09/08/99

TIP PROJECT: B-4279

CONTRACT: 201964

CULVERT

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

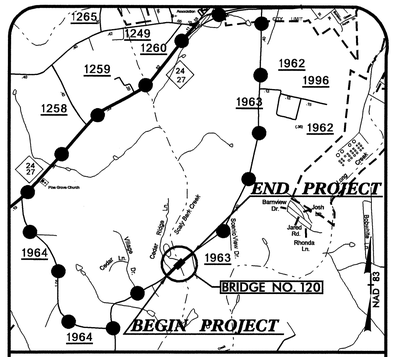
STANLY COUNTY

LOCATION: BRIDGE NO. 120 OVER SCALY BARK CREEK ON SR 1963 (ST. MARTIN RD.)

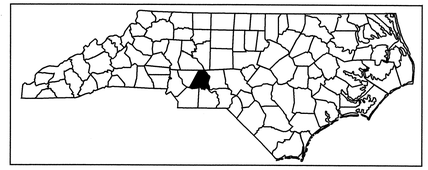
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4279		

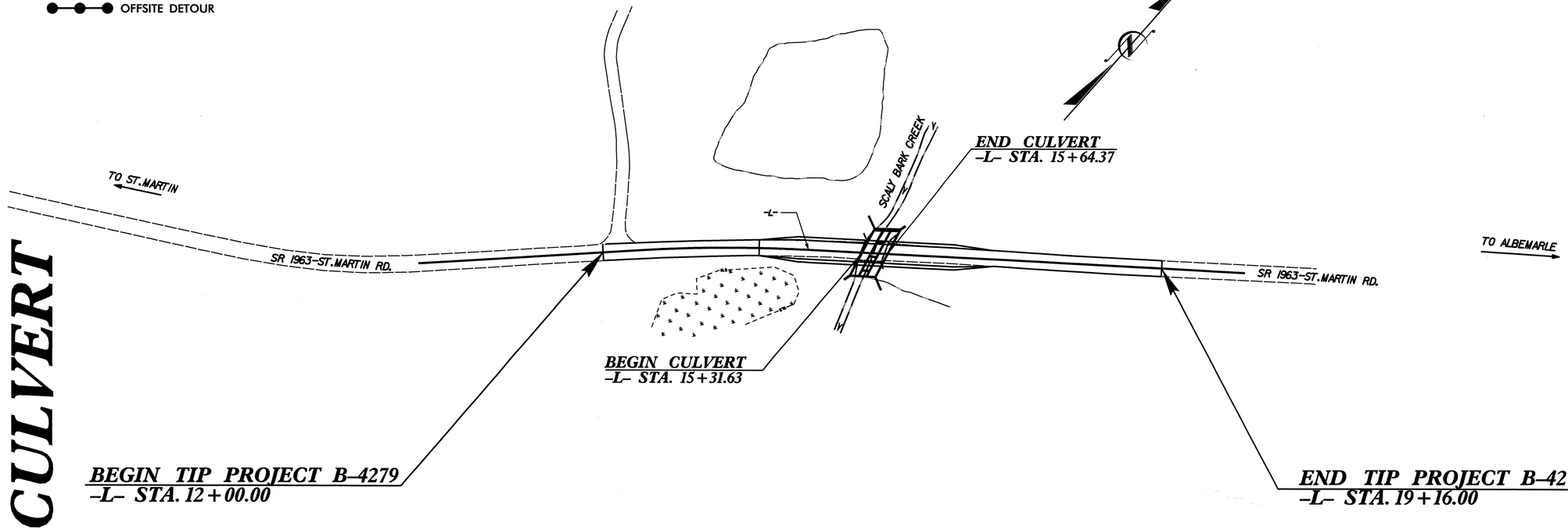
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33619.1.1	BRZ-1963 (2)	PE
33619.2.1	BRZ-1963 (2)	R/W & UTIL.
33619.3.1	BRZ-1963 (2)	CONST.



VICINITY MAP



OFFSITE DETOUR



DESIGN DATA	
ADT 2008	= 3,649
ADT 2028	= 5,649
DHV	= 10 %
D	= 60 %
T	= 5 % *
**V	= 60 MPH
* TTST 2% + DUALS 3%	
FUNC. CLASS	= RURAL MINOR COLLECTOR

PROJECT LENGTH

Length Roadway Tip Project B-4279 = 0.130 Miles

Length Structure Tip Project B-4279 = 0.006 Miles

Total Length Tip Project B-4279 = 0.136 Miles

Prepared In the Office of:

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE: OCT 21, 2008

N. N. BULLOCK, P. E.
PROJECT ENGINEER

A. K. PASCHAL, P. E.
PROJECT DESIGN ENGINEER

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

07-AUG-2008 13:41
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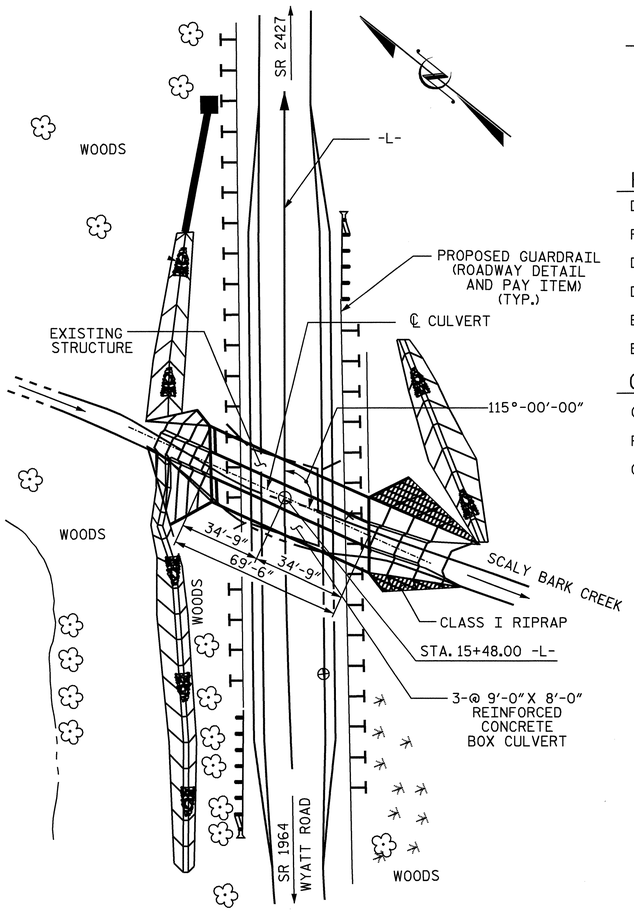
Kpaschal

B.M. #2 - RR SPIKE IN BASE OF POWER POLE 58' LT. OF -L- STA. 18+67.00 ELEV. 408.32



FOR UTILITY INFORMATION,
SEE UTILITY PLANS AND SPECIAL PROVISIONS

LOCATION SKETCH

GRADE DATA

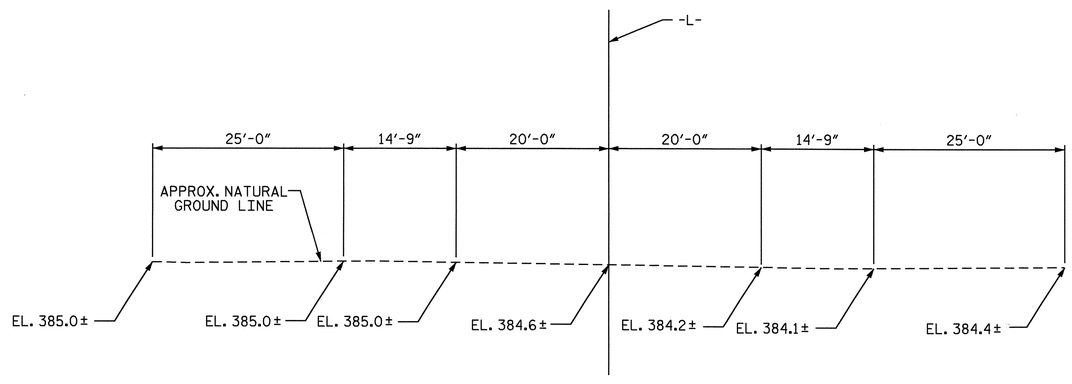
GRADE POINT ELEV @ STA. 15+48.00 -L-	= 396.600
BED ELEV @ STA. 15+48.00 -L-	= 383.660
ROADWAY SLOPES	= 2:1

HYDRAULIC DATA

DESIGN DISCHARGE	= 900 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 392.000
DRAINAGE AREA	= 2.7 SQ. MI.
BASIC DISCHARGE (Q100)	= 1400 C.F.S.
BASIC HIGH WATER ELEVATION	= 394.200

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 2100- C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500- YRS.
OVERTOPPING FLOOD ELEVATION	= 369.600



PROFILE ALONG ℄ CULVERT

DRAWN BY : M. G. SHAIKH DATE : 07-10-08
CHECKED BY : J. G. KHARVA DATE : 07-23-08

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mshaikh

TOTAL STRUCTURE QUANTITIES (STAGE I)

CLASS A CONCRETE - (STAGE I)

BARREL	1.0309 C.Y./FT.	71.6 C.Y.
WINGS ETC.		14.5 C.Y.
SILL		0.8 C.Y.
TOTAL		86.9 C.Y.
FOUNDATION COND. MAT'L		56 TONS

REINFORCING STEEL - (STAGE I)

BARREL	15173 LBS.
WINGS ETC.	833 LBS.
SILL	12 LBS.
TOTAL	16018 LBS.

TOTAL STRUCTURE QUANTITIES (STAGE II)

CLASS A CONCRETE - (STAGE II)

BARREL	1.4198 C.Y./FT.	98.7 C.Y.
WINGS ETC.		16.0 C.Y.
SILL		2.3 C.Y.
TOTAL		117.0 C.Y.
FOUNDATION COND. MAT'L		90 TONS

REINFORCING STEEL - (STAGE II)

BARREL	19188 LBS.
WINGS ETC.	833 LBS.
SILL	113 LBS.
TOTAL	20134 LBS.

TOTAL BILL OF MATERIAL

CLASS A CONCRETE

STAGE I	86.9 C.Y.
STAGE II	117.0 C.Y.
TOTAL	203.9 C.Y.

REINFORCING STEEL

STAGE I	16018 LBS.
STAGE II	20114 LBS.
TOTAL	36132 LBS.

FOUNDATION COND. MAT'L

STAGE I	56 TONS
STAGE II	90 TONS
TOTAL	146 TONS

CULVERT EXCAVATION ---------- LUMP SUM

REMOVAL OF EXISTING STRUCTURE ---------- LUMP SUM

F. A. PROJECT NO. BRZ-1963(2)

NOTES

ASSUMED LIVE LOAD ----------HS20-44 OR ALTERNATE LOADING.

DESIGN FILL----------4.63'

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

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

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

(STAGE I)

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS, ROOF SLAB AND WINGS FULL HEIGHT.

(STAGE II)

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS, ROOF SLAB AND WINGS FULL HEIGHT,

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.

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 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.

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 15+48.00 -L-."

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 EXISTING STRUCTURE CONSISTING OF 1 SPAN 30'-5", 46'-0" CLEAR ROADWAY WIDTH. TIMBER FLOOR ON I-STEEL BEAMS WITH TIMBER CAPS ON TIMBER POSTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED.

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.

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.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-4279
STANLY COUNTY
STATION: 15+48.00 -L-

SHEET 1 OF 5 REPLACES BRIDGE NO. 120

NORTH CAROLINA PROFESSIONAL SEAL 12929 ENGINEER NORMAN MERLETT BLACKWELL, JR.
8/22/08

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL
8/22/08

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 9 FT. X 8 FT. CONCRETE BOX CULVERT 115° SKEW

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

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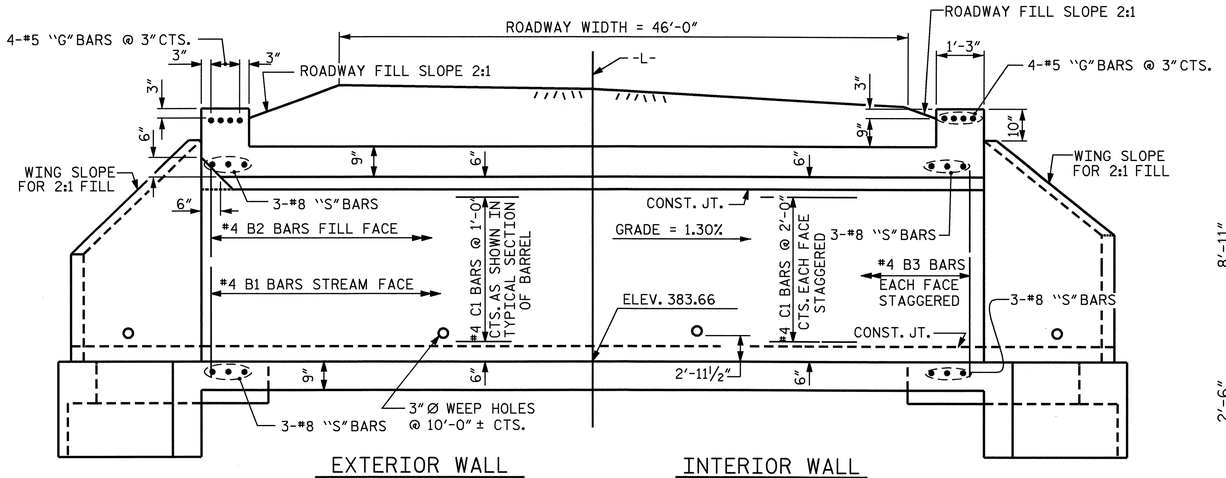
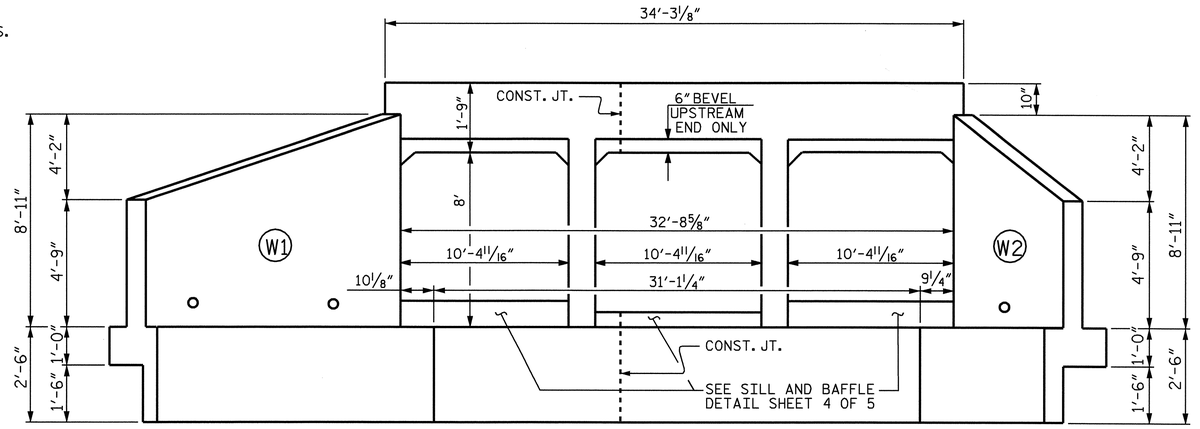
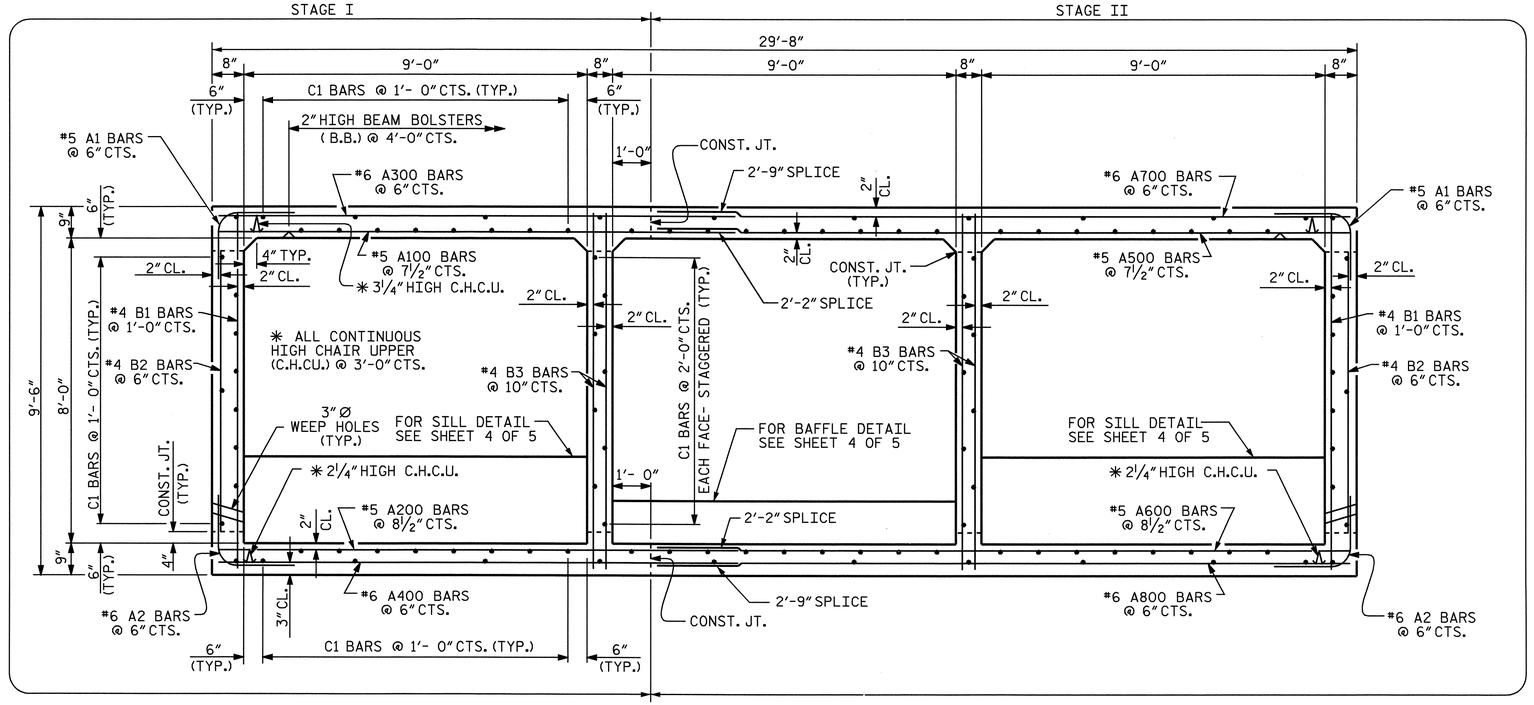


CULVERT SECTION NORMAL TO ROADWAY



INLET ELEVATION NORMAL TO SKEW



RIGHT ANGLE SECTION OF BARREL

THERE ARE 45 C1 BARS IN SECTION OF BARREL. (STAGE I)
THERE ARE 63 C1 BARS IN SECTION OF BARREL. (STAGE II)

ASSEMBLED BY : M. G. SHAIKH DATE : 7-18-08 CHECKED BY : J. G. KHARVA DATE : 8-23-08	SPECIAL
DRAWN BY : C.F.HOLMES DATE : 11-71 CHECKED BY : JOEL JOHNSON DATE : 12-71	STANDARD

PROJECT NO. B-4279
STANLY COUNTY
STATION: 15+48.00 -L-

SHEET 2 OF 5

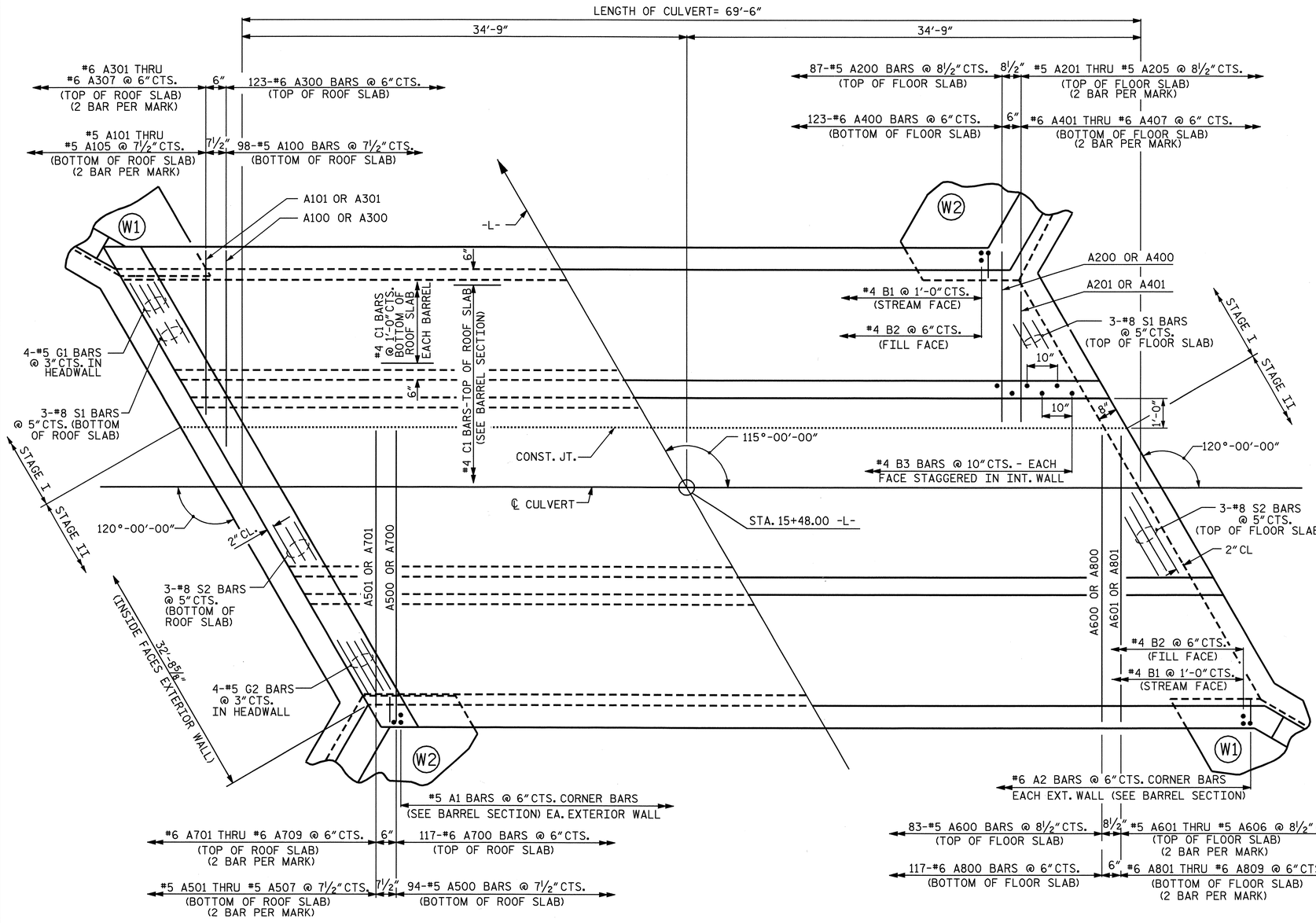
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 9 FT.X 8 FT. CONCRETE BOX CULVERT 115° SKEW

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

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL
8/22/08

SID NO. CB333



PART PLAN - ROOF SLAB

PART PLAN - FLOOR SLAB

BILL OF MATERIAL

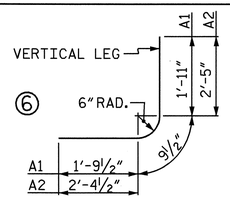
STAGE I

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
A1	139	#5	6	4'-6"	652
A2	139	#6	6	5'-7"	1166
A100	98	#5	STR	13'-10"	1414
A101	4	#5	STR	11'-8"	49
A102	4	#5	STR	9'-6"	40
A103	4	#5	STR	7'-4"	31
A104	4	#5	STR	5'-2"	22
A105	4	#5	STR	3'-0"	13
A200	87	#5	STR	13'-10"	1255
A201	4	#5	STR	11'-1"	46
A202	4	#5	STR	8'-8"	36
A203	4	#5	STR	6'-2"	26
A204	4	#5	STR	3'-9"	16
A205	4	#5	STR	1'-4"	6
A300	123	#6	STR	13'-10"	2556
A301	4	#6	STR	11'-9"	71
A302	4	#6	STR	10'-0"	60
A303	4	#6	STR	8'-4"	50
A304	4	#6	STR	6'-7"	40
A305	4	#6	STR	4'-10"	29
A306	4	#6	STR	3'-1"	19
A307	4	#6	STR	1'-4"	8
A400	123	#6	STR	13'-10"	2556
A401	4	#6	STR	11'-9"	71
A402	4	#6	STR	10'-0"	60
A403	4	#6	STR	8'-4"	50
A404	4	#6	STR	6'-7"	40
A405	4	#6	STR	4'-10"	29
A406	4	#6	STR	3'-1"	19
A407	4	#6	STR	1'-4"	8
B1	70	#4	STR	9'-0"	421
B2	139	#4	STR	7'-6"	696
B3	168	#4	STR	9'-0"	1010
C1	135	#4	STR	24'-6"	2209
G1	8	#5	STR	15'-1"	126
S1	12	#8	STR	17'-4"	555
REINFORCING STEEL					15455

STAGE II

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
A1	139	#5	6	4'-6"	652
A2	139	#6	6	5'-7"	1166
A500	94	#5	STR	18'-1"	1773
A501	4	#5	STR	16'-2"	67
A502	4	#5	STR	14'-0"	58
A503	4	#5	STR	11'-10"	49
A504	4	#5	STR	9'-8"	40
A505	4	#5	STR	7'-6"	31
A506	4	#5	STR	5'-4"	22
A507	4	#5	STR	3'-2"	13
A600	83	#5	STR	18'-1"	1565
A601	4	#5	STR	15'-11"	66
A602	4	#5	STR	13'-6"	56
A603	4	#5	STR	11'-0"	46
A604	4	#5	STR	8'-7"	36
A605	4	#5	STR	6'-2"	26
A606	4	#5	STR	3'-8"	15
A700	117	#6	STR	18'-1"	3178
A701	4	#6	STR	16'-9"	101
A702	4	#6	STR	15'-0"	90
A703	4	#6	STR	13'-3"	80
A704	4	#6	STR	11'-6"	69
A705	4	#6	STR	9'-10"	59
A706	4	#6	STR	8'-1"	49
A707	4	#6	STR	6'-4"	38
A708	4	#6	STR	4'-7"	28
A709	4	#6	STR	2'-11"	18
A800	117	#6	STR	18'-1"	3178
A801	4	#6	STR	16'-9"	101
A802	4	#6	STR	15'-0"	90
A803	4	#6	STR	13'-3"	80
A804	4	#6	STR	11'-6"	69
A805	4	#6	STR	9'-10"	59
A806	4	#6	STR	8'-1"	49
A807	4	#6	STR	6'-4"	38
A808	4	#6	STR	4'-7"	28
A809	4	#6	STR	2'-11"	18
B1	70	#4	STR	9'-0"	421
B2	139	#4	STR	7'-6"	696
B3	168	#4	STR	9'-0"	1010
C1	189	#4	STR	24'-6"	3093
G2	8	#5	STR	21'-0"	175
S2	12	#8	STR	21'-0"	673
REINFORCING STEEL					19188 LBS.

BAR TYPE



DIMENSIONS ARE OUT TO OUT.

SPLICE LENGTH CHART

BAR	SIZE	LENGTH
B1, B2, B3	#4	1'-9"
C1	#4	1'-11"

PROJECT NO. B-4279

STANLY COUNTY

STATION: 15+48.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 9 FT.X 8 FT. CONCRETE BOX CULVERT 115° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER J. KEITH PASCHAL

9/22/08

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

DRAWN BY : M. G. SHAIKH DATE : 7-18-08
CHECKED BY : J. G. KHARWA DATE : 8-23-08

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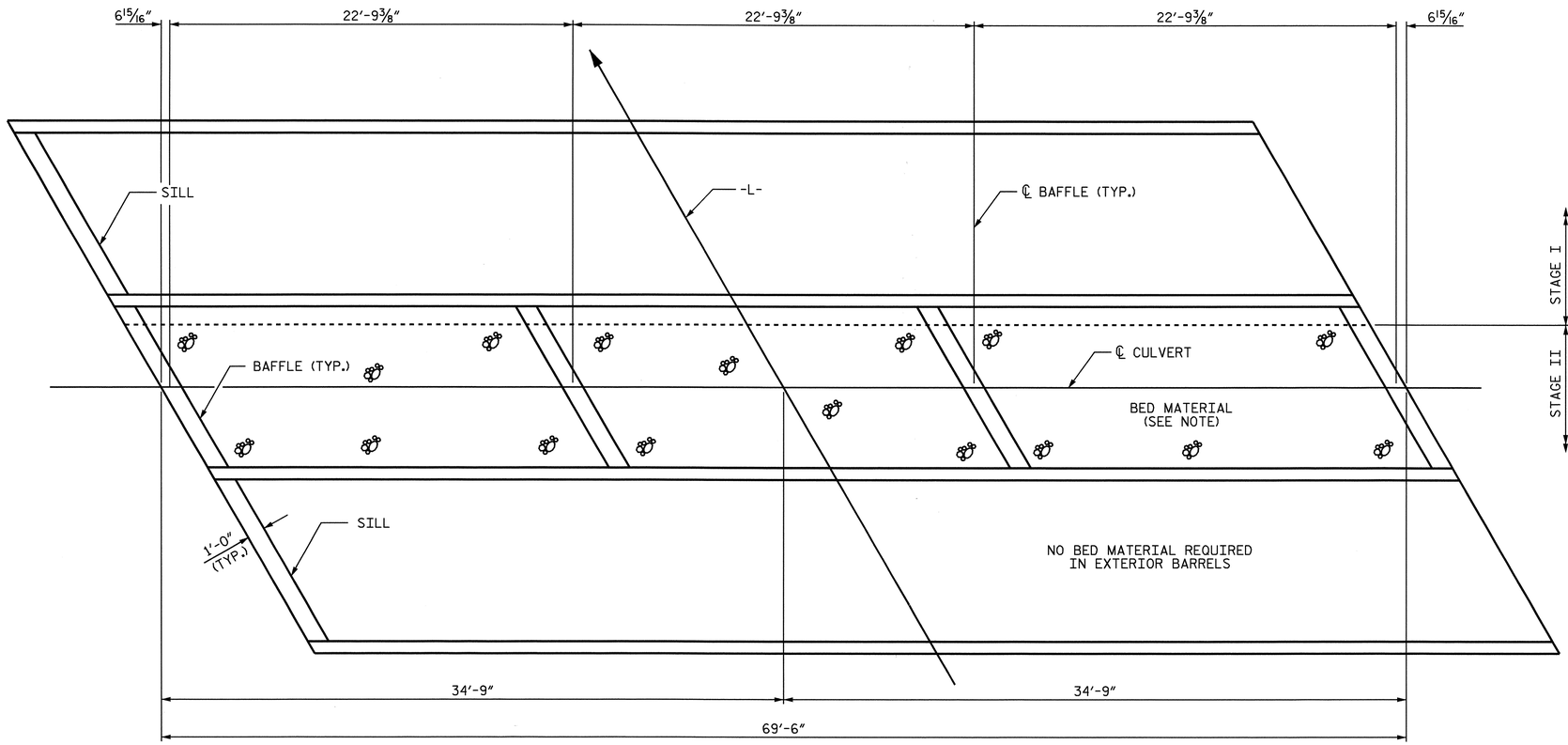
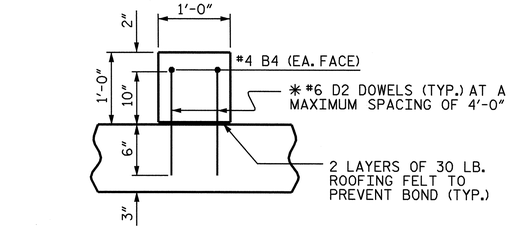


PLAN

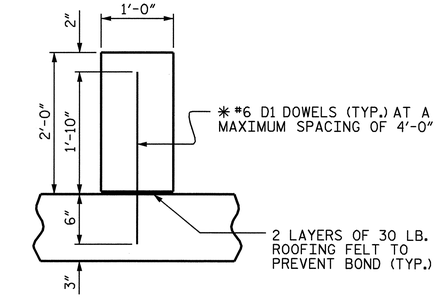
ELEVATION VIEW-INLET

CULVERT SILL AND BAFFLE DETAILS



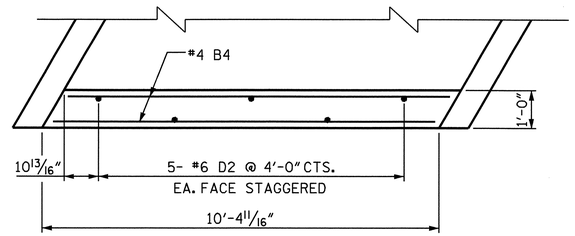
SECTION THROUGH 1'-0" BAFFLE

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



SECTION THROUGH 1'-0" SILL

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



BAFFLE DETAILS

SILL AND BAFFLE QUANTITIES
(INCLUDED IN TOTAL FOR STRUCTURE)

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
D1	3	#6	STR.	2'-7"	12
REINFORCING STEEL					12
CLASS A CONCRETE					0.8 C.Y.

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
D1	3	#6	STR.	2'-7"	12
D2	20	#6	STR.	1'-7"	48
B4	8	#4	STR.	10'-0"	53
REINFORCING STEEL					113
CLASS A CONCRETE					2.3 C.Y.

NOTE : PLACE BED MATERIAL TO TOP OF RELATIVE BAFFLE ELEVATIONS STOCKPILE EXCAVATED SITE BED MATERIAL, IF AVAILABLE AND USE IN CULVERT. OTHERWISE USE CLASS B RIP RAP.

NORTH CAROLINA PROFESSIONAL SEAL 22008 ENGINEER J. KEITH PASCHAL
8/22/08

PROJECT NO. B-4279
STANLY COUNTY
STATION: 15+48.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TRIPLE 9 FT.X 8 FT. CONCRETE BOX CULVERT 115° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-4
1			3			TOTAL SHEETS
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DRAWN BY : M. G. SHAIKH DATE : 7-18-08
CHECKED BY : J. G. KHARVA DATE : 8-23-08

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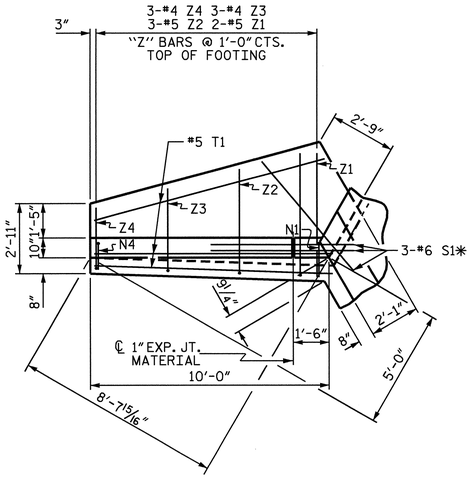
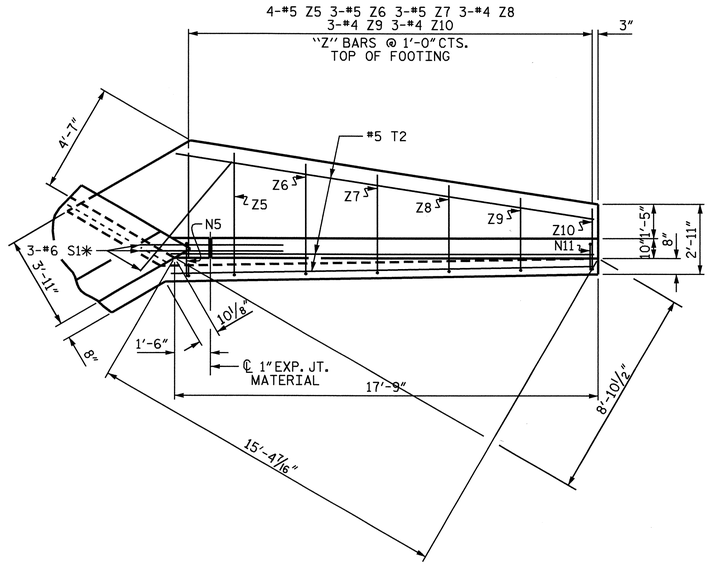
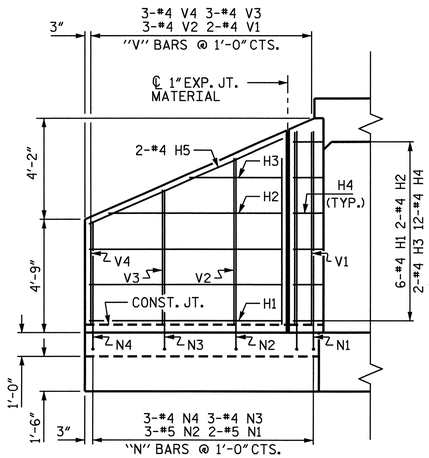


*BOTTOM OF FLOOR SLAB AND FOOTING

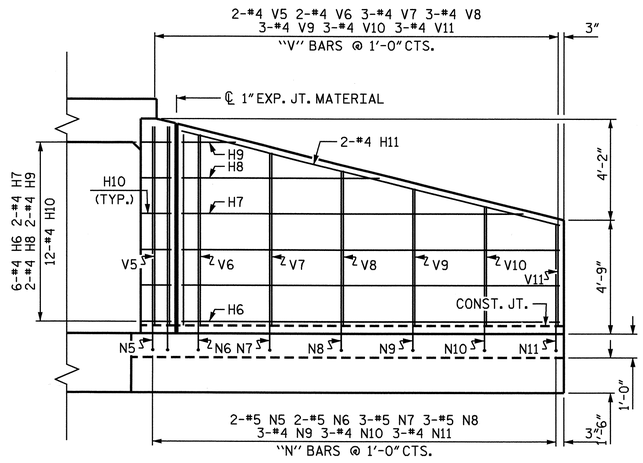
PLAN W2



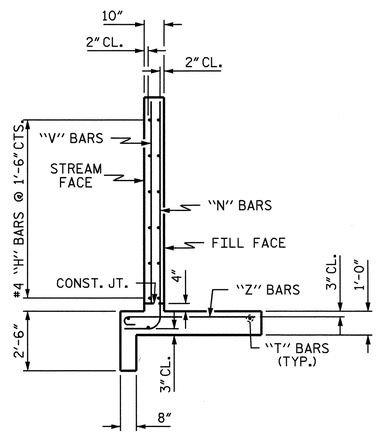
PLAN W1



ELEVATION W2



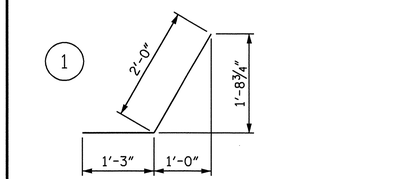
ELEVATION W1

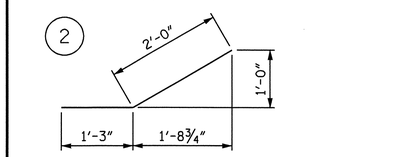


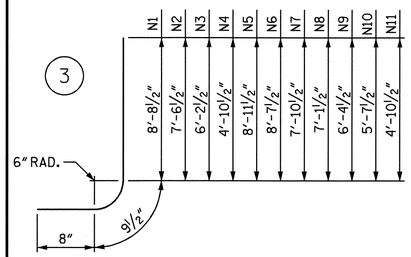
TYPICAL WING SECTION

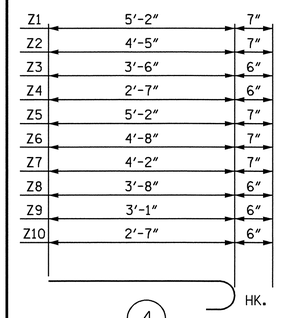
BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.









BILL OF MATERIAL

STAGE I (W1,W2)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	6	#4	STR	8'-1"	32
H2	2	#4	STR	7'-3"	10
H3	2	#4	STR	3'-11"	5
H4	12	#4	1	3'-3"	26
H5	2	#4	STR	8'-10"	12
H6	6	#4	STR	15'-10"	63
H7	2	#4	STR	14'-4"	19
H8	2	#4	STR	8'-3"	11
H9	2	#4	STR	2'-3"	3
H10	12	#4	2	3'-3"	26
H11	2	#4	STR	16'-4"	22
N1	2	#5	3	10'-2"	21
N2	3	#5	3	9'-0"	28
N3	3	#4	3	7'-8"	15
N4	3	#4	3	6'-4"	13
N5	2	#5	3	10'-5"	22
N6	2	#5	3	10'-1"	21
N7	3	#5	3	9'-4"	29
N8	3	#5	3	8'-7"	27
N9	3	#4	3	7'-10"	16
N10	3	#4	3	7'-1"	14
N11	3	#4	3	6'-4"	13
S1	6	#6	STR	6'-0"	54
T1	3	#5	STR	10'-0"	31
T2	3	#5	STR	17'-9"	56
V1	2	#4	STR	8'-1"	11
V2	3	#4	STR	7'-0"	14
V3	3	#4	STR	5'-8"	11
V4	3	#4	STR	4'-4"	9
V5	2	#4	STR	8'-4"	11
V6	2	#4	STR	8'-0"	11
V7	3	#4	STR	7'-3"	15
V8	3	#4	STR	6'-6"	13
V9	3	#4	STR	5'-9"	12
V10	3	#4	STR	5'-0"	10
V11	3	#4	STR	4'-3"	9
Z1	2	#5	4	5'-9"	12
Z2	3	#5	4	5'-0"	16
Z3	3	#4	4	4'-0"	8
Z4	3	#4	4	3'-1"	6
Z5	4	#5	4	5'-9"	24
Z6	3	#5	4	5'-3"	16
Z7	3	#5	4	4'-9"	15
Z8	3	#4	4	4'-2"	8
Z9	3	#4	4	3'-7"	7
Z10	3	#4	4	3'-1"	6

REINFORCING STEEL FOR 2 WINGS 833 LBS

CLASS A CONCRETE

2 WINGS	12.1	CY
2 HEADWALLS	1.2	CY
2 END CURTAIN WALLS	1.2	CY
TOTAL	14.5	CY

STAGE II (W1,W2)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	6	#4	STR	8'-1"	32
H2	2	#4	STR	7'-3"	10
H3	2	#4	STR	3'-11"	5
H4	12	#4	1	3'-3"	26
H5	2	#4	STR	8'-10"	12
H6	6	#4	STR	15'-10"	63
H7	2	#4	STR	14'-4"	19
H8	2	#4	STR	8'-3"	11
H9	2	#4	STR	2'-3"	3
H10	12	#4	2	3'-3"	26
H11	2	#4	STR	16'-4"	22
N1	2	#5	3	10'-2"	21
N2	3	#5	3	9'-0"	28
N3	3	#4	3	7'-8"	15
N4	3	#4	3	6'-4"	13
N5	2	#5	3	10'-5"	22
N6	2	#5	3	10'-1"	21
N7	3	#5	3	9'-4"	29
N8	3	#5	3	8'-7"	27
N9	3	#4	3	7'-10"	16
N10	3	#4	3	7'-1"	14
N11	3	#4	3	6'-4"	13
S1	6	#6	STR	6'-0"	54
T1	3	#5	STR	10'-0"	31
T2	3	#5	STR	17'-9"	56
V1	2	#4	STR	8'-1"	11
V2	3	#4	STR	7'-0"	14
V3	3	#4	STR	5'-8"	11
V4	3	#4	STR	4'-4"	9
V5	2	#4	STR	8'-4"	11
V6	2	#4	STR	8'-0"	11
V7	3	#4	STR	7'-3"	15
V8	3	#4	STR	6'-6"	13
V9	3	#4	STR	5'-9"	12
V10	3	#4	STR	5'-0"	10
V11	3	#4	STR	4'-3"	9
Z1	2	#5	4	5'-9"	12
Z2	3	#5	4	5'-0"	16
Z3	3	#4	4	4'-0"	8
Z4	3	#4	4	3'-1"	6
Z5	4	#5	4	5'-9"	24
Z6	3	#5	4	5'-3"	16
Z7	3	#5	4	4'-9"	15
Z8	3	#4	4	4'-2"	8
Z9	3	#4	4	3'-7"	7
Z10	3	#4	4	3'-1"	6

REINFORCING STEEL FOR 2 WINGS 833 LBS

CLASS A CONCRETE

2 WINGS	12.1	CY
2 HEADWALLS	2.0	CY
2 END CURTAIN WALLS	1.9	CY
TOTAL	16.0	CY

PROJECT NO. B-4279

STANLEY COUNTY

STATION: 15+48.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD WINGS FOR CONCRETE BOX CULVERT

H = 8'-0" SLOPE = 2:1
60° OR 120° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL
8/22/08

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

STD. NO. CW6008

ASSEMBLED BY : M. G. SHAIKH	DATE : 7-14-08
CHECKED BY : J. G. KHARVA	DATE : 7-23-08
DRAWN BY : CCJ 11/99	
CHECKED BY : RWW 03/00	

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 2002 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; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

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 WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. 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.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

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 W RGW REV. 6-27-02 RWW W JTE
REV. 6-16-09 RWW W LES