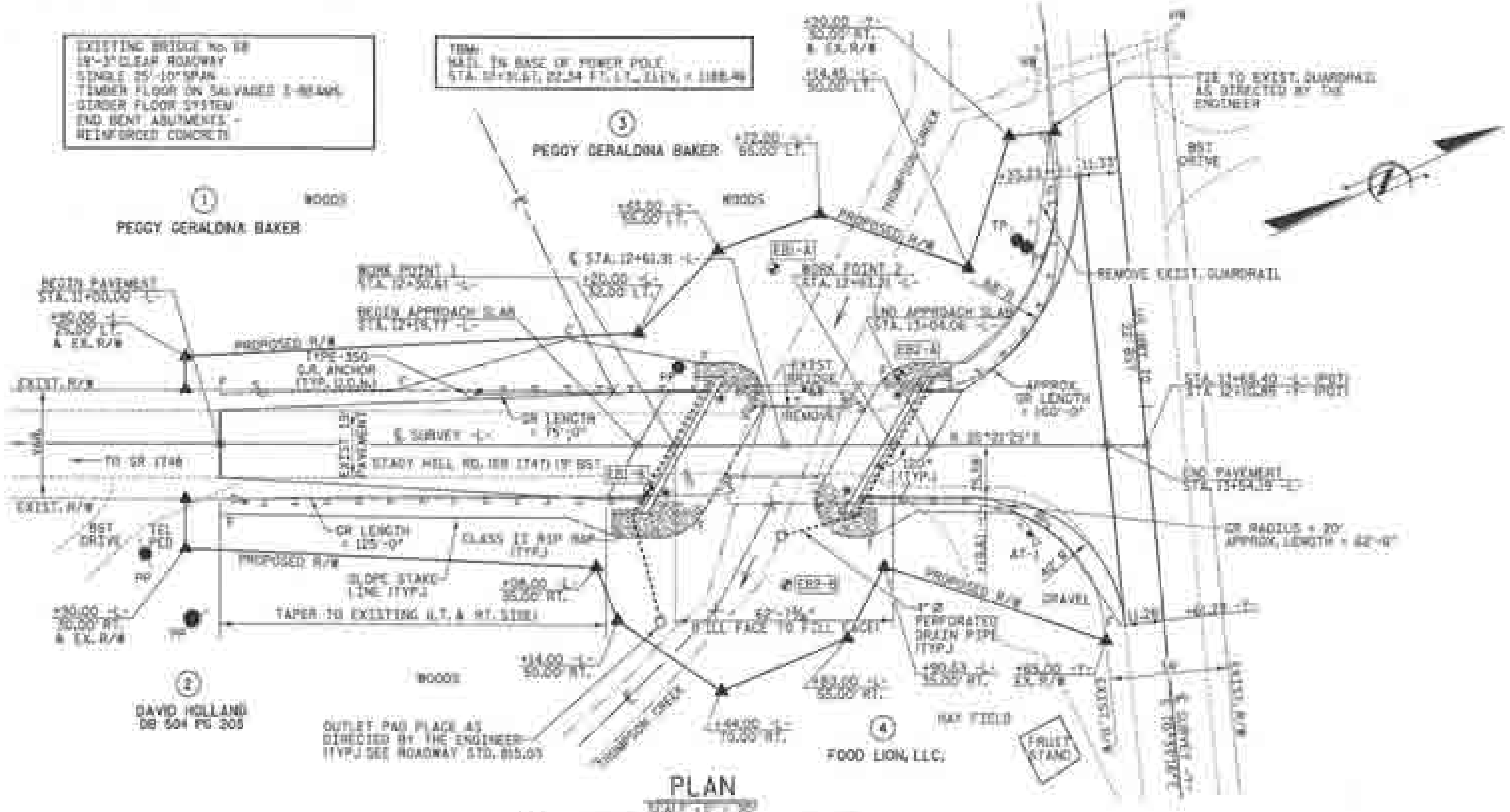
B-3874

#68 McDOWELL

F. A. PROJ. NO. BRSTP-1747(1)



PLAN

SCALE: 1" = 20'

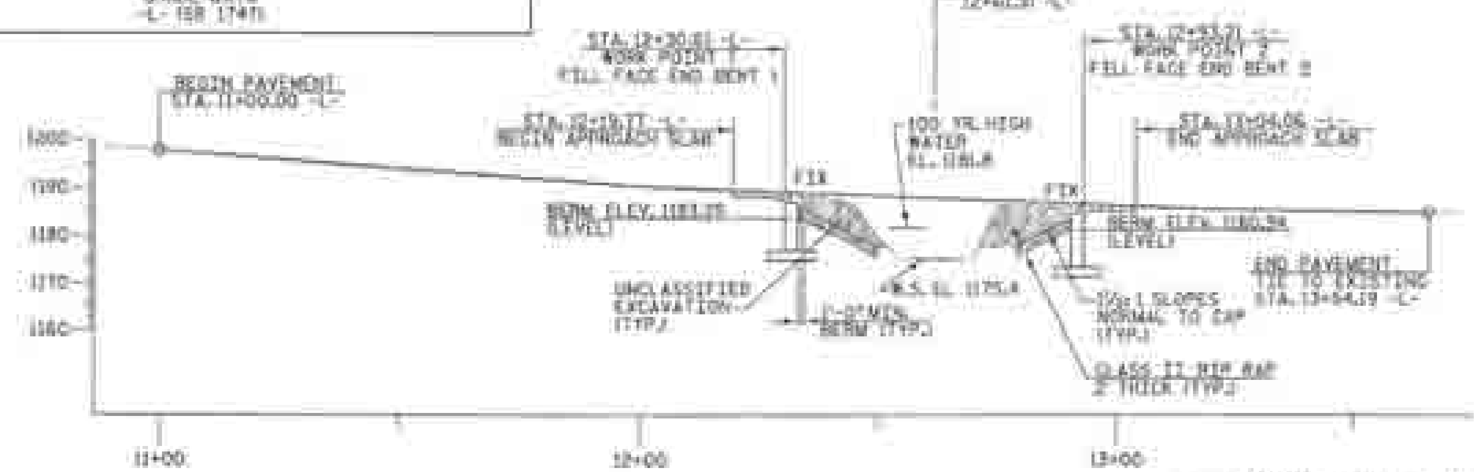
- DENOTES GEO-TECH BORE HOLE LOCATIONS.
- DENOTES GUARDRAIL CONNECTION REQ'D., SEE SHEET 1)

U.O.N. - UNLESS OTHERWISE NOTED

NOTE: GUARDRAIL LENGTHS AS SHOWN INCLUDE ANCHOR UNITS.

STA. 11+00 ELEV. 1187.82	STA. 12+00 ELEV. 1180.52 VC = 40'	STA. 13+00 ELEV. 1185.56	STA. 13+54.19 ELEV. 1184.50

GRADE DATA -L- (SR 1747)



DENOTES ROADWAY FILL TO BE REMOVED

PROFILE ALONG ℄ SURVEY

SCALE: 1" = 20'

NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT CORED SLAB UNITS HAVE BEEN DESIGNED FOR HS 25.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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 THE DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 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.

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

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC CATEGORY B.

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."

THE REQUIRED BEARING CAPACITY OF THE SPREAD FOOTINGS AT END BENTS 1 AND 2 IS 2 TSF (4 KSF). THE REQUIRED BEARING CAPACITY SHALL BE VERIFIED.

FOOTINGS SHALL BE KEYED AT LEAST 12 INCHES INTO WEATHERED ROCK OR ROCK WITH MINIMUM THICKNESS AS SHOWN ON THE PLANS.

THE SCOUR CRITICAL ELEVATION FOR THE STRUCTURE IS THE BOTTOM OF THE FOOTING. THE SCOUR CRITICAL ELEVATIONS ARE FOR USE BY MAINTENANCE FORCES TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

ADT = 1600 FOR YEAR 1999

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

THE QUANTITY OF RIP RAP TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF TONS OF EACH CLASS OF RIP RAP WHICH HAS BEEN INCORPORATED INTO THE COMPLETED AND ACCEPTED WORK. THE RIP RAP WILL BE MEASURED BY BEING WEIGHED IN TRUCKS ON CERTIFIED PLATFORM SCALES OR OTHER CERTIFIED WEIGHING DEVICES. THE QUANTITY OF RIP RAP WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON.

PLAIN RIP RAP CLASS II (2'-0" THICK)	END BENT No. 1	100	TONS
	END BENT No. 2	70	TONS
	TOTAL	170	TONS

HYDROGRAPHIC DATA:

DESIGN DISCHARGE =	950 CFS
FREQUENCY OF DESIGN FLOOD =	25 YEAR
DESIGN HIGH WATER ELEVATION =	1180.6
DRAINAGE AREA =	2.9 SQ. MI.
BASIC DISCHARGE (Q 100) =	1450 CFS
BASIC HIGH WATER ELEVATION =	1181.8

OVERTOPPING FLOOD DATA:

OVERTOPPING DISCHARGE =	1800 CFS +
FREQUENCY OF OVERTOPPING FLOOD =	500 YEAR +
OVERTOPPING FLOOD ELEVATION =	1184.8

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68

MULKEY

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE ON SR 1747 OVER THOMPSON CREEK BETWEEN SR 1748 AND US HWY 70

29'-10" CLEAR ROADWAY - 120° SKEW

REVISIONS

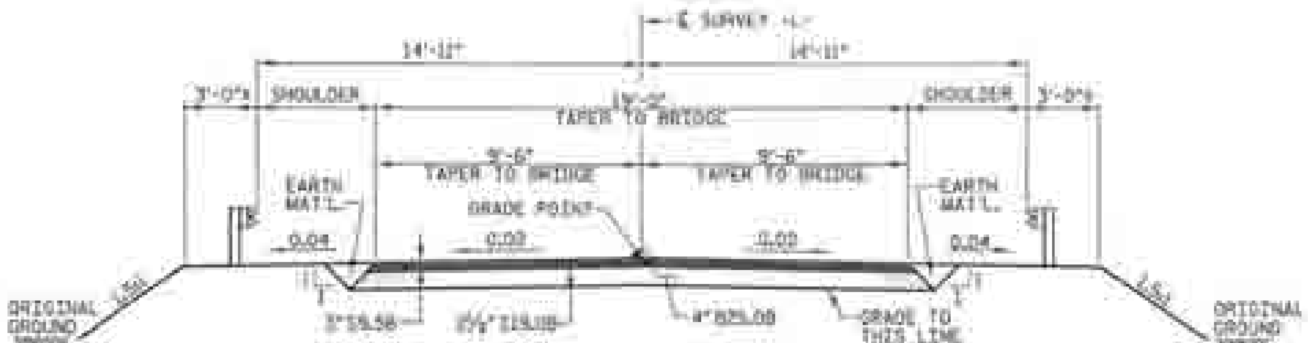
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. 1

TOTAL SHEETS 19

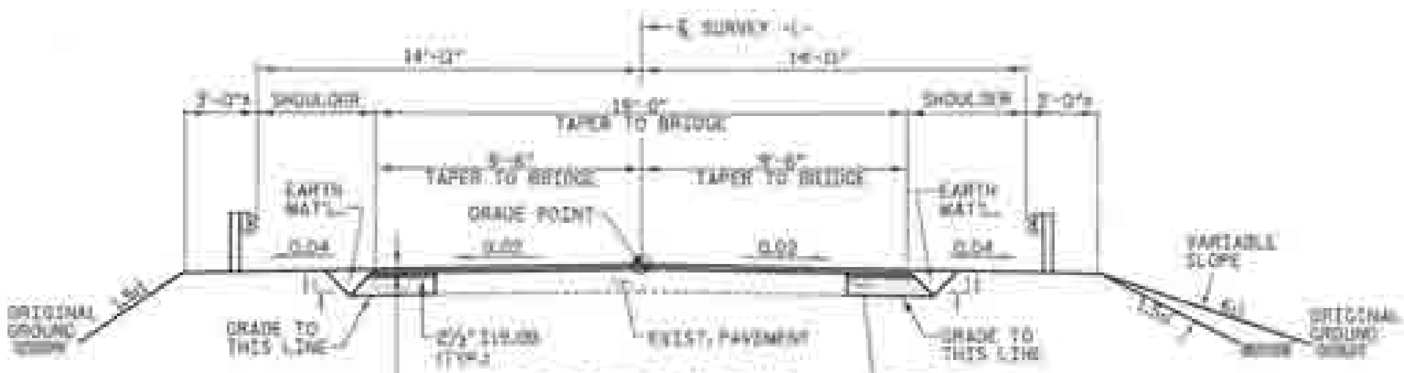
DRAWN BY: R. B. ALLEN DATE: 10/05

CHECKED BY: L. S. AUSTIN DATE: 10/05



FULL DEPTH PAVEMENT

FROM -L- STA. 12+10 TO BEGIN BRIDGE
FROM END BRIDGE TO -L- STA. 13+15



WIDENING PAVEMENT

FROM -L- STA. 11+00 TO -L- STA. 12+10
FROM -L- STA. 13+15 TO -L- STA. 13+54.19

TYPICAL ROADWAY SECTION

WITHIN CONSTRUCTION LIMITS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "[illegible] -BL-1" WITH NAD [illegible] STATE PLANE GRID COORDINATES OF NORTHING: [illegible] EASTING: [illegible]
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: [illegible]
THE NC LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "[illegible] -BL-1" TO -L- STATION 10+00.00 IS S 29° 38' 20" W [illegible]
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

RIGHT OF WAY AREA DATA

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL AREA	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	CONST. EASE.	PERM. DRAIN. EASE.	TEMP. DRAIN. EASE.
1	PEGGY GERALDINA BAKER	3.80 AC	290 SF		3.70 AC			
2	DAVID HOLLAND	0.62 AC	3546 SF	0.54 AC				
3	PEGGY GERALDINA BAKER	0.44 AC	4076 SF		0.35 AC			
4	FOOD LION, LLC.	140.65 AC	3366 SF	140.57 AC				

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68

MULKEY

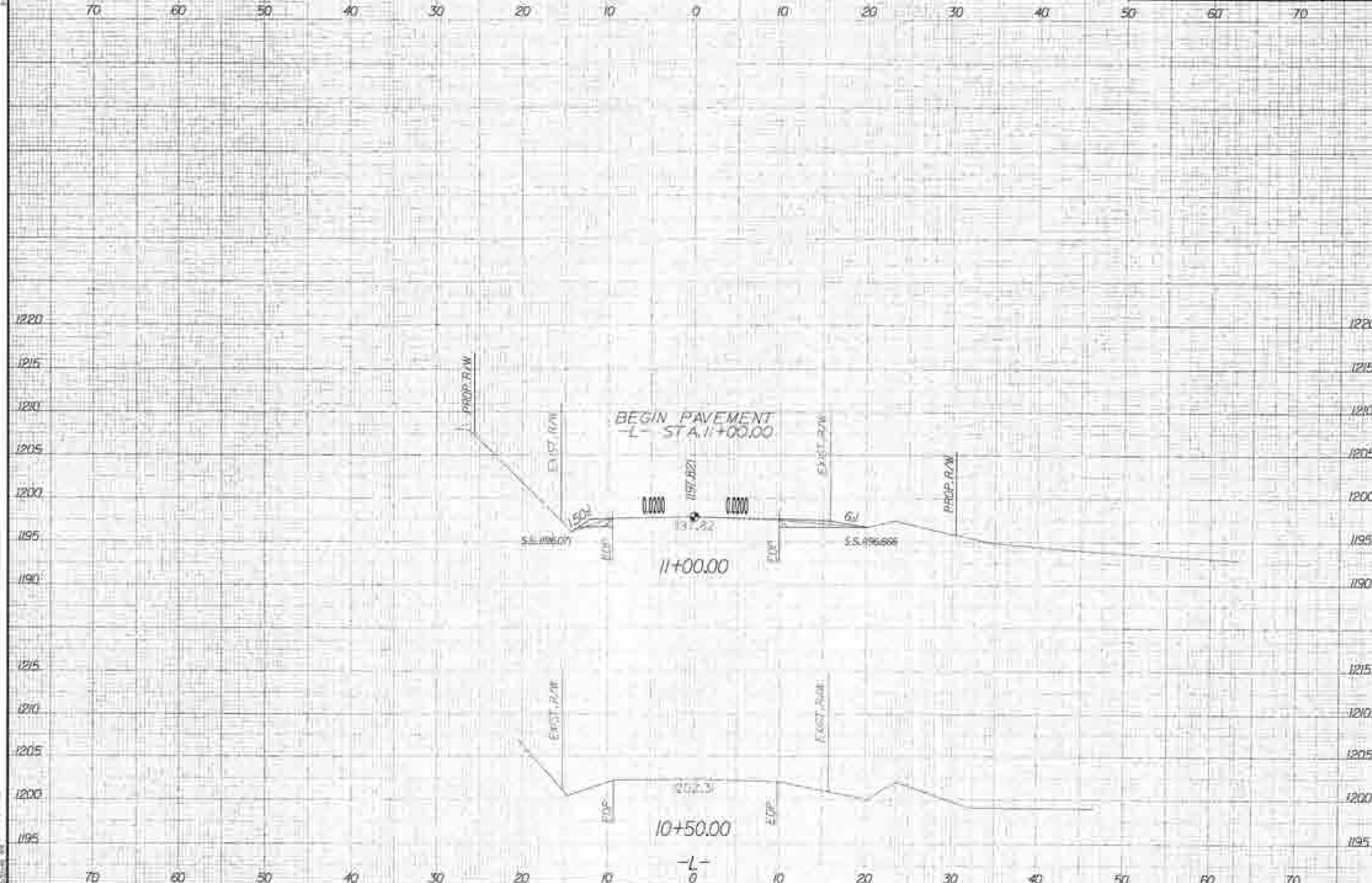
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROADWAY DETAILS

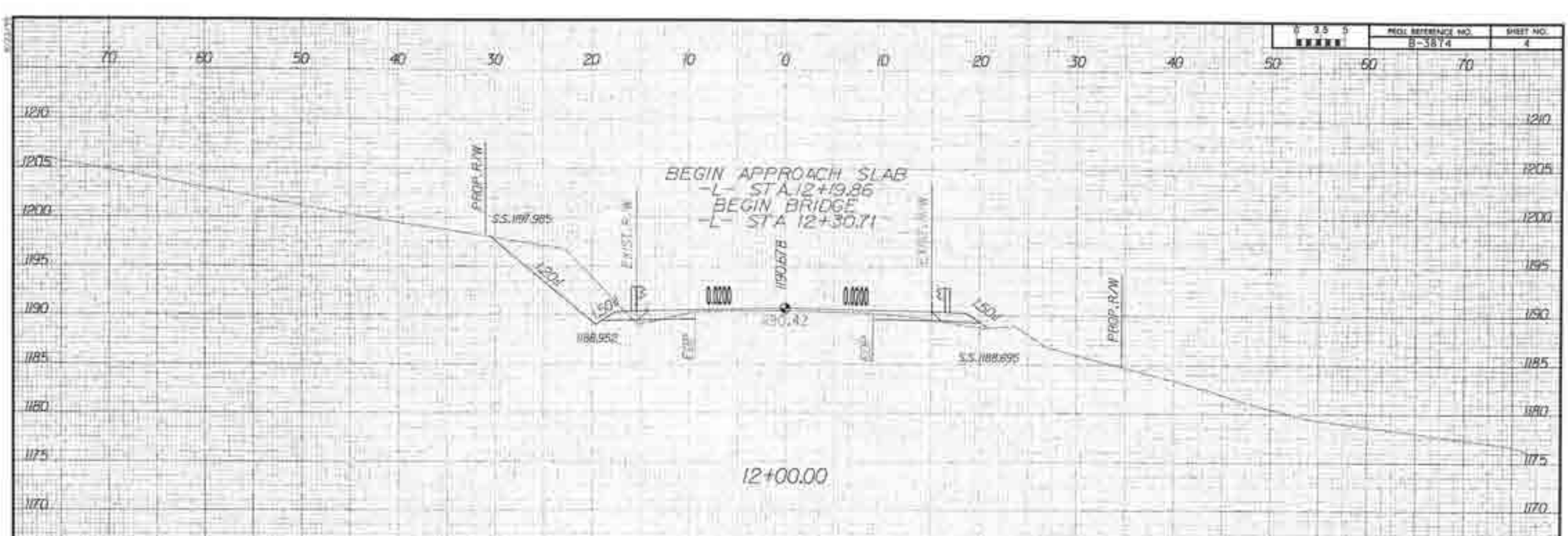
DRAWN BY:	M.S. ALLEN	DATE:	10/08
CHECKED BY:	L.K. AUSTIN	DATE:	10/09

SHEET NO. 2
TOTAL SHEETS 19

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-3874	3



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-3874	4



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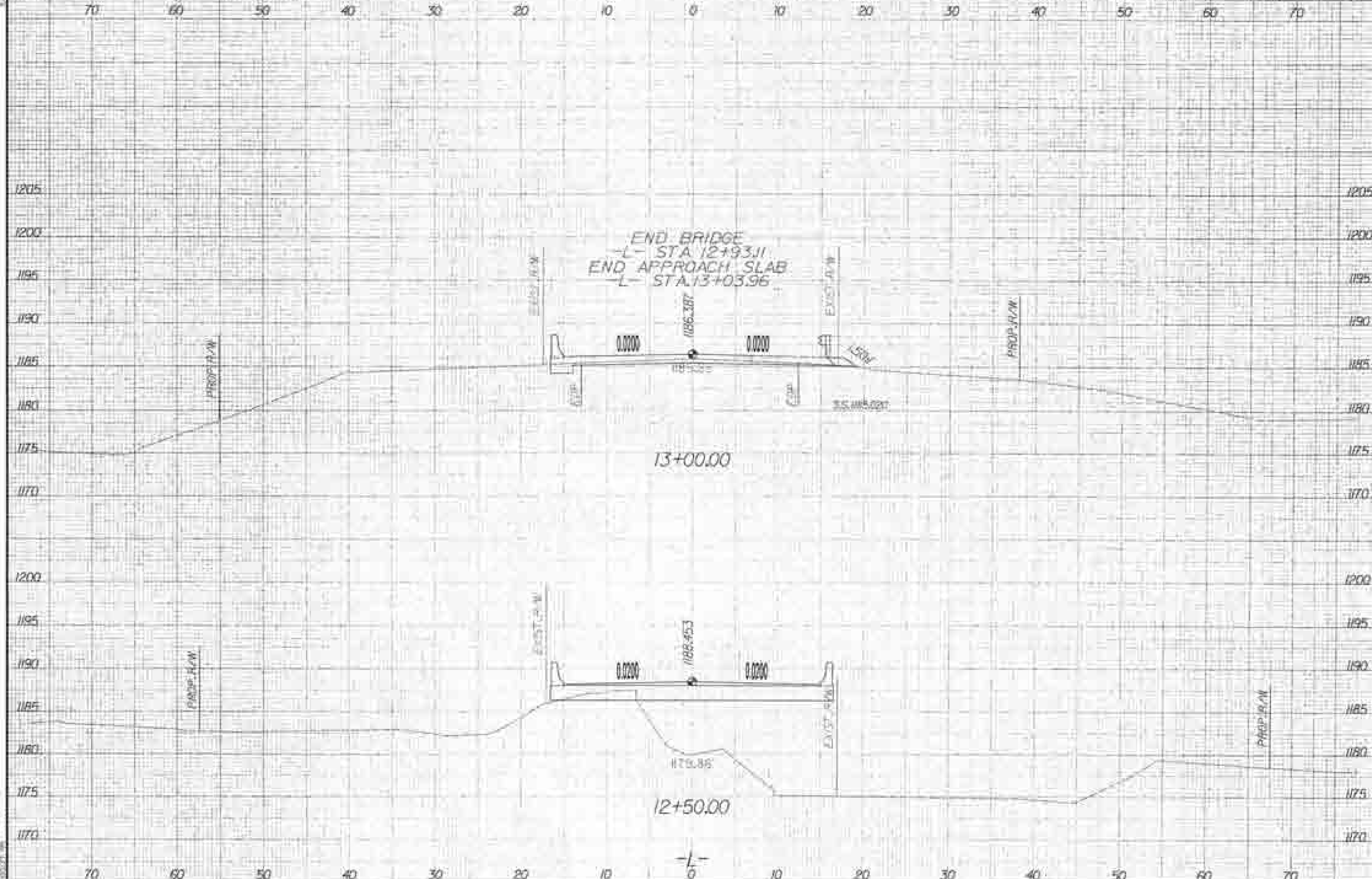
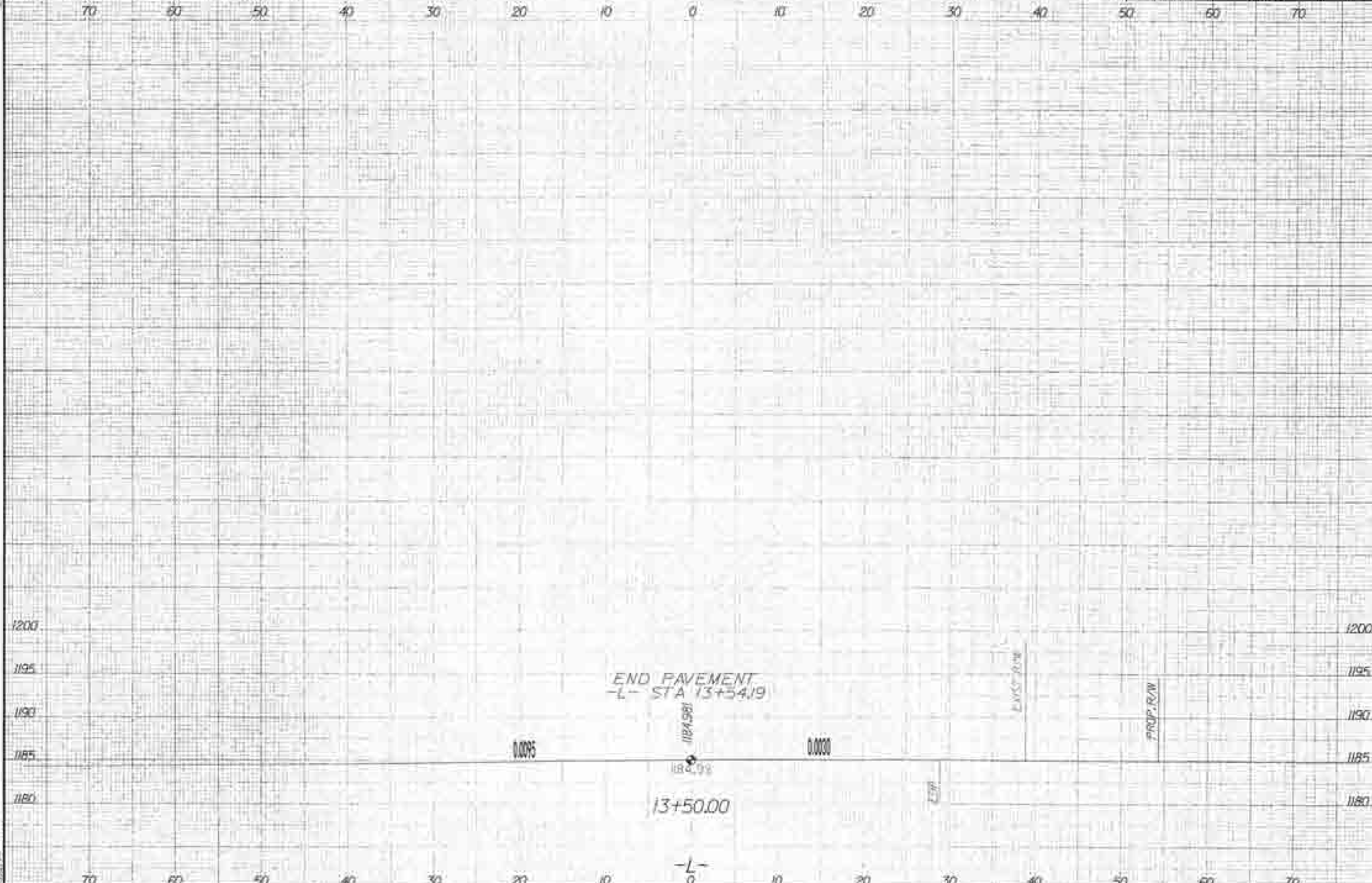
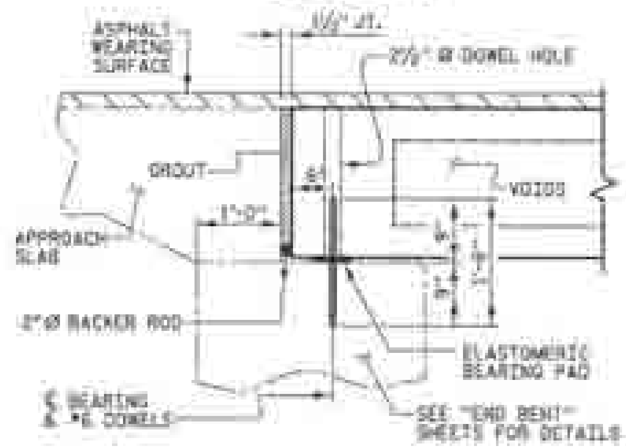
B-3874	5

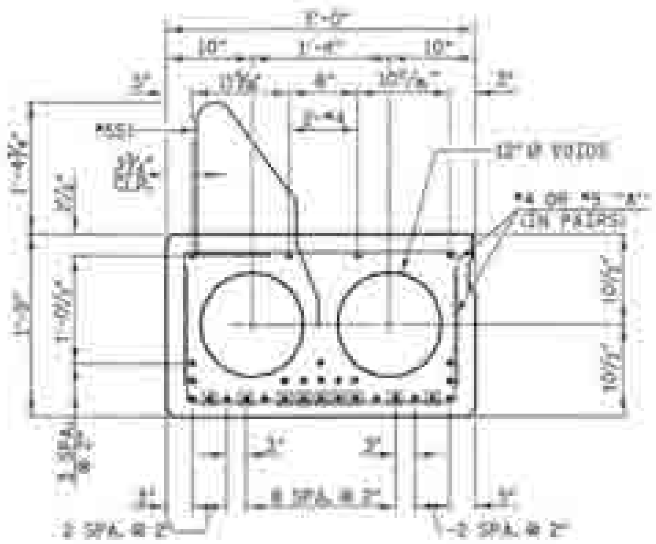


PROJ. REFERENCE NO.	SHEET NO.
B-3874	6





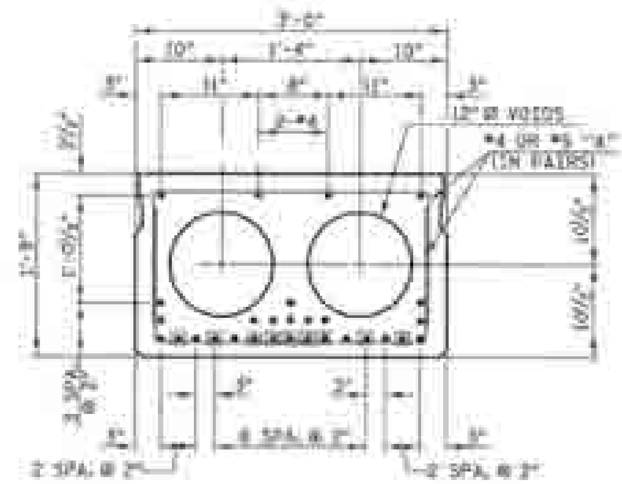
SECTION AT END BENT



60' SPAN

27 - 0.6" Ø L.R. STRANDS
EXTERIOR SLAB SECTIONS

* DENOTES SHEATHED STRAND (SEE SHEATH CHART)



60' SPAN

27 - 0.6" Ø L.R. STRANDS
INTERIOR SLAB SECTIONS

GENERAL NOTES

CONCRETE - f'c = 8000psi (MIN. COMP. STRENGTH @ 28 DAYS).

f'ci = 7200psi (MIN. COMP. STRENGTH @ TRANSFER OF STRESSING FORCE).

SIZE	TYPE	AREA	ULTIMATE STR.	APPLIED FORCE
0.6" Ø	LOW RELAX.	0.217 SQ. IN. PER CABLE	58,600 LBS.	43,950 LBS. PER CABLE

STRUCTURAL STEEL ITEMS SHALL BE OF A GRADE CONFORMING TO EITHER ASTM A36 OR A373, EXCEPT HIGH STRENGTH BOLTS. HIGH STRENGTH BOLTS SHALL BE ASTM A325. ALL STRUCTURAL STEEL SHALL BE GALVANIZED AS PER THE SPECIFICATION.

ALL MATERIAL AND WORKMANSHIP SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES OF THE NC DEPARTMENT OF TRANSPORTATION DATED JULY 2006 AND WITH THE SPECIAL PROVISIONS.

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 CONSTRUCTION OF SUPERSTRUCTURE.

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

THE BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS. THE JOINT SHALL BE FILLED WITH GROUT.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE 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 BARRIER RAILS SHALL BE EPOXY COATED.

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

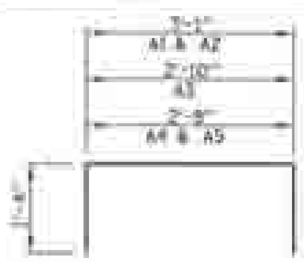
APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾".

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

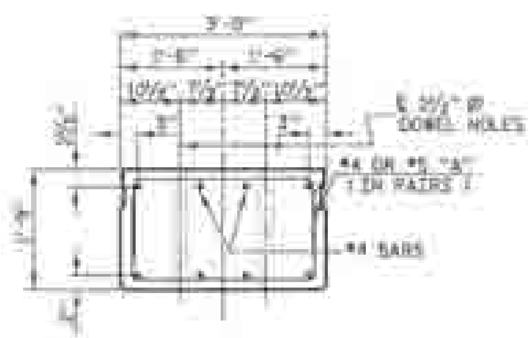
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

NO DECK DRAINS ALLOWED.



REINFORCING BAR TYPES

BAR DIMENSIONS ARE OUT TO OUT



SLAB END ELEVATION

THE 2½" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT. SEE SPECIAL PROVISIONS.

EXTERIOR & INTERIOR SLAB UNIT	60'
CAMBER (SLAB UNIT ALONE IN PLACE)	4⅞" (UP)
DEFLECTION (SUPERIMPOSED DEAD LOAD)	* ⅝" (DOWN)
FINAL DEFLECTION	4¼" (UP)

* INCLUDES FUTURE WEARING SURFACE

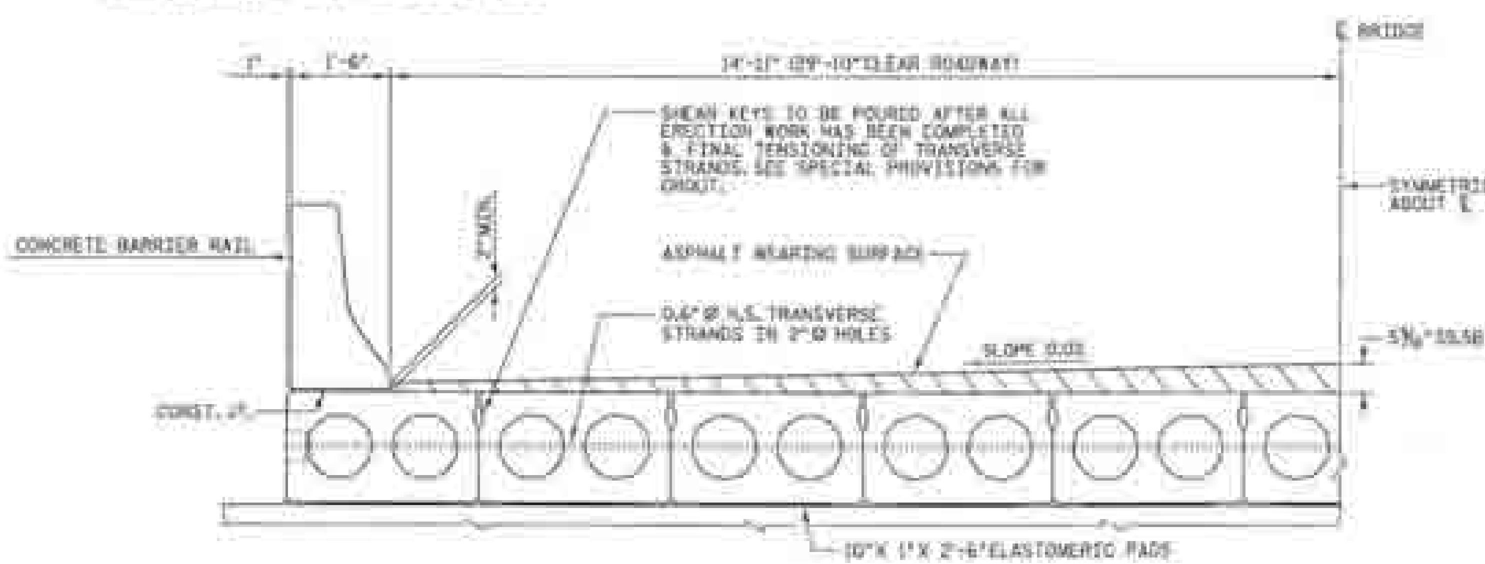
SHEATH CHART

SPAN LENGTH	NUMBER OF SHEATHED STRANDS PER EXTERIOR SLAB SECTIONS	NUMBER OF SHEATHED STRANDS PER INTERIOR SLAB SECTIONS
60'	5	5

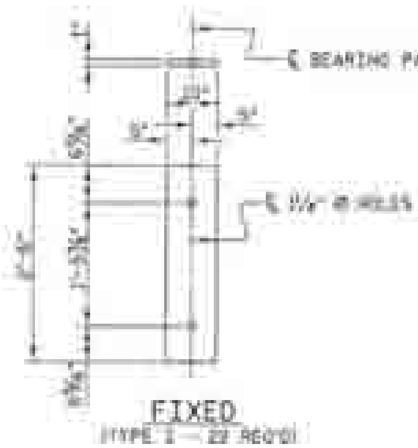
BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 5'-0" FROM END OF SLAB

SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE OF EXTERIOR CORED SLAB



TYPICAL HALF SECTION



ELASTOMERIC BEARING DETAILS

NOTE: ELASTOMER HARDNESS SHALL BE 50 DUROMETERS.

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CORED SLAB
60' SPAN

29'-10" CLEAR ROADWAY - 120° SKEW

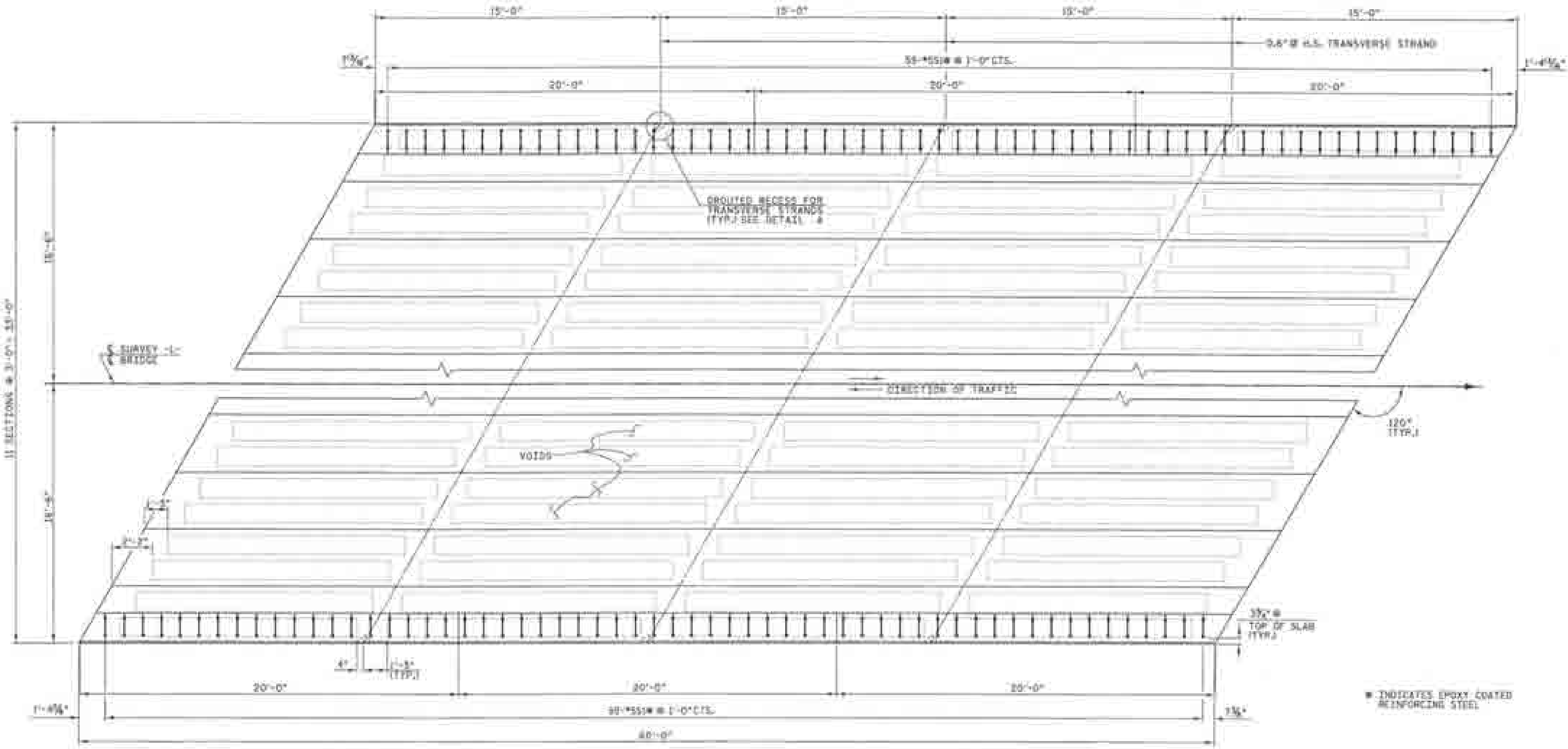
MULKEY

REVISIONS

SHEET NO. 7

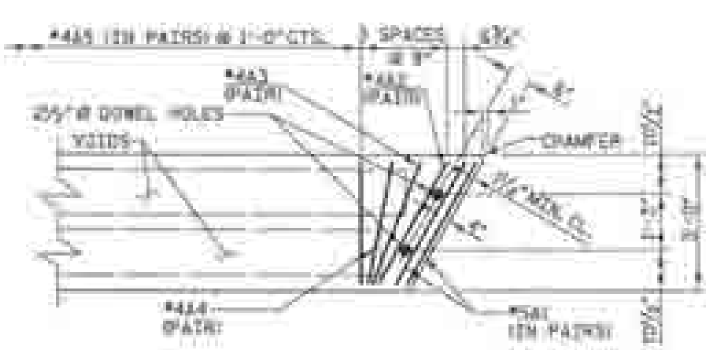
TOTAL SHEETS 19

DRAWN BY: M. B. ALLEN DATE: 10/09
CHECKED BY: L. S. AUSTIN DATE: 10/09

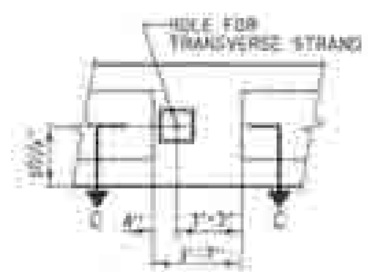


PLAN OF SPAN

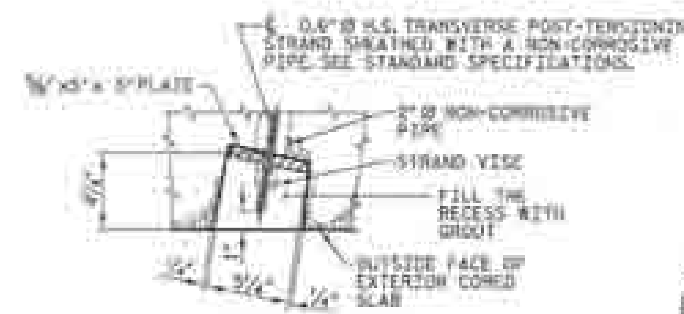
* INDICATES EPOXY COATED REINFORCING STEEL



PART PLAN - SLAB SECTION



ELEVATION



SECTION C-C

DETAIL A
GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLAB

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 48

DEPARTMENT OF TRANSPORTATION

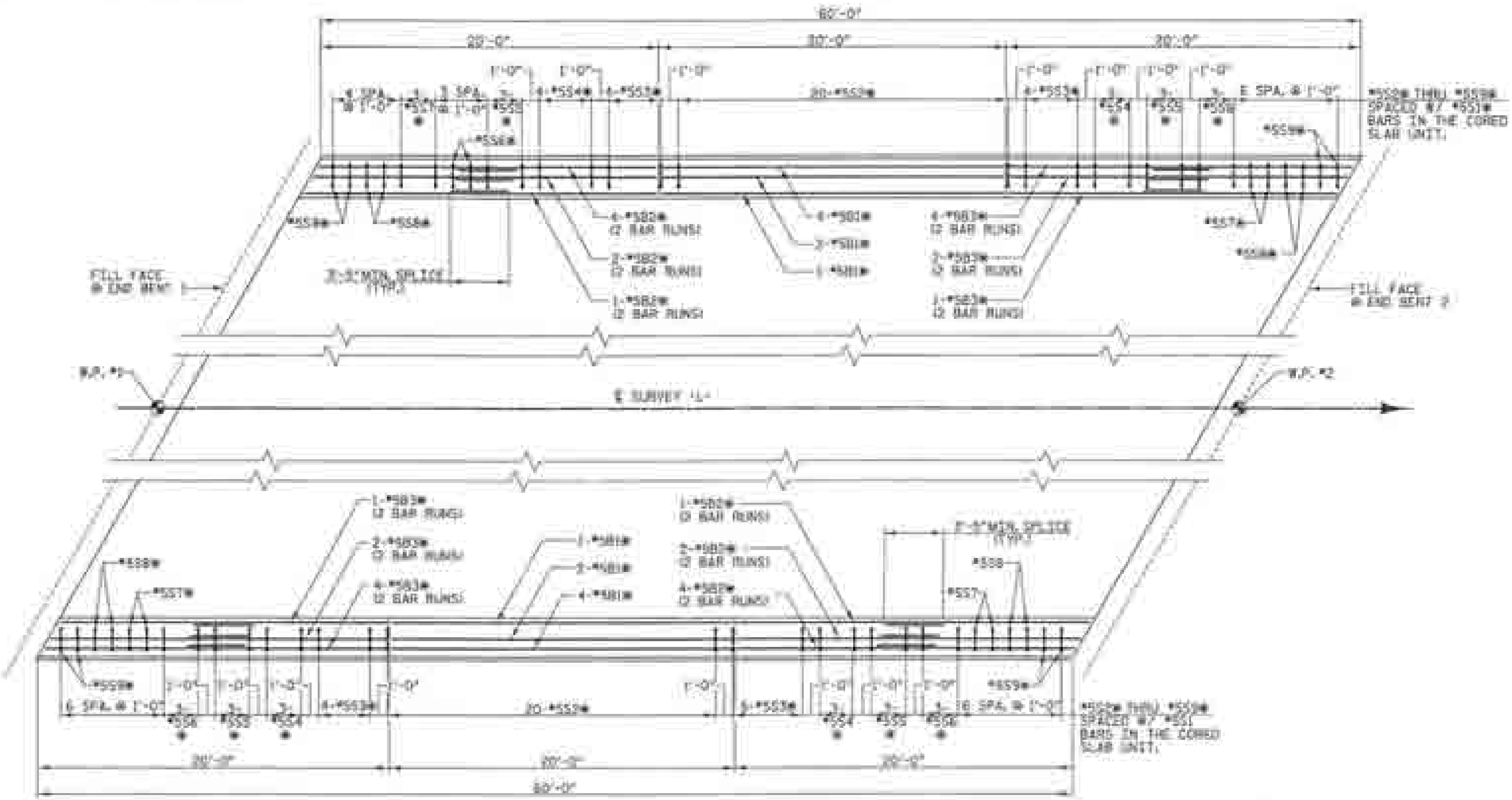
STANDARD

PRESTRESSED CORED SLAB
60' SPAN

29'-10" CLEAR ROADWAY - 120° SKEW

MULKEY

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



PLAN

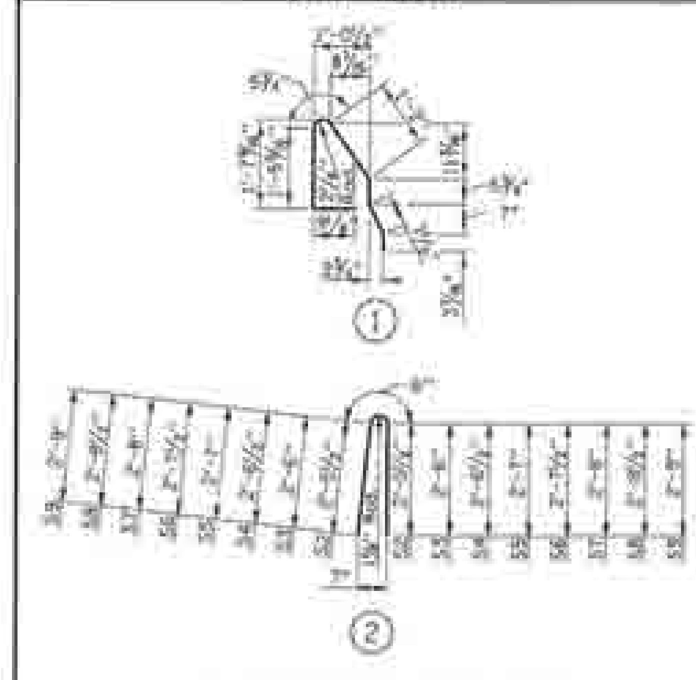
* INDICATES EPOXY COATED REINFORCING STEEL.

FOR SPACING AND LOCATION OF THE *SS1 BARS SEE "PRESTRESSED CORED SLAB, 60' SPAN".

#5 "S" BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE BARRIER RAIL AND GROUTED RECESS FOR TRANSVERSE STRANDS IN THE CORED SLABS.

THE HEIGHT OF THE BARRIER RAIL VARIES THE TOP OF THE RAIL IS TO FOLLOW THE PROFILE OF THE GUTTER LINE.

BAR TYPES

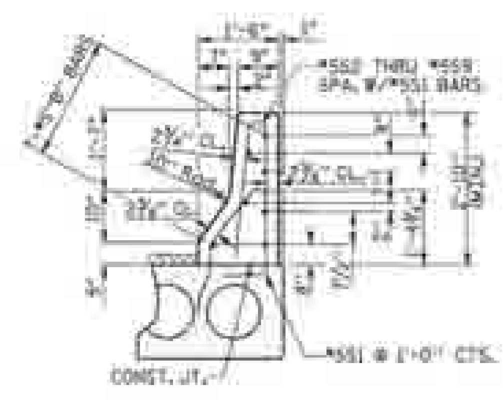


ALL BAR DIMENSIONS ARE OUT TO OUT

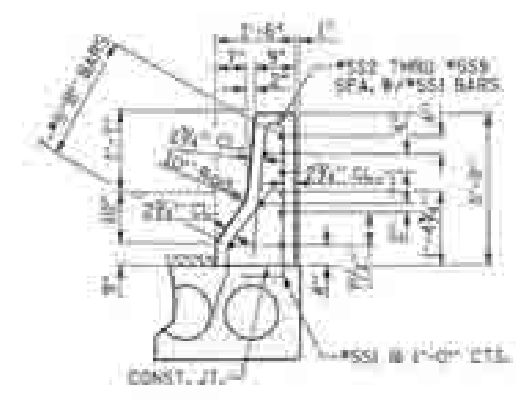
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	14	#5	STR	19'-7"	286
* B2	28	#5	STR	11'-11"	348
* B3	28	#5	STR	11'-6"	336
* S1	118	#5	1	5'-3"	646
* S2	40	#5	2	5'-5"	226
* S3	17	#5	2	5'-6"	98
* S4	13	#5	2	5'-7"	76
* S5	12	#5	2	5'-8"	71
* S6	11	#5	2	5'-9"	66
* S7	9	#5	2	5'-10"	55
* S8	8	#5	2	5'-11"	49
* S9	8	#5	2	6'-0"	50
* EPOXY COATED REINFORCING STEEL LBS. =					2307
CLASS AA CONCRETE CU. YDS. =					14.2

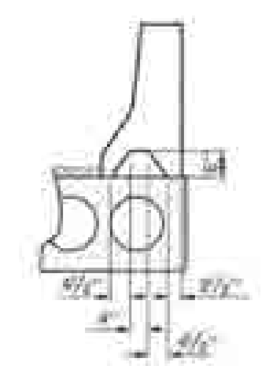
BARRIER RAIL DETAILS



SECTION THRU RAIL @ MID-SPAN

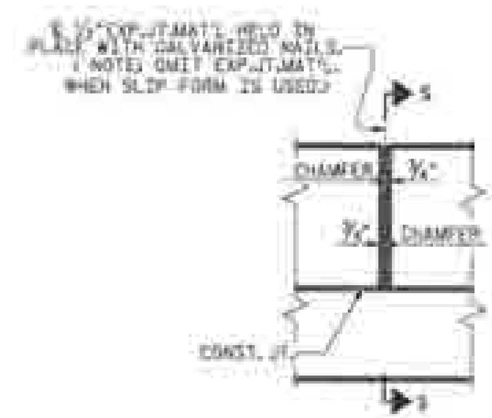


SECTION THRU RAIL @ ℄ BEARING



SECTION S-S

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



ELEVATION AT EXPANSION JOINTS

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL

29'-10" CLEAR ROADWAY - 120° SKEW

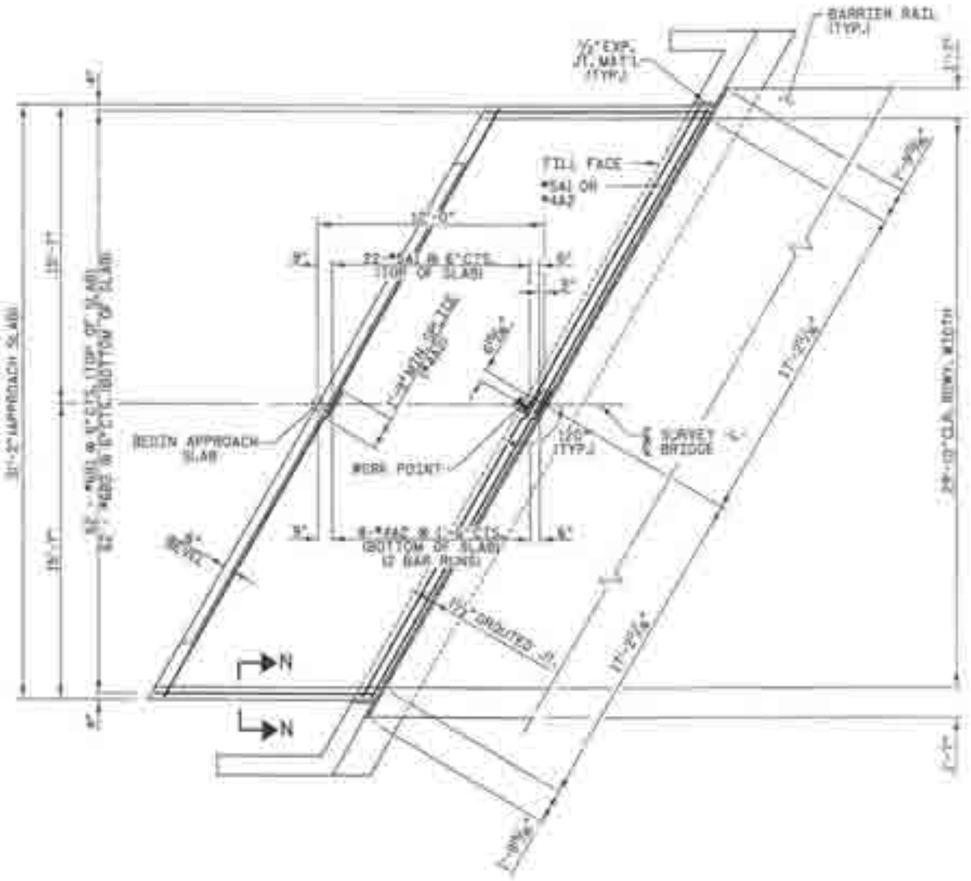
MULKEY

REVISIONS

SHEET NO. 9

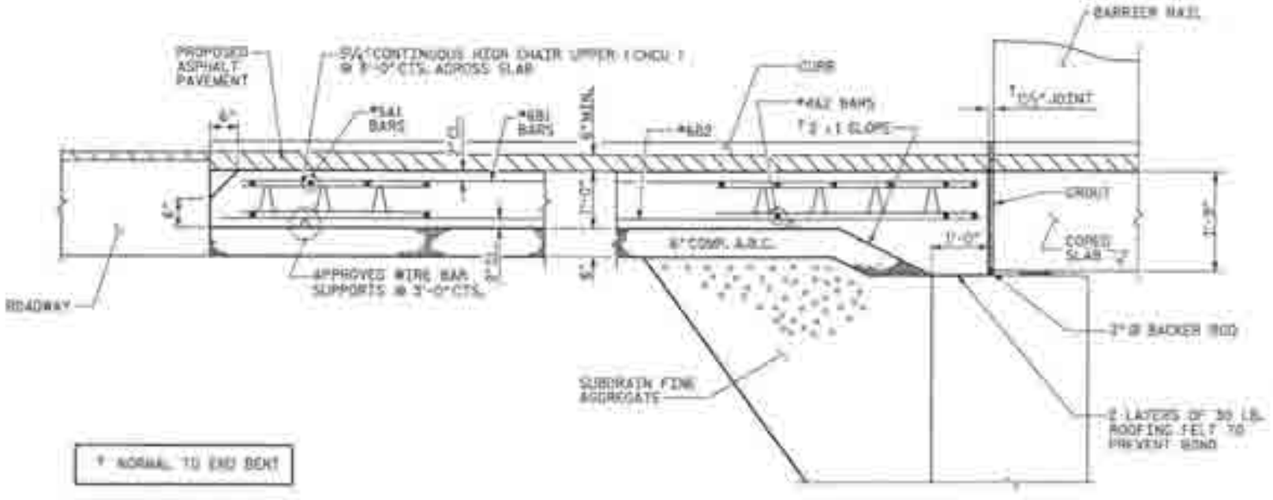
TOTAL SHEETS 19

DRAWN BY: R.D. ALLEN DATE: 10/09
CHECKED BY: L. AUSTIN DATE: 10/09



PLAN OF APPROACH SLAB

BEGIN APPROACH SLAB SHOWN
END APPROACH SLAB SIMILAR



* NORMAL TO END BENT

SECTION THRU SLAB

NOTES

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.

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

FOR JOINT DETAIL, SEE "PRESTRESSED CONCRETE CORED SLAB, 60' SPAN" SHEET 7.

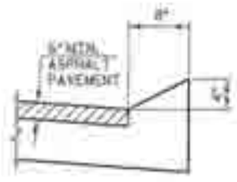
THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

SUBDRAIN FINE AGGREGATE IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL AND END BENT FROM OUTSIDE EDGE OF SUPERSTRUCTURE TO OUTSIDE EDGE OF SUPERSTRUCTURE. NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND PLACING FINE AGGREGATE AND STONE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR PLACEMENT OF SUPERSTRUCTURE.

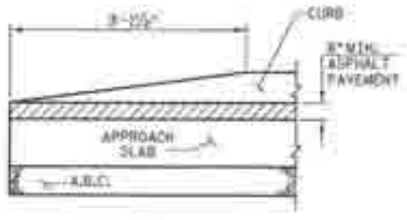
APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL
FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	23	#5	STR.	55'-1"	854
A2	18	#4	STR.	38'-11"	327
* B1	62	#6	STR.	11'-2"	1040
B2	62	#6	STR.	11'-7"	1079
REINFORCING STEEL				LBS.	3300
* EPOXY COATED REINFORCING STEEL				LBS.	1894
CLASS AA CONCRETE				C. Y.	15.9



SECTION N-N



END OF CURB

CURB DETAILS

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68 SHEET 1 OF 2

DEPARTMENT OF TRANSPORTATION

APPROACH SLAB

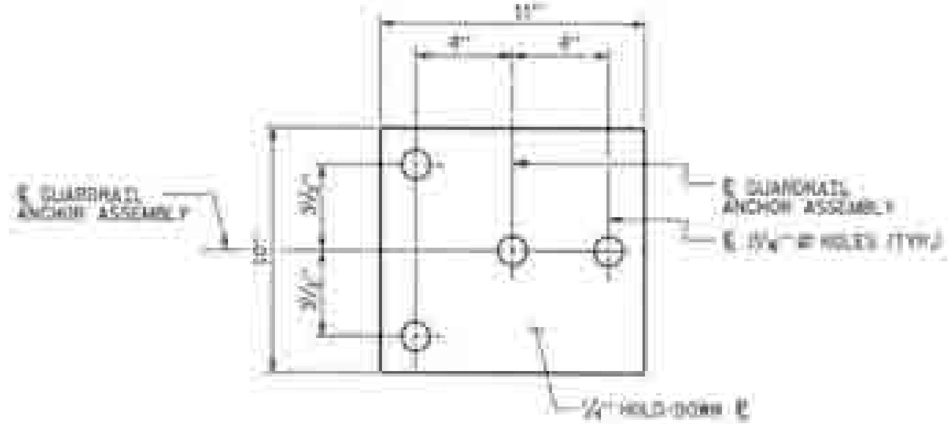
29'-10" CLEAR ROADWAY - 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	10
						TOTAL SHEETS
						19

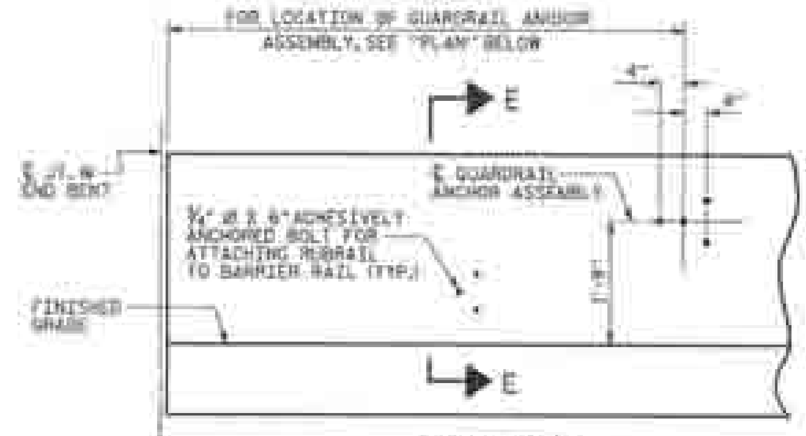
MULKEY

DRAWN BY: B. S. ALLEN DATE: 10/09

CHECKED BY: L. K. AUSTIN DATE: 10/09



PLAN



ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼" HOLD DOWN PLATE AND 4 - ⅞" Ø BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.

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 ⅞" 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.)

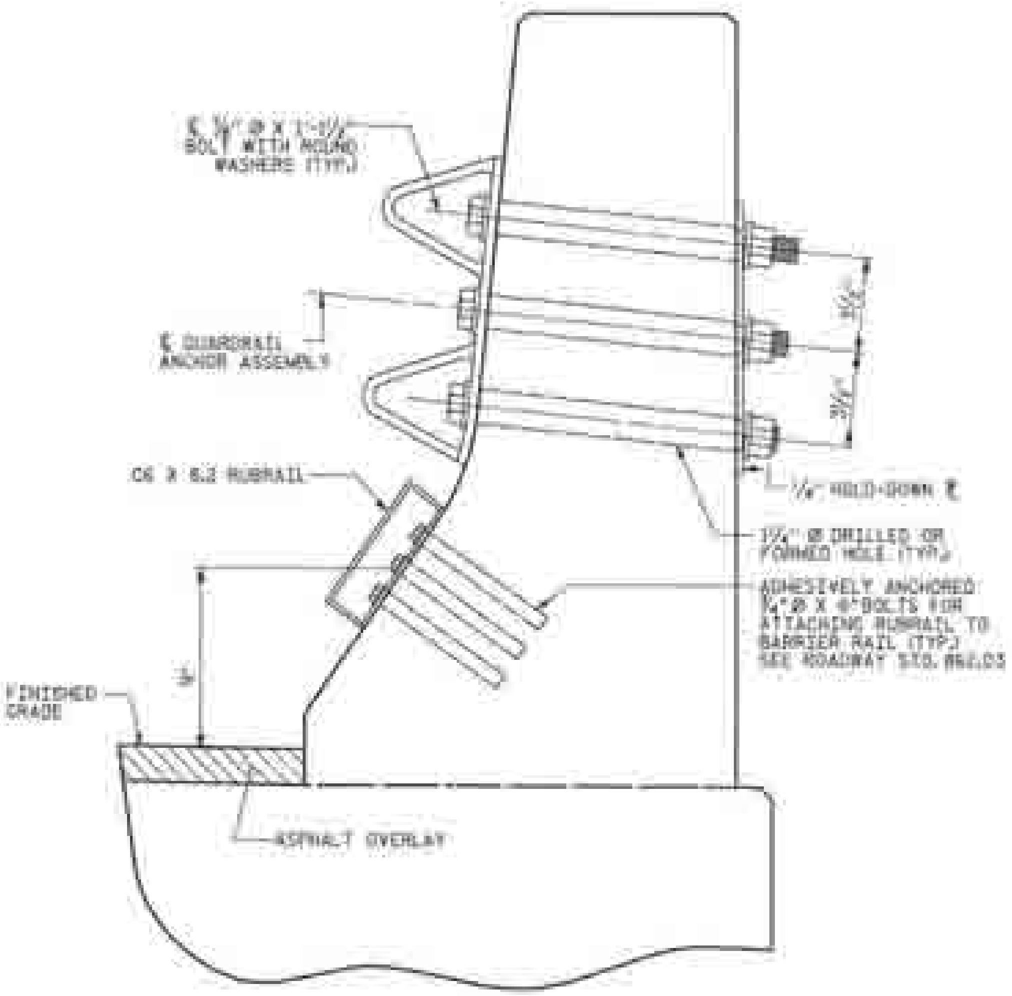
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 CONCRETE BARRIER RAIL.

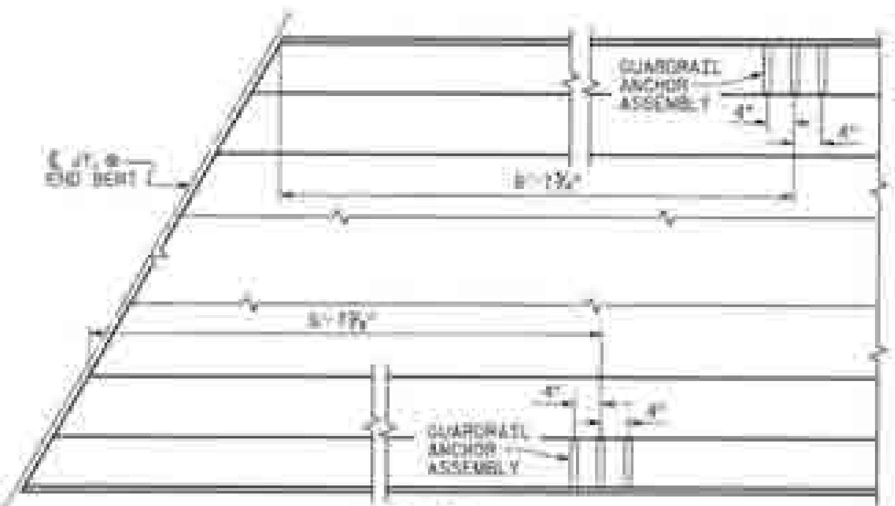
THE 1¼" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE ¾" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ¾" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SECTION E-E

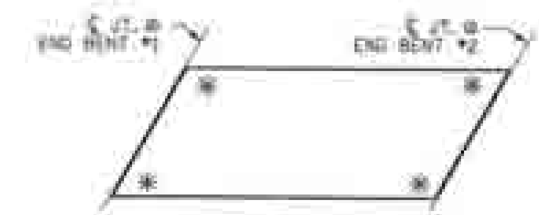
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

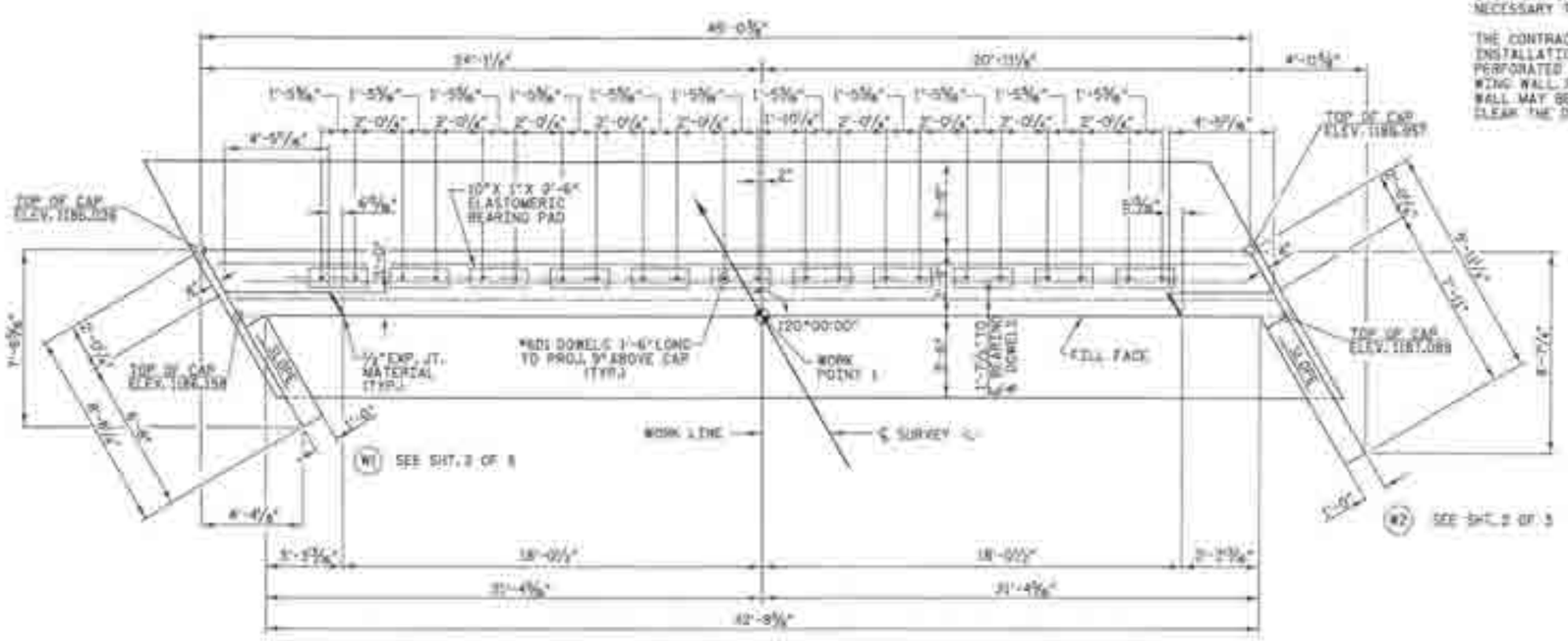
GUARDRAIL ANCHORAGE FOR BARRIER RAIL

STD. NO. GRA2

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED.

MULKEY

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



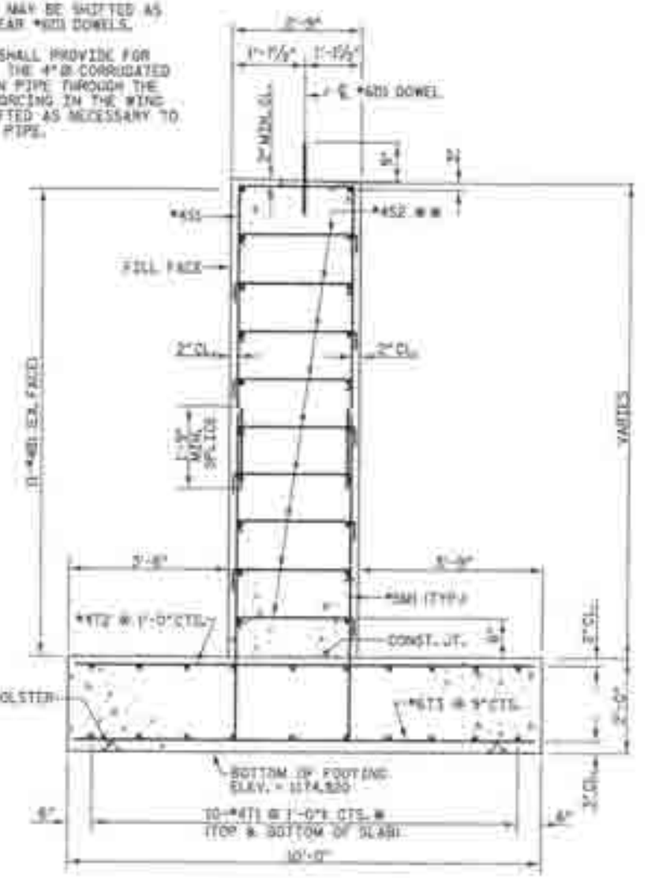
PLAN OF CAP

SEE SHT. 3 OF 3 FOR PLAN OF FOOTING

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR *6D1 DOWELS.

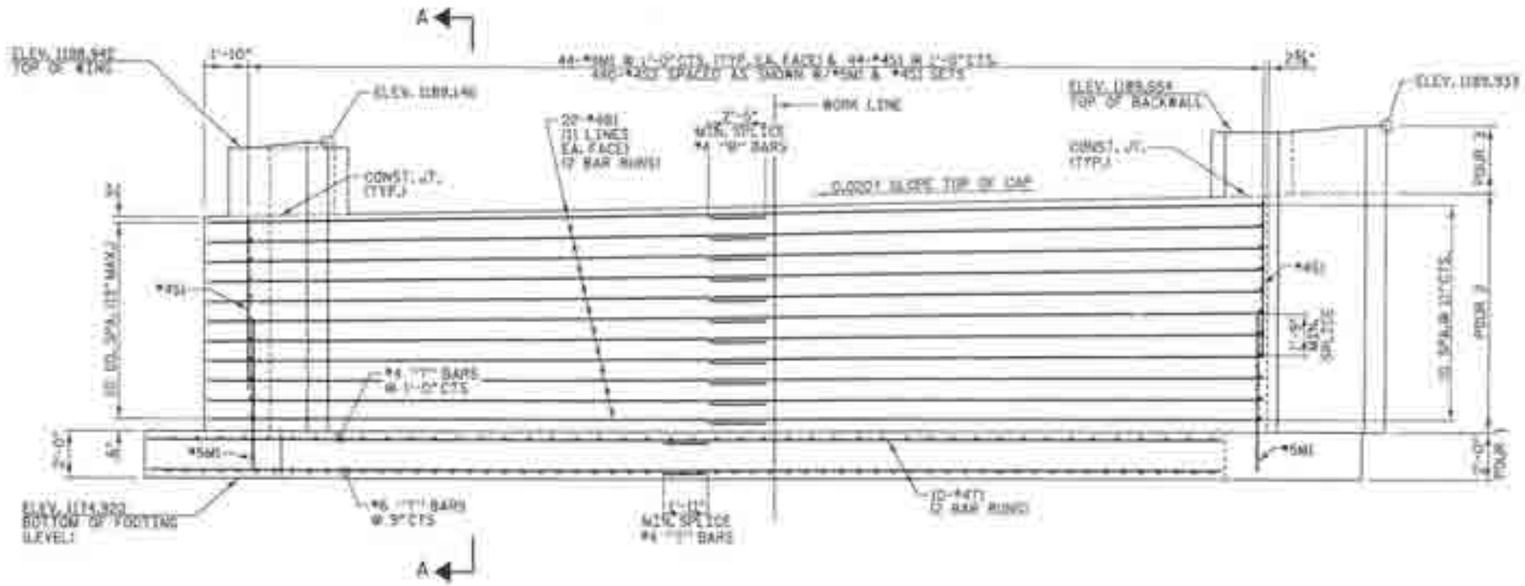
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4"Ø CORRUGATED PERFORATED DRAIN PIPE THROUGH THE WING WALL REINFORCING IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



SECTION A-A

* BARS MAY BE SHIFTED AS NECESSARY FOR TYING *5M1 BARS. MAINTAIN MAXIMUM SPACING OF 1'-3".

** ALTERNATE HOOKS ON ADJACENT TIES AS SHOWN IN BOTH HORIZONTAL AND VERTICAL DIRECTIONS.



ELEVATION

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68 SHEET 1 OF 5

DEPARTMENT OF TRANSPORTATION

SUBSTRUCTURE END BENT 1

29'-10" CLEAR ROADWAY - 120° SKEW

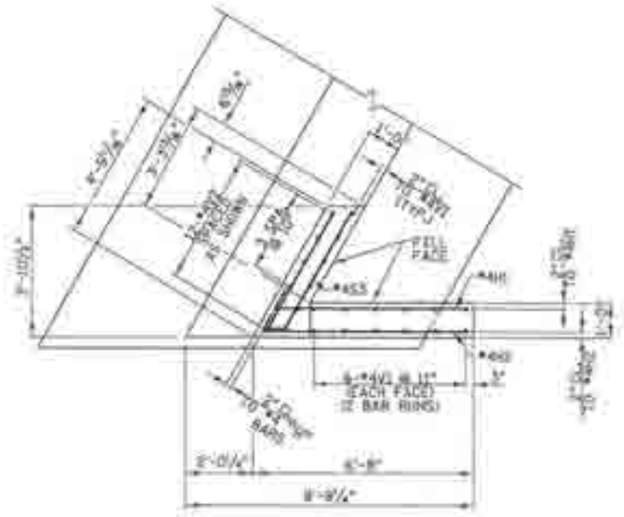
DRAWN BY : B. S. ALLEN DATE : 10/09

CHECKED BY : L.K. MOSTEN DATE : 10/09

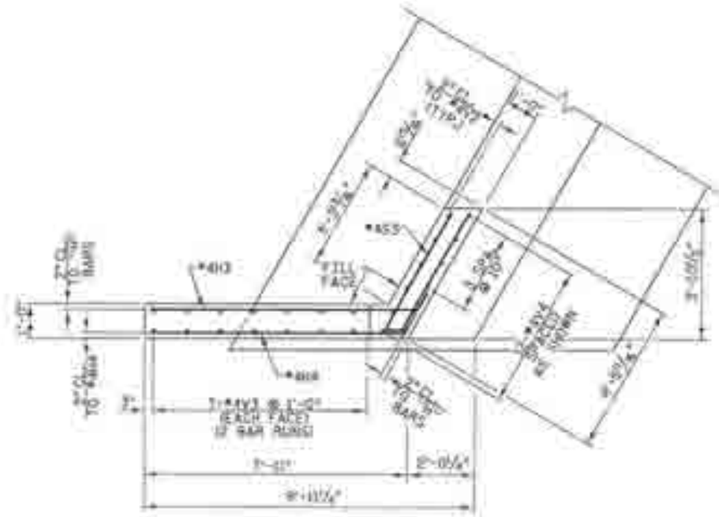
MULKEY

SHEET NO. 12

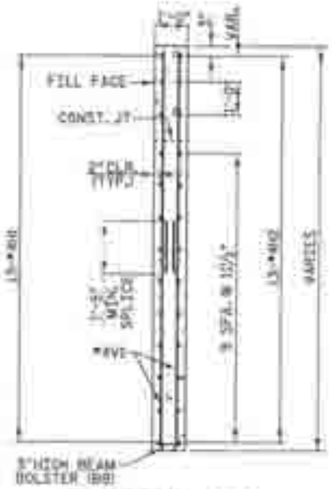
TOTAL SHEETS 19



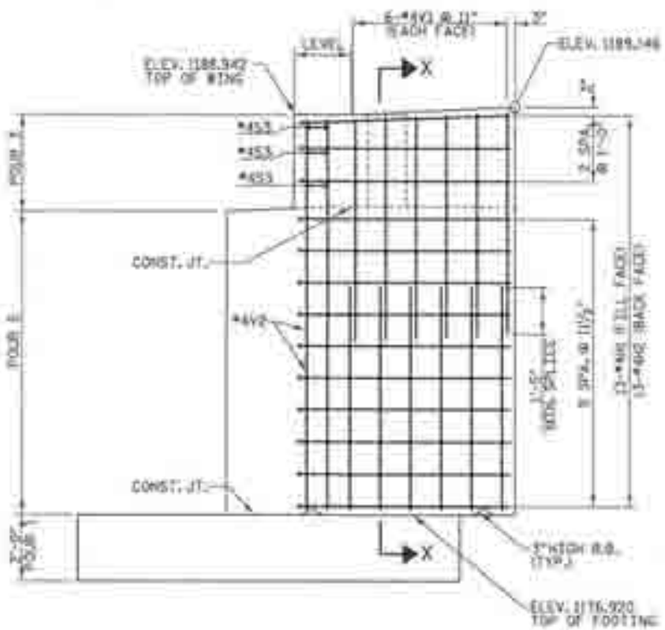
(W1) PLAN OF LEFT WING



(W2) PLAN OF RIGHT WING

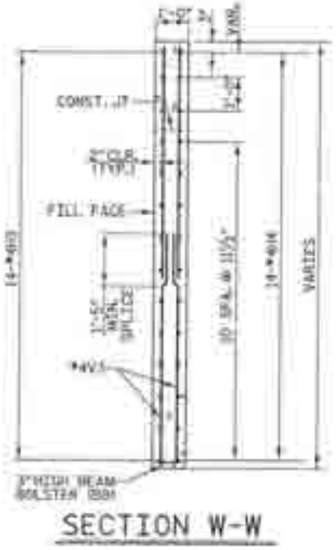


SECTION X-X



(W1) ELEVATION OF LEFT WING

(W2) ELEVATION OF RIGHT WING



SECTION W-W

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68 SHEET 2 OF 3

DEPARTMENT OF TRANSPORTATION

SUBSTRUCTURE END BENT 1

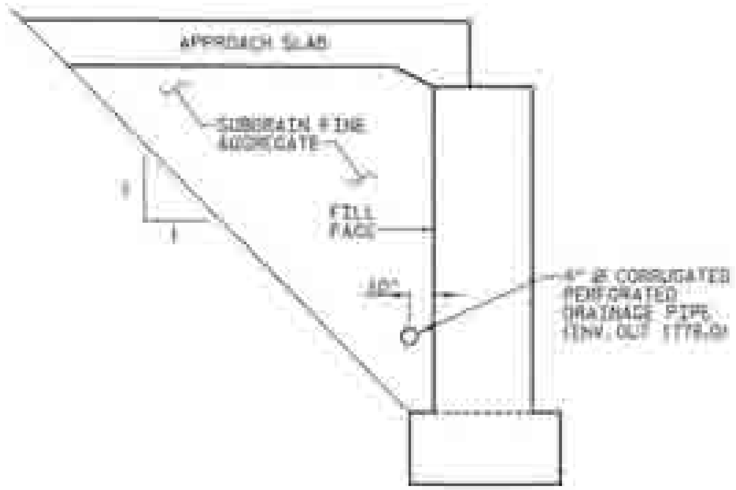
29'-10" CLEAR ROADWAY - 120° SKEW

MULKEY

DRAWN BY: W.S. ALLEN DATE: 12/09

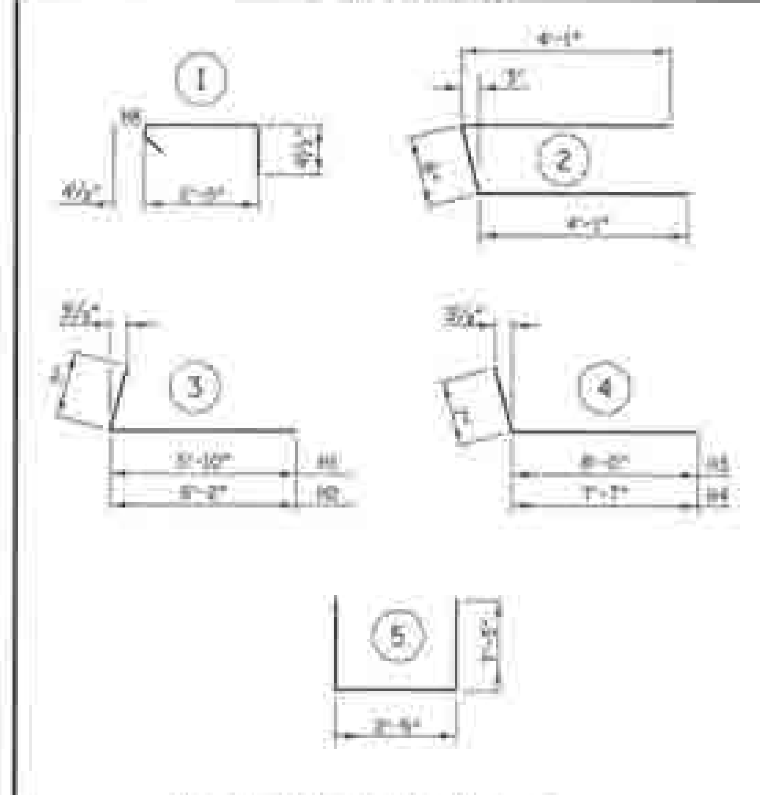
CHECKED BY: L.K. AUSTIN DATE: 12/09

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	13
						TOTAL SHEETS 19



SUBDRAIN DETAIL AT END BENT

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

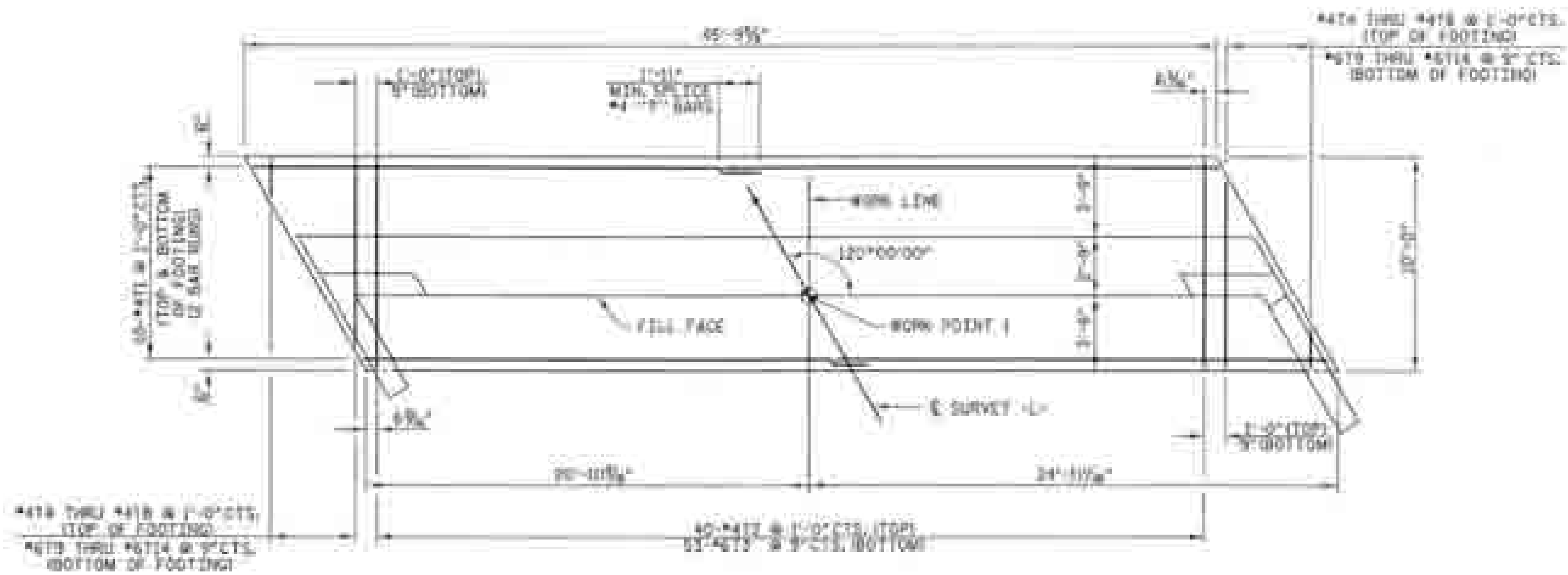
FOR END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	44	#4	STR	23'-7"	683
D1	22	#6	STR	1'-6"	50
H1	13	#4	3	6'-5"	56
H2	13	#4	3	6'-9"	59
H3	14	#4	4	8'-7"	80
H4	14	#4	4	8'-2"	76
M1	88	#5	STR	6'-0"	551
S1	44	#4	5	17'-3"	507
S2	440	#4	1	3'-2"	931
S3	6	#4	2	8'-8"	35
T1	40	#4	STR	23'-8"	632
T2	40	#4	STR	9'-8"	258
T3	53	#6	STR	9'-8"	770
T4	2	#4	STR	8'-7"	11
T5	2	#4	STR	6'-11"	9
T6	2	#4	STR	5'-2"	7
T7	2	#4	STR	3'-5"	5
T8	2	#4	STR	1'-8"	2
T9	2	#6	STR	9'-1"	27
T10	2	#6	STR	7'-9"	23
T11	2	#6	STR	6'-6"	20
T12	2	#6	STR	5'-2"	16
T13	2	#6	STR	3'-10"	12
T14	2	#6	STR	2'-7"	8
V1	24	#6	STR	6'-8"	107
V2	12	#6	STR	11'-8"	94
V3	28	#4	STR	7'-2"	134
V4	12	#4	STR	12'-4"	99

TOTAL REINFORCING STEEL = 5212 lbs.

CLASS "A" CONCRETE - CU. YARDS

POUR 1	33.9 cu. yds.
POUR 2	48.6 cu. yds.
POUR 3	2.1 cu. yds.
TOTAL	84.6 cu. yds.



PLAN OF FOOTING

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68 SHEET 3 OF 3

DEPARTMENT OF TRANSPORTATION

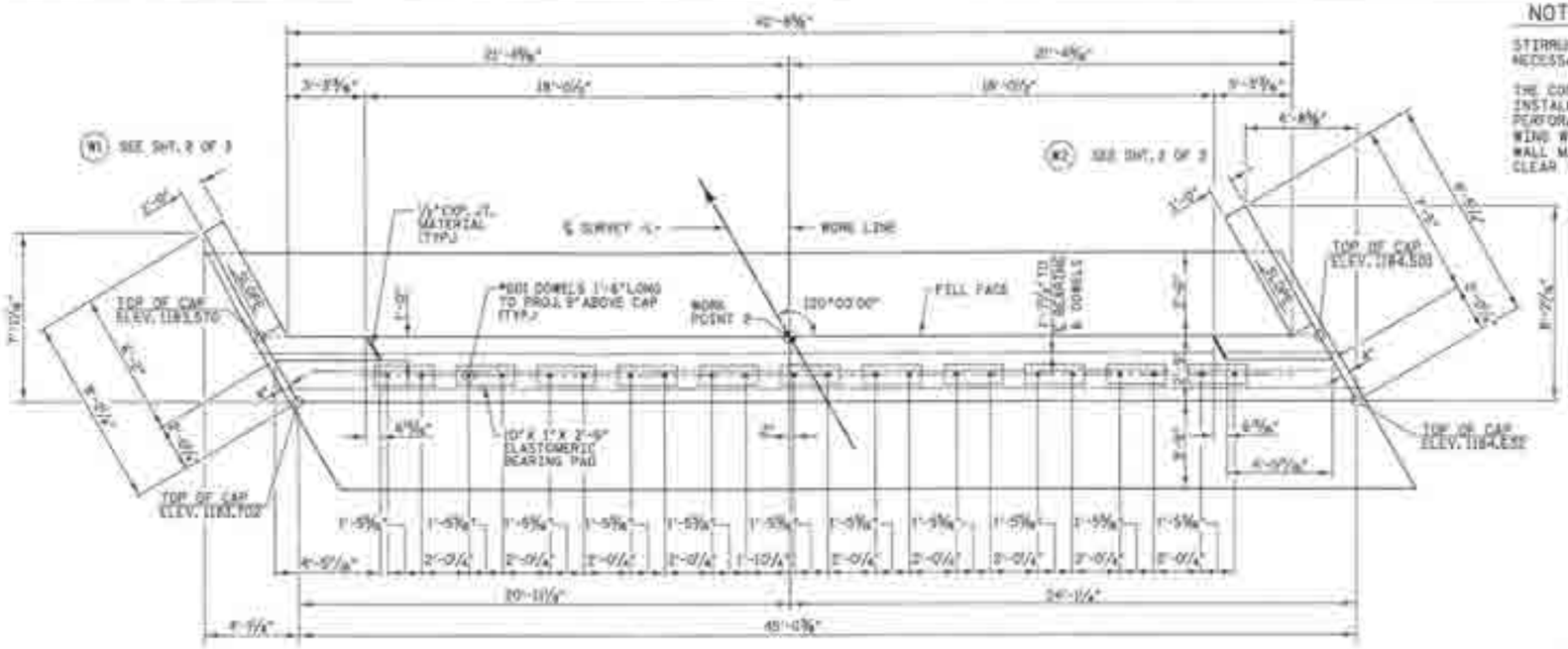
SUBSTRUCTURE
END BENT 1

29'-10" CLEAR ROADWAY - 120° SKEW

MULKEY

SHEET NO. 14
TOTAL SHEETS 19

DRAWN BY: M.B. ALLEN DATE: 10/09
CHECKED BY: L.S. AUSTIN DATE: 10/09



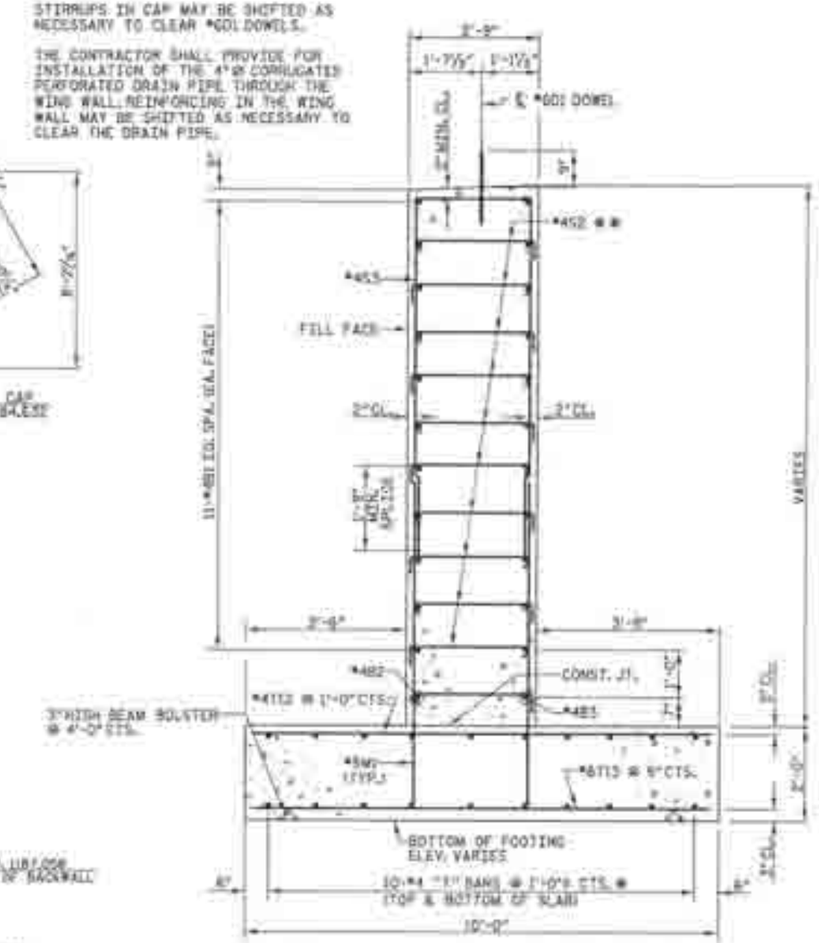
PLAN OF CAP

SEE SHT. 3 OF 3 FOR PLAN OF FOOTING

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR *6SI DOWELS.

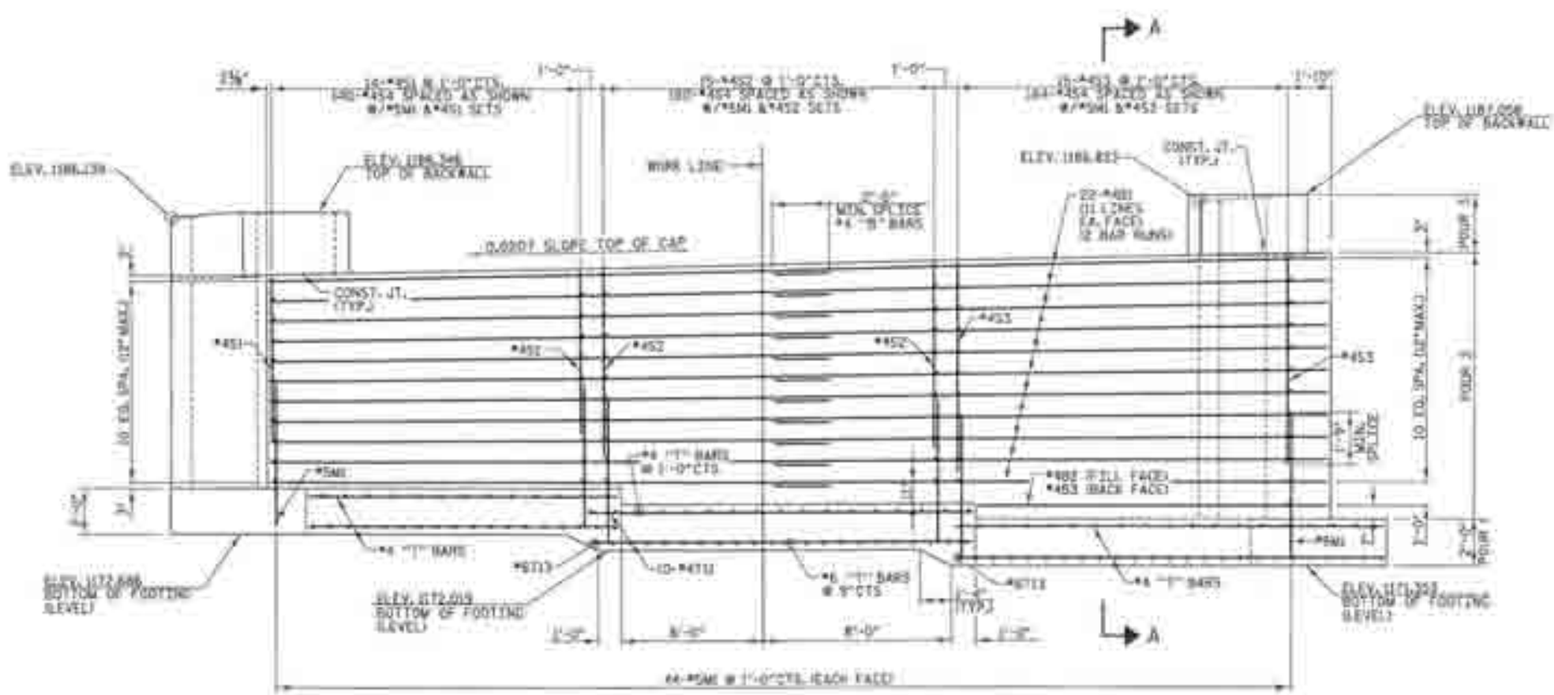
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4"Ø CORRUGATED PERFORATED DRAIN PIPE THROUGH THE WING WALL. REINFORCING IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



SECTION A-A

* BARS MAY BE SHIFTED AS NECESSARY FOR TYING *5M1 BARS. MAINTAIN MAXIMUM SPACING OF 1'-3".

** ALTERNATE HOOKS ON ADJACENT TIES AS SHOWN IN BOTH HORIZONTAL AND VERTICAL DIRECTIONS.



ELEVATION

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68 SHEET 1 OF 5

DEPARTMENT OF TRANSPORTATION

SUBSTRUCTURE END BENT 2

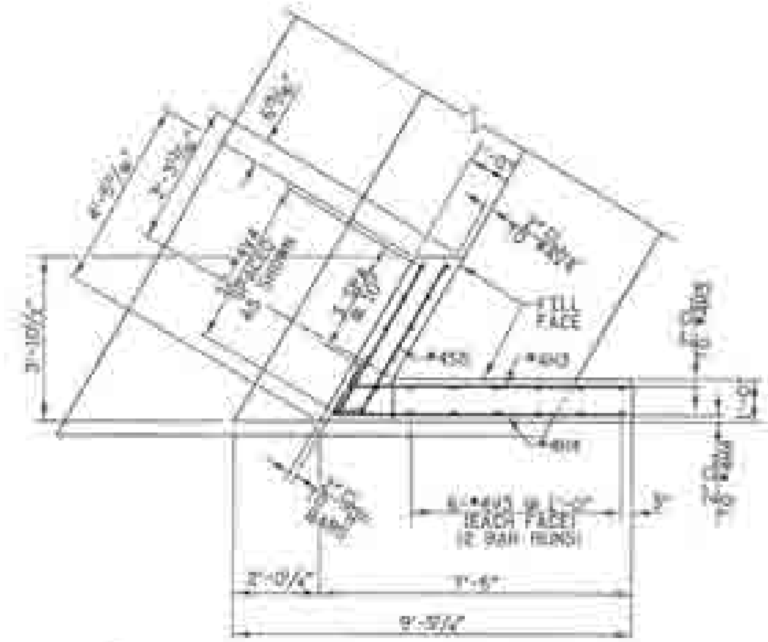
29'-10" CLEAR ROADWAY - 120°SKEW

MULKEY

DRAWN BY : K.S. MILLER DATE : 10/09

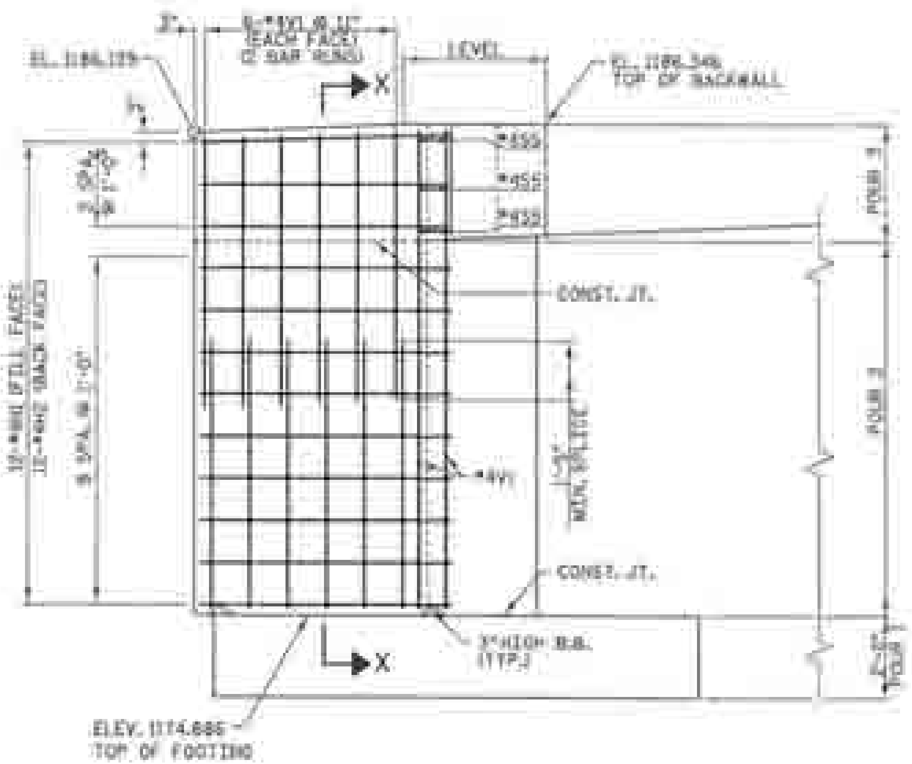
CHECKED BY : L.A. MILLER DATE : 10/09

(W1) PLAN OF LEFT WING

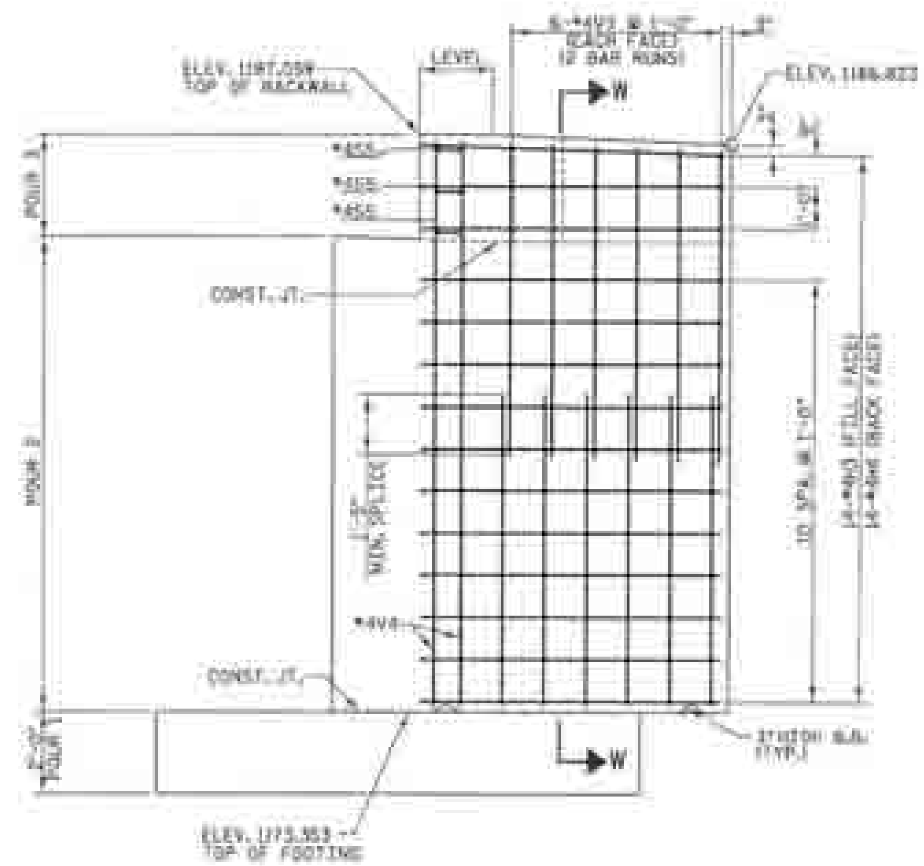


(W2) PLAN OF RIGHT WING

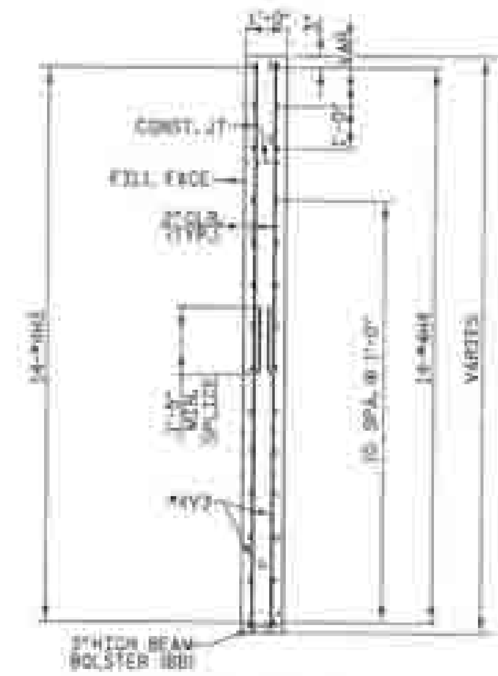
SECTION X-X



(W1) ELEVATION OF LEFT WING



(W2) ELEVATION OF RIGHT WING



SECTION W-W

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68 SHEET 3 OF 3

DEPARTMENT OF TRANSPORTATION

SUBSTRUCTURE
END BENT 2

29'-10" CLEAR ROADWAY - 120° SKEW

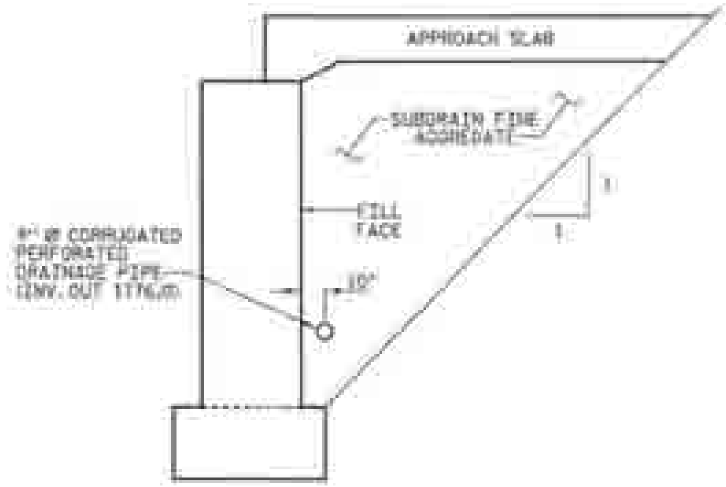
MULKEY

REVISIONS

SHEET NO. 16

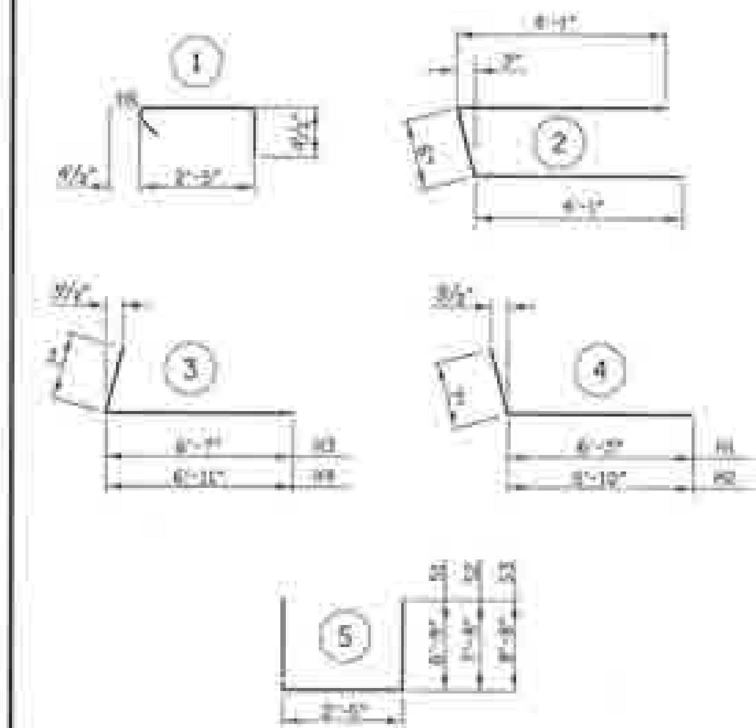
TOTAL SHEETS 19

DRAWN BY: W. B. ALLEN
CHECKED BY: L. K. AUSTIN



SUBDRAIN DETAIL AT END BENT

BAR TYPES



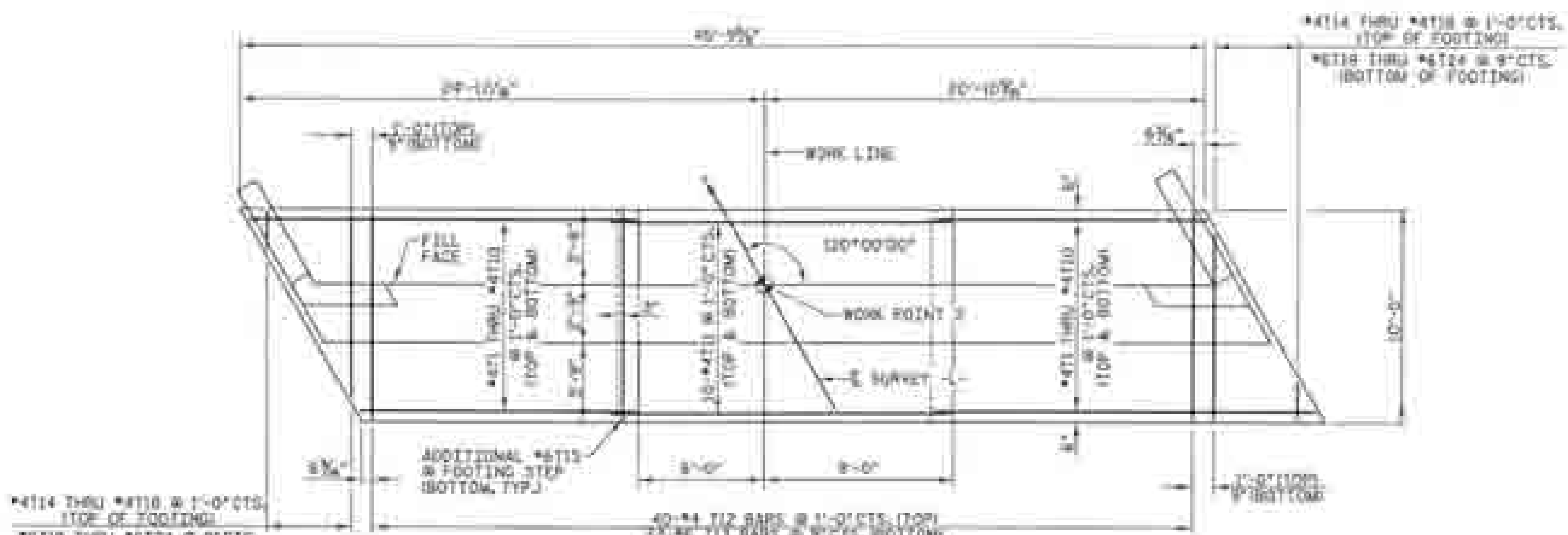
ALL BAR DIMENSIONS ARE OUT TO OUT

CLASS "A" CONCRETE - CU. YARDS	
POUR 1	34.8 cu. yds.
POUR 2	50.5 cu. yds.
POUR 3	1.9 cu. yds.
TOTAL	87.2 cu. yds.

BILL OF MATERIAL

FOR END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	44	#4	STR	23'-7"	693
B2	1	#4	STR	13'-3"	9
B3	1	#4	STR	14'-7"	10
D1	20	#6	STR	1'-6"	50
H1	12	#4	4	6'-10"	55
H2	12	#4	4	6'-5"	51
H3	14	#4	3	7'-2"	67
H4	14	#4	3	7'-6"	70
M1	88	#5	STR	6'-0"	551
S1	14	#4	5	15'-11"	149
S2	15	#4	5	17'-11"	180
S3	15	#4	5	19'-9"	198
S4	454	#4	1	3'-2"	960
S5	6	#4	2	8'-8"	35
T1	4	#4	STR	13'-7"	35
T2	4	#4	STR	13'-7"	36
T3	4	#4	STR	14'-2"	38
T4	4	#4	STR	14'-9"	39
T5	4	#4	STR	15'-4"	41
T6	4	#4	STR	15'-11"	43
T7	4	#4	STR	16'-6"	44
T8	4	#4	STR	17'-1"	46
T9	4	#4	STR	17'-8"	47
T10	4	#4	STR	18'-3"	49
T11	20	#4	STR	16'-3"	217
T12	40	#4	STR	9'-8"	258
T13	55	#6	STR	9'-8"	799
T14	2	#4	STR	8'-7"	11
T15	2	#4	STR	6'-11"	9
T16	2	#4	STR	5'-3"	7
T17	2	#4	STR	3'-5"	5
T18	2	#4	STR	1'-8"	2
T19	2	#6	STR	9'-1"	27
T20	2	#6	STR	7'-9"	23
T21	2	#6	STR	6'-6"	20
T22	2	#6	STR	5'-0"	15
T23	2	#6	STR	3'-10"	12
T24	2	#6	STR	2'-7"	8
V1	23	#4	STR	6'-5"	103
V2	12	#4	STR	11'-4"	91
V3	24	#4	STR	7'-5"	119
V4	12	#4	STR	13'-4"	107
TOTAL REINFORCING STEEL =					5330 lbs.



PLAN OF FOOTING

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68 SHEET 3 OF 3

DEPARTMENT OF TRANSPORTATION

SUBSTRUCTURE
END BENT 2

29'-10" CLEAR ROADWAY - 120° SKEW

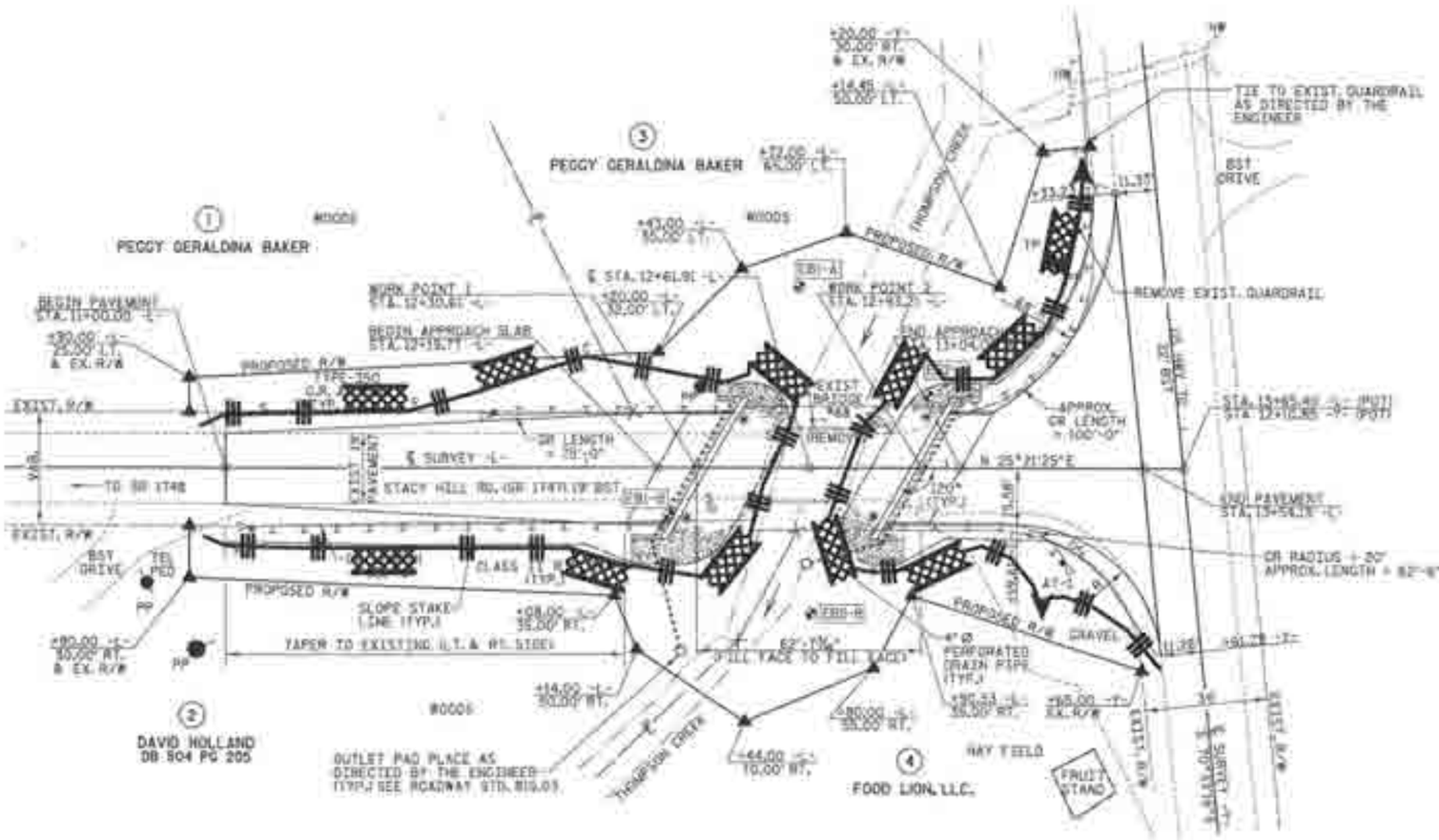
MULKEY

DRAWN BY:	W. B. ALLEN	DATE:	10/09
CHECKED BY:	L. A. AUSTIN	DATE:	10/09

SHEET NO. 17

TOTAL SHEETS 19

EROSION CONTROL PLAN



STD. #

1605.01 Temporary Silt Fence

1633.01 Temporary Rock Silt Check Type-A

Temporary Rock Silt Check Type-B

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68

DEPARTMENT OF TRANSPORTATION

BRIDGE ON SR 1747 OVER THOMPSON CREEK BETWEEN SR 1748 AND US HWY 70

29'-10" CLEAR ROADWAY - 120° SKEW

REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	18
						TOTAL SHEETS
						19

EROSION CONTROL PLAN

RHARDIN ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

1605 STANDARD SPECIFICATIONS

NOTE: ANY DEVIATION FROM APPROVED EARTH WILL REQUIRE WRITTEN APPROVAL BY ENGINEER.

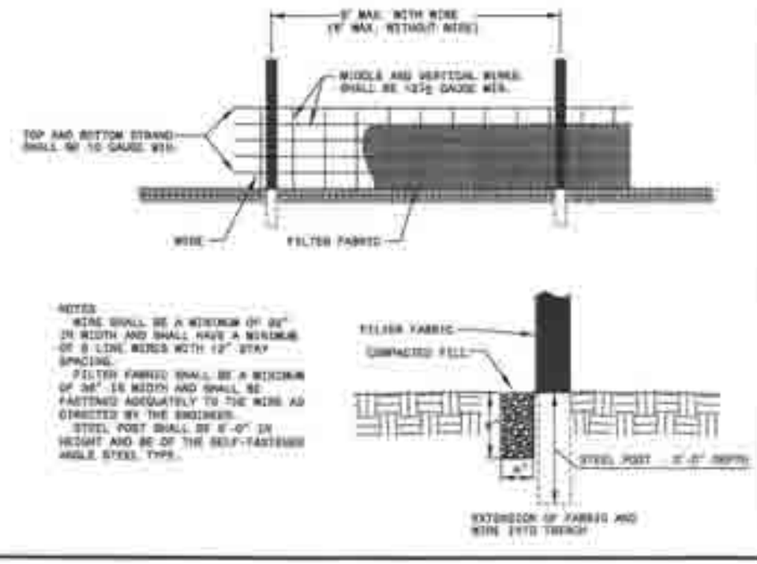
ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR

TEMPORARY SILT FENCE

1605.01



NOTES:
WIRE SHALL BE A MINIMUM OF 22" IN WIDTH AND SHALL HAVE A MINIMUM OF 5 LINE WIRES WITH 12" STAY SPACING.
FILTER FABRIC SHALL BE A MINIMUM OF 36" IN WIDTH AND SHALL BE FASTENED ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.
STEEL POST SHALL BE 5'-0" IN HEIGHT AND BE OF THE SELF-FASTENING ANGLE STEEL TYPE.

STATE OF NORTH CAROLINA
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR

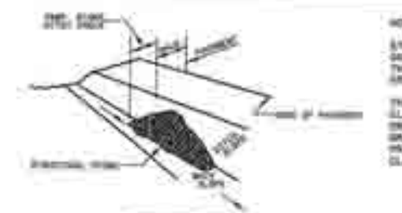
TEMPORARY SILT FENCE

1605.01

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR

TEMPORARY ROCK SILT CHECK TYPE 'B'



NOTES:
STRUCTURAL STONE SHALL BE STONE FOR EROSION CONTROL CLASS "B" AND SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON "STONE FOR EROSION CONTROL, CLASS "B".

THE ENGINEER MAY ELIMINT THE OPTION OF CLASS "A" STONE FOR SITES HAVING LESS THAN ONE (1) ACRE DRAINAGE AREA AND A DITCH GRADE LESS THAN 3%. PAYMENT SHALL BE UNIT PRICE PER TON "STONE FOR EROSION CONTROL, CLASS "A".

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ENGLISH STANDARD DRAWING FOR

TEMPORARY ROCK SILT CHECK TYPE 'B'

STATE OF NORTH CAROLINA
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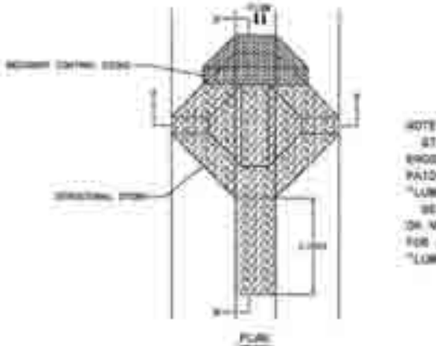
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR

TEMPORARY ROCK SILT CHECK TYPE 'A'

1633.01



NOTE
STRUCTURAL STONE SHALL BE STONE FOR EROSION CONTROL (CLASS "B") AND SHALL BE PAID FOR AT THE CONTRACT BID PRICE FOR "LUMP SUM FOR EROSION CONTROL".
SEDIMENT CONTROL STONE SHALL BE NC. 8 OR NO. 57 STONE AND SHALL BE PAID FOR AT THE CONTRACT BID PRICE FOR "LUMP SUM FOR EROSION CONTROL".

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ENGLISH STANDARD DRAWING FOR

TEMPORARY ROCK SILT CHECK TYPE 'A'

1633.01

PROJECT NO. 33318

McDOWELL COUNTY

STATION: 12+61.91 -L-

REPLACES BRIDGE NO. 68

DEPARTMENT OF TRANSPORTATION

BRIDGE ON SR 1747 OVER THOMPSON CREEK BETWEEN SR 1748 AND US HWY 70

29'-10" CLEAR ROADWAY - 120°SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	19
						TOTAL SHEETS
						19