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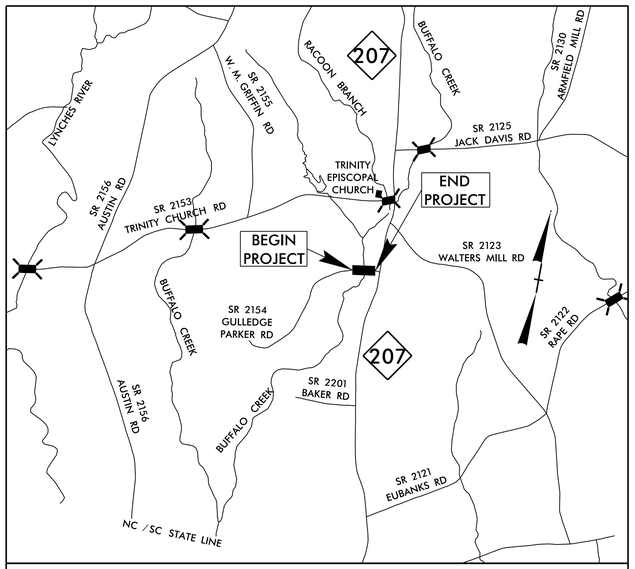
TIP PROJECT: B-5374

CONTRACT: 204066



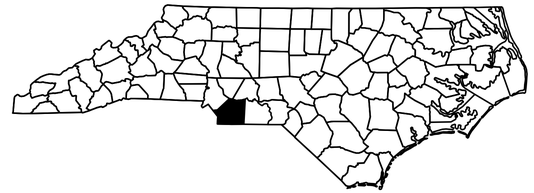
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UNION COUNTY

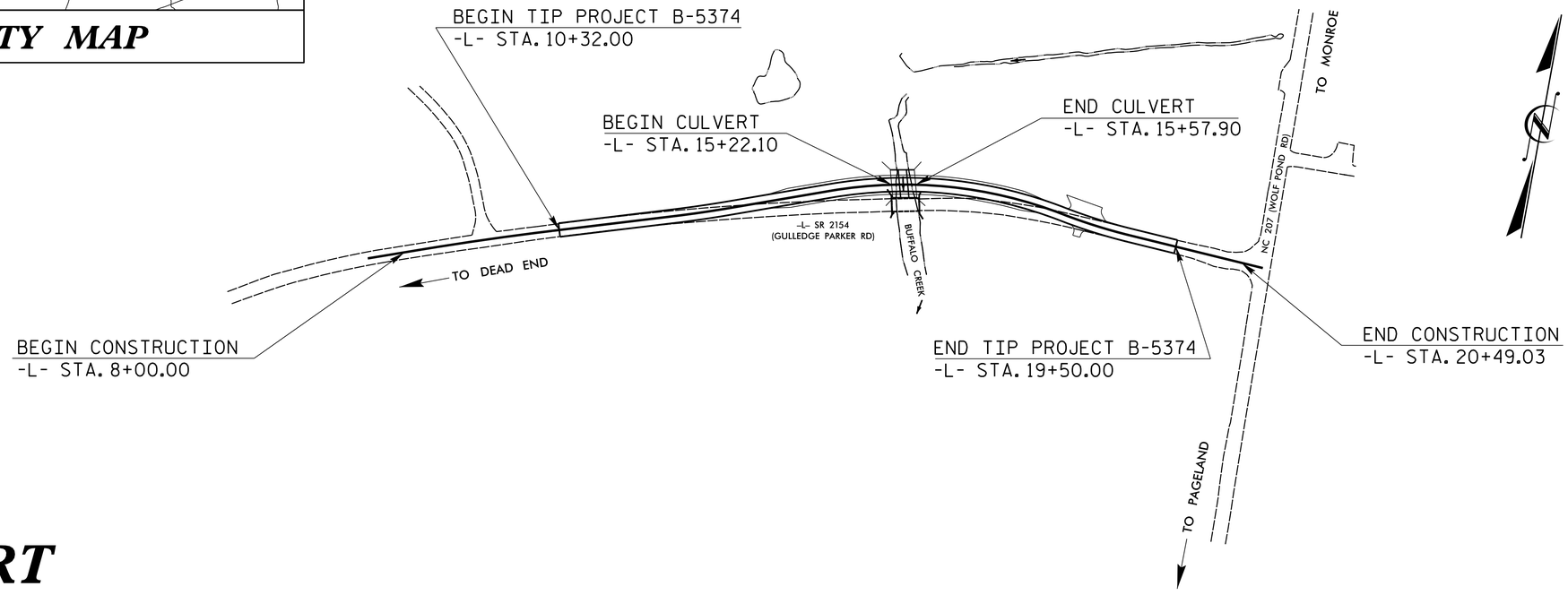
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5374		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46089.1.1	BRZ-2154(1)	P. E.
46089.2.1	BRZ-2154(1)	R/W, UTIL.
46089.3.1	BRZ-2154(1)	CONST.



LOCATION: REPLACE BRIDGE NO. 448 OVER BUFFALO CREEK ON SR 2154 (GULLEDGE PARKER RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND CULVERT



CULVERT

DESIGN DATA

ADT 2018 = 617
ADT 2038 = 916
DHV = 10 %
D = 60 %
T = 5 % *
V = 40 MPH
* TTST 2% + DUAL 3%
FUNC. CLASS. = RURAL LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5374 = 0.167 MILE
LENGTH OF STRUCTURE TIP PROJECT B-5374 = 0.007 MILE
TOTAL LENGTH TIP PROJECT B-5374 = 0.174 MILE

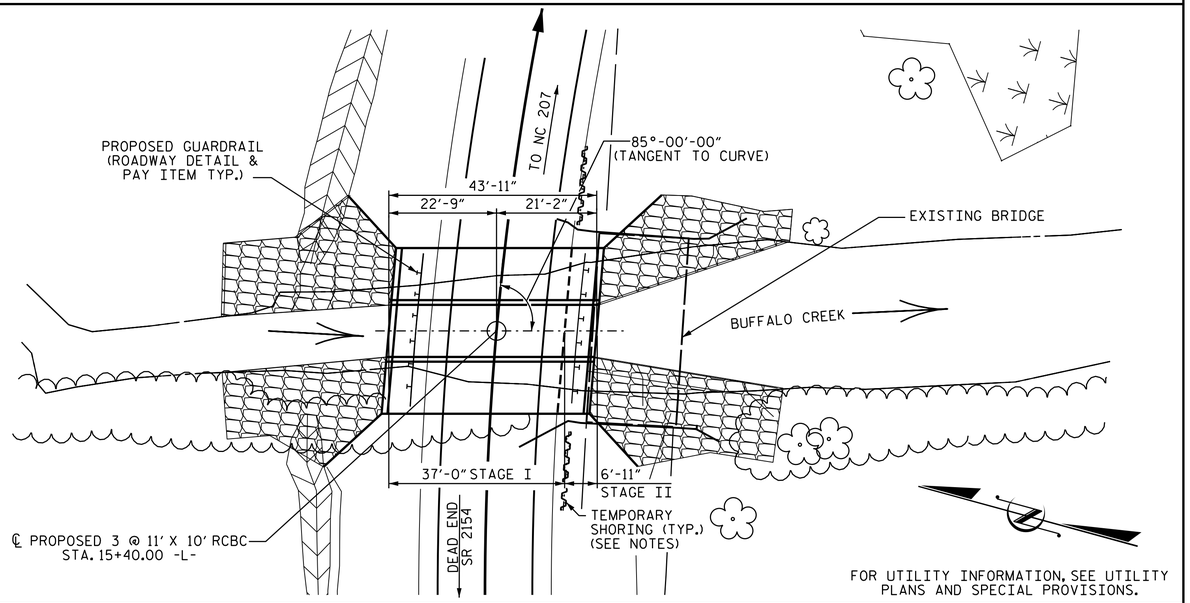
Prepared In the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

LETTING DATE: FEBRUARY 20, 2018

A. KEITH PASCHAL, P.E.
PROJECT ENGINEER

BENCH MARK #2: RR SPIKE IN BASE OF 32" GUM TREE. EL.561.86
STA. 16+08.00 -L-, 81.0' RT



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

STAGE I QUANTITIES

CLASS "A" CONCRETE
BARREL 3.697 C.Y./FT. 136.8 C.Y.
WINGS, SILLS ETC. 24.8 C.Y.
TOTAL 161.6 C.Y.

REINFORCING STEEL
BARREL 18503 LBS.
WINGS ETC. 1215 LBS.
TOTAL 19718 LBS.

FOUNDATION CONDITIONING MATERIAL 93.5 TONS

STAGE II QUANTITIES

CLASS "A" CONCRETE
BARREL 3.697 C.Y./FT. 25.6 C.Y.
WING, SILL ETC. 24.8 C.Y.
TOTAL 50.4 C.Y.

REINFORCING STEEL
BARREL 3953 LBS.
WING ETC. 1215 LBS.
TOTAL 5168 LBS.

FOUNDATION CONDITIONING MATERIAL 17.5 TONS

TOTAL STRUCTURE QUANTITIES (STAGE I & STAGE II)

REMOVAL OF EXISTING STRUCTURE	LUMP SUM
FOUNDATION CONDITIONING MATERIAL	111 TONS
CLASS A CONCRETE	
BARREL	162.4 C.Y.
WINGS, SILLS ETC.	49.6 C.Y.
TOTAL	212.0 C.Y.
REINFORCING STEEL	
BARREL	22456 LBS.
WINGS ETC.	2430 LBS.
TOTAL	24886 LBS.
ASBESTOS ASSESSMENT	LUMP SUM
CULVERT EXCAVATION	LUMP SUM

HYDRAULIC DATA

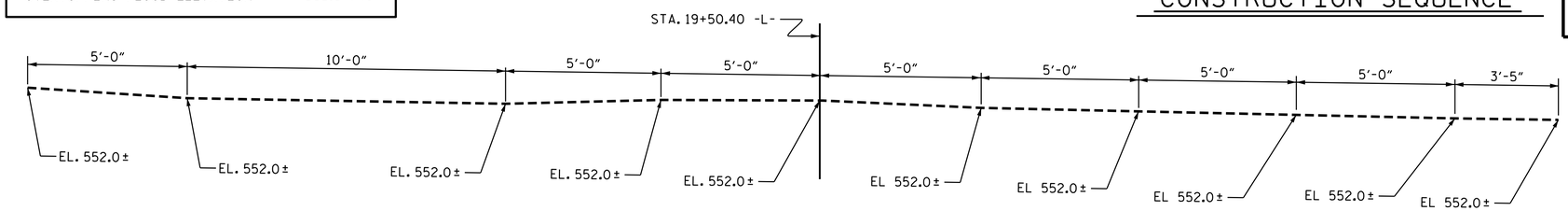
DESIGN DISCHARGE	= 1200 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 559.9 FT.
DRAINAGE AREA	= 3.68 SQ. MI.
BASE DISCHARGE (Q100)	= 1688 CFS
BASE HIGH WATER ELEVATION	= 560.99 FT.

OVERTOPPING FLOOD DATA

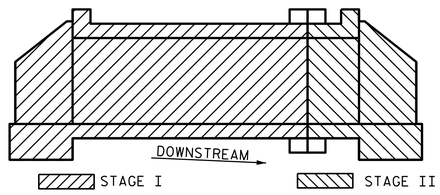
OVERTOPPING DISCHARGE	= 3100 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YRS.
OVERTOPPING FLOOD ELEVATION	= 565.0 FT.

GRADE DATA -L-

GRADE POINT ELEV. @
STA. 15+40.00 -L- _____ = 564.38
BED ELEVATION @
STA. 15+40.00 -L- _____ = 551.00
ROADWAY SLOPES _____ = 2:1



PROFILE ALONG ℄ CULVERT



CONSTRUCTION SEQUENCE

NOTES

ASSUMED LIVE LOAD ----------HL-93 OR ALTERNATE LOADING.

DESIGN FILL----------3.77 FT. MAX., 2.98 FT. MIN.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

STEEL IN THE BOTTOM SLAB MAY BE SPLICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL AND BOTH FACES OF INTERIOR WALLS ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

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.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 2 SPAN 1 @ 14'-8" AND 1 @ 25'-10", WITH A 19'-2" CLEAR ROADWAY AND TIMBER DECK ON 8 LINES OF W16 X 40 CONTINUOUS I BEAMS @ 2'-7" CENTERS AND TIMBER END BENT CAPS ON TIMBER POSTS AND SILL LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS NOT PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THE LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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. 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.

TEMPORARY SHORING WILL BE REQUIRED IN THE AREAS SHOWN IN THE LOCATION SKETCH AND WILL BE INCLUDED IN THE LUMP SUM COST FOR CULVERT EXCAVATION.

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

THE REINFORCED CONCRETE BOX CULVERT SHALL BE PLACED ON THE STANDARD 1.0 FOOT BLANKET OF FOUNDATION CONDITIONING MATERIAL SEE SECTION 414 OF THE STANDARD SPECIFICATIONS.
CONCRETE IN STAGE I CULVERT TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS, CURTAIN WALL, EDGE BEAM AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTION OF WALLS AND WINGS FULL HEIGHT.
3. INLET SILLS.
4. ROOF SLAB, EDGE BEAM AND HEADWALL.

CONCRETE IN STAGE II CULVERT TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS, CURTAIN WALL, EDGE BEAM AND FLOOR SLAB TO THE CONSTRUCTION JOINT INCLUDING 4" OF STAGE II VERTICAL WALLS.
2. THE REMAINING PORTION OF STAGE II WALLS AND WINGS FULL HEIGHT.
3. OUTLET SILLS.
4. ROOF SLAB, EDGE BEAM AND HEADWALL.

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR CONSTRUCTION SEQUENCE, SEE EROSION CONTROL PLANS.

THE REQUIRED BEARING CAPACITY AT THE BASE OF THE CULVERT IS 1 TSF. THE REQUIRED BEARING CAPACITY SHALL BE VERIFIED.

AT THE CONTRACTOR'S OPTION HE MAY SUBMIT, TO THE ENGINEER FOR APPROVAL, DESIGN AND DETAIL DRAWINGS FOR A PRECAST REINFORCED CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE CULVERT SHOWN ON THE PLANS. THE DESIGN SHALL PROVIDE THE SAME SIZE AND NUMBER OF BARRELS AS USED ON THE CAST-IN-PLACE DESIGN. FOR OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

F.A. PROJECT NO.: BRZ-2154(1)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-5374
UNION COUNTY
STATION: 15+40.00 -L-

SHEET 1 OF 9 REPLACES BRIDGE NO. 448

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 11 FT. X 10 FT. CONCRETE BOX CULVERT 85° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL
DocuSigned by: A. Keith Paschal F8B6AD6DB2FC48F...
2/15/2018

DRAWN BY : B. N. BARODAWALA DATE : 9-15-17
CHECKED BY : H. T. BARBOUR DATE : 11-1-17
DESIGN ENGINEER OF RECORD: E. K. POPE DATE : 12-13-17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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kpaschal

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE									COMMENT NUMBER
							LIVE-LOAD FACTORS (γ_{LL})	MOMENT				SHEAR				
								RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.05	---	1.75	1.45	1	TOP SLAB	4.96	1.05	1	TOP SLAB	10.38	
		HL-93 (OPERATING)	N/A		1.36	---	1.35	1.88	1	TOP SLAB	4.96	1.36	1	TOP SLAB	10.38	
		HS-20 (INVENTORY)	36.000	2	1.16	41.74	1.75	1.63	1	TOP SLAB	4.96	1.16	1	BOTTOM SLAB	10.76	
		HS-20 (OPERATING)	36.000		1.50	54.10	1.35	2.11	1	TOP SLAB	4.96	1.50	1	BOTTOM SLAB	10.76	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		2.37	31.96	1.40	2.97	1	TOP SLAB	4.96	2.37	1	TOP SLAB	10.38	
		SNGARBS2	20.000		2.22	44.38	1.40	2.78	1	TOP SLAB	4.96	2.22	1	TOP SLAB	10.38	
		SNAGRIS2	22.000		2.37	52.09	1.40	2.96	1	TOP SLAB	4.96	2.37	1	TOP SLAB	10.38	
		SNCOTTS3	27.250		1.32	35.85	1.40	1.82	1	TOP SLAB	4.96	1.32	1	TOP SLAB	10.38	
		SNAGGRS4	34.925		1.50	52.52	1.40	2.21	1	TOP SLAB	5.25	1.50	1	BOTTOM SLAB	10.76	
		SNS5A	35.550		1.48	52.61	1.40	2.11	1	TOP SLAB	4.96	1.48	1	BOTTOM SLAB	10.76	
		SNS6A	39.950		1.32	52.71	1.40	2.01	1	BOTTOM SLAB	10.79	1.32	1	BOTTOM SLAB	10.76	
		SNS7B	42.000		1.25	52.68	1.40	1.91	1	BOTTOM SLAB	10.79	1.25	1	BOTTOM SLAB	10.76	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.59	52.44	1.40	2.45	1	BOTTOM SLAB	10.79	1.59	1	BOTTOM SLAB	10.76	
		TNT4A	33.075		1.57	52.03	1.40	2.16	1	TOP SLAB	4.96	1.57	1	TOP SLAB	10.38	
		TNT6A	41.600		1.27	52.65	1.40	1.92	1	BOTTOM SLAB	10.79	1.27	1	BOTTOM SLAB	10.76	
		TNT7A	42.000		1.32	55.41	1.40	2.03	1	BOTTOM SLAB	10.79	1.32	1	BOTTOM SLAB	10.76	
		TNT7B	42.000		1.32	55.41	1.40	2.06	2	BOTTOM SLAB	10.79	1.32	1	BOTTOM SLAB	10.76	
		TNAGRIT4	43.000		1.23	52.75	1.40	1.91	1	BOTTOM SLAB	10.79	1.23	1	BOTTOM SLAB	10.76	
		TNAGT5A	45.000	3	1.17	52.66	1.40	1.81	1	BOTTOM SLAB	10.79	1.17	1	BOTTOM SLAB	10.76	
		TNAGT5B	45.000		1.18	52.88	1.40	1.79	1	BOTTOM SLAB	10.79	1.18	1	BOTTOM SLAB	10.76	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS

LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

NOTE:

RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

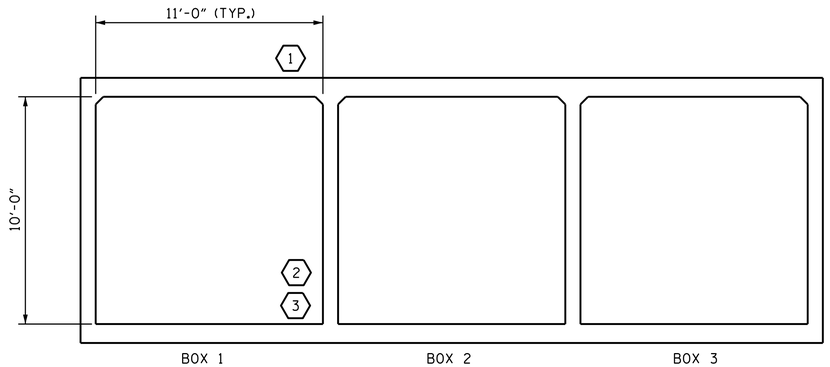
(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE



LRFR SUMMARY

(LOOKING DOWNSTREAM)

PROJECT NO. B-5374

UNION COUNTY

STATION: 15+40.00 -L-

SHEET 2 OF 9

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

DocuSigned by: A Keith Paschal 12/20/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-2
1			3			TOTAL SHEETS
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CHECKED BY : H. T. BARBOUR	DATE : 10-25-17		
DRAWN BY : WMC	7/11		
CHECKED BY : GM	7/11		

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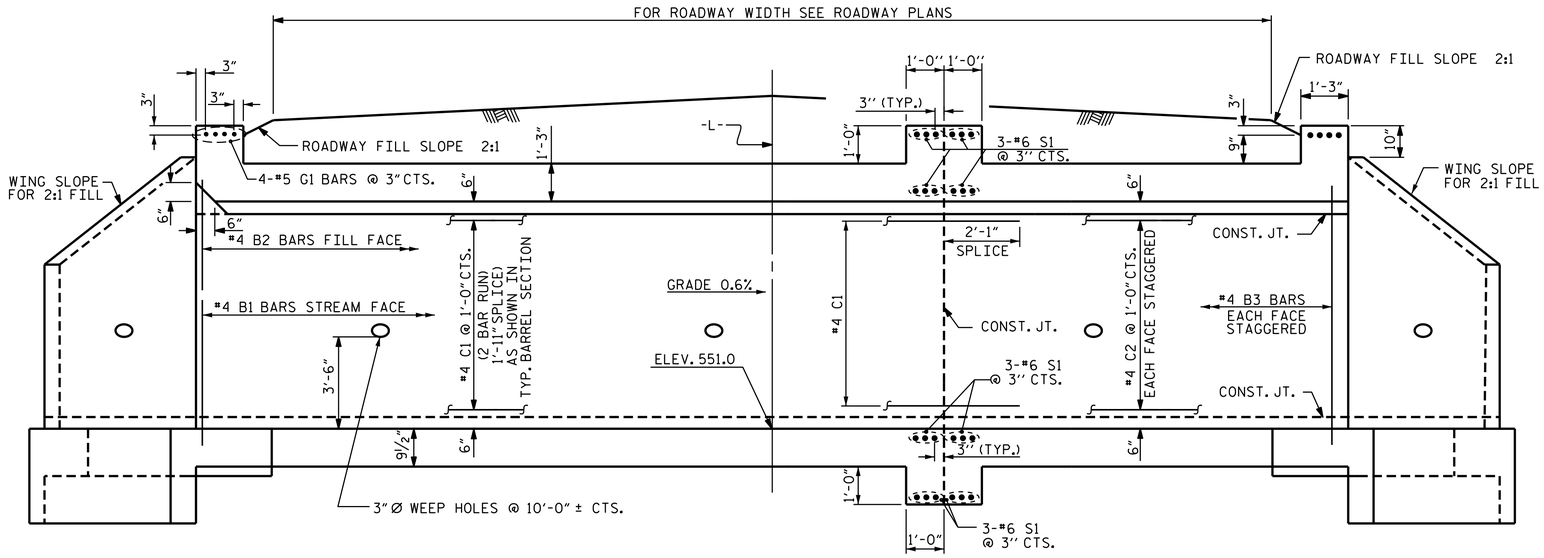
STD. NO. LRFR5

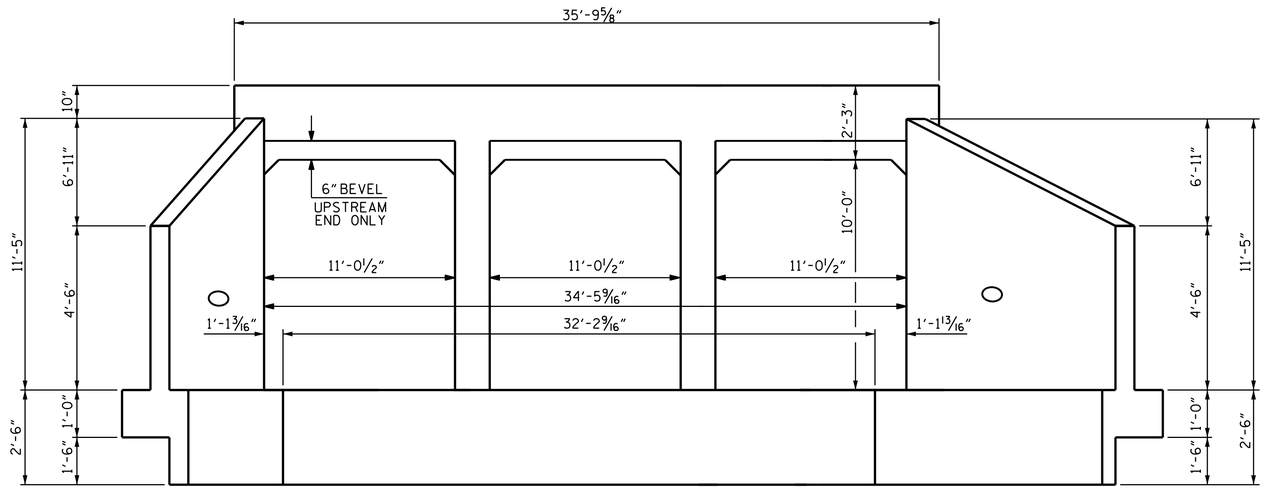


EXTERIOR WALL
(STAGE II SIMILAR)

INTERIOR WALL
(STAGE I SIMILAR)

STAGE I CULVERT SECTION NORMAL TO ROADWAY

STAGE II CULVERT SECTION NORMAL TO ROADWAY



END ELEVATION NORMAL TO SKEW

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-5374

UNION COUNTY

STATION: 15+40.00 -L-

SHEET 3 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 11 FT. X 10 FT. CONCRETE BOX CULVERT

85° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

DocuSigned by: A Keith Paschal 12/20/2017
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2			4			9

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CHECKED BY : H. T. BARBOUR DATE : 10-25-17
DESIGN ENGINEER OF RECORD: E. K. POPE DATE : 12-13-17

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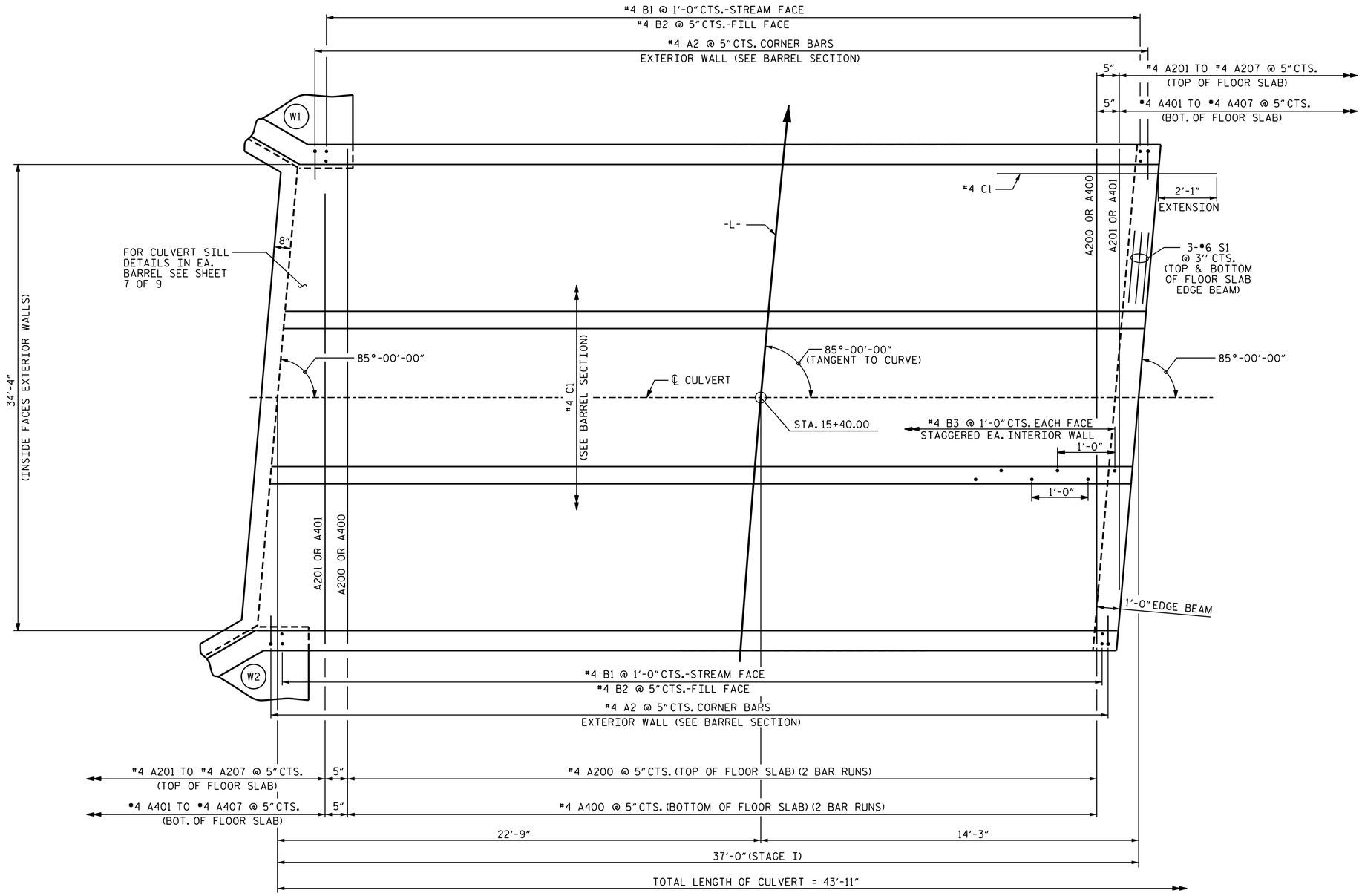

STAGE I

PLAN - FLOOR SLAB

PROJECT NO. B-5374

UNION COUNTY

STATION: 15+40.00 -L-

SHEET 4 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 11 FT. X 10 FT. CONCRETE BOX CULVERT

85° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

DocuSigned by: A Keith Paschal 12/20/2017
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1			3			TOTAL SHEETS
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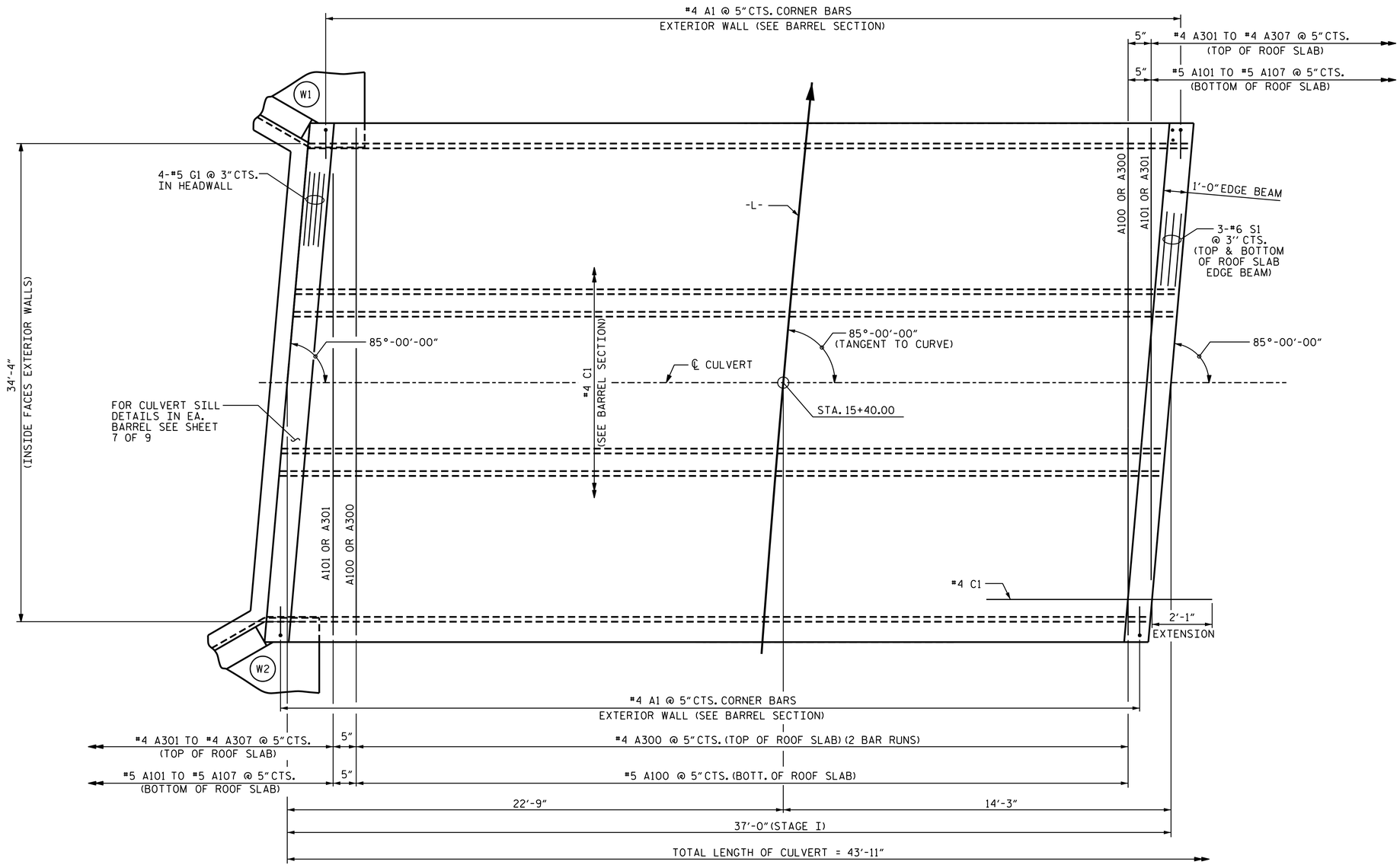
kpaschal



STAGE I

PLAN - ROOF SLAB

PROJECT NO. B-5374

UNION COUNTY

STATION: 15+40.00 -L-

SHEET 5 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 11 FT. X 10 FT. CONCRETE BOX CULVERT

85° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

DocuSigned by: A Keith Paschal 12/20/2017
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-5
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2			4			9

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CHECKED BY : H. T. BARBOUR DATE : 10-25-17
DESIGN ENGINEER OF RECORD: E. K. POPE DATE : 12-13-17

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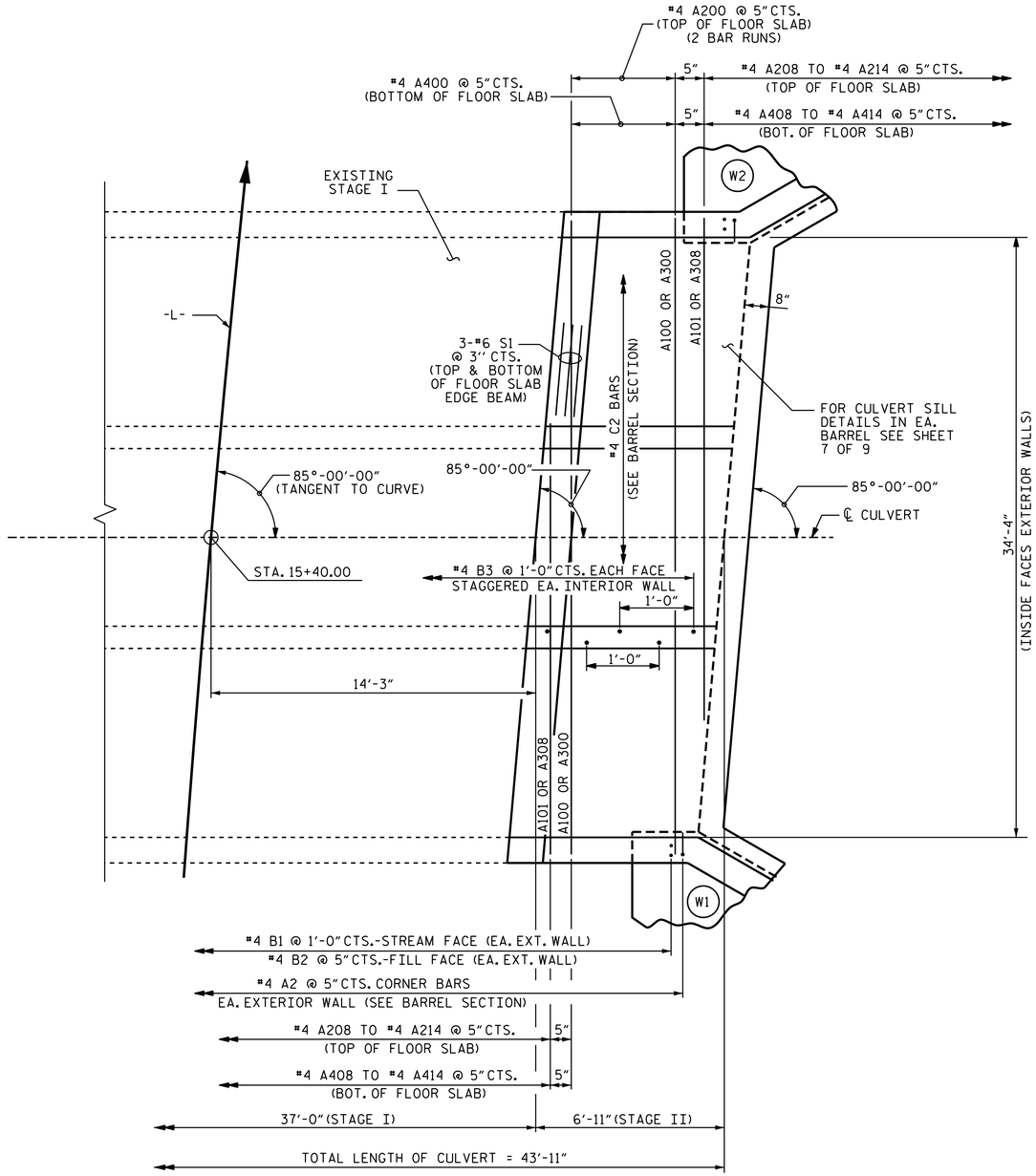
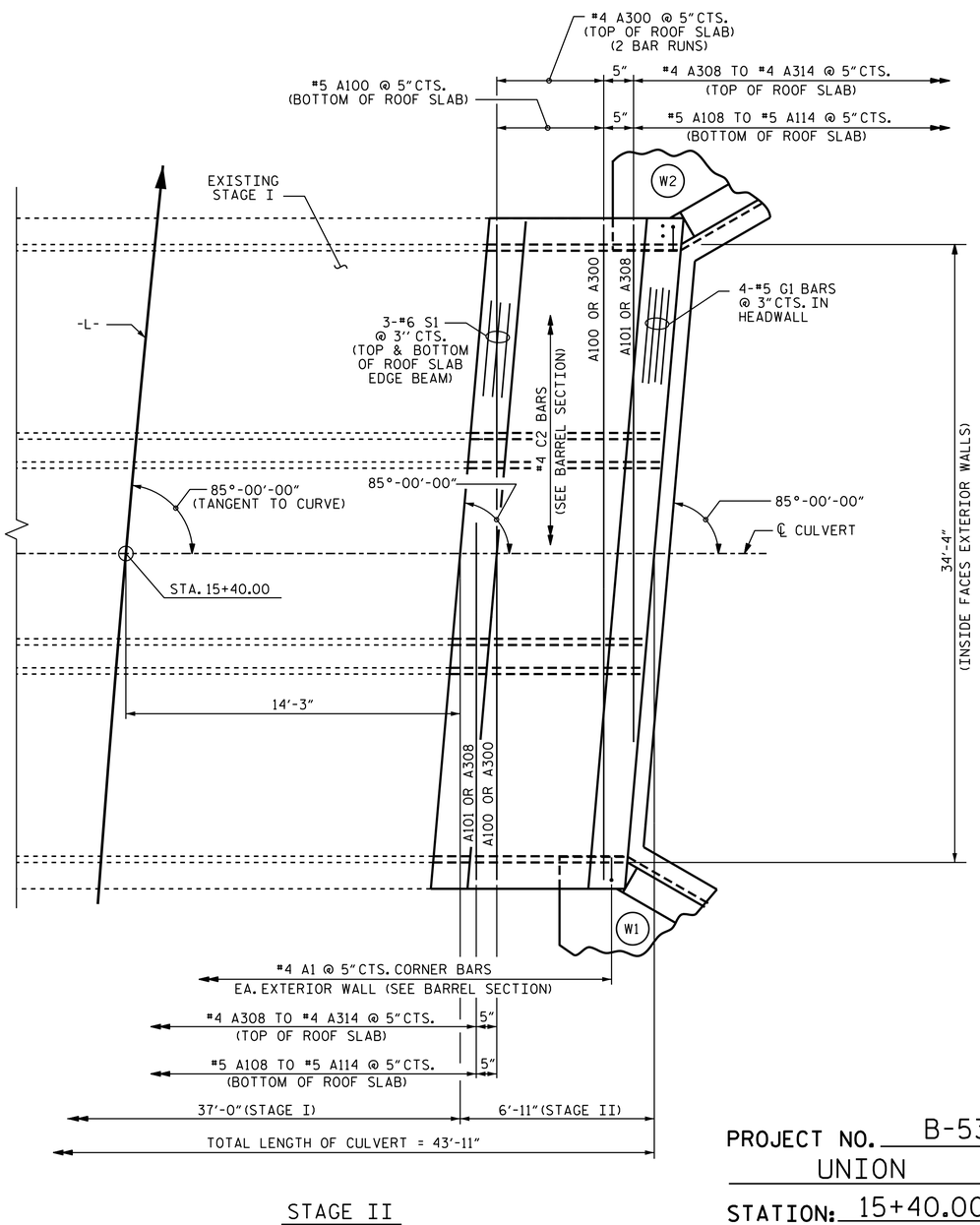
kpaschal



STAGE II

PLAN - FLOOR SLAB



STAGE II

PLAN - ROOF SLAB

PROJECT NO. B-5374

UNION COUNTY

STATION: 15+40.00 -L-

SHEET 6 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 11 FT. X 10 FT. CONCRETE BOX CULVERT

85° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

DocuSigned by:
A Keith Paschal 12/20/2017
F8B6AD6DB2FC48F...

DRAWN BY : B. N. BARODAWALA DATE : 9-15-17
CHECKED BY : H. T. BARBOUR DATE : 10-25-17
DESIGN ENGINEER OF RECORD: E. K. POPE DATE : 12-13-17

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2			4			9

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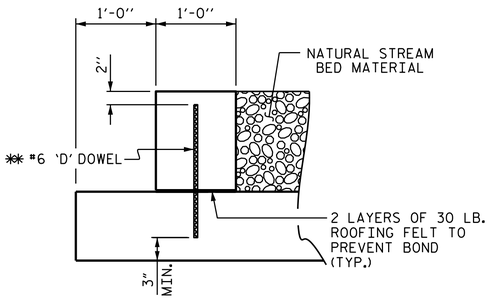


SECTION

✱✱ DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOAT FINISHED.

NOTES

MATERIAL EXCAVATED FROM THE EXISTING STREAM BED OR FLOOD PLAIN SHALL BE STOCKPILED FOR USE IN THE PROPOSED CULVERT AND SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL AS SHOWN. THE MATERIAL SHALL BE NATURAL STONE WITH A GRADATION SIZE SIMILAR TO THAT OF CLASS II RIP RAP. BED MATERIAL SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER, AND MAY BE SUBJECT TO PERMIT CONDITIONS.

THE STOCKPILED MATERIAL SHALL BE PLACED TO PROVIDE A DEPTH OF 1 FOOT IN LOW FLOW BARREL, AND 3 FEET IN THE HIGH FLOW BARRELS.

THE TOP OF BED MATERIAL IN THE LOW FLOW BARREL SHOULD MATCH THE STREAM BED ELEVATION.

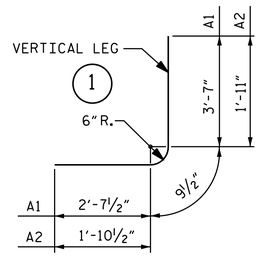
BED MATERIAL SHALL BE SUPPLEMENTED BY CLASS II RIP RAP AS NECESSARY IN THE HIGH FLOW BARREL ONLY.

BED MATERIAL SHALL BE PLACED ON TOP OF THE SUPPLEMENTAL FILL, IF USED, TO PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE.

THE ENTIRE COST OF WORK REQUIRED TO PLACE EXCAVATED OR SUPPLEMENTAL MATERIAL AS SHOWN ON THE PLANS SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE BID FOR CULVERT EXCAVATION.

THE ENTIRE COST OF WORK REQUIRED TO CONSTRUCT THE SILLS SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

BAR TYPE



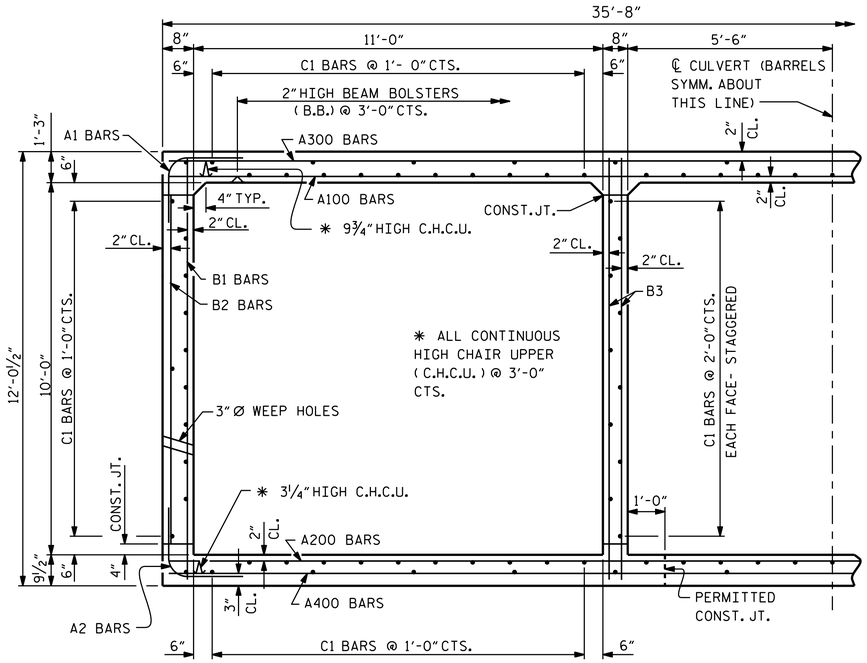
BAR DIMENSIONS ARE OUT TO OUT

SPLICE LENGTHS CHART

BAR	SIZE	SPLICE LENGTH
A200	#4	1'-9"
A300	#4	2'-5"
A400	#4	1'-9"
B1	#4	1'-5"
B3	#4	1'-5"
C1	#4	1'-11"

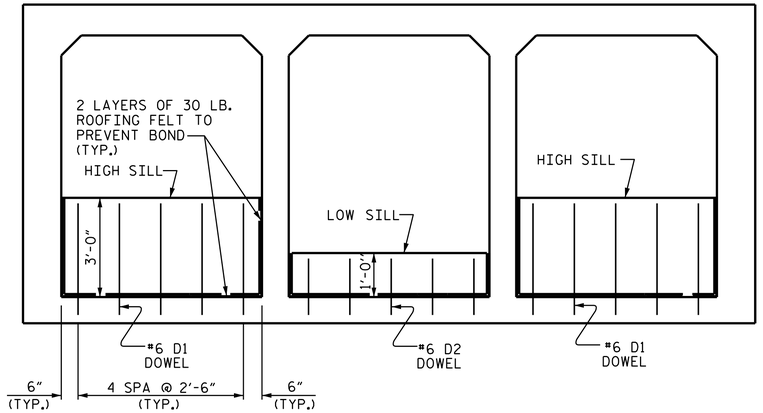
REINFORCED BAR SCHEDULE

STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	176	#4	1	7'-0"	823	A1	32	#4	1	7'-0"	150
A2	176	#4	1	4'-7"	539	A2	32	#4	1	4'-7"	98
A100	81	#5	STR	35'-4"	2985	A100	9	#5	STR	35'-4"	332
A101	2	#5	STR	32'-1"	67	A108	2	#5	STR	31'-7"	66
A102	2	#5	STR	27'-2"	57	A109	2	#5	STR	26'-8"	56
A103	2	#5	STR	22'-4"	47	A110	2	#5	STR	21'-11"	46
A104	2	#5	STR	17'-7"	37	A111	2	#5	STR	17'-2"	36
A105	2	#5	STR	12'-10"	27	A112	2	#5	STR	12'-5"	26
A106	2	#5	STR	8'-1"	17	A113	2	#5	STR	7'-7"	16
A107	2	#5	STR	3'-4"	7	A114	2	#5	STR	2'-10"	6
A200	162	#4	STR	18'-7"	2011	A200	18	#4	STR	18'-7"	223
A201	4	#4	STR	16'-11"	45	A208	4	#4	STR	16'-8"	45
A202	2	#4	STR	27'-2"	36	A209	2	#4	STR	26'-8"	36
A203	2	#4	STR	22'-4"	30	A210	2	#4	STR	21'-11"	29
A204	2	#4	STR	17'-7"	23	A211	2	#4	STR	17'-2"	23
A205	2	#4	STR	12'-10"	17	A212	2	#4	STR	12'-5"	17
A206	2	#4	STR	8'-1"	11	A213	2	#4	STR	7'-7"	10
A207	2	#4	STR	3'-4"	4	A214	2	#4	STR	2'-10"	4
A300	162	#4	STR	18'-11"	2047	A300	18	#4	STR	18'-11"	227
A301	4	#4	STR	17'-2"	46	A308	4	#4	STR	17'-0"	45
A302	2	#4	STR	27'-2"	36	A309	2	#4	STR	26'-8"	36
A303	2	#4	STR	22'-4"	30	A310	2	#4	STR	21'-11"	29
A304	2	#4	STR	17'-7"	23	A311	2	#4	STR	17'-2"	23
A305	2	#4	STR	12'-10"	17	A312	2	#4	STR	12'-5"	17
A306	2	#4	STR	8'-1"	11	A313	2	#4	STR	7'-8"	10
A307	2	#4	STR	3'-4"	4	A314	2	#4	STR	2'-11"	4
A400	162	#4	STR	18'-7"	2011	A400	18	#4	STR	18'-7"	223
A401	4	#4	STR	16'-11"	45	A408	4	#4	STR	16'-8"	45
A402	2	#4	STR	27'-2"	36	A409	2	#4	STR	26'-8"	36
A403	2	#4	STR	22'-4"	30	A410	2	#4	STR	21'-11"	29
A404	2	#4	STR	17'-7"	23	A411	2	#4	STR	17'-2"	23
A405	2	#4	STR	12'-10"	17	A412	2	#4	STR	12'-5"	17
A406	2	#4	STR	8'-1"	11	A413	2	#4	STR	7'-7"	10
A407	2	#4	STR	3'-4"	4	A414	2	#4	STR	2'-10"	4
B1	74	#4	STR	11'-6"	568	B1	14	#4	STR	11'-6"	108
B2	178	#4	STR	9'-4"	1110	B2	32	#4	STR	9'-4"	200
B3	148	#4	STR	11'-6"	1137	B3	28	#4	STR	11'-6"	215
C1	268	#4	STR	20'-6"	3670	C2	134	#4	STR	6'-7"	589
D1	10	#6	STR	3'-4"	50	D1	10	#6	STR	3'-4"	50
D2	5	#6	STR	1'-4"	10	D2	5	#6	STR	1'-4"	10
G1	4	#5	STR	35'-4"	147	G1	4	#5	STR	35'-4"	147
S1	12	#6	STR	35'-4"	637	S1	12	#6	STR	35'-4"	637
REINFORCING STEEL				LBS.	18503	REINFORCING STEEL				LBS.	3953



RIGHT ANGLE SECTION OF BARREL

THERE ARE 134 "C" BARS IN SECTION OF BARREL.



ELEVATION

SILL DETAILS

(AT UPSTREAM AND DOWNSTREAM END)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-5374

UNION COUNTY

STATION: 15+40.00 -L-

SHEET 7 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 11 FT. X 10 FT. CONCRETE BOX CULVERT

85° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

DocuSigned by: A Keith Paschal F8B6AD6DB2FC48F... 12/20/2017

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CHECKED BY : H. T. BARBOUR DATE : 10-25-17
DESIGN ENGINEER OF RECORD: E. K. POPE DATE : 12-13-17

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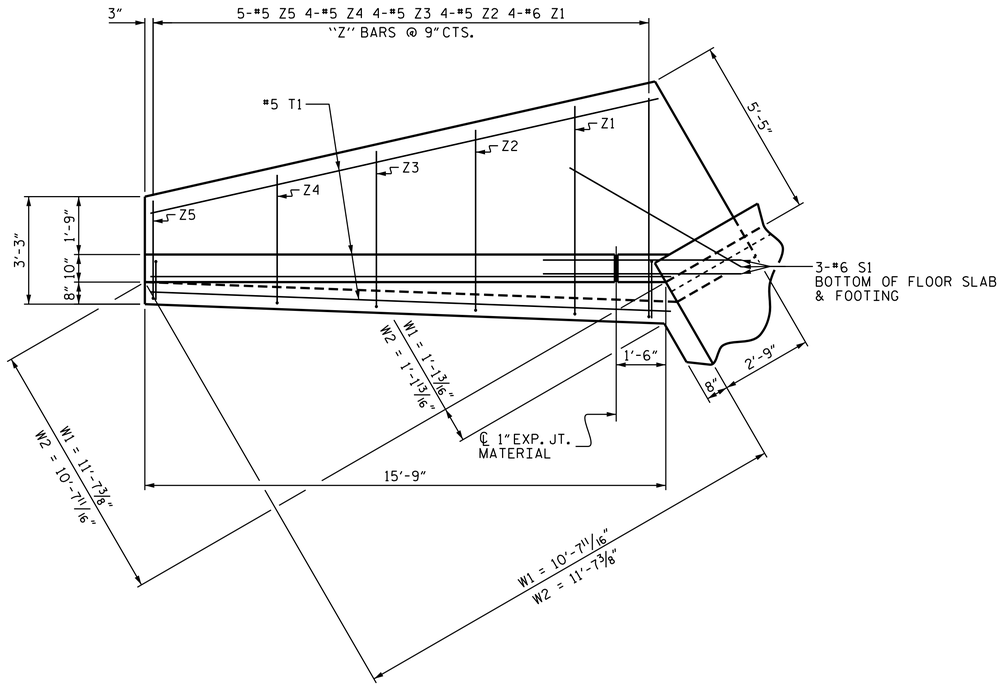
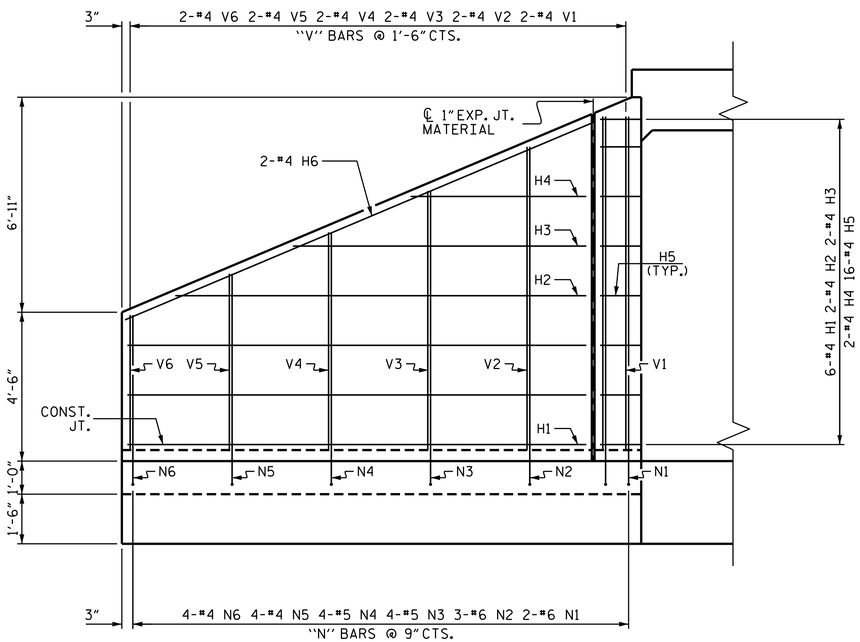


PLAN



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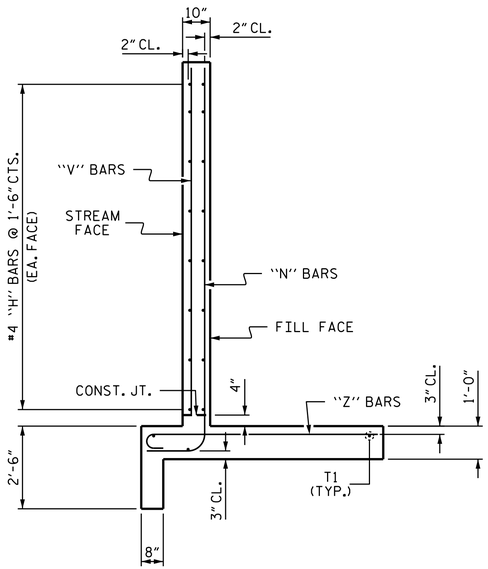
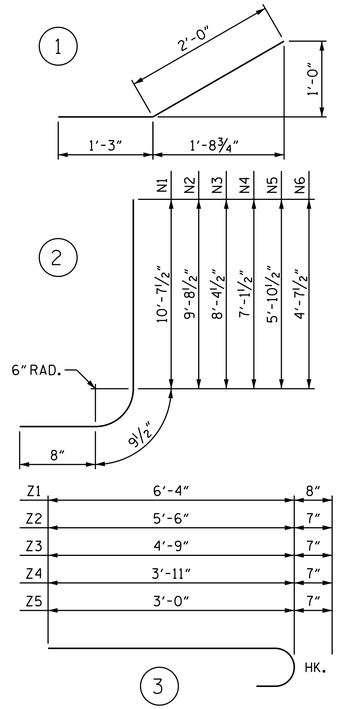


TYPICAL WING SECTION

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



BILL OF MATERIAL — STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	12	#4	STR	13'-10"	111
H2	4	#4	STR	12'-5"	33
H3	4	#4	STR	8'-10"	24
H4	4	#4	STR	5'-4"	14
H5	32	#4	1	3'-3"	69
H6	4	#4	STR	15'-5"	41
N1	4	#6	2	12'-1"	73
N2	6	#6	2	11'-2"	101
N3	8	#5	2	9'-10"	82
N4	8	#5	2	8'-7"	72
N5	8	#4	2	7'-4"	39
N6	8	#4	2	6'-1"	33
S1	6	#6	STR	6'-0"	54
T1	6	#5	STR	15'-9"	99
V1	4	#4	STR	10'-1"	27
V2	4	#4	STR	9'-2"	24
V3	4	#4	STR	7'-10"	21
V4	4	#4	STR	6'-7"	18
V5	4	#4	STR	5'-4"	14
V6	4	#4	STR	4'-1"	11
Z1	8	#6	3	7'-0"	84
Z2	8	#5	3	6'-1"	51
Z3	8	#5	3	5'-4"	45
Z4	8	#5	3	4'-6"	38
Z5	10	#5	3	3'-7"	37

REINFORCING STEEL
FOR 2 WINGS 1215 LBS

CLASS A CONCRETE

2 WINGS	15.6	CY
1 HEADWALL & 2 EDGE BEAM	4.3	CY
END CURTAIN WALL	2.0	CY
SILLS	2.9	CY
TOTAL	24.8	CY

BILL OF MATERIAL — STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	12	#4	STR	13'-10"	111
H2	4	#4	STR	12'-5"	33
H3	4	#4	STR	8'-10"	24
H4	4	#4	STR	5'-4"	14
H5	32	#4	1	3'-3"	69
H6	4	#4	STR	15'-5"	41
N1	4	#6	2	12'-1"	73
N2	6	#6	2	11'-2"	101
N3	8	#5	2	9'-10"	82
N4	8	#5	2	8'-7"	72
N5	8	#4	2	7'-4"	39
N6	8	#4	2	6'-1"	33
S1	6	#6	STR	6'-0"	54
T1	6	#5	STR	15'-9"	99
V1	4	#4	STR	10'-1"	27
V2	4	#4	STR	9'-2"	24
V3	4	#4	STR	7'-10"	21
V4	4	#4	STR	6'-7"	18
V5	4	#4	STR	5'-4"	14
V6	4	#4	STR	4'-1"	11
Z1	8	#6	3	7'-0"	84
Z2	8	#5	3	6'-1"	51
Z3	8	#5	3	5'-4"	45
Z4	8	#5	3	4'-6"	38
Z5	10	#5	3	3'-7"	37

REINFORCING STEEL
FOR 2 WINGS 1215 LBS

CLASS A CONCRETE

2 WINGS	15.6	CY
1 HEADWALL & 2 EDGE BEAM	4.3	CY
END CURTAIN WALL	2.0	CY
SILLS	2.9	CY
TOTAL	24.8	CY

PROJECT NO. B-5374

UNION COUNTY

STATION: 15+40.00 -L-

SHEET 8 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BOX CULVERT

H = 10'-0" SLOPE = 2:1
85° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

DocuSigned by: A Keith Paschal 12/20/2017
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DRAWN BY : B. N. BARODAWALA DATE : 9-15-17
CHECKED BY : H. T. BARBOUR DATE : 10-25-17
DESIGN ENGINEER OF RECORD: E. K. POPE DATE : 12-13-17

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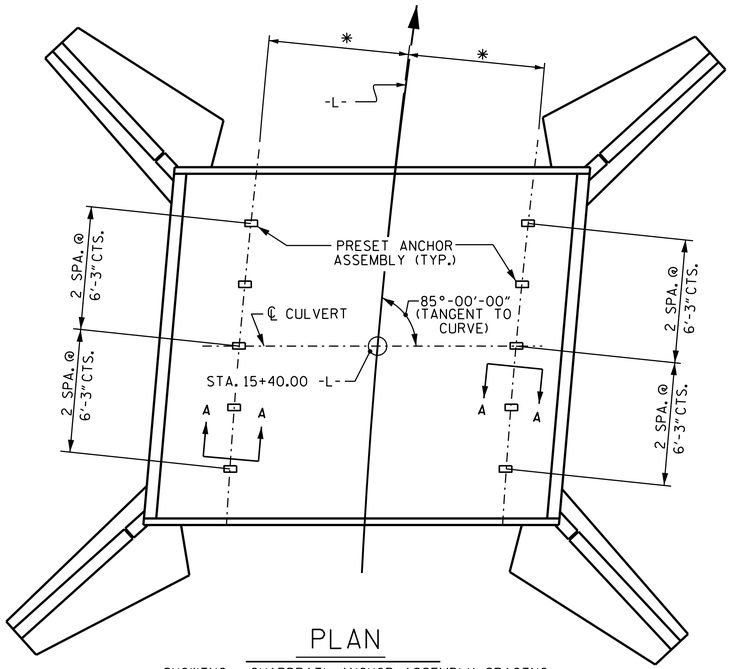


PLAN

SHOWING : GUARDRAIL ANCHOR ASSEMBLY SPACING.
* THIS DIMENSION TO BE FURNISHED BY THE ENGINEER

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2½".

B. 4 - 1" Ø X 2¼" BOLTS WITH WASHERS, BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1" Ø X 2¼" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUTS SHOWN IN THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.

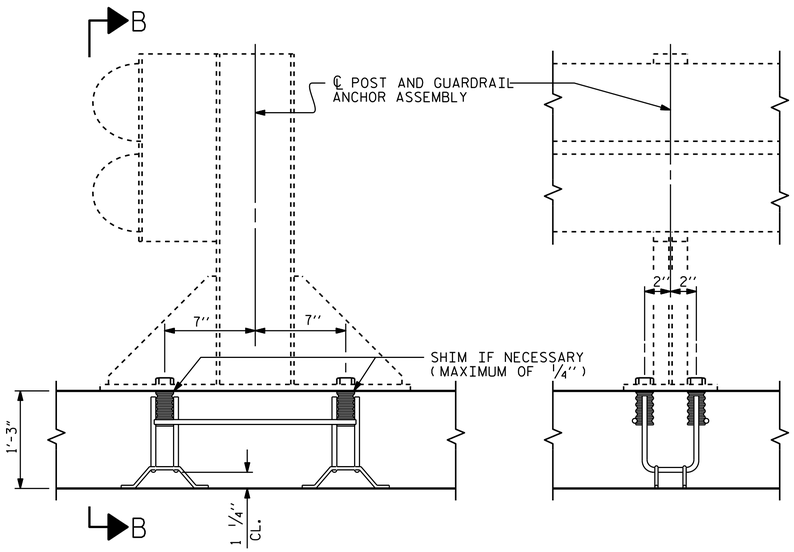
FERRULES TO BE PLUGGED DURING POURING OF SLAB AS RECOMMENDED BY THE MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

PAYMENT FOR GUARDRAIL, POSTS, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

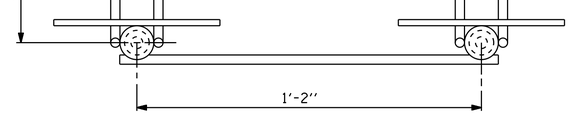
SLAB REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR GUARDRAIL ANCHOR ASSEMBLY. CARE SHOULD BE TAKEN TO KEEP THE SHIFTING OF REINFORCING STEEL TO A MINIMUM.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 1"Ø BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

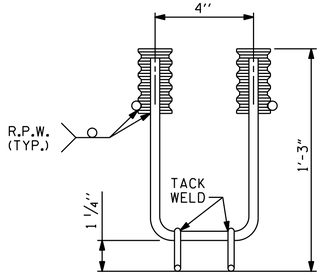


SECTION A-A

SECTION B-B



PLAN



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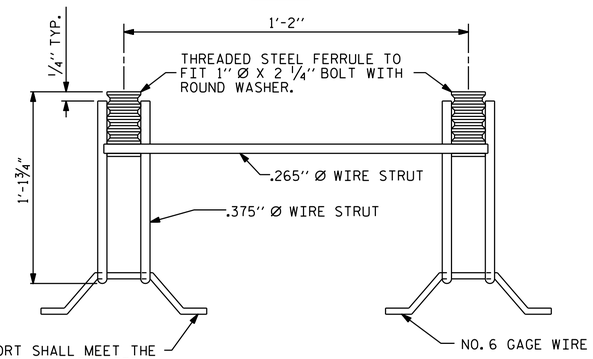

SIDE VIEW

GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS

PROJECT NO. B-5374
UNION COUNTY
STATION: 15+40.00 -L-

SHEET 9 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ANCHORAGE DETAILS FOR GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

DocuSigned by: A Keith Paschal 12/20/2017
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ASSEMBLED BY : B. N. BARODAWALA	DATE : 9-15-17		
CHECKED BY : H. T. BARBOUR	DATE : 11-1-17		
DRAWN BY : FCJ 6/88	REV. 5/7/03	RWW/JTE	
CHECKED BY : ARB 6/88	REV. 5/1/06R	KMM/GM	
	REV. 10/1/11	MAA/GM	

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kpaschal

STD. NO. GRA1

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 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" 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.

ENGLISH

JANUARY, 1990

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

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