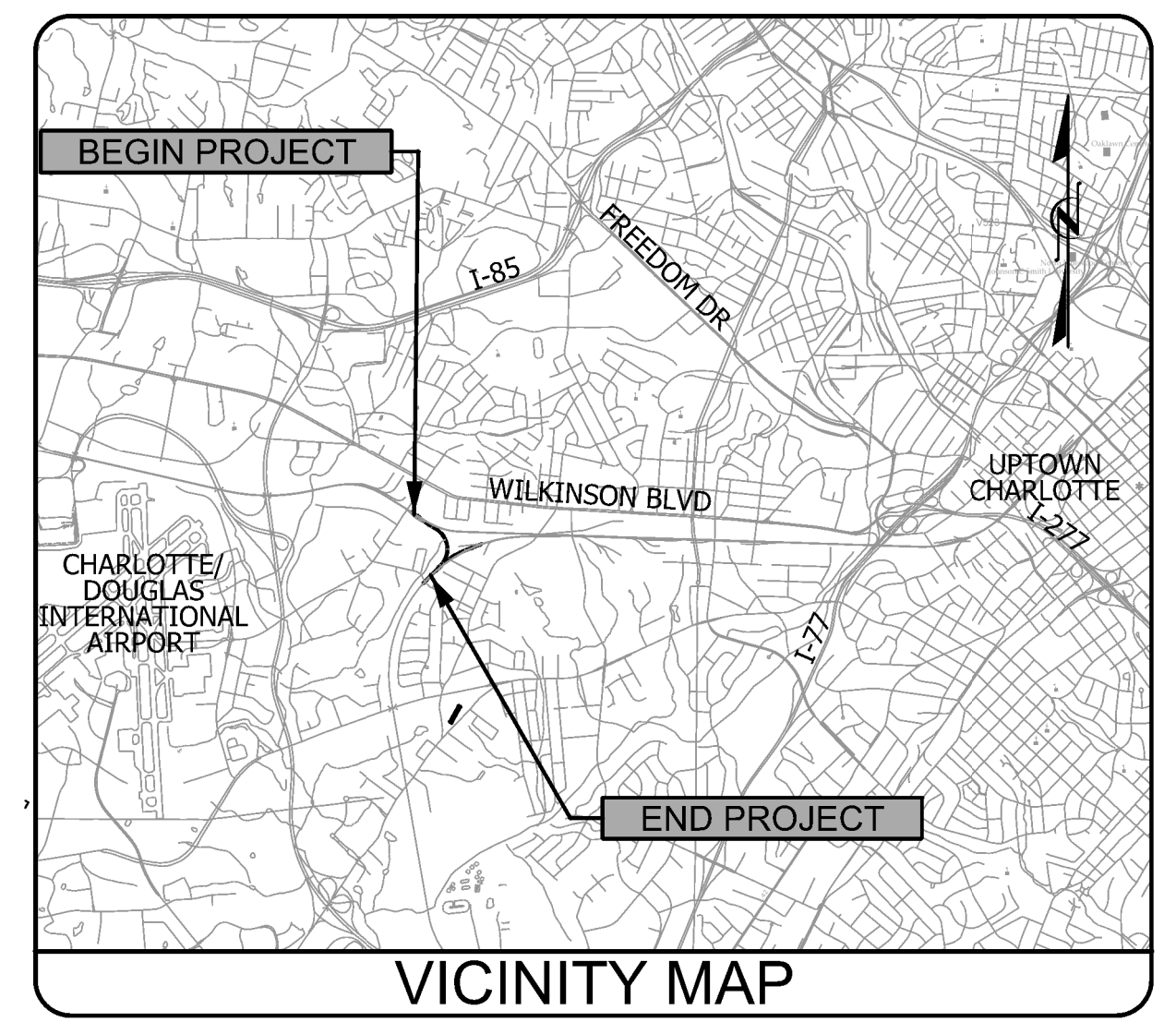


TIP PROJECT: P-5705A

CONTRACT: C204176

SEE SHEET 1A FOR INDEX OF SHEETS

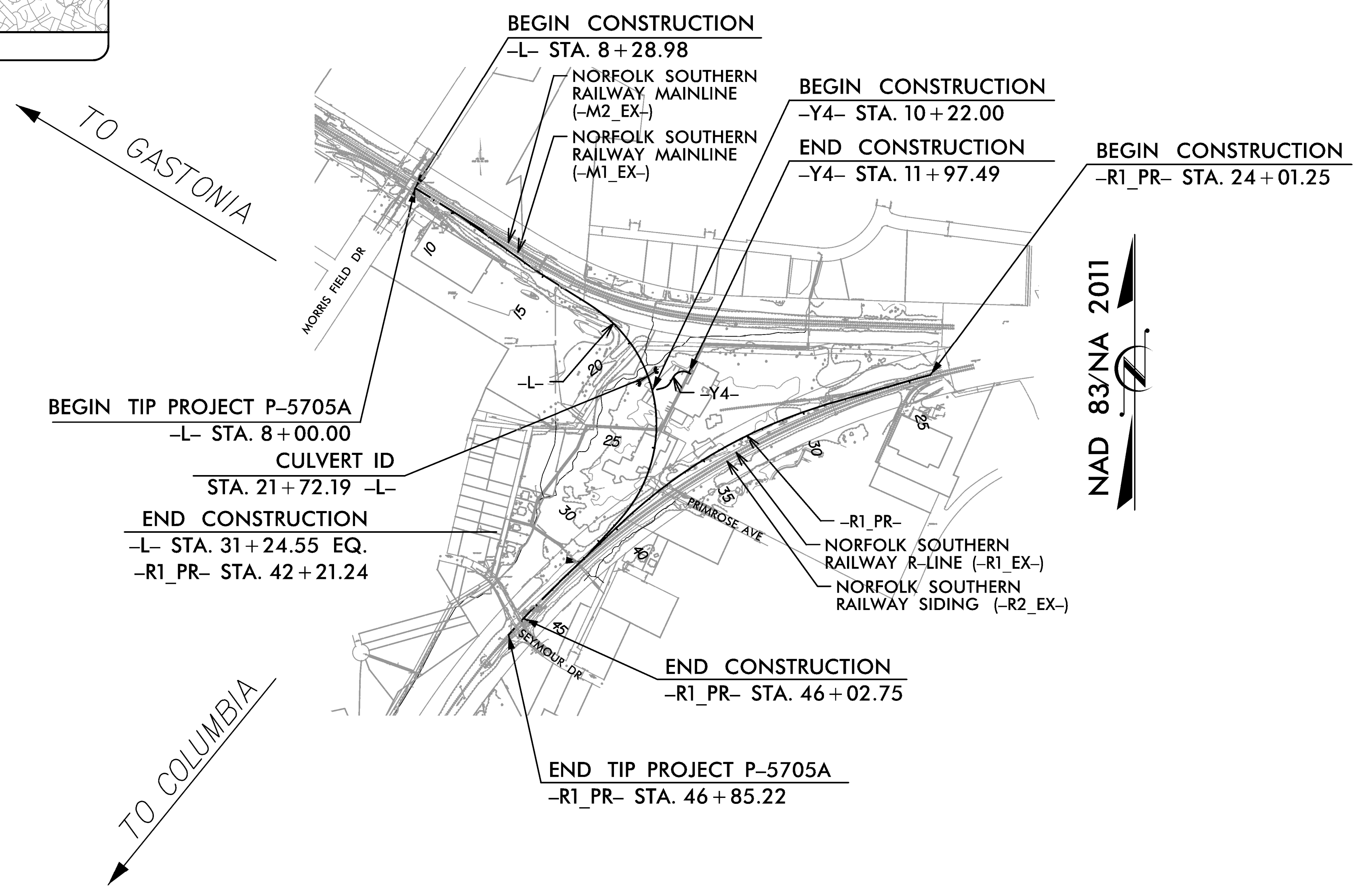


STATE OF NORTH CAROLINA
RAIL DIVISION

MECKLENBURG COUNTY

**LOCATION: CHARLOTTE GATEWAY STATION - RAIL (STI)
WYE CONNECTION TRACK AT CHARLOTTE JUNCTION
TYPE OF WORK: CULVERT, DRAINAGE, GRADING**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-5705A	C1-0	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
44475.1.1		P.E.	
44475.2.1		ROW / UTIL P.E.	
44475.3.1		CONST./UTIL CONST.	



PROJECT LENGTH	
LENGTH OF RAIL TIP PROJECT	0.873 MILES
LENGTH OF STRUCTURES TIP PROJECT	0.000 MILES
TOTAL LENGTH OF RAIL TIP PROJECT	0.873 MILES
LENGTH MEASURED ALONG -L- AND -R1_PR-	

NCDOT CONTACT: BRAD SMYTHE, P.E.
NCDOT PROJECT MANAGER

HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
03/09/2018

LETTING DATE:
07/18/2023

COREY VERNIER, P.E.
RAIL PROJECT ENGINEER

DAVID HAWKINS, P.E.
STRUCTURE PROJECT ENGINEER

BRAD SMYTHE, P.E.
NCDOT PROJECT MANAGER

STRUCTURES ENGINEER

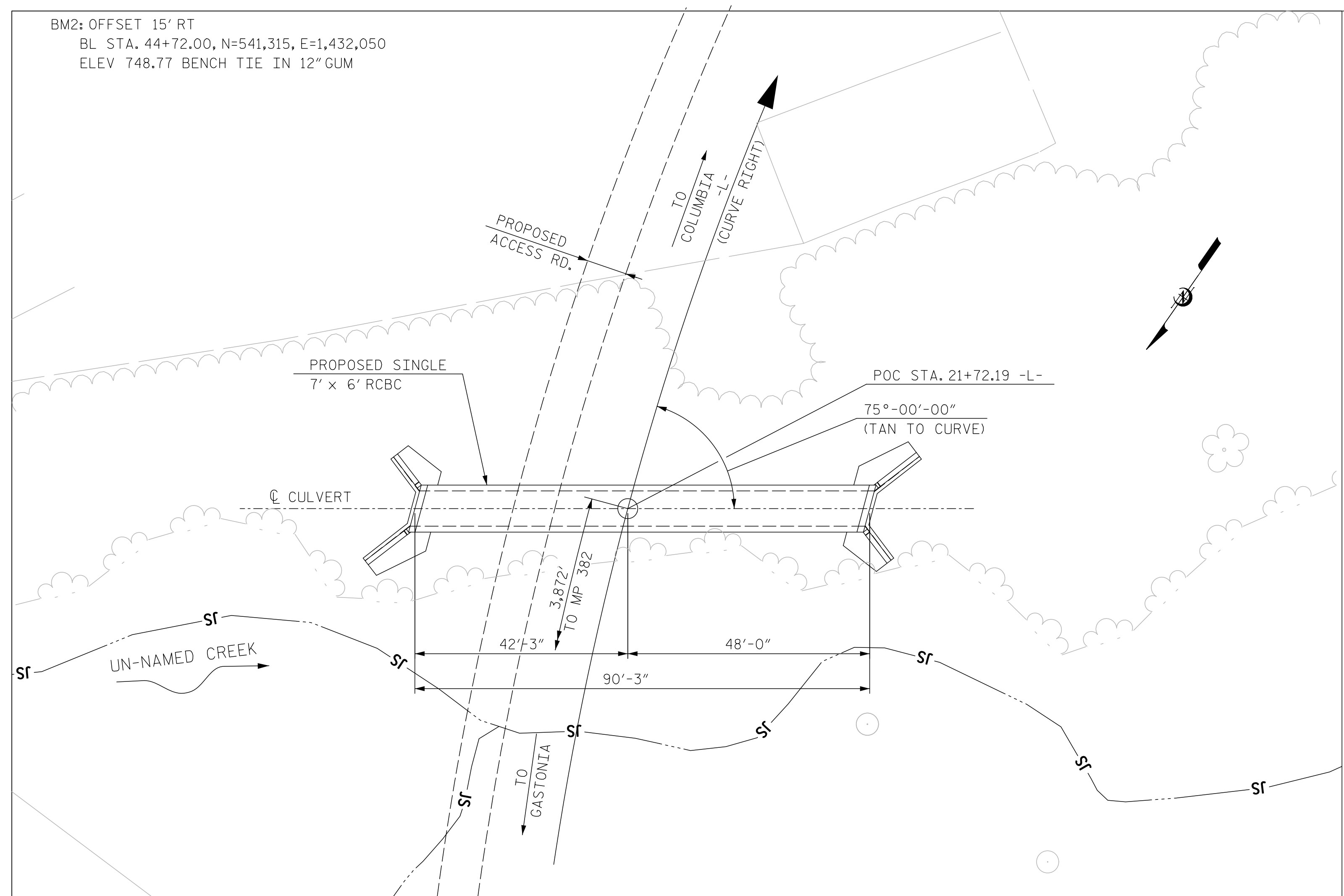
DAVID W. HAWKINS
REGISTERED PROFESSIONAL ENGINEER
SEAL 27812
5/25/2023

SIGNATURE: _____ P.E.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

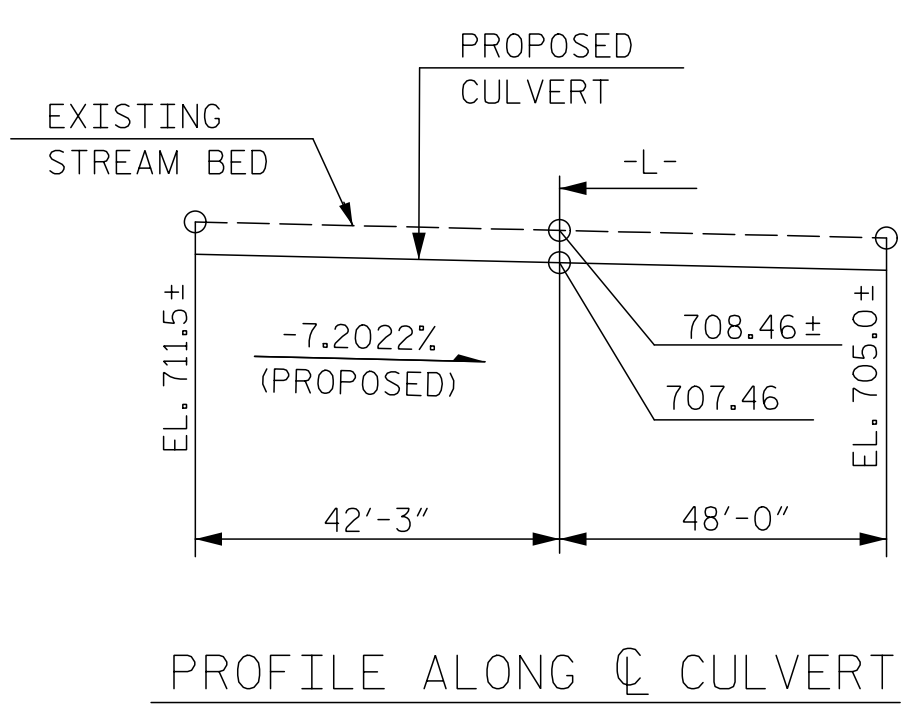
NC DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
DESIGN AND CONSTRUCTION

BM2: OFFSET 15' RT
 BL STA. 44+72.00, N=541,315, E=1,432,050
 ELEV 748.77 BENCH TIE IN 12" GUM

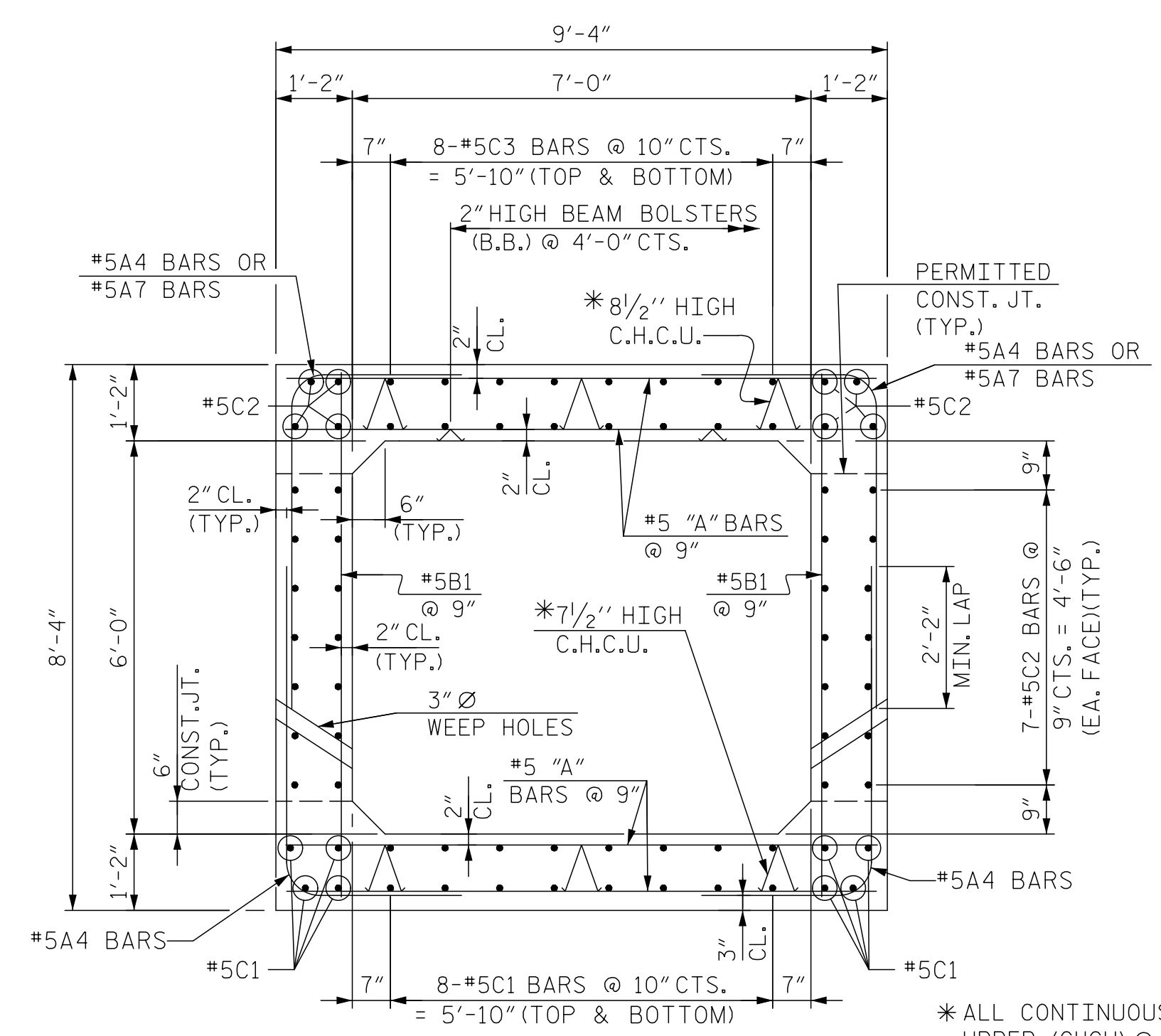


LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.



PROFILE ALONG CULVERT



RIGHT ANGLE SECTION OF BARREL
 THERE ARE 76 "C" BARS IN SECTION OF BARREL

* ALL CONTINUOUS HIGH CHAIR UPPER (CHCU) @ 3'-0" CTS.

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.

NOTES

ASSUMED LIVE LOAD = AREMA E80.
 THIS CULVERT HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITION OF AREMA'S MANUAL FOR RAILWAY ENGINEERING, VOL. 2, STRUCTURES.
 DESIGN FILL - 14.23' (BASE OF RAIL TO TOP OF STRUCTURE).
 FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.
 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 OTHER DESIGN DATA AND NOTES SEE STRUCTURE STANDARD NOTES 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 FOOTING AND FLOOR SLAB INCLUDING 6" OF ALL VERTICAL WALLS.
 2) THE REMAINING PORTIONS OF WALL, AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

AT THE CONTRACTOR'S OPTION, THE CONTRACTOR MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL 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 BACKFILLING OF EXTERIOR WALLS SHALL BE PERMITTED UNTIL TOP SLAB HAS BEEN PLACED AND CURED. CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARILY BRACING WALLS UNTIL TOP SLAB IS COMPLETED.

HYDRAULIC DATA

DESIGN DISCHARGE	270 CFS
FREQUENCY OF DESIGN FLOOD	100 YR.
DESIGN HIGH WATER ELEV.	716.4
DRAINAGE AREA	102 ACRES
BASIC DISCHARGE (Q100)	270 CFS
BASIC HIGH WATER ELEV.	716.4

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	688.6 CFS
FREQUENCY OF OVERTOPPING FLOOD	> 500 YR.
OVERTOPPING FLOOD ELEV.	726.8

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 DETAILS SHEET.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE USED IN THE BARREL, SPACED TO LIMIT THE POURS TO A MAXIMUM OF 70 FT. LOCATION OF JOINTS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER. CONSTRUCTION JOINTS SHALL BE A MINIMUM OF 10' FROM THE END OF THE BARREL AND SHALL NOT BE LOCATED WITHIN 14' NORMAL OF PROPOSED TRACK LOCATION.

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.

ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES", JANUARY 2018, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (HEREIN CALLED STANDARD SPECIFICATIONS), EXCEPT AS NOTED HEREIN, ELSEWHERE ON PLANS, OR IN THE SPECIAL PROVISIONS.

ALL CONCRETE SHALL BE 4,500 PSI CLASS AA CONCRETE WITH NO. 57 OR 67 COARSE AGGREGATE AND SHALL BE AIR-ENTRAINED. MINIMUM CEMENT CONTENT PER CUBIC YARD OF CONCRETE SHALL BE 6.5 BAGS. NO SUBSTITUTION OF FLYASH, BLAST FURNACE SLAG OR OTHER MATERIAL WILL BE PERMITTED IN MEETING THIS MINIMUM CEMENT REQUIREMENT. CHAMFER ALL EXPOSED EDGES AND CORNERS 3/4" EXCEPT AS NOTED. THE USE OF GROUND GRANULATED BLAST FURNACE SLAG IS NOT PERMITTED IN THIS STRUCTURE.

CONTROL OF WORK: ALL WORK INVOLVED IN THE CONSTRUCTION OF THE RAILWAY STRUCTURE SHALL BE PERFORMED SATISFACTORY TO THE ENGINEER AND/OR NORFOLK SOUTHERN RAILWAY COMPANY. ALL METHODS OF HANDLING THE WORK AFFECTING THE SAFETY OF RAIL OPERATIONS MUST BE APPROVED BY THE RAILWAY COMPANY BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. RAIL TRAFFIC SHALL, AT ALL TIMES, BE MAINTAINED AND PROTECTED. THE CONTRACTOR SHALL NOT AT ANY TIME DELAY OR INTERFERE WITH RAIL OPERATIONS.

FOR PORTLAND CEMENT, SEE SPECIAL PROVISIONS.

FOR FINE AND COARSE AGGREGATE, SEE SPECIAL PROVISIONS.

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.

GRADE DATA

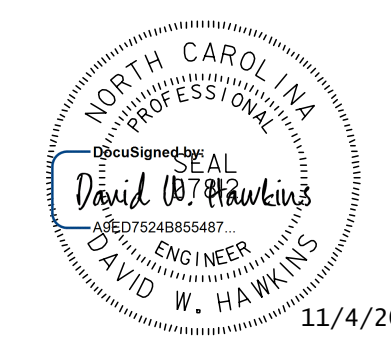
TOP OF RAIL ELEV. @ POC STA. 21+72.19 -L- = 729.50
 CULVERT BED ELEVATION @ STA. 11+00.00 -L- = 707.46
 ROADWAY SLOPES 2:1

TOTAL STRUCTURE QUANTITIES	
CLASS AA CONCRETE	
BARREL @ 1.34 CY/FT	121.3 C.Y.
WING ETC.	19.4 C.Y.
TOTAL	140.7 C.Y.
REINFORCING STEEL	
BARREL @ 18,036 LBS.	
WINGS ETC. @ 2,435 LBS.	
TOTAL	20,471 LBS.
FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	59 TONS
CULVERT EXCAVATION AT POC STATION 21+72.19 -L-	LUMP SUM

PROJECT NO. P-5705A
MECKLENBURG COUNTY
 STATION: 21+72.19 -L-

SHEET 1 OF 5 RR MILEPOST #382

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 LOCATION SKETCH/
 BARREL SECTION FOR
 SINGLE 7 FT. x 6 FT.
 CONCRETE BOX CULVERT
 AT STA. 21+72.19 -L-



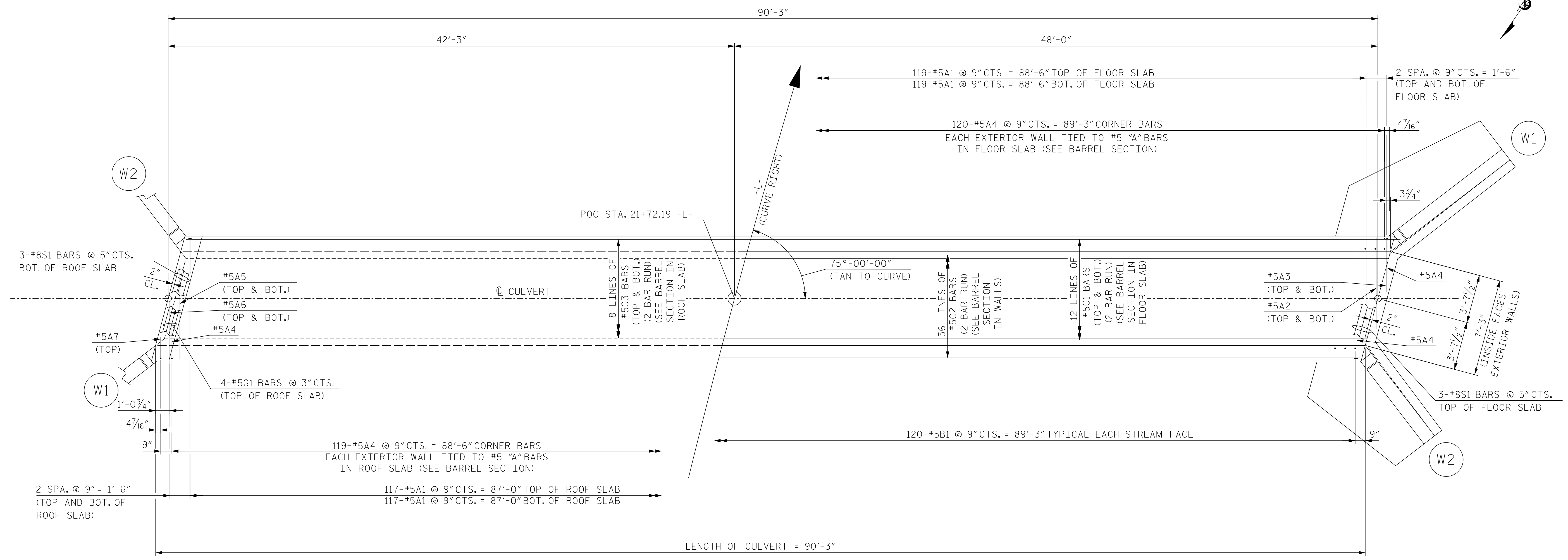
HNTB HNTB NORTH CAROLINA, P.C.
 NC License No. C-1554
 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY: M. WRIGHT	DATE: 11/18
CHECKED BY: N. HART	DATE: 12/18
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 12/18

DWG. NO. 1

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

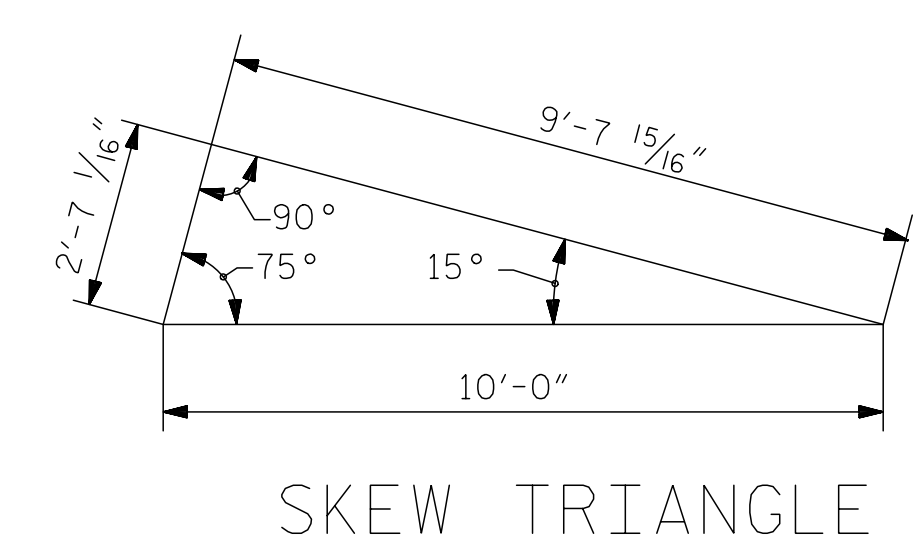
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-1
1			3			TOTAL SHEETS
2			4			6



HALF PLAN - ROOF SLAB

HALF PLAN - FLOOR SLAB

PLAN



SKIEW TRIANGLE

PROJECT NO. P-5705A
MECKLENBURG COUNTY
 STATION: 21+72.19 -L-

SHEET 2 OF 5
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN
 SINGLE 7 FT. x 6 FT.
 CONCRETE BOX CULVERT
 AT STA. 21+72.19 -L-



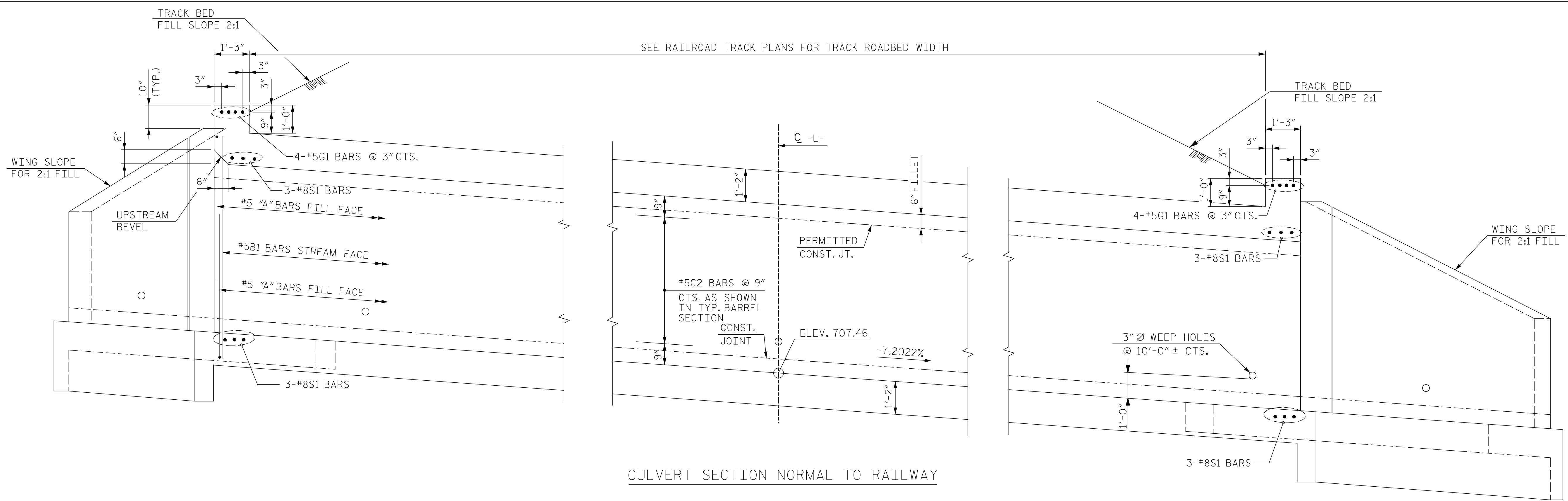
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 NC License No. C-1554
 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

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 CHECKED BY: N. HART DATE: 12/18
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 12/18

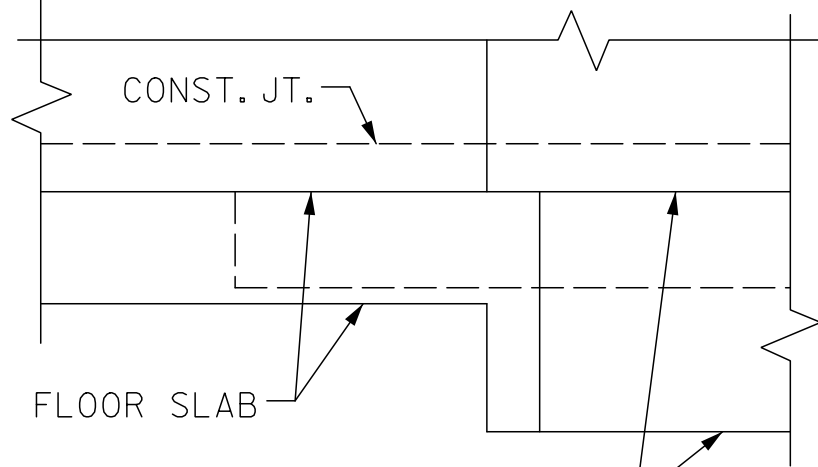
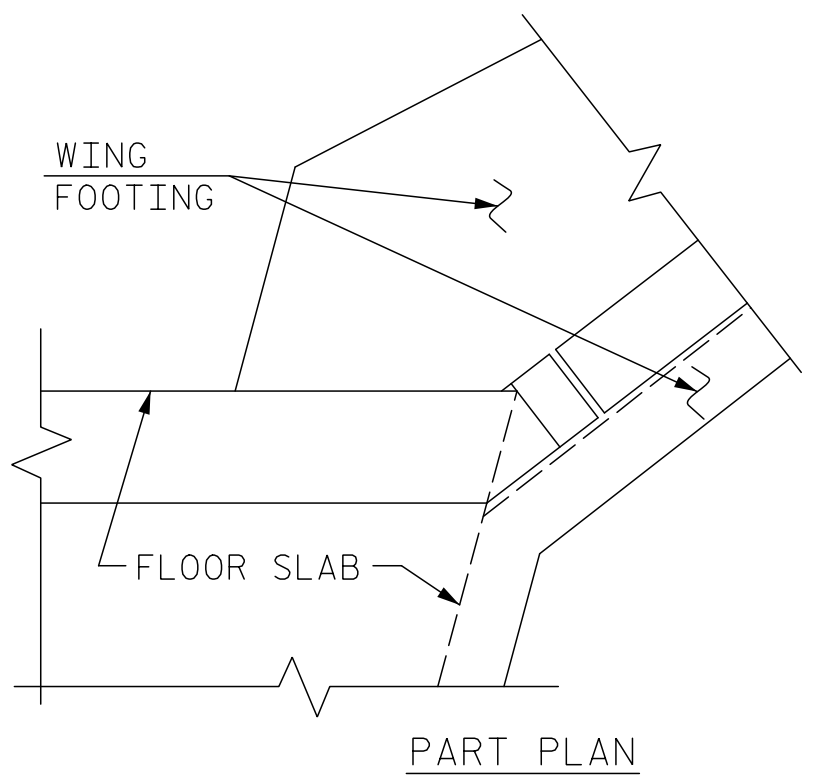
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**DOCUMENT NOT CONSIDERED FINAL
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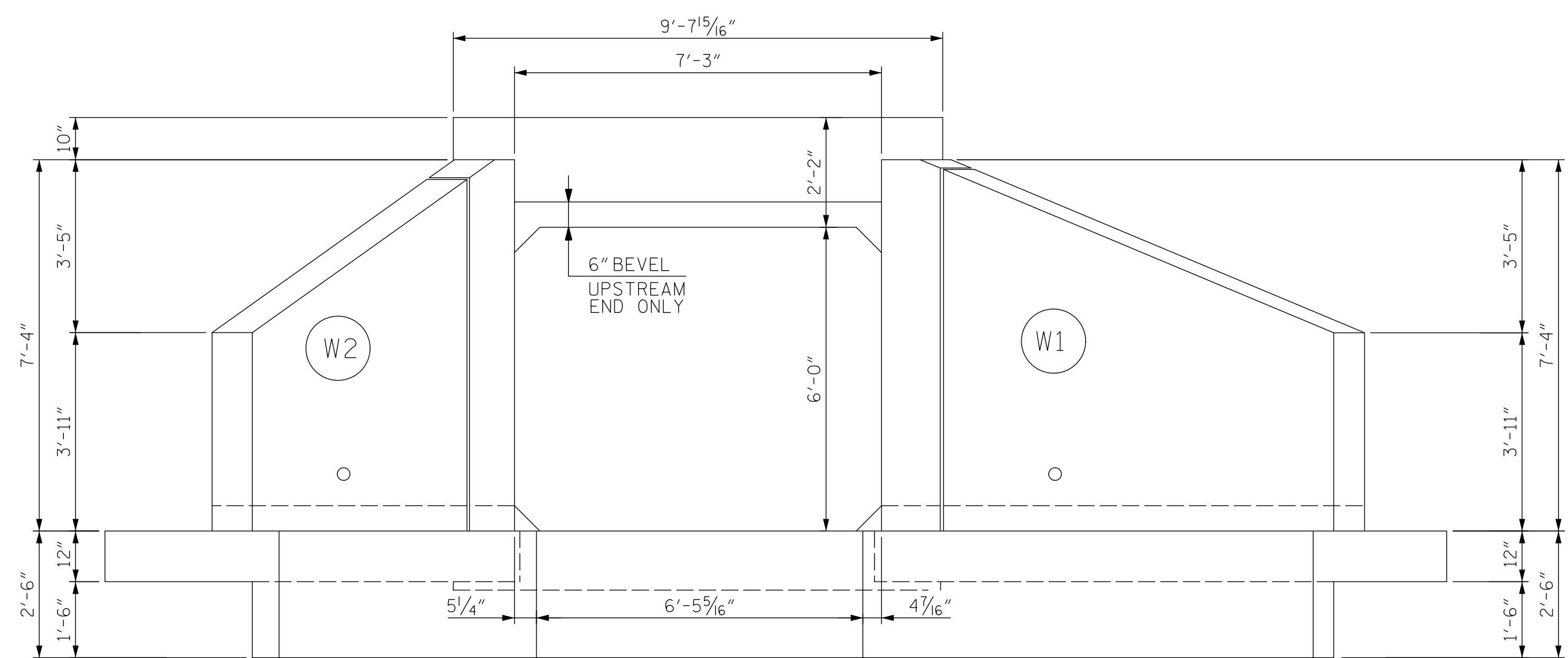
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-2
1			3			TOTAL SHEETS
2			4			6



CULVERT SECTION NORMAL TO RAILWAY



WING FOOTING FLOOR SLAB DETAIL



END ELEVATION NORMAL TO SKEW

PROJECT NO. P-5705A
MECKLENBURG COUNTY
 STATION: 21+72.19 -L-

SHEET 3 OF 5
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SECTION AND ELEVATION
 SINGLE 7 FT. x 6 FT.
 CONCRETE BOX CULVERT
 AT STA. 21+72.19 -L-



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

DRAWN BY: M. WRIGHT DATE: 11/18
 CHECKED BY: N. HART DATE: 12/18
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 12/18

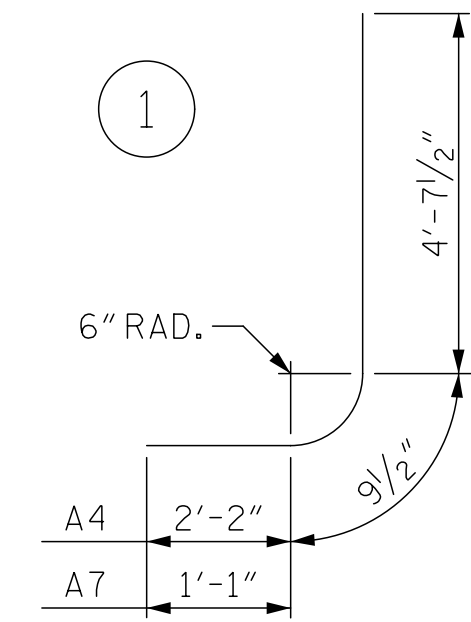
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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-3
1			3			TOTAL SHEETS
2			4			6

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	472	5	STR	9'-0"	4,431
A2	4	5	STR	6'-9"	28
A3	4	5	STR	4'-0"	17
A4	478	5	1	7'-7"	3,781
A5	4	5	STR	6'-2"	26
A6	4	5	STR	3'-4"	14
A7	2	5	1	6'-6"	14
B1	240	5	STR	7'-11"	1,982
C1	48	5	STR	46'-9"	2,340
C2	72	5	STR	46'-6"	3,492
C3	32	5	STR	46'-1"	1,538
G1	8	5	STR	9'-3"	77
S1	12	8	STR	9'-3"	296
REINFORCING STEEL					18,036 LBS

SPLICE LENGTH CHART

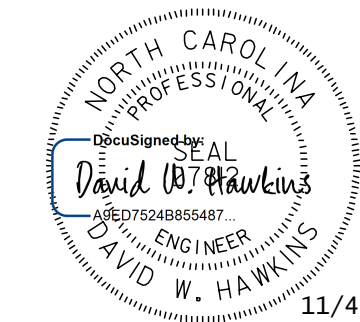
BAR	SIZE	SPLICE LENGTH
C BARS IN WALLS	#5	3'-0"
C BARS IN SLABS	#5	2'-2"
B BARS IN WALLS	#5	2'-2"

PROJECT NO. P-5705A
MECKLENBURG COUNTY
 STATION: 21+72.19 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

REINFORCING SCHEDULE
 SINGLE 7 FT. x 6 FT.
 CONCRETE BOX CULVERT
 AT STA. 21+72.19 -L-



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 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

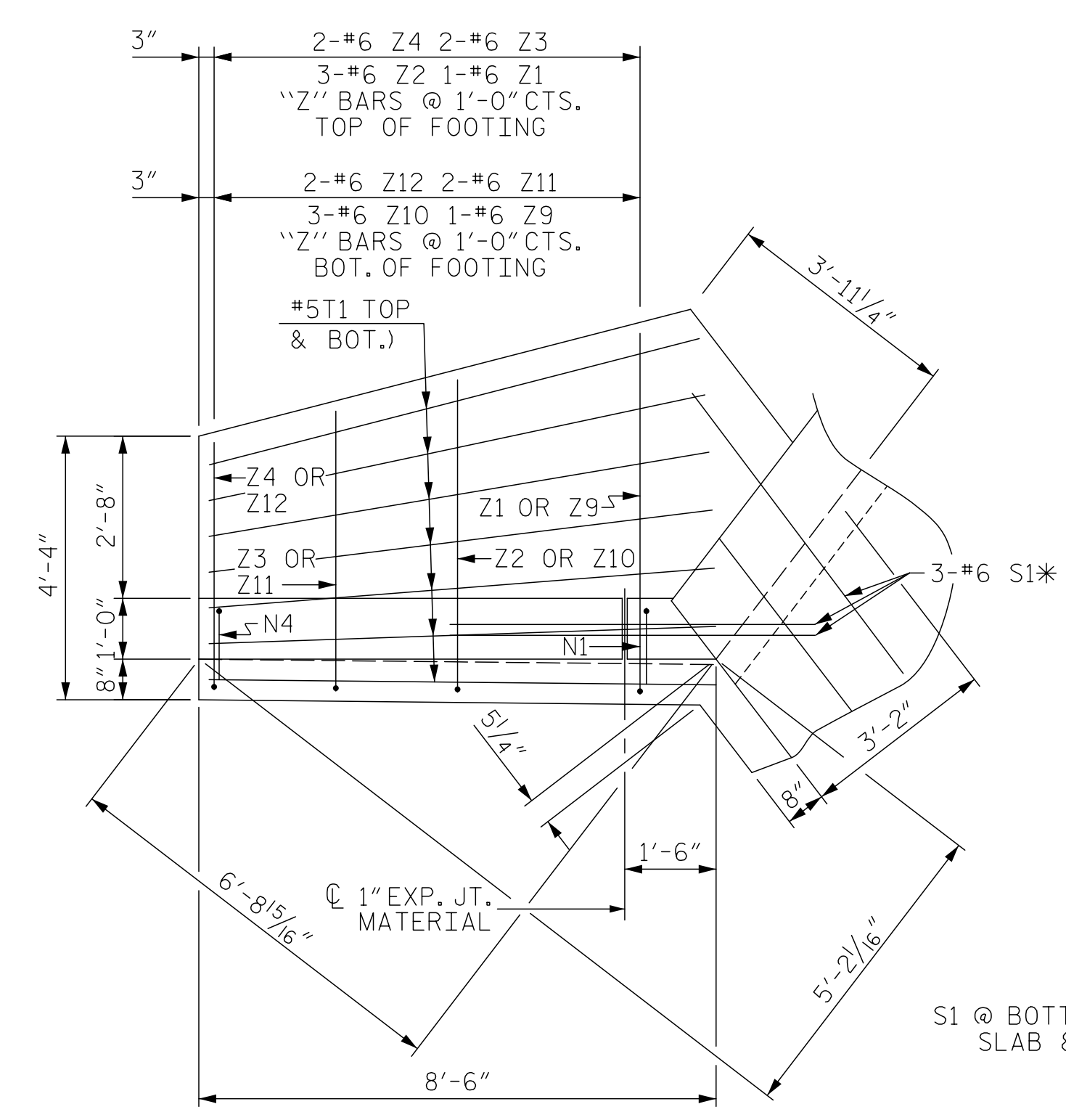
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 CHECKED BY: N. HART DATE: 12/18
 DESIGN ENGINEER OF RECORD: D. HAWKINS DATE: 12/18

DWG. NO. 4

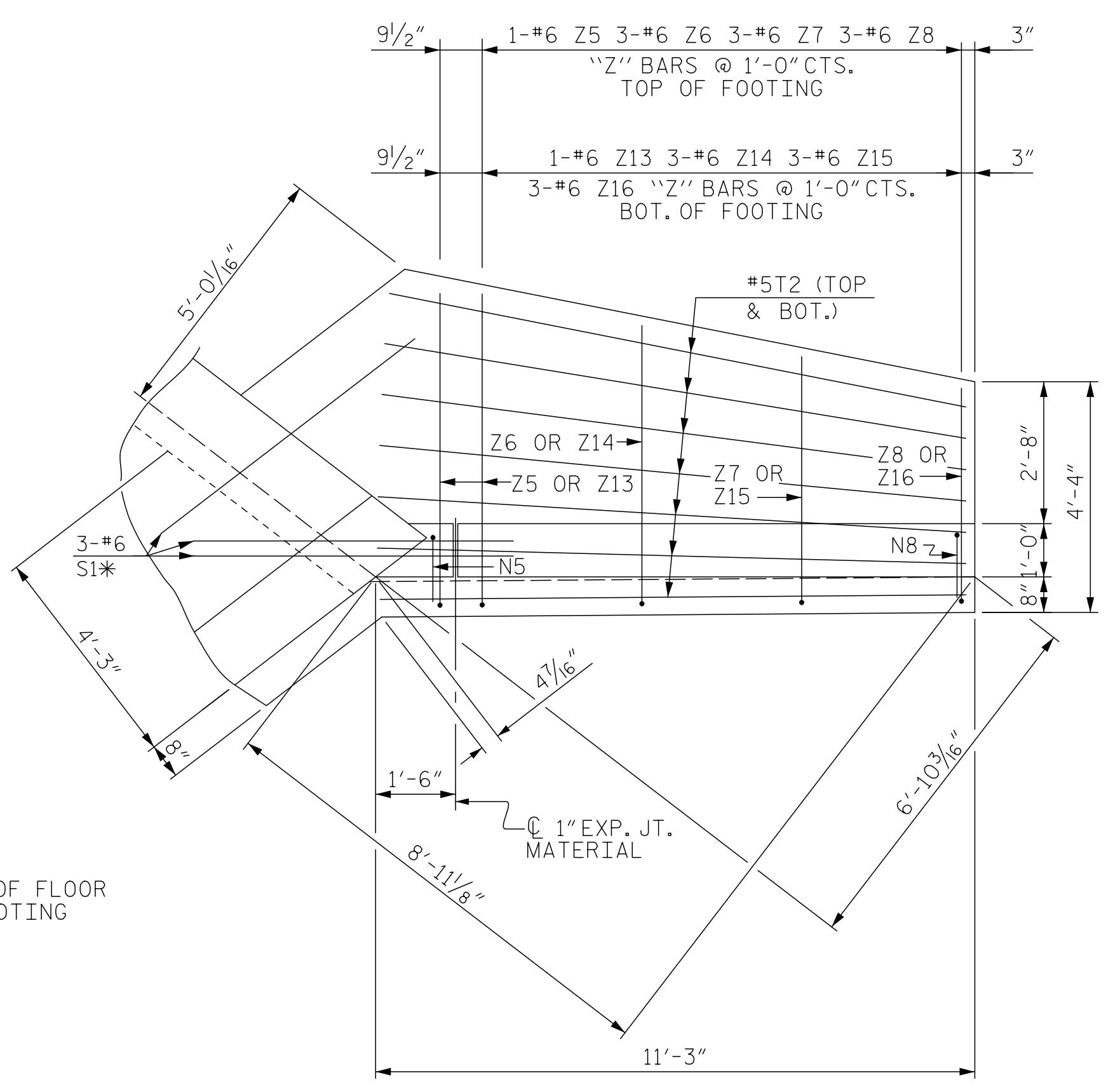
REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

C1-4	TOTAL SHEETS	6
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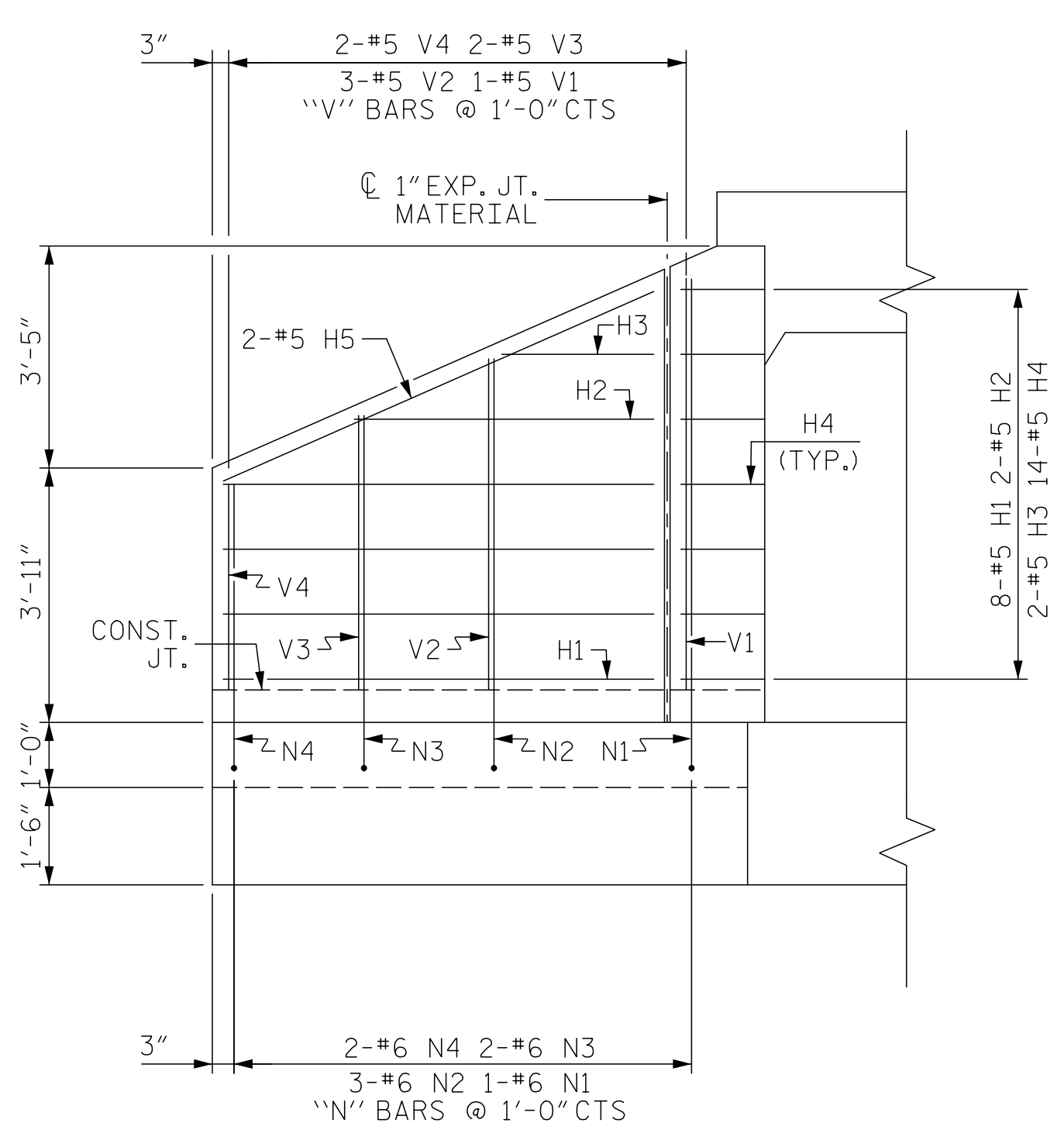
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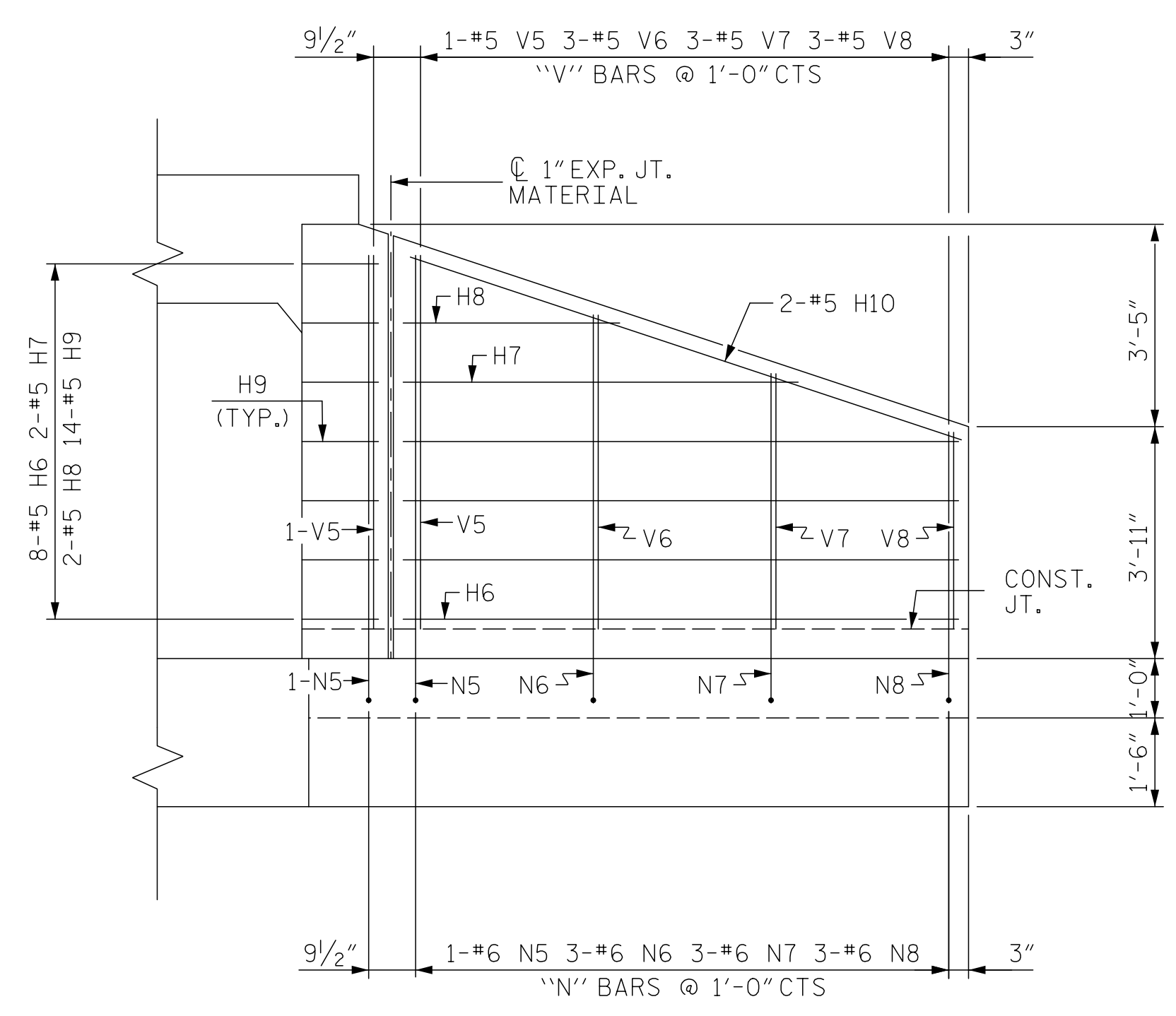
PLAN W2



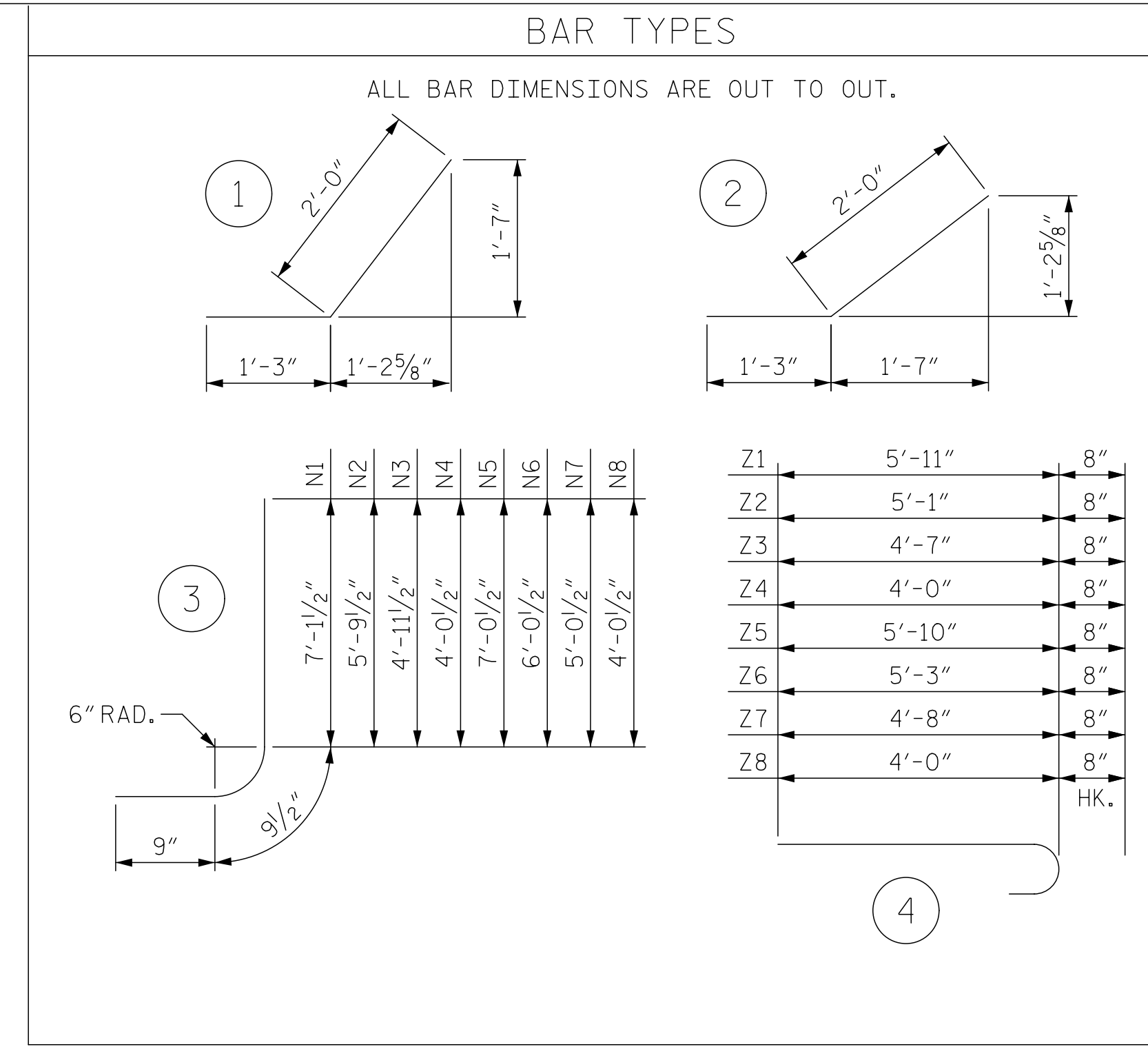
PLAN W1



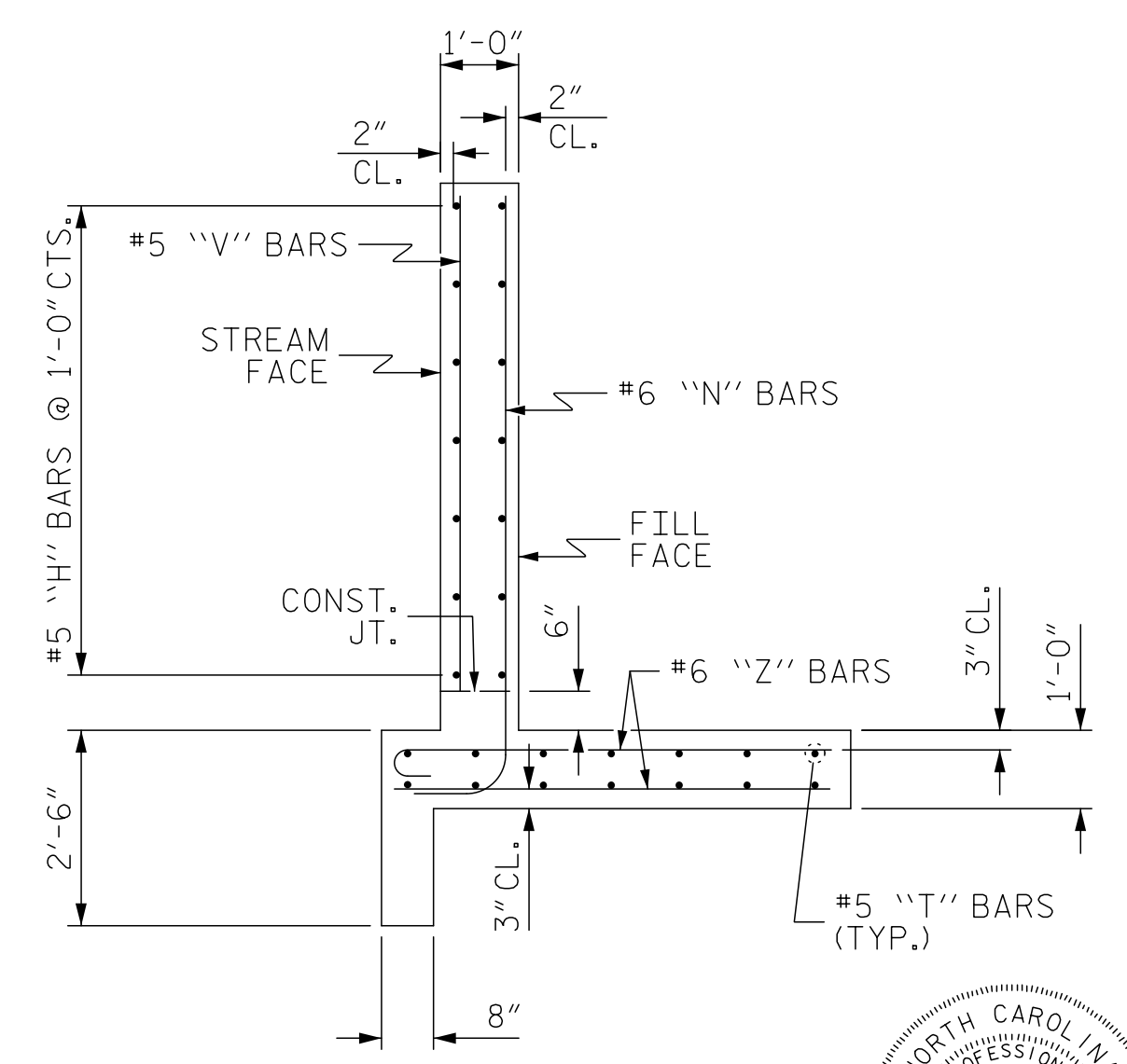
ELEVATION W2



ELEVATION W1



REINFORCING STEEL FOR 4 WINGS	2,435 LBS
CLASS AA CONCRETE	
4 WINGS	16.5 CY
2 HEADWALLS	0.9 CY
2 END CURTAIN WALLS	2.0 CY
TOTAL	19.4 CY



TYPICAL WING SECTION



BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	16	#5	STR	6'-7"	110
H2	4	#5	STR	4'-7"	19
H3	4	#5	STR	2'-4"	10
H4	28	#5	STR	3'-3"	95
H5	4	#5	STR	7'-1"	30
H6	16	#5	STR	9'-4"	156
H7	4	#5	STR	6'-8"	28
H8	4	#5	STR	3'-7"	15
H9	28	#5	STR	3'-3"	95
H10	4	#5	STR	9'-9"	41
N1	2	#6	3	8'-8"	26
N2	6	#6	3	7'-4"	66
N3	4	#6	3	6'-6"	39
N4	4	#6	3	5'-7"	34
N5	4	#6	3	8'-7"	52
N6	6	#6	3	7'-7"	68
N7	6	#6	3	6'-7"	59
N8	6	#6	3	5'-7"	50
S1	12	#6	STR	6'-0"	108
T1	28	#5	STR	8'-3"	241
T2	28	#5	STR	11'-0"	321
V1	2	#5	STR	6'-5"	13
V2	6	#5	STR	5'-1"	32
V3	4	#5	STR	4'-2"	17
V4	4	#5	STR	3'-4"	14
V5	4	#5	STR	6'-3"	26
V6	6	#5	STR	5'-3"	33
V7	6	#5	STR	4'-3"	27
V8	6	#5	STR	3'-3"	20
Z1	2	#6	4	6'-7"	20
Z2	6	#6	4	5'-9"	52
Z3	4	#6	4	5'-3"	32
Z4	4	#6	4	4'-8"	28
Z5	4	#6	4	6'-6"	39
Z6	6	#6	4	5'-11"	53
Z7	6	#6	4	5'-4"	48
Z8	6	#6	4	4'-8"	42
Z9	2	#6	STR	5'-11"	18
Z10	6	#6	STR	5'-1"	46
Z11	4	#6	STR	4'-7"	28
Z12	4	#6	STR	4'-0"	24
Z13	4	#6	STR	5'-10"	35
Z14	6	#6	STR	5'-3"	47
Z15	6	#6	STR	4'-8"	42
Z16	6	#6	STR	4'-0"	36

PROJECT NO. P-5705A
 MECKLENBURG COUNTY
 STATION: 21+72.19 -L-

SHEET 5 OF 5
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 WING DETAILS
 SINGLE 7 FT. x 6 FT.
 CONCRETE BOX CULVERT
 AT STA. 21+72.19 -L-

HNTB	HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609
DRAWN BY: M. WRIGHT	DATE: 11/18
CHECKED BY: N. HART	DATE: 12/18
DESIGN ENGINEER OF RECORD: D. HAWKINS	DATE: 12/18

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

C1-5
 TOTAL SHEETS
 6

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	-----	AREMA (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE AREMA
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	--	SEE AREMA
- AASHTO M270 GRADE 50W	--	SEE AREMA
- AASHTO M270 GRADE 50	--	SEE AREMA
REINFORCING STEEL IN TENSION - GRADE 60	---	SEE AREMA
CONCRETE IN COMPRESSION	-----	SEE AREMA
CONCRETE IN SHEAR	-----	SEE AREMA
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	---	SEE AREMA
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	SEE AREMA
EQUIVALENT FLUID PRESSURE OF EARTH	-----	SEE AREMA

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 $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $1\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$ " 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 $\frac{1}{4}$ " RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE $\frac{7}{8}$ " \emptyset SHEAR STUDS FOR THE $\frac{3}{4}$ " \emptyset STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$ " \emptyset STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \emptyset STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset 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 $\frac{5}{16}$ " 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 $\frac{1}{16}$ 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. FINIS 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

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	C1-6
1			3			TOTAL SHEETS
2			4			6

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.
	--	27,000 LBS. PER SQ. IN.
	--	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 $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$ " 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 $\frac{1}{4}$ " 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:

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