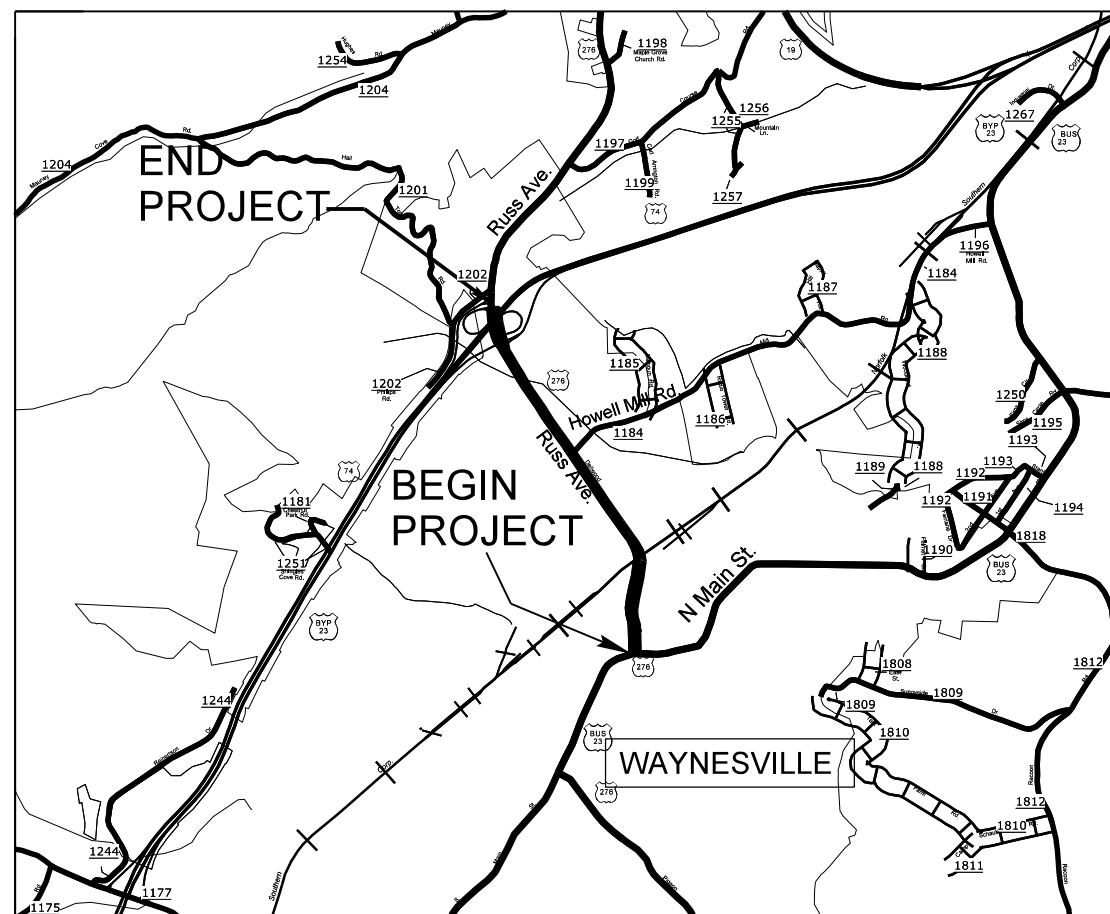


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**TIP PROJECT: U-5839**

See Sheet 1A For Index of Sheets



**VICINITY MAP**

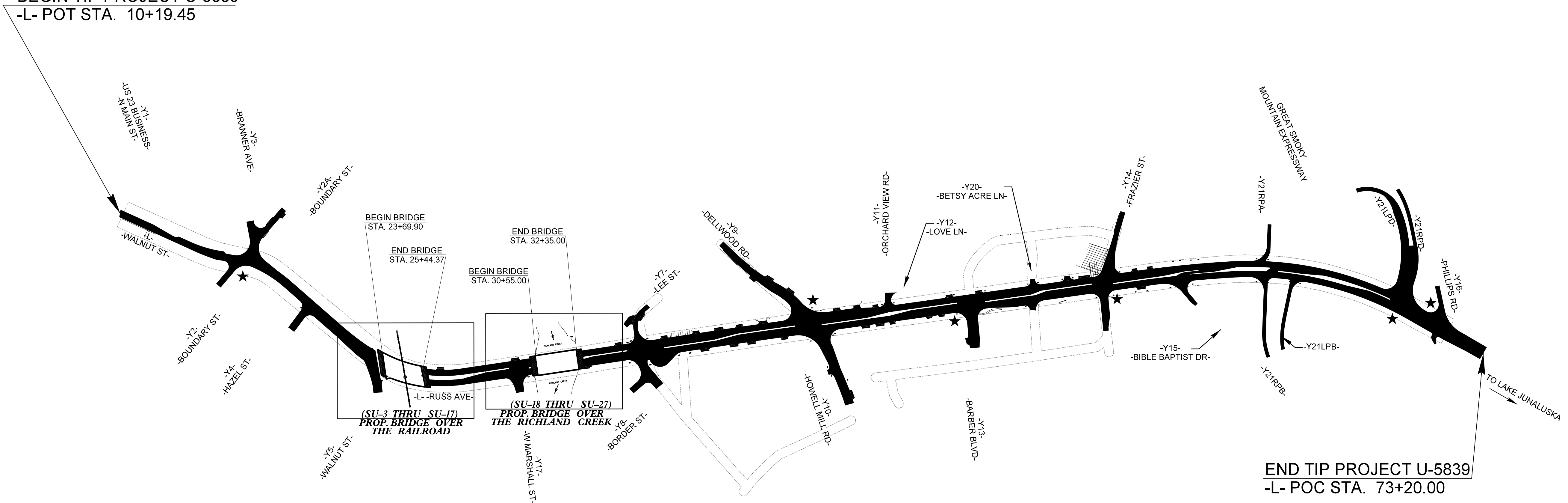
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**STRUCTURE UTILITIES PLANS  
HAYWOOD COUNTY**

**LOCATION: RUSS AVE-US 276 FROM US 23 73 (GREAT SMOKY MOUNTAINS EXPWY) RO US 23 BUS (N MAIN ST)**

**TYPE OF WORK: AT&T CONDUIT ATTACHMENTS TO THE BRIDGES OVER THE RAILROAD AND RICHLAND CREEK**

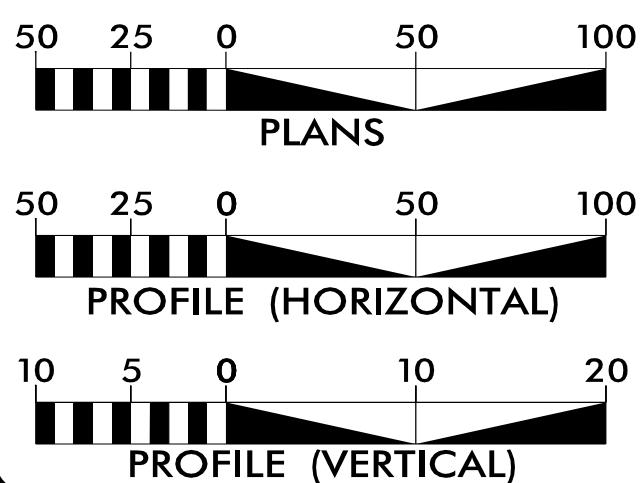
BEGIN TIP PROJECT U-5839  
-L- POT STA. 10+19.45



END TIP PROJECT U-5839  
-L- POC STA. 73+20.00

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.  
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF GREENVILLE.

**GRAPHIC SCALES**



**INDEX OF SHEETS**

SHEET NO.	DESCRIPTION
SU-1	TITLE SHEET
SU-2	UTILITY SYMBOLOGY
SU-3 THRU SU-16	9-4" PVC CONDUITS ATTACHED TO RAILROAD BRIDGE PLAN SHEETS
SU-17 THRU SU-26	9-4" PVC CONDUITS ATTACHED TO RICHLAND CREEK BRIDGE PLAN SHEETS

**CONDUITS OWNERS ON PROJECT**

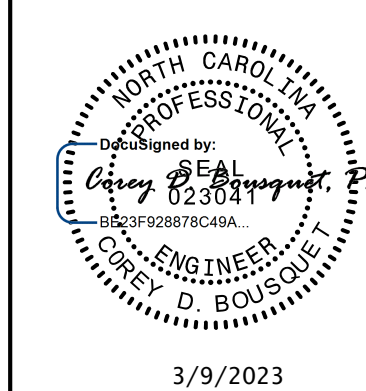
(A) AT&T COMMUNICATIONS

PREPARED IN THE OFFICE OF:

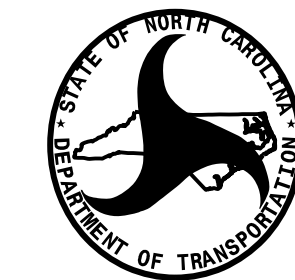


Clint L. Stevens, P.E. UTILITIES PROJECT MANAGER  
Corey D. Bousquet, P.E. UTILITIES PROJECT ENGINEER  
Jordan K. Chapman UTILITIES PROJECT DESIGNER

SEAL



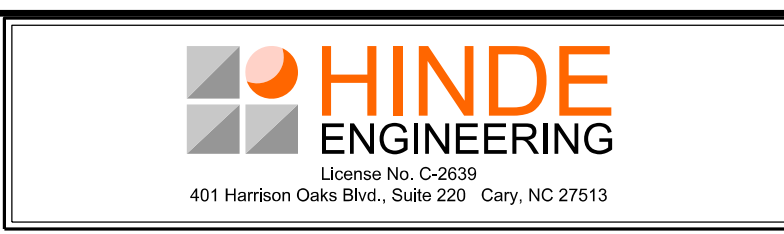
3/9/2023



**DIVISION OF HIGHWAYS UTILITIES UNIT**  
1555 MAIL SERVICES CENTER  
RALEIGH NC 27699-1555  
PHONE (919) 707-6690  
FAX (919) 250-4151

Wanda Austin, P.E. UTILITIES REGIONAL ENGINEER  
Mitchell Bishop, P.E. UTILITIES ENGINEER  
Nathan Tanner, PE UTILITIES AREA COORDINATOR  
Bob Golding UTILITIES COORDINATOR

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS



PROJECT REFERENCE NO. U-5839	SHEET NO. SU-2
---------------------------------	-------------------

## UTILITIES PLAN SHEET SYMBOLS

### PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11 1/4 Degree Bend	
22 1/2 Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	REM FH
Water Meter	
Relocate Water Meter	
Remove Water Meter	REM WM
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

### PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	
Force Main Sewer Line (Sized as Shown)	
Manhole (Sized per Note)	
Sewer Pump Station	

### PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	
Trenchless Installation	
Encasement by Open Cut	
Encasement	

Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

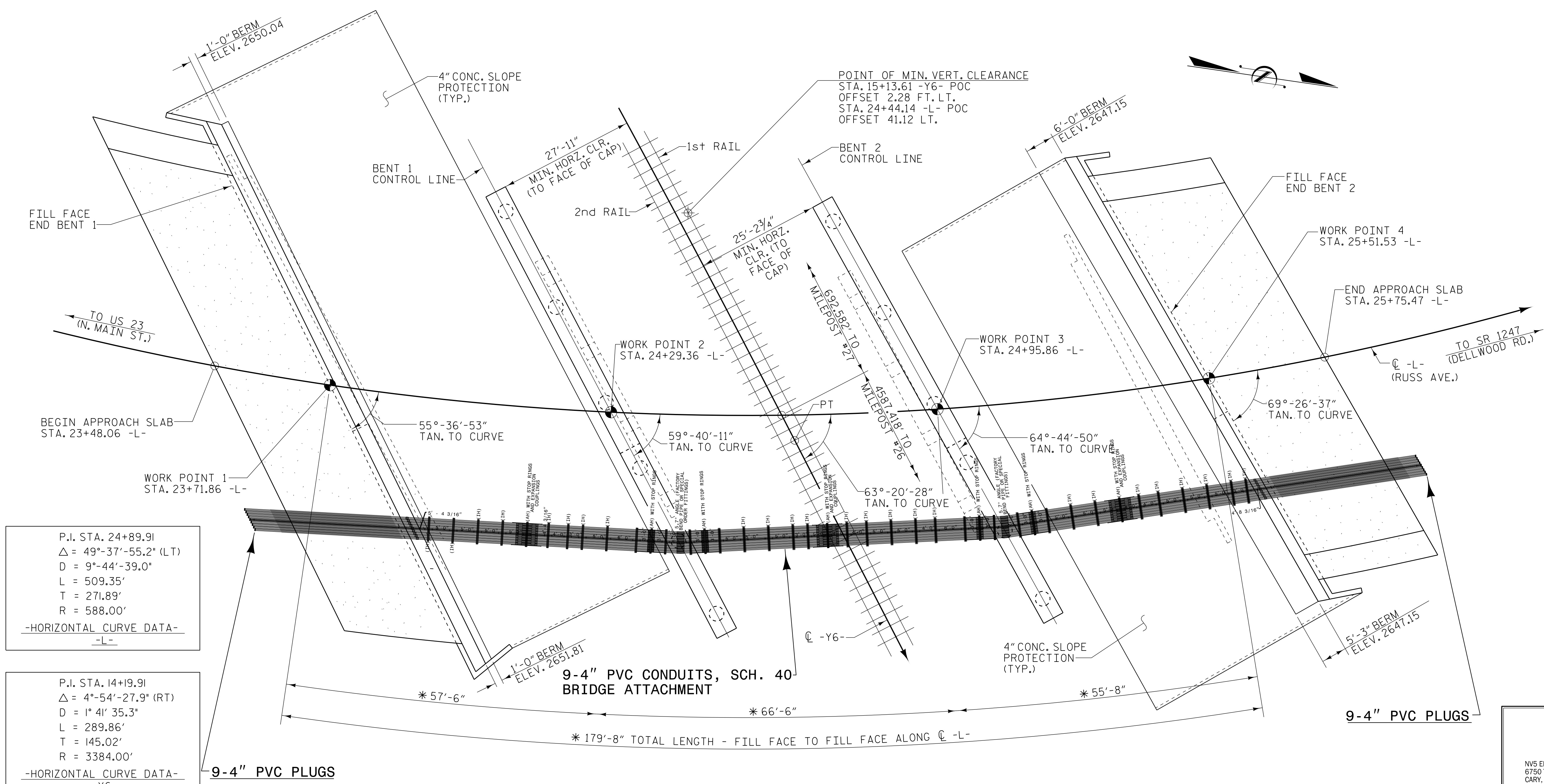
NOTE  
PAY ITEM

### EXISTING UTILITIES SYMBOLS

Power Pole		*Underground Power Line	
Telephone Pole		*Underground Telephone Cable	
Joint Use Pole		*Underground Telephone Conduit	
Utility Pole		*Underground Fiber Optics Telephone Cable	
Utility Pole with Base		*Underground TV Cable	
H-Frame Pole		*Underground Fiber Optics TV Cable	
Power Transmission Line Tower		*Underground Gas Pipeline	
Water Manhole		Aboveground Gas Pipeline	
Power Manhole		*Underground Water Line	
Telephone Manhole		Aboveground Water Line	
Sanitary Sewer Manhole		*Underground Gravity Sanitary Sewer Line	
Hand Hole for Cable		Aboveground Gravity Sanitary Sewer Line	
Power Transformer		*Underground SS Forced Main Line	
Telephone Pedestal		Underground Unknown Utility Line	
CATV Pedestal		SUE Test Hole	
Gas Valve		Water Meter	
Gas Meter		Water Valve	
Located Miscellaneous Utility Object		Fire Hydrant	
Abandoned According to Utility Records	AATUR	Sanitary Sewer Cleanout	
End of Information	E.O.I.		

\*For Existing Utilities  
Utility Line Drawn from Record (Type as Shown)  
Designated Utility Line (Type as Shown)

07-FEB-2023 13:20 C:\Users\j... \Projects\Bridges Rail-road Att Conduit Attachment\U5839\_Ut\_sgm\_RB\_ATT\_Conduit\_Attach\_SU2\_psh.dgn  
REV: 2/1/2012



P.I. STA. 24+89.91  
 $\Delta = 49^\circ-37'-55.2"$  (LT)  
 $D = 9^\circ-44'-39.0"$   
 $L = 509.35'$   
 $T = 271.89'$   
 $R = 588.00'$   
 -HORIZONTAL CURVE DATA-  
 -L-

P.I. STA. 14+19.91  
 $\Delta = 4^\circ-54'-27.9"$  (RT)  
 $D = 1^\circ-41'-35.3"$   
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 $T = 145.02'$   
 $R = 3384.00'$   
 -HORIZONTAL CURVE DATA-  
 -Y6-

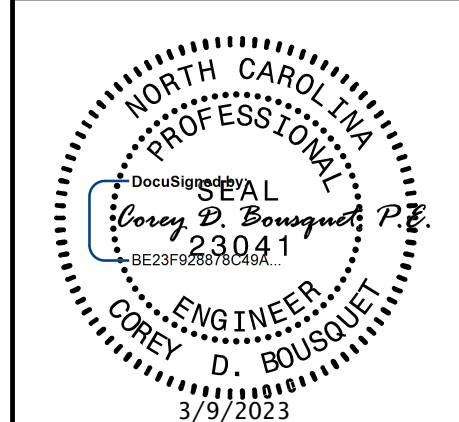
\* DIMENSIONS MEASURED  
 ALONG ARC

**PLAN**  
 (NOTE: PILES NOT SHOWN FOR CLARITY)

**NOTES**

1. CONDUITS TO BE PLACED BENEATH APPROACH SLABS PRIOR TO POURING OF APPROACH SLABS.
2. 4" I.D. RIGID PVC CONDUIT, SCH. 40 HEAVY WALL PIPE (COLOR-WHITE) MIN. 0.237" WALL THICKNESS DEFLECTION LESS THAN 5"/20' WITH 8 LB CABLE LOAD U.L. RATED TREATED WITH TITANIUM DIOXIDE NON-FLAMABLE
3. HANGER SUPPORTS TO BE PLACED AT INTERVALS SHOWN ON THE PLANS NOT TO EXCEED 5 FEET, EXCEPT AT THE TRANVERSE JOINTS WHERE THE INTERVAL SHALL BE 6 FEET.
4. BACK TO BACK EXPANSION JOINTS TO BE PLACED AT LOCATIONS SHOWN ON THE PLANS.
5. ALL HARDWARE TO BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
6. ATTACHMENTS WILL NOT OBSTRUCT DRAIN PIPES.
7. NO PIPE JOINTS SHALL BE PLACED CLOSER THAN ONE FOOT TO THE HANGERS.
8. NO PORTION OF THE ATTACHMENT SHALL EXTEND BELOW THE GIRDERS.

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



PROJECT NO. U-5839  
HAYWOOD COUNTY  
 STATION: 24+64.13 -L- POC =  
15+58.95 -Y6- POC  
 SHEET 1 OF 5 REPLACES BRIDGE NO. 184  
 MILE POST NO. 27

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON -L- (RUSS AVE.)  
 OVER -Y6- (SOUTHERN RAILROAD)  
 BETWEEN US 23 (N. MAIN ST.)  
 AND SR 1247 (DELLWOOD RD.)

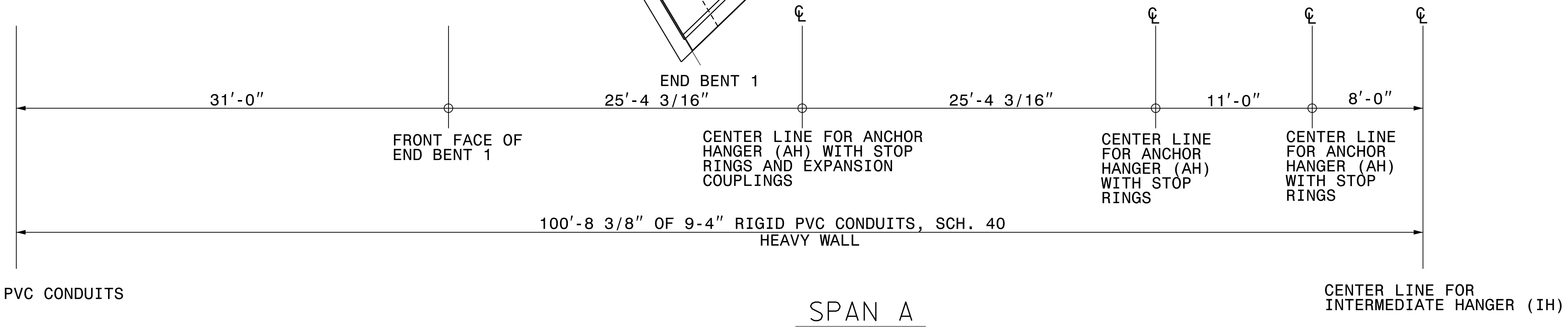
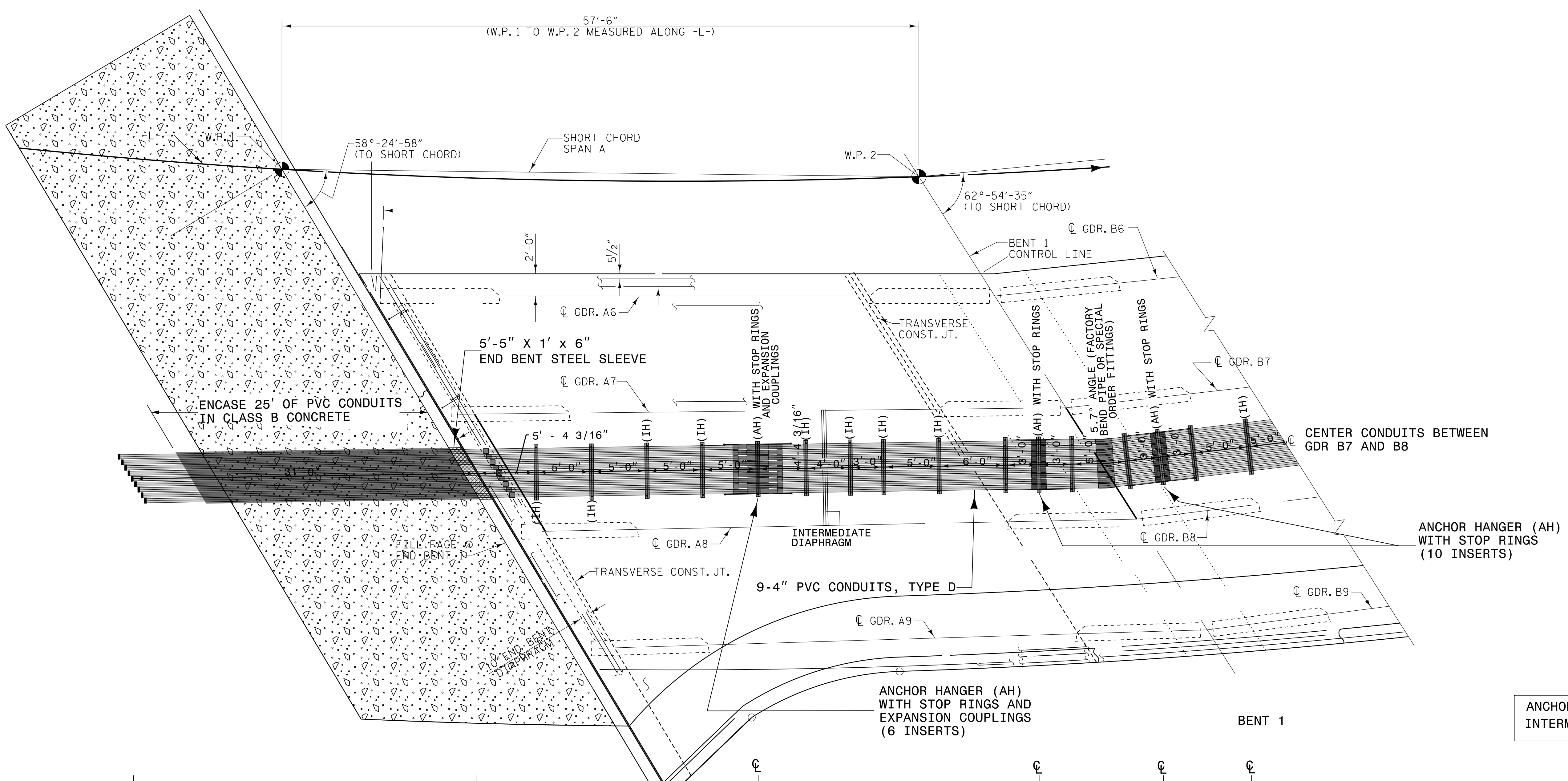
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 CHECKED BY : Z. H. BROWN DATE : 6/19  
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : X/20

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ANCHOR POINT HANGER (AH)  
INTERMEDIATE HANGERS (IH)

PROJECT NO. U-5839  
HAYWOOD COUNTY  
STATION: 24+64.13 -L- POC

SHEET 1 OF 7

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
PLAN OF SPANS  
STAGE I

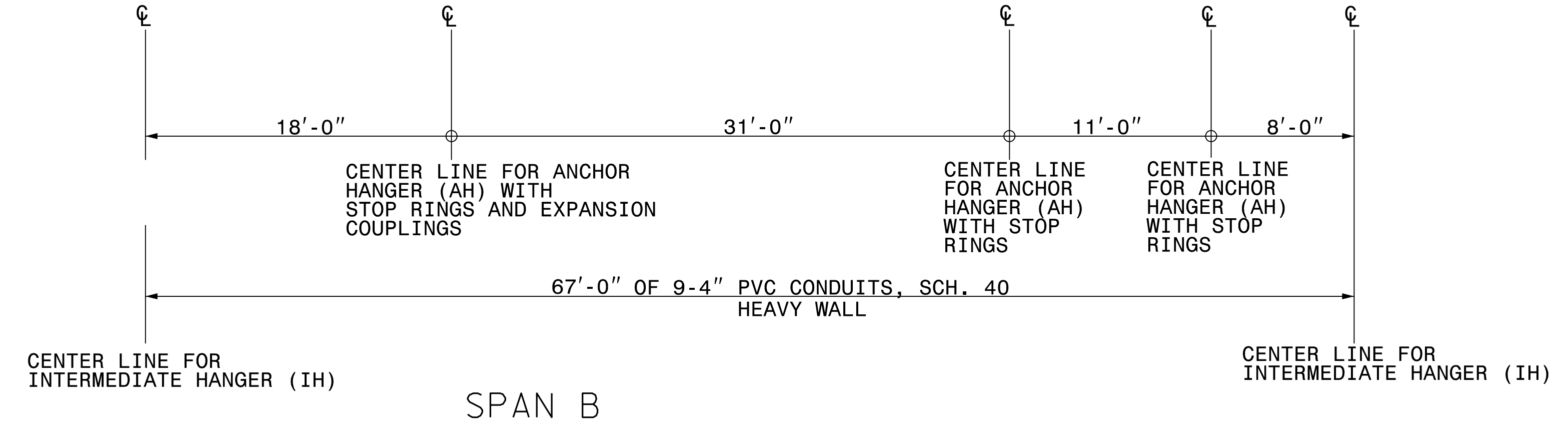
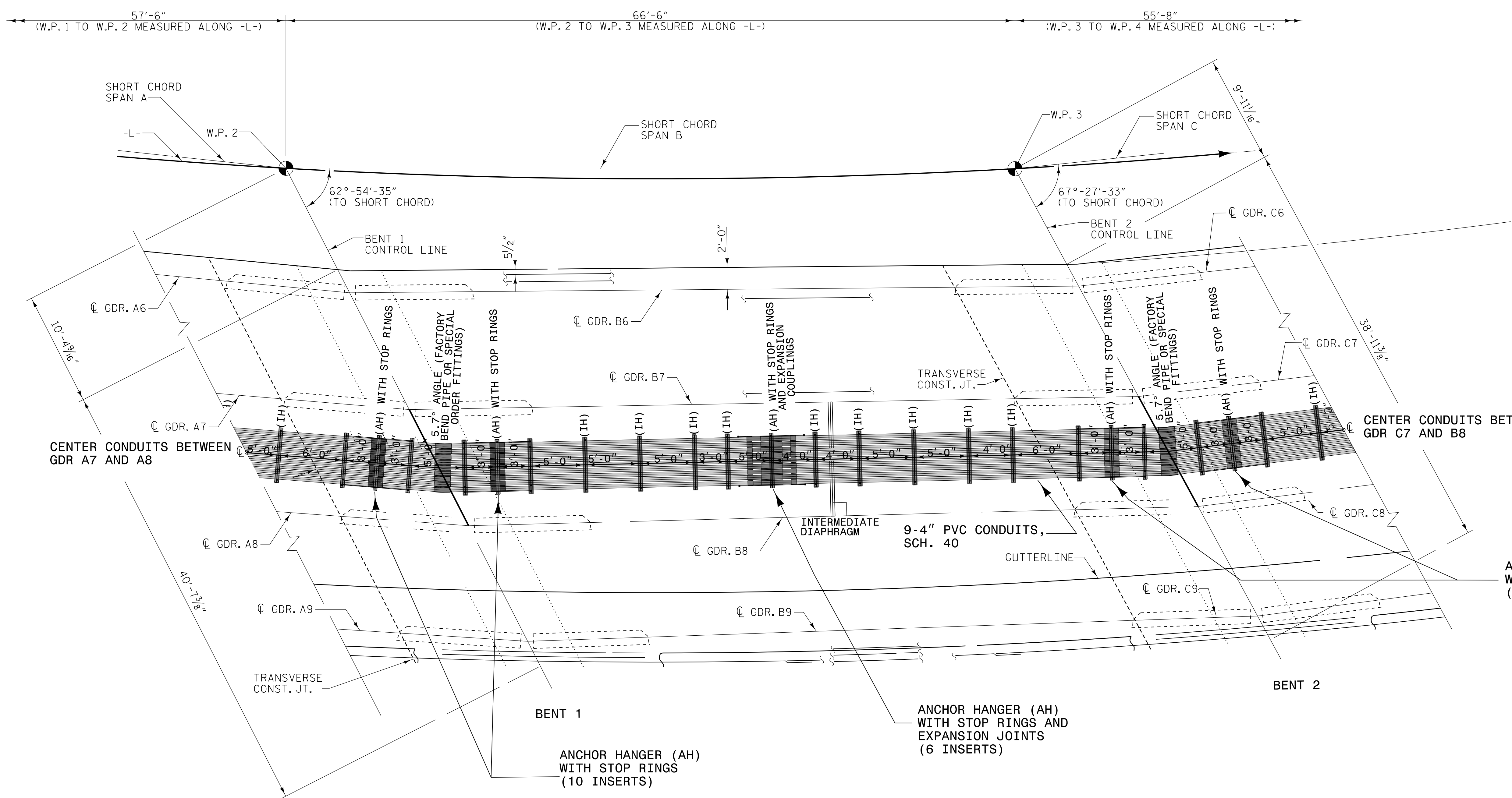
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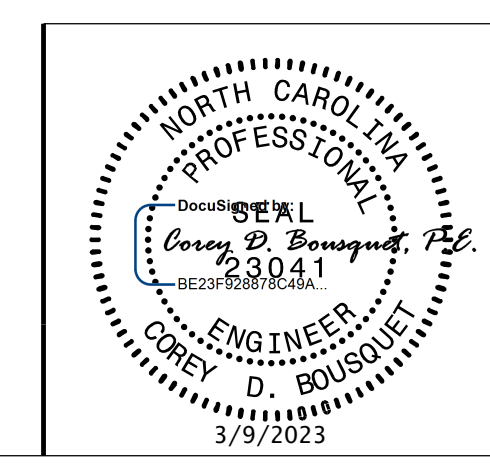
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 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE: X/20



PROJECT NO. U-5839  
HAYWOOD COUNTY  
STATION: 24+64.13 -L- POC

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
PLAN OF SPANS  
STAGE I

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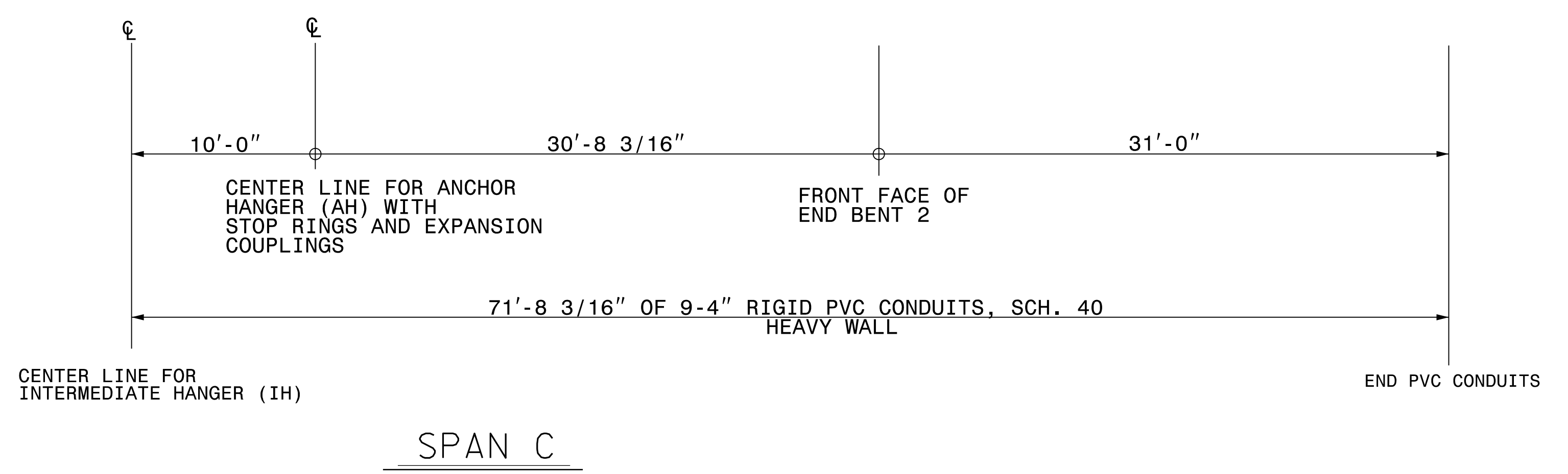
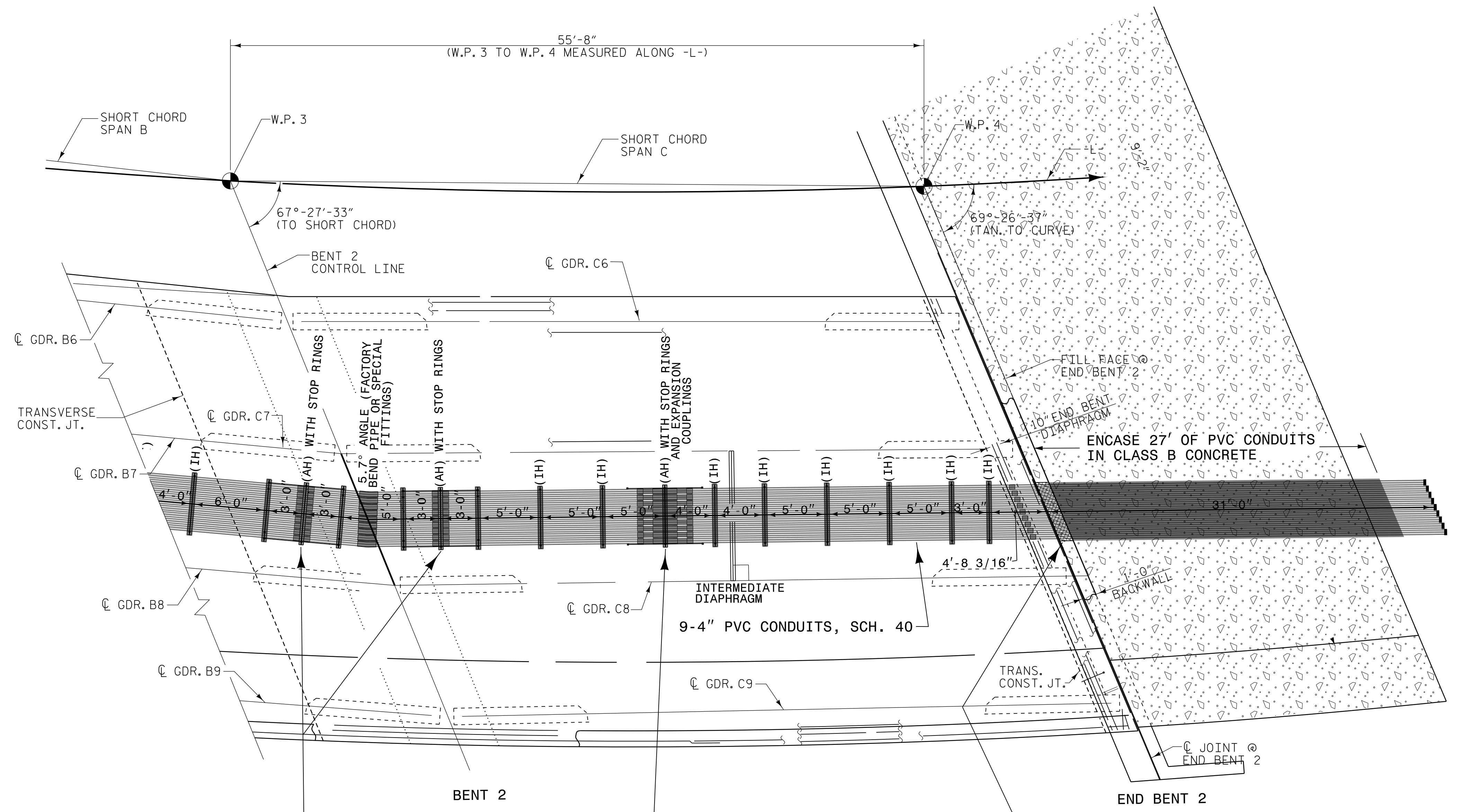
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DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : X/20

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DATE\$ TIME\$ FILE\$



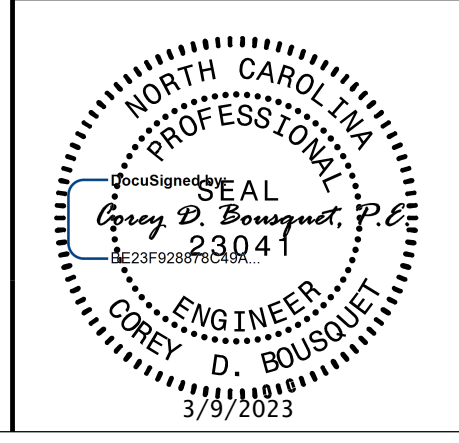
ANCHOR POINT HANGER (AH)  
 INTERMEDIATE HANGERS (IH)

**NV5**  
 NV5 ENGINEERS & CONSULTANTS, INC.  
 6750 TRYON ROAD  
 CARY, NC 27518  
 P: 919.851.1912 www.NV5.com  
 NC License # F-1333  
 formerly CALYX Engineers & Consultants

PROJECT NO. U-5839  
 HAYWOOD COUNTY  
 STATION: 24+64.13 -L- POC

SHEET 4 OF 7  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPANS  
 STAGE I

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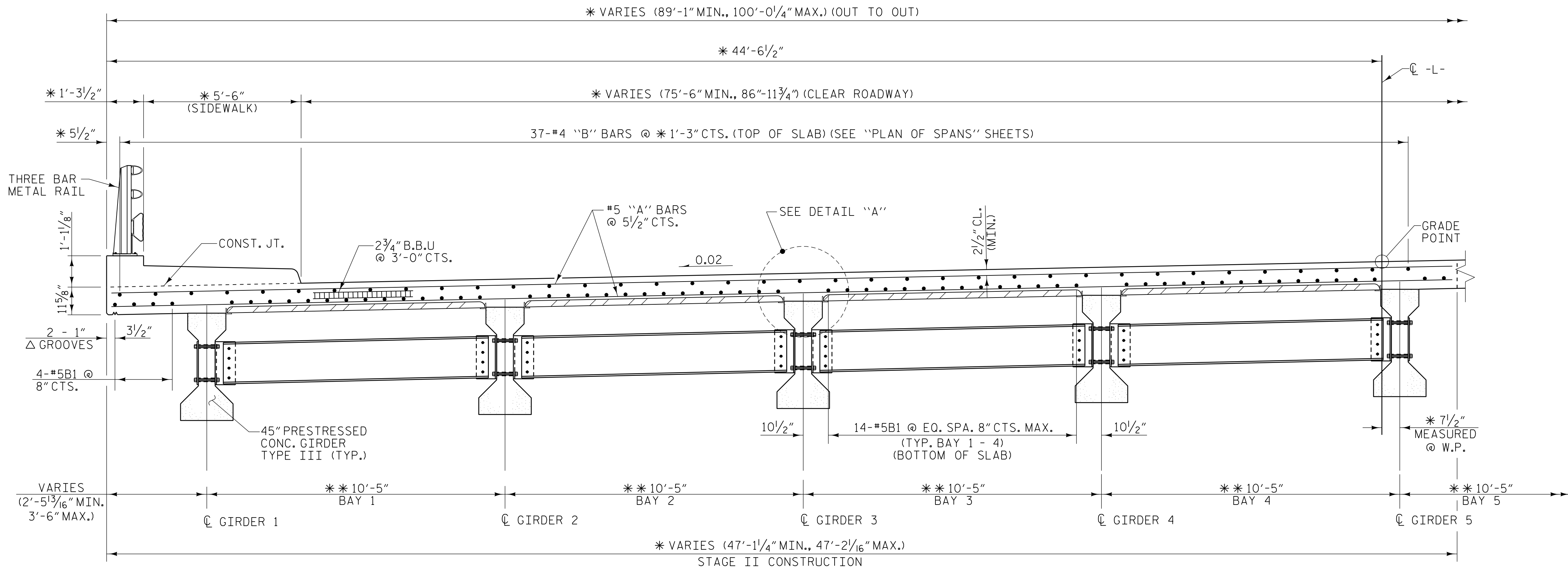
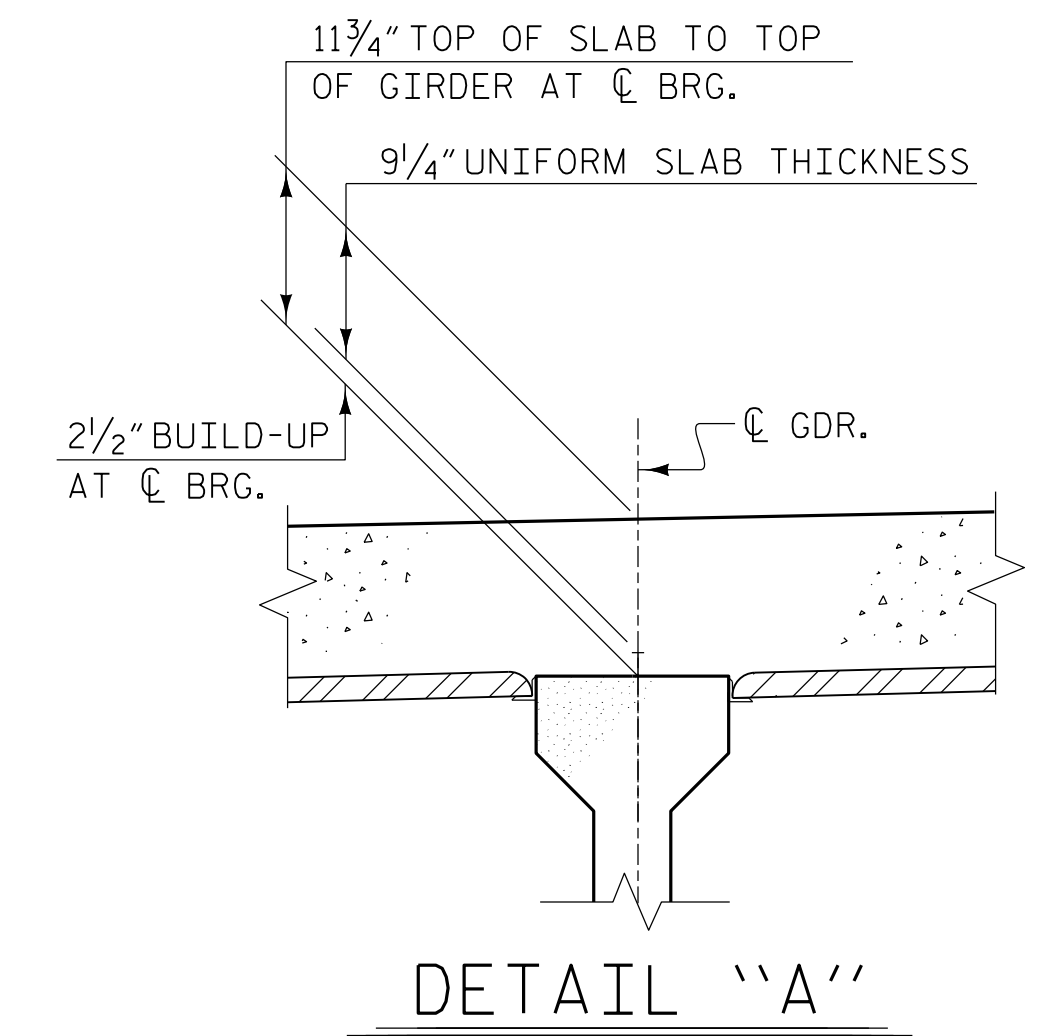
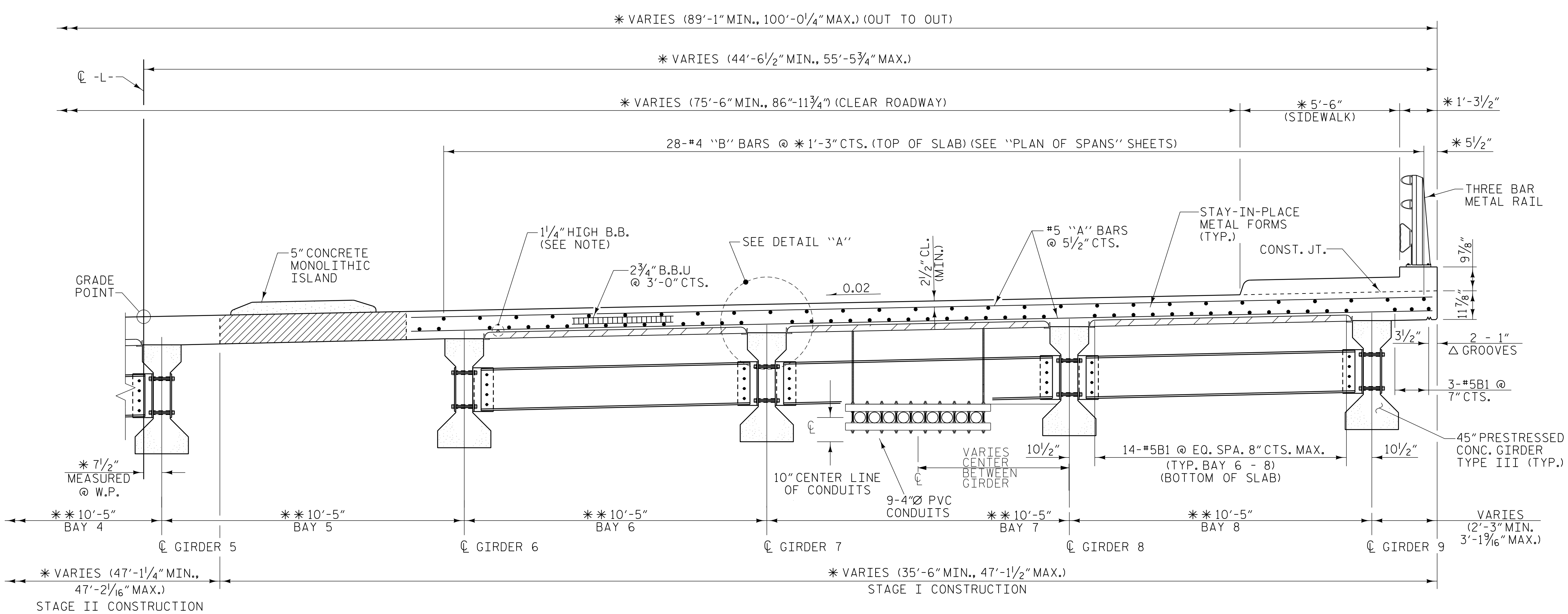
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 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : X/20

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DATE: 8/1/2023 8:15:00 AM



**NV5**

NV5 ENGINEERS & CONSULTANTS, INC.  
 6750 TRYON ROAD  
 CARY, NC 27518  
 P: 919.851.1912 www.NV5.com  
 NC License # F-1333  
 formerly CALTA Engineers & Consultants

PROJECT NO. U-5839  
 HAYWOOD COUNTY  
 STATION: 24+64.13 -L- POC

SHEET 3 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

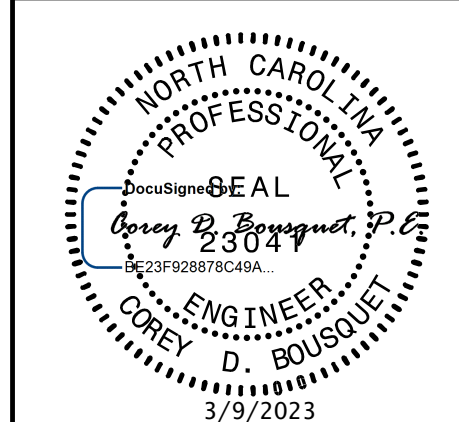
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 BENTS**

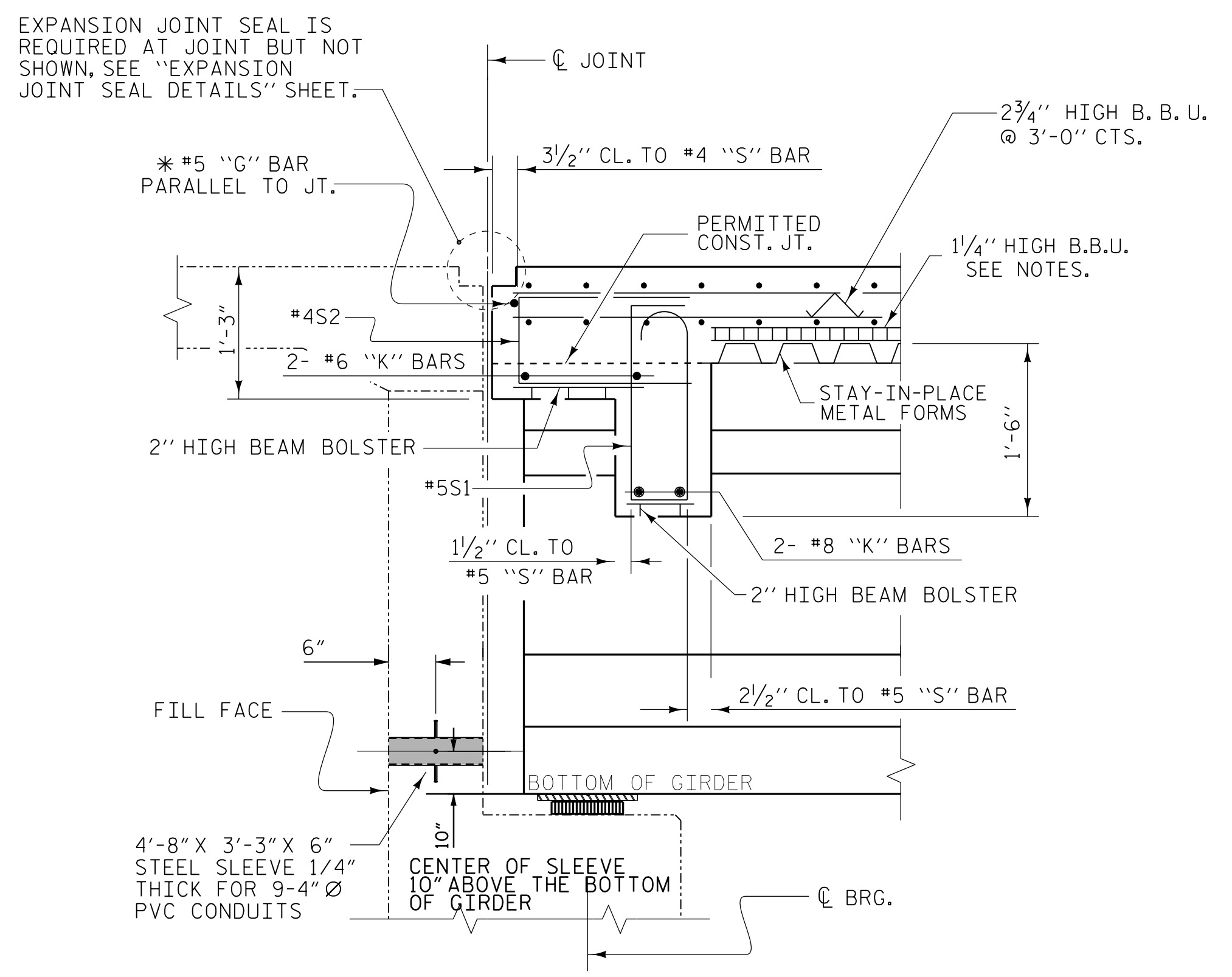
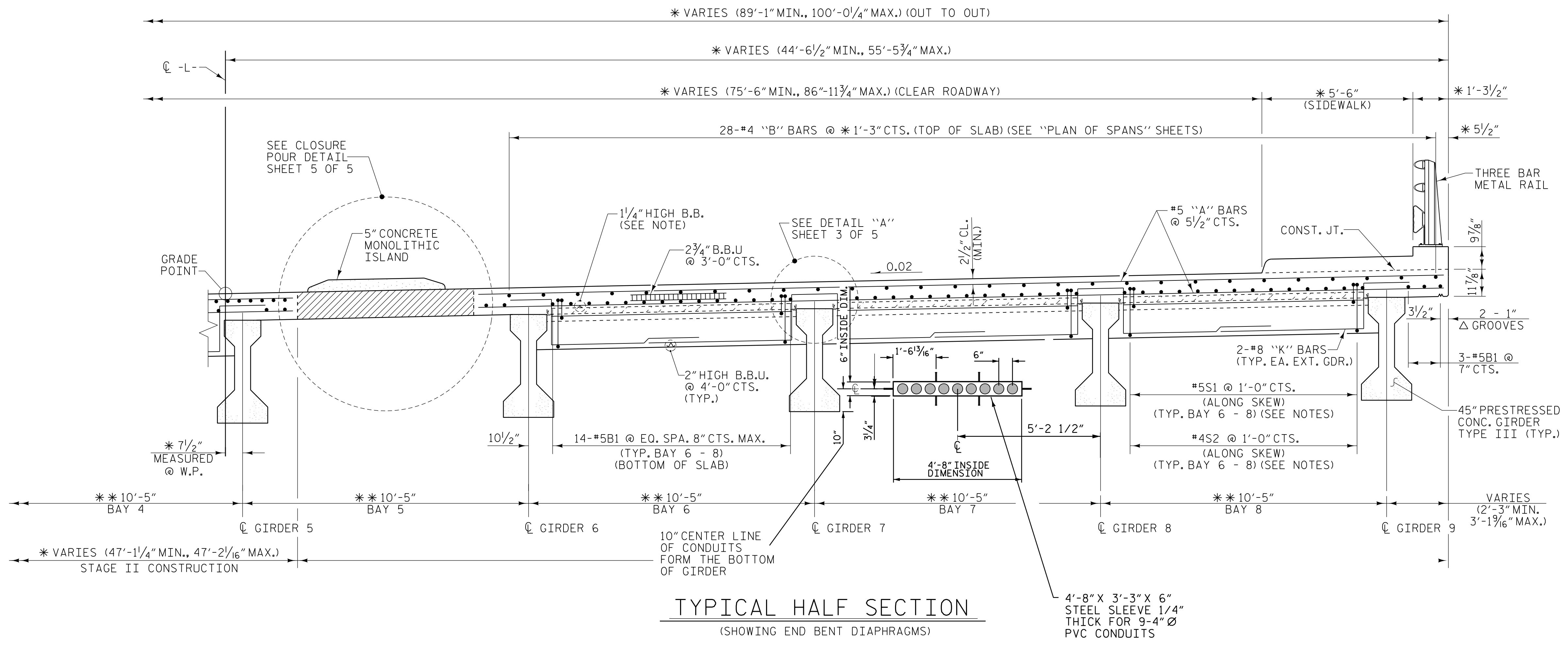
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

**TYPICAL HALF SECTIONS**  
 (SHOWING INTERMEDIATE STEEL DIAPHRAGMS)

DRAWN BY: W. B. ALLEN DATE: 9/19  
 CHECKED BY: Z. H. BROWN DATE: 1/20  
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE: X/20

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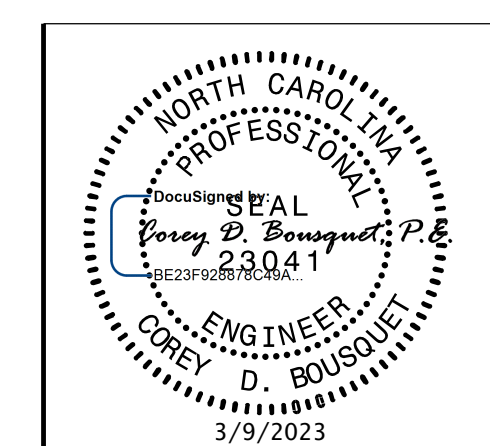


PROJECT NO. U-5839  
HAYWOOD COUNTY  
 STATION: 24+64.13 -L- POC

SHEET 1 OF 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUPERSTRUCTURE  
 TYPICAL SECTION  
 END BENTS**



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 CHECKED BY: Z. H. BROWN  
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN  
 DATE: 1/20  
 DATE: X/20



# ANCHOR HANGER WITH STOP RINGS DETAIL

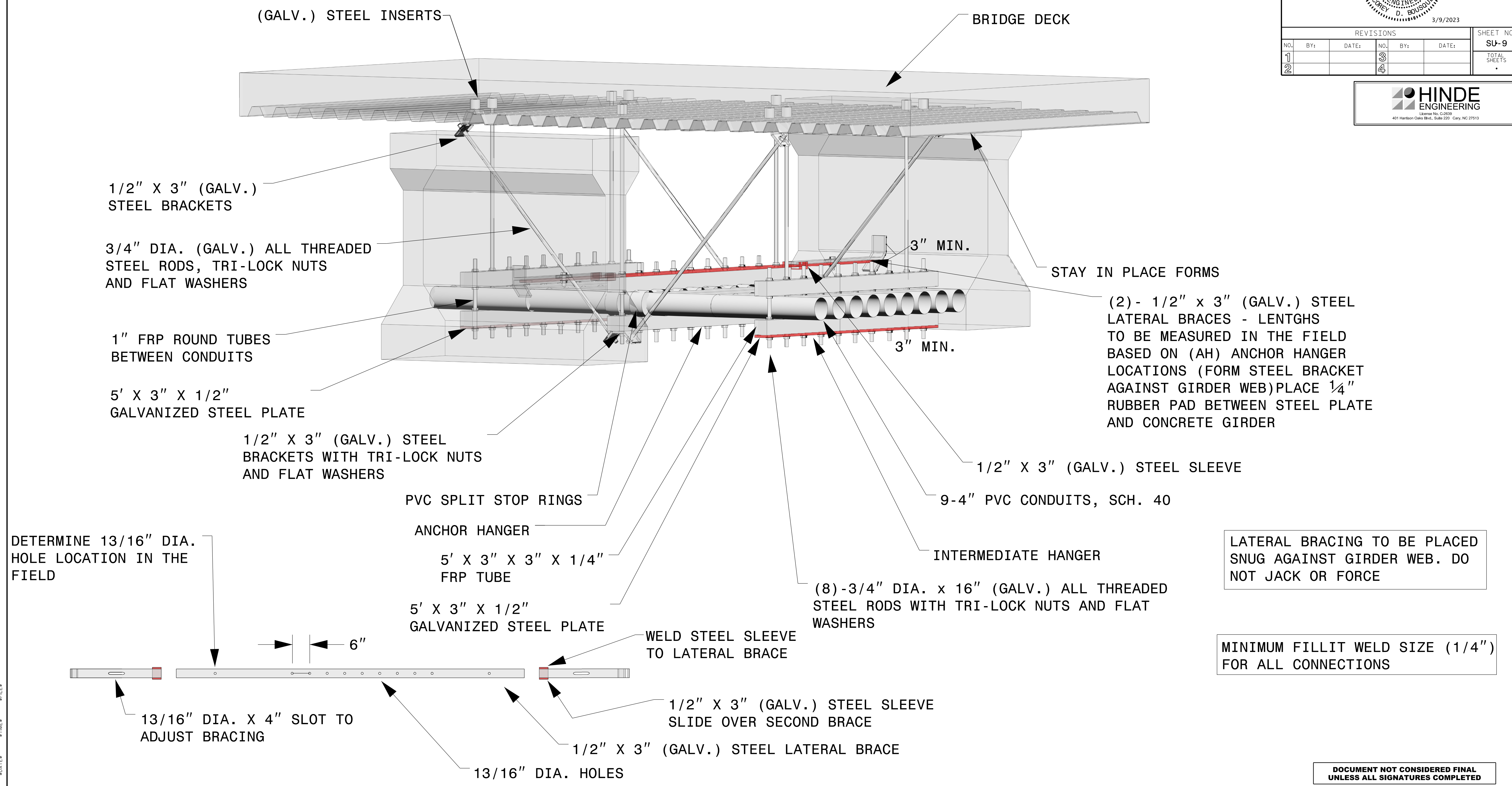
PROJECT NO. U-5839  
 HAYWOOD COUNTY  
 STATION: 24+64.13 -L- POT

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

3/9/2023

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SHEET NO. SU-9  
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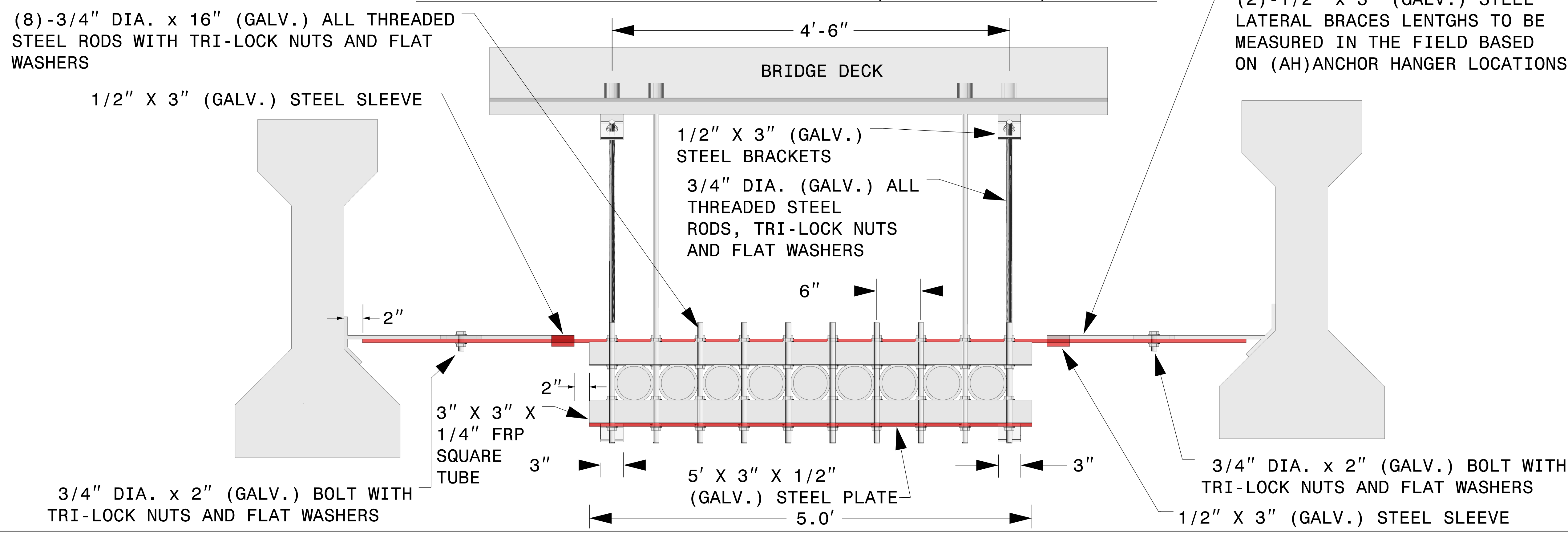
LATERAL BRACING TO BE PLACED SNUG AGAINST GIRDER WEB. DO NOT JACK OR FORCE

MINIMUM FILLIT WELD SIZE (1/4") FOR ALL CONNECTIONS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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### ANCHOR HANGER WITH STOP RINGS (FRONT VIEW) DETAIL



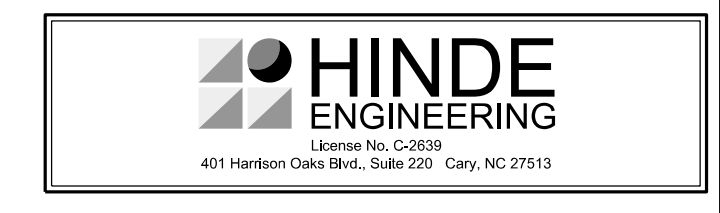
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 HAYWOOD COUNTY  
 STATION: 24+64.13 -L- POT

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

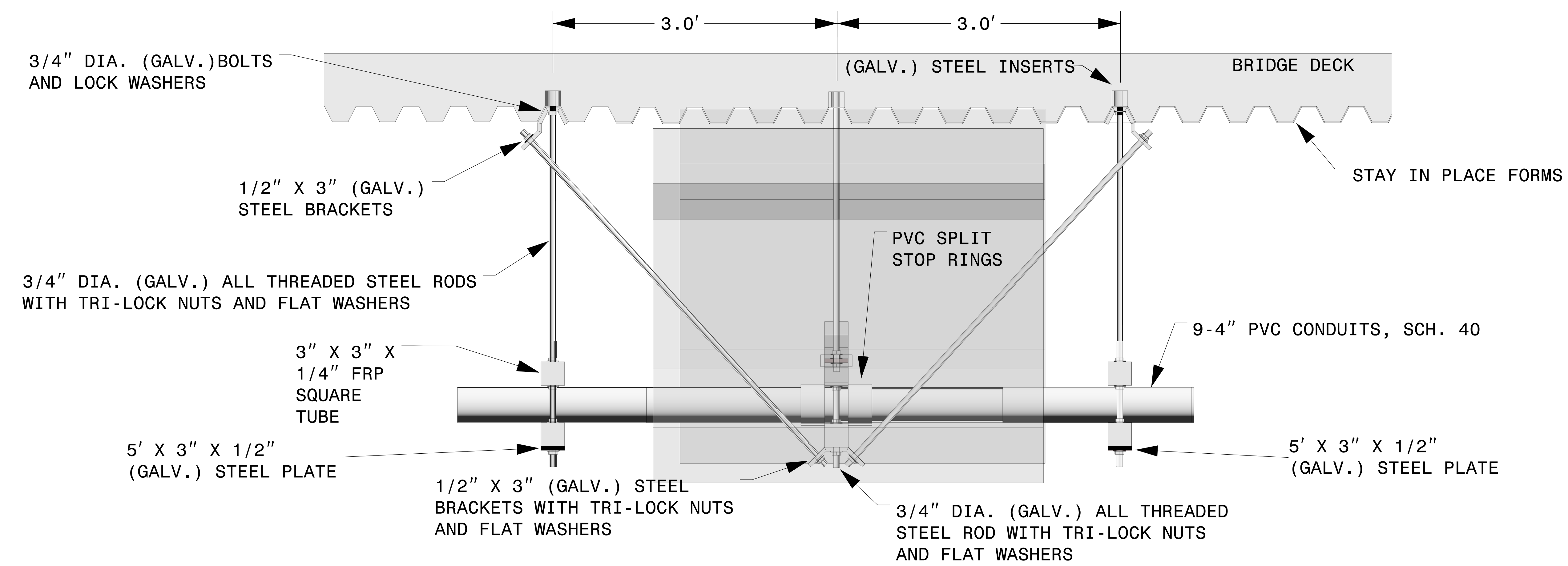
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SHEET NO. SU-10  
 TOTAL SHEETS



### ANCHOR HANGER WITH STOP RINGS (SIDE VIEW) DETAIL



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 UNLESS ALL SIGNATURES COMPLETED

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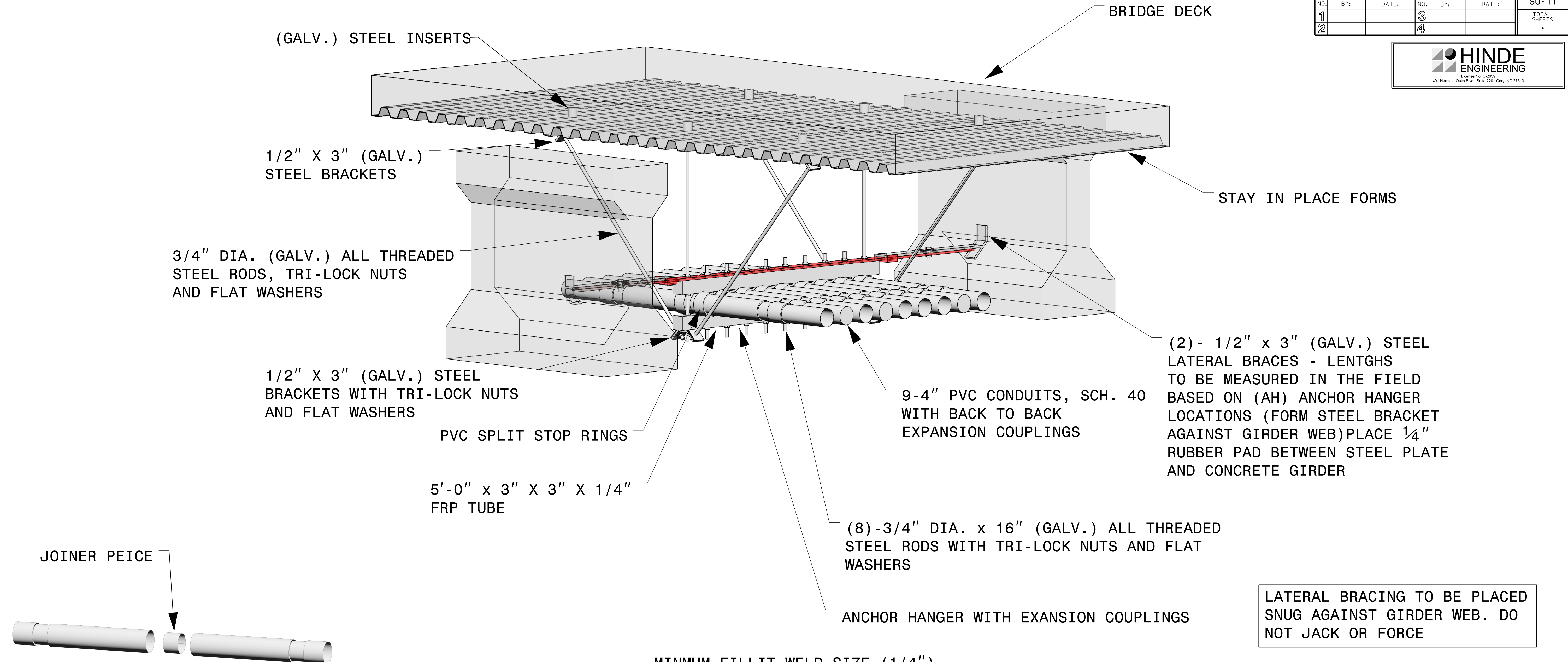
# ANCHOR HANGER WITH STOP RINGS AND EXPANSION COUPLINGS DETAIL

PROJECT NO. U-5839  
 HAYWOOD COUNTY  
 STATION: 24+64.13 -L- POT

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

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SHEET NO. SU-11  
 TOTAL SHEETS



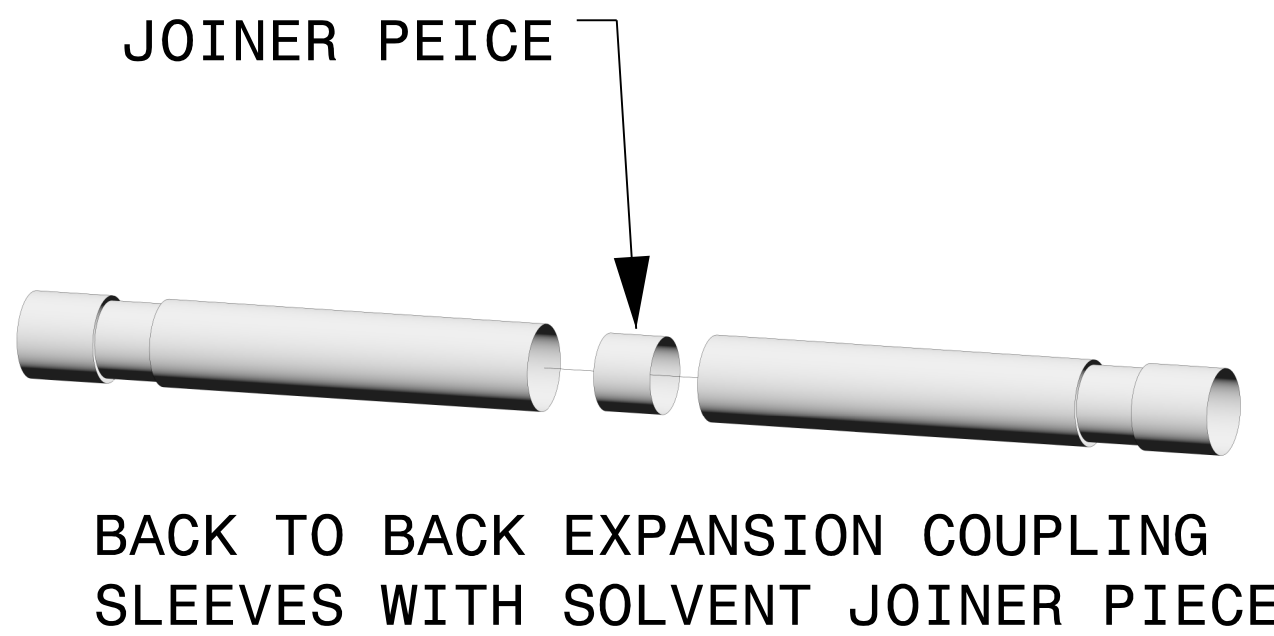
(2) - 1/2" x 3" (GALV.) STEEL LATERAL BRACES - LENGTHS TO BE MEASURED IN THE FIELD BASED ON (AH) ANCHOR HANGER LOCATIONS (FORM STEEL BRACKET AGAINST GIRDER WEB) PLACE 1/4" RUBBER PAD BETWEEN STEEL PLATE AND CONCRETE GIRDER

LATERAL BRACING TO BE PLACED SNUG AGAINST GIRDER WEB. DO NOT JACK OR FORCE

MINIMUM FILLIT WELD SIZE (1/4") FOR ALL CONNECTIONS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MINIMUM FILLIT WELD SIZE (1/4") FOR ALL CONNECTIONS



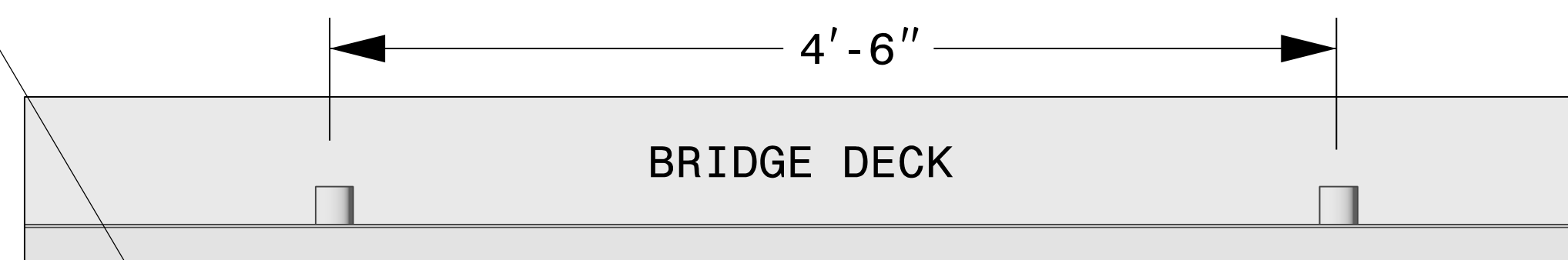
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### ANCHOR HANGER WITH STOP RINGS AND EXPANSION COUPLINGS (FRONT VIEW) DETAIL

PROJECT NO. U-5839  
HAYWOOD COUNTY  
STATION: 31+45.00 -L- POT

(8)-3/4" DIA. x 16" (GALV.) ALL THREADED STEEL RODS WITH TRI-LOCK NUTS AND FLAT WASHERS

1/2" X 3" (GALV.) STEEL SLEEVE



(2)-1/2" x 3" (GALV.) STEEL LATERAL BRACES LENGTHS TO BE MEASURED IN THE FIELD BASED ON (AH)ANCHOR HANGER LOCATIONS

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

3/9/2023

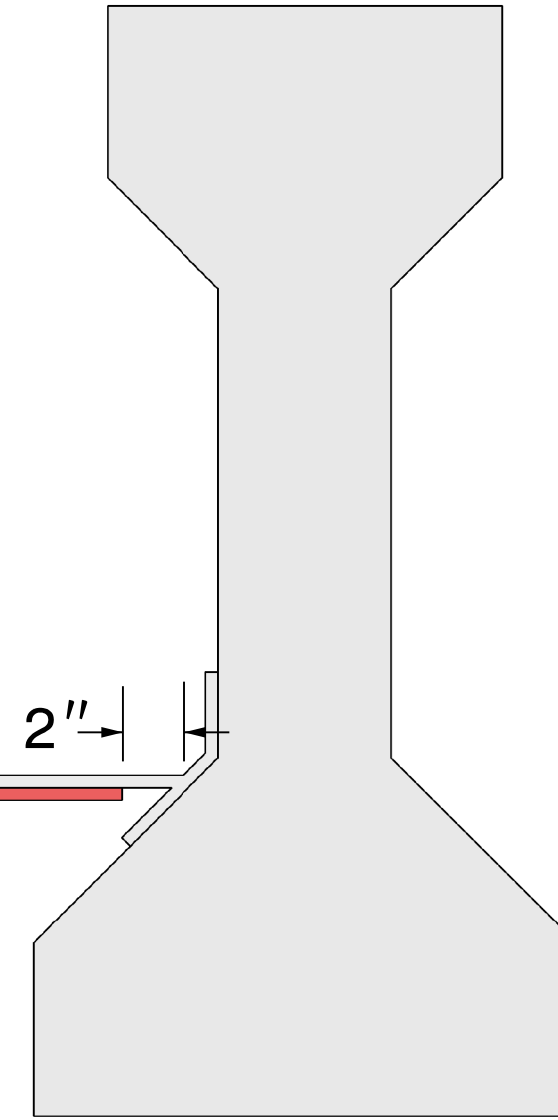
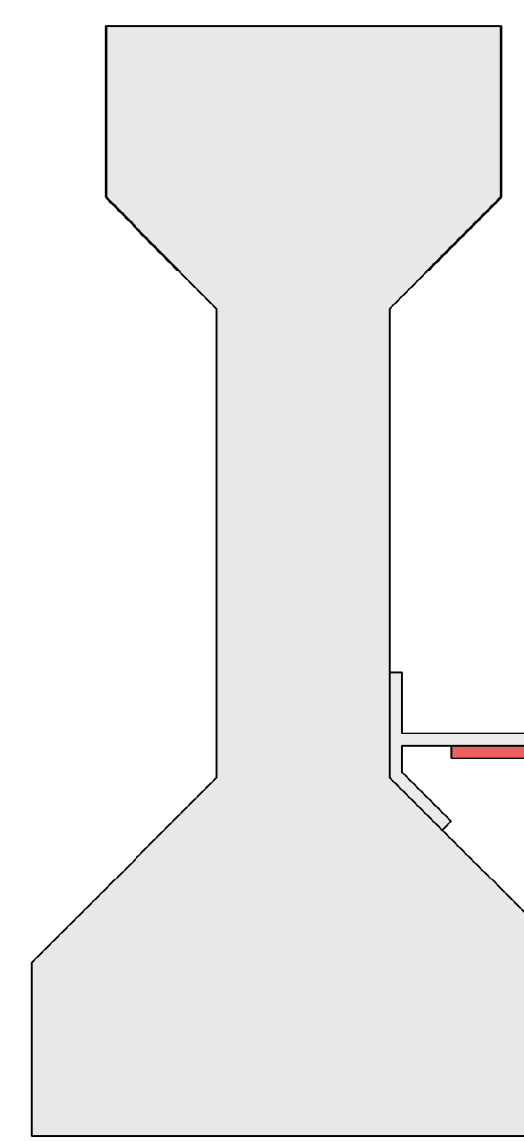
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. SU-12  
TOTAL SHEETS



1/2" X 3" (GALV.) STEEL BRACKETS

3/4" DIA. (GALV.) ALL THREADED STEEL RODS, TRI-LOCK NUTS AND FLAT WASHERS



3/4" DIA. x 2" (GALV.) BOLT WITH TRI-LOCK NUTS AND FLAT WASHERS

3" X 3" X 1/4" FRP SQUARE TUBE

3/4" DIA. x 2" (GALV.) BOLT WITH TRI-LOCK NUTS AND FLAT WASHERS

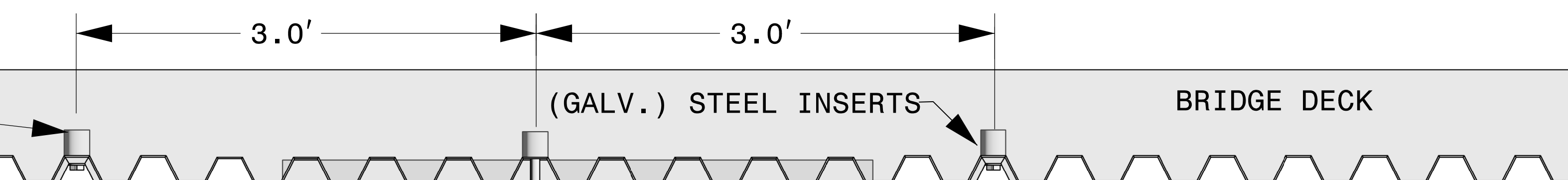
1/2" X 3" (GALV.) STEEL SLEEVE

### ANCHOR HANGER WITH STOP RINGS AND EXPANSION COUPLINGS (SIDE VIEW) DETAIL

3/4" DIA. (GALV.) BOLTS AND LOCK WASHERS

1/2" X 3" (GALV.) STEEL BRACKETS

3/4" DIA. (GALV.) ALL THREADED STEEL RODS WITH TRI-LOCK NUTS AND FLAT WASHERS



(GALV.) STEEL INSERTS

BRIDGE DECK

STAY IN PLACE FORMS

PVC SPLIT STOP RINGS

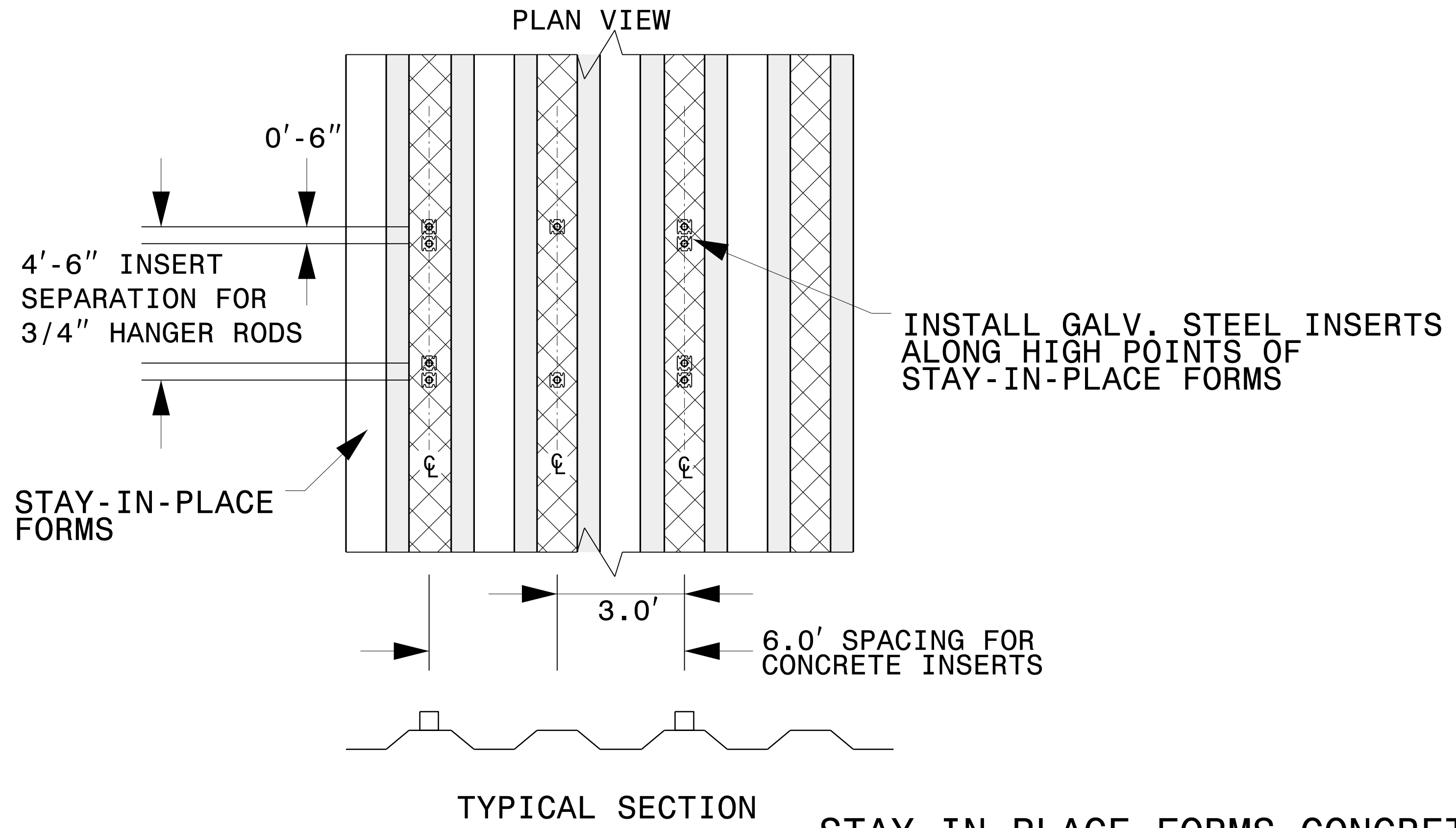
1/2" X 3" (GALV.) STEEL BRACKETS WITH TRI-LOCK NUTS AND FLAT WASHERS

3/4" DIA. (GALV.) ALL THREADED STEEL ROD WITH TRI-LOCK NUTS AND FLAT WASHERS

9-4" PVC CONDUITS, SCH. 40 WITH BACK TO BACK EXPANSION COUPLINGS

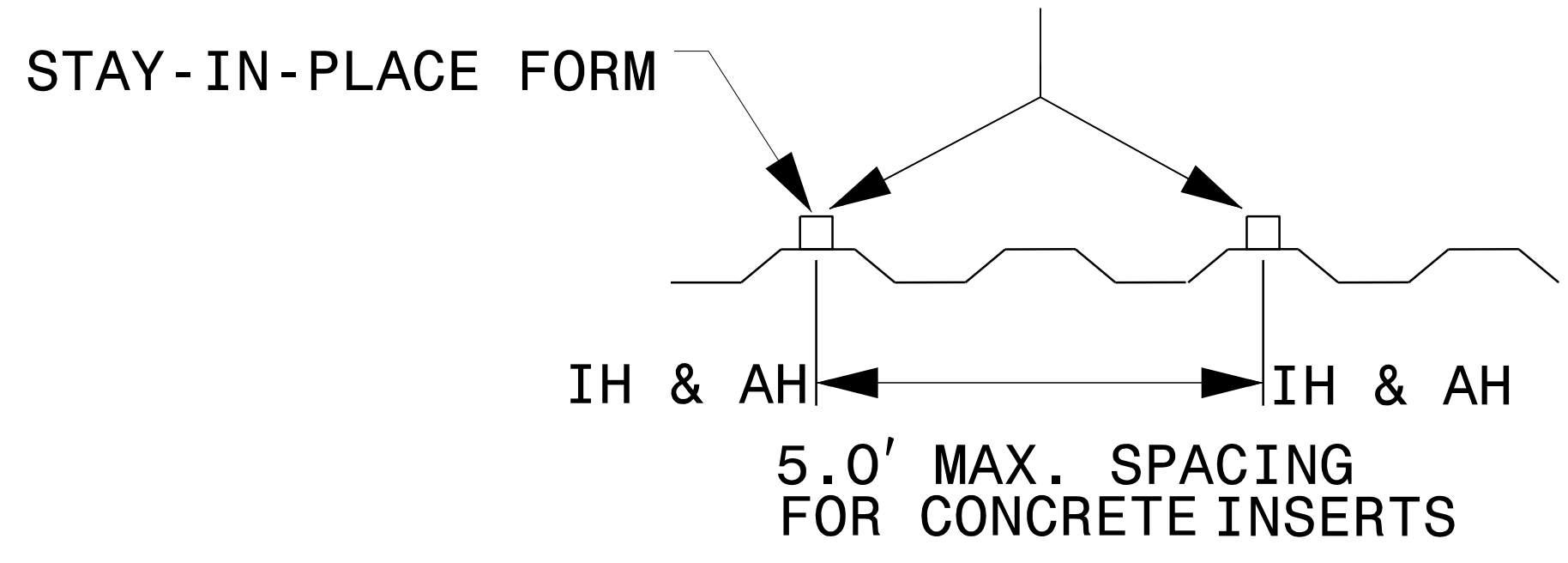
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DATE: 8/15/23 8:15 AM



**TYPICAL SECTION**

APPROVED 3/4" CONCRETE INSERTS @ MAX SPACING OF 5.0' FOR 9-4" PVC CONDUITS



**NOTES:**

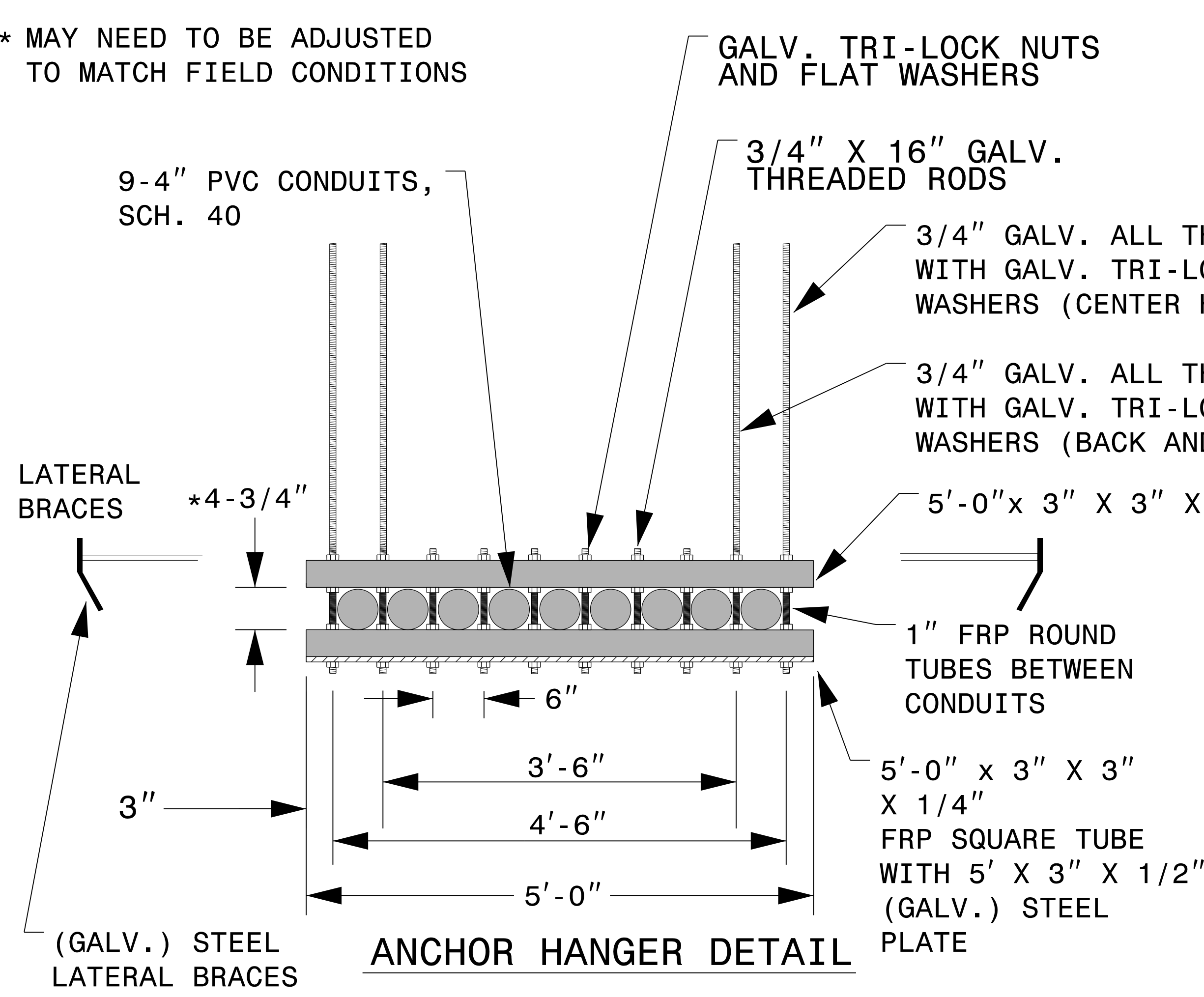
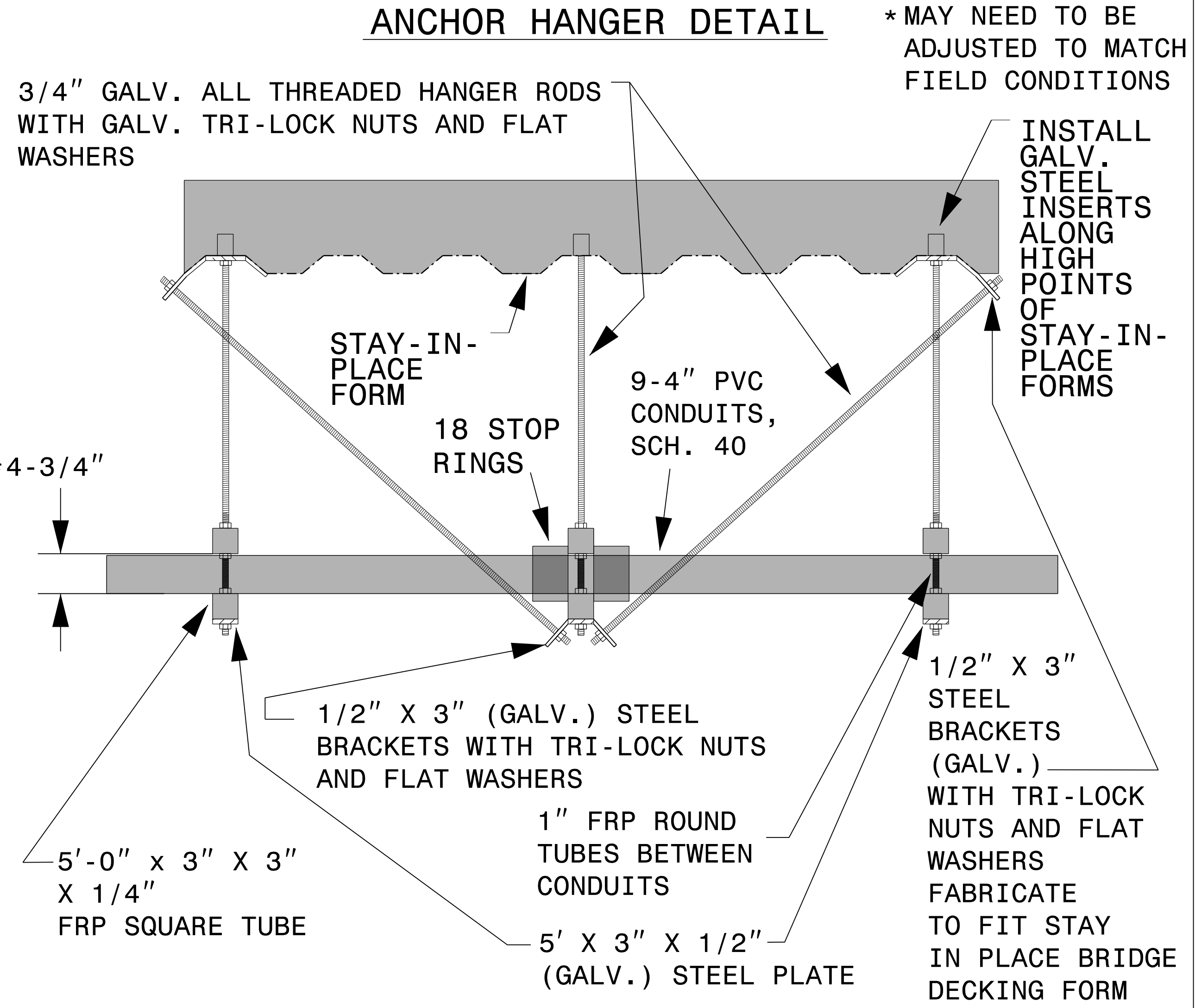
INSERTS MUST BE LOCATED IN THE HIGH POINT OF THE STAY-IN-PLACE FORMS.

EXACT SPACING MAY VARY IN ORDER TO AVOID LOCATING INSERTS ON SLOPING OR LOW SURFACE OF STAY IN PLACE FORM.

AT TRAVERSE JOINTS PLACE CONCRETE INSERTS 1'-6" MIN. FROM THE CENTER LINE OF THE JOINT.

**STAY-IN-PLACE FORMS CONCRETE INSERT PLACEMENT DETAIL**

**ANCHOR HANGERS**



PROJECT NO. U-5839  
HAYWOOD COUNTY  
STATION: 24+64.13 -L- POT

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

COREY D. BOUSQUET  
ENGINEER  
3/9/2023

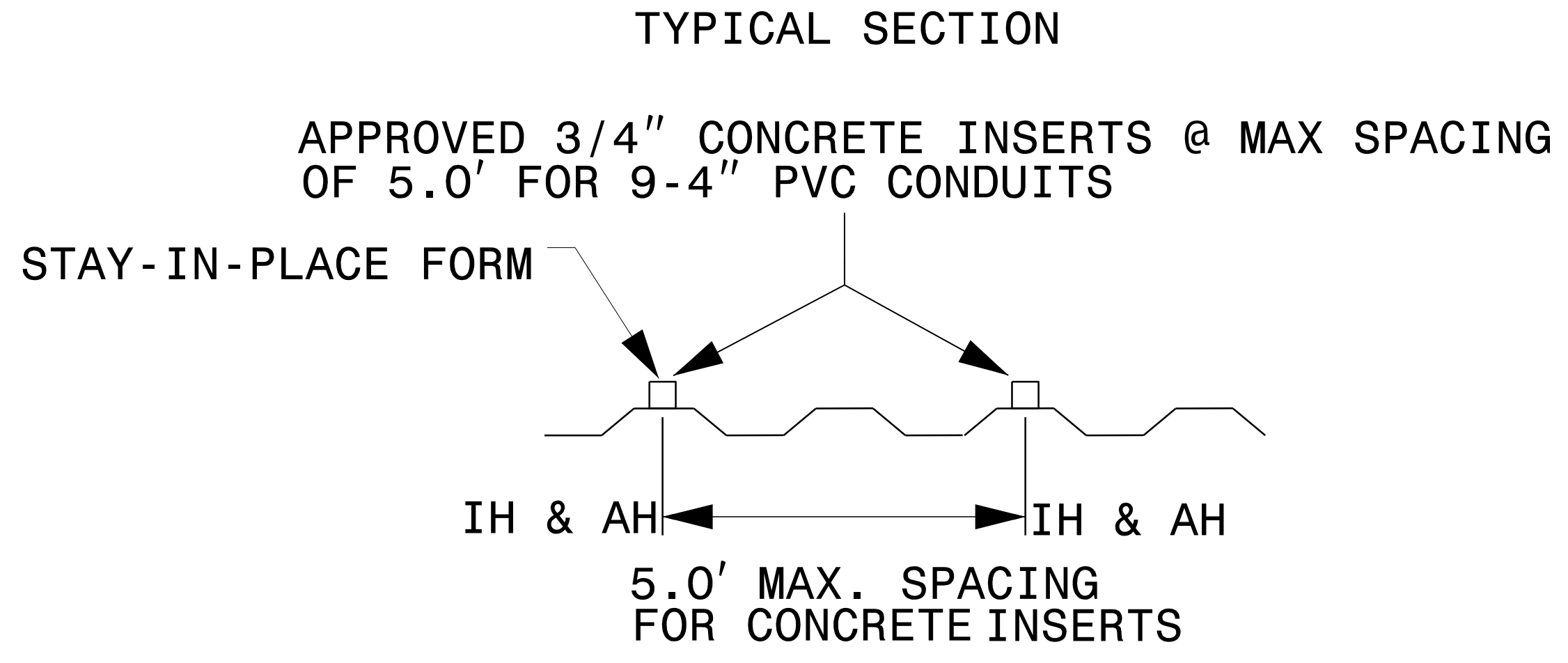
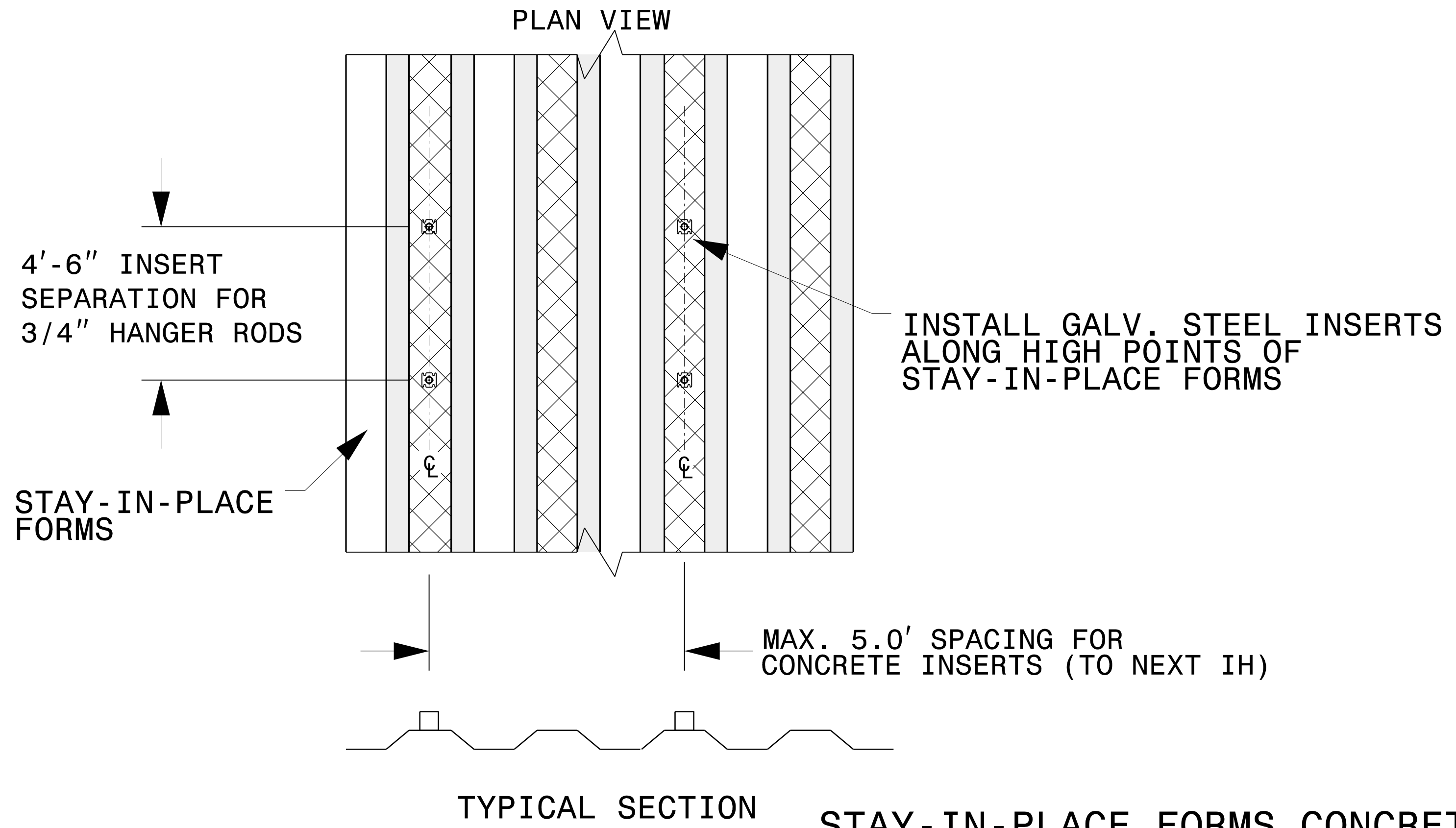
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NO.	BY:	DATE:	NO.	BY:	DATE:	SU-13	
1			3			TOTAL SHEETS	
2			4				

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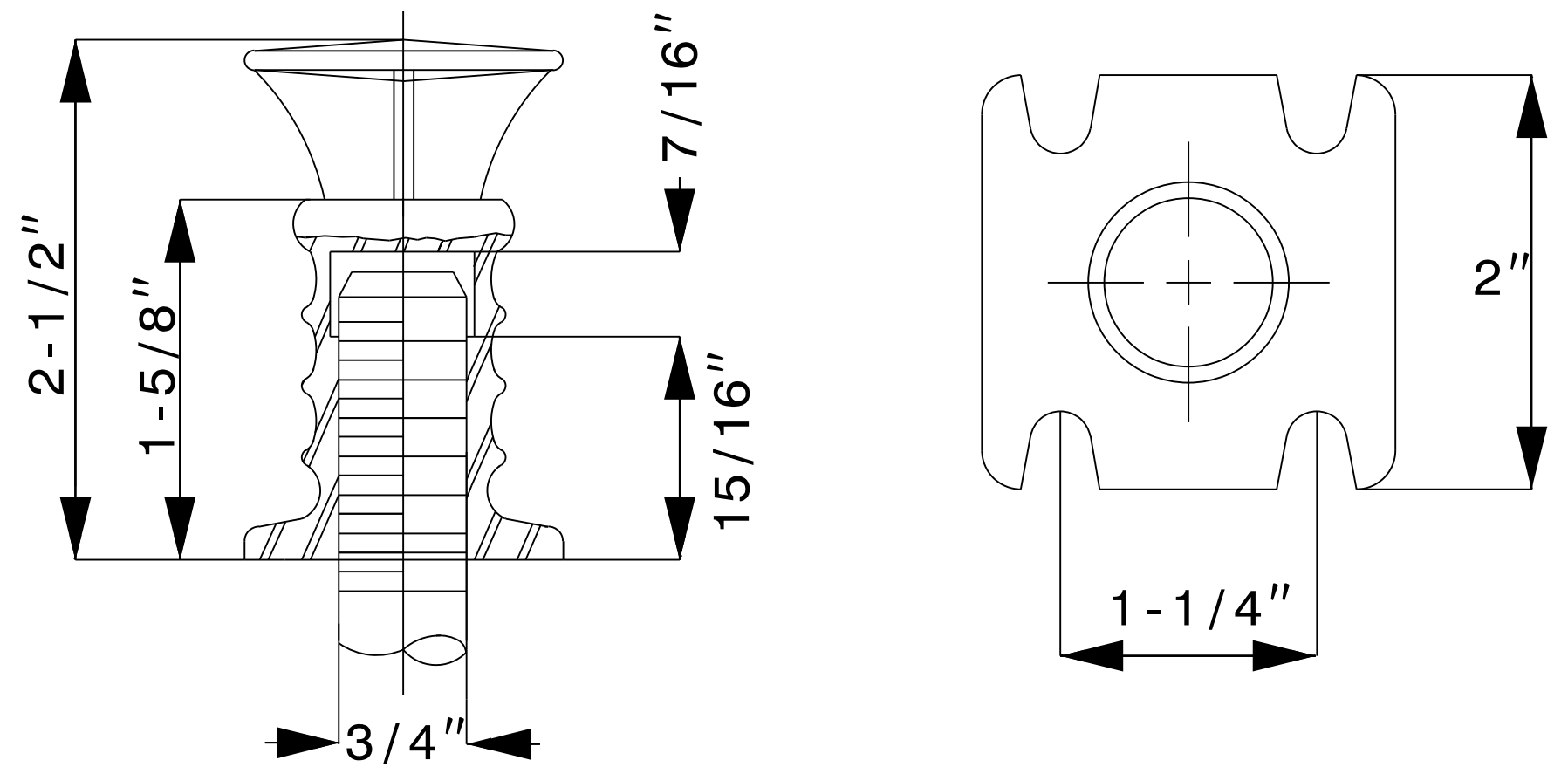
DATE: 8/15/23 8:15 AM



**NOTES:**  
 INSERTS MUST BE LOCATED IN THE HIGH POINT OF THE STAY-IN-PLACE FORMS.  
 EXACT SPACING MAY VARY IN ORDER TO AVOID LOCATING INSERTS ON SLOPING OR LOW SURFACE OF STAY IN PLACE FORM.

AT TRAVERSE JOINTS PLACE CONCRETE INSERTS 1'-6" MIN. FROM THE CENTER LINE OF THE JOINT.

**STAY-IN-PLACE FORMS CONCRETE INSERT PLACEMENT DETAIL (INTERMEDIATE HANGERS)**

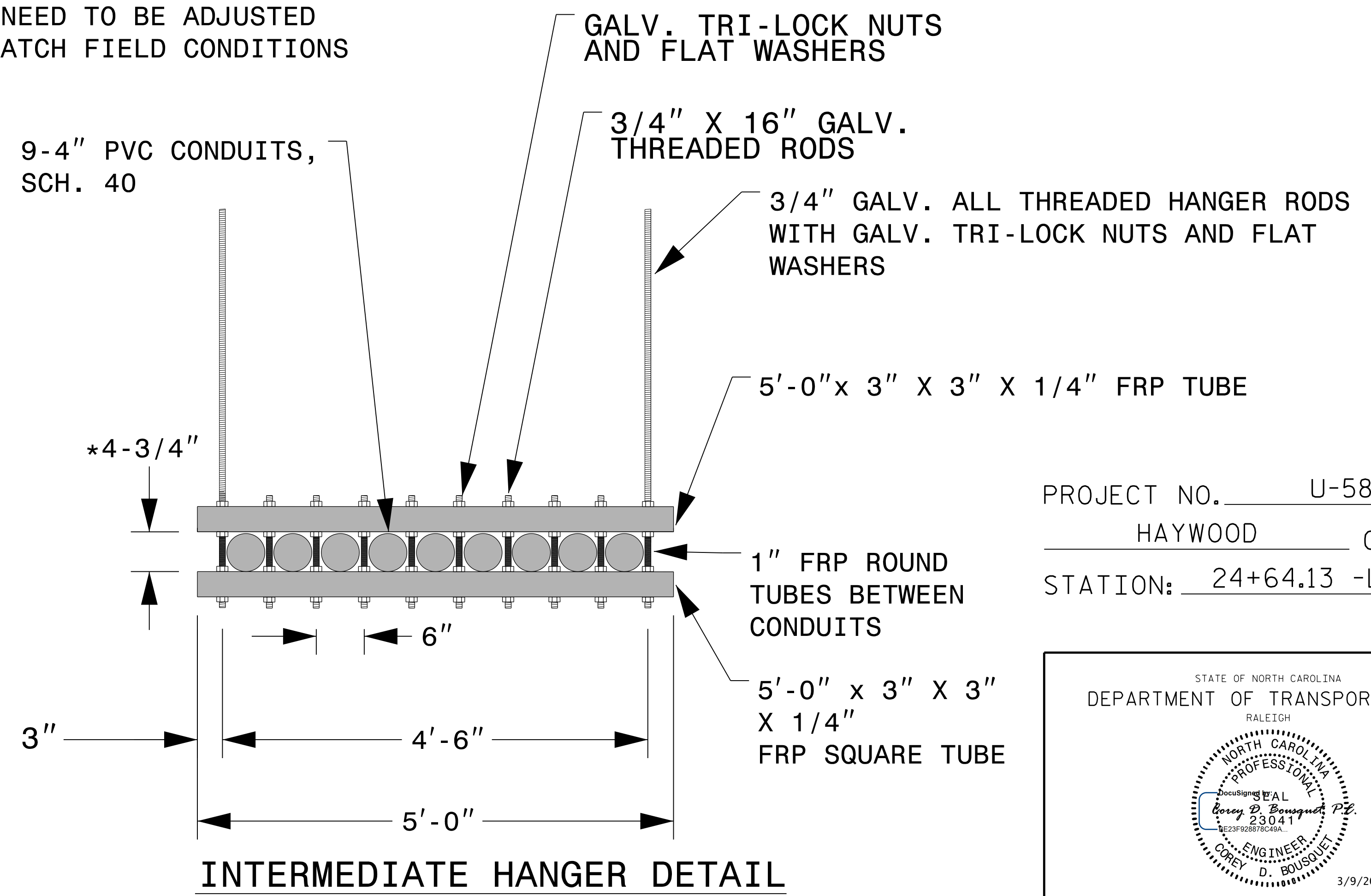


INSERTS SHALL BE HOT DIPPED GALVANIZED GRINNELL FIGURE 152

PIPE SIZE	MAX. RECOM LOAD, LBS.	WEIGHT LBS. EACH
9-4" CONDUITS	2500	0.64

**SCREW CONCRETE INSERT DETAIL**

\* MAY NEED TO BE ADJUSTED TO MATCH FIELD CONDITIONS



**INTERMEDIATE HANGER DETAIL**

PROJECT NO. U-5839  
 HAYWOOD COUNTY  
 STATION: 24+64.13 -L- POT

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

COREY D. BOUSQUET  
 ENGINEER  
 3/9/2023

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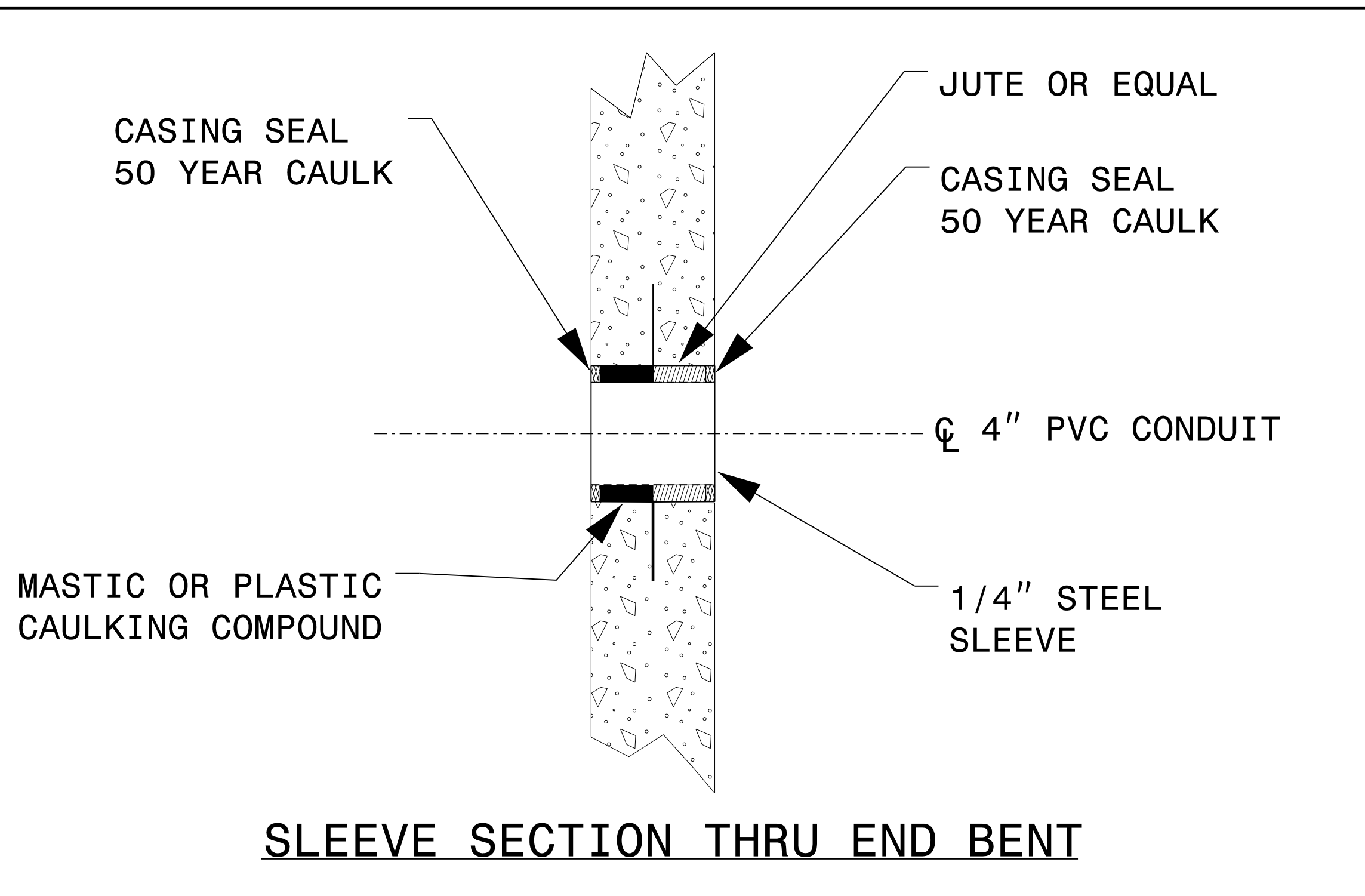
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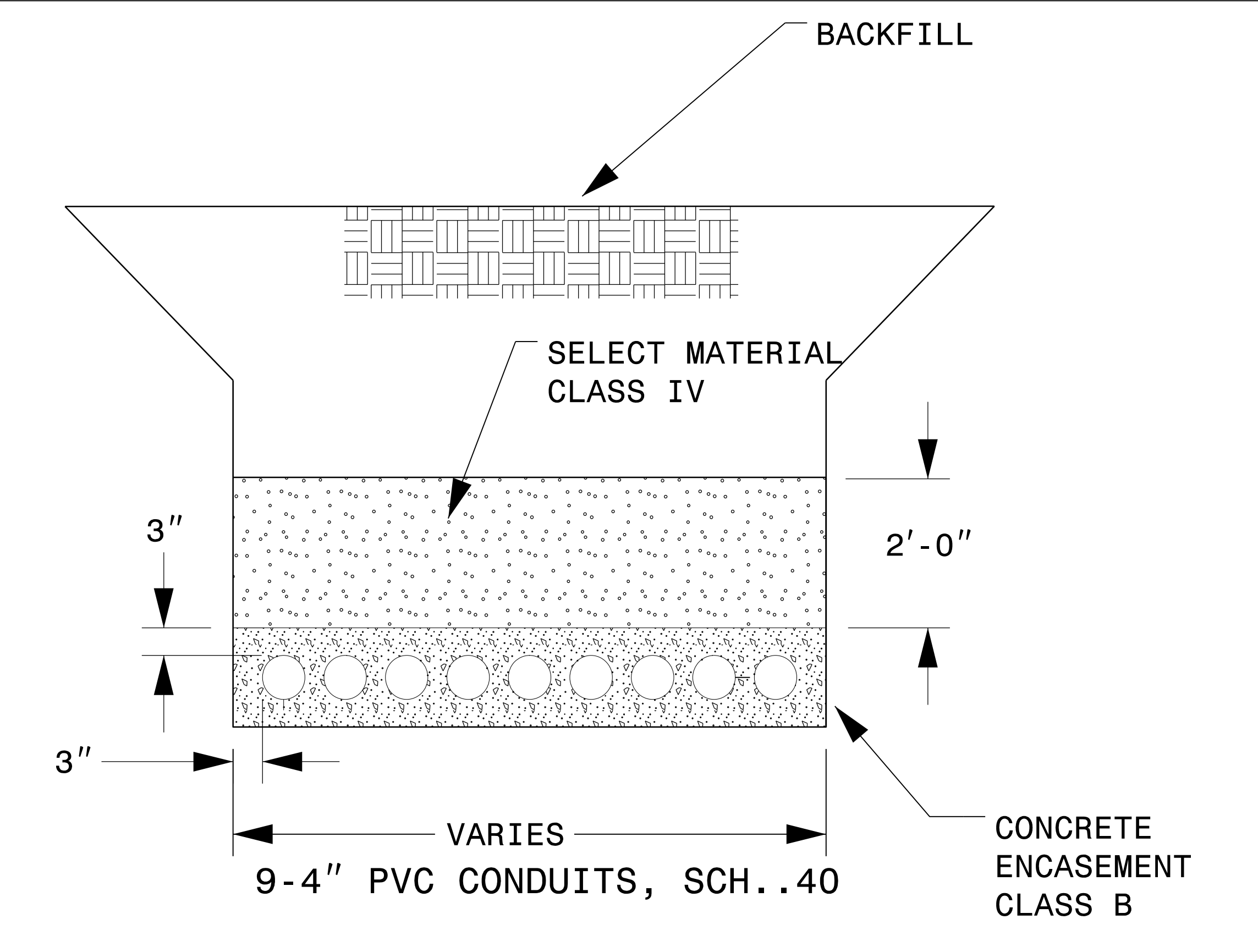
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8:04:28 AM 8/11/2023

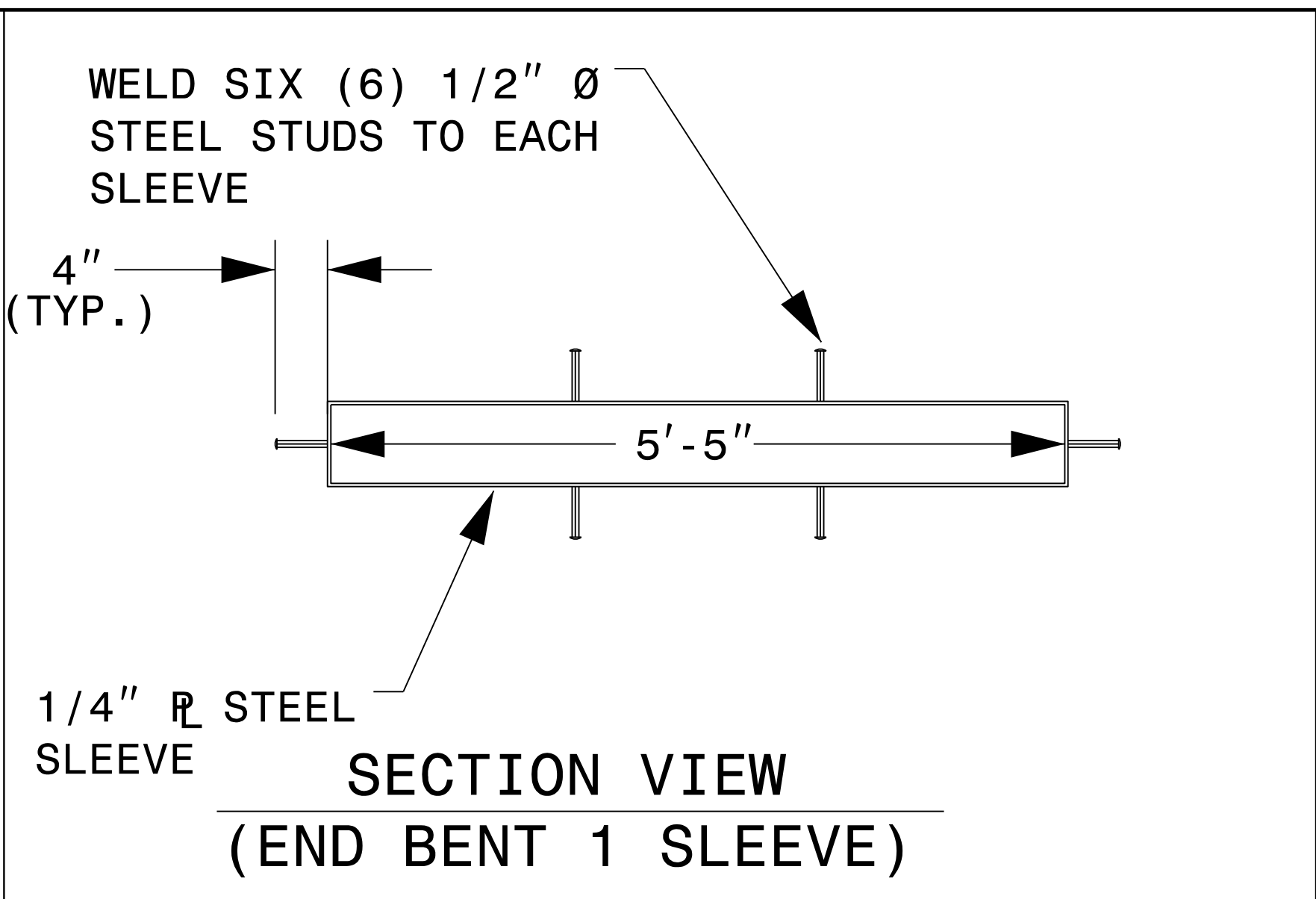


**SLEEVE SECTION THRU END BENT**

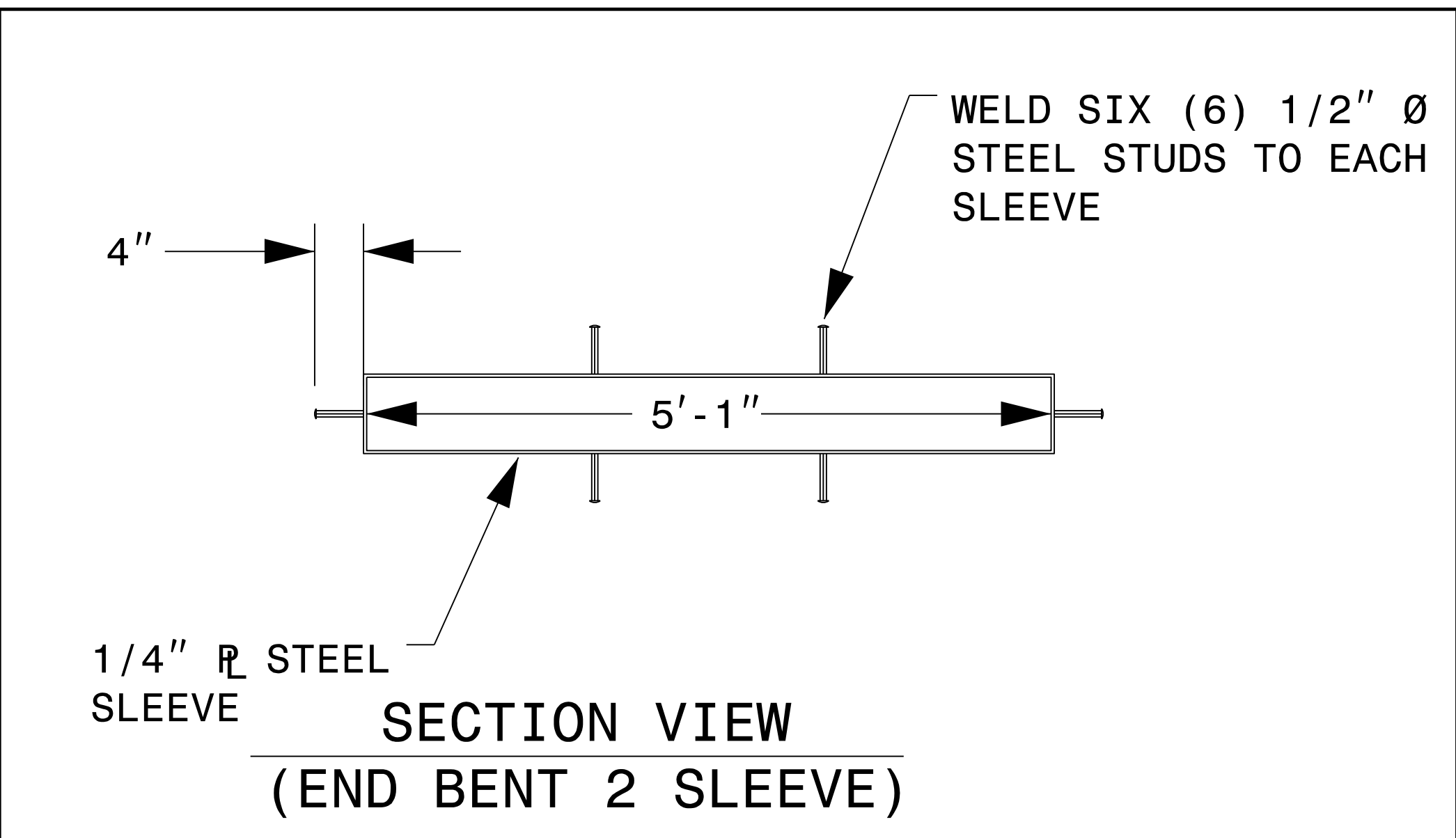


**CONCRETE ENCASUREMENT**

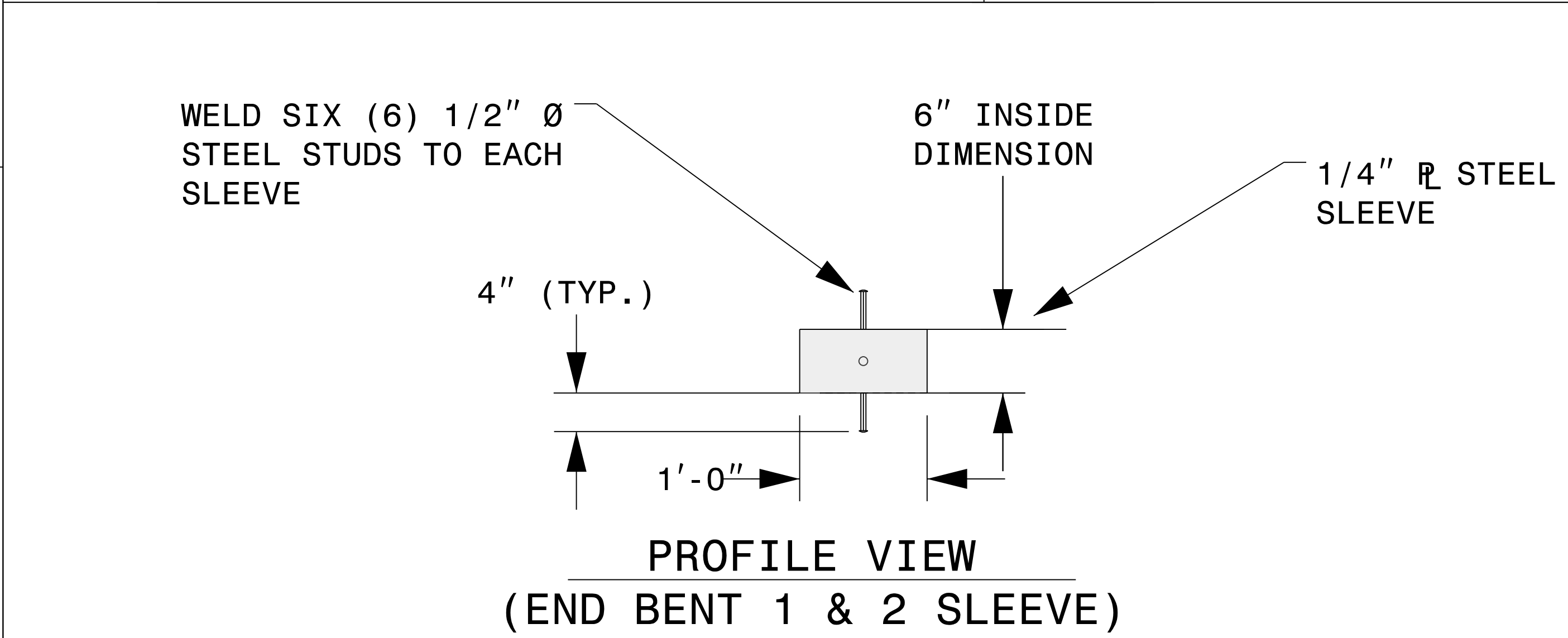
ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.



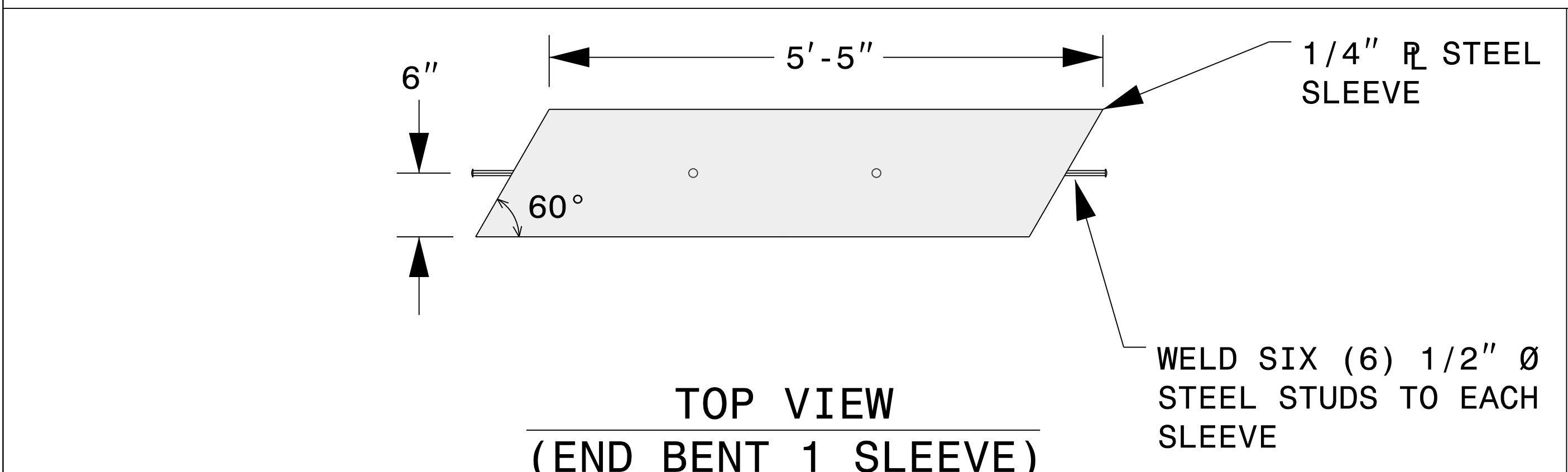
**SECTION VIEW (END BENT 1 SLEEVE)**



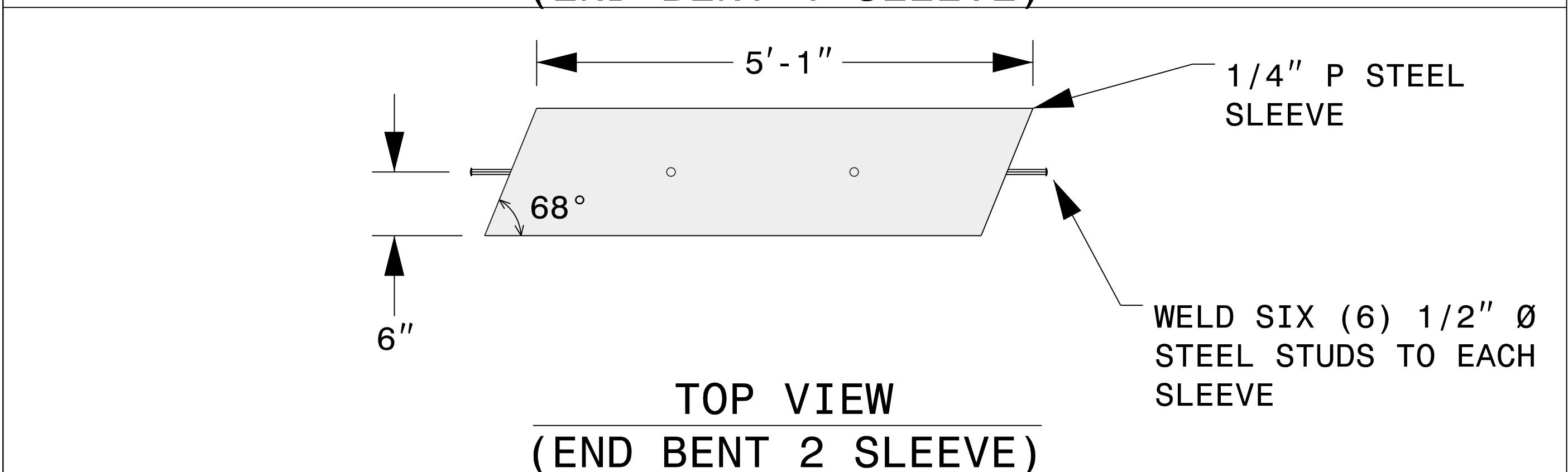
**SECTION VIEW (END BENT 2 SLEEVE)**



**PROFILE VIEW (END BENT 1 & 2 SLEEVE)**

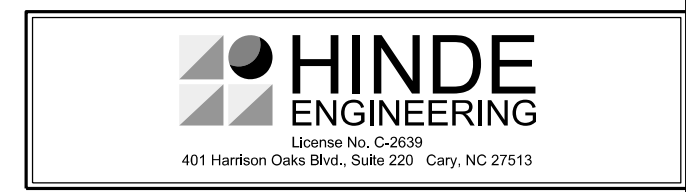


**TOP VIEW (END BENT 1 SLEEVE)**

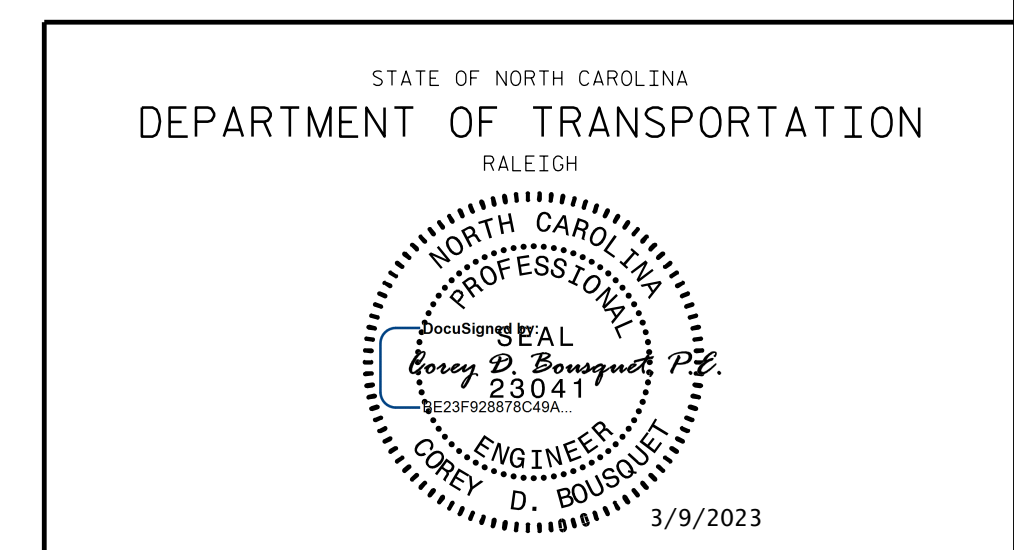


**TOP VIEW (END BENT 2 SLEEVE)**

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PROJECT NO. U-5839  
 HAYWOOD COUNTY  
 STATION: 24+64.13 -L- POT



REVISIONS				SHEET NO.	
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TOTAL SHEETS: 15

DATE: 8/15/23 8:15 AM

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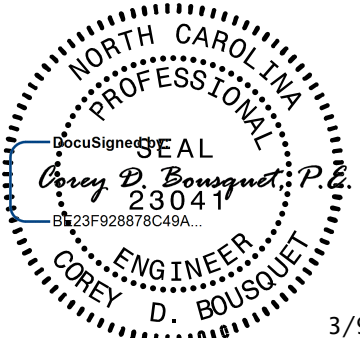
### BILL OF MATERIALS

9-4" PVC CONDUITS BRIDGE ATTACHMENT		
NO.	UNITS	ITEMS
1	1 EA	5'-5" X 1' X 6" END BENT STEEL SLEEVE, 1/4" WALL THICKNESS (JUTE, CAULKING OR MASTIC)
2	1 EA	5'-1" X 1' X 6" END BENT STEEL SLEEVE, 1/4" WALL THICKNESS (JUTE, CAULKING OR MASTIC)
3	25 EA	ITERMEDIATE HANGER (GALV. STEEL RODS AND ALL INCIDENTALS)
4	4 EA	ANCHOR HANGER WITH STOP RINGS (GALV. STEEL RODS AND ALL INCIDENTALS)
5	3 EA	ANCHOR HANGER WITH STOP RINGS AND EXPANSION COUPLINGS (GALV. STEEL RODS AND ALL INCIDENTALS)
6	108 EA	GALVANIZED STEEL INSERT FORMED INTO THE BRIDGE DECK
7	2152 LF	4" RIGID PVC CONDUIT, SCH. 40 - HEAVY WALL
8	18 EA	END PLUG (OR CAP) FOR 4" PVC CONDUIT
9	9 CY	CLASS B CONCRETE FOR ENCASING UTILITY LINES

THESE MATERIALS ARE ESTIMATED QUANTITIES ONLY AND ARE TO BE FURNISHED BY THE CONTRACTOR FOR THE ATTACHMENT TO THE PROPOSED BRIDGE

PROJECT NO. U-5839  
HAYWOOD COUNTY  
 STATION: 24+64.13 -L- POT

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH



3/9/2023

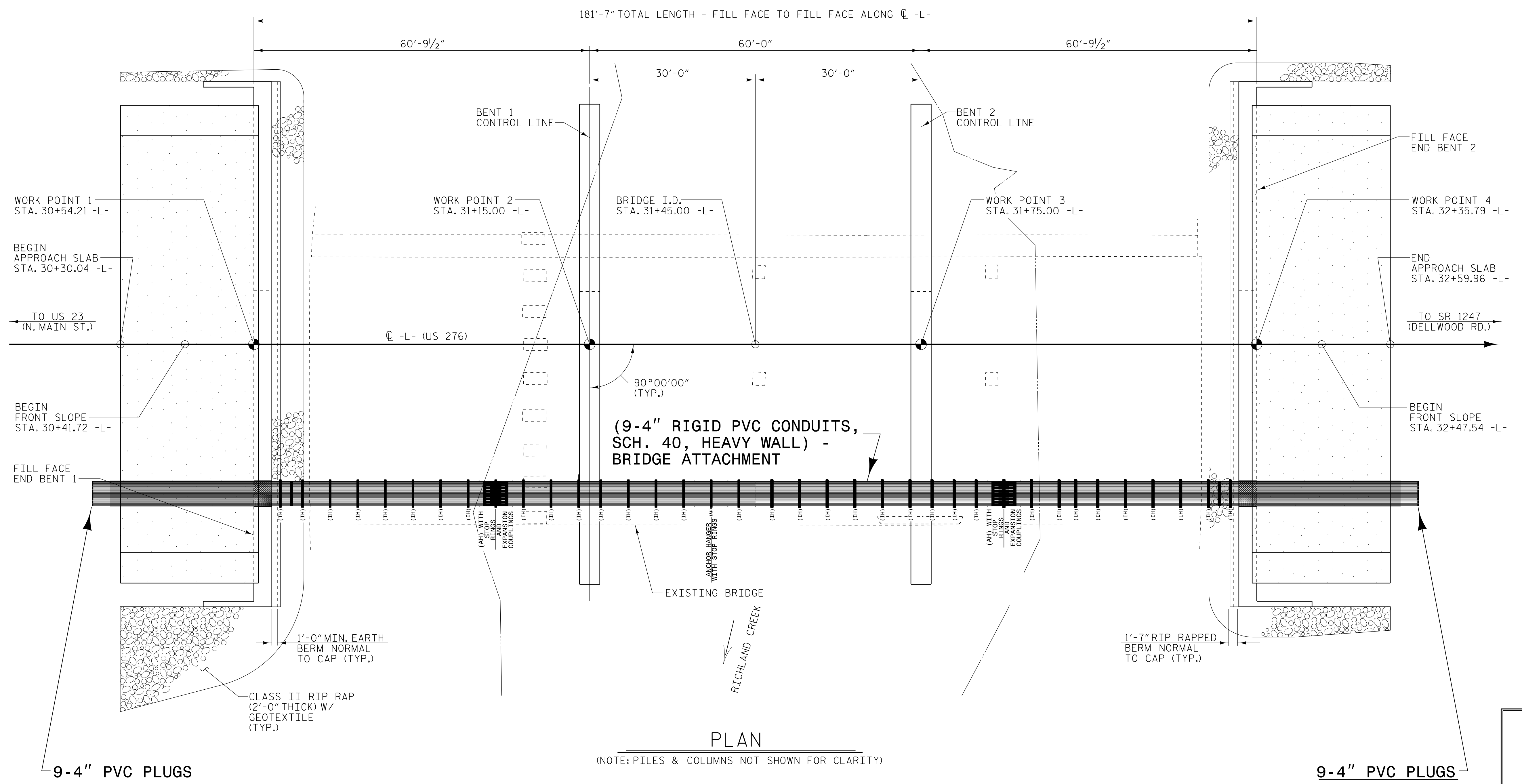
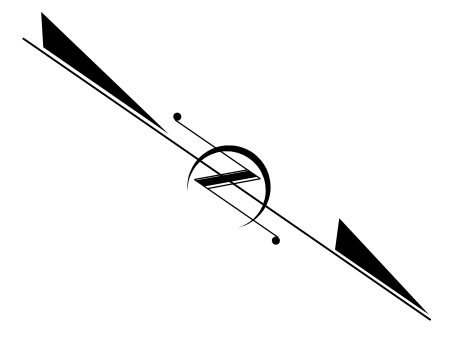
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1			3			TOTAL SHEETS
2			4			.

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DATE: 8:11 AM 3/9/2023





# NOTES

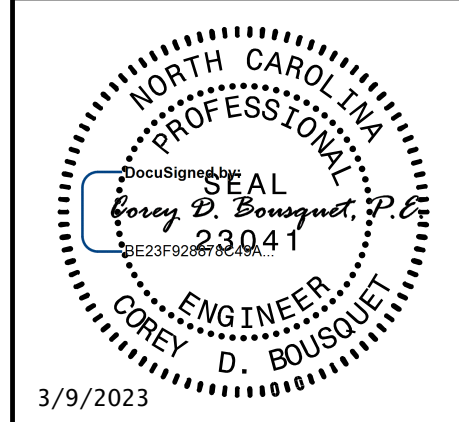
- CONDUITS TO BE PLACED BENEATH APPROACH SLABS PRIOR TO POURING OF APPROACH SLABS.
- 4" I.D. RIGID PVC CONDUIT, SCH. 40 HEAVY WALL PIPE (COLOR-WHITE) MIN. 0.237" WALL THICKNESS DEFLECTION LESS THAN 5"/20' WITH 8 LB CABLE LOAD U.L. RATED TREATED WITH TITANIUM DIOXIDE NON-FLAMABLE
- HANGER SUPPORTS TO BE PLACED AT INTERVALS SHOWN ON THE PLANS AND NOT TO EXCEED 5 FEET.
- BACK TO BACK EXPANSION JOINTS TO BE PLACED AT LOCATIONS SHOWN ON THE PLANS.
- ALL HARDWARE TO BE GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
- ATTACHMENTS WILL NOT OBSTRUCT DRAIN PIPES.
- NO PIPE JOINTS SHALL BE PLACED CLOSER THAN ONE FOOT TO THE HANGERS.
- NO PORTION OF THE ATTACHMENT SHALL EXTEND BELOW THE GIRDERS.



PROJECT NO. U-5839  
 HAYWOOD COUNTY  
 STATION: 31+45.00 -L- POT

SHEET 1 OF 4 REPLACES BRIDGE NO. 186

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE ON -L- (RUSS AVE.)  
 OVER RICHLAND CREEK  
 BETWEEN US 23 (N. MAIN ST.)  
 AND SR 1247 (DELLWOOD RD.)



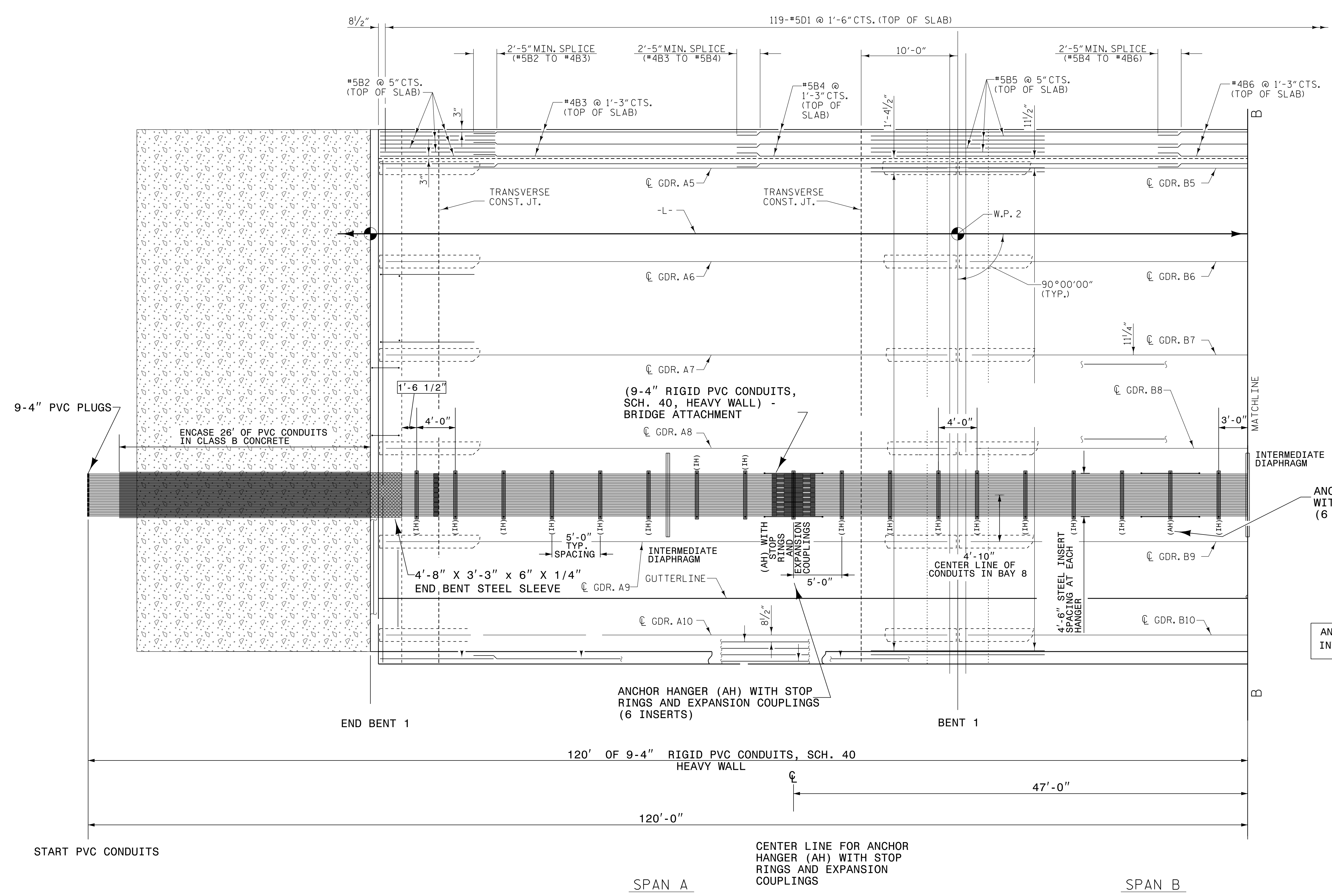
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1			3			TOTAL SHEETS
2			4			SU-17

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3/9/2023

DRAWN BY : W. B. ALLEN      DATE : 4/19  
 CHECKED BY : Z. H. BROWN      DATE : 4/19  
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN      DATE : 4/19

8:00 AM 8:00 PM 8:00 PM 8:00 PM

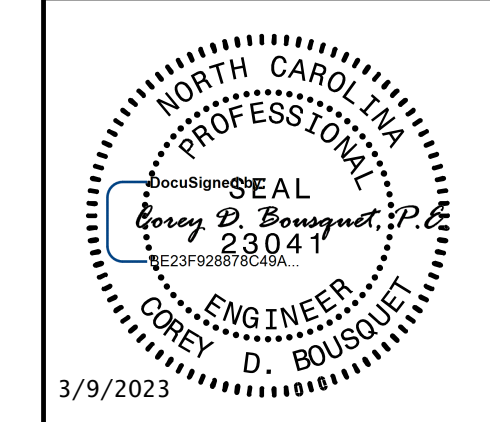


PLAN OF SPANS A & B  
STAGE II CONSTRUCTION

PROJECT NO. U-5839  
HAYWOOD COUNTY  
STATION: 31+45.00 -L- POT

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
PLAN OF SPANS  
STAGE II



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DRAWN BY :	W. B. ALLEN	DATE :	5/19
CHECKED BY :	Z. H. BROWN	DATE :	7/19
DESIGN ENGINEER OF RECORD:	L. K. AUSTIN	DATE :	4/19

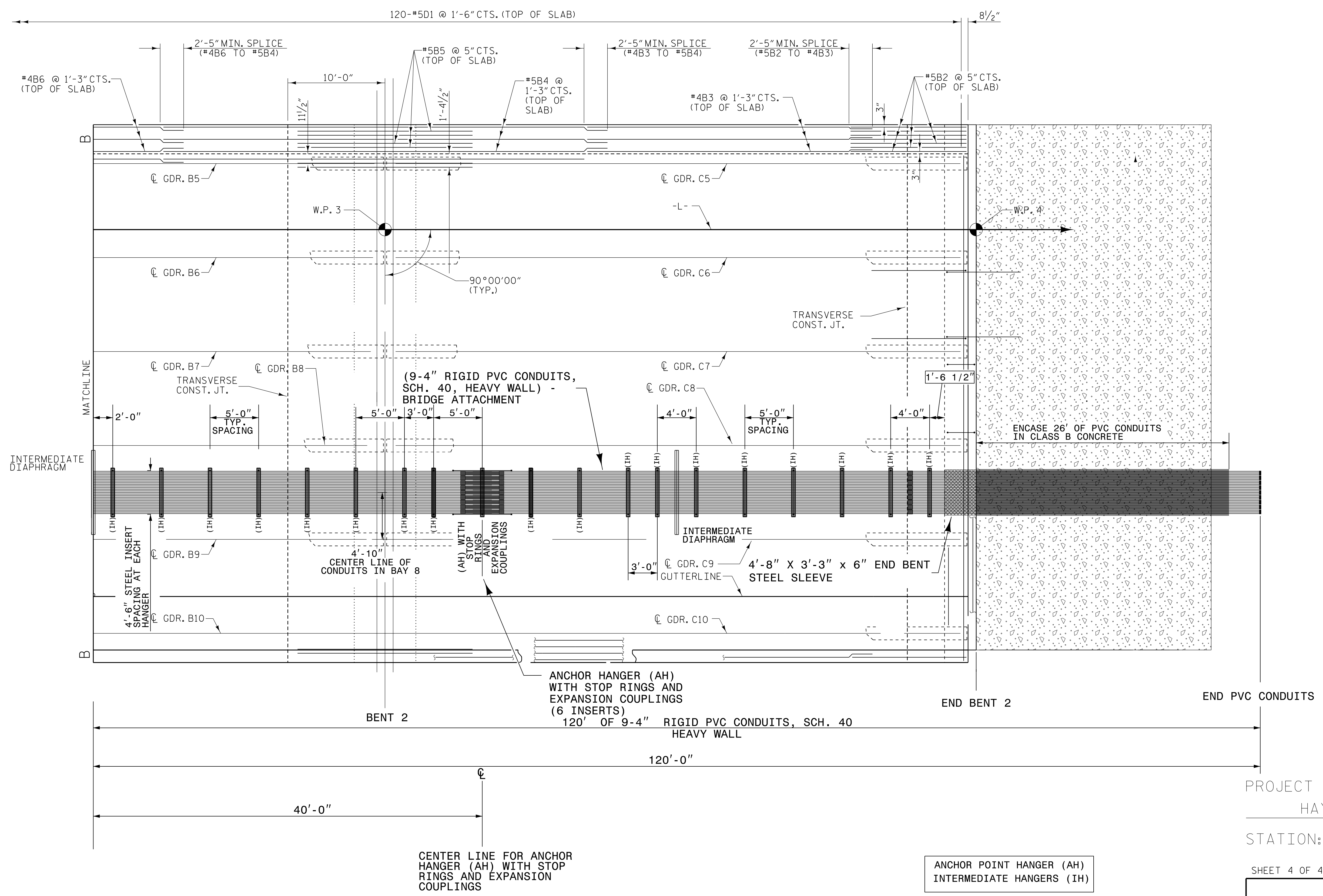
REVISIONS						SHEET NO. SU - 18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			

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DATE\$ TIME\$ \$FILES\$

3/9/2023



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DATE: 8/19/19  
TIME: 8:00 AM  
FILES: 8/19/19

DRAWN BY : W. B. ALLEN DATE : 5/19  
 CHECKED BY : Z. H. BROWN DATE : 7/19  
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 4/19

SPAN B

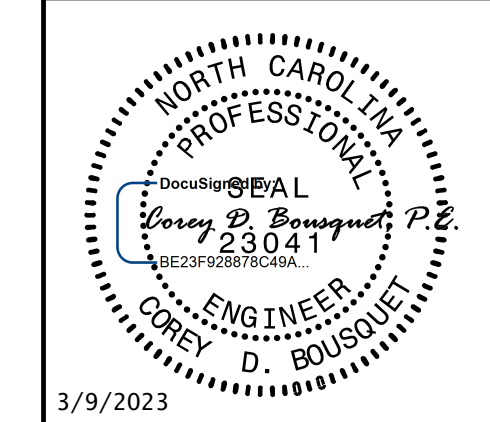
**PLAN OF SPANS A & C**  
**STAGE II CONSTRUCTION**

SPAN C

ANCHOR POINT HANGER (AH)  
 INTERMEDIATE HANGERS (IH)



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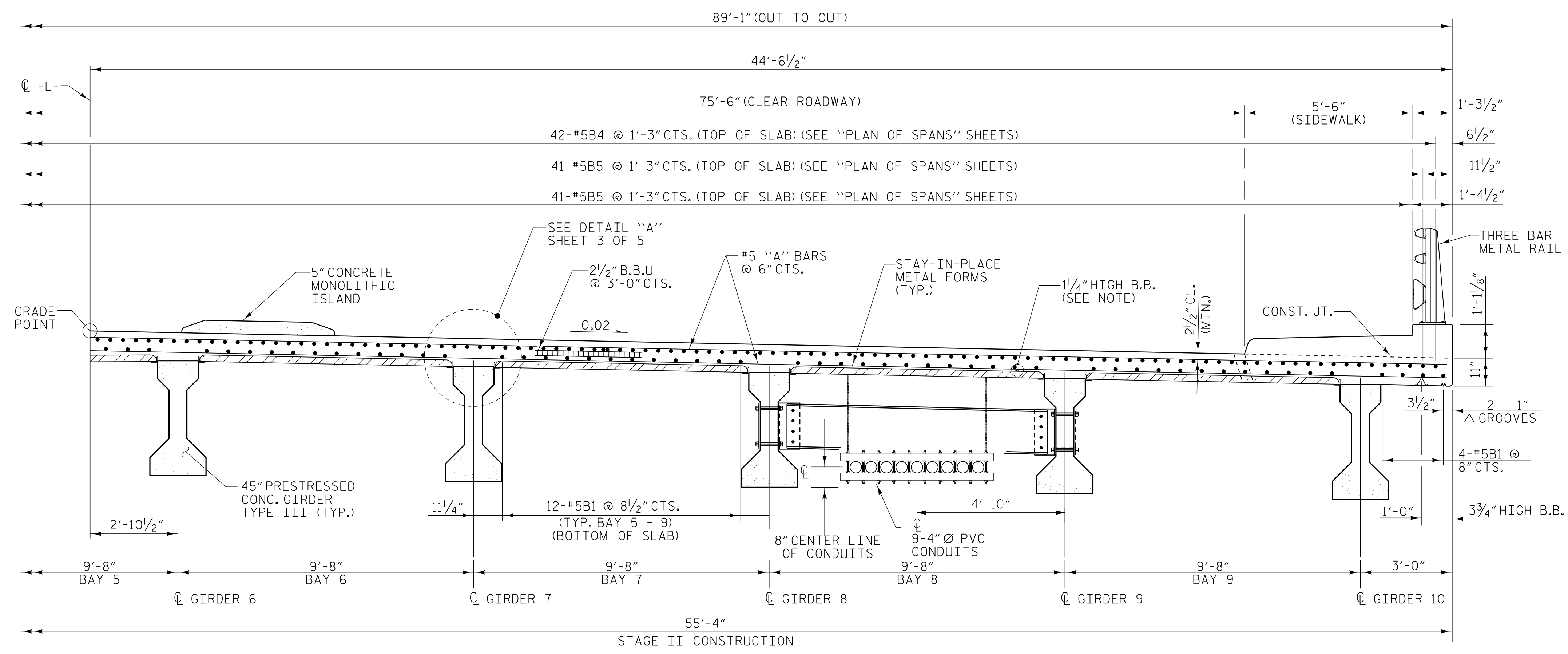
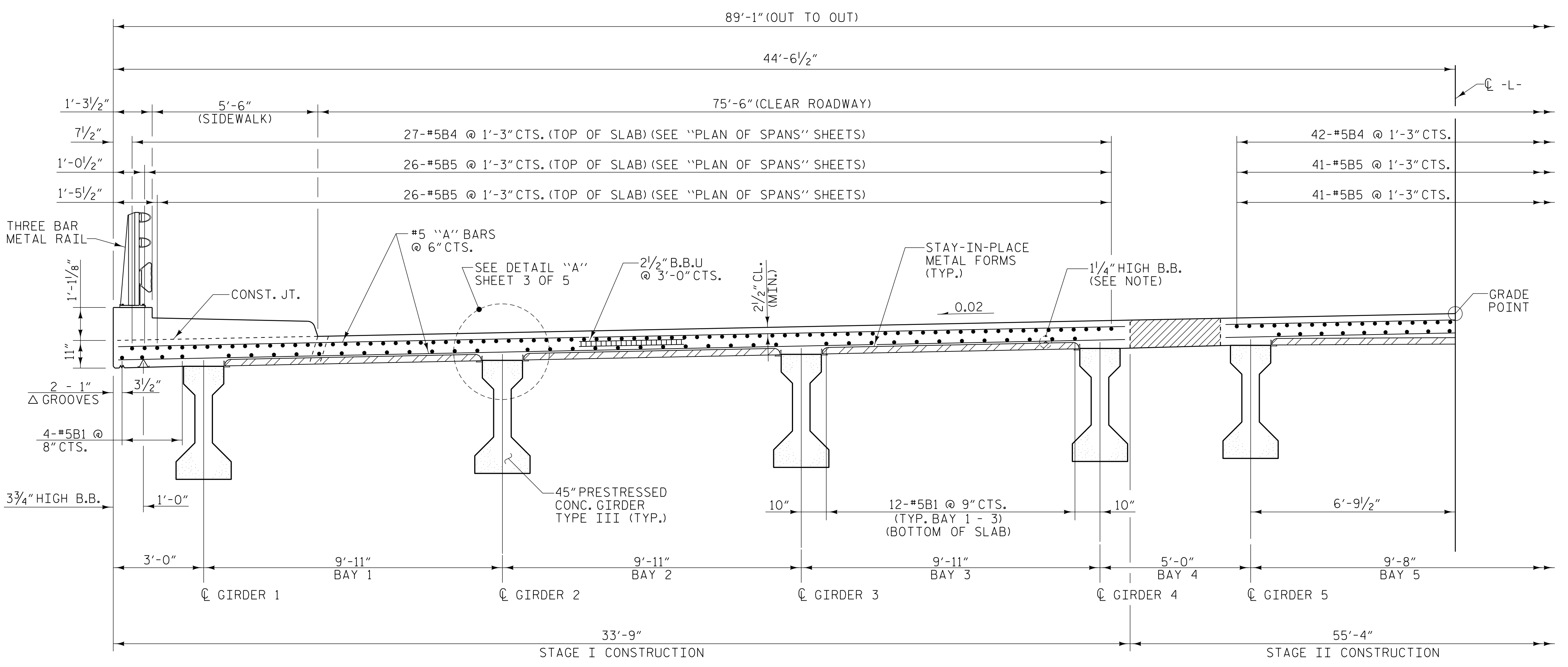


3/9/2023

PROJECT NO. U-5839  
HAYWOOD COUNTY  
 STATION: 31+45.00 -L- POT

SHEET 4 OF 4

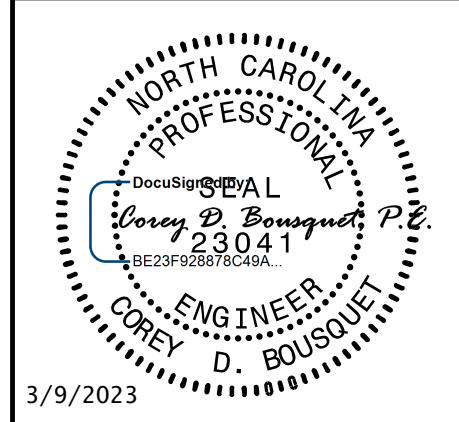
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPANS STAGE II					
SHEET NO. <b>SU-19</b>					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS



**NIV5**  
 NIV5 ENGINEERS & CONSULTANTS, INC.  
 6750 TRYON ROAD  
 CARY, NC 27518  
 P: 919.851.1912 www.NIV5.com  
 NC License # F-1333  
 Formerly CALYX Engineers & Consultants

PROJECT NO. U-5839  
HAYWOOD COUNTY  
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SHEET 4 OF 5  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 TYPICAL SECTION  
 BENTS



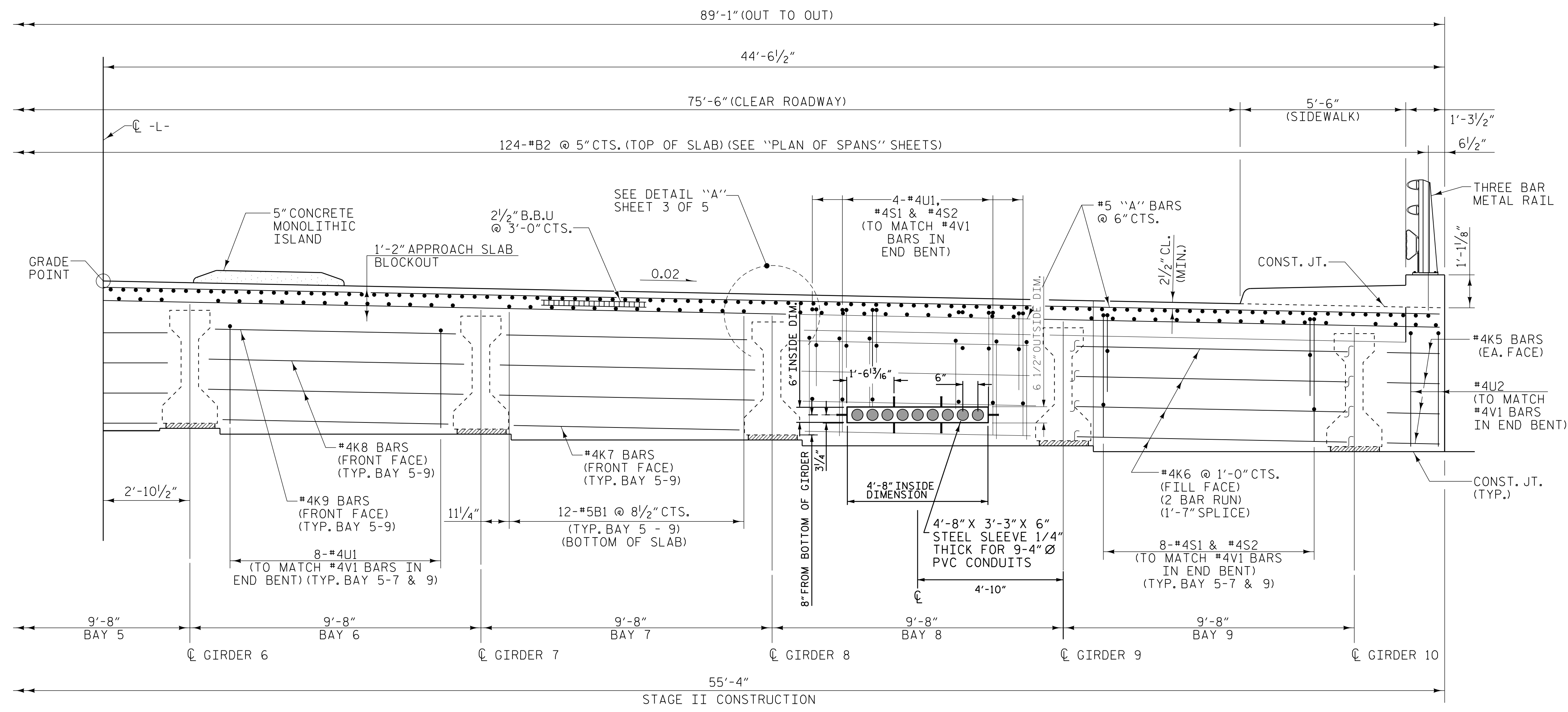
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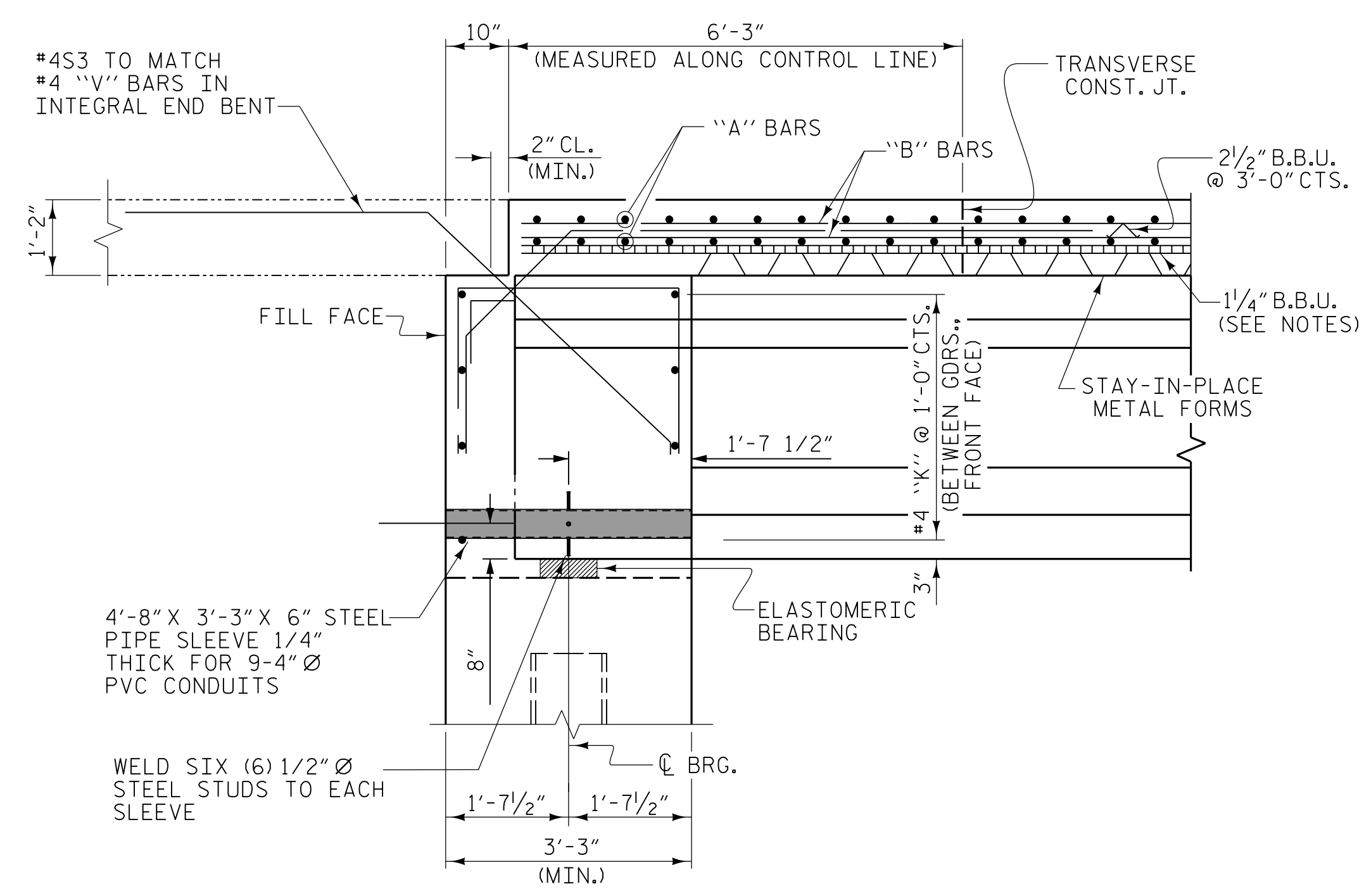
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 CHECKED BY : Z. H. BROWN DATE : 7/19  
 DESIGN ENGINEER OF RECORD : L. K. AUSTIN DATE : 4/19

DATE: 8/15/19 8:15 AM

3/9/2023



**TYPICAL HALF SECTION**  
(SHOWING INTEGRAL END BENT DIAPHRAGM)



**SECTION THRU INTEGRAL END BENTS**  
(BAY 8)  
(SEE SHEET 1 OF 5 FOR SECTION AT BAYS 6, 7 & 9)

PROJECT NO. U-5839  
HAYWOOD COUNTY  
STATION: 31+45.00 -L- POT

SHEET 2 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**SUPERSTRUCTURE  
TYPICAL SECTION  
END BENTS**

**NV5**  
NV5 ENGINEERS & CONSULTANTS, INC.  
6750 TRYON ROAD  
CARY, NC 27518  
P: 919.851.1912 www.NV5.com  
NC License # F-1333  
Formerly CALIX Engineers & Consultants

**PROFESSIONAL SEAL**  
DocuSign  
Corey D. Bousquet, P.E.  
23041  
ENGINEER  
COREY D. BOUSQUET

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

DATE: 5/19  
DRAWN BY: W. B. ALLEN  
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DESIGN ENGINEER OF RECORD: L. K. AUSTIN  
DATE: 7/19  
DATE: 4/19

DATE: 8/19

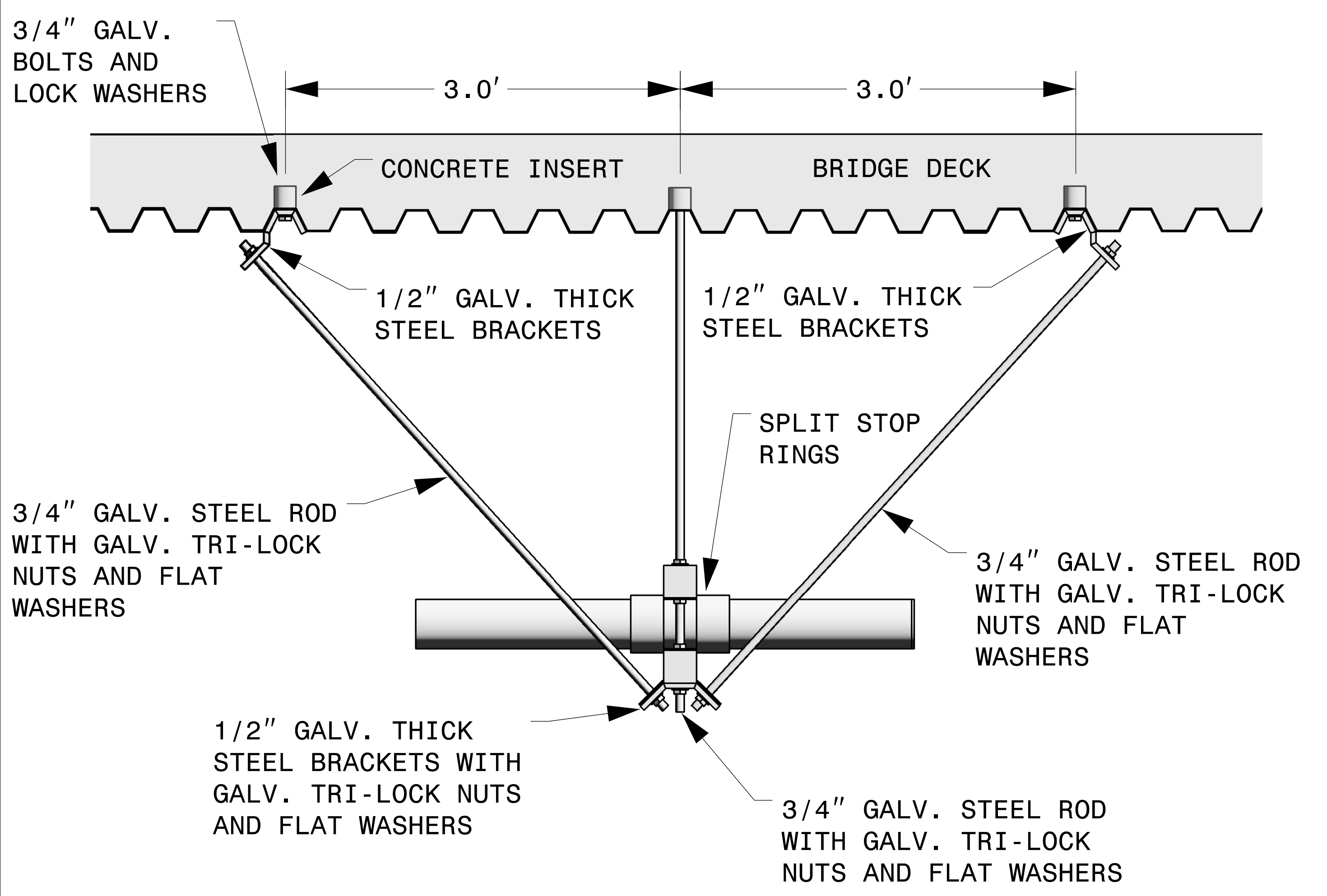
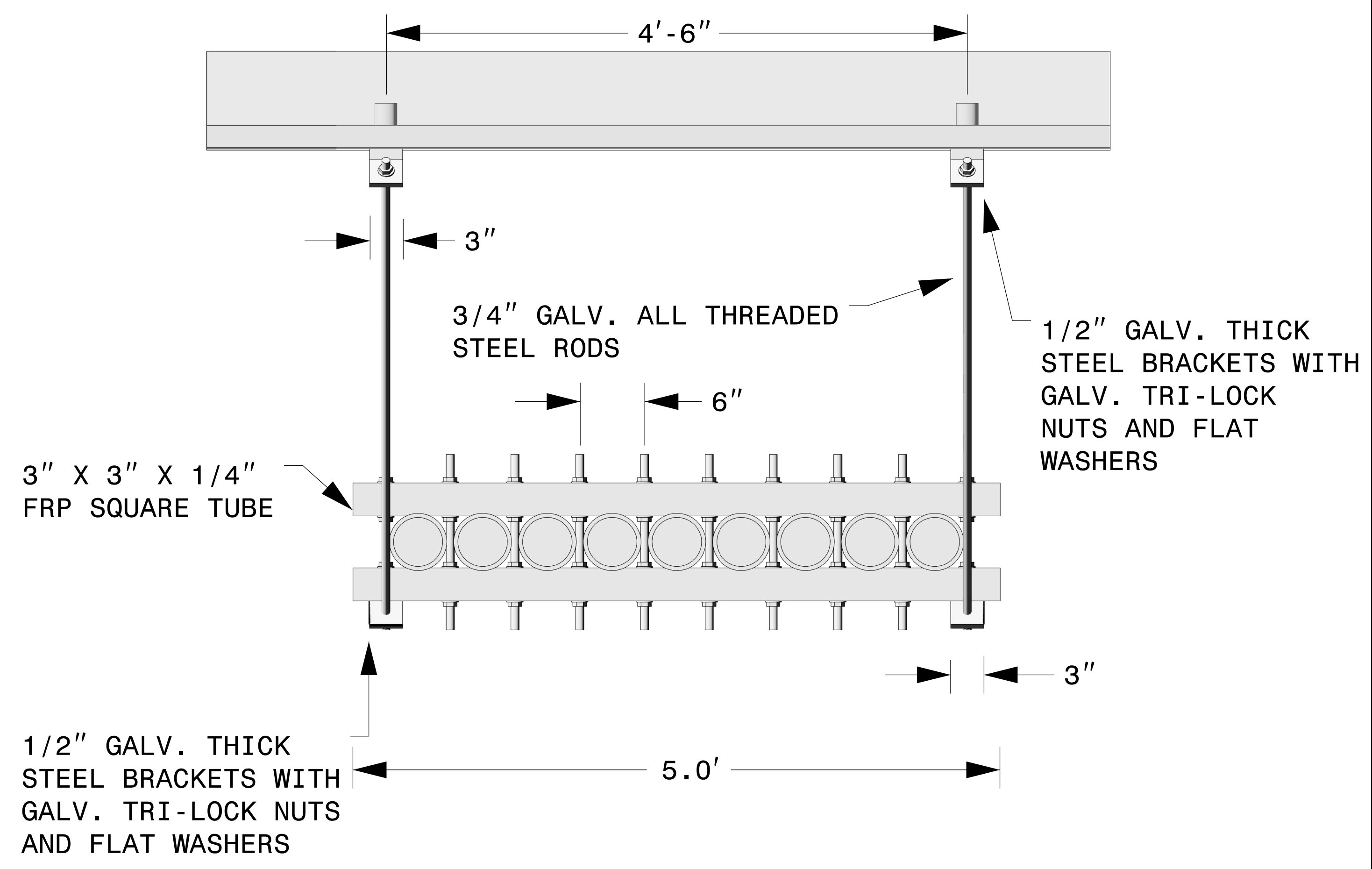
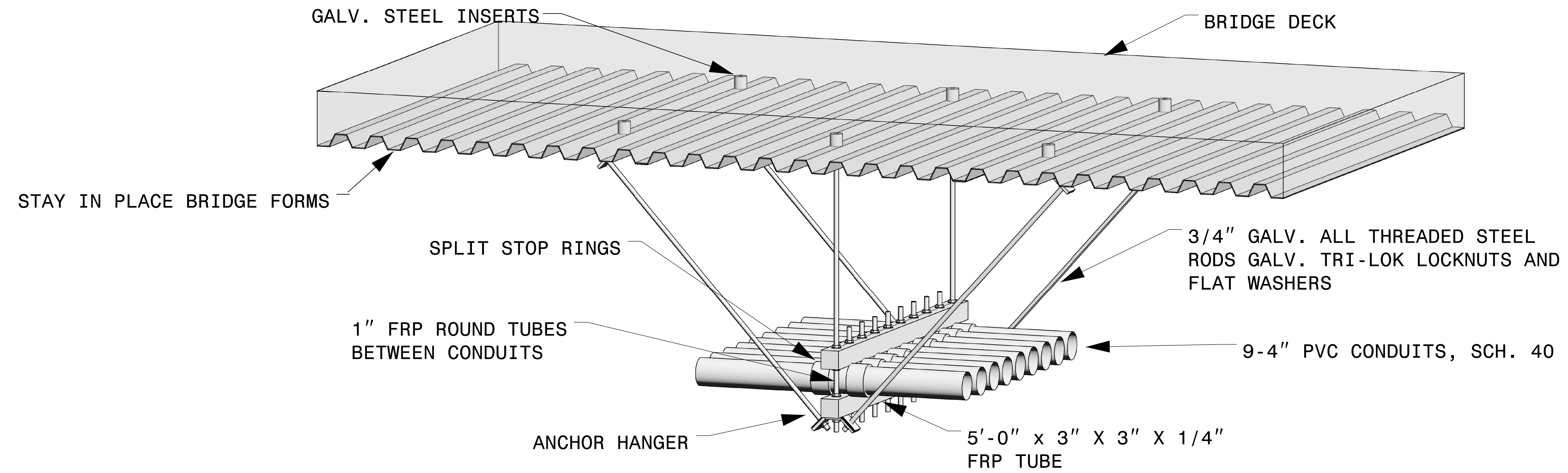
# ANCHOR HANGER WITH STOP RINGS DETAIL

PROJECT NO. U-5839  
HAYWOOD COUNTY  
STATION: 31+45.00 -L- POT

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

REVISIONS				SHEET NO.	
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TOTAL SHEETS: SU-22



DATE: 8:15 AM 8 FILES

DRAWN BY : W. B. ALLEN DATE : 4/19  
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 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 4/19

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# ANCHOR HANGER WITH STOP RINGS AND EXPANSION COUPLINGS DETAIL

PROJECT NO. U-5839  
HAYWOOD COUNTY  
STATION: 31+45.00 -L- POT

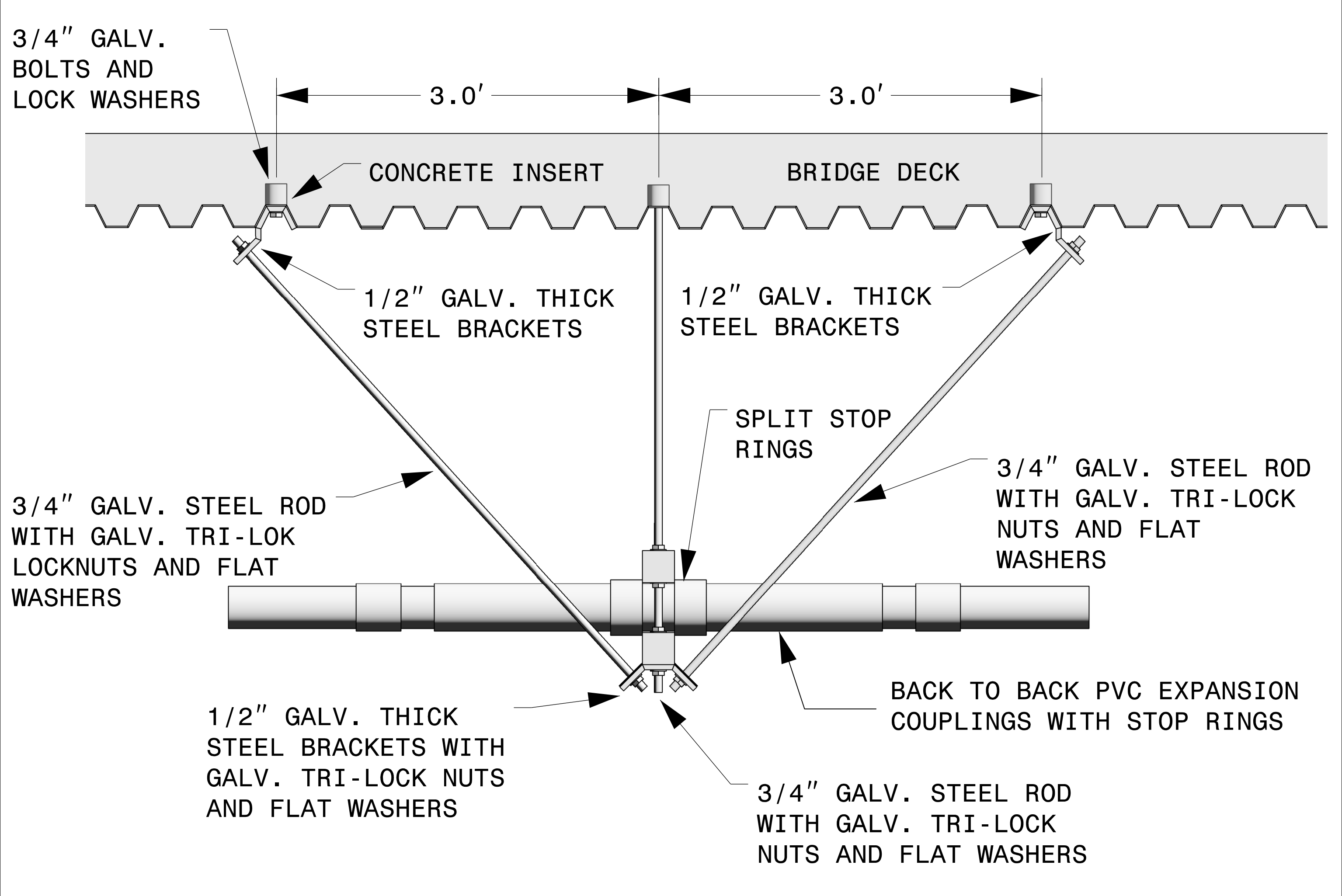
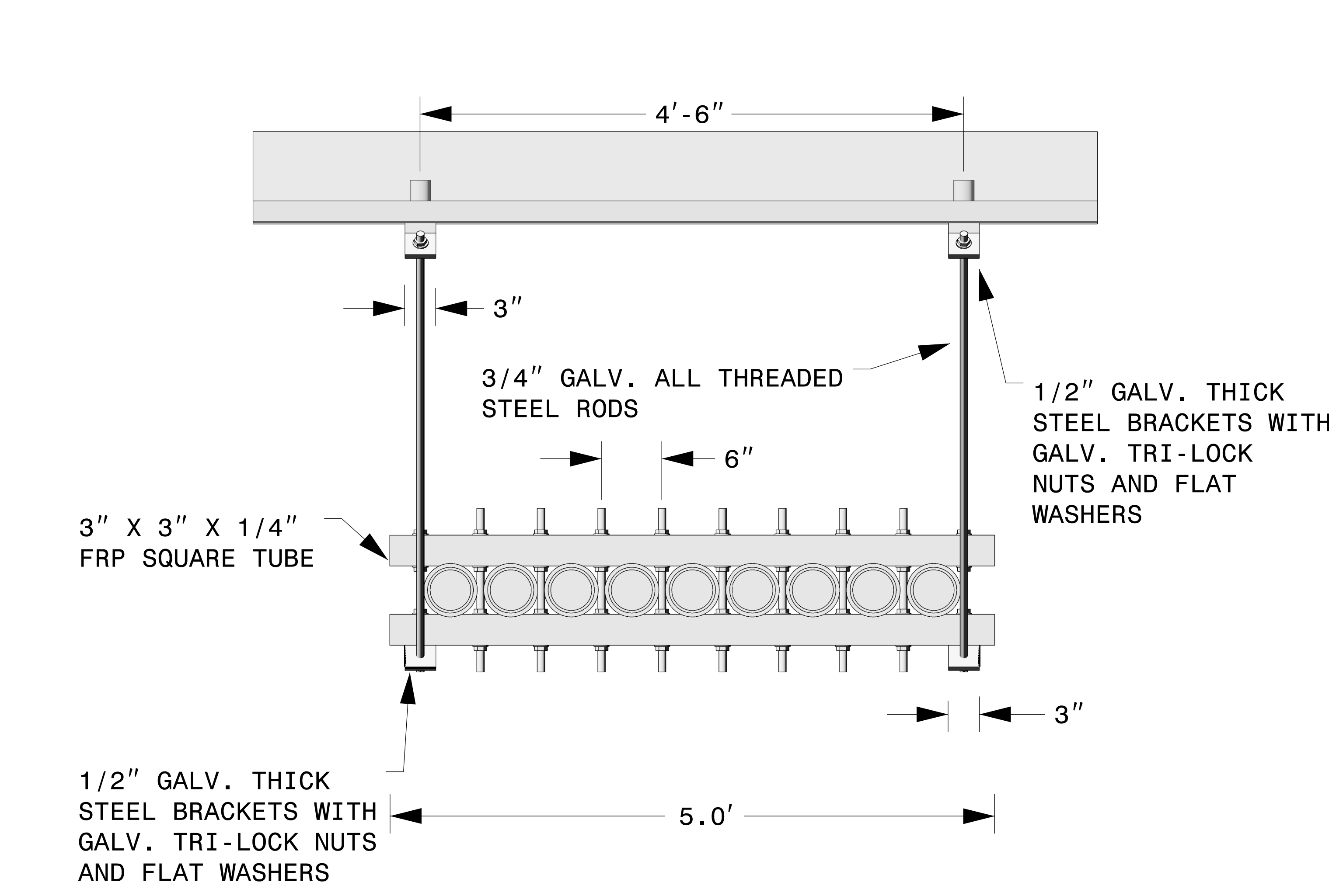
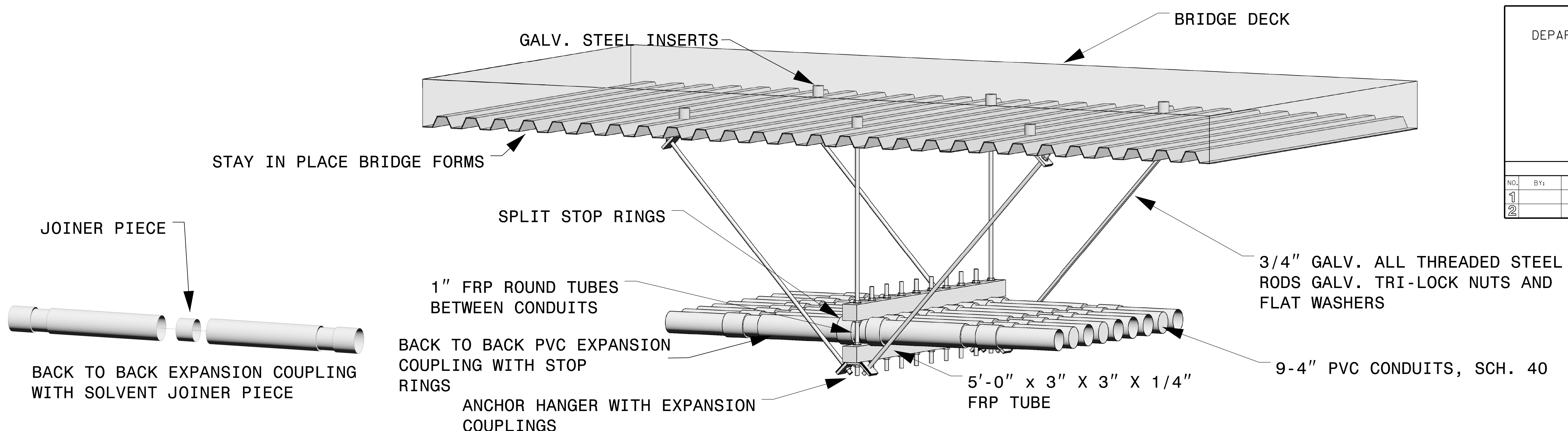
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

3/9/2023

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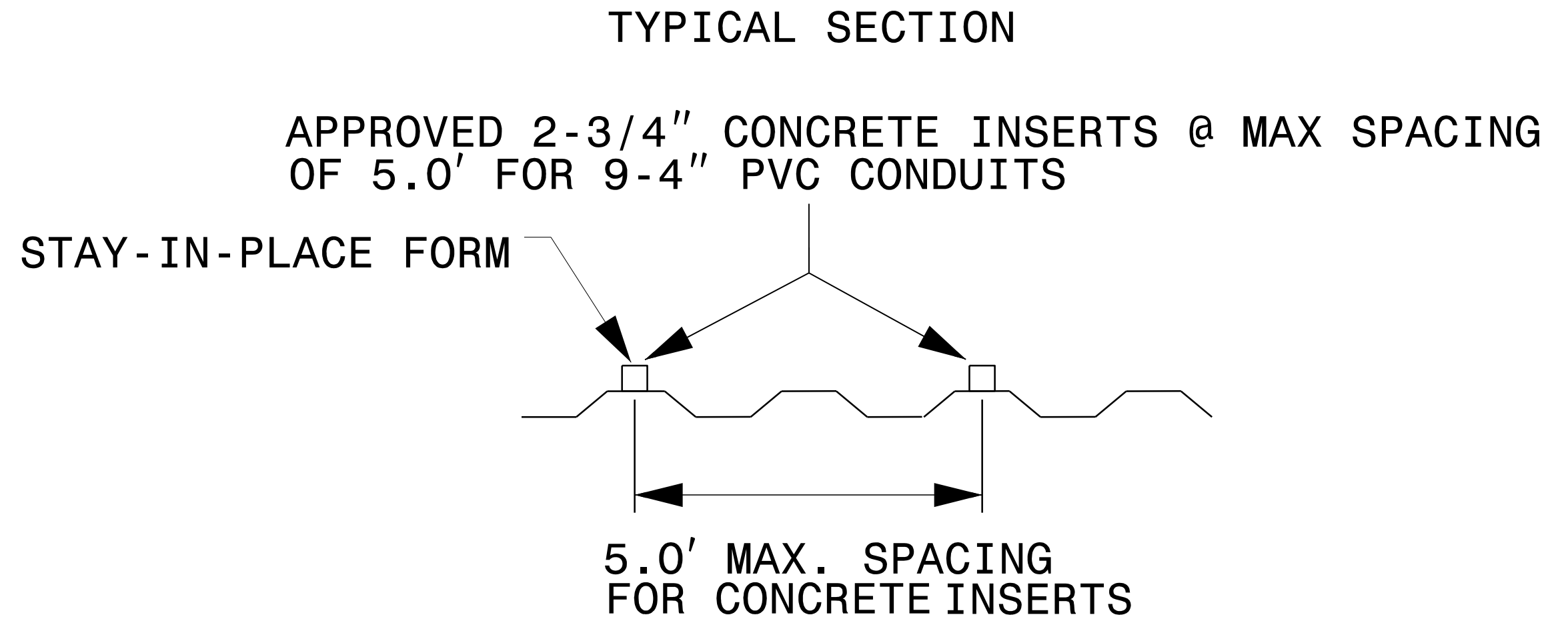
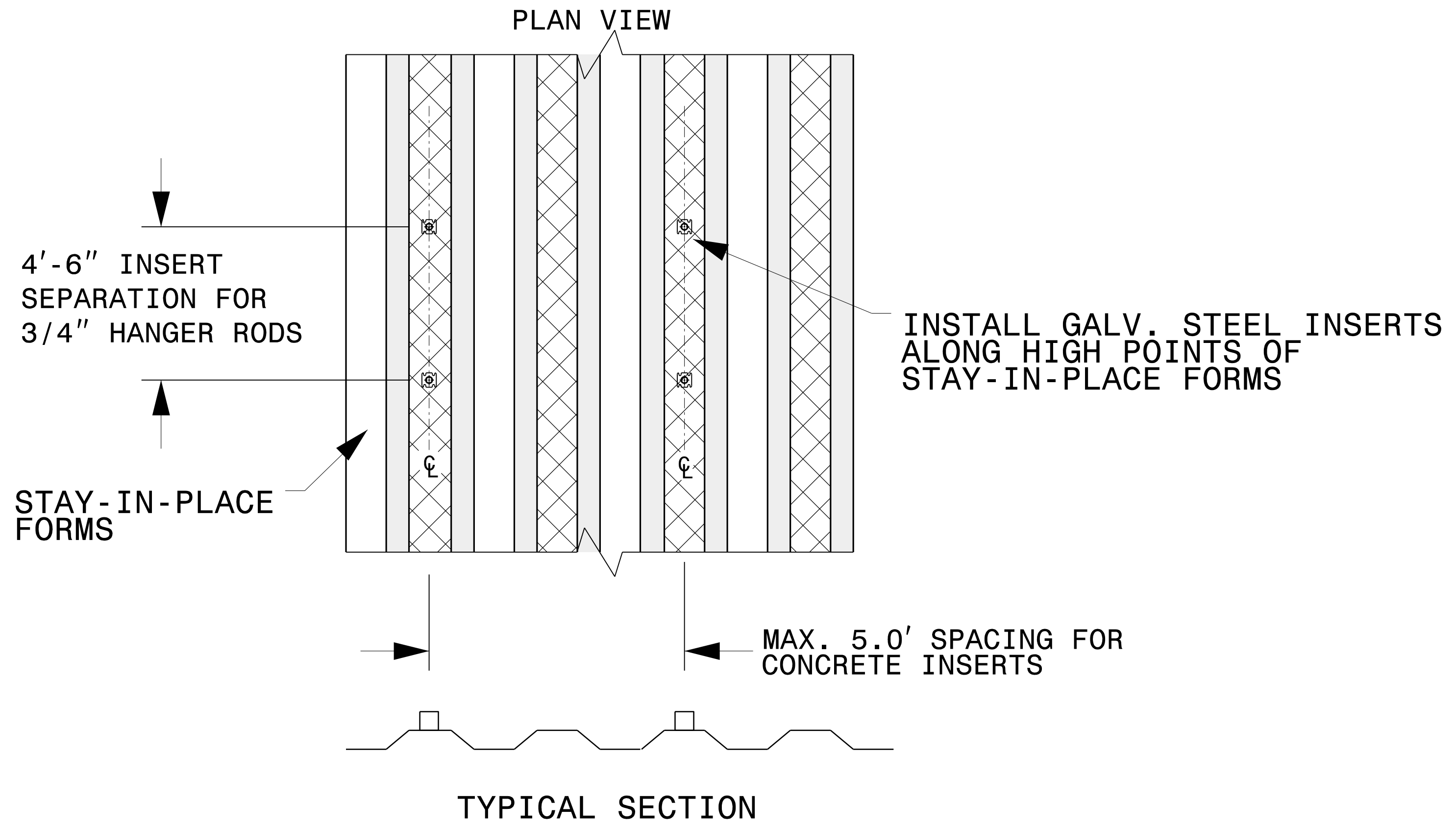
SHEET NO. SU-23  
TOTAL SHEETS

HINDE ENGINEERING  
401 Harrison Oaks Blvd., Suite 200, Cary, NC 27513



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 CHECKED BY : Z. H. BROWN DATE : 4/19  
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 4/19

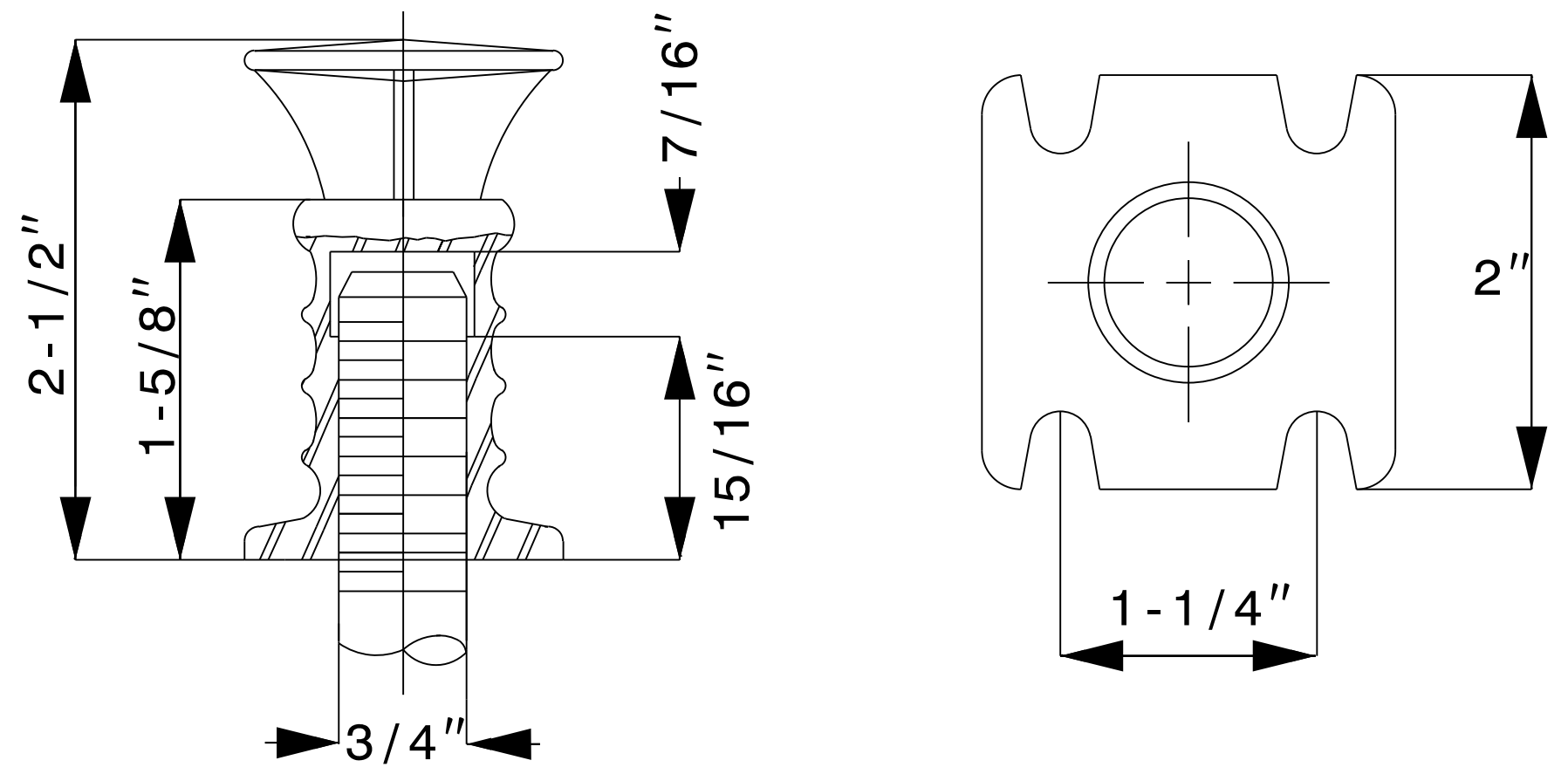
DOCUMENT NOT CONSIDERED FINAL  
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**NOTES:**  
 INSERTS MUST BE LOCATED IN THE HIGH POINT OF THE STAY-IN-PLACE FORMS.  
 EXACT SPACING MAY VARY IN ORDER TO AVOID LOCATING INSERTS ON SLOPING OR LOW SURFACE OF STAY IN PLACE FORM.

AT TRAVERSE JOINTS PLACE HANGERS 1'-6" MIN. FROM THE CENTER LINE OF THE JOINT.

**STAY-IN-PLACE FORMS CONCRETE INSERT PLACEMENT DETAIL**

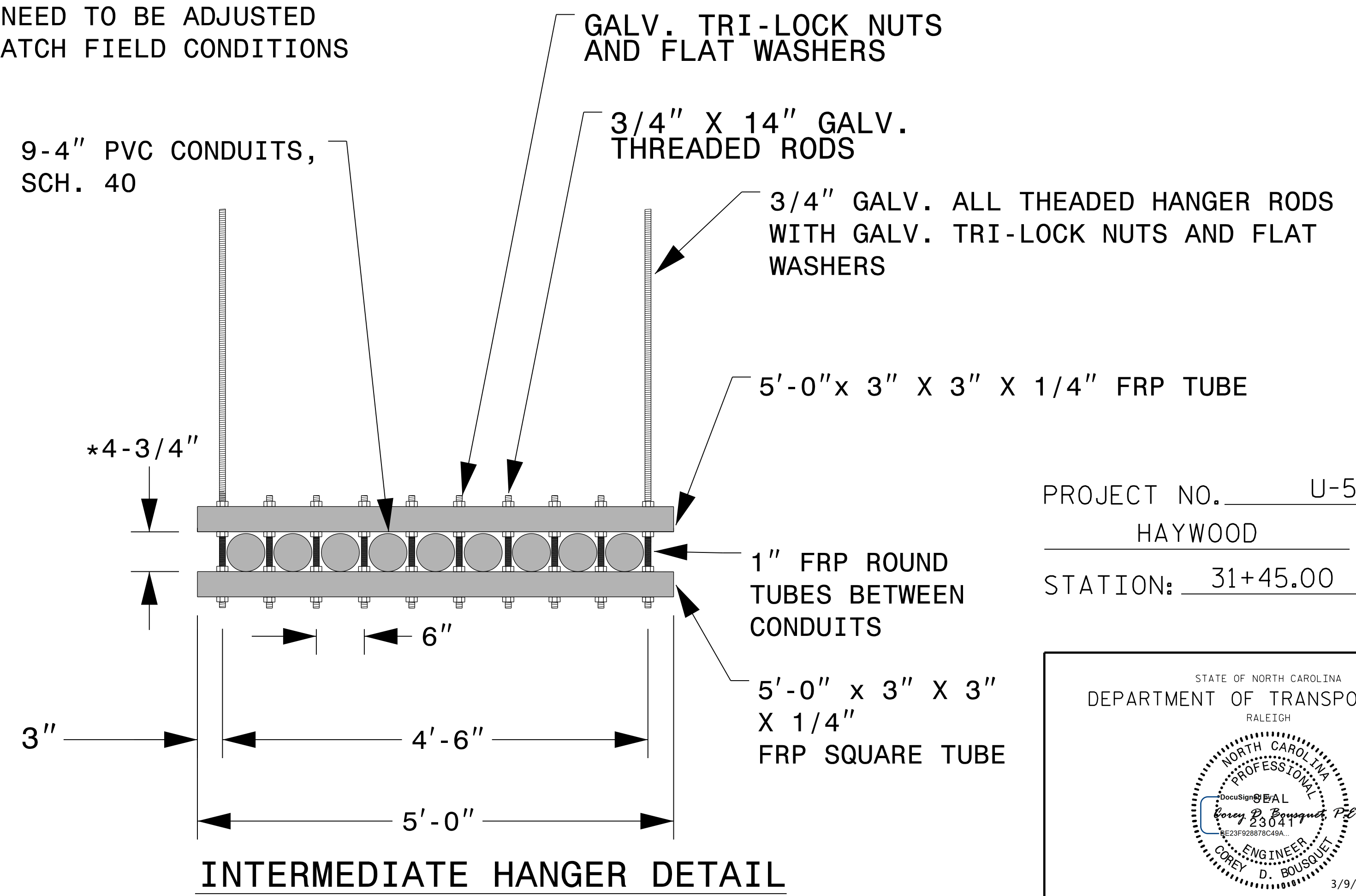


INSERTS SHALL BE HOT DIPPED GALVANIZED GRINNELL FIGURE 152

PIPE SIZE	MAX. RECOM LOAD, LBS.	WEIGHT LBS. EACH
9-4" CONDUITS	2500	0.64

**SCREW CONCRETE INSERT DETAIL**

\* MAY NEED TO BE ADJUSTED TO MATCH FIELD CONDITIONS



**INTERMEDIATE HANGER DETAIL**

PROJECT NO. U-5839  
 HAYWOOD COUNTY  
 STATION: 31+45.00 -L- POT

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

ENGINEER  
 COREY D. BOUSQUET  
 3/9/2023

REVISIONS						SHEET NO.
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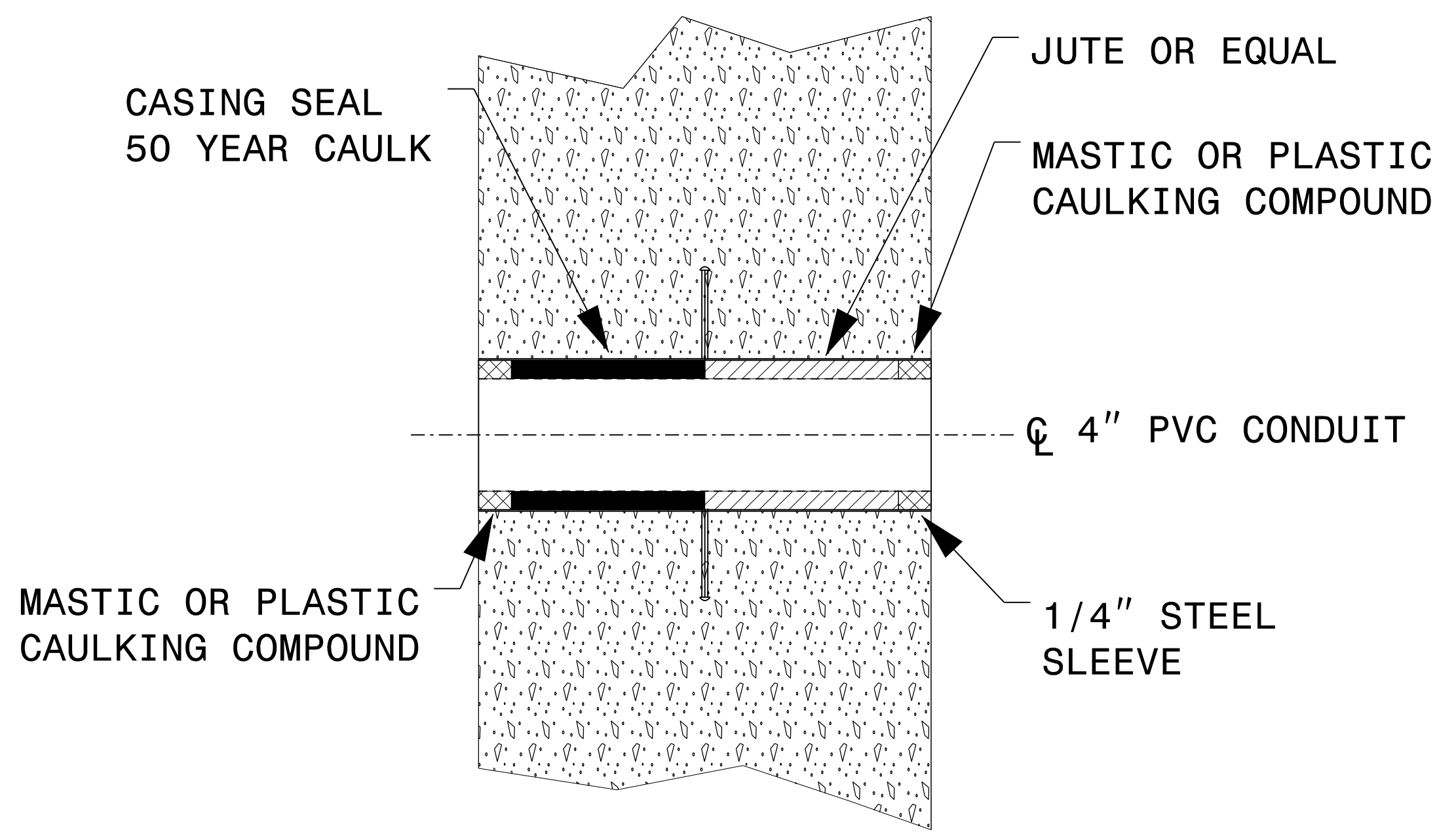
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

DRAWN BY : W. B. ALLEN DATE : 4/19  
 CHECKED BY : Z. H. BROWN DATE : 4/19  
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 4/19

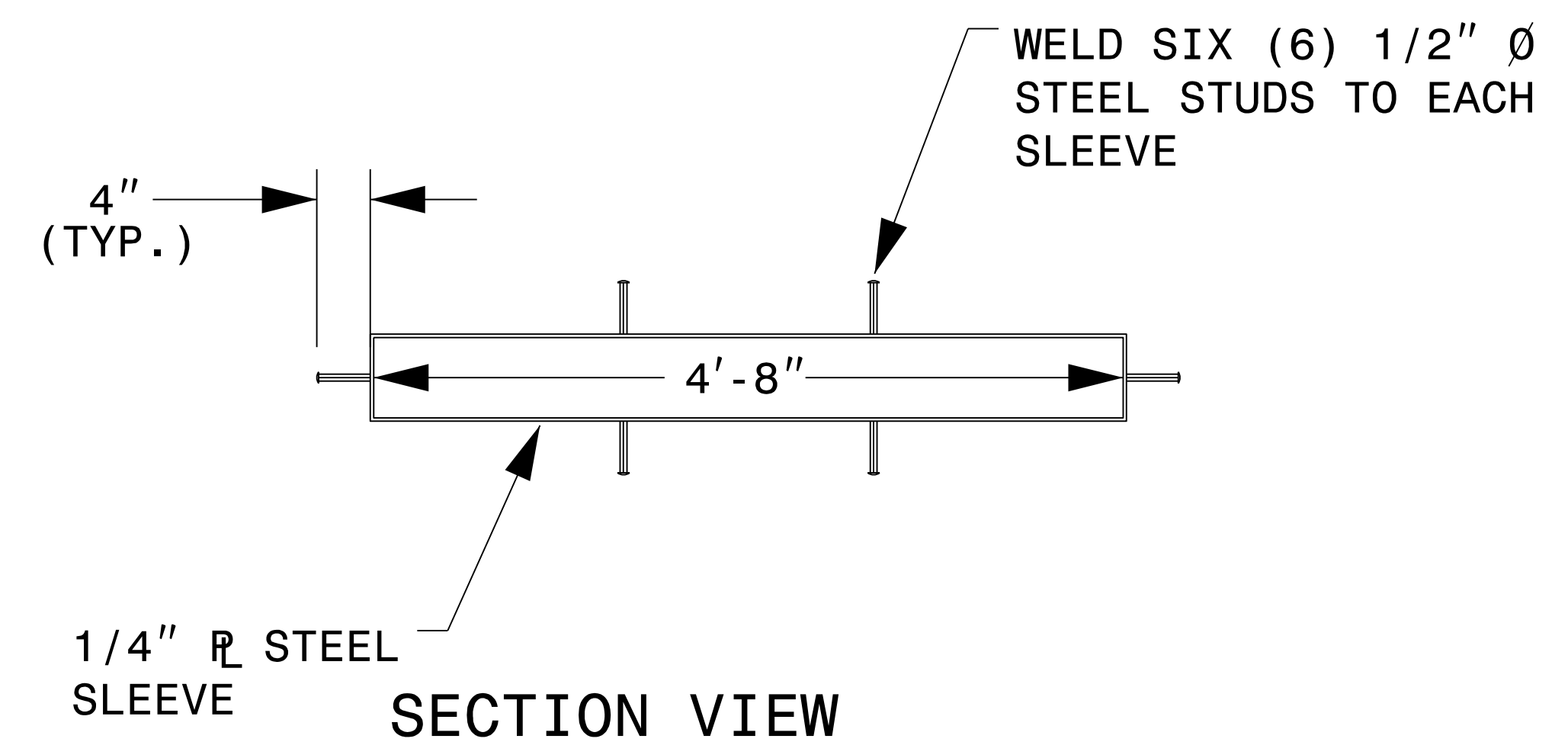
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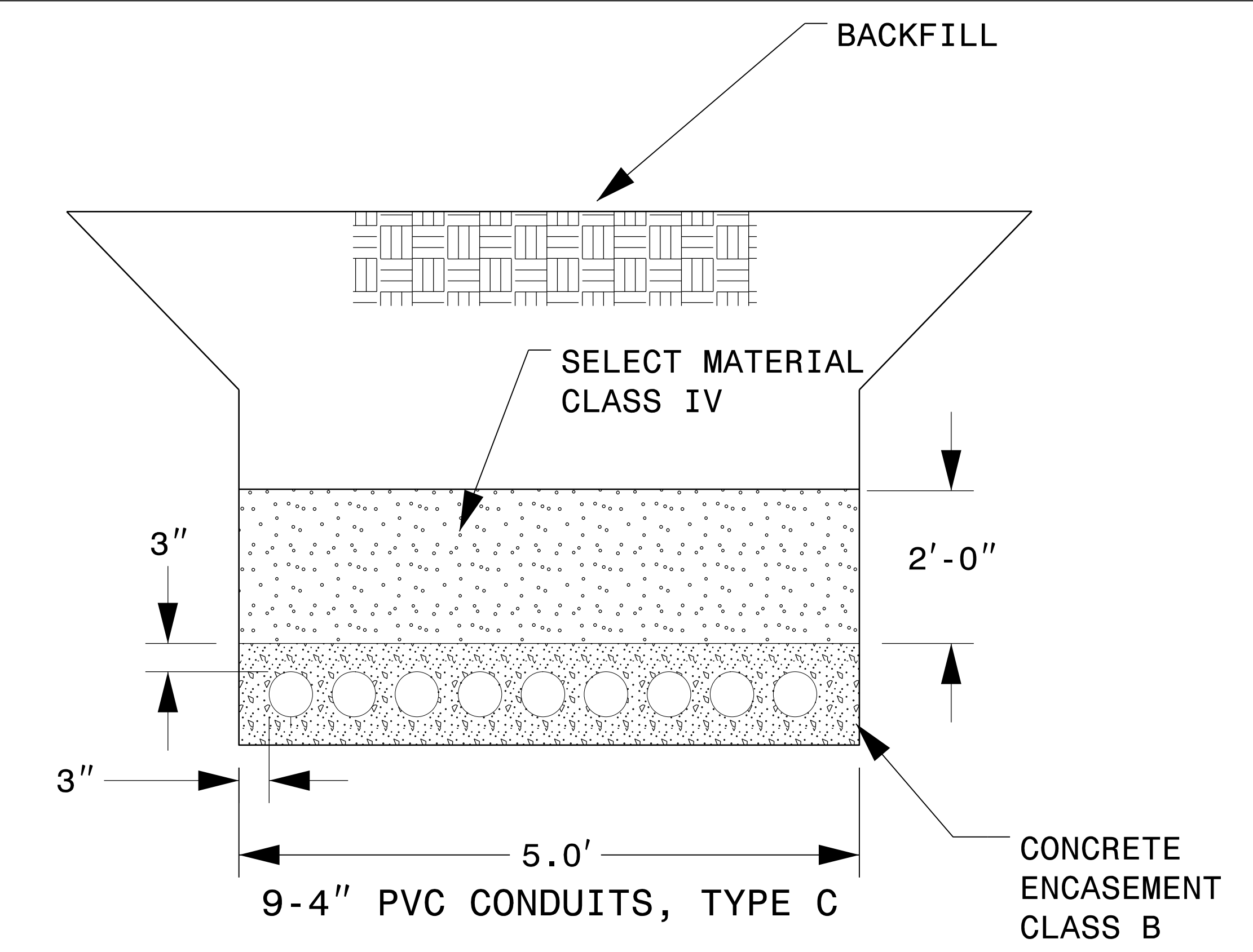
**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**



**SLEEVE SECTION THRU END BENT**

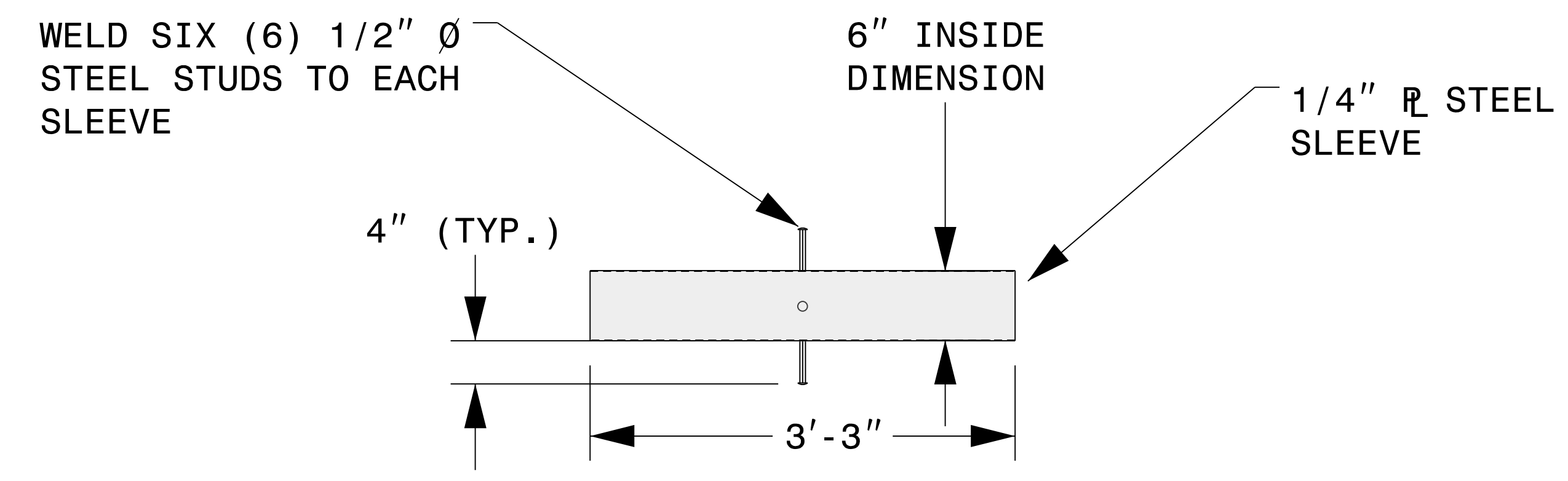


**SECTION VIEW  
 (END BENT SLEEVE)**

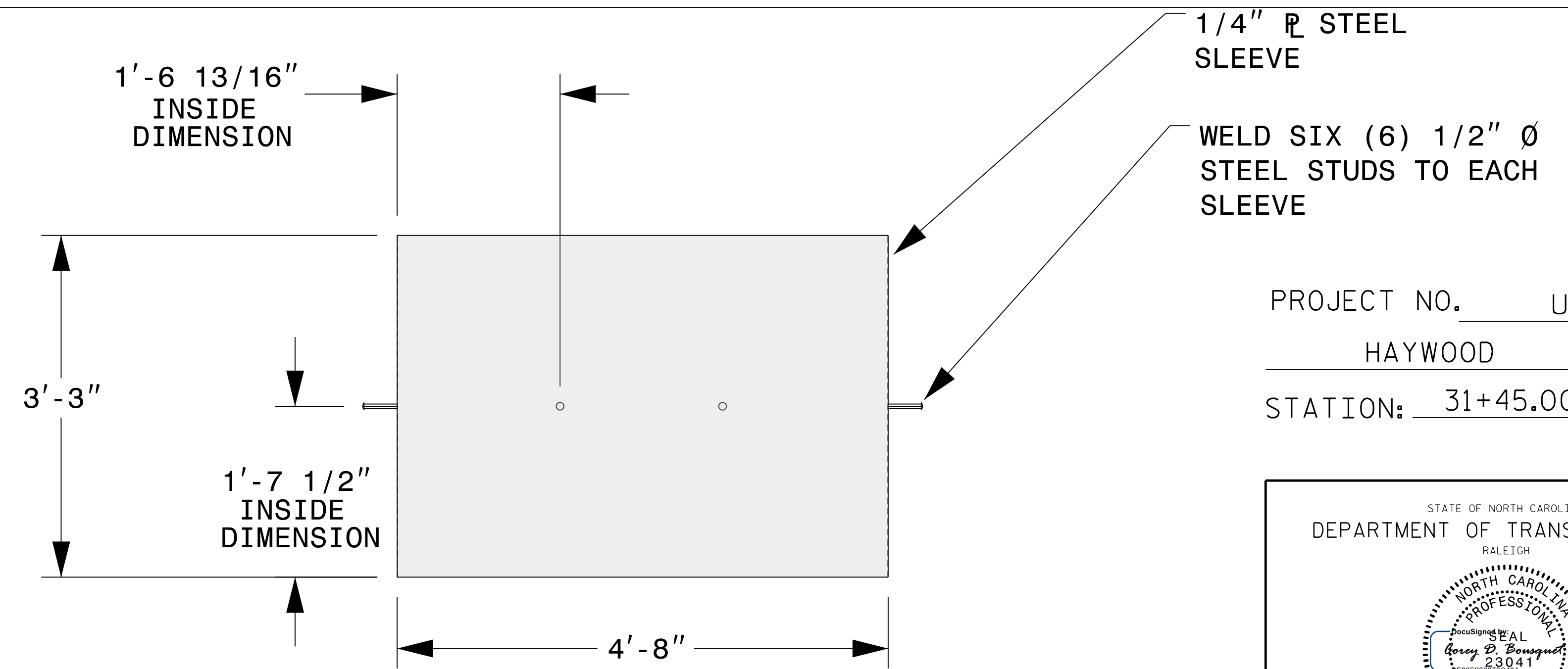


**CONCRETE ENCASEMENT**

ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.



**PROFILE VIEW  
 (END BENT SLEEVE)**



**TOP VIEW  
 (END BENT SLEEVE)**

PROJECT NO. U-5839  
 HAYWOOD COUNTY  
 STATION: 31+45.00 -L- POT

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**COREY D. BOUSSOLET**  
 ENGINEER  
 23041  
 3/9/2023

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

DRAWN BY : W. B. ALLEN DATE : 4/19  
 CHECKED BY : Z. H. BROWN DATE : 4/19  
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 4/19

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

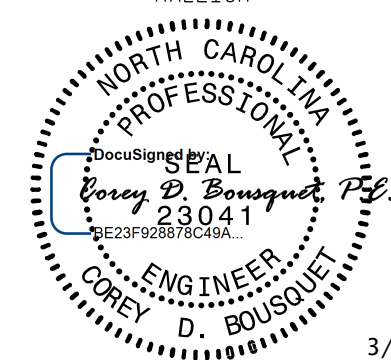
### BILL OF MATERIALS

9-4" PVC CONDUITS BRIDGE ATTACHMENT		
NO.	UNITS	ITEMS
1	2 EA	4'-8" X 3'-3" X 6" END BENT STEEL SLEEVE, 1/4" WALL THICKNESS (JUTE, CAULKING OR MASTIC)
2	34 EA	ITERMEDIATE HANGER (GALV. STEEL RODS AND ALL INCIDENTALS)
3	1 EA	ANCHOR HANGER WITH STOP RINGS (GALV. STEEL RODS AND ALL INCIDENTALS)
4	2 EA	ANCHOR HANGER WITH STOP RINGS AND EXPANSION COUPLINGS (GALV. STEEL RODS AND ALL INCIDENTALS)
5	86 EA	GALVANIZED STEEL INSERT FORMED INTO THE BRIDGE DECK
6	1512 LF	4" RIGID PVC CONDUIT, SCH. 40 - HEAVY WALL
8	18 EA	END PLUG (OR CAP) FOR 4" PVC CONDUIT
9	9 CY	CLASS B CONCRETE FOR ENCASING UTILITY LINES

THESE MATERIALS ARE ESTIMATED QUANTITIES ONLY AND ARE TO BE FURNISHED BY THE CONTRACTOR FOR THE ATTACHMENT TO THE PROPOSED BRIDGE

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3/9/2023

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

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DATE TIME FILE