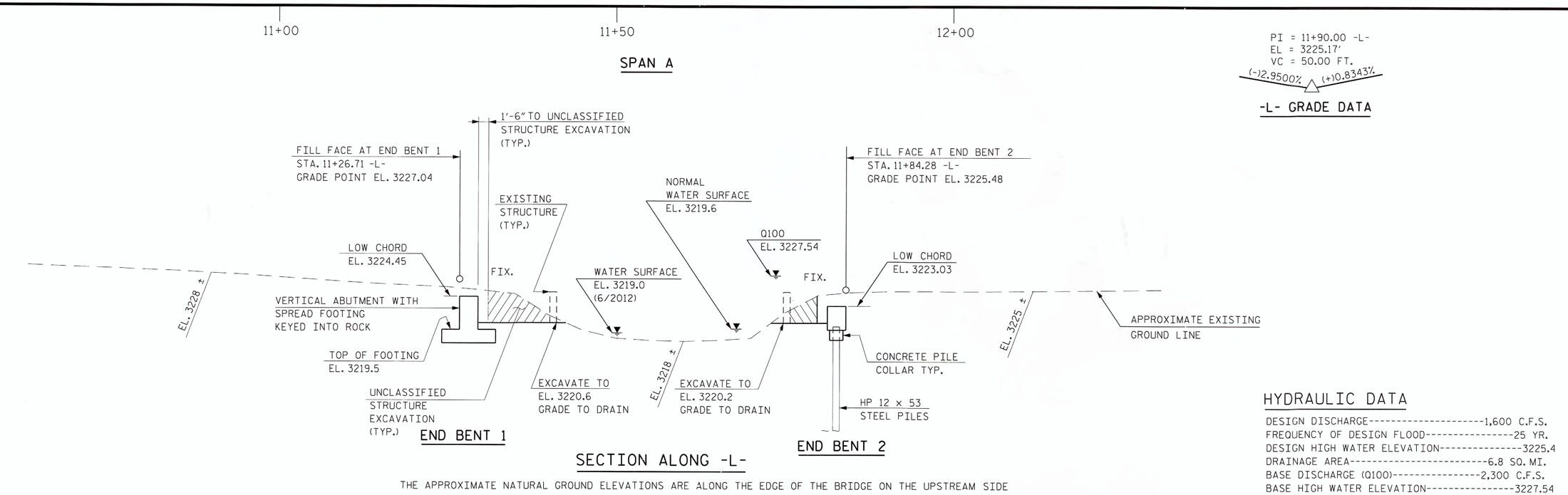
BD-5111AA

WATAUGA COUNTY

BRIDGE NO. 38



SECTION ALONG -L-

THE APPROXIMATE NATURAL GROUND ELEVATIONS ARE ALONG THE EDGE OF THE BRIDGE ON THE UPSTREAM SIDE

PI = 11+90.00 -L-
EL = 3225.17'
VC = 50.00 FT.
(-)2.9500% (+)0.8343%

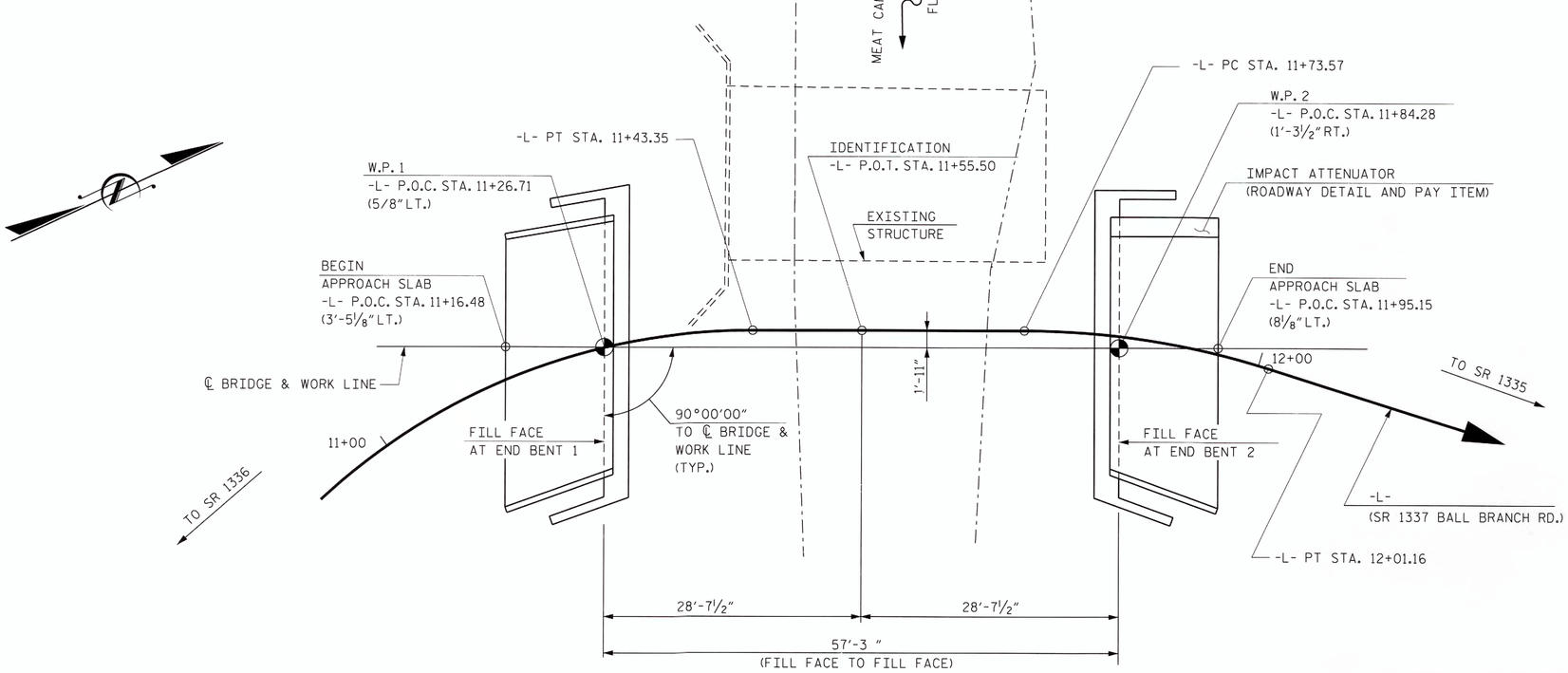
-L- GRADE DATA

HYDRAULIC DATA

DESIGN DISCHARGE----------1,600 C.F.S.
FREQUENCY OF DESIGN FLOOD----------25 YR.
DESIGN HIGH WATER ELEVATION----------3225.4
DRAINAGE AREA----------6.8 SQ. MI.
BASE DISCHARGE (Q100)----------2,300 C.F.S.
BASE HIGH WATER ELEVATION----------3227.54

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE----------1,748 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD------25 YR. +
OVERTOPPING FLOOD ELEVATION----------3225.7



PLAN

PILES NOT SHOWN IN PLAN VIEW

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: STA. 11+55.50 -L- P.O.T

SHEET 1 OF 4 REPLACES BRIDGE NO. 38

DRAWN BY : F.D. WEEDEN DATE : JUNE 2013
CHECKED BY : R.V. KEITH DATE : JUNE 2013

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NUMBER: F-0112

DWG. NO. 1

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER R.V. KEITH
7/2/2013

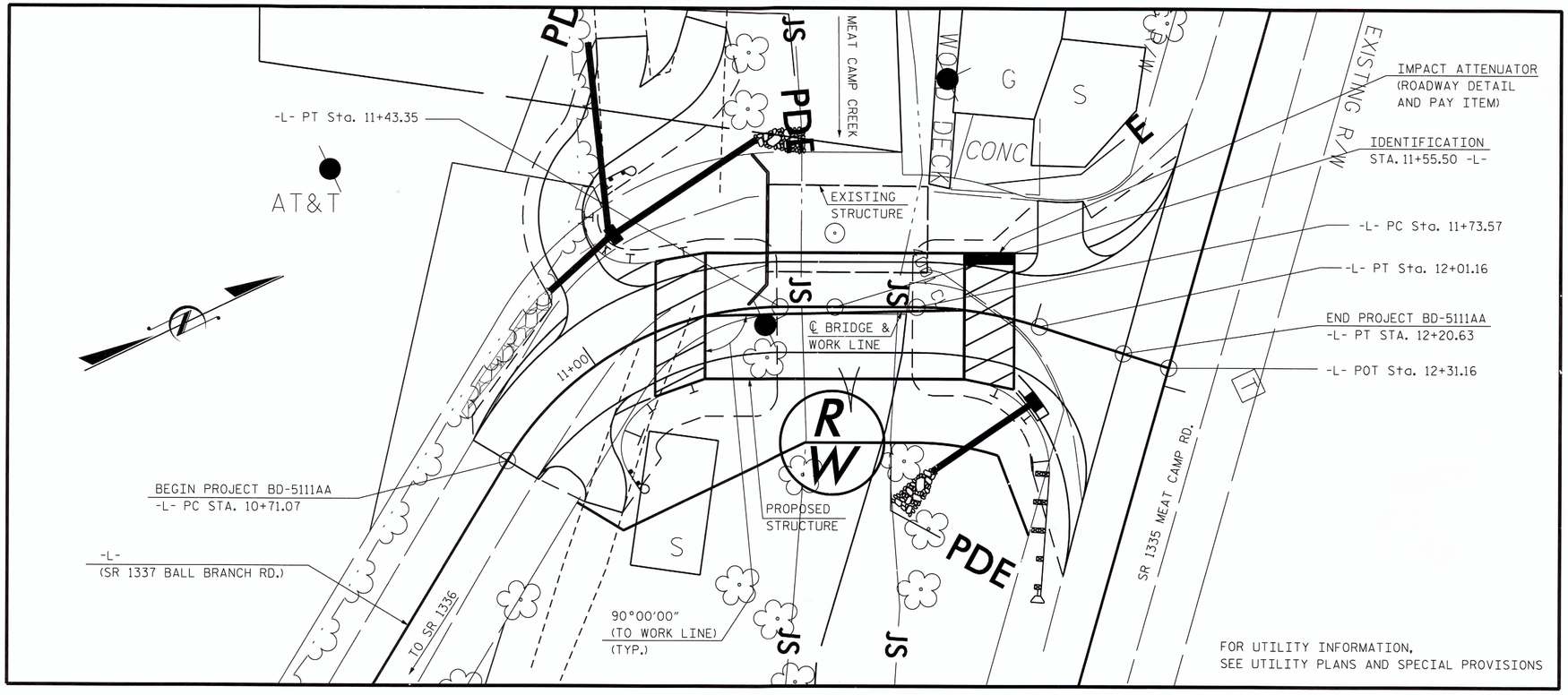
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER MEAT CAMP CREEK
ON SR 1337 (BALL BRANCH RD.)
BETWEEN SR 1335 (MEAT CAMP RD.)
AND SR 1336 (LEE SOUTH RD.)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	1
1			3			TOTAL SHEETS
2			4			22

M:\projects\2009\09085_NCDOT_Div_OnCall\P01_Div11Bridges_GRP4\BD5111AA_Watauga38\Design\Structures\BD5111aa_str_gen.dgn

BENCH MARK : BD511AA-1, ON -L- STA. 12+12.08, 42.8' LT. LOCALIZED PROJECT COORDINATES N= 930897.0355 E= 1214713.4488 ELEV. = 3226.01



LOCATION SKETCH

TOTAL BILL OF MATERIALS

	REMOVAL OF EXISTING STRUCTURE	FOUNDATION EXCAVATION	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	VERTICAL CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	LIN. FT.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE					LUMP SUM					110.25		10	550.0
END BENT NO. 1		LUMP SUM	LUMP SUM	49.1		5,314							
END BENT NO. 2			LUMP SUM	22.0		2,535	6	90.0	6				
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	71.1	LUMP SUM	7,849	6	90.0	6	110.25	LUMP SUM	10	550.0

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: STA. 11+55.50 -L- P.O.T

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER MEAT CAMP CREEK
ON SR 1337 (BALL BRANCH RD.)
BETWEEN SR 1335 (MEAT CAMP RD.)
AND SR 1336 (LEE SOUTH RD.)

DWG. NO. 2

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY V. KEITH
7/2/2013

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NUMBER: F-0112

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	2
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : F.D. WEEDEN DATE : JUNE 2013
CHECKED BY : R.V. KEITH DATE : JUNE 2013

M:\projects\2009\09085_NCDOT_Div_OnCall\P01_Div11Bridges_GRP4\BD5111AA_Watauga38\Design\Structures\BD5111aa_str_loc.dgn

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 1 SPAN @ 35'-6" WITH AN ASPHALT WEARING SURFACE OVER A TIMBER FLOOR ON I-BEAM SUPERSTRUCTURE AND A CLEAR ROADWAY WIDTH OF 19.1' ON A SUBSTRUCTURE CONSISTING OF TIMBER CAPS/TIMBER POST & SILLS AND LOCATED UPSTREAM OF THE PROPOSED STRUCTURE LOCATION SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. SEE SPECIAL PROVISION FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 11+55.50 -L-".

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 20 FEET EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 11+55.50 -L-".

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.

FOR IMPACT ATTENUATOR, SEE ROADWAY SPECIAL PROVISIONS.

FOR CONSTRUCTION STAGING, SEE TRAFFIC CONTROL PLANS.

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 142 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR END BENT NO. 1 IS THE BOTTOM OF FOOTING ELEVATION. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SPREAD FOOTING AT END BENT NO. 1 IS DESIGNED FOR A FACTORED RESISTANCE OF 6 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 14 TSF JUST BEFORE PLACING CONCRETE.

KEY IN SPREAD FOOTING AT END BENT NO. 1 AT LEAST 12" INTO ROCK WITH MINIMUM THICKNESS AS SHOWN ON THE PLANS.

FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE ARTICLE 410-9 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: STA. 11+55.50 -L- P.O.T

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER MEAT CAMP CREEK
ON SR 1337 (BALL BRANCH RD.)
BETWEEN SR 1335 (MEAT CAMP RD.)
AND SR 1336 (LEE SOUTH RD.)

DWG. NO. 2A

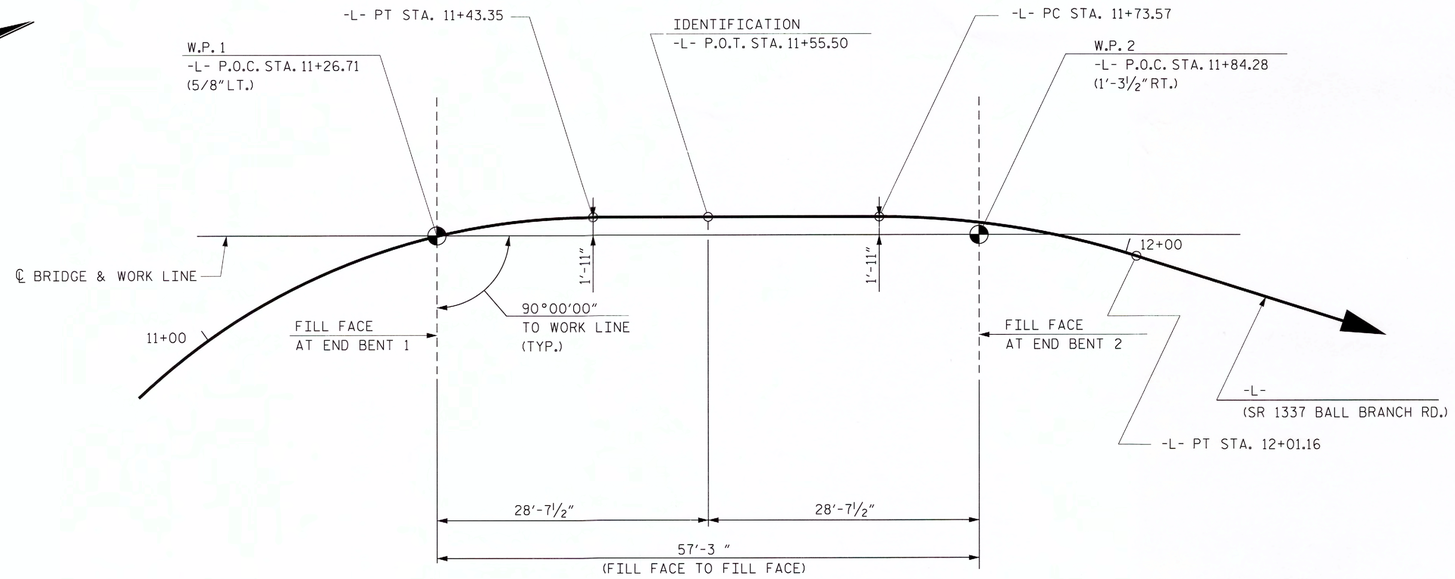
NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER RICKY W. KEITH
7/2/2013

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NUMBER: F-0112

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	2A
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : F.D. WEEDEN DATE : JUNE 2013
CHECKED BY : R.V. KEITH DATE : JUNE 2013

M:\projects\2009\09085_NCDOT_Div_OnCall\P01_Div11Bridges_GRP4\BD5111AA_Watauga38\Design\Structures\BD5111aa_str_loc.dgn



PLAN

THIS BRIDGE IS TO BE LAYED OUT ALONG A CHORD (WORK LINE)
FROM WORK POINT NO. 1 TO WORK POINT NO. 2

-L- HORIZONTAL CURVE DATA

PI Sta 11+10.80	PI Sta 11+87.48
Δ = 59° 09' 55.3"(RT)	Δ = 17° 33' 45.4"(RT)
D = 81° 51' 04.0"	D = 63° 39' 43.1"
L = 72.28'	L = 27.59'
T = 39.74'	T = 13.90'
R = 70.00'	R = 90.00'

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: STA. 11+55.50 -L- P.O.T

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LONG CHORD LAYOUT

DWG. NO. 3

NORTH CAROLINA PROFESSIONAL SEAL 10966 ENGINEER R.V. KEITH
7/2/2013

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NUMBER: F-0112

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	3
1			3			TOTAL SHEETS
2			4			22

DRAWN BY : F.D. WEEDEN DATE : JUNE 2013
CHECKED BY : R.V. KEITH DATE : JUNE 2013

M:\projects\2009\09085_NCDOT_Div_OnCall\P01_Div11Bridges_GRP4\BD5111AA_Watauga38\Design\Structures\BD5111aa_str_lc.dgn

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	⬡ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93(Inv)	N/A	1	1.11	--	1.75	0.276	1.15	A	EL	27	0.523	1.19	A	EL	5.4	0.80	0.276	1.11	A	EL	27.000	
		HL-93(Opr)	N/A	--	1.49	--	1.35	0.276	1.49	A	EL	27	0.523	1.54	A	EL	5.4	N/A	--	--	--	--	--	
		HS-20(Inv)	36.000	2	1.39	50.184	1.75	0.276	1.44	A	EL	27	0.523	1.42	A	EL	5.4	0.80	0.276	1.39	A	EL	27.000	
		HS-20(Opr)	36.000	--	1.84	66.310	1.35	0.276	1.86	A	EL	27	0.523	1.84	A	EL	5.4	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.93	39.523	1.4	0.276	3.78	A	EL	27	0.523	4.04	A	EL	5.4	0.80	0.276	2.93	A	EL	27.000	
		SNGARBS2	20.000	--	2.27	45.449	1.4	0.276	2.93	A	EL	27	0.523	2.93	A	EL	5.4	0.80	0.276	2.27	A	EL	27.000	
		SNAGRIS2	22.000	--	2.19	48.232	1.4	0.276	2.83	A	EL	27	0.523	2.74	A	EL	5.4	0.80	0.276	2.19	A	EL	27.000	
		SNCOTTS3	27.250	--	1.46	39.768	1.4	0.276	1.88	A	EL	27	0.523	2.02	A	EL	5.4	0.80	0.276	1.46	A	EL	27.000	
		SNAGGRS4	34.925	--	1.25	43.795	1.4	0.276	1.62	A	EL	27	0.523	1.72	A	EL	5.4	0.80	0.276	1.25	A	EL	27.000	
		SNS5A	35.550	--	1.22	43.508	1.4	0.276	1.58	A	EL	27	0.523	1.76	A	EL	5.4	0.80	0.276	1.22	A	EL	27.000	
		SNS6A	39.950	--	1.14	45.456	1.4	0.276	1.47	A	EL	27	0.523	1.63	A	EL	5.4	0.80	0.276	1.14	A	EL	27.000	
		SNS7B	42.000	--	1.08	45.533	1.4	0.276	1.40	A	EL	27	0.523	1.62	A	EL	5.4	0.80	0.276	1.08	A	EL	27.000	
	TTST	TNAGRIT3	33.000	--	1.39	45.936	1.4	0.276	1.80	A	EL	27	0.523	1.92	A	EL	5.4	0.80	0.276	1.39	A	EL	27.000	
		TNT4A	33.075	--	1.40	46.381	1.4	0.276	1.81	A	EL	27	0.523	1.85	A	EL	5.4	0.80	0.276	1.40	A	EL	27.000	
		TNT6A	41.600	--	1.16	48.314	1.4	0.276	1.50	A	EL	27	0.523	1.77	A	EL	5.4	0.80	0.276	1.16	A	EL	27.000	
		TNT7A	42.000	--	1.18	49.361	1.4	0.276	1.52	A	EL	27	0.523	1.66	A	EL	5.4	0.80	0.276	1.18	A	EL	27.000	
		TNT7B	42.000	--	1.23	51.517	1.4	0.276	1.58	A	EL	27	0.523	1.57	A	EL	5.4	0.80	0.276	1.23	A	EL	27.000	
		TNAGRIT4	43.000	--	1.16	49.916	1.4	0.276	1.50	A	EL	27	0.523	1.51	A	EL	5.4	0.80	0.276	1.16	A	EL	27.000	
		TNAGT5A	45.000	--	1.09	48.939	1.4	0.276	1.40	A	EL	27	0.523	1.53	A	EL	5.4	0.80	0.276	1.09	A	EL	27.000	
		TNAGT5B	45.000	3	1.07	48.072	1.4	0.276	1.38	A	EL	27	0.523	1.43	A	EL	5.4	0.80	0.276	1.07	A	EL	27.000	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.

2.

3.

4.

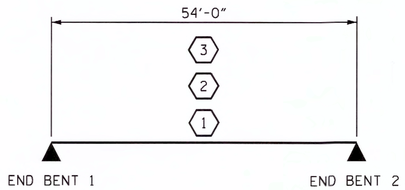
⬡ CONTROLLING LOAD RATING

1. DESIGN LOAD RATING (HL-93)
2. DESIGN LOAD RATING (HS-20)
3. LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

FOR SPAN 'A'

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: 11+55.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR 55' CORED SLAB UNIT 90° SKEW (NON-INTERSTATE TRAFFIC)

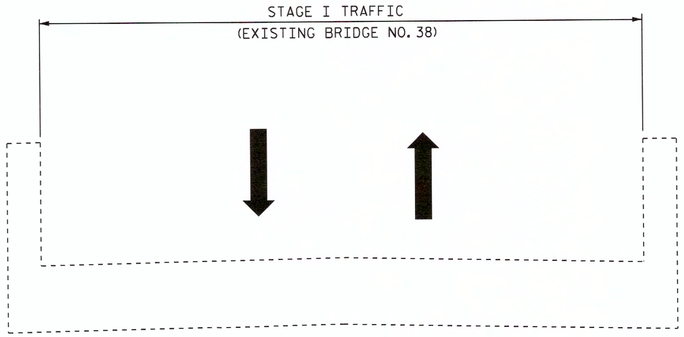
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			22

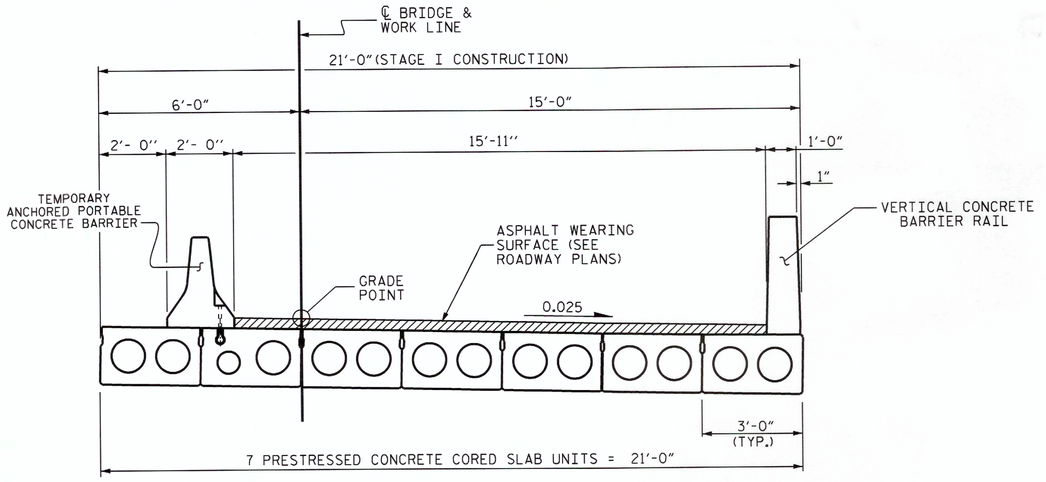
STD. NO. LRFR1

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRIAN D. KLAPPENBACH
6-5-2013

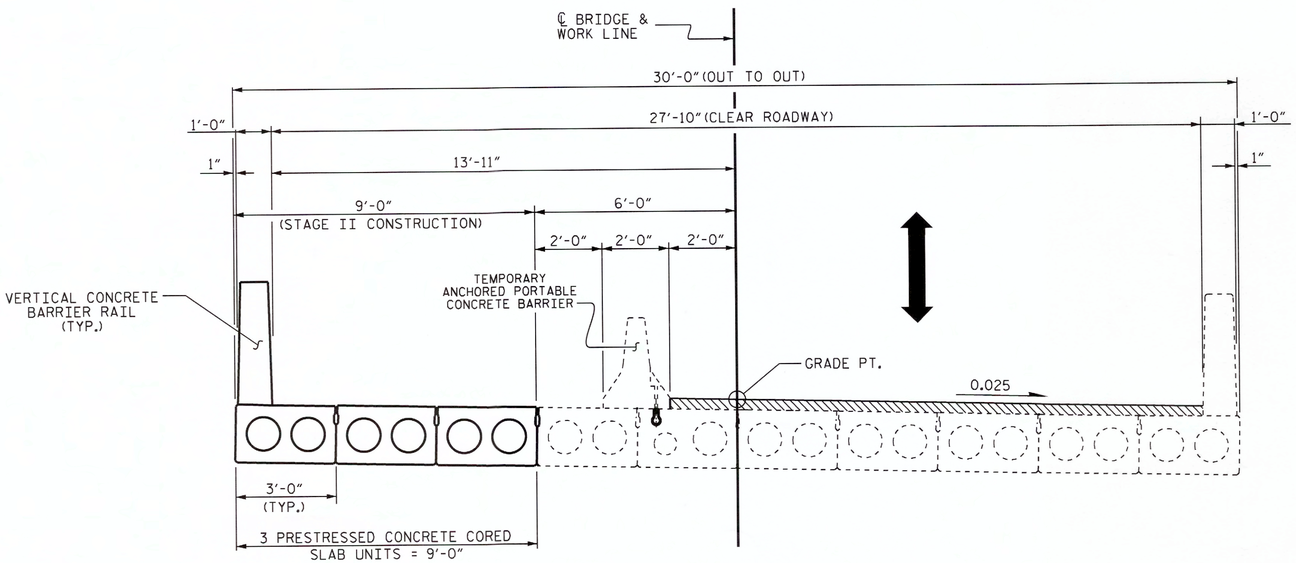
ASSEMBLED BY : B. A. DUKE	DATE : 12-12-12		
CHECKED BY : R. Z. DEAN	DATE : 6-3-13		
DRAWN BY : MAA 1/08	REV. 11/12/08RR	MAA/GM	
CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM	

05-JUN-2013 16:18
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_super.dgn
bklappenbach





STAGE I



STAGE II

STAGING SEQUENCE

NOTES

FOR TEMPORARY ANCHORED PORTABLE CONCRETE BARRIER, SEE TRAFFIC CONTROL PLANS.

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: 11+55.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION STAGING

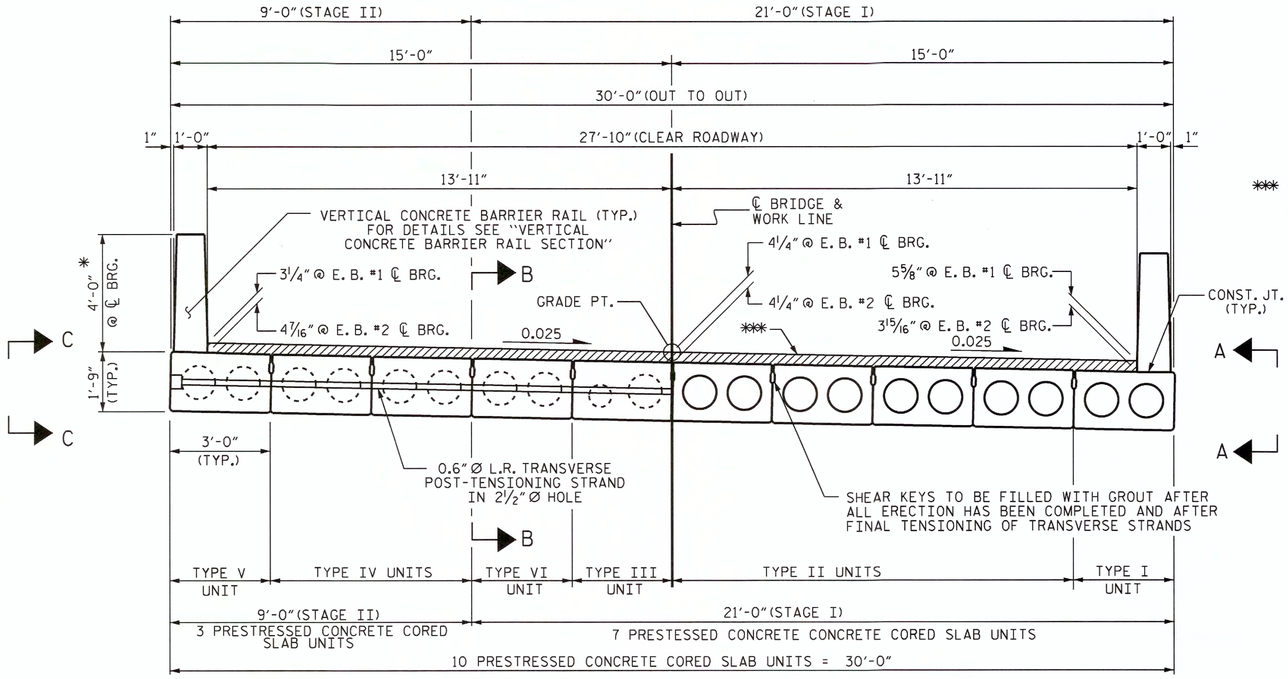
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			22

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
6-27-2013

DRAWN BY : B. A. DUKE DATE : 12-11-12
CHECKED BY : R. Z. DEAN DATE : 4-8-13

26-JUN-2013 12:01
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_super.dgn
bklappenbach

NCDOT



*** ASPHALT WEARING SURFACE (SEE ROADWAY ROADWAY PLANS)

HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

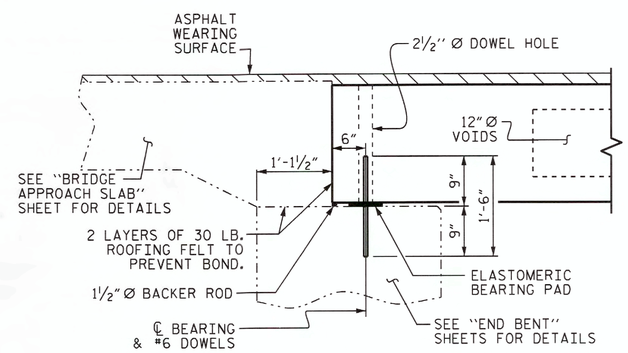
HALF SECTION
THROUGH VOIDS

TYPICAL SECTION

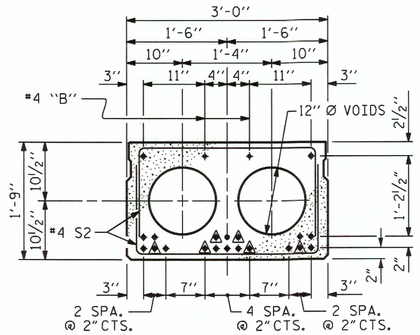
* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

** ASPHALT DEPTHS VARY ACROSS TYPICAL SECTION DUE TO CURVED HORIZONTAL ALIGNMENT.

FIXED END



SECTION AT END BENT

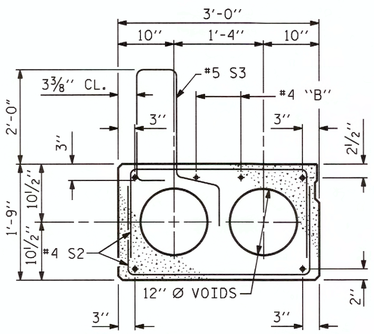


STRAND LAYOUT FOR 55' UNIT
TYPE II IV & VI (20 STRANDS REQUIRED)

INTERIOR SLAB SECTION 0.6" Ø LOW RELAXATION

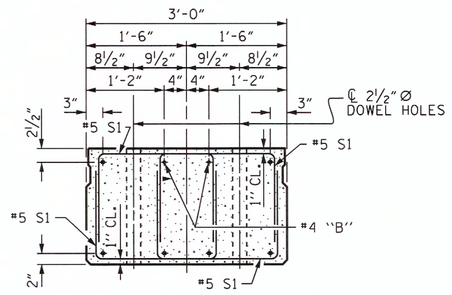
▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 8'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



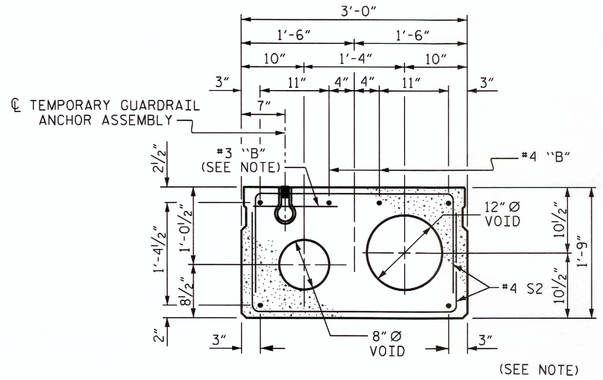
EXT. SLAB SECTION

TYPE I & V
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION - TYPE II, IV & VI)



END ELEVATION

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES.
(STRAND LAYOUT NOT SHOWN.)
INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



INTERIOR SLAB SECTION

TYPE III
(FOR PRESTRESSED STRAND LAYOUT, SEE "INTERIOR SLAB SECTION - TYPE II, IV & VI)

NOTE: FOR LOCATION OF CONCRETE INSERTS, SEE "ANCHORAGE DETAIL FOR ANCHORED PORTABLE CONCRETE BARRIER DETAILS" SHEET.

PROJECT NO. BD-5111AA
WATAUGA COUNTY
STATION: 11+55.50 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3'-0" X 1'-9"
PRESTRESSED CONCRETE CORED SLAB UNIT
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			22

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER B. A. DUKE
6-27-2013

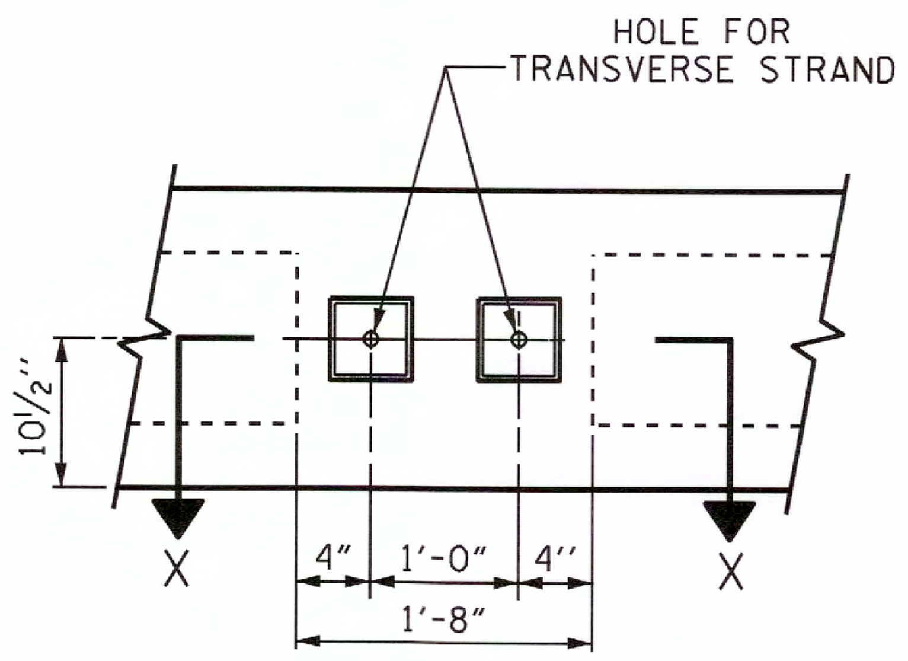
ASSEMBLED BY : B. A. DUKE	DATE : 11-30-12		
CHECKED BY : R. Z. DEAN	DATE : 4-8-13		
DRAWN BY : DGE 5/09	REV. 12/11 MAA/AAC	DESIGN ENGINEER OF RECORD: B. A. DUKE	DATE : 4-22-13
CHECKED BY : BCH 6/09			

26-JUN-2013 12:01
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_super.dgn
bklappenbach

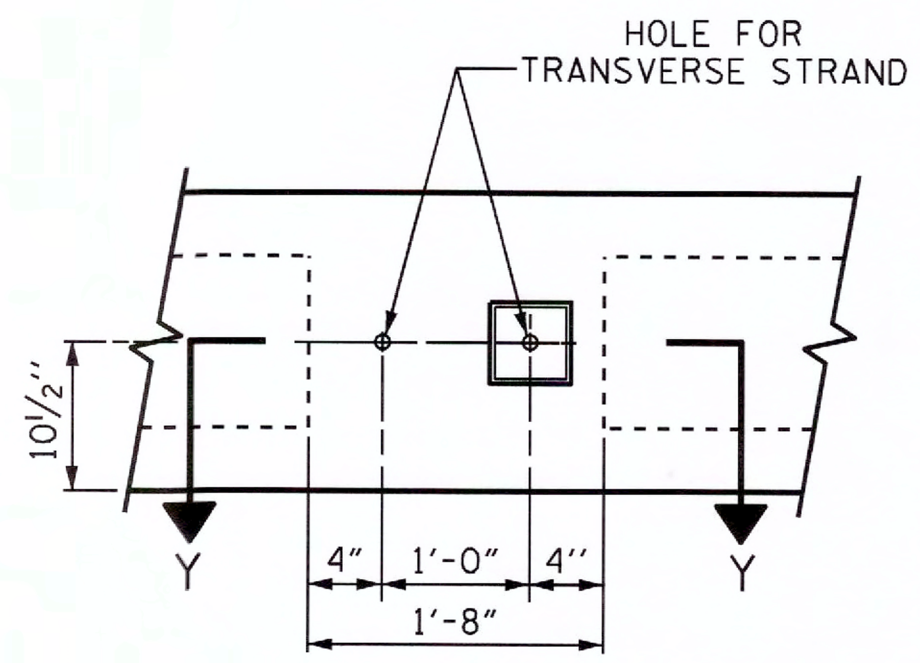
STD. NO. 21"PCS2_30_90S

▲ STRAND #1 GOES THRU 7 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE I CONSTRUCTION)

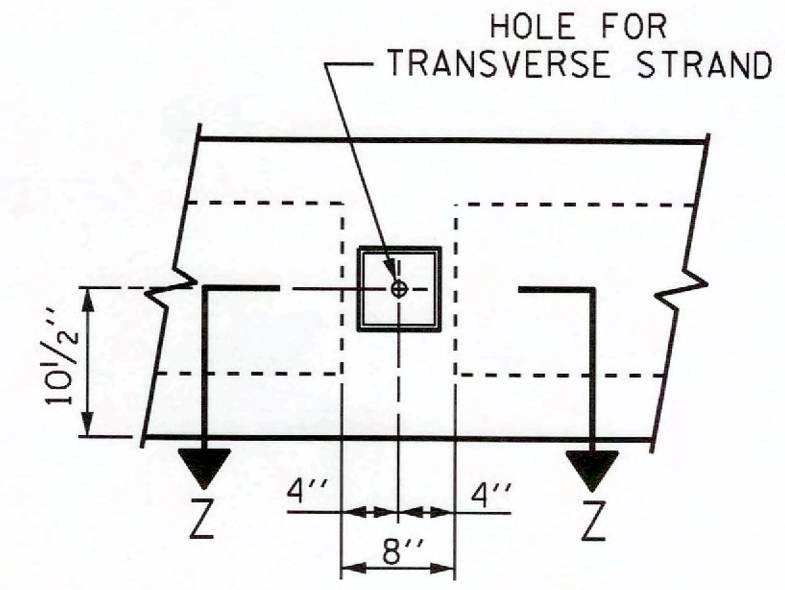
● STRAND #2 GOES THRU ALL 10 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE II CONSTRUCTION)



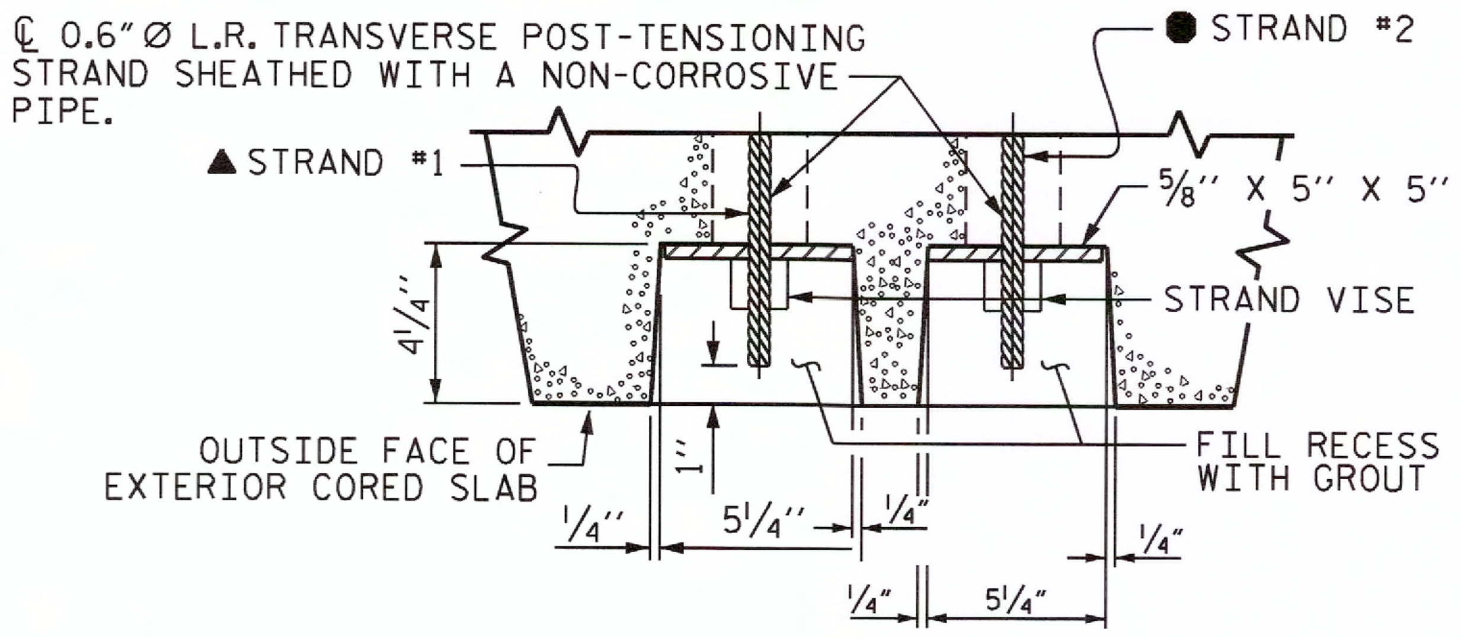
VIEW A-A
SEE SHEET 1 OF 5



VIEW B-B
SEE SHEET 1 OF 5

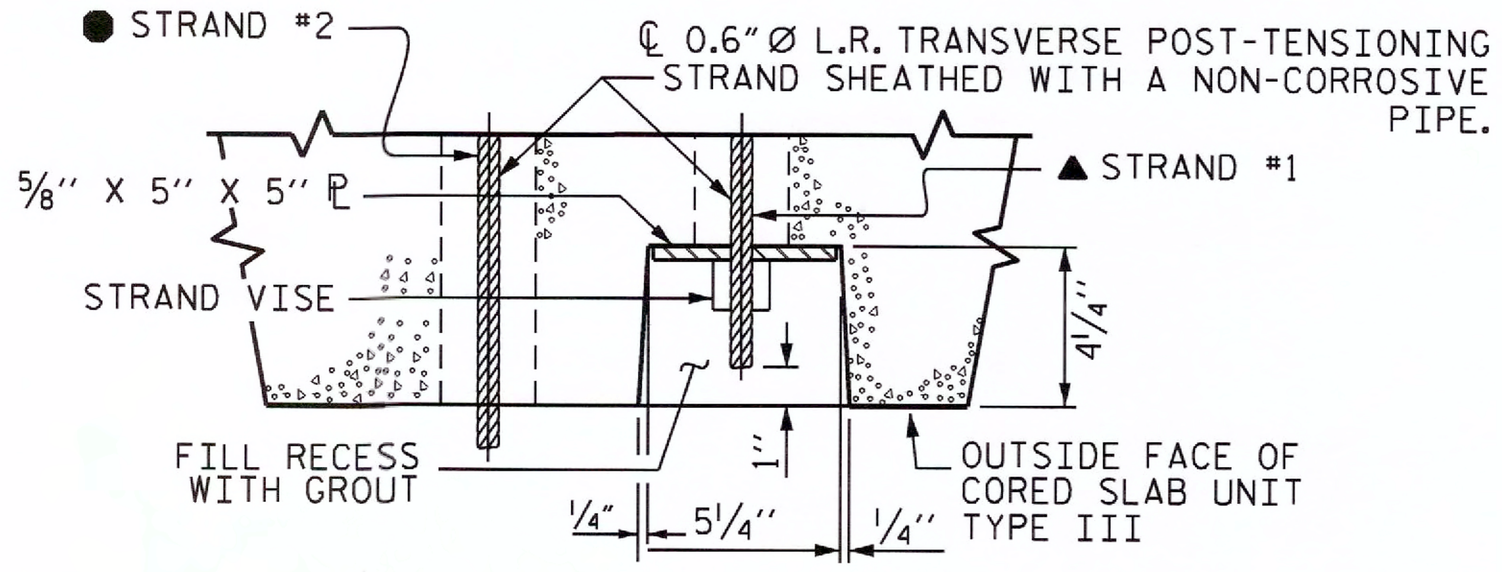


VIEW C-C
SEE SHEET 1 OF 5



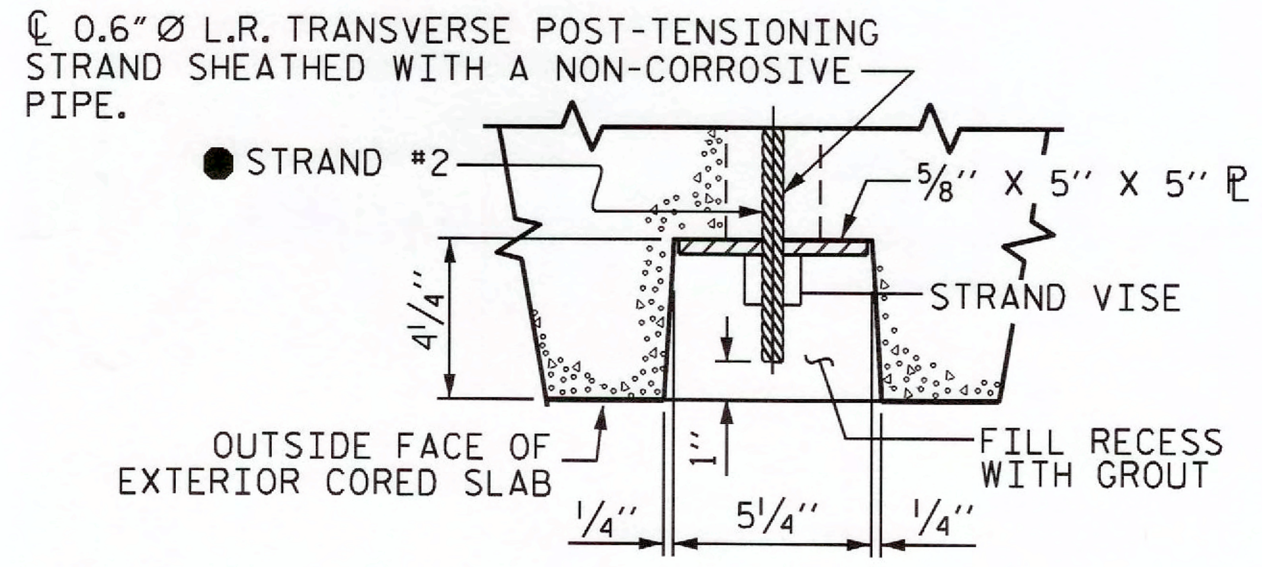
SECTION X-X
(TYPE I UNIT)

UP STATION



SECTION Y-Y
(TYPE VI UNIT)

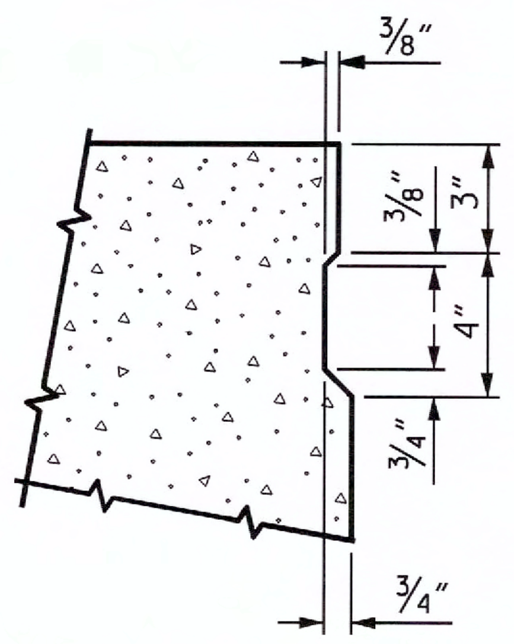
UP STATION



SECTION Z-Z
(TYPE V UNIT)

UP STATION

GROUTED RECESS AT END OF POST-TENSIONED STRAND



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

PROJECT NO. BD- 5111AA
WATAGUA COUNTY
STATION: 11+55.50 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

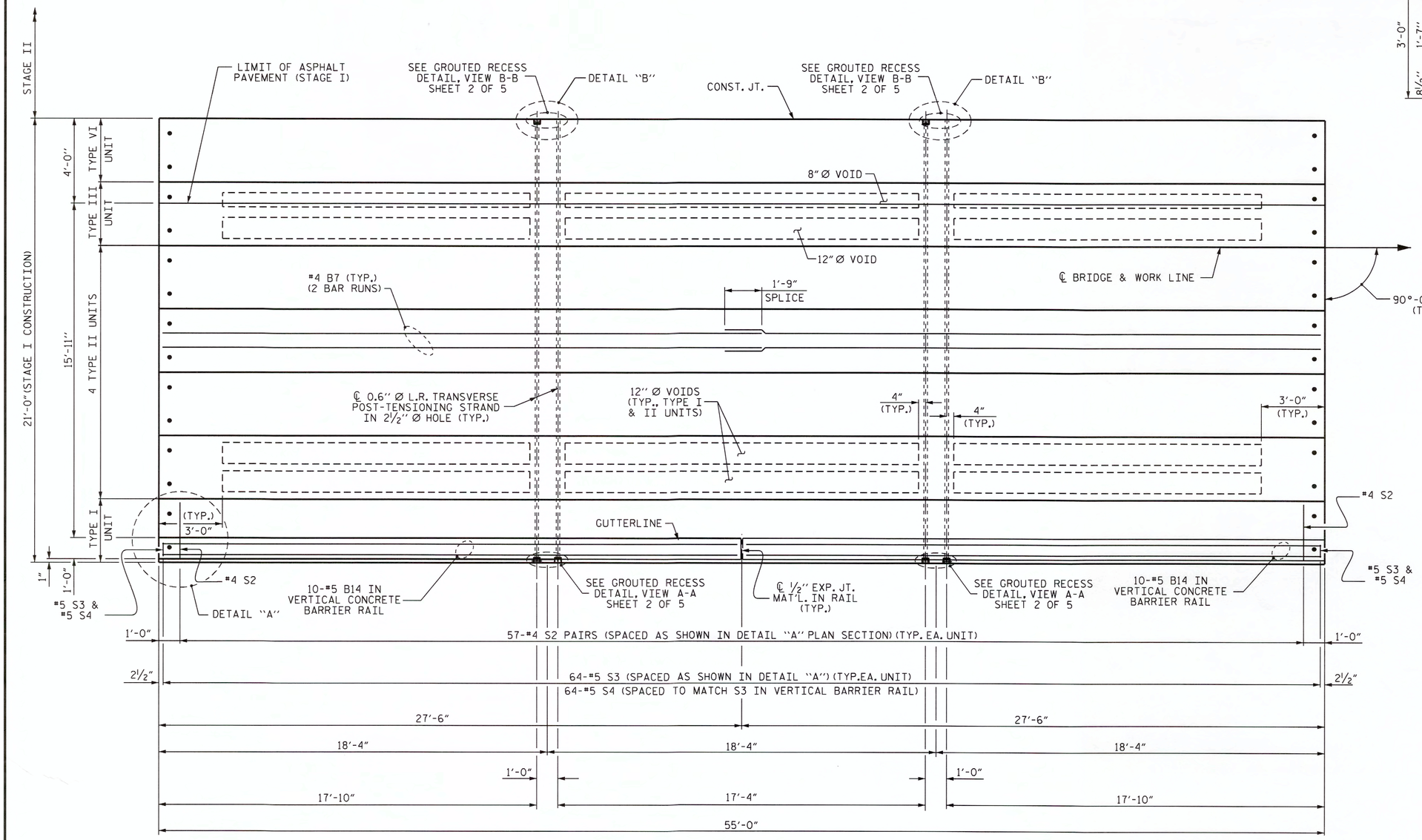
SUPERSTRUCTURE
3′-0″ X 1′-9″
PRESTRESSED CONCRETE
CORED SLAB UNIT

SEAL 15825 NORTH CAROLINA PROFESSIONAL ENGINEER BRUCE D. KLAPPENBACH 6-27-2013

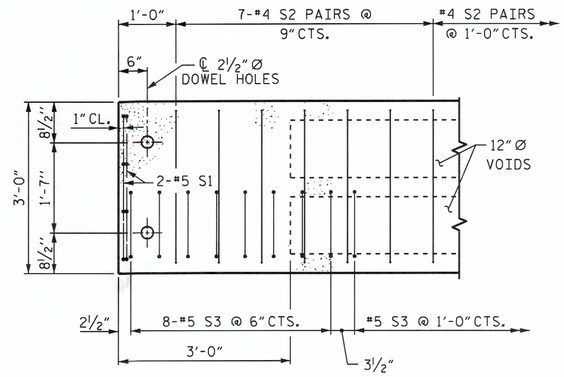
REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S-7
1			3					TOTAL SHEETS
2			4					22

DRAWN BY : B. A. DUKE DATE : 12-11-13
CHECKED BY : R. Z. DEAN DATE : 4-8-13
DESIGN ENGINEER OF RECORD: B. A. DUKE DATE : 4-22-13

26-JUN-2013 12:01
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_super.dgn
bklappenbach

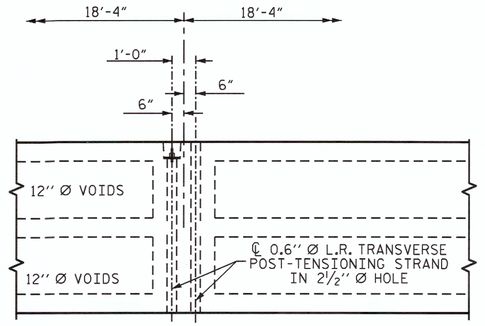


PLAN OF UNIT
(STAGE I)



DETAIL "A"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.



DETAIL "B"

#4 S2 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUTED RECESS AND 2½" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: 11+55.50 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF 55' UNIT STAGE I

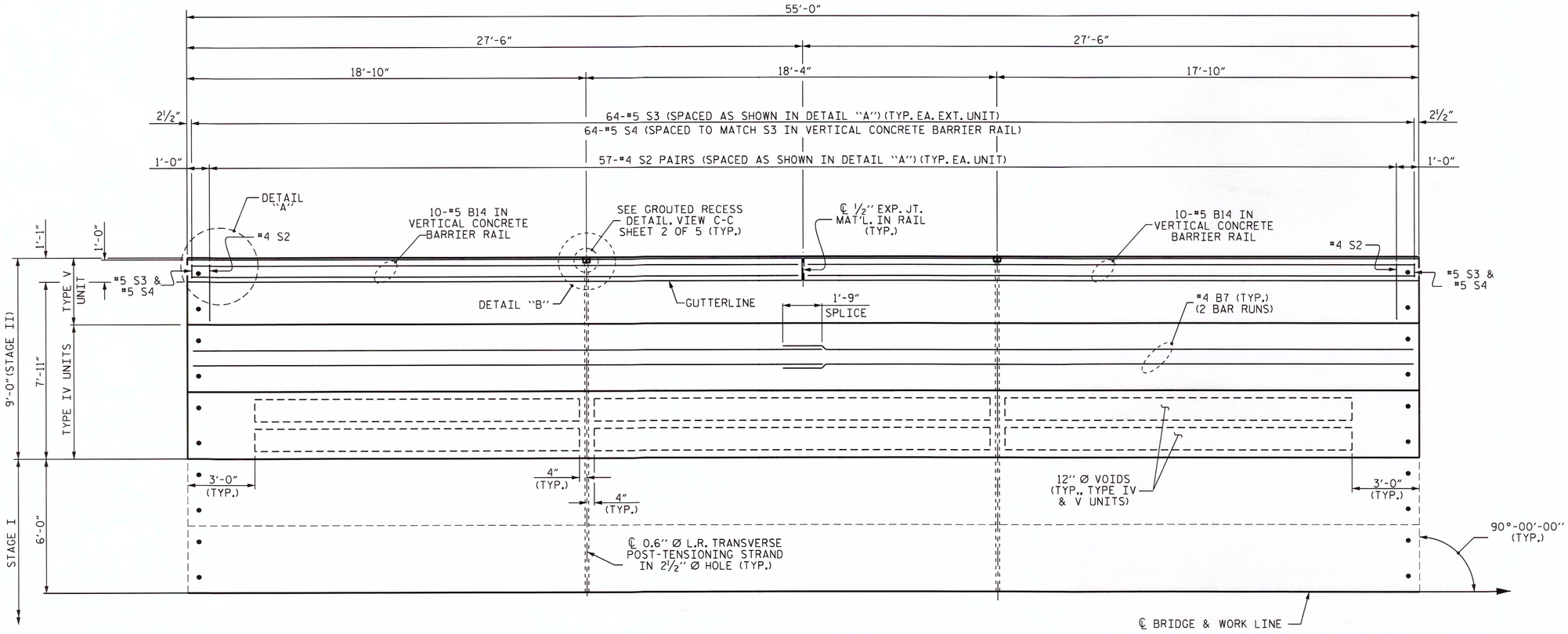
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			22

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
6-27-2013

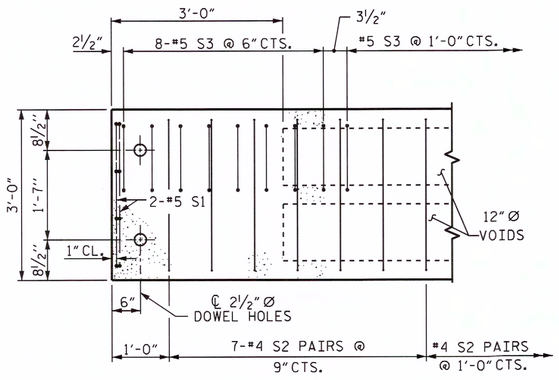
ASSEMBLED BY : B. A. DUKE	DATE : 12-13-12	
CHECKED BY : R. Z. DEAN	DATE : 4-8-13	
DRAWN BY : DGE 3/09	REV. 12/5/11 MAA/AAC	DESIGN ENGINEER OF RECORD: B. A. DUKE DATE : 4-22-13
CHECKED BY : BCH 3/09		

26-JUN-2013 12:01
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_super.dgn
bklappenbach

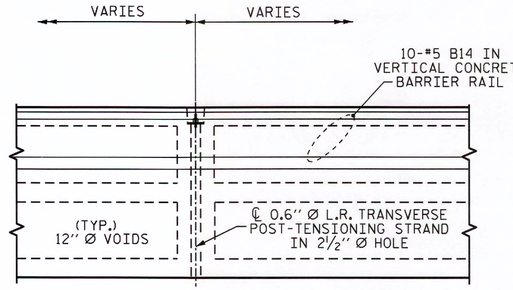
STD. NO. 21"PCS_30_90S_55L



PLAN OF UNIT
(STAGE II)



DETAIL "A"
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.



DETAIL "B"
#4 S2 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUTED RECESS AND 2½" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
6-5-2013

PROJECT NO. BD-5111AA
WATAUGA COUNTY
STATION: 11+55.50 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF 55' UNIT STAGE II

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			22

ASSEMBLED BY : B. A. DUKE	DATE : 12-14-12		
CHECKED BY : R. Z. DEAN	DATE : 3-22-13		
DRAWN BY : DGE 3/09	REV. 12/5/11 MAA/AAC	DESIGN ENGINEER OF RECORD: B. A. DUKE DATE : 4-22-13	
CHECKED BY : BCH 3/09			

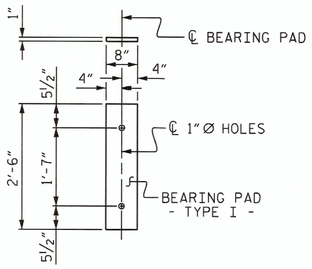
05-JUN-2013 11:17
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_super.dgn
bklappenbach

STD. NO. 21"PCS_30_90S_55L

CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
55' UNIT			
EXTERIOR C.S.	2	55'-0"	110'-0"
INTERIOR C.S.	8	55'-0"	440'-0"
TOTAL	10		550'-0"

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	55' UNIT					
✱B14	40	40	#5	STR	27'-1"	1130
✱ S4	128	128	#5	2	7'-6"	1001
✱EPOXY COATED REINFORCING STEEL				LBS.		2131
CLASS AA CONCRETE				CU.YDS.		14.4
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		110.25

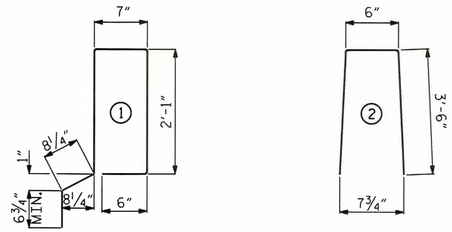


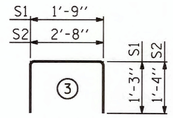
FIXED END
(TYPE I - 20 REQ'D)

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

27'-10" CLEAR ROADWAY	ASPHALT OVERLAY THICKNESS	RAIL HEIGHT
	@ MID-SPAN	@ MID-SPAN
	SUPERED SECTION	
55' UNITS	1½"	3'-9⅝"

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2½"Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

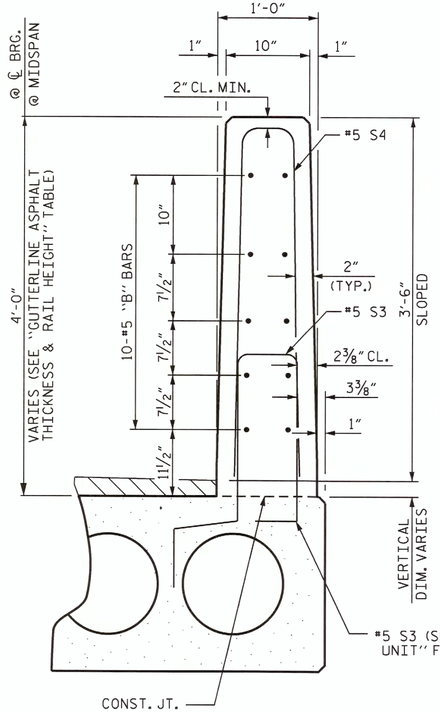
TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

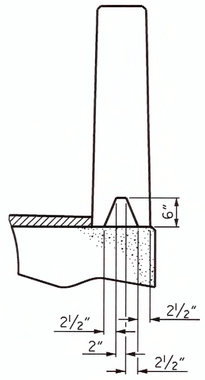
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

ELASTOMERIC BEARING DETAILS

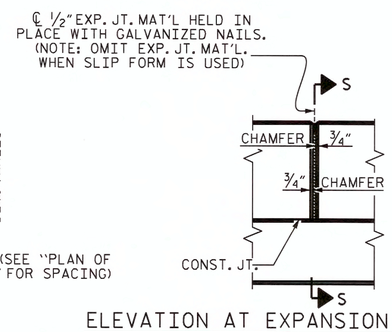
ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.



VERTICAL CONCRETE BARRIER RAIL SECTION



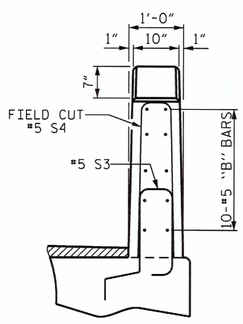
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



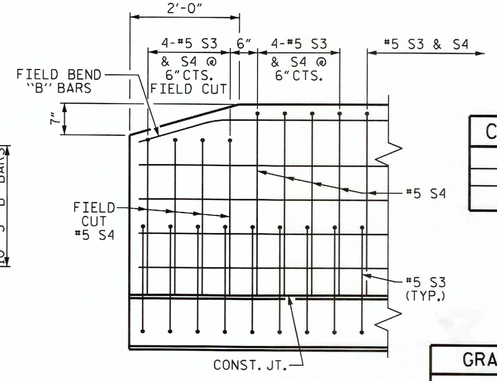
ELEVATION AT EXPANSION JOINTS

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT

				EXTERIOR UNIT (TYPE I & V)		INTERIOR UNIT (TYPE II & IV)		INTERIOR UNIT (TYPE III)	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-3"	35	4'-3"	35	4'-3"	35
S2	114	#4	3	5'-4"	406	5'-4"	406	5'-4"	406
✱ S3	64	#5	1	6'-6"	434				
REINFORCING STEEL			LBS.		516		516		516
✱EPOXY COATED REINFORCING STEEL			LBS.		434				
6500 P.S.I. CONCRETE			CU. YDS.		7.8		7.8		8.6
0.6" Ø L.R. STRANDS			No.		20		20		20



END VIEW



SIDE VIEW

END OF RAIL DETAILS

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 1'-9"
55' CORED SLAB UNIT	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2⅞" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	½" ↓
FINAL CAMBER	2⅜" ↑

** INCLUDES FUTURE WEARING SURFACE

CONCRETE RELEASE STRENGTH

UNIT	PSI
55' UNITS	4900

GRADE 270 STRANDS

	0.6"Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

PROJECT NO. BD-5111AA
WATAUGA COUNTY
STATION: 11+55.50 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

ASSEMBLED BY : B. A. DUKE	DATE : 12-14-12
CHECKED BY : R. Z. DEAN	DATE : 4-22-13
DRAWN BY : DGE 5/09	REV. 12/11 MAA/AAC
CHECKED BY : BCH 6/09	

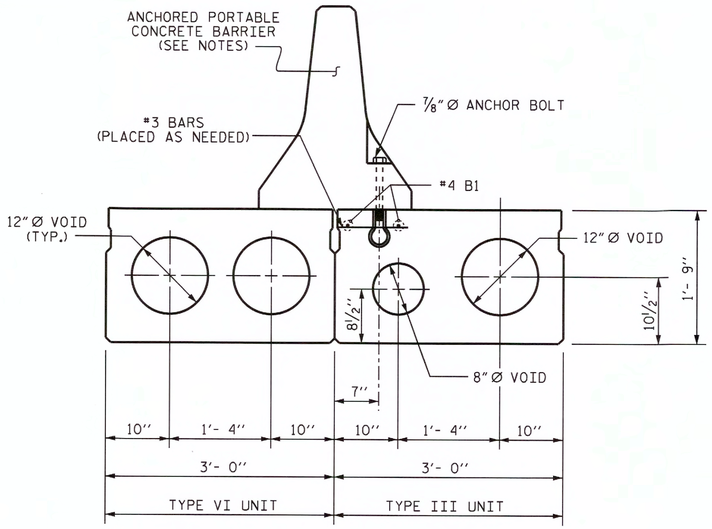
DESIGN ENGINEER OF RECORD:
B. A. DUKE DATE : 4-22-13

NORTH CAROLINA PROFESSIONAL SEAL 15823 ENGINEER BRIAN L. KLAPPENBACH 7-15-13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			22

18-JUL-2013 09:08
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_super.dgn
bklappenbach

STD. NO. 21"PCS3_30_90S



CONCRETE INSERT LOCATION

NOTES

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 5/8".

B. 1 - 7/8" Ø X 8 1/2" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. AT THE CONTRACTORS OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø X 8 1/2" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.

D. STRUCTURAL CONCRETE INSERT ASSEMBLIES SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

THE COST OF THE STRUCTURAL CONCRETE INSERT ASSEMBLY, COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR 3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLABS.

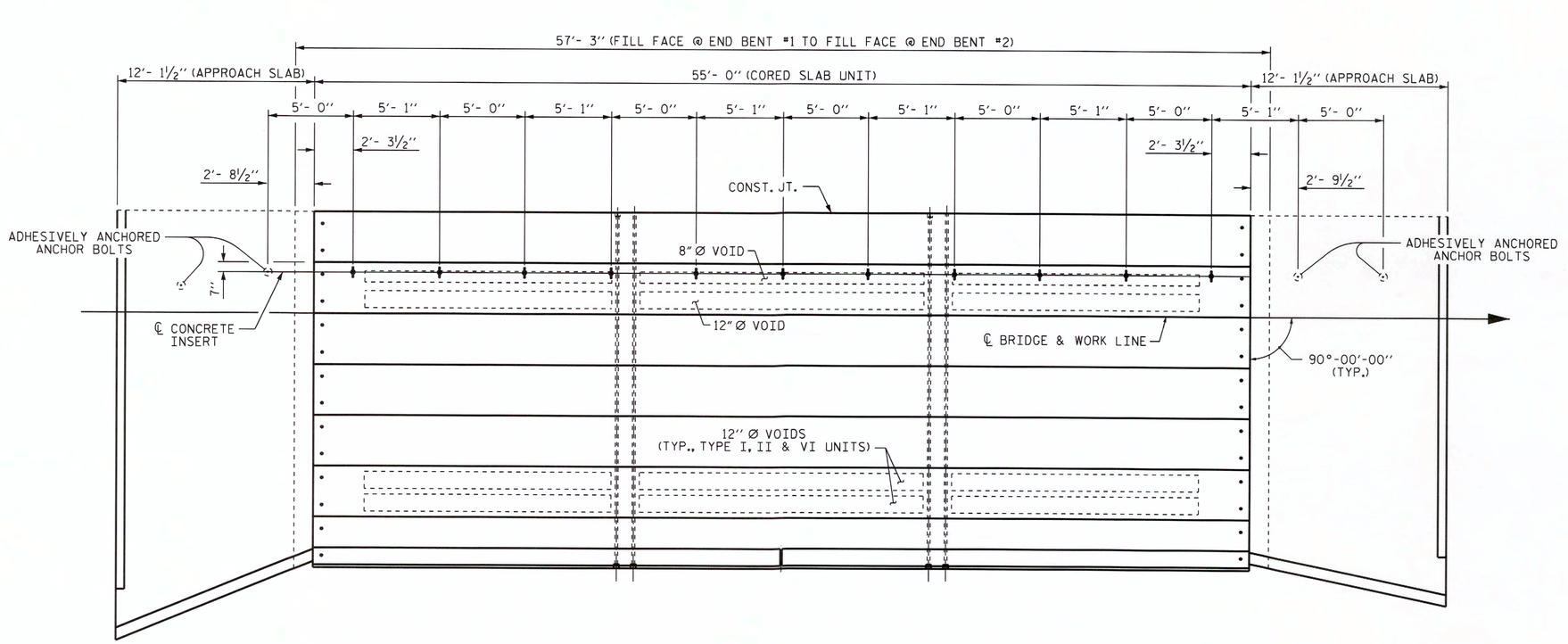
TO FACILITATE PLACEMENT OF STRUCTURAL CONCRETE INSERT ASSEMBLIES, #3 BARS MAY BE TIED TO THE #4 B1 BARS IN THE CORED SLAB UNITS. THE COST OF THE #3 BARS SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR 3'-0" x 1'-9" PRESTRESSED CONCRETE CORED SLABS.

STIRRUPS IN THE CORED SLAB UNITS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR STRUCTURAL CONCRETE INSERT ASSEMBLIES.

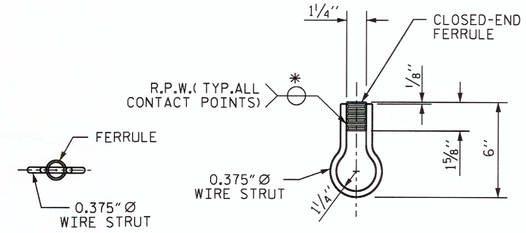
FERRULES TO BE PLUGGED DURING CASTING OF THE CORED SLAB UNITS AS RECOMMENDED BY THE MANUFACTURER.

ANCHORED PORTABLE CONCRETE BARRIER SHALL BE AS SPECIFIED IN ROADWAY STANDARD NO. 1170.01. SEE TRAFFIC CONTROL PLANS.

AFTER REMOVAL OF ANCHORED PORTABLE CONCRETE BARRIER, THE STRUCTURAL CONCRETE INSERTS SHALL BE FILLED WITH GROUT.



CONCRETE INSERT SPACING FOR ANCHORED PORTABLE CONCRETE BARRIER - STAGE I



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: 11+55.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

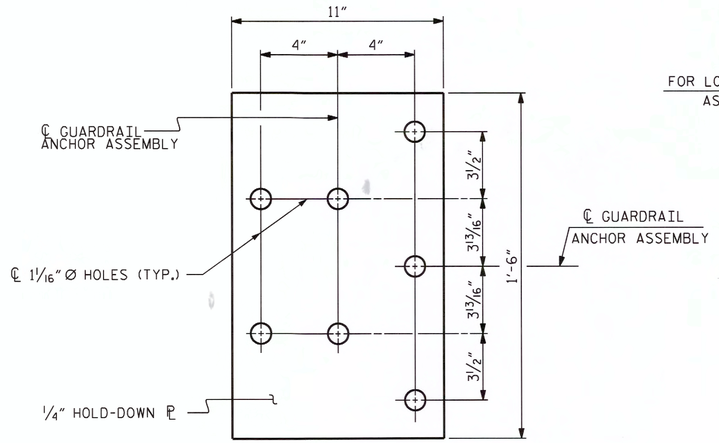
ANCHORAGE DETAIL FOR ANCHORED PORTABLE CONCRETE BARRIER DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			22

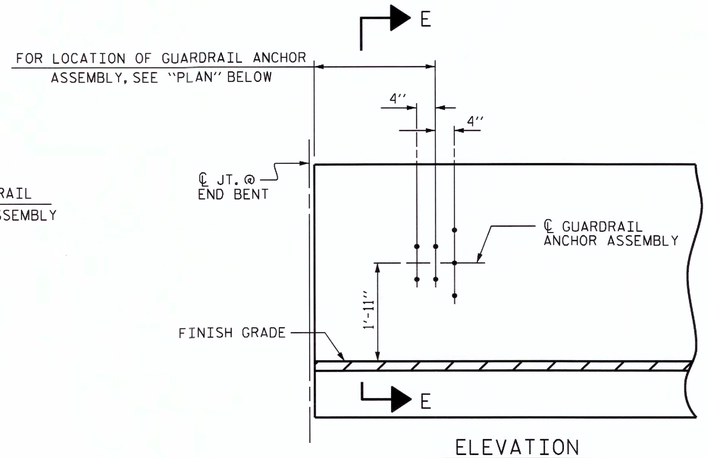
NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
6-27-2013

DRAWN BY : D. A. GLADDEN DATE : 6-19-13
CHECKED BY : B.D. KLAPPENBACH DATE : 6-25-13
DESIGN ENGINEER OF RECORD: B.D. KLAPPENBACH DATE : 6-25-13

26-JUN-2013 12:00
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_super.dgn
bklappenbach



PLAN



ELEVATION

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

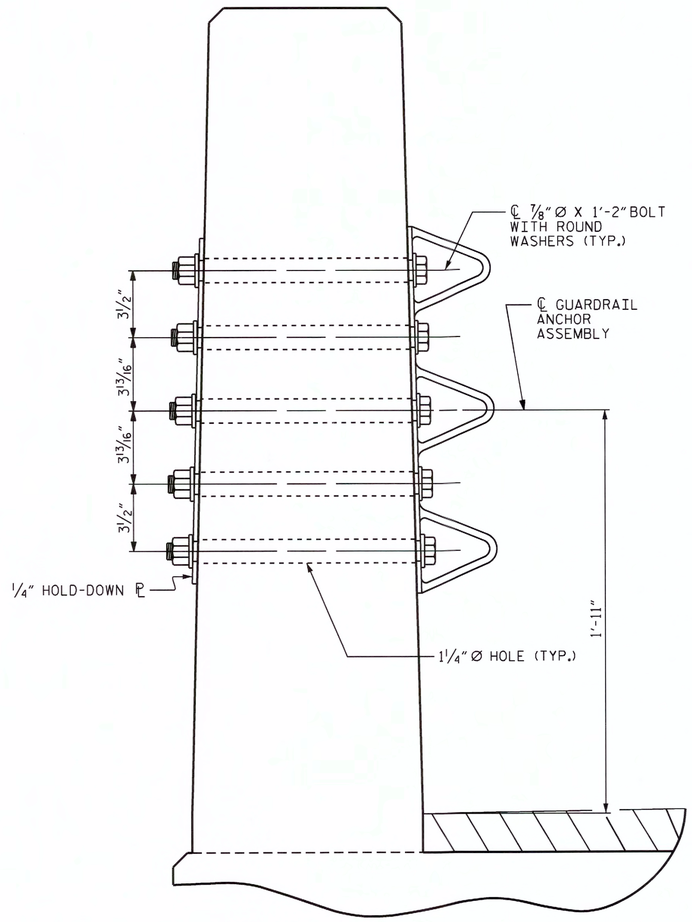
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

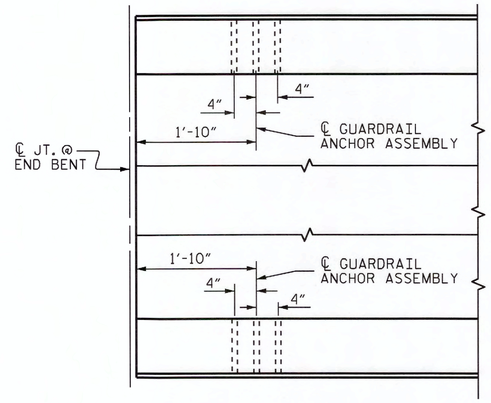
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SECTION E-E

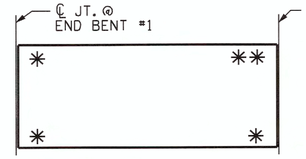
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2, RIGHT SIDE SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

** LOCATION OF IMPACT ATTENUAIOUR ATTACHMENT (SEE ROADWAY PLANS AND SPECIAL PROVISIONS FOR DETAIL AND PAY ITEM).

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: 11+55.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

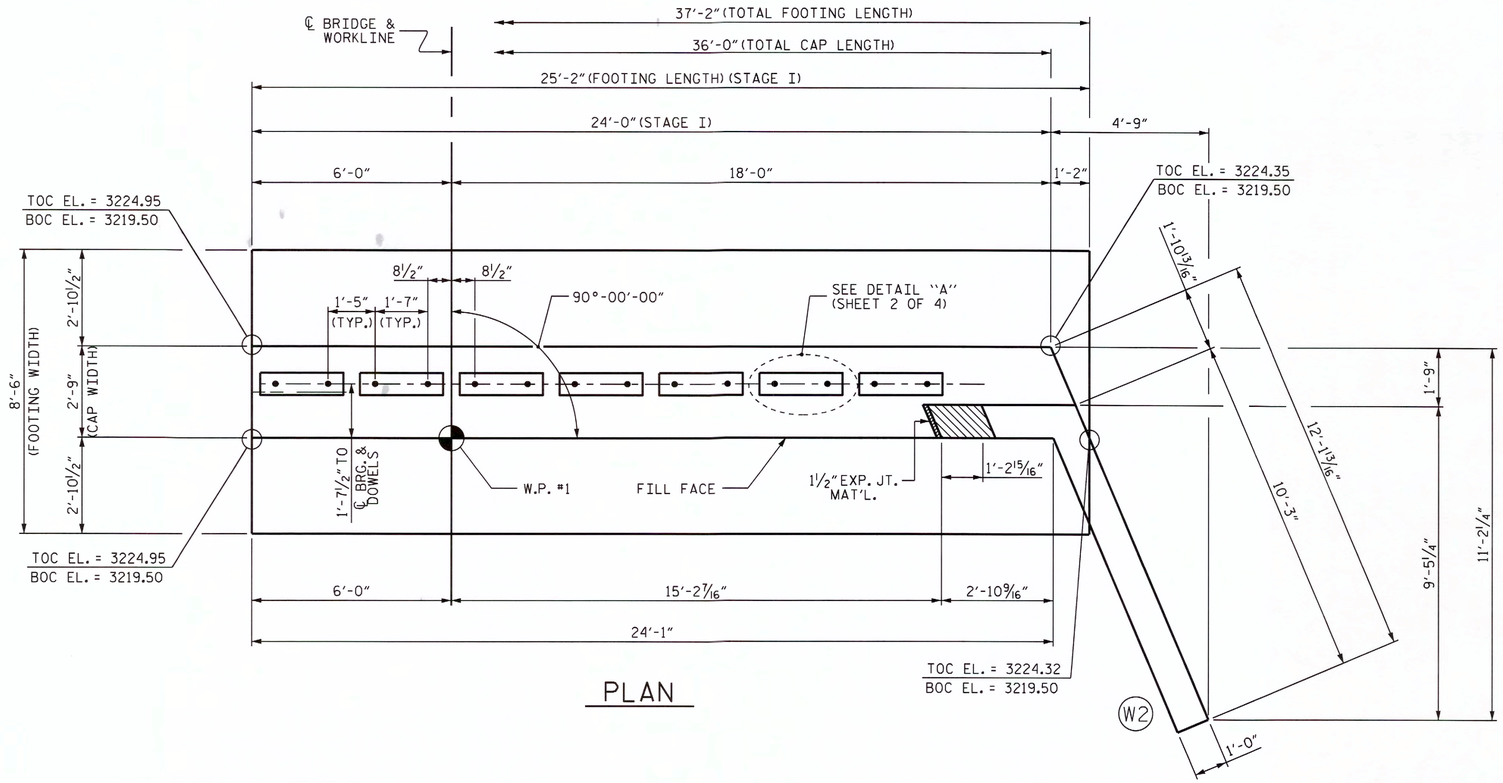
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			22

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH 7-19-13

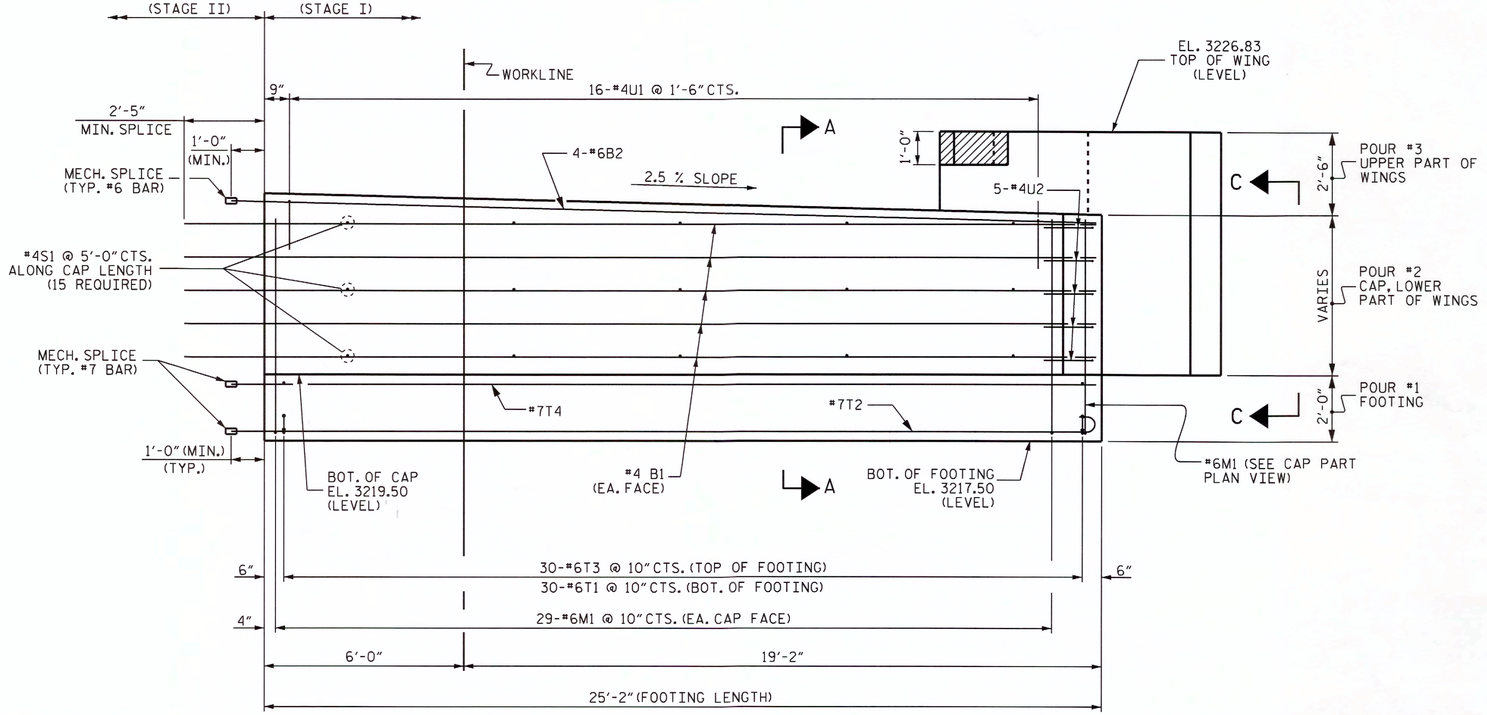
ASSEMBLED BY : B. A. DUKE	DATE : 12-17-12	
CHECKED BY : R. Z. DEAN	DATE : 4-8-13	
DRAWN BY : MAA 5/10	ADDED 5/6/10	DESIGN ENGINEER OF RECORD: B. A. DUKE DATE : 4-22-13
CHECKED BY : GM 5/10	REV. 10/1/11 MAA/GM	
	REV. 12/5/11 MAA/GM	

18-JUL-2013 08:48
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_super.dgn
bklappenbach

(SHT 1) STD. NO. GRA3



PLAN



ELEVATION

FOR SECTION A-A, SEE SHEET 4 OF 4.

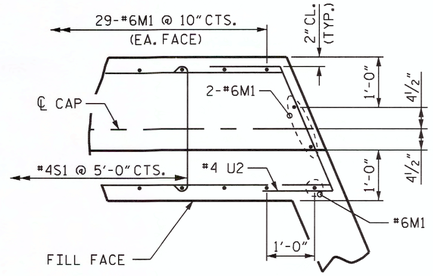
NOTES

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

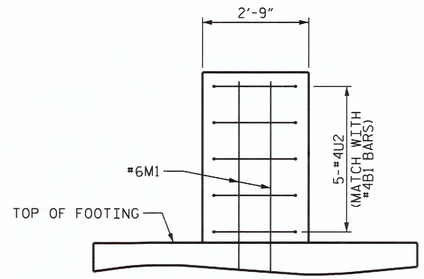
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR WING DETAILS, SEE SHEET 3 OF 4.



CAP PART PLAN VIEW

(RIGHT END)



VIEW C-C

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: 11+55.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1 (STAGE I)

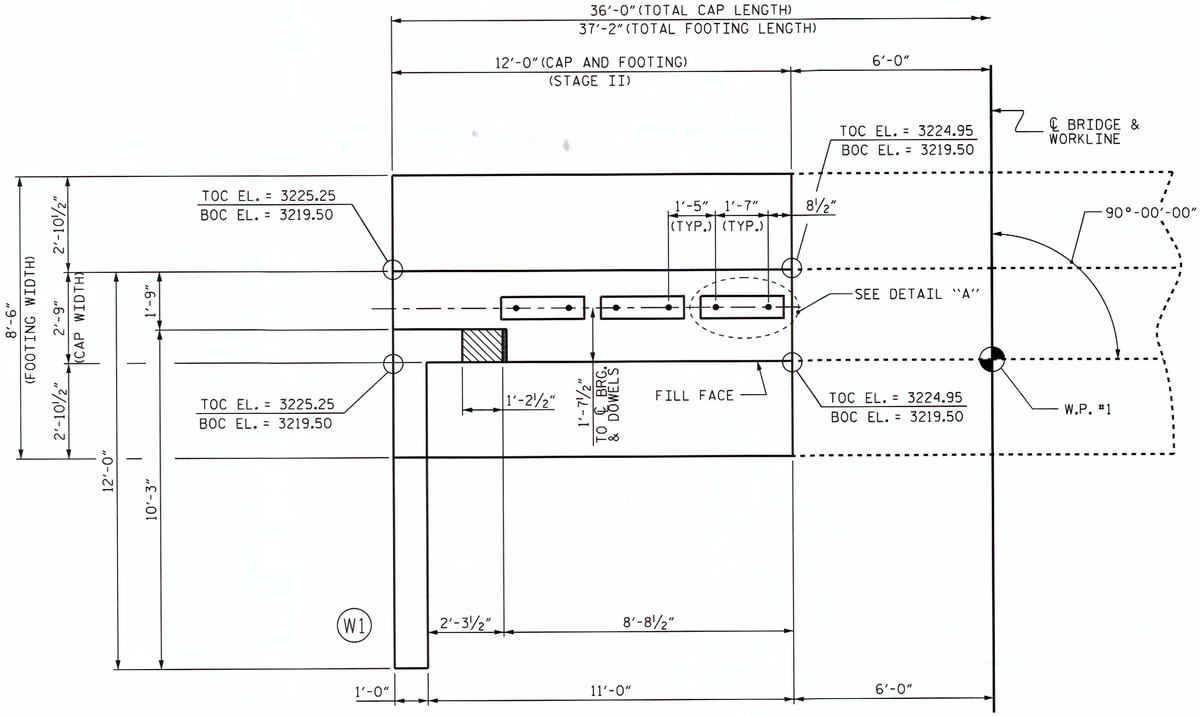
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			22

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH

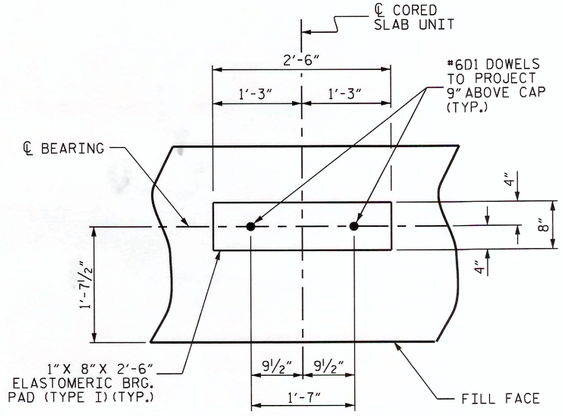
6-10-2013

DESIGN ENGINEER OF RECORD: J. R. MCROY	DATE :	6-6-13
DRAWN BY : R. P. PATEL	DATE :	5-3-13
CHECKED BY : J. P. MCCARTHA	DATE :	5-30-13

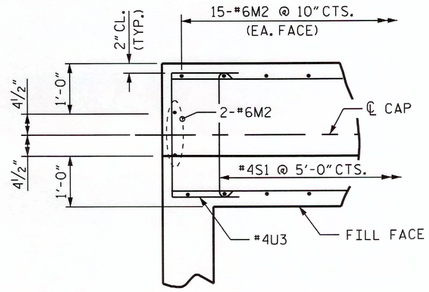
10-JUN-2013 09:15
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_EB.dgn
bklappenbach



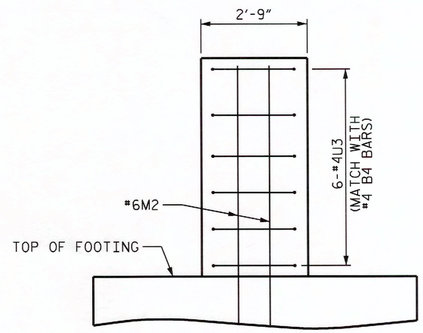
PLAN



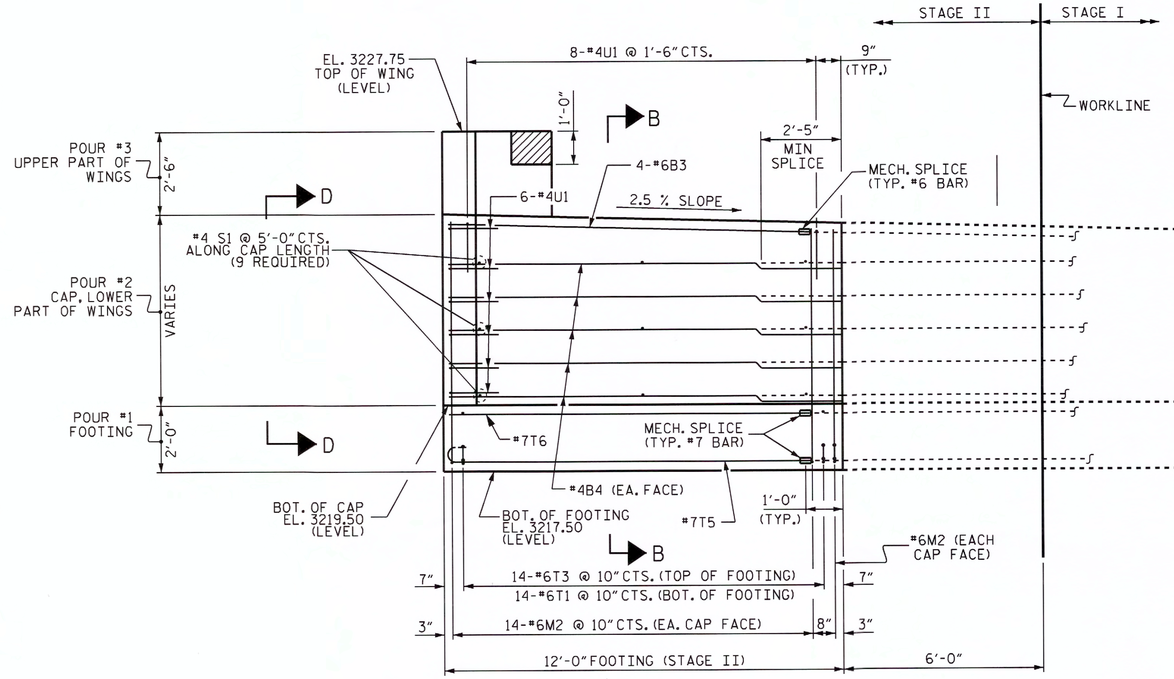
DETAIL "A"



CAP PART PLAN VIEW
(LEFT END)



VIEW D-D



ELEVATION
FOR SECTION B-B, SEE SHEET 4 OF 4.

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
6-10-2013

PROJECT NO. BD-5111AA
WATAUGA COUNTY
STATION: 11+55.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

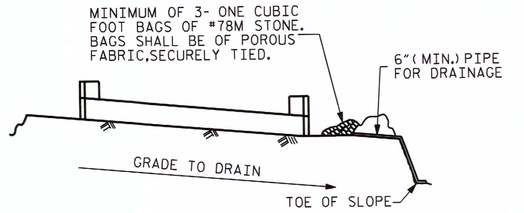
SUBSTRUCTURE

END BENT #1
(STAGE II)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			22

DESIGN ENGINEER OF RECORD: J. R. MCROY DATE: 6-6-13
DRAWN BY: R. P. PATEL DATE: 5-3-13
CHECKED BY: J. P. MCCARTHA DATE: 5-30-13

10-JUN-2013 09:15
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_EB.dgn
bklappenbach



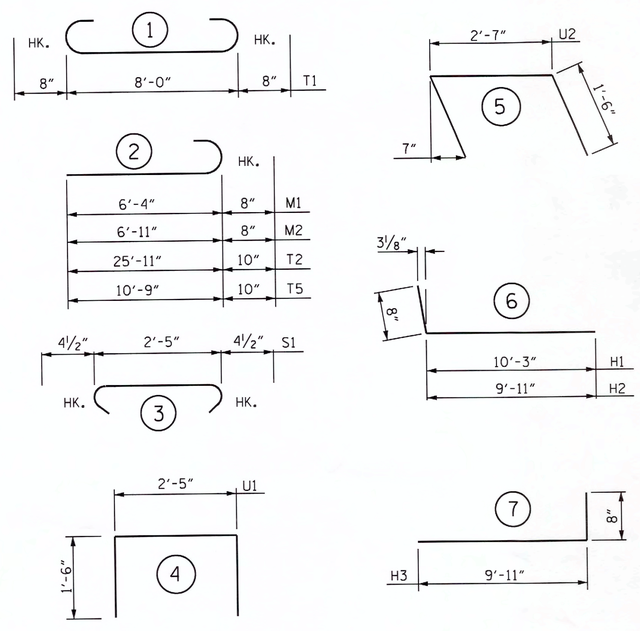
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #1 (STAGE I)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#4	STR	27'-5"	183
B2	4	#6	STR	26'-0"	156
H1	10	#4	6	10'-11"	73
H2	10	#4	6	10'-7"	71
K1	8	#4	STR	3'-2"	17
M1	61	#6	2	7'-0"	641
S1	15	#4	3	3'-2"	32
T1	30	#6	1	9'-4"	421
T2	12	#7	2	26'-9"	656
T3	30	#6	STR	8'-2"	368
T4	12	#7	STR	26'-0"	638
U1	16	#4	4	5'-5"	58
U2	5	#4	5	5'-7"	19
V1	30	#4	STR	7'-0"	140

REINFORCING STEEL LBS. 3473

CLASS A CONCRETE

POUR 1	(FOOTING)	15.8 C.Y.
POUR 2	(CAP & LOWER WINGS)	14.5 C.Y.
POUR 3	(UPPER WINGS)	1.2 C.Y.
TOTAL		31.5 C.Y.

FOUNDATION EXCAVATION LUMP SUM

BILL OF MATERIAL

END BENT #1 (STAGE II)

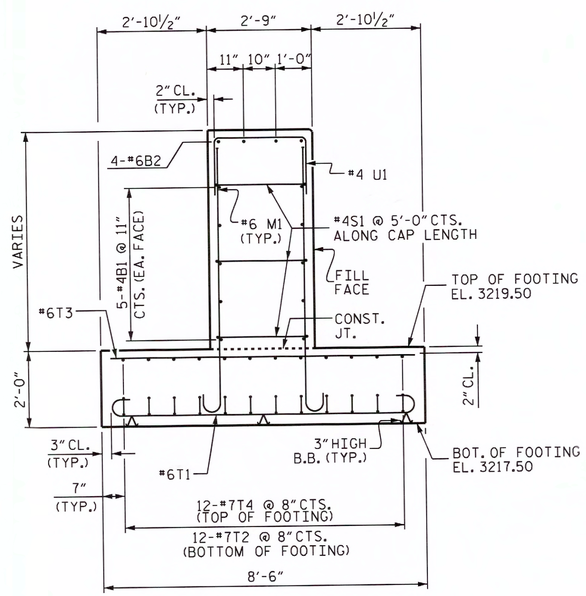
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B3	4	#6	STR	10'-10"	65
B4	10	#4	STR	11'-10"	79
H3	24	#4	7	10'-7"	170
K2	8	#4	STR	2'-11"	16
M2	32	#6	2	7'-7"	364
S1	9	#4	3	3'-2"	19
T1	14	#6	1	9'-4"	196
T3	14	#6	STR	8'-2"	172
T5	12	#7	2	11'-7"	284
T6	12	#7	STR	10'-10"	266
U1	14	#4	4	5'-5"	51
V2	30	#4	STR	7'-11"	159

REINFORCING STEEL LBS. 1841

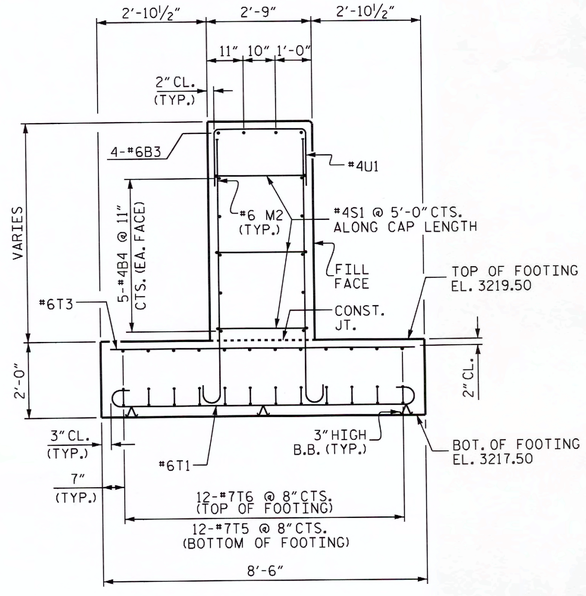
CLASS A CONCRETE

POUR 1	(FOOTING)	7.6 C.Y.
POUR 2	(CAP & LOWER WINGS)	8.8 C.Y.
POUR 3	(UPPER WINGS)	1.2 C.Y.
TOTAL		17.6 C.Y.

FOUNDATION EXCAVATION LUMP SUM



SECTION A-A



SECTION B-B

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: 11+55.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

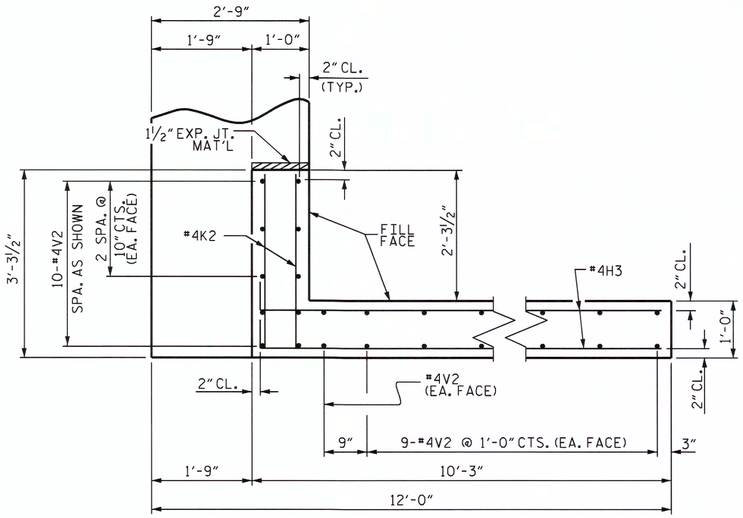
SUBSTRUCTURE

END BENT #1 DETAILS

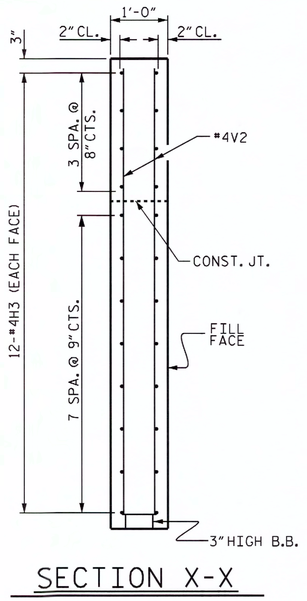
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			22

DESIGN ENGINEER OF RECORD: J. R. MCROY	DATE : 6-6-13
DRAWN BY : R. P. PATEL	DATE : 4-25-13
CHECKED BY : J. P. MCCARTHA	DATE : 5-30-13

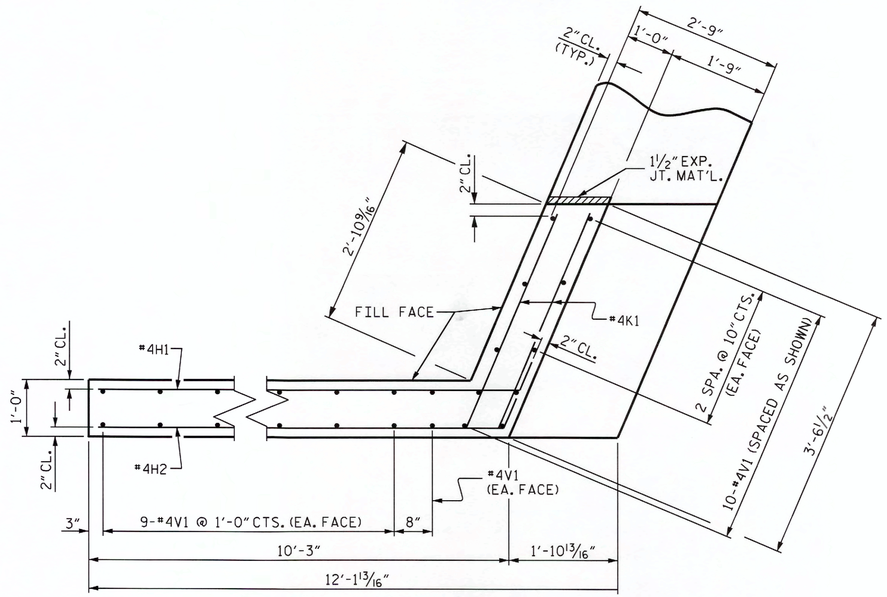
10-JUN-2013 09:15
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_EB.dgn
bklappenbach



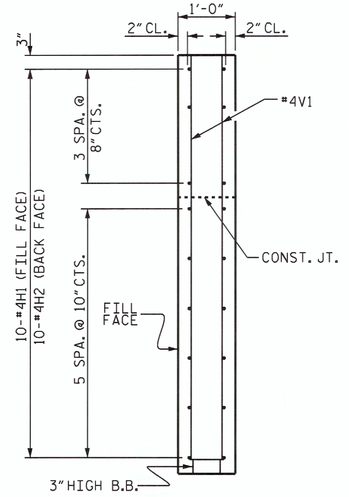
PLAN OF WING W1



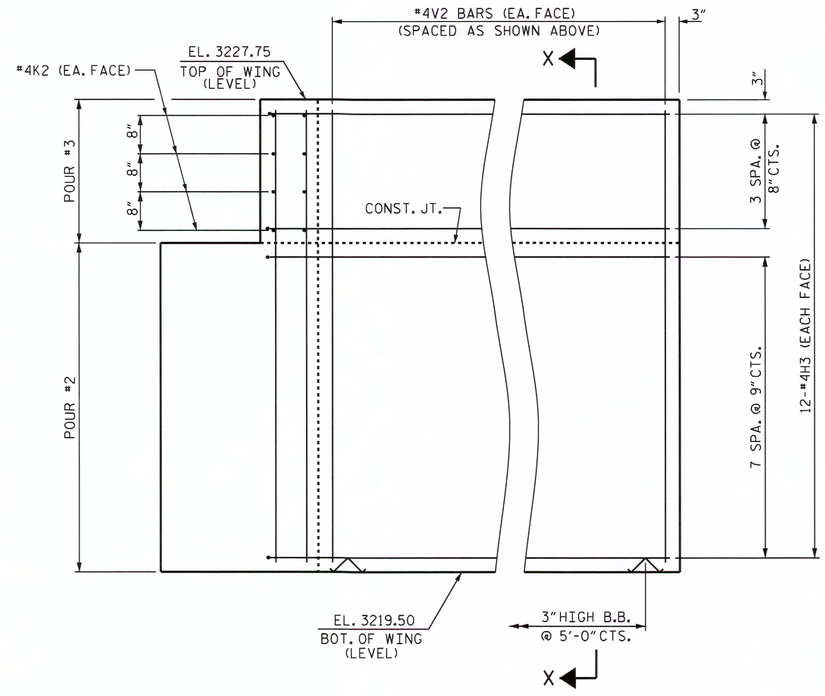
SECTION X-X



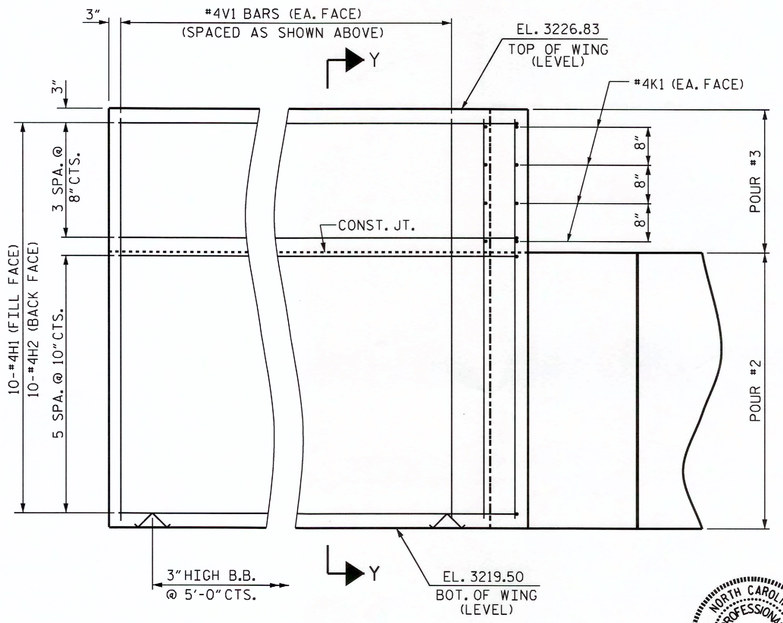
PLAN OF WING W2



SECTION Y-Y



ELEVATION OF WING W1



ELEVATION OF WING W2

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH

6-10-2013

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: 11+55.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #1
WING DETAILS

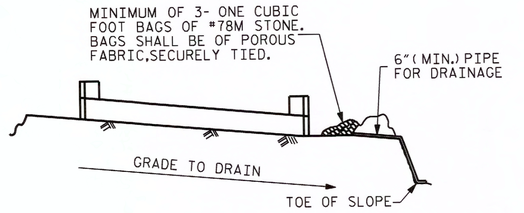
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			22

DESIGN ENGINEER OF RECORD: J. R. MCROY DATE: 6-6-13

DRAWN BY: R. P. PATEL DATE: 5-3-13

CHECKED BY: J. P. MCCARTHA DATE: 5-30-13

10-JUN-2013 09:15
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_EB.dgn
bklappenbach



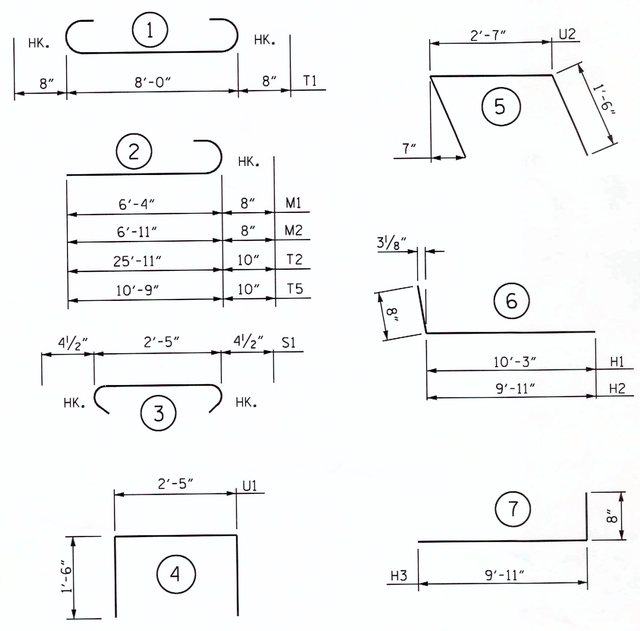
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #1 (STAGE I)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#4	STR	27'-5"	183
B2	4	#6	STR	26'-0"	156
H1	10	#4	6	10'-11"	73
H2	10	#4	6	10'-7"	71
K1	8	#4	STR	3'-2"	17
M1	61	#6	2	7'-0"	641
S1	15	#4	3	3'-2"	32
T1	30	#6	1	9'-4"	421
T2	12	#7	2	26'-9"	656
T3	30	#6	STR	8'-2"	368
T4	12	#7	STR	26'-0"	638
U1	16	#4	4	5'-5"	58
U2	5	#4	5	5'-7"	19
V1	30	#4	STR	7'-0"	140

REINFORCING STEEL LBS. 3473

CLASS A CONCRETE

POUR 1	(FOOTING)	15.8 C.Y.
POUR 2	(CAP & LOWER WINGS)	14.5 C.Y.
POUR 3	(UPPER WINGS)	1.2 C.Y.
TOTAL		31.5 C.Y.

FOUNDATION EXCAVATION LUMP SUM

BILL OF MATERIAL

END BENT #1 (STAGE II)

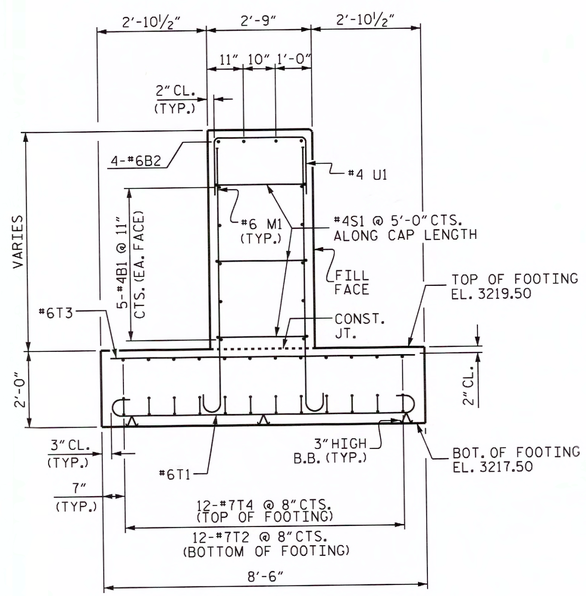
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B3	4	#6	STR	10'-10"	65
B4	10	#4	STR	11'-10"	79
H3	24	#4	7	10'-7"	170
K2	8	#4	STR	2'-11"	16
M2	32	#6	2	7'-7"	364
S1	9	#4	3	3'-2"	19
T1	14	#6	1	9'-4"	196
T3	14	#6	STR	8'-2"	172
T5	12	#7	2	11'-7"	284
T6	12	#7	STR	10'-10"	266
U1	14	#4	4	5'-5"	51
V2	30	#4	STR	7'-11"	159

REINFORCING STEEL LBS. 1841

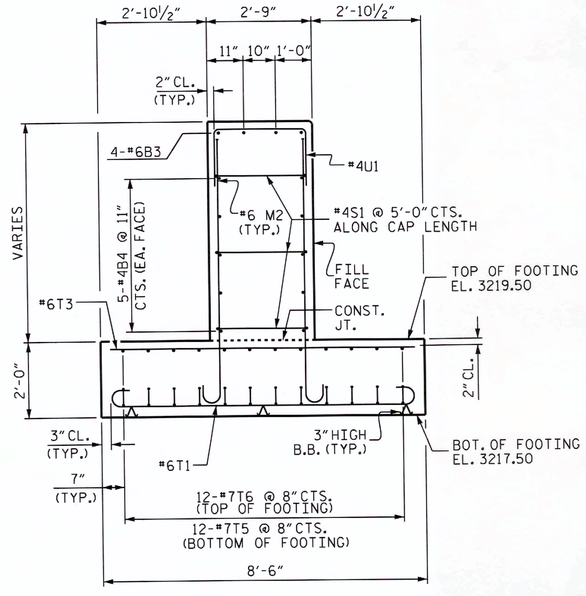
CLASS A CONCRETE

POUR 1	(FOOTING)	7.6 C.Y.
POUR 2	(CAP & LOWER WINGS)	8.8 C.Y.
POUR 3	(UPPER WINGS)	1.2 C.Y.
TOTAL		17.6 C.Y.

FOUNDATION EXCAVATION LUMP SUM



SECTION A-A



SECTION B-B

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: 11+55.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

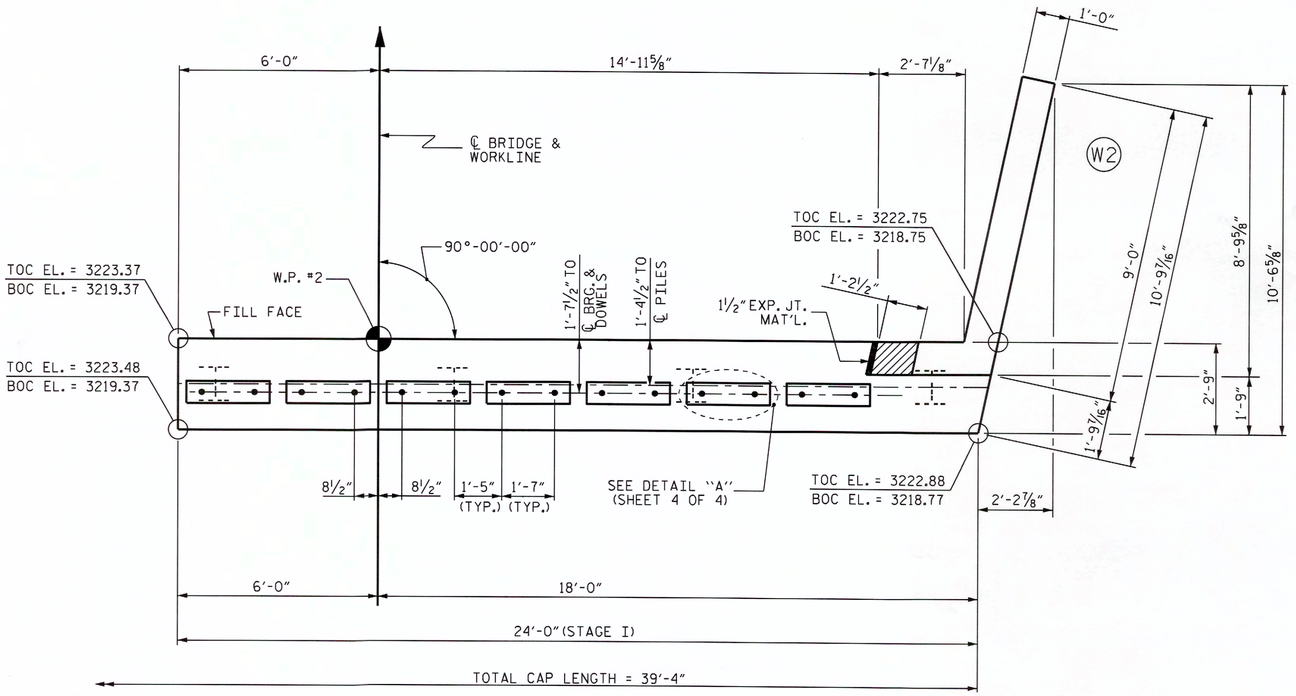
SUBSTRUCTURE

END BENT #1 DETAILS

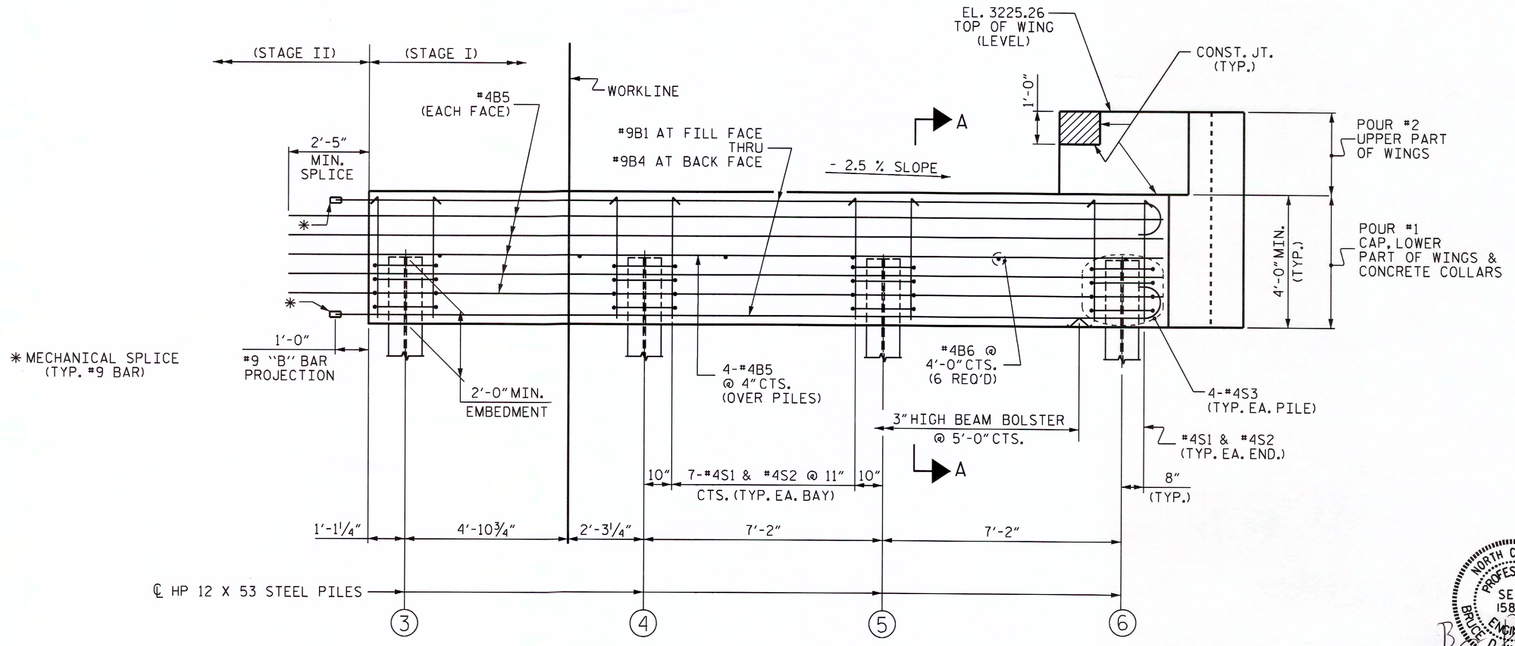
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			22

DESIGN ENGINEER OF RECORD: J. R. MCROY	DATE : 6-6-13
DRAWN BY : R. P. PATEL	DATE : 4-25-13
CHECKED BY : J. P. MCCARTHA	DATE : 5-30-13

10-JUN-2013 09:15
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_EB.dgn
bklappenbach



PLAN



ELEVATION

FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

TOP OF PILE ELEVATIONS	
③	3221.34
④	3221.16
⑤	3220.98
⑥	3220.80

DESIGN ENGINEER OF RECORD: B.A. DUKE	DATE : 6-6-13
ASSEMBLED BY : R. P. PATEL	DATE : 4-25-13
CHECKED BY : J. P. MCCARTHA	DATE : 5-29-13
DRAWN BY : WJH 12/11	
CHECKED BY : AAC 12/11	

05-JUN-2013 12:47
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_EB.dgn
bklappenbach

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH
6-5-2013

PROJECT NO. BD-5111AA
WATAUGA COUNTY
STATION: 11+55.50 -L-

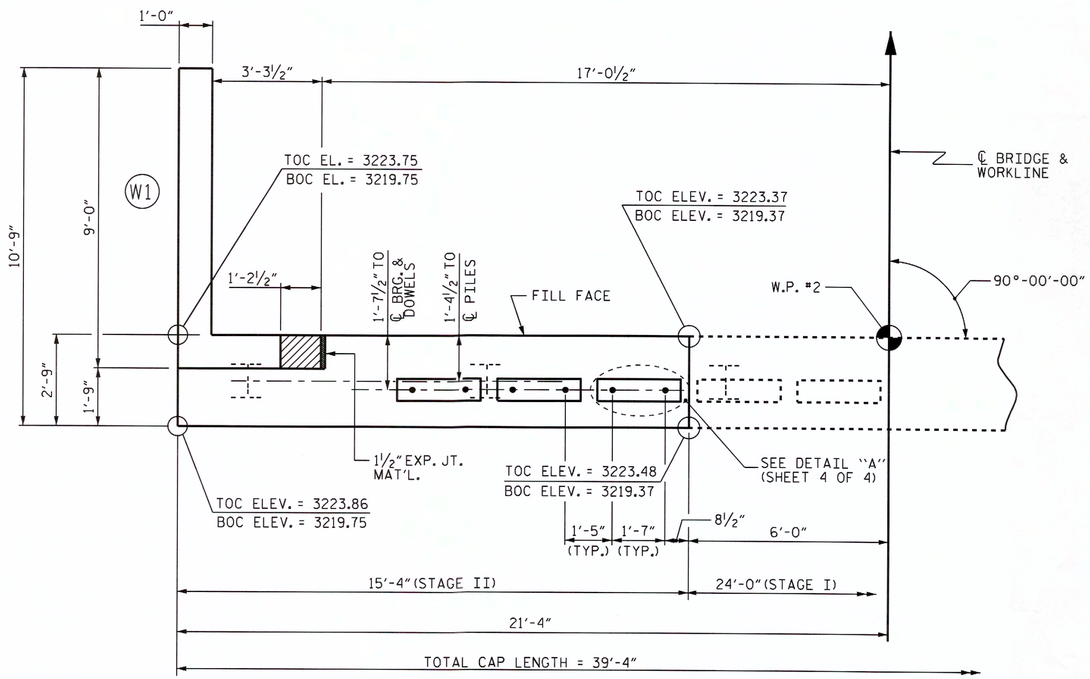
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

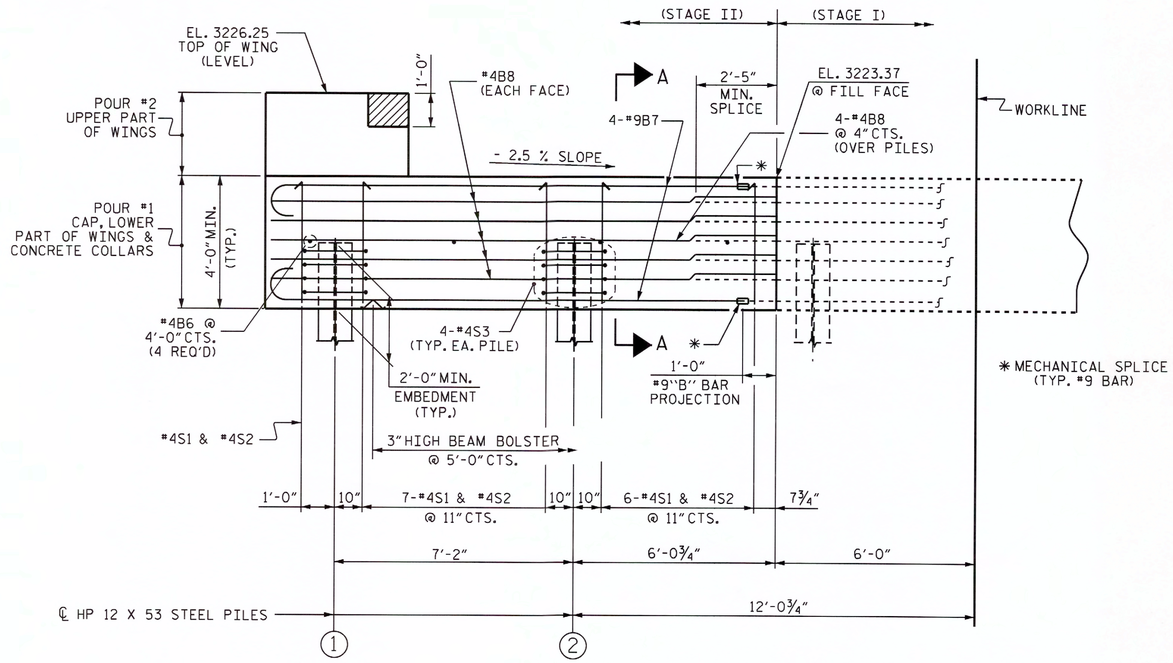
END BENT #2 (STAGE I)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			22



PLAN

TOP OF PILE ELEVATIONS	
①	3221.70
②	3221.52



ELEVATION

FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

DESIGN ENGINEER OF RECORD: B.A. DUKE	DATE : 6-6-13
ASSEMBLED BY : R. P. PATEL	DATE : 4-25-13
CHECKED BY : J. P. MCCARTHA	DATE : 5-29-13
DRAWN BY : WJH 12/11	
CHECKED BY : AAC 12/11	

05-JUN-2013 12:47
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_EB.dgn
bklappenbach

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER B. KLAPPENBACH
6-5-2012

PROJECT NO. BD-5111AA
WATAUGA COUNTY
STATION: 11+55.50 -L-

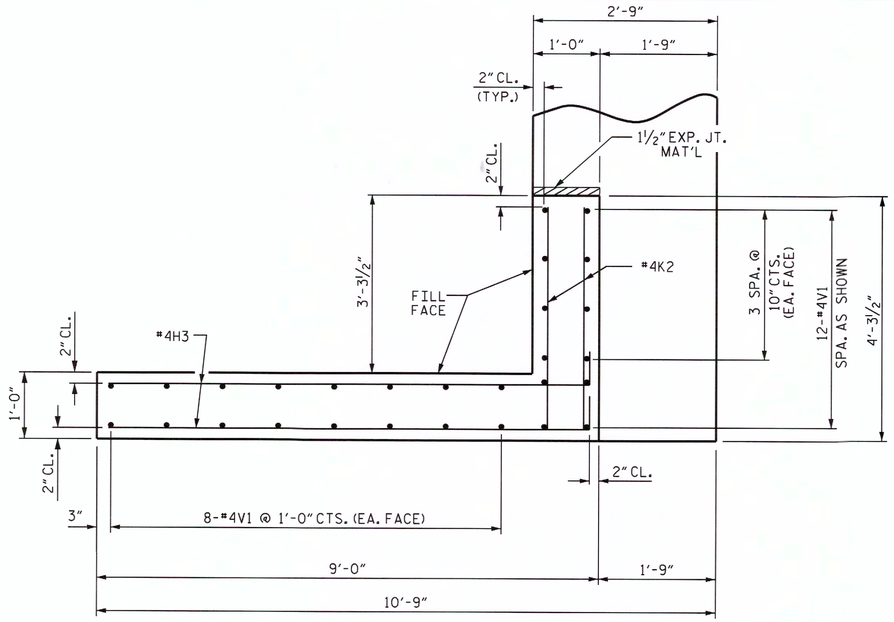
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

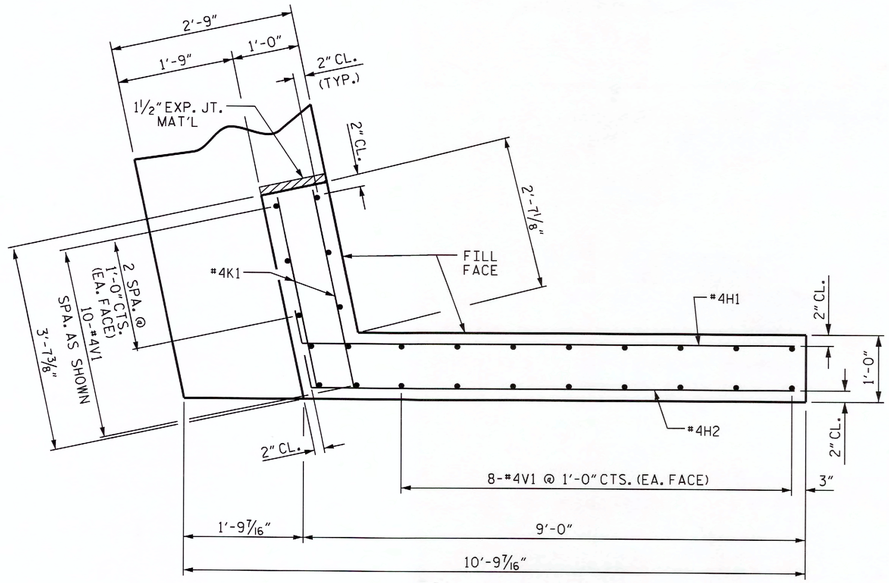
SUBSTRUCTURE

END BENT #2 (STAGE II)

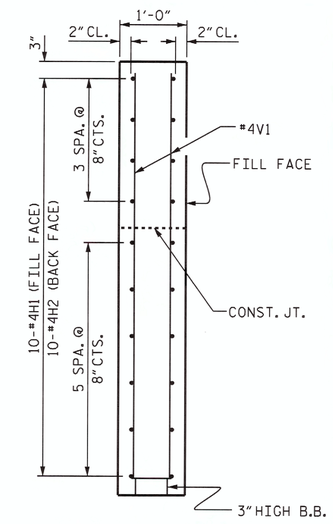
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			22



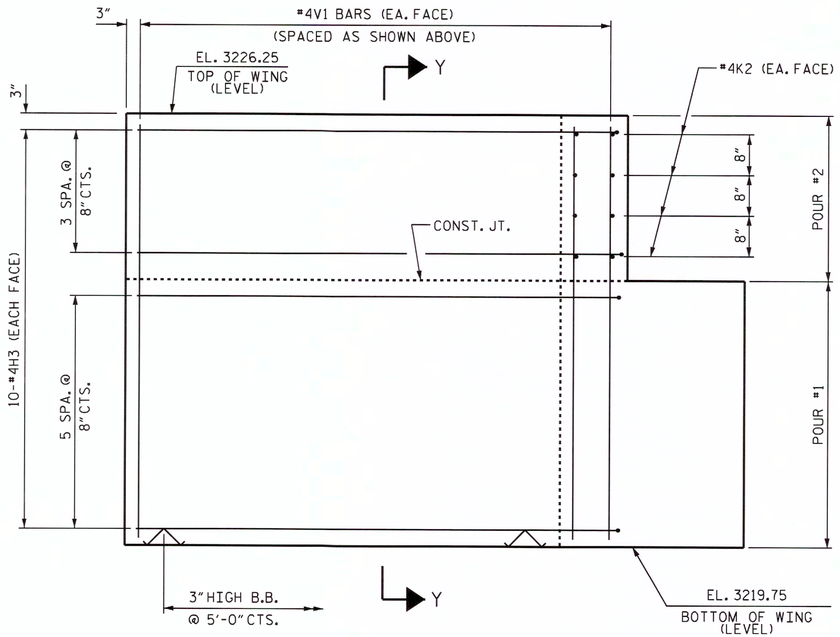
PLAN OF WING W1



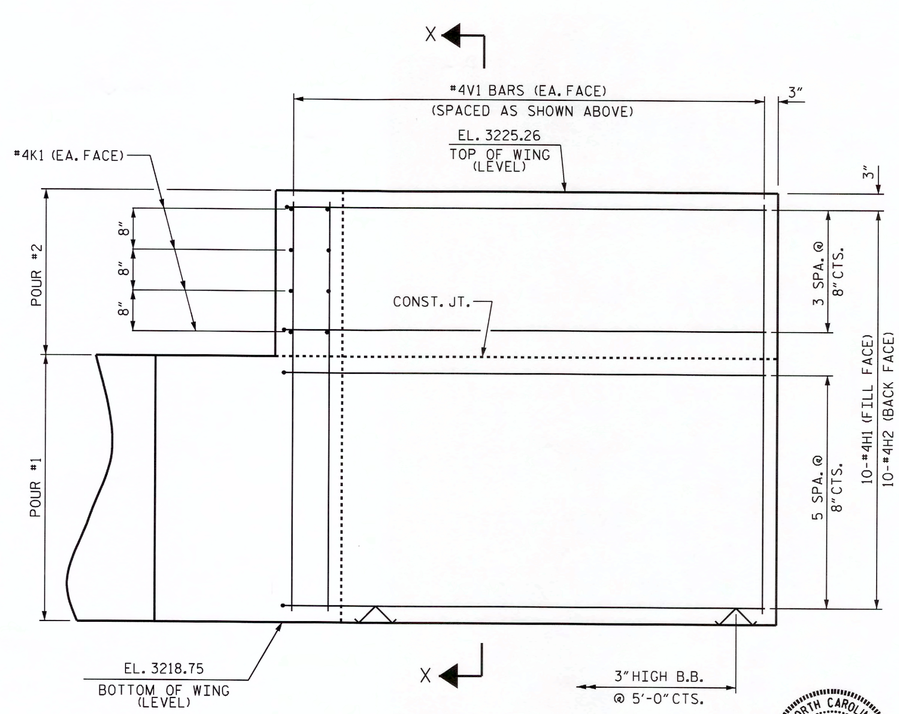
PLAN OF WING W2



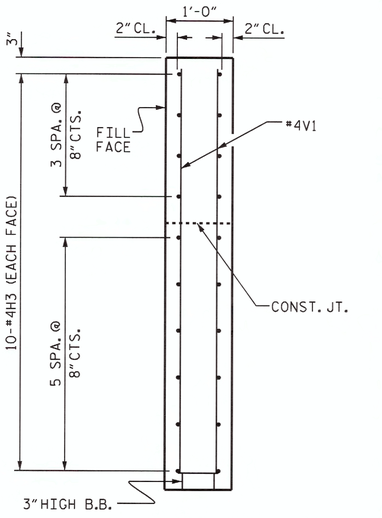
SECTION X-X



ELEVATION OF WING W1



ELEVATION OF WING W2



SECTION Y-Y

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: 11+55.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT #2
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			22

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH

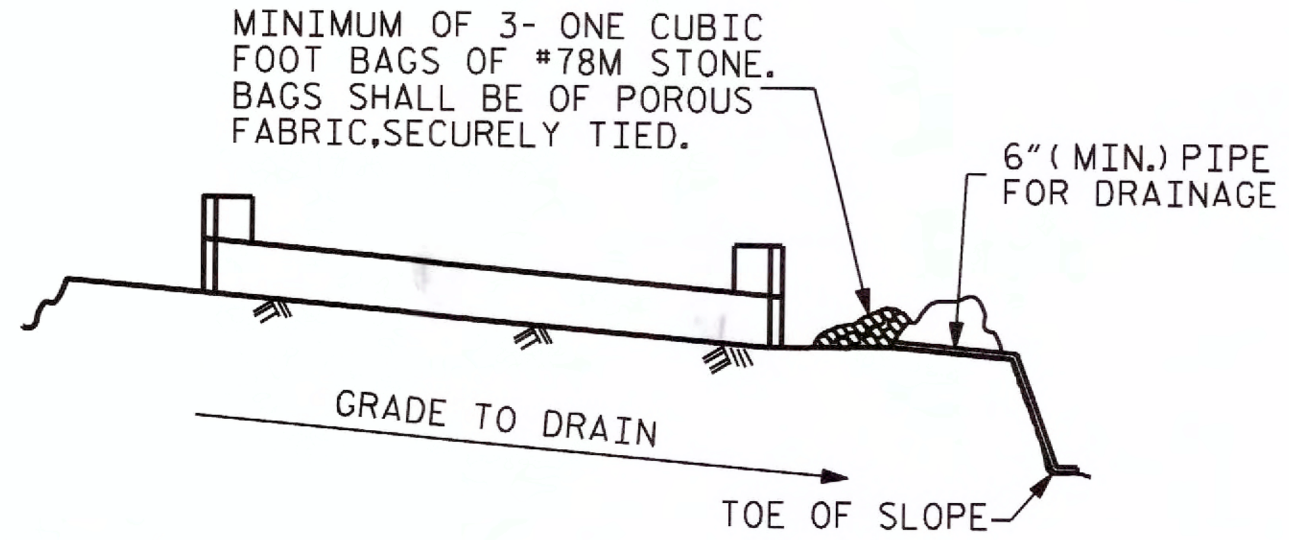
6-5-2013

ASSEMBLED BY : R. P. PATEL DATE : 4-25-13
CHECKED BY : J. P. MCCARTHA DATE : 5-29-13

DRAWN BY : WJH 12/11
CHECKED BY : AAC 12/11

DESIGN ENGINEER OF RECORD:
B.A. DUKE DATE : 6-6-13

05-JUN-2013 12:47
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_EB.dgn
bklappenbach

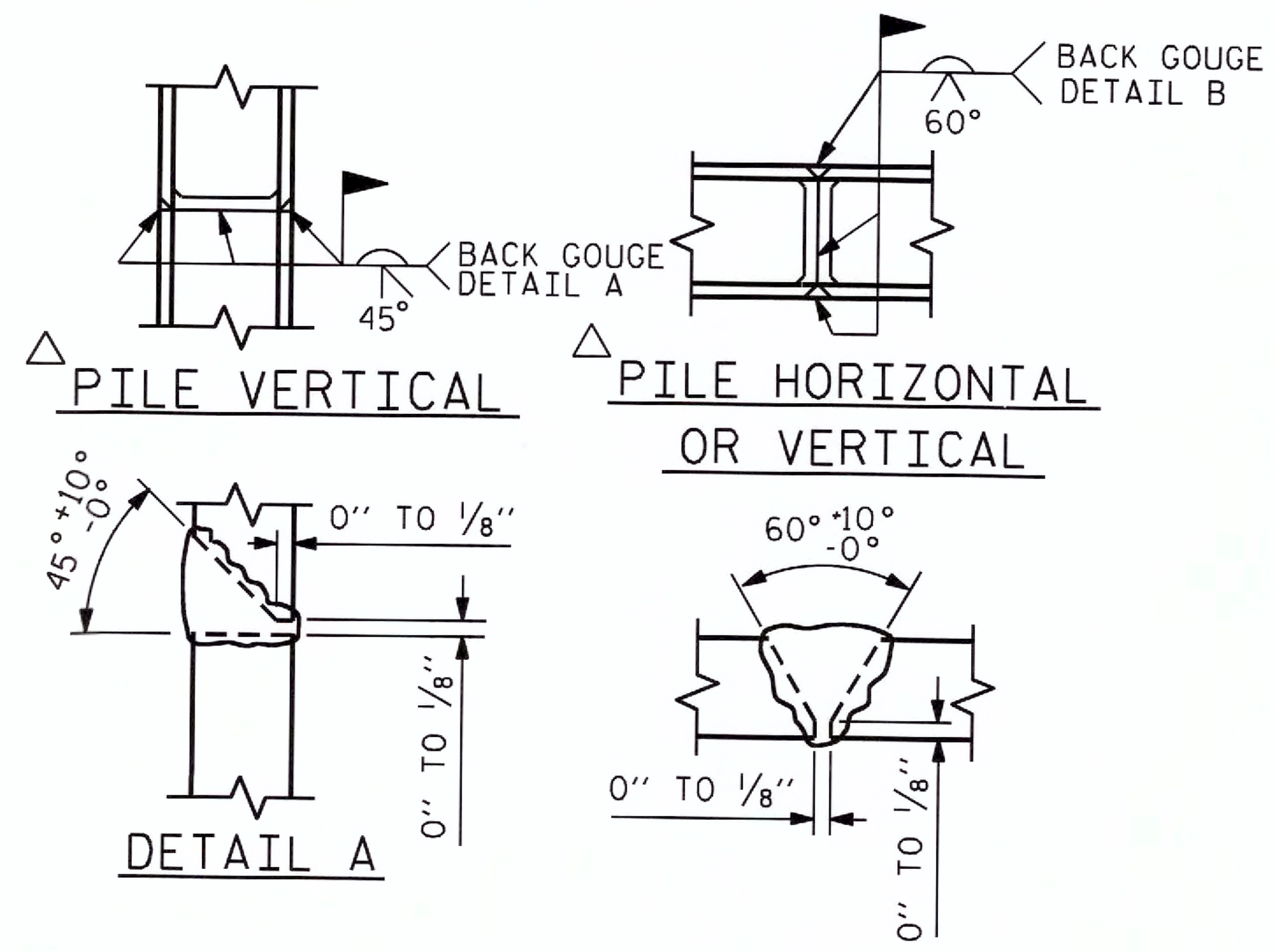


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

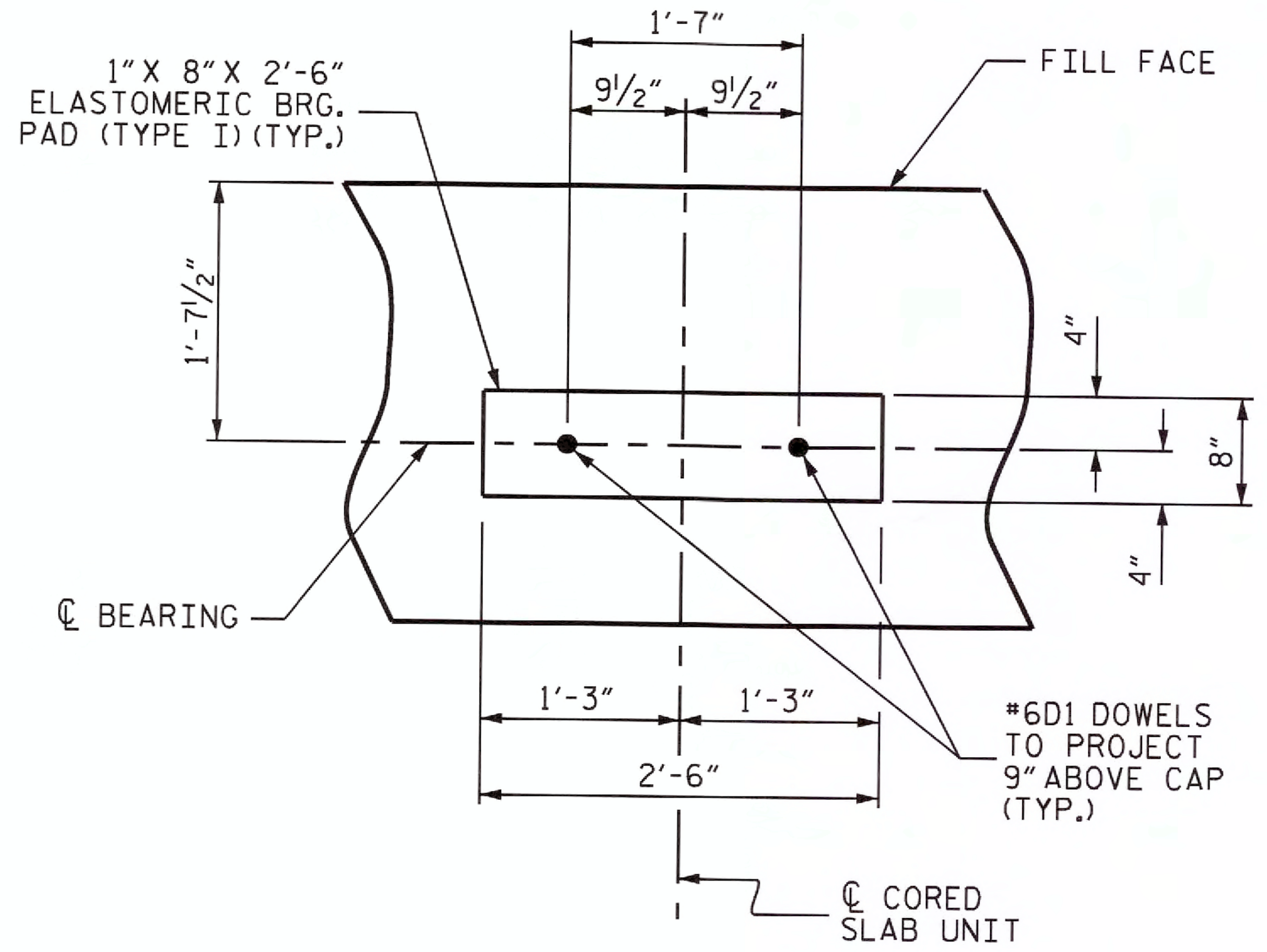
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

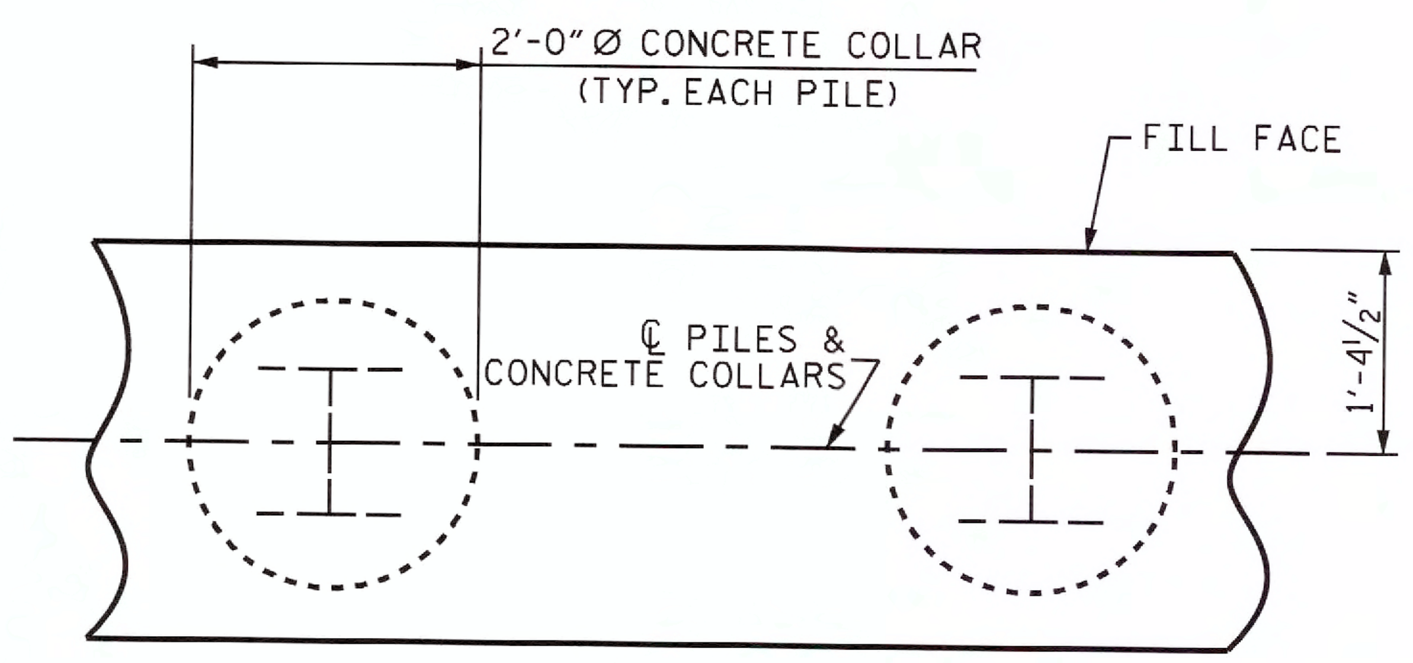


△ POSITION OF PILE DURING WELDING.

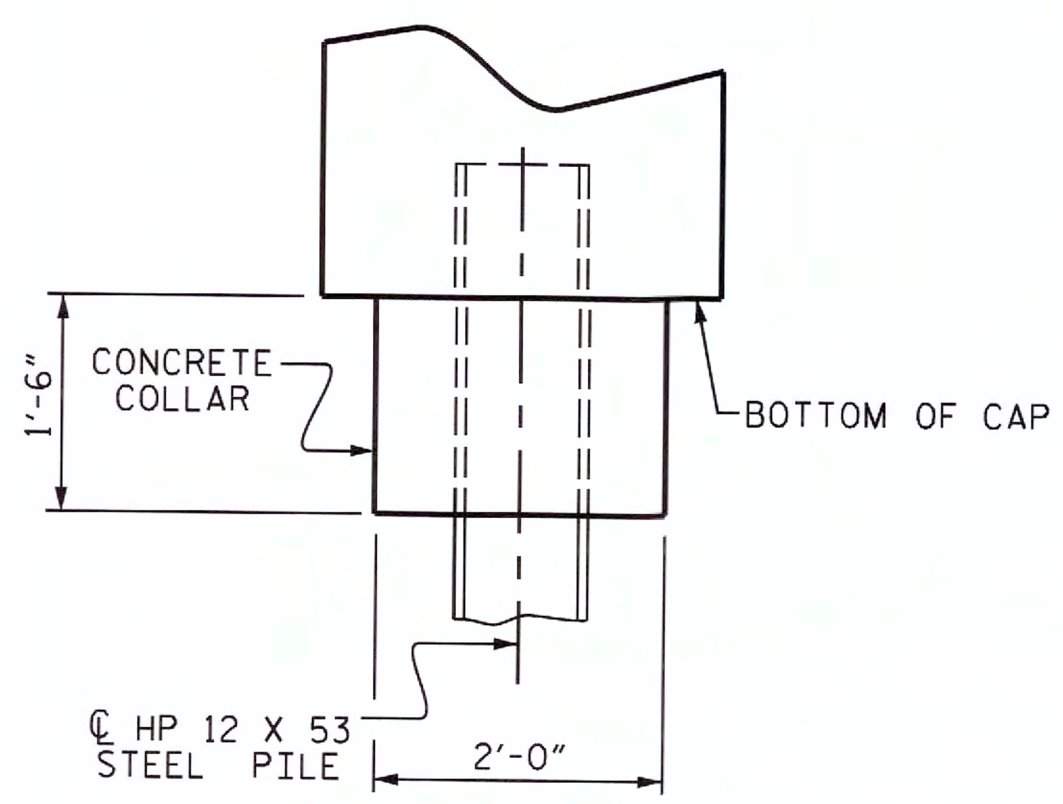
PILE SPLICE DETAILS



DETAIL "A"

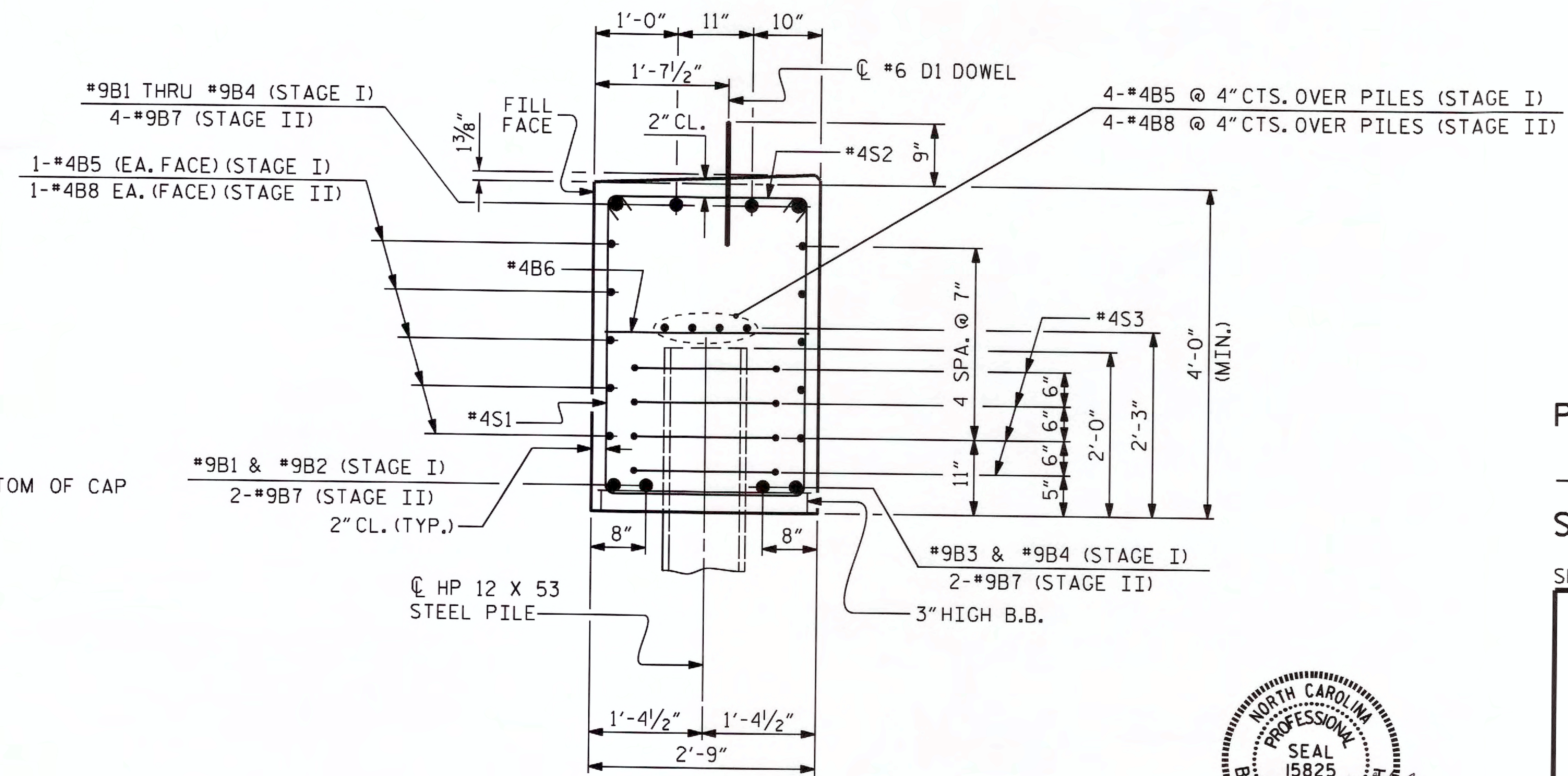


PLAN



ELEVATION

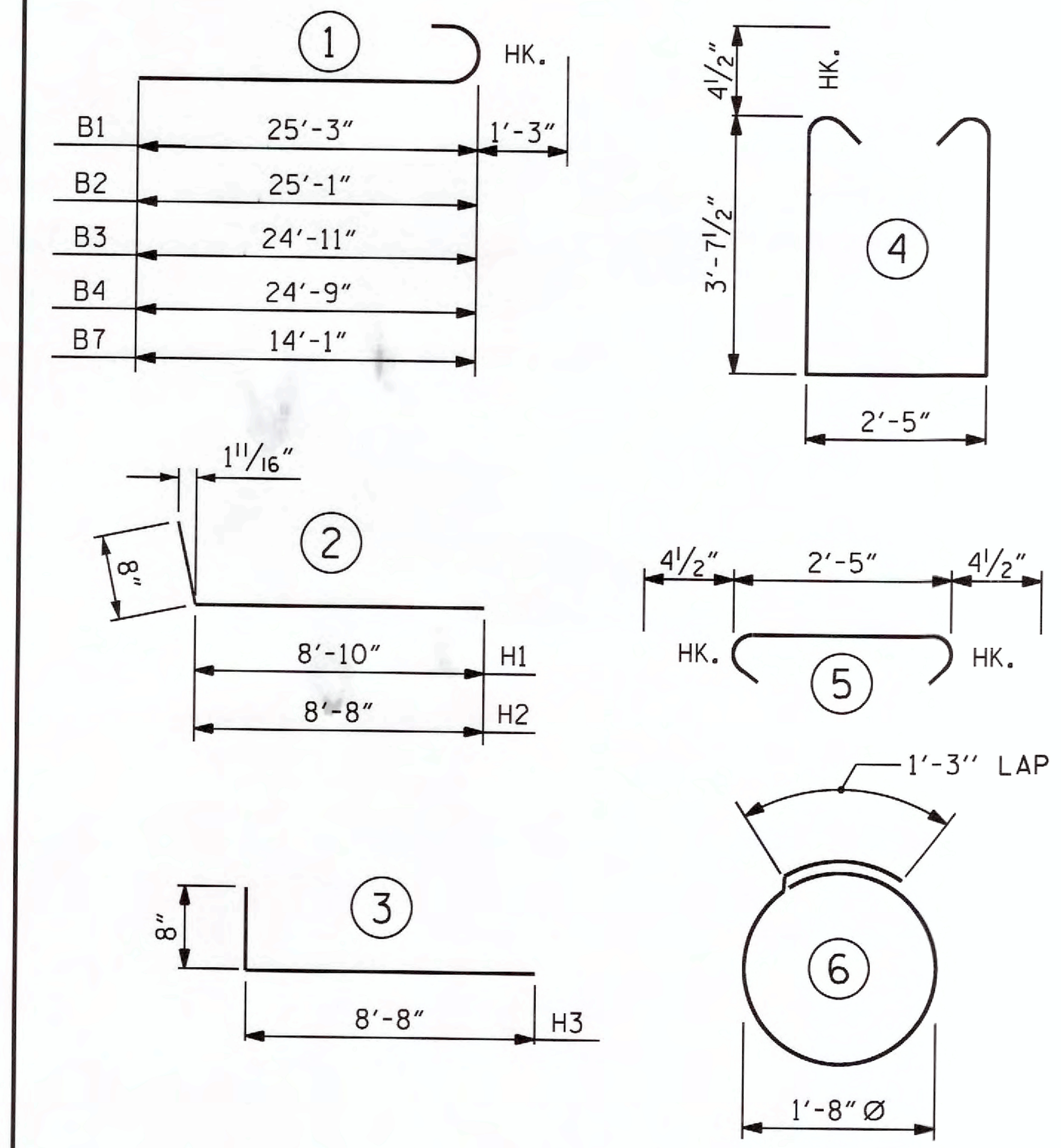
CORROSION PROTECTION FOR STEEL PILES DETAIL



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

STAGE I	STAGE II
HP 12 X 53 STEEL PILES NO: 4 LIN. FT.= 60	HP 12 X 53 STEEL PILES NO: 2 LIN. FT.= 30
STAGE I STEEL PILE POINTS: NO. 4	STAGE II STEEL PILE POINTS: NO. 2

BILL OF MATERIAL

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#9	1	26'-6"	180
B2	2	#9	1	26'-4"	179
B3	2	#9	1	26'-2"	178
B4	2	#9	1	26-0"	177
B5	14	#4	STR	26'-9"	250
B6	6	#4	STR	2'-5"	10
D1	14	#6	STR	1'-6"	32
H1	10	#4	2	9'-6"	63
H2	10	#4	2	9'-4"	62
K1	8	#4	STR	3'-3"	17
S1	23	#4	4	10'-5"	160
S2	23	#4	5	3'-2"	49
S3	16	#4	6	6'-6"	69
V1	26	#4	STR	6'-2"	107
REINFORCING STEEL					1,533 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	11.9 C.Y.
POUR #2	UPPER PART OF WINGS	1.1 C.Y.
TOTAL CLASS A CONCRETE		13.0 C.Y.

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B6	4	#4	STR	2'-5"	6
B7	8	#9	1	15'-4"	417
B8	14	#4	STR	15'-2"	142
D1	6	#6	STR	1'-6"	14
H3	20	#4	3	9'-4"	125
K2	8	#4	STR	3'-11"	21
S1	14	#4	4	10'-5"	97
S2	14	#4	5	3'-2"	30
S3	8	#4	6	6'-6"	35
V1	28	#4	STR	6'-2"	115
REINFORCING STEEL					1,002 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	7.9 C.Y.
POUR #2	UPPER PART OF WINGS	1.1 C.Y.
TOTAL CLASS A CONCRETE		9.0 C.Y.

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: 11+55.50 -L-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 15825 ENGINEER BRUCE D. KLAPPENBACH

[illegible]

6-5-2013

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

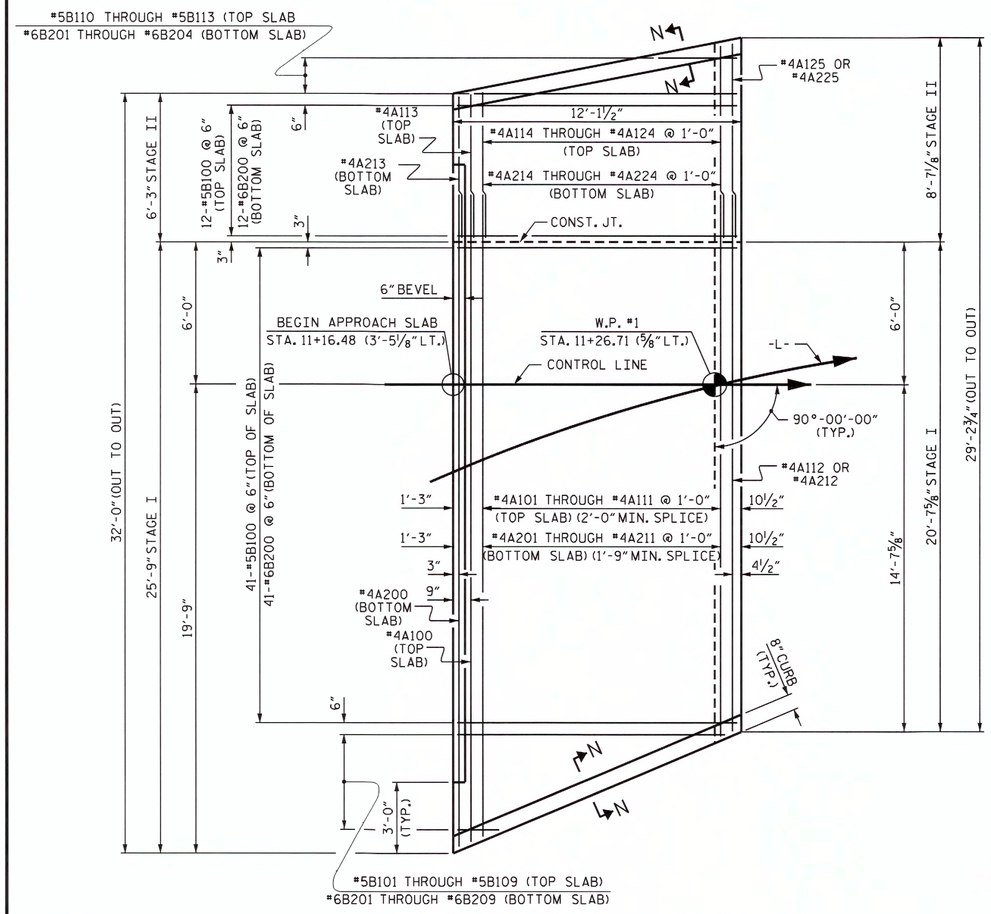
END BENT #2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			22

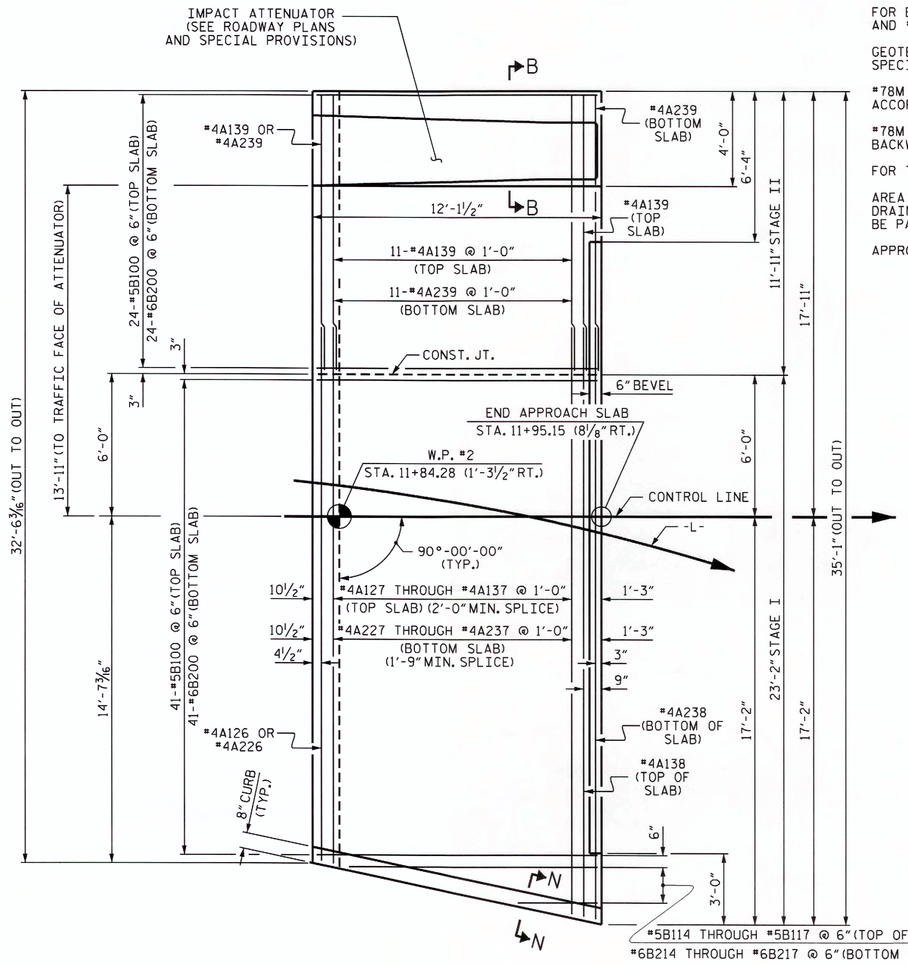
ASSEMBLED BY : R. P. PATEL	DATE : 4-25-13
CHECKED BY : J. P. MCCARTHA	DATE : 5-29-13
DRAWN BY : WJH	12/11
CHECKED BY : AAC	12/11

DESIGN ENGINEER OF RECORD: B.A. DUKE DATE : 6-6-13

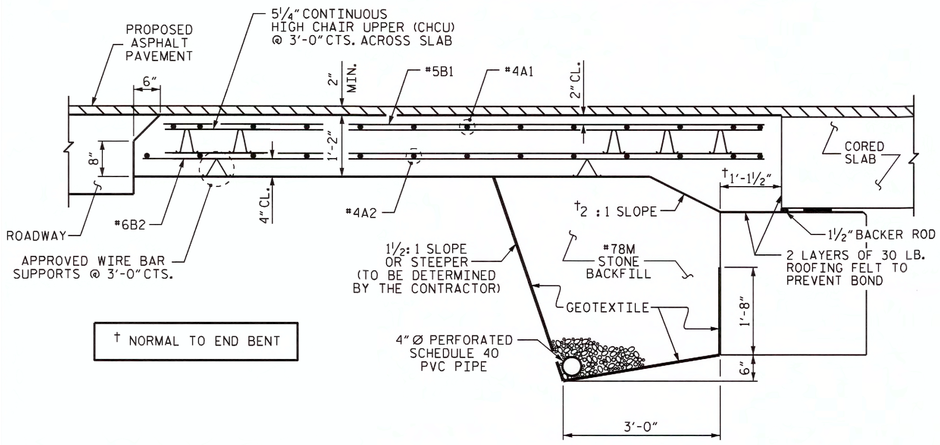
05-JUN-2013 12:46
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_EB.dgn
bklappenbach



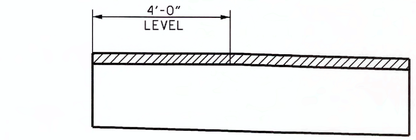
PLAN @ END BENT #1



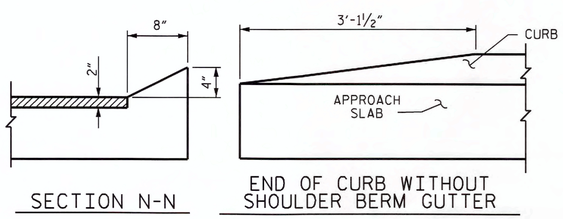
PLAN @ END BENT #2



SECTION THRU SLAB



SECTION B-B



SECTION N-N

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE I IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

PROJECT NO. BD-5111AA

WATAUGA COUNTY

STATION: 11+55.50-L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			22

NORTH CAROLINA PROFESSIONAL SEAL 13825 ENGINEER D. KLAPPENBACH
6-11-2013

DRAWN BY : H. T. BARBOUR DATE : 12-14-12
CHECKED BY : D. A. GLADDEN DATE : 1-13
DESIGN ENGINEER OF RECORD: - DATE : -

11-JUN-2013 09:02
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_AS.dgn
bklappenbach

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 2012 "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. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

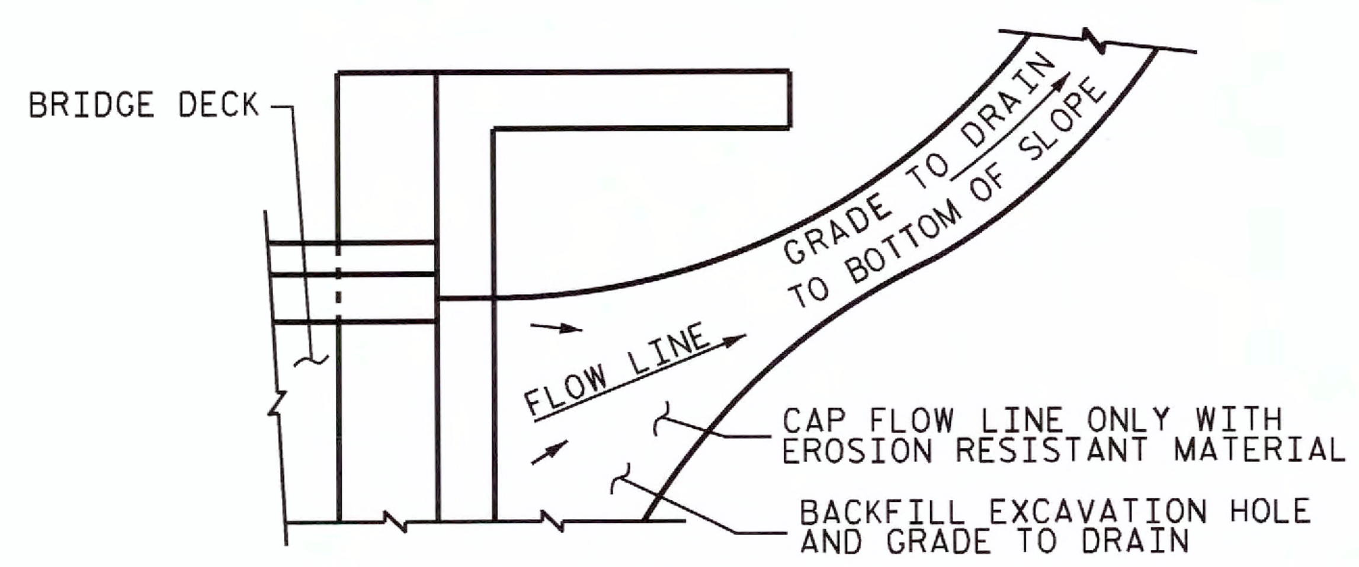
ENGLISH

JANUARY, 1990

STD. NO. SN

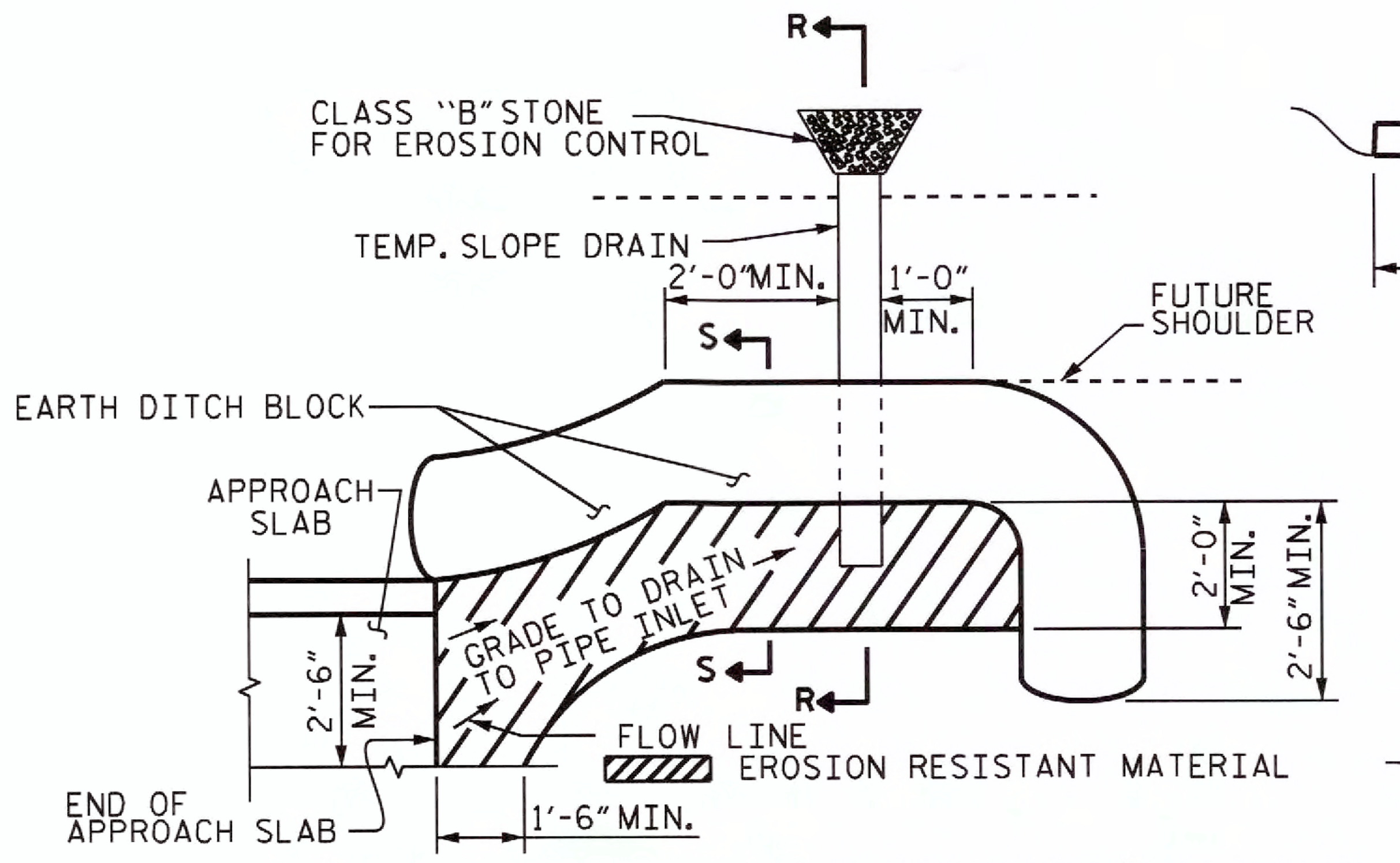
REV. 6-16-95 EEM (c) RGW REV. 5-7-03 RWW (c) JTE REV. 10-1-11 MAA (c) GM
REV. 8-16-99 RWW (c) LES REV. 5-1-06 TLA (c) GM

05-JUN-2013 11:18
R:\Structures\Plans\FINALPLANS\BD5111O_SD_SN.dgn
bklappenbach



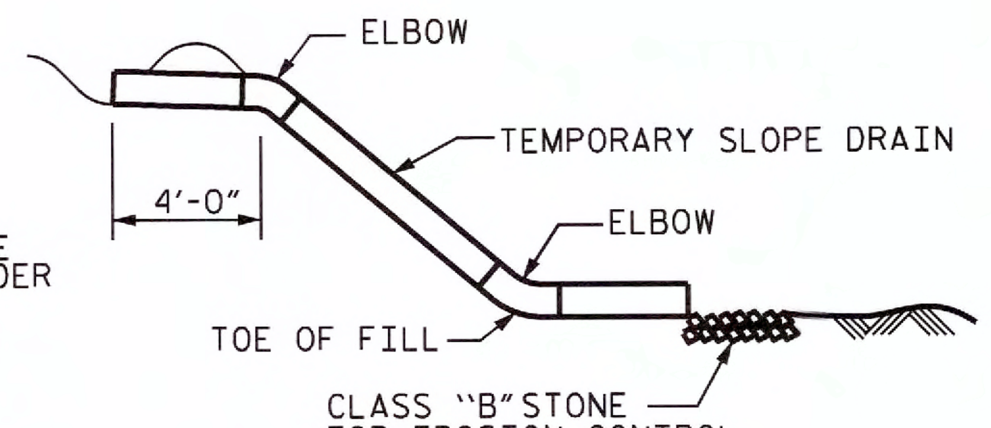
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

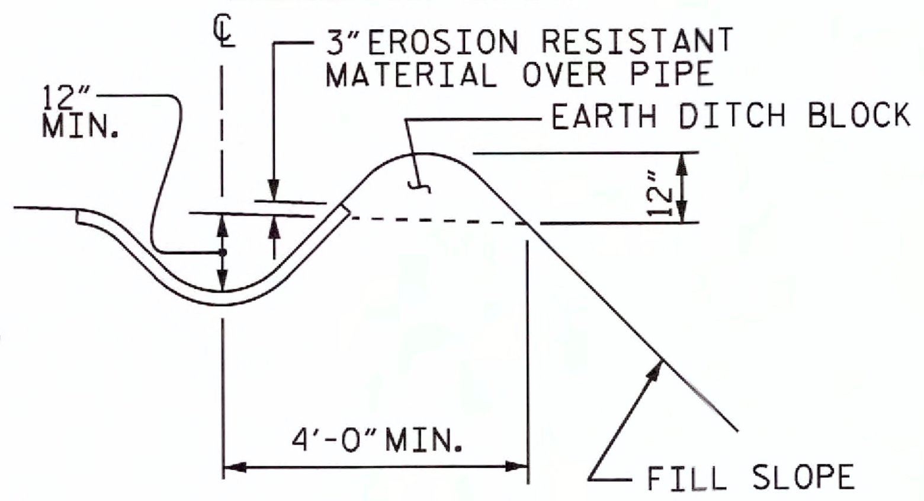


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW



SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

BILL OF MATERIAL

APPROACH SLAB AT EB #1 — STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A100	1	#4	STR	27'-5"	18
* A101	1	#4	STR	27'-3"	18
* A102	1	#4	STR	26'-10"	18
* A103	1	#4	STR	26'-5"	18
* A104	1	#4	STR	26'-0"	17
* A105	1	#4	STR	25'-7"	17
* A106	1	#4	STR	25'-2"	17
* A107	1	#4	STR	24'-9"	17
* A108	1	#4	STR	24'-4"	16
* A109	1	#4	STR	23'-11"	16
* A110	1	#4	STR	23'-5"	16
* A111	1	#4	STR	23'-0"	15
* A112	1	#4	STR	22'-10"	15
A200	1	#4	STR	27'-5"	18
A201	1	#4	STR	27'-0"	18
A202	1	#4	STR	26'-7"	18
A203	1	#4	STR	26'-2"	17
A204	1	#4	STR	25'-9"	17
A205	1	#4	STR	25'-4"	17
A206	1	#4	STR	24'-11"	17
A207	1	#4	STR	24'-6"	16
A208	1	#4	STR	24'-1"	16
A209	1	#4	STR	23'-8"	16
A210	1	#4	STR	23'-2"	15
A211	1	#4	STR	22'-9"	15
A212	1	#4	STR	22'-7"	15
* B100	41	#5	STR	11'-4"	485
* B101	1	#5	STR	11'-3"	12
* B102	1	#5	STR	10'-1"	11
* B103	1	#5	STR	8'-10"	9
* B104	1	#5	STR	7'-8"	8
* B105	1	#5	STR	6'-6"	7
* B116	1	#5	STR	5'-4"	6
* B107	1	#5	STR	4'-1"	4
* B108	1	#5	STR	2'-11"	3
* B109	1	#5	STR	1'-9"	2
B200	41	#6	STR	11'-9"	724
B201	1	#6	STR	11'-3"	17
B202	1	#6	STR	10'-1"	15
B203	1	#6	STR	8'-10"	13
B204	1	#6	STR	7'-8"	12
B205	1	#6	STR	6'-6"	10
B206	1	#6	STR	5'-4"	8
B207	1	#6	STR	4'-1"	6
B208	1	#6	STR	2'-11"	4
B209	1	#6	STR	1'-9"	3
REINFORCING STEEL				LBS.	1027
* EPOXY COATED REINFORCING STEEL				LBS.	765
CLASS AA CONCRETE				C.Y.	13.2

APPROACH SLAB AT EB #1 — STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A113	1	#4	STR	6'-0"	4
* A114	1	#4	STR	6'-1"	4
* A115	1	#4	STR	6'-4"	4
* A116	1	#4	STR	6'-6"	4
* A117	1	#4	STR	6'-8"	4
* A118	1	#4	STR	6'-11"	5
* A119	1	#4	STR	7'-1"	5
* A120	1	#4	STR	7'-3"	5
* A121	1	#4	STR	7'-6"	5
* A122	1	#4	STR	7'-8"	5
* A123	1	#4	STR	7'-10"	5
* A124	1	#4	STR	8'-1"	5
* A125	1	#4	STR	8'-2"	5
A213	1	#4	STR	5'-11"	4
A214	1	#4	STR	6'-1"	4
A215	1	#4	STR	6'-4"	4
A216	1	#4	STR	6'-6"	4
A217	1	#4	STR	6'-8"	4
A218	1	#4	STR	6'-11"	5
A219	1	#4	STR	7'-1"	5
A220	1	#4	STR	7'-3"	5
A221	1	#4	STR	7'-6"	5
A222	1	#4	STR	7'-8"	5
A223	1	#4	STR	7'-10"	5
A224	1	#4	STR	8'-1"	5
A225	1	#4	STR	8'-2"	5
* B100	12	#5	STR	11'-4"	142
* B110	1	#5	STR	11'-1"	12
* B111	1	#5	STR	8'-5"	9
* B112	1	#5	STR	5'-10"	6
* B113	1	#5	STR	3'-3"	3
B200	12	#6	STR	11'-9"	212
B210	1	#6	STR	11'-1"	17
B211	1	#6	STR	8'-5"	13
B212	1	#6	STR	5'-10"	9
B213	1	#6	STR	3'-3"	5
REINFORCING STEEL				LBS.	316
* EPOXY COATED REINFORCING STEEL				LBS.	232
CLASS AA CONCRETE				C.Y.	4.3

APPROACH SLAB AT EB #2 — STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A126	1	#4	STR	22'-9"	15
* A127	1	#4	STR	22'-10"	15
* A128	1	#4	STR	23'-0"	15
* A129	1	#4	STR	23'-3"	16
* A130	1	#4	STR	23'-5'	16
* A131	1	#4	STR	23'-8'	16
* A132	1	#4	STR	23'-11"	16
* A133	1	#4	STR	24'-1"	16
* A134	1	#4	STR	24'-4"	16
* A135	1	#4	STR	24'-6"	16
* A136	1	#4	STR	24'-9"	17
* A137	1	#4	STR	24'-11"	17
* A138	1	#4	STR	25'-0"	17
A226	1	#4	STR	22'-6"	15
A227	1	#4	STR	22'-7"	15
A228	1	#4	STR	22'-9"	15
A229	1	#4	STR	23'-0"	15
A230	1	#4	STR	23'-2"	15
A231	1	#4	STR	23'-5"	16
A232	1	#4	STR	23'-8"	16
A233	1	#4	STR	23'-10"	16
A234	1	#4	STR	24'-1"	16
A235	1	#4	STR	24'-3"	16
A236	1	#4	STR	24'-6"	16
A237	1	#4	STR	24'-8"	16
A238	1	#4	STR	24'-11"	17
* B100	41	#5	STR	11'-4"	485
* B114	1	#5	STR	10'-5"	11
* B115	1	#5	STR	8'-0"	8
* B116	1	#5	STR	5'-8"	6
* B117	1	#5	STR	3'-4"	3
B200	41	#6	STR	11'-9"	724
B214	1	#6	STR	10'-5"	16
B215	1	#6	STR	8'-0"	12
B216	1	#6	STR	5'-8"	9
B217	1	#6	STR	3'-4"	5
REINFORCING STEEL				LBS.	970
* EPOXY COATED REINFORCING STEEL				LBS.	721
CLASS AA CONCRETE				C.Y.	12.4

APPROACH SLAB AT EB #2 — STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A139	13	#4	STR	11'-7"	101
A239	13	#4	STR	11'-7"	101
* B100	24	#5	STR	11'-4"	284
B200	24	#6	STR	11'-9"	424
REINFORCING STEEL				LBS.	525
* EPOXY COATED REINFORCING STEEL				LBS.	385
CLASS AA CONCRETE				C.Y.	6.9

SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

PROJECT NO. BD-5111AA
WATAUGA COUNTY
STATION: 11+55.50-L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SLAB DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16825 BRUCE D. KLAPPENBACH 6-5-2013

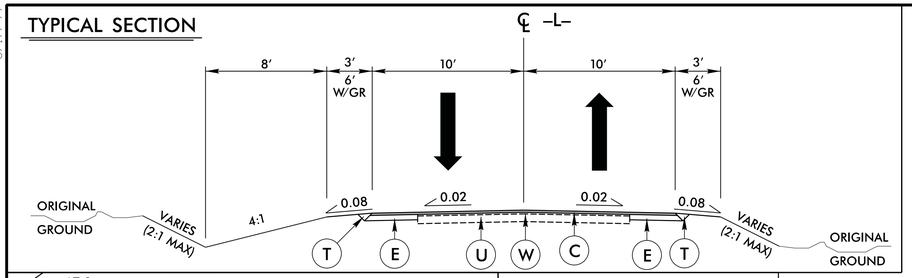
REVISIONS								SHEET NO. S-22
NO.	BY:	DATE:	NO.	BY:	DATE:			TOTAL SHEETS 22
1			3					
2			4					

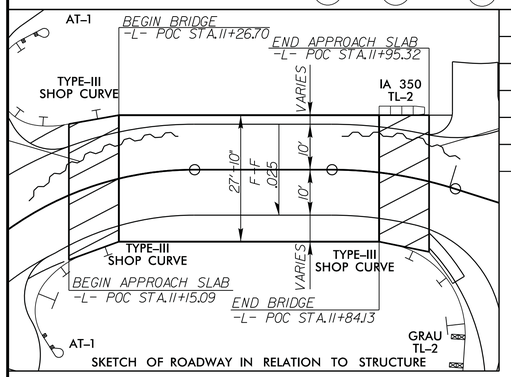
DRAWN BY : H. T. BARBOUR DATE : 12-14-12
CHECKED BY : D. A. GLADDEN DATE : 1-13
DESIGN ENGINEER OF RECORD: - DATE : -

05-JUN-2013 11:16
R:\Structures\Plans\FINALPLANS\BD5111AA_SD_AS.dgn
bklappenbach

8/17/99

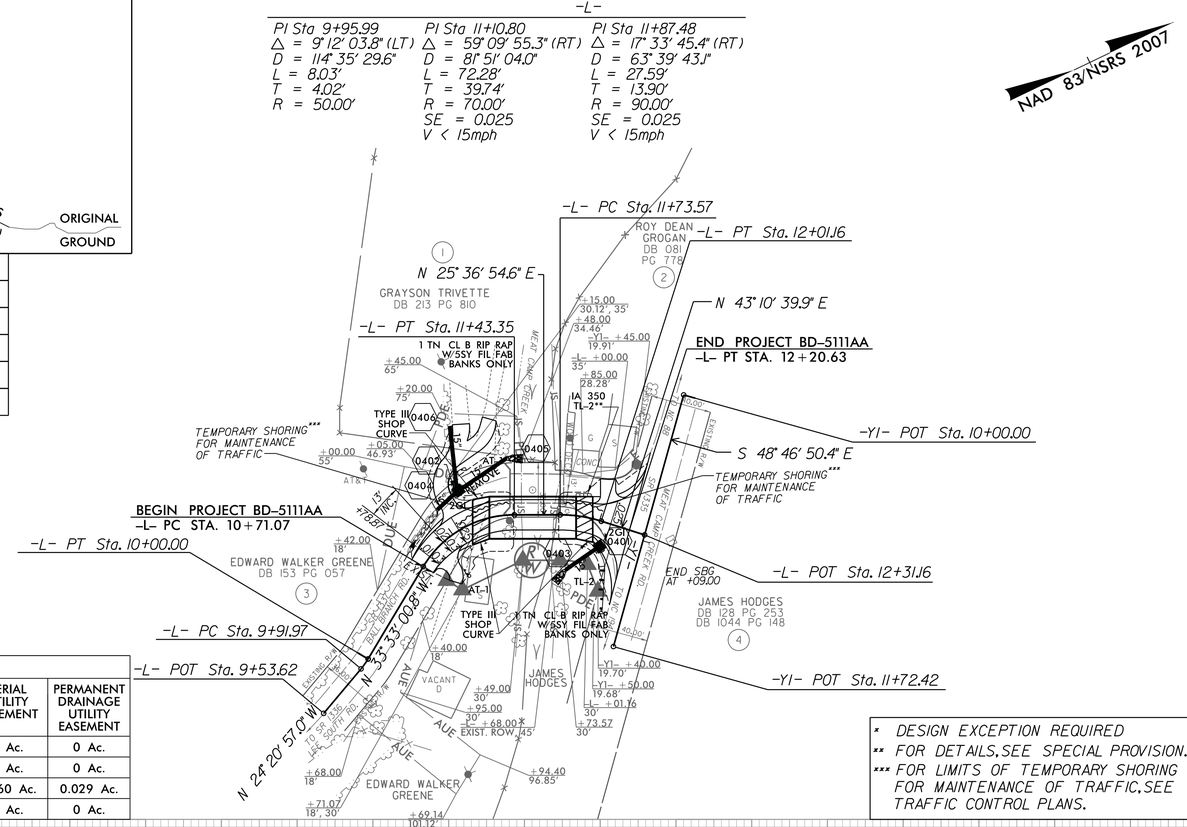
TYPICAL SECTION





SKETCH OF ROADWAY IN RELATION TO STRUCTURE

PAVEMENT SCHEDULE	
C	1½" SURFACE COURSE, TYPE SF9.5A
E	5½" BASE COURSE, TYPE B25.0B
T	EARTH MATERIAL
U	EXISTING PAVEMENT.
W	WEDGING

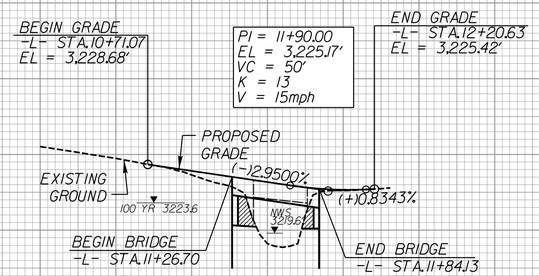


* DESIGN EXCEPTION REQUIRED
** FOR DETAILS, SEE SPECIAL PROVISION.
*** FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

RIGHT-OF-WAY AREAS									
PARCEL #	PROPERTY OWNER'S NAME	TOTAL AREA	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONSTRUCTION EASEMENT	PERMANENT DRAINAGE EASEMENT	AERIAL UTILITY EASEMENT	PERMANENT DRAINAGE UTILITY EASEMENT
1	GRAYSON TRIVETTE	N/A	0 Ac.	N/A	N/A	0 Ac.	0.031 Ac.	0 Ac.	0 Ac.
2	ROY DEAN GROGAN	N/A	0 Ac.	N/A	N/A	0.004 Ac.	0 Ac.	0 Ac.	0 Ac.
3	EDWARD WALKER GREENE	N/A	0.045 Ac.	N/A	N/A	0 Ac.	0.018 Ac.	0.060 Ac.	0.029 Ac.
4	JAMES HODGES	N/A	0.027 Ac.	N/A	N/A	0 Ac.	0.014 Ac.	0 Ac.	0 Ac.

Bridge AA Control Points									
Point Description	Alignment	Proposed Station	Proposed Offset	Northing	Easting	Elevation	Alignment	Distance from Sta. 10+00	Direction from Sta. 10+00
BL-3	-L-	11+14.89	24.80' LT	930783.4646	1214676.9754	3227.48	-L-	126.8	N 36° 37' 55.0" W
BD5111AA-1	-L-	12+12.08	42.77' LT	930897.0355	1214713.4488	3226.01	-L-	218.87	N 10° 18' 50.9" W
BEGIN ALN	-L-	09+53.62	0	930639.7450	1214772.3315				
PC	-L-	09+91.97	0	930674.6880	1214756.5180				
PT	-L-	10+00.00	0	930681.7066	1214752.6356				
BEGIN PROJECT (PC)	-L-	10+71.07	0	930740.9326	1214713.3601				
PT	-L-	11+43.35	0	930809.8820	1214708.5780				
PC	-L-	11+73.57	0	930837.1358	1214721.6446				
PT	-L-	12+01.16	0	930859.8104	1214737.1682				
END PROJECT	-L-	12+20.63	0	930874.0078	1214750.4901				
INTERSECT ALN -L- & -Y1-	-L-	12+31.16	0	930881.6852	1214757.6941				
BEGIN ALN	-Y1-	10+00.00	0	930944.8806	1214685.5557				
END ALN	-Y1-	11+72.42	0	930831.2688	1214815.2451				

BD5111AA-1 EL = 3,226.01'
-L- STA.12+12.08 42.77' LT.
GPS MONUMENT



3,240 3,230 3,220 3,210 3,200

10+00 11+00 12+00 13+00 14+00

TO BE EXCAVATED

PROJECT REFERENCE NO.	SHEET NO.
BD-5111AA	RDY-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 23982 ENGINEER STEPHEN E. ROBERTS
Stephen E. Roberts 8-9-13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 23090 ENGINEER AUDREY B. BURNETTE
Audrey B. Burnette 8/9/13

GRAPHIC SCALES

PLANS: 50 0 50 100
PROFILE (HORIZONTAL): 50 0 50 100
PROFILE (VERTICAL): 10 0 10 20

WATAUGA #38

DESIGN SPEED = 15 mph *
ADT = 240 (2000)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BD5111AA-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 930628.6918(ft) EASTING: 1215041.7467(ft)
ELEVATION: 3221.4019'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998840796
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BD5111AA-2" TO -L- STATION 10+00.00 IS S 15° 13' 27.02" E 293.93 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

8/2/2013
R:\Roadway\Proj\BD5111aa_rdy_psh04.dgn
mwhite

PROJECT REFERENCE NO.	SHEET NO.
BD-5111AA	RDY-2

ROADWAY DESIGN ENGINEER

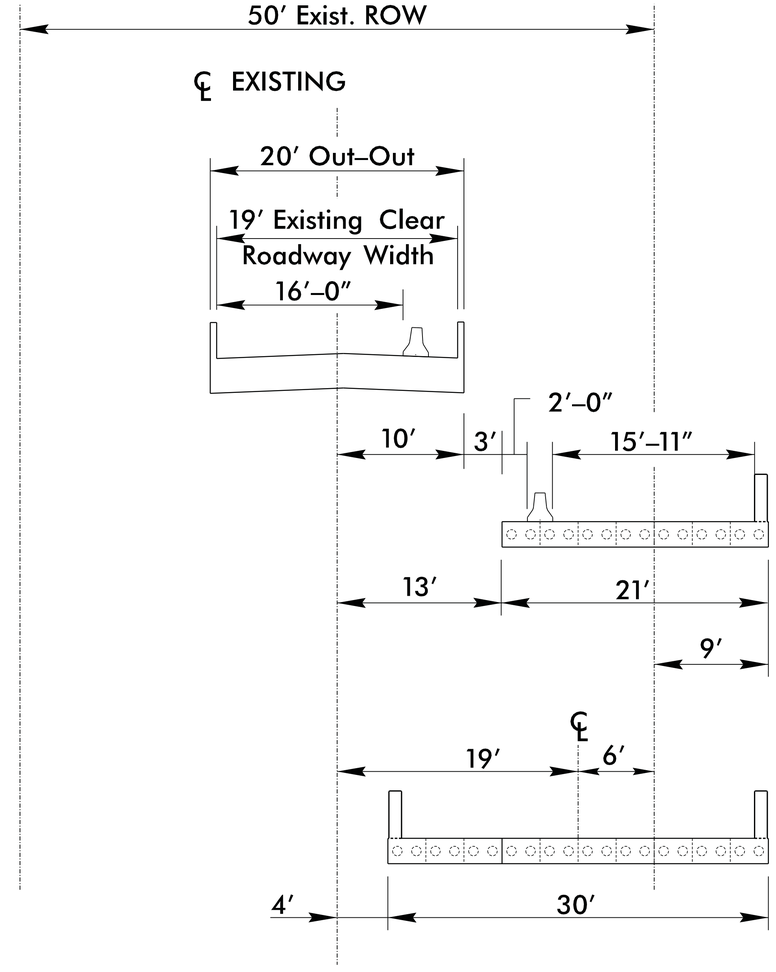
NORTH CAROLINA PROFESSIONAL SEAL 23982 ENGINEER STEPHEN E. ROBERTS

Stephen E. Roberts 8-9-13

PHASED CONSTRUCTION

Phase 1

Phase 2



PROJECT REFERENCE NO.	SHEET
45357.1.26(BD-5111AA)	RDY-3

GEOTECHNICAL ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 039779 ENGINEER JEREMY R. HAHN — 8/9/13 — SIGNATURE — DATE

ENGINEER — SIGNATURE — DATE

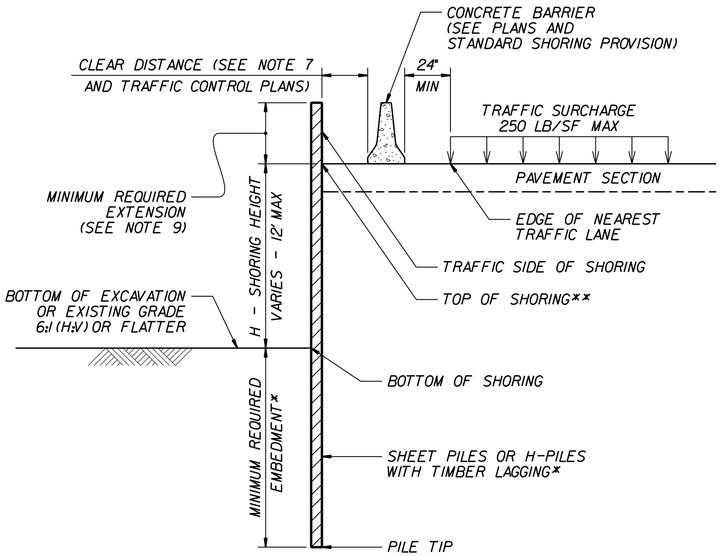
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

***DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**

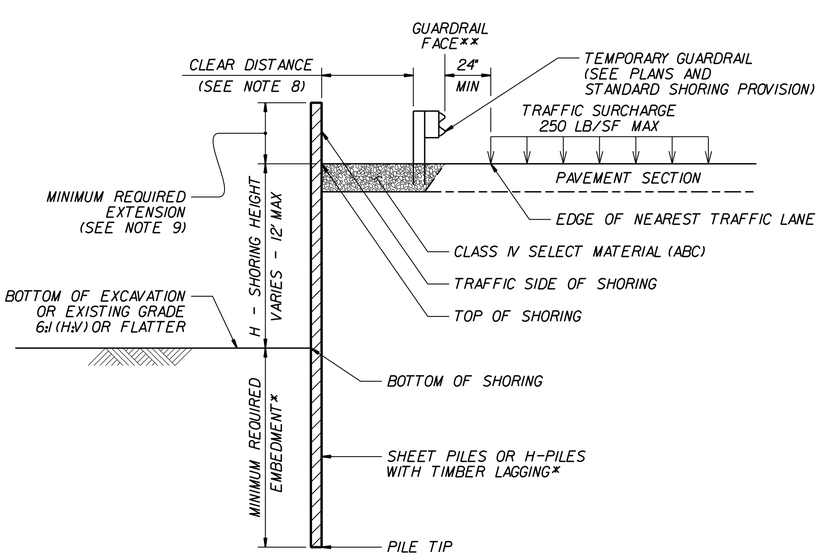
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 LB/CF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 LB/SF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM.
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



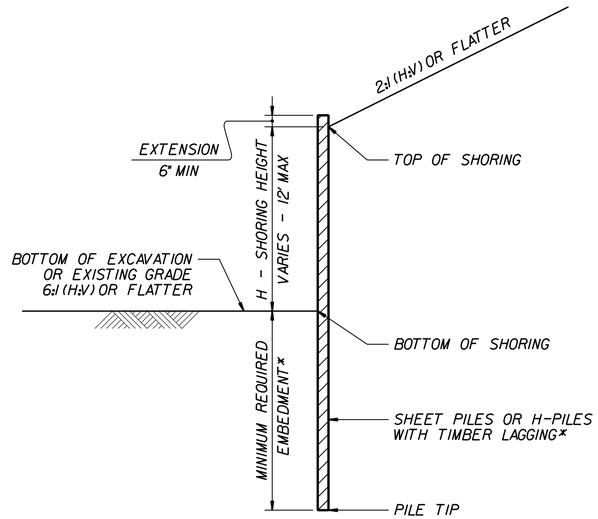
CONCRETE BARRIER

****TOP OF SHORING = EDGE OF PAVEMENT**



TEMPORARY GUARDRAIL

****GUARDRAIL FACE = EDGE OF PAVEMENT**



STANDARD TEMPORARY SHORING

(SLOPE CASE)

***SEE TABLE ABOVE.**

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)

***SEE TABLE ABOVE.**

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-20-12

ASHE BD-5111AA

TIP PROJECT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE PROJECT REFERENCE NO.	SHEET NO.
BD-5111AA	TCP-1

PLAN FOR PROPOSED TRAFFIC CONTROL, MARKING & DELINEATION

WATAUGA COUNTY

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS"-PROJECT SERVICES UNTI-N.C. DEPARTMENT OF TRANSPORTATION-RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	POSITIVE PROTECTION
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - (PERMANENT AND TEMPORARY)
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

TEMP. PAVEMENT MARKING SCHEDULE

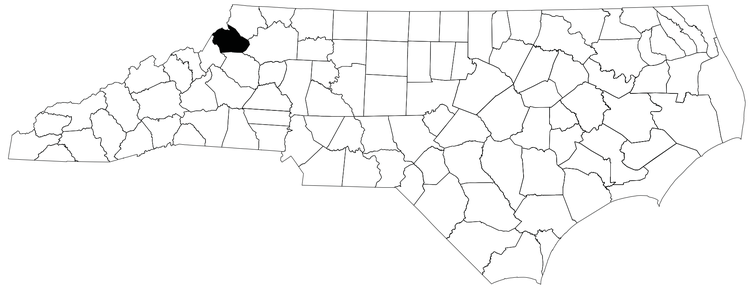
SYMBOL	DESCRIPTION	QUANTITY BREAKDOWN	PAY ITEM	TOTAL QUANTITY
	PAVEMENT MARKING LINES		PAINT (4")	
PA	WHITE EDGELINE 2X	1192 LF		
			TOTAL	1192 LF

2X = TWO APPLICATIONS

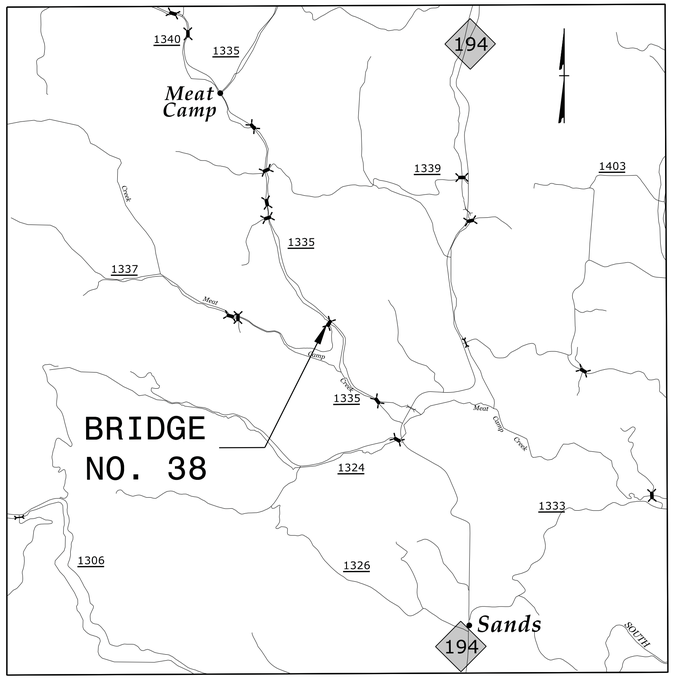
FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	QUANTITY BREAKDOWN	PAY ITEM	TOTAL QUANTITY
	PAVEMENT MARKING LINES		PAINT (4")	
PA	WHITE EDGELINE 2X	596 LF		
PI	YELLOW DOUBLE CENTER 2X	596 LF		
			TOTAL	1192 LF

2X = TWO APPLICATIONS



VICINITY MAP
BRIDGE #38



LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA

TRAFFIC CONTROL DEVICES

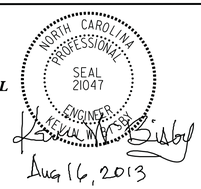
- BARRICADE (TYPE III)
- DRUM
- TEMPORARY CRASH CUSHION
- PORTABLE CONCRETE BARRIER
- FLAGGER
- TRUCK MOUNTED ATTENUATOR (TMA)

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560
FOR DIVISION OF HIGHWAYS

SEAL



Aug 16, 2013

K. W. BISBY, PE — TRAFFIC CONTROL ENGINEER
M. A. COLE — TRAFFIC CONTROL PROJECT DESIGNER
A. TUTT — TRAFFIC CONTROL PROJECT DESIGNER

5/8/2013
R:\Traffic\TrafficControl\TCP\Final TCP\BD5111AA_TCP_tcp01.dgn
mcole

PROJ. REFERENCE NO.	SHEET NO.
BD-5111AA	TCP-2

GENERAL NOTES / LOCAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

A. REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

B. WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

C. WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D. WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

E. DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F. BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

G. DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) (500') IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

SIGNING

H. INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

TRAFFIC BARRIER

I. INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE/RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER IS REMOVED.

J. PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVEABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVEABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LES	15 FT
45 - 50	20 FT
55	25 FT
60 MPH OR HIGHER	30 FT

TRAFFIC CONTROL DEVICES

K. SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH), EXCEPT 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY WHEN LANE CLOSURES ARE NOT IN EFFECT. WHEN SKINNY DRUMS ARE ALLOWED REFER TO SECTION 1180 OF STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES OR AS SHOWN IN THE PLANS.

L. PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

M. INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS SHOWN IN THE PAVEMENT MARKING PLAN.

N. INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD TYPE	MARKING	MARKER
ASPHALT	PAINT	RAISED
CONCRETE	COLD APPLIED PLASTIC (TYPE IV)	RAISED

O. INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE.

P. PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

Q. TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

R. REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

TRAFFIC CONTROL PHASING

PHASE I

STEP 1:

ERECT ADVANCED WORK ZONE SIGNS ON SR 1337 AND SR 1335 IN ACCORDANCE WITH RDWY STD 1101.01 SHEET 3.

STEP 2:

USING RDWY STD 1101.02 SHEET 1 TO MAINTAIN SR 1337 TRAFFIC IN A ONE LANE TWO WAY TRAFFIC PATTERN, INSTALL ONE LANE BRIDGE SIGNS ON SR 1337 AND SR 1335 AS DIRECTED BY THE ENGINEER. PLACE TEMPORARY PAVEMENT MARKING FROM -L- STA 10+00 TO -L- STA 12+50 AND PLACE PORTABLE CONCRETE BARRIER (ANCHORED) FROM -L- STA. 11+00 TO -L- STA. 12+00 WITH TEMPORARY CRASH CUSHIONS, (SEE TCP-3).

STEP 3:

USING RDWY STD 1101.02 SHEET 1 IN A CONTINUOUS OPERATION DIRECT TRAFFIC ON SR 1337 TO ITS TEMPORARY ONE LANE TWO WAY TRAFFIC PATTERN. CONSTRUCT PROPOSED -L- SR 1337 STRUCTURE AND APPROACHES FROM -L- 10+71 TO -L- STA. 12+20, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE PAVEMENT, (SEE TCP-3, ROADWAY AND STRUCTURE PLANS).

PHASE II

STEP 1:

USING RDWY STD 1101.02 SHEET 1 IN A CONTINUOUS OPERATION REMOVE AND RESET PORTABLE CONCRETE BARRIER (ANCHORED) FROM -L- STA. 11+00 TO -L- STA. 12+00 WITH TEMPORARY CRASH CUSHIONS. DIRECT TRAFFIC ON SR 1337 TO ITS TEMPORARY ONE LANE TWO WAY TRAFFIC PATTERN ONTO THE NEWLY CONSTRUCTED STRUCTURE STAGE I, (SEE TCP-4, ROADWAY AND STRUCTURE PLANS).

STEP 2:

USING RDWY STD 1101.02 SHEET 1, COMPLETE CONSTRUCTION OF PROPOSED -L- SR 1337 STRUCTURE AND APPROACHES FROM -L- 10+71 TO -L- STA. 12+20, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE, (SEE TMP-4).

PHASE III

STEP 1:

USING RDWY STD 1101.02 SHEET 1 IN A CONTINUOUS OPERATION (ALTERNATING LANE CLOSURES), PLACE THE FINAL LAYER OF SURFACE COURSE, FINAL PAVEMENT MARKINGS AND MARKERS FROM -L- STA. 10+71 TO -L- STA. 12+21,(SEE NCDOT ROADWAY STANDARD DRAWINGS).

STEP 2:

REMOVE ANY REMAINING TRAFFIC CONTROL DEVICES FROM THE PROJECT LIMITS AND OPEN SR 1337 TO ITS PROPOSED TRAFFIC PATTERN.

APPROVED:_____ DATE:_____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. BIGBY

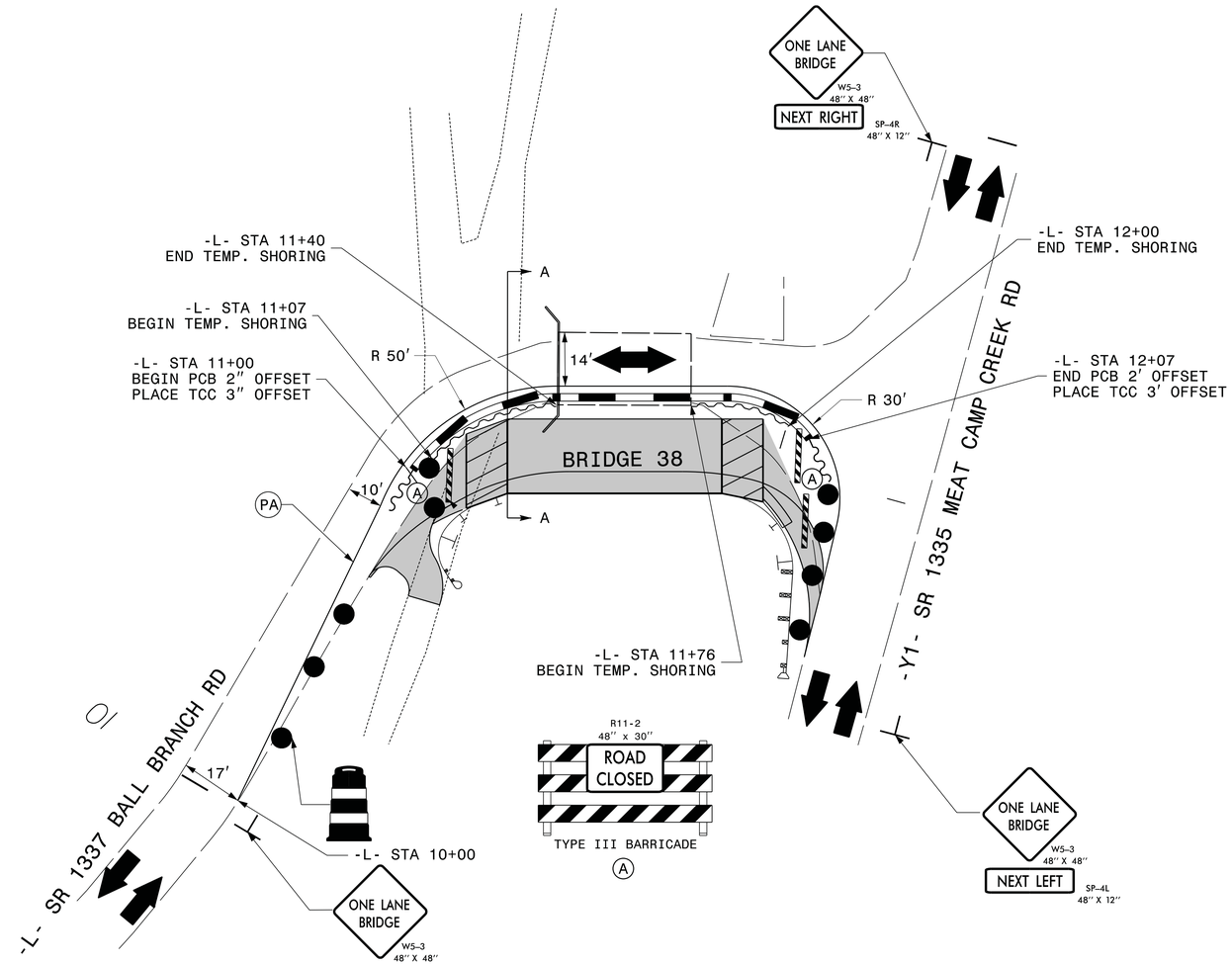
Aug 16, 2013

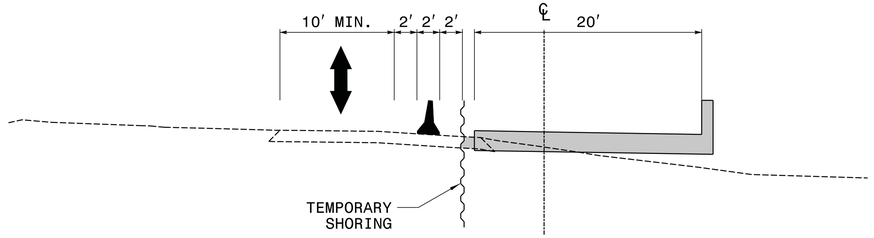
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TRAFFIC CONTROL GENERAL NOTES AND PROJECT PHASING

8/16/2013
BD5111AA_TCP_tcp02.dgn
kbigby

PROJ. REFERENCE NO.	SHEET NO.
BD-5111AA	TCP-3





SECTION A-A

APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN W. SIBLEY

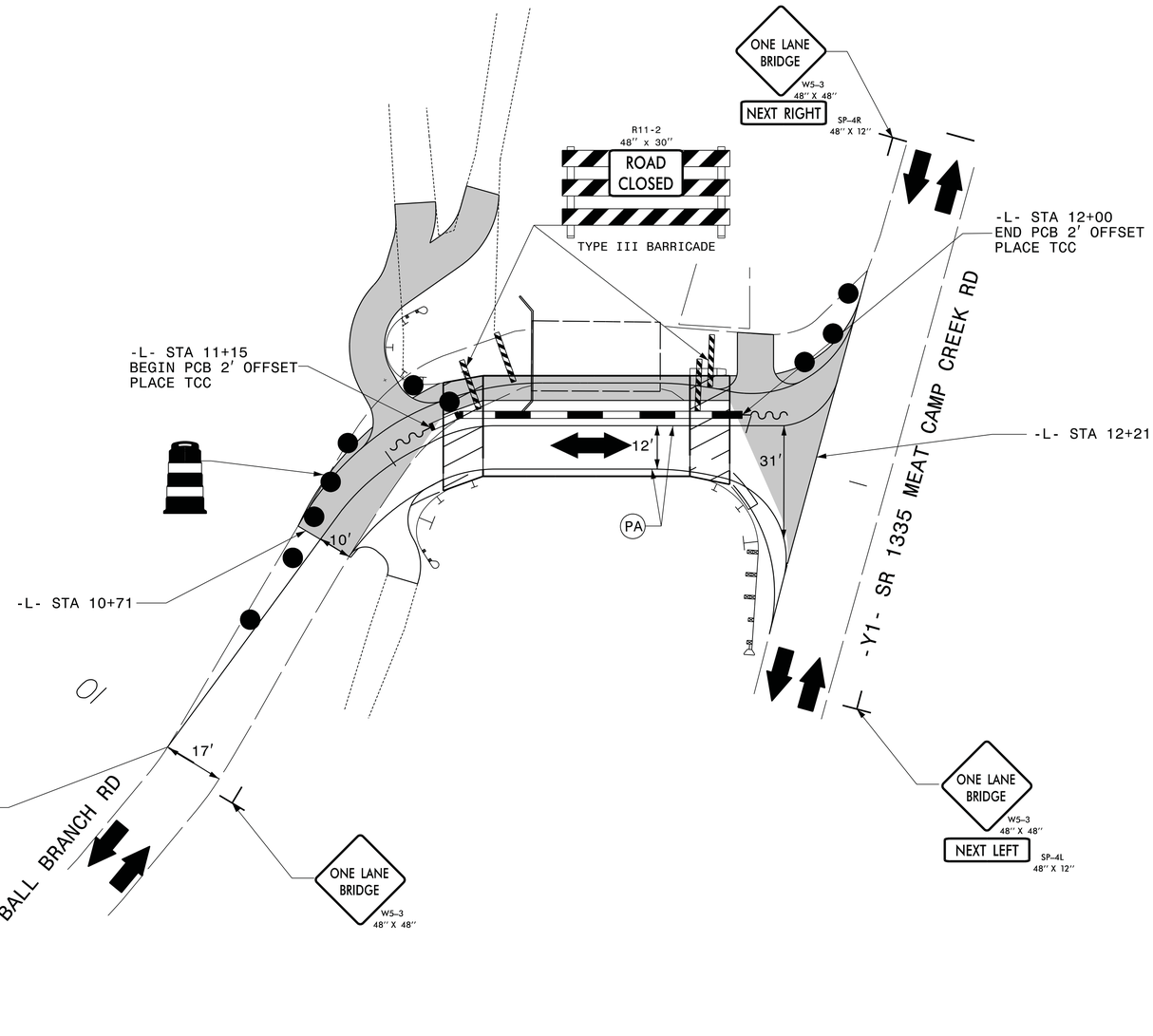
Aug 16, 2013

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

PHASE I DETAIL

8/5/2013
M:\projects\2009\09085_NCDOT_Div_OnCall\POI_Div\Bridges_GRP4\BD5111AA_Watauga38\Design\Traffic\TrafficControl\TCP\FinalTCP\BD5111AA_TCP_tcp03.dgn
mcole

PROJ. REFERENCE NO.	SHEET NO.
BD-5111AA	TCP-4



APPROVED: _____ DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 21047 ENGINEER KEVIN WAY

August 6, 2013

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

PHASE II DETAIL

5/8/2013
R:\Traffic\TrafficControl\TCP\Final TCP\BD5111AA_TCP_tcp04.dgn
mcole

EROSION CONTROL PLAN

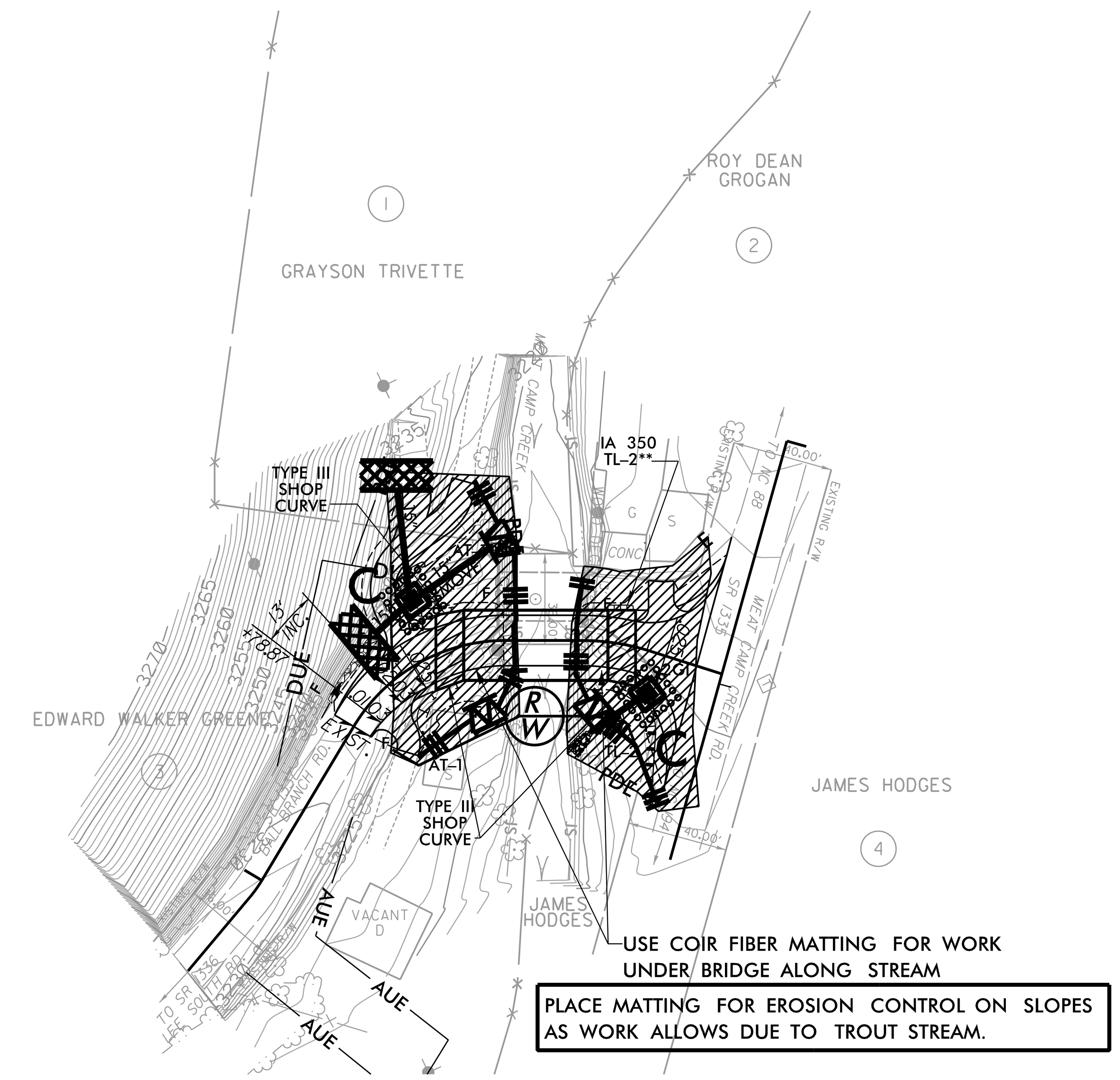
NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
BD-5111AA	EC-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENVIRONMENTALLY SENSITIVE AREA
PLEASE SEE NOTE

2012 STANDARD SPECIFICATIONS

NOTES:
1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.



ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG–010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1632.03	Rock Inlet Sediment Trap Type C	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle	
	Wattle with Polyacrylamide (PAM)	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	

2012 STANDARD DRAWINGS

1604.01	Railroad Erosion Control Detail
1605.01	Temporary Silt Fence
1606.01	Special Sediment Control Fence
1607.01	Gravel Construction Entrance
1622.01	Temporary Berms and Slope Drains
1630.01	Riser Basin
1630.02	Silt Basin Type B
1630.03	Temporary Silt Ditch
1630.04	Stilling Basin
1630.05	Temporary Diversion
1630.06	Special Stilling Basin
1631.01	Matting Installation
1632.01	Rock Inlet Sediment Trap Type A
1632.02	Rock Inlet Sediment Trap Type B
1632.03	Rock Inlet Sediment Trap Type C
1633.01	Temporary Rock Silt Check Type A
1633.02	Temporary Rock Silt Check Type B
1634.01	Temporary Rock Sediment Dam Type A
1634.02	Temporary Rock Sediment Dam Type B
1635.01	Rock Pipe Inlet Sediment Trap Type A
1635.02	Rock Pipe Inlet Sediment Trap Type B
1640.01	Coir Fiber Baffle
1645.01	Temporary Stream Crossing

AUDREY BURNETTE
LEVEL IIIA NAME

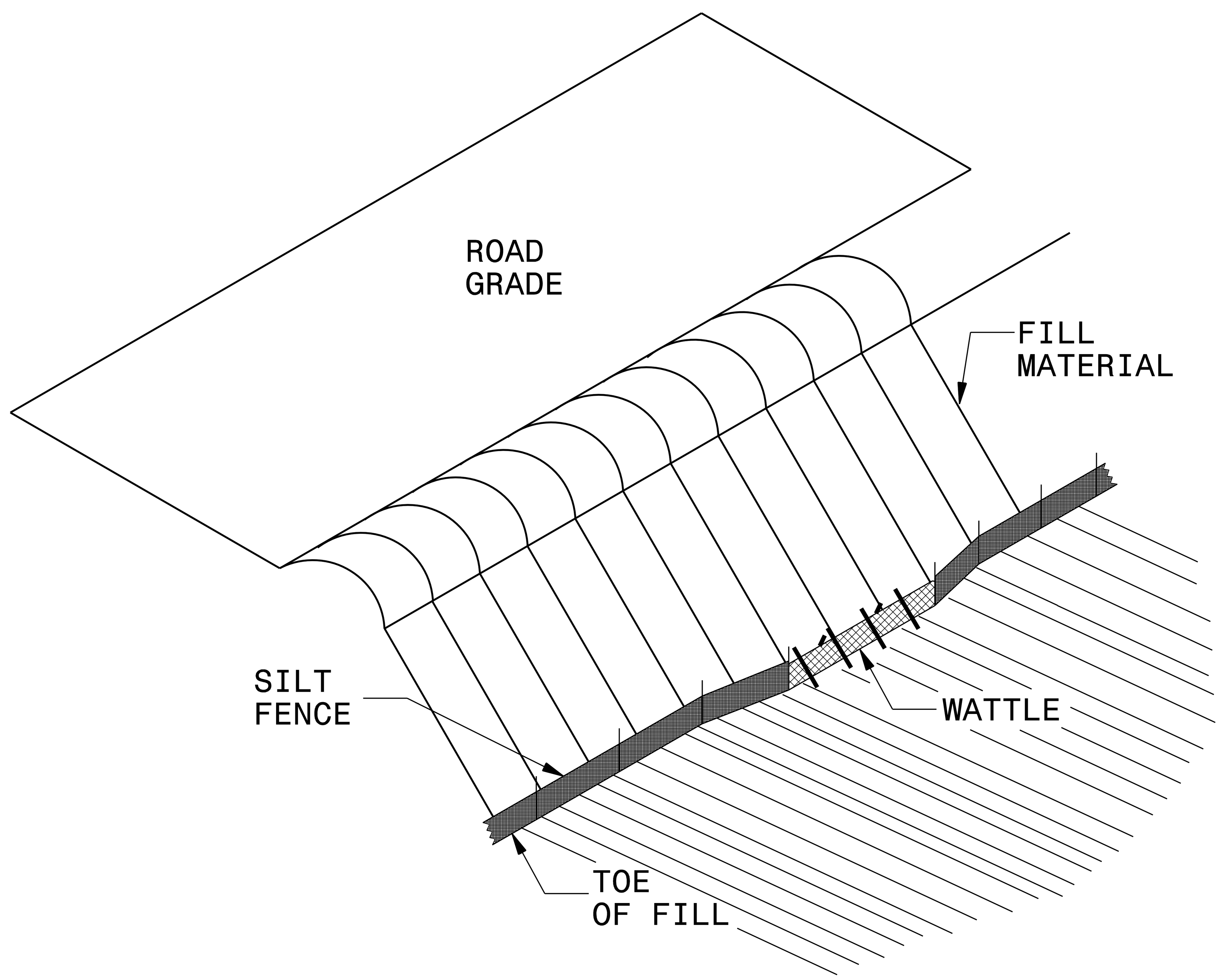
3081
LEVEL IIIA CERTIFICATION NO.

TO BE EXCAVATED

PLANS PREPARED BY :
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609–3960
NC LICENSE NO. F–0112 • (919) 878–9560

PROJECT REFERENCE NO.	SHEET NO.
BD-5111AA	EC-2

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

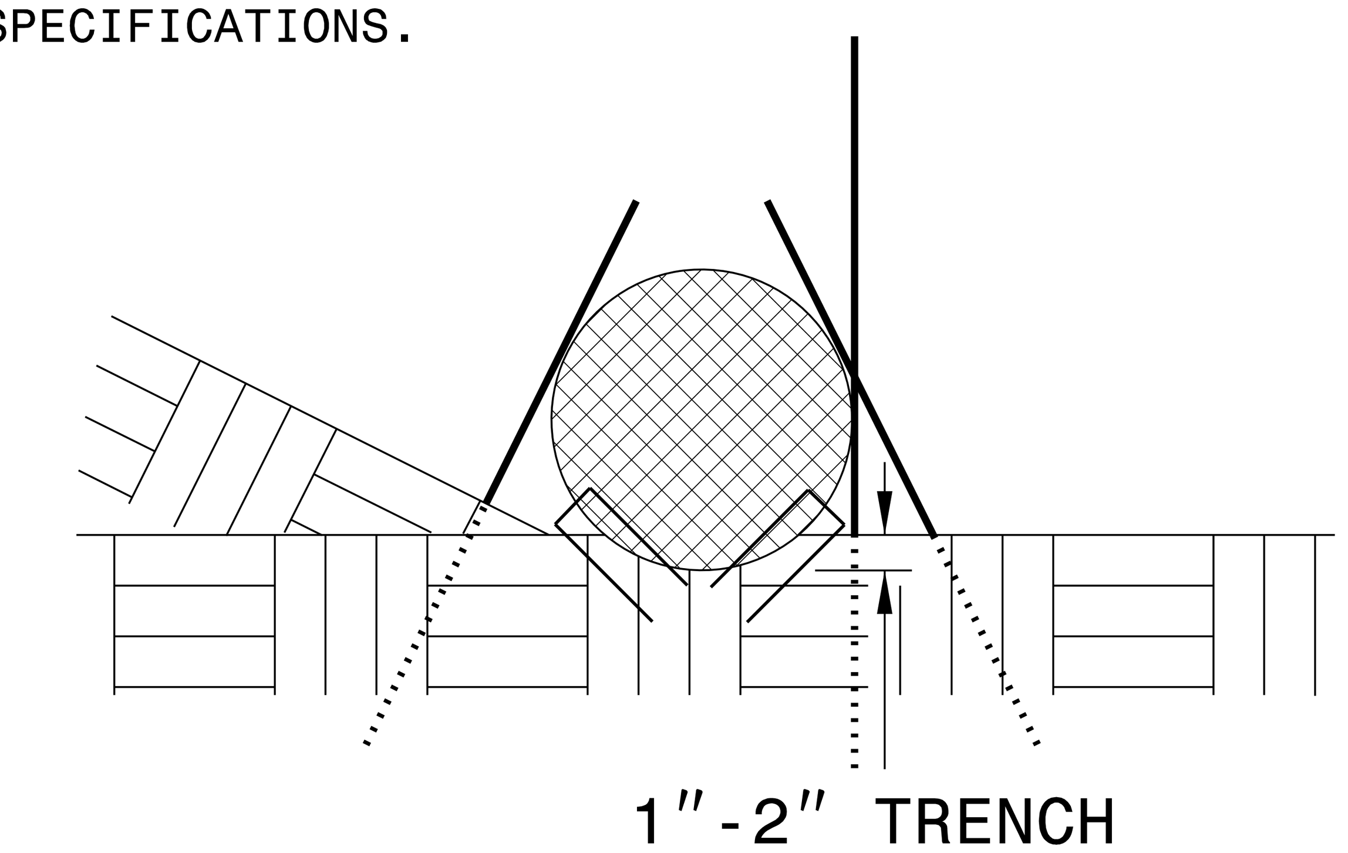
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

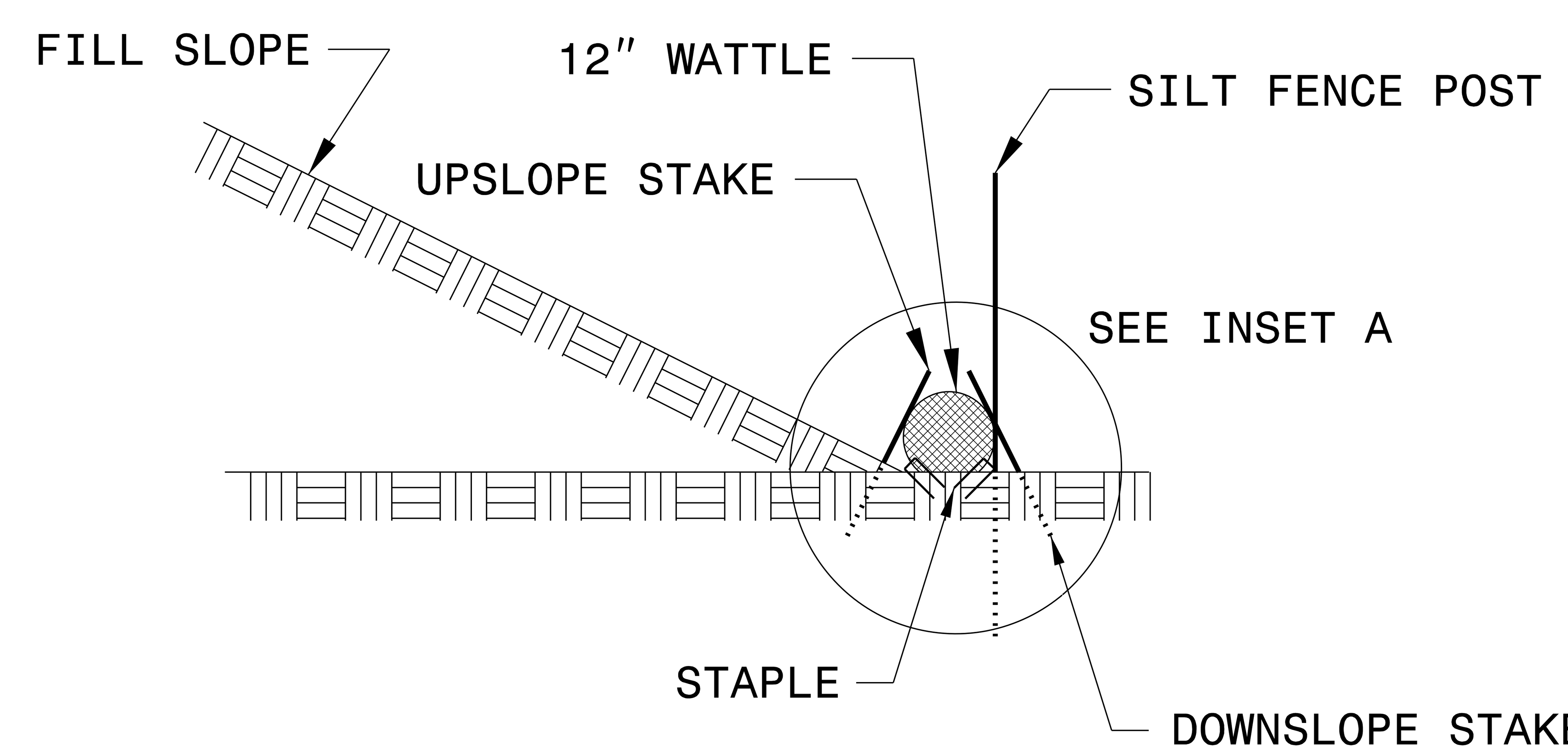
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

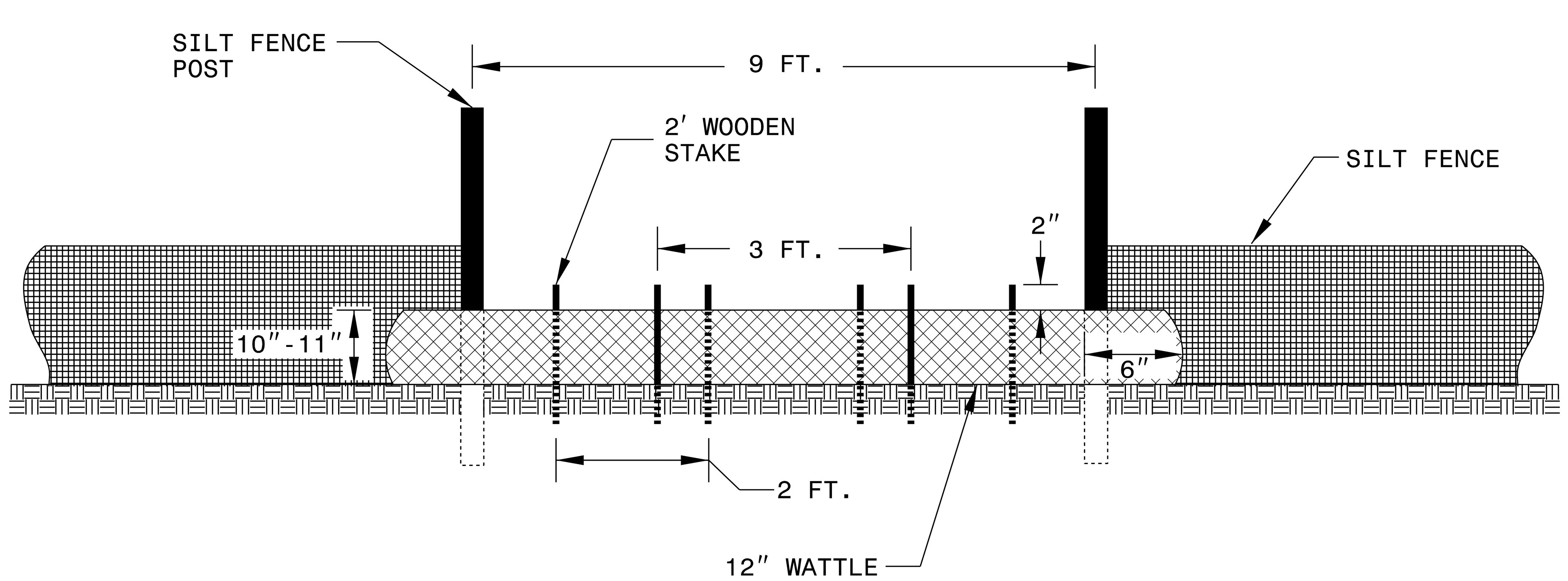
INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





SIDE VIEW



VIEW FROM SLOPE

8/2/2013
R:\Hydraulics\CADD\PSH\BD5111aa_HYD_EC02_siltfence.dgn
Fkeys

PROJECT REFERENCE NO.	SHEET NO.
BD-5111AA	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-5111AA	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

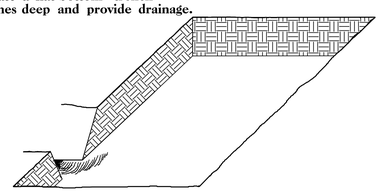
PLANTING DETAILS

SEEDLING / LINER BAREROOT PLANTING DETAIL

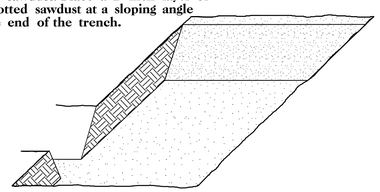
HEALING IN

1. Locate a healing-in site in a shady, well protected area.

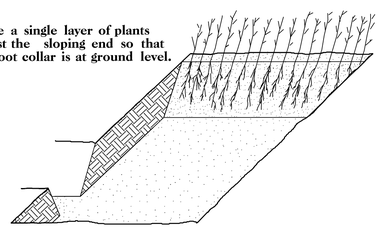
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



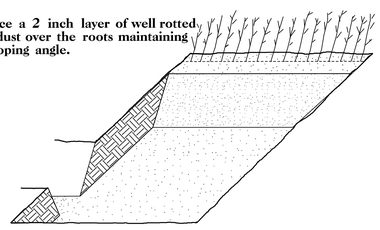
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

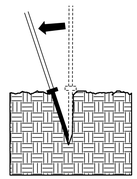


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

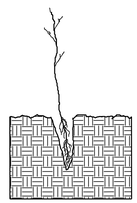


6. Repeat layers of plants and sawdust as neccessary and water thoroughly.

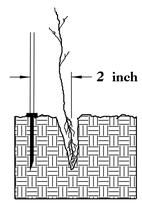
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



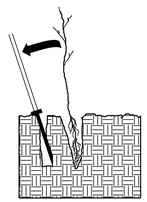
1. Insert planting bar as shown and pull handle toward planter.



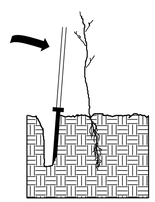
2. Remove planting bar and place seedling at correct depth.



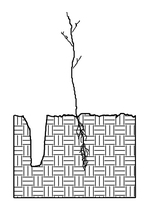
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in – 18 in BR
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in – 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

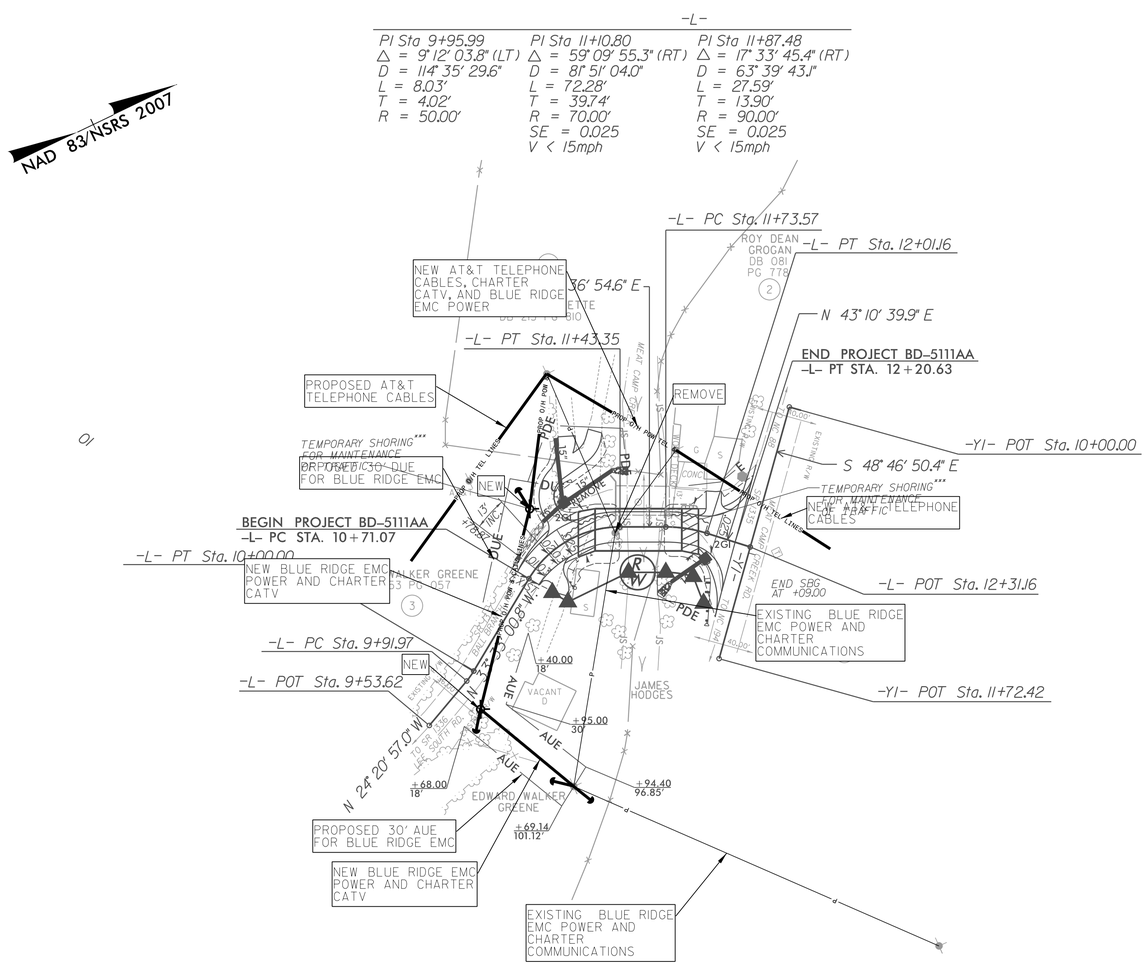
REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

PROJECT REFERENCE NO.	SHEET NO.
BD-5111AA	*UO-1*

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS



NOTES:

1.CHARTER COMMUNICATION IS IN JOINT USE WITH BLUE RIDGE EMC.

UTILITY OWNERS ON PROJECT

AT&T – TELEPHONE AND FIBER OPTIC
CHARTER COMMUNICATIONS – CATV
BLUE RIDGE EMC – POWER

PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5111AA	X-1

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

3275
3270
3265
3260
3255
3250
3245
3240
3235
3230
3225
3220
3215

3229.47

10+50.00

—℄—

8/2/2013
R:\Roadway\Xsc\BD5111aa_rdy_xpl.dgn
mughi

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5111AA	X-2

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

3270 3265 3260 3255 3250 3245 3240 3235 3230 3225 3220 3215

2% 0.009 0.033 2%

3228.55

10+75.00

—L—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

8/2/2013
R:\Roadway\Xsc\BD5111aa_rdy_xpl.dgn
mushi

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5111AA	X-3

3230 3225 3220 3215 3240 3235 3230 3225 3220 3215 3260 3255 3250 3245 3240 3235 3230 3225 3220 3215

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0.025 0.025

3218.21

11+50.00

2%

0.025 0.025

3225.86

11+25.00

4%

0.023 0.027

3227.29

2%

11+00.00

—℄—

8/2/2013
R:\Roadway\Xsc\BD5111aa_rdy_xpl.dgn
mughi

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	BD-5111AA	X-4

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

3230
3225
3220
3215

3225.48
12+25.00

0.025 0.025
2%
3225.23
12+00.00

0.025 0.025
3222.00
11+75.00

8/2/2013
R:\Roadway\Xsc\BD5111aa_rdy_xpl.dgn
mughi