09/08/99

TIP PROJECT: B-3528

CONTRACT: C201783 CULVERT

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

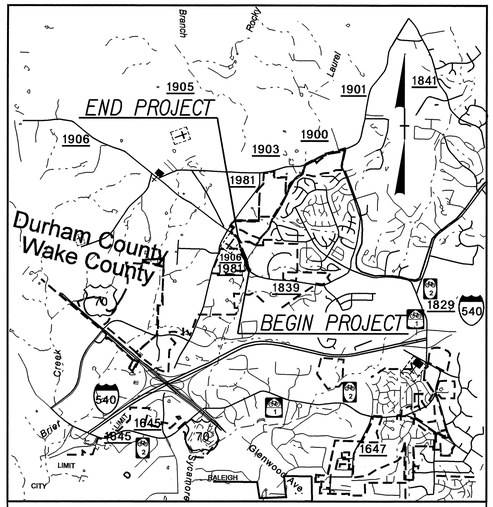
WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3528		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33136.1.1	BRZ-1839(1)	P.E.
33136.2.2	BRZ-1839(1)	R/W & UTIL.
33136.3.1	BRZ-1839(1)	CONST.

LOCATION: BRIDGE NO. 429 OVER SYCAMORE CREEK ON SR 1839 AND APPROACHES

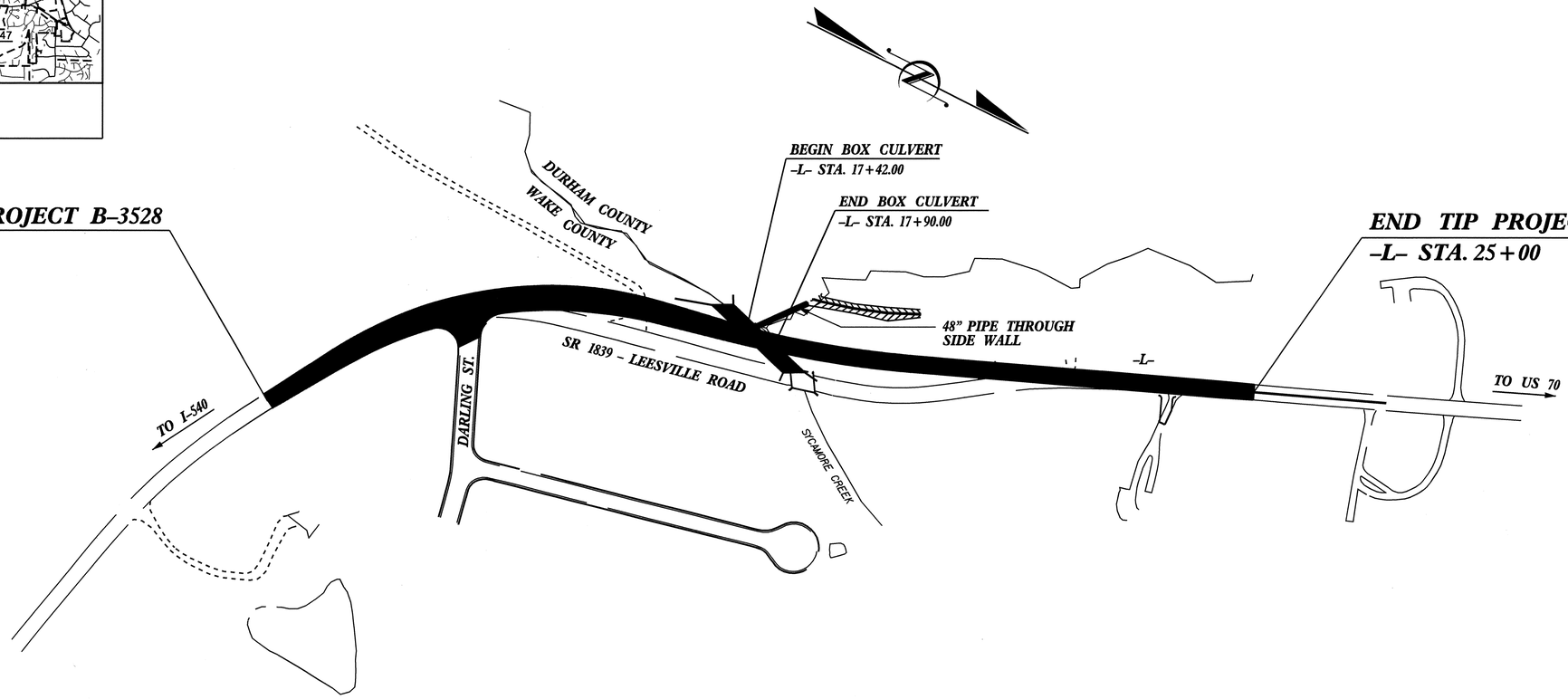
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND CULVERT



VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARY OF RALEIGH

BEGIN TIP PROJECT B-3528
-L- STA. 10+00



END TIP PROJECT B-3528
-L- STA. 25+00

** DESIGN EXCEPTION REQUIRED FOR HORIZONTAL CURVE AND HORIZONTAL SSD.

STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

DESIGN DATA

ADT 2007 = 11,600
ADT 2030 = 28,500
DHV = 12 %
D = 70 %
T = 3 % *
** V = 50 MPH

* TTST 1% DUAL 2%

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-3528 = 0.275 mi.
LENGTH OF STRUCTURE TIP PROJECT B-3528 = 0.009 mi
TOTAL LENGTH OF TIP PROJECT B-3528 = 0.284 mi.

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 BIRCH RIDGE DR. RALEIGH, NC 27610

2006 STANDARD SPECIFICATIONS

LETTING DATE: MARCH 18, 2008

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

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

STRUCTURE DESIGN UNIT
1000 BIRCH RIDGE DR. RALEIGH, NC 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

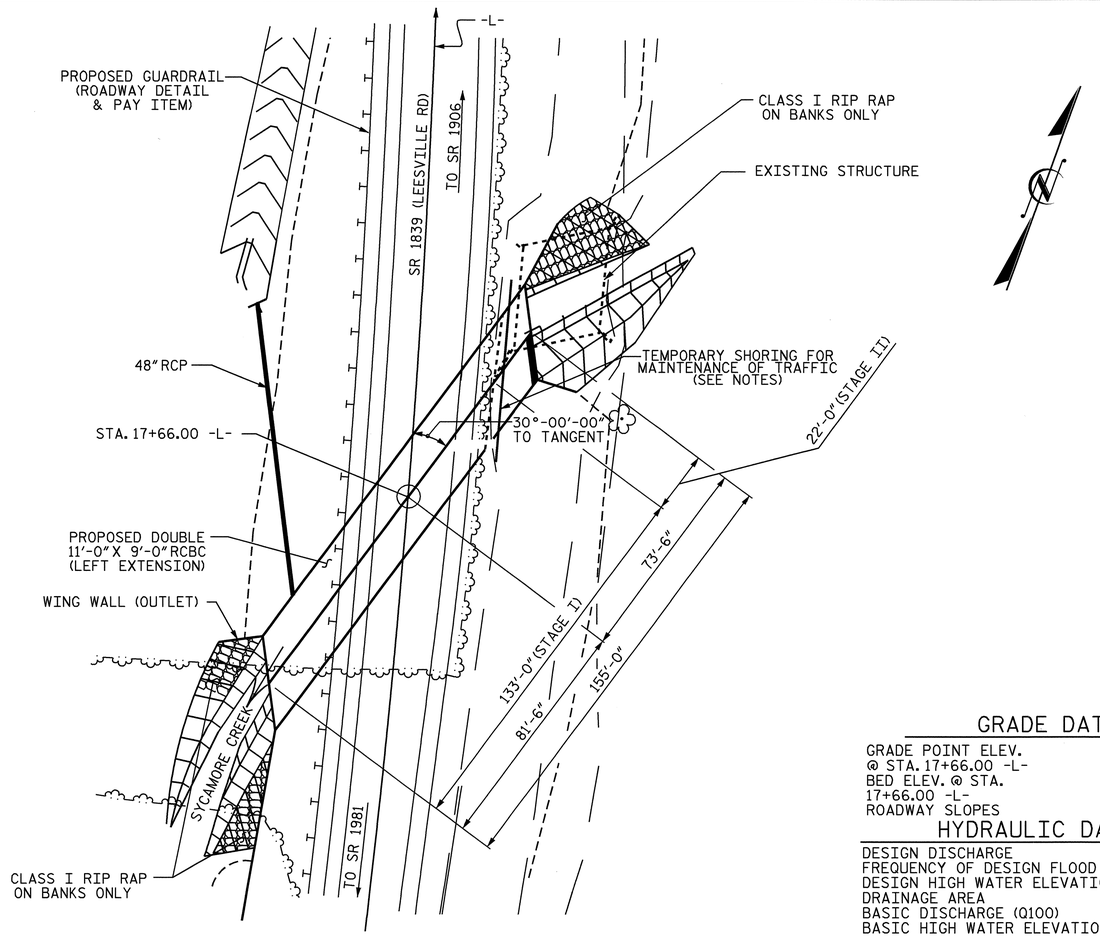
P.E.
STATE HIGHWAY DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED *P.E.*
STATE HIGHWAY DESIGN ENGINEER

04-FEB-2008 10:44
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
jknarva

BM: #2 : RR SPIKE SET IN 13" CHERRY 84'-0" LT, OF STA. 17+17.00 ± -L- ELEV. 404.58



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

GRADE DATA

GRADE POINT ELEV. @ STA. 17+66.00 -L-	= 412.76
BED ELEV. @ STA. 17+66.00 -L-	= 397.82
ROADWAY SLOPES	= 2:1

HYDRAULIC DATA

DESIGN DISCHARGE	= 1100 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 50 YR.
DESIGN HIGH WATER ELEVATION	= 404.800
DRAINAGE AREA	= 1.07 Sq.m.
BASIC DISCHARGE (Q100)	= 1200 C.F.S.
BASIC HIGH WATER ELEVATION	= 405.200

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 2200 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500 + YRS.
OVERTOPPING FLOOD ELEVATION	= 411.600

TOTAL STRUCTURE QUANTITIES (STAGE I)

CLASS A CONCRETE - (STAGE I)

BARREL	306.6 C.Y.
WING (W3) ETC.	31.5 C.Y.
TOTAL	338.1 C.Y.
FOUNDATION COND. MAT'L	225 TONS

REINFORCING STEEL - (STAGE I)

BARREL	57,535 LBS.
WING (W3) ETC.	2091 LBS.
TOTAL	59,626 LBS.

TOTAL STRUCTURE QUANTITIES (STAGE II)

CLASS A CONCRETE - (STAGE II)

BARREL	50.7 C.Y.
WINGS ETC.	26.9 C.Y.
SILL	1.2 C.Y.
TOTAL	78.8 C.Y.
FOUNDATION COND. MAT'L	37 TONS

REINFORCING STEEL - (STAGE II)

BARREL	10,560 LBS.
WINGS ETC.	1638 LBS.
SILL	16 LBS.
TOTAL	12,214 LBS.

TOTAL BILL OF MATERIAL

CLASS A CONCRETE

STAGE I	338.1 C.Y.
STAGE II	78.8 C.Y.
TOTAL	416.9 C.Y.

REINFORCING STEEL

STAGE I	59,626 LBS.
STAGE II	12,214 LBS.
TOTAL	71,840 LBS.

FOUNDATION COND. MAT'L

STAGE I	225 TONS
STAGE II	37 TONS
TOTAL	262 TONS

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

REMOVAL OF EXISTING STRUCTURE -- LUMP SUM

F. A. PROJECT NO. BRZ-1839(1)

NOTES:

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

DESIGN FILL ----------6.82 FT.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

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

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

STAGE I :

1. WING FOOTING (W3), PART FOOTING (W2), AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.

2. THE REMAINING PORTIONS OF THE WALLS AND WING (W3) FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALL.

STAGE II :

1. INLET WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.

2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALL.

FINAL (AFTER COMPLETION OF STAGE 2 AND REMOVAL OF DIVERSION CHANNEL :

1. OUTLET WING (W2) FOOTING AND WING (W2) 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.

STEEL IN THE BOTTOM SLAB MAY BE SHIFTED 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 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.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30" SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30" 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.

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

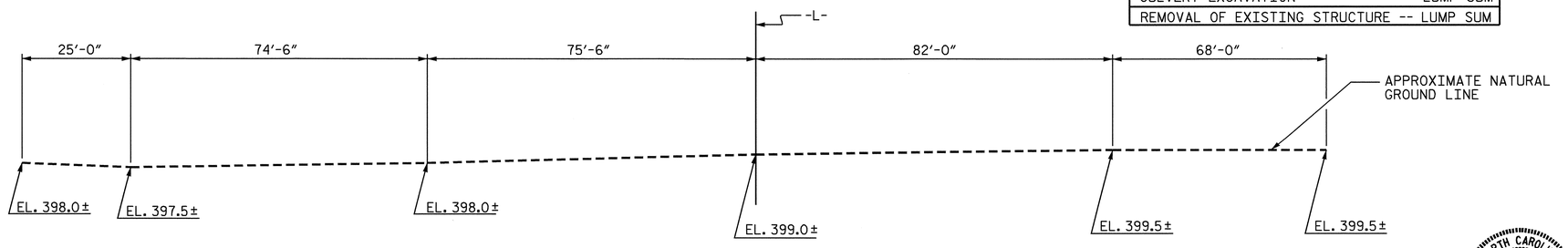
(AFTER SERVING AS A TEMPORARY STRUCTURE) THE EXISTING STRUCTURE CONSISTING OF SINGLE SPAN 1 @ 36'-0", TIMBER FLOOR ON I-BEAMS W/RC ABUTMENTS AND UPSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FEET. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

(NOTES CONTINUED ON SHEET 2 OF 9)



PROFILE ALONG ℄ CULVERT

PROJECT NO. B-3528

WAKE COUNTY

STATION: 17+66.00 -L-

SHEET 1 OF 9 REPLACES BRIDGE 429

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 11 FT. X 9 FT. CONCRETE BOX CULVERT 30°-00'-00" SKEW

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

NORTH CAROLINA PROFESSIONAL SEAL 12929 ENGINEER NORMAN NEBLETT GILLESPIE, JR.
2/4/08

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER ALEXANDER KEITH PASCHAL
2/4/08

DRAWN BY : J.G. KHARVA DATE : 11/13/07
CHECKED BY : A.K. PASCHAL DATE : 11/16/07

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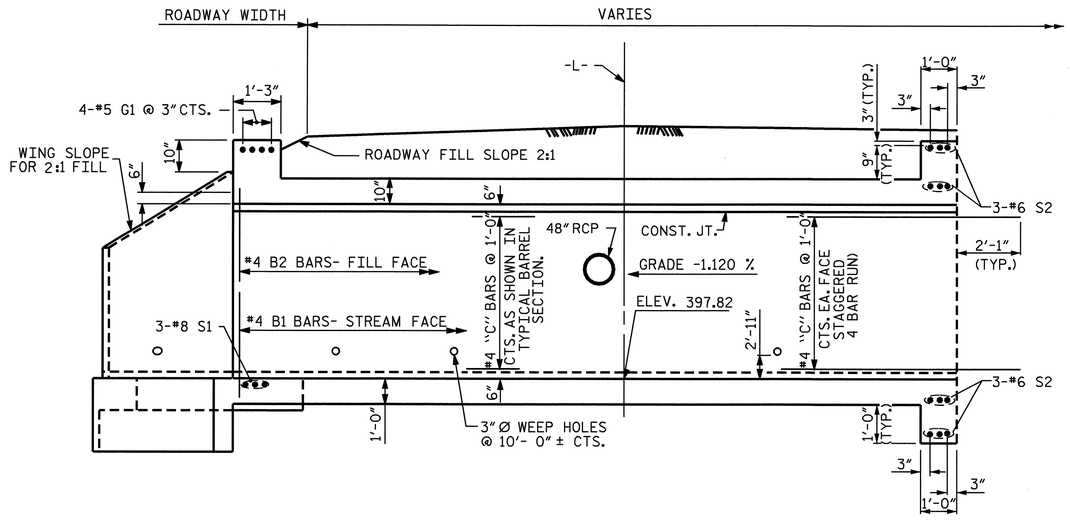
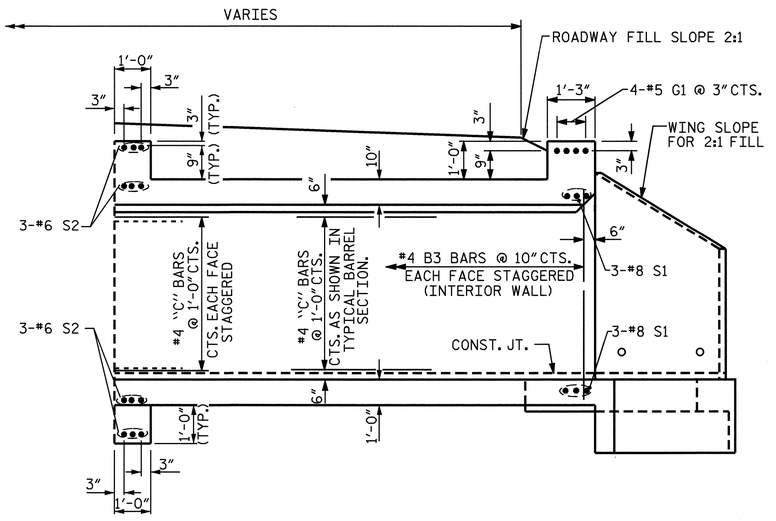
jkharva



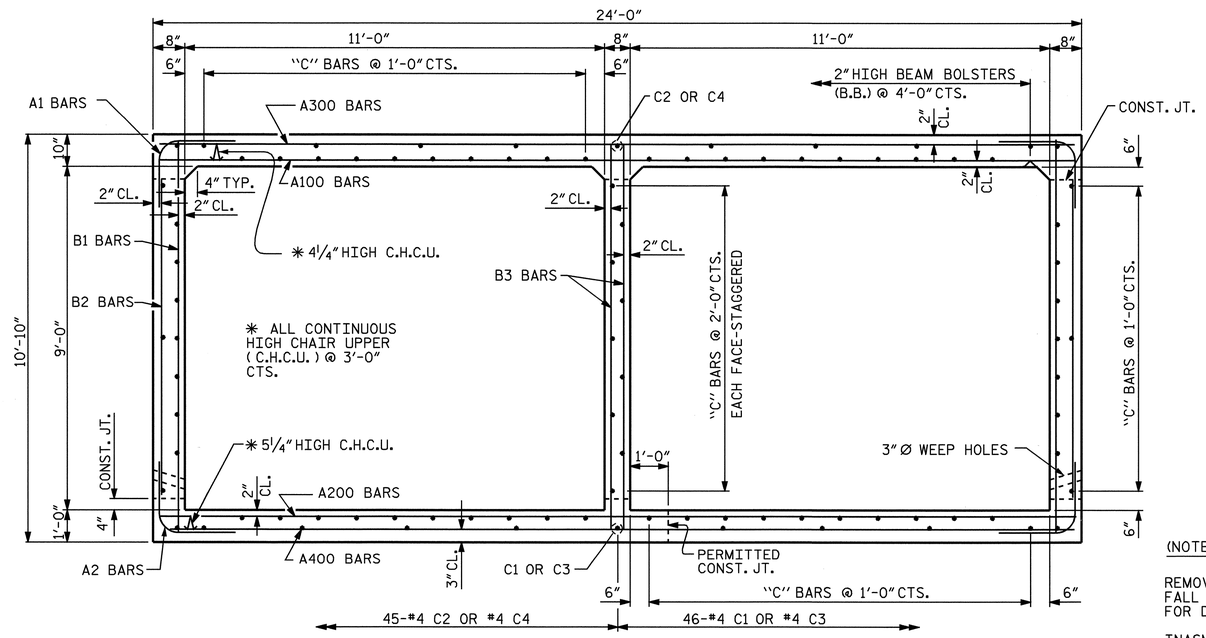
CULVERT SECTION NORMAL TO ROADWAY

(STAGE I)



CULVERT SECTION NORMAL TO ROADWAY

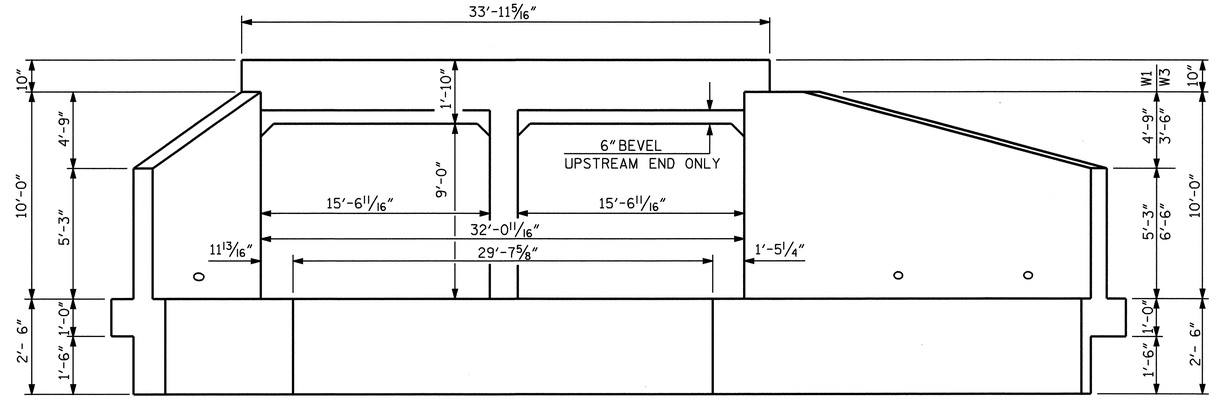
(STAGE II)



RIGHT ANGLE SECTION OF BARREL

THERE ARE 91 "C" BARS IN SECTION OF BARREL.

(LOOKING UPSTREAM)



END ELEVATION NORMAL TO SKEW

(NOTES CONTINUED FROM SHEET 1 OF 9)

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.

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 17+66.00 -L-."

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

TRAFFIC ON 17+66.00 -L- SHALL BE MAINTAINED. IN ORDER TO MAINTAIN TRAFFIC THE CULVERT SHALL BE CONSTRUCTED IN SECTIONS AS DIRECTED BY THE ENGINEER.

NORTH CAROLINA PROFESSIONAL SEAL 32908 ENGINEER KEITH PASCHAL

2/4/08

PROJECT NO. B-3528

WAKE COUNTY

STATION: 17+66.00 -L-

SHEET 2 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 11 FT. X 9 FT. CONCRETE BOX CULVERT 30°-00'-00" SKEW

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

SID NO. CB52

REVISED 11-19-99 BY M.M. CHECKED BY R.W.W.
REDRAWN : D.P.D. 11-90 CHECKED BY : E.L.R. 11-2-90

ASSEMBLED BY : J. G. KHARVA DATE : 11/13/07
CHECKED BY : A.K. PASCHAL DATE : 11/16/07

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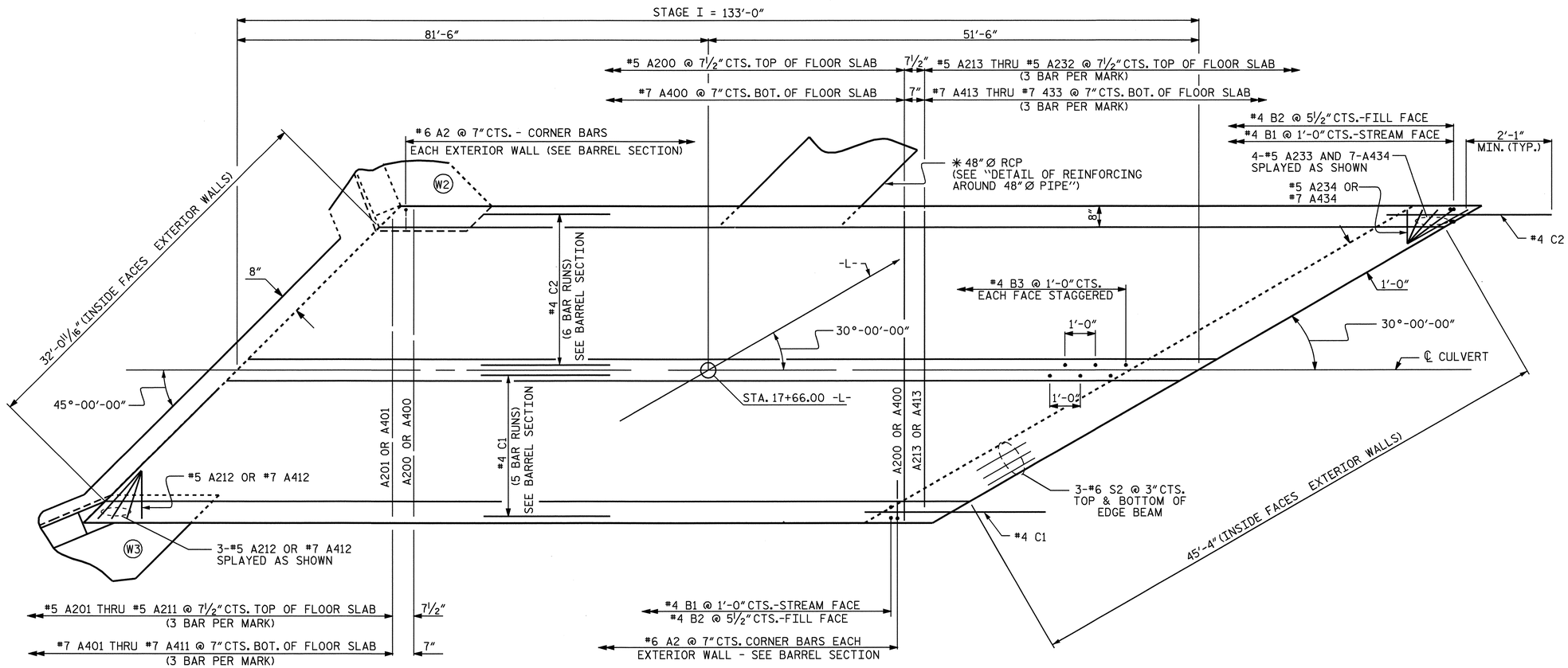
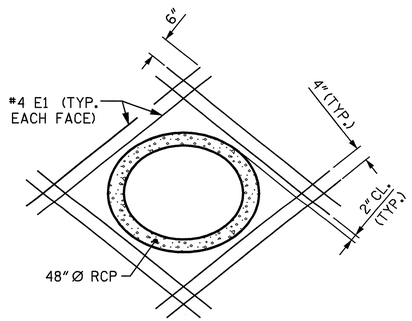


PLAN - FLOOR SLAB

STAGE I



✳ THE 48" RCP THROUGH THE SIDEWALL OF THE CULVERT WILL BE LOCATED BY THE ENGINEER. THE REINFORCING STEEL WILL BE FIELD BENT AS NECESSARY TO CLEAR PIPE.

DETAIL OF REINFORCING AROUND 48" Ø PIPE

DRAWN BY : J. G. KHARVA DATE : 11/13/07
CHECKED BY : A. K. PASCHAL DATE : 11/16/07

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jkharva

PROJECT NO. B-3528
WAKE COUNTY
STATION: 17+66.00 -L-

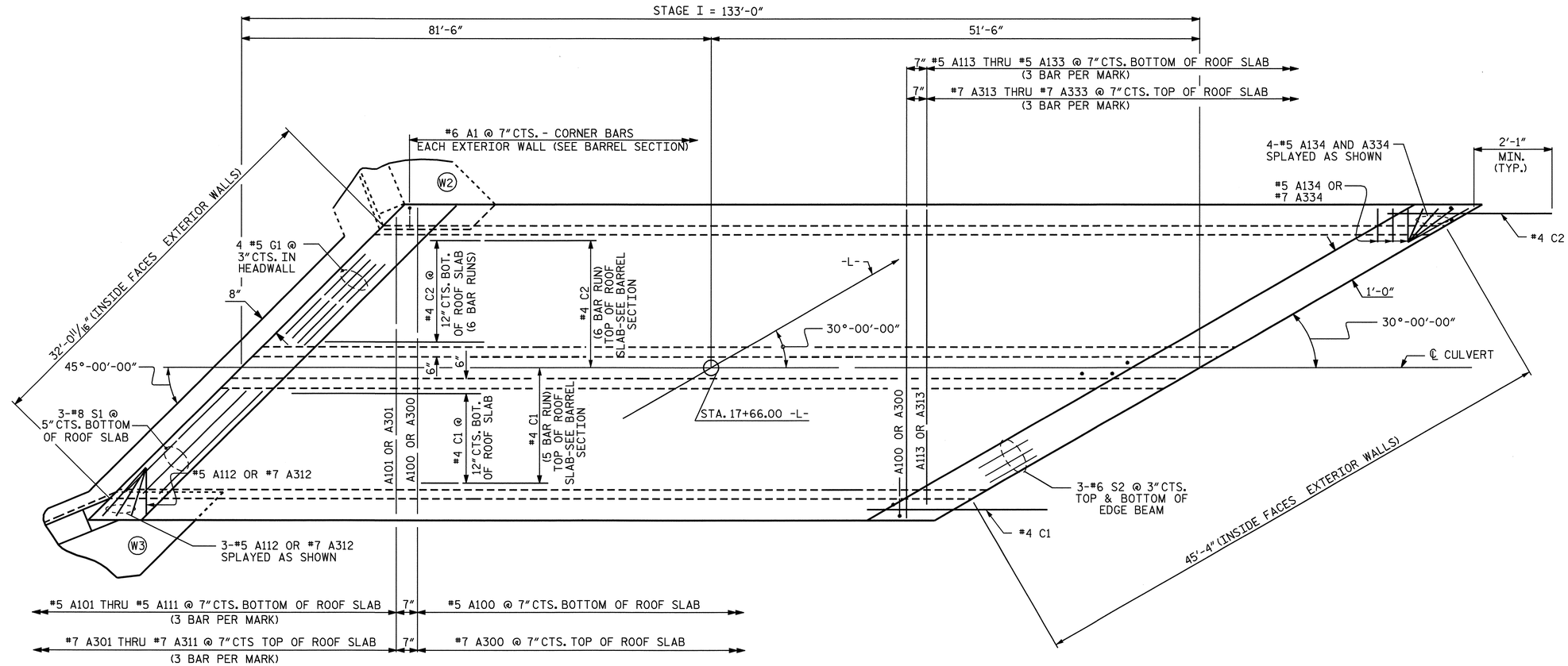
SHEET 3 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 11 FT. X 9 FT. CONCRETE BOX CULVERT 30°-00'-00" SKEW

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

NORTH CAROLINA PROFESSIONAL SEAL 27005 ENGINEER A. KEITH PASCHAL
2/4/08



PLAN - ROOF SLAB

STAGE I

PROJECT NO. B-3528

WAKE COUNTY

STATION: 17+66.00 -L-

SHEET 4 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 11 FT. X 9 FT. CONCRETE BOX CULVERT 30°-00'-00" SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL

2/4/08

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

DRAWN BY : J. G. KHARVA DATE : 11/13/07
CHECKED BY : A.K. PASCHAL DATE : 11/16/07

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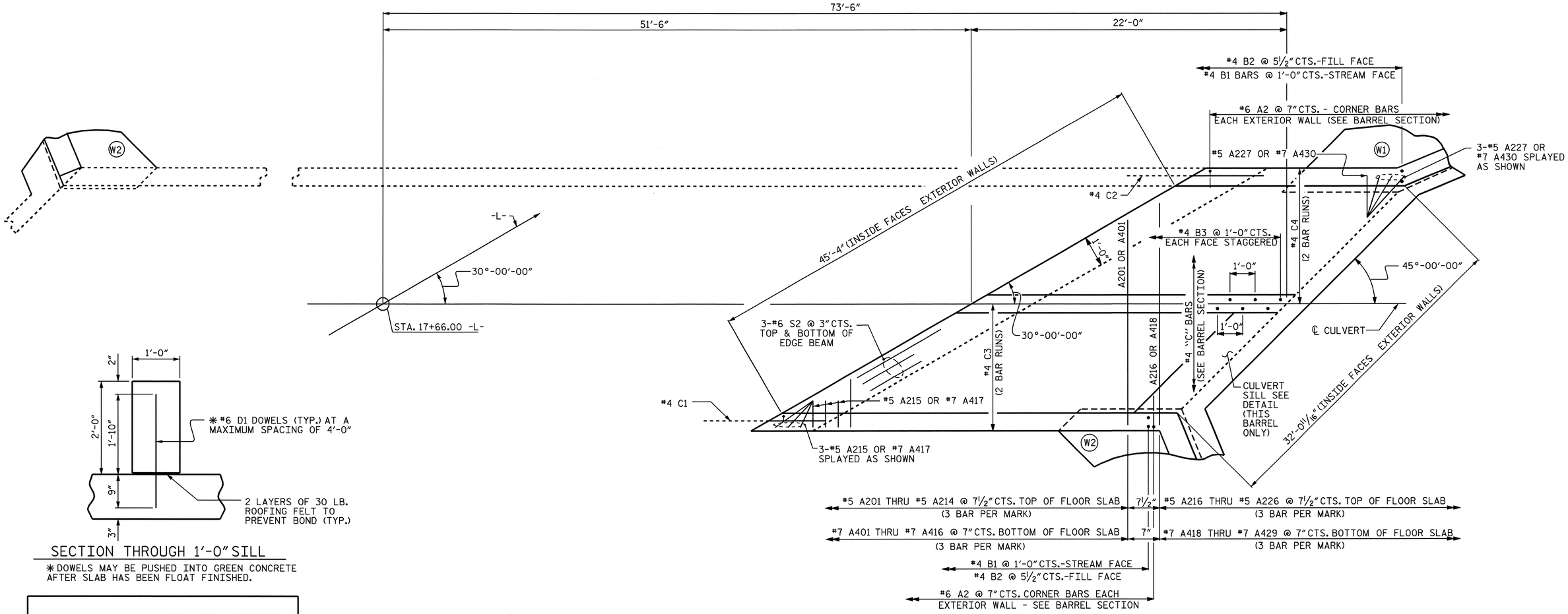
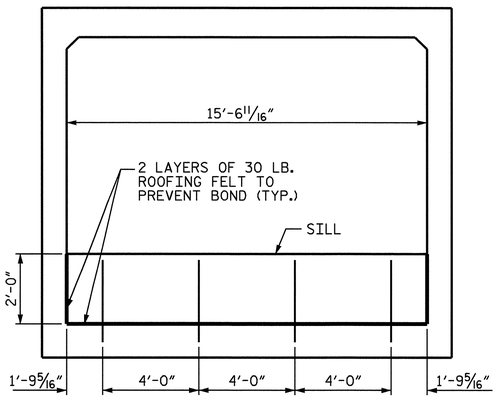


PLAN - FLOOR SLAB

STAGE II

SECTION THROUGH 1'-0" SILL

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



ELEVATION VIEW - INLET

CULVERT SILL DETAIL

SILL QUANTITIES

(INCLUDED IN TOTAL FOR STRUCTURE)

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
D1	4	#6	STR.	2'-7"	16
REINFORCING STEEL					16 LBS.
CLASS A CONCRETE					1.2 C.Y.
TOTAL REINFORCING STEEL					16 LBS.
TOTAL CLASS A CONCRETE					1.2 C.Y.

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A.K. PASCHAL
2/4/08

PROJECT NO. B-3528

WAKE COUNTY

STATION: 17+66.00 -L-

SHEET 5 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 11 FT. X 9 FT. CONCRETE BOX CULVERT 30°-00'-00" SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-5
1			3			TOTAL SHEETS
2			4			9

DRAWN BY : J. G. KHARVA DATE : 11/13/07
CHECKED BY : A.K. PASCHAL DATE : 11/16/07

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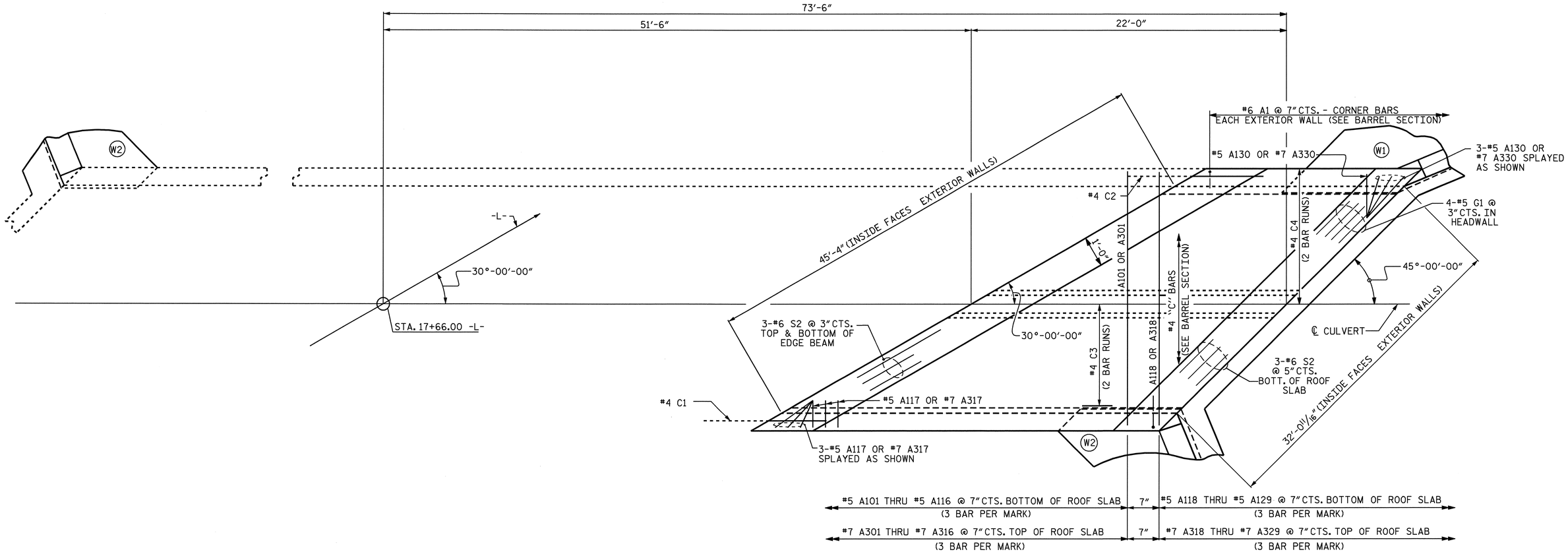

PLAN - ROOF SLAB

STAGE II

PROJECT NO. B-3528

WAKE COUNTY

STATION: 17+66.00 -L-

SHEET 6 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE 11 FT. X 9 FT. CONCRETE BOX CULVERT 30°-00'-00" SKEW

NORTH CAROLINA PROFESSIONAL SEAL 23005 ENGINEER A.K. KEITH PASCHAL

2/4/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-6
1			3			TOTAL SHEETS
2			4			9

DRAWN BY : J. G. KHARVA DATE : 11/13/07
CHECKED BY : A.K. PASCHAL DATE : 11/16/07

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jkharva

BILL OF MATERIAL

(STAGE I)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	456	#6	6	5′-9″	3938
A2	456	#6	6	5′-10″	3995
A100	172	#5	STR	23′-7″	4231
A101	3	#5	STR	21′-9″	68
A102	3	#5	STR	20′-0″	63
A103	3	#5	STR	18′-3″	57
A104	3	#5	STR	16′-6″	52
A105	3	#5	STR	14′-9″	46
A106	3	#5	STR	13′-0″	41
A107	3	#5	STR	11′-3″	35
A108	3	#5	STR	9′-6″	30
A109	3	#5	STR	7′-9″	24
A110	3	#5	STR	6′-0″	19
A111	3	#5	STR	4′-3″	13
A112	6	#5	STR	2′-6″	16
A113	3	#5	STR	22′-8″	71
A114	3	#5	STR	21′-8″	68
A115	3	#5	STR	20′-8″	65
A116	3	#5	STR	19′-8″	62
A117	3	#5	STR	18′-8″	58
A118	3	#5	STR	17′-7″	55
A119	3	#5	STR	16′-7″	52
A120	3	#5	STR	15′-7″	49
A121	3	#5	STR	14′-7″	46
A122	3	#5	STR	13′-7″	42
A123	3	#5	STR	12′-7″	39
A124	3	#5	STR	11′-6″	36
A125	3	#5	STR	10′-6″	33
A126	3	#5	STR	9′-6″	30
A127	3	#5	STR	8′-6″	27
A128	3	#5	STR	7′-6″	23
A129	3	#5	STR	6′-6″	20
A130	3	#5	STR	5′-6″	17
A131	3	#5	STR	4′-6″	14
A132	3	#5	STR	3′-5″	11
A133	3	#5	STR	2′-5″	8
A134	7	#5	STR	1′-5″	10
A200	161	#5	STR	23′-7″	3690
A201	3	#5	STR	21′-7″	68
A202	3	#5	STR	19′-9″	62
A203	3	#5	STR	17′-10″	56
A204	3	#5	STR	16′-0″	50
A205	3	#5	STR	14′-1″	44
A206	3	#5	STR	12′-3″	38
A207	3	#5	STR	10′-4″	32
A208	3	#5	STR	8′-6″	27
A209	3	#5	STR	6′-7″	21
A210	3	#5	STR	4′-9″	15
A211	3	#5	STR	2′-10″	9
A212	4	#5	STR	2′-3″	9
A213	3	#5	STR	22′-6″	70
A214	3	#5	STR	21′-5″	67
A215	3	#5	STR	20′-4″	64
A216	3	#5	STR	19′-3″	60
A217	3	#5	STR	18′-2″	57
A218	3	#5	STR	17′-1″	53
A219	3	#5	STR	16′-0″	50
A220	3	#5	STR	14′-11″	47
A221	3	#5	STR	13′-10″	43
A222	3	#5	STR	12′-9″	40
A223	3	#5	STR	11′-8″	37
A224	3	#5	STR	10′-7″	33
A225	3	#5	STR	9′-6″	30
A226	3	#5	STR	8′-5″	26
A227	3	#5	STR	7′-4″	23
A228	3	#5	STR	6′-3″	20

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A229	3	#5	STR	5′-2″	16
A230	3	#5	STR	4′-1″	13
A231	3	#5	STR	3′-0″	9
A232	3	#5	STR	1′-11″	6
A233	5	#5	STR	1′-2″	6
A300	172	#7	STR	23′-7″	8291
A301	3	#7	STR	21′-9″	133
A302	3	#7	STR	20′-0″	123
A303	3	#7	STR	18′-3″	112
A304	3	#7	STR	16′-6″	101
A305	3	#7	STR	14′-9″	90
A306	3	#7	STR	13′-0″	80
A307	3	#7	STR	11′-3″	69
A308	3	#7	STR	9′-6″	58
A309	3	#7	STR	7′-9″	48
A310	3	#7	STR	6′-0″	37
A311	3	#7	STR	4′-3″	26
A312	6	#7	STR	2′-6″	31
A313	3	#7	STR	22′-8″	139
A314	3	#7	STR	21′-8″	133
A315	3	#7	STR	20′-8″	127
A316	3	#7	STR	19′-8″	121
A317	3	#7	STR	18′-8″	114
A318	3	#7	STR	17′-7″	108
A319	3	#7	STR	16′-7″	102
A320	3	#7	STR	15′-7″	96
A321	3	#7	STR	14′-7″	89
A322	3	#7	STR	13′-7″	83
A323	3	#7	STR	12′-7″	77
A324	3	#7	STR	11′-6″	71
A325	3	#7	STR	10′-6″	64
A326	3	#7	STR	9′-6″	58
A327	3	#7	STR	8′-6″	52
A328	3	#7	STR	7′-6″	46
A329	3	#7	STR	6′-6″	40
A330	3	#7	STR	5′-6″	34
A331	3	#7	STR	4′-6″	28
A332	3	#7	STR	3′-5″	21
A333	3	#7	STR	2′-5″	15
A334	7	#7	STR	1′-5″	20
A400	172	#7	STR	23′-7″	8291
A401	3	#7	STR	21′-9″	133
A402	3	#7	STR	20′-0″	123
A403	3	#7	STR	18′-3″	112
A404	3	#7	STR	16′-6″	101
A405	3	#7	STR	14′-9″	90
A406	3	#7	STR	13′-0″	80
A407	3	#7	STR	11′-3″	69
A408	3	#7	STR	9′-6″	58
A409	3	#7	STR	7′-9″	48
A410	3	#7	STR	6′-0″	37
A411	3	#7	STR	4′-3″	26
A412	6	#7	STR	2′-6″	31
A413	3	#7	STR	22′-8″	139
A414	3	#7	STR	21′-8″	133
A415	3	#7	STR	20′-8″	127
A416	3	#7	STR	19′-8″	121
A417	3	#7	STR	18′-8″	114
A418	3	#7	STR	17′-7″	108
A419	3	#7	STR	16′-7″	102
A420	3	#7	STR	15′-7″	96
A421	3	#7	STR	14′-7″	89
A422	3	#7	STR	13′-7″	83
A423	3	#7	STR	12′-7″	77
A424	3	#7	STR	11′-6″	71

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A425	3	#7	STR	10′-6″	64
A426	3	#7	STR	9′-6″	58
A427	3	#7	STR	8′-6″	52
A428	3	#7	STR	7′-6″	46
A429	3	#7	STR	6′-6″	40
A430	3	#7	STR	5′-6″	34
A431	3	#7	STR	4′-6″	28
A432	3	#7	STR	3′-5″	21
A433	3	#7	STR	2′-5″	15
A434	7	#7	STR	1′-5″	20
B1	266	#4	STR	10′-5″	1851
B2	578	#4	STR	8′-4″	3218
B3	266	#4	STR	10′-5″	1851
C1	225	#4	STR	28′-6″	4284
C2	276	#4	STR	25′-6″	4701
G1	4	#5	STR	33′-5″	139
S1	6	#8	STR	33′-5″	535
S2	12	#6	STR	47′-4″	853
E1	16	#4	STR	6′-11″	74

REINFORCING STEEL	57,535 LBS.
CLASS A CONCRETE	
BARREL (STAGE I)	306.6 C.Y.

DRAWN BY : J. G. KHARVA DATE : 11/13/07
CHECKED BY : A.K. PASCHAL DATE : 11/16/07

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lkharva

BILL OF MATERIAL

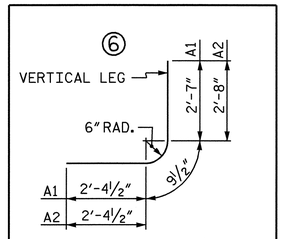
(STAGE II)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	76	#6	6	5′-9″	656
A2	76	#6	6	5′-10″	666
A101	3	#5	STR	16′-6″	52
A102	3	#5	STR	15′-6″	48
A103	3	#5	STR	14′-6″	45
A104	3	#5	STR	13′-5″	42
A105	3	#5	STR	12′-5″	39
A106	3	#5	STR	11′-5″	36
A107	3	#5	STR	10′-5″	33
A108	3	#5	STR	9′-5″	29
A109	3	#5	STR	8′-5″	26
A110	3	#5	STR	7′-5″	23
A111	3	#5	STR	6′-5″	20
A112	3	#5	STR	5′-4″	17
A113	3	#5	STR	4′-4″	14
A114	3	#5	STR	3′-4″	10
A115	3	#5	STR	2′-4″	7
A116	3	#5	STR	1′-4″	4
A117	6	#5	STR	1′-0″	6
A118	3	#5	STR	15′-9″	49
A119	3	#5	STR	15′-0″	47
A120	3	#5	STR	14′-3″	45
A121	3	#5	STR	13′-6″	42
A122	3	#5	STR	12′-9″	40
A123	3	#5	STR	12′-1″	38
A124	3	#5	STR	11′-4″	35
A125	3	#5	STR	9′-7″	30
A126	3	#5	STR	7′-10″	25
A127	3	#5	STR	6′-1″	19
A128	3	#5	STR	4′-4″	14
A129	3	#5	STR	2′-7″	8
A130	4	#5	STR	1′-7″	13
A201	3	#5	STR	16′-6″	52
A202	3	#5	STR	15′-5″	48
A203	3	#5	STR	14′-4″	45
A204	3	#5	STR	13′-3″	41
A205	3	#5	STR	12′-2″	38
A206	3	#5	STR	11′-1″	35
A207	3	#5	STR	10′-0″	31
A208	3	#5	STR	8′-11″	28
A209	3	#5	STR	7′-10″	25
A210	3	#5	STR	6′-9″	21
A211	3	#5	STR	5′-8″	18
A212	3	#5	STR	4′-7″	14
A213	3	#5	STR	3′-6″	11
A214	3	#5	STR	2′-5″	8
A215	6	#5	STR	1′-4″	8
A216	3	#5	STR	15′-9″	49
A217	3	#5	STR	14′-11″	47
A218	3	#5	STR	14′-2″	44
A219	3	#5	STR	13′-4″	42
A220	3	#5	STR	12′-7″	39
A221	3	#5	STR	11′-9″	37
A222	3	#5	STR	10′-6″	33
A223	3	#5	STR	8′-8″	27
A224	3	#5	STR	6′-9″	21
A225	3	#5	STR	4′-11″	15
A226	3	#5	STR	3′-0″	9
A227	4	#5	STR	2′-5″	10

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A301	3	#7	STR	16′-6″	101
A302	3	#7	STR	15′-6″	95
A303	3	#7	STR	14′-6″	89
A304	3	#7	STR	13′-5″	82
A305	3	#7	STR	12′-5″	76
A306	3	#7	STR	11′-5″	70
A307	3	#7	STR	10′-5″	64
A308	3	#7	STR	9′-5″	58
A309	3	#7	STR	8′-5″	52
A310	3	#7	STR	7′-5″	45
A311	3	#7	STR	6′-5″	39
A312	3	#7	STR	5′-4″	33
A313	3	#7	STR	4′-4″	27
A314	3	#7	STR	3′-4″	20
A315	3	#7	STR	2′-4″	14
A316	3	#7	STR	1′-4″	8
A317	6	#7	STR	1′-0″	12
A318	3	#7	STR	15′-9″	97
A319	3	#7	STR	15′-0″	92
A320	3	#7	STR	14′-3″	87
A321	3	#7	STR	13′-6″	83
A322	3	#7	STR	12′-9″	78
A323	3	#7	STR	12′-1″	74
A324	3	#7	STR	11′-4″	69
A325	3	#7	STR	9′-7″	59
A326	3	#7	STR	7′-10″	48
A327	3	#7	STR	6′-1″	37
A328	3	#7	STR	4′-4″	27
A329	3	#7	STR	2′-7″	16
A330	4	#7	STR	1′-7″	13
A401	3	#7	STR	16′-6″	101
A402	3	#7	STR	15′-6″	95
A403	3	#7	STR	14′-6″	89
A404	3	#7	STR	13′-5″	82
A405	3	#7	STR	12′-5″	76
A406	3	#7	STR	11′-5″	70
A407	3	#7	STR	10′-5″	64
A408	3	#7	STR	9′-5″	58
A409	3	#7	STR	8′-5″	52
A410	3	#7	STR	7′-5″	45
A411	3	#7	STR	6′-5″	39
A412	3	#7	STR	5′-4″	33
A413	3	#7	STR	4′-4″	27
A414	3	#7	STR	3′-4″	20
A415	3	#7	STR	2′-4″	14
A416	3	#7	STR	1′-4″	8
A417	6	#7	STR	1′-0″	12
A418	3	#7	STR	15′-9″	97
A419	3	#7	STR	15′-0″	92
A420	3	#7	STR	14′-3″	87
A421	3	#7	STR	13′-6″	83
A422	3	#7	STR	12′-9″	78
A423	3	#7	STR	12′-1″	74
A424	3	#7	STR	11′-4″	69
A425	3	#7	STR	9′-7″	59
A426	3	#7	STR	7′-10″	48
A427	3	#7	STR	6′-1″	37
A428	3	#7	STR	4′-4″	27
A429	3	#7	STR	2′-7″	16
A430	4	#7	STR	1′-7″	13

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	44	#4	STR	10′-5″	306
B2	76	#4	STR	8′-4″	423
B3	44	#4	STR	10′-5″	306
C3	90	#4	STR	16′-2″	972
C4	92	#4	STR	11′-9″	722
G1	4	#5	STR	33′-5″	139
S1	6	#8	STR	33′-5″	535
S2	12	#6	STR	47′-4″	853

REINFORCING STEEL	10,560 LBS.
CLASS A CONCRETE	
BARREL	50.7 C.Y.



BAR TYPE
DIMENSIONS ARE OUT TO OUT

SPLICE LENGTH CHART		
BAR	SIZE	LENGTH
A200	#5	1′-9″
A400	#7	3′-1″
B1, B3	#4	1′-9″
C1, C2, C3 & C4	#4	1′-11″

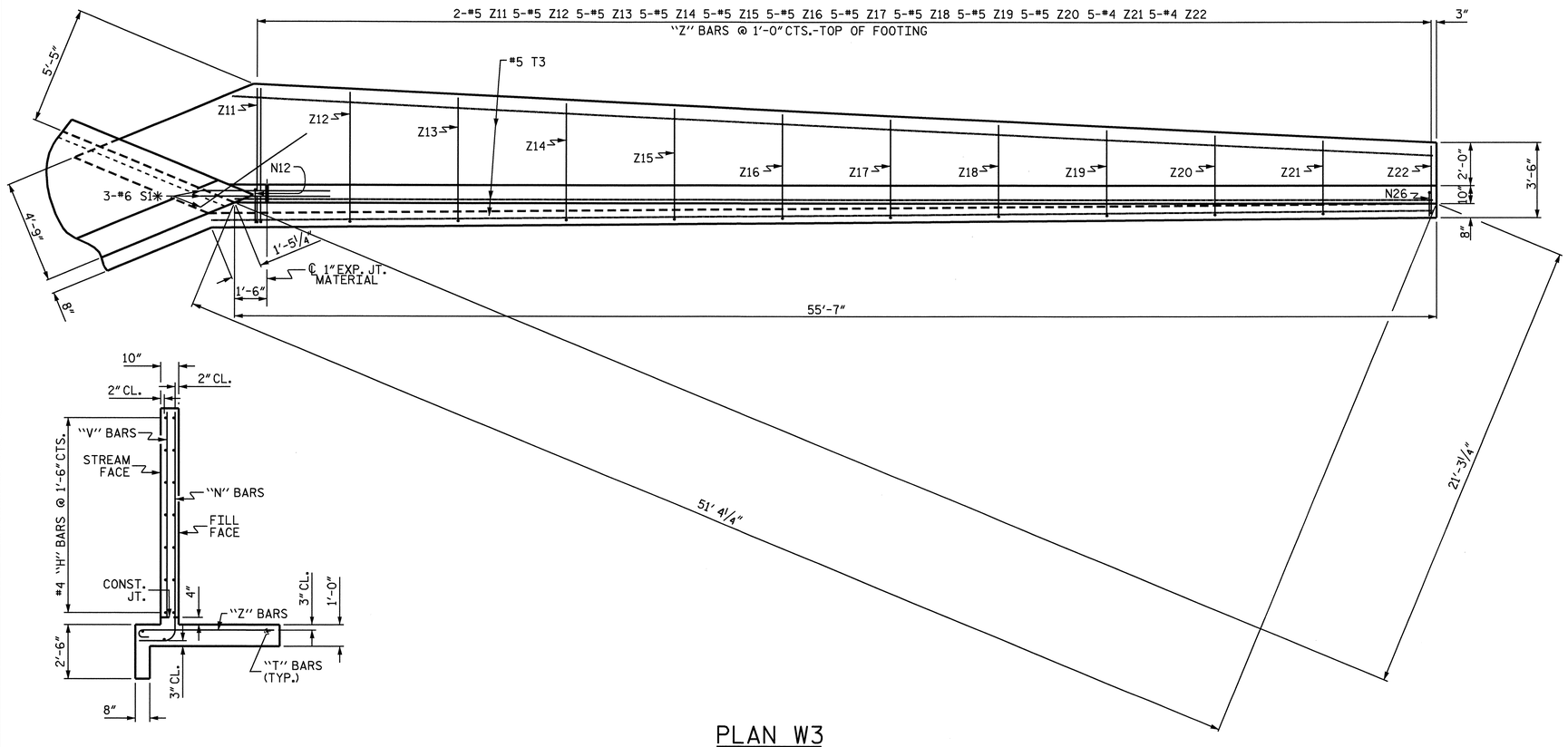
PROJECT NO. B-3528
WAKE COUNTY
STATION: 17+66.00 -L-

SHEET 7 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

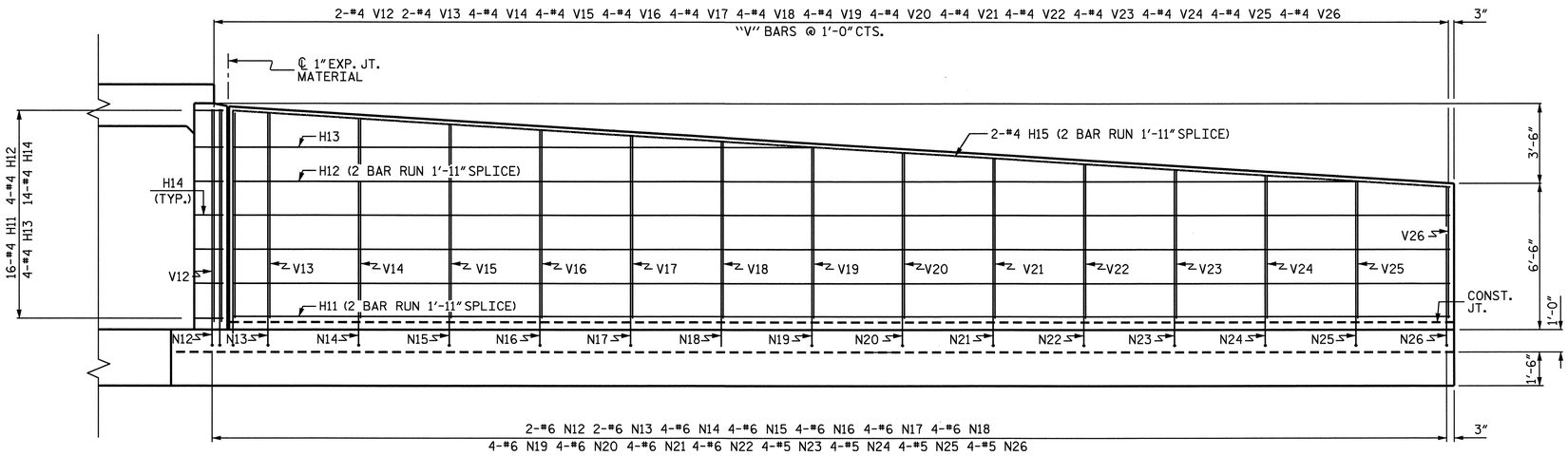
DOUBLE 11 FT. X 9 FT. CONCRETE BOX CULVERT 30°-00′-00″ SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-7
1			3			TOTAL SHEETS
2			4			9



TYPICAL WING SECTION

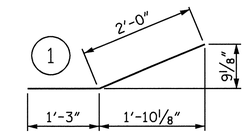
PLAN W3

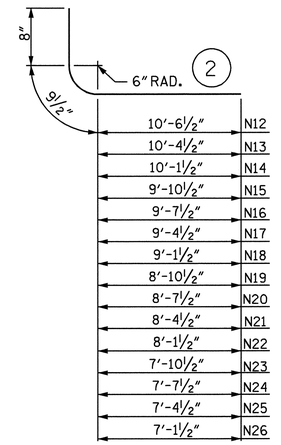


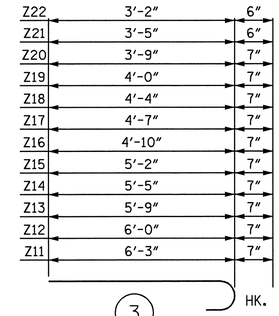
ELEVATION W3

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.







BILL OF MATERIAL (W3)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H11	16	#4	STR	27'-10"	297
H12	4	#4	STR	25'-11"	69
H13	2	#4	STR	25'-10"	35
H14	14	#4	2	3'-3"	30
H15	4	#4	STR	27'-11"	75
N12	2	#6	3	12'-0"	36
N13	2	#6	3	11'-10"	36
N14	4	#6	3	11'-7"	70
N15	4	#6	3	11'-4"	68
N16	4	#6	3	11'-1"	67
N17	4	#6	3	10'-10"	65
N18	4	#6	3	10'-7"	64
N19	4	#6	3	10'-4"	62
N20	4	#6	3	10'-1"	60
N21	4	#6	3	9'-10"	59
N22	4	#6	3	9'-7"	58
N23	4	#5	3	9'-4"	39
N24	4	#5	3	9'-1"	38
N25	4	#5	3	8'-10"	37
N26	4	#5	3	8'-7"	36
S1	3	#6	STR	6'-0"	27
T3	3	#5	STR	55'-7"	174
V12	2	#4	STR	9'-5"	13
V13	2	#4	STR	9'-1"	12
V14	4	#4	STR	8'-10"	24
V15	4	#4	STR	8'-7"	23
V16	4	#4	STR	8'-4"	22
V17	4	#4	STR	8'-1"	22
V18	4	#4	STR	7'-10"	21
V19	4	#4	STR	7'-7"	20
V20	4	#4	STR	7'-4"	20
V21	4	#4	STR	7'-1"	19
V22	4	#4	STR	6'-10"	18
V23	4	#4	STR	6'-7"	18
V24	4	#4	STR	6'-4"	17
V25	4	#4	STR	6'-1"	16
V26	4	#4	STR	5'-10"	16
Z11	2	#5	4	6'-9"	14
Z12	5	#5	4	6'-6"	34
Z13	5	#5	4	6'-4"	33
Z14	5	#5	4	6'-0"	31
Z15	5	#5	4	5'-9"	30
Z16	5	#5	4	5'-5"	28
Z17	5	#5	4	5'-2"	27
Z18	5	#5	4	4'-11"	26
Z19	5	#5	4	4'-7"	24
Z20	5	#5	4	4'-3"	22
Z21	5	#4	4	3'-11"	20
Z22	5	#4	4	3'-8"	19

REINFORCING STEEL 2091 LBS

CLASS A CONCRETE (W3)

1 WING	28.1	CY
1 HEADWALL	1.6	CY
1 END CURTAIN WALL	1.8	CY
TOTAL	31.5	CY

PROJECT NO. B-3528

WAKE COUNTY

STATION: 17+66.00 -L-

SHEET 8 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

MODIFIED WING-W3 FOR CONCRETE BOX CULVERT

H = 9'-0" SLOPE = 2:1

45° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-8
1			3			TOTAL SHEETS
2			4			9

STD. NO. CW4509

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCHAL 2/4/08

ASSEMBLED BY :	J. G. KHARVA	DATE :	11/13/07
CHECKED BY :	A. K. PASCHAL	DATE :	11/16/07
DRAWN BY :	CCJ		01/00
CHECKED BY :	RWW		03/00

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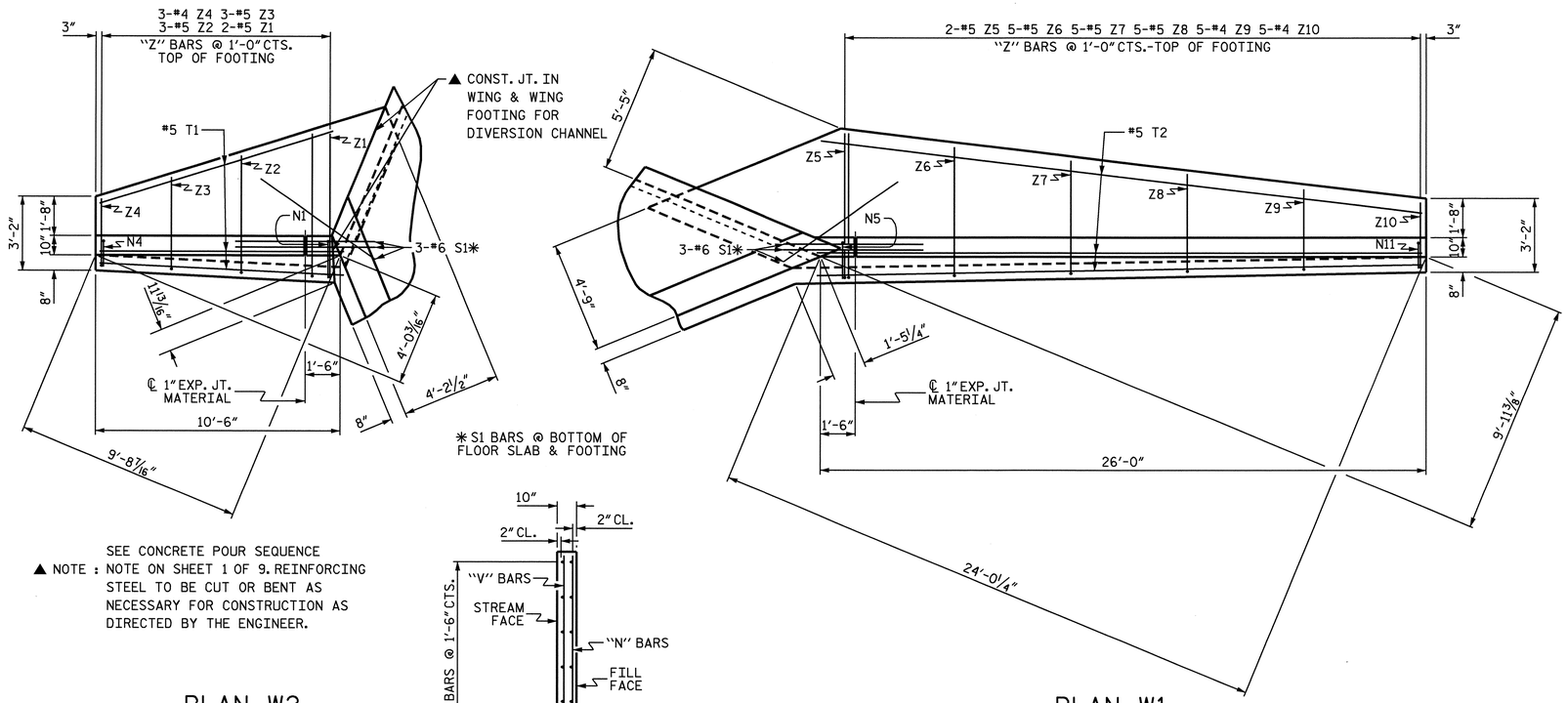
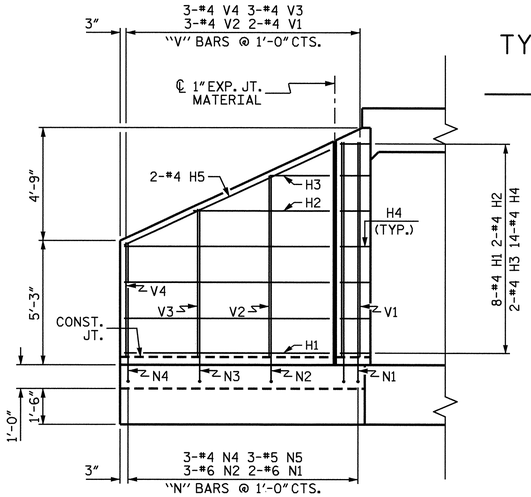


PLAN W2
(2 REQ'D)

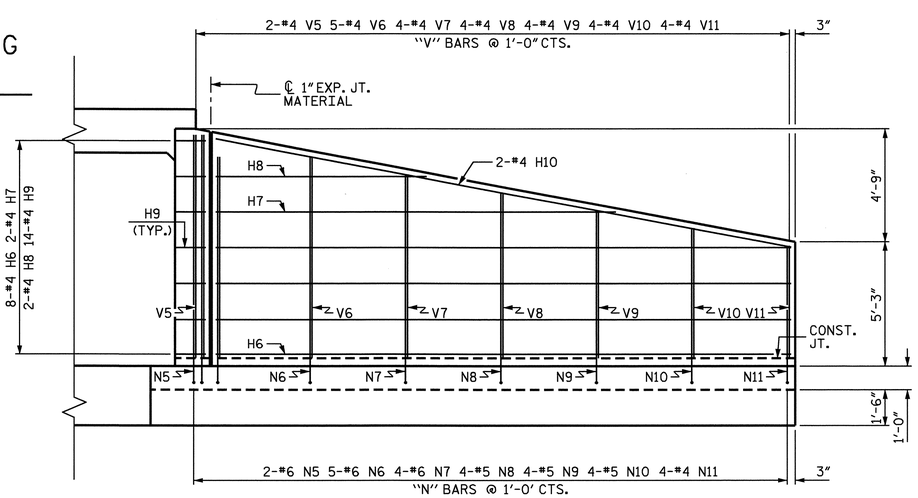
PLAN W1
(1 REQ'D)

▲ NOTE : SEE CONCRETE POUR SEQUENCE NOTE ON SHEET 1 OF 9. REINFORCING STEEL TO BE CUT OR BENT AS NECESSARY FOR CONSTRUCTION AS DIRECTED BY THE ENGINEER.

TYPICAL WING SECTION



ELEVATION W2
(2 REQ'D)

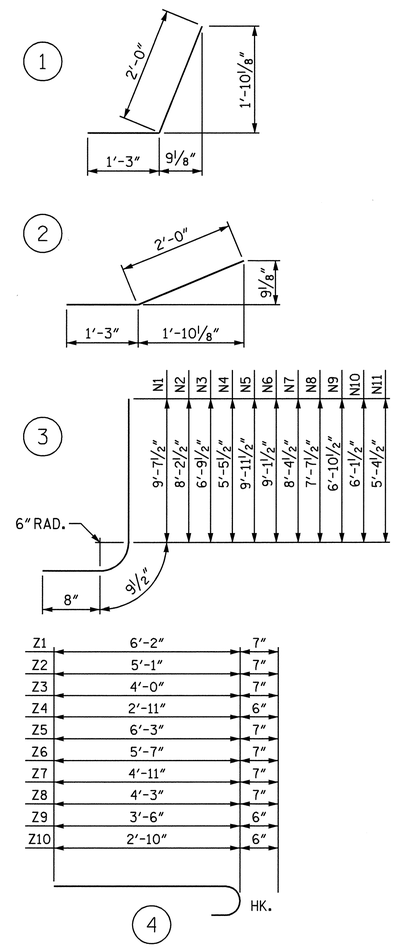


ELEVATION W1
(1 REQ'D)

STAGE II

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



Z1	6'-2"	7"
Z2	5'-1"	7"
Z3	4'-0"	7"
Z4	2'-11"	6"
Z5	6'-3"	7"
Z6	5'-7"	7"
Z7	4'-11"	7"
Z8	4'-3"	7"
Z9	3'-6"	6"
Z10	2'-10"	6"

4 HK.

BILL OF MATERIAL (1-W1, 2-W2)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	16	#4	STR	8'-7"	92
H2	4	#4	STR	5'-8"	15
H3	4	#4	STR	2'-6"	7
H4	28	#4	1	3'-3"	61
H5	4	#4	STR	9'-6"	25
H6	8	#4	STR	24'-1"	129
H7	2	#4	STR	16'-9"	22
H8	2	#4	STR	8'-10"	12
H9	14	#4	2	3'-3"	30
H10	2	#4	STR	24'-6"	33
N1	4	#6	3	11'-1"	67
N2	6	#6	3	9'-8"	87
N3	6	#5	3	8'-3"	52
N4	6	#4	3	6'-11"	28
N5	2	#6	3	11'-5"	34
N6	5	#6	3	10'-7"	79
N7	4	#6	3	9'-10"	59
N8	4	#5	3	9'-1"	38
N9	4	#5	3	8'-4"	35
N10	4	#5	3	7'-7"	32
N11	4	#4	3	6'-10"	18
S1	9	#6	STR	6'-0"	81
T1	6	#5	STR	10'-6"	66
T2	3	#5	STR	26'-0"	81
V1	4	#4	STR	9'-1"	24
V2	6	#4	STR	7'-8"	31
V3	6	#4	STR	6'-3"	25
V4	6	#4	STR	4'-10"	19
V5	2	#4	STR	9'-5"	13
V6	5	#4	STR	8'-6"	28
V7	4	#4	STR	7'-9"	21
V8	4	#4	STR	7'-0"	19
V9	4	#4	STR	6'-3"	17
V10	4	#4	STR	5'-6"	15
V11	4	#4	STR	4'-9"	13
Z1	4	#5	4	6'-9"	28
Z2	6	#5	4	5'-8"	35
Z3	6	#5	4	4'-7"	29
Z4	6	#4	4	3'-5"	14
Z5	2	#5	4	6'-10"	14
Z6	5	#5	4	6'-2"	32
Z7	5	#5	4	5'-6"	29
Z8	5	#5	4	4'-10"	25
Z9	5	#4	4	4'-0"	13
Z10	5	#4	4	3'-4"	11

REINFORCING STEEL FOR 3 WINGS (1-W1, 2-W2)	1638 LBS
CLASS A CONCRETE	
3 WINGS 1-W1, 2-W2)	23.5 CY
1 HEADWALL	1.6 CY
1 END CURTAIN WALL	1.8 CY
TOTAL	26.9 CY

ASSEMBLED BY : J. G. KHARVA	DATE : 11/13/07
CHECKED BY : A. K. PASCHAL	DATE : 11/16/07
DRAWN BY : CCJ 01/00	
CHECKED BY : RWW 03/00	

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jkharva

PROJECT NO. B-3528
WAKE COUNTY
STATION: 17+66.00 -L-
SHEET 9 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD WINGS FOR CONCRETE BOX CULVERT

H = 9'-0" SLOPE = 2:1
45° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER KEITH PASCHAL
2/4/08

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

STD. NO. CW4509

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

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