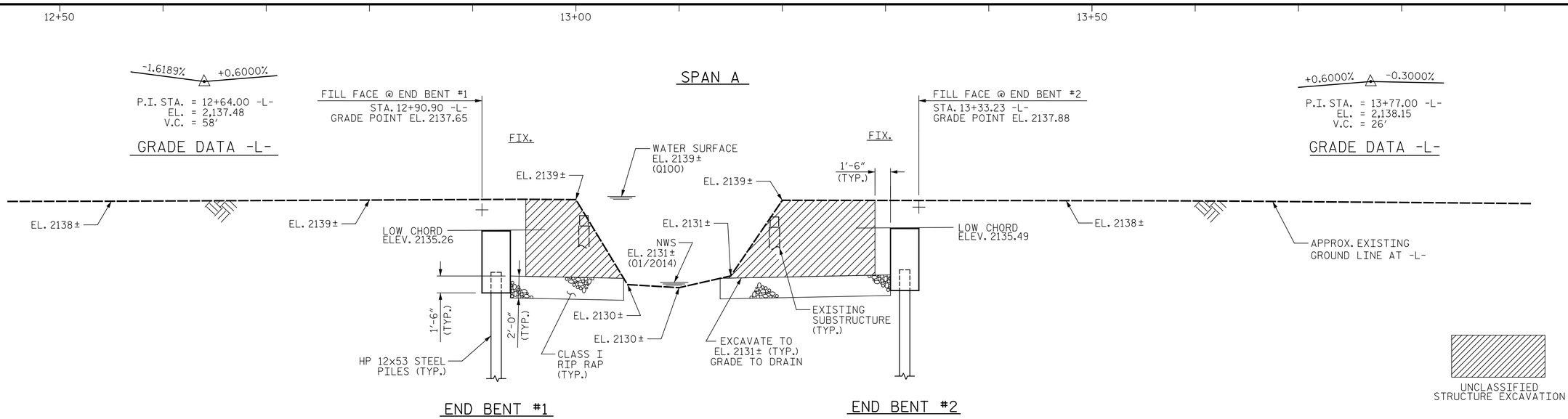
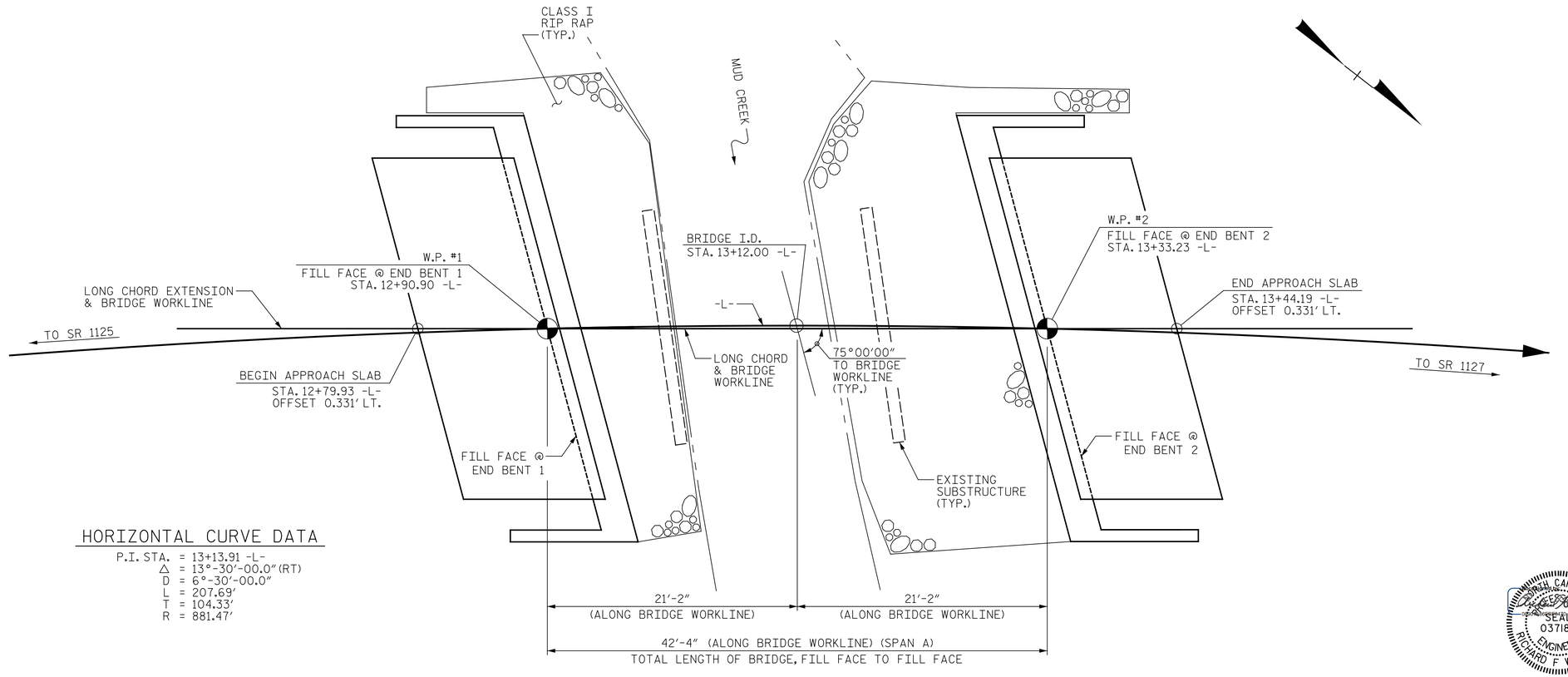
This electronic collection of documents is provided for the convenience of the user and is Not a Certified Document –

The documents contained herein were originally issued and sealed by the individuals whose names and license numbers appear on each page, on the dates appearing with their signature on that page.
This file or an individual page shall not be considered a certified document.



SECTION ALONG BRIDGE WORKLINE

(SECTIONS AT END BENTS ARE TAKEN AT RIGHT ANGLES)



PLAN

(PILES NOT SHOWN IN PLAN VIEW)

HORIZONTAL CURVE DATA

P.I. STA. = 13+13.91 -L-
△ = 13°-30'-00.0"(RT)
D = 6°-30'-00.0"
L = 207.69'
T = 104.33'
R = 881.47'

I HEREBY CERTIFY THESE PLANS
ARE THE AS-BUILT PLANS

PROJECT NO. B-6023

HENDERSON COUNTY

STATION: 13+12.00 -L-

SHEET 1 OF 3 REPLACES BRIDGE NO. 192

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER
MUD CREEK ON SR 1126
BETWEEN SR 1125
AND SR 1127

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037180 ENGINEER RICHARD F WERTMAN

11/12/2018 12:03:19 PM PST

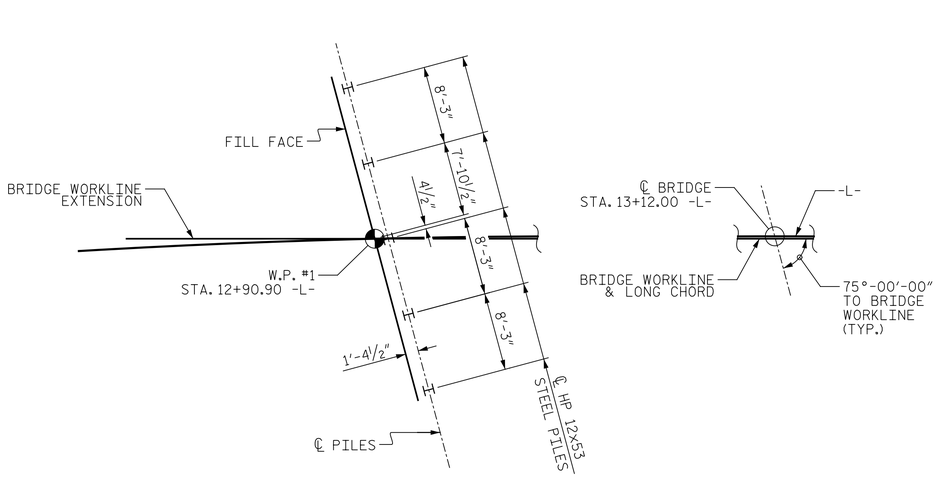
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			15

DRAWN BY : T.J. KIRSCHBAUM DATE : 1/7/15
CHECKED BY : R.F. WERTMAN DATE : 2/5/15
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 2/5/15

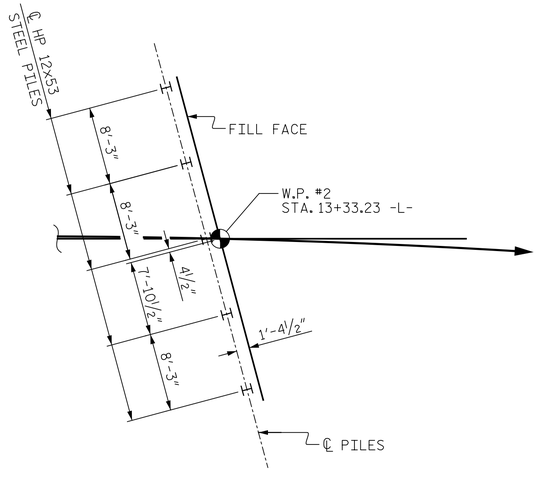
PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

STR. #192



END BENT #1



END BENT #2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE.

NOTES:

PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 78 TONS PER PILE.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 78 TONS PER PILE.

DRIVE LEFT PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 130 TONS PER PILE.

PILE EXCAVATION IS REQUIRED TO INSTALL CENTER AND RIGHT SIDE PILES AT END BENT NO. 1. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 2119.0 FT. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATION.

PILE EXCAVATION IS REQUIRED TO INSTALL ALL PILES AT END BENT NO. 2. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 2119.0 FT. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATION.

CONCRETE IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1 AND END BENT NO. 2.

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-6023

HENDERSON COUNTY

STATION: 13+12.00 -L-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F WERTMAN

11/12/2018 12:03:19 PM PST

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER
MUD CREEK ON SR 1126
BETWEEN SR 1125
AND SR 1127

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

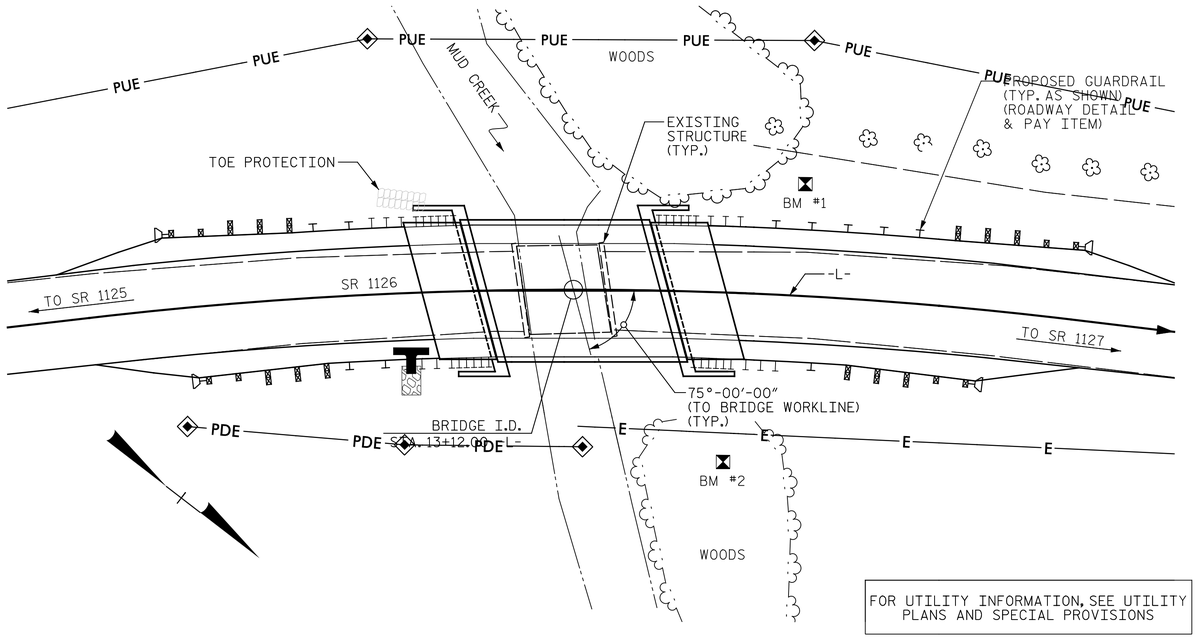
DRAWN BY : T.J. KIRSCHBAUM DATE : 1/7/15
CHECKED BY : R.F. WERTMAN DATE : 2/24/15
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 2/24/15

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STR. #192

BENCH MARK #2 : NAVD88 NAIL IN BASE OF 12" WALNUT, -L- STA. 13+44.94, 35.77' RIGHT, EL. 2139.46



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 20 FT. EACH SIDE OF BRIDGE WORK LINE AT END BENT 1 AND END BENT 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF ONE SPAN AT 18'-6", WITH A CLEAR ROADWAY OF 19'-2" ON TIMBER JOISTS ON END BENTS WITH TIMBER CAPS ON TIMBER PILES LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 EVALUATING SCOUR AT BRIDGES".

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	= 850 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 10 YRS.
DESIGN HIGH WATER ELEVATION	= 2137.5
DRAINAGE AREA	= 4.4 SQ. MI.
BASE DISCHARGE (Q100)	= 1,700 C.F.S.
BASE HIGH WATER ELEVATION	= 2138.93

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 950 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 10+ YRS.
OVERTOPPING FLOOD ELEVATION	= 2138.1

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS I (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EACH	NO.	LIN.FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE							LUMP SUM					80.25			LUMP SUM	10	400
END BENT NO. 1			21.0	9.0	LUMP SUM	31.5		3,125	5	5	75		35	40			
END BENT NO. 2			37.0	13.0	LUMP SUM	31.5		3,125	5	5	75		65	70			
TOTAL	LUMP SUM	LUMP SUM	58.0	22.0	LUMP SUM	63.0	LUMP SUM	6,250	10	10	150	80.25	100	110	LUMP SUM	10	400

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037180 ENGINEER RICHARD F. WERTMAN

11/19/2018 4:01:28 PM PST

PROJECT NO. B-6023

HENDERSON COUNTY

STATION: 13+12.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

BRIDGE OVER
MUD CREEK ON SR 1126
BETWEEN SR 1125
AND SR 1127

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

STR. #192

DRAWN BY : T.J. KIRSCHBAUM DATE : 1/7/15
CHECKED BY : R.F. WERTMAN DATE : 2/6/15
DESIGN ENGINEER OF RECORD : R.F. WERTMAN DATE : 2/6/15

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.573	--	1.75	0.274	1.78	40′	EL	19.482	0.62	1.6	40′	EL	1.948	0.80	0.274	**1.57**	40′	EL	**19.482**	
		HL-93(Opr)	N/A	--	2.078	--	1.35	0.274	2.31	40′	EL	19.482	0.62	2.08	40′	EL	1.948	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.873	67.422	1.75	0.274	2.23	40′	EL	19.482	0.62	**1.87**	40′	EL	**1.948**	0.80	0.274	1.96	40′	EL	19.482	
		HS-20(Opr)	36.000	--	2.428	87.4	1.35	0.274	2.9	40′	EL	19.482	0.62	2.43	40′	EL	1.948	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.642	49.163	1.4	0.274	5.16	40′	EL	19.482	0.62	4.8	40′	EL	7.793	0.80	0.274	3.64	40′	EL	19.482	
		SNGARBS2	20.000	--	2.995	59.897	1.4	0.274	4.24	40′	EL	15.586	0.62	3.65	40′	EL	7.793	0.80	0.274	2.99	40′	EL	19.482	
		SNAGRIS2	22.000	--	2.951	64.924	1.4	0.274	4.14	40′	EL	15.586	0.62	3.49	40′	EL	7.793	0.80	0.274	2.95	40′	EL	15.586	
		SNCOTTS3	27.250	--	1.82	49.605	1.4	0.274	2.58	40′	EL	19.482	0.62	2.42	40′	EL	7.793	0.80	0.274	1.82	40′	EL	19.482	
		SNAGGRS4	34.925	--	1.639	57.231	1.4	0.274	2.32	40′	EL	19.482	0.62	2.18	40′	EL	7.793	0.80	0.274	1.64	40′	EL	19.482	
		SNS5A	35.550	--	1.594	56.664	1.4	0.274	2.26	40′	EL	19.482	0.62	2.3	40′	EL	7.793	0.80	0.274	1.59	40′	EL	19.482	
		SNS6A	39.950	--	1.517	60.592	1.4	0.274	2.15	40′	EL	19.482	0.62	2.16	40′	EL	1.948	0.80	0.274	1.52	40′	EL	19.482	
		SNS7B	42.000	3	1.446	60.751	1.4	0.274	2.05	40′	EL	19.482	0.62	2.2	40′	EL	1.948	0.80	0.274	**1.45**	40′	EL	**19.482**	
	TTST	TNAGRIT3	33.000	--	1.866	61.588	1.4	0.274	2.65	40′	EL	19.482	0.62	2.52	40′	EL	1.948	0.80	0.274	1.87	40′	EL	19.482	
		TNT4A	33.075	--	1.89	62.524	1.4	0.274	2.68	40′	EL	19.482	0.62	2.38	40′	EL	7.793	0.80	0.274	1.89	40′	EL	19.482	
		TNT6A	41.600	--	1.603	66.702	1.4	0.274	2.27	40′	EL	19.482	0.62	2.34	40′	EL	7.793	0.80	0.274	1.60	40′	EL	19.482	
		TNT7A	42.000	--	1.644	69.051	1.4	0.274	2.33	40′	EL	19.482	0.62	2.17	40′	EL	1.948	0.80	0.274	1.64	40′	EL	19.482	
		TNT7B	42.000	--	1.681	70.584	1.4	0.274	2.38	40′	EL	19.482	0.62	2.09	40′	EL	1.948	0.80	0.274	1.68	40′	EL	19.482	
		TNAGRIT4	43.000	--	1.635	70.321	1.4	0.274	2.31	40′	EL	15.586	0.62	2	40′	EL	1.948	0.80	0.274	1.64	40′	EL	19.482	
		TNAGT5A	45.000	--	1.513	68.098	1.4	0.274	2.14	40′	EL	19.482	0.62	2.08	40′	EL	1.948	0.80	0.274	1.51	40′	EL	19.482	
		TNAGT5B	45.000	--	1.47	66.159	1.4	0.274	2.08	40′	EL	19.482	0.62	1.9	40′	EL	1.948	0.80	0.274	1.47	40′	EL	19.482	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.
2.
3.
4.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

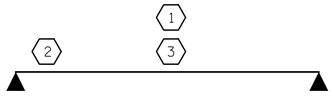
⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN 'A'

PROJECT NO. B-6023

HENDERSON COUNTY

STATION: 13+12.00 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037180 RICHARD F. WERTMAN

11/12/2018 12:03:19 PM PST

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 40′ CORED SLAB UNIT 75° SKEW

(NON-INTERSTATE TRAFFIC)

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

ASSEMBLED BY : T.J. KIRSCHBAUM DATE : 12/1/14
CHECKED BY : R.F. WERTMAN DATE : -

DRAWN BY : CVC 6/10
CHECKED BY : DNS 6/10

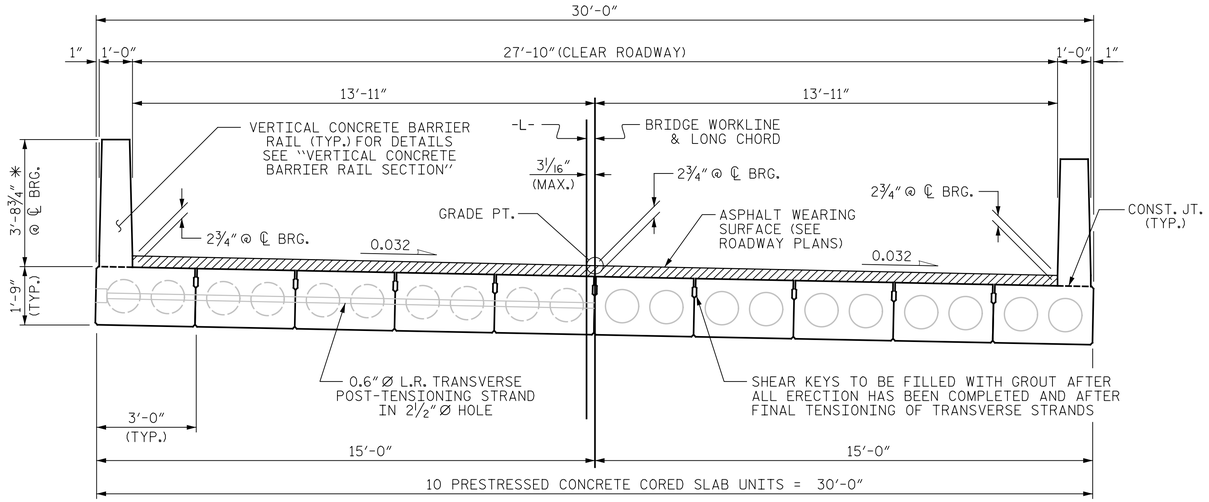
PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STR. #192

STD. NO. 21LRFR1_75&105S_40L

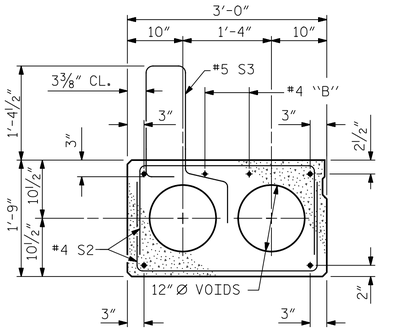


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

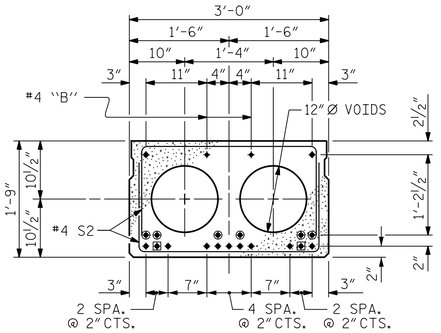
TYPICAL SECTION

✳ - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE ''VERTICAL CONCRETE BARRIER RAIL SECTION'' DETAIL.



EXT. SLAB SECTION

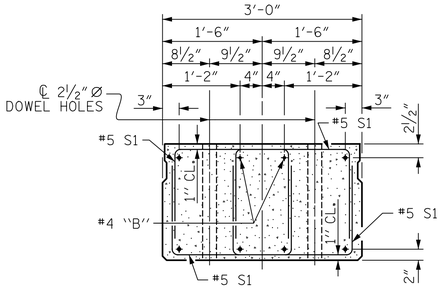
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION (40′ UNIT)

(13 STRANDS REQUIRED)

0.6″Ø LOW RELAXATION STRAND LAYOUT

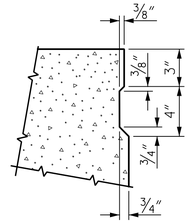


END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

- ◉ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2′-0″ FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- ◉ OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

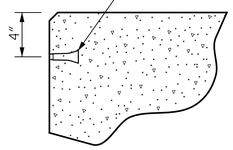
DEBONDING LEGEND



SHEAR KEY DETAIL

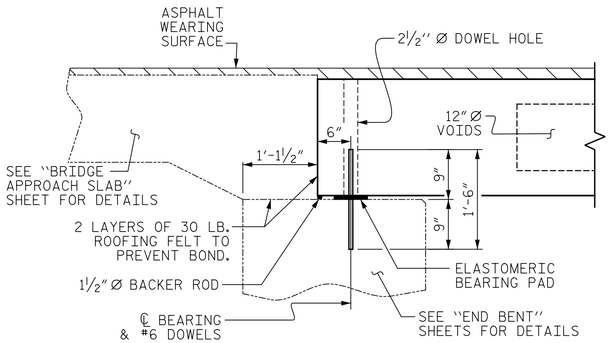
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED ⅜″. SIZE TO BE DETERMINED BY CONTRACTOR.

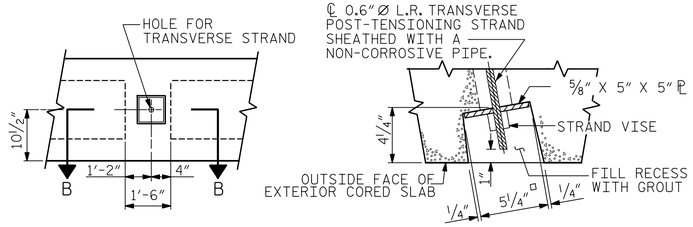


THREADED INSERT DETAIL

FIXED END



SECTION AT END BENT



ELEVATION VIEW

SECTION B-B

GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS

PROJECT NO. B-6023
HENDERSON COUNTY
STATION: 13+12.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD 3′-0″ X 1′-9″ PRESTRESSED CONCRETE CORED SLAB UNIT 75° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037180 ENGINEER RICHARD F WERTMAN

11/19/2018 4:01:28 PM PST

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			15

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 12/1/14		
CHECKED BY : R.F. WERTMAN	DATE : 2/6/15		
DRAWN BY : DGE 5/09	REV. 8/14 MAA/TMG		
CHECKED BY : BCH 6/09			

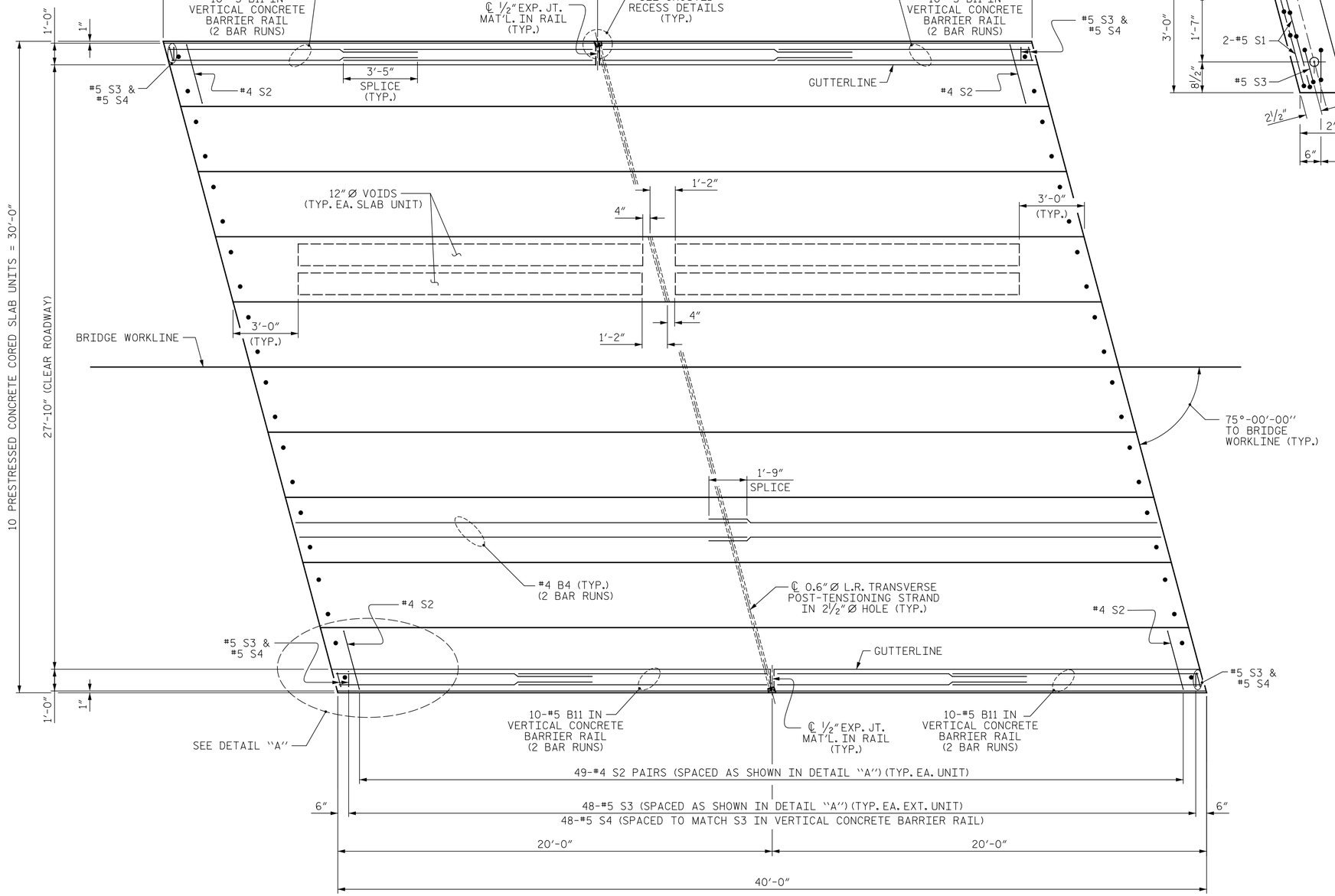
PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

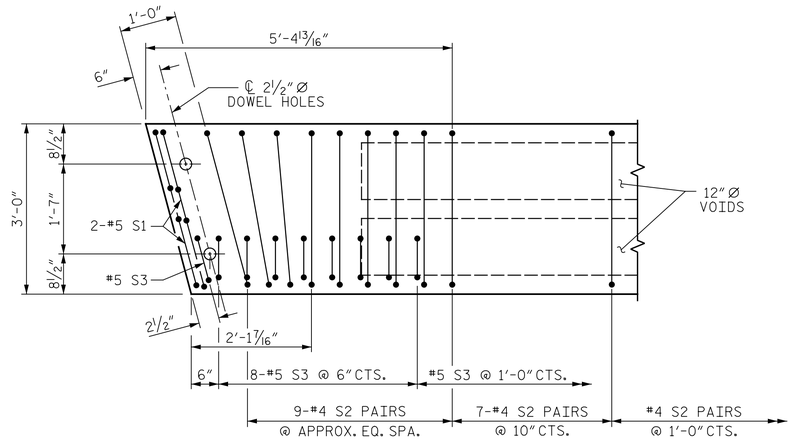
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STR. #192

STD. NO. 21″PCS2_30_75S



PLAN OF UNIT



DETAIL "A"

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PROJECT NO. B-6023

HENDERSON COUNTY

STATION: 13+12.00 -L-

SHEET 2 OF 3

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 12/1/14				
CHECKED BY : R.F. WERTMAN	DATE : 2/6/15				
DRAWN BY : DGE 3/09	REV. 12/5/11	MAA/AAC			
CHECKED BY : BCH 3/09	REV. 8/14	MAA/TMG			

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037180 ENGINEER RICHARD F WERTMAN

11/12/2018 12:03:19 PM PST

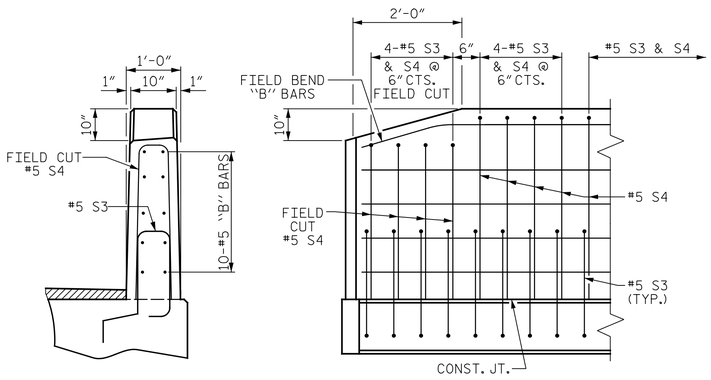
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PLAN OF 40' UNIT 27'-10" CLEAR ROADWAY 75° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			15

STR. #192

STD. NO. 21"PCS_30_75S_40L



END VIEW SIDE VIEW

END OF RAIL DETAILS

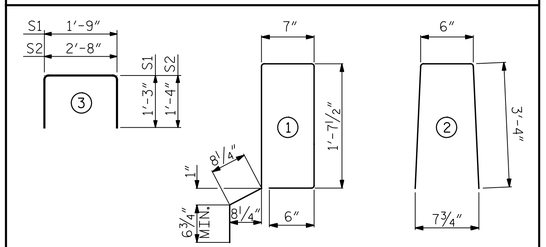
DEAD LOAD DEFLECTION AND CAMBER	3'-0" x 1'-9"
40' CORED SLAB UNIT	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	7/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ✻✻	1/8" ↓
FINAL CAMBER	3/4" ↑

✻✻ INCLUDES FUTURE WEARING SURFACE

CORED SLABS REQUIRED	NUMBER	LENGTH	TOTAL LENGTH
40' UNIT			
EXTERIOR C.S.	2	40'-0"	80'-0"
INTERIOR C.S.	8	40'-0"	320'-0"
TOTAL	10		400'-0"

CONCRETE RELEASE STRENGTH	
UNIT	PSI
40' UNITS	4000

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

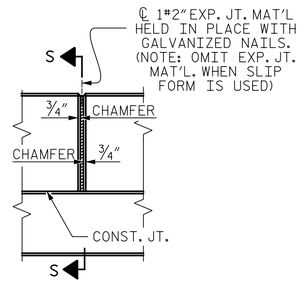
THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

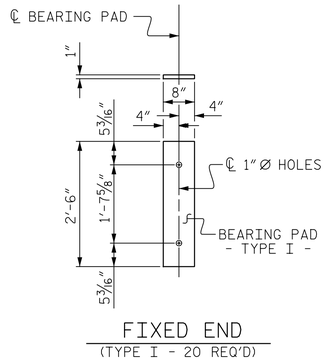
BILL OF MATERIAL FOR ONE 40' CORED SLAB UNIT

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT LENGTH	EXTERIOR UNIT WEIGHT	INTERIOR UNIT LENGTH	INTERIOR UNIT WEIGHT
B4	4	#4	STR	20'-9"	55	20'-9"	55
S1	8	#5	3	4'-3"	35	4'-3"	35
S2	98	#4	3	5'-4"	349	5'-4"	349
✻ S3	50	#5	1	5'-7"	291		
REINFORCING STEEL			LBS.		439		439
✻ EPOXY COATED REINFORCING STEEL			LBS.		291		
5000 P.S.I. CONCRETE			CU. YDS.		5.8		5.8
0.6" Ø L.R. STRANDS			No.		13		13

GRADE 270 STRANDS	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950



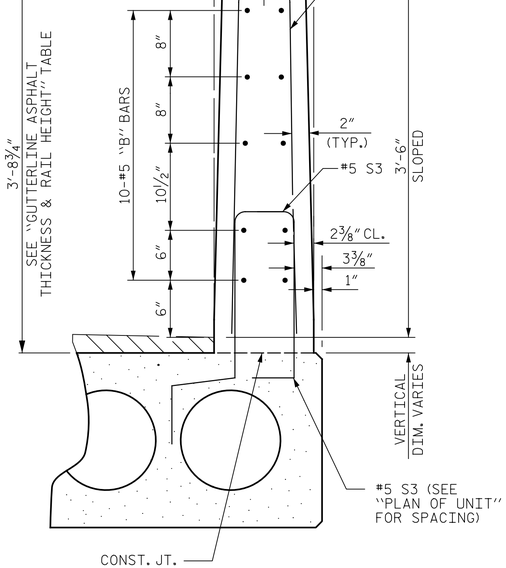
ELEVATION AT EXPANSION JOINTS

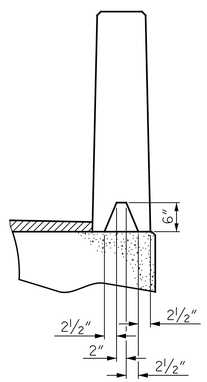


FIXED END
(TYPE I - 20 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.





SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

VERTICAL CONCRETE BARRIER RAIL SECTION

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS 40' UNIT	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
✻ B11	80	80	#5	STR	11'-8"	973
✻ S4	100	100	#5	2	7'-2"	747
✻ EPOXY COATED REINFORCING STEEL				LBS.		1720
CLASS AA CONCRETE				CU.YDS.		10.2
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		80.25

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
27'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
40' UNITS	2"	3'-8"

PROJECT NO. B-6023
HENDERSON COUNTY
STATION: 13+12.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 75° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037180 RICHARD F. WERTMAN
11/12/2018 12:03:19 PM PST

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			15

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 12/1/14		
CHECKED BY : R.F. WERTMAN	DATE : 2/6/15		
DRAWN BY : DGE 5/09	CHECKED BY : BCH 6/09	REV. 5/18	MAA/THC

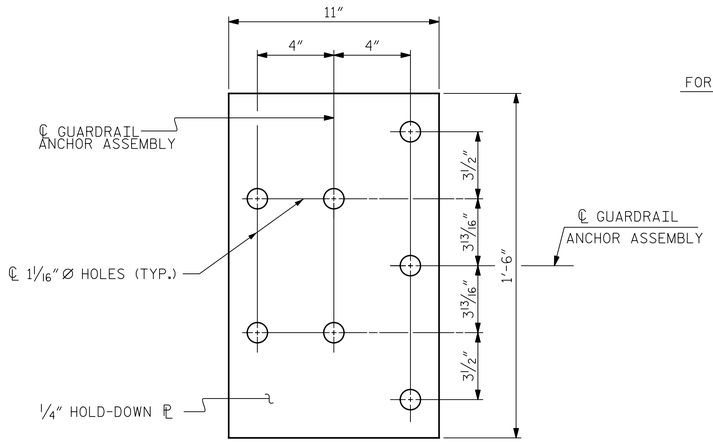
PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road Suite 102 Raleigh NC 27607-3073 (919) 420-7660
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

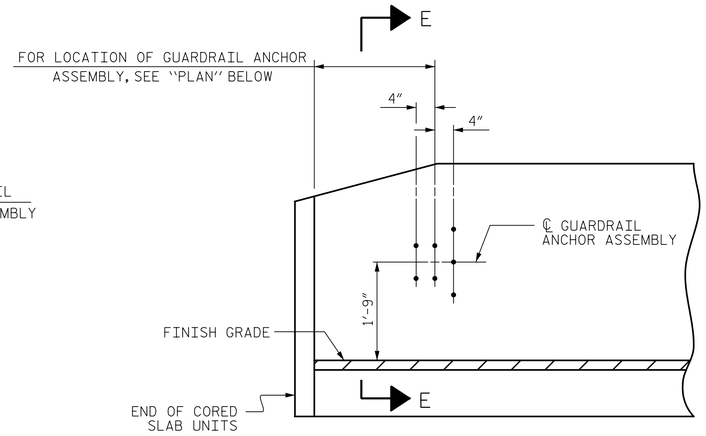
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STR. #192

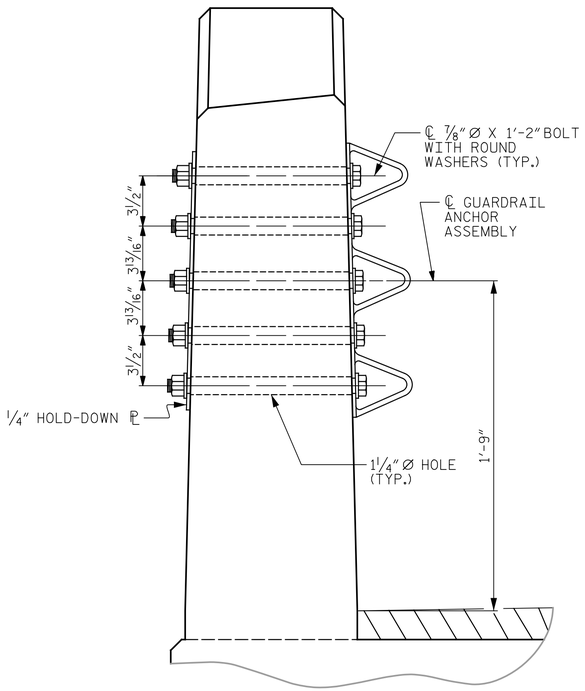
STD. NO. 21"PCS3_30_75S



PLAN

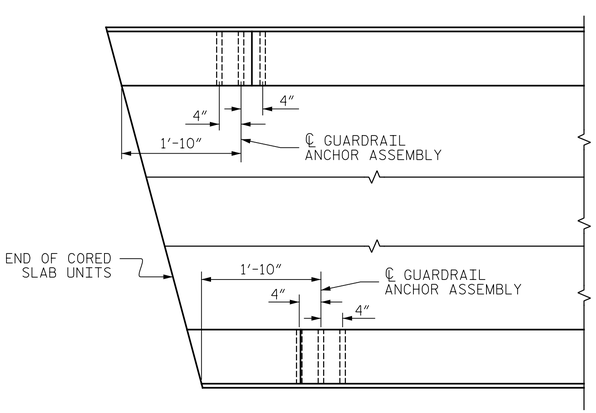


ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4″ HOLD DOWN PLATE AND 7 - 7/8″ Ø BOLTS WITH NUTS AND WASHERS.

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 7/8″ Ø 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.

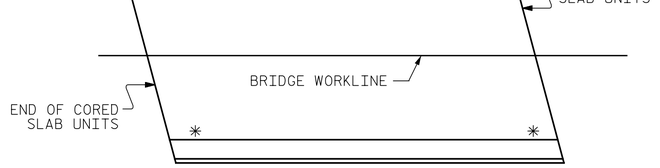
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4″ Ø 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.



SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-6023

HENDERSON COUNTY

STATION: 13+12.00 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037180 ENGINEER RICHARD F WERTMAN
11/12/2018 12:03:19 PM PST

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 12/1/14
CHECKED BY : R.F. WERTMAN	DATE : 2/6/15
DRAWN BY : MAA 5/10	REV. 6/13 MAA/GM
CHECKED BY : GM 5/10	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

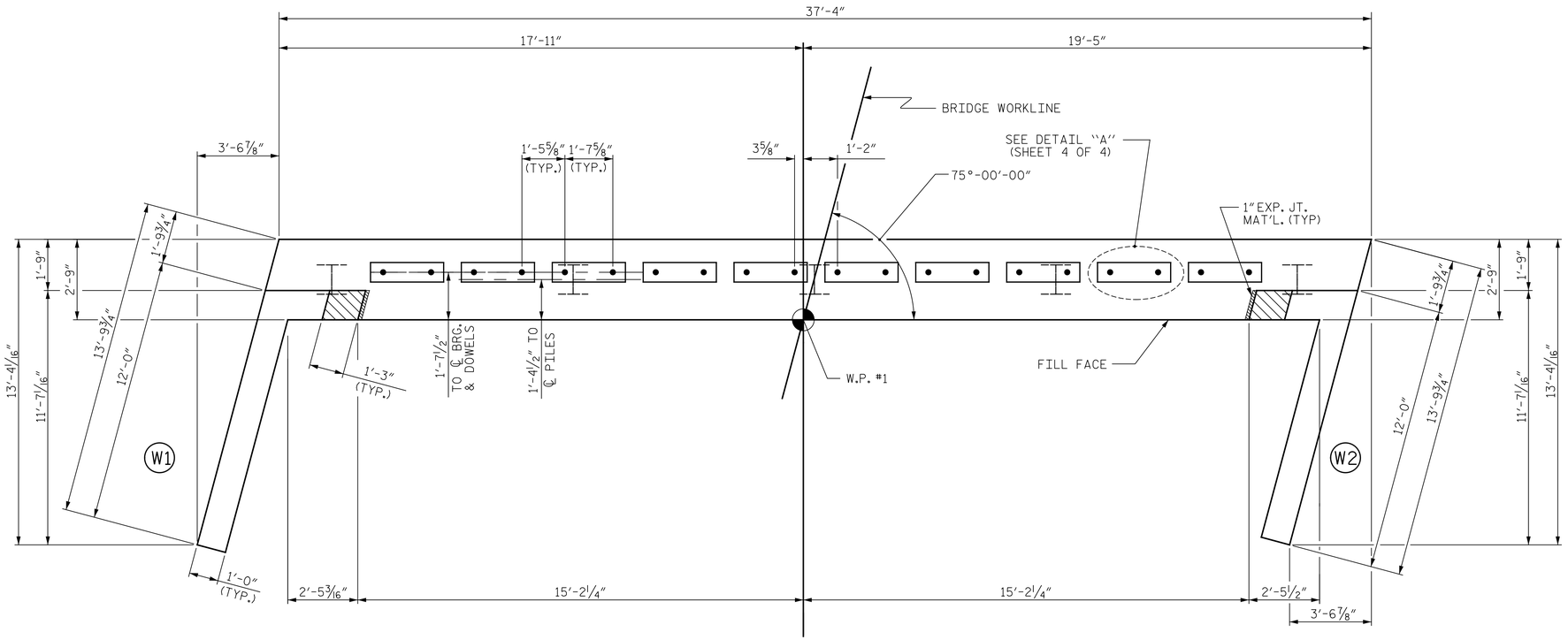
THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

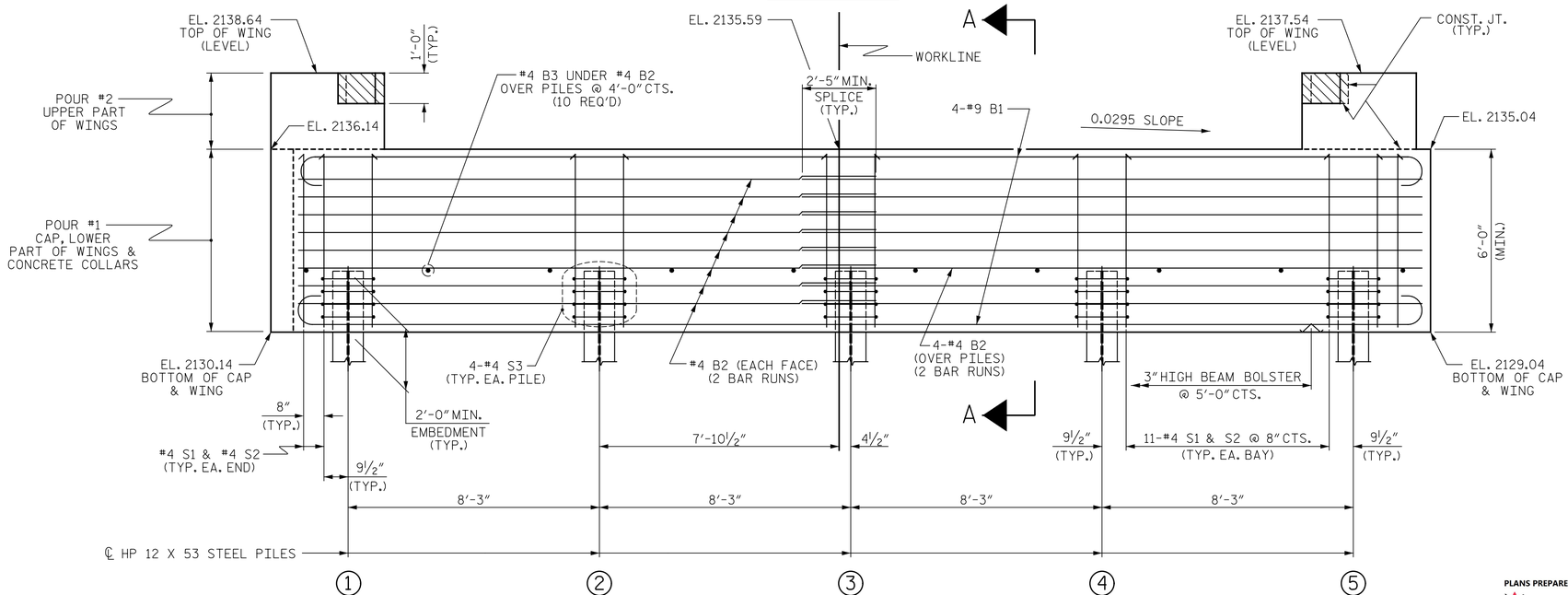
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			15

STR. #192

STD. NO. GRA3



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
1	2132.06
2	2131.82
3	2131.58
4	2131.34
5	2131.10

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037180 RICHARD F. WERTMAN

11/12/2018 12:03:19 PM PST

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

PROJECT NO. B-6023
HENDERSON COUNTY
STATION: 13+12.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

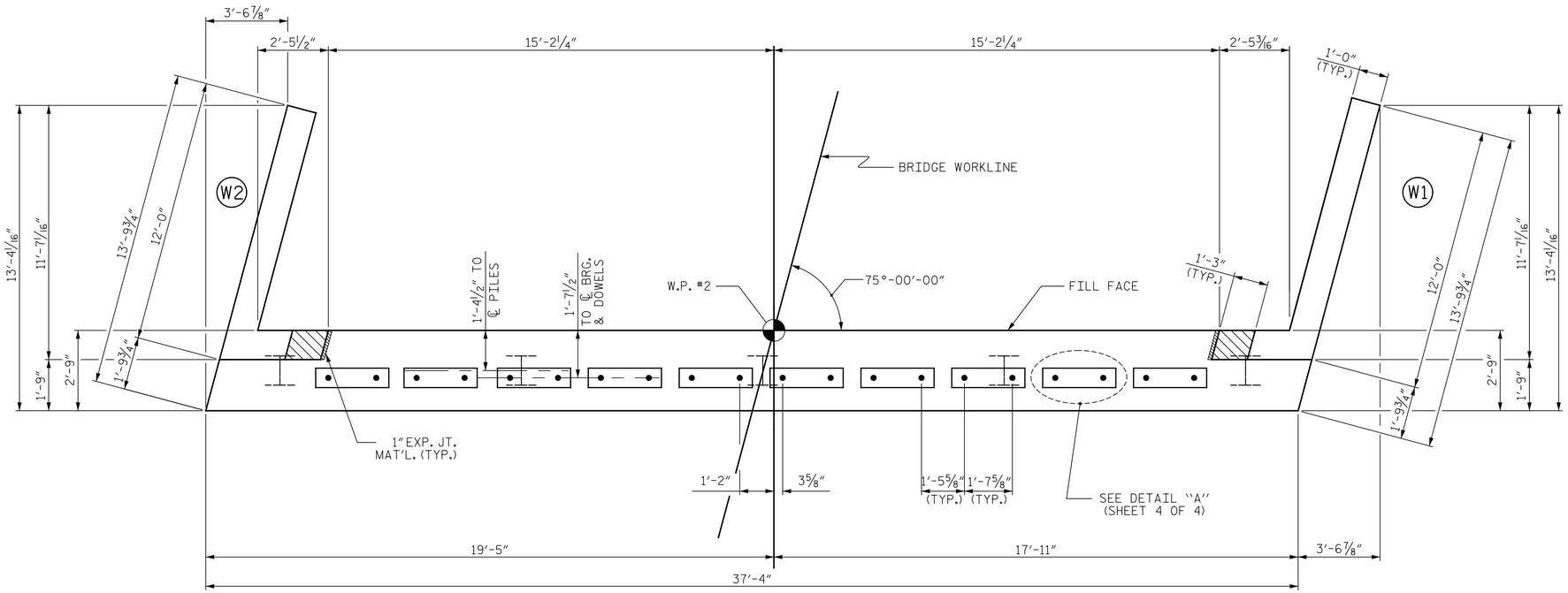
END BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			15

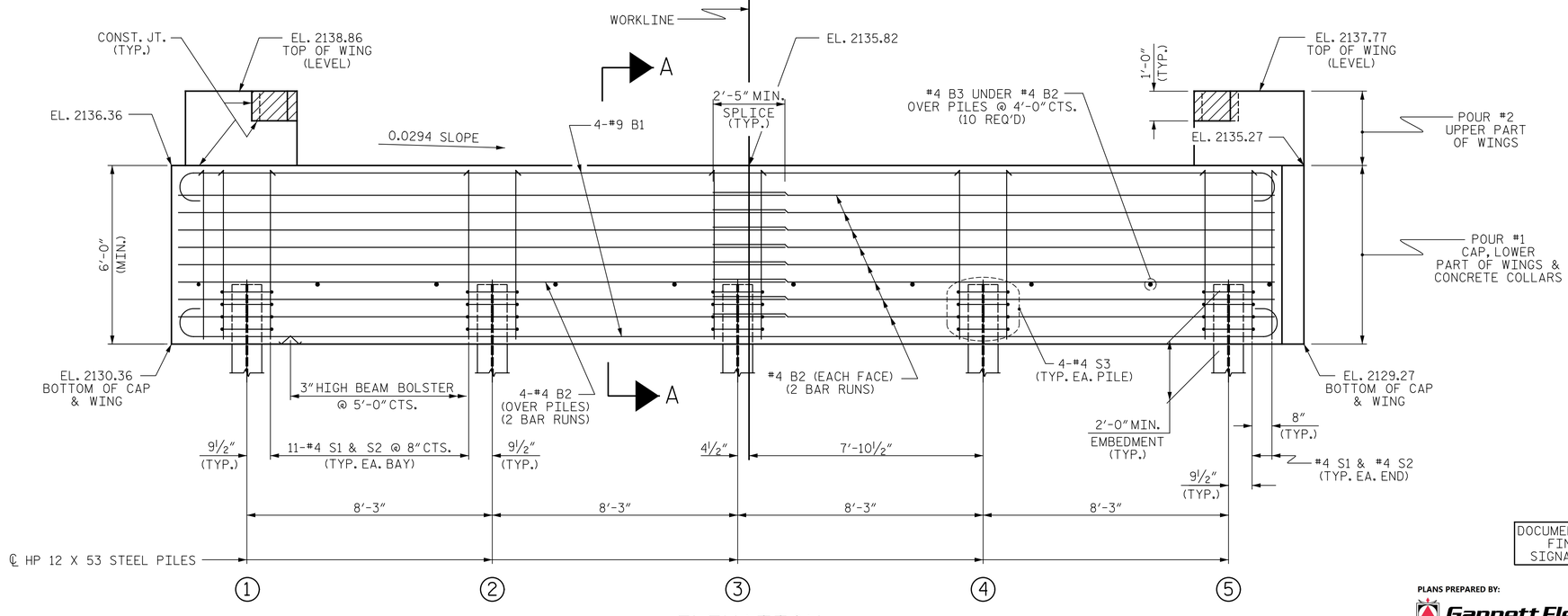
ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 12/22/14
CHECKED BY : R.F. WERTMAN	DATE : 2/9/15
DRAWN BY : WJH 12/11	
CHECKED BY : AAC 12/11	

STR. #192

STD. NO. EB_30_75S4



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE ″CORROSION PROTECTION FOR STEEL PILES DETAIL″, SHEET 4 OF 4.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
1	2132.29
2	2132.05
3	2131.81
4	2131.57
5	2131.33

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 12/22/14
CHECKED BY : R. F. WERTMAN	DATE : 2/11/15
DRAWN BY : WJH 12/11	
CHECKED BY : AAC 12/11	

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037180 RICHARD F. WERTMAN
11/12/2018 12:03:19 PM PST

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

PROJECT NO. B-6023
HENDERSON COUNTY
STATION: 13+12.00 -L-
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

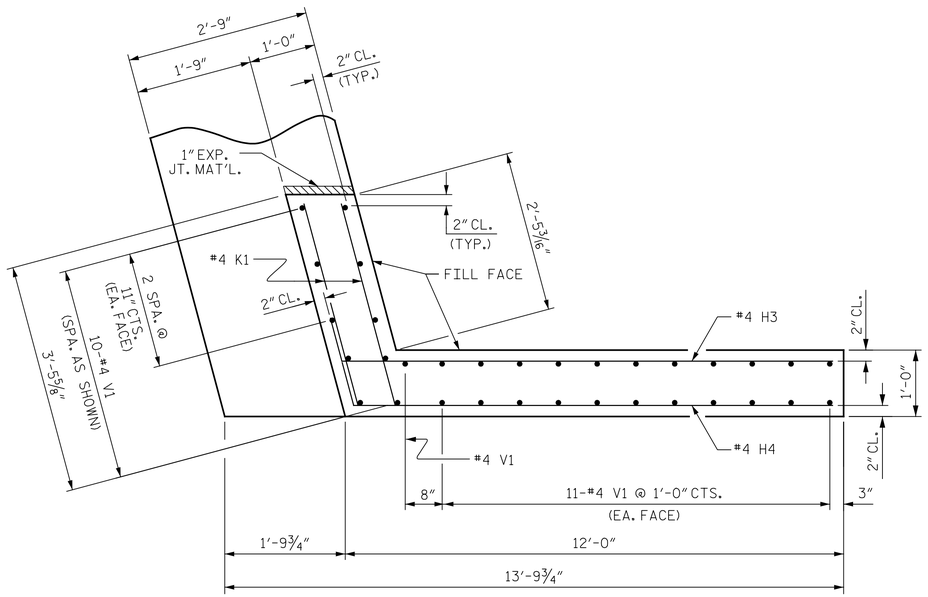
SUBSTRUCTURE

END BENT No. 2

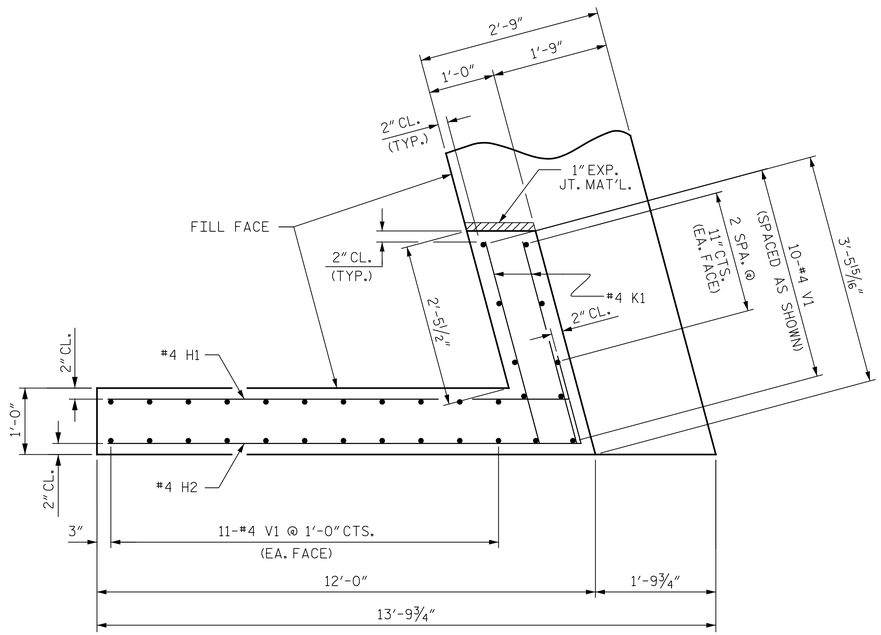
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			15

STR. #192

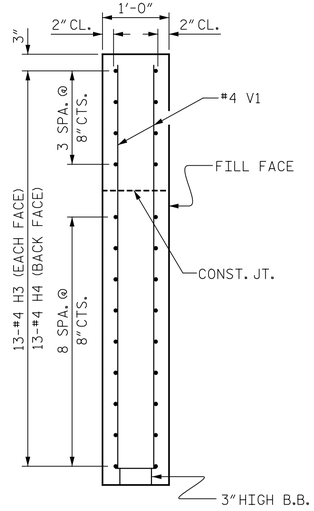
STD. NO. EB_30_75S4



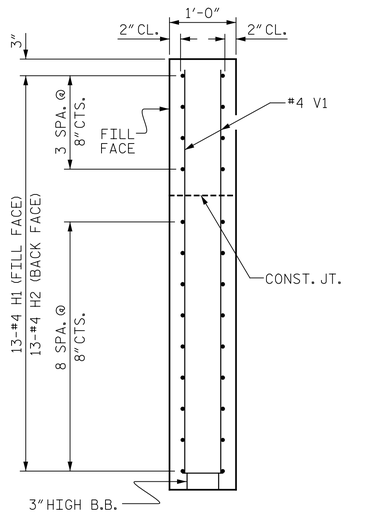
PLAN OF WING (W1)



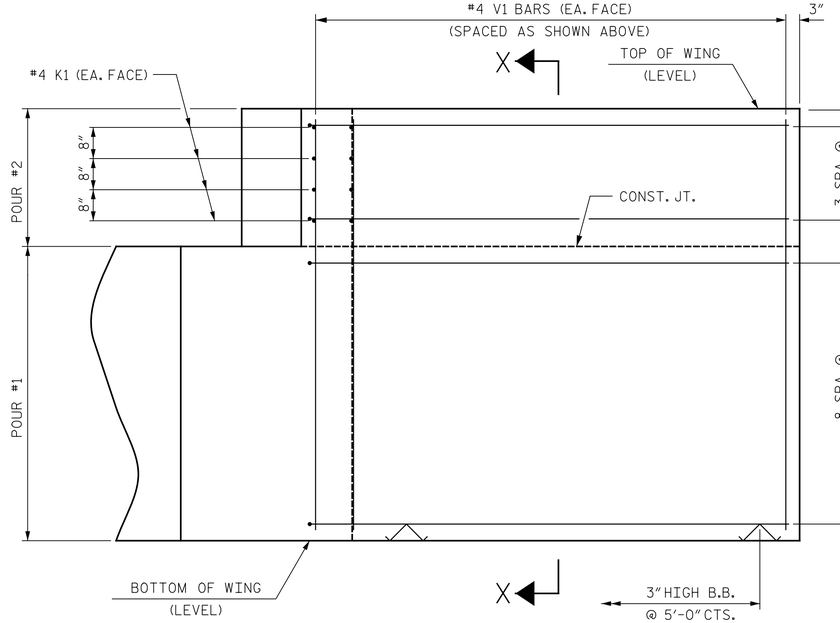
PLAN OF WING (W2)



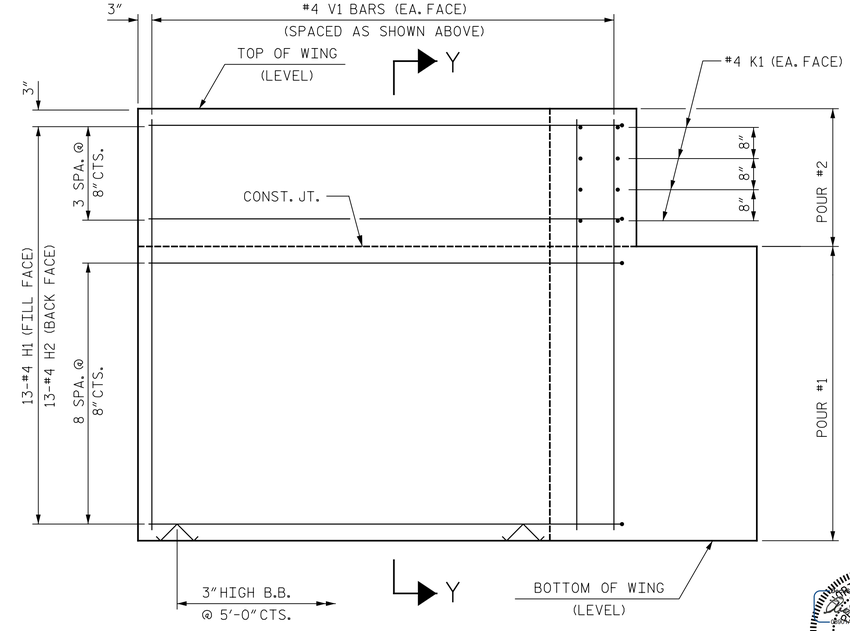
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

PROJECT NO. B-6023

HENDERSON COUNTY

STATION: 13+12.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT
WING DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037180 RICHARD F. WERTMAN

11/12/2018 12:03:19 PM PST

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 12/22/14
CHECKED BY : R. F. WERTMAN	DATE : 2/11/15
DRAWN BY : WJH	12/11
CHECKED BY : AAC	12/11

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

WING DETAILS

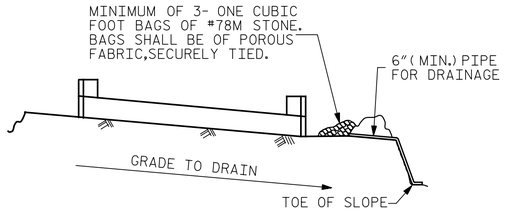
THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			15

STR. #192

STD. NO. EB_30_75S4

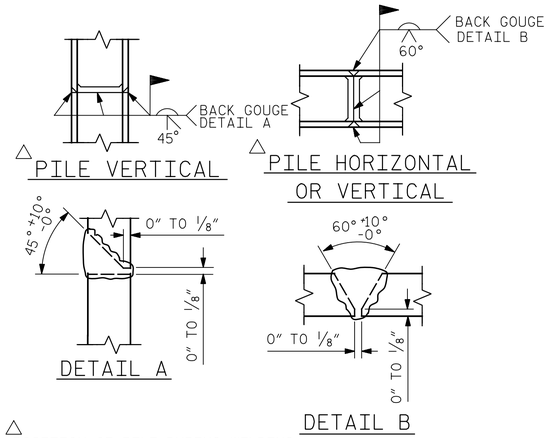


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

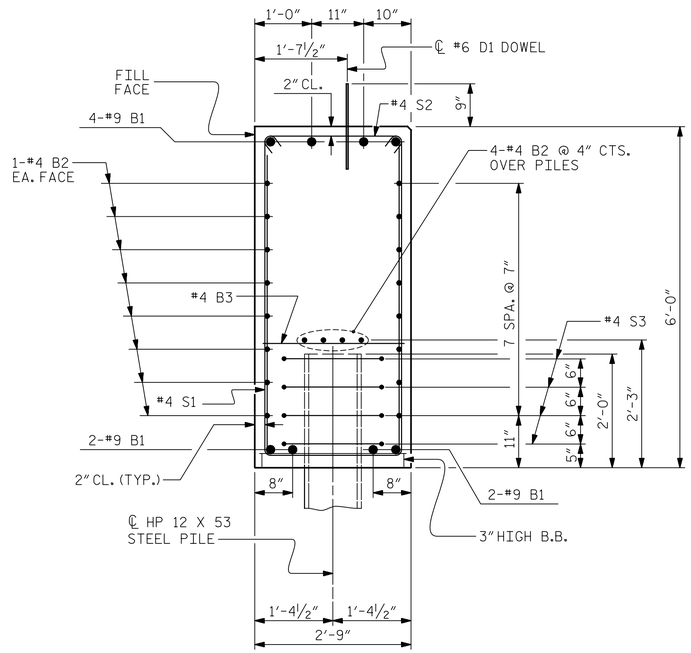
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



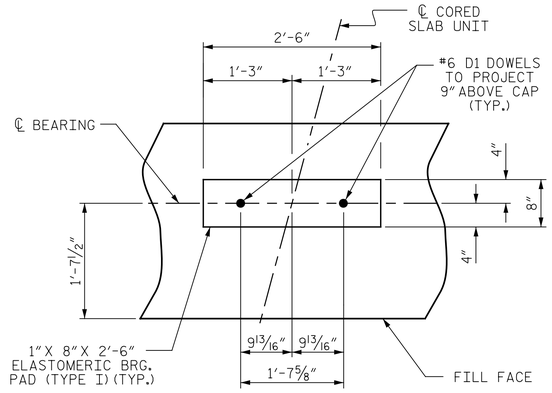
△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



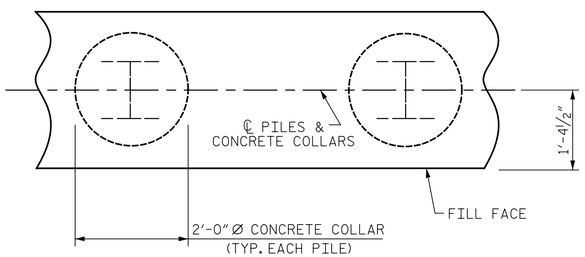
SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

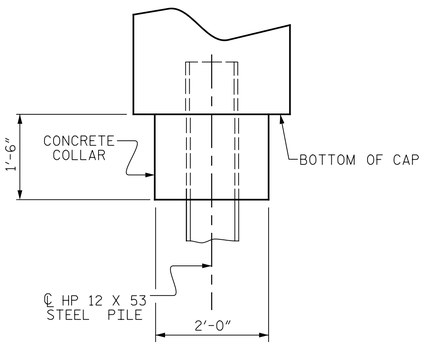


DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



PLAN

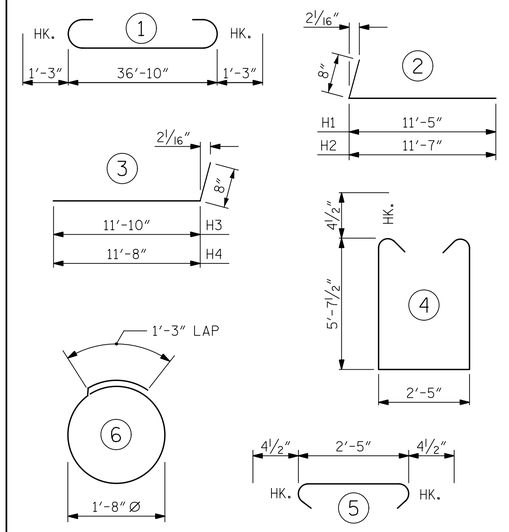


ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES
No. = 5 LIN. FT. = 75	No. = 5 LIN. FT. = 75

END BENT No. 1		END BENT No. 2	
PILE EXCAVATION IN SOIL	21.0 LIN. FT.	PILE EXCAVATION IN SOIL	37.0 LIN. FT.
PILE EXCAVATION NOT IN SOIL	9.0 LIN. FT.	PILE EXCAVATION NOT IN SOIL	13.0 LIN. FT.

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES
NO: 5	NO: 5

BILL OF MATERIAL

FOR ONE END BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	39'-4"	1070
B2	40	#4	STR	19'-9"	528
B3	10	#4	STR	2'-5"	16
D1	20	#6	STR	1'-6"	45
H1	13	#4	2	12'-1"	105
H2	13	#4	2	12'-3"	106
H3	13	#4	3	12'-6"	109
H4	13	#4	3	12'-4"	107
K1	16	#4	STR	3'-1"	33
S1	48	#4	4	14'-5"	462
S2	48	#4	5	3'-2"	102
S3	20	#4	6	6'-6"	87
V1	65	#4	STR	8'-2"	355

REINFORCING STEEL (FOR ONE END BENT) 3,125 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 28.8 C.Y.

POUR #2 UPPER PART OF WINGS 2.7 C.Y.

TOTAL CLASS A CONCRETE 31.5 C.Y.

PROJECT NO. B-6023

HENDERSON COUNTY

STATION: 13+12.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F WERTMAN

11/12/2018 12:03:19 PM PST

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			15

STR. #192

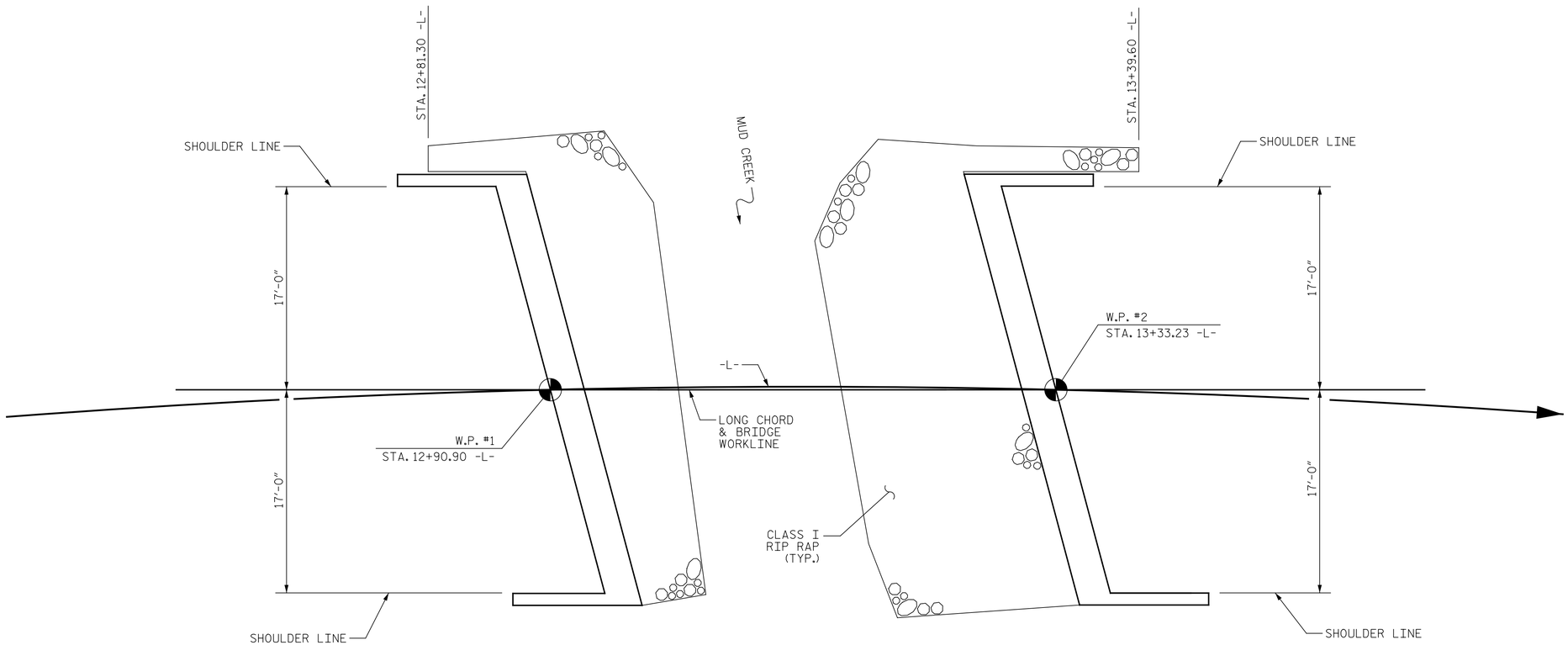
STD. NO. EB_30_75S4

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 12/22/14	
CHECKED BY : R.F. WERTMAN	DATE : 2/11/15	
DRAWN BY : WJH 12/11	REV. 4/17	MAA/THC
CHECKED BY : AAC 12/11		

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

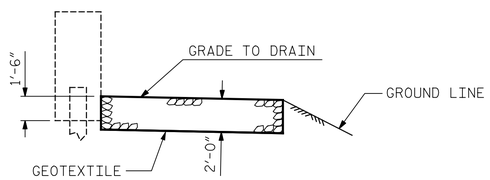
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



END BENT #1

END BENT #2

PLAN



℄ SECTION

BERM RIP RAPPED

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+12.00 -L-	RIP RAP CLASS I (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	35	40
END BENT 2	65	70

PROJECT NO. B-6023

HENDERSON COUNTY

STATION: 13+12.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F WERTMAN

11/12/2018 12:03:19 PM PST

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

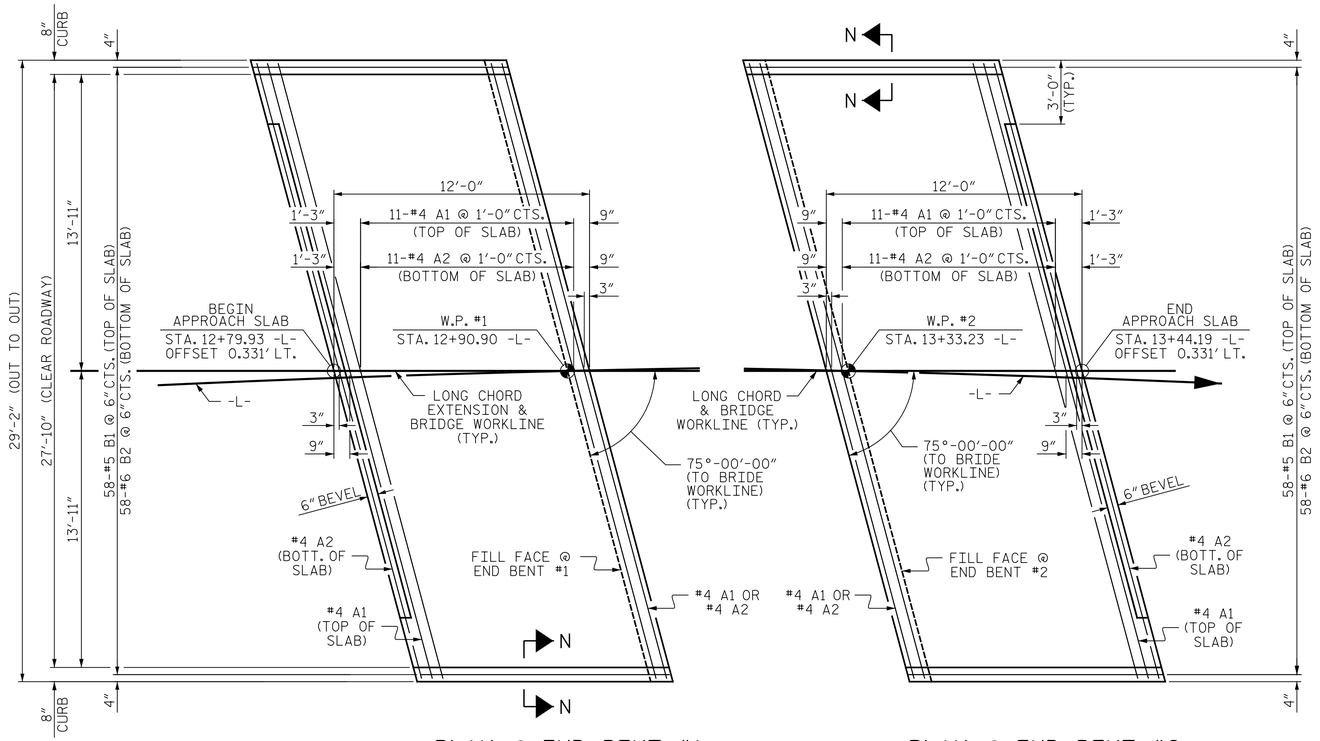
PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 7/2/15
CHECKED BY : R.F. WERTMAN	DATE : 7/3/15
DRAWN BY : REK 1/84	REV. 10/1/11 MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/11 MAA/GM
	REV. 12/17 MAA/THC

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			15

STR. #192

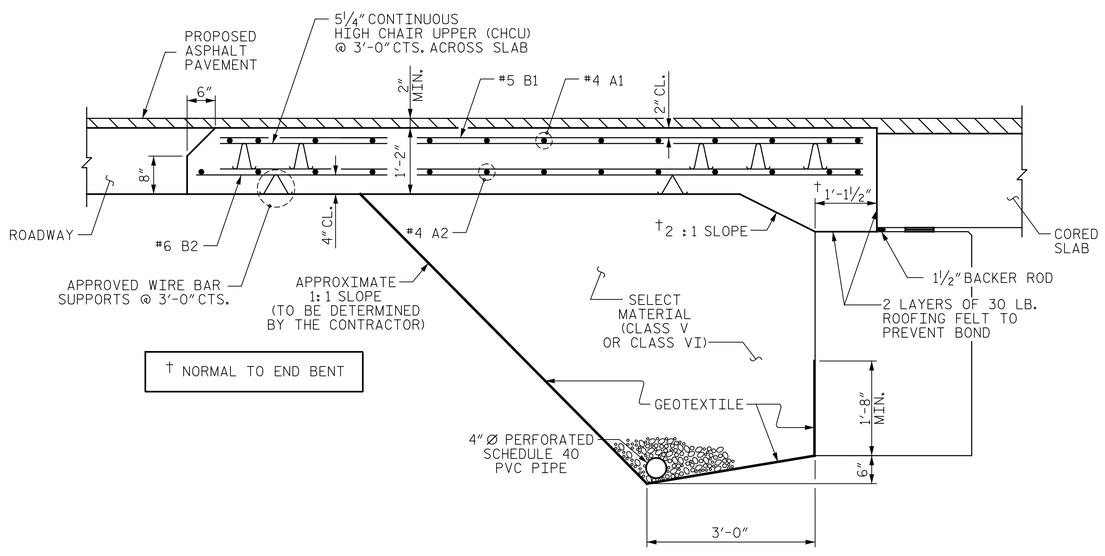
STD. NO. RR1



PLAN @ END BENT #1

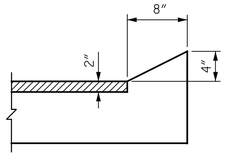
PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

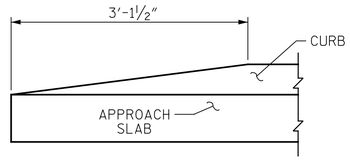


SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH FILL)



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4″ Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4″ Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	2′-0″	1′-9″
#5	2′-6″	2′-2″
#6	3′-10″	2′-7″

BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	13	#4	STR	29′-10″	259
A2	13	#4	STR	29′-10″	259
✳B1	13	#5	STR	11′-1″	670
B2	13	#6	STR	11′-7″	1009
REINFORCING STEEL				LBS.	1268
✳EPOXY COATED REINFORCING STEEL				LBS.	929
CLASS AA CONCRETE				C.Y.	16.7

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A	13	#4	STR	29′-10″	259
A	13	#4	STR	29′-10″	259
✳B	13	#5	STR	11′-1″	670
B	13	#6	STR	11′-7″	1009
REINFORCING STEEL				LBS.	1268
✳EPOXY COATED REINFORCING STEEL				LBS.	929
CLASS AA CONCRETE				C.Y.	16.7

PROJECT NO. B-6023

HENDERSON COUNTY

STATION: 13+12.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 75° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 037180 ENGINEER RICHARD F WERTMAN

11/12/2018 12:03:19 PM PST

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			15

STR. #192

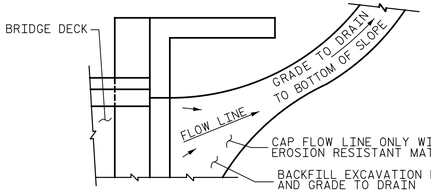
STD. NO. BAS6

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 12/22/14		
CHECKED BY : R. F. WERTMAN	DATE : 2/11/15		
DRAWN BY : SHS/MAA 5-09	REV. 12-17	MAA/THC	
CHECKED BY : BCH 5-09			

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

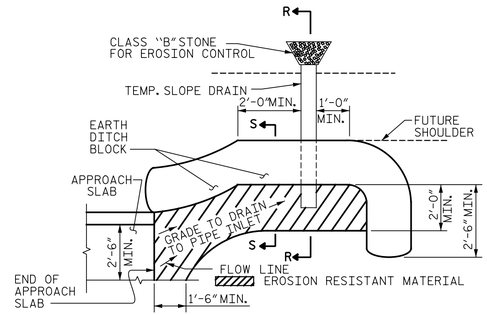
THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



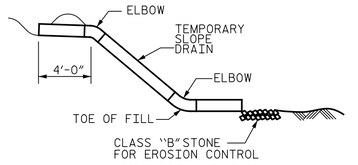
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

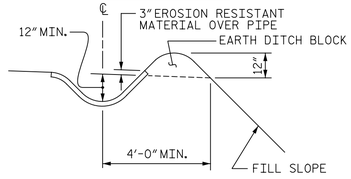


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW



SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. B-6023

HENDERSON COUNTY

STATION: 13+12.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
75° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037180 RICHARD F. WERTMAN
11/12/2018 12:03:19 PM PST

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

ASSEMBLED BY : T.J. KIRSCHBAUM	DATE : 12/22/14	
CHECKED BY : R. F. WERTMAN	DATE : 2/11/15	
DRAWN BY : SHS/MAA 5-09	REV. 12-17	MAA/THC
CHECKED BY : BCH 5-09		

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
2610 Wycliff Road
Suite 102
Raleigh NC 27607-3073
(919) 420-7660
NC Lic. No. F-0270

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STR. #192

STD. NO. BAS_30_75S

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

DocuSigned by:
Richard F. Vaughan
08901A86EBF6470...

11/12/2018 12:03:19 PM PST

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95	EEM	(/) RGW	REV. 5-7-03	RWW	(/) JTE	REV. 10-1-11	MAA	(/) GM			
REV. 8-16-99	RWW	(/) LES	REV. 5-1-06	TLA	(/) GM	REV. 12-17	MAA	(/) THC			