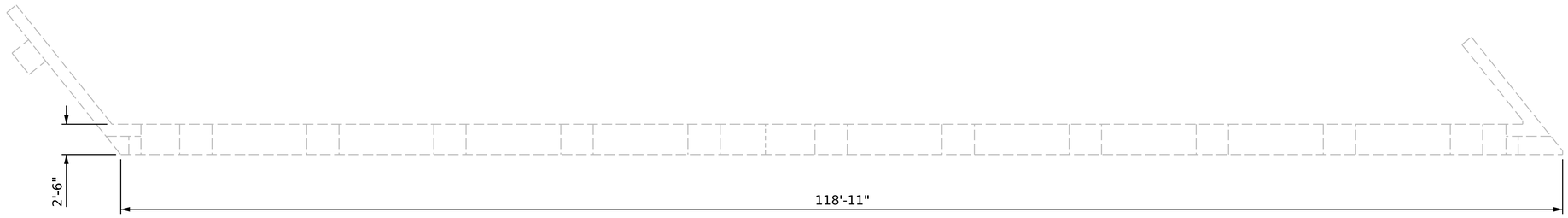
PREVIOUSLY ACCOUNTED FOR AREA

EPOXY RESIN INJECTION

## AS-BUILT REPAIR QUANTITY TABLE

| REPAIRS - END BENT 2 | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| SHOTCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 8.0 | 4.0 | | |
| CURTAIN WALL | 0 | 0 | | |
| WINGWALL | 0 | 0 | | |
| CONCRETE REPAIRS | AREA (SQ. FT.) | VOLUME (CU. FT.) | AREA (SQ. FT.) | VOLUME (CU. FT.) |
| CAP | 0 | 0 | | |
| CURTAIN WALL | 0 | 0 | | |
| WINGWALL | 0 | 0 | | |
| EPOXY RESIN INJECTION | LIN. FT. | | LIN. FT. | |
| CAP | 0 | | | |
| CURTAIN WALL | 0 | | | |
| WINGWALL | 0 | | | |
| EPOXY COATING | AREA (SQ. FT.) | | AREA (SQ. FT.) | |
| CAP | 178.9 | | | |
| CURTAIN WALL | 545.4 | | | |
| POURABLE SILICONE JOINT SEALANT | LIN. FT. | | LIN. FT. | |
| JOINT | 107.8 | | | |

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




PLAN


ELEVATION

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

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

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB665D584EF...
03/27/2025

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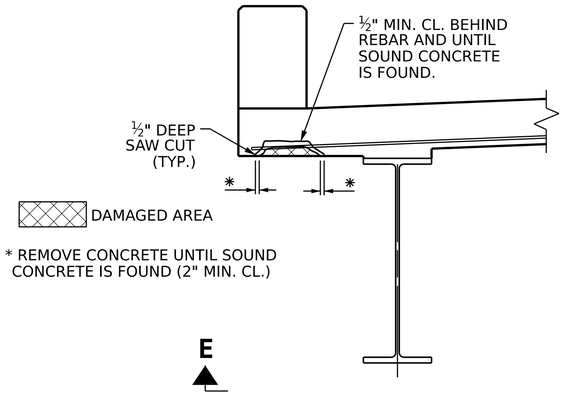
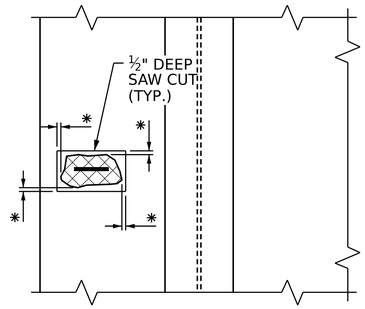
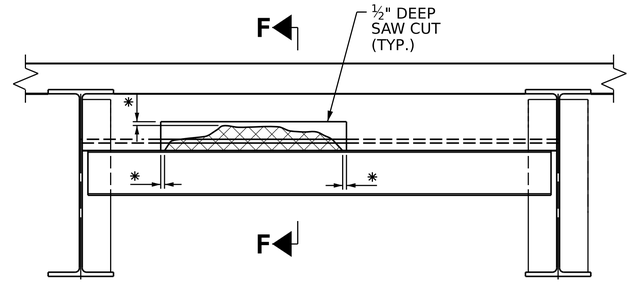



TYPICAL SECTION




SECTION E-E

## OVERHANG DETAILS




TYPICAL SECTION

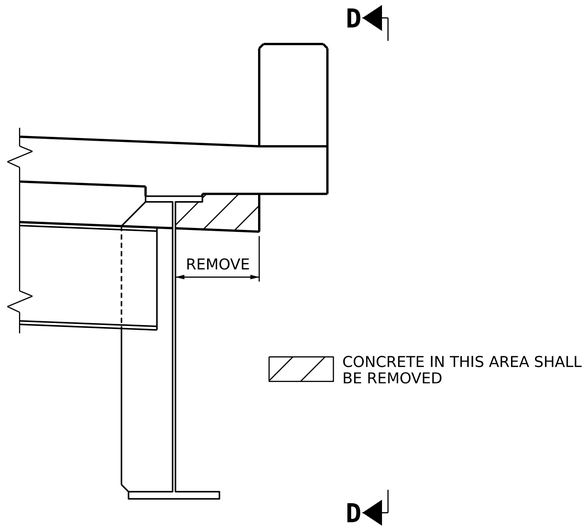
* REMOVE CONCRETE UNTIL SOUND CONCRETE IS FOUND (2" MIN. CL.)

## NOTES

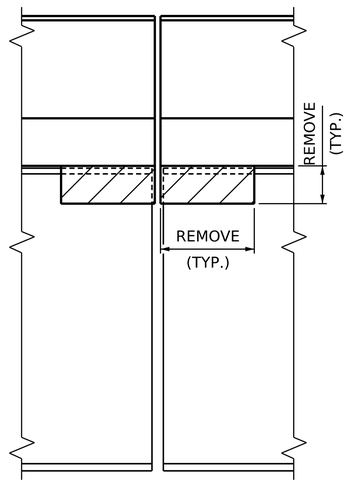
CONTRACTOR SHALL REMOVE SURFACE CONCRETE TO VERIFY THAT SAWCUT DEPTH WILL NOT DAMAGE EXISTING REINFORCING STEEL OR PRESTRESSED STRANDS.

CONTRACTOR SHALL SAW CUT TO A NOMINAL DEPTH OF 1/2" BUT REINFORCING STEEL AND PRESTRESSED STRANDS SHALL NOT BE DAMAGED.

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



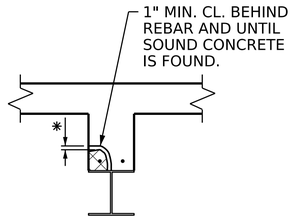

TYPICAL SECTION




SECTION D-D

## OVERHANG DIAPHRAGM REMOVAL DETAILS

NOTE: OVERHANG DIAPHRAGMS TO BE REMOVED ARE SHOWN ON "DECK UNDERSIDE REPAIR" SHEETS.




SECTION F-F

DAMAGED AREA

NOTE:
EXISTING REBAR TO REMAIN IN PLACE. CLEAN AND REPAIR AS NECESSARY

## INTERIOR DIAPHRAGM REPAIR DETAILS

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

# OVERHANG AND DIAPHRAGM REPAIR DETAIL

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

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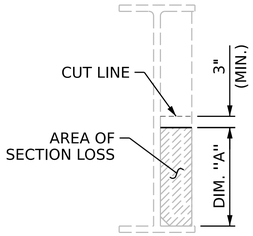
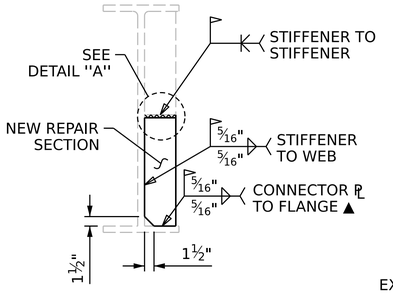


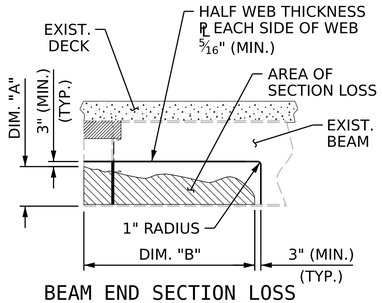

STIFFENER/CONNECTOR ℄ SECTION LOSS



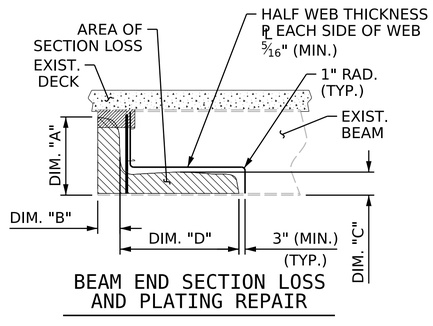

STIFFENER/CONNECTOR ℄ SECTION REPAIR

▲ FOR STIFFENERS,MILL TO BEAR AND DO NOT WELD

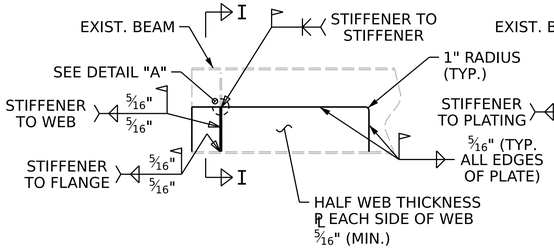
## STIFFENER/CONNECTOR PLATE REPAIR



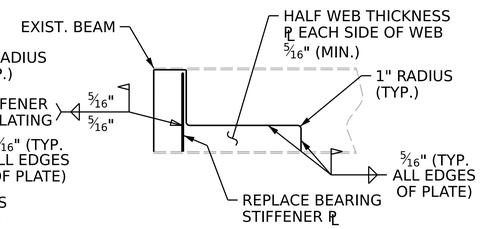

BEAM END SECTION LOSS AND PLATING REPAIR




BEAM END SECTION LOSS AND PLATING REPAIR




BEAM END PLATING REPAIR




BEAM END PLATING REPAIR

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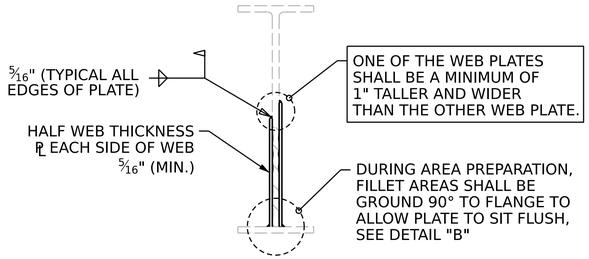


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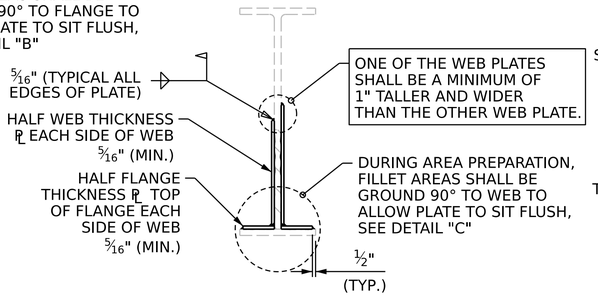


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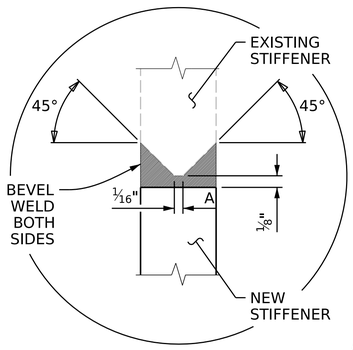


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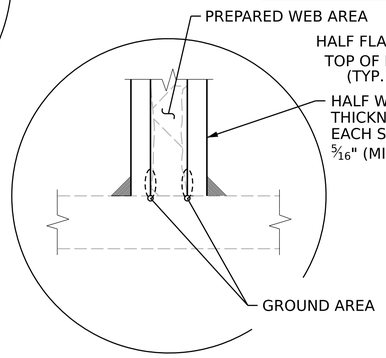


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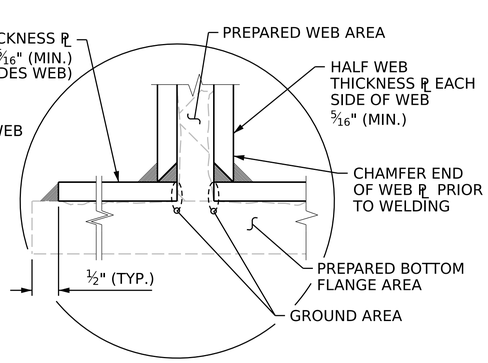


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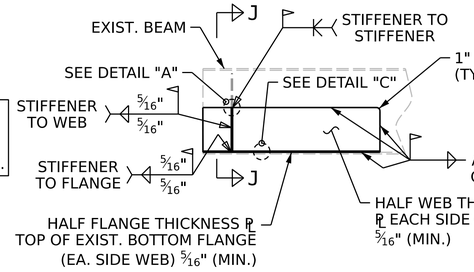
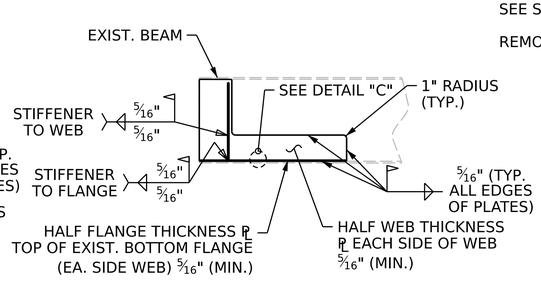
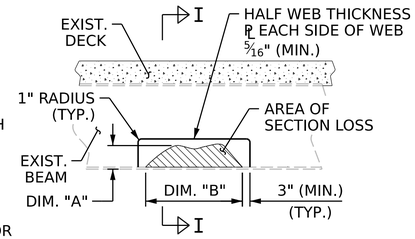



BEAM END BOTTOM FLANGE PLATING REPAIR

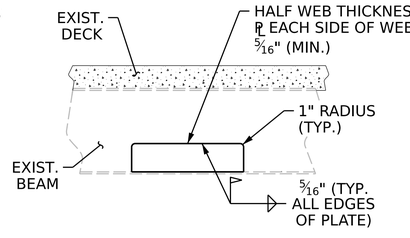



BEAM END BOTTOM FLANGE PLATING REPAIR

## BEAM END WITH BOTTOM FLANGE PLATING REPAIR




INTERMEDIATE SECTION LOSS BEAM PLATING REPAIR




INTERMEDIATE SECTION LOSS BEAM PLATING REPAIR

## INTERMEDIATE BEAM PLATING REPAIR

### BEAM PLATING REPAIR NOTES

ALL CONDITIONS AND DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO FABRICATION OR INSTALLATION OF ANY COMPONENTS.

REPAIR PLATES SHALL BE MINIMUM 36 KSI STEEL.

### REPAIR SEQUENCE:

COORDINATE WITH MATERIALS AND TEST UNIT AT LEAST 4 DAYS PRIOR TO ANTICIPATED WORK.

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

IF NECESSARY, REMOVE EXISTING STIFFENER TO INSTALL WELDED PLATE REPAIR. REPLACE WITH A NEW STIFFENER PLATE OF SIMILAR SIZE.

IF BEAM DETERIORATION EXTENDS INTO THE CONCRETE DIAPHRAGM THEN CHIP AWAY CONCRETE TO DETERMINE THE EXTENT OF THE DAMAGE.

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 WELDING NEW PLATES. REMOVE PRIMER IN WELD AREA.

ONE PLATE SHALL BE PLACED, AS INDICATED, ON EACH SIDE OF THE BEAM WEB. ONE OF THE WEB PLATES SHALL BE A MINIMUM OF 1" TALLER AND WIDER THAN THE OTHER WEB PLATE TO OFFSET THE WEB PLATE WELDING LOCATIONS ON THE EXISTING BEAM WEB.

EACH PLATE SHALL BE APPROXIMATELY ONE-HALF THE ORIGINAL THICKNESS OF THE BEAM WEB, WITH A MINIMUM THICKNESS OF 5/16".

FULLY WELD ALONG TOP AND SIDES OF THE PLATES AS SHOWN.

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 THE 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 WEATHERING STEEL 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.

REMOVE ALL TRAFFIC CONTROL DEVICES.

PROJECT NO. U-6018
GUILFORD COUNTY
BRIDGE NO. 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

# BEAM PLATING REPAIR DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B790AD8650584EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 12/2022
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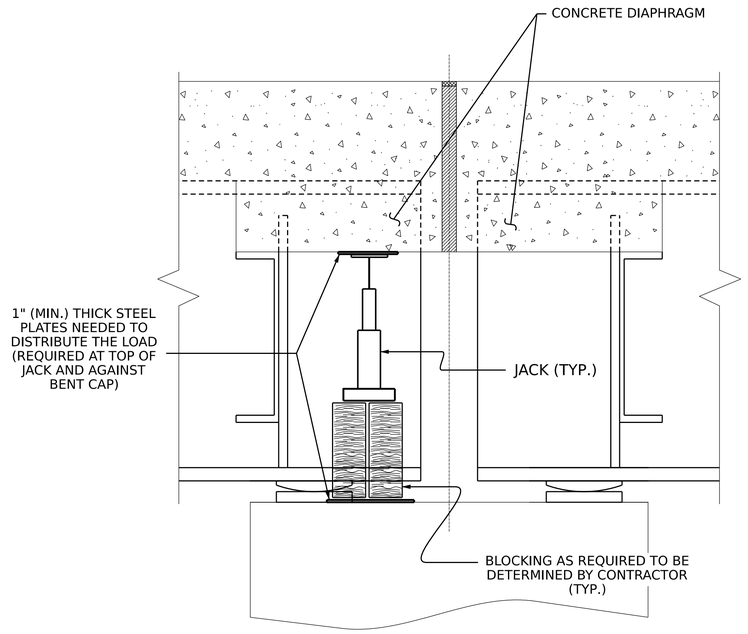


## SECTION THRU DIAPHRAGM

## BRIDGE JACKING TABLE

| LOCATION | SPAN | BEAM(S) | BRIDGE JACKING TYPE |
|---|---|---|---|
| BENT 1 | A & B | 11 | TYPE I |
| BENT 2 | B & C | 7 | TYPE I |
| BENT 3 | C & D | 11 | TYPE I |

## NOTES:

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.

PRIOR TO BRIDGE JACKING OPERATIONS, THE ENGINEER AND CONTRACTOR SHALL INSPECT THE STRUCTURE FOR ANY NOTABLE DEFECTS TO THE PRIMARY AND SECONDARY STRUCTURAL MEMBERS. ALL NOTABLE DEFECTS SHALL BE DOCUMENTED AND REPORTED TO THE AREA BRIDGE MAINTENANCE ENGINEER PRIOR TO COMMENCEMENT OF ANY BRIDGE JACKING. THE CONTRACTOR SHALL PROVIDE SAFE AND SUFFICIENT ACCESS TO ALL STRUCTURAL MEMBERS FOR THE ENGINEER TO ESTABLISH PROPER DOCUMENTATION.

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

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.

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 ⅛".

LOADS PROVIDED IN THE ``BRIDGE JACKING TABLE'' ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY, THE CONTRACTOR'S ENGINEER SHALL DETERMINE THE EXPECTED LOADS TO BE LIFTED DURING THE BRIDGE JACKING OPERATIONS.

THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS AND CALCULATIONS OF THE JACKING PROCEDURE(S) SEALED BY A PROFESSIONAL ENGINEER IN THE STATE OF NORTH CAROLINA TO THE ENGINEER FOR APPROVAL PRIOR TO BRIDGE JACKING OPERATIONS.

FOR TYPE I OR TYPE II BRIDGE JACKING, SEE SPECIAL PROVISIONS.

FOR WORKING DRAWING SUBMITTALS, SEE SPECIAL PROVISIONS.

ANY STEEL THAT HAS BEEN WELDED TO THE EXISTING STRUCTURE SHALL REMAIN IN PLACE.

TYPE II BRIDGE JACKING SHALL BE DONE WITH A HYDRUALIC JACKING SYSTEM THAT LIFTS EACH BEAM ALONG ENTIRE SPAN END WITH EQUAL FORCE AND AT AN EQUAL RATE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED TO THE EXISTING STRUCTURE BY BRIDGE JACKING OPERATIONS AT NO ADDITIONAL COST TO THE DEPARTMENT.

PROJECT NO. U-6018
GUILFORD COUNTY
BRIDGE NO. 400524

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

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B79DADB65D584EF...
03/27/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

# BRIDGE JACKING DETAILS

DRAWN BY : N.S. HART DATE : 12/2022
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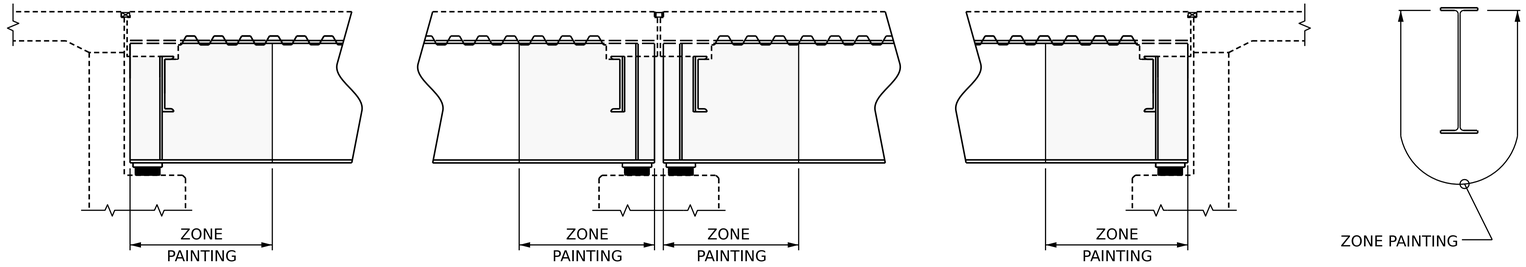



## LIMITS OF ZONE PAINTING

## NOTES

ZONE PAINTING WILL BE COMPLETED AT ALL END BENTS AND BENTS WITH THE LIMITS FOUND IN THE ZONE PAINTING SPECIAL PROVISIONS.

ADDITIONAL ZONE PAINTING WILL BE COMPLETED IN THE LOCATIONS AND DISTANCE AS SHOWN IN THE "ADDITIONAL ZONE PAINTING" TABLES.

ADDITIONAL ZONE PAINTING LENGTH IS IN ADDITION TO THE STANDARD ZONE PAINTING LENGTH.

**ADDITIONAL ZONE PAINTING**
**SPAN A - BENT 1 SIDE**

| GIRDER # | LOCATION | LENGTH (FT.) |
|---|---|---|
| 1 | BOT. FLANGE | 26' |
| 2 | BOT. FLANGE | 2' |
| 3 | BOT. FLANGE | 2' |
| 4 | BOT. FLANGE | 4' |
| 8 | BOT. FLANGE | 2' |

**ADDITIONAL ZONE PAINTING**
**SPAN B - BENT 1 SIDE**

| GIRDER # | LOCATION | LENGTH (FT.) |
|---|---|---|
| 1 | BOT. FLANGE | 135' |
| 2 | BOT. FLANGE | 5' |
| 3 | BOT. FLANGE | 3' |
| 4 | BOT. FLANGE | 20' |
| 5 | BOT. FLANGE | 5' |
| 8 | BOT. FLANGE | 15' |
| 9 | BOT. FLANGE | 15' |
| 10 | BOT. FLANGE | 20' |
| 11 | BOT. FLANGE | 135' |

**ADDITIONAL ZONE PAINTING**
**SPAN B - BENT 2 SIDE**

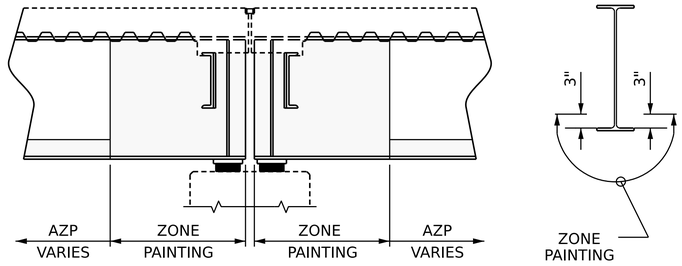
| GIRDER # | LOCATION | LENGTH (FT.) |
|---|---|---|
| 2 | BOT. FLANGE | 31' |
| 3 | BOT. FLANGE | 31' |
| 4 | BOT. FLANGE | 10' |
| 5 | BOT. FLANGE | 10' |

**ADDITIONAL ZONE PAINTING**
**SPAN C - BENT 2 SIDE**

| GIRDER # | LOCATION | LENGTH (FT.) |
|---|---|---|
| 3 | BOT. FLANGE | 3' |
| 4 | BOT. FLANGE | 5' |
| 5 | BOT. FLANGE | 20' |
| 8 | BOT. FLANGE | 10' |
| 9 | BOT. FLANGE | 25' |

**ADDITIONAL ZONE PAINTING**
**SPAN C - BENT 3 SIDE**

| GIRDER # | LOCATION | LENGTH (FT.) |
|---|---|---|
| 1 | BOT. FLANGE | 135' |
| 2 | BOT. FLANGE | 135' |
| 3 | BOT. FLANGE | 31' |
| 4 | BOT. FLANGE | 20' |
| 5 | BOT. FLANGE | 20' |
| 6 | BOT. FLANGE | 20' |
| 7 | BOT. FLANGE | 20' |
| 8 | BOT. FLANGE | 20' |
| 9 | BOT. FLANGE | 10' |
| 10 | BOT. FLANGE | 135' |
| 11 | BOT. FLANGE | 135' |




## LIMITS OF ADDITIONAL ZONE PAINTING

PROJECT NO. U-6018
GUILFORD COUNTY
BRIDGE NO. 400524

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by:
Francesca Lea
B79DADB65D584EF...
03/27/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

# ZONE PAINTING AND ADDITIONAL ZONE PAINTING

DRAWN BY : N.S. HART DATE : 12/2022
CHECKED BY : S.A. HERNANDEZ DATE : 01/2025

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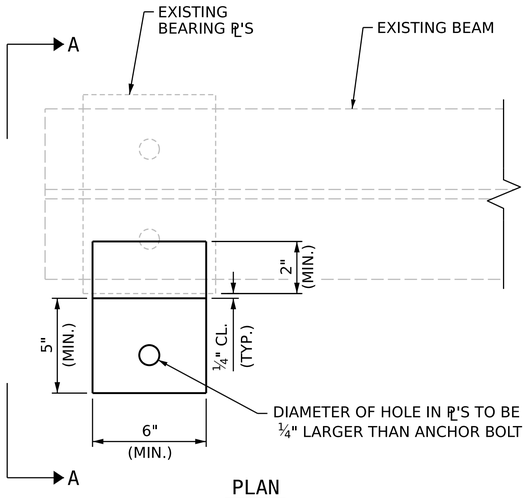


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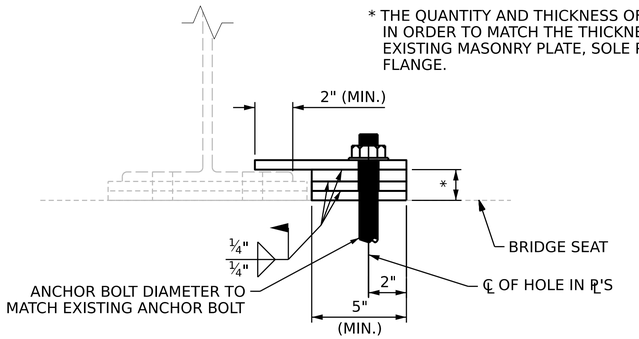



SECTION A-A

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

## NOTES

STRUCTURAL STEEL SHALL BE AASHTO GRADE 36 OR GREATER.

ASSEMBLIES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

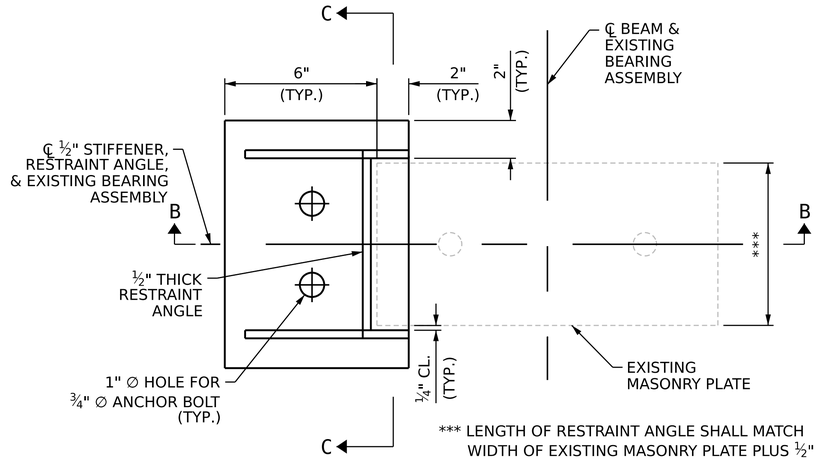
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL BE ASTM A563-15 GRADE A OR ASTM A194, AND WASHERS SHALL BE ASTM F436 TYPE 1 CIRCULAR. SHOP DRAWINGS ARE REQUIRED FOR HARDWARE AND BEARING KEEPER. SHOP INSPECTION IS REQUIRED.

ANCHOR ROD LENGTH AND EMBEDDMENT LENGTH SHALL CONFORM TO ADHESIVE ANCHOR MANUFACTURER'S RECOMMENDED LENGTH WITH SUFFICIENT PROJECTION TO PROVIDE FULL NUT ENGAGEMENT ABOVE KEEPER ASSEMBLY. SEE STANDARD SPECIFICATIONS FOR ADHESIVE ANCHOR REQUIREMENTS. NO FIELD TESTING REQUIRED.

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

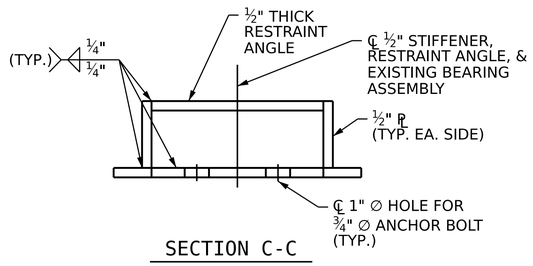
THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS SHOWING LOCATIONS OF ANCHOR BOLTS AND EXISTING CAP REINFORCEMENT TO THE ENGINEER FOR APPROVAL PRIOR TO FABRICATION OF ASSEMBLIES.

## PLATE CLIP KEEPER OPTION



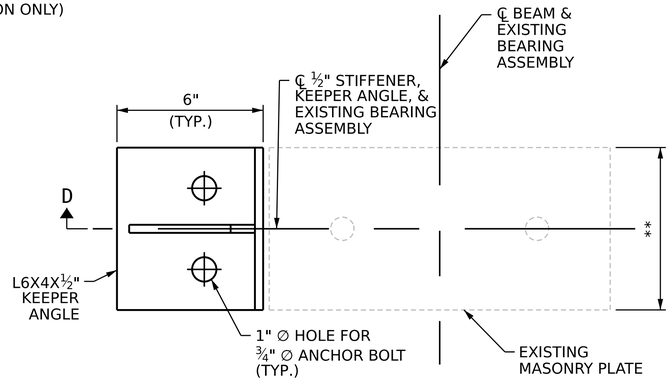

*** LENGTH OF RESTRAINT ANGLE SHALL MATCH WIDTH OF EXISTING MASONRY PLATE PLUS ½"

PLAN



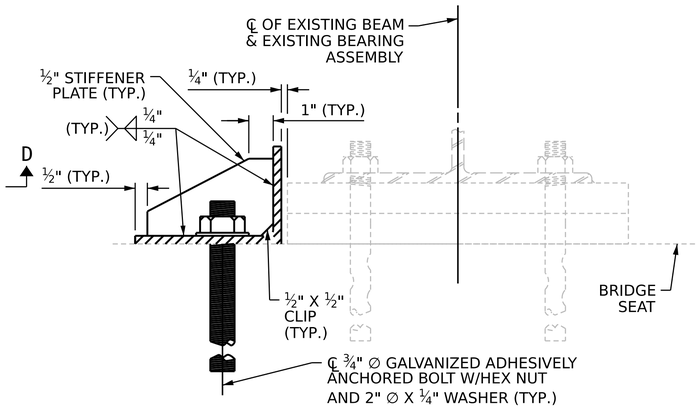

SECTION C-C

## STEEL RESTRAINT ANGLE OPTION




** LENGTH OF ANGLE SHALL MATCH WIDTH OF EXISTING MASONRY PLATE

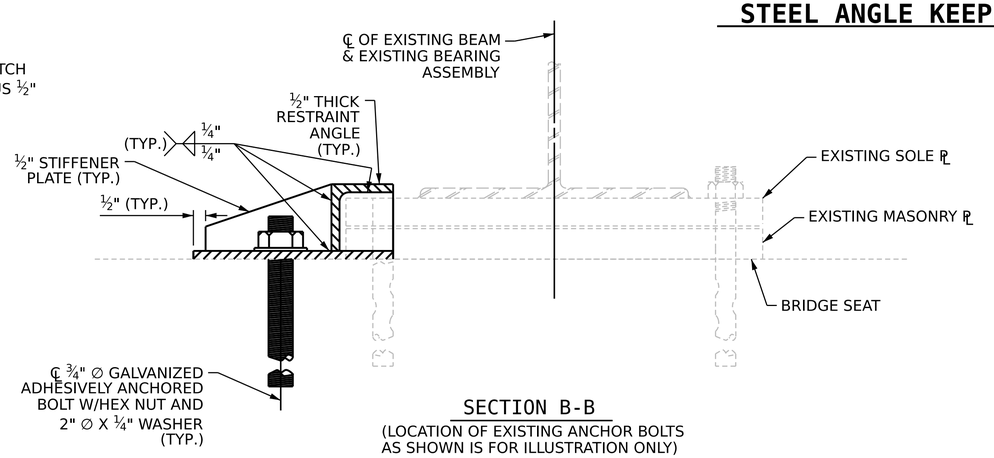
PLAN




SECTION D-D

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

## STEEL ANGLE KEEPER OPTION




SECTION B-B

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

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

# BEARING KEEPER DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B790ADB65D584EF...
03/27/2025

DRAWN BY : N.S. HART DATE : 04/2023
CHECKED BY : S.A. HERNANDEZ DATE : 01/2025

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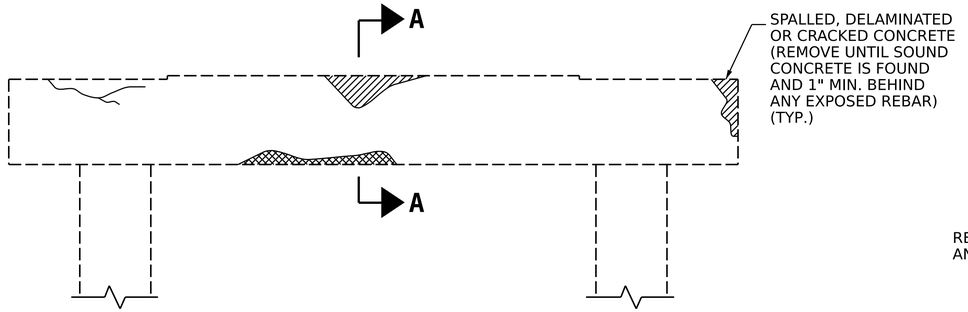
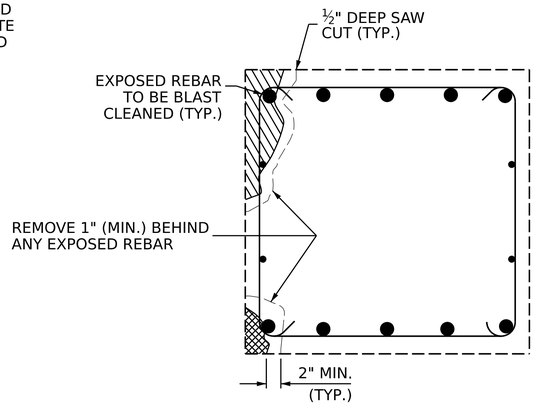
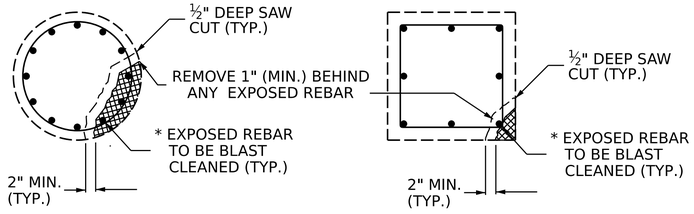



BENT CAP REPAIRS




SECTION A-A




PLAN OF COLUMN

## REPAIR KEY

CONCRETE REPAIR AREA (FORM AND POUR)

SHOTCRETE REPAIR AREA

EPOXY RESIN INJECTION (ERI)

## CAP REPAIR

## NOTES

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 1½" BEHIND THE MAIN REINFORCING BARS, NOTIFY THE ENGINEER PRIOR TO PROCEEDING.

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.

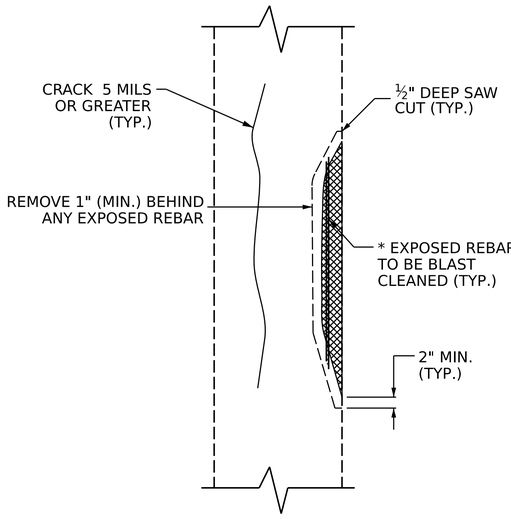
FOR SHOTCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.

FOR EPOXY PROTECTIVE COATING, SEE SPECIAL PROVISIONS.

FOR EPOXY RESIN INJECTION (ERI), SEE SPECIAL PROVISIONS.

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.

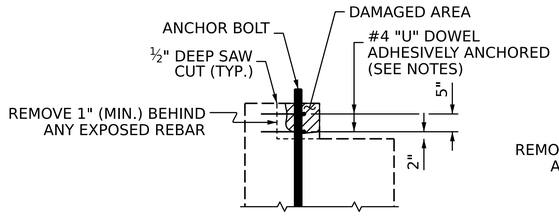



* REPAIR LENGTH SHALL NOT EXCEED 10 FEET.

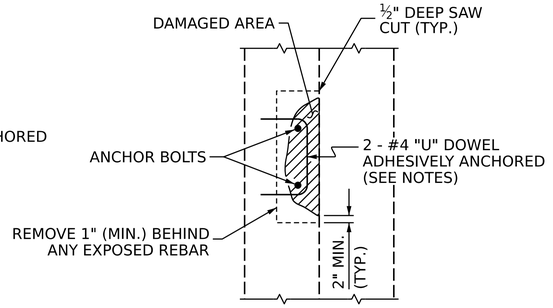
ELEVATION OF COLUMN

## COLUMN REPAIR

| 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" |




ELEVATION




PLAN

## PEDASTAL WALL REPAIR

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

# TYPICAL CAP AND COLUMN REPAIR DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D584EF...

03/27/2025

DRAWN BY : N.S. HART DATE : 12/2022

CHECKED BY : S.A. HERNANDEZ DATE : 01/2025

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## VOID FILLING QUANTITY TABLE

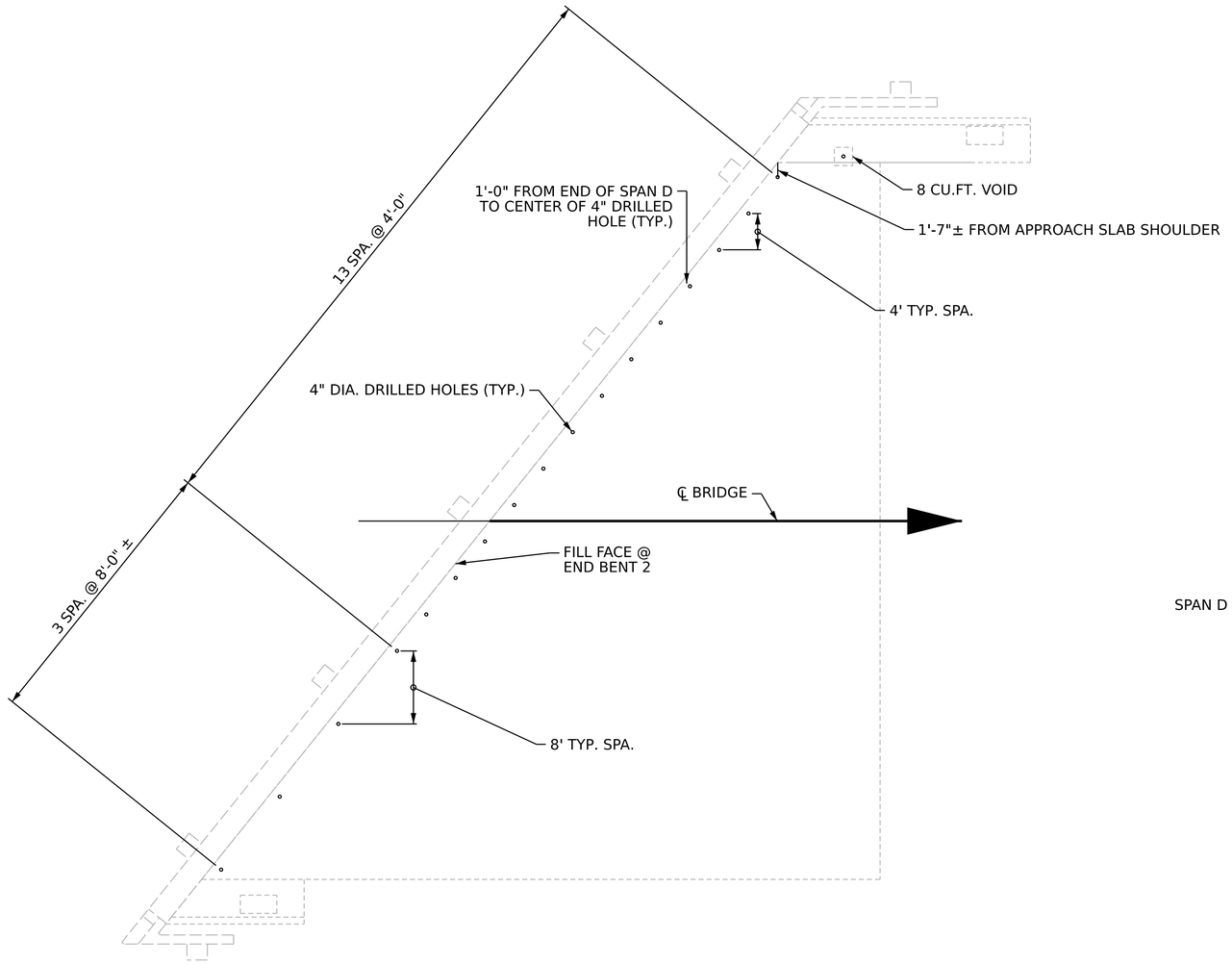
| VOIDS - APPROACH SLAB 2 | QUANTITIES | | | |
|---|---|---|---|---|
| | ESTIMATE | | ACTUAL | |
| APPROACH SLAB VOID FILLING | 456.0 | LBS. | | |
| 4" ∅ DRILLED HOLES | 17.0 | No. | | |

### NOTES

DRILL 4" DIA. HOLES 1' FROM END BENT 2 BACKWALL ALONG END BENT 2 SKEW.

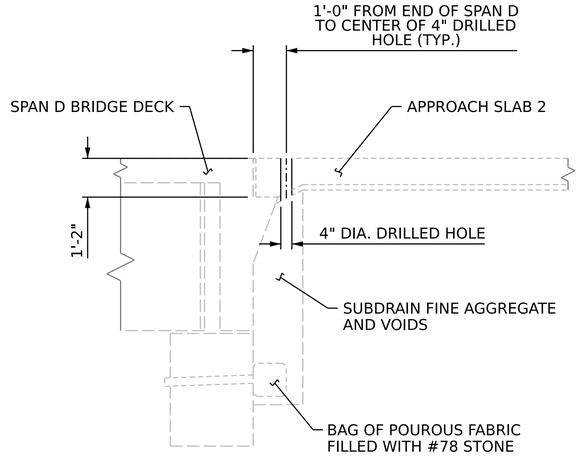
4" DIA. HOLES SHALL BE 4' APART UP TO 68' ALONG THE END BENT 2 JOINT. OR AS DIRECTED BY THE ENGINEER. IF NEEDED, THE REMAINING LENGTH SHALL HAVE 4" DIA. HOLES AT 8' APART.

FOR APPROACH SLAB VOID FILLING, SEE SPECIAL PROVISIONS.




## PLAN

( @ END BENT 2 / APPROACH SLAB 2 )




## SECTION ALONG APPROACH SLAB 2

PROJECT NO. U-6018

GUILFORD COUNTY

BRIDGE NO. 400524

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

# FOAM VOID FILLING FOR PRESERVATION DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 36871 ENGINEER FRANCESCA LEA

DocuSigned by: Francesca Lea B79DADB65D584EF...
03/27/2025

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3/5/2025
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# STANDARD NOTES

DESIGN DATA:

| | |
|---|---|
| SPECIFICATIONS | AASHTO (CURRENT) |
| LIVE LOAD | SEE PLANS |
| IMPACT ALLOWANCE | SEE AASHTO |
| 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 AASHTO |
| 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 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

## CONCRETE:

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

## CONCRETE CHAMFERS:

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

## DOWELS:

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

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

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

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

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

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

## REINFORCING STEEL:

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

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

## STRUCTURAL STEEL:

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

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

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

## HANDRAILS AND POSTS:

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

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

## SPECIAL NOTES:

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