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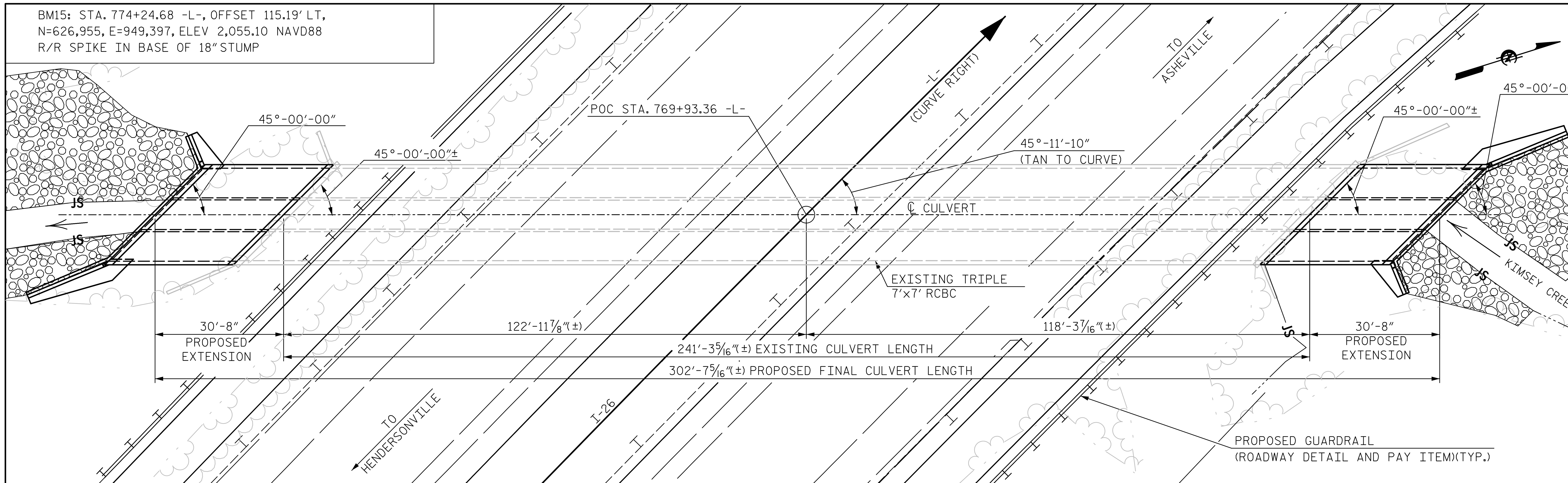
F.A. PROJECT NO. NHF-26-1(62)23



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	1,700 CFS
FREQUENCY OF DESIGN FLOOD	50 YR.
DESIGN HIGH WATER ELEV.	2,059.6
DRAINAGE AREA	2.49 SQ. MI.
BASIC DISCHARGE (Q100)	1,900 CFS
BASIC HIGH WATER ELEV.	2,061.0

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	2,400+ CFS
FREQUENCY OF OVERTOPPING FLOOD	> 500+ YR.
OVERTOPPING FLOOD ELEV.	2,068.5

GRADE DATA

GRADE POINT ELEV. @ STA. 769+93.36 -L- = 2,069.98
CULVERT BED ELEVATION @ STA. 769+93.36 -L- = 2,048.63
ROADWAY SLOPES 2:1

TOTAL STRUCTURE QUANTITIES	
CULVERT EXCAVATION AT POC STATION 769+93.36 -L-	LUMP SUM
FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	120 TONS
CLASS A CONCRETE	
BARREL @ 2.31 CY/FT	141.6 C.Y.
LEFT EXTENSION	70.9 C.Y.
RIGHT EXTENSION	70.7 C.Y.
WING ETC.	36.5 C.Y.
TOTAL	178.1 C.Y.
REINFORCING STEEL	
BARREL	27406 LBS.
LEFT EXTENSION	13733 LBS.
RIGHT EXTENSION	13673 LBS.
WINGS ETC.	1501 LBS.
TOTAL	28907 LBS.

NOTES

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

DESIGN FILL-----------------16.45'

THIS CULVERT EXTENSION HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

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.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

AT THE CONTRACTOR'S OPTION, THE CONTRACTOR MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL AND BOTH FACES OF INTERIOR WALLS ABOVE THE 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 SPLICE SHALL BE PAID FOR BY THE CONTRACTOR.

NO BACKFILLING OF EXTERIOR WALLS SHALL BE PERMITTED UNTIL ROOF SLAB HAS BEEN PLACED AND CURED. CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY BRACING WALLS UNTIL ROOF SLAB IS COMPLETED.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

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 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 SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

DOWELS SHALL BE USED TO CONNECT THE CULVERT EXTENSION TO THE EXISTING CULVERT AS SHOWN. FOR NOTE REGARDING SETTING OF DOWELS, SEE SHEET SN.

IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY USE THE EXISTING WINGS AS TEMPORARY SHORING FOR THE CONSTRUCTION OF THE CULVERT EXTENSIONS. IN THIS CASE, THE BOTTOM SLAB OF THE EXTENSION SHALL BE POURED AT LEAST 72 HOURS PRIOR TO CUTTING THE WINGS. THE WINGS MAY BE CUT EARLIER PROVIDED THE SLAB CONCRETE STRENGTH HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

FOR PHASING DETAILS AND POURING SEQUENCE, SEE BILL OF MATERIAL SHEET.

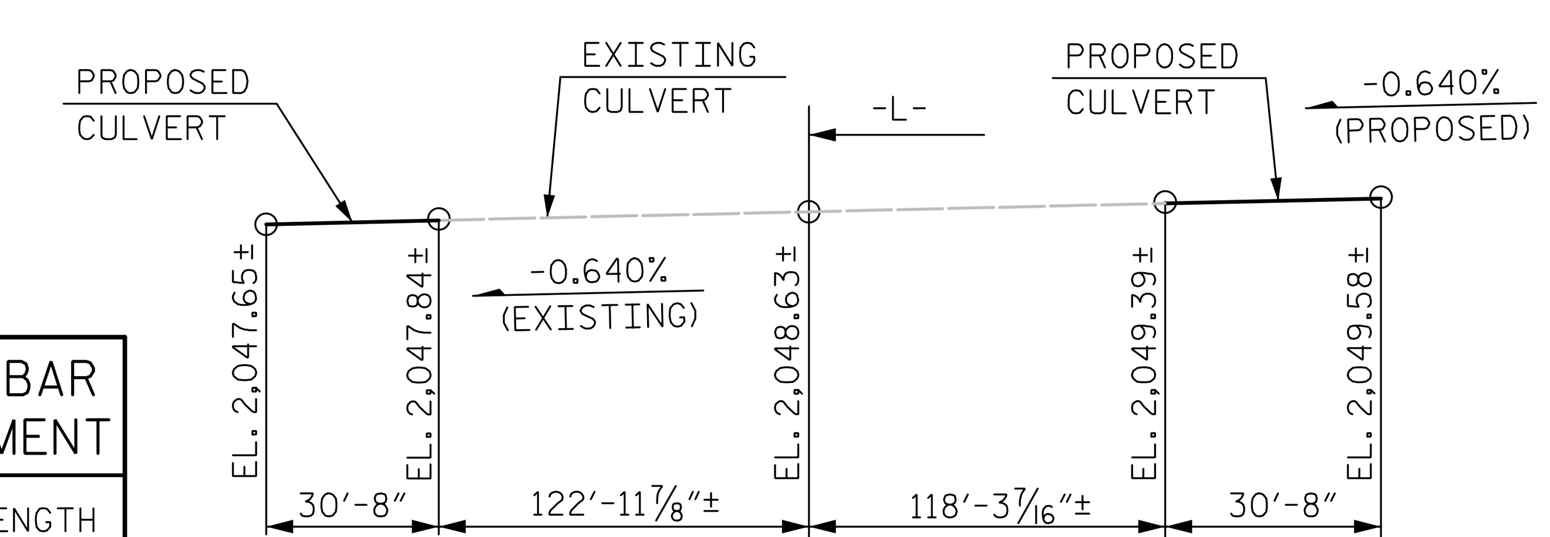
FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

FOUNDATION NOTES

FOR BOX CULVERT EXCAVATION, SEE SECTION 414 OF THE STANDARD SPECIFICATIONS.

THE REINFORCED CONCRETE BOX CULVERT SHALL BE PLACED ON THE STANDARD 1.0 FOOT BLANKET OF FOUNDATION CONDITIONING MATERIAL.

UNDERCUT SOFT/VERY LOOSE SOILS THAT MAY BE ENCOUNTERED BENEATH THE BOTTOM OF THE FOUNDATION CONDITIONING MATERIAL. BACKFILL UNDERCUT AREAS WITH FOUNDATION CONDITIONING MATERIAL. IF MORE THAN 1 FT. UNDERCUT IS REQUIRED, CONTACT THE OPERATIONS ENGINEER FOR APPROVAL.



PROFILE ALONG ℄ CULVERT

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE:
SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND fy = 60ksi.

I HEREBY CERTIFY THESE PLANS ARE AS-BUILT PLANS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 DAVID W. HAWKINS 5/13/2019

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PROJECT NO. I-4400C
HENDERSON COUNTY
STATION: 769+93.36 -L-

SHEET 1 OF 12 BRIDGE NO. 440236

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LOCATION SKETCH FOR TRIPLE 7 FT. x 7 FT. CONCRETE BOX CULVERT

45 DEGREE SKEW
ON I-26 OVER KIMSEY CREEK

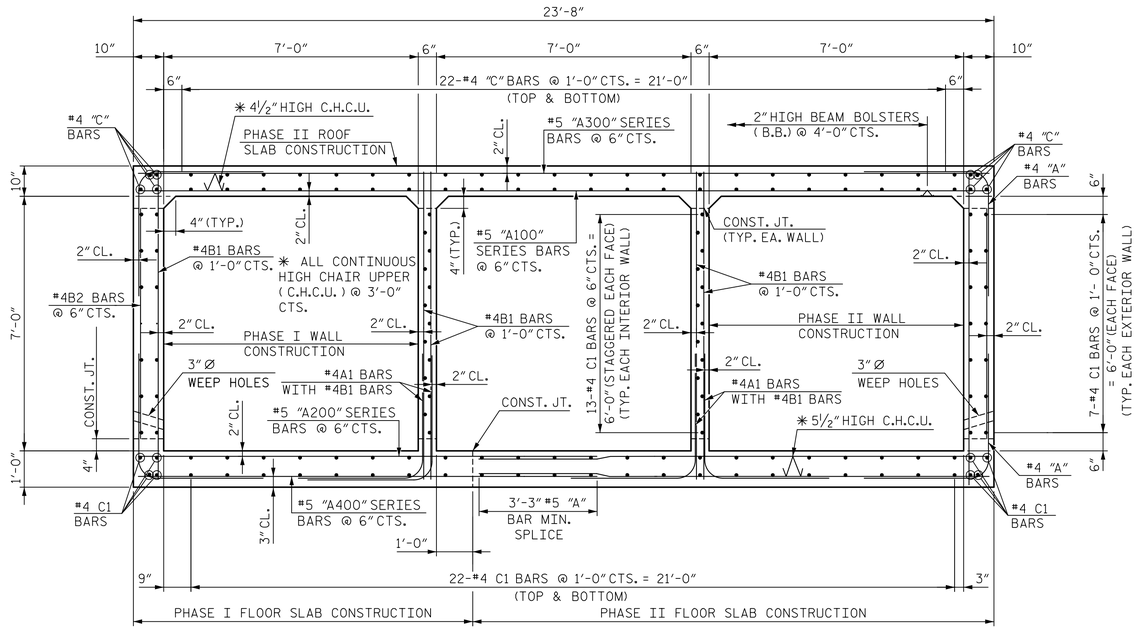
HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY	B. STEIB	DATE	2/19
CHECKED BY	N. HART	DATE	3/19
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	3/19

DWG. NO. 1

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

SHEET NO. C1-1
TOTAL SHEETS 12



RIGHT ANGLE SECTION OF BARREL

THERE ARE 158 "C" BARS IN SECTION OF BARREL
(LOOKING UPSTREAM)

PROJECT NO. I-4400C

HENDERSON COUNTY

STATION: 769+93.36 -L-

SHEET 2 OF 12

I HEREBY CERTIFY THESE PLANS ARE AS-BUILT PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signed by: David W. Hawkins

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 5/13/2019 ENGINEER DAVID W. HAWKINS

HNTB

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NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY D.WITHERSPOON DATE 3/19
CHECKED BY N. HART DATE 3/19
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 3/19

DWG. NO. 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BARREL SECTION FOR TRIPLE 7 FT. x 7 FT. CONCRETE BOX CULVERT

45 DEGREE SKEW
ON I-26 OVER KIMSEY CREEK

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-2
1			3			TOTAL SHEETS
2			4			12

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 × RF	STRENGTH I LIMIT STATE									COMMENT NUMBER
								MOMENT				SHEAR				
							LIVE-LOAD FACTORS (γ_{LL})	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⟩	**4.27**	--	1.75	7.03	1	TOP. SLAB	7.00	**4.27**	3	TOP SLAB	0.60	--
		HL-93 (OPERATING)	N/A	--	5.53	--	1.35	9.11	1	TOP. SLAB	7.00	5.53	3	TOP SLAB	0.60	--
		HS-20 (INVENTORY)	36.000	⟨2⟩	**5.57**	200.5	1.75	9.20	1	TOP. SLAB	7.00	**5.57**	3	TOP SLAB	0.60	--
		HS-20 (OPERATING)	36.000	--	7.22	259.9	1.35	11.93	1	TOP. SLAB	7.00	7.22	3	TOP SLAB	0.60	--
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH	12.500	--	12.88	160.9	1.40	21.21	1	TOP. SLAB	7.00	12.88	3	TOP SLAB	0.60	--
		S3C	21.500	--	7.71	165.9	1.40	12.71	1	TOP. SLAB	7.00	7.71	3	TOP SLAB	0.60	--
		S3A	22.750	--	6.86	156.0	1.40	11.30	1	TOP. SLAB	7.00	6.86	3	TOP SLAB	0.60	--
		S4A	26.750	--	6.57	175.7	1.40	10.82	1	TOP. SLAB	7.00	6.57	3	TOP SLAB	0.60	--
		S5A	30.500	--	6.40	195.3	1.40	10.55	1	TOP. SLAB	7.00	6.40	3	TOP SLAB	0.60	--
		S6A	34.500	--	6.23	214.9	1.40	10.26	1	TOP. SLAB	7.00	6.23	3	TOP SLAB	0.60	--
		S7B	38.500	⟨3⟩	**6.09**	234.6	1.40	10.04	1	TOP. SLAB	7.00	**6.09**	3	TOP SLAB	0.60	--
		S7A	40.000	--	6.48	259.1	1.40	10.67	1	TOP. SLAB	7.00	6.48	3	TOP SLAB	0.60	--
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A	28.250	--	7.09	200.2	1.40	11.68	1	TOP. SLAB	7.00	7.09	3	TOP SLAB	0.60	--
		T5B	32.000	--	6.87	219.8	1.40	11.32	1	TOP. SLAB	7.00	6.87	3	TOP SLAB	0.60	--
		T6A	36.000	--	6.65	239.5	1.40	10.96	1	TOP. SLAB	7.00	6.65	3	TOP SLAB	0.60	--
		T7A	40.000	--	6.48	259.1	1.40	10.67	1	TOP. SLAB	7.00	6.48	3	TOP SLAB	0.60	--
		T7B	40.000	--	6.48	259.1	1.40	10.67	1	TOP. SLAB	7.00	6.48	3	TOP SLAB	0.60	--

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.

COMMENTS:

1.
2.
3.
4.

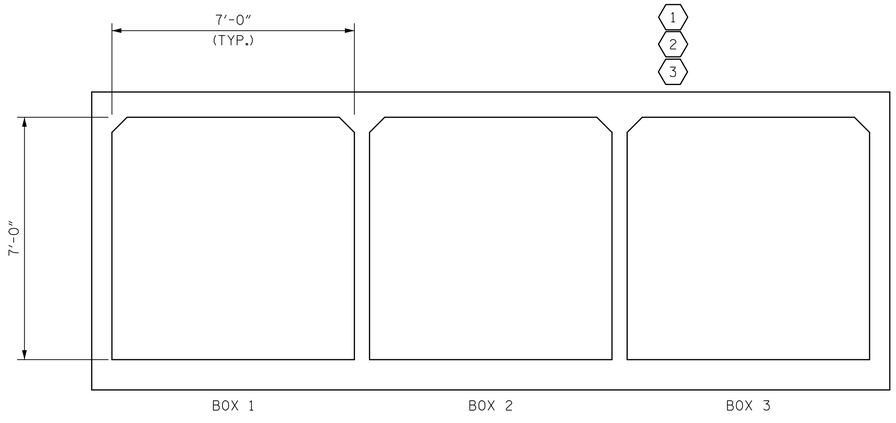
⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE



LRFR SUMMARY

(LOOKING UPSTATION)

PROJECT NO. I-4400C

HENDERSON COUNTY

STATION: 769+93.36 -L-

SHEET 3 OF 12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS
(INTERSTATE TRAFFIC)
45 DEGREE SKEW
ON I-26 OVER KIMSEY CREEK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 5/13/2019 ENGINEER DAVID W. HAWKINS

Digitally signed by: David W. Hawkins

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-3
1			3			TOTAL SHEETS
2			4			12

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CHECKED BY N. HART DATE 3/19
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DWG. NO. 3

ASSEMBLED BY : D. WITHERSPOON DATE : 3/19
CHECKED BY : N. HART DATE : 3/19

DRAWN BY : WMC 7/11
CHECKED BY : GM 7/11

REV. 10/1/11 MAA/GM
REV. 12/17 MAA/THC

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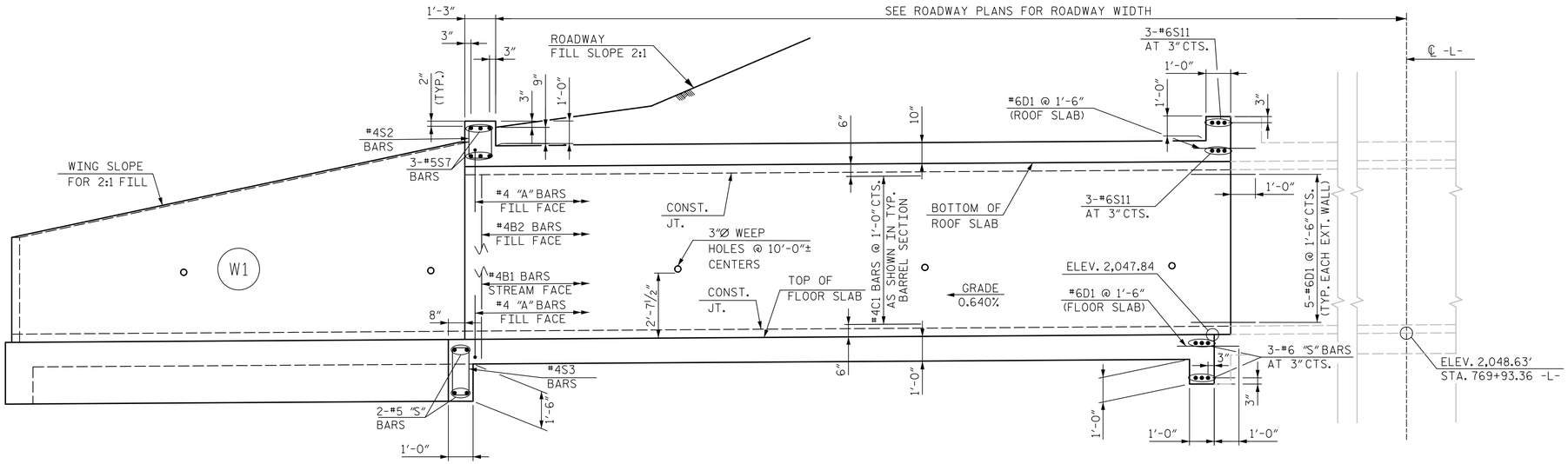
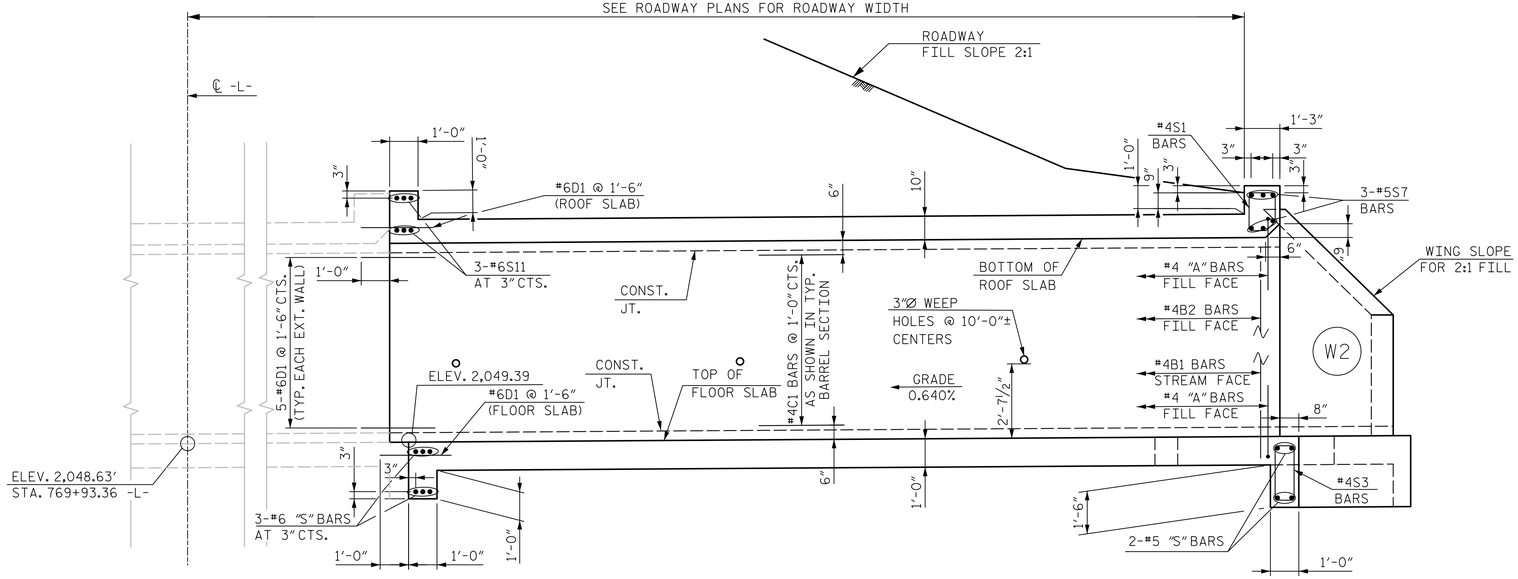
STD. NO. LRFR6



CULVERT LEFT SECTION NORMAL TO ROADWAY



CULVERT RIGHT SECTION NORMAL TO ROADWAY

I HEREBY CERTIFY THESE PLANS
ARE AS-BUILT PLANS

PROJECT NO. I-4400C

HENDERSON COUNTY

STATION: 769+93.36 -L-

SHEET 4 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 5/13/2019 DAVID W. HAWKINS

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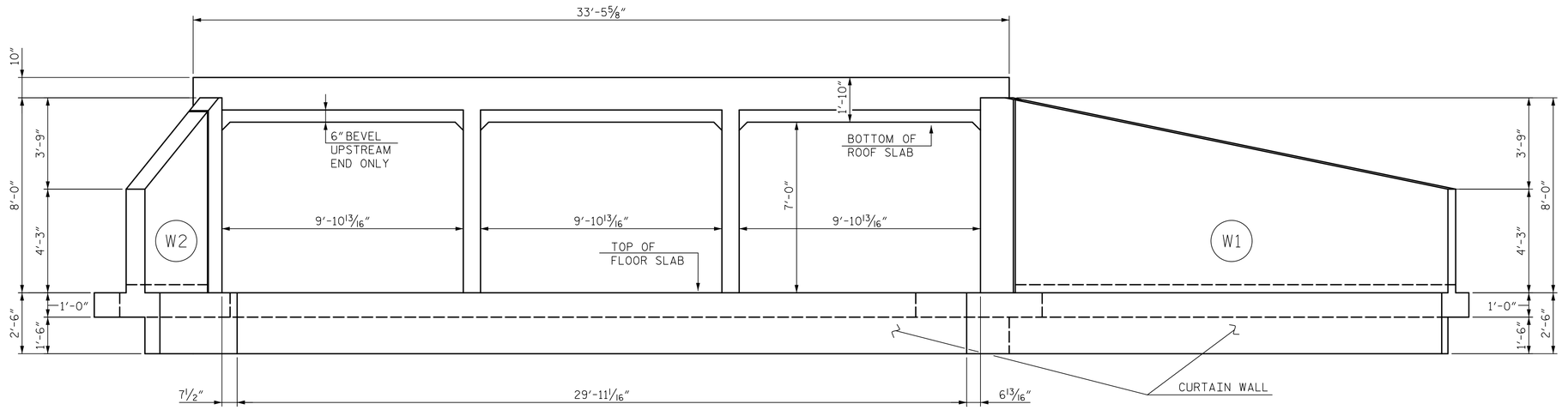
DWG. NO. 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

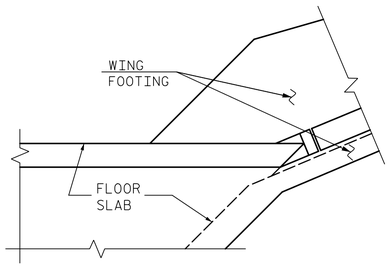
SECTION FOR TRIPLE 7 FT. x 7 FT. CONCRETE BOX CULVERT

45 DEGREE SKEW
ON I-26 OVER KIMSEY CREEK

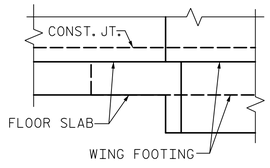
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-4
1			3			TOTAL SHEETS
2			4			12



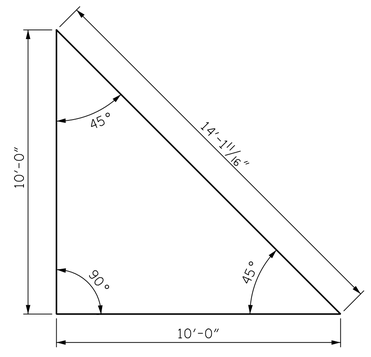
END ELEVATION NORMAL TO SKEW



PART PLAN



ELEVATION



SKEW TRIANGLE

WING FOOTING
FLOOR SLAB DETAIL

I HEREBY CERTIFY THESE PLANS
ARE AS-BUILT PLANS

PROJECT NO. I-4400C

HENDERSON COUNTY

STATION: 769+93.36 -L-

SHEET 5 OF 12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ELEVATION FOR TRIPLE 7 FT. × 7 FT. CONCRETE BOX CULVERT

45 DEGREE SKEW
ON I-26 OVER KIMSEY CREEK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 5/13/2019 DAVID W. HAWKINS
Digitally signed by: David W. Hawkins

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DWG. NO. 5

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-5
1			3			TOTAL SHEETS
2			4			12

PLAN - FLOOR SLAB (LEFT EXTENSION)

(PHASE I & II CONSTRUCTION)

(A) #5 "S" TOP BAR 4'-3" MIN. LAP
#5 "S" BOTTOM BAR 3'-3" MIN. LAP

(B) #6 "S" TOP BAR 5'-2" MIN. LAP
#6 "S" BOTTOM BAR 3'-11" MIN. LAP

(C) #4A2 THRU #4A4 @ 6" CTS. = 1'-0" CORNER BARS EXTERIOR WALL FACE (TIE WITH #5 "A" BARS) (SEE BARREL SECTION)

PROJECT NO. I-4400C
HENDERSON COUNTY
STATION: 769+93.36 -L-

SHEET 6 OF 12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FLOOR SLAB PLAN FOR TRIPLE 7 FT. X 7 FT. CONCRETE BOX CULVERT LEFT EXTENSION

45 DEGREE SKEW
ON I-26 OVER KIMSEY CREEK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 DAVID W. HAWKINS 5/13/2019

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DWG. NO. 6

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REVISIONS

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2			4		

SHEET NO. C1-6
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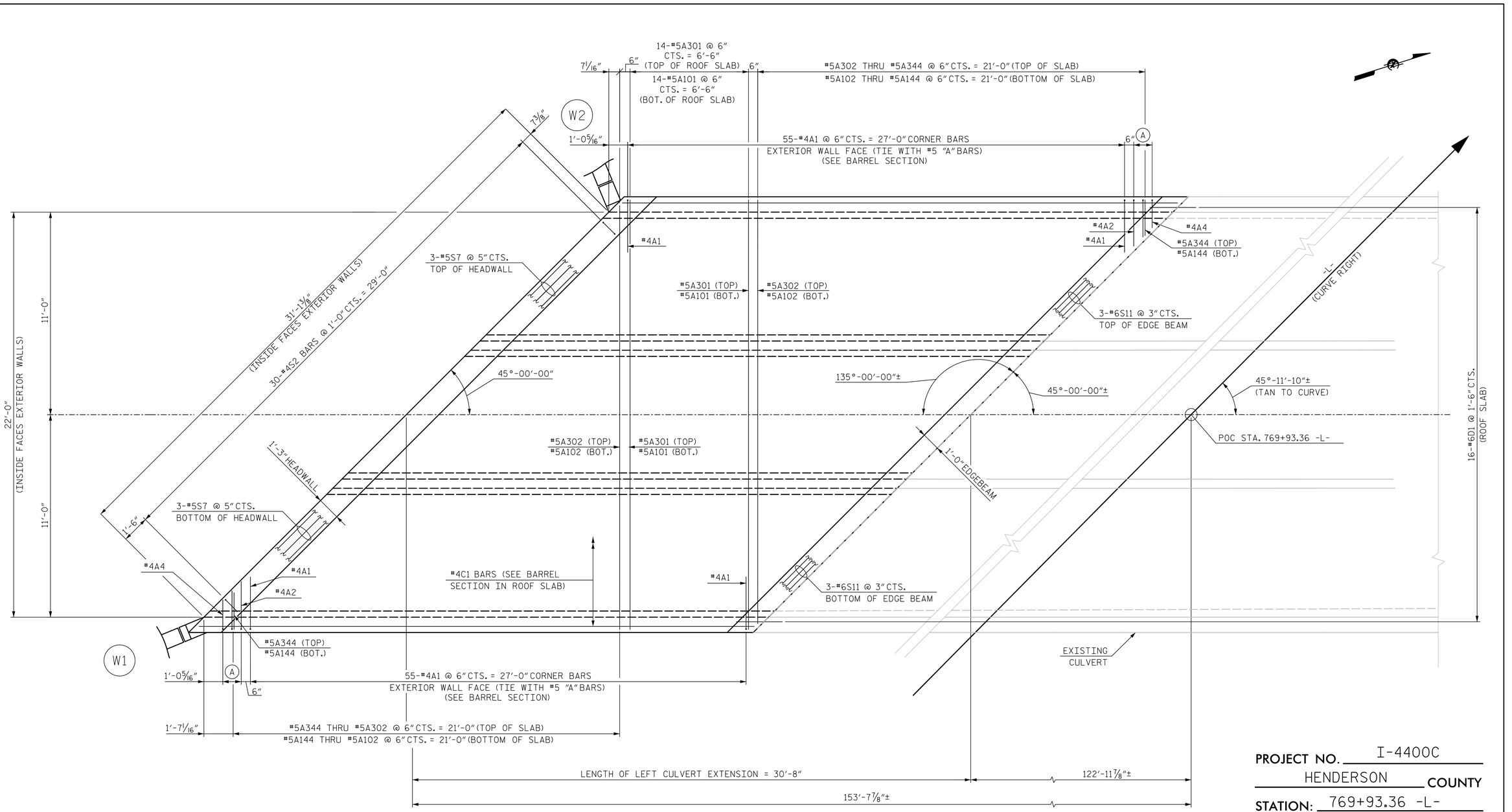

PLAN - ROOF SLAB (LEFT EXTENSION)

(PHASE II CONSTRUCTION)

PROJECT NO. I-4400C

HENDERSON COUNTY

STATION: 769+93.36 -L-

SHEET 7 OF 12

Digitally signed by: David W. Hawkins

NORTH CAROLINA PROFESSIONAL SEAL 27812 ENGINEER DAVID W. HAWKINS

SEAL 27812 5/13/2019

Ⓐ #4A2 THRU #4A4 @ 6"CTS. = 1'-0" CORNER BARS EXTERIOR WALL FACE (TIE WITH #5 "A" BARS) (SEE BARREL SECTION)

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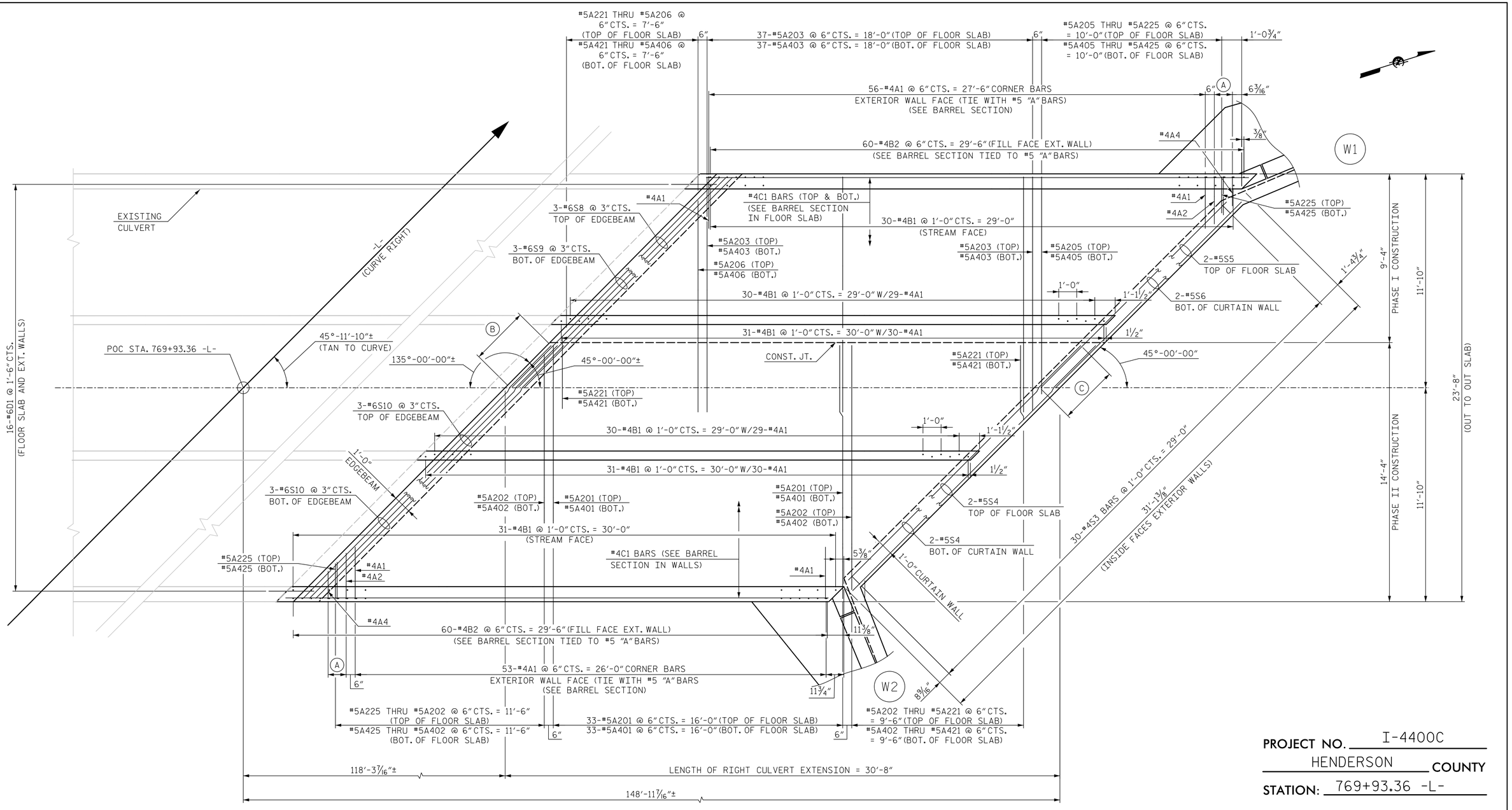
DWG. NO. 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROOF SLAB PLAN FOR TRIPLE 7 FT. X 7 FT. CONCRETE BOX CULVERT LEFT EXTENSION

45 DEGREE SKEW
ON I-26 OVER KIMSEY CREEK

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-7
1			3			TOTAL SHEETS
2			4			12



PLAN - FLOOR SLAB (RIGHT EXTENSION)

(PHASE I & II CONSTRUCTION)

(A) #4A2 THRU #4A4 @ 6"CTS. = 1'-0" CORNER BAR EXTERIOR WALL FACE (TIE WITH #5 "A" BARS) (SEE BARREL SECTION)

(B) #6 "S" TOP BAR 5'-2" MIN. LAP
#6 "S" BOTTOM BAR 3'-11" MIN. LAP

(C) #5 "S" TOP BAR 4'-3" MIN. LAP
#5 "S" BOTTOM BAR 3'-3" MIN. LAP

PROJECT NO. I-4400C

HENDERSON COUNTY

STATION: 769+93.36 -L-

SHEET 8 OF 12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FLOOR SLAB PLAN FOR TRIPLE 7 FT. X 7 FT. CONCRETE BOX CULVERT RIGHT EXTENSION

45 DEGREE SKEW
ON I-26 OVER KIMSEY CREEK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 5/13/2019 DAVID W. HAWKINS
Digitally signed by David W. Hawkins

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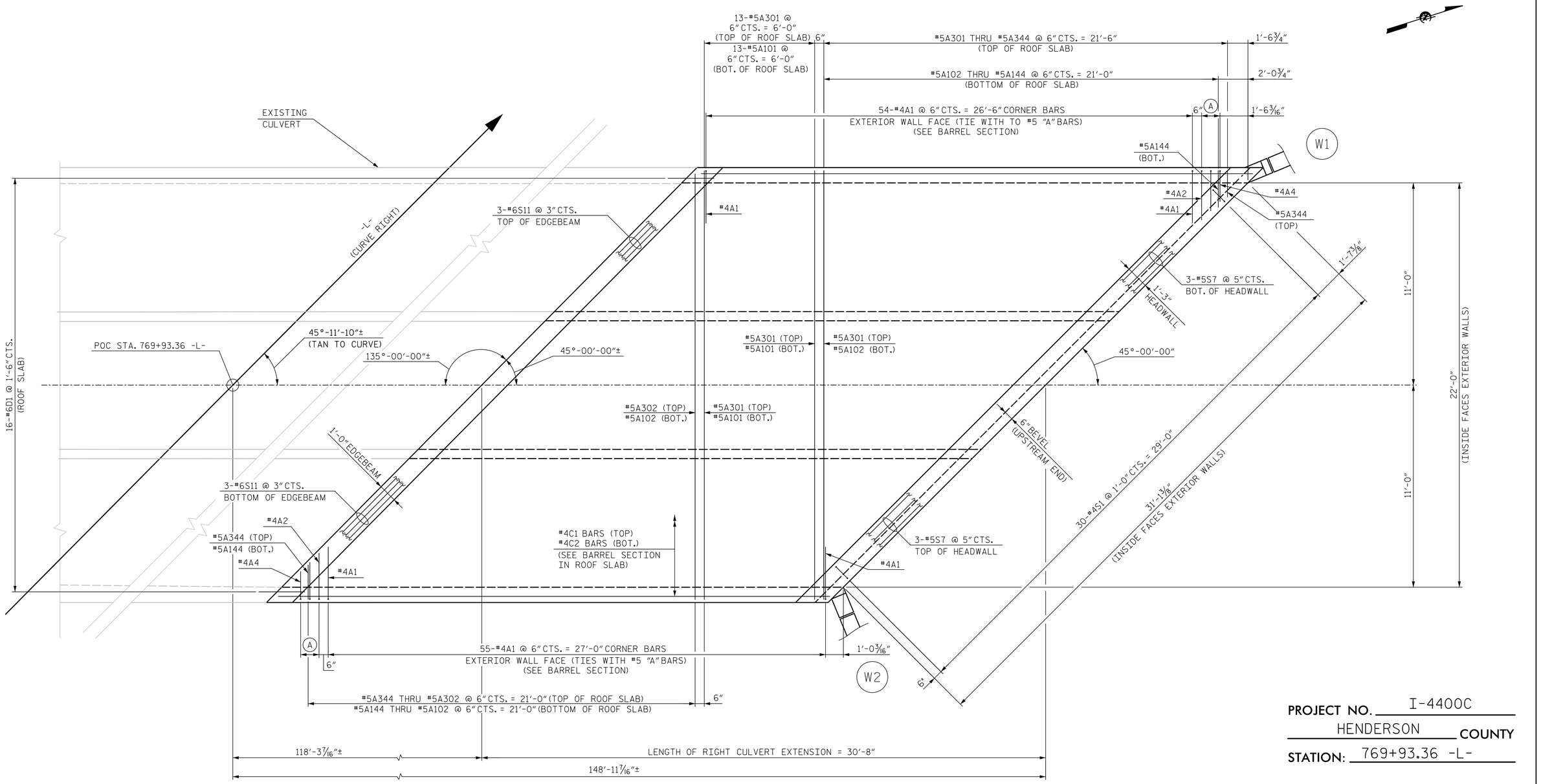
DRAWN BY B. STEIB DATE 2/19
CHECKED BY N. HART DATE 2/19
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 3/19

DWG. NO. 8

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-8
1			3			TOTAL SHEETS
2			4			12



PLAN - ROOF SLAB (RIGHT EXTENSION)

(PHASE II CONSTRUCTION)

Ⓐ #4A2 THRU #4A4 @ 6"CTS. = 1'-0" CORNER BARS EXTERIOR WALL FACE (TIE WITH #5 "A" BARS) (SEE BARREL SECTION)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. I-4400C

HENDERSON COUNTY

STATION: 769+93.36 -L-

SHEET 9 OF 12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROOF SLAB PLAN FOR TRIPLE 7 FT. X 7 FT. CONCRETE BOX CULVERT RIGHT EXTENSION

45 DEGREE SKEW
ON I-26 OVER KIMSEY CREEK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 5/13/2019 DAVID W. HAWKINS

Digitally signed by: David W. Hawkins

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY B. STEIB DATE 2/19
CHECKED BY N. HART DATE 2/19
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 3/19

DWG. NO. 9

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-9
1			3			TOTAL SHEETS
2			4			12

REINFORCING BAR SCHEDULE - LEFT EXTENSION

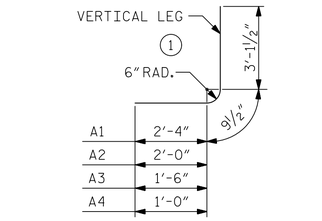
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	338	4	1	6′-3″	1,411
A2	4	4	1	5′-11″	16
A3	4	4	1	5′-5″	14
A4	4	4	1	4′-11″	13
A101	14	5	STR	23′-4″	341
A102	2	5	STR	23′-0″	48
A103	2	5	STR	22′-6″	47
A104	2	5	STR	22′-0″	46
A105	2	5	STR	21′-6″	45
A106	2	5	STR	21′-0″	44
A107	2	5	STR	20′-6″	43
A108	2	5	STR	20′-0″	42
A109	2	5	STR	19′-6″	41
A110	2	5	STR	19′-0″	40
A111	2	5	STR	18′-6″	39
A112	2	5	STR	18′-0″	38
A113	2	5	STR	17′-6″	37
A114	2	5	STR	17′-0″	35
A115	2	5	STR	16′-6″	34
A116	2	5	STR	16′-0″	33
A117	2	5	STR	15′-6″	32
A118	2	5	STR	15′-0″	31
A119	2	5	STR	14′-6″	30
A120	2	5	STR	14′-0″	29
A121	2	5	STR	13′-6″	28
A122	2	5	STR	13′-0″	27
A123	2	5	STR	12′-6″	26
A124	2	5	STR	12′-0″	25
A125	2	5	STR	11′-6″	24
A126	2	5	STR	11′-0″	23
A127	2	5	STR	10′-6″	22
A128	2	5	STR	10′-0″	21
A129	2	5	STR	9′-6″	20
A130	2	5	STR	9′-0″	19
A131	2	5	STR	8′-5″	18
A132	2	5	STR	7′-11″	17
A133	2	5	STR	7′-5″	15
A134	2	5	STR	6′-11″	14
A135	2	5	STR	6′-5″	13
A136	2	5	STR	5′-11″	12
A137	2	5	STR	5′-5″	11
A138	2	5	STR	4′-11″	10
A139	2	5	STR	4′-5″	9
A140	2	5	STR	3′-11″	8
A141	2	5	STR	3′-5″	7
A142	2	5	STR	2′-11″	6
A143	2	5	STR	2′-5″	5
A144	2	5	STR	1′-11″	4

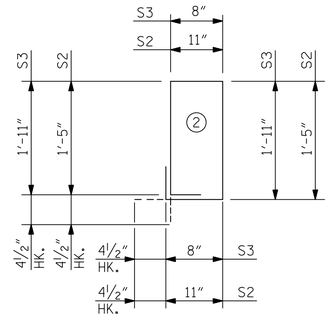
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A201	33	5	STR	14′-0″	482
A202	2	5	STR	13′-6″	28
A203	37	5	STR	13′-0″	502
A204	4	5	STR	12′-6″	52
A205	4	5	STR	12′-0″	50
A206	4	5	STR	11′-6″	48
A207	4	5	STR	11′-0″	46
A208	4	5	STR	10′-6″	44
A209	4	5	STR	10′-0″	42
A210	4	5	STR	9′-6″	40
A211	4	5	STR	9′-0″	38
A212	4	5	STR	8′-6″	35
A213	4	5	STR	8′-0″	33
A214	4	5	STR	7′-6″	31
A215	4	5	STR	7′-0″	29
A216	4	5	STR	6′-6″	27
A217	4	5	STR	6′-0″	25
A218	4	5	STR	5′-6″	23
A219	4	5	STR	4′-11″	21
A220	4	5	STR	4′-5″	18
A221	3	5	STR	3′-11″	12
A222	2	5	STR	3′-5″	7
A223	2	5	STR	2′-11″	6
A224	2	5	STR	2′-5″	5
A225	2	5	STR	1′-11″	4
A301	14	5	STR	23′-4″	341
A302	2	5	STR	23′-0″	48
A303	2	5	STR	22′-6″	47
A304	2	5	STR	22′-0″	46
A305	2	5	STR	21′-6″	45
A306	2	5	STR	21′-0″	44
A307	2	5	STR	20′-6″	43
A308	2	5	STR	20′-0″	42
A309	2	5	STR	19′-6″	41
A310	2	5	STR	19′-0″	40
A311	2	5	STR	18′-6″	39
A312	2	5	STR	18′-0″	38
A313	2	5	STR	17′-6″	37
A314	2	5	STR	17′-0″	35
A315	2	5	STR	16′-6″	34
A316	2	5	STR	16′-0″	33
A317	2	5	STR	15′-6″	32
A318	2	5	STR	15′-0″	31
A319	2	5	STR	14′-6″	30
A320	2	5	STR	14′-0″	29
A321	2	5	STR	13′-6″	28
A322	2	5	STR	13′-0″	27
A323	2	5	STR	12′-6″	26
A324	2	5	STR	12′-0″	25
A325	2	5	STR	11′-6″	24
A326	2	5	STR	11′-0″	23
A327	2	5	STR	10′-6″	22
A328	2	5	STR	10′-0″	21

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A329	2	5	STR	9′-6″	20
A330	2	5	STR	9′-0″	19
A331	2	5	STR	8′-5″	18
A332	2	5	STR	7′-11″	17
A333	2	5	STR	7′-5″	15
A334	2	5	STR	6′-11″	14
A335	2	5	STR	6′-5″	13
A336	2	5	STR	5′-11″	12
A337	2	5	STR	5′-5″	11
A338	2	5	STR	4′-11″	10
A339	2	5	STR	4′-5″	9
A340	2	5	STR	3′-11″	8
A341	2	5	STR	3′-5″	7
A342	2	5	STR	2′-11″	6
A343	2	5	STR	2′-5″	5
A344	2	5	STR	1′-11″	4
A401	33	5	STR	14′-0″	482
A402	2	5	STR	13′-6″	28
A403	37	5	STR	13′-0″	502
A404	4	5	STR	12′-6″	52
A405	4	5	STR	12′-0″	50
A406	4	5	STR	11′-6″	48
A407	4	5	STR	11′-0″	46
A408	4	5	STR	10′-6″	44
A409	4	5	STR	10′-0″	42
A410	4	5	STR	9′-6″	40
A411	4	5	STR	9′-0″	38
A412	4	5	STR	8′-6″	35
A413	4	5	STR	8′-0″	33
A414	4	5	STR	7′-6″	31
A415	4	5	STR	7′-0″	29
A416	4	5	STR	6′-6″	27
A417	4	5	STR	6′-0″	25
A418	4	5	STR	5′-6″	23
A419	4	5	STR	4′-11″	21
A420	4	5	STR	4′-5″	18
A421	3	5	STR	3′-11″	12
A422	2	5	STR	3′-5″	7
A423	2	5	STR	2′-11″	6
A424	2	5	STR	2′-5″	5
A425	2	5	STR	1′-11″	4
B1	182	4	STR	8′-5″	1,023
B2	121	4	STR	6′-4″	512
C1	158	4	STR	30′-0″	3,166
D1	42	6	STR	2′-6″	158

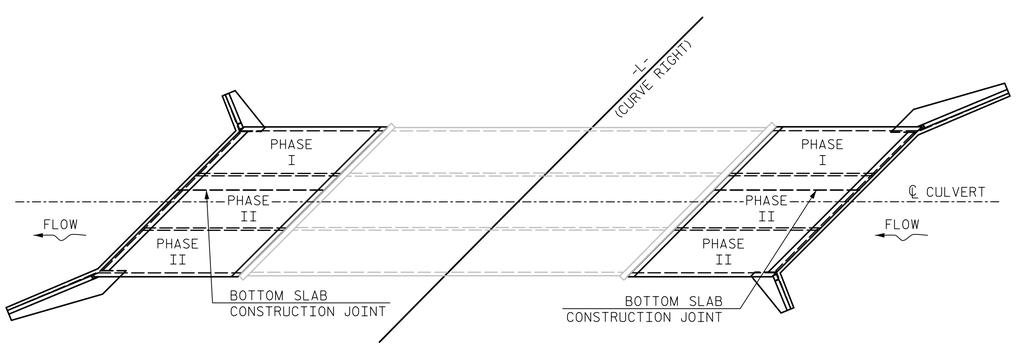
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S2	30	4	2	5′-5″	109
S3	30	4	2	5′-11″	119
S4	4	5	STR	17′-10″	74
S5	2	5	STR	15′-11″	33
S6	2	5	STR	14′-11″	31
S7	6	5	STR	32′-11″	206
S8	3	6	STR	18′-5″	83
S9	3	6	STR	17′-2″	77
S10	6	6	STR	19′-8″	177
S11	6	6	STR	32-11″	297
REINFORCING STEEL					13,733 LBS.

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT.



CONSTRUCTION SEQUENCE

PHASING REQUIRES CREEK FLOW DIVERSION - SEE EROSION CONTROL PLANS.

PHASING AND POURING SEQUENCE NOTES

CONCRETE IN CULVERT TO BE POURED IN THE FOLLOWING ORDER:

PHASE I:
1. INSTALL IMPERVIOUS DIKE TO SHIFT STREAM FLOW FROM PHASE I AND DEWATER CONSTRUCTION AREA.
2. CONSTRUCT PHASE I WING FOOTINGS AND FLOOR SLAB INCLUDING 4″ OF VERTICAL WALLS.
3. CONSTRUCT REMAINING PHASE I PORTIONS OF THE WALLS AND WINGS FULL HEIGHT.

PHASE II:
1. RECONFIGURE IMPERVIOUS DIKE AND SHIFT STREAM FLOW THROUGH PHASE I CELL.
2. CONSTRUCT PHASE II WING FOOTINGS AND FLOOR SLAB INCLUDING 4″ OF REMAINING VERTICAL WALL.
3. CONSTRUCT REMAINING PHASE II PORTION OF WALL AND WINGS FULL HEIGHT.
4. CONSTRUCT ENTIRE ROOF SLAB AND HEADWALLS.

SPLICE LENGTH CHART

BAR	SIZE	SPLICE LENGTH
"A"	#5	3′-3″
S5	#5	4′-3″
S6	#5	3′-3″
S8	#6	5′-2″
S9	#6	3′-11″

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY B. STEIB DATE 2/19
CHECKED BY N. HART DATE 2/19
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 3/19

DWG. NO. 10

PROJECT NO. I-4400C
HENDERSON **COUNTY**
STATION: 769+93.36 -L-

SHEET 10 OF 12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BILL OF MATERIAL FOR TRIPLE 7 FT. × 7 FT. CONCRETE BOX CULVERT

45 DEGREE SKEW
ON I-26 OVER KIMSEY CREEK

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-10
1			3			TOTAL SHEETS
2			4			12

REINFORCING BAR SCHEDULE - RIGHT EXTENSION

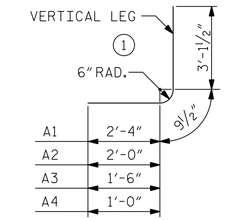
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	336	4	1	6′-3″	1,403
A2	4	4	1	5′-11″	16
A3	4	4	1	5′-5″	14
A4	4	4	1	4′-11″	13
A101	13	5	STR	23′-4″	316
A102	2	5	STR	23′-0″	48
A103	2	5	STR	22′-6″	47
A104	2	5	STR	22′-0″	46
A105	2	5	STR	21′-6″	45
A106	2	5	STR	21′-0″	44
A107	2	5	STR	20′-6″	43
A108	2	5	STR	20′-0″	42
A109	2	5	STR	19′-6″	41
A110	2	5	STR	19′-0″	40
A111	2	5	STR	18′-6″	39
A112	2	5	STR	18′-0″	38
A113	2	5	STR	17′-6″	37
A114	2	5	STR	17′-0″	35
A115	2	5	STR	16′-6″	34
A116	2	5	STR	16′-0″	33
A117	2	5	STR	15′-6″	32
A118	2	5	STR	15′-0″	31
A119	2	5	STR	14′-6″	30
A120	2	5	STR	14′-0″	29
A121	2	5	STR	13′-6″	28
A122	2	5	STR	13′-0″	27
A123	2	5	STR	12′-6″	26
A124	2	5	STR	12′-0″	25
A125	2	5	STR	11′-6″	24
A126	2	5	STR	11′-0″	23
A127	2	5	STR	10′-6″	22
A128	2	5	STR	10′-0″	21
A129	2	5	STR	9′-6″	20
A130	2	5	STR	9′-0″	19
A131	2	5	STR	8′-5″	18
A132	2	5	STR	7′-11″	17
A133	2	5	STR	7′-5″	15
A134	2	5	STR	6′-11″	14
A135	2	5	STR	6′-5″	13
A136	2	5	STR	5′-11″	12
A137	2	5	STR	5′-5″	11
A138	2	5	STR	4′-11″	10
A139	2	5	STR	4′-5″	9
A140	2	5	STR	3′-11″	8
A141	2	5	STR	3′-5″	7
A142	2	5	STR	2′-11″	6
A143	2	5	STR	2′-5″	5
A144	2	5	STR	1′-11″	4

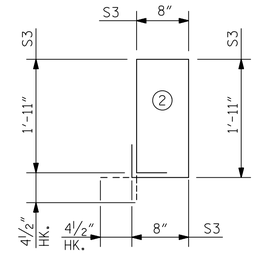
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A201	33	5	STR	14′-0″	482
A202	2	5	STR	14′-6″	28
A203	39	5	STR	13′-0″	529
A204	2	5	STR	12′-6″	26
A205	3	5	STR	12′-0″	38
A206	4	5	STR	11′-6″	48
A207	4	5	STR	11′-0″	46
A208	4	5	STR	10′-6″	44
A209	4	5	STR	10′-0″	42
A210	4	5	STR	9′-6″	40
A211	4	5	STR	9′-0″	38
A212	4	5	STR	8′-6″	35
A213	4	5	STR	8′-0″	33
A214	4	5	STR	7′-6″	31
A215	4	5	STR	7′-0″	29
A216	4	5	STR	6′-6″	27
A217	4	5	STR	6′-0″	25
A218	4	5	STR	5′-6″	23
A219	4	5	STR	4′-11″	21
A220	4	5	STR	4′-5″	18
A221	4	5	STR	3′-11″	16
A222	2	5	STR	3′-5″	7
A223	2	5	STR	2′-11″	6
A224	2	5	STR	2′-5″	5
A225	2	5	STR	1′-11″	4
A301	14	5	STR	23′-4″	341
A302	2	5	STR	23′-0″	48
A303	2	5	STR	22′-6″	47
A304	2	5	STR	22′-0″	46
A305	2	5	STR	21′-6″	45
A306	2	5	STR	21′-0″	44
A307	2	5	STR	20′-6″	43
A308	2	5	STR	20′-0″	42
A309	2	5	STR	19′-6″	41
A310	2	5	STR	19′-0″	40
A311	2	5	STR	18′-6″	39
A312	2	5	STR	18′-0″	38
A313	2	5	STR	17′-6″	37
A314	2	5	STR	17′-0″	35
A315	2	5	STR	16′-6″	34
A316	2	5	STR	16′-0″	33
A317	2	5	STR	15′-6″	32
A318	2	5	STR	15′-0″	31
A319	2	5	STR	14′-6″	30
A320	2	5	STR	14′-0″	29
A321	2	5	STR	13′-6″	28
A322	2	5	STR	13′-0″	27
A323	2	5	STR	12′-6″	26
A324	2	5	STR	12′-0″	25
A325	2	5	STR	11′-6″	24
A326	2	5	STR	11′-0″	23
A327	2	5	STR	10′-6″	22
A328	2	5	STR	10′-0″	21

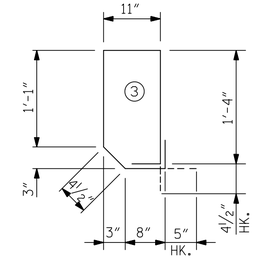
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A329	2	5	STR	9′-6″	20
A330	2	5	STR	9′-0″	19
A331	2	5	STR	8′-5″	18
A332	2	5	STR	7′-11″	17
A333	2	5	STR	7′-5″	15
A334	2	5	STR	6′-11″	14
A335	2	5	STR	6′-5″	13
A336	2	5	STR	5′-11″	12
A337	2	5	STR	5′-5″	11
A338	2	5	STR	4′-11″	10
A339	2	5	STR	4′-5″	9
A340	2	5	STR	3′-11″	8
A341	2	5	STR	3′-5″	7
A342	2	5	STR	2′-11″	6
A343	2	5	STR	2′-5″	5
A344	2	5	STR	1′-11″	4
A401	33	5	STR	14′-0″	482
A402	2	5	STR	13′-6″	28
A403	39	5	STR	13′-0″	529
A404	2	5	STR	12′-6″	26
A405	3	5	STR	12′-0″	38
A406	4	5	STR	11′-6″	48
A407	4	5	STR	11′-0″	46
A408	4	5	STR	10′-6″	44
A409	4	5	STR	10′-0″	42
A410	4	5	STR	9′-6″	40
A411	4	5	STR	9′-0″	38
A412	4	5	STR	8′-6″	35
A413	4	5	STR	8′-0″	33
A414	4	5	STR	7′-6″	31
A415	4	5	STR	7′-0″	29
A416	4	5	STR	6′-6″	27
A417	4	5	STR	6′-0″	25
A418	4	5	STR	5′-6″	23
A419	4	5	STR	4′-11″	21
A420	4	5	STR	4′-5″	18
A421	4	5	STR	3′-11″	16
A422	2	5	STR	3′-5″	7
A423	2	5	STR	2′-11″	6
A424	2	5	STR	2′-5″	5
A425	2	5	STR	1′-11″	4
B1	183	4	STR	8′-5″	1,029
B2	120	4	STR	6′-4″	508
C1	132	4	STR	30′-0″	2,645
C2	26	4	STR	29′-5″	511
D1	42	6	STR	2′-6″	158

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	30	4	3	5′-2″	104
S3	30	4	2	5′-11″	119
S4	4	5	STR	17′-10″	74
S5	2	5	STR	15′-11″	33
S6	2	5	STR	14′-11″	31
S7	6	5	STR	32′-11″	206
S8	3	6	STR	18′-5″	83
S9	3	6	STR	17′-2″	77
S10	6	6	STR	19′-8″	177
S11	6	6	STR	32-11″	297
REINFORCING STEEL					13,673 LBS.

BAR TYPES







ALL BAR DIMENSIONS ARE OUT TO OUT.

SPLICE LENGTH CHART		
BAR	SIZE	SPLICE LENGTH
"A"	#5	3′-3″
S5	#5	4′-3″
S6	#5	3′-3″
S8	#6	5′-2″
S9	#6	3′-11″

PROJECT NO. I-4400C

HENDERSON COUNTY

STATION: 769+93.36 -L-

SHEET 11 OF 12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 5/13/2019 DAVID W. HAWKINS — Signed by: David W. Hawkins

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY B. STEIB DATE 2/19
CHECKED BY N. HART DATE 2/19
DESIGN ENGINEER OF RECORD D. HAWKINS DATE 3/19

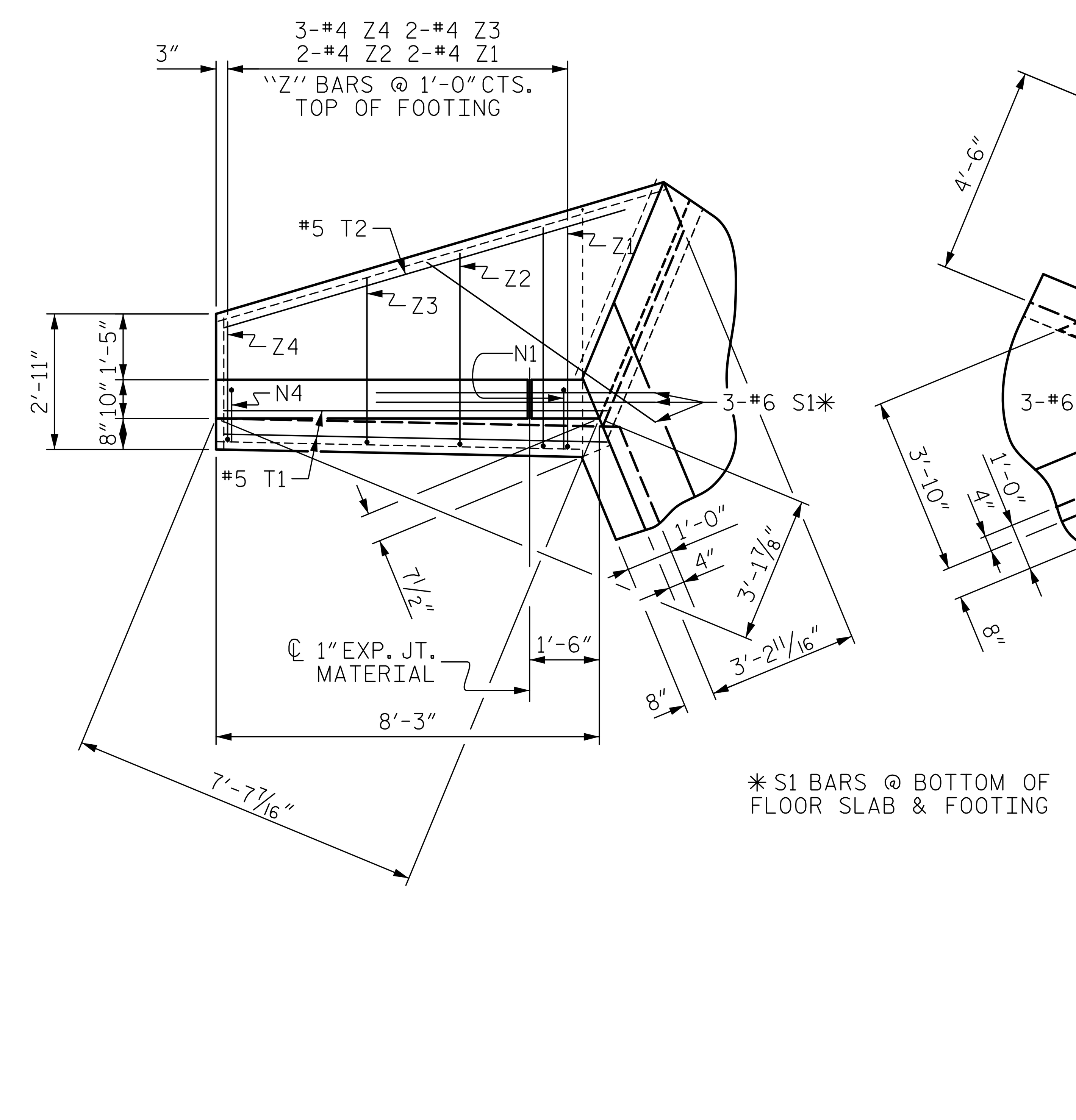
DWG. NO. 11

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

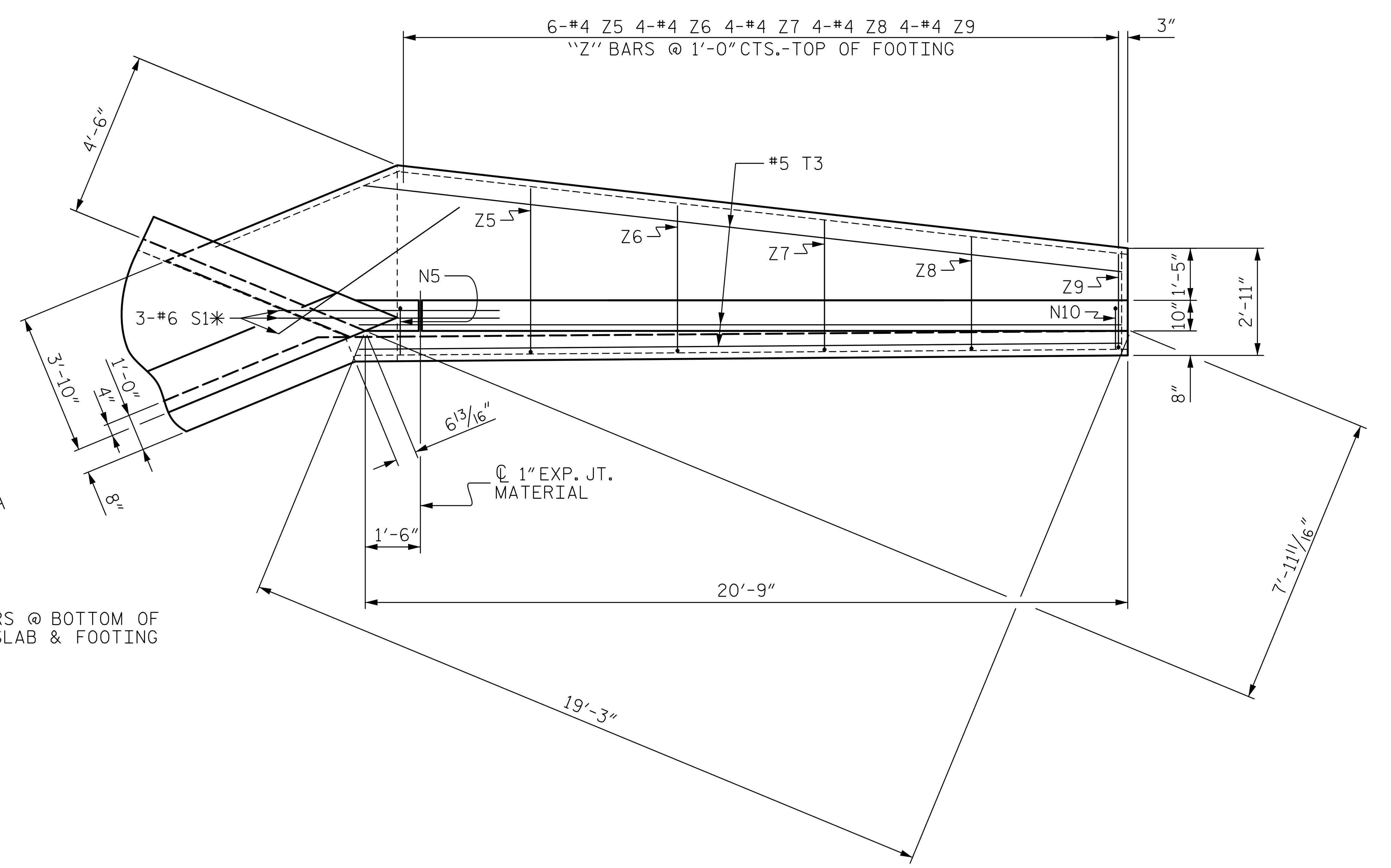
BILL OF MATERIAL FOR TRIPLE 7 FT. × 7 FT. CONCRETE BOX CULVERT

45 DEGREE SKEW
ON I-26 OVER KIMSEY CREEK

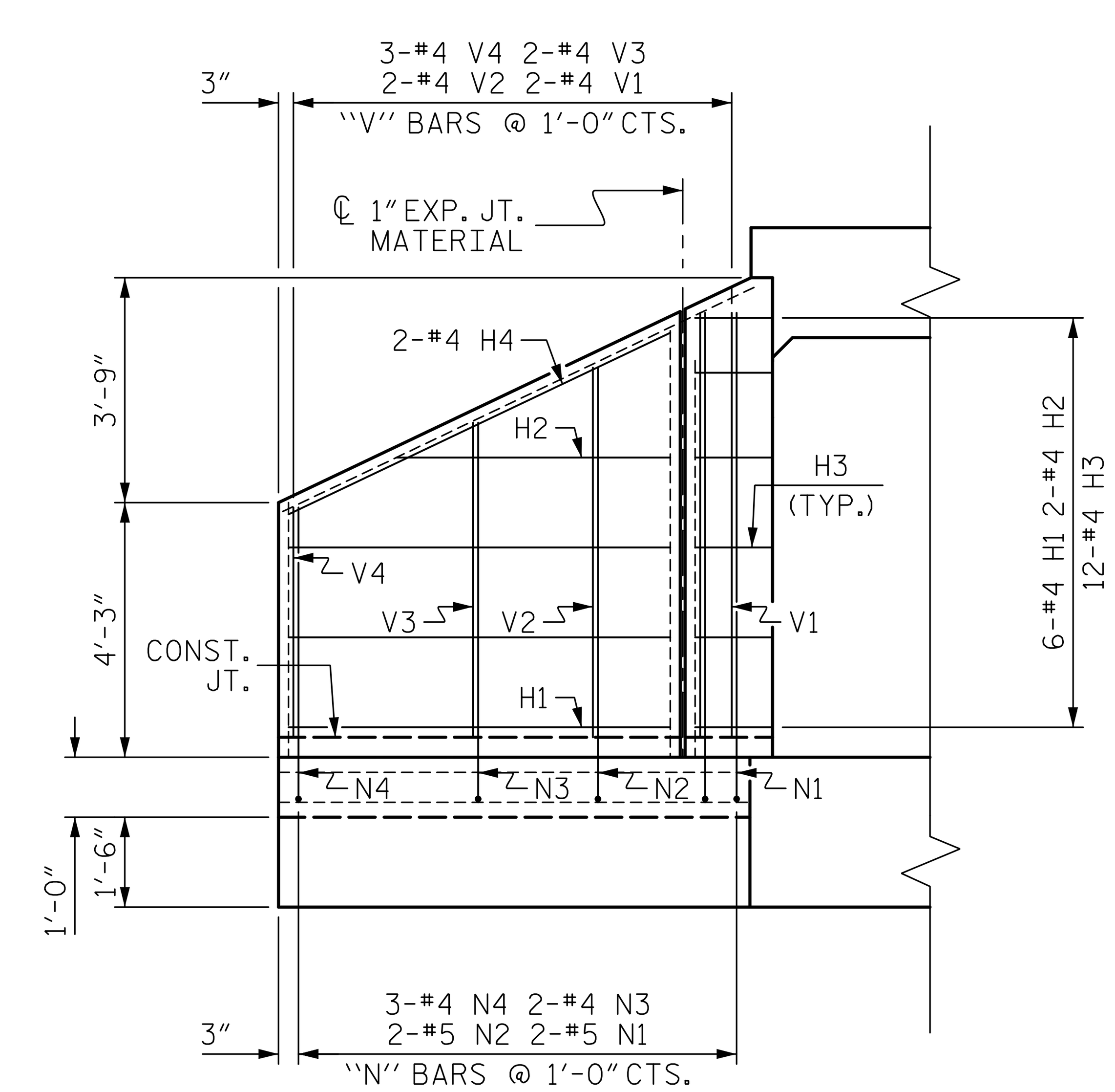
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-11
1			3			TOTAL SHEETS
2			4			12



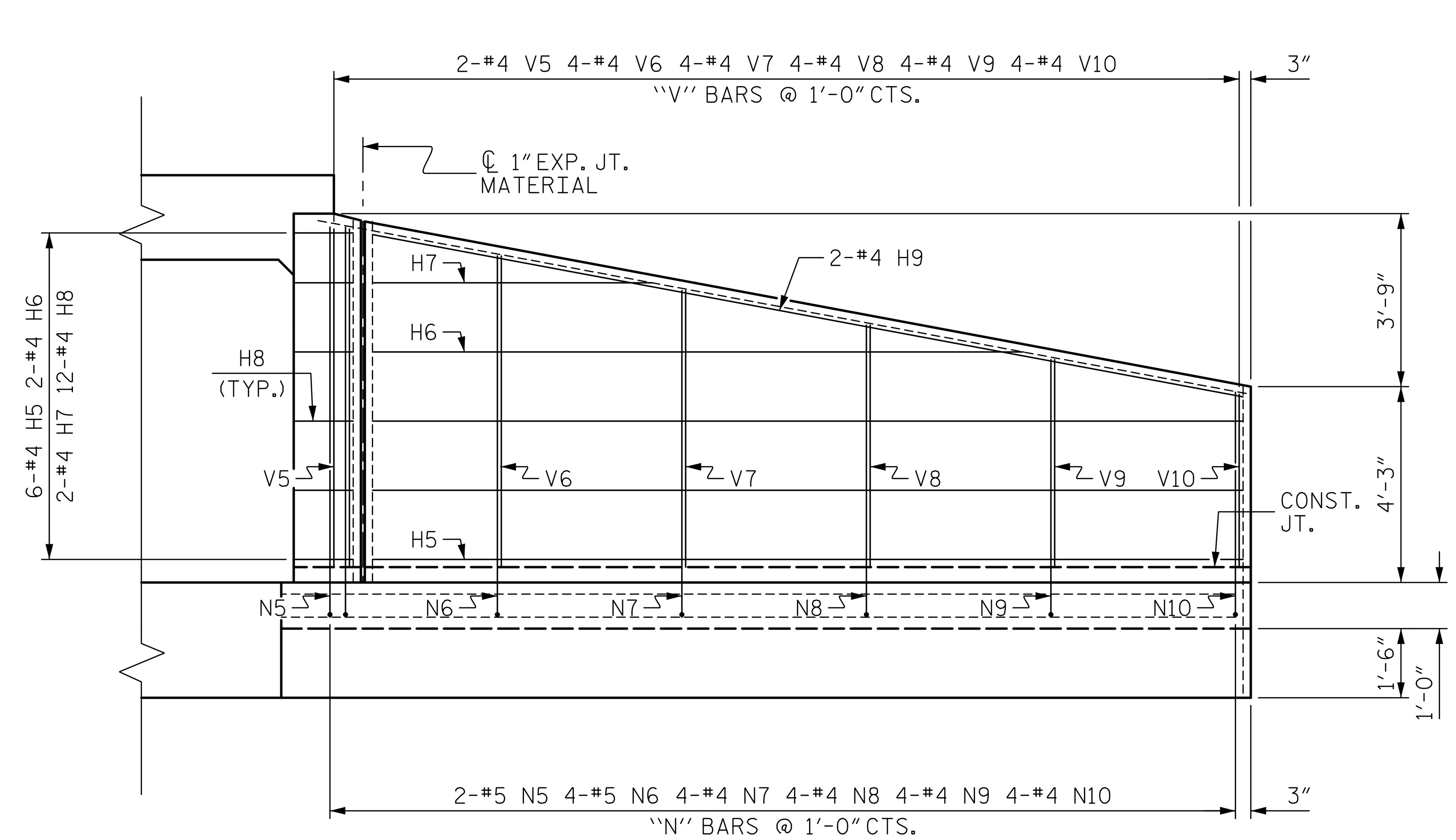
PLAN W2



PLAN W1



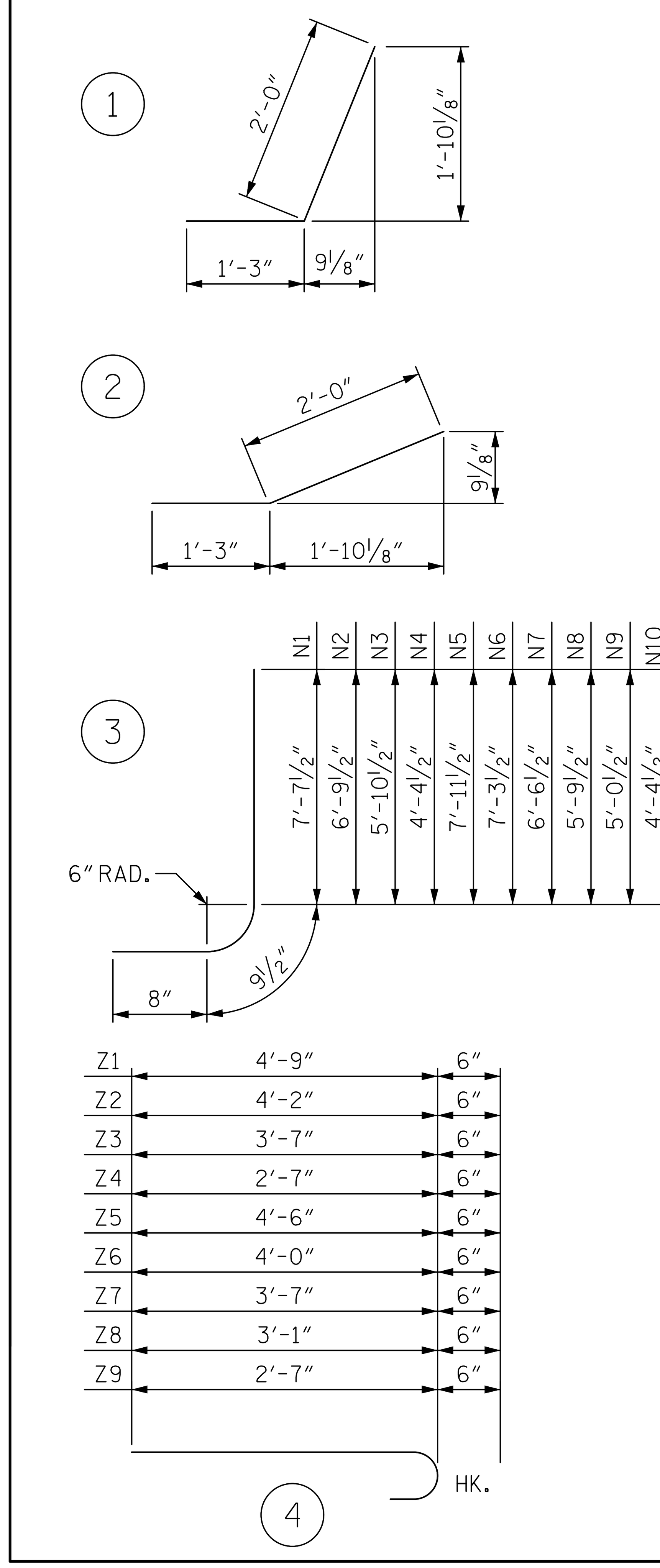
ELEVATION W2



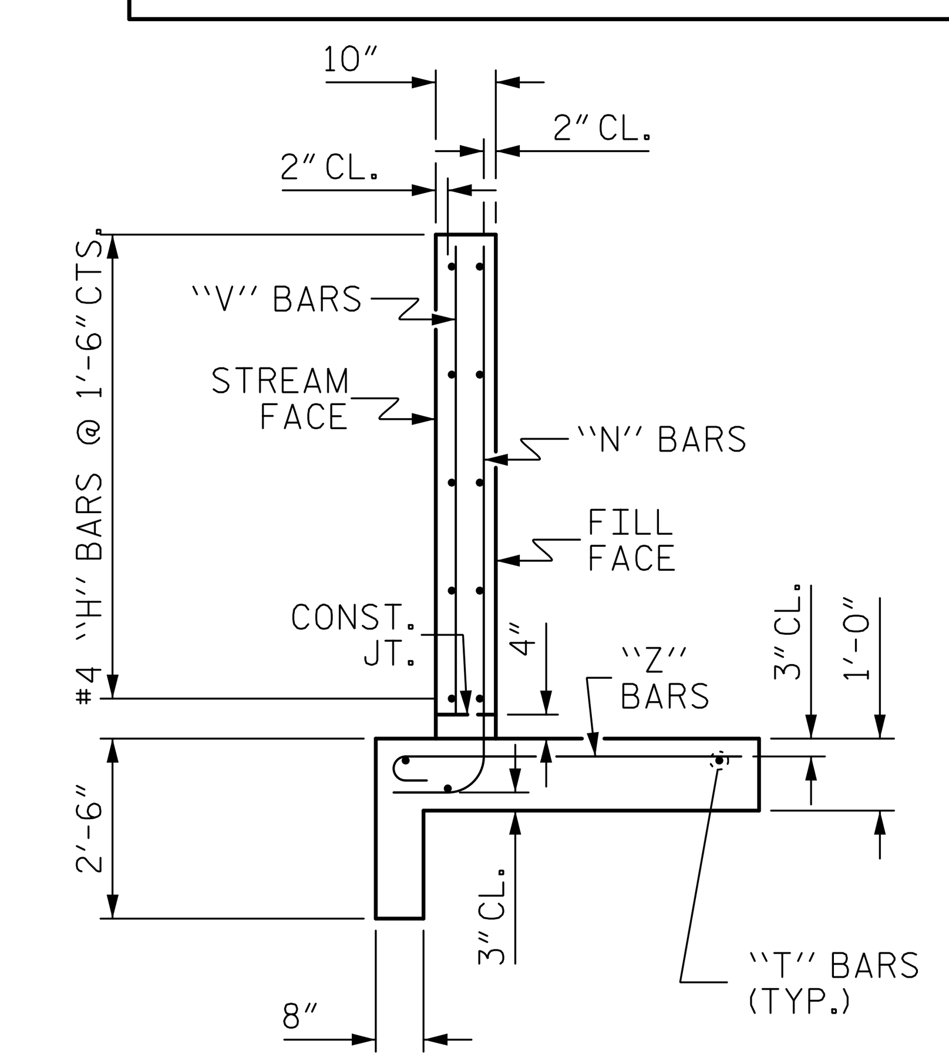
ELEVATION W1

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	12	#4	STR	6'-4"	51
H2	4	#4	STR	4'-6"	12
H3	24	#4	1	3'-3"	52
H4	4	#4	STR	7'-0"	19
H5	12	#4	STR	18'-10"	151
H6	4	#4	STR	14'-1"	38
H7	4	#4	STR	6'-0"	16
H8	24	#4	2	3'-3"	52
H9	4	#4	STR	19'-2"	51
N1	4	#5	3	9'-1"	38
N2	4	#5	3	8'-3"	34
N3	4	#4	3	7'-4"	20
N4	6	#4	3	5'-7"	22
N5	4	#5	3	9'-5"	39
N6	8	#5	3	8'-9"	73
N7	8	#4	3	8'-0"	43
N8	8	#4	3	7'-3"	39
N9	8	#4	3	6'-6"	35
N10	8	#4	3	5'-10"	31
S1	12	#6	STR	6'-0"	108
T1	4	#5	STR	8'-3"	34
T2	2	#5	STR	9'-0"	19
T3	6	#5	STR	20'-9"	130
V1	4	#4	STR	7'-1"	19
V2	4	#4	STR	6'-2"	16
V3	4	#4	STR	5'-3"	14
V4	6	#4	STR	3'-9"	15
V5	4	#4	STR	7'-4"	20
V6	8	#4	STR	6'-9"	36
V7	8	#4	STR	6'-0"	32
V8	8	#4	STR	5'-3"	28
V9	8	#4	STR	4'-6"	24
V10	8	#4	STR	3'-9"	20
Z1	4	#4	4	5'-3"	14
Z2	4	#4	4	4'-8"	12
Z3	4	#4	4	4'-1"	11
Z4	6	#4	4	3'-1"	12
Z5	12	#4	4	5'-0"	40
Z6	8	#4	4	4'-6"	24
Z7	8	#4	4	4'-1"	22
Z8	8	#4	4	3'-7"	19
Z9	8	#4	4	3'-1"	16
REINFORCING STEEL FOR 4 WINGS					1501 LBS
CLASS A CONCRETE					
4 WINGS					23.6 CY
2 HEADWALLS					3.1 CY
2 END CURTAIN WALLS					4.8 CY
4 EDGEBEAMS					5.0 CY
TOTAL					36.5 CY



TYPICAL WING SECTION

PROJECT NO. I-4400C

HENDERSON COUNTY

STATION: 769+93.36 -L-

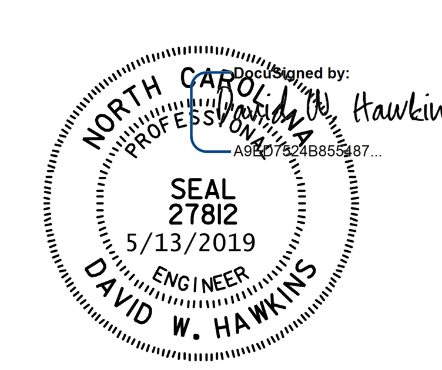
SHEET 12 OF 12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD WINGS FOR CONCRETE BOX CULVERT

H = 7'-0" SLOPE = 2:1

45 DEGREE SKEW
ON I-26 OVER KIMSEY CREEK



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY	B. STEIB	DATE	3/19
CHECKED BY	N. HART	DATE	3/19
DESIGN ENGINEER OF RECORD	D. HAWKINS	DATE	3/19

DWG. NO. 12

REVISIONS

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

SHEET NO. C1-12
TOTAL SHEETS 12

ASSEMBLED BY : B. STEIB	DATE : 2/19
CHECKED BY : N.HART	DATE : 3/19
DRAWN BY : CCJ 01/00	
CHECKED BY : RWW 03/00	

STD. NO. CW4507

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.

ENGLISH

JANUARY, 1990

STD. NO. SN

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