

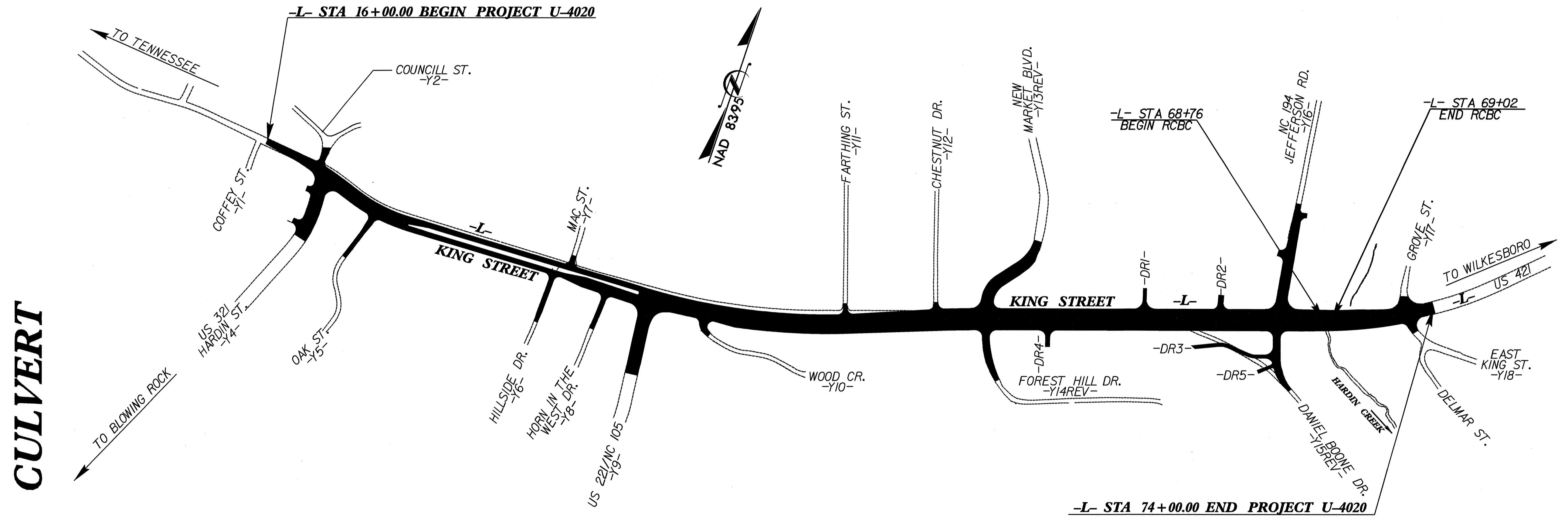
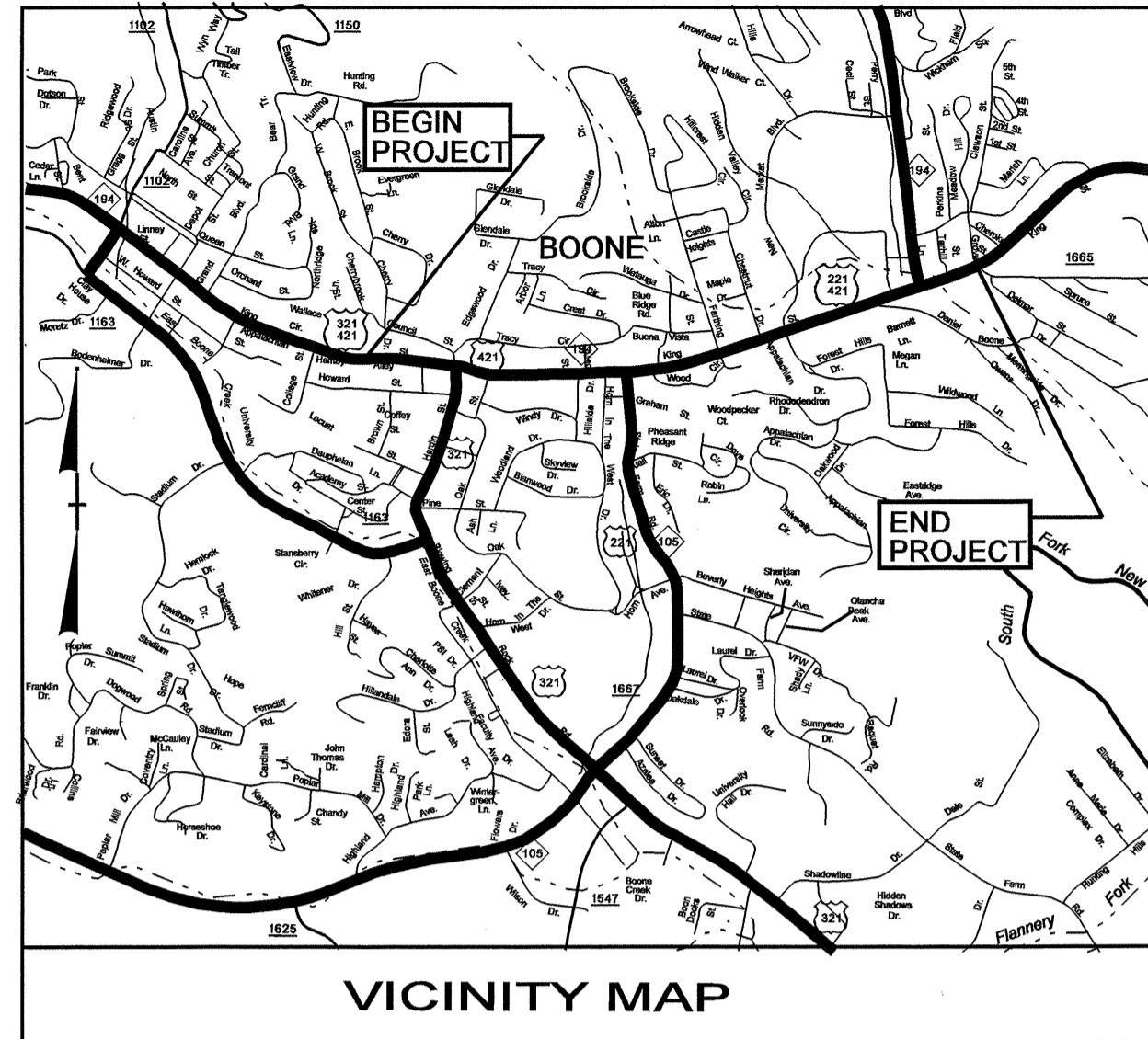
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WATAUGA COUNTY

**LOCATION: US 421 (KING STREET) FROM US 321 (HARDIN STREET)
TO EAST OF NC 194 (JEFFERSON ROAD) IN BOONE**

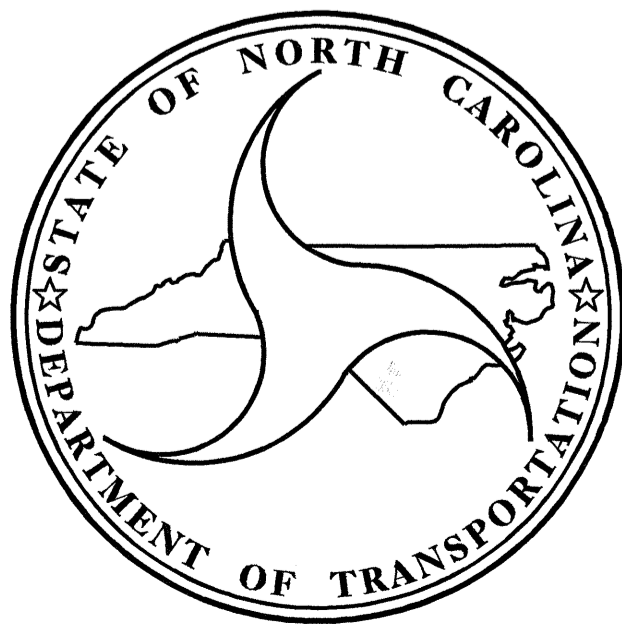
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT EXTENSION,
RETAINING WALLS, SIGNING AND SIGNALS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4020		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35015.1.1	NHF-421(31)	PE	
35015.2.1	NHF-421(31)	RW & UTIL	
35015.3.1	NHF-421(44)	CONSTRUCTION	



TIP PROJECT: U-4020

CONTRACT: C202084



DESIGN DATA	
ADT 2009 = 21,100 - 43,200	ADT 2030 = 29,300 - 67,800
DHV = 9 %	D = 55 %
T = 6 % *	V = 40 MPH
* TTST 2%	DUAL 4%
FUNCTIONAL CLASSIFICATION MINOR ARTERIAL	

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT U-4020 = 1.098 MILES	
TOTAL LENGTH OF TIP PROJECT U-4020 = 1.098 MILES	

Prepared in the Office of: DIVISION OF HIGHWAYS 1000 Birch Ridge Dr., Raleigh NC, 27610	
2006 STANDARD SPECIFICATIONS	
LETTING DATE: JUNE 16, 2009	OMAR R. AZIZI, P.E. PROJECT ENGINEER
	EMILY E. MURRAY, P.E. PROJECT DESIGN ENGINEER

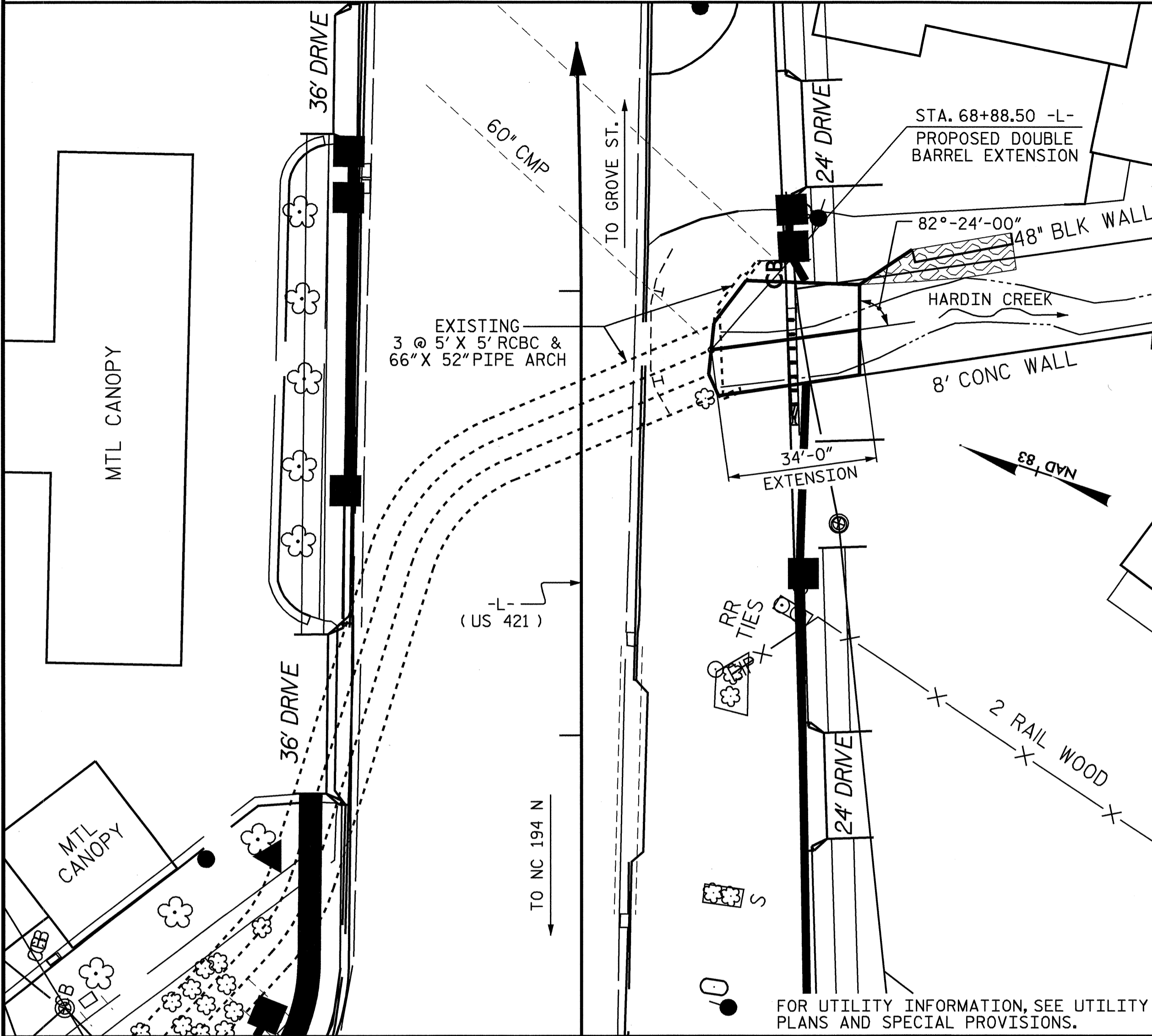
STRUCTURE DESIGN UNIT 1000 BIRCH RIDGE DR. RALEIGH, N.C. 27610	
	APPROVED DIVISION ADMINISTRATOR
	DATE

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA	
STATE DESIGN ENGINEER	
DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION	
	DATE

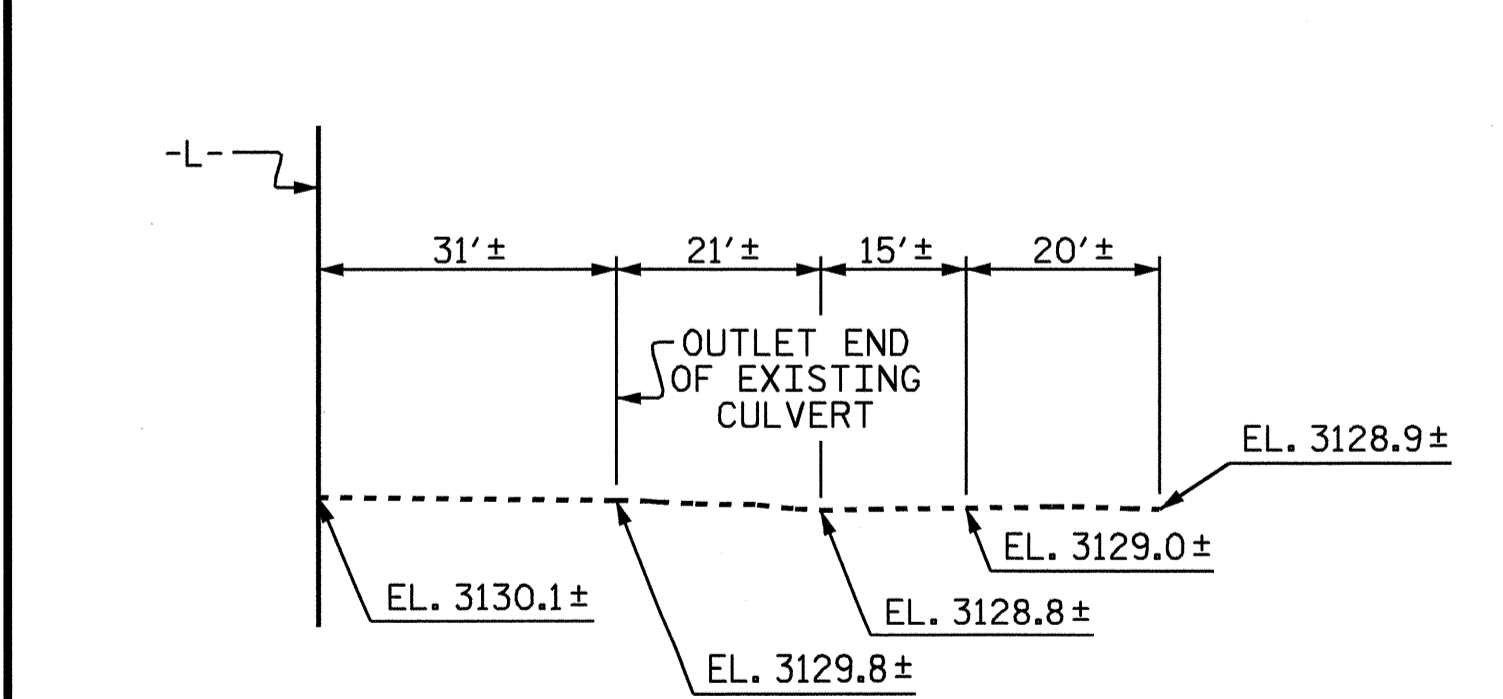
09/08/09
22-APR-2009 12:49
\$\$\$\$\$\$\$\$\$DGN\$\$\$\$\$\$\$\$\$
TAVETTE

BM #4: CHISELED SQUARE ON CONCRETE BASE FOR VACUUM AT WILCO
 -L- STA. 73+81.00, 138' RT. ELEV. 3156.5'

F. A. PROJECT NO. NHF-421(44)



LOCATION SKETCH



PROFILE ALONG CULVERT

GRADE DATA	
GRADE PT. EL. @ STA. 68+88.50 -L-	= 3138.266'
BED EL. @ STA. 68+88.50 -L-	= 3130.1'±
ROADWAY SLOPES	= 2:1
HYDRAULIC DATA	
DESIGN DISCHARGE	= 763 ft ³ /sec
FREQUENCY OF DESIGN FLOOD	= 25 YR.
DESIGN HIGH WATER ELEVATION	= 3140.2'
DRAINAGE AREA	= 672 AC.
BASIC DISCHARGE (Q100)	= 1014 ft ³ /sec
BASIC HIGH WATER ELEVATION	= 3141.1'
OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	= 800 ft ³ /sec
FREQUENCY OF OVERTOPPING FLOOD	= 25 YR.+
OVERTOPPING FLOOD ELEVATION	= 3140.5'

STAGE I STRUCTURE QUANTITIES	
CLASS A CONCRETE	
BARREL	44.3 C.Y.
EDGE BEAMS	1.1 C.Y.
END CURTAIN WALL & HEADWALL	1.5 C.Y.
STAGE I TOTAL	46.9 C.Y.
REINFORCING STEEL	
BARREL	12,169 LBS.
STAGE I TOTAL	12,169 LBS.
CULVERT EXCAVATION	LUMP SUM
FOUNDATION COND. MAT'L.	34 TONS

STAGE II STRUCTURE QUANTITIES	
CLASS A CONCRETE	
BARREL	26.9 C.Y.
EDGE BEAMS	1.1 C.Y.
END CURTAIN WALL, HEADWALL & WING	5.0 C.Y.
VERT. EXTENSION OF PIPE ARCH HEADWALL	0.7 C.Y.
STAGE II TOTAL	33.7 C.Y.
REINFORCING STEEL	
BARREL	6972 LBS.
WINGS ETC.	288 LBS.
VERT. EXTENSION OF PIPE ARCH HEADWALL	99 LBS.
STAGE II TOTAL	7359 LBS.
CULVERT EXCAVATION	LUMP SUM
FOUNDATION COND. MAT'L.	22 TONS

TOTAL STRUCTURE QUANTITIES	
CLASS A CONCRETE	
BARREL	71.2 C.Y.
EDGE BEAMS	2.2 C.Y.
END CURTAIN WALL, HEADWALL & WING	6.5 C.Y.
VERT. EXTENSION OF PIPE ARCH HEADWALL	0.7 C.Y.
TOTAL	80.6 C.Y.
REINFORCING STEEL	
BARREL	19,141 LBS.
WINGS ETC.	288 LBS.
VERT. EXTENSION OF PIPE ARCH HEADWALL	99 LBS.
TOTAL	19,528 LBS.
CULVERT EXCAVATION	LUMP SUM
FOUNDATION COND. MAT'L.	56 TONS
48" CHAIN LINK FENCE	21.3 LIN. FT.

NOTES

ASSUMED LIVE LOAD -----HS20 OR ALTERNATE LOADING.
 DESIGN FILL----- 3.45'
 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. AFTER REMOVING EXISTING WESTERN WING WALL AND PORTION OF EXISTING 8' CONCRETE WALL AS NECESSARY FOR CONSTRUCTION, STAGE I FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
 2. THE REMAINING PORTIONS OF THE STAGE I WALLS FULL HEIGHT FOLLOWED BY STAGE I ROOF SLAB AND HEADWALLS.
 3. PIPE ARCH EXTENSION, WING FOOTING AND STAGE II FLOOR SLAB INCLUDING 4" OF VERTICAL WALL.
 4. THE REMAINING PORTIONS OF THE STAGE II WALL AND WING FULL HEIGHT FOLLOWED BY STAGE II ROOF SLAB AND HEADWALLS.

PAYMENT FOR REMOVAL OF EXISTING WESTERN WING WALL AND PORTION OF EXISTING 8' CONCRETE WALL SHALL INCLUDED IN PAY ITEM FOR CULVERT EXCAVATION.

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 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.

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 SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

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

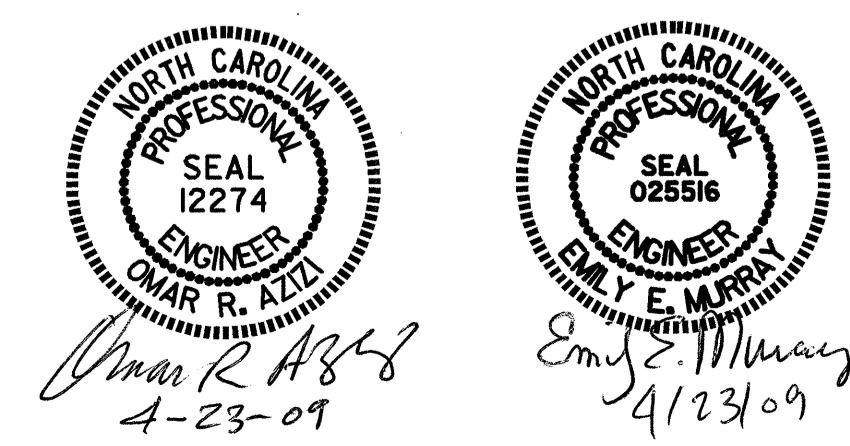
IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY USE THE EXISTING WINGS AS TEMPORARY SHORING FOR THE CONSTRUCTION OF THE CULVERT EXTENSIONS. IN THIS CASE, THE BOTTOM SLAB OF THE EXTENSION SHALL BE POURED AT LEAST 72 HOURS PRIOR TO CUTTING THE WINGS. THE WINGS MAY BE CUT EARLIER PROVIDED THE SLAB CONCRETE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

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.

FOR PIPE ARCH EXTENSION DETAILS, SEE SHEET 10 OF 11.
 FOR 48" CHAIN LINK FENCE, SEE SPECIAL PROVISIONS. FOR DETAILS OF HEADWALL WITH CHAIN LINK FENCE, SEE SHEET 11 OF 11.

PROJECT NO. U-4020
WATAUGA COUNTY
 STATION: 68+88.50 -L-
 SHEET 1 OF 11

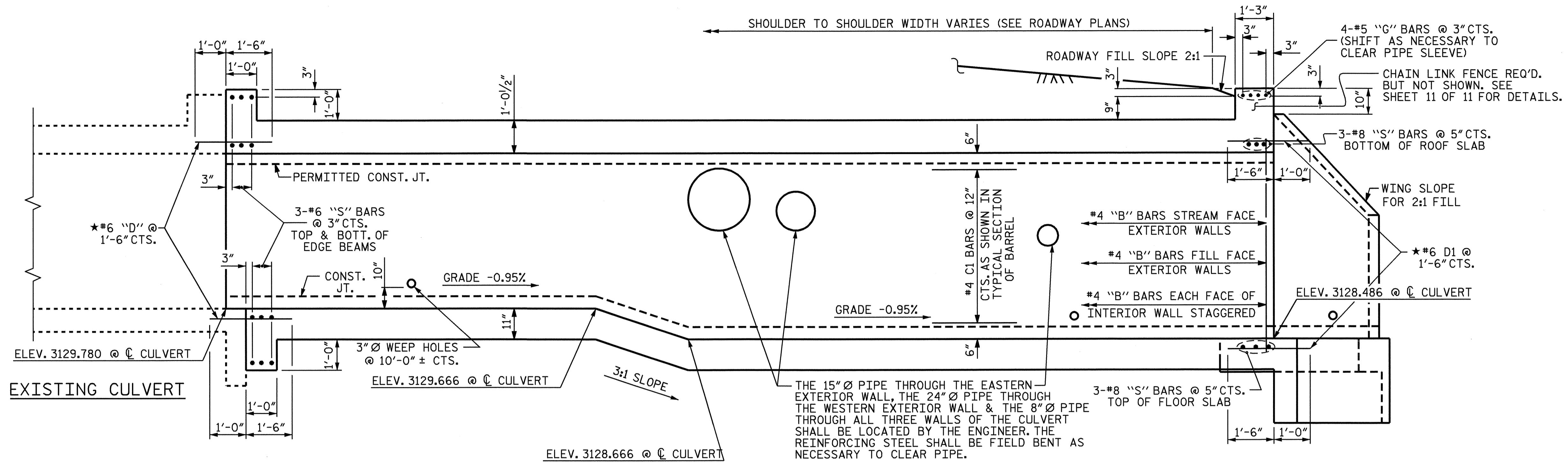
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DOUBLE TAPERED
 CONCRETE BOX CULVERT
 EXTENSION
 82°-24'-00" SKEW



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	C-1	
1			3			TOTAL SHEETS	
2			4			11	

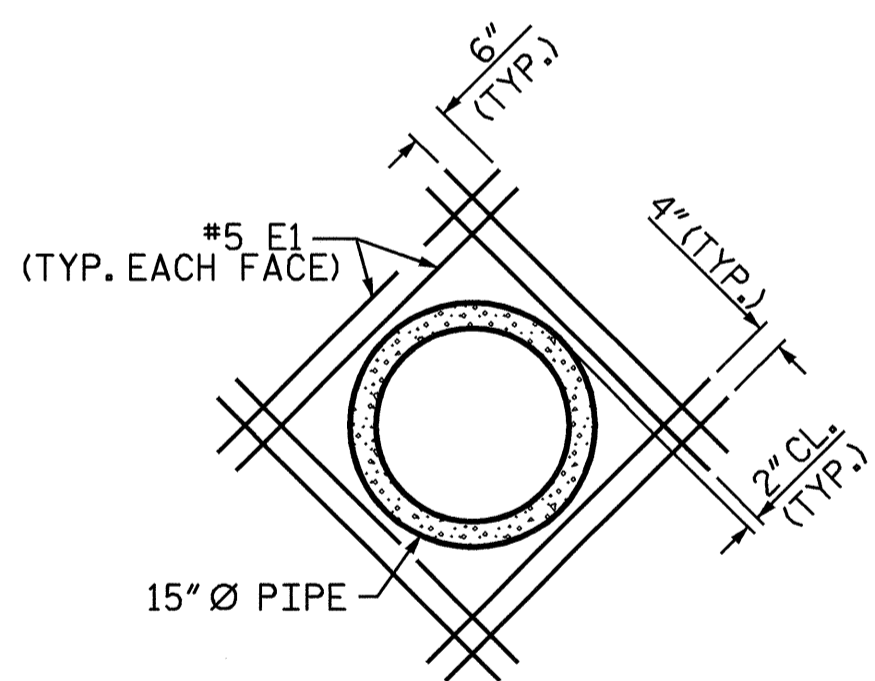
ADDED NOV. 1, 1990

ASSEMBLED BY: I.L. AVERETTE	DATE: 1-09	SPECIAL
CHECKED BY: A.M. LEE	DATE: 1-09	
DRAWN BY: R.W. WRIGHT	DATE: JULY, 1990	STANDARD
CHECKED BY: D.A. GLADDEN	DATE: JULY, 1990	

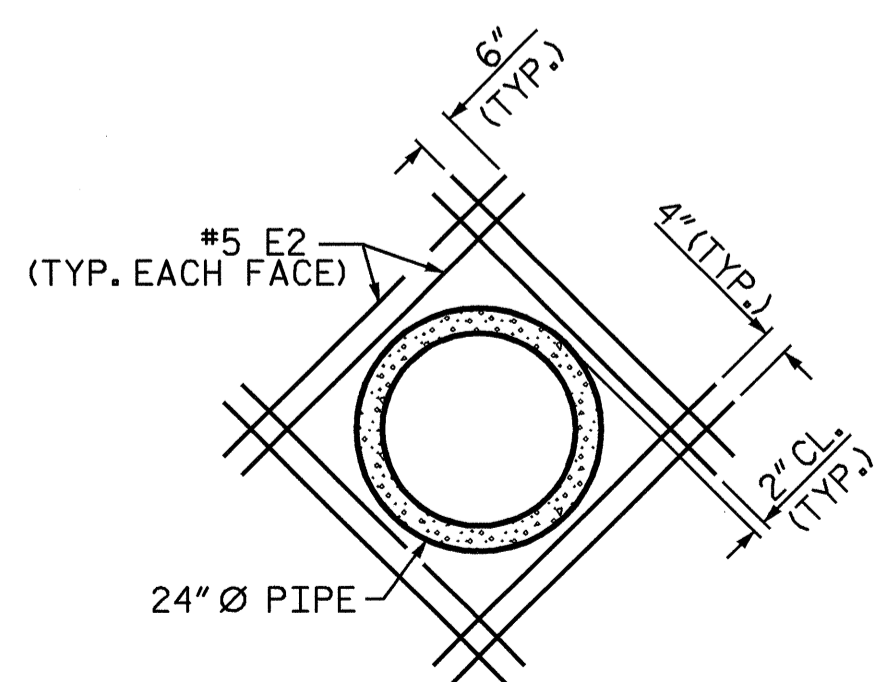


PROPOSED EXTENSION
CULVERT SECTION NORMAL TO ROADWAY

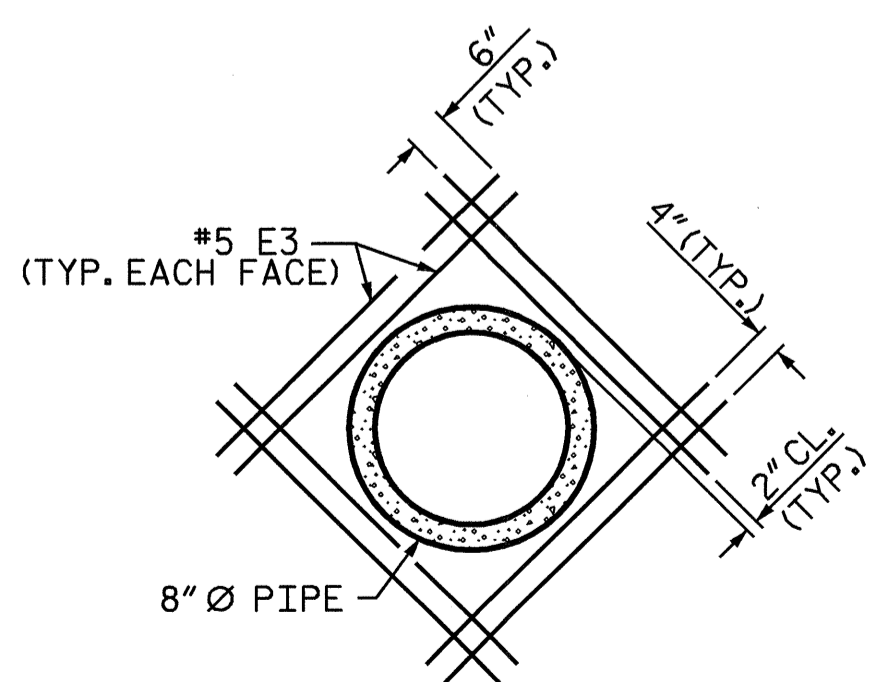
*#6 "D" DOWELS SHALL BE PLACED @ 1'-6" CTS. IN THE ROOF SLAB, FLOOR SLAB, AND EXTERIOR WALLS TO CONNECT THE CULVERT EXTENSION TO THE EXISTING CULVERT. ALSO, #6 D1 DOWELS SHALL BE PLACED @ 1'-6" CTS. IN THE WESTERN EXTERIOR WALL TO CONNECT THE CULVERT EXTENSION TO THE EXISTING 8' HIGH CONCRETE WALL AT THE END OF THE CULVERT EXTENSION.



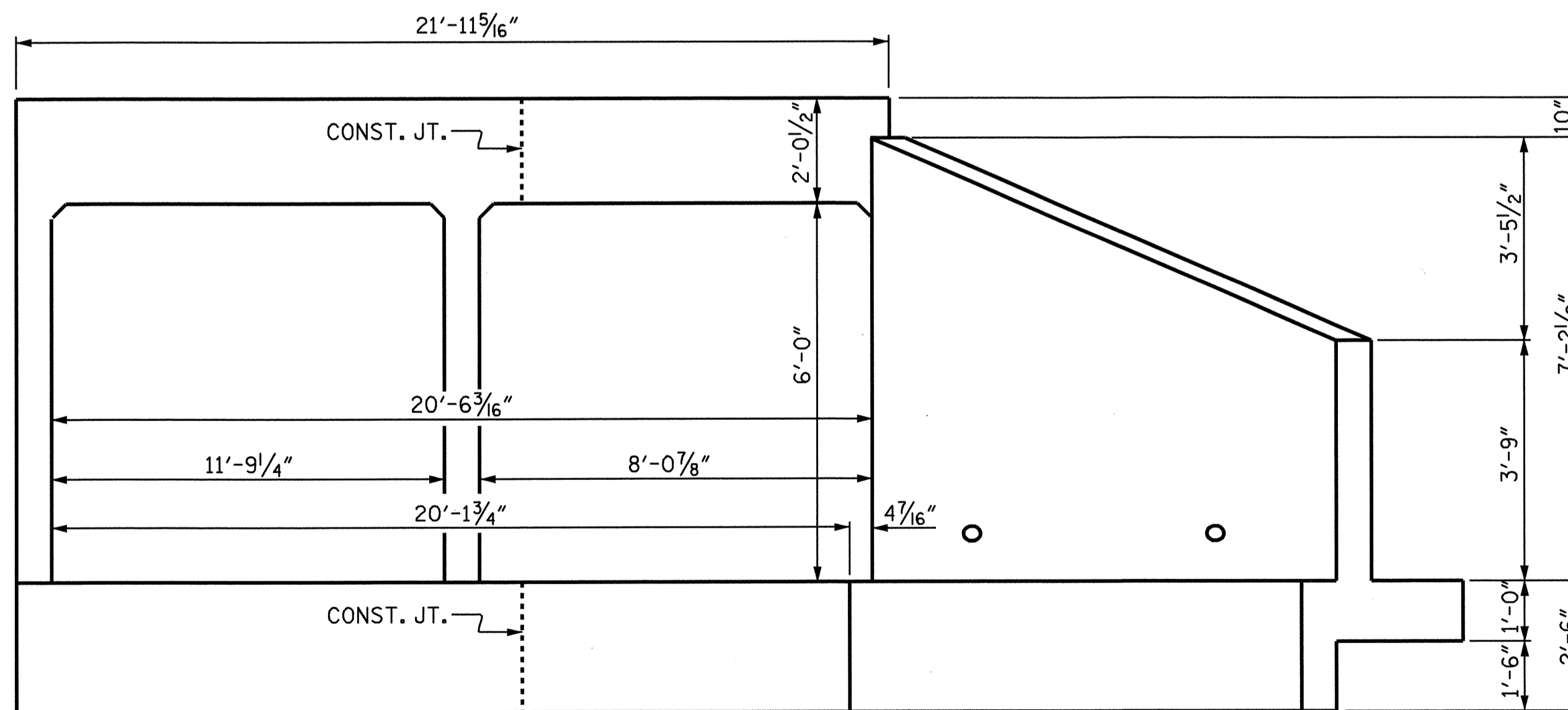
DETAIL OF REINFORCING
 AROUND 15" Ø PIPE



DETAIL OF REINFORCING
 AROUND 24" Ø PIPE



DETAIL OF REINFORCING
 AROUND 8" Ø PIPE



OUTLET END ELEVATION NORMAL TO SKEW

PROJECT NO. U-4020
WATAUGA COUNTY
 STATION: 68+88.50 -L-

SHEET 2 OF 11

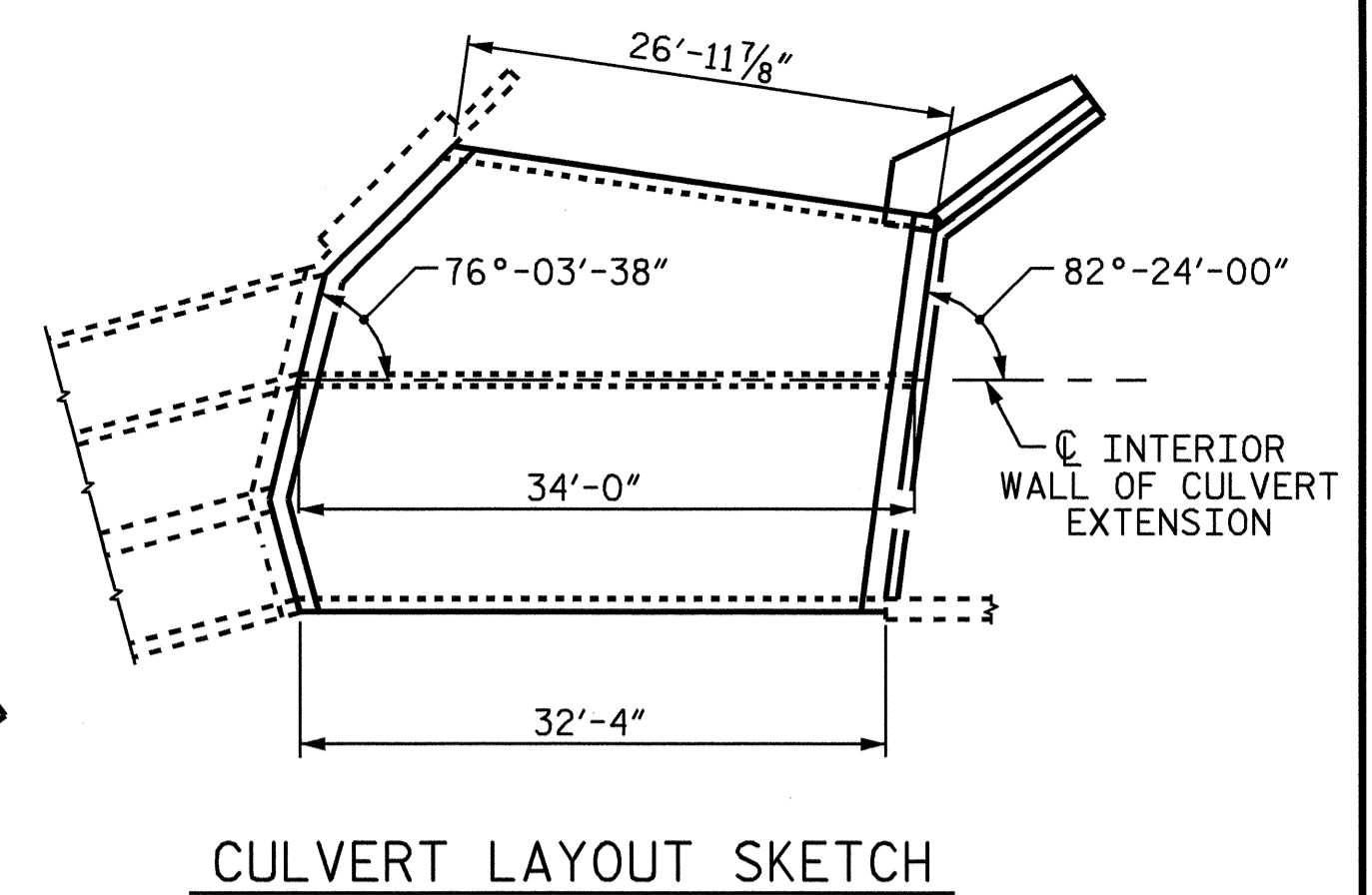
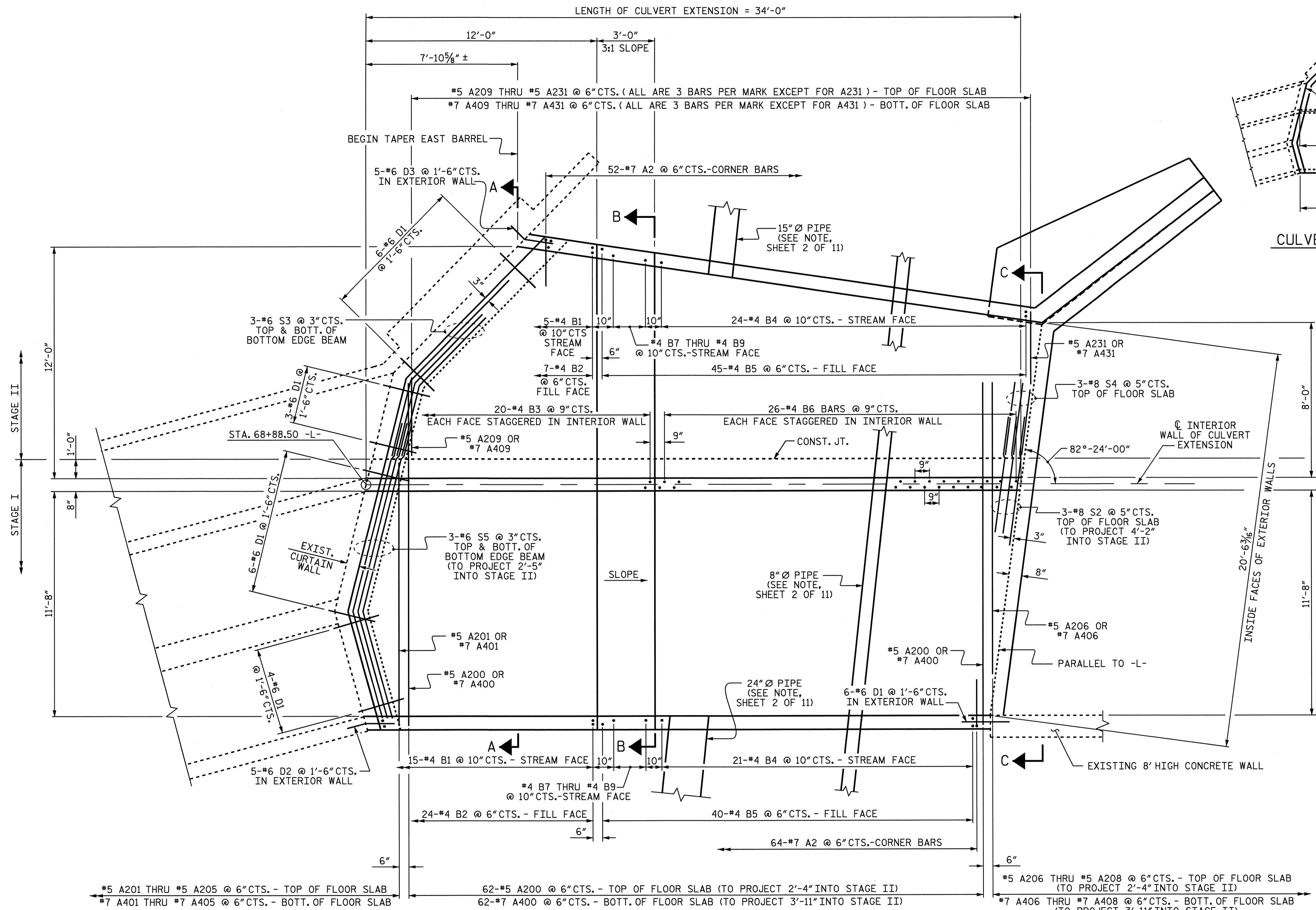
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DOUBLE TAPERED
 CONCRETE BOX CULVERT
 EXTENSION

82°-24'-00" SKEW



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-2
1			3			TOTAL SHEETS 11
2			4			

DRAWN BY: T.L. AVERETTE DATE: 1-09
 CHECKED BY: A.M. LEE DATE: 1-09



PLAN - FLOOR SLAB

"C" BARS NOT SHOWN. FOR "C" BAR LAYOUT, SEE SHEET 5 OF 11.
 FOR BARREL SECTIONS A-A, B-B & C-C, SEE SHEET 6 OF 11.
 SILLS NOT SHOWN. FOR DETAILS, SEE SHEET 7 OF 11.

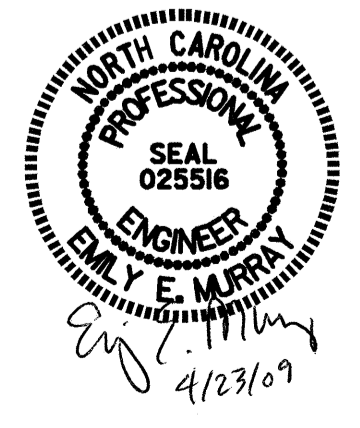
PROJECT NO. U-4020
WATAUGA COUNTY
 STATION: 68+88.50 -L-

SHEET 3 OF 11

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

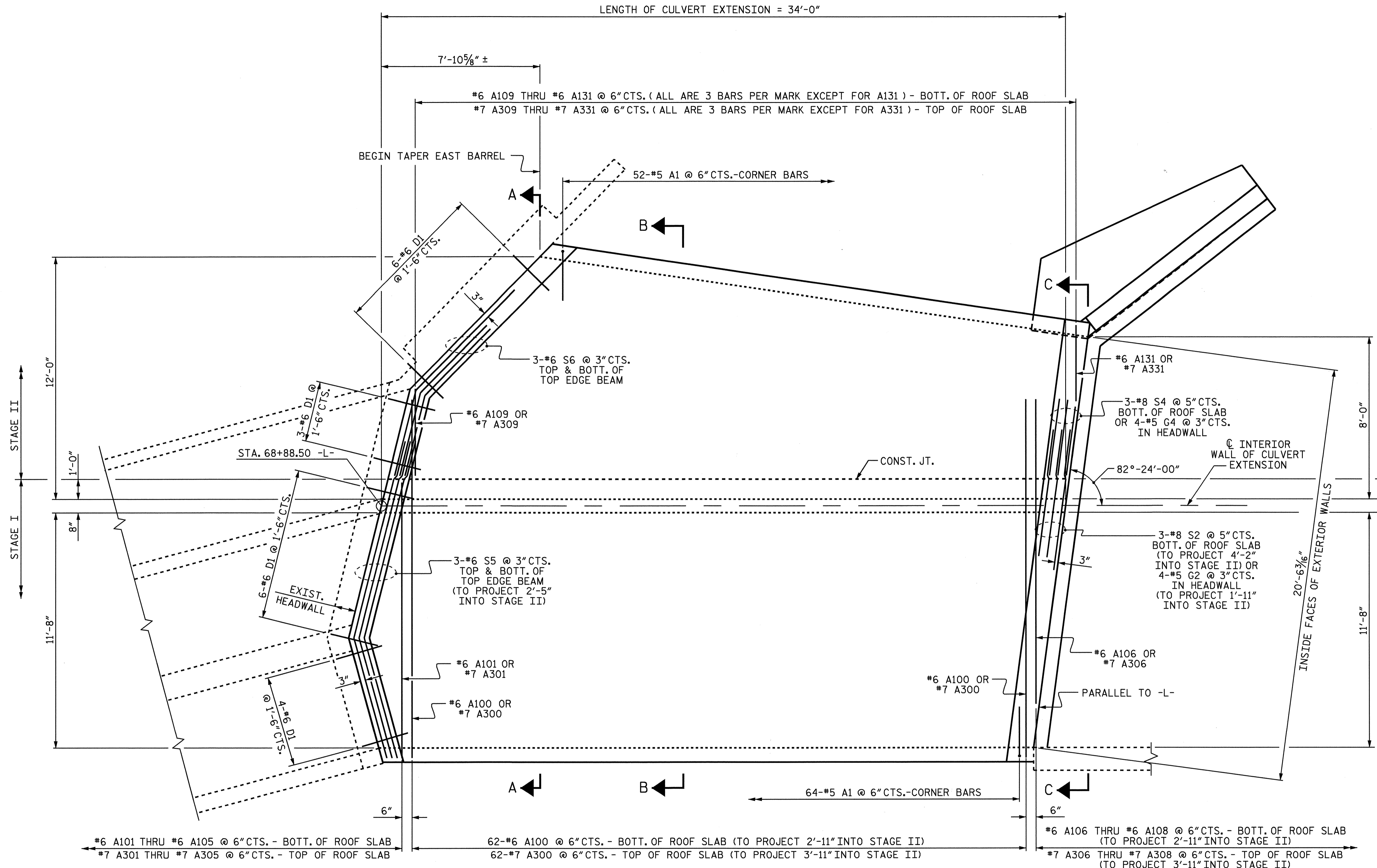
**DOUBLE TAPERED
 CONCRETE BOX CULVERT
 EXTENSION**

82°-24'-00" SKEW



DRAWN BY: T.L. AVERETTE DATE: 1-09
 CHECKED BY: A.M. LEE DATE: 1-09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-3
1			3			TOTAL SHEETS
2			4			11



PLAN - ROOF SLAB

"C" BARS NOT SHOWN. FOR "C" BAR LAYOUT, SEE SHEET 5 OF 11.
 FOR BARREL SECTIONS A-A, B-B & C-C, SEE SHEET 6 OF 11.
 CHAIN LINK FENCE IN DOWNSTREAM HEADWALL NOT SHOWN. SEE SHEET 11 OF 11 FOR DETAILS.

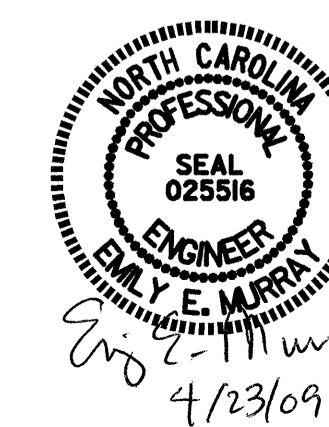
PROJECT NO. U-4020
WATAUGA COUNTY
 STATION: 68+88.50 -L-

SHEET 4 OF 11

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

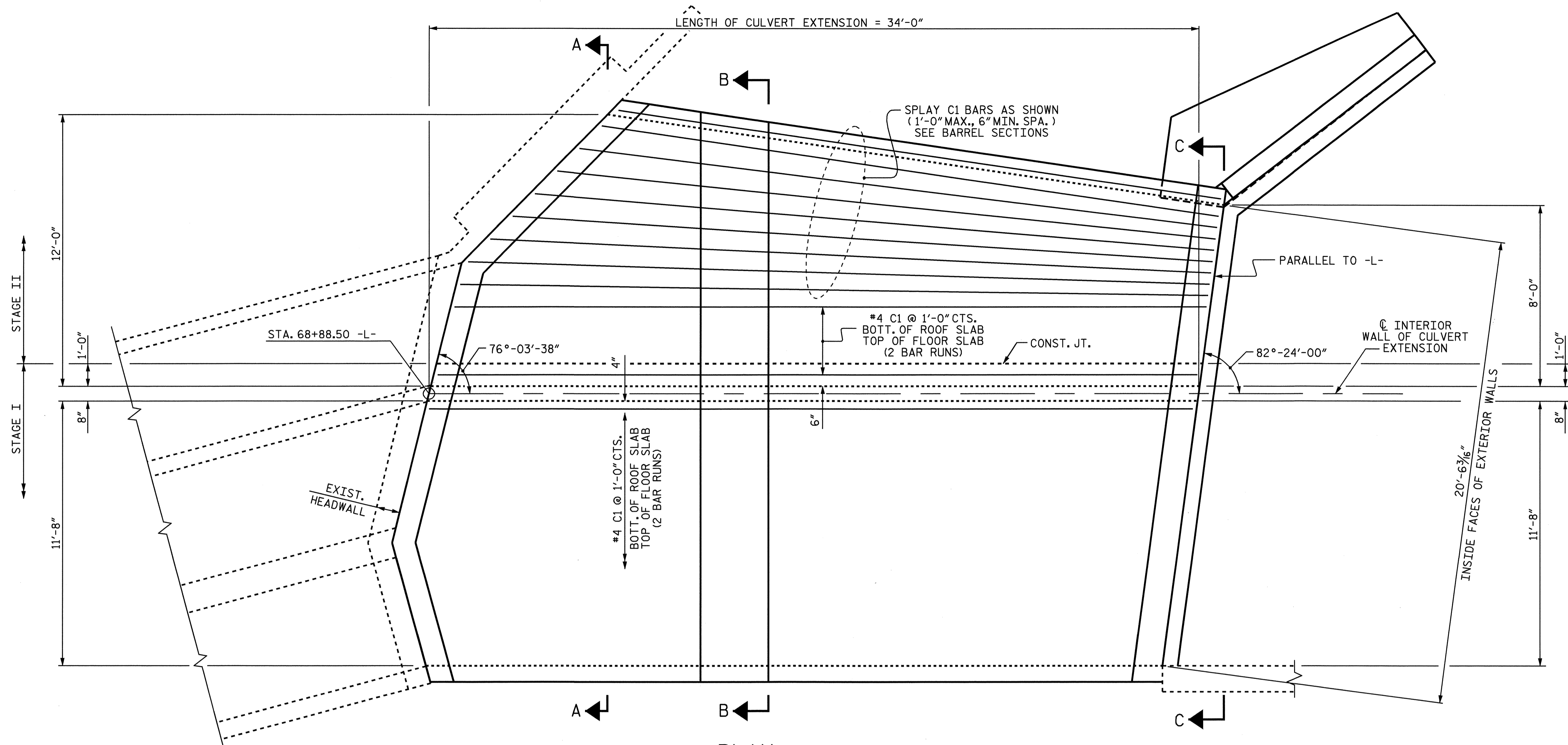
**DOUBLE TAPERED
 CONCRETE BOX CULVERT
 EXTENSION**

82°-24'-00" SKEW

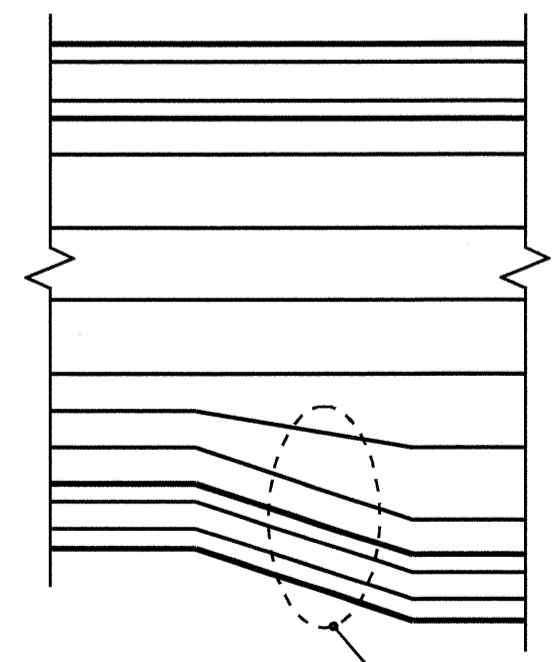


DRAWN BY: T.L. AVERETTE DATE: 1-09
 CHECKED BY: A.M. LEE DATE: 1-09

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	C-4	
1			3			TOTAL	11
2			4			SHEETS	



PLAN
 SHOWING "C" BAR LAYOUT.
 FOR BARREL SECTIONS A-A, B-B & C-C, SEE SHEET 6 OF 11.

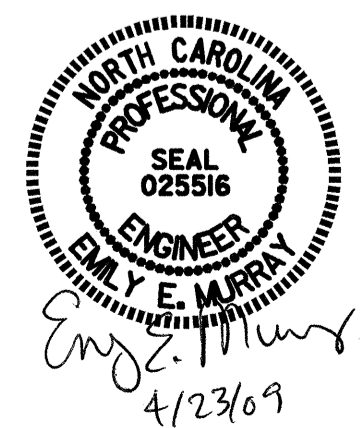


PARTIAL ELEVATION

PROJECT NO. U-4020
WATAUGA COUNTY
 STATION: 68+88.50 -L-

SHEET 5 OF 11

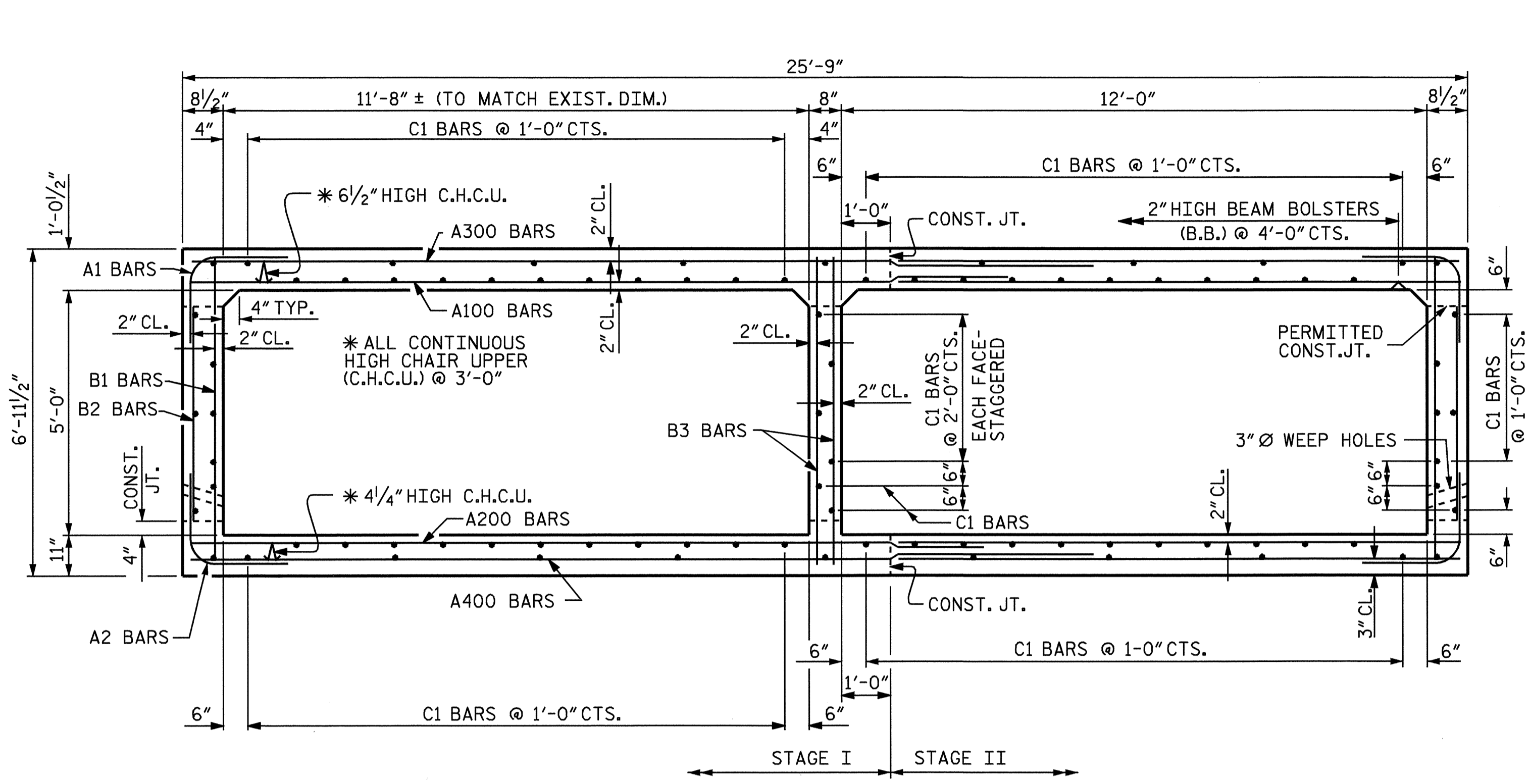
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**DOUBLE TAPERED
 CONCRETE BOX CULVERT
 EXTENSION**
 82°-24'-00" SKEW



DRAWN BY: T.L. AVERETTE DATE: 1-09
 CHECKED BY: A.M. LEE DATE: 1-09

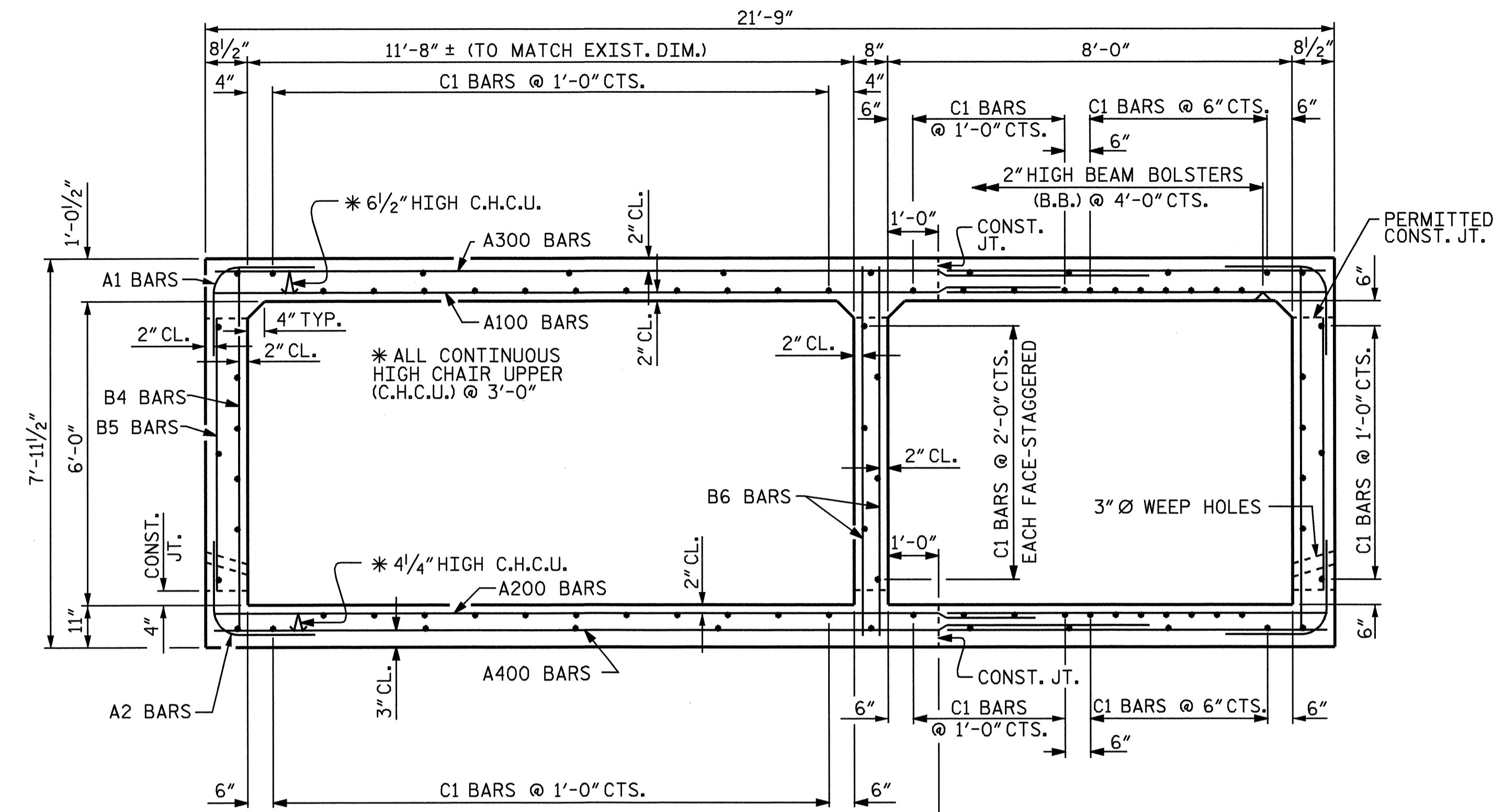
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 taverette

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-5
1			3			TOTAL SHEETS
2			4			11



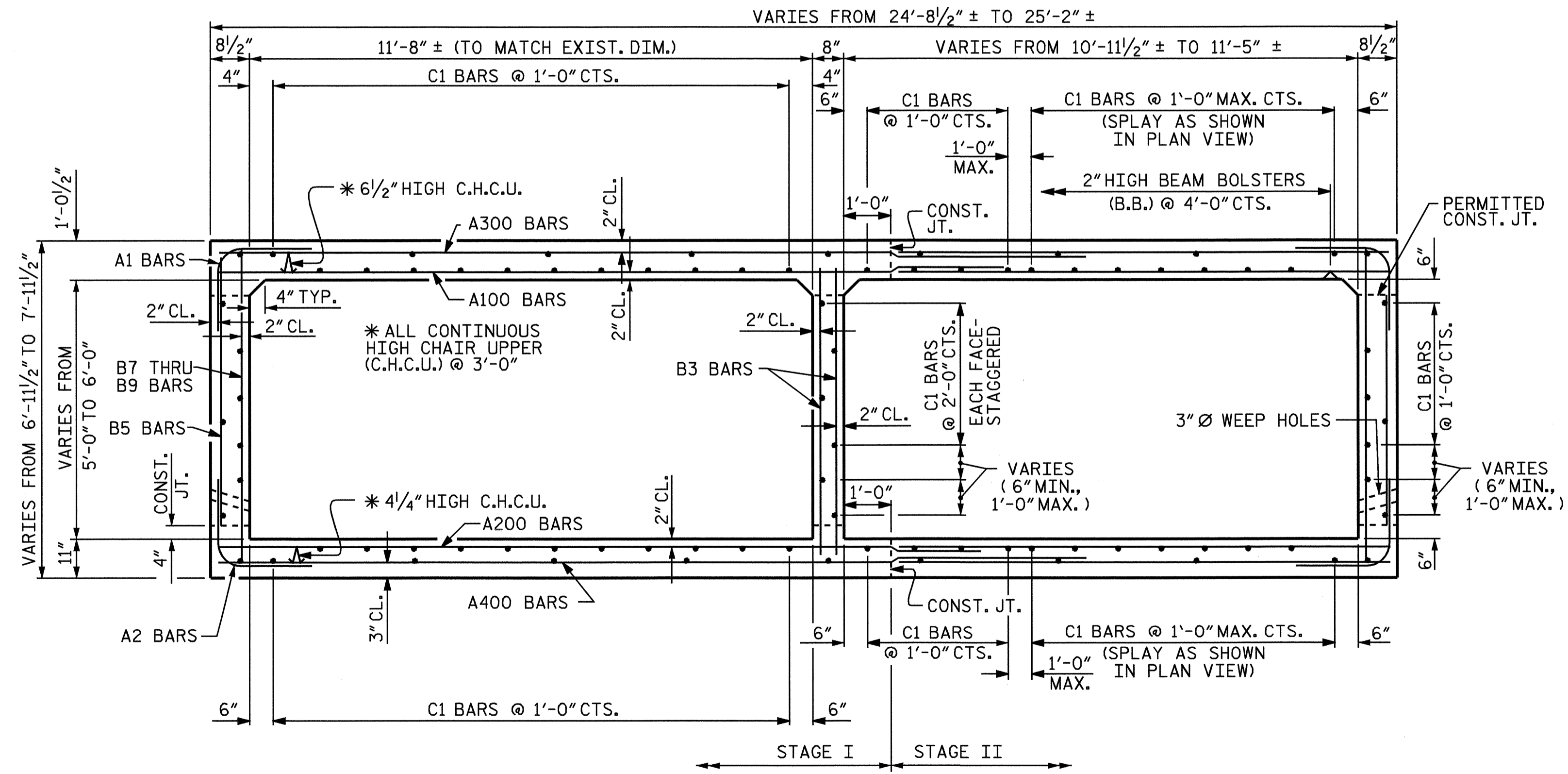
SECTION A-A

THERE ARE 86 "C" BARS IN SECTION OF BARREL.



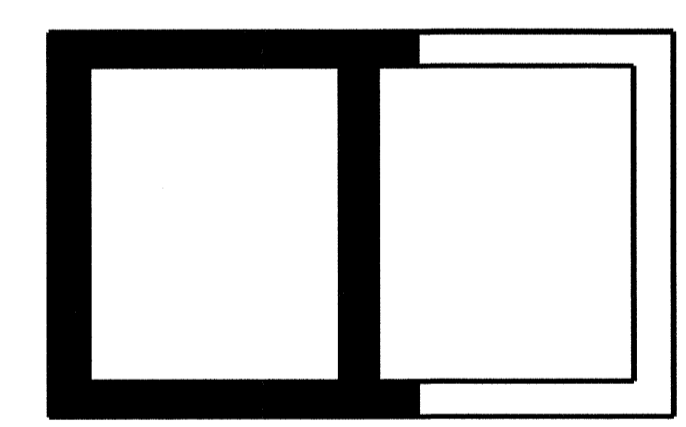
SECTION C-C

THERE ARE 86 "C" BARS IN SECTION OF BARREL.

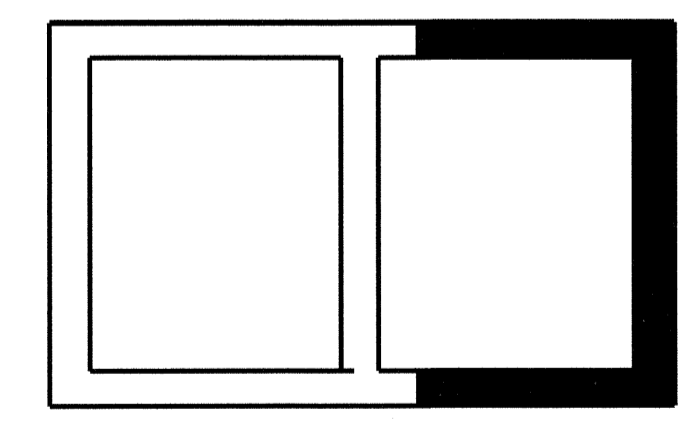


SECTION B-B

THERE ARE 86 "C" BARS IN SECTION OF BARREL.



STAGE I



STAGE II

CONSTRUCTION SEQUENCE

(LOOKING UPSTREAM)

PROJECT NO. U-4020
 WATAUGA COUNTY
 STATION: 68+88.50 -L-

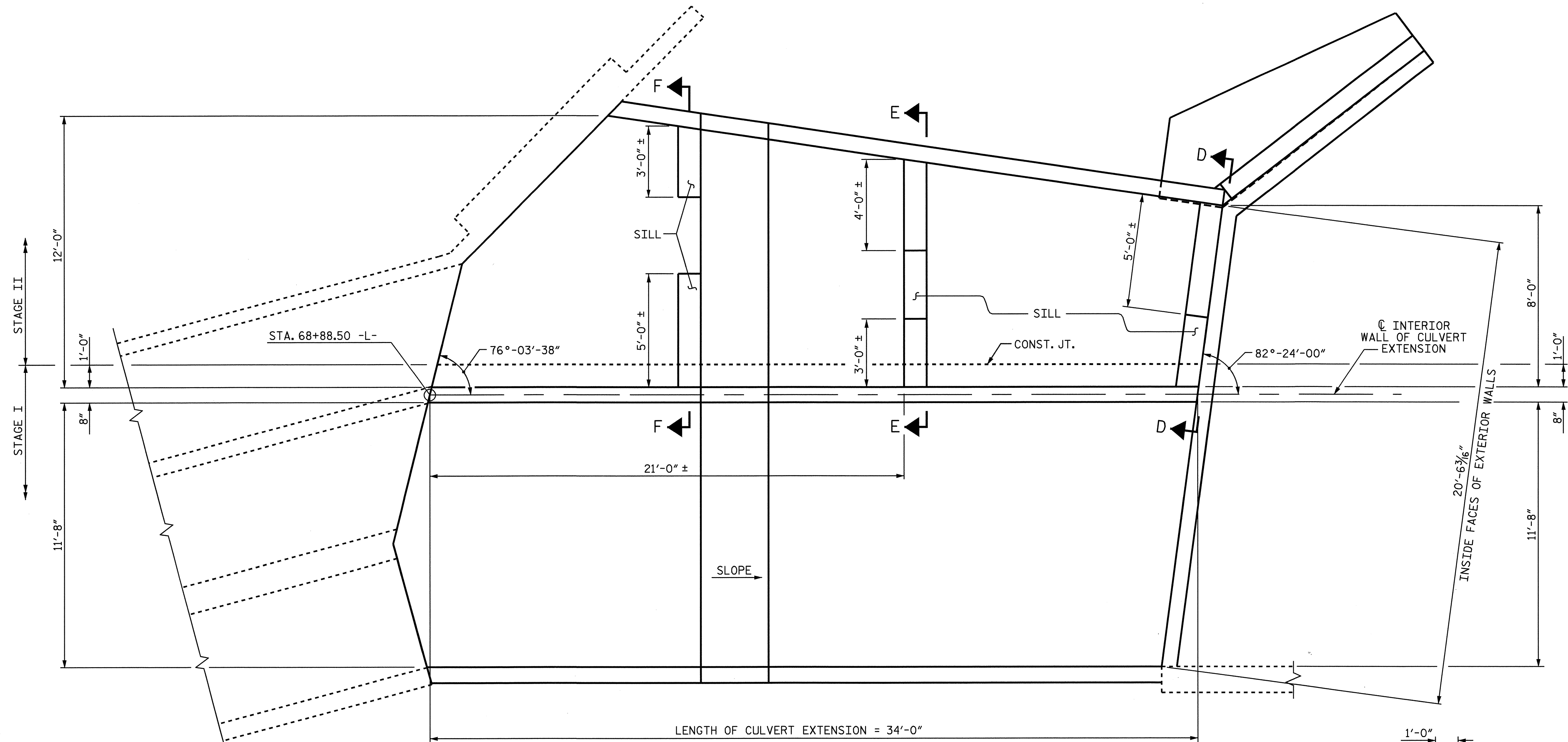
SHEET 6 OF 11

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 DOUBLE TAPERED
 CONCRETE BOX CULVERT
 EXTENSION
 82°-24'-00" SKEW

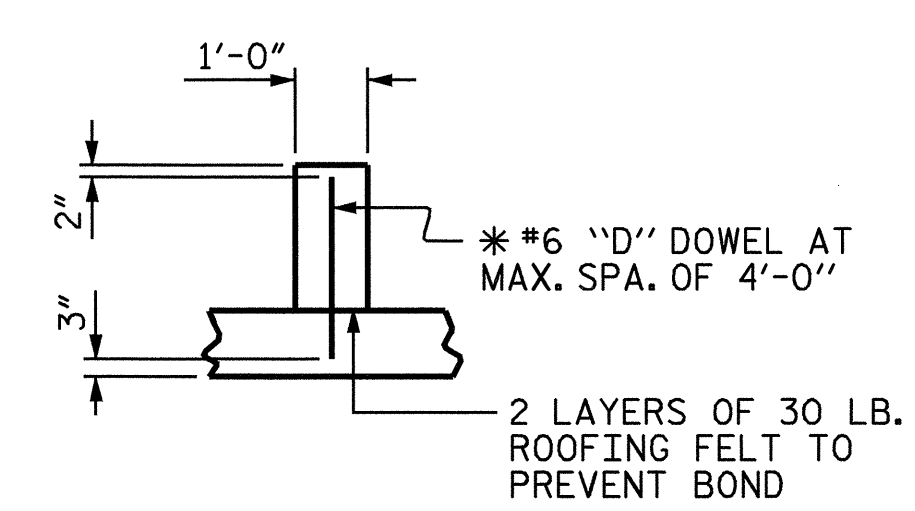


REVISIONS						SHEET NO. C-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 11
2			4			

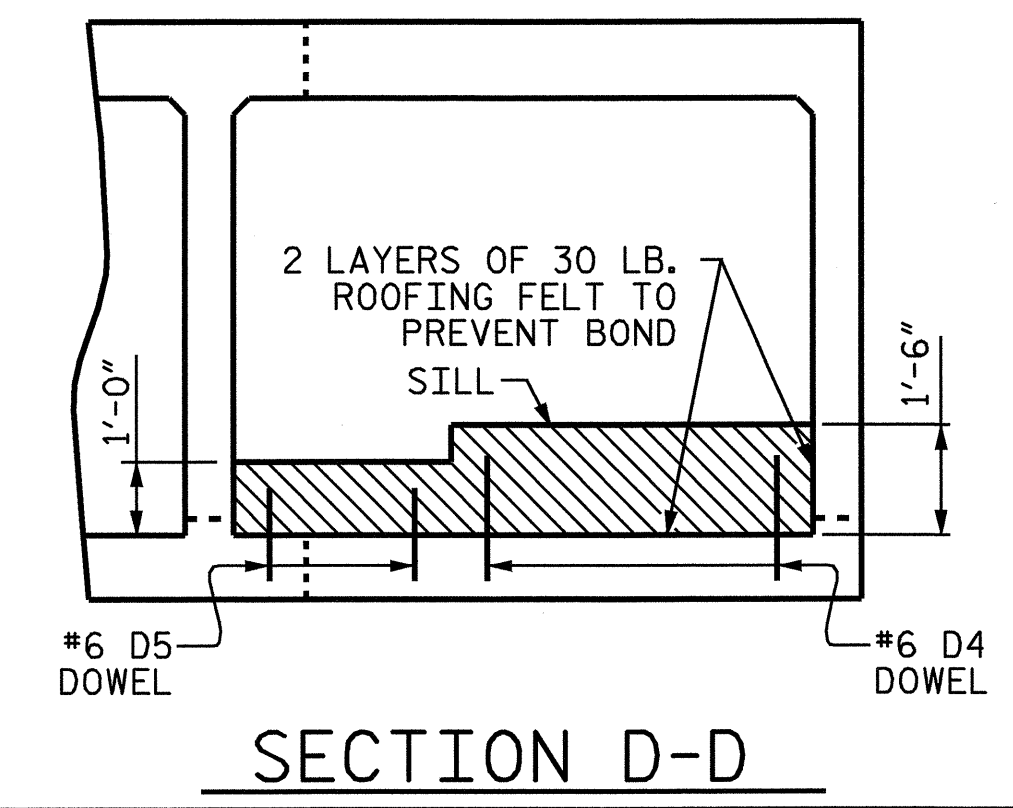
DRAWN BY: T.L. AVERETTE DATE: 1-09
 CHECKED BY: A.M. LEE DATE: 1-09



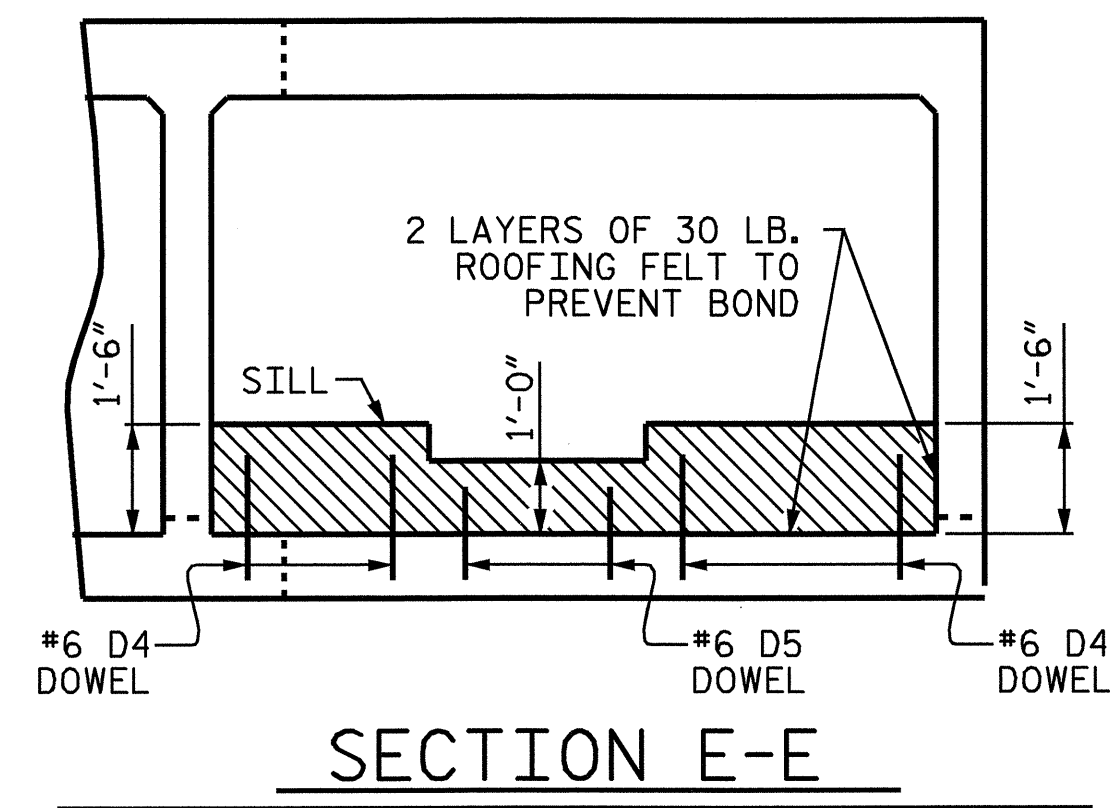
PLAN
SHOWING SILL LOCATIONS



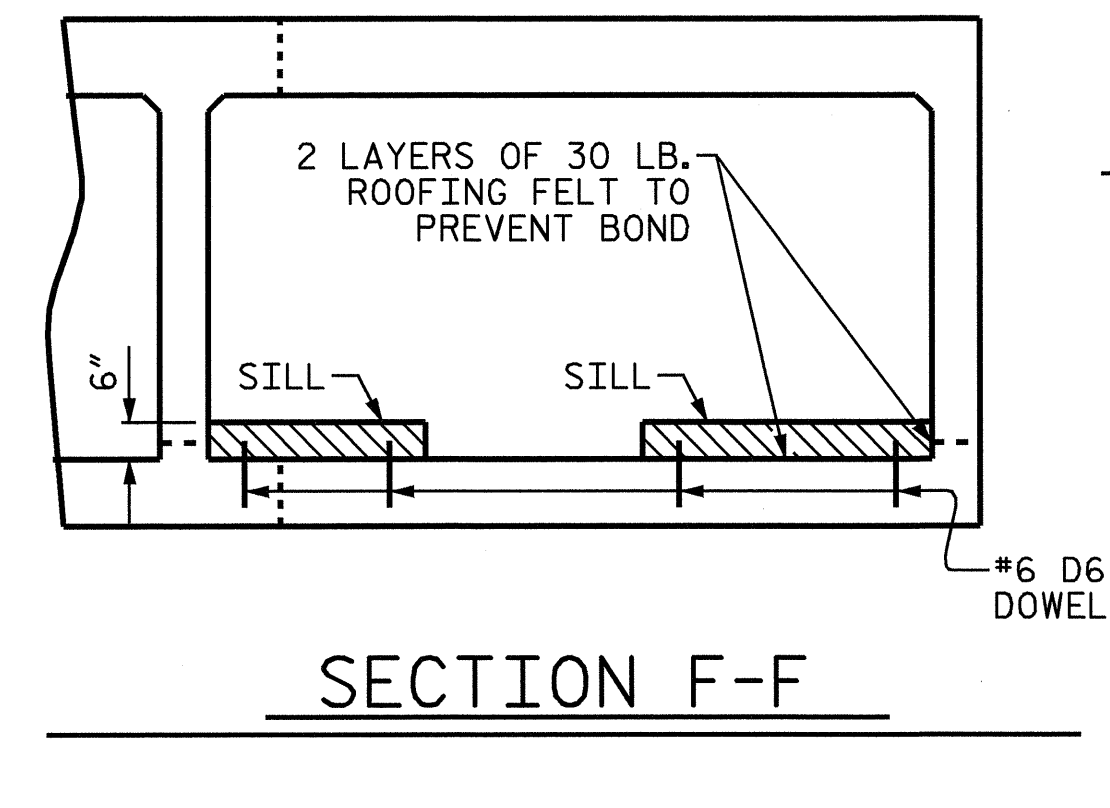
SECTION THRU SILL



SECTION D-D



SECTION E-E



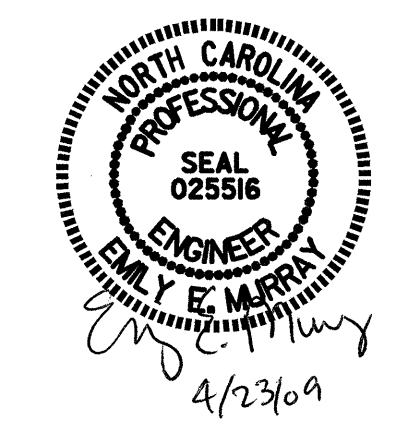
SECTION F-F

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

PROJECT NO. U-4020
WATAUGA COUNTY
STATION: 68+88.50 -L-

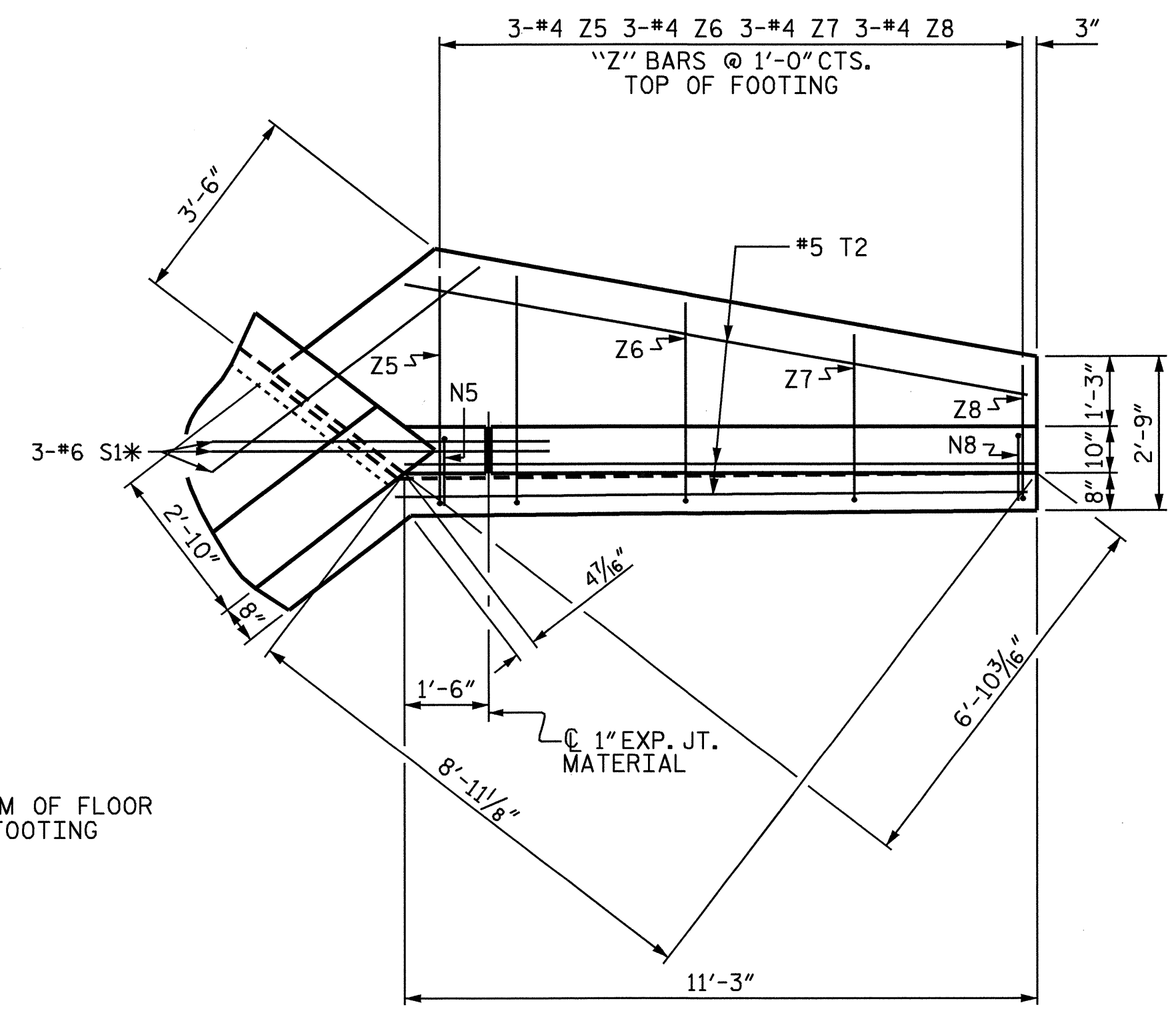
SHEET 7 OF 11

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**DOUBLE TAPERED
CONCRETE BOX CULVERT
EXTENSION**
82°-24'-00" SKEW

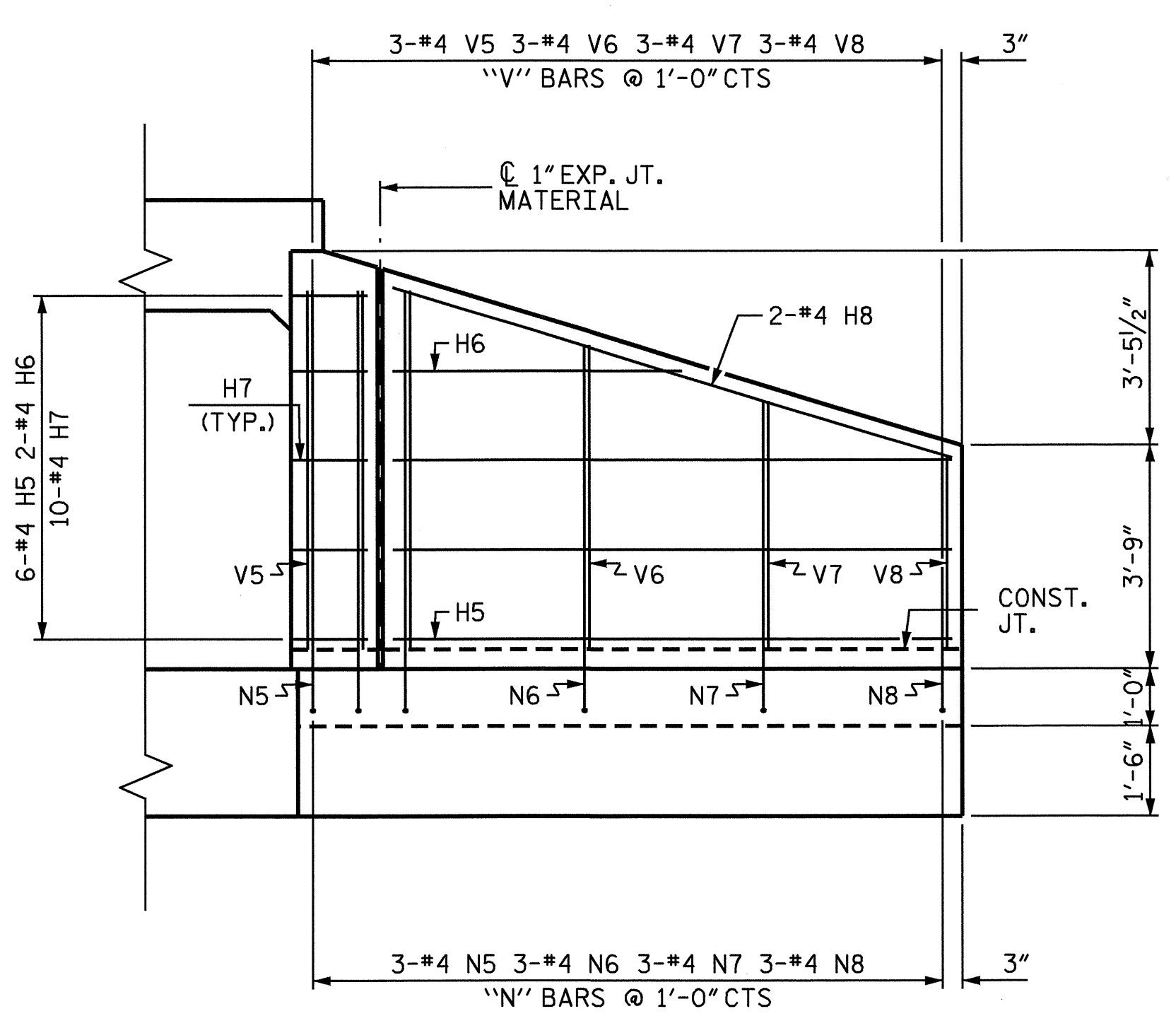


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-7
1			3			TOTAL SHEETS
2			4			11

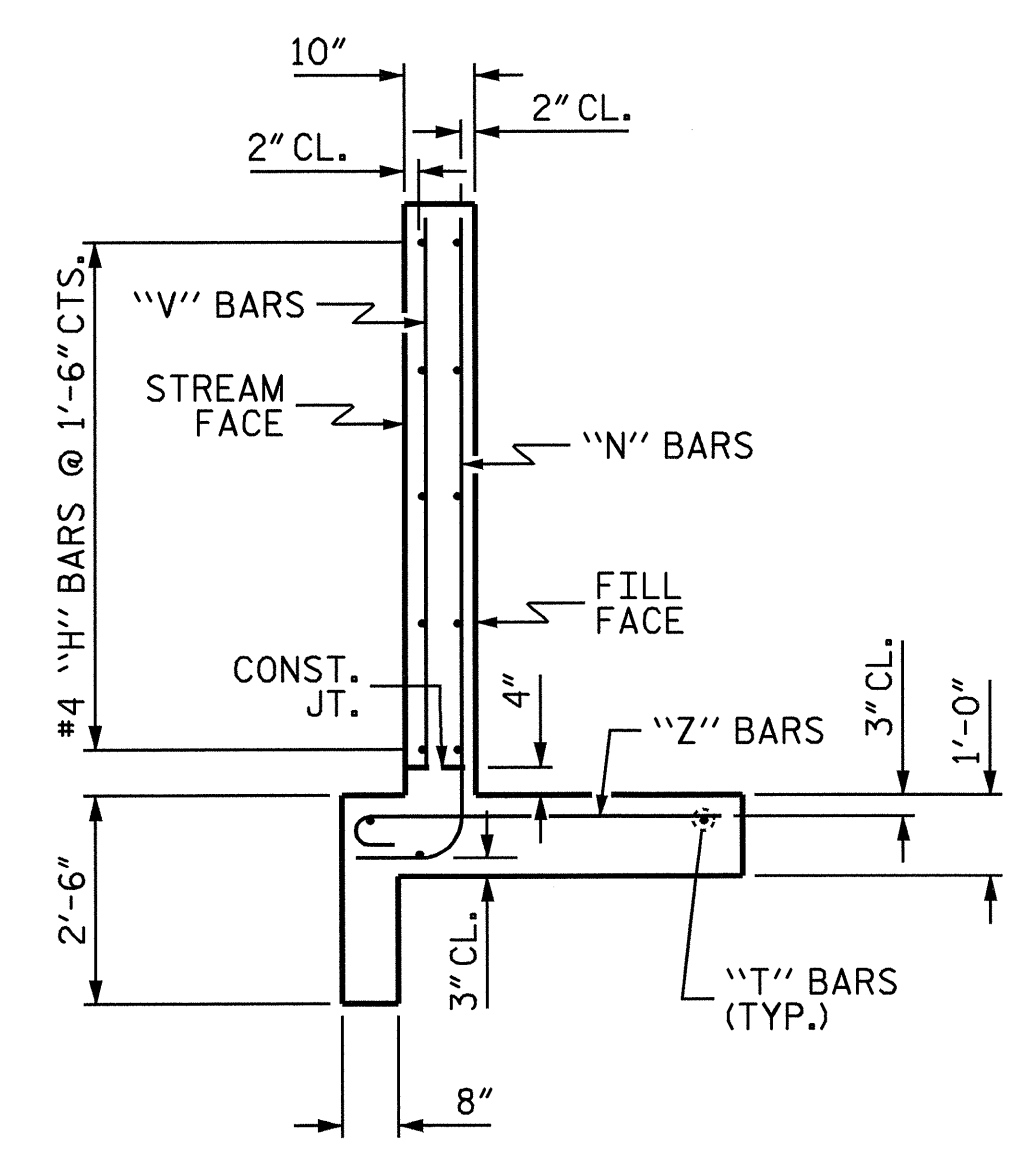
DRAWN BY: T.L. AVERETTE DATE: 1-09
CHECKED BY: A.M. LEE DATE: 1-09



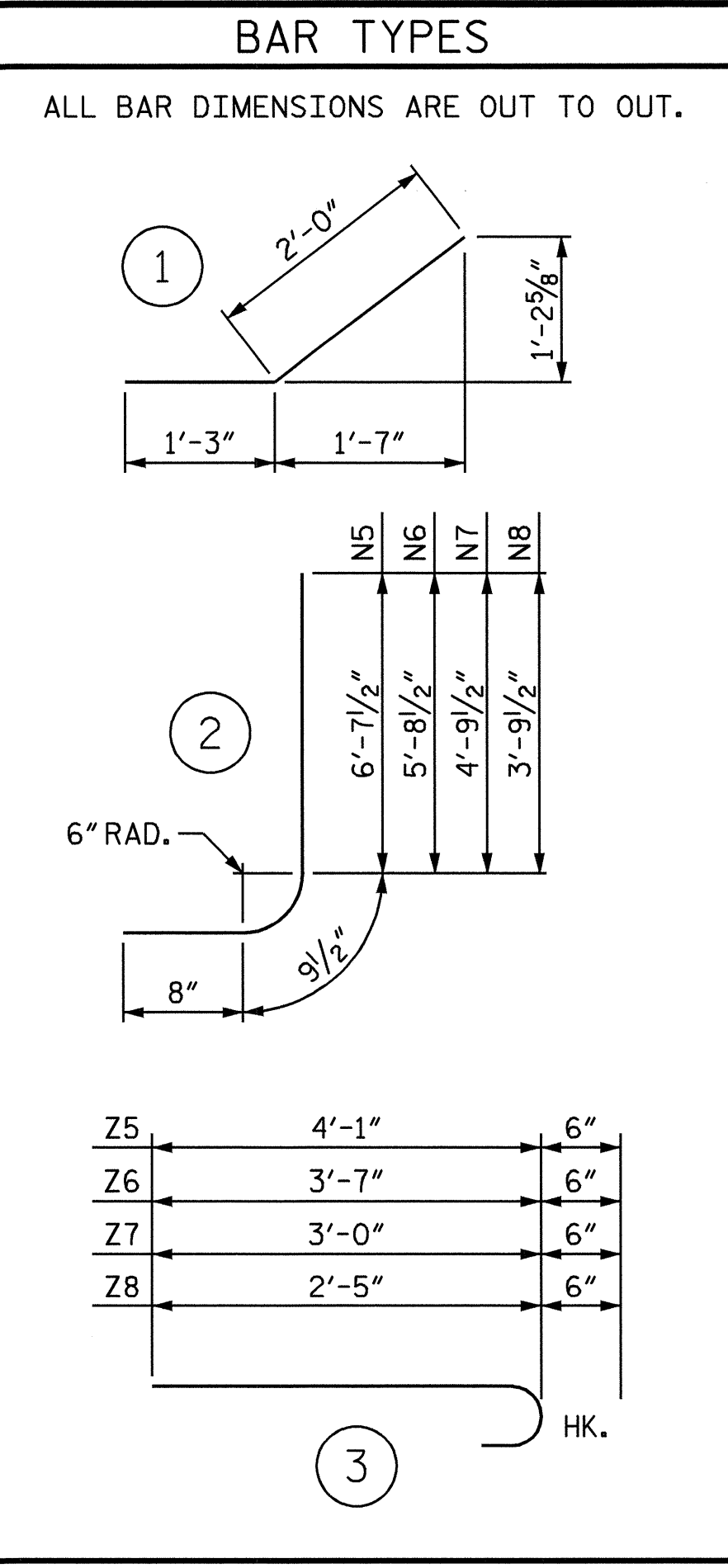
PLAN W1



ELEVATION W1



TYPICAL WING SECTION



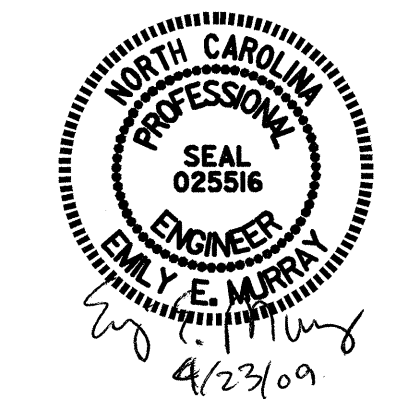
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H5	6	#4	STR	9'-4"	37
H6	2	#4	STR	4'-10"	6
H7	10	#4	1	3'-3"	22
H8	2	#4	STR	9'-9"	13
N5	3	#4	2	8'-1"	16
N6	3	#4	2	7'-2"	14
N7	3	#4	2	6'-3"	13
N8	3	#4	2	5'-3"	11
S1	6	#6	STR	6'-0"	54
T2	3	#5	STR	11'-3"	35
V5	3	#4	STR	6'-0"	12
V6	3	#4	STR	5'-1"	10
V7	3	#4	STR	4'-2"	8
V8	3	#4	STR	3'-3"	7
Z5	3	#4	3	4'-7"	9
Z6	3	#4	3	4'-1"	8
Z7	3	#4	3	3'-6"	7
Z8	3	#4	3	2'-11"	6
REINFORCING STEEL FOR 1 WING				288 LBS	
CLASS A CONCRETE					
1 WING				4.2	CY
1 HEADWALL				1.0	CY
1 END CURTAIN WALL				1.3	CY
TOTAL				6.5	CY

ASSEMBLED BY : T.L. AVERETTE DATE : 1-09
 CHECKED BY : A.M. LEE DATE : 1-09
 DRAWN BY : CCJ 12/99
 CHECKED BY : RWW 03/00

PROJECT NO. U-4020
 WATAUGA COUNTY
 STATION: 68+88.50 -L-
 SHEET 8 OF 11

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 WING FOR
 CONCRETE BOX CULVERT
 H = 6'-0" SLOPE = 2:1
 75° OR 105° SKEW

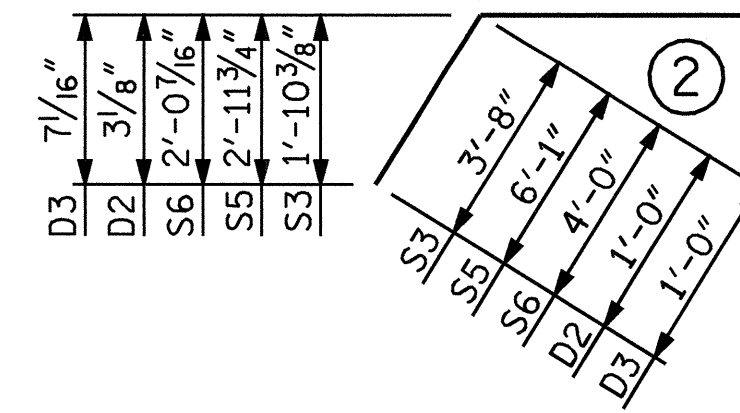
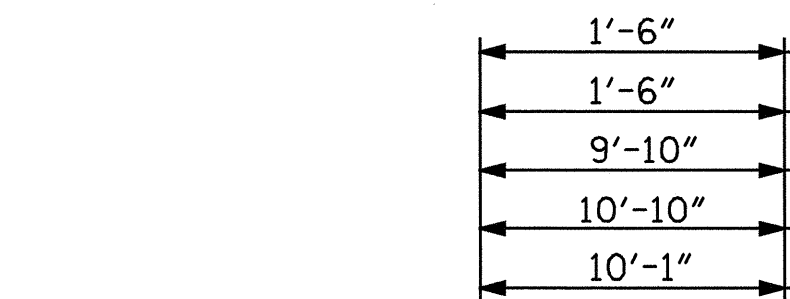
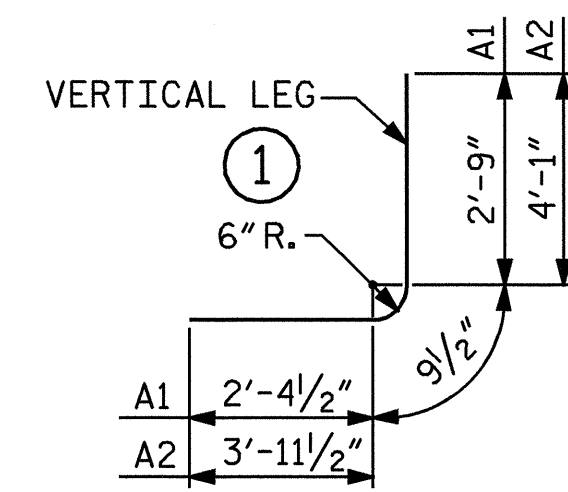


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-8
1			3			TOTAL SHEETS
2			4			11

REINFORCING STEEL SCHEDULE FOR CULVERT BARREL

BAR TYPES

STAGE I						STAGE II											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	64	#5	1	5'-11"	395	A1	52	#5	1	5'-11"	321	A320	3	#7	STR	9'-8"	59
A2	64	#7	1	8'-10"	1156	A2	52	#7	1	8'-10"	939	A321	3	#7	STR	9'-5"	58
A100	62	#6	STR	16'-9"	1560	A109	3	#6	STR	3'-9"	17	A322	3	#7	STR	9'-3"	57
A101	1	#6	STR	13'-8"	21	A110	3	#6	STR	5'-7"	25	A323	3	#7	STR	9'-0"	55
A102	1	#6	STR	13'-8"	21	A111	3	#6	STR	7'-2"	32	A324	3	#7	STR	8'-9"	54
A103	1	#6	STR	11'-3"	17	A112	3	#6	STR	8'-8"	39	A325	3	#7	STR	8'-7"	53
A104	1	#6	STR	7'-5"	11	A113	3	#6	STR	10'-2"	46	A326	3	#7	STR	8'-4"	51
A105	1	#6	STR	3'-7"	5	A114	3	#6	STR	11'-0"	50	A327	3	#7	STR	8'-1"	50
A106	1	#6	STR	14'-1"	21	A115	3	#6	STR	10'-9"	48	A328	3	#7	STR	7'-11"	49
A107	1	#6	STR	10'-4"	16	A116	3	#6	STR	10'-7"	48	A329	3	#7	STR	7'-8"	47
A108	1	#6	STR	6'-7"	10	A117	3	#6	STR	10'-4"	47	A330	3	#7	STR	7'-6"	46
A200	62	#5	STR	16'-2"	1045	A118	3	#6	STR	10'-1"	45	A331	1	#7	STR	3'-9"	8
A201	1	#5	STR	13'-8"	14	A119	3	#6	STR	9'-11"	45	A409	3	#7	STR	3'-9"	23
A202	1	#5	STR	13'-8"	14	A120	3	#6	STR	9'-8"	44	A410	3	#7	STR	5'-7"	34
A203	1	#5	STR	11'-3"	12	A121	3	#6	STR	9'-5"	42	A411	3	#7	STR	7'-2"	44
A204	1	#5	STR	7'-5"	8	A122	3	#6	STR	9'-3"	42	A412	3	#7	STR	8'-8"	53
A205	1	#5	STR	3'-7"	4	A123	3	#6	STR	9'-0"	41	A413	3	#7	STR	10'-2"	62
A206	1	#5	STR	13'-6"	14	A124	3	#6	STR	8'-9"	39	A414	3	#7	STR	11'-0"	67
A207	1	#5	STR	9'-9"	10	A125	3	#6	STR	8'-7"	39	A415	3	#7	STR	10'-9"	66
A208	1	#5	STR	6'-0"	6	A126	3	#6	STR	8'-4"	38	A416	3	#7	STR	10'-7"	65
A300	62	#7	STR	17'-9"	2249	A127	3	#6	STR	8'-1"	36	A417	3	#7	STR	10'-4"	63
A301	1	#7	STR	13'-8"	28	A128	3	#6	STR	7'-11"	36	A418	3	#7	STR	10'-1"	62
A302	1	#7	STR	13'-8"	28	A129	3	#6	STR	7'-8"	35	A419	3	#7	STR	9'-11"	61
A303	1	#7	STR	11'-3"	23	A130	3	#6	STR	7'-6"	34	A420	3	#7	STR	9'-8"	59
A304	1	#7	STR	7'-5"	15	A131	1	#6	STR	3'-9"	6	A421	3	#7	STR	9'-5"	58
A305	1	#7	STR	3'-7"	7	A209	3	#5	STR	3'-9"	12	A422	3	#7	STR	9'-3"	57
A306	1	#7	STR	15'-1"	31	A210	3	#5	STR	5'-7"	17	A423	3	#7	STR	9'-0"	55
A307	1	#7	STR	11'-4"	23	A211	3	#5	STR	7'-2"	22	A424	3	#7	STR	8'-9"	54
A308	1	#7	STR	7'-7"	16	A212	3	#5	STR	8'-8"	27	A425	3	#7	STR	8'-7"	53
A400	62	#7	STR	17'-9"	2249	A213	3	#5	STR	10'-2"	32	A426	3	#7	STR	8'-4"	51
A401	1	#7	STR	13'-8"	28	A214	3	#5	STR	11'-0"	34	A427	3	#7	STR	8'-1"	50
A402	1	#7	STR	13'-8"	28	A215	3	#5	STR	10'-9"	34	A428	3	#7	STR	7'-11"	49
A403	1	#7	STR	11'-3"	23	A216	3	#5	STR	10'-7"	33	A429	3	#7	STR	7'-8"	47
A404	1	#7	STR	7'-5"	15	A217	3	#5	STR	10'-4"	32	A430	3	#7	STR	7'-6"	46
A405	1	#7	STR	3'-7"	7	A218	3	#5	STR	10'-1"	32	A431	1	#7	STR	3'-9"	8
A406	1	#7	STR	15'-1"	31	A219	3	#5	STR	9'-11"	31	B1	5	#4	STR	6'-5"	21
A407	1	#7	STR	11'-4"	23	A220	3	#5	STR	9'-8"	30	B2	7	#4	STR	4'-4"	20
A408	1	#7	STR	7'-7"	16	A221	3	#5	STR	9'-5"	29	B4	24	#4	STR	7'-5"	119
B1	15	#4	STR	6'-5"	64	A222	3	#5	STR	9'-3"	29	B5	45	#4	STR	5'-4"	160
B2	24	#4	STR	4'-4"	69	A223	3	#5	STR	9'-0"	28	B7	1	#4	STR	6'-8"	4
B3	40	#4	STR	6'-5"	171	A224	3	#5	STR	8'-9"	27	B8	1	#4	STR	7'-0"	5
B4	21	#4	STR	7'-5"	104	A225	3	#5	STR	8'-7"	27	B9	1	#4	STR	7'-3"	5
B5	40	#4	STR	5'-4"	143	A226	3	#5	STR	8'-4"	26	C1	74	#4	STR	18'-2"	898
B6	52	#4	STR	7'-5"	258	A227	3	#5	STR	8'-1"	25	D1	18	#6	STR	2'-6"	68
B7	1	#4	STR	6'-8"	4	A228	3	#5	STR	7'-11"	25	D3	5	#6	2	2'-6"	19
B8	1	#4	STR	7'-0"	5	A229	3	#5	STR	7'-8"	24	D4	6	#6	STR	2'-0"	18
B9	1	#4	STR	7'-3"	5	A230	3	#5	STR	7'-6"	23	D5	4	#6	STR	1'-6"	9
C1	98	#4	STR	18'-2"	1189	A231	1	#5	STR	3'-9"	4	D6	4	#6	STR	1'-0"	6
D1	26	#6	STR	2'-6"	98	A309	3	#7	STR	3'-9"	23	E1	16	#5	STR	3'-8"	61
D2	5	#6	2	2'-6"	19	A310	3	#7	STR	5'-7"	34	E3	16	#5	STR	3'-1"	51
E2	16	#5	STR	4'-7"	76	A311	3	#7	STR	7'-2"	44	G4	4	#5	STR	7'-4"	31
E3	32	#5	STR	3'-1"	103	A312	3	#7	STR	8'-8"	53	S3	6	#6	2	13'-9"	124
G2	4	#5	STR	15'-10"	66	A313	3	#7	STR	10'-2"	62	S4	6	#8	STR	7'-4"	117
S2	6	#8	STR	18'-1"	290	A314	3	#7	STR	11'-0"	67	S6	6	#6	2	13'-10"	125
S5	12	#6	2	16'-11"	305	A315	3	#7	STR	10'-9"	66	REINFORCING STEEL FOR BARREL (STAGE II) LBS. 6972					
REINFORCING STEEL FOR BARREL (STAGE I) LBS. 12,169						A316	3	#7	STR	10'-7"	65						
						A317	3	#7	STR	10'-4"	63						
						A318	3	#7	STR	10'-1"	62						
						A319	3	#7	STR	9'-11"	61						



BAR DIMENSIONS ARE OUT TO OUT

BAR	SIZE	SPLICE LENGTH
A100	#6	2'-9"
A200	#5	2'-2"
A300	#7	3'-9"
A400	#7	3'-9"
"B"	#4	1'-9"
C1	#4	1'-11"
"G"	#5	1'-9"
"S"	#6	2'-3"
"S"	#8	4'-0"

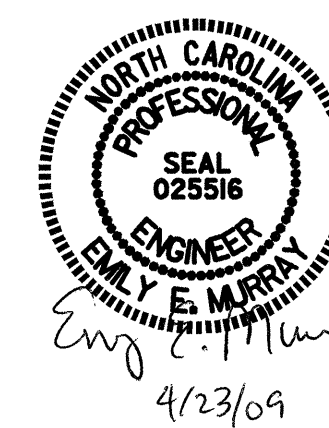
PROJECT NO. U-4020
WATAUGA COUNTY
 STATION: 68+88.50 -L-

SHEET 9 OF 11

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

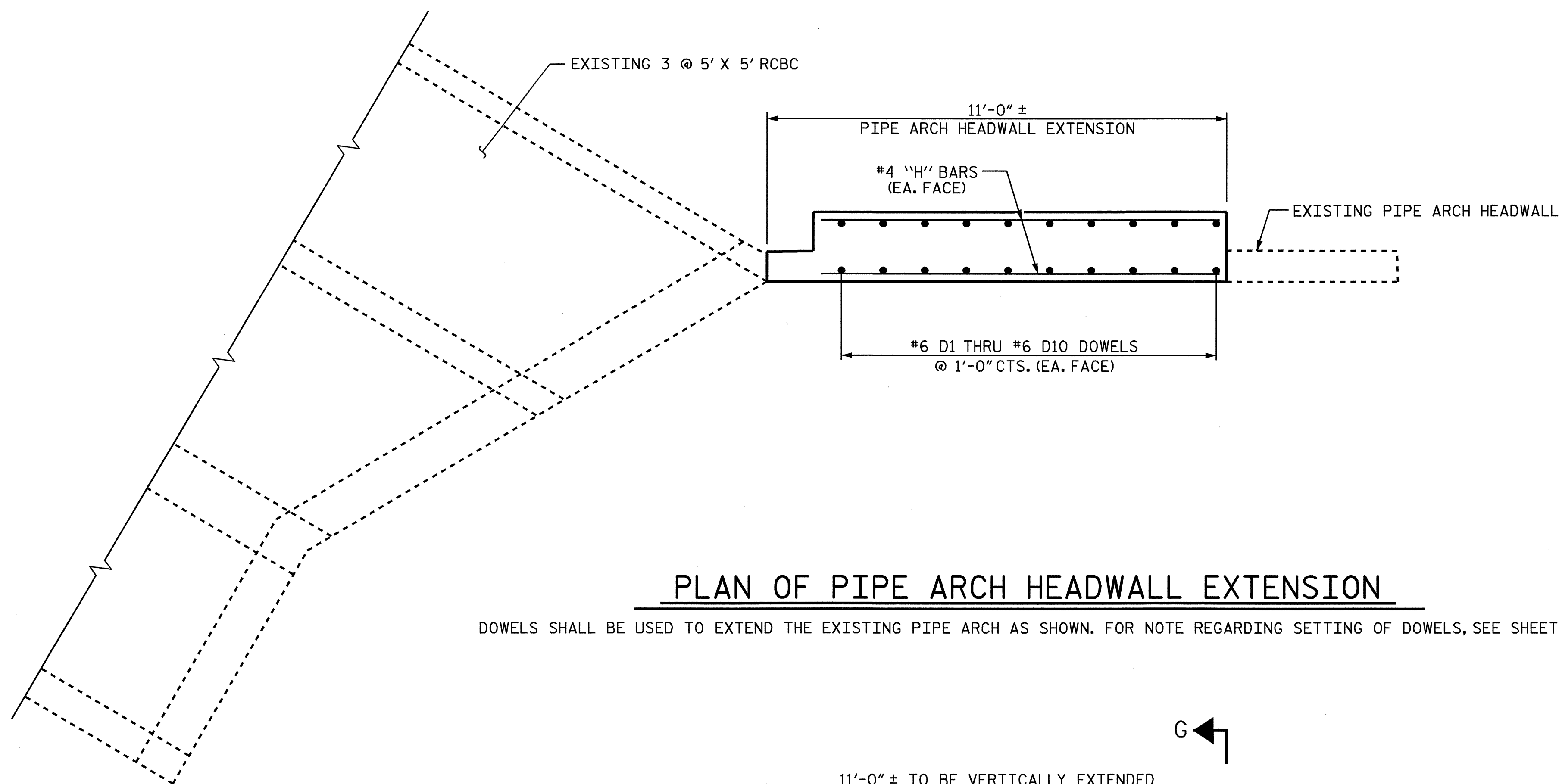
DOUBLE TAPERED
 CONCRETE BOX CULVERT
 EXTENSION

82°-24'-00" SKEW



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-9
1			3			TOTAL SHEETS 11
2			4			

DRAWN BY: T.L. AVERETTE DATE: 1-09
 CHECKED BY: A.M. LEE DATE: 1-09

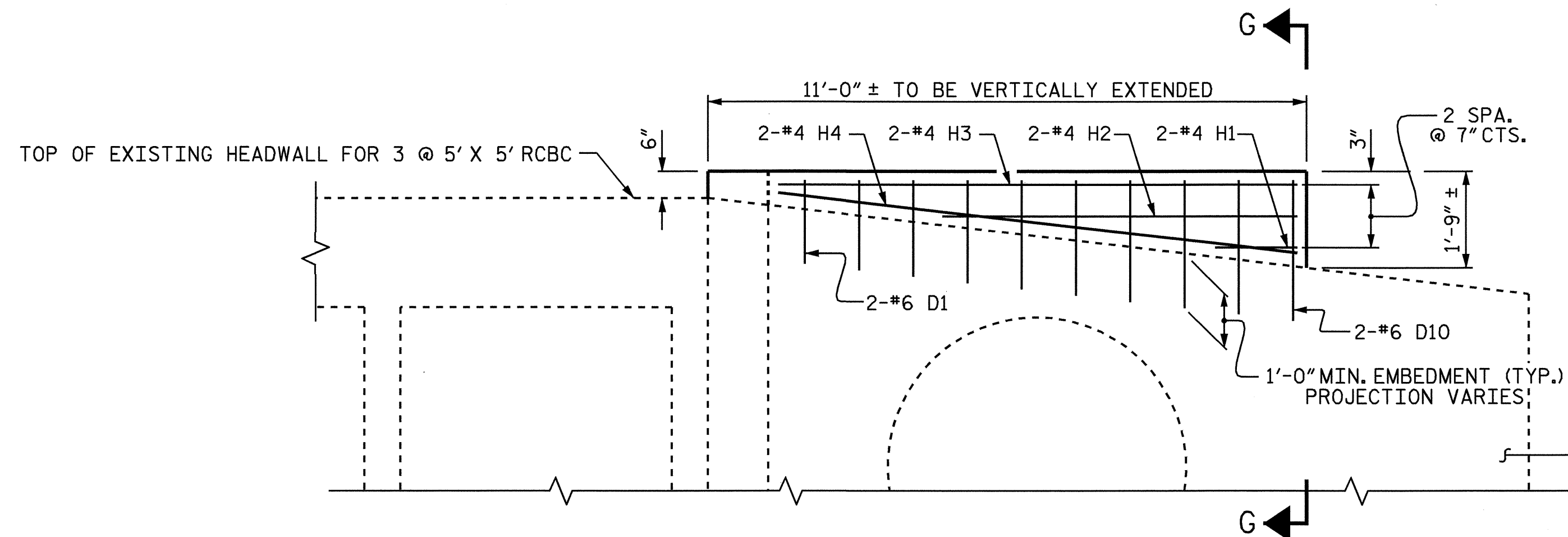


PLAN OF PIPE ARCH HEADWALL EXTENSION

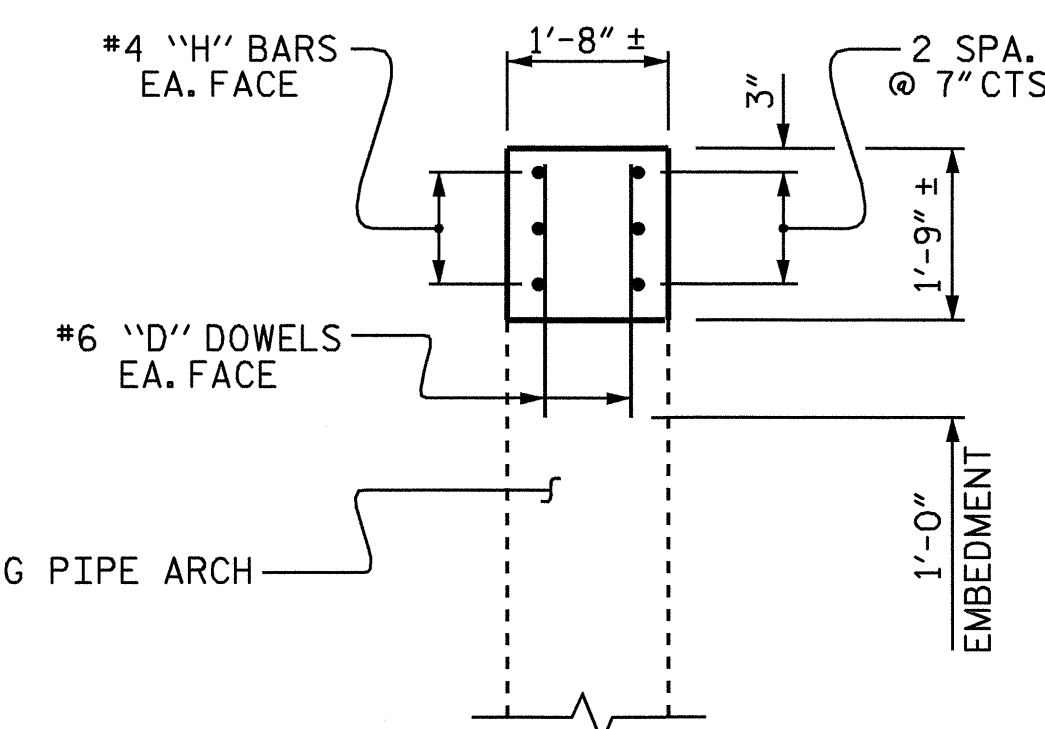
DOWELS SHALL BE USED TO EXTEND THE EXISTING PIPE ARCH AS SHOWN. FOR NOTE REGARDING SETTING OF DOWELS, SEE SHEET SN.

PIPE ARCH EXTENSION QUANTITIES	
CLASS A CONCRETE	
VERTICAL EXTENSION OF PIPE ARCH HEADWALL	0.7 C.Y.
REINFORCING STEEL	
VERTICAL EXTENSION OF PIPE ARCH HEADWALL	99 LBS.

REINFORCING BAR SCHEDULE FOR PIPE ARCH HEADWALL EXTENSION					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
D1	2	#6	STR	1'-7"	5
D2	2	#6	STR	1'-8"	5
D3	2	#6	STR	1'-9"	5
D4	2	#6	STR	1'-10"	6
D5	2	#6	STR	2'-0"	6
D6	2	#6	STR	2'-1"	6
D7	2	#6	STR	2'-3"	7
D8	2	#6	STR	2'-4"	7
D9	2	#6	STR	2'-5"	7
D10	2	#6	STR	2'-7"	8
H1	2	#4	STR	1'-6"	2
H2	2	#4	STR	6'-6"	9
H3	2	#4	STR	9'-6"	13
H4	2	#4	STR	9'-7"	13
REINFORCING STEEL FOR PIPE ARCH EXTENSION		LBS.			99



ELEVATION OF PIPE ARCH HEADWALL EXTENSION



SECTION G-G

PROJECT NO. U-4020
WATAUGA COUNTY
STATION: 68+88.50 -L-

SHEET 10 OF 11



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DOUBLE TAPERED
CONCRETE BOX CULVERT
EXTENSION

82°-24'-00" SKEW

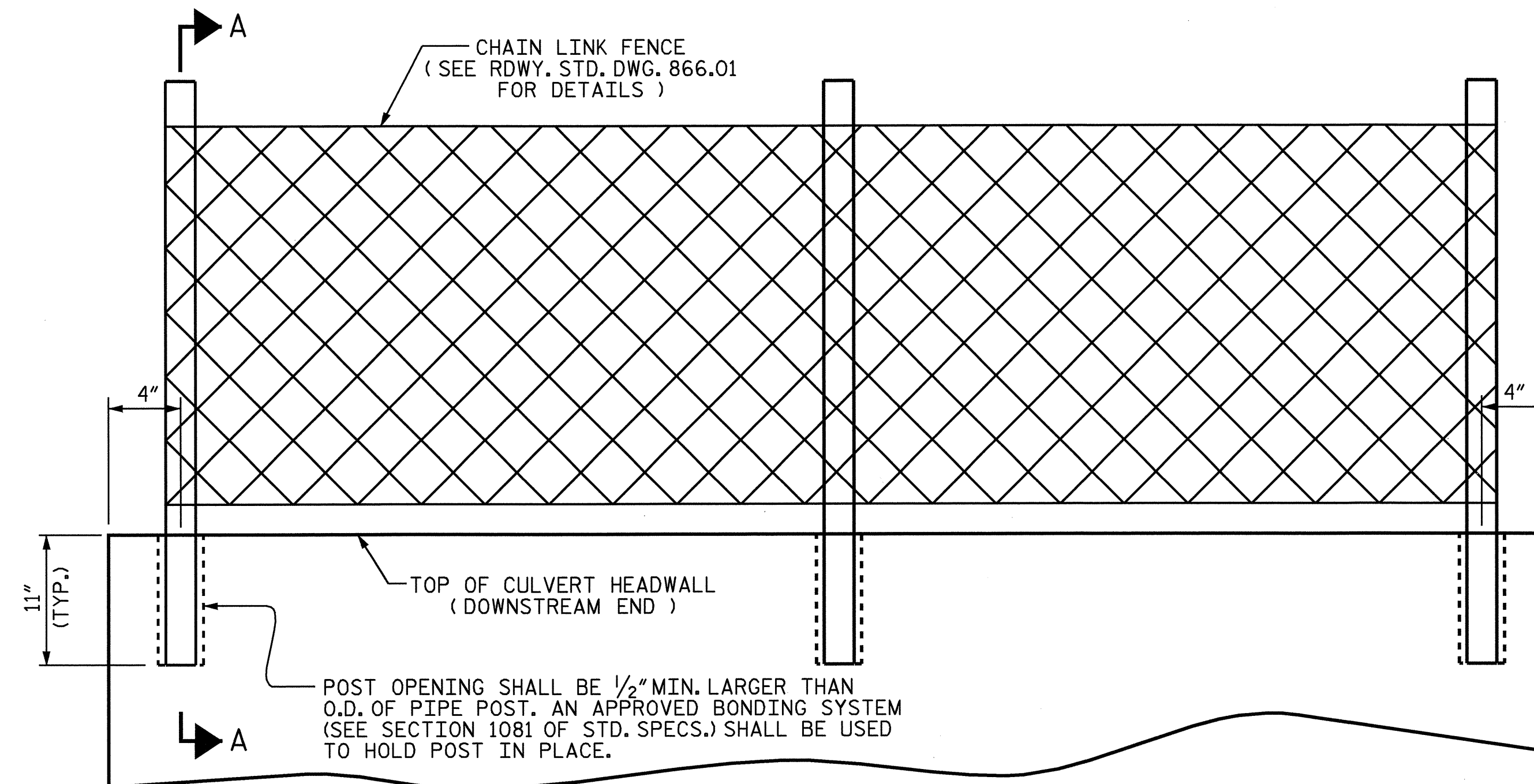
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-10
1			3			TOTAL SHEETS
2			4			11

DRAWN BY: T.L. AVERETTE DATE: 1-09
CHECKED BY: A.M. LEE DATE: 1-09

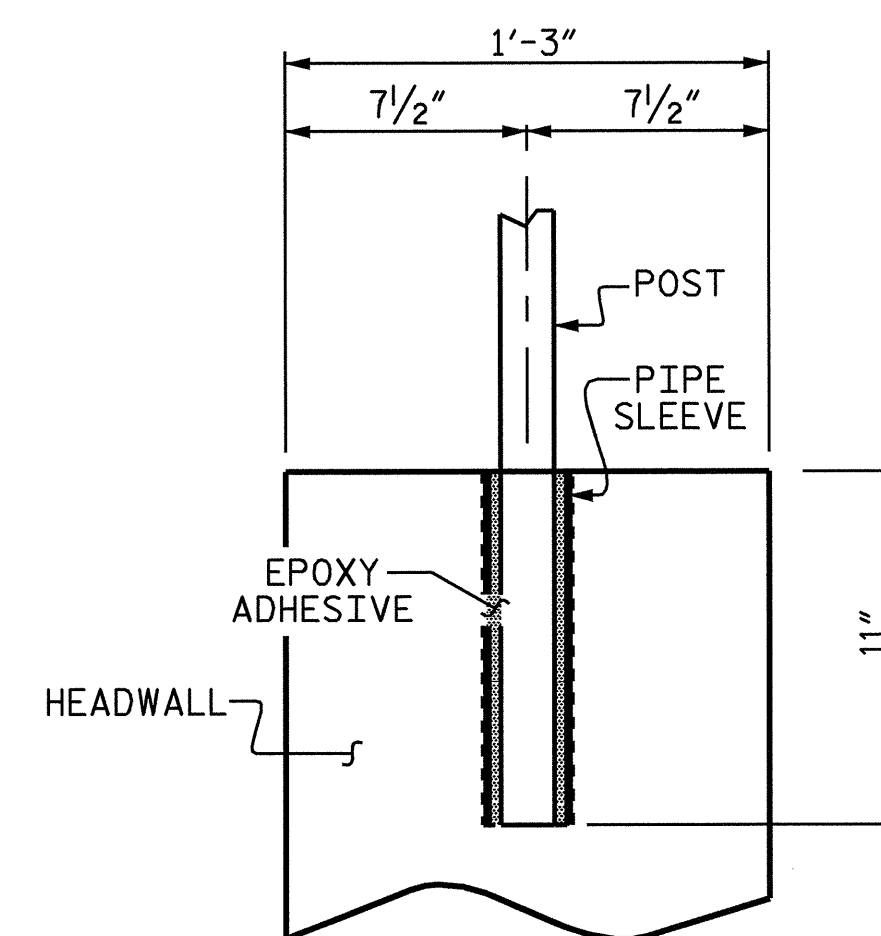
NOTES:

CHAIN LINK FENCE SHALL BE EMBEDDED 11" INTO PROPOSED HEADWALL. THE PROPOSED RAILING SHALL BE PRE-MEASURED AND CENTERED ON TOP OF HEADWALL FOR PIPE SLEEVE SPACINGS. INSERT PIPE SLEEVES IN THE HEADWALL AND REFER TO STD. SPEC. 1081 FOR PROPER ANCHOR SYSTEM.

FOR 48" CHAIN LINK FENCE, SEE SPECIAL PROVISIONS.



ELEVATION VIEW OF CULVERT HEADWALL WITH CHAIN LINK FENCE



SECTION A-A

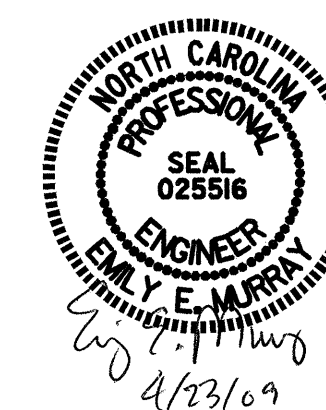
PROJECT NO. U-4020
WATAUGA COUNTY
 STATION: 68+88.50 -L-

SHEET 11 OF 11

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

DOUBLE TAPERED
 CONCRETE BOX CULVERT
 EXTENSION

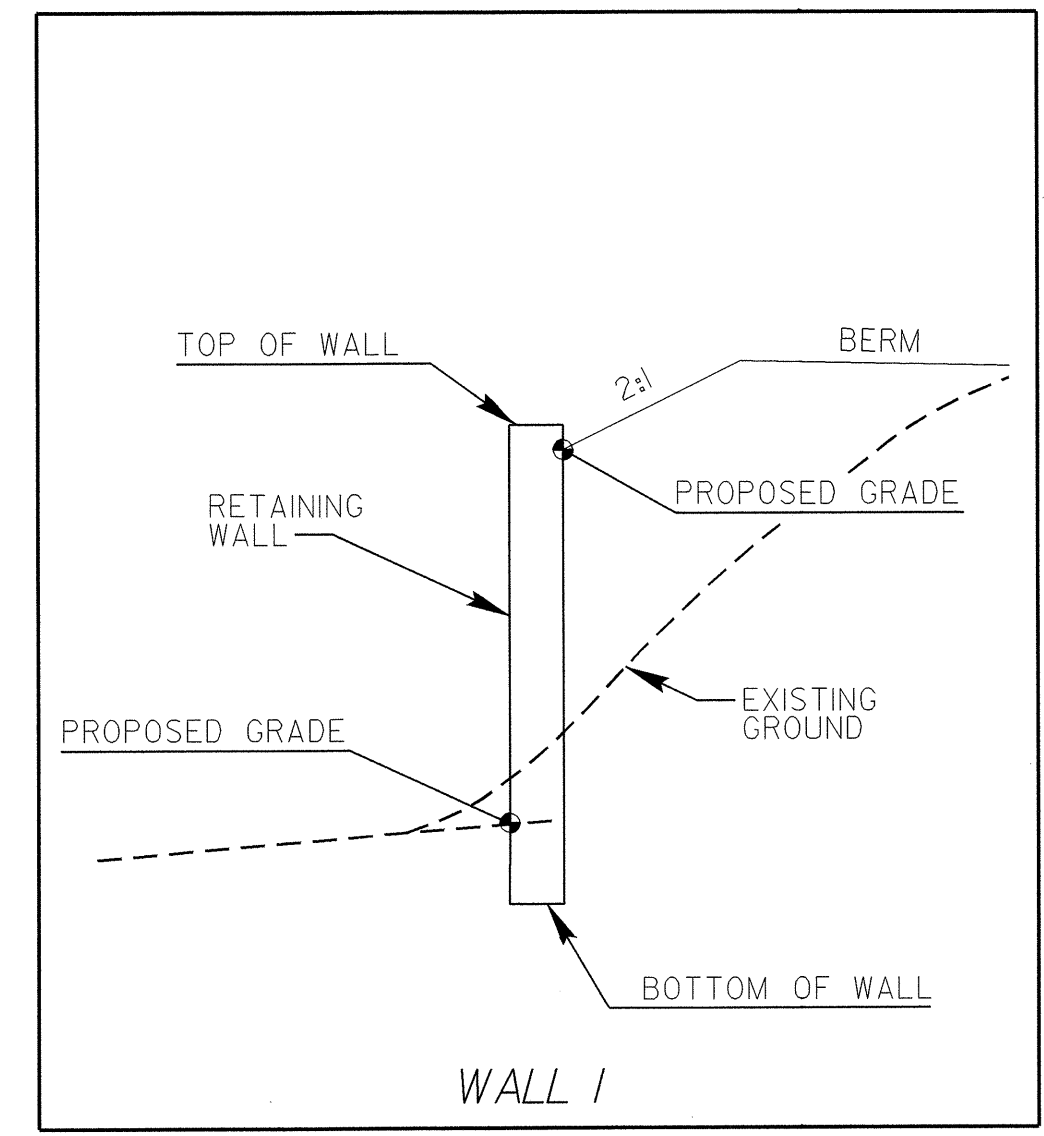
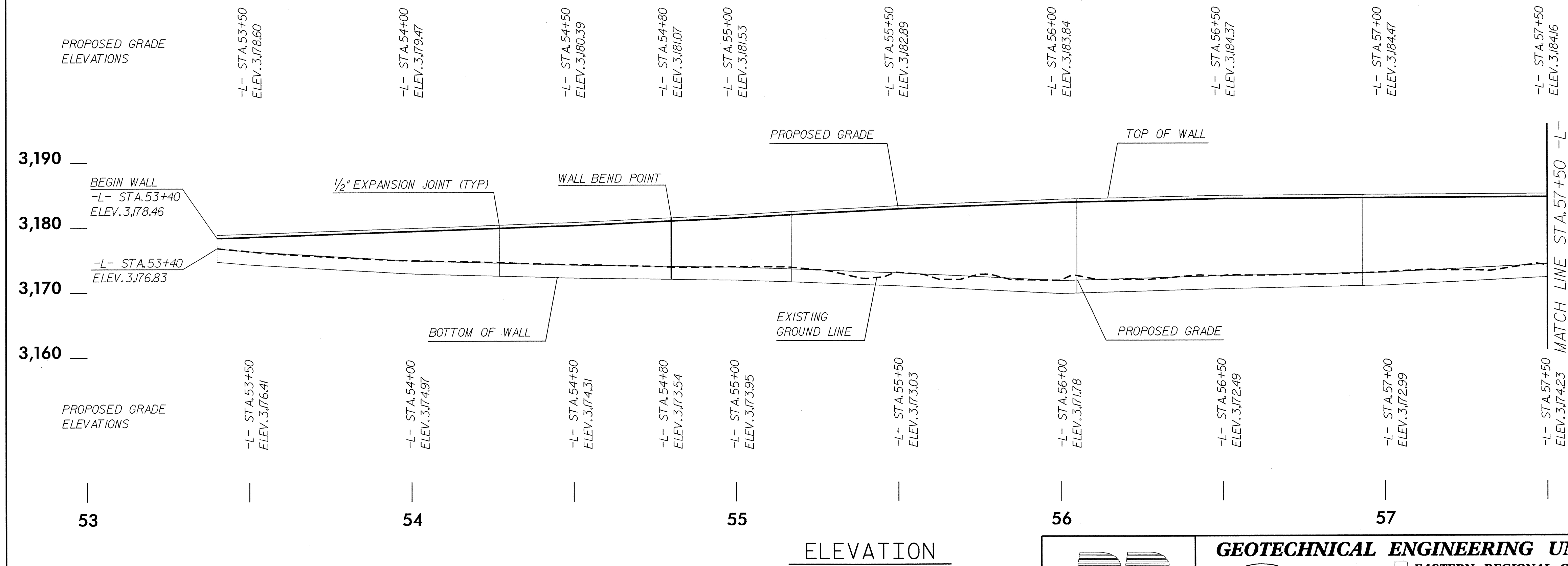
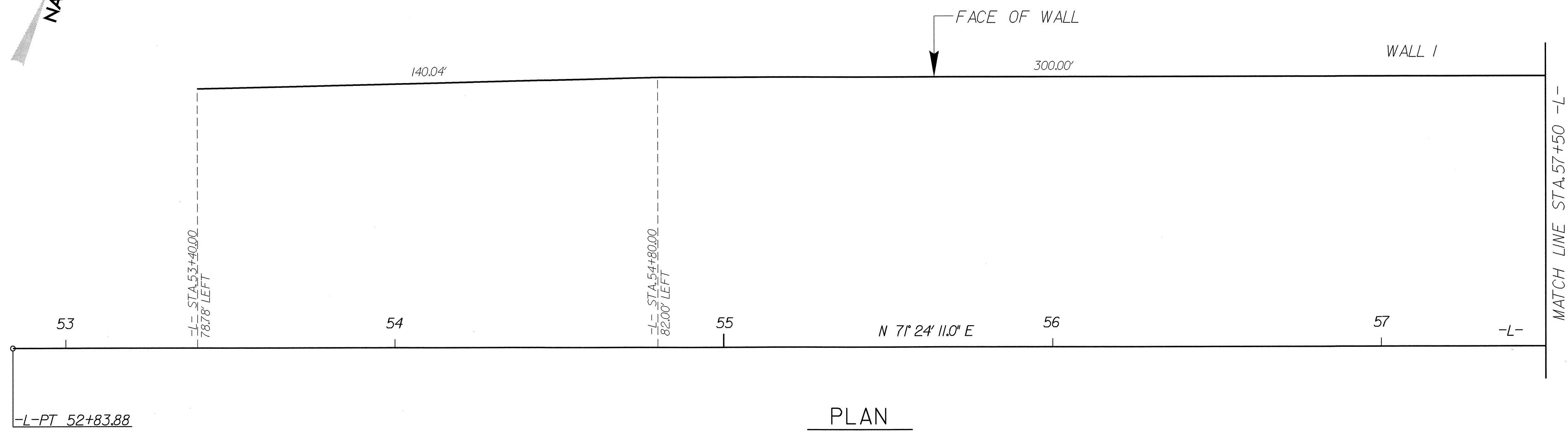
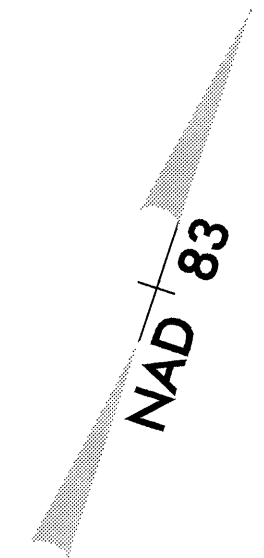
82°-24'-00" SKEW



DRAWN BY : T.L. AVERETTE DATE : 1-09
 CHECKED BY : A.M. LEE DATE : 1-09

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-11
1			3			TOTAL SHEETS
2			4			11

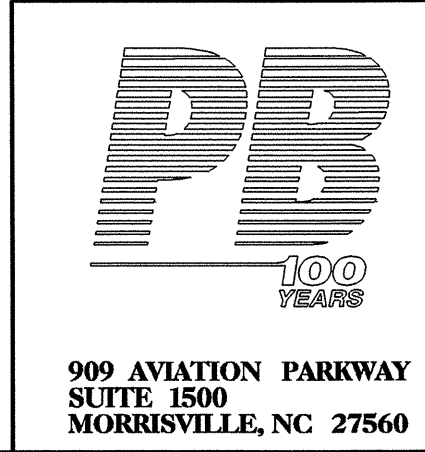
ENGINEER
 NORTH CAROLINA PROFESSIONAL SEAL
 18680
 ENGINEER
 GARY R. TAYLOR
 11/9/08
 SIGNATURE DATE



PROJECT NO.: U-4020 (35015.1.1)
WATAUGA COUNTY
STATION: _____
 SHEET 1 OF 17

PREPARED BY: K. WHITE DATE: 10/08
 REVIEWED BY: G. TAYLOR DATE: 10/08

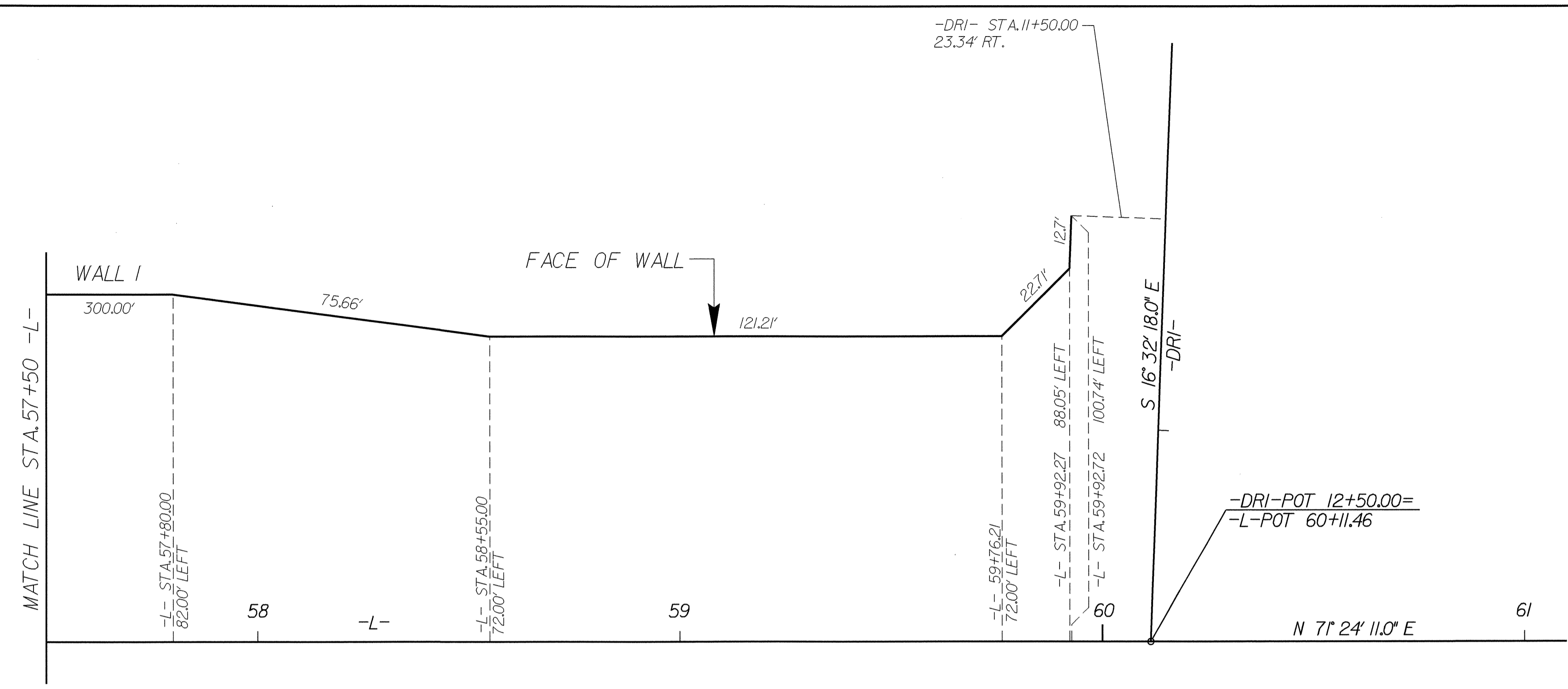
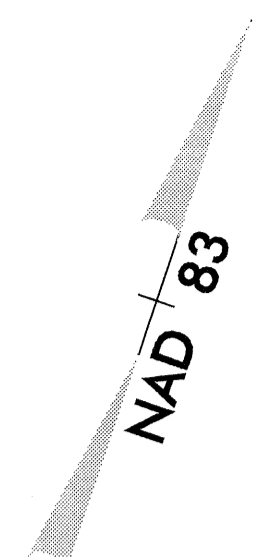
NOTES:
 CUT OR FILL AS NEEDED TO MATCH PROPOSED GRADE AT BOTTOM FRONT OF WALL.
 CONTRACTION JOINTS NOT SHOWN FOR CLARITY.



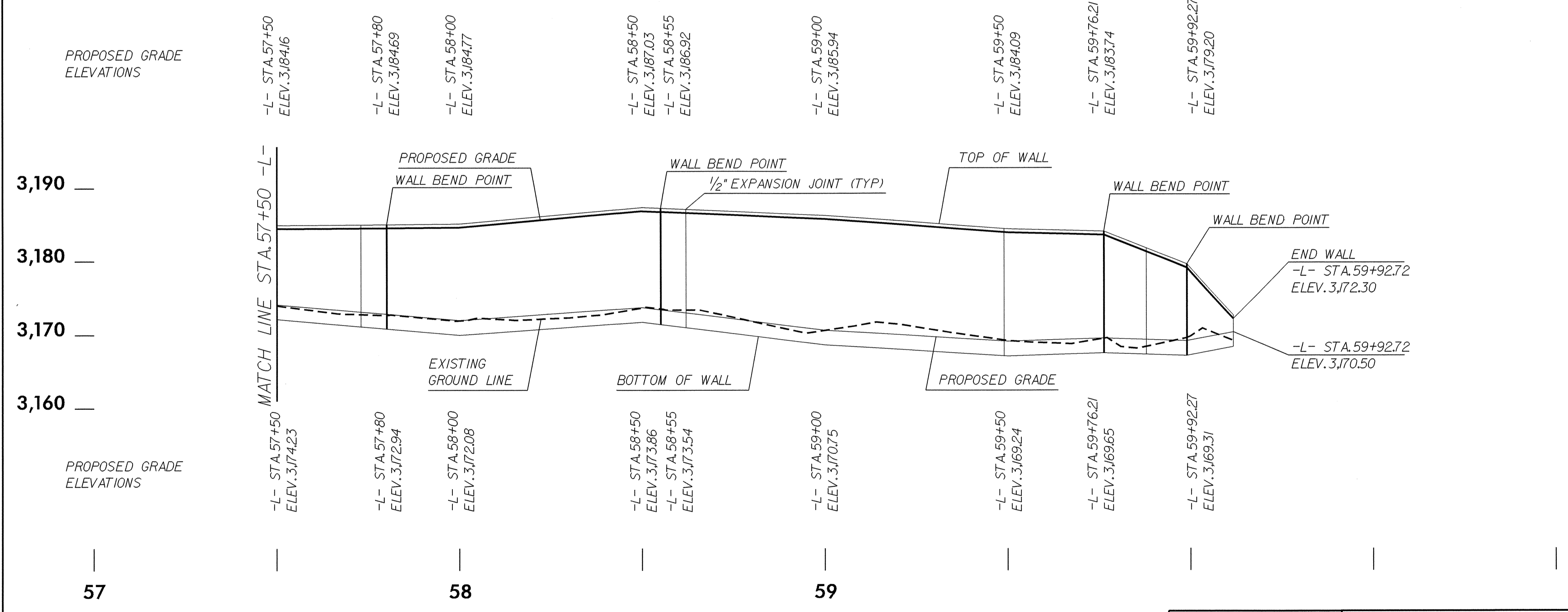
GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SOLDIER PILE RETAINING WALL
WALL 1 - SHEET 1 OF 2

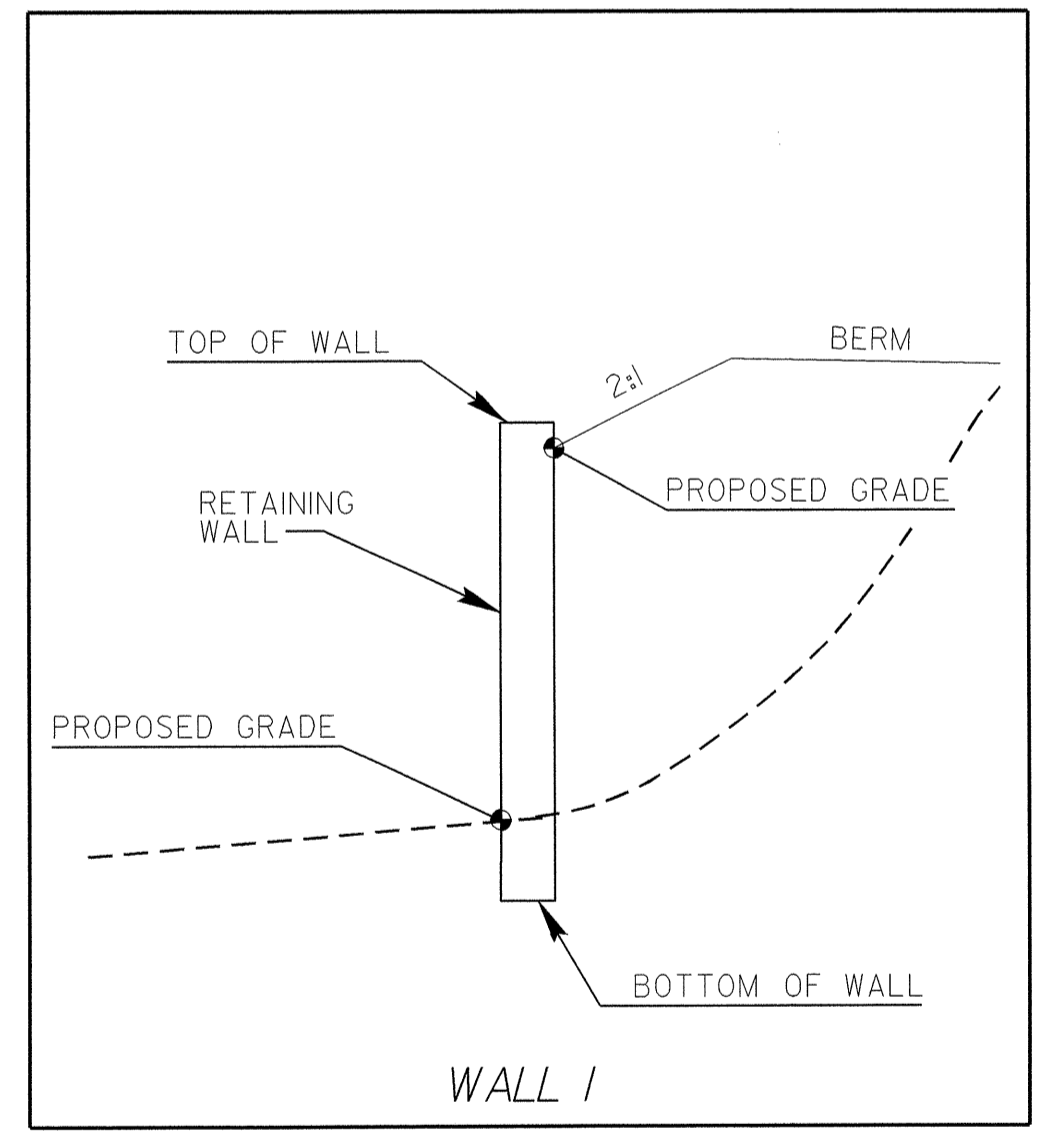
REVISIONS						SHEET NO. W-1
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS
2			4			19



PLAN



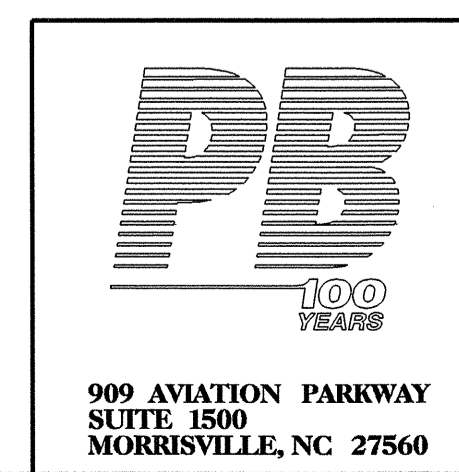
ELEVATION



PROJECT NO.: U-4020 (35015.1.1)
 WATAUGA COUNTY
 STATION:
 SHEET 2 OF 17

PREPARED BY: K. WHITE	DATE: 10/08
REVIEWED BY: G. TAYLOR	DATE: 10/08

NOTES:
 CUT OR FILL AS NEEDED TO MATCH PROPOSED GRADE AT BOTTOM FRONT OF WALL.
 CONTRACTION JOINTS NOT SHOWN FOR CLARITY.



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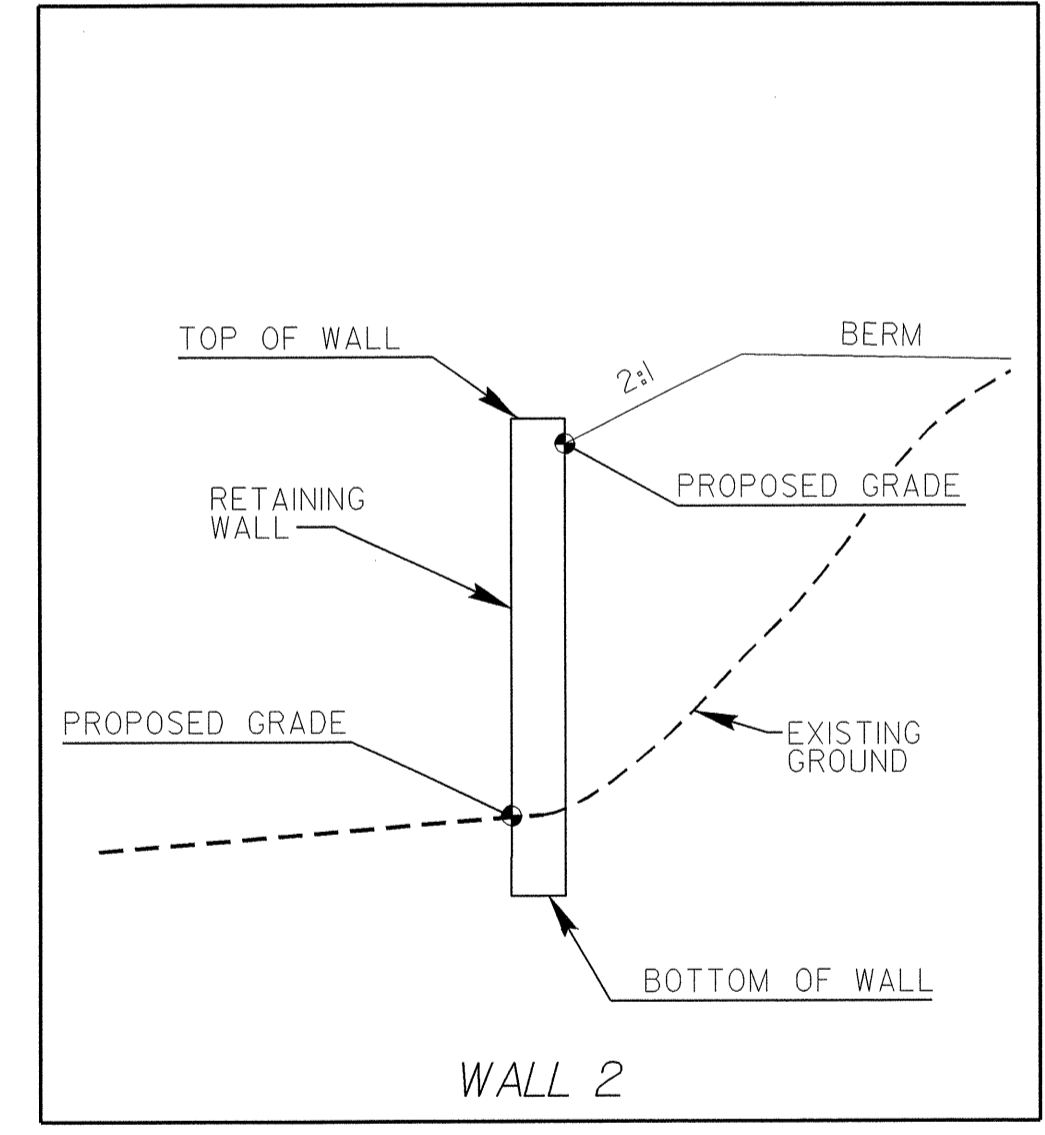
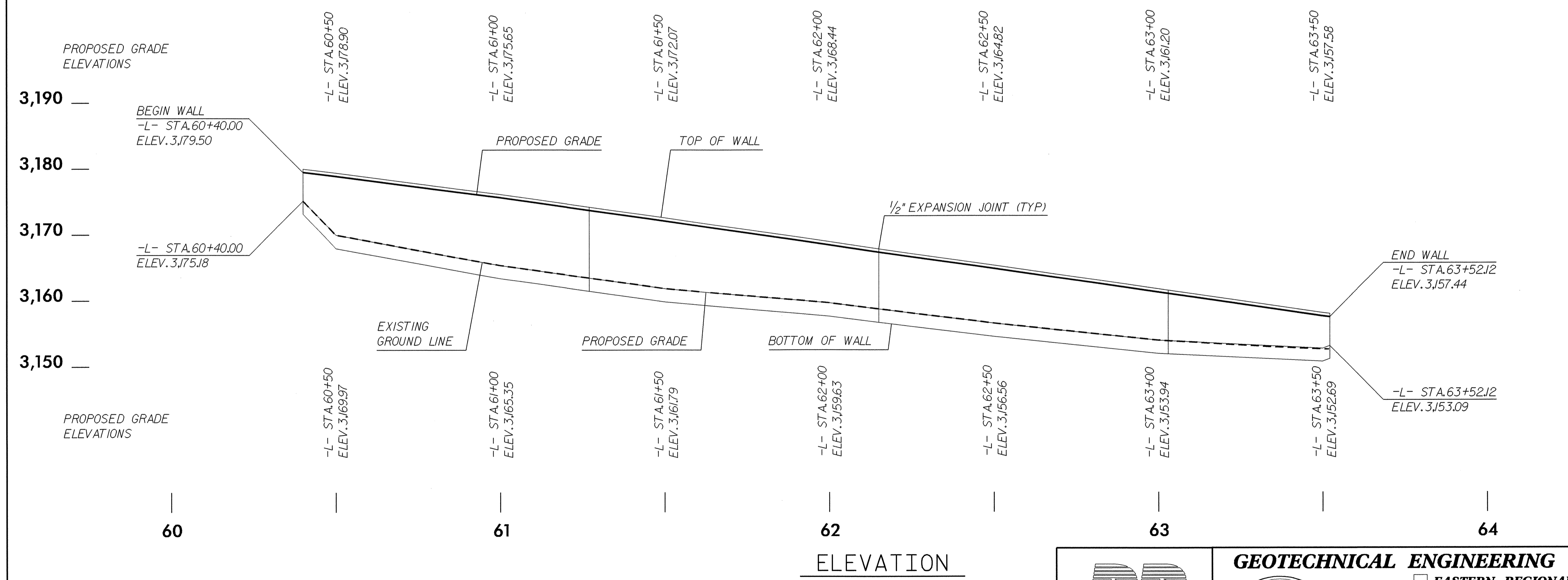
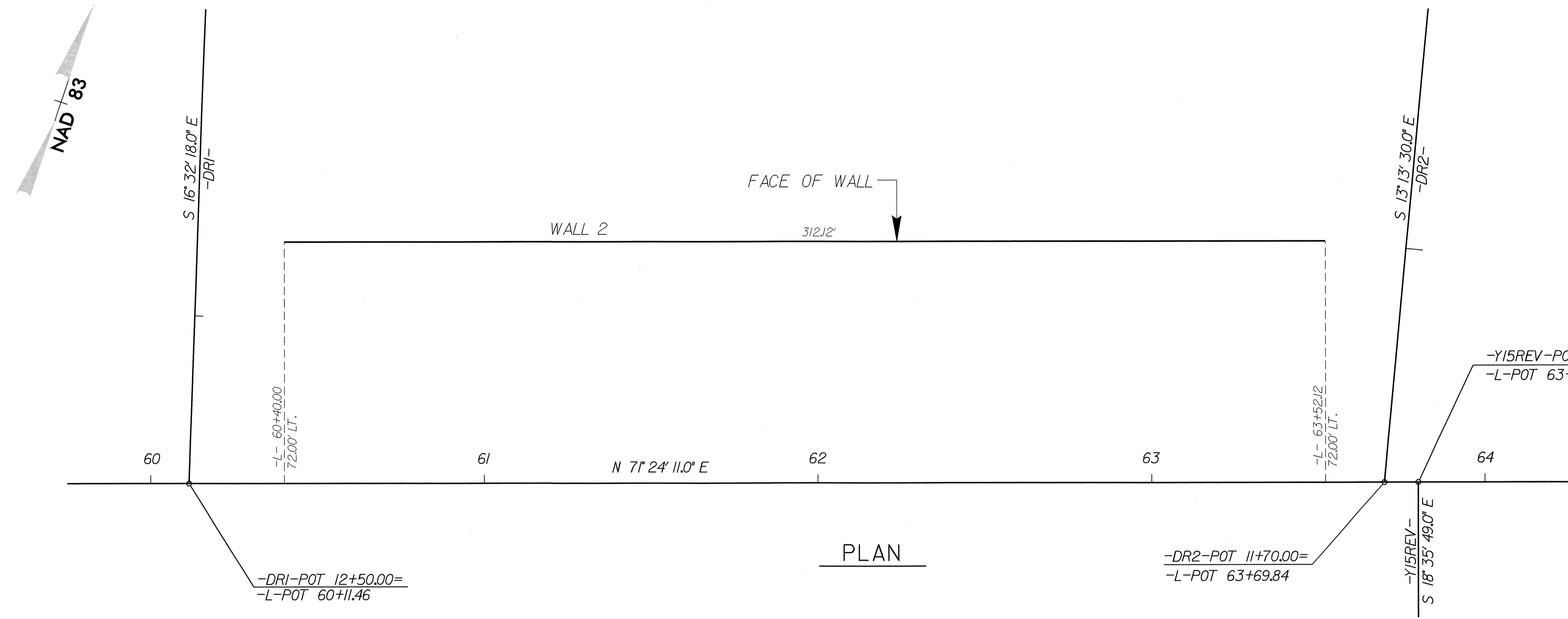
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

REVISIONS						SHEET NO. W-2
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 19
2			4			

ENGINEER

Gary R. Taylor 1/9/09
 SIGNATURE DATE

ENGINEER
 NORTH CAROLINA PROFESSIONAL SEAL
 18880
 ENGINEER
 GARY R. TAYLOR
 11/9/09
 SIGNATURE DATE



PROJECT NO.: U-4020 (35015.1.1)
 WATAUGA COUNTY
 STATION:
 SHEET 3 OF 17

PREPARED BY: K. WHITE DATE: 10/08
 REVIEWED BY: G. TAYLOR DATE: 10/08

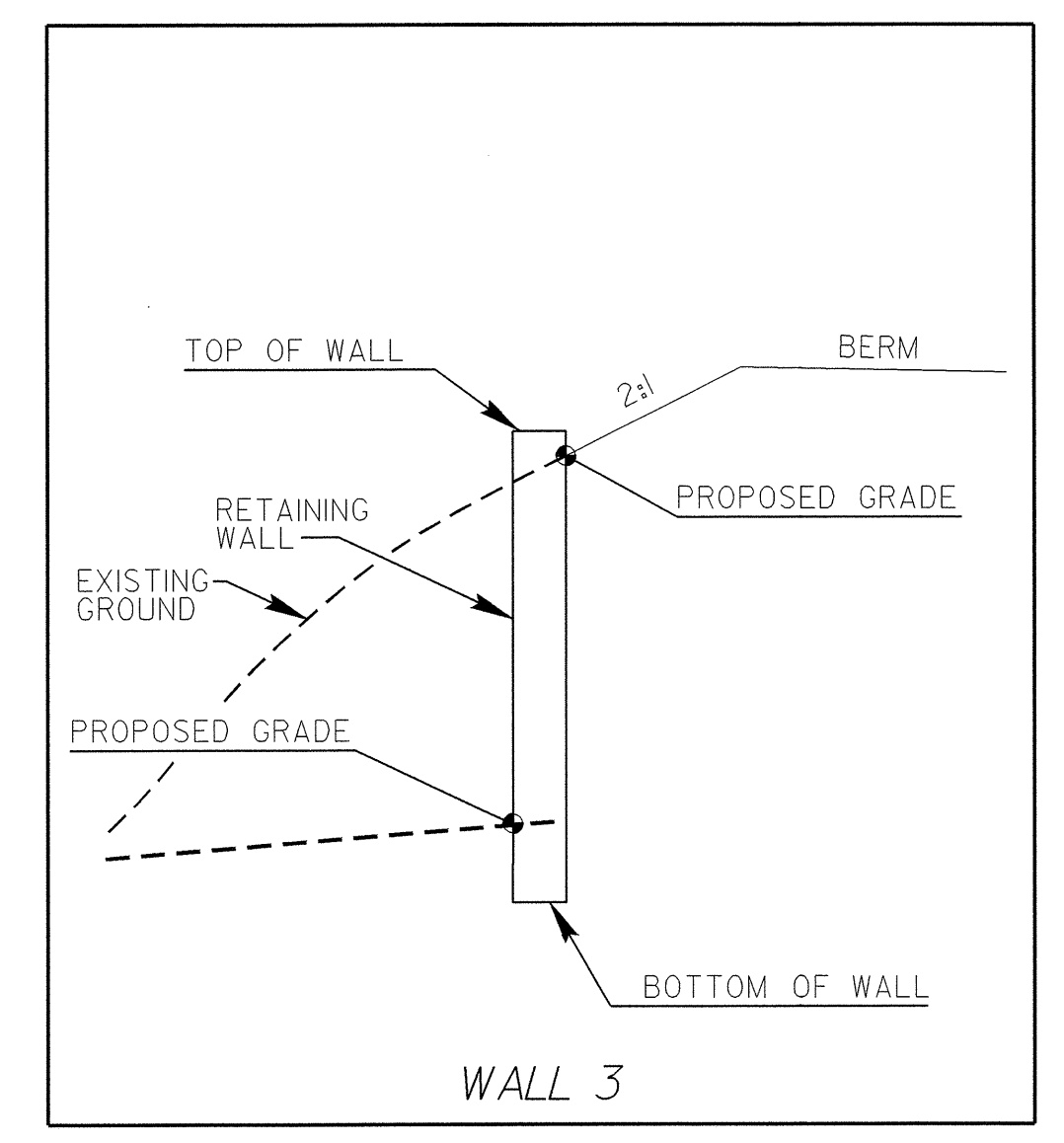
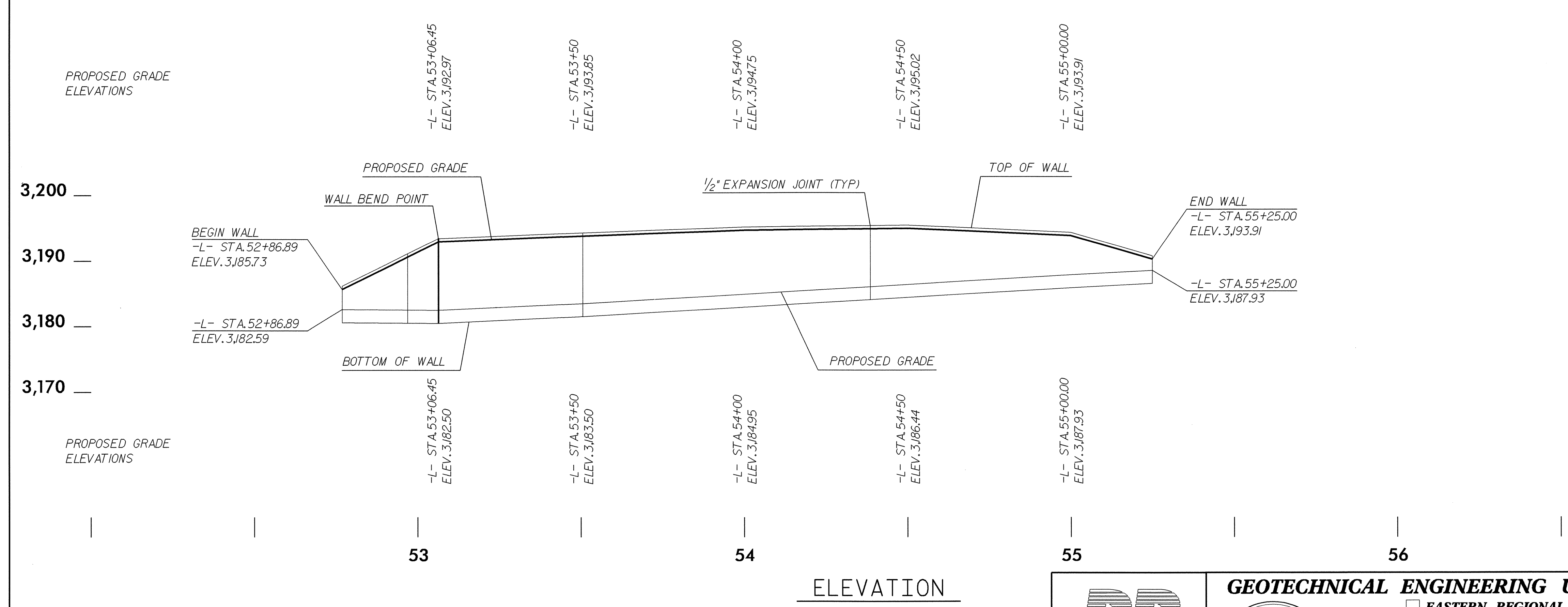
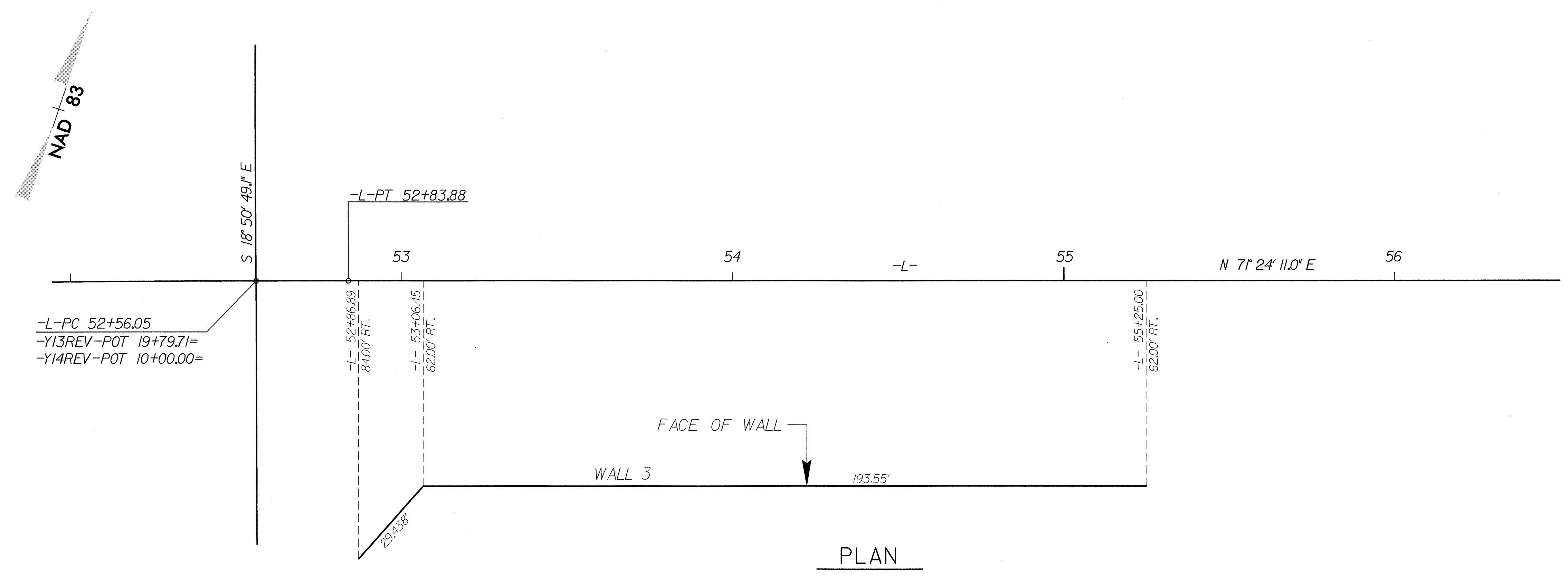
NOTES:
 CUT OR FILL AS NEEDED TO MATCH PROPOSED GRADE AT BOTTOM FRONT OF WALL.
 CONTRACTION JOINTS NOT SHOWN FOR CLARITY.



GEOTECHNICAL ENGINEERING UNIT
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 DEPARTMENT OF TRANSPORTATION
 RALEIGH

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			19
2			4			

ENGINEER
 NORTH CAROLINA PROFESSIONAL SEAL
 18880
 ENGINEER
 GARY R. TAYLOR
 11/9/09
 DATE



PROJECT NO.: U-4020 (35015.1.1)
 WATAUGA COUNTY
 STATION:
 SHEET 4 OF 17

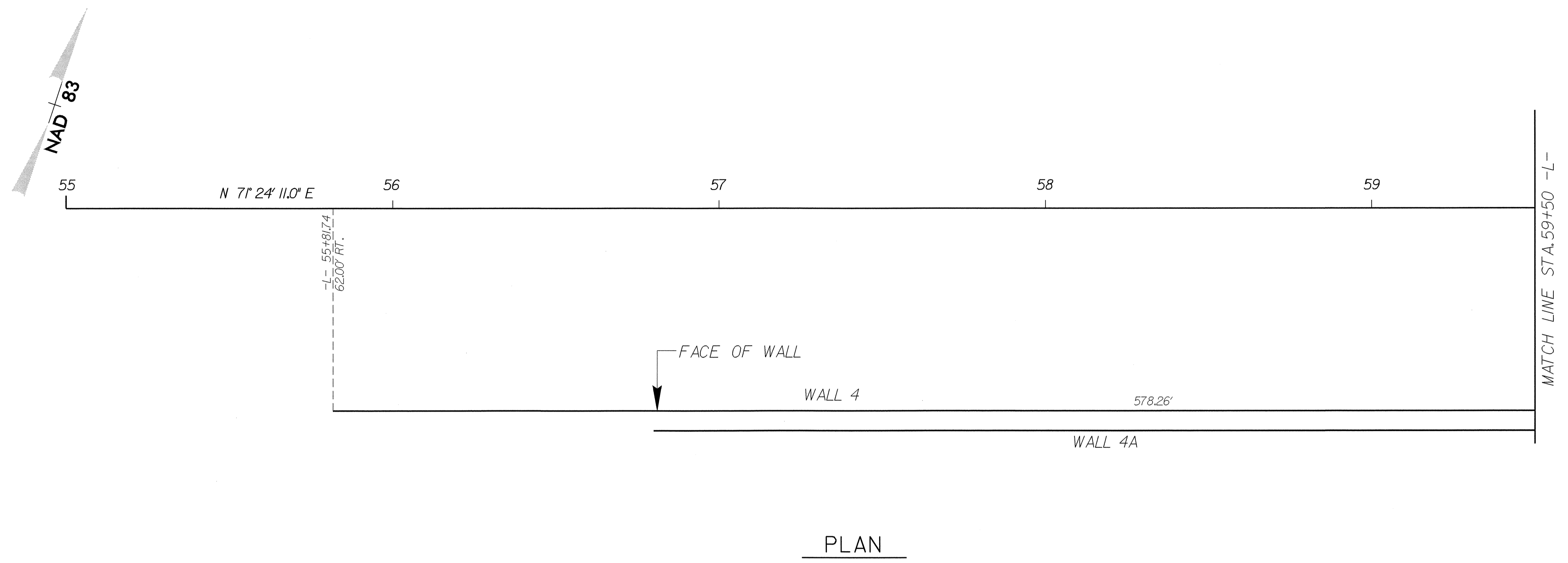
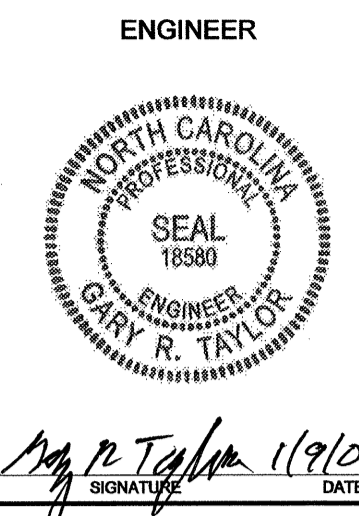
PREPARED BY: K. WHITE DATE: 10/08
 REVIEWED BY: G. TAYLOR DATE: 10/08

NOTES:
 CONTRACTION JOINTS NOT SHOWN FOR CLARITY.



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 RALEIGH

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-4
2			4			TOTAL SHEETS 19



PLAN

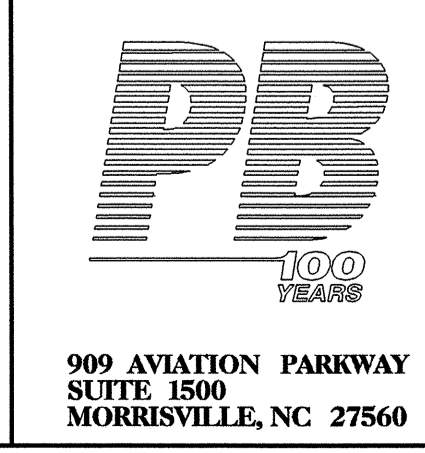


ELEVATION

PROJECT NO.: U-4020 (35015.1.1)
WATAUGA COUNTY
STATION:
 SHEET 5 OF 17

NOTES:
 CONTRACTION JOINTS NOT SHOWN FOR CLARITY.

PREPARED BY: K. WHITE	DATE: 10/08
REVIEWED BY: G. TAYLOR	DATE: 10/08



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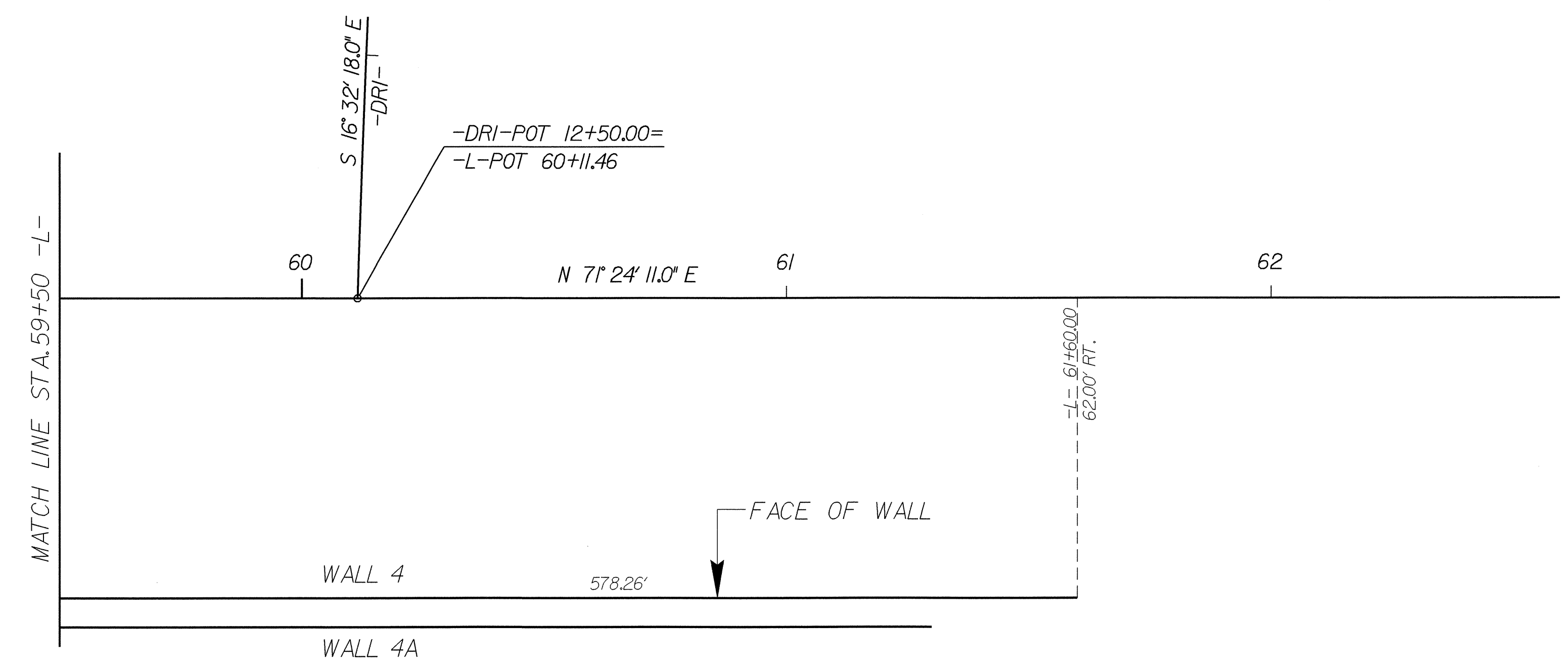
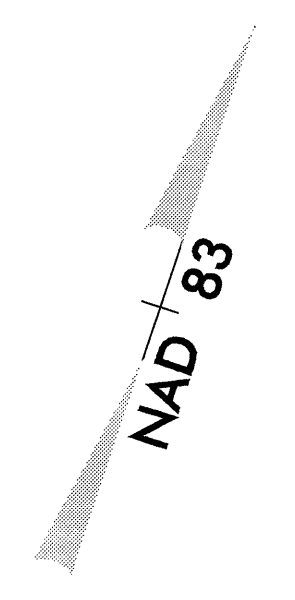
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 RALEIGH

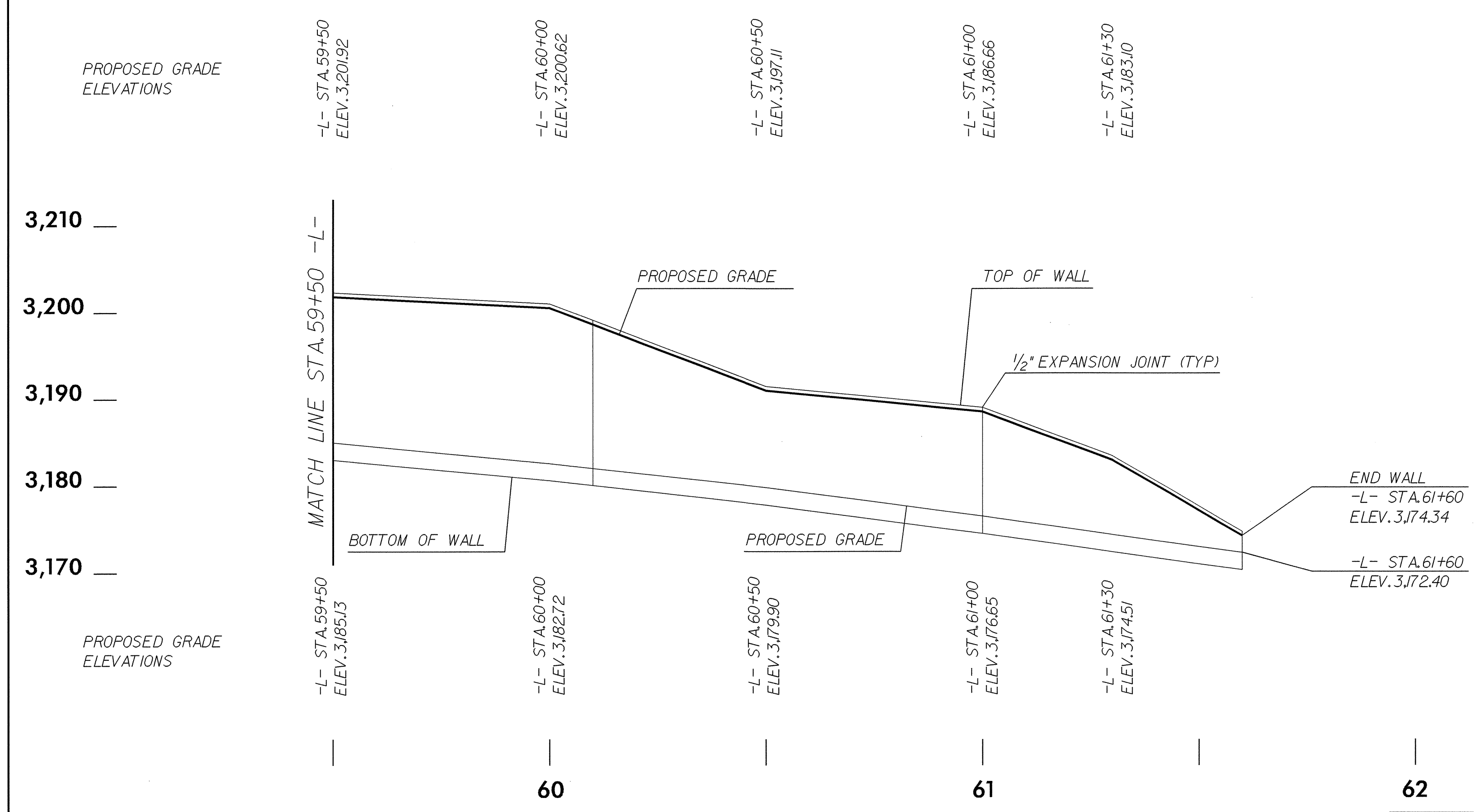
SOLDIER PILE RETAINING WALL
WALL 4 - SHEET 1 OF 2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-5
1			3			TOTAL SHEETS
2			4			19

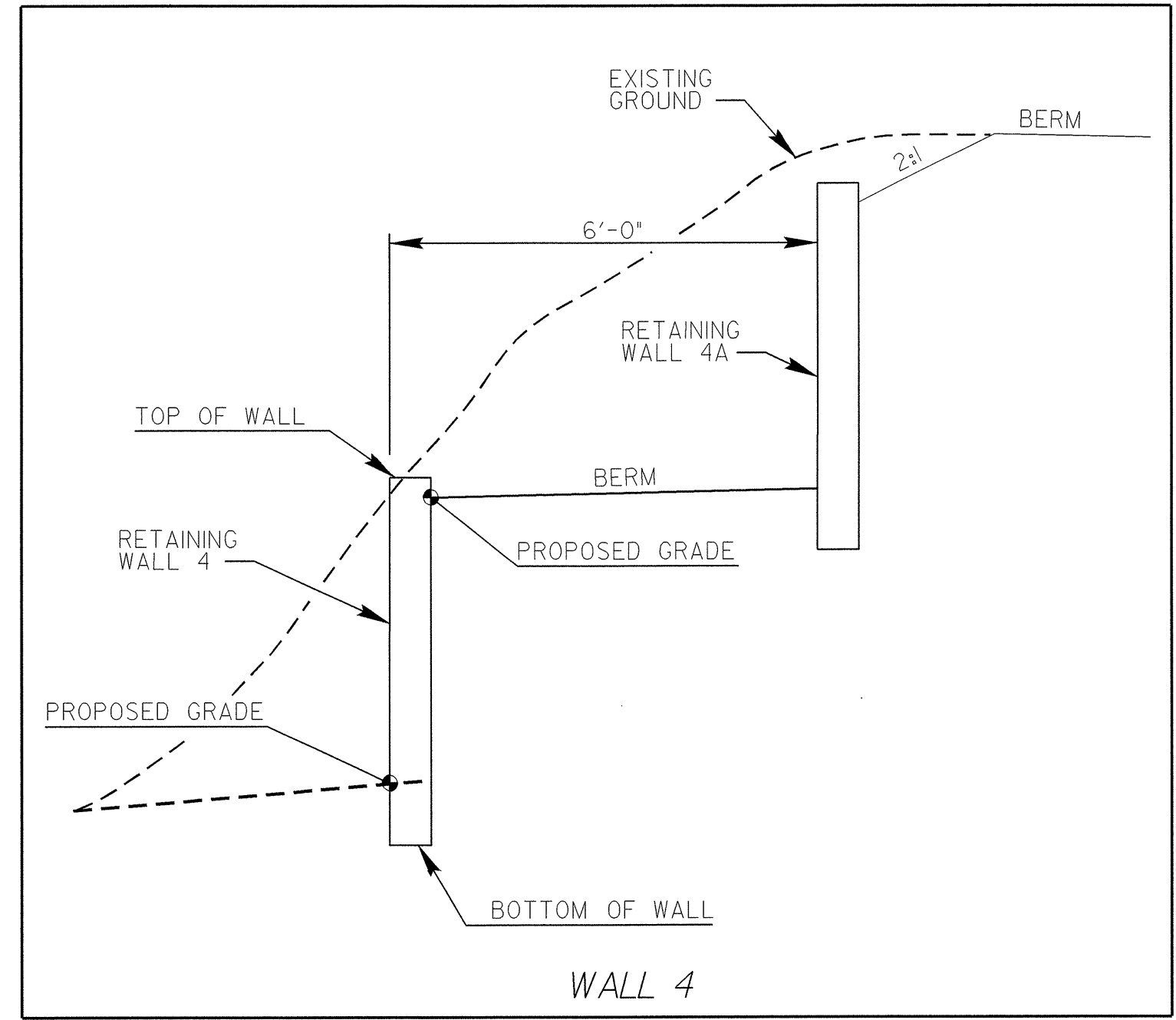
ENGINEER
 NORTH CAROLINA PROFESSIONAL SEAL
 1880
 ENGINEER
 GARY R. TAYLOR
 SIGNATURE: *Gary R. Taylor* 11/9/09 DATE



PLAN



ELEVATION



PROJECT NO.: U-4020 (35015.1.1)
 WATAUGA COUNTY
 STATION:
 SHEET 6 OF 17

PREPARED BY: K. WHITE DATE: 10/08
 REVIEWED BY: G. TAYLOR DATE: 10/08

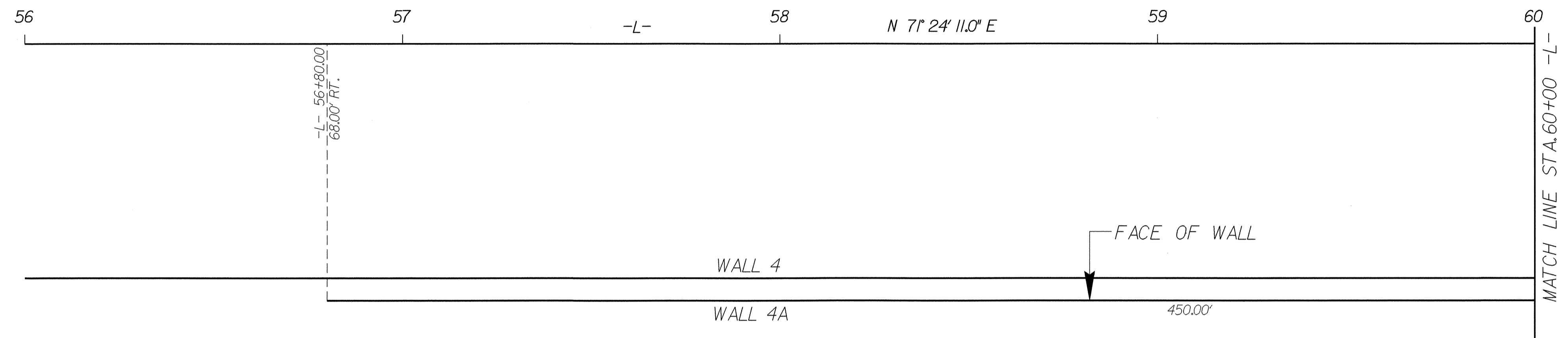
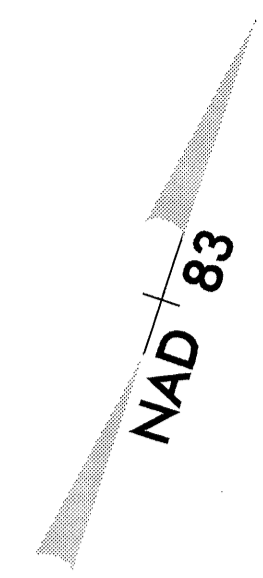
NOTES:
 CONTRACTION JOINTS NOT SHOWN FOR CLARITY.



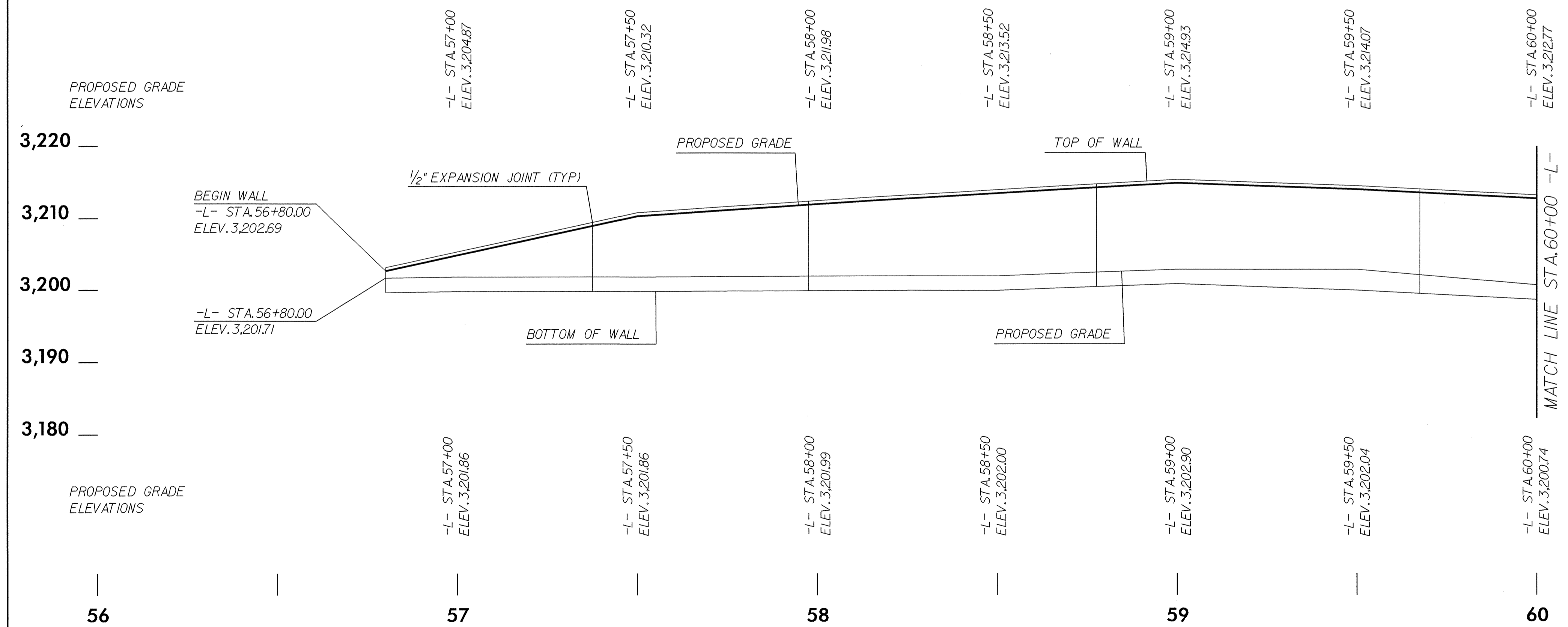
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REVISIONS						SHEET NO. W-6 TOTAL SHEETS 19
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

ENGINEER
 NORTH CAROLINA
 PROFESSIONAL SEAL
 1880
 ENGINEER
 GARY R. TAYLOR
 10/10/08
 DATE



PLAN



ELEVATION

NOTE:
 CONTRACTION JOINTS NOT SHOWN FOR CLARITY.

PROJECT NO.: U-4020 (35015.1.1)
 WATAUGA COUNTY
 STATION:
 SHEET 7 OF 17

PREPARED BY: K. WHITE DATE: 10/08
 REVIEWED BY: G. TAYLOR DATE: 10/08



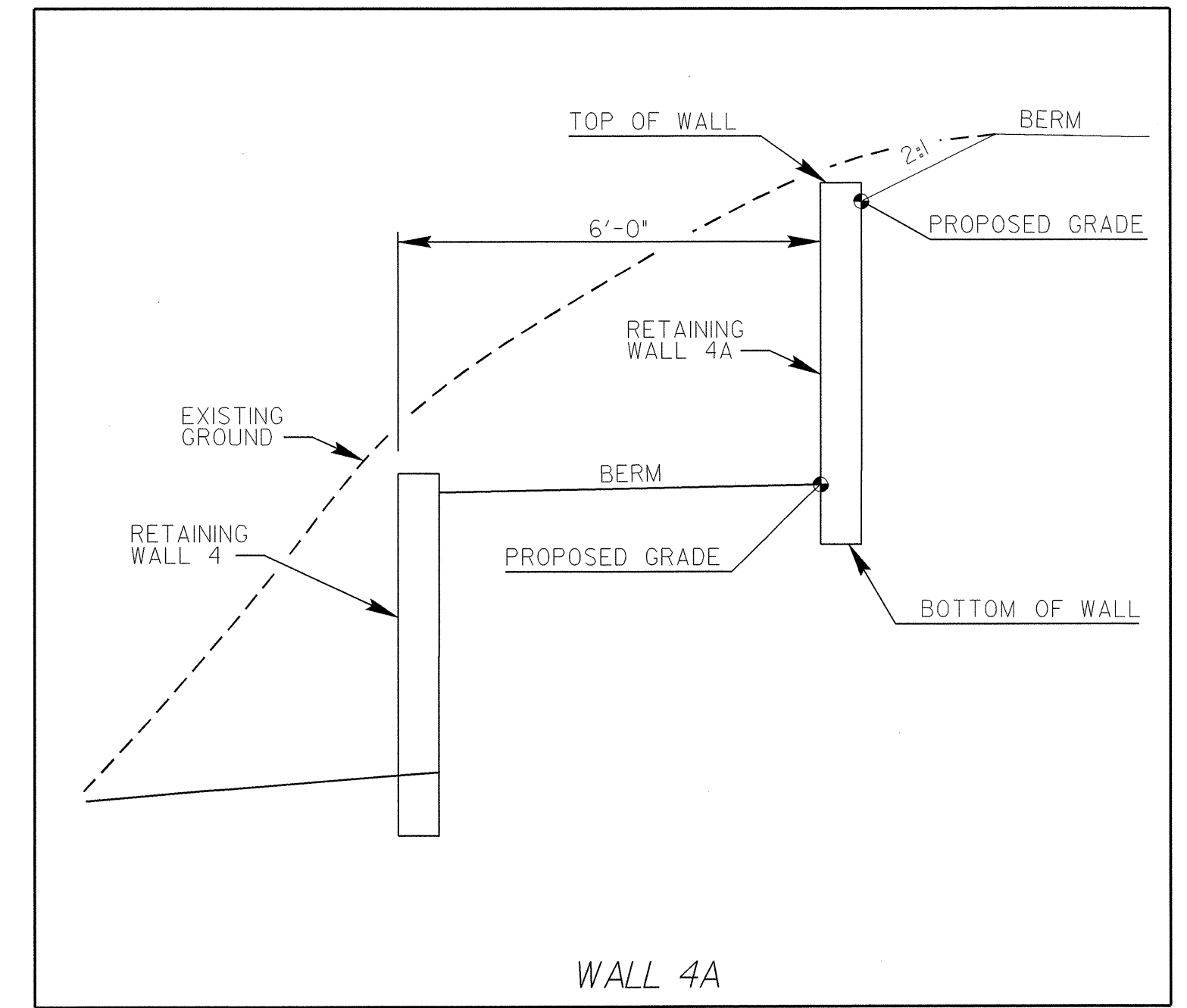
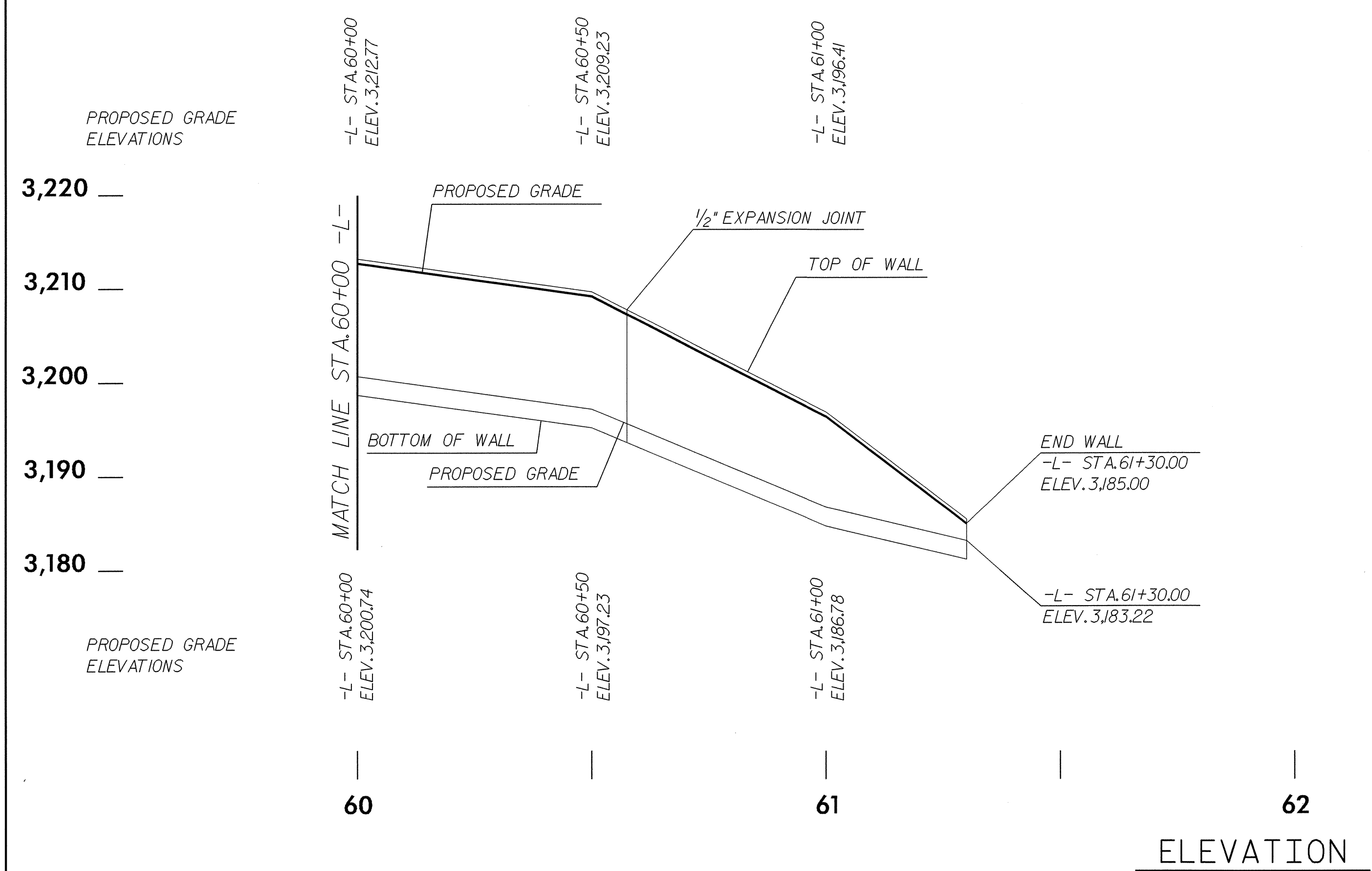
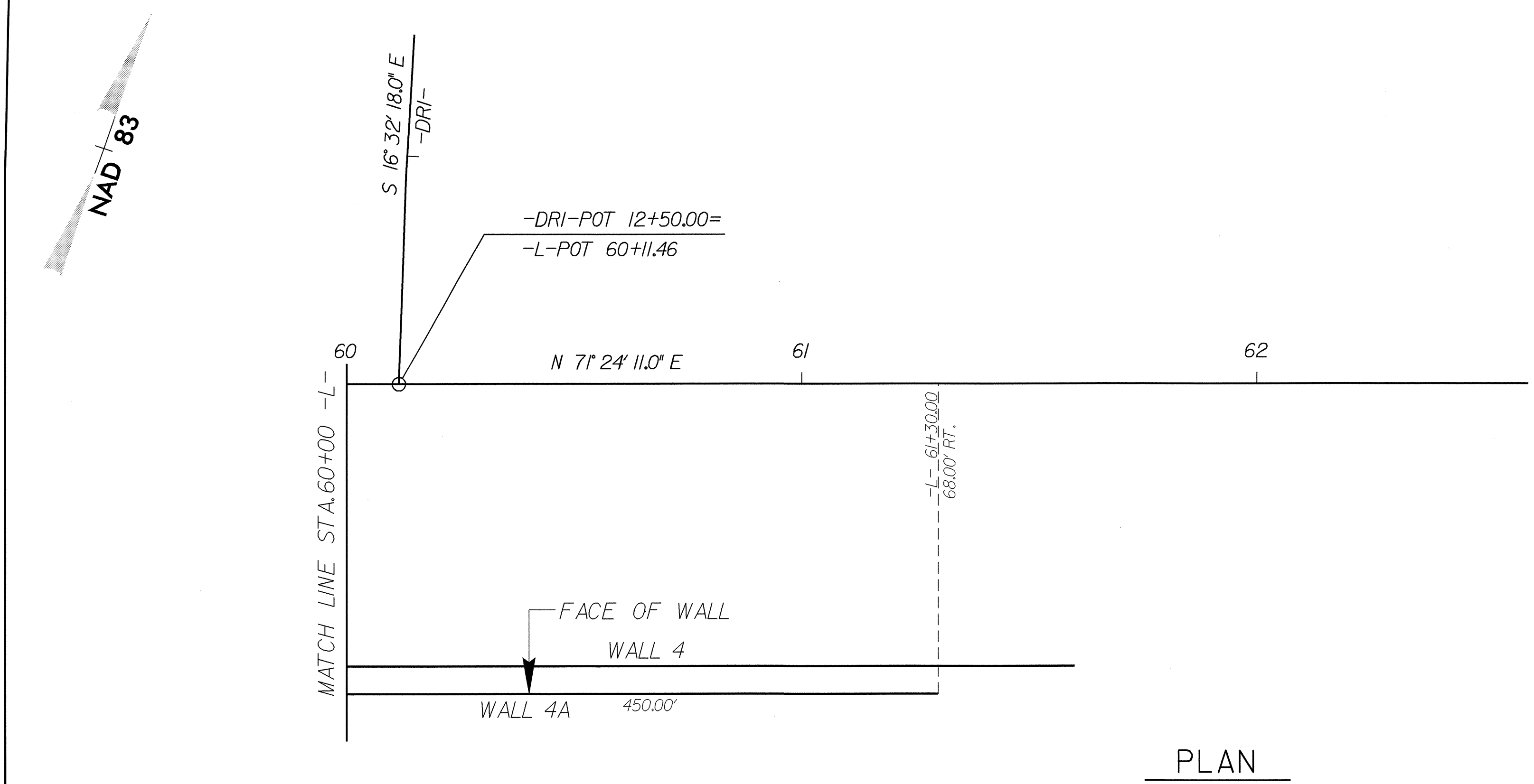
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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-7
1			3			TOTAL SHEETS
2			4			19

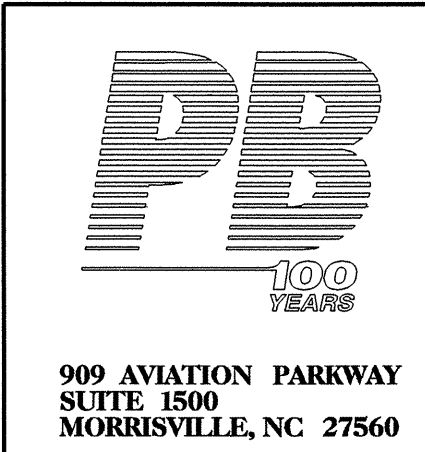
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 NORTH CAROLINA PROFESSIONAL SEAL
 19580
 ENGINEER
 GARY R. TAYLOR
 Signature: Gary R. Taylor 11/16/09
 DATE



PROJECT NO.: U-4020 (35015.1.1)
 WATAUGA COUNTY
 STATION:
 SHEET 8 OF 17

PREPARED BY: K. WHITE DATE: 10/08
 REVIEWED BY: G. TAYLOR DATE: 10/08

NOTES:
 CONTRACTION JOINTS NOT SHOWN FOR CLARITY.



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SOLDIER PILE RETAINING WALL
WALL 4A - SHEET 2 OF 2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-8
1			3			TOTAL SHEETS
2			4			19

NOTES

FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS SPECIAL PROVISION.

FOR GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

A FENCE IS REQUIRED BEHIND RETAINING WALLS 1, 2, 3, AND 4A. SEE ROADWAY PLANS AND SECTION 866. THE FENCE SHOULD BE INSTALLED IMMEDIATELY BEHIND THE PAVED DITCH.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES FOR ALL RETAINING WALLS. PILE EXCAVATION IS EXPECTED TO ENCOUNTER SOIL, WEATHERED ROCK AND ROCK. EXCAVATE SHAFTS TO THE REQUIRED PILE TIP ELEVATION REGARDLESS OF THE MATERIAL ENCOUNTERED.

A SIMULATED ROCK ARCHITECTURAL FINISH IS REQUIRED FOR THE ROADWAY FACE OF THE CAST-IN-PLACE REINFORCED CONCRETE FACING FOR ALL RETAINING WALLS. THE CONTRACTOR SHALL CONSTRUCT A SAMPLE PANEL ON-SITE FOR REVIEW AND APPROVAL BY THE ENGINEER.

WIDTH OF TIMBER LAGGING PLANKS SHALL NOT EXCEED 12 INCHES (ROUGH CUT). FOR MATERIAL REQUIREMENTS, SEE SOLDIER PILE RETAINING WALLS SPECIAL PROVISION.

TIMBER LAGGING SHALL HAVE A MINIMUM BEARING DISTANCE OF 3 INCHES ON THE PILE FLANGE.

SPLICING PILES IS NOT ALLOWED.

ROADWAY EMBANKMENT SHALL BE CONSTRUCTED UP TO THE TOP OF AND BEHIND WALLS 1 AND 2 PRIOR TO CONSTRUCTING THE CONCRETE FACING. TIMBER LAGGING SHALL BE UTILIZED. HEAVY COMPACTION EQUIPMENT SHALL NOT BE OPERATED WITHIN 3 FEET OF THE BACK OF THE WALLS. USE ONLY HAND OPERATED MECHANICAL TAMPERS IN THE 3 FOOT ZONE.

ALL WALL FACING STEEL REINFORCING SHALL BE UNCOATED #4 BARS.

CONSTRUCTION SEQUENCE

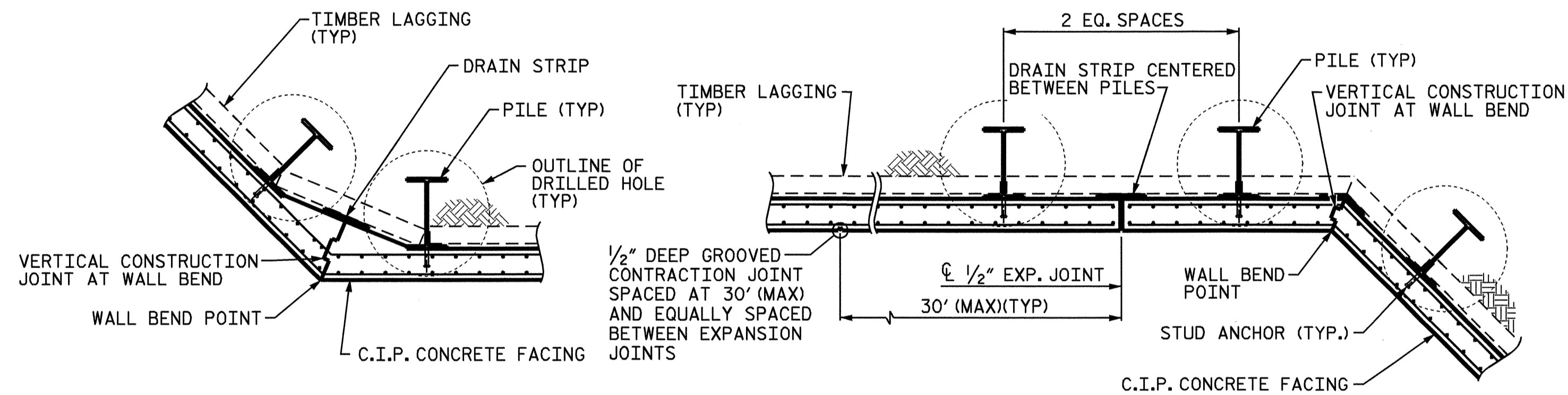
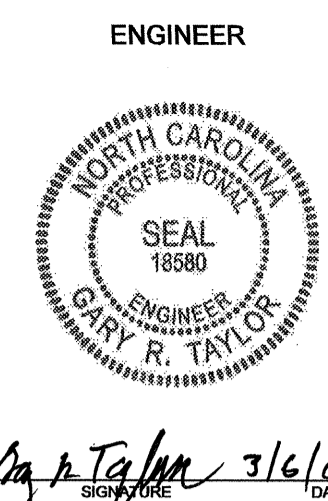
1. VERIFY LOCATION AND DEPTH OF UTILITIES (NOTIFY THE ENGINEER OF ANY CONFLICTS).
2. EXCAVATE SHAFTS.
3. SET AND ALIGN PILES IN SHAFTS.
4. BACKFILL SHAFTS WITH CONCRETE AND FLOWABLE FILL.

WALLS 1 AND 2

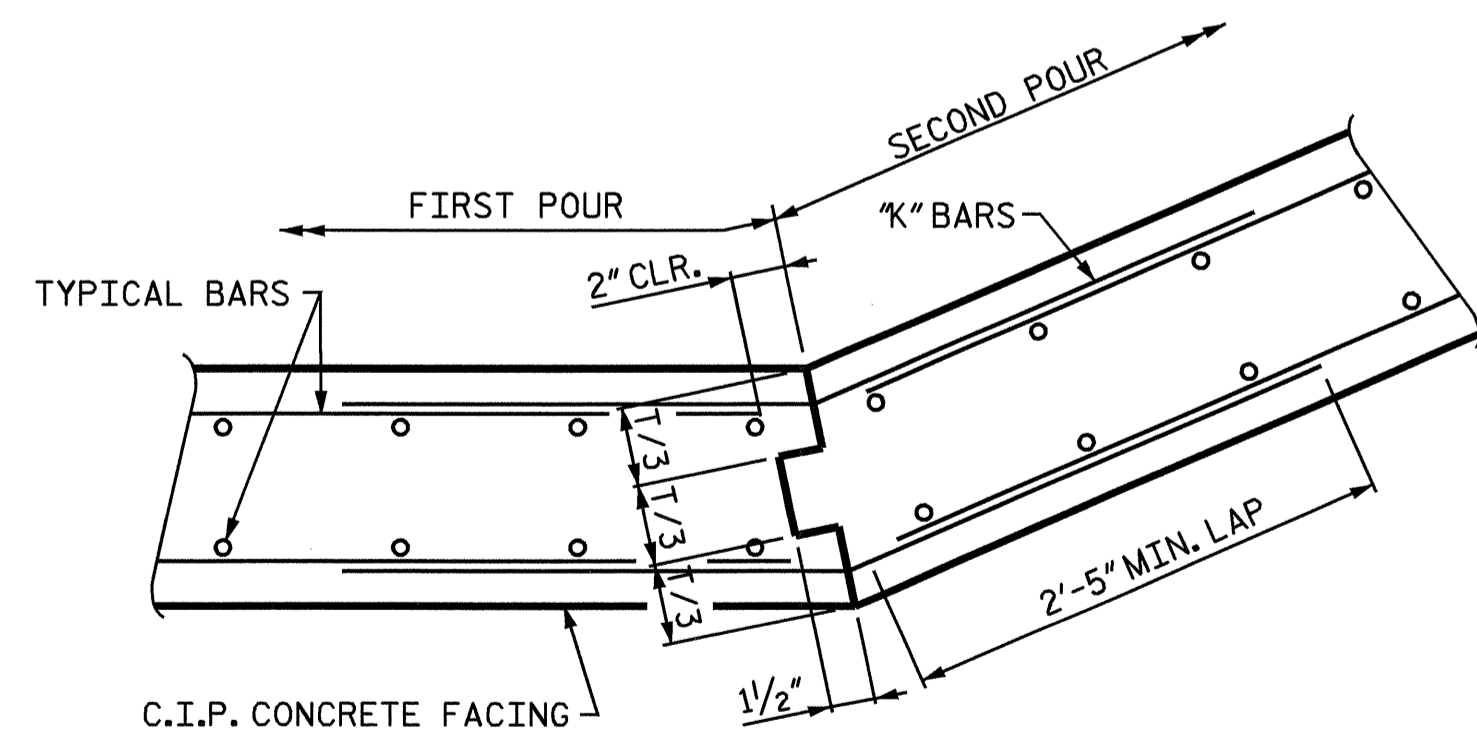
3. INSTALL LAGGING.
4. CONSTRUCT ROADWAY EMBANKMENT UP TO THE TOP OF PILES BEHIND WALL.
5. INSTALL DRAIN STRIPS AND CONSTRUCT STONE LEVELING PAD.
6. CONSTRUCT CONCRETE FACING.
7. COMPLETE ROADWAY EMBANKMENT CONSTRUCTION.
8. CONSTRUCT PAVED DITCH.

WALL 3, 4, AND 4A

3. GRADE SLOPE BEHIND WALL
4. EXCAVATE IN LIFTS NOT TO EXCEED 5 FEET.
5. INSTALL LAGGING.
6. BACKFILL BEHIND LAGGING WITH #57 STONE.
8. REPEAT STEPS 3 AND 4 UNTIL EXCAVATION REACHES THE BOTTOM OF WALL.
9. INSTALL DRAIN STRIPS AND CONSTRUCT STONE LEVELING PAD.
10. CONSTRUCT CONCRETE FACING.
11. CONSTRUCT PAVED DITCH.



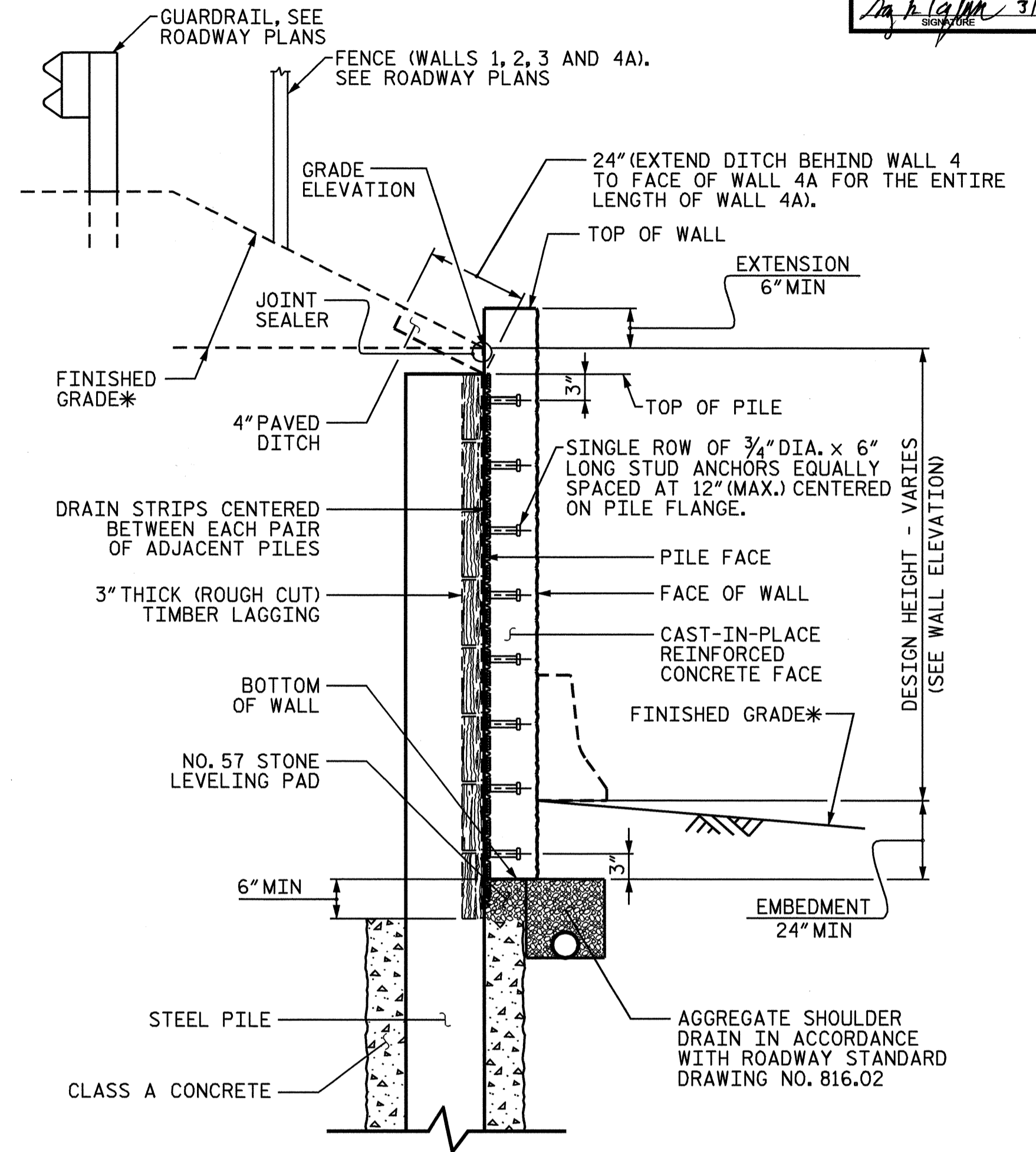
CAST-IN-PLACE CONCRETE FACING JOINTS



VERTICAL CONSTRUCTION JOINT DETAIL

VERTICAL CONSTRUCTION JOINTS IN WALL FACING IN ADDITION TO THOSE REQUIRED AT WALL BEND POINTS ARE PERMITTED. LOCATIONS OF ADDITIONAL VERTICAL CONSTRUCTION JOINTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

HORIZONTAL CONSTRUCTION JOINTS IN WALL FACING ARE NOT PERMITTED.



CAST-IN-PLACE FACE TYPICAL SECTION

*SEE ROADWAY TYPICAL SECTIONS FOR FINISHED GRADE DETAILS.

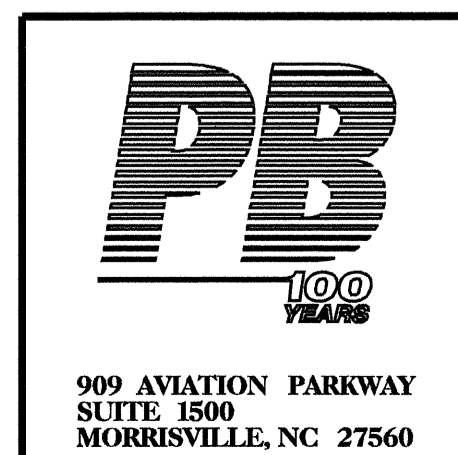
PROJECT NO.: U-4020 (35015.1.1)

WATAUGA COUNTY

STATION:

SHEET 9 OF 17

PREPARED BY: K. WHITE	DATE: 10/08
REVIEWED BY: G. TAYLOR	DATE: 10/08



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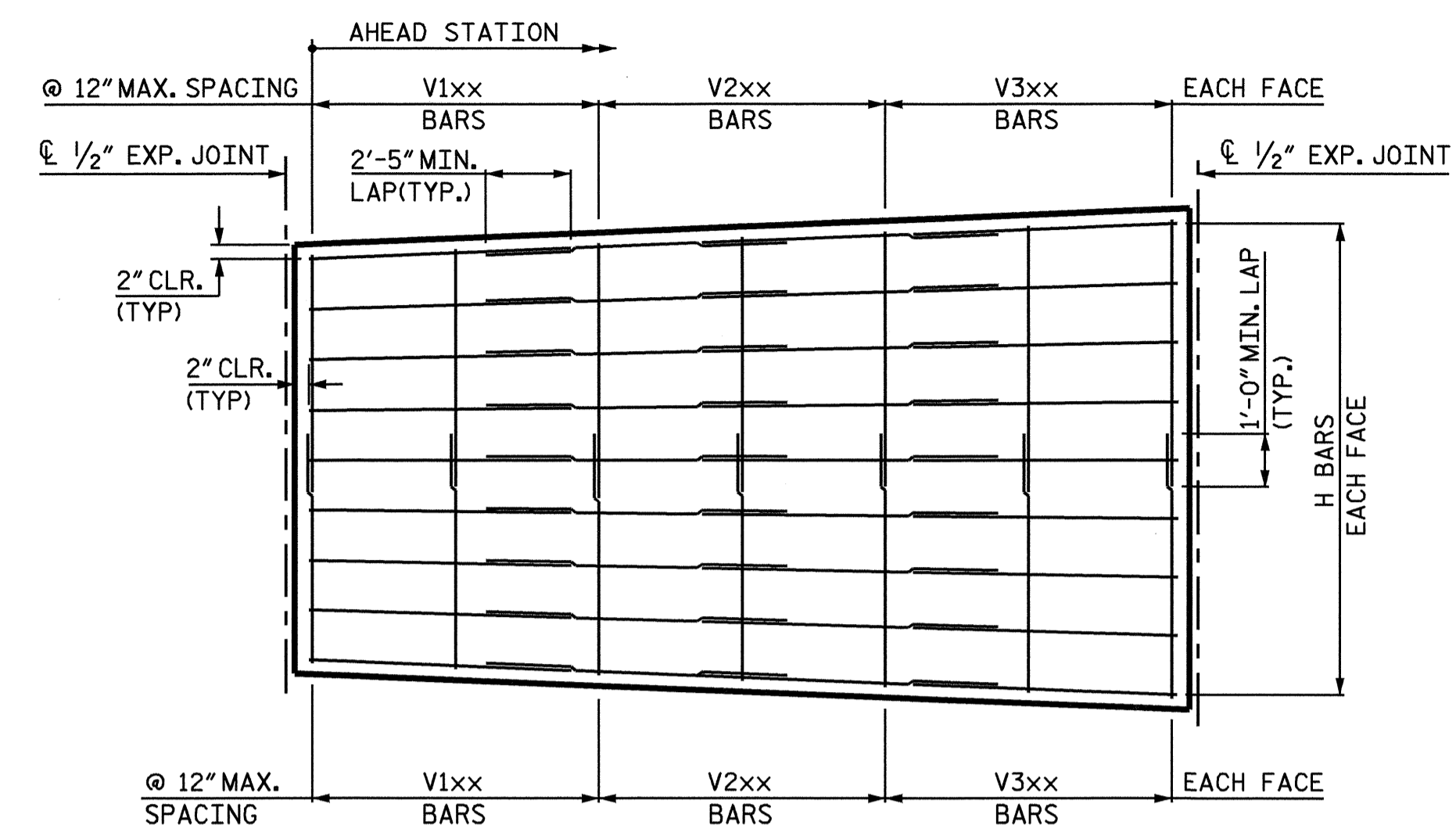
SOLDIER PILE RETAINING WALL TYPICAL SECTIONS AND DETAILS SHEET 1 OF 5

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-9
1			3			TOTAL SHEETS
2			4			19

ENGINEER

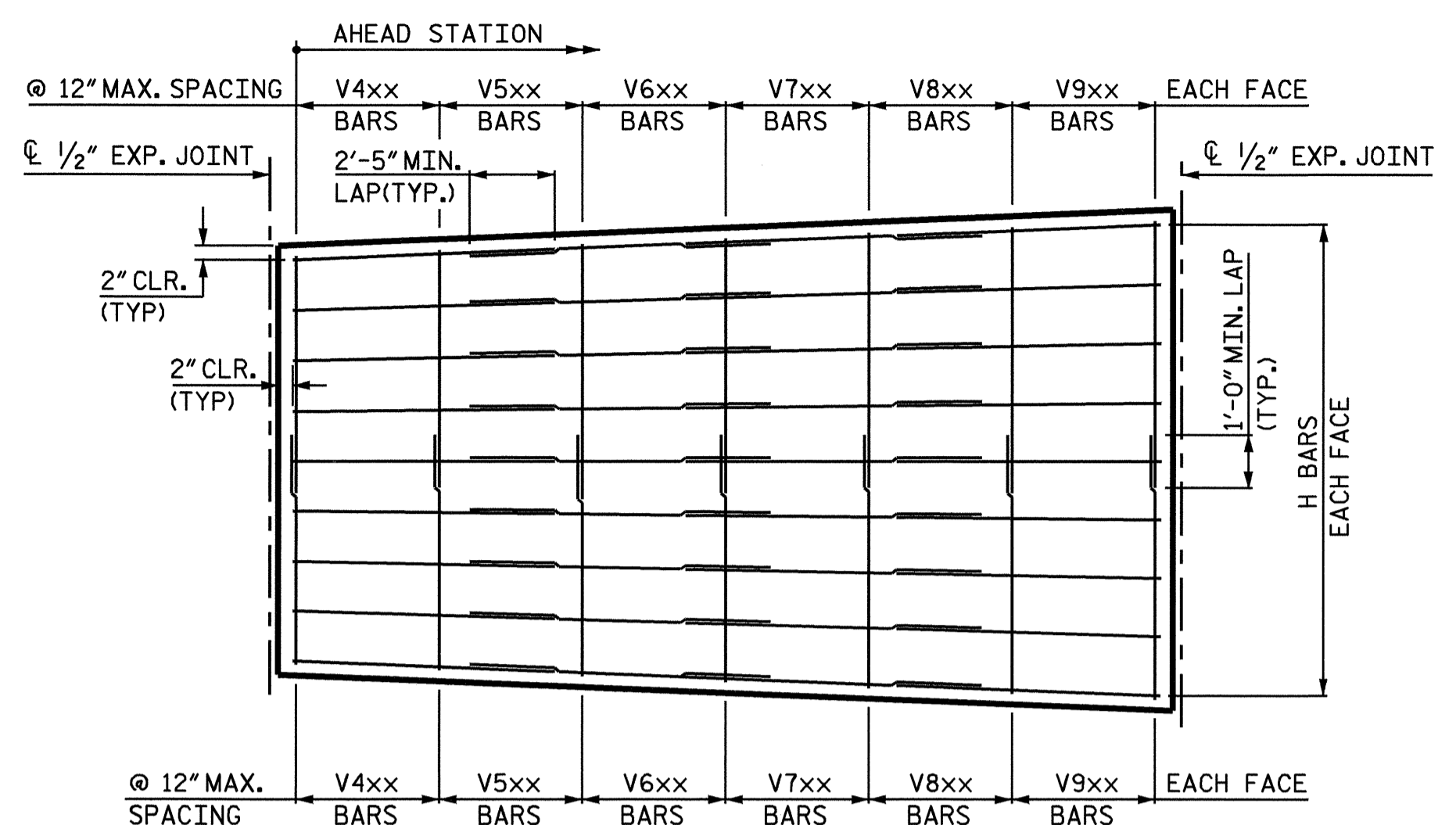


Gary R. Taylor 3/6/09



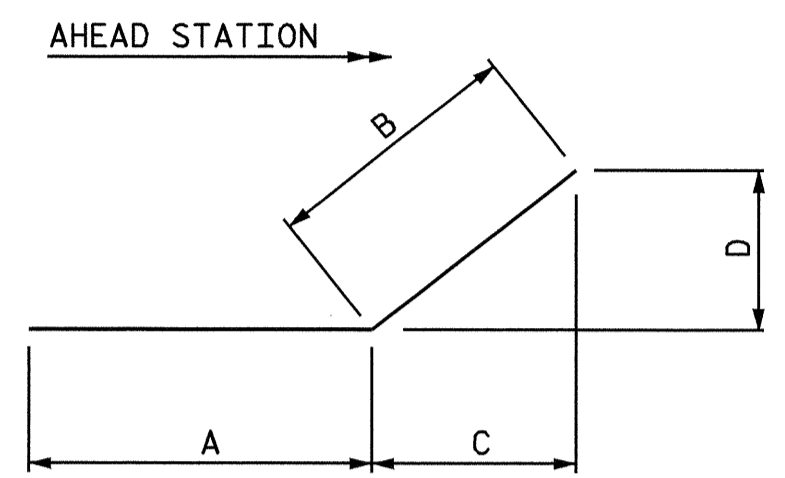
TYPICAL WALL REINFORCING ELEVATION - TYPE 1

FOR MAXIMUM SPACING OF 4" BARS, SEE REINFORCING SCHEDULES



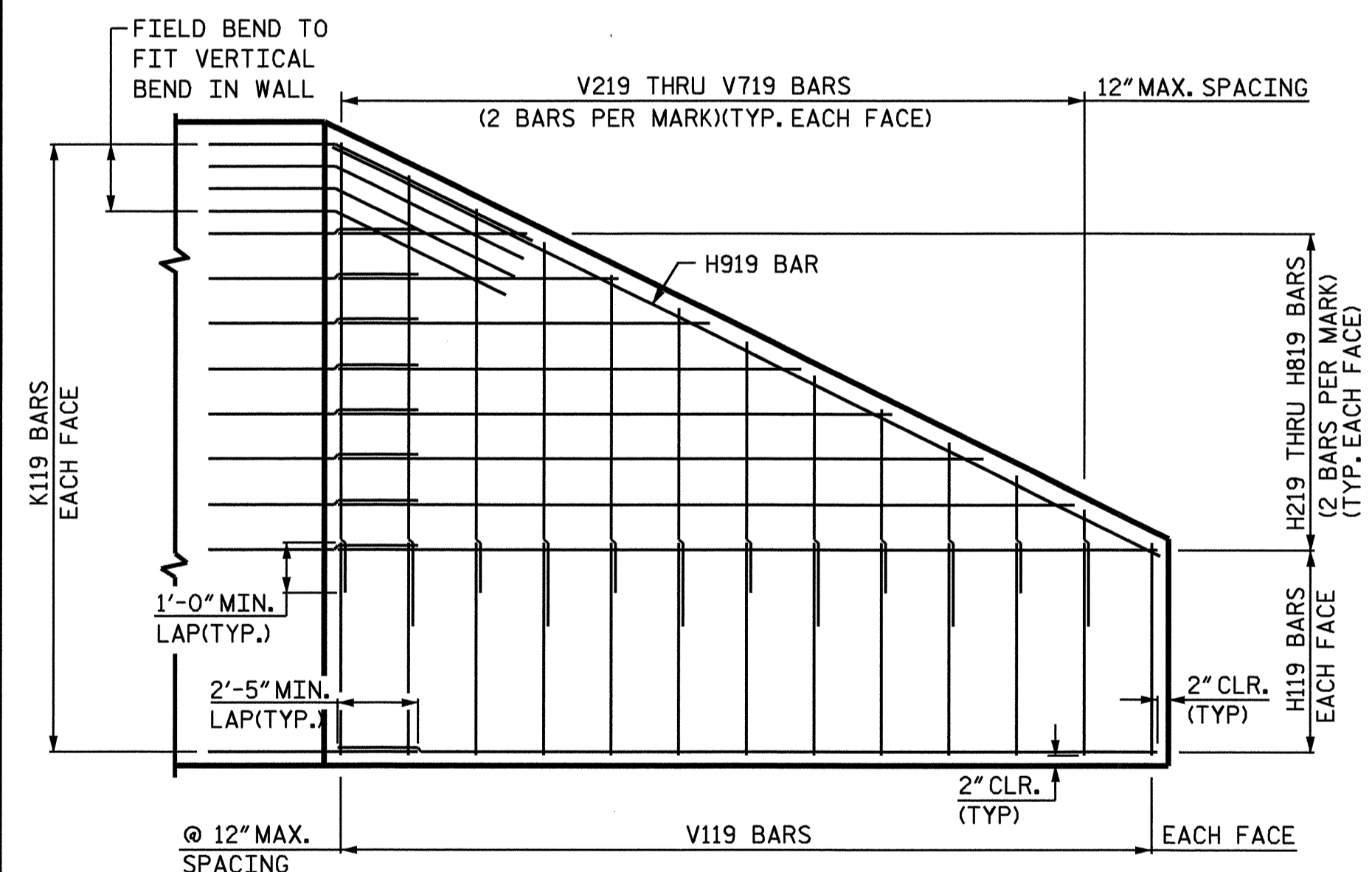
TYPICAL WALL REINFORCING ELEVATION - TYPE 2

FOR MAXIMUM SPACING OF 4" BARS, SEE REINFORCING SCHEDULES



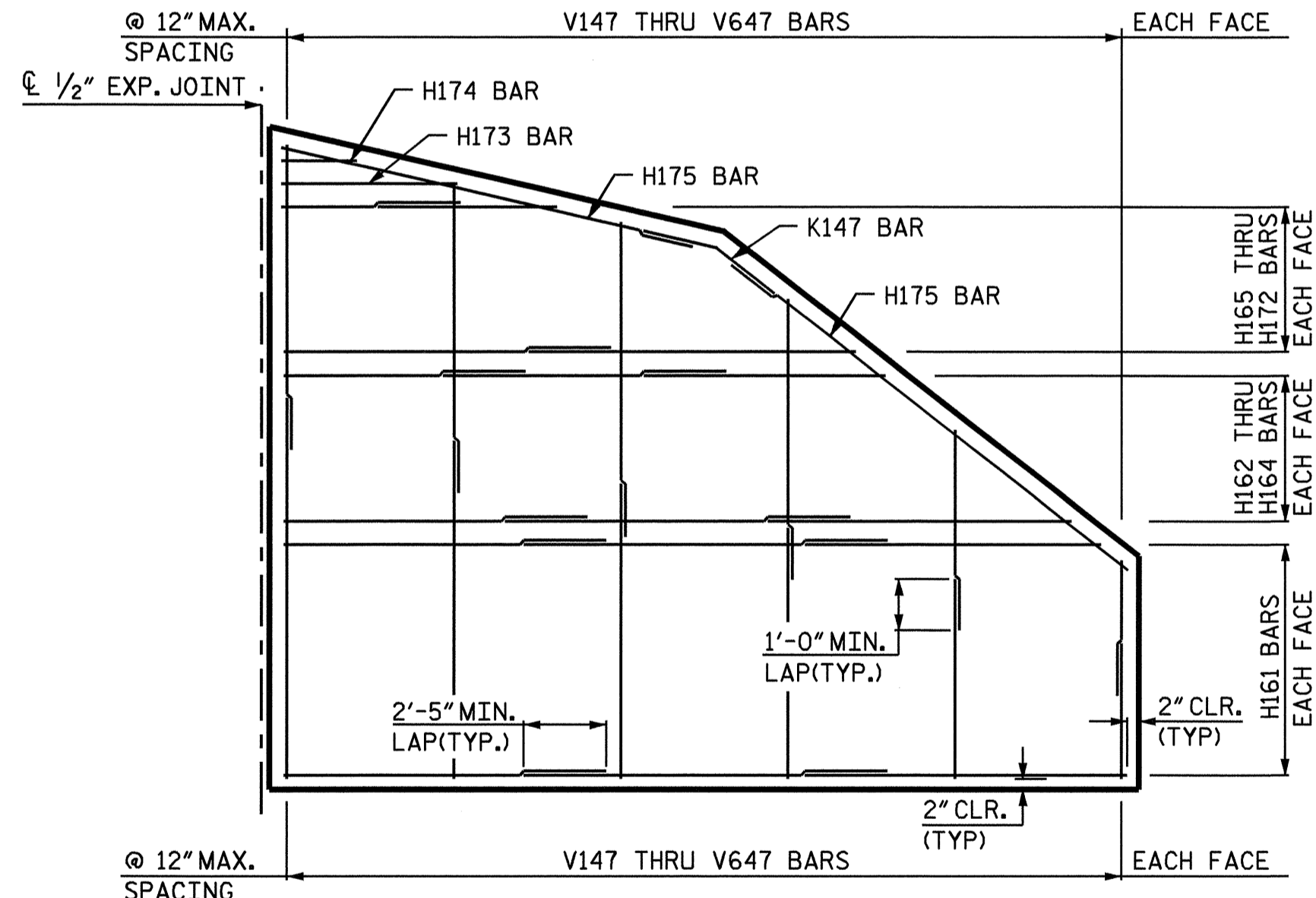
TYPICAL K BAR

FOR VERTICAL AND HORIZONTAL BENDS IN WALL. SEE REINFORCING SCHEDULE.



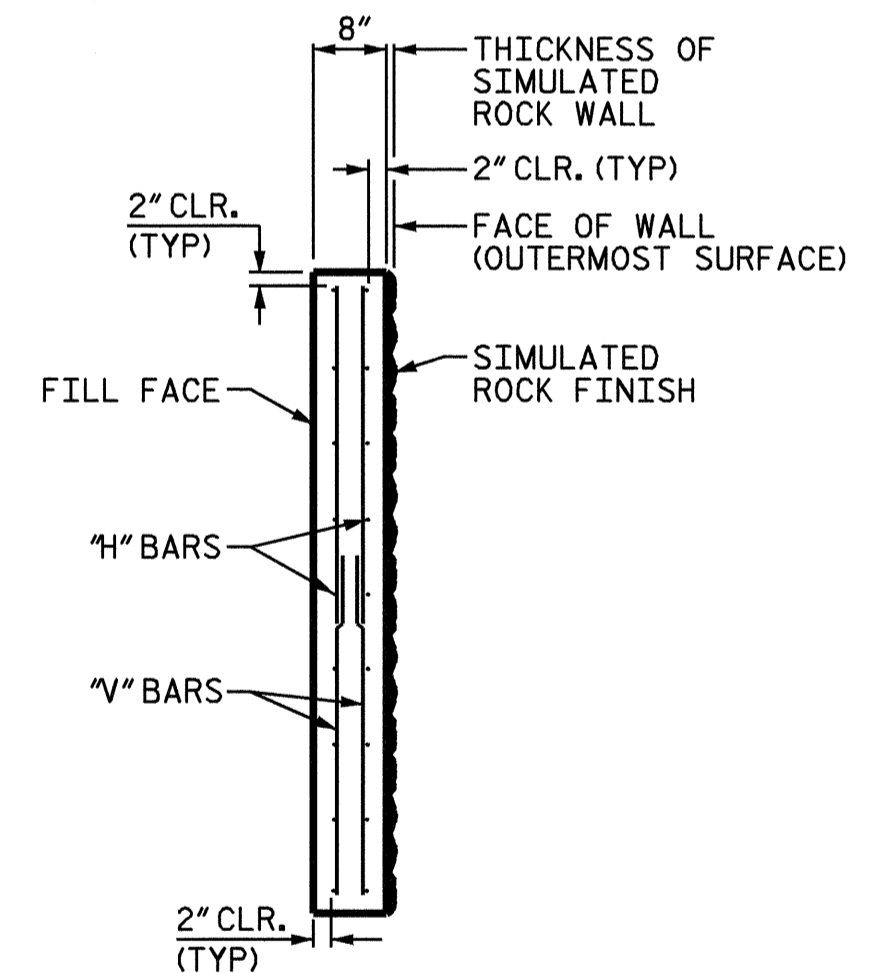
TYPICAL WALL REINFORCING ELEVATION - TYPE 3

FOR MAXIMUM SPACING OF 4" BARS, SEE REINFORCING SCHEDULES



TYPICAL WALL REINFORCING ELEVATION - TYPE 4

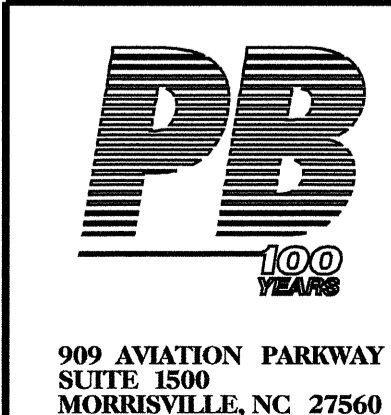
FOR MAXIMUM SPACING OF 4" BARS, SEE REINFORCING SCHEDULES



TYPICAL SECTION C.I.P. CONCRETE FACING

PROJECT NO.: U-4020 (35015.1.1)
WATAUGA COUNTY
STATION:
SHEET 10 OF 17

PREPARED BY: K. WHITE DATE: 10/08
REVIEWED BY: G. TAYLOR DATE: 10/08



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SOLDIER PILE RETAINING WALL
TYPICAL SECTIONS AND DETAILS
SHEET 2 OF 5

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

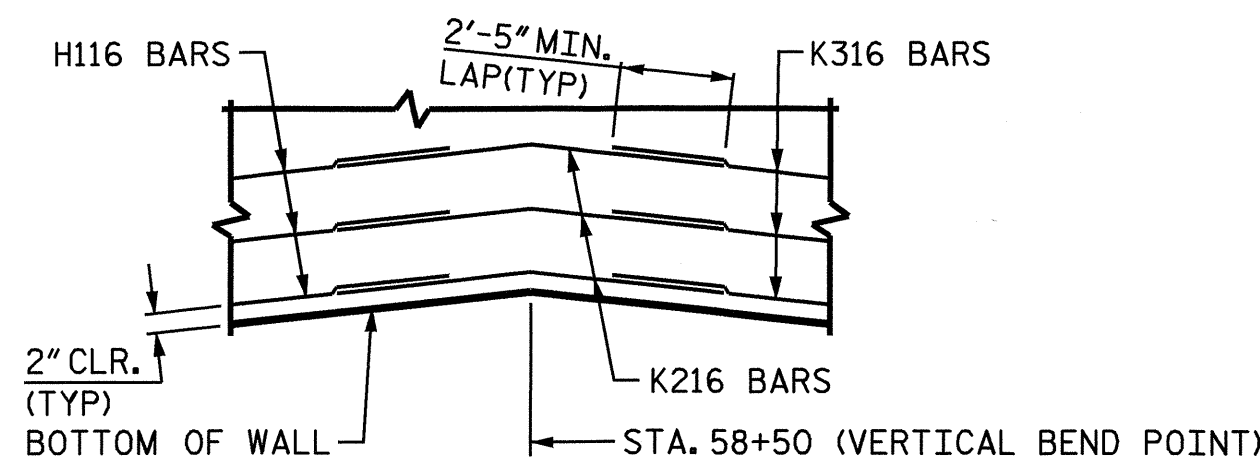
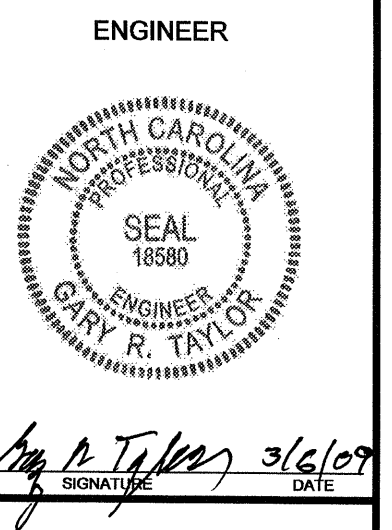
SHEET NO. W-10
TOTAL SHEETS 19

WALL 1 C.I.P. CONCRETE FACING REINFORCING SCHEDULE

BEGIN	END	TYPICAL WALL ELEVATION TYPE	HORIZONTAL BARS				VERTICAL BARS				BENT BARS									
			BAR	NO.	MAX. SPACING C-C	LENGTH	WEIGHT	BAR	NO.	LENGTH	WEIGHT	BAR	NO.	MAX. SPACING C-C	A	B	C	D	WEIGHT	
BEGIN WALL	EXP. JOINT 1	TYPE 2	H111	152	5"	23'-7"	2395	V411	52	2'-9"	96									
			V511	60	3'-1"	124														
			V611	60	3'-5"	137														
			V711	60	3'-10"	154														
			V811	60	4'-1"	164														
EXP. JOINT 1	EXP. JOINT 2	TYPE 1	H112	216	5"	24'-4"	3511	V112	120	4'-10"	387									
			V212	84	5'-4"	299														
			V312	160	5'-10"	623														
EXP. JOINT 2	EXP. JOINT 3	TYPE 1	H113	280	5"	23'-10"	4458	V113	120	6'-5"	514									
			V213	120	7'-1"	568														
			V313	116	7'-8"	594														
EXP. JOINT 3	EXP. JOINT 4	TYPE 1	H114	280	5"	23'-10"	4458	V114	120	7'-8"	615									
			V214	120	7'-8"	615														
			V314	116	7'-8"	594														
EXP. JOINT 4	EXP. JOINT 5	TYPE 1	H115	272	5"	18'-3"	3316	V115	120	7'-5"	595									
			V215	120	7'-5"	595														
			V315	84	7'-5"	416														
EXP. JOINT 5	EXP. JOINT 6	TYPE 1	H116	312	5"	19'-6"	4064	V116	80	7'-9"	414	K116	78	5"	6'-10"	2'-8"	2'-7 1/2"	0'-4"	495	
			V216	140	8'-1"	756	K216	78	5"	2'-8"	4'-10"	4'-10"	0'-6"	391						
			V316	140	8'-6"	795	K316	78	5"	2'-8"	6'-10"	6'-9"	0'-11"	495						
EXP. JOINT 6	EXP. JOINT 7	TYPE 1	H117	344	5"	23'-7"	5419	V117	80	8'-10"	472									
			V217	140	9'-2"	857														
			V317	132	9'-2"	808														
EXP. JOINT 7	EXP. JOINT 8	TYPE 1	H118	84	5"	26'-10"	1506	V118	116	9'-1"	704	K118	84	5"	2'-8"	2'-8"	1'-10 1/2"	1'-10 1/2"	299	
			H218	84	5"	12'-2"	683	V218	24	8'-6"	136									
			V318	24	8'-0"	128														
EXP. JOINT 8	END WALL	TYPE 3	H119	20	5"	11'-10"	158	V119	26	4'-0"	69	K119	70	5"	3'-3"	3'-3"	2'-3 1/2"	2'-3 1/2"	304	
			H219	4	5"	11'-6"	31	V219	16	8'-8"	93									
			H319	4	5"	10'-2"	27	V319	16	7'-5"	79									
			H419	4	5"	8'-10"	24	V419	16	6'-2"	66									
			H519	4	5"	7'-6"	20	V519	16	4'-10"	52									
			H619	4	5"	6'-3"	17	V619	16	3'-7"	38									
			H719	4	5"	4'-11"	13	V719	16	2'-4"	25									
			H819	2	5"	4'-3"	6													
			H919	2		14'-8"	20													

WALL 1 ESTIMATED QUANTITIES

CLASS A CONCRETE CAST-IN-PLACE FACING - CU. YARDS	226
SHAFT EXCAVATION - LIN. FT.	1683.3
SHAFT CONCRETE - CU. YARDS	315.8
TOTAL REINFORCING STEEL (FACING) - LBS	44862
TIMBER LAGGING - SQ. FEET	8181
HP12x53 STEEL PILES - EA.	9
HP12x53 STEEL PILES - LIN. FT.	143
HP14x73 STEEL PILES - EA.	6
HP14x73 STEEL PILES - LIN. FT.	123.5
HP14x89 STEEL PILES - EA.	11
HP14x89 STEEL PILES - LIN. FT.	290
W14x132 STEEL PILES - EA.	14
W14x132 STEEL PILES - LIN. FT.	420
W14x145 STEEL PILES - EA.	7
W14x145 STEEL PILES - LIN. FT.	236
W21x122 STEEL PILES - EA.	5
W21x122 STEEL PILES - LIN. FT.	200
W21x132 STEEL PILES - EA.	17
W21x132 STEEL PILES - LIN. FT.	662
W21x166 STEEL PILES - EA.	15
W21x166 STEEL PILES - LIN. FT.	675
PAY QUANTITY	
SOLDIER PILE RETAINING WALLS - WALL NO. 1	7511 SF



**WALL 1 REINFORCING ELEVATION
DETAIL AT STA. 58+50**

PROJECT NO.: U-4020 (35015.1.1)
WATAUGA COUNTY
STATION: _____
 SHEET 11 OF 17

**SOLDIER PILE RETAINING WALL
TYPICAL SECTIONS AND DETAILS
SHEET 3 OF 5**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-11
1			3			TOTAL SHEETS
2			4			19

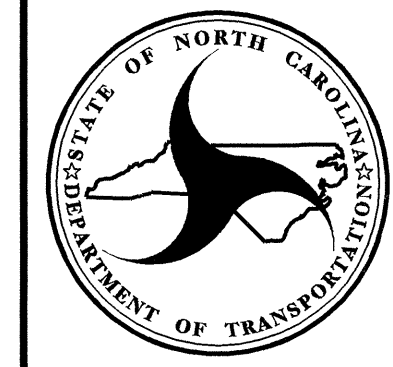
PREPARED BY: K. WHITE DATE: 10/08
 REVIEWED BY: G. TAYLOR DATE: 10/08

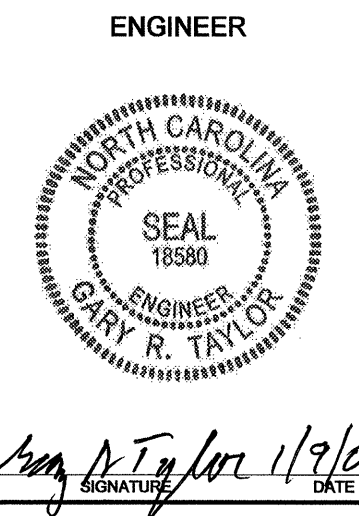


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WALL 2 C.I.P. CONCRETE FACING REINFORCING SCHEDULE

BEGIN	END	TYPICAL WALL ELEVATION TYPE	HORIZONTAL BARS				VERTICAL BARS				
			BAR	NO.	MAX. SPACING C-C	LENGTH	WEIGHT	BAR	NO.	LENGTH	WEIGHT
BEGIN WALL	EXP. JOINT 1	TYPE 2	H121*	160	8"	23'-7"	2521	V421	12	4'-3"	34
								V521	12	4'-11"	39
								V621	12	5'-7"	45
								V721	36	6'-2"	148
								V821	80	6'-5"	343
					V921	200	6'-9"	902			
EXP. JOINT 1	EXP. JOINT 2	TYPE 1	H122	160	8"	23'-10"	2547	V122	120	6'-9"	541
								V222	84	6'-9"	379
								V322	152	6'-4"	643
EXP. JOINT 2	EXP. JOINT 3	TYPE 1	H123	144	8"	23'-10"	2293	V123	120	5'-11"	474
								V223	120	5'-11"	474
								V323	116	5'-6"	426
EXP. JOINT 3	END WALL	TYPE 1	H124**	60	8"	25'-8"	1029	V124	80	5'-2"	276
								V224	80	4'-8"	249
								V324	40	4'-3"	114

* BOTTOM 2 H121 BARS AT BEGIN WALL SHALL FOLLOW THE PROFILE OF THE BOTTOM OF WALL. FIELD CUT OR BEND OTHER H121 BARS NEAR BOTTOM OF WALL AT BEGIN WALL AS REQUIRED.

** DUE TO LENGTH OF WALL SECTION BETWEEN EXP. JOINT 3 AND END WALL, ONLY 1 LAP IS REQUIRED FOR H124 BARS

WALL 2 ESTIMATED QUANTITIES

CLASS A CONCRETE CAST-IN-PLACE FACING - CU. YARDS	91
SHAFT EXCAVATION - LIN. FT.	629.6
SHAFT CONCRETE - CU. YARDS	118.0
TOTAL REINFORCING STEEL (FACING) - LBS	13477
TIMBER LAGGING - SQ. FEET	2908
HP12x53 STEEL PILES - EA.	2
HP12x53 STEEL PILES - LIN. FT.	32
HP14x73 STEEL PILES - EA.	18
HP14x73 STEEL PILES - LIN. FT.	410
HP14x89 STEEL PILES - EA.	7
HP14x89 STEEL PILES - LIN. FT.	189
W14x102 STEEL PILES - EA.	5
W14x102 STEEL PILES - LIN. FT.	165
W14x117 STEEL PILES - EA.	7
W14x117 STEEL PILES - LIN. FT.	245
PAY QUANTITY	
SOLDIER PILE RETAINING WALLS - WALL NO. 2	2598 SF

WALL 3 C.I.P. CONCRETE FACING REINFORCING SCHEDULE

BEGIN	END	TYPICAL WALL ELEVATION TYPE	HORIZONTAL BARS				VERTICAL BARS				BENT BARS									
			BAR	NO.	MAX. SPACING C-C	LENGTH	WEIGHT	BAR	NO.	LENGTH	WEIGHT	BAR	NO.	MAX. SPACING C-C	A	B	C	D	WEIGHT	
BEGIN WALL	EXP. JOINT 1	TYPE 2	H131*	72	8"	13'-11"	669	V431	16	3'-7"	38									
								V531	16	4'-1"	44									
								V631	16	4'-7"	49									
								V731	16	5'-1"	54									
								V831	16	5'-7"	60									
					V931	24	6'-4"	102												
EXP. JOINT 1	EXP. JOINT 2	TYPE 1	H132	80	8"	24'-4"	1300	V132	68	6'-10"	310	K132	40	8"	4'-3"	2'-8"	1'-9"	2'-0"	185	
								V232	68	6'-10"	310									
								V332	72	6'-10"	329									
EXP. JOINT 2	EXP. JOINT 3	TYPE 1	H133	160	8"	23'-10"	2547	V133	120	6'-9"	541									
								V233	120	6'-7"	528									
								V333	116	6'-5"	497									
EXP. JOINT 3	END WALL	TYPE 2	H134	120	10"	22'-9"	1824	V434	100	6'-0"	401									
								V534	80	5'-6"	294									
								V634	68	5'-0"	227									
								V734	32	4'-4"	93									
								V834	32	3'-8"	78									
					V934	28	3'-0"	56												

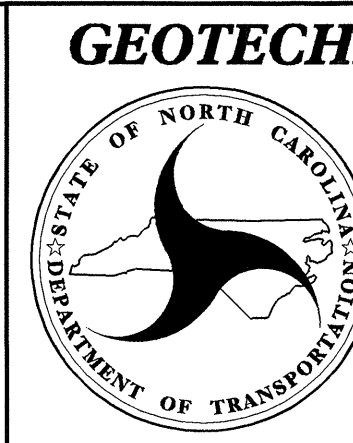
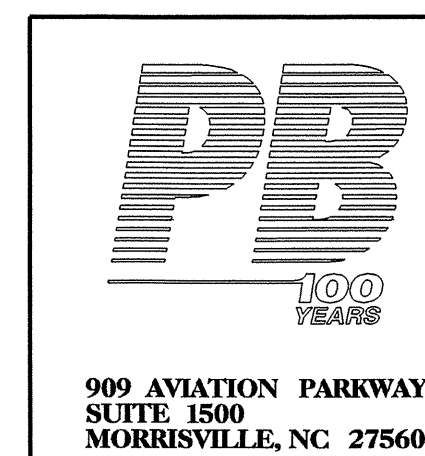
* DUE TO LENGTH OF WALL SECTION BETWEEN BEGIN WALL AND EXP. JOINT 1, ONLY 1 LAP IS REQUIRED FOR H131 BARS.

WALL 3 ESTIMATED QUANTITIES

CLASS A CONCRETE CAST-IN-PLACE FACING - CU. YARDS	71
SHAFT EXCAVATION - LIN. FT.	951.5
SHAFT CONCRETE - CU. YARDS	112.9
TOTAL REINFORCING STEEL (FACING) - LBS	10536
TIMBER LAGGING - SQ. FEET	2129
HP14x73 STEEL PILES - EA.	8
HP14x73 STEEL PILES - LIN. FT.	176
HP14x117 STEEL PILES - EA.	7
HP14x117 STEEL PILES - LIN. FT.	207
W14x145 STEEL PILES - EA.	17
W14x145 STEEL PILES - LIN. FT.	552.5
PAY QUANTITY	
SOLDIER PILE RETAINING WALLS WALL NO. 3	1906 SF

PROJECT NO.: U-4020 (35015.1.1)
WATAUGA COUNTY
STATION:
 SHEET 12 OF 17

PREPARED BY: K. WHITE DATE: 10/08
 REVIEWED BY: G. TAYLOR DATE: 10/08



GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SOLDIER PILE RETAINING WALL
TYPICAL SECTIONS AND DETAILS
SHEET 4 OF 5

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-12
1			3			TOTAL SHEETS
2			4			19

ENGINEER



Signature: Cary R. Taylor
Date: 11/9/09

WALL 4 C.I.P. CONCRETE FACING REINFORCING SCHEDULE

Table with columns: BEGIN, END, TYPICAL WALL ELEVATION TYPE, HORIZONTAL BARS (BAR, NO., MAX. SPACING C-C, LENGTH, WEIGHT), VERTICAL BARS (BAR, NO., LENGTH, WEIGHT), BENT BARS (BAR, NO., MAX. SPACING C-C, A, B, C, D, WEIGHT). Rows include joints 1 through 6 and an END WALL section.

* TOP 2 H141 BARS AT BEGIN WALL SHALL FOLLOW THE PROFILE OF THE TOP OF WALL. FIELD CUT OR BEND OTHER H141 BARS NEAR TOP OF WALL AT BEGIN WALL AS REQUIRED.

WALL 4A C.I.P. CONCRETE FACING REINFORCING SCHEDULE

Table with columns: BEGIN, END, TYPICAL WALL ELEVATION TYPE, HORIZONTAL BARS (BAR, NO., MAX. SPACING C-C, LENGTH, WEIGHT), VERTICAL BARS (BAR, NO., LENGTH, WEIGHT). Rows include joints 1 through 5 and an END WALL section.

WALL 4A ESTIMATED QUANTITIES

Table listing quantities for Wall 4A: CLASS A CONCRETE CAST-IN-PLACE FACING - CU. YARDS (146), SHAFT EXCAVATION - LIN. FT. (3412.5), SHAFT CONCRETE - CU. YARDS (431.0), TOTAL REINFORCING STEEL (FACING) - LBS (19487), TIMBER LAGGING - SQ. FEET (5019), and various steel pile quantities (HP14x73, HP14x117, W21x132, W21x147).

WALL 4 ESTIMATED QUANTITIES

Table listing quantities for Wall 4: CLASS A CONCRETE CAST-IN-PLACE FACING - CU. YARDS (223), SHAFT EXCAVATION - LIN. FT. (3297), SHAFT CONCRETE - CU. YARDS (300.8), TOTAL REINFORCING STEEL (FACING) - LBS (38194), TIMBER LAGGING - SQ. FEET (7896), and various steel pile quantities (HP14x73, HP14x117, W21x132, W21x147).

PREPARED BY: K. WHITE DATE: 10/08
REVIEWED BY: G. TAYLOR DATE: 10/08

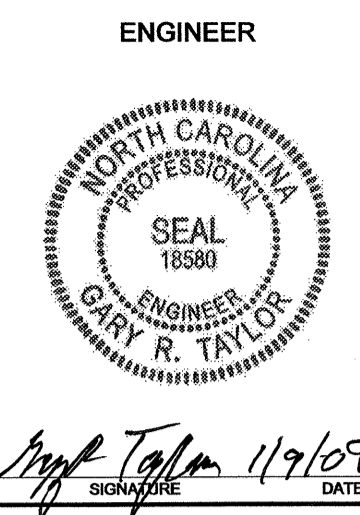


GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

PROJECT NO.: U-4020 (35015.1.1)
WATAUGA COUNTY
STATION: _____
SHEET 13 OF 17

SOLDIER PILE RETAINING WALL
TYPICAL SECTIONS AND DETAILS
SHEET 5 OF 5

Table with columns: REVISIONS (NO., BY, DATE) and SHEET NO. (TOTAL SHEETS: 19)



WALL 1 PILE SCHEDULE							
PILE STATION	PILE NO.	PILE SIZE	PILE SPACING	DRILLED HOLE DIA.	PILE LENGTH	PILE CUTOFF ELEV.	PILE TIP ELEV.
53+40.00	BEGIN WALL 1						
	1	HP12x53	2**	2.5	14.0	3178.0	3164.0
	2	HP12x53	10	2.5	14.0	3178.1	3164.1
	3	HP12x53	10	2.5	14.0	3178.3	3164.3
	4	HP12x53	10	2.5	14.0	3178.5	3164.5
	5	HP12x53	10	2.5	18.5	3178.7	3160.2
	6	HP12x53	10	2.5	18.5	3178.8	3160.3
	7	HP12x53	10	2.5	18.5	3179.0	3160.5
	8	HP12x53	10	2.5	18.5	3179.2	3160.7
	9	HP14x73	10	2.5	19.5	3179.4	3159.9
	EXP. JT. 1		5**				
	10	HP14x73	5**	2.5	19.5	3179.6	3160.1
	11	HP14x73	10	2.5	19.5	3179.7	3160.2
	12	HP14x73	10	2.5	19.5	3179.9	3160.4
	13	HP14x73	10	2.5	19.5	3180.2	3160.7
	14	HP14x89	10	2.5	22.0	3180.4	3158.4
	15	HP14x89	6	2.5	22.0	3180.5	3158.5
54+80.00	WALL BEND PT. 2 **						
	16	HP14x89	3 **	2.5	22.0	3180.6	3158.6
	17	HP14x89	10	2.5	22.0	3180.9	3158.9
	18	HP14x89	10	2.5	22.0	3181.1	3159.1
	19	HP14x89	10	2.5	30.0	3181.4	3151.4
	EXP. JT. 2		4**				
	20	HP14x89	4**	2.5	30.0	3181.6	3151.6
	21	HP14x89	8	2.5	30.0	3181.8	3151.8
	22	HP14x89	8	2.5	30.0	3182.0	3152.0
	23	HP14x89	8	2.5	30.0	3182.3	3152.3
	24	HP14x89	8	2.5	30.0	3182.4	3152.4
	25	W14x132	8	2.5	30.0	3182.6	3152.6
	26	W14x132	8	2.5	30.0	3182.8	3152.8
	27	W14x132	8	2.5	30.0	3182.9	3152.9
	28	W14x132	8	2.5	30.0	3183.1	3153.1
	29	W14x132	8	2.5	30.0	3183.2	3153.2
	30	W14x132	8	2.5	30.0	3183.4	3153.4
	EXP. JT. 3		4**				
	31	W14x132	4**	2.5	30.0	3183.4	3153.4
	32	W14x132	8	2.5	30.0	3183.5	3153.5
	33	W14x132	8	2.5	30.0	3183.6	3153.6
	34	W14x132	8	2.5	30.0	3183.7	3153.7
	35	W14x132	8	2.5	30.0	3183.8	3153.8
	36	W14x132	8	2.5	30.0	3183.9	3153.9
	37	W14x132	8	2.5	30.0	3183.8	3153.8
	38	W14x132	8	2.5	30.0	3183.9	3153.9
	39	W14x145	8	2.5	32.0	3183.9	3151.9
	40	W14x145	8	2.5	32.0	3183.9	3151.9
	41	W14x145	8	2.5	32.0	3183.9	3151.9
	EXP. JT. 4		4**				

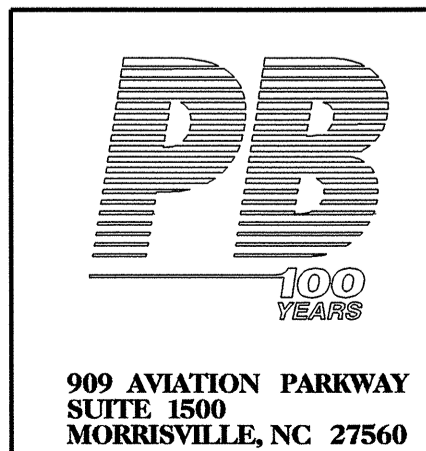
WALL 1 PILE SCHEDULE							
PILE STATION	PILE NO.	PILE SIZE	PILE SPACING	DRILLED HOLE DIA.	PILE LENGTH	PILE CUTOFF ELEV.	PILE TIP ELEV.
	42	W14x145	4**	2.5	32.0	3184.0	3152.0
	43	W14x145	8	2.5	36.0	3184.0	3148.0
	44	W14x145	8	2.5	36.0	3184.0	3148.0
	45	W14x145	8	2.5	36.0	3184.1	3148.1
	46	W21x132	8	2.5	36.0	3184.0	3148.0
	47	W21x132	8	2.5	36.0	3184.0	3148.0
	48	W21x132	8	2.5	36.0	3184.1	3148.1
	49	W21x132	8	2.5	36.0	3184.1	3148.1
	50	W21x132	8	2.5	36.0	3184.1	3148.1
	51	W21x132	8	2.5	36.0	3184.1	3148.1
	EXP. JT. 5		4**				
	52	W21x132	4**	2.5	36.0	3184.2	3148.2
57+80.00	WALL BEND PT. 3 **						
	53	W21x132	1 **	2.5	41.0	3184.2	3143.2
	54	W21x132	8	2.5	41.0	3184.2	3143.2
	55	W21x132	8	2.5	41.0	3184.3	3143.3
	56	W21x132	8	2.5	41.0	3184.5	3143.5
	57	W21x132	8	2.5	41.0	3184.9	3143.9
	58	W21x132	8	2.5	41.0	3185.2	3144.2
	59	W21x132	8	2.5	41.0	3185.6	3144.6
	60	W21x132	8	2.5	41.0	3185.9	3144.9
	61	W21x132	8	2.5	41.0	3186.4	3145.4
	62	W21x132	8	2.5	41.0	3186.5	3145.5
58+55.00	WALL BEND PT. 2.6 **						
	63	W21x166	3 **	2.5	45.0	3186.3	3141.3
	EXP. JT. 6		4**				
	64	W21x166	3**	2.5	45.0	3186.2	3141.2
	65	W21x166	8	2.5	45.0	3186.0	3141.0
	66	W21x166	8	2.5	45.0	3185.8	3140.8
	67	W21x166	8	2.5	45.0	3185.6	3140.6
	68	W21x166	8	2.5	45.0	3185.5	3140.5
	69	W21x166	8	2.5	45.0	3185.3	3140.3
	70	W21x166	8	2.5	45.0	3185.0	3140.0
	71	W21x166	8	2.5	45.0	3184.7	3139.7
	72	W21x166	8	2.5	45.0	3184.4	3139.4
	73	W21x166	8	2.5	45.0	3184.1	3139.1
	74	W21x166	8	2.5	45.0	3183.8	3138.8
	EXP. JT. 7		4**				
	75	W21x166	4**	2.5	45.0	3183.5	3138.5
	76	W21x166	8	2.5	45.0	3183.4	3138.4
	77	W21x166	8	2.5	45.0	3183.3	3138.3
	78	W21x122	5	2.5	40.0	3183.3	3143.3
59+76.21	WALL BEND PT. 2.2 **						
	79	W21x122	2.7 **	2.5	40.00	3182.7	3142.7
	80	W21x122	6	2.5	40.00	3181.5	3141.5
	EXP. JT. 8		3**				
	81	W21x122	3**	2.5	40.00	3179.5	3139.5

WALL 1 PILE SCHEDULE							
PILE STATION	PILE NO.	PILE SIZE	PILE SPACING	DRILLED HOLE DIA.	PILE LENGTH	PILE CUTOFF ELEV.	PILE TIP ELEV.
	82	W21x122	6	2.5	40.00	3179.1	3139.1
59+92.27	WALL BEND PT.		2 **				
	83	HP14x73	2.5 **	2.5	26.0	3177.3	3151.3
	84	HP12x53	8	2.5	13.0	3173.0	3160.0
60+12.31	END WALL 1 2.2 **						

** DISTANCE FROM BEGIN WALL, END WALL, EXPANSION JOINT OR WALL BEND POINT TO OR FROM CENTER OF PILE.

PROJECT NO.: U-4020 (35015.1.1)
WATAUGA COUNTY
STATION:
 SHEET 14 OF 17

PREPARED BY: K. WHITE DATE: 10/08
 REVIEWED BY: G. TAYLOR DATE: 10/08



GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

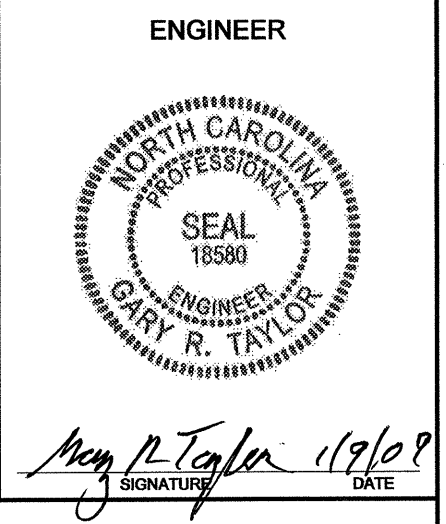
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-14
1			3			TOTAL SHEETS
2			4			19

WALL 2 PILE SCHEDULE							
PILE STATION	PILE NO.	PILE SIZE	PILE SPACING	DRILLED HOLE DIA.	PILE LENGTH	PILE CUTOFF ELEV.	PILE TIP ELEV.
60+40.00	BEGIN WALL 2						
	1	HP14x102	3**	2.5	33.0	3178.8	3145.8
	2	HP14x102	8	2.5	33.0	3178.3	3145.3
	3	HP14x102	8	2.5	33.0	3177.8	3144.8
	4	HP14x102	8	2.5	33.0	3177.3	3144.3
	5	HP14x102	8	2.5	33.0	3176.8	3143.8
	6	HP14x117	8	2.5	35.0	3176.2	3141.2
	7	HP14x117	8	2.5	35.0	3175.7	3140.7
	8	HP14x117	8	2.5	35.0	3175.2	3140.2
	9	HP14x117	8	2.5	35.0	3174.6	3139.6
	10	HP14x117	8	2.5	35.0	3174.1	3139.1
	11	HP14x117	8	2.5	35.0	3173.5	3138.5
	EXP. JT. 1		4**				
	12	HP14x117	4**	2.5	35.0	3172.9	3137.9
	13	HP14x89	8	2.5	27.0	3172.3	3145.3
	14	HP14x89	8	2.5	27.0	3171.8	3144.8
	15	HP14x89	8	2.5	27.0	3171.2	3144.2
	16	HP14x89	8	2.5	27.0	3170.6	3143.6
	17	HP14x89	8	2.5	27.0	3170.0	3143.0
	18	HP14x89	8	2.5	27.0	3169.5	3142.5
	19	HP14x89	8	2.5	27.0	3168.9	3141.9
	20	HP14x73	8	2.5	25.0	3168.3	3143.3
	21	HP14x73	8	2.5	25.0	3167.7	3142.7
	22	HP14x73	8	2.5	25.0	3167.1	3142.1
	EXP. JT. 2		4**				
	23	HP14x73	4**	2.5	25.0	3166.6	3141.6
	24	HP14x73	8	2.5	25.0	3166.0	3141.0
	25	HP14x73	8	2.5	25.0	3165.4	3140.4
	26	HP14x73	8	2.5	25.0	3164.8	3139.8
	27	HP14x73	8	2.5	25.0	3164.2	3139.2
	28	HP14x73	8	2.5	25.0	3163.7	3138.7
	29	HP14x73	8	2.5	21.0	3163.1	3142.1
	30	HP14x73	8	2.5	21.0	3162.5	3141.5
	31	HP14x73	8	2.5	21.0	3161.9	3140.9
	32	HP14x73	8	2.5	21.0	3161.3	3140.3
	33	HP14x73	8	2.5	21.0	3160.8	3139.8
	EXP. JT. 3		4**				
	34	HP14x73	4**	2.5	21.0	3160.2	3139.2
	35	HP14x73	8	2.5	21.0	3159.6	3138.6
	36	HP14x73	8	2.5	19.0	3159.0	3140.0
	37	HP14x73	8	2.5	19.0	3158.5	3139.5
	38	HP12x53	8	2.5	16.0	3157.9	3141.9
	39	HP12x53	10	2.5	16.0	3157.2	3141.2
63+52.12	END WALL 2		3.12**				

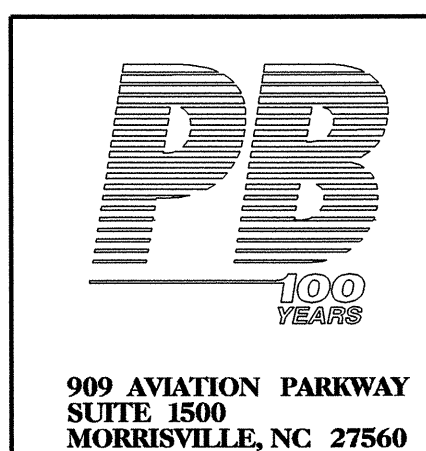
WALL 3 PILE SCHEDULE							
PILE STATION	PILE NO.	PILE SIZE	PILE SPACING	DRILLED HOLE DIA.	PILE LENGTH	PILE CUTOFF ELEV.	PILE TIP ELEV.
52+86.89	BEGIN WALL 3						
	1	HP14x73	2.5**	2.5	21.0	3185.8	3164.8
	2	HP14x73	8	2.5	21.0	3187.8	3166.8
	3	HP14x89	8	2.5	27.0	3189.8	3162.8
	EXP. JT. 1		4**				
	4	W14x117	4**	2.5	32.5	3191.8	3159.3
53+06.45	WALL BEND PT.		2.94**				
	5	W14x117	2.55**	2.5	32.5	3192.5	3160.0
	6	W14x145	8	2.5	32.5	3192.7	3160.2
	7	W14x145	8	2.5	32.5	3192.8	3160.3
	8	W14x145	8	2.5	32.5	3193.0	3160.5
	9	W14x145	8	2.5	32.5	3193.2	3160.7
	10	W14x145	8	2.5	32.5	3193.3	3160.8
	EXP. JT. 2		4**				
	11	W14x145	4**	2.5	32.5	3194.5	3162.0
	12	W14x145	8	2.5	32.5	3193.6	3161.1
	13	W14x145	8	2.5	32.5	3193.8	3161.3
	14	W14x145	8	2.5	32.5	3193.9	3161.4
	15	W14x145	8	2.5	32.5	3194.1	3161.6
	16	W14x145	8	2.5	32.5	3194.2	3161.7
	17	W14x145	8	2.5	32.5	3194.3	3161.8
	18	W14x145	8	2.5	32.5	3194.3	3161.8
	19	W14x145	8	2.5	32.5	3194.4	3161.9
	20	HP14x117	8	2.5	32.5	3194.4	3161.9
	21	HP14x89	8	2.5	30.0	3194.5	3164.5
	EXP. JT. 3		4**				
	22	HP14x89	4**	2.5	30.0	3194.5	3164.5
	23	HP14x89	8	2.5	30.0	3194.5	3164.5
	24	HP14x89	8	2.5	30.0	3194.3	3164.3
	25	HP14x89	8	2.5	30.0	3194.1	3164.1
	26	HP14x89	8	2.5	30.0	3193.9	3163.9
	27	HP14x73	8	2.5	23.5	3193.8	3170.3
	28	HP14x73	8	2.5	23.5	3193.6	3170.1
	29	HP14x73	8	2.5	23.5	3193.3	3169.8
	30	HP14x73	8	2.5	23.5	3192.1	3168.6
	31	HP14x73	8	2.5	20.0	3191.0	3171.0
	32	HP14x73	6	2.5	20.0	3190.1	3170.1
55+25	END WALL 3		2**				

** DISTANCE FROM BEGIN WALL, END WALL, EXPANSION JOINT OR WALL BEND POINT TO OR FROM CENTER OF PILE.

PROJECT NO.: U-4020 (35015.1.1)
WATAUGA COUNTY
STATION:
 SHEET 15 OF 17



PREPARED BY: K. WHITE DATE: 10/08
 REVIEWED BY: G. TAYLOR DATE: 10/08



GEOTECHNICAL ENGINEERING UNIT
 EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-15
1	GRT	11/06/08	3			TOTAL SHEETS
2			4			19

**SOLDIER PILE RETAINING WALL
 WALLS 2 AND 3
 PILE SCHEDULE**

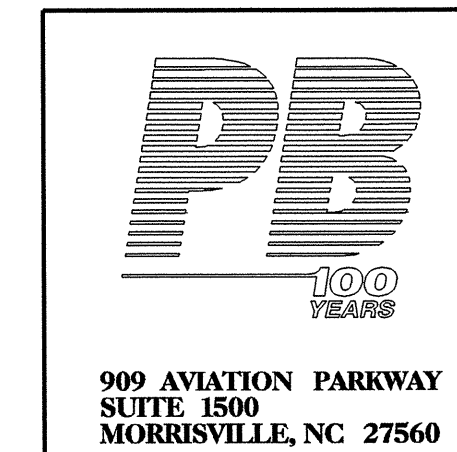
WALL 4A							
PILE SCHEDULE							
PILE STATION	PILE NO.	PILE SIZE	PILE SPACING	DRILLED HOLE DIA.	PILE LENGTH	PILE CUTOFF ELEV.	PILE TIP ELEV.
56+80.00	BEGIN WALL 4A						
	1	HP14x73	2**	2.5	25.0	3202.4	3177.4
	2	HP14x73	8	2.5	25.0	3203.4	3178.4
	3	HP14x73	8	2.5	25.0	3204.3	3179.3
	4	HP14x73	8	2.5	25.0	3205.0	3180.0
	5	HP14x73	8	2.5	25.0	3205.9	3180.9
	6	HP14x117	8	2.5	32.0	3206.8	3174.8
	7	HP14x117	8	2.5	32.0	3207.6	3175.6
	8	HP14x117	5	2.5	32.0	3208.2	3176.2
	EXP. JT. 1		2.5**				
	9	HP14x117	2.5**	2.5	32.0	3208.7	3176.7
	10	HP14x117	5	2.5	32.0	3209.3	3177.3
	11	HP14x117	5	2.5	32.0	3209.8	3177.8
	12	HP14x117	5	2.5	32.0	3210.0	3178.0
	13	HP14x117	5	2.5	32.0	3210.2	3178.2
	14	HP14x117	5	2.5	32.0	3210.3	3178.3
	15	HP14x117	5	2.5	34.0	3210.5	3176.5
	16	HP14x117	5	2.5	34.0	3210.7	3176.7
	17	HP14x117	5	2.5	34.0	3210.8	3176.8
	18	HP14x117	5	2.5	34.0	3211.0	3177.0
	19	HP14x117	5	2.5	34.0	3211.1	3177.1
	20	HP14x117	5	2.5	34.0	3211.3	3177.3
	EXP. JT. 2		2.5**				
	21	HP14x117	2.5**	2.5	34.0	3211.5	3177.5
	22	HP14x117	5	2.5	34.0	3211.6	3177.6
	23	HP14x117	5	2.5	34.0	3211.8	3177.8
	24	HP14x117	5	2.5	34.0	3211.9	3177.9
	25	W21x132	5	2.5	43.0	3212.1	3169.1
	26	W21x132	5	2.5	43.0	3212.3	3169.3
	27	W21x132	5	2.5	43.0	3212.4	3169.4
	28	W21x132	5	2.5	43.0	3212.6	3169.6
	29	W21x132	5	2.5	43.0	3212.7	3169.7
	30	W21x132	5	2.5	43.0	3212.9	3169.9
	31	W21x132	5	2.5	43.0	3213.0	3170.0
	32	W21x132	5	2.5	43.0	3213.2	3170.2
	33	W21x132	5	2.5	43.0	3213.3	3170.3
	34	W21x132	5	2.5	43.0	3213.4	3170.4
	35	W21x132	5	2.5	43.0	3213.6	3170.6
	36	W21x132	5	2.5	43.0	3213.7	3170.7
	EXP. JT. 3		2.5**				
	37	W21x132	2.5**	2.5	43.0	3213.9	3170.9
	38	W21x132	5	2.5	43.0	3214.0	3171.0
	39	W21x132	5	2.5	43.0	3214.1	3171.1
	40	W21x132	5	2.5	43.0	3214.3	3171.3
	41	W21x132	5	2.5	43.0	3214.4	3171.4
	42	W21x132	5	2.5	43.0	3214.3	3171.3
	43	W21x132	5	2.5	43.0	3214.3	3171.3

WALL 4A							
PILE SCHEDULE							
PILE STATION	PILE NO.	PILE SIZE	PILE SPACING	DRILLED HOLE DIA.	PILE LENGTH	PILE CUTOFF ELEV.	PILE TIP ELEV.
	44	W21x147	5	2.5	46.0	3214.2	3168.2
	45	W21x147	5	2.5	46.0	3214.1	3168.1
	46	W21x147	5	2.5	46.0	3214.0	3168.0
	47	W21x147	5	2.5	46.0	3213.9	3167.9
	48	W21x147	5	2.5	46.0	3213.8	3167.8
	49	W21x147	5	2.5	46.0	3213.7	3167.7
	50	W21x147	5	2.5	46.0	3213.7	3167.7
	51	W21x147	5	2.5	46.0	3213.6	3167.6
	52	W21x147	5	2.5	46.0	3213.4	3167.4
	53	W21x147	5	2.5	46.0	3213.3	3167.3
	54	W21x147	5	2.5	46.0	3213.2	3167.2
	EXP. JT. 4		2.5**				
	55	W21x147	2.5**	2.5	46.0	3213.1	3167.1
	56	W21x147	5	2.5	46.0	3212.9	3166.9
	57	W21x147	5	2.5	46.0	3212.8	3166.8
	58	W21x147	5	2.5	46.0	3212.7	3166.7
	59	W21x147	5	2.5	46.0	3212.5	3166.5
	60	W21x147	5	2.5	46.0	3212.4	3166.4
	61	W21x147	5	2.5	46.0	3212.3	3166.3
	62	W21x147	5	2.5	46.0	3211.9	3165.9
	63	W21x147	5	2.5	46.0	3211.6	3165.6
	64	W21x147	5	2.5	46.0	3211.2	3165.2
	65	W21x147	5	2.5	46.0	3210.9	3164.9
	66	W21x147	5	2.5	46.0	3210.5	3164.5
	67	W21x147	5	2.5	46.0	3210.1	3164.1
	68	W21x147	5	2.5	46.0	3209.8	3163.8
	69	W21x147	5	2.5	46.0	3209.4	3163.4
	70	W21x147	5	2.5	46.0	3209.1	3163.1
	71	W21x147	5	2.5	46.0	3208.7	3162.7
	72	W21x147	5	2.5	46.0	3207.4	3161.4
	EXP. JT. 5		2.5**				
	73	W21x147	2.5**	2.5	46.0	3206.2	3160.2
	74	W21x147	5	2.5	46.0	3204.9	3158.9
	75	W21x147	5	2.5	46.0	3203.6	3157.6
	76	W21x147	5	2.5	46.0	3202.3	3156.3
	77	HP14x117	5	2.5	34.0	3201.0	3167.0
	78	HP14x117	5	2.5	34.0	3199.8	3165.8
	79	HP14x73	5	2.5	34.0	3198.5	3164.5
	80	HP14x73	5	2.5	34.0	3197.2	3163.2
	81	HP14x73	5	2.5	34.0	3195.9	3161.9
	82	HP14x73	5	2.5	28.0	3194.0	3166.0
	83	HP14x73	8	2.5	28.0	3192.2	3164.2
	84	HP14x73	8	2.5	28.0	3190.4	3162.4
	85	HP14x73	8	2.5	28.0	3188.5	3160.5
61+30.00	END WALL 4A		1**				

**DISTANCE FROM BEGIN WALL, END WALL, EXPANSION JOINT OR WALL BEND POINT TO OR FROM CENTER OF PILE.

PROJECT NO.: U-4020 (35015.1.1)
 WATAUGA COUNTY
 STATION:
 SHEET 17 OF 17

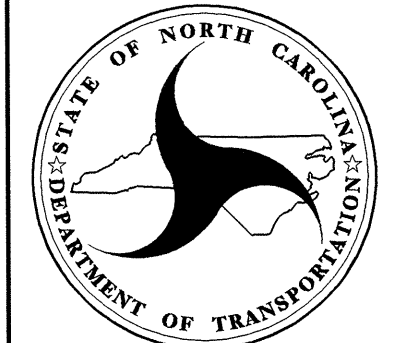
PREPARED BY: K. WHITE DATE: 10/08
 REVIEWED BY: G. TAYLOR DATE: 10/08



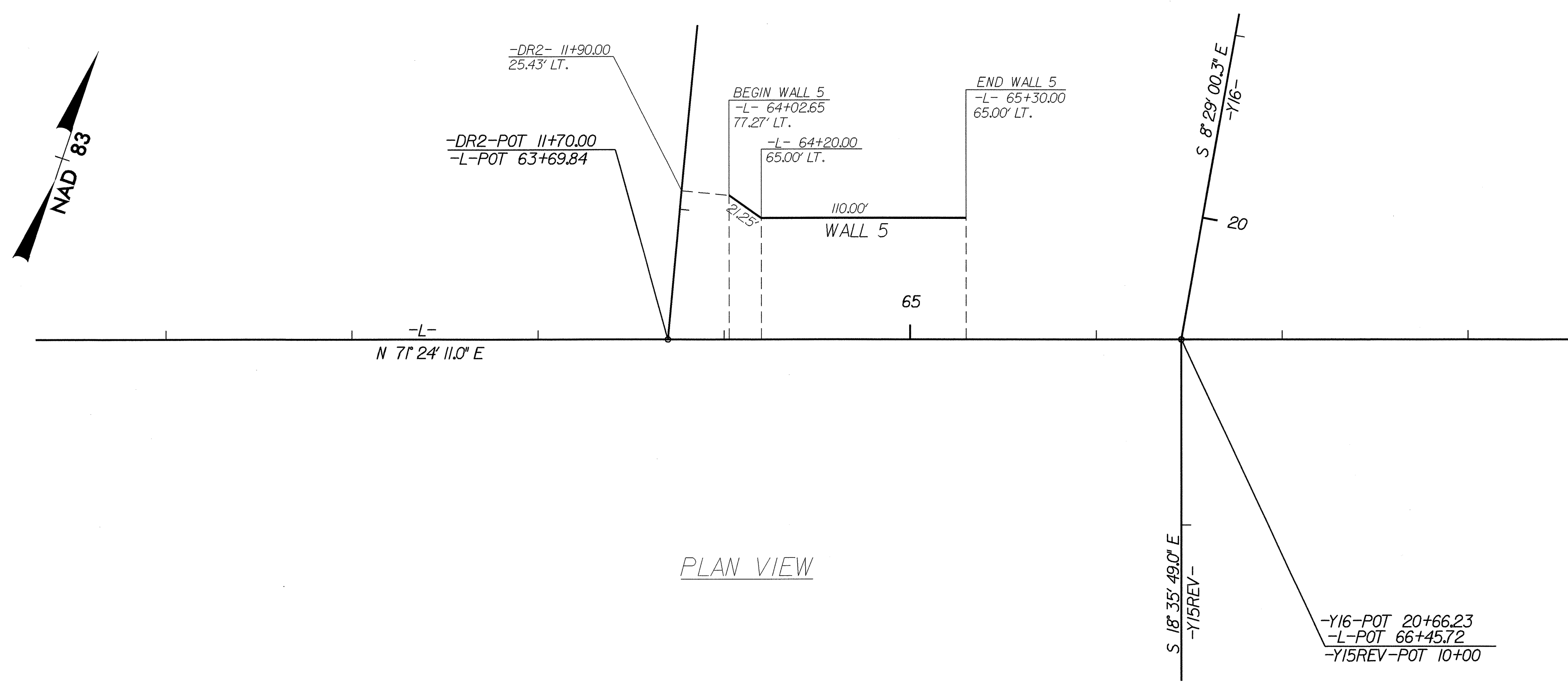
GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

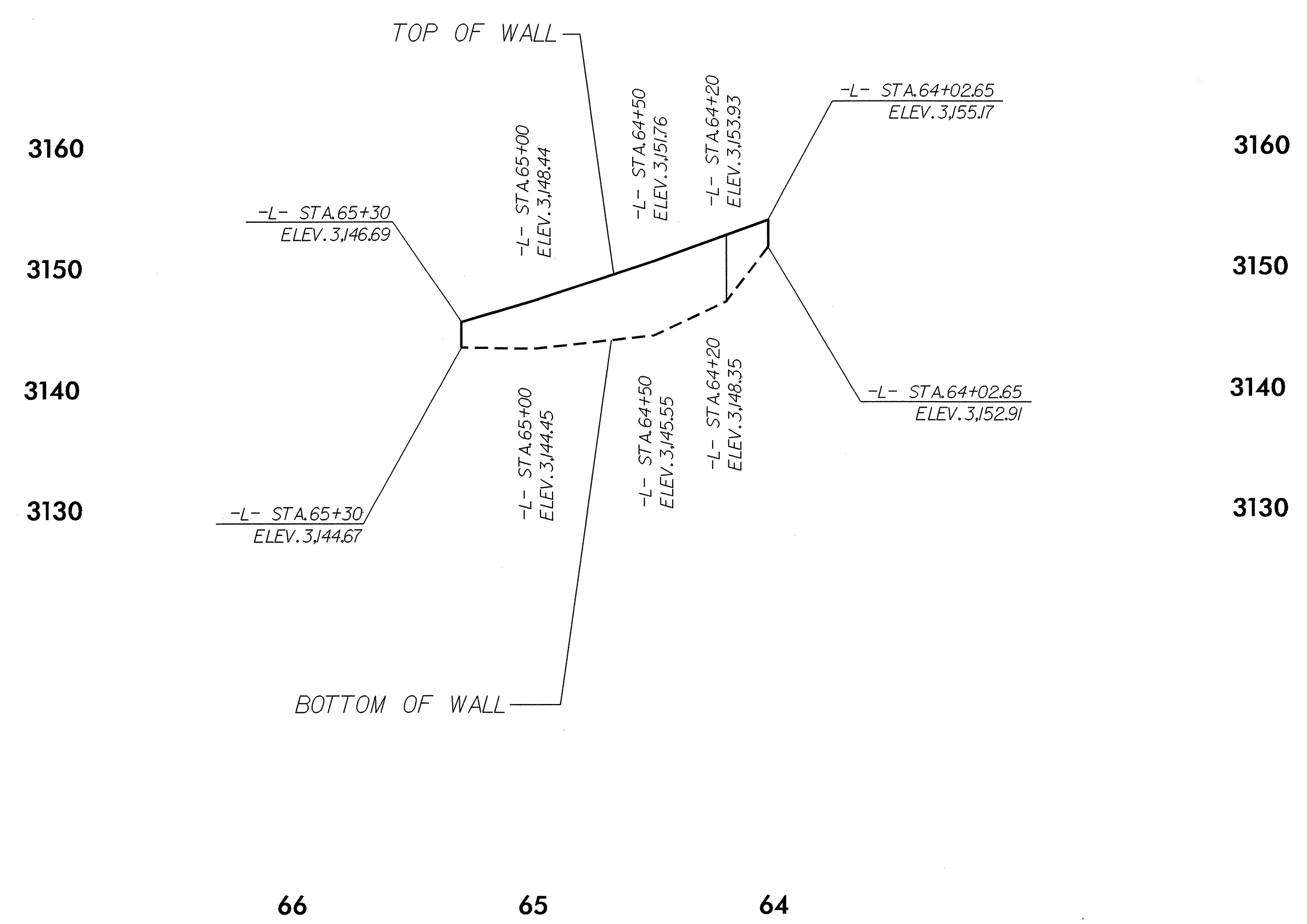
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH



SOLDIER PILE RETAINING WALL WALL 4A PILE SCHEDULE						
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	W-17
1			3			TOTAL SHEETS
2			4			19



PLAN VIEW



ELEVATION VIEW - FRONT FACE

ESTIMATED WALL FACE AREA = 612 SQ.FT.

PROJECT NO.: U-4020 (35015.1.1)
 WATAUGA COUNTY
 STATION: 64+02.65 -L- TO 65+30.00 -L-
 SHEET 1 OF 2

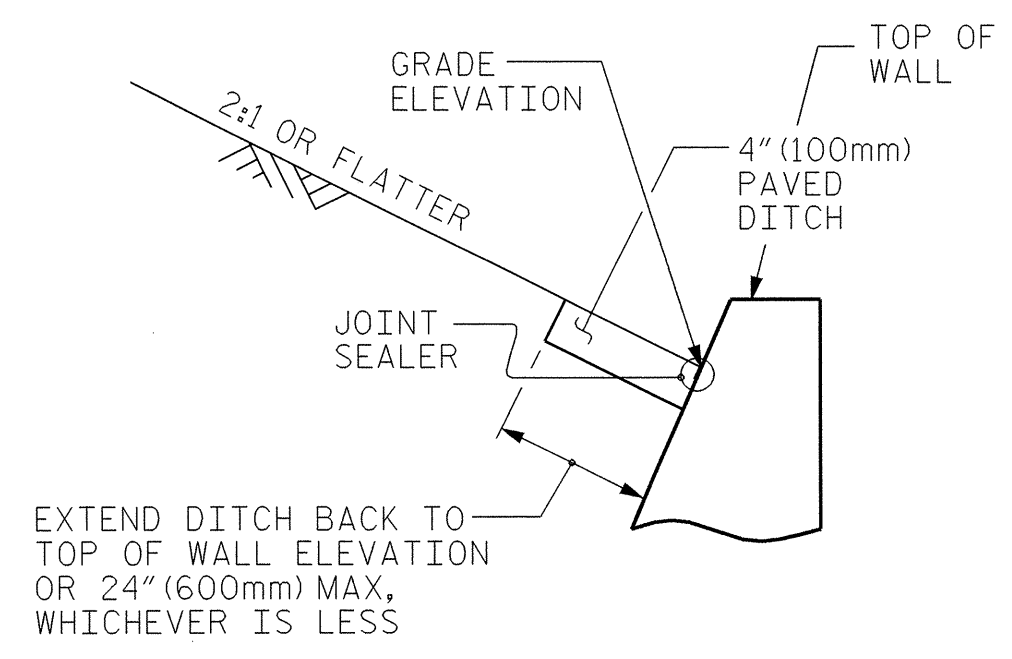
GEOTECHNICAL ENGINEERING UNIT

- EASTERN REGIONAL OFFICE
- WESTERN REGIONAL OFFICE
- CONTRACT OFFICE

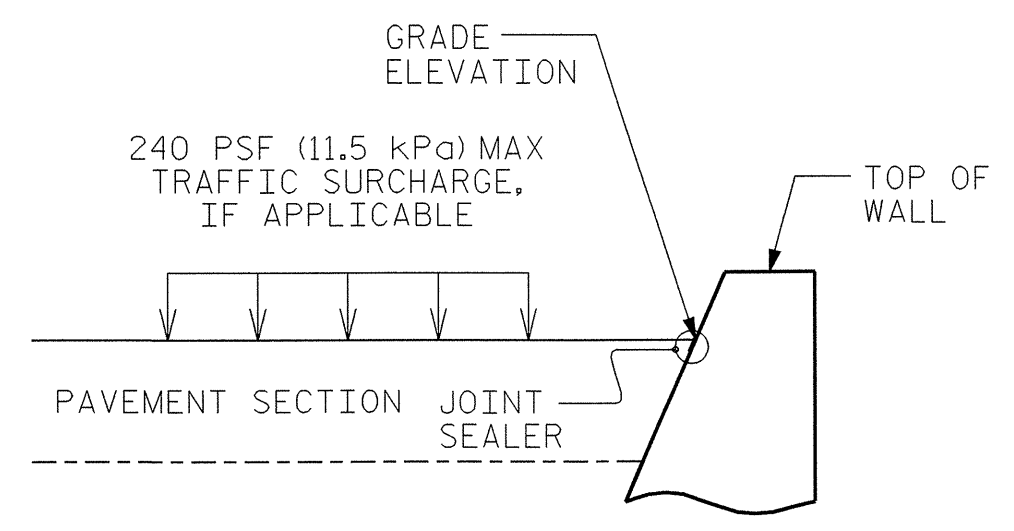
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			19
2			4			

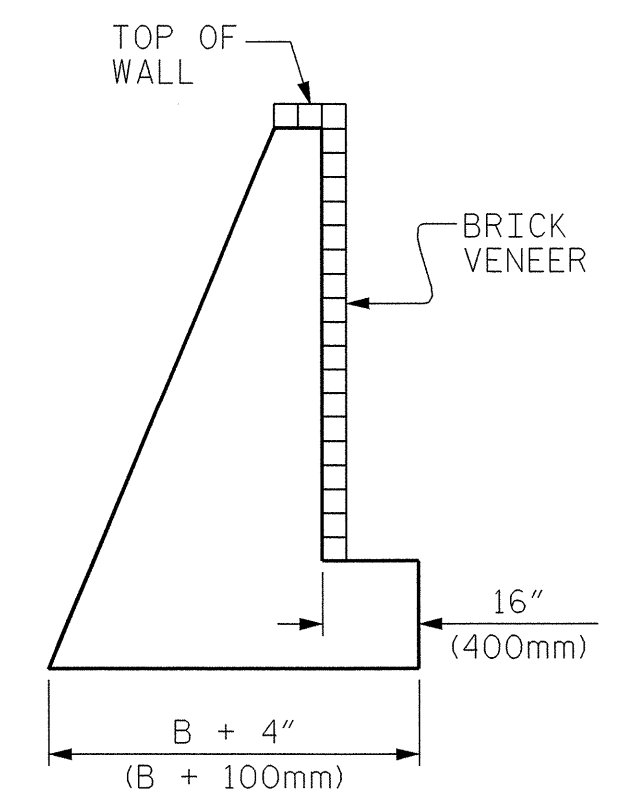
PREPARED BY: D. TEAGUE	DATE: 12/08
REVIEWED BY: E. WILLIAMS	DATE: 12/08



SLOPE CONDITION



NO SLOPE CONDITION



BRICK VENEER DETAIL

(WHEN APPLICABLE)

NOTES

FOR STANDARD GRAVITY RETAINING WALLS, SEE GRAVITY RETAINING WALLS PROVISION AND SECTION 453 OF THE STANDARD SPECIFICATIONS.

SEE PREVIOUS SHEETS FOR PLAN AND PROFILE (WALL ENVELOPE) VIEWS AND PROPOSED ELEVATIONS.

STANDARD GRAVITY RETAINING WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
 UNIT WEIGHT, $\gamma = 120$ PCF (18.8 kN/m³)
 FRICTION ANGLE, $\phi = 35$ DEGREES (GROUNDWATER WITHIN 5'-0" (1.5m) OF BOTTOM OF FOOTING)
 FRICTION ANGLE, $\phi = 30$ DEGREES (GROUNDWATER MORE THAN 5'-0" (1.5m) BELOW BOTTOM OF FOOTING)
 COHESION, $c = 0$ PSF (0 kPa)

DO NOT USE STANDARD GRAVITY RETAINING WALLS IF THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE THE BOTTOM OF FOOTING.

DO NOT USE STANDARD GRAVITY RETAINING WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS PRESENT BELOW WALLS.

DO NOT PLACE CONCRETE UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

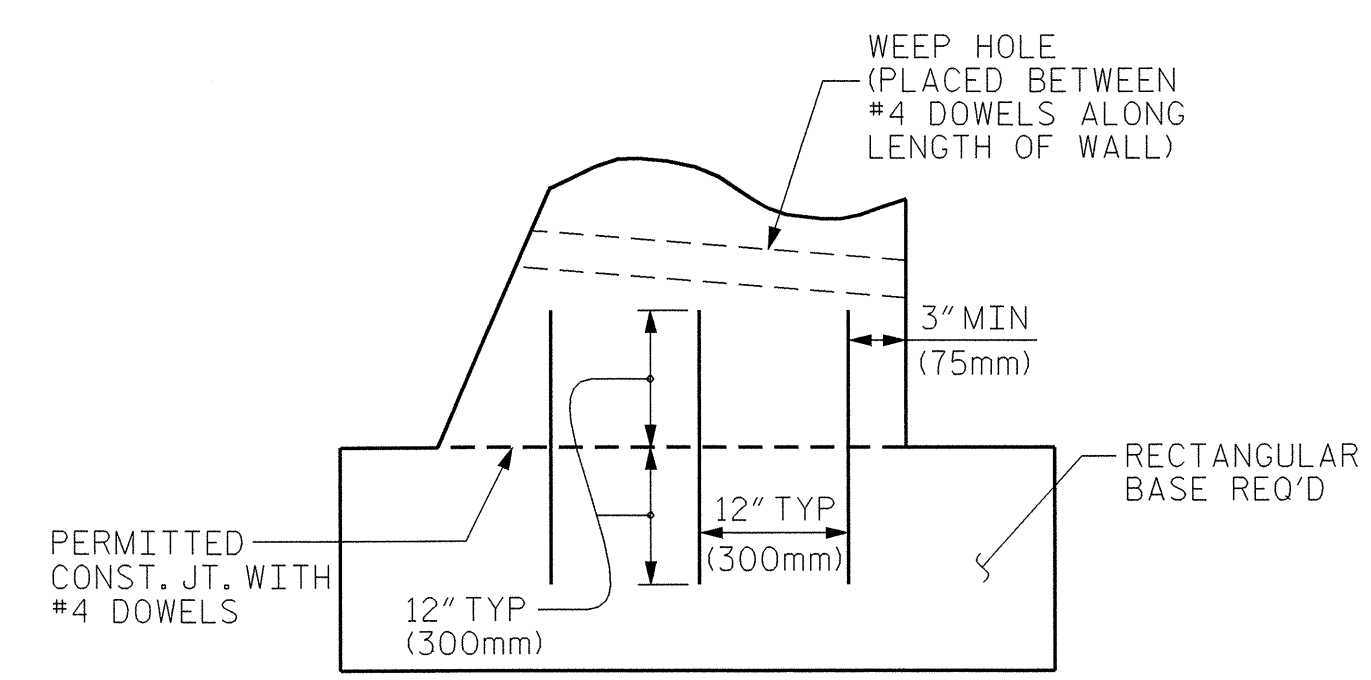
WHEN A CONSTRUCTION JOINT IS LOCATED AT THE BASE OF THE WALL, IN SECTION, PROVIDE A MINIMUM OF 3 #4 DOWELS AT AN EQUAL SPACING. SPACE ALL DOWELS AT 1'-6" (450mm) ALONG THE LENGTH OF THE WALL.

FOR SUBSURFACE DRAINAGE AT WEEP HOLES, SEE ARTICLE 410-9 OF THE STANDARD SPECIFICATIONS.

THIS WALL DOES NOT REQUIRE A BRICK VENEER FACING.

THIS WALL DOES NOT REQUIRE SINGLE FACED CONCRETE BARRIER.

FOR FENCES OR HAND RAILS ON TOP OF WALLS, USE SLEEVES IN ACCORDANCE WITH SECTION 866 OF THE STANDARD SPECIFICATIONS FOR POSTS OR SUBMIT POST ANCHOR PLATE DETAILS TO THE ENGINEER FOR APPROVAL.

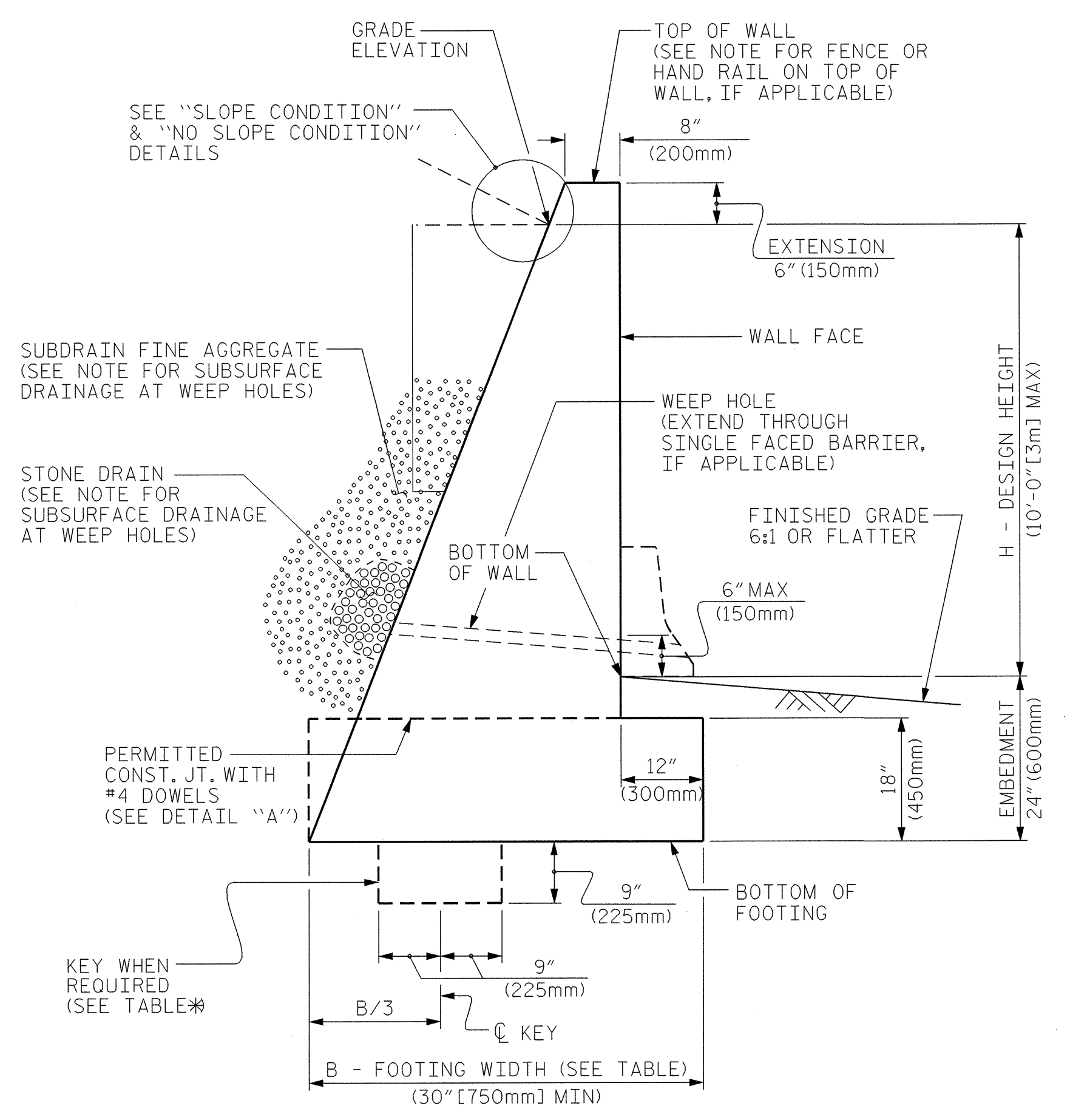


DETAIL "A"

H + 2 (FT)	3 - < 6	6 - 9	> 9 - 12
H + 0.6 (m)	0.9 - < 1.8	1.8 - 2.7	> 2.7 - 3.7
NO SLOPE CONDITION WITHOUT TRAFFIC SURCHARGE	.60	.60	.60
NO SLOPE CONDITION WITH TRAFFIC SURCHARGE	.80	.75*	.70*
SLOPE CONDITION	.66	.70*	.75*

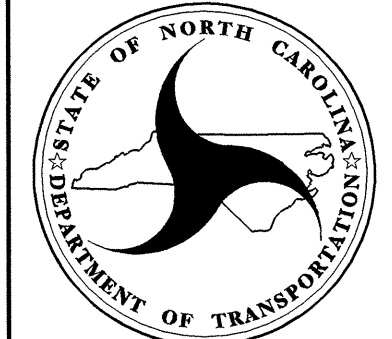
B/(H + 2) RATIO
 (B = 30" [750mm] MIN)

*KEY IS REQUIRED FOR SLOPE CONDITION OR NO SLOPE CONDITION WITH TRAFFIC SURCHARGE WHEN H + 2 FT (H + 0.6m) IS 6'-0" (1.8m) OR GREATER.



TYPICAL SECTION

PROJECT NO.: U-4020 (35015.1.1)
WATAUGA COUNTY
STATION: 64+02.65 -L- TO 65+30.00 -L-
 SHEET 2 OF 2


GEOTECHNICAL ENGINEERING UNIT
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD DRAWING NO. 453.01
STANDARD GRAVITY RETAINING WALL
 SHEET NO. W-19
 TOTAL SHEETS 19
 DATE: 12-16-08

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 2006 "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 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. 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. 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. FINISHES 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