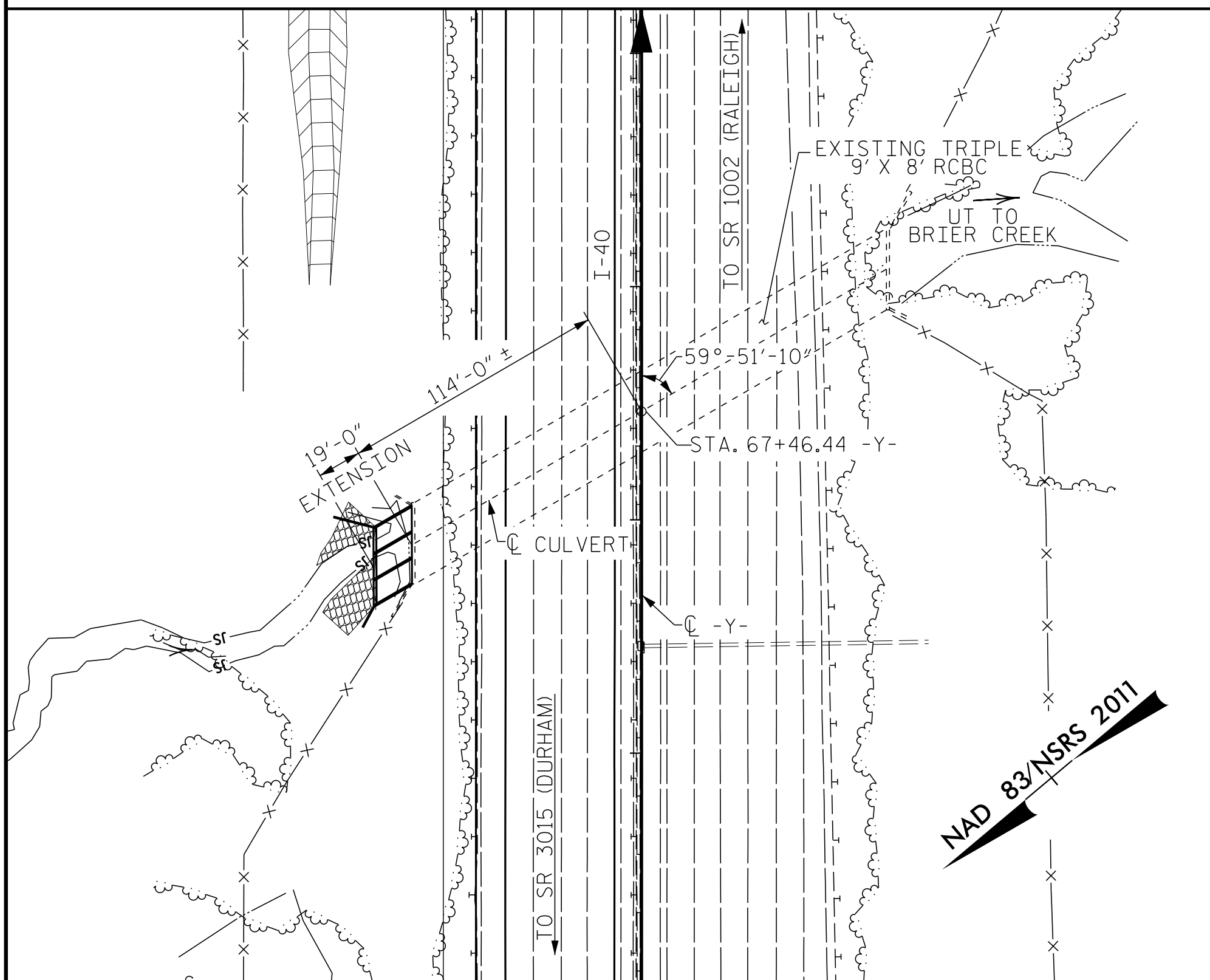


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BENCHMARK: BL-7, REBAR CAP OFF EDGE OF PAVEMENT, -Y- STA. 66+32.77, 73.10' LT., EL. 301.57
N767283.6825, E2056429.3360



LOCATION SKETCH

ROADWAY DATA

GRADE POINT ELEV. @ STA 67+46.44 -Y- = 302.89
BED ELEV. @ STATION 67+46.44 -Y- = 281.12
ROADWAY SLOPES = 2:1

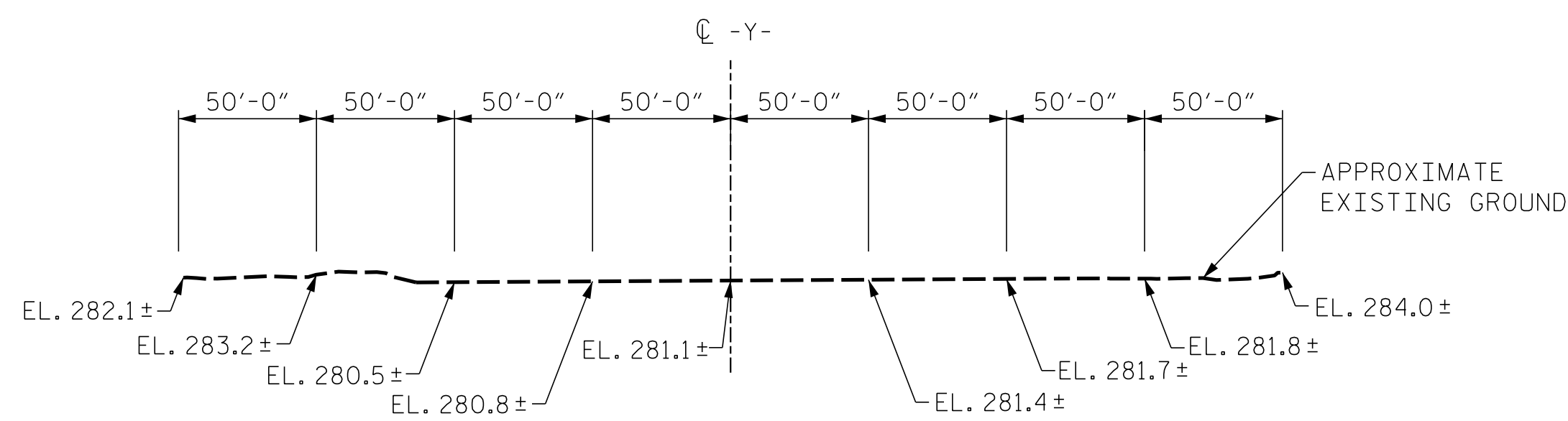
HYDRAULIC DATA

DESIGN DISCHARGE = 600 CFS
FREQUENCY OF DESIGN FLOOD = 50 YEARS
DESIGN HIGH WATER ELEVATION = 286.50
DRAINAGE AREA = 0.56 SQ. MI.
BASIC DISCHARGE (Q100) = 650 CFS
BASIC HIGH WATER ELEVATION = 286.71 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 550 CFS
FREQUENCY OF OVERTOPPING FLOOD = 50- YEAR
OVERTOPPING FLOOD ELEVATION = 286.30
OVERTOPS TO ANOTHER DA STA 59+50 -Y- LT AT ELEVATION 286.2. DESIGN ELEVATION IS CONSERVATIVE.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.



PROFILE ALONG CULVERT

NOTES

ASSUMED LIVE LOAD -----HS20-44 OR ALTERNATE LOADING.
DESIGN FILL TO BOTTOM OF TOP SLAB ----- 8'-11"
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:

1. 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 HEADWALLS.

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

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

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

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

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

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.

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.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

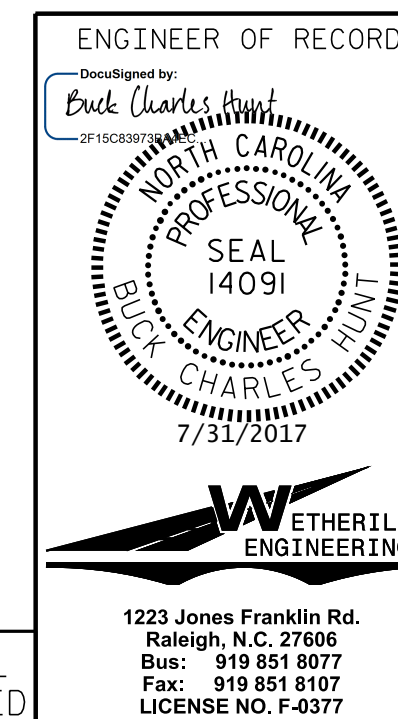
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE	
BARREL @ 2.82	53.5 C.Y.
WINGS ETC.	18.9 C.Y.
TOTAL	72.4 C.Y.
REINFORCING STEEL	
BARREL	9432 LBS.
WINGS ETC.	833 LBS.
TOTAL	10265 LBS.
CULVERT EXCAVATION	LUMP SUM
FOUNDATION CONDITIONING MAT'L	45 TONS

PROJECT NO. I-5506
WAKE COUNTY
STATION: 67+46.44 -Y-

BRIDGE NO. 54



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BARREL STANDARD
TRIPLE 9 FT. X 8 FT.
CONCRETE BOX CULVERT
EXTENSION
59°-51'-10" SKEW

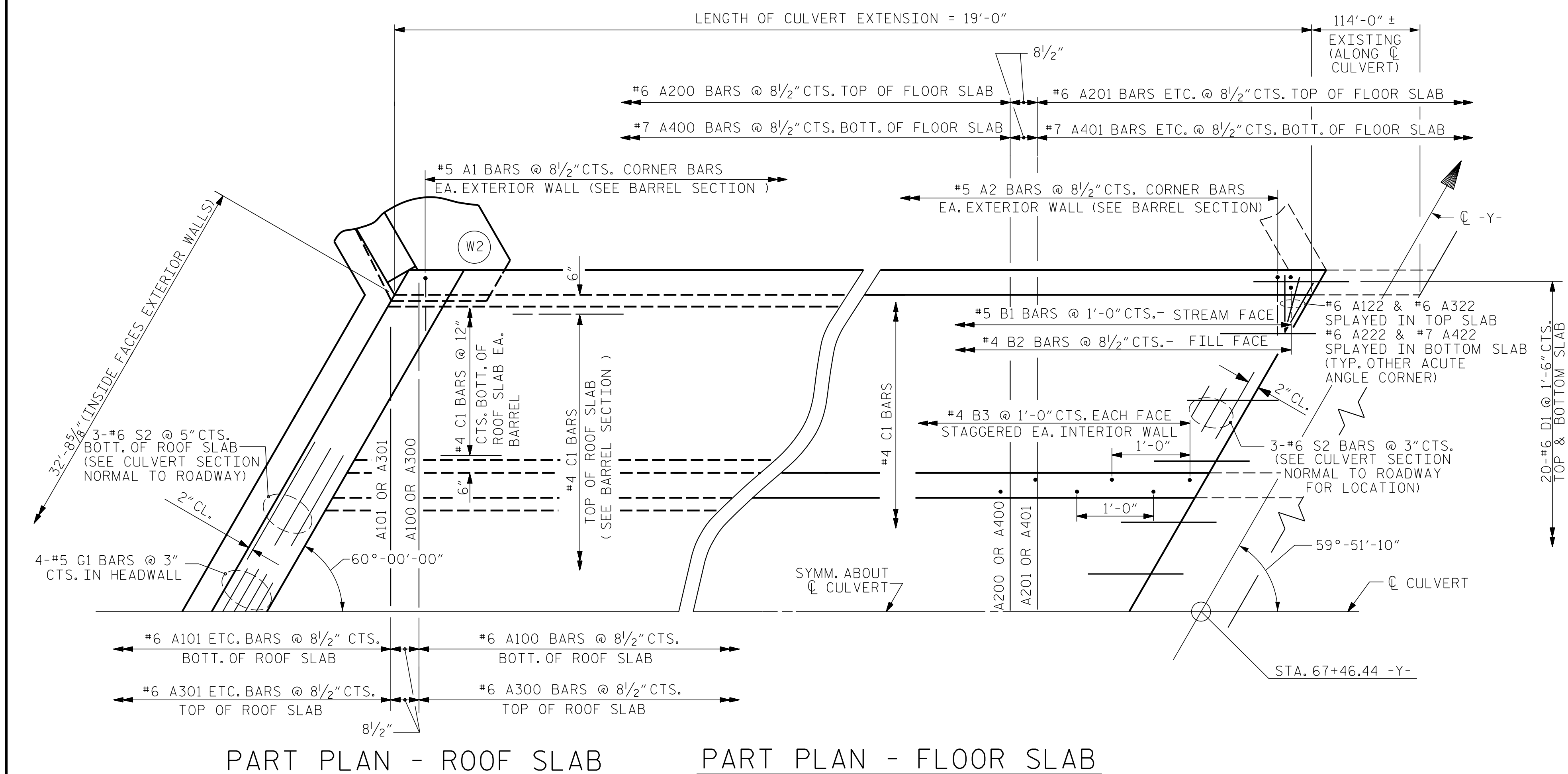
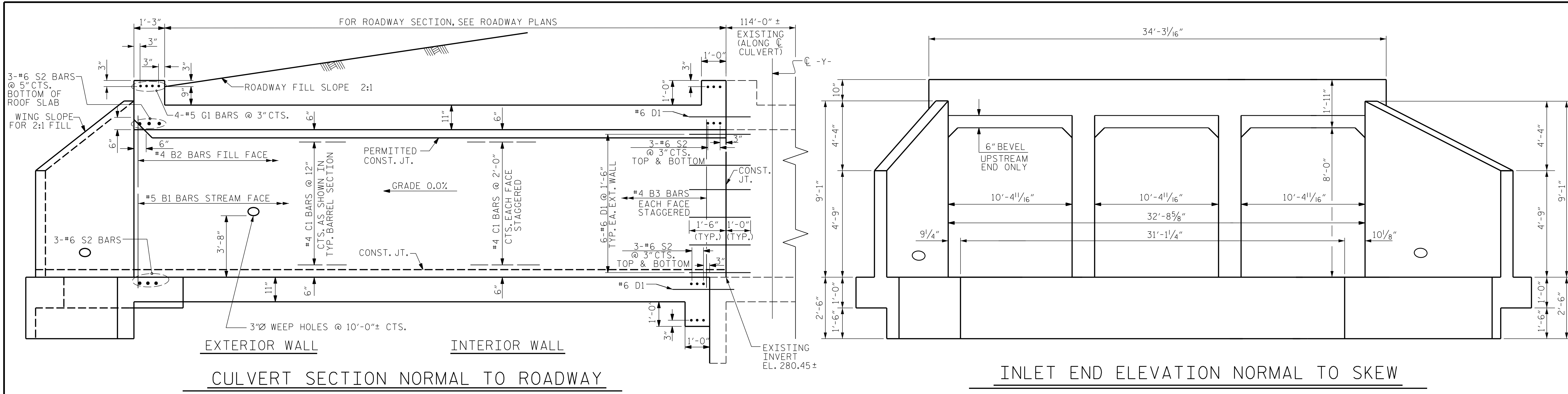
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2			4		

C-1
TOTAL SHEETS 4

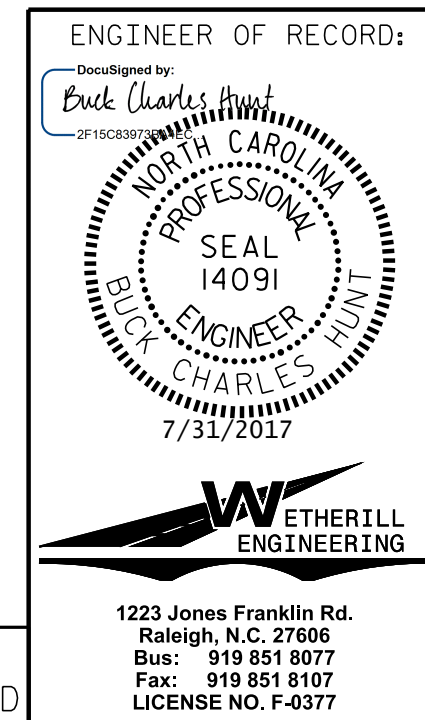
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Fax: 919 851 8107
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STD. NO. CB33A



PROJECT NO. I-5506
WAKE COUNTY
 STATION: 67+46.44 -Y-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BARREL STANDARD
 TRIPLE 9 FT. X 8 FT.
 CONCRETE BOX CULVERT
 EXTENSION
 59°-51'-10" SKEW

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

DRAWN BY: G. WILSON DATE: 2/7/17
 CHECKED BY: B.C. HUNT DATE: 3/27/17

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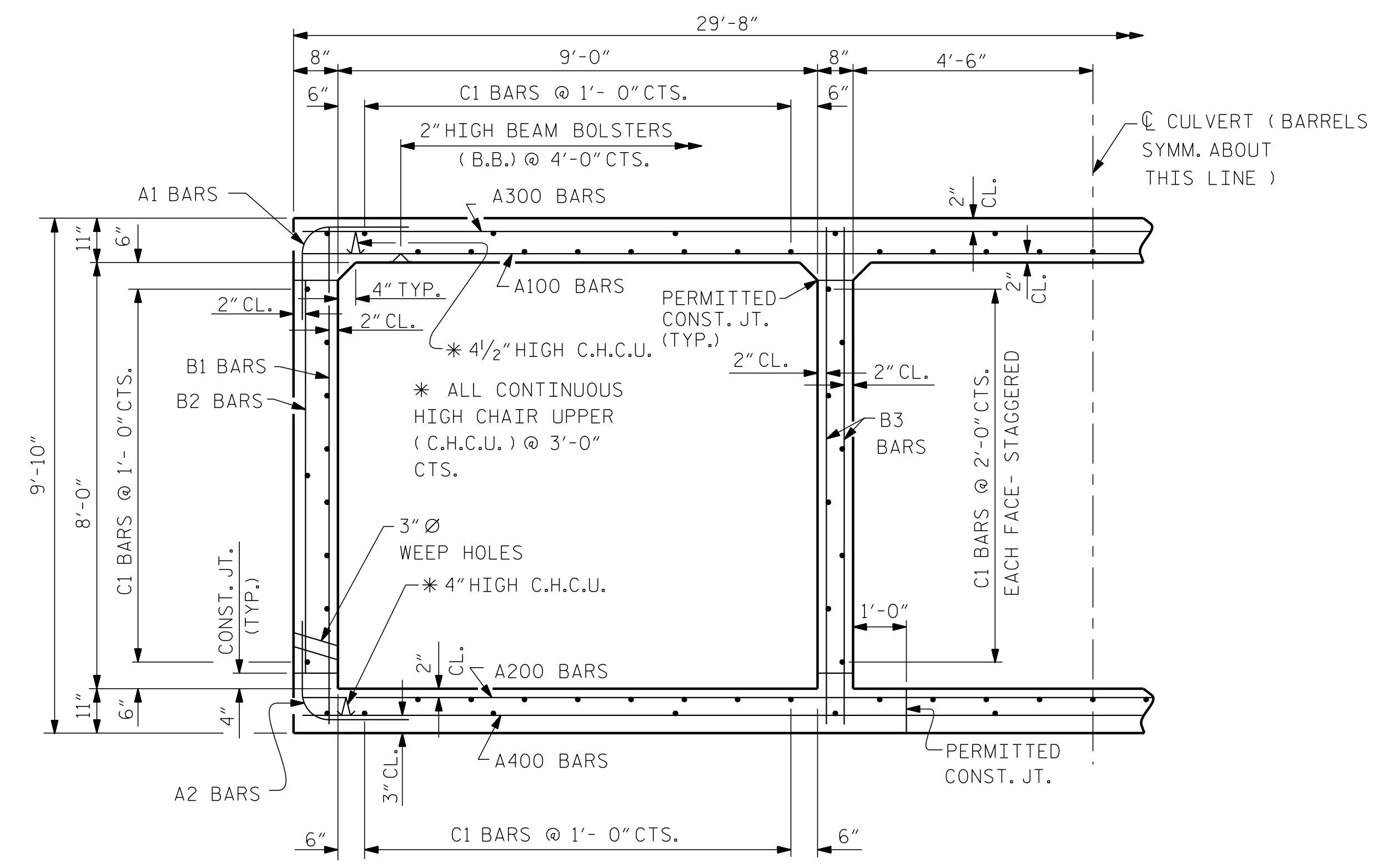
BARREL REINFORCING STEEL

BAR	NO	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
A1	54	5	1	5'-9"	324	A300	3	6	STR	29'-3"	132	B1	38	5	STR	9'-5"	373
A2	54	5	1	5'-8"	319	A301	2	6	STR	28'-3"	85	B2	54	4	STR	7'-4"	265
						A302	2	6	STR	27'-0"	81	B3	74	4	STR	9'-5"	465
A100	3	6	STR	29'-3"	132	A303	2	6	STR	25'-10"	78						
A101	2	6	STR	28'-3"	85	A304	2	6	STR	24'-7"	74						
A102	2	6	STR	27'-0"	81	A305	2	6	STR	23'-4"	70						
A103	2	6	STR	25'-10"	78	A306	2	6	STR	22'-2"	67						
A104	2	6	STR	24'-7"	74	A307	2	6	STR	20'-11"	63						
A105	2	6	STR	23'-4"	70	A308	2	6	STR	19'-8"	59						
A106	2	6	STR	22'-2"	67	A309	2	6	STR	18'-5"	55						
A107	2	6	STR	20'-11"	63	A310	2	6	STR	17'-3"	52						
A108	2	6	STR	19'-8"	59	A311	2	6	STR	16'-0"	48						
A109	2	6	STR	18'-5"	55	A312	2	6	STR	14'-9"	44						
A110	2	6	STR	17'-3"	52	A313	2	6	STR	13'-6"	41						
A111	2	6	STR	16'-0"	48	A314	2	6	STR	12'-4"	37						
A112	2	6	STR	14'-9"	44	A315	2	6	STR	11'-1"	33						
A113	2	6	STR	13'-6"	41	A316	2	6	STR	9'-10"	30						
A114	2	6	STR	12'-4"	37	A317	2	6	STR	8'-8"	26						
A115	2	6	STR	11'-1"	33	A318	2	6	STR	7'-5"	22						
A116	2	6	STR	9'-10"	30	A319	2	6	STR	6'-2"	19						
A117	2	6	STR	8'-8"	26	A320	2	6	STR	4'-11"	15						
A118	2	6	STR	7'-5"	22	A321	2	6	STR	3'-9"	11						
A119	2	6	STR	6'-2"	19	A322	6	6	STR	2'-6"	23						
A120	2	6	STR	4'-11"	15												
A121	2	6	STR	3'-9"	11												
A122	6	6	STR	2'-6"	23												

REINFORCING STEEL 9432 LBS

SPLICE LENGTHS CHART

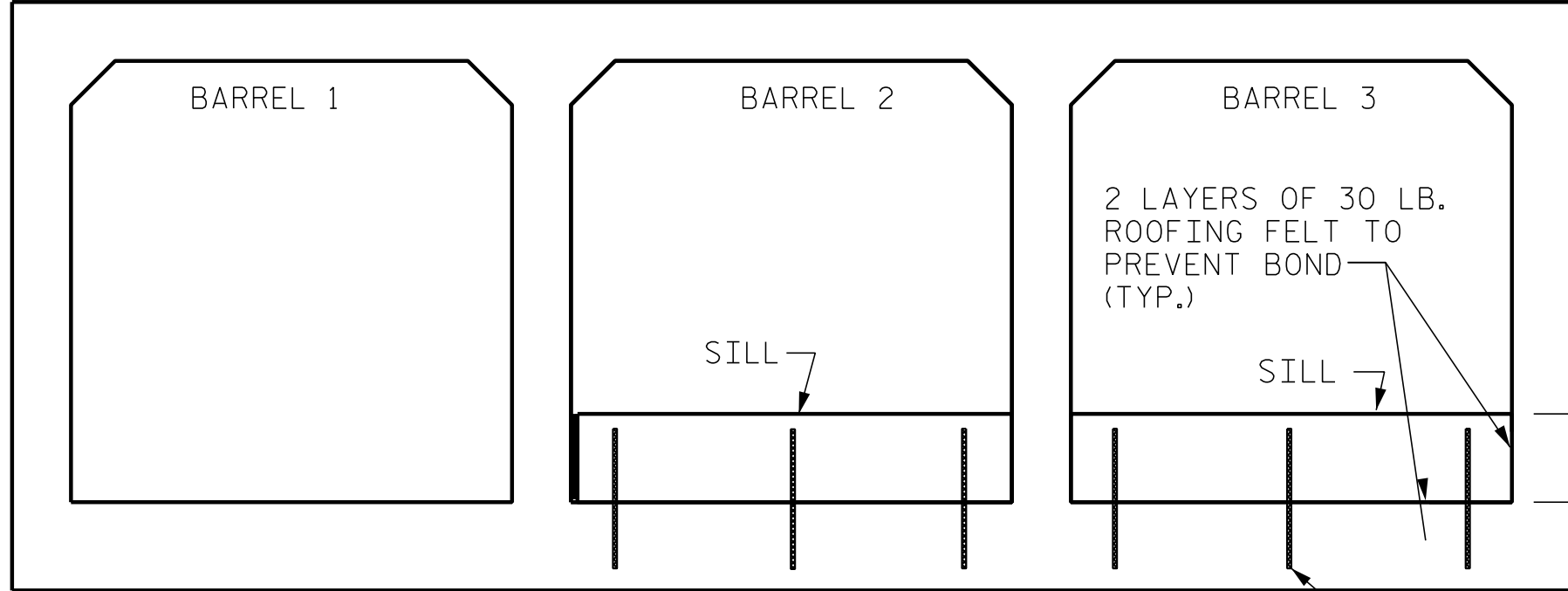
BAR	SIZE	SPLICE LENGTH
A200	#6	2'-9"
A400	#7	3'-9"
B1	#5	2'-2"
B3	#4	1'-9"
C1	#4	1'-11"



RIGHT ANGLE SECTION OF BARREL

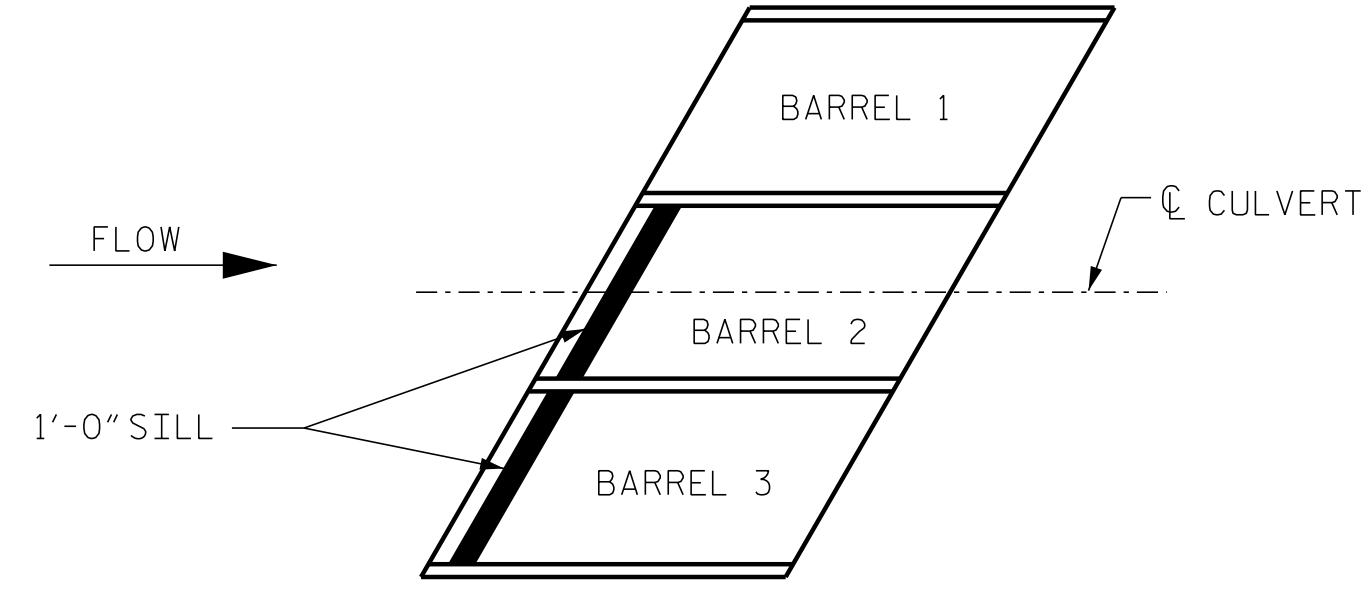
THERE ARE 108 #4 BARS IN SECTION OF BARREL.

A200	3	6	STR	29'-3"	132	A400	3	7	STR	29'-3"	179
A201	2	6	STR	28'-3"	85	A401	2	7	STR	28'-3"	115
A202	2	6	STR	27'-0"	81	A402	2	7	STR	27'-0"	110
A203	2	6	STR	25'-10"	78	A403	2	7	STR	25'-10"	106
A204	2	6	STR	24'-7"	74	A404	2	7	STR	24'-7"	100
A205	2	6	STR	23'-4"	70	A405	2	7	STR	23'-4"	95
A206	2	6	STR	22'-2"	67	A406	2	7	STR	22'-2"	91
A207	2	6	STR	20'-11"	63	A407	2	7	STR	20'-11"	86
A208	2	6	STR	19'-8"	59	A408	2	7	STR	19'-8"	80
A209	2	6	STR	18'-5"	55	A409	2	7	STR	18'-5"	75
A210	2	6	STR	17'-3"	52	A410	2	7	STR	17'-3"	71
A211	2	6	STR	16'-0"	48	A411	2	7	STR	16'-0"	65
A212	2	6	STR	14'-9"	44	A412	2	7	STR	14'-9"	60
A213	2	6	STR	13'-6"	41	A413	2	7	STR	13'-6"	55
A214	2	6	STR	12'-4"	37	A414	2	7	STR	12'-4"	50
A215	2	6	STR	11'-1"	33	A415	2	7	STR	11'-1"	45
A216	2	6	STR	9'-10"	30	A416	2	7	STR	9'-10"	40
A217	2	6	STR	8'-8"	26	A417	2	7	STR	8'-8"	35
A218	2	6	STR	7'-5"	22	A418	2	7	STR	7'-5"	30
A219	2	6	STR	6'-2"	19	A419	2	7	STR	6'-2"	25
A220	2	6	STR	4'-11"	15	A420	2	7	STR	4'-11"	20
A221	2	6	STR	3'-9"	11	A421	2	7	STR	3'-9"	15
A222	6	6	STR	2'-6"	23	A422	6	7	STR	2'-6"	31



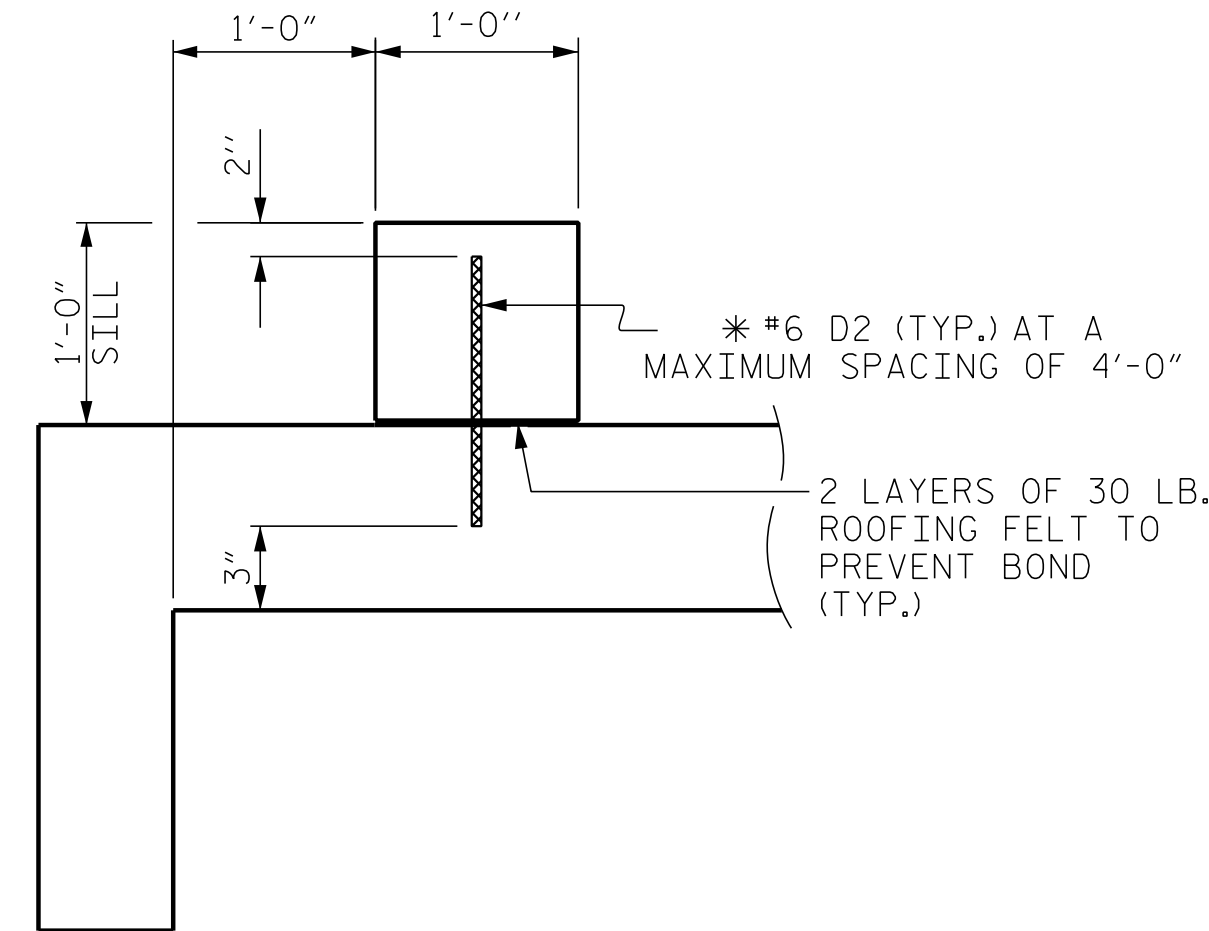
INLET ELEVATION

LOOKING DOWNSTREAM



FLOOR PLAN

SHOWING PLACEMENT OF SILLS



SECTION THROUGH SILL

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

CULVERT SILL DETAILS

PROJECT NO. I-5506
WAKE COUNTY
 STATION: 67+46.44 -Y-

ENGINEER OF RECORD:
 Buck Charles Hunt
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 14091
 BUCK CHARLES HUNT
 7/31/2017
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

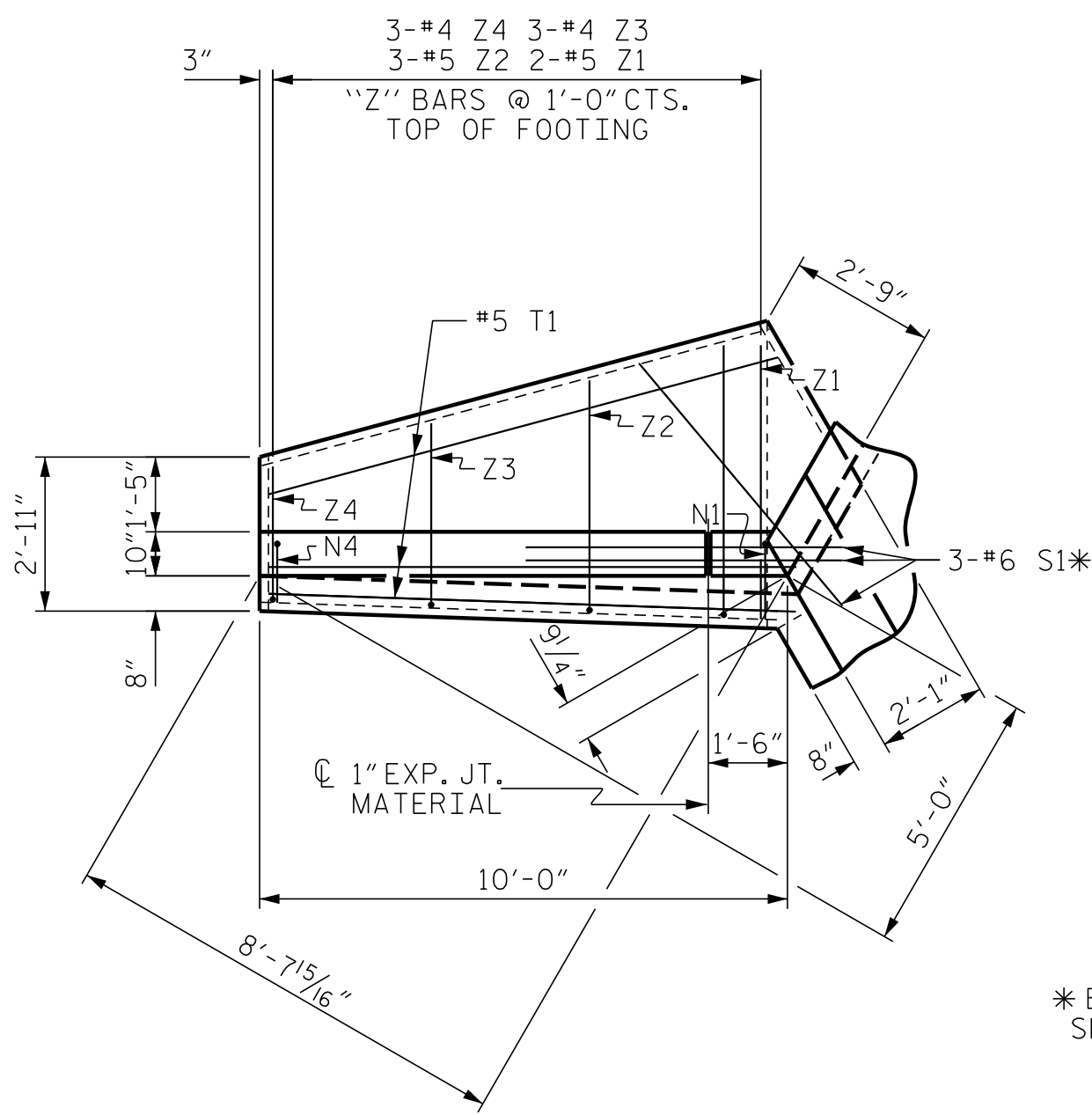
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BARREL STANDARD
 TRIPLE 9 FT. X 8 FT.
 CONCRETE BOX CULVERT
 EXTENSION
 59°-51'-10" SKEW

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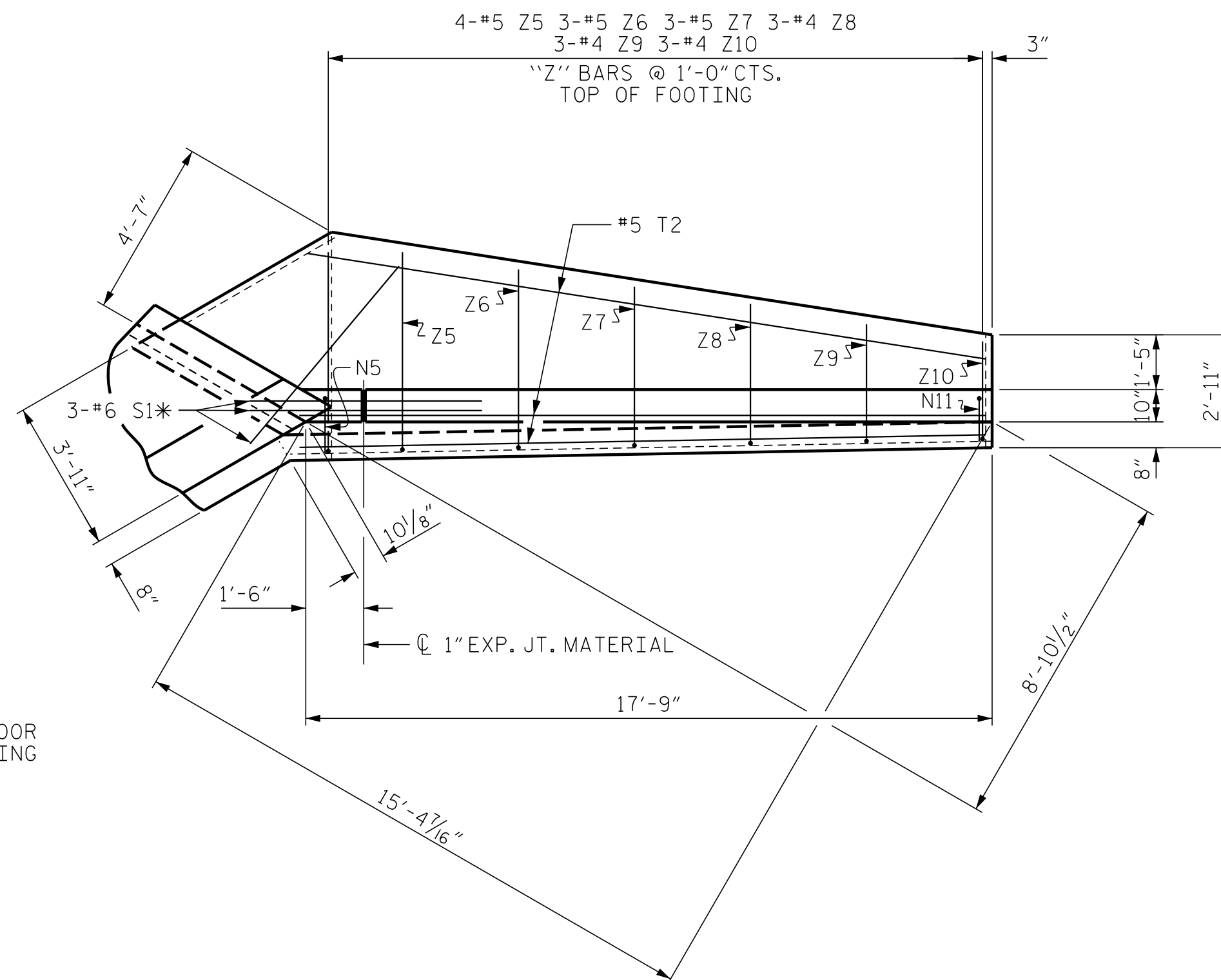
TOTAL SHEETS 4

DRAWN BY: G. WILSON DATE: 2/8/17
 CHECKED BY: B.C. HUNT DATE: 3/27/17

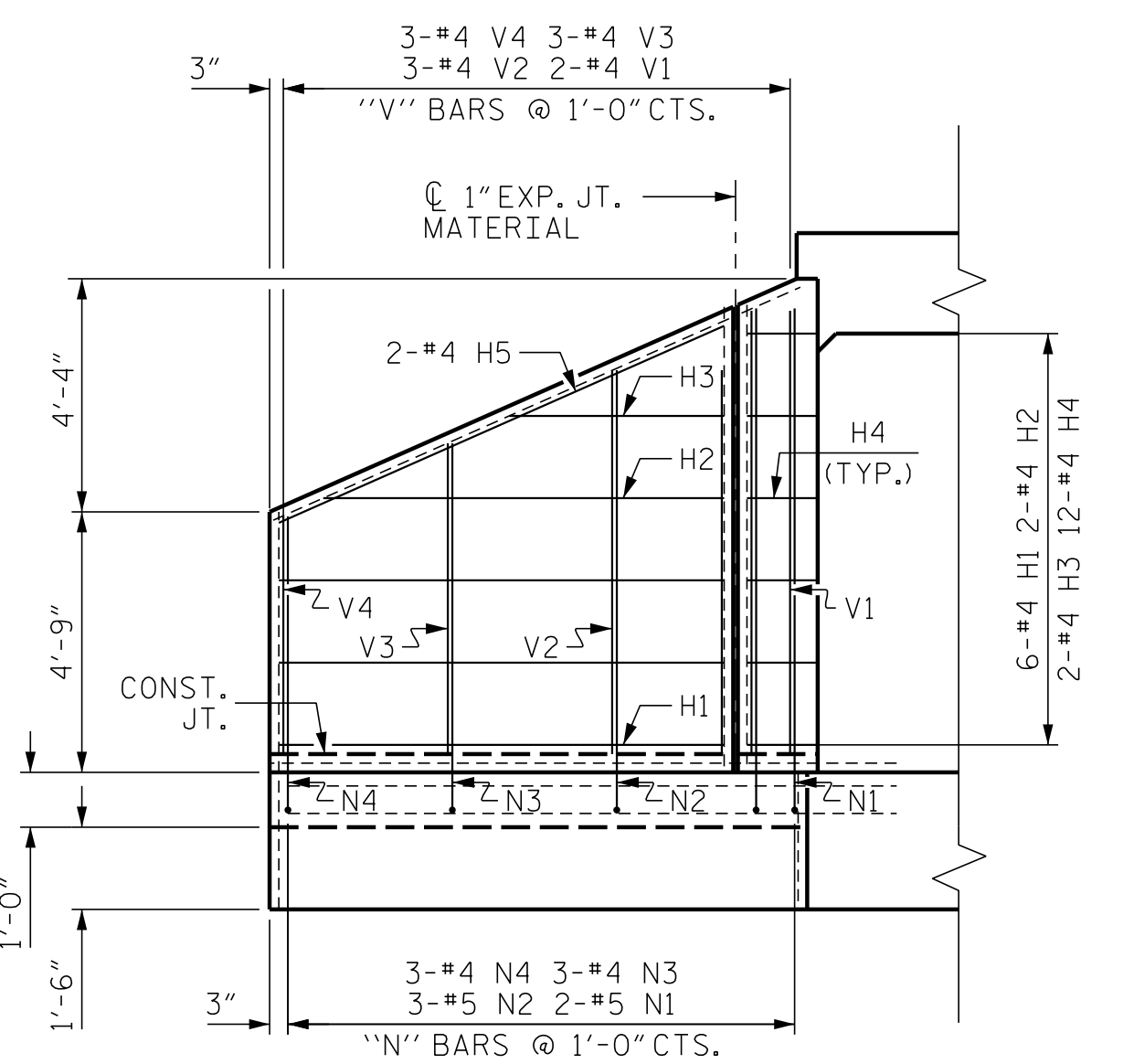
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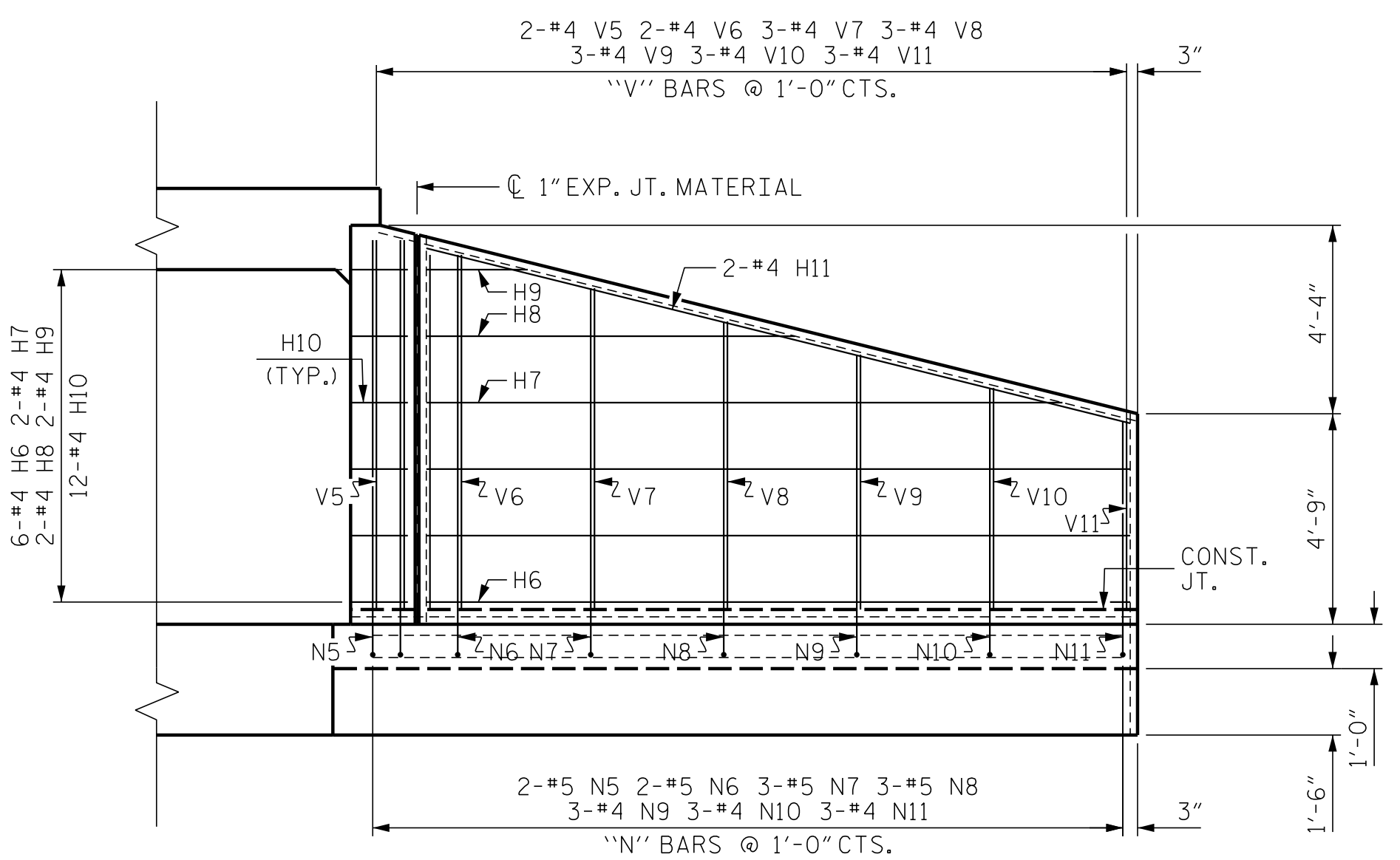
PLAN W2



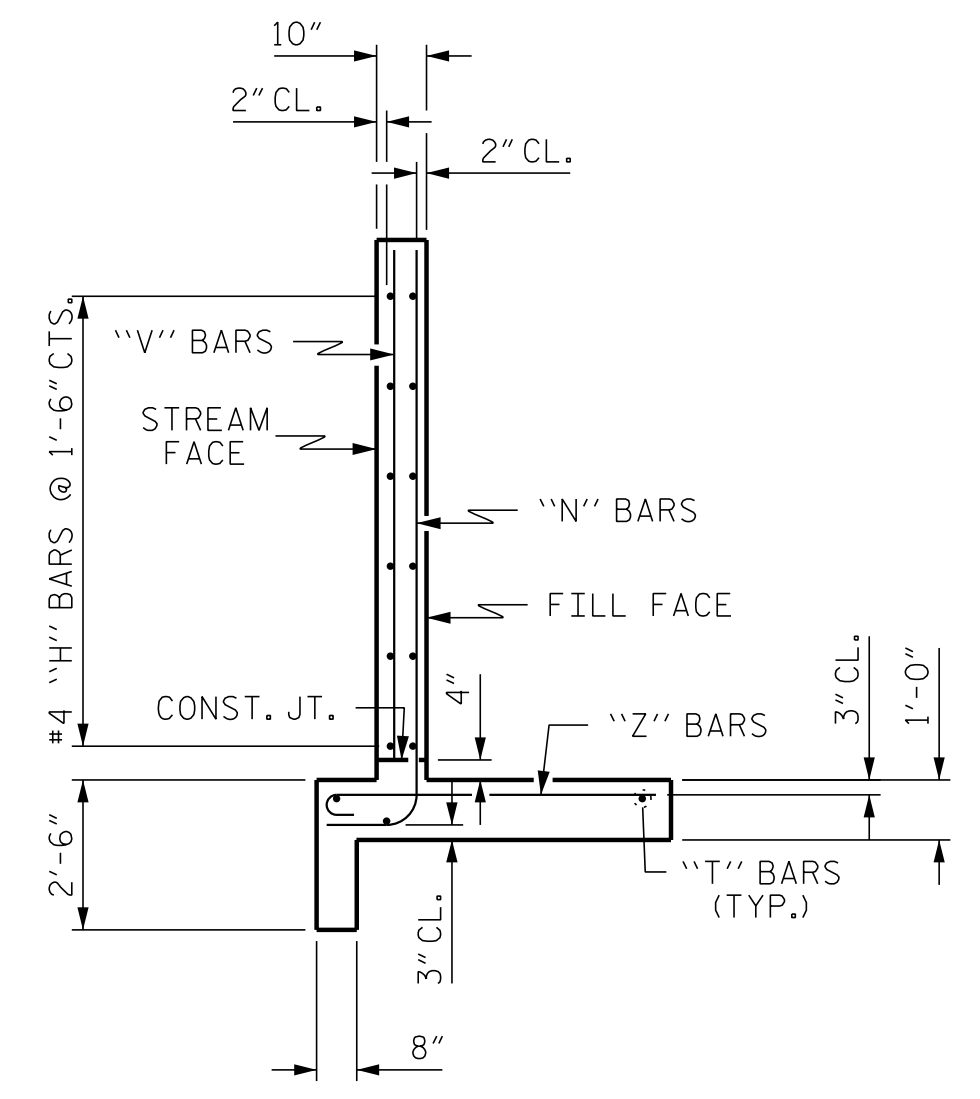
PLAN W1



ELEVATION W2



ELEVATION W1



TYPICAL WING SECTION

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

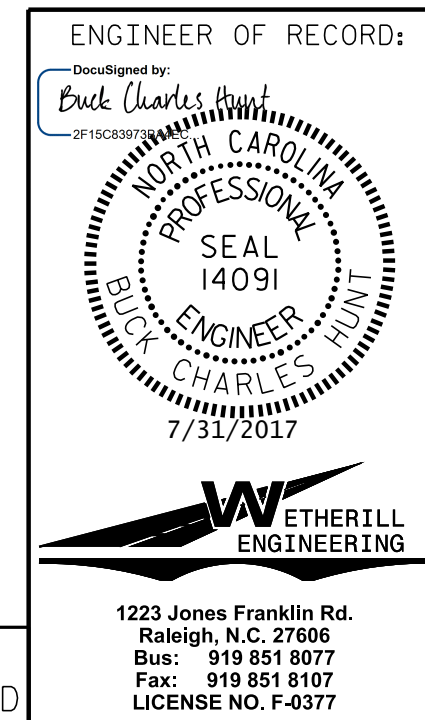
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	6	#4	STR	8'-1"	32
H2	2	#4	STR	7'-3"	10
H3	2	#4	STR	3'-11"	5
H4	12	#4	1	3'-3"	26
H5	2	#4	STR	8'-10"	12
H6	6	#4	STR	15'-10"	63
H7	2	#4	STR	14'-4"	19
H8	2	#4	STR	8'-3"	11
H9	2	#4	STR	2'-3"	3
H10	12	#4	2	3'-3"	26
H11	2	#4	STR	16'-4"	22
N1	2	#5	3	10'-2"	21
N2	3	#5	3	9'-0"	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 833 LBS
FOR 2 WINGS

CLASS A CONCRETE

2 WINGS	12.2	CY
1 HEADWALL	1.6	CY
1 END CURTAIN WALL	1.9	CY
EDGE BEAMS	2.5	CY
SILLS	0.7	CY
TOTAL	18.9	CY

PROJECT NO. I-5506
WAKE COUNTY
STATION: 67+46.44 -Y-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD WINGS
FOR
CONCRETE BOX CULVERT
H = 8'-0" SLOPE = 2:1
60° OR 120° SKEW

REVISIONS						SHEET NO.
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2			4			4

ASSEMBLED BY: G. WILSON DATE: 2/6/17
CHECKED BY: B.C. HUNT DATE: 3/27/17

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