FOR INFORMATION ONLY **A34511, Sht. 1**

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE: MO | PROJECT NO. | SHEET NO. 135

PR. GR. ELEV. 862.57

0.25-1.25% CONTINUOUS COMPOSITE PLATE GIRDER SPANS

PROPOSED GRADE

PR. GR. ELEV. 864.15

EXP

6" CONCRETE SLOPE PROTECTION FROM'Y. ITEM

3H SLOPE NORMAL TO BENT

FIX

ROADWAY & DRAINAGE EXCAVATION LINE

ELEV. 875.00

GENERAL ELEVATION

15°

B-1 B-3 B-2 B-4

3'-4" 3'-4" 3'-3" 3'-3" 3'-3" 3'-3" 3'-3" 3'-3" 3'-3" 3'-4" 3'-4"

6 3/4"

4 PILES

FILL FACE OF ABUT. NO. 1 P.C.E. STA. 8+95.66 PR.GR. ELEV. 862.57

FRONT FACE OF BKWL. STA. 9+27.41 PR.GR. ELEV. 863.05

1'-3 1/2" 30'-5 1/2" 31'-9"

SPAN (1-2)

15° 07' 00"

10.356

10.000

90°

74° 53' 00"

2.7013

POINT OF MIN. VERT. CLEARANCE

PROFILE GRADE & ℄ ROADWAY

℄ W.B. LANE OF RTE. 54

℄ MEDIAN RTE. 54

15'-6" TYP.

℄ BENT NO. 2 & LINE TANGENT TO ℄ MEDIAN RTE. 54

30'-0"

24'-0" PAVEMENT

10'-0" SHLDR.

5'-0" SHLDR.

21'-0" TYP.

B-5 B-6

28'-6" HORIZ. CLEAR

6'-0" SHLDR.

STA. 10+53.70 (RTE. TT) = STA. 452+26.74 (RTE. 54)

℄ ABUT.

℄ COLUMN

12'-0"

28'-6" HORIZ. CLEAR

℄ BRIDGE & ROADWAY STA. 10+53.70 PR.GR. ELEV. 864.25

126'-3 1/2"

316'-1"

PLAN

SPAN (2-3)

126'-3 1/2"

ARMOUR 10'-7.3"

15'-5"

15'-10"

℄ PILES

B-7 B-9 B-8 B-10

3'-4" 3'-4" 3'-3" 3'-3" 3'-3" 3'-3" 3'-3" 3'-3" 3'-3" 3'-4" 3'-4"

6 3/4"

FRONT FACE OF BKWL. STA. 11+79.99 PR.GR. ELEV. 864.32

FILL FACE OF ABUT. NO. 3 STA. 12+41.74 PR. GR. ELEV. 864.15

1'-3 1/2" 30'-5 1/2" 31'-9"

INDICATES LOCATION OF BORINGS. BORING DATA IS DETAILED ON SHT. NO. 3.

BENCHMARKS:

#53 ELEV. 819.78 "D" SOUTHWEST CORNER HIGHWAY CULVERT 70' RIGHT STATION 436+15 SOUTH BOUND LANE

#54 ELEV. 830.68 BOATSPIKE IN ANCHOR POLE 100' RIGHT STATION 459+95 SOUTH BOUND LANE

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

NOTE: FOR GENERAL NOTES, ESTIMATED QUANTITIES, ESTIMATED QUANTITIES FOR ALTERNATE SLABS AND PILE DATA SEE SHEET NO. 2.

SHEET NO. 1 OF 27

ESE Environmental Science & Engineering, Inc.

Donald D. Bell 5-21-92

DONALD D. BELL E-22719

BRIDGE: ROUTE TT OVER ROUTE 54

PROJECT NO. STA. 452+26.74

JOB NO. JSP04128 RTE. 54

CALLAWAY COUNTY

DATE 6/8/92

STD. 207.82	
STD. 606.22	
STD. 514.20	
STD. 708.35	
A-3451	

DETAILED JAN. 1992
CHECKED MAR.1992

385-384

STATE | PROJECT NO. | SHEET NO. 13A

ESTIMATED QUANTITIES

ITEM	UNIT	SUBSTR.	SUPERSTR.	TOTAL
CLASS I EXCAVATION	CU. YD.			
CAST-IN-PLACE CONCRETE PILES	LIN. FT.			
PRE-BORE FOR PILING	LIN. FT.			
CLASS B CONCRETE (SUBSTR.)	CU. YD.			
SLAB ON STEEL	SQ. FT.			
SAFETY BARRIER CURB	LIN. FT.			
SLAB ON SEMI-DEEP ABUTMENT	SQ. FT.			
LAMINATED NEOPRENE BEARING PADS (STEEL STRUCTURES)	EACH			
PREFORMED COMPRESSION EXPANSION JOINT SEAL (3.5 IN.)	LIN. FT.			
REINFORCING STEEL	LBS.			
REINFORCING STEEL (EPOXY COATED)	LBS.			
FABRICATED STRUCTURAL CARBON STEEL (PLATE GIRDERS) A-36	LBS.			
FABRICATED STRUCTURAL LOW ALLOY STEEL (PLATE GIRDERS) A-572	LBS.			
SLAB DRAINS	EACH			
PAINTING (SYSTEM C) GREEN	LUMP			
LOAD TESTS	EACH			

NOTE: ALL CONCRETE AND REINFORCING STEEL BELOW TOP OF SLAB AND ABOVE FOOTING, JOINT UNDER SLAB OF SEMI-DEEP ABUTMENTS ARE INCLUDED IN SUPERSTRUCTURE QUANTITIES FOR SLAB ON SEMI-DEEP ABUTMENTS.

*** SEE SPECIAL PROVISIONS

PILE DATA

BENT NO.		APPROACH BEAM ABUT. NO. 1	BEARING BEAM ABUT. NO. 1	INT. BT. NO. 2	BEARING BEAM ABUT. NO. 3	APPROACH BEAM ABUT. NO. 3
PILE TYPE AND SIZE		14"ø S.I.P.	14"ø S.I.P.	14"ø S.I.P.	14"ø S.I.P.	14"ø S.I.P.
NUMBER		7	11	36	11	8
APPROXIMATE LENGTH	FT.	45	40	25	50	45
MIN. PILE TIP ELEV.	FT.	814.00	814.00	806.80	805.60	815.00
DESIGN BEARING	TONS	30	*** 39	30	*** 39	27
HAMMER ENERGY REQUIRED	FT.-LBS.	8,000	8,000	8,000	8,000	8,000

NOTE: MINIMUM ENERGY REQUIREMENT OF HAMMER IS BASED ON PLAN LENGTH & DESIGN BEARING VALUE OF PILES.
ALL PILES SHALL BE DRIVEN TO PRACTICAL REFUSAL.

ALL PILES SHALL BE FOUNDATION FILES.

*** LOAD TEST - SEE SPECIAL PROVISIONS

PREBORE FOR PILES AT APPROACH BEAM BENT #1 TO ELEV. 844.5.
BEARING BEAM BENT #1 TO ELEV. 847.8 & APPROACH BEAM BENT #3 TO ELEV. 853.1.

ESTIMATED QUANTITIES FOR ALTERNATE SLABS

TYPE OF SLABS	SLAB ON STEEL REINF. (LBS.) EPOXY	SLAB ON STEEL REINF. (LBS.) PLAIN	SLAB ON STEEL CONC. (CU. YD.)
CAST-IN-PLACE CONVENTIONAL FORMS	69,540		242.0
PRECAST PANEL FORMS	53,770		179.9
STAY-IN-PLACE FORMS	** 69,540		*232.6

NOTE: THE TABLE OF ESTIMATED QUANTITIES FOR ALTERNATE SLABS REPRESENTS THE QUANTITIES USED BY THE STATE IN PREPARING THE COST ESTIMATE FOR CONCRETE SLABS. VARIATIONS MAY BE ENCOUNTERED IN THESE ESTIMATED QUANTITIES BUT THESE VARIATIONS CANNOT BE USED FOR AN ADJUSTMENT IN THE CONTRACT UNIT PRICE PER SQUARE YARD OF ALTERNATE SLAB USED.
SEE SPECIAL PROVISIONS FOR ALTERNATE METHODS OF FORMING SLABS.
* DOES NOT INCLUDE CONCRETE REQUIRED TO FILL CORRUGATIONS OF S.I.P. FORMS.
** DOES NOT INCLUDE REINFORCING BARS USED AS BAR SUPPORTS.
PRECAST PANEL QUANTITIES ARE BASED ON SKEWED END PANELS.

GENERAL NOTES:

DESIGN SPECIFICATIONS: A.A.S.H.T.O. 1992 & 1991 INTERIM
LOAD FACTOR DESIGN
A.A.S.H.T.O. 1983 GUIDE SPECIFICATIONS FOR SEISMIC DESIGN.
SEISMIC PERFORMANCE CATEGORY A

DESIGN LOADING: HS20-44, HS20 OR 24,000# TANDEM AXLE
35#/SQ. FT. FUTURE WEARING SURFACE
EARTH (120#/CU. FT., EQUIVALENT FLUID PRESSURE 45#/CU. FT.
FATIGUE STRESS - CASE II

DESIGN UNIT STRESSES:

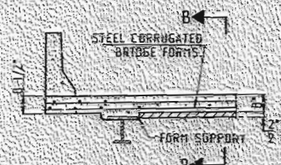
CLASS B CONCRETE (SUBSTRUCTURE)	f'c = 3,000 PSI
CLASS B1 CONCRETE (SAFETY BARRIER CURB)	f'c = 4,000 PSI
CLASS B2 CONCRETE (SUPERSTRUCTURE, EXCEPT SAFETY BARRIER CURB)	f'c = 4,000 PSI
REINFORCING STEEL (GRADE 60)	FY = 60,000 PSI
STRUCTURAL CARBON STEEL	FY = 36,000 PSI
STRUCTURAL STEEL (A.S.T.M. A572) GRADE 50	FY = 50,000 PSI

FABRICATED STEEL CONNECTIONS:
FIELD CONNECTIONS: HIGH STRENGTH BOLTS 3/4"ø, HOLES 13/16"ø, EXCEPT AS NOTED.

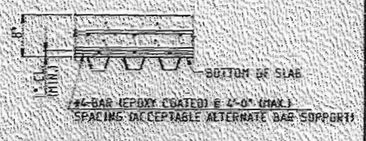
JOINT FILLER:
ALL JOINT FILLER SHALL MET THE REQUIREMENTS OF STD. SPEC. 1057.2.4, EXCEPT AS NOTED.

REINFORCING STEEL:
MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1-1/2", UNLESS OTHERWISE SHOWN.

PAINT:
SYSTEM C BY CONTRACTOR IN ACCORDANCE WITH STD. SPEC. 712.12



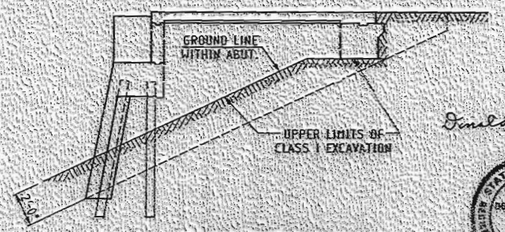
PART SECTION THRU SLAB
SHOWING STAY-IN-PLACE FORMS



LONGITUDINAL SECTION THRU SLAB
(STAY-IN-PLACE FORMS)
SECTION B-B

NOTE: BOTTOM TRANSVERSE REINFORCING STEEL SHALL BE PLACED TO MATCH FORM CORRUGATIONS.

TO DETERMINE HAUNCH FOR THE STAY-IN-PLACE ALTERNATE, ADD 1/2" TO THE HAUNCH FOR THE CAST-IN-PLACE ALTERNATE.



Donald O. Bell 5-21-92

STATE OF MISSOURI — DONALD O. BELL — E-22715 — REGISTERED PROFESSIONAL ENGINEER

GROUND LINE AND PILING
IN ABUTMENTS

NOTE: IN NO CASE SHALL THE EARTH WITHIN ABUTMENTS NO. 1 AND 3 BE ABOVE THE GROUND LINE SHOWN. FORMS SUPPORTING ABUTMENT SLAB MAY BE LEFT IN PLACE.

THE MAXIMUM VARIATION OF THE HEAD OF THE PILE AND THE BATTERED FACE OF THE PILE FROM THE POSITION SHOWN ON THE PLANS SHALL BE NOT MORE THAN 2" FOR PILE UNDER ABUTMENTS NO. 1 AND 3.

EXPOSED STEEL PILE SHELLS WITHIN THE ABUTMENTS SHALL BE COATED WITH A HEAVY COATING OF APPROVED BITUMINOUS PAINT.

SEE FINAL PLANS

DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

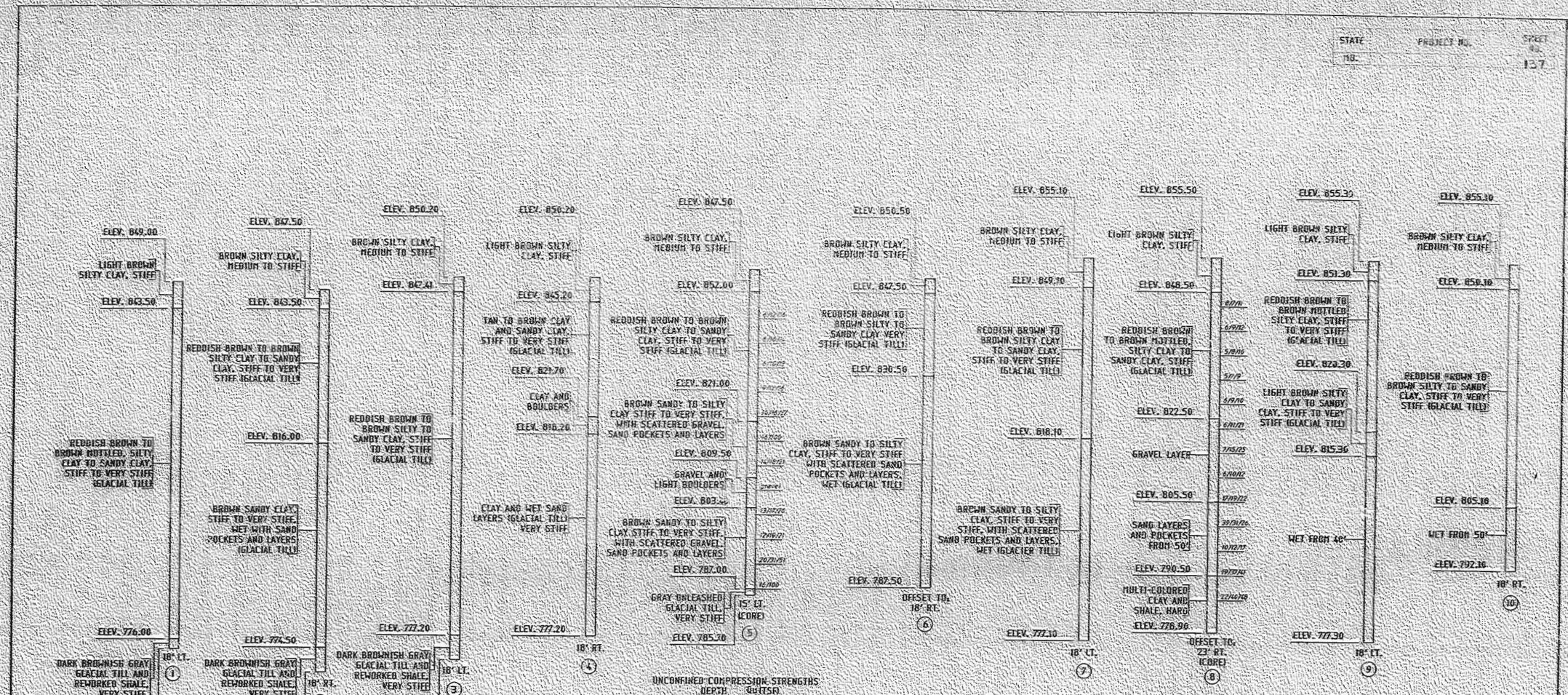
SHEET NO. 2 OF 27

CALLAWAY COUNTY

A-3451

FOR INFORMATION ONLY **A34511, Sht. 3**

STATE 19 PROJECT NO. SHEET NO. 137



UNCONFINED COMPRESSION STRENGTHS

DEPTH	Qu (TSF)
10.0'	4.7
20.0'	3.5
25.0'	3.5
30.0'	2.9
40.0'	3.8

UNCONFINED COMPRESSION STRENGTHS

DEPTH	Qu (TSF)
20.0'	4.3
25.0'	3.1
30.0'	2.5
35.0'	2.5
40.0'	4.1
45.0'	3.1
50.0'	3.5

BORING DATA

NOTE: FOR LOCATIONS OF BORINGS SEE SHEET NO. 1 OF 27. BORING DATA FOR ALL LOCATIONS IS AVAILABLE UPON REQUEST FROM THE DISTRICT OFFICE.

38728

David D. Bell
5-21-92

DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 3 OF 27

CALLAWAY COUNTY

A-3451

STATE	PROJECT NO.	SHEET NO.
MO.		138

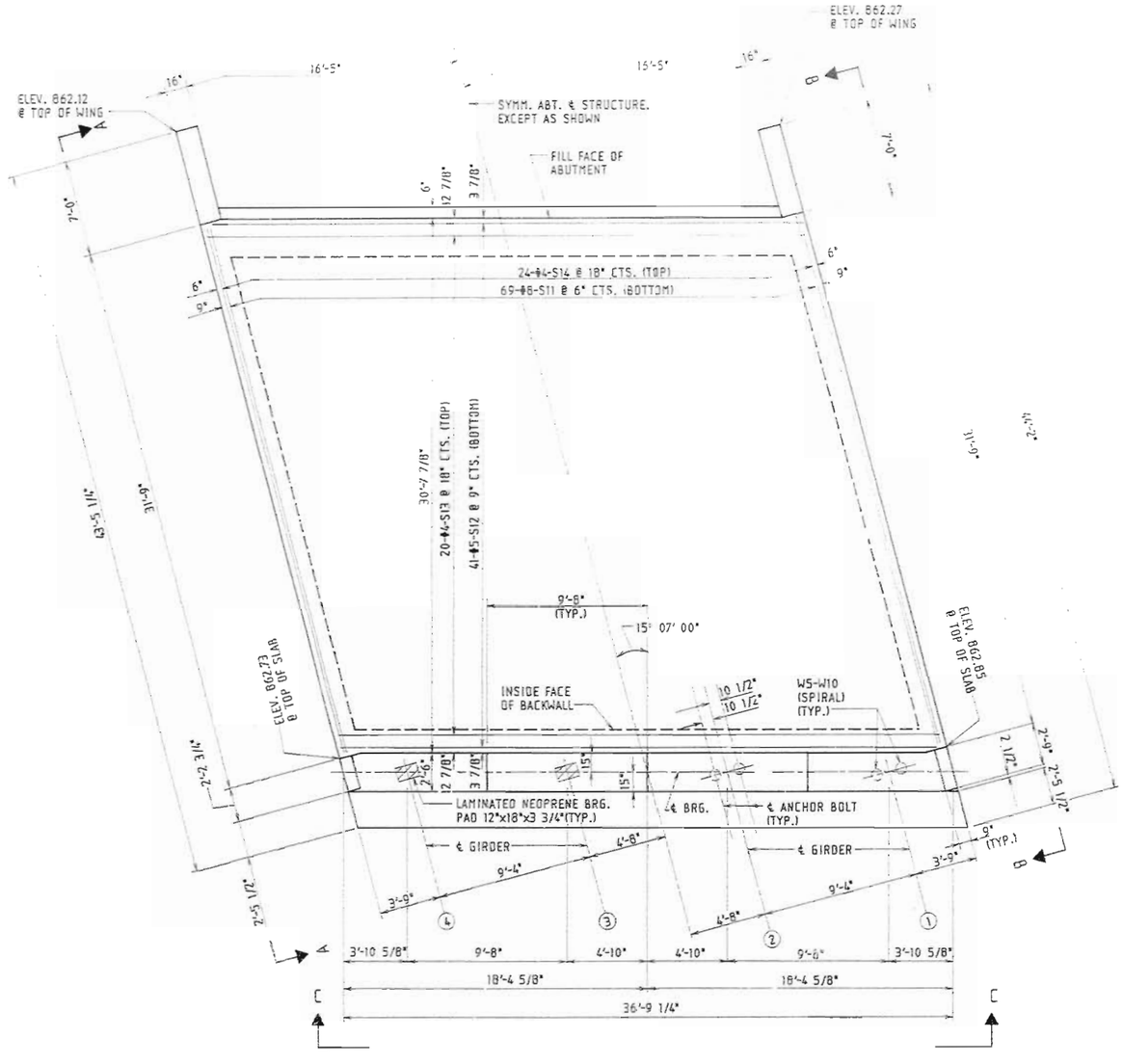
NOTE: TOP OF ABUTMENT SLAB AND EXPANSION DEVICE FOR ABUTMENT NO. 1 SHALL CONFORM TO CROWN OF ROADWAY SLAB. ABUTMENT SLAB ABOVE THE UPPER CONSTRUCTION JOINT SHALL NOT BE POURED UNTIL THE SUPERSTRUCTURE SLAB HAS BEEN POURED IN THE ADJACENT SPAN.

FOR DETAILS OF EXPANSION DEVICE SEE SHEET NO. 19.

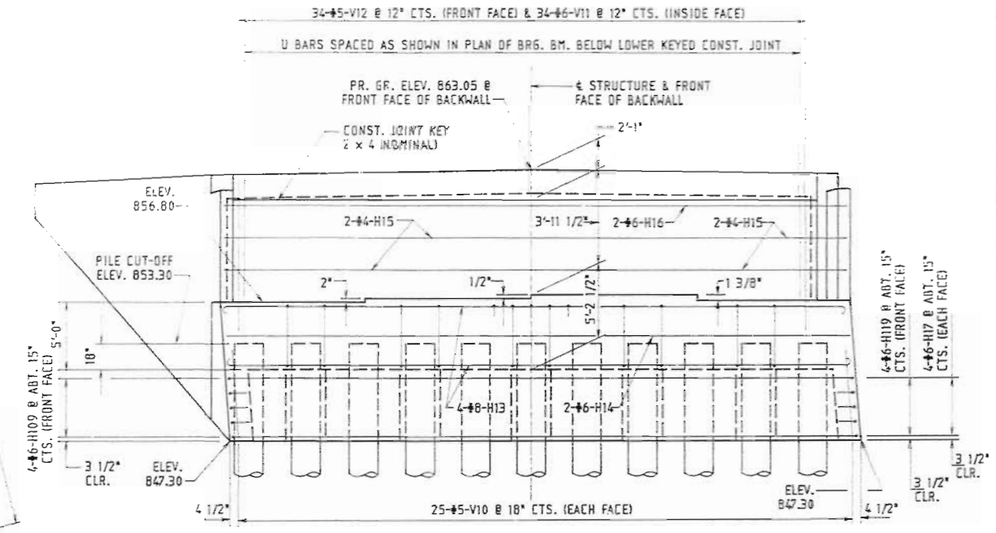
FOR DETAILS OF ANCHOR BOLT WELLS SEE SHEET NO. 16.

FOR ELEVATION A-A, ELEVATION B-B, AND SECTION NEAR ℄ ROADWAY, SEE SHEET NO. 7.

FOR DETAILS OF TIMBER HEADER SEE SHEET NO. 22.



PLAN



ELEVATION C-C

SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 1		
ITEM		QUANTITY
CLASS 1 EXCAVATION	CU. YDS.	56
C.I.P. PILE (14")	LIN. FT.	755
CLASS B CONCRETE (SUBSTRUCTURE)	CU. YDS.	83.1
REINFORCING STEEL	LBS.	5,480
REINFORCING STEEL (EPOXY COATED)	LBS.	930

NOTE: WORK THIS TABLE WITH ESTIMATED QUANTITIES AS SHOWN ON SHEET #2

Donald D. Bell
5-21-92

⚠ Void sheet No. 4 . see sheet No. 4A .

DETAILS OF ABUTMENT NO. 1

DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 4 OF 27 ⚠ Revised 9/29/92

CALLAWAY COUNTY

A-3451

338 387

STATE | PROJECT NO. | SHEET NO.

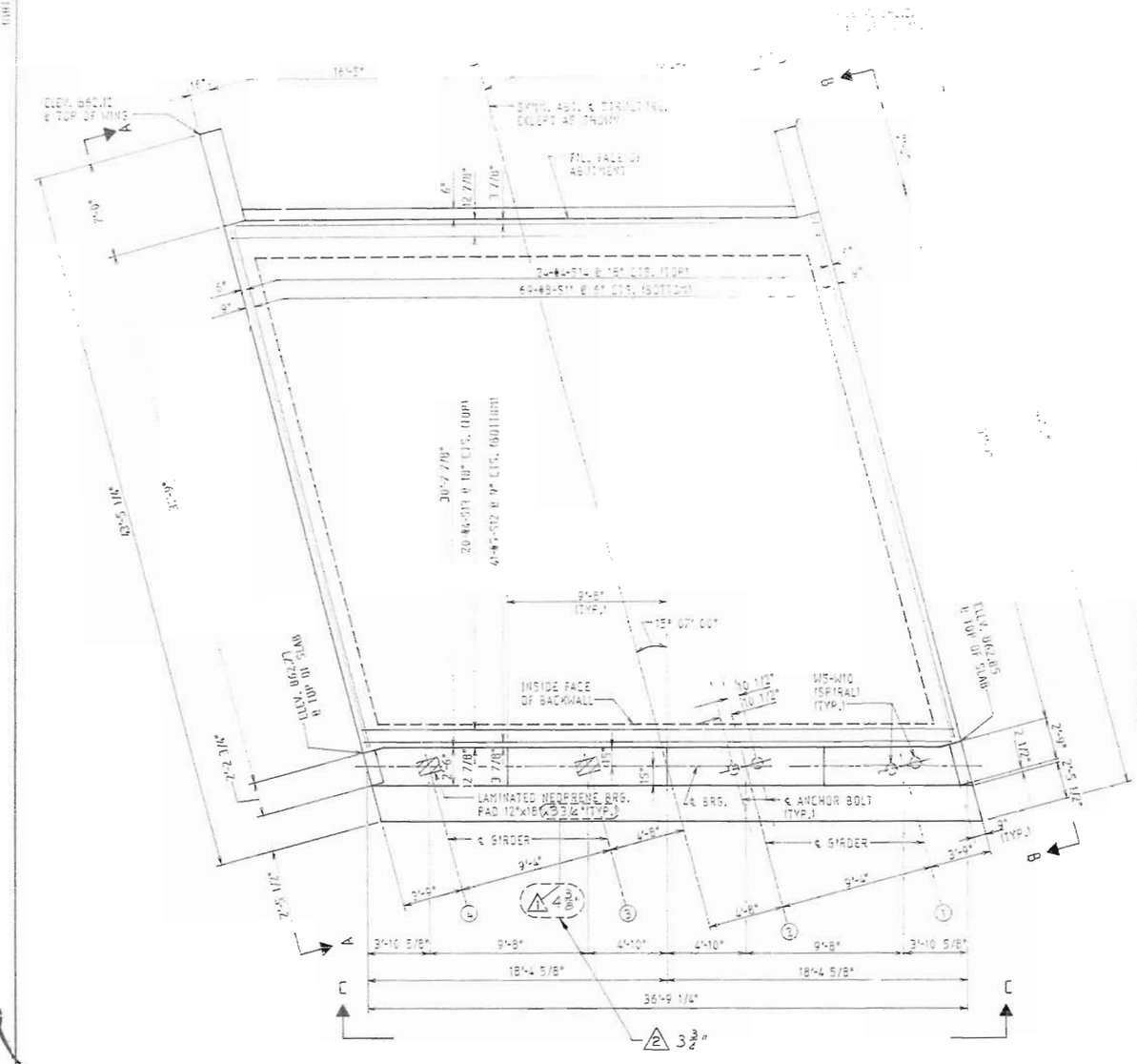
NOTE: TOP OF ABUTMENT SLAB AND EXPANSION DEVICE FOR ABUTMENT NO. 1 SHALL CONFORM TO CROWN OF ROADWAY SLAB. ABUTMENT SLAB ABOVE THE UPPER CONSTRUCTION JOINT SHALL NOT BE POURED UNTIL THE SUPERSTRUCTURE SLAB HAS BEEN POURED IN THE ADJACENT SPAN.

FOR DETAILS OF EXPANSION DEVICE SEE SHEET NO. 19.

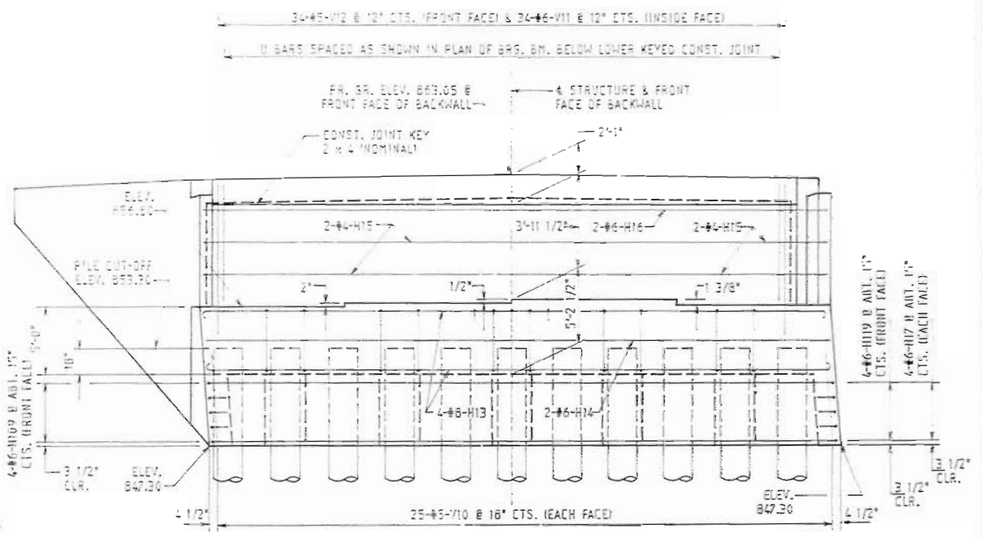
FOR DETAILS OF ANCHOR BOLT WELLS SEE SHEET NO. 16.

FOR ELEVATION A-A, ELEVATION B-B, AND SECTION NEAR ℄ ROADWAY, SEE SHEET NO. 7.

FOR DETAILS OF TIMBER HEADER SEE SHEET NO. 22.



PLAN



ELEVATION C-C

SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 1		
ITEM		QUANTITY
CLASS 1 EXCAVATION	CU. YDS.	56
C.I.P. PILE (14")	LIN. FT.	755
CLASS B CONCRETE (SUBSTRUCTURE)	CU. YDS.	83.1
REINFORCING STEEL	LBS.	5,480
REINFORCING STEEL (EPOXY COATED)	LBS.	930

NOTE: WORK THIS TABLE WITH ESTIMATED QUANTITIES AS SHOWN ON SHEET #2

DETAILS OF ABUTMENT NO. 1

DETAILED JAN. 1992
CHECKED MAR. 1992

SEE FINAL PLANS

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

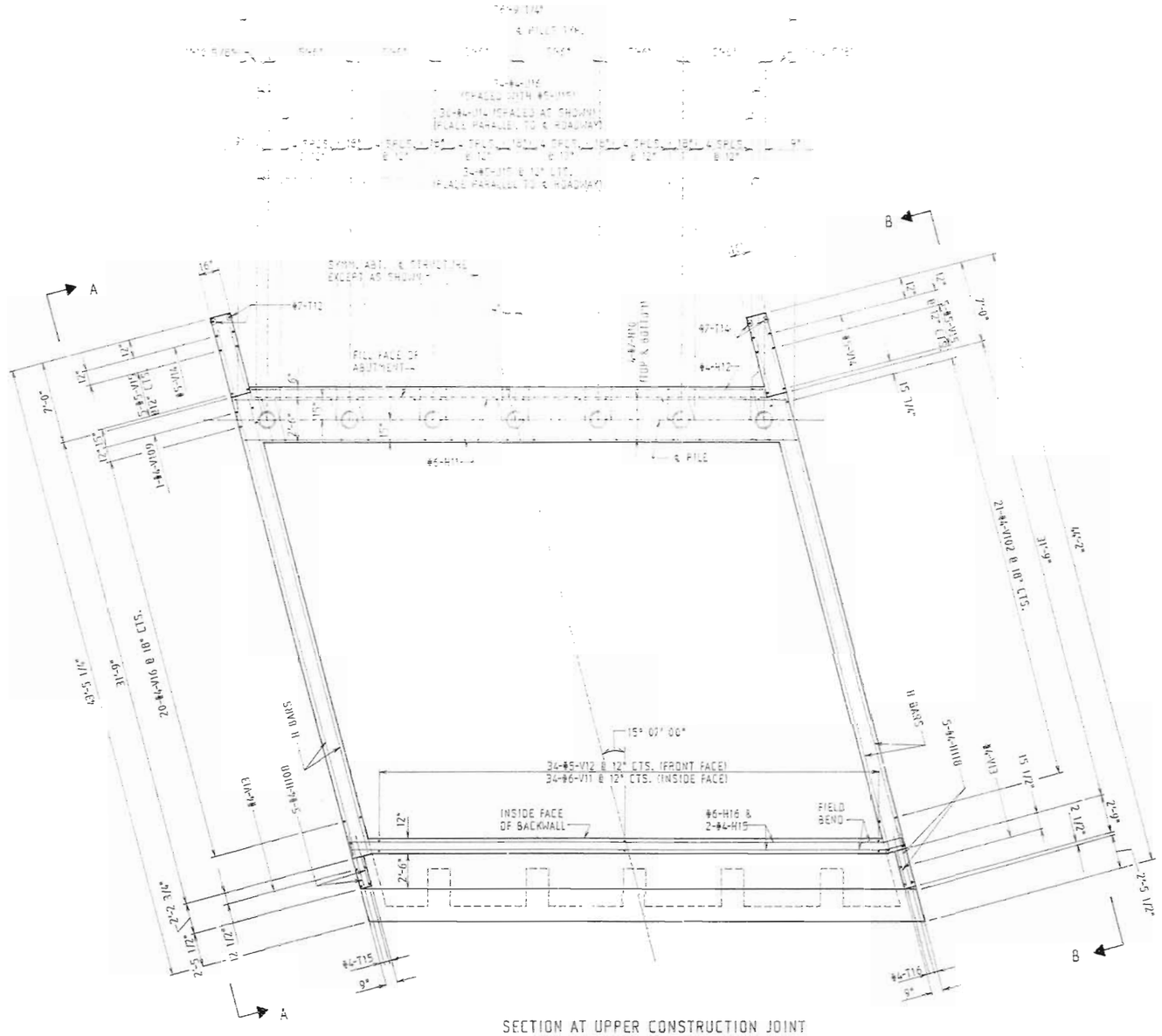
SHEET NO. 4 OF 27

2 Revised 9-29-92

1 REVISED 8-4-92

CALLAWAY COUNTY

A-3451



SECTION AT UPPER CONSTRUCTION JOINT

DETAILS OF ABUTMENT NO. 1

390288

Donald D. Bell
5-21-92

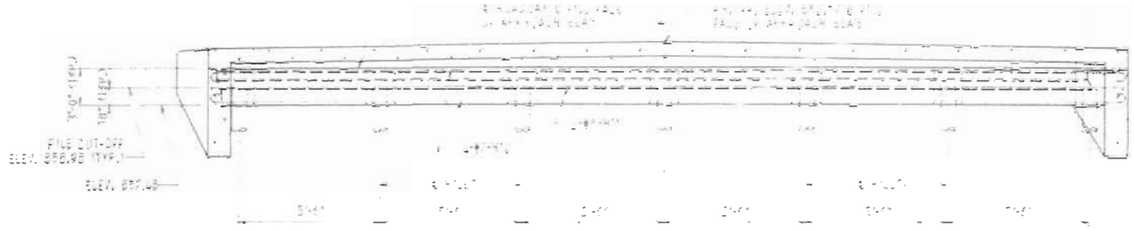
DETAILED JAN. 1992
CHECKED MAR. 1992

THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

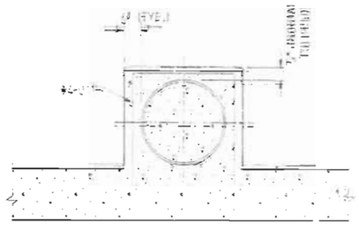
SHEET NO. 5 OF 37

CALLAWAY COUNTY

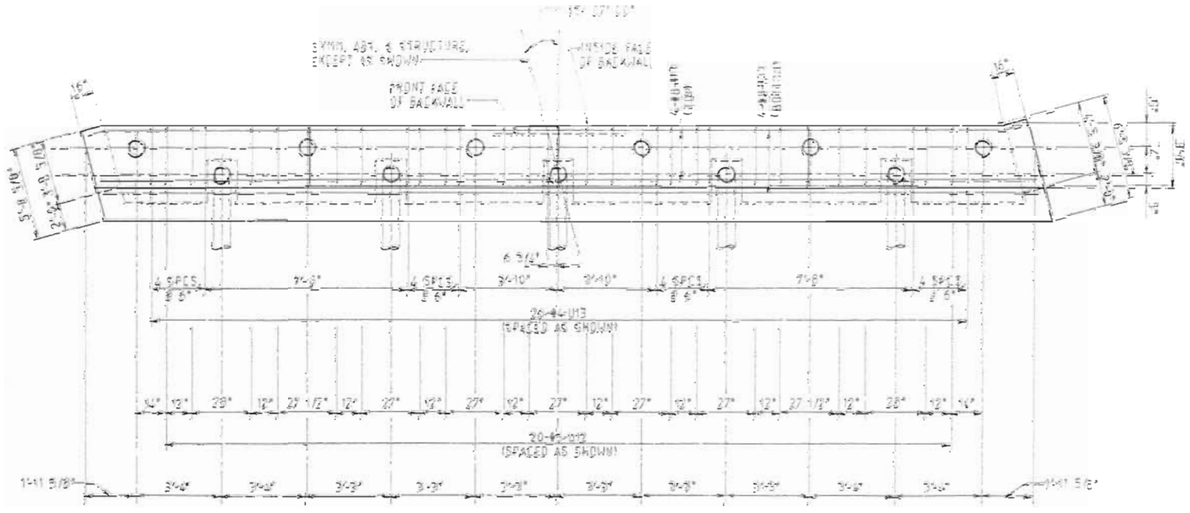
A-3451



SECTION NEAR APPROACH BEAM



SECTION B-B



PLAN OF BEARING BEAM BELOW LOWER KEYED CONSTRUCTION JOINT

NOTE: ALL REINFORCING BARS IN TOPS OF SUBSTRUCTURE BEAMS OR CAPS SHALL BE SPACED TO CLEAR ANCHOR BOLTS FOR BEARINGS BY AT LEAST 1/2".

391 285

Donald D. Bell
5-21-92

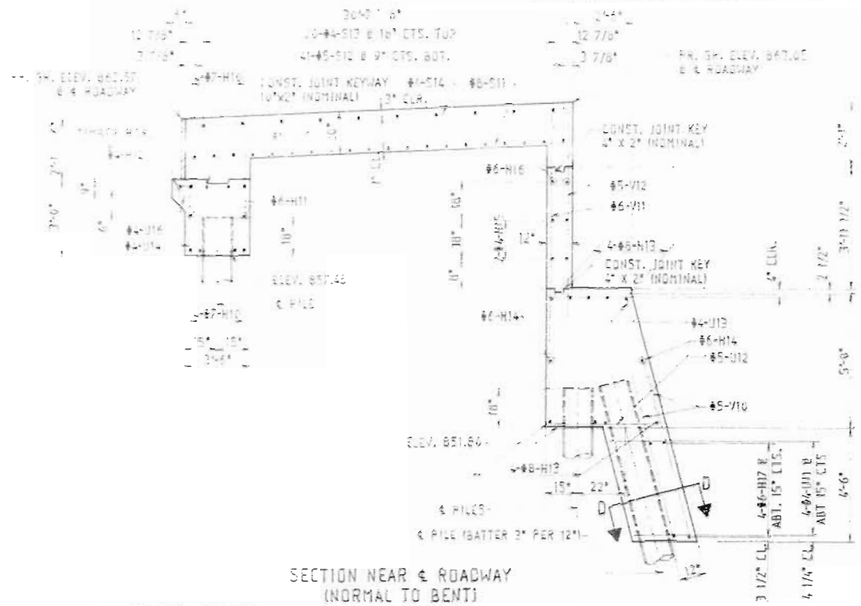
DETAILED JAN. 1992
CHECKED MAR 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

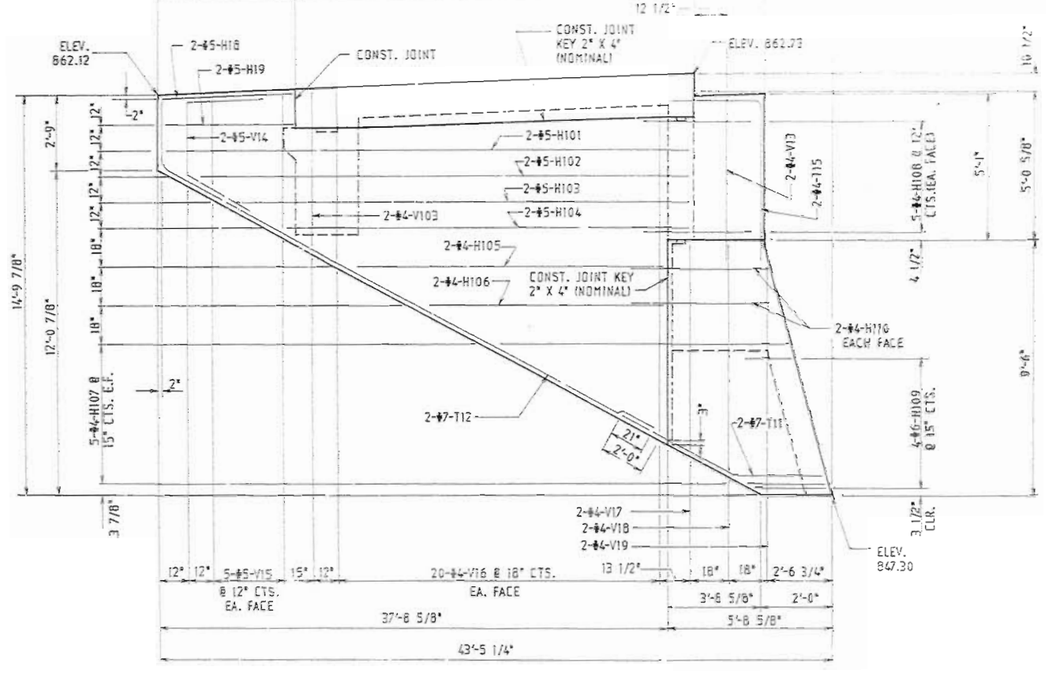
SHEET NO. 6 OF 27

CALLAWAY COUNTY

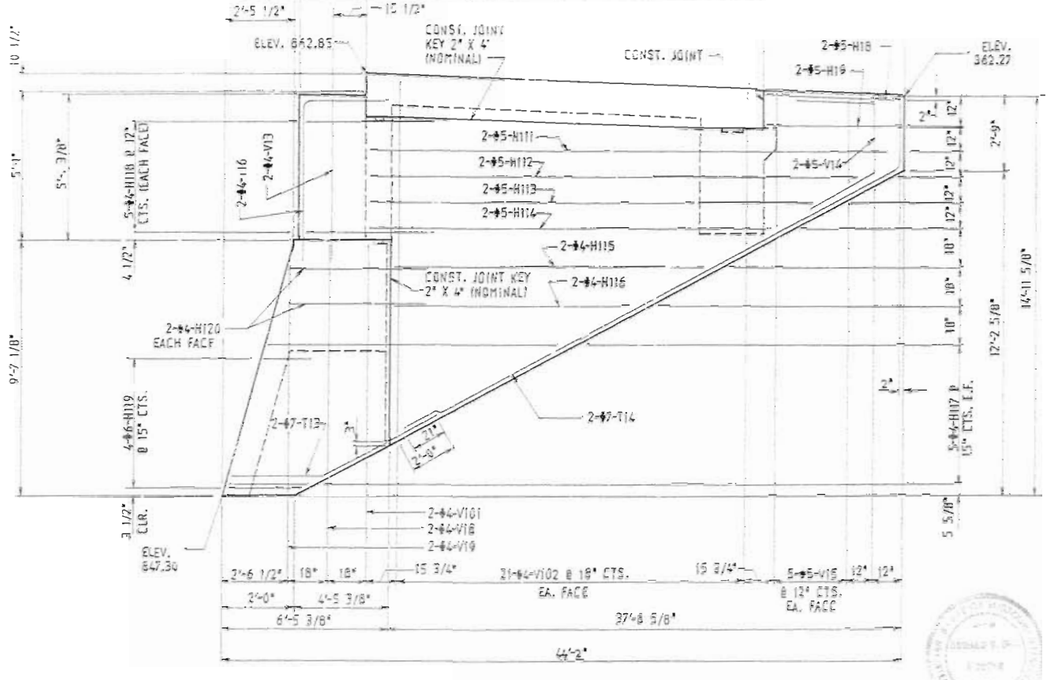
A-34511



SECTION NEAR ℄ ROADWAY
(NORMAL TO BENT)



ELEVATION A-A



ELEVATION B-B

DETAILS OF ABUTMENT NO.1

392 288

Donald D. Bell
5-21-92

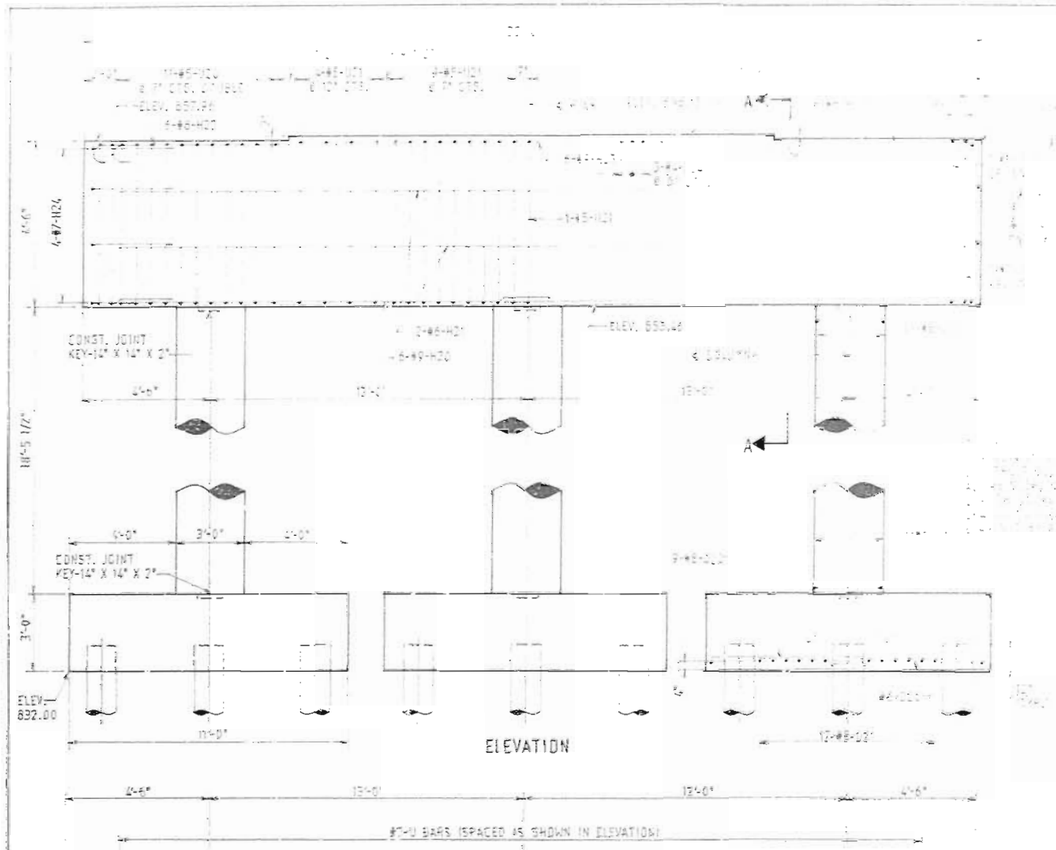
DETAILED JAN. 1992
CHECKED MAR.1992

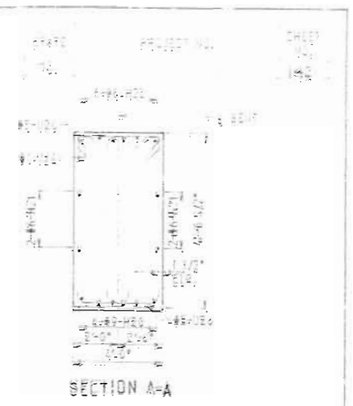
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

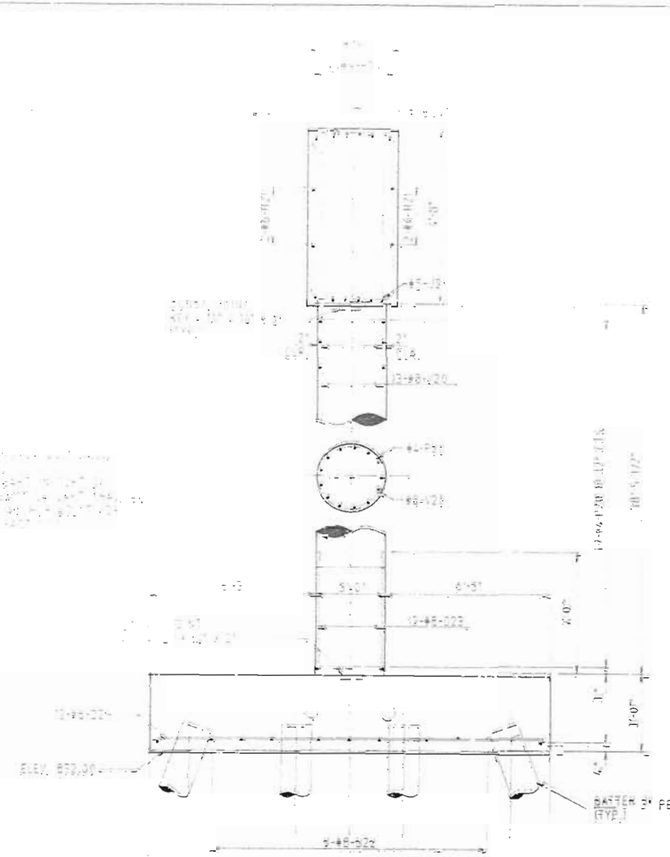
SHEET NO. 7 OF 27

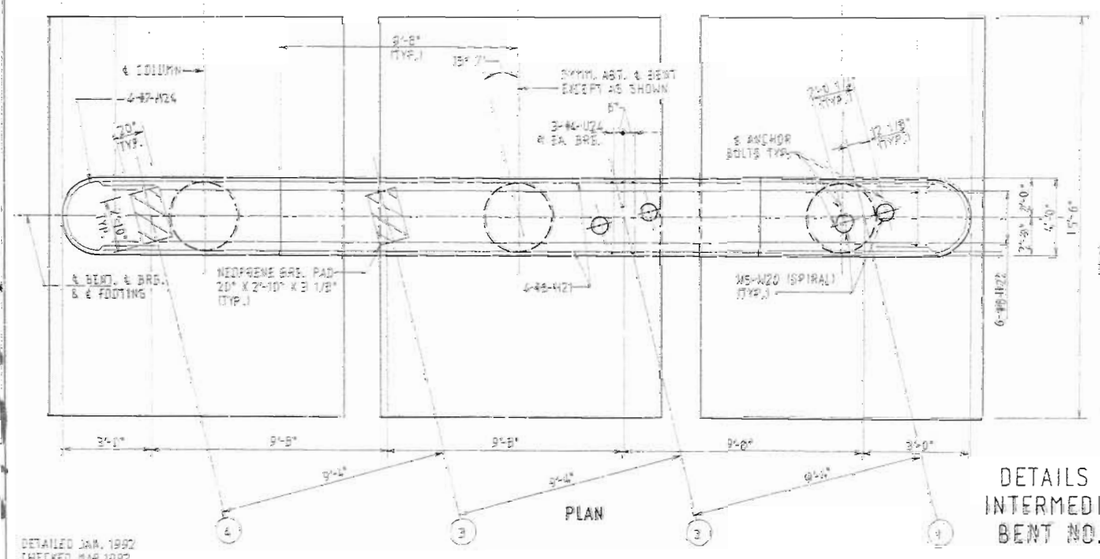
CALLAWAY COUNTY

A-3451

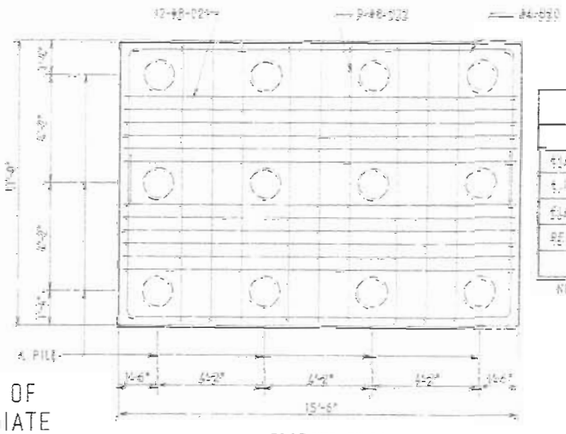








DETAILS OF INTERMEDIATE BENT NO. 2



SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 2		
ITEM		QUANTITY
CLASS I EXCAVATION	CU. YDS.	465
S.I.P. PILE (60')	LIN. FT.	900
SLOPE & CONCRETE (SUBSTRUCTURE)	CU. YDS.	94.9
REINFORCING STEEL	LBS.	9,010

NOTE: WORK THIS TABLE WITH ESTIMATED QUANTITIES AS SHOWN ON SHEET #2

DETAILED JAN. 1992
CHECKED MAR. 1992

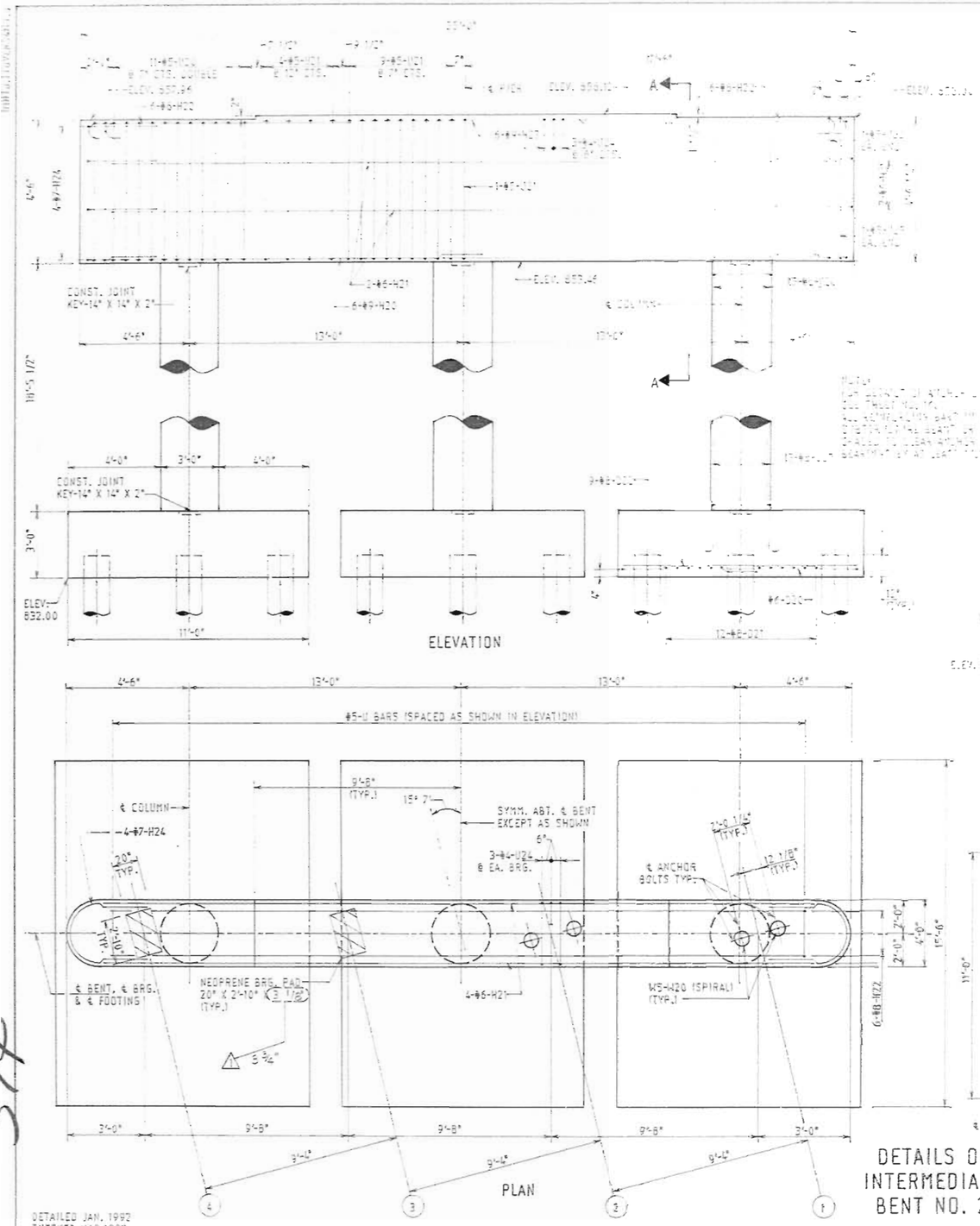
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

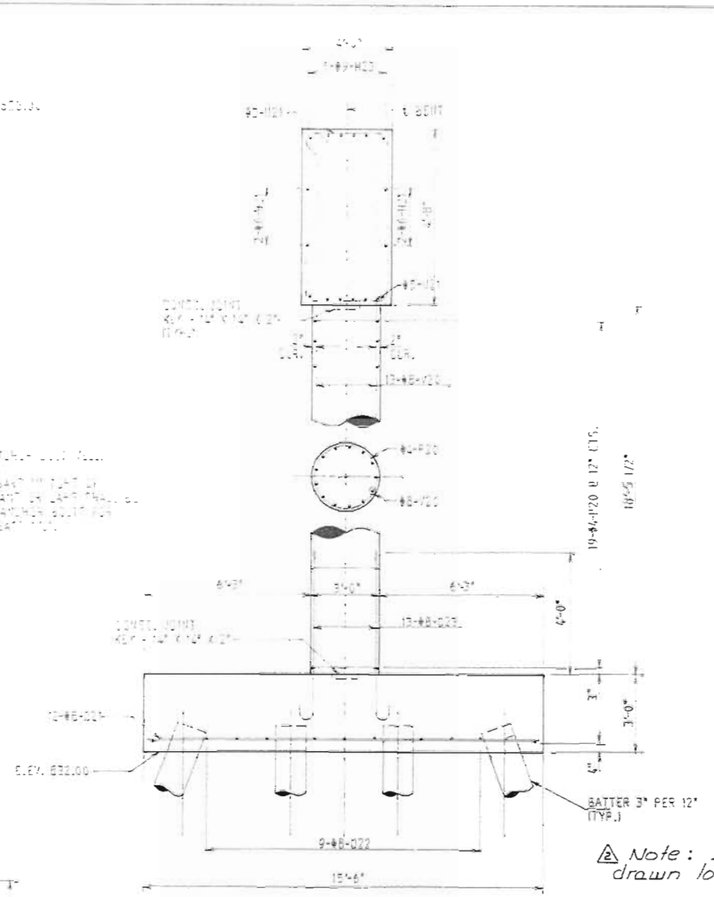
SHEET NO. 9 OF 17 SHTS. Δ Revised 5/29/92

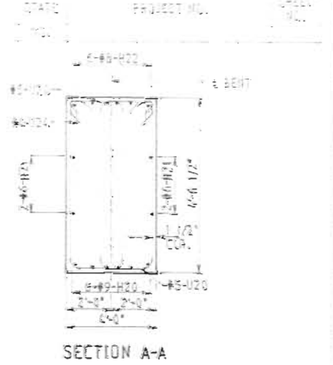
Δ Void sheet No.8, see sheet No.8A.

Donald E Bell

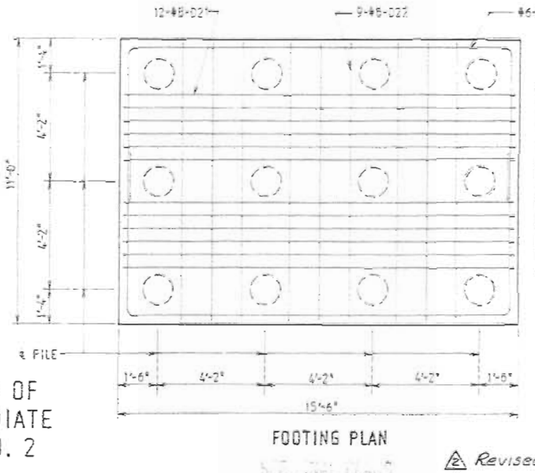
CALLAWAY COUNTY 8-21-92 A-3451







⚠2 Note: Intermediate Bent No.2 is drawn looking back station.



SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 2		
ITEM		QUANTITY
CLASS I EXCAVATION	CU. YDS.	168
C.I.P. PILE (10")	LIN. FT.	900
CLASS B CONCRETE (SUBSTRUCTURE)	CU. YDS.	347
REINFORCING STEEL	LBS.	9,010

NOTE: WORK THIS TABLE WITH ESTIMATED QUANTITIES AS SHOWN ON SHEET #2

DETAILS OF INTERMEDIATE BENT NO. 2

DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 8 OF 27 SHEETS

⚠2 Revised 9/29/92
⚠1 REVISED 6-4-92

CALLAWAY COUNTY

A-3451

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STATE NO. | PROJECT NO. | SHEET NO. 11

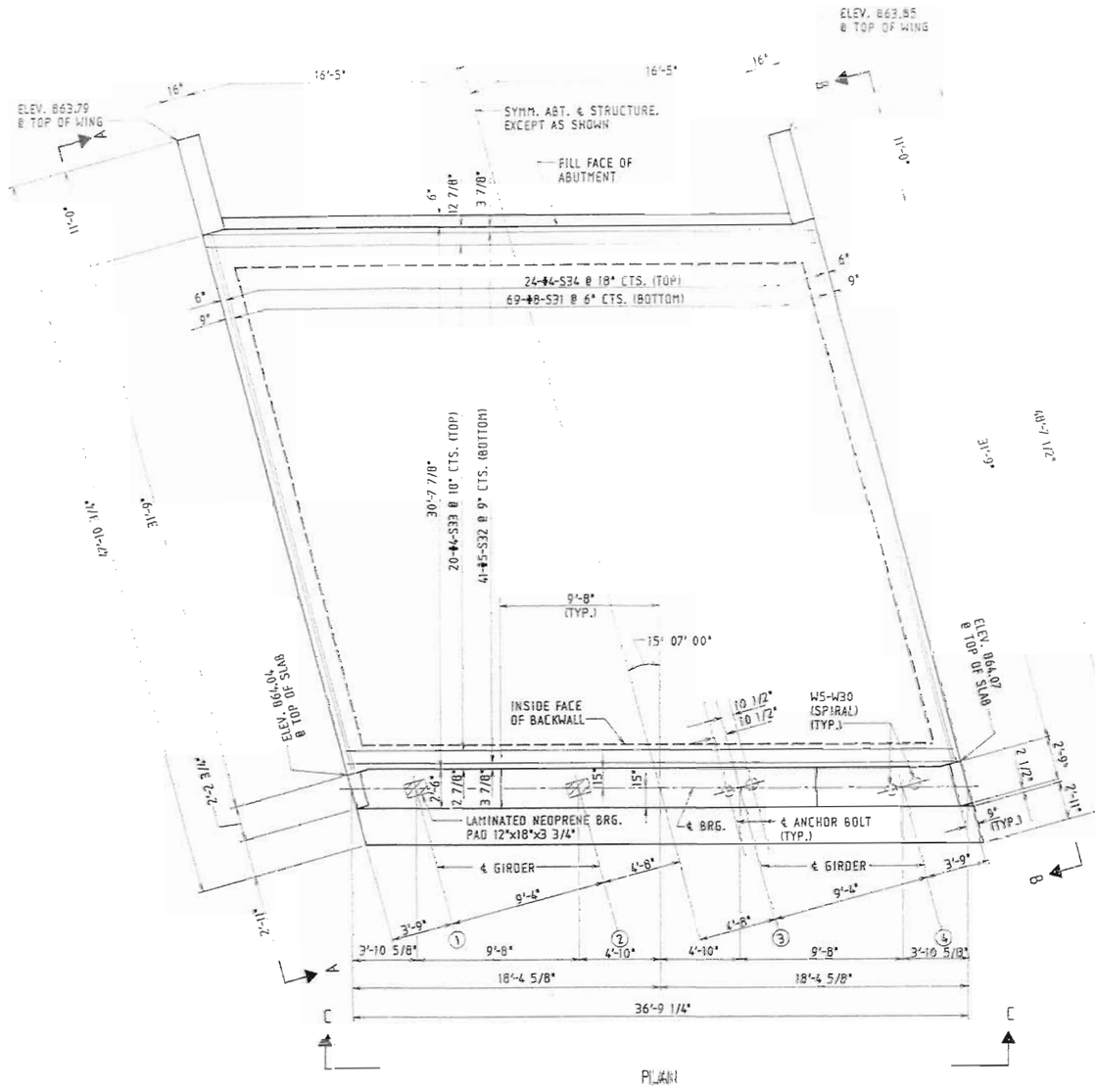
NOTE: TOP OF ABUTMENT SLAB AND EXPANSION DEVICE FOR ABUTMENT NO. 3 SHALL CONFORM TO CROWN OF ROADWAY SLAB. ABUTMENT SLAB ABOVE THE UPPER CONSTRUCTION JOINT SHALL NOT BE POURED UNTIL THE SUPERSTRUCTURE SLAB HAS BEEN POURED IN THE ADJACENT SPAN.

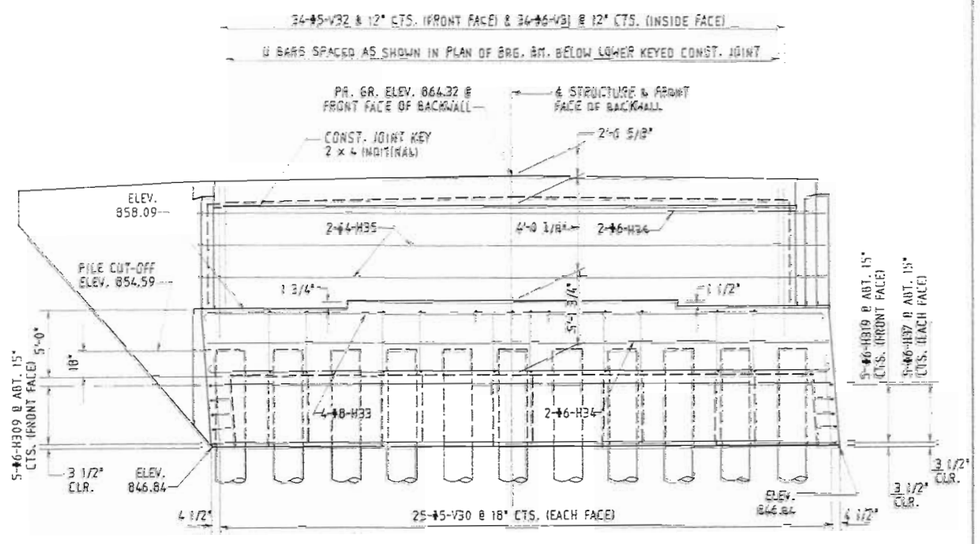
FOR DETAILS OF EXPANSION DEVICE SEE SHEET NO. 19.

FOR DETAILS OF ANCHOR BOLT WELLS SEE SHEET NO. 16.

FOR ELEVATION A-A, ELEVATION B-B, AND SECTION NEAR ℄ ROADWAY, SEE SHEET NO. 12.

FOR DETAILS OF TIMBER HEADER SEE SHEET NO. 22.





ELEVATION C-C

SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 3		
ITEM		QUANTITY
CLASS 1 EXCAVATION	CU. YDS.	56
C.I.P. PILE (14")	LIN. FT.	910
CLASS B CONCRETE (SUBSTRUCTURE)	CU. YDS.	91.9
REINFORCING STEEL	LBS.	6,810
REINFORCING STEEL (EPOXY COATED)	LBS.	934

NOTE: WORK THIS TABLE WITH ESTIMATED QUANTITIES AS SHOWN ON SHEET 92

Donald G. Bell
5-21-92

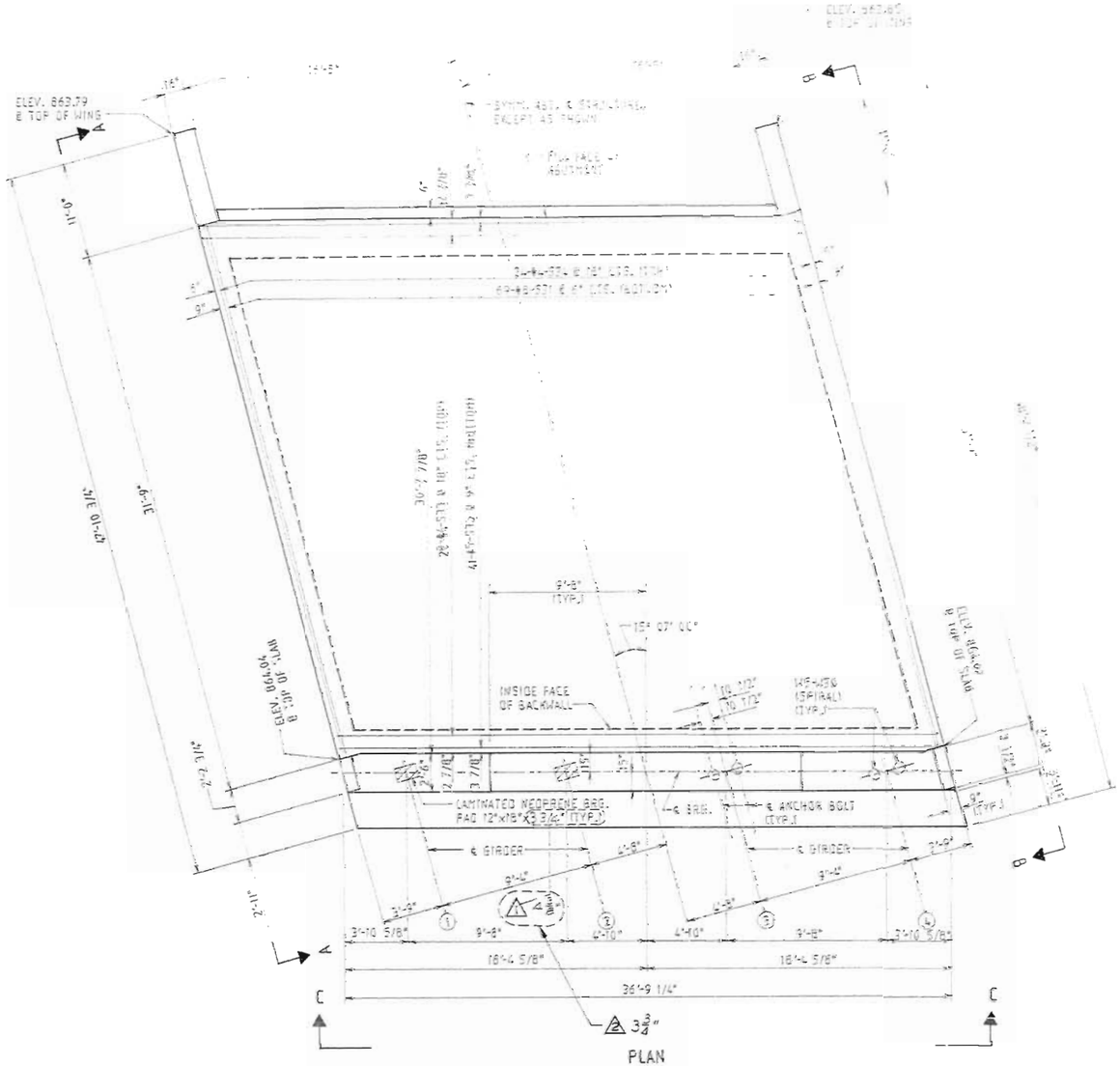
⚠ Void sheet No. 9 . see sheet No 9A .

395-792

DETAILED JAN., 1992
CHECKED MAR., 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 9 OF 27 ⚠ Revised 9/29/92 CALLAWAY COUNTY A-34511



PLAN

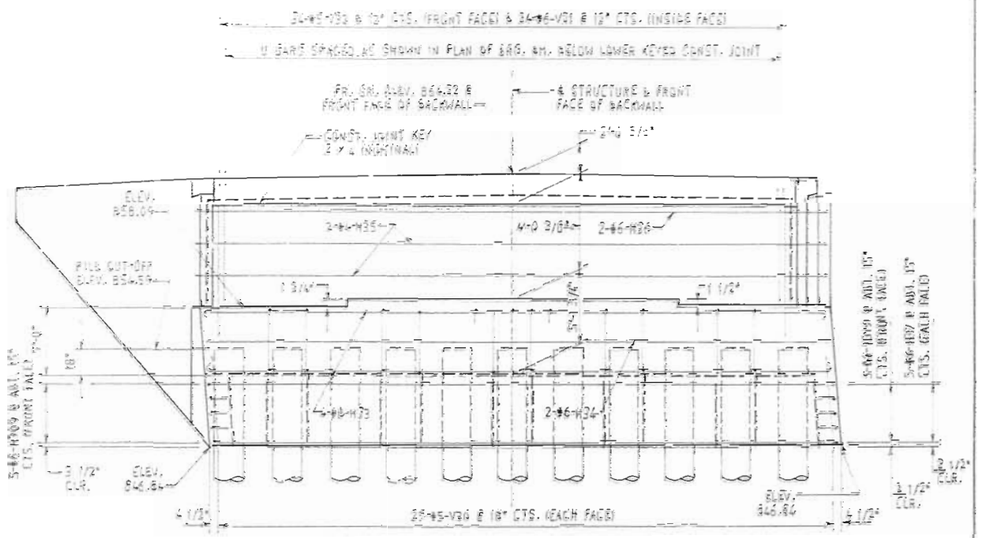
NOTE: THE EXPANSION JOINT SEAL AND EXPANSION DEVICE FOR ABUTMENT NO. 3 SHALL CONFORM TO FINISH OF ROADWAY SLABS. ABUTMENT SLAB ABOVE THE UPPER CONSTRUCTION JOINT SHALL NOT BE POURED UNTIL THE SUPERSTRUCTURE SLAB HAS BEEN POURED IN THE ADJACENT SPAN.

FOR DETAILS OF EXPANSION DEVICE SEE SHEET NO. 19.

FOR DETAILS OF ANCHOR BOLT WELLS SEE SHEET NO. 16.

FOR ELEVATION A-A, ELEVATION B-B, AND SECTION NEAR ℄ ROADWAY, SEE SHEET NO. 13.

FOR DETAILS OF TIMBER HEADER SEE SHEET NO. 20.



ELEVATION C-C

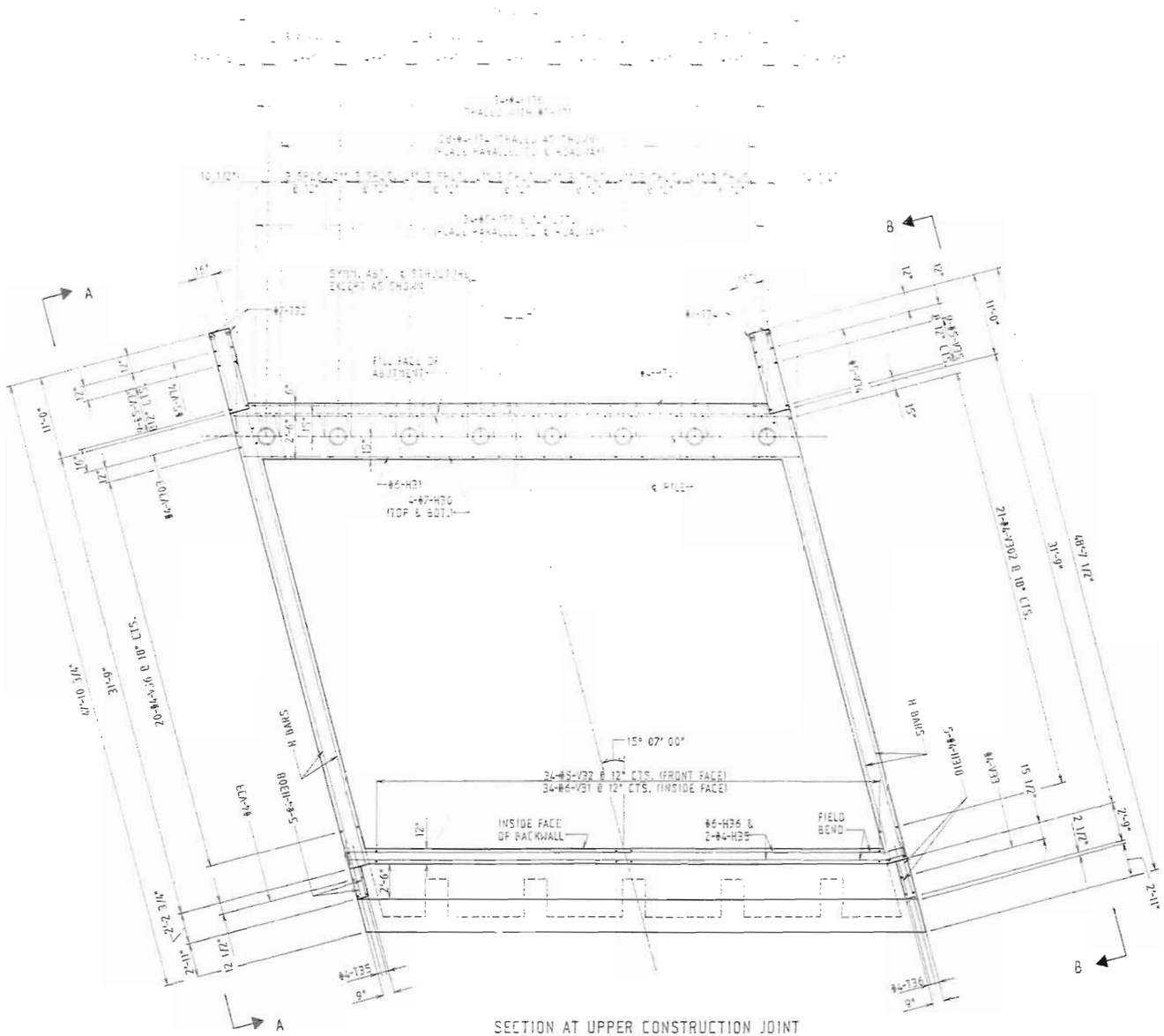
SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 3		
ITEM		QUANTITY
CLASS 1 EXCAVATION	CU. YDS.	156
C.I.P. PILE (14")	LIN. FT.	910
CLASS B CONCRETE (SUBSTRUCTURE)	CU. YDS.	97.9
REINFORCING STEEL	LBS.	8,010
REINFORCING STEEL (EPOXY COATED)	LBS.	930

NOTE: WORK THIS TABLE WITH ESTIMATED QUANTITIES AS SHOWN ON SHEET #2

336

DETAILS OF ABUTMENT NO. 3

SEE FINAL PLANS



SECTION AT UPPER CONSTRUCTION JOINT

DETAILS OF ABUTMENT NO. 3

Donald D. Bell
5-21-92

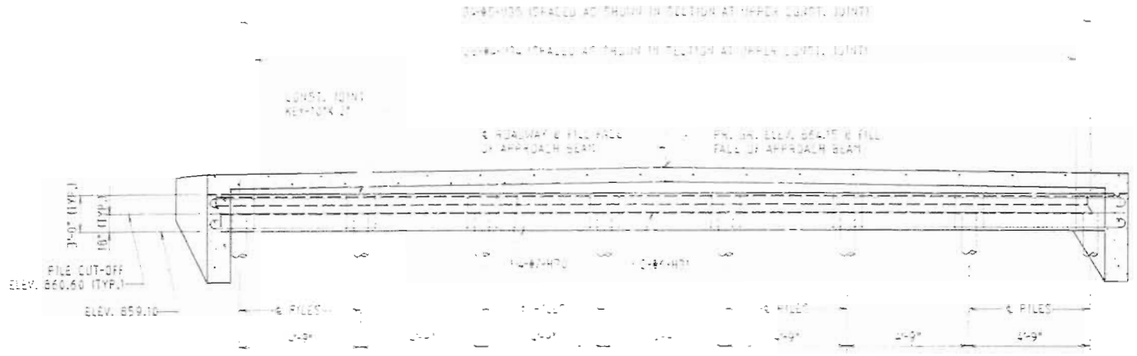
397 82

DETAILED JAN. 1992
CHECKED MAR.1992

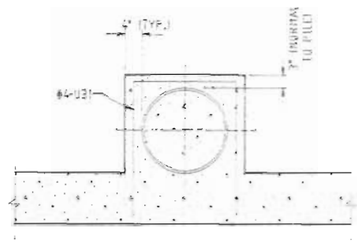
THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

CALLAWAY COUNTY

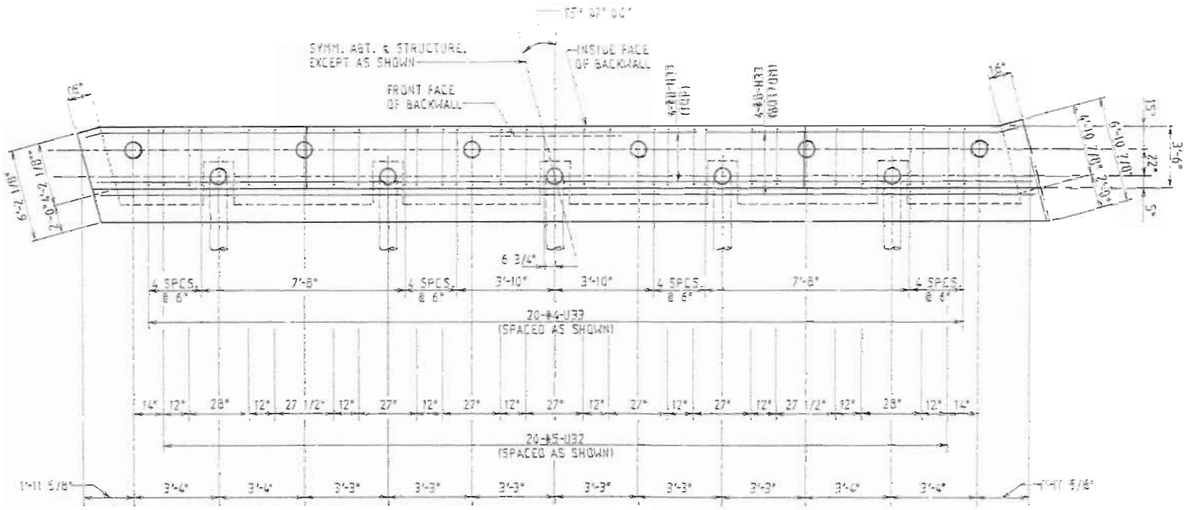
A-3451



SECTION NEAR APPROACH BEAM



SECTION D-D



PLAN OF BEARING BEAM BELOW LOWER KEYED CONSTRUCTION JOINT

NOTE: ALL REINFORCING BARS IN TOPS OF SUBSTRUCTURE BEAMS OR CAPS SHALL BE SPACED TO CLEAR ANCHOR BOLTS FOR BEARINGS BY AT LEAST 1/2".

DETAILS OF ABUTMENT NO. 3

Donald D. Bell
5-21-92

398 Fix

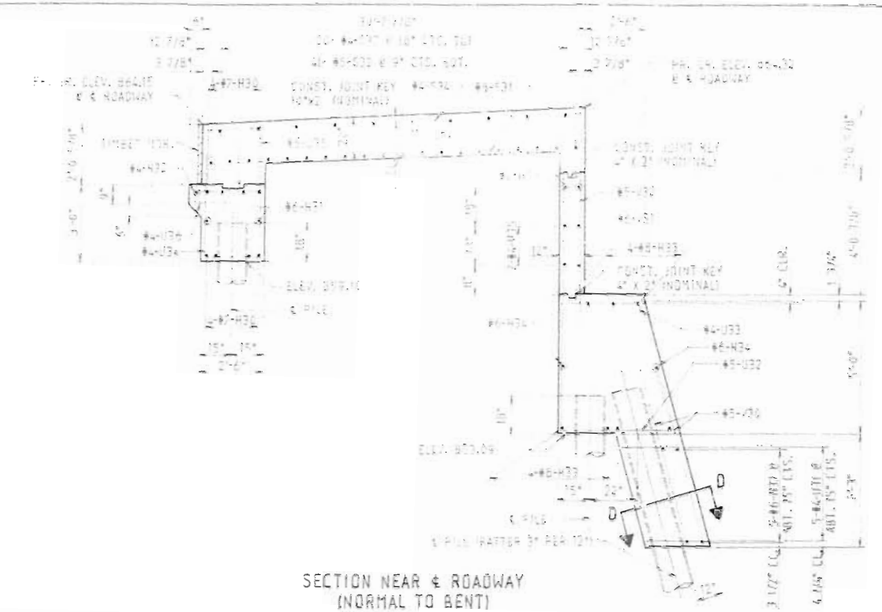
DETAILED JAN. 1992
CHECKED MAR. 1992

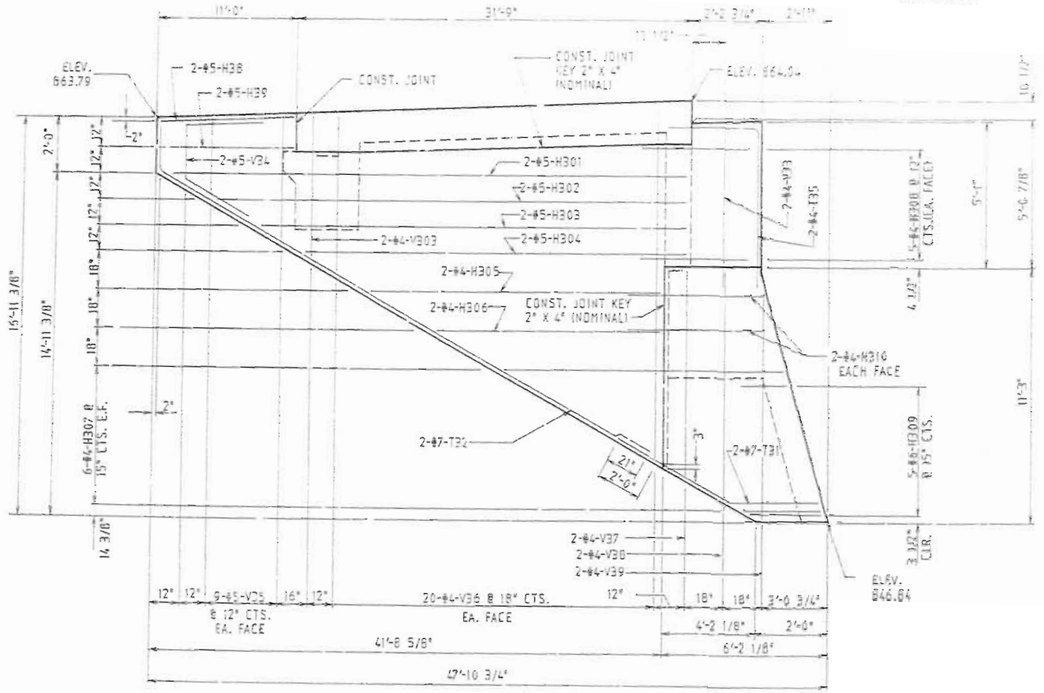
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 11 OF 27

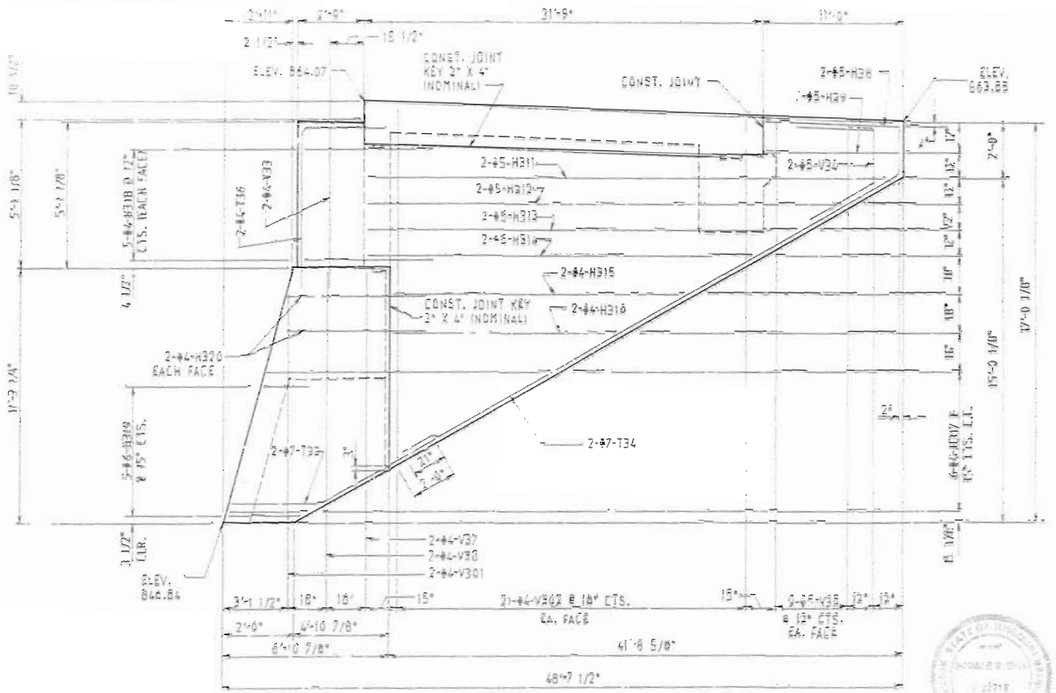
CALLAWAY COUNTY

A-3451





ELEVATION A-A



ELEVATION B-B

Donald D Bell
5-21-92

399 85

DETAILED JAN. 1992
CHECKED MAR. 1992

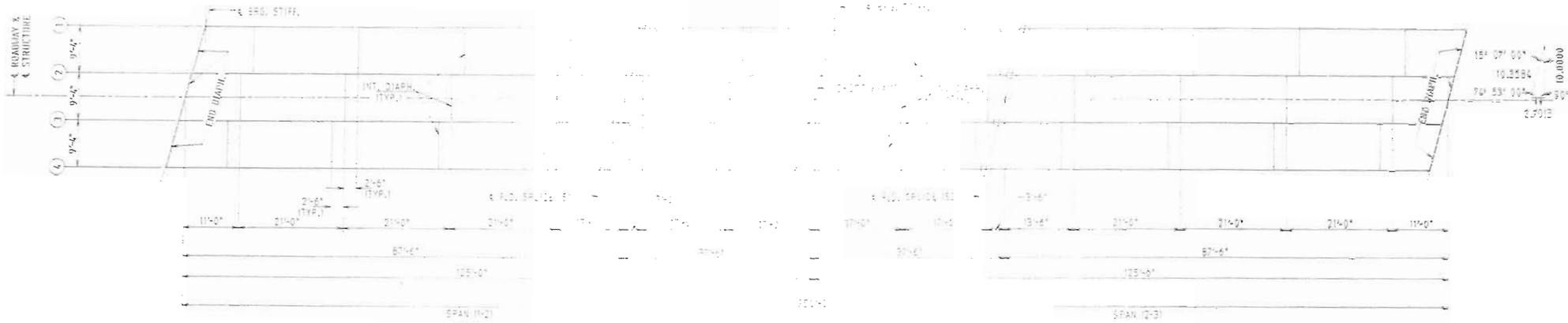
DETAILS OF ABUTMENT NO. 3

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

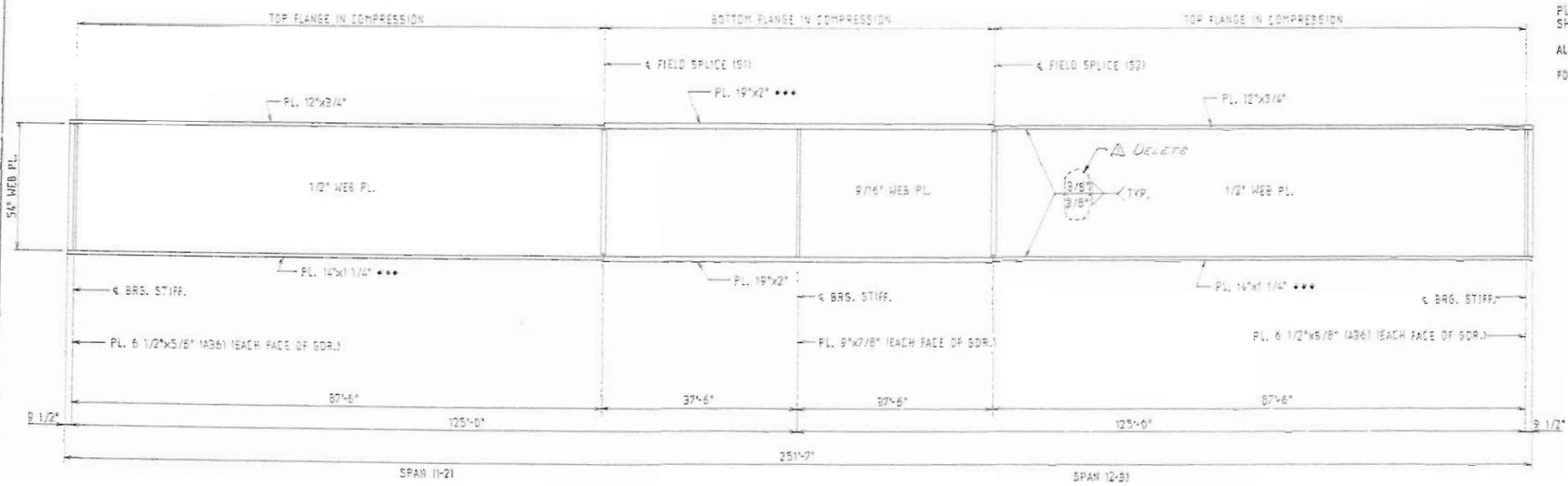
SHEET NO. 12 OF 27

CALLAWAY COUNTY

A-3451



PLAN OF STRUCTURAL STEEL



ELEVATION OF GIRDER

NOTE:
LONGITUDINAL DIMENSIONS ARE HORIZONTAL.

FABRICATED STRUCTURAL STEEL SHALL BE A-572, EXCEPT AS NOTED.

••• INDICATES FLANGE PLATES SUBJECT TO NOTCH TOUGHNESS REQUIREMENTS.

PLATE GIRDERS SHALL BE FABRICATED TO CONFORM TO CAMBER DIAGRAM SHOWN ON SHEET NO. 16.

ALL WEB PLATES SHALL BE SUBJECT TO NOTCH TOUGHNESS REQUIREMENTS.

FOR LOCATION OF SLAB DRAINS, SEE SHEET NO. 15.

Donald D Bell
5-21-92

400 276

△ REVISED 5-21-92

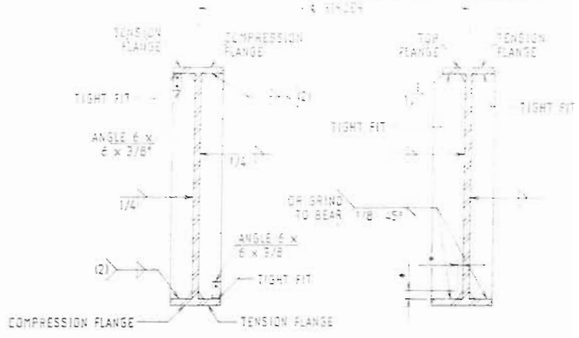
SEE FINAL PLANS

DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

CALLAWAY COUNTY

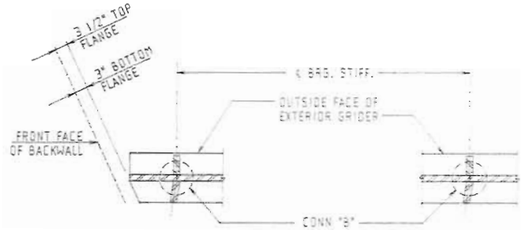
A-3451

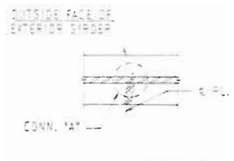


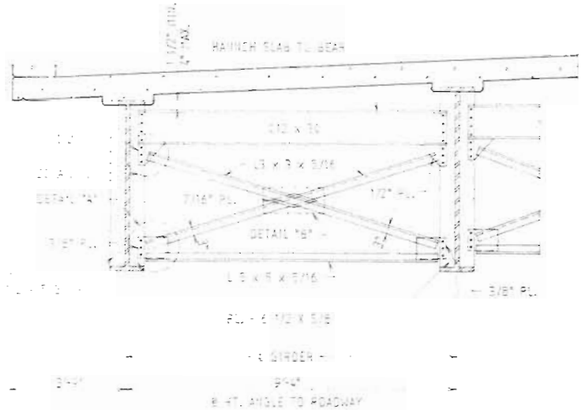
(2) WELD TO COMPRESSION FLANGE AS LOCATED IN ELEVATION OF GIRDER.

• 1-1/2" x 3" TYPICAL FOR ALL INT. WEB STIFF., INT. DIAPH. CONN. PL. AND BRG. STIFF.

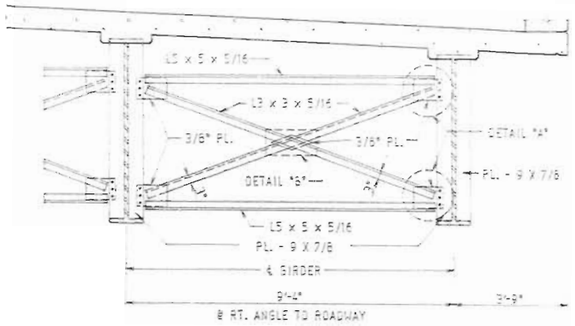
WELDING DETAILS





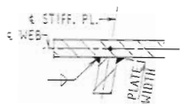


TYPICAL PART SECTION SHOWING END DIAPHRAGMS

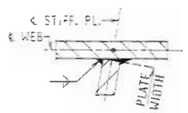


TYPICAL PART SECTION SHOWING CROSS FRAMES

TYPICAL LOCATION DETAILS

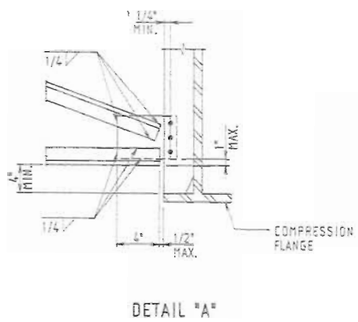


CONN. "B"

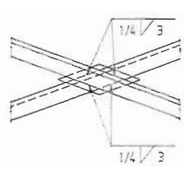


CONN. "A"

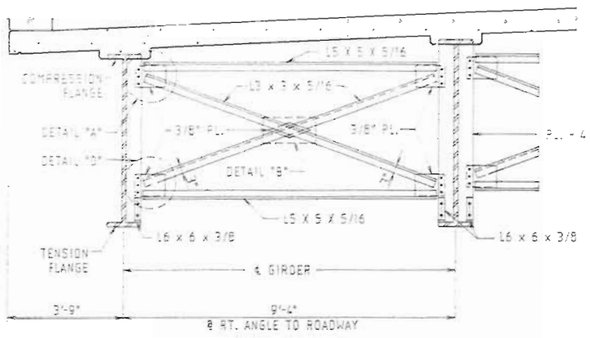
WELDING DETAILS



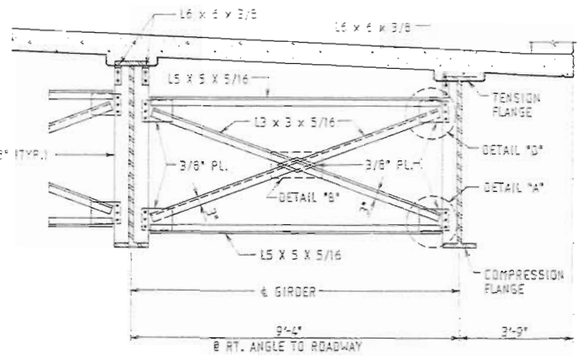
DETAIL "A"



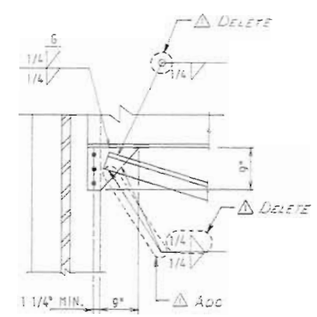
DETAIL "B"



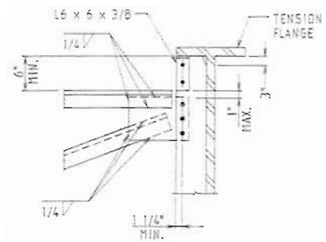
TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS BOTTOM FLANGE IN TENSION



TYPICAL PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS TOP FLANGE IN TENSION



DETAIL "C"

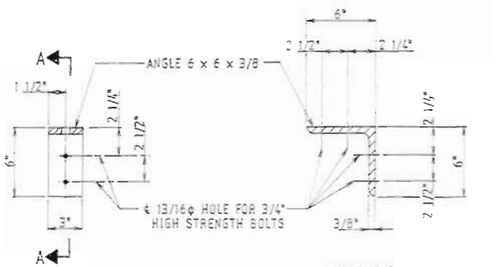


DETAIL "D"

Δ ADD

NOTE:

ALL END & INTERMEDIATE DIAPHRAGMS INCLUDING CONNECTION PLATES, AND ALL OF APPLIANCES MAY BE A36 STEEL.



SECTION A-A

DETAIL OF FLANGE CONNECTION ANGLE

Donald D. Bell
5-21-92

401 277

DETAILED JAN. 1992
CHECKED MAR.1992

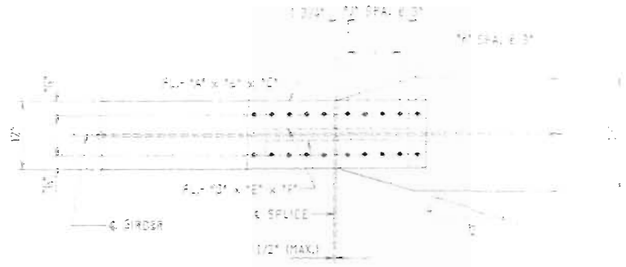
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 14 OF 27

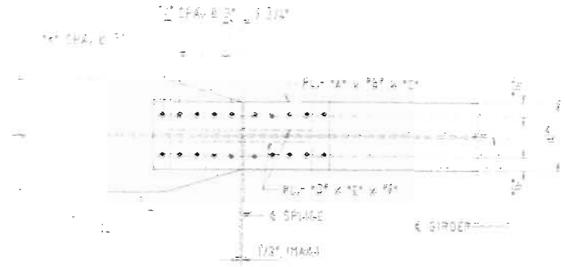
Δ REVISED - 5-4-92

CALLAWAY COUNTY

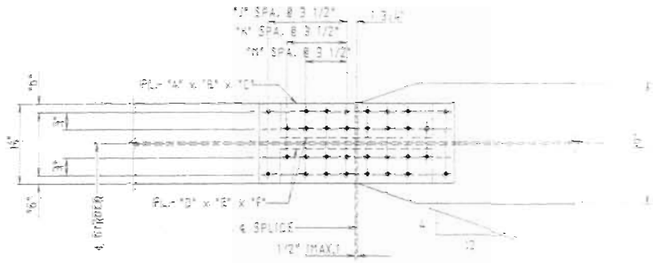
A-3451



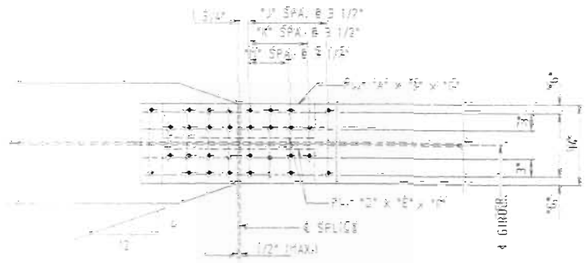
S1 TOP



S2 TOP



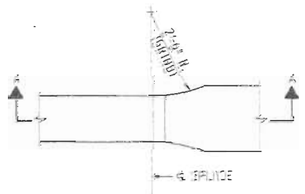
S1 BOTTOM



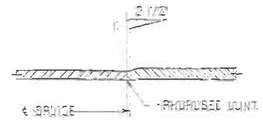
S2 BOTTOM

NOTE: ALL SPLICE PLATES SHALL BE NORMAL UNLESS NOTED.

SPLICE LOCATION	TABLE OF DIMENSIONS											
	A	B	C	D	E	F	G	J	K	M	N	P	Q
S1 (TOP)	12"	5/8"	2'-6 1/2"	8"	1/2"	2'-0 1/2"	2 1/2"	4	3	/	12"	1 1/4"	1'-3"
S1 (BOTT.)	16"	1 1/8"	3'-5 1/2"	6"	1 1/8"	2'-10 1/2"	1 1/2"	5	4	2	11"	3/4"	1'-8 1/2"
S2 (TOP)	12"	5/8"	2'-6 1/2"	8"	1/2"	2'-0 1/2"	2 1/2"	4	3	/	12"	1 1/4"	1'-3"
S2 (BOTT.)	16"	1 1/8"	3'-5 1/2"	6"	1 1/8"	2'-10 1/2"	1 1/2"	5	4	2	14"	3/4"	1'-8 1/2"

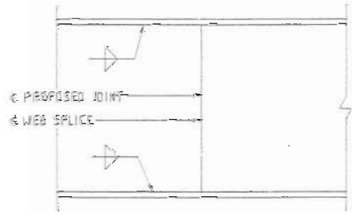


2'-0" RADIUS
TRANSITION PLAN

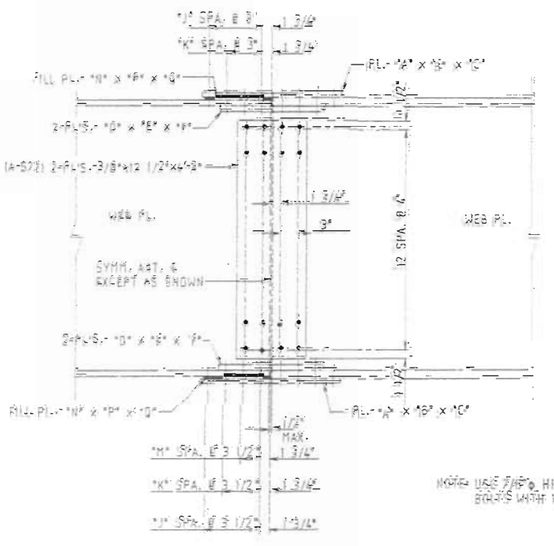


WELDED SHOP FLANGE SPLICE

SECTION A-A



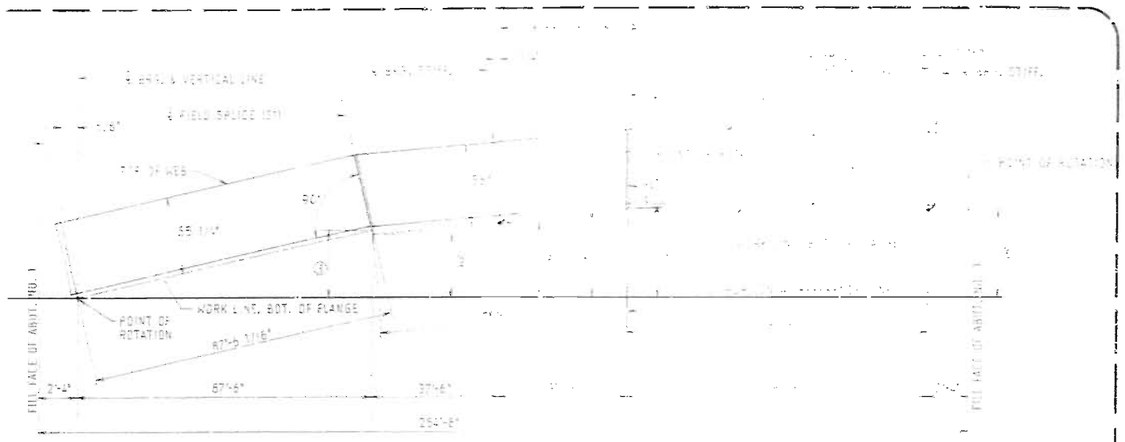
SHOP WEB SPLICE



EDITED FIELD SPLICE

NOTE: USE F.H.P.'s HIGH STRENGTH BOLTS WITH 15/16"ø HOLES.

Donald D. Bell
5-21-92



ELEVATION OF LONGITUDINAL STEEL DIAGRAM

①	11 1/2" @ GRD. #1,#2 12" @ GRD. #3,#4	④	1'-2 1/2" @ GRD. #1,#2 1'-3 1/2" @ GRD. #3,#4
②	10 3/4" @ GRD. #1,#2 11 1/4" @ GRD. #3,#4	⑤	1'-5 1/2" @ GRD. #1,#2 1'-6" @ GRD. #3,#4
③	1'-0 3/4" @ GRD. #1,#2 1'-1 1/4" @ GRD. #3,#4	⑥	1'-2 1/2" GRD. #1,#2 1'-3 1/2" @ GRD. #3,#4

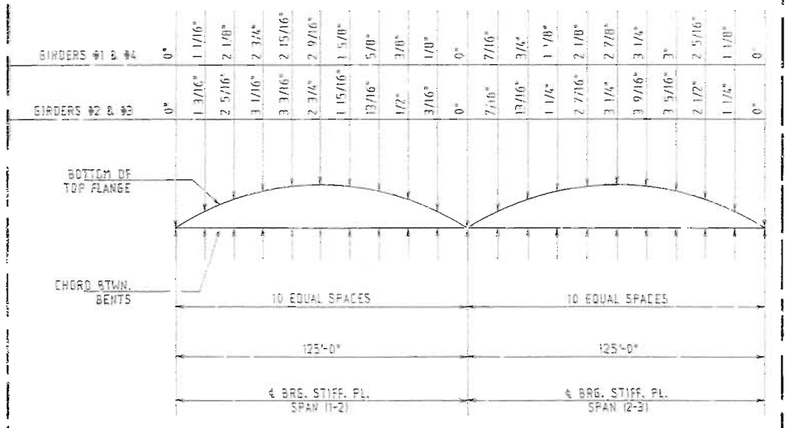


PLATE GIRDER CAMBER DIAGRAM

NOTE: CAMBER INCLUDED ALLOWANCE FOR DEAD LOAD DEFLECTION DUE TO CONCRETE SLAB, CURB AND STRUCTURAL STEEL, AND VERTICAL CURVE.

⚠ Omit

⚠ Note: For Plate Girder Camber Diagram and Part Longitudinal Section see sheet No. 16A .

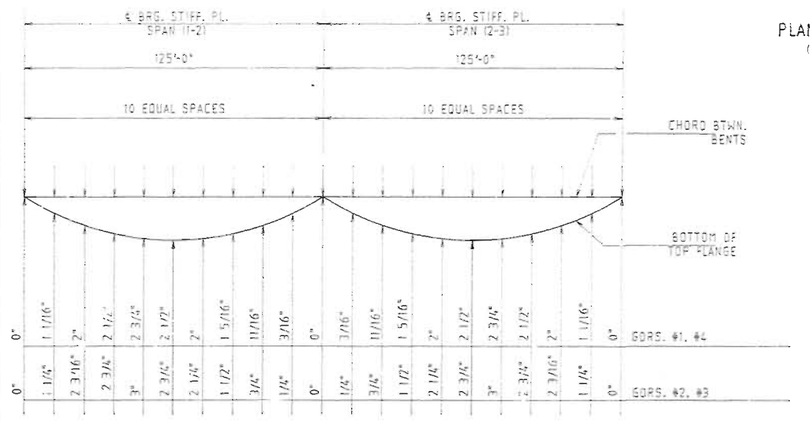
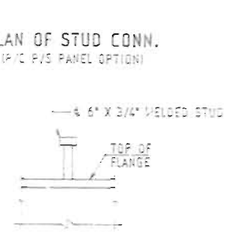


PLATE GIRDER DEAD LOAD DEFLECTION DIAGRAM

NOTE: 17% OF DEAD LOAD DEFLECTION DUE TO WEIGHT OF STRUCTURAL STEEL.

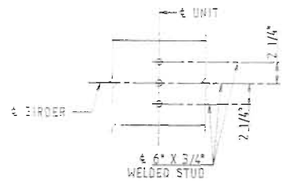
DEFLECTION DUE TO CONCRETE SLAB, CURB, AND STRUCTURAL STEEL.

PLAN OF STUD CONN.
(P/C P/S PANEL OPTION)

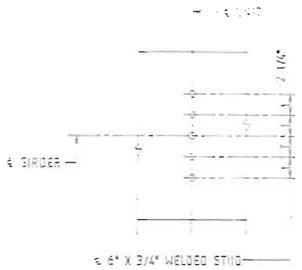


ELEVATION

DETAIL OF ANCHOR BOLT WELL



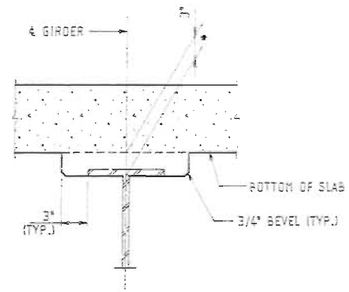
PLAN OF STUD CONN.
(CIP & SIP OPTION)



PLAN OF STUD CONN.
(ALL OPTIONS)

DETAIL OF SHEAR CONNECTOR

NOTE: A WEIGHT OF 1,725 LBS. OF SHEAR CONNECTORS IS INCLUDED IN WEIGHT OF FABRICATED STRUCTURAL CARBON STEEL.



THEORETICAL SLAB HAUNCH

NOTE: * DIMENSION MAY VARY IF THE GIRDER CAMBER AFTER ERECTION DIFFERS FROM PLAN CAMBER BY MORE THAN THE ½ OF D.L. DEFLECTION DUE TO THE WEIGHT OF STRUCTURAL STEEL. NO PAYMENT WILL BE MADE FOR ADDITIONAL FORMING OR CONCRETE REQUIRED FOR VARIATION IN HAUNCHING.

Donald D. Bell
5-21-92

42378

DETAILED JAN. 1992
CHECKED MAR. 1992

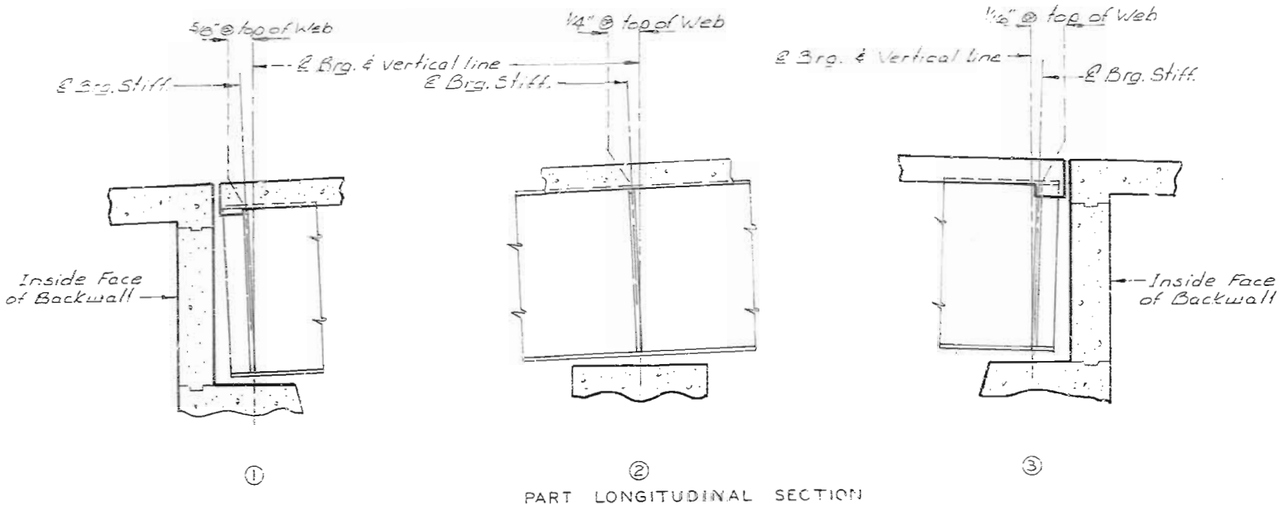
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 16 OF 17 ⚠ Revised 9/29/92

CALLAWAY COUNTY

A-3451

STATE	PROJ. NO.	SHEET NO.
MO.		



PART LONGITUDINAL SECTION

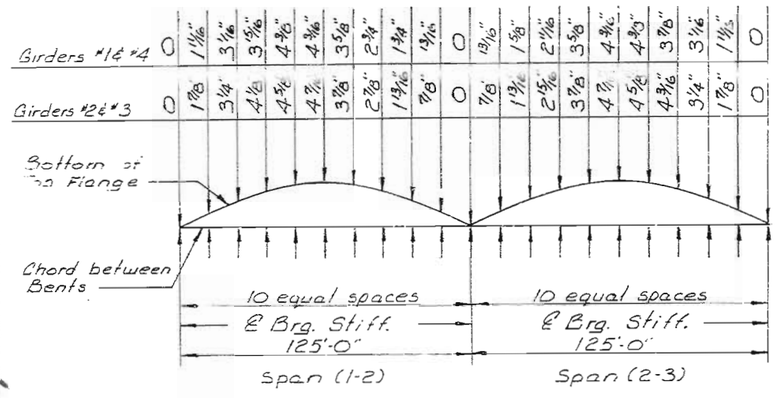


PLATE GIRDER CAMBER DIAGRAM

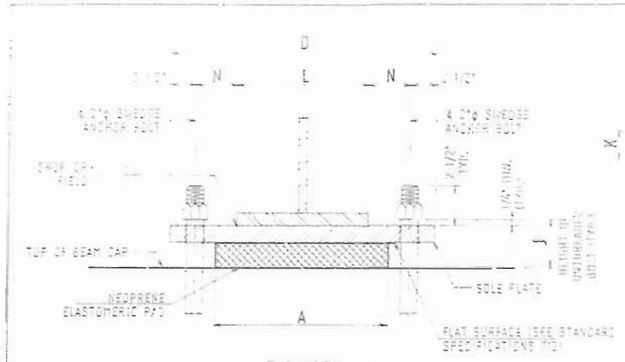
Note : Camber includes allowance for Vertical curve , Dead Load Deflection due to concrete slab , Curb , and Structural steel.

DETAILED Sept. 1992
CHECKED Sept. 1992

Note: This drawing is not to scale. Follow dimensions.

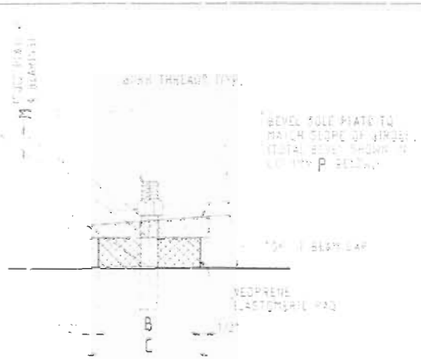
SEE FINAL PLANS
Sheet No. 16A of 27 ⚠ Revised 9/29/92 CALLAWAY COUNTY

A-3451

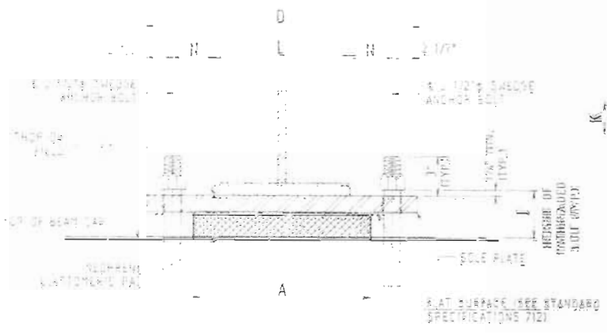


END VIEW

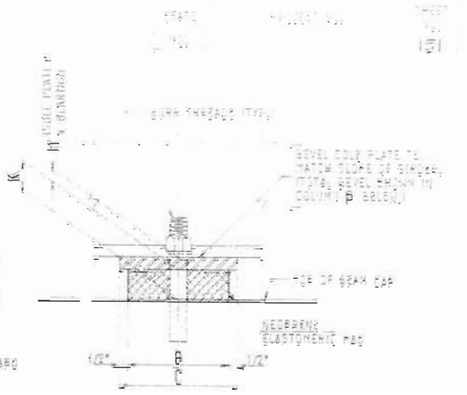
NOTE: THE LOCATION OF ANCHOR BOLTS IN RELATION TO THE SLOTTED HOLES IN THE SOLE PLATE SHALL CORRESPOND WITH THE TEMPERATURE AT THE TIME OF ERECTION. AT 80°F, THE SLOTTED HOLES SHOULD CENTER ON THE ANCHOR BOLTS.



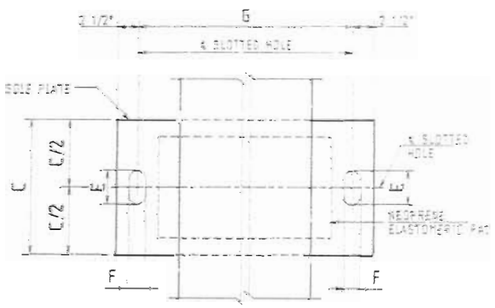
SIDE VIEW



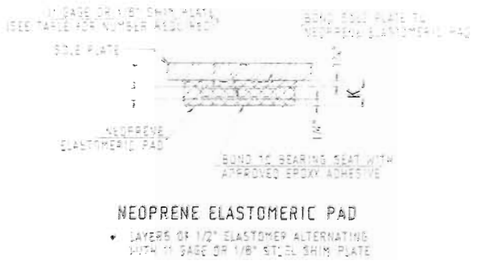
END VIEW



SIDE VIEW



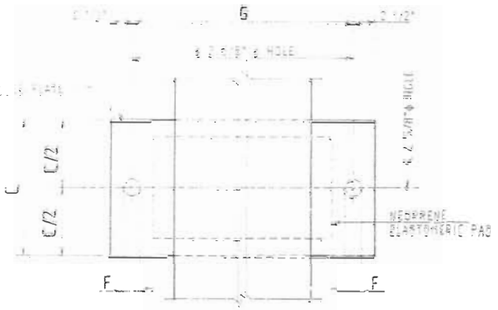
PART PLAN VIEW



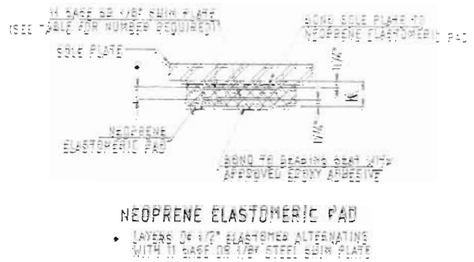
NEOPRENE ELASTOMERIC PAD

- LAYERS OF 1/2" ELASTOMER ALTERNATING WITH 11 GAGE OR 1/8" STEEL SHIM PLATE

EXPANSION BEARINGS
NUMBER REQUIRED = 8



PART PLAN VIEW



NEOPRENE ELASTOMERIC PAD

- LAYERS OF 1/2" ELASTOMER ALTERNATING WITH 11 GAGE OR 1/8" STEEL SHIM PLATE

FIXED BEARINGS
NUMBER REQUIRED = 1

① 3"ø (BT #1, #2)
2 1/2"ø (BT #3)

② 18" (BT #1, #2)
22" (BT #3)

EXPANSION BEARINGS

BENT	A	B	C	D	E	F	G	J	K	L	M	N	P	NUMBER OF SHIM PLATES*
1	18	10	13	24	15 1/4	2 1/8	1'	5 1/2	3 1/2	14	1' 1/2	3 1/2	1 1/8	7
3	18	10	13	24	15 1/4	2 1/8	2'	5 1/2	3 1/2	14	1' 1/2	3 1/2	0	7

① 5¾" 3¾" 13¼" (6)
5¾" 3¾" 13¼" (6)

* THE REQUIRED SHIM PLATE SHALL BE PLACED BETWEEN LAYERS OF ELASTOMER AND MOLDED TOGETHER TO FORM AN INTEGRAL UNIT.

GENERAL NOTES:

ANCHOR BOLTS SHALL BE ① A588 STEEL SWEDGED BOLTS AND SHALL EXTEND ② INTO THE CONCRETE WITH NUT - 2, 2H OR A563 - C, C3, D, DH, DH3 HEAVY HEXAGON NUTS. ACTUAL MANUFACTURER'S CERTIFIED MTL TEST REPORTS (CHEMICAL AND MECHANICAL) SHALL BE PROVIDED IF WELDING SHALL BE 1" LESS THAN EXTENSION INTO THE CONCRETE).

ALL STRUCTURAL STEEL FOR THE SOLE PLATE, ANCHOR BOLTS AND HEAVY HEXAGON NUTS SHALL BE PAINTED WITH 3 COATS (5 MILS. MIN.) OF INORGANIC ZINC. WELD AREAS TO BE TOUCHED UP AFTER ASSEMBLY.

NEOPRENE ELASTOMERIC PADS SHALL BE 60 DUROMETER.

THE SOLE PLATE SHALL BE FURNISHED WITH THE BEARING AND FIELD OR SHOP WELDED TO THE STRINGERS OR GIRDERS.

STRUCTURAL STEEL FOR SOLE PLATE SHALL BE A36.

THE ACCEPTED QUANTITY OF ELASTOMERIC BEARING ASSEMBLIES, COMPLETE-IN-PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR LAMINATED NEOPRENE BEARING PADS (STEEL STRUCTURES) EACH.

FIXED BEARINGS

BENT	A	B	C	D	F	G	J	K	L	M	N	P	NUMBER OF SHIM PLATES*
2	30	24	30	29	1 1/4	3 5/8	24 1/4	5 1/2	19	1 1/2	3 5/16	1/8	6

① 5½"

* THE REQUIRED SHIM PLATE SHALL BE PLACED BETWEEN LAYERS OF ELASTOMER AND MOLDED TOGETHER TO FORM AN INTEGRAL UNIT.

Arnold D. Bell
5-21-92

495308

DETAILS OF LAMINATED NEOPRENE BEARINGS (STEEL STRUCTURES)

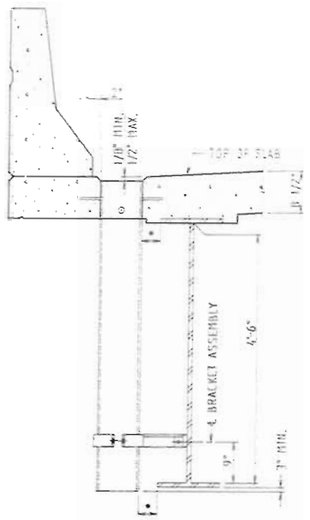
DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 17 OF 27 ⚠ Revised 9/29/92

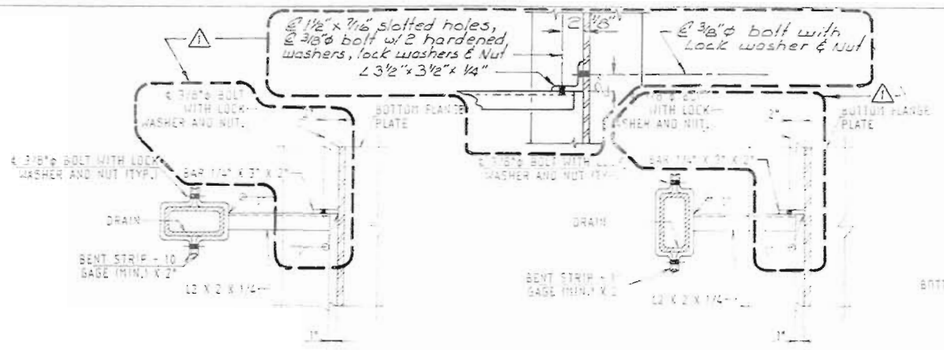
CALLAWAY COUNTY

A-3461

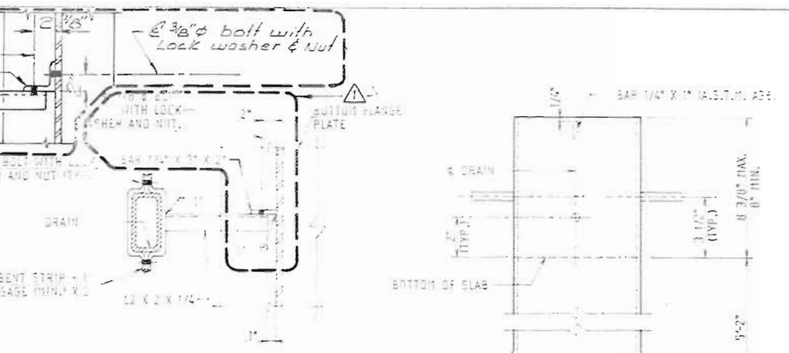


PART ELEVATION OF SLAB AT DRAIN

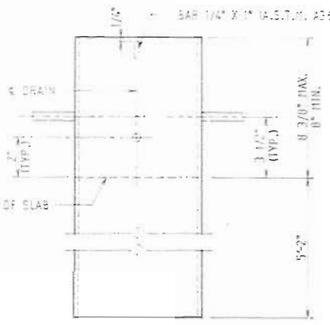
- IF DIMENSION IS LESS THAN 1", DRAINS SHALL BE PLACED PARALLEL TO ROADWAY, OTHERWISE PLACE DRAINS TRANSVERSE TO ROADWAY.



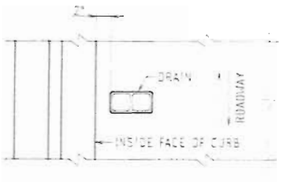
PART SECTION SHOWING BRACKET ASSEMBLY



PART SECTION SHOWING BRACKET ASSEMBLY

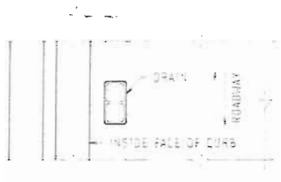


ELEVATION OF DRAIN



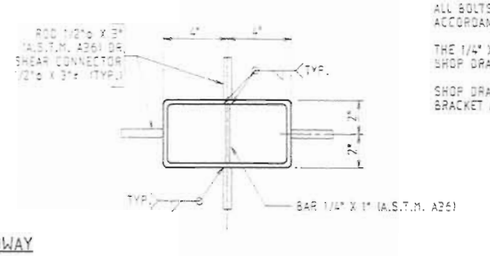
PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS TRANSVERSE TO ROADWAY



PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS PARALLEL TO ROADWAY



PLAN OF DRAIN

GENERAL NOTES:

SLAB DRAINS MAY BE FABRICATED OF EITHER 1/4" WELDED SHEETS OF A.S.T.M. A36 STEEL OR FROM 1/4" STRUCTURAL STEEL TUBING A.S.T.M. A500 OR A501.

OUTSIDE DIMENSIONS OF DRAINS ARE 8" X 6".

LOCATE DRAINS IN THE SLAB BY DIMENSIONS SHOWN IN THE PART ELEVATION.

SHIFT REINFORCING IN FIELD WHERE NECESSARY TO CLEAR DRAINS.

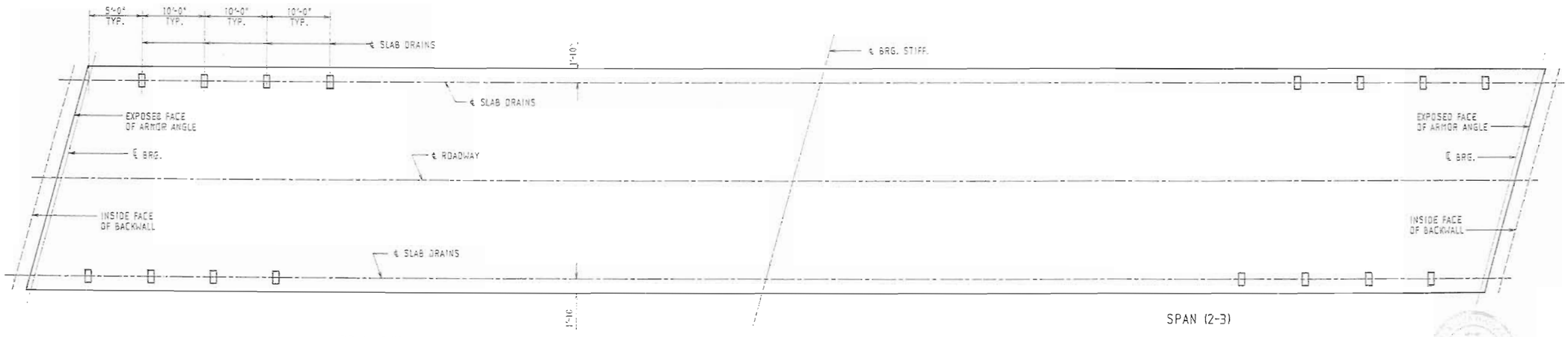
THE DRAINS AND BRACKET ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.

ALL BOLTS, LOCK WASHERS AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A153.

THE 1/4" X 3" X 2" BAR SHALL BE LOCATED ON THE PLATE GIRDER SHOP DRAWINGS.

SHOP DRAWINGS WILL NOT BE REQUIRED FOR SLAB DRAINS AND BRACKET ASSEMBLY.

SLAB DRAIN DETAILS



SPAN (1-2)

SPAN (2-3)

PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS

406 304

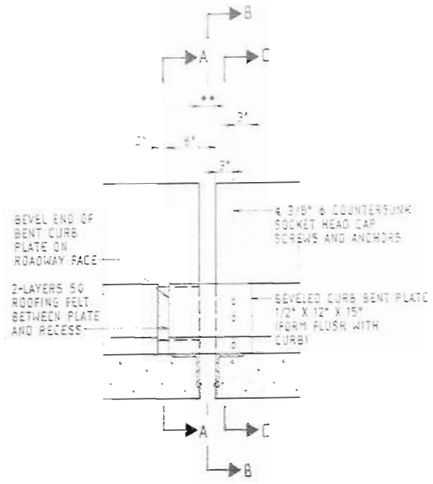
DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 18 OF 27 ⚠ Revised 9/29/92 CALLAWAY COUNTY

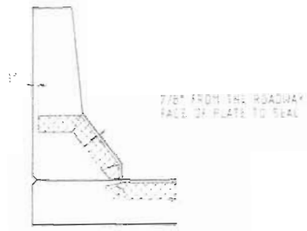
Donald D. Bell 5-21-92

A-3451

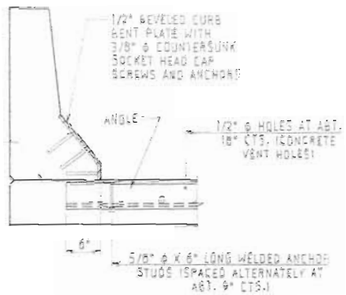


PART ELEVATION OF BARRIER CURB

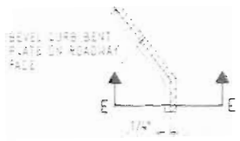
PART SECTION A-A



PART SECTION THRU SAFETY BARRIER CURB SHOWING PREFORMED COMPRESSION SEAL
PART SECTION B-B



PART SECTION C-C



PART ELEVATION AT END OF BEVELED CURB BENT PLATE

SECTION E-E

GENERAL NOTES:

STRUCTURAL STEEL FOR EXPANSION DEVICE SHALL BE FABRICATED IN ONE SECTION, EXCEPT THAT WHEN THE LENGTH IS OVER 50', SPLICING IS PERMISSIBLE.

THE EXPANSION DEVICE SHALL BE BENT TO CONFORM TO CROWN AND GRADE OF ROADWAY.

STRUCTURAL STEEL FOR THE ARMORED JOINT SHALL BE GRADE A36.

ANCHORS FOR COMPRESSION SEAL ARMOR SHALL BE APPROVED STUD WELDED ANCHORS (C1010 THRU C1020.)

PLAN DIMENSIONS ARE BASED ON INSTALLATION AT 60°.

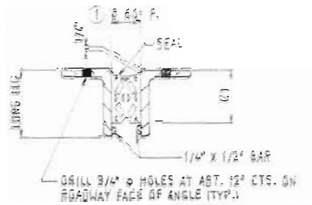
DIMENSIONS (1) SHALL BE INCREASED FOR EACH 10° FALL IN TEMPERATURE AND DECREASED FOR EACH 10° RISE IN TEMPERATURE AT INSTALLATION.

SEE SPECIAL PROVISIONS FOR THE REQUIREMENTS FOR COMPRESSION JOINT SEAL.

FURNISHING, PAINTING AND INSTALLING THE STRUCTURAL STEEL ARMORED JOINT AND CURB PLATES SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR PREFORMED EXPANSION JOINT SEAL.

NEOPRENE EXTRUSIONS SHALL MEET A.S.T.M. D2564-83.

** - GROOVE SIZE FROM TABLE TIMES 1.036 ROUNDED TO THE NEAREST 1/8" @ 5 3/4" @ 60°F.



PART CROSS SECTION THRU EXPANSION JOINT

TABLE OF TRANSVERSE BRIDGE SEAL DIMENSIONS

SEAL WIDTH (WS)	(1)	(2)	REQUIRED MOVEMENT RANGE
2.5"	1-5/8"	SEAL DEPTH + 3/4"	.5"
3.0"	1-7/8"	SEAL DEPTH + 3/4"	1.0"
3.5"	2-1/4"	SEAL DEPTH + 3/4"	1.5"
4.0"	2-5/8"	SEAL DEPTH + 3/4"	1.5"
4.5"	2-3/4"	SEAL DEPTH + 3/4"	1.5"
5.0"	2-7/8"	SEAL DEPTH + 3/4"	2.0"

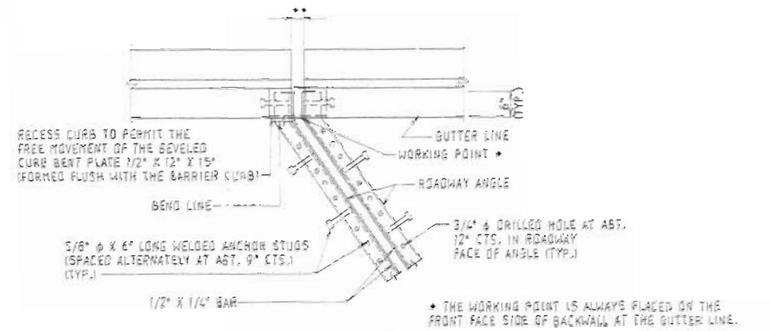
ABUTMENT NO.1 AND NO.3

Donald D. Bell
5-21-92

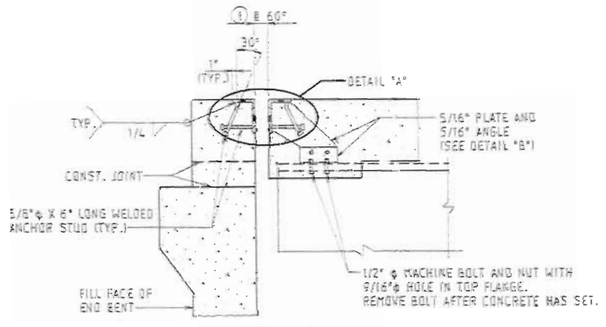
TABLE OF GROOVE SIZE

SEAL WIDTHS - STEEL STRUCTURES					
TEMP. (°F.)	2 1/2"	3"	3 1/2"	4"	4 1/2"
-10	2-1/8"	2-5/8"	3"	3-1/2"	3-3/4"
0	2"	2-1/2"	2-7/8"	3-1/4"	3-5/8"
+20	1-7/8"	2-1/4"	2-5/8"	3"	3-3/8"
+40	1-3/4"	2"	2-3/8"	2-3/4"	3"
+50	1-5/8"	1-7/8"	2-1/4"	2-5/8"	2-3/4"
+80	1-3/8"	1-5/8"	2"	2-1/4"	2-3/8"
+100	1-1/4"	1-1/2"	1-3/8"	2"	2-1/8"
+110	1-1/8"	1-3/8"	1-5/8"	1-3/4"	2"
+120	1-1/8"	1-1/4"	1-1/2"	1-5/8"	1-7/8"

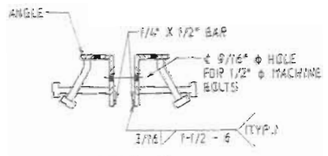
PART PLAN



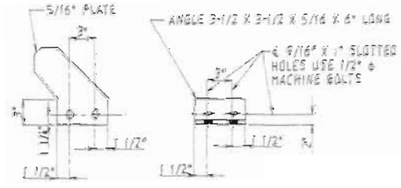
SKEWED STRUCTURE



SECTION D-D
@ RIGHT ANGLE TO JOINT



DETAIL "A"



DETAIL "B"

SIZE OF ARMOR ANGLE:

VERTICAL LEG OF ANGLE SHALL BE A MINIMUM OF DEPTH OF SEAL + 1 1/2".
HORIZONTAL LEG OF ANGLE SHALL BE A MINIMUM OF 6". MINIMUM THICKNESS OF ANGLE SHALL BE 1/2".

IF A SEAL SIZE LARGER THAN THAT INDICATED ON THE PLANS IS USED, THE MOVEMENT RANGE, THE OPENING AT 60° AND ALL DIMENSIONS FOR THE ARMOR ANGLES SHALL BE SHOWN ON THE SHOP DRAWINGS.

4017308

DETAILED JAN. 1992
CHECKED MAR. 1992

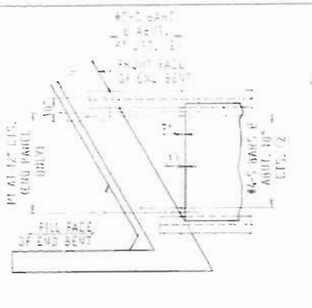
DETAILS OF PREFORMED COMPRESSION JOINT SEAL AT ABUTMENTS NO. 1 & 3

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

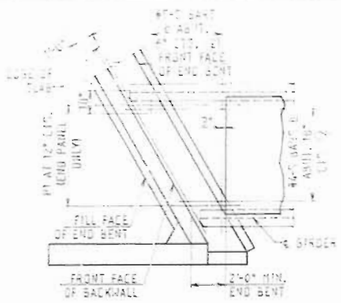
SHEET NO. 14 OF 23

CALLAWAY COUNTY

A-3451

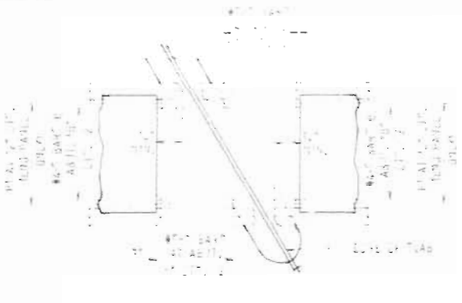


END BENT (INTEGRAL)

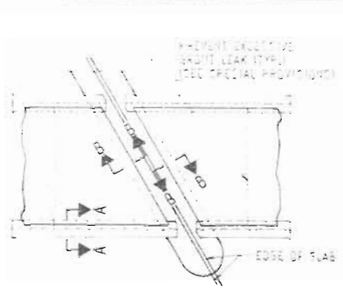


END BENT

PANELS-SQUARED ENDS



INT. BENT (EXP. GAP)



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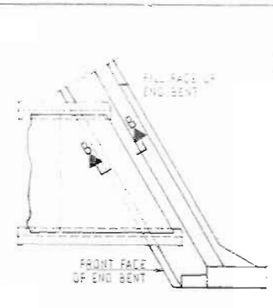
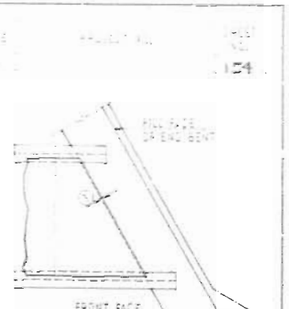


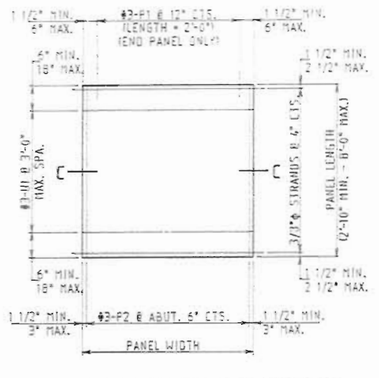
END BENT

PANELS-SKEWED ENDS

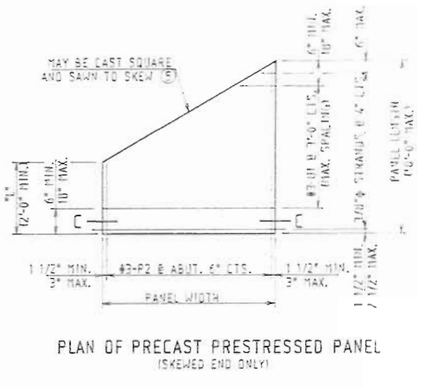


END BENT (INTEGRAL)

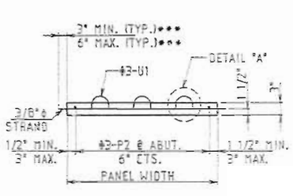
PLAN OF PRECAST PRESTRESSED PANELS PLACEMENT



PLAN OF PRECAST PRESTRESSED PANEL

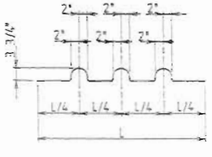


PLAN OF PRECAST PRESTRESSED PANEL
(SKEWED END ONLY)

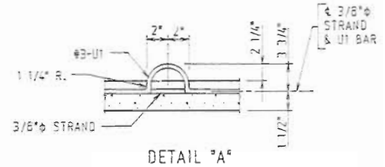


SECTION C-C

••• PRESTRESSING STRANDS TO EXTEND 6" OR TO WITHIN 1" OF ADJACENT PANEL.



BENDING DIAGRAM FOR U1 BAR



DETAIL "A"

DETAILED JAN. 1992
CHECKED MAR. 1992

GENERAL NOTES

PRESTRESSED PANELS:

CONCRETE FOR PRESTRESSED PANELS SHALL BE CLASS AT WITH f'c = 5,000 PSI, f'ci = 3,000 PSI.

THE TOP SURFACE OF ALL PANELS SHALL RECEIVE A SCORED FINISH WITH A DEPTH OF SCORING OF 1/8 INCH PERPENDICULAR TO THE PRESTRESSING STRANDS IN THE PANELS (SEE SPECIAL PROVISIONS).

PRESTRESSING TENDONS SHALL BE HIGH-TENSILE STRENGTH UNCOATED SEVEN WIRE (7), LOW RELAXATION STRANDS FOR PRESTRESSED CONCRETE, CONFORMING TO AASHTO M203, EXCEPT THAT NOMINAL DIAMETER OF STRAND = 3/8 INCH AND NOMINAL AREA = 0.085 SQ. IN. AND MINIMUM ULTIMATE STRENGTH = 23,000 LBS. (270 KSI). LARGER STRANDS MAY BE USED WITH THE SAME SPACING AND INITIAL TENSION.

INITIAL PRESTRESSING FORCE = 14.9 KIPS/STRAND.

THE METHOD AND SEQUENCE OF RELEASING THE STRANDS SHALL BE SHOWN ON THE SHOP DRAWINGS.

SUITABLE ANCHORAGE DEVICES FOR LIFTING PANELS MAY BE CAST IN PANELS, PROVIDED THEY ARE SHOWN ON THE SHOP DRAWINGS AND APPROVED BY THE ENGINEER. PANEL LENGTHS SHALL BE DETERMINED BY THE CONTRACTOR AND SHOWN ON THE SHOP DRAWINGS.

WHEN SQUARE END PANELS ARE USED AT SKEWED BENTS, IT IS REQUIRED THAT THE SKEWED PORTION BE CAST FULL DEPTH. NO SEPARATE PAYMENT WILL BE MADE FOR THE ADDITIONAL CONCRETE AND REINFORCING REQUIRED.

MINIMUM JOINT FILLER OF POLYSTYRENE BEDDING MATERIAL THICKNESS SHALL BE 1/2 INCH, EXCEPT OVER SPLICE PLATES WHERE MINIMUM THICKNESS SHALL BE 1/4 INCH. WHEN JOINT FILLER OR POLYSTYRENE BEDDING MATERIAL IS LESS THAN 1/2" THICK OVER THE SPLICE PLATE, MAKE THE WIDTH OF MATERIAL AT SPLICE THE SAME WIDTH AS PANEL ON SPLICE. THICKER MATERIAL MAY BE USED ON ONE OR BOTH SIDES OF THE GIRDER TO REDUCE CAST-IN-PLACE CONCRETE THICKNESS, WITHIN TOLERANCES. NO MORE THAN 2 INCHES TOTAL THICKNESS OF JOINT FILLER OR POLYSTYRENE BEDDING MATERIAL SHALL BE USED.

THE SAME THICKNESS OF JOINT FILLER MATERIAL SHALL BE USED UNDER ANY ONE EDGE OF ANY PANEL EXCEPT AT SPLICES, AND THE MAXIMUM CHANGE IN THICKNESS BETWEEN ADJACENT PANELS SHALL BE 1/4 INCH TO CORRECT FOR VARIATIONS FROM GIRDER CAMBER DIAGRAM. THE POLYSTYRENE BEDDING MATERIAL MAY BE CUT TO MATCH HAUNCH HEIGHT ABOVE TOP OF FLANGE.

SUPPORT FROM DIAPHRAGM FORMS IS REQUIRED UNDER THE OPTIONAL SKEWED END UNTIL THE CAST-IN-PLACE CONCRETE HAS REACHED 3,000 PSI COMPRESSIVE STRENGTH.

REINFORCING STEEL:

ALL DIMENSIONS ARE OUT TO OUT.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1-1/2 INCH, UNLESS OTHERWISE SHOWN.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE C.R.S.I. MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, STIRRUP AND TIE DIMENSIONS.

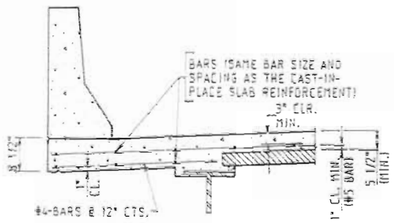
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE OF BAR TO THE NEAREST INCH.

THE PRESTRESSED PANEL QUANTITIES ARE NOT INCLUDED IN THE TABLE OF ESTIMATED QUANTITES FOR ALTERNATE SLABS.

IF U1 BARS INTERFERE WITH PLACEMENT OF SLAB STEEL, U1 LOOPS MAY BE BENT OVER, AS NECESSARY, TO CLEAR SLAB STEEL.

WELDED WIRE FABRIC OR WELDED DEFORMED BAR MATS PROVIDING A MINIMUM AREA OF REINFORCING PERPENDICULAR TO STRANDS OF 0.22 SQ. IN./FT. WITH SPACING PARALLEL TO STRANDS SUFFICIENT TO INSURE PROPER HANDLING, MAY BE USED IN LIEU OF THE #3-P2 BARS SHOWN. WIRE OR BAR DIAMETER SHALL NOT BE LARGER THAN 0.375 INCHES. #3-U1 BARS MAY BE ORIENTED AT RIGHT ANGLES TO LOCATION AND SPACING SHOWN. U1 BARS SHALL BE PLACED BETWEEN P1 BARS.

NOTE: SEE THEORETICAL SLAB HAUNCH ON SHEET NO. 16 FOR DETERMINING THICKNESS OF JOINT FILLER OR POLYSTYRENE BEDDING MATERIAL WITHIN THE LIMITS NOTED BELOW.



SECTION THRU CANTILEVER

NOTES:

① END PANELS TO BE DIMENSIONED 1-1/2" FROM THE INSIDE FACE OF DIAPHRAGM.

② S-BARS SHOWN ARE BOTTOM STEEL IN SLAB BETWEEN PANELS AND USED WITH SQUARED END PANELS ONLY.

③ ADJUSTMENT IN THE SLAB THICKNESS, JOINT FILLER, OR POLYSTYRENE BEDDING MATERIAL THICKNESS, OR GRADE, WILL BE NECESSARY IF THE GIRDER CAMBER AFTER ERECTION DIFFERS FROM PLAN CAMBER BY MORE THAN THE ± OF DEAD LOAD DEFLECTION DUE TO THE WEIGHT OF STRUCTURAL STEEL. NO PAYMENT WILL BE MADE FOR ADDITIONAL LABOR OR MATERIALS FOR THE ADJUSTMENT.

④ S-BARS SHOWN ARE USED WITH SKEWED END PANELS, OR SQUARE END PANELS OF SQUARE STRUCTURES ONLY. #5 S-BARS SHALL EXTEND THE WIDTH OF SLAB (21 INCHES LAP IF NECESSARY) OR TO WITHIN 3" OF EXPANSION DEVICE ASSEMBLIES.

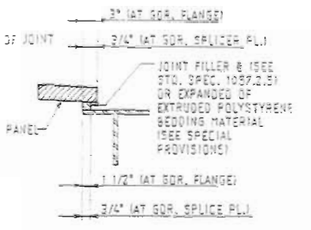
COST OF S-BARS SHALL BE INCLUDED IN PRICE BID FOR SLAB PER SQUARE YARD.

S-BARS ARE NOT LISTED IN BILL OF REINFORCING.

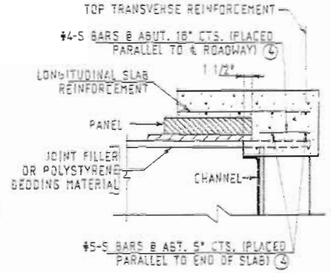
SLAB EXTERIOR GIRDER HAUNCH SHALL BE THE SAME AS CAST-IN-PLACE.

⑤ ANY STRAND 2'-0" OR SHORTER SHALL HAVE A #4 REINFORCING BAR ON EACH SIDE OF IT CENTERED BETWEEN STRANDS. STRANDS 2'-0" OR SHORTER MAY BE DEBONDED AT THE FABRICATORS OPTION.

⑥ ALL PANEL SUPPORT PADS SHALL BE GLUED TO THE GIRDER. WHEN SUPPORT THICKNESS EXCEEDS 1-1/2", THE PADS SHALL BE GLUED TOP AND BOTTOM. THE GLUE USED SHALL BE THE TYPE RECOMMENDED BY THE PANEL SUPPORT MANUFACTURER.

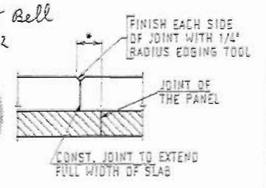


SECTION A-A



PART SECTION B-B

Donald D. Bell
5-21-92



PERMISSIBLE CONST. JOINT

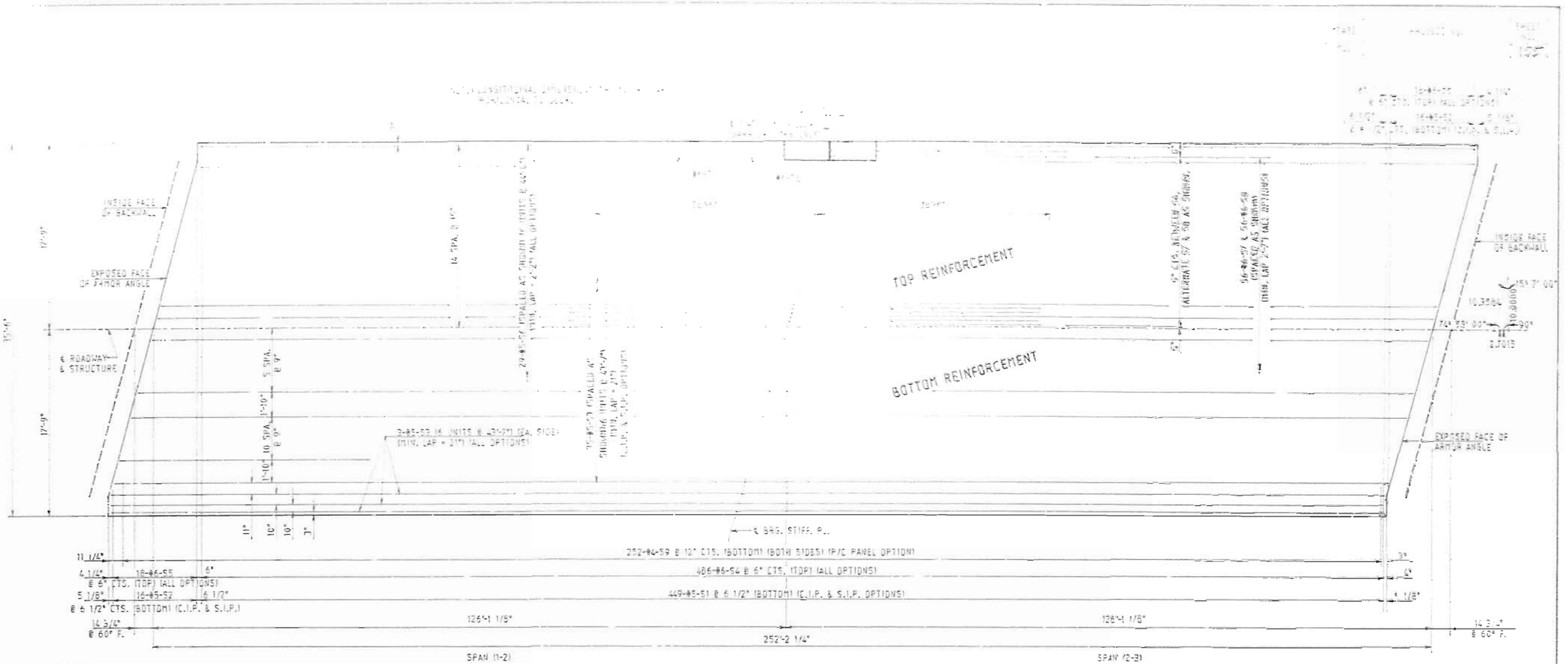
* ADJUST THE PERMISSIBLE CONSTRUCTION JOINT TO A CLEARANCE OF 6 INCH MINIMUM FROM THE JOINTS OF THE PANELS.

ALL REINFORCEMENT OTHER THAN PRESTRESSING STRANDS SHALL BE EPOXY COATED.

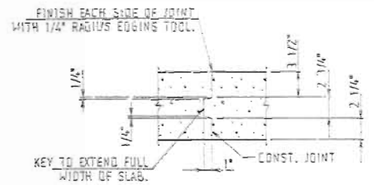
DETAILS OF PRECAST PRESTRESSED PANELS

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

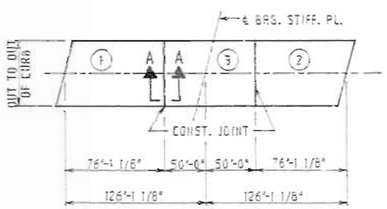
408 303



PLAN OF SLAB SHOWING REINFORCEMENT



SECTION A-A



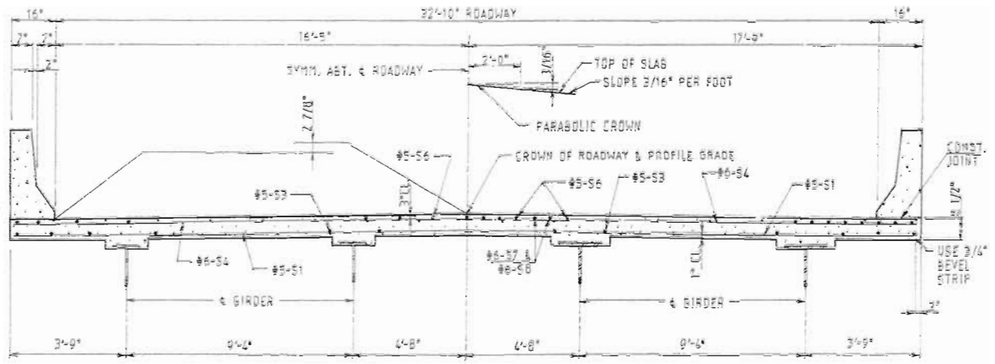
SLAB POURING SEQUENCE

	SEQUENCE OF POURS			MINIMUM RATE OF POUR (CUBIC YDS. PER HOUR)	
	DIRECTION			WITH RETARDER	NO RETARDER
BASIC SEQUENCE	1	2	3	25	25
	EITHER DIRECTION				
ALTERNATE POURS TO THE BASIC SKIP SEQUENCE ARE SUBJECT TO THE APPROVAL OF THE ENGINEER IN ACCORDANCE WITH SECTION 703.3.12.4 OF MISSOURI STANDARD SPECIFICATIONS.					
ALTERNATE "A" POURS	1		3 • 2	49	
	END TO 3		1 TO END		
ALTERNATE "B" POURS	1 • 2 • 3			49	
	END TO END				

THE CONTRACTOR SHALL POUR AND SATISFACTORILY FINISH THE SLAB POURS AT THE RATE GIVEN ABOVE. RETARDER, IF USED, SHALL BE AN APPROVED TYPE AND RETARD THE SET OF CONCRETE TO 2.5 HOURS.
IF THE PRECAST PRESTRESSED PANEL OPTION IS USED, THE VALUES SHOWN FOR THE MINIMUM RATE OF POUR MAY BE REDUCED BY 25%. HOWEVER, IN NO CASE SHALL THE MINIMUM RATE OF POUR BE LESS THAN 25 YD³/HOUR.

STATE OF MISSOURI — DONALD D. BELL — E-6271 — REGISTERED PROFESSIONAL ENGINEER

Donald D. Bell
5-21-92



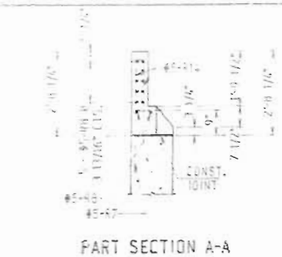
HALF SECTION NEAR ℄ SPAN HALF SECTION NEAR INT. BENT

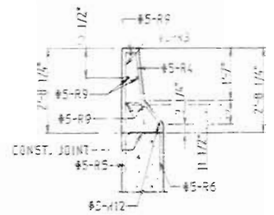
NOTE: FOR DETAILS AND REINFORCEMENT OF SAFETY BARRIER BRIDGE CURB NOT SHOWN SEE SHEET NO. 22 OR NO. 23.

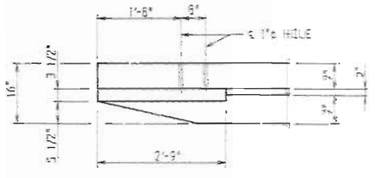
409 384

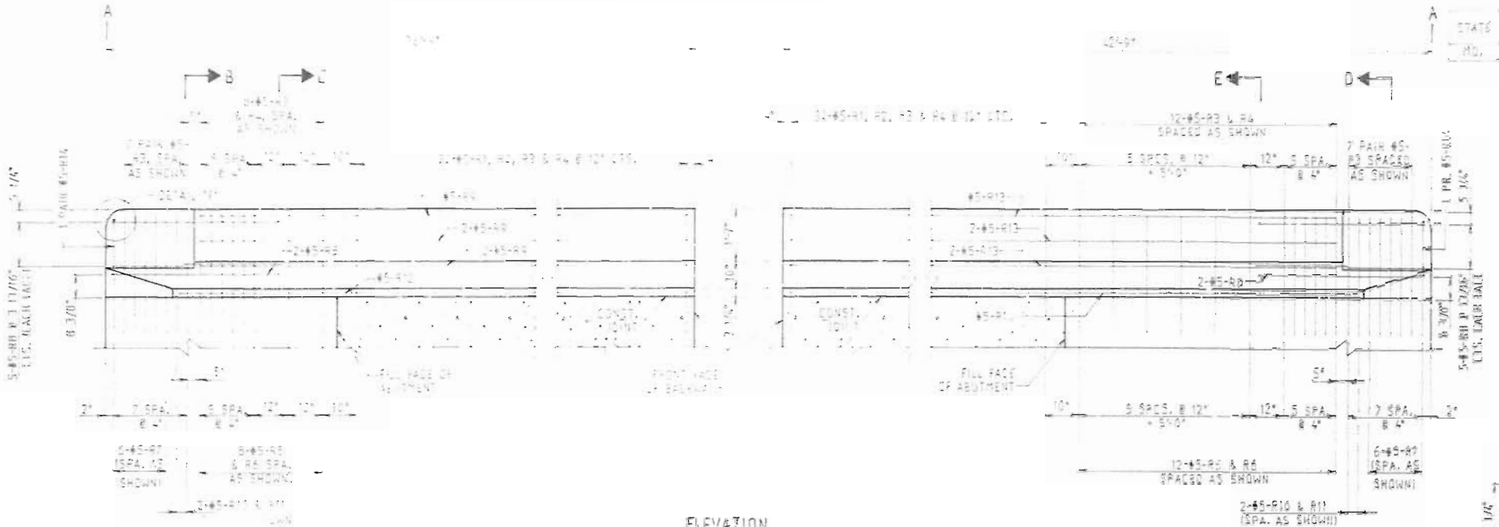
DETAILED JAN. 1992
CHECKED MAR.1992

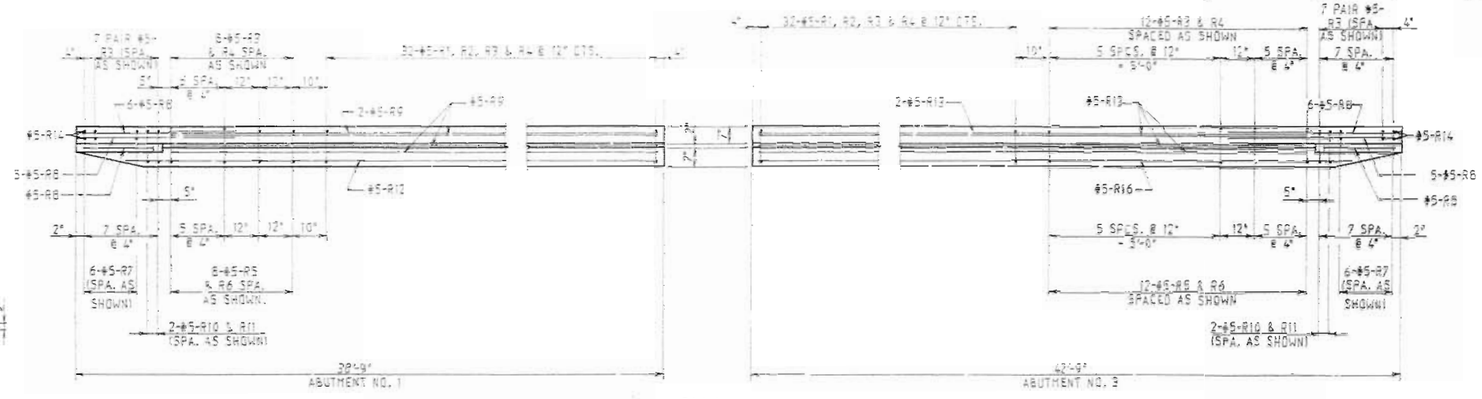
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

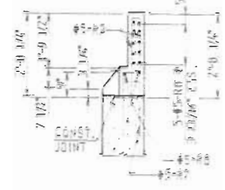


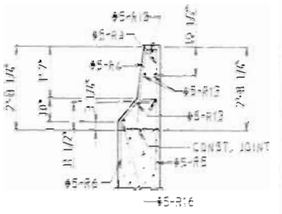


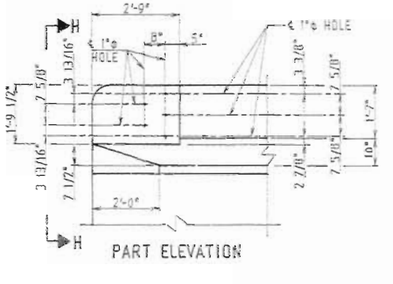




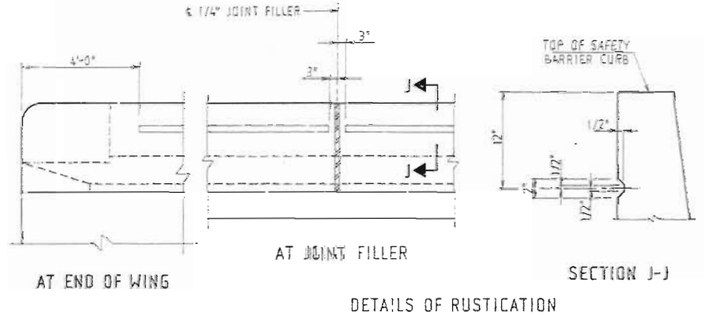




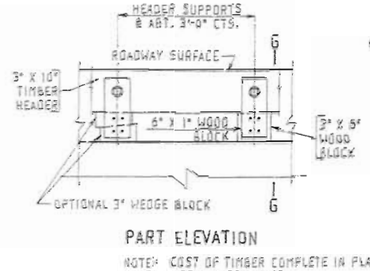




DETAILS OF GUARD RAIL ATTACHMENT



DETAILS OF RUSTICATION



NOTE: COST OF TIMBER COMPLETE IN PLACE TO BE INCLUDED IN CONTRACT UNIT PRICE FOR CONCRETE.

DETAILS OF TIMBER HEADER AT END BENTS

DETAILS OF SAFETY BARRIER CURB AT END BENTS

Donald D. Bell
5-21-92

DETAILED: MAY 1992
CHECKED: MAY 1992

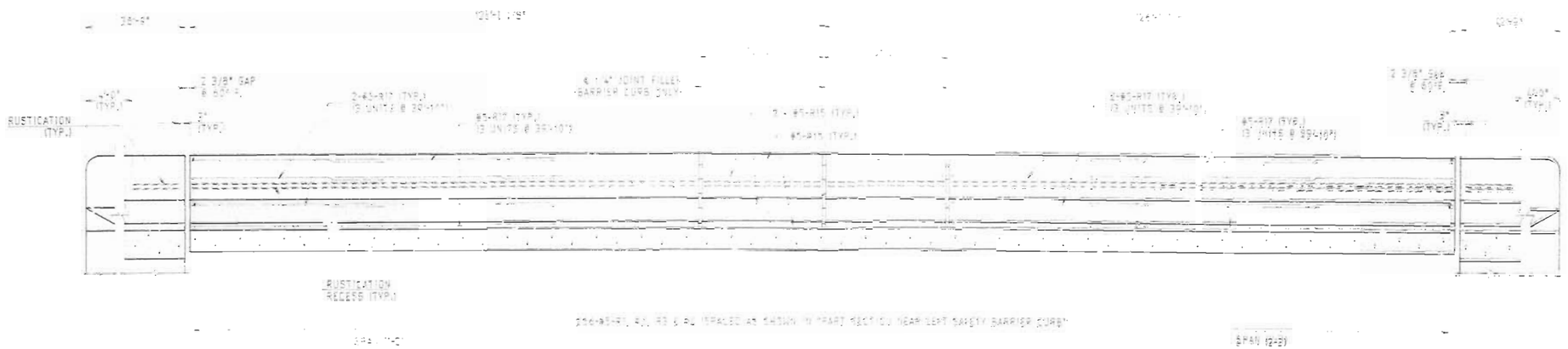
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 26 OF 27

CALLAWAY COUNTY

A-3451

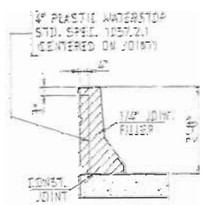
410 363



SECTION NEAR LEFT BARRIER CURB

NOTE:

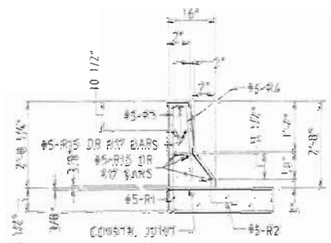
TOP OF SAFETY BARRIER CURB SHALL BE BUILT PARALLEL TO GRADE WITH SAFETY BARRIER CURB JOINTS (EXCEPT AT END WALLS) NORMAL TO GRADE. ALL EXPOSED EDGES OF SAFETY BARRIER CURB SHALL HAVE EITHER A 1/2" RADIUS OR A 3/4" BEVEL, UNLESS OTHERWISE NOTED.
WHEN THE SAFETY BARRIER CURB IS BID BY LINEAR FEET, THE CONTRACT UNIT PRICE SHALL INCLUDE THE COST OF ALL CONCRETE AND REINFORCEMENT, COMPLETE-IN-PLACE.
CONCRETE FOR THE SAFETY BARRIER CURB SHALL BE CLASS S1.
MEASUREMENT OF THE SAFETY BARRIER CURB IS TO THE NEAREST LINEAR FOOT FOR EACH STRUCTURE, MEASURED ALONG THE OUTSIDE TOP OF SLAB FROM END OF WING TO END OF WING.



DETAILS OF PLASTIC WATERSTOP

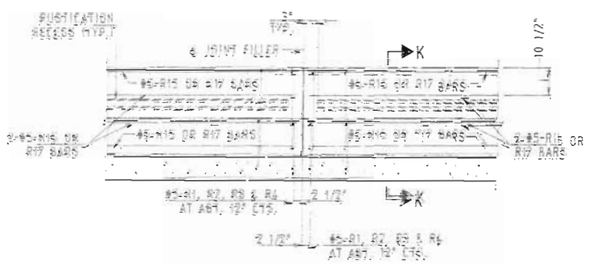
NOTE: PLASTIC WATERSTOP SHALL BE PLACED IN ALL SAFETY BARRIER CURB FILLED JOINTS.

COST OF PLASTIC WATERSTOP COMPLETE IN PLACE TO BE INCLUDED IN CONTRACT JOINT PRICE FOR SAFETY BARRIER CURB.



SECTION K-K

NOTE: USE A MINIMUM LAP OF 17" FOR #5 HORIZONTAL SAFETY BARRIER CURB BARS. THE CROSS-SECTIONAL AREA ABOVE THE SLAB = 2.27 SQ. FT.



PART SECTION NEAR LEFT SAFETY BARRIER CURB

FILLED JOINT DETAIL

Donald D. Bell
5-21-92

411 306

DETAILED JAN. 1993
CHECKED MAR. 1993

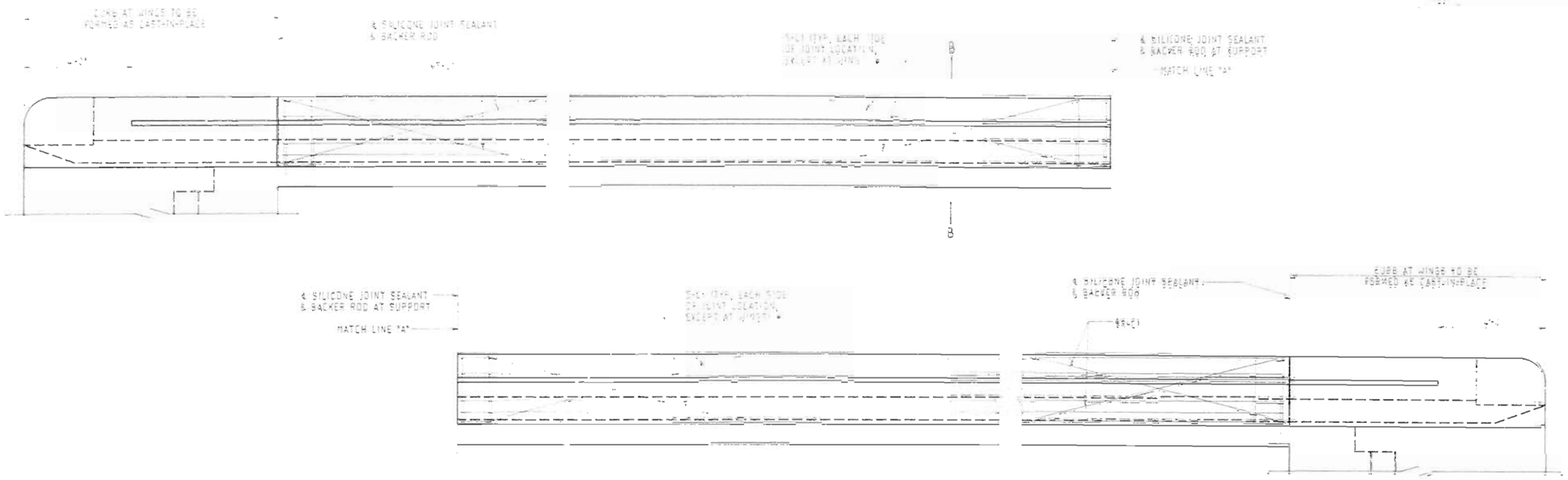
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 43 OF 57

CALLAWAY COUNTY

A-3451

STATE | PROJECT NO. | SHEET NO.
MO | | 14 OF 27



TYPICAL SECTION NEAR RIGHT SAFETY BARRIER CURB AT SUPPORT LOCATIONS
(OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIER CURB)

NOTE:

TOP OF SAFETY BARRIER CURB SHALL BE BUILT PARALLEL TO GRADE WITH SAFETY BARRIER CURB JOINTS (EXCEPT AT END BENTS) NORMAL TO GRADE.

WHEN THE SAFETY BARRIER CURB IS BID BY LINEAR FEET, THE CONTRACT UNIT PRICE SHALL INCLUDE THE COST OF ALL CONCRETE AND REINFORCEMENT, COMPLETE-IN-PLACE.

CONCRETE IN THE SAFETY BARRIER CURB SHALL BE CLASS B1.

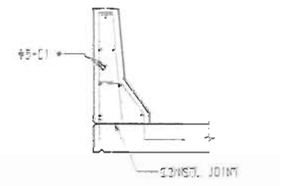
MEASUREMENT OF SAFETY BARRIER CURB IS TO THE NEAREST LINEAR FOOT FOR EACH STRUCTURE, MEASURED ALONG THE OUTSIDE TOP OF SLAB FROM END OF CURB TO END OF CURB.

NOTE:

JOINT SEALANT AND BACKER RODS SHALL BE USED ON ALL SLIP-FORM BRIDGE SAFETY BARRIER CURBS INSTEAD OF JOINT FILLER.

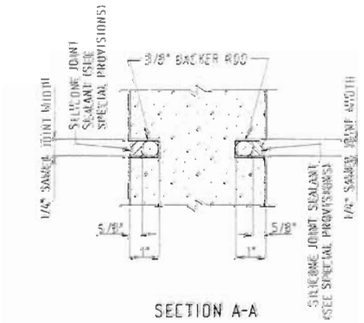
PLASTIC WATERSTOP SHALL NOT BE USED WITH SLIP-FORM OPTION.

ST BARS (SLIP-FORM OPTION ONLY) SHALL BE USED IN ADDITION TO CAST-IN-PLACE CONVENTIONAL FORMING REINFORCEMENT FOR BRIDGE SAFETY BARRIER CURB.



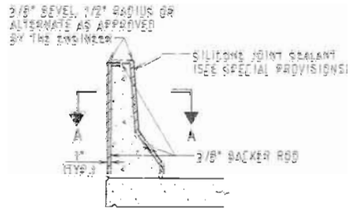
PART SECTION B-B

NOTE: * EACH SIDE OF JOINT LOCATION, EXCEPT SKEW SIDE ONLY AT END BENTS.

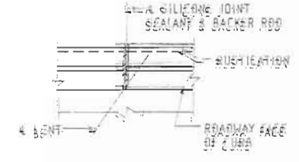


SECTION A-A

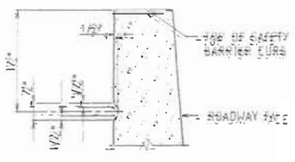
NOTE: COST OF SILICONE JOINT SEALANT AND BACKER ROD COMPLETE IN PLACE TO BE INCLUDED IN THE CONTRACT UNIT PRICE FOR SAFETY BARRIER CURB.



SECTION THRU JOINT



PART PLAN SHOWING
SAFETY BARRIER CURB JOINT



PART SECTION SHOWING
RUSTICATION DETAILS

RUSTICATION DETAIL

Donald D. Dell
5-21-92

STATE OF MISSOURI
DONALD D. DELL
E-22756
REGISTERED PROFESSIONAL ENGINEER

OPTIONAL SLIP-FORM BRIDGE SAFETY BARRIEP CURB

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 14 OF 27

CALLAWAY COUNTY

A-345H

DETAILED JAN. 1992
CHECKED MAR. 1992

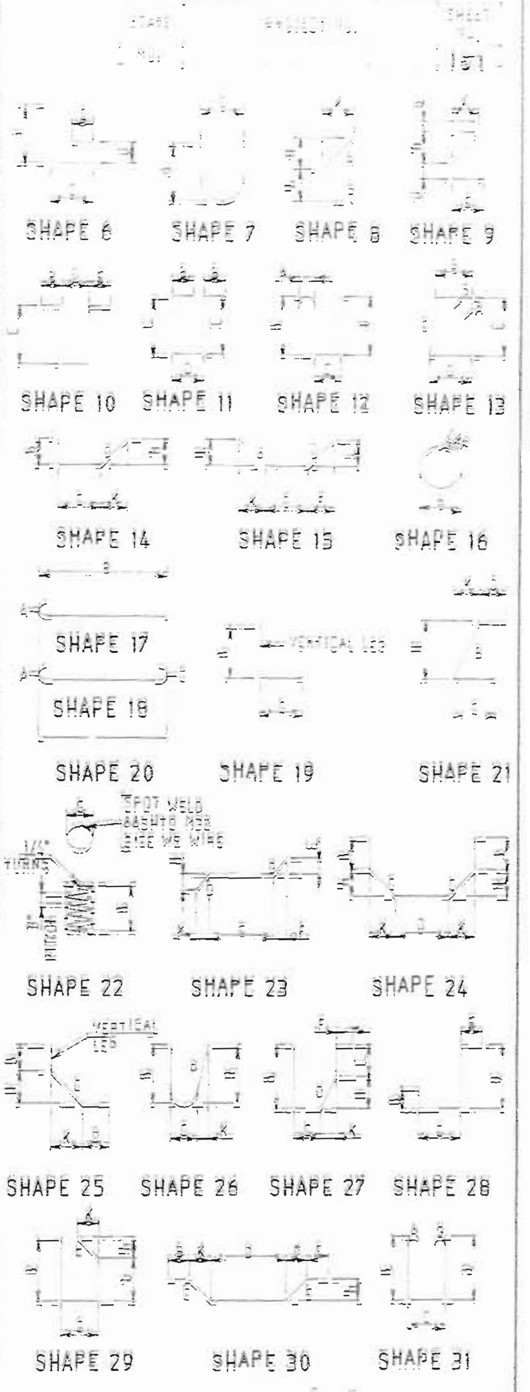
382
412

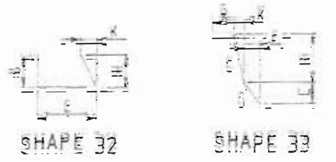
COMPLETE BILL OF REINFORCING STEEL

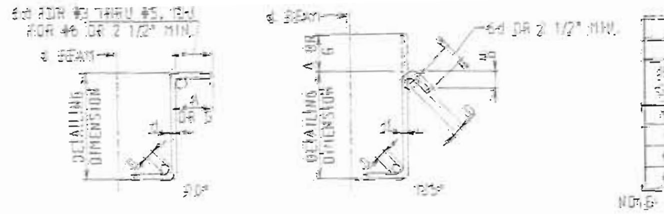
No. Each	Mark	Location	Size	E/S	X	V	B	C	D	E	F	H	K	Nominal Length	Actual Length	Weight
		[illegible]														
		ABUTMENT NO. [illegible]														
[illegible]	[illegible]H10	APPROACH BEAM	18		X		36 3.000							[illegible]	[illegible]	[illegible]
[illegible]	5H11	APPROACH BEAM	20		X		36 3.000							[illegible]	[illegible]	[illegible]
[illegible]	[illegible]H12	APPR. HAUNCH	20		X		33 6.000							[illegible]	[illegible]	[illegible]
[illegible]	[illegible]H13	BEARING BEAM	18		X		36 3.000							[illegible]	[illegible]	[illegible]
[illegible]	[illegible]H14	BEARING BEAM	20		X		36 3.000							[illegible]	[illegible]	[illegible]
[illegible]	[illegible]H15	BACKWALL	20		X		34 3.000							[illegible]	[illegible]	[illegible]
[illegible]	[illegible]H16	BACKWALL	20		X		36 3.000							[illegible]	[illegible]	[illegible]
[illegible]	[illegible]H17	APRON	20		X		36 3.000							[illegible]	[illegible]	[illegible]
[illegible]	[illegible]H18	WING	E 20		X		6 6.000							[illegible]	[illegible]	[illegible]
[illegible]	[illegible]H19	WING	20		X		6 6.000							[illegible]	[illegible]	[illegible]
2	5H101	WING	20		X		35 5.000							[illegible]	[illegible]	[illegible]
2	5H102	WING	20		X		36 10.000							[illegible]	[illegible]	[illegible]
2	5H103	WING	20		X		33 5.000							[illegible]	[illegible]	[illegible]
2	5H104	WING	20		X		30 0.000							[illegible]	[illegible]	[illegible]
2	4H105	WING	20		X		23 10.000							[illegible]	[illegible]	[illegible]
2	4H106	WING	20		X		18 8.000							[illegible]	[illegible]	[illegible]
10	4H107	WING	20		X	V 2	17 11.000							[illegible]	[illegible]	[illegible]
		INCR = 48.000 IN					1 11.000							[illegible]	[illegible]	[illegible]
10	4H108	CURTAIN WALL	20		X		3 3.000							[illegible]	[illegible]	[illegible]
4	5H109	APRON & WING	13	S	X		2 0.000	2 0.000				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	4H110	BRG BEAM & WING	20		X		4 8.000							[illegible]	[illegible]	[illegible]
2	5H111	WING	20		X		36 5.000							[illegible]	[illegible]	[illegible]
2	5H112	WING	20		X		34 10.000							[illegible]	[illegible]	[illegible]
2	5H1[illegible]	WING	20		X		33 5.000							[illegible]	[illegible]	[illegible]
2	5H1[illegible]	WING	20		X		29 11.000							[illegible]	[illegible]	[illegible]
2	4H115	WING	20		X		23 9.000							[illegible]	[illegible]	[illegible]
2	4H116	WING	20		X		18 7.000							[illegible]	[illegible]	[illegible]
10	4H117	WING	20		X	V 2	18 5.000							[illegible]	[illegible]	[illegible]
		INCR = 48.000 IN					2 4.000							[illegible]	[illegible]	[illegible]
10	4H118	CURTAIN WALL	20		X		3 8.000							[illegible]	[illegible]	[illegible]
4	5H119	APRON & WING	21	S	X		2 0.000	2 0.000				1 11.125	4.250	[illegible]	[illegible]	[illegible]
1	4H120	BRG BM & WING	20		X		5 3.000							5 3	5 3	14
2	7T11	WING	15		X		5 1.000	2 4.875				1 6.000	4 10.250	7 6	7 6	31
2	7T12	WING	15		X		39 0.500	2 3.375				37 3.500	11 6.500	41 4	41 3	169
2	7T13	WING	15		X		5 10.000	2 5.000				1 8.500	3 2.000	8 3	8 3	34
2	7T14	WING	15		X		39 0.250	2 3.500				37 3.500	11 5.625	41 4	41 3	169
2	4T15	CURTAIN WALL	19		X		6 0.000	3 1.250						9 1	9 0	12
2	4T16	CURTAIN WALL	19		X		6 0.375	3 7.500						9 8	7	13
20	4U11	PILE ENCASEMENT	10	S	X			2 0.000	1 5.000					5 5	5 3	70
20	5U12	BEARING BEAM	13	S	X		3 2.000	4 8.000	4 3.500	4 6.000				17 7	17 3	360
20	4U13	BEARING BEAM	10	S	X			6.000	3 1.000					4 1	3 11	52
30	4U14	APPROACH BEAM	13	S	X		2 4.000	2 5.000	2 4.000	2 5.000				10 5	10 2	204
34	5U15	APPROACH BEAM	E 21	S	X		2 4.000	2 7.375	2 7.000			2 4.000	0.375	7 6	7 4	260
34	4U16	APPR. HAUNCH	10	S	X			1 5.500	6.000					3 5	3 3	74
50	5V10	APRON	20		X		5 8.000							5 8	5 8	296
34	6V11	BACKWALL	E 20		X		7 1.000							7 1	7 1	362
34	5V12	BACKWALL	E 20		X		7 1.000							7 1	7 1	251
4	4V13	CURTAIN WALL	20		X		6 2.000							6 2	6 2	16
4	5V14	WING	E 14		X		2 0.000	2 6.000	2 0.000			1 11.000	7.000	3 6	6 4	26

COMPLETE BILL OF REINFORCING STEEL

No. Each	Mark	Location	Size	E/S	X	V	B	C	D	E	F	H	K	Nominal Length	Actual Length	Weight
[illegible]	[illegible]	WING	[illegible]		X	V	[illegible] 7.000							4 3	4 3	[illegible]
		INCR = [illegible] IN					[illegible] 11.000							2 11	2 11	72
[illegible]	[illegible]	WING	[illegible]		X	V	13 7.000							15 7	15 7	[illegible]
		INCR = [illegible] IN					[illegible] 10.000							4 10	4 10	245
[illegible]	[illegible]	WING	[illegible]		X		6 6.000							6 6	6 6	11
[illegible]	[illegible]	WING	[illegible]		X		6 7.000							6 7	6 7	23
[illegible]	[illegible]	WING	[illegible]		X		6 [illegible]							6 5	6 5	22
[illegible]	[illegible]	WING	[illegible]		X		6 2.000							6 2	6 2	11
[illegible]	[illegible]	WING	[illegible]		X	V	13 9.000							15 9	15 9	[illegible]
		INCR = [illegible] IN					[illegible] 7.000							4 7	4 7	257
[illegible]	[illegible]	WING	[illegible]		X		[illegible]							4 7	4 7	6
[illegible]	[illegible]	A B WELL	[illegible]		X		1 [illegible]	[illegible]						26 1	26 1	53
[illegible]	[illegible]	FOOTING	[illegible]		X			4 6.000	12 3.000					26 5	27 11	252
[illegible]	[illegible]	FOOTING	[illegible]		X		15 3.000							15 3	15 3	1,466
[illegible]	[illegible]	FOOTING	[illegible]		X		10 9.000							10 9	10 9	775
[illegible]	[illegible]	FOOTING	17		X		[illegible] 6.000							7 5	7 5	772
[illegible]	[illegible]	BEAM	[illegible]		X		19 0.000							19 0	19 0	775
[illegible]	[illegible]	BEAM	[illegible]		X		31 0.000							31 0	31 0	186
[illegible]	[illegible]	BEAM	17		X		13 3.000							13 2	13 2	422
[illegible]	[illegible]	BEAM	[illegible]		X		19 0.000							19 0	19 0	366
5	[illegible]	BEAM	7		X		2 5.000	3 7.500						10 10	10 10	[illegible]
[illegible]	5U20	BEAM	13	S	X		2 4.000	4 3.000	2 4.000	4 3.000				14 1	13 9	631
27	5U21	BEAM	13	S	X		3 9.000	4 5.000	3 9.000	4 5.000				17 3	16 11	476
2	5U22	BEAM	13	S	X		3 5.250	4 3.000	3 5.250	4 3.000				16 4	16 0	33
2	5U23	BEAM	13	S	X		2 7.625	4 3.000	2 7.625	4 3.000				14 8	14 4	30
12	4U24	BEAM	10	S	X			0 6.00	3 9.00					4 9	4 7	37
39	8V20	COLUMN	20		X		21 0.000							21 0	21 0	2,187
57	4P20	COLUMN	16		X		2 9.000							9 6	9 6	362
8	W5W20	A B WELL	22		X		2 1.000	9.125						33 2	33 2	45

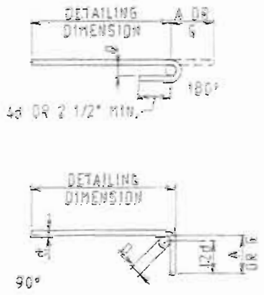






STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D	90° HOOK	135° HOOK	
		A OR G	A OR G	APPROX. H
#3	1 1/2"	4"	4"	2 1/2"
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	7 3/4"	4 1/2"

NOTE: UNLESS OTHERWISE NOTED THE DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



BENT HOOK DIMENSIONS				
BAR SIZE	D	180° HOOKS		90° HOOKS
		ALL GRADES		ALL GRADES
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTES:

ALL STANDARD HOOKS AND BENDS OTHER THAN 180° TO BE BENT WITH SAME PROCEDURE AS FOR 90° STD. HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E - EPOXY COATED REINFORCEMENT
S - STIRRUP
X - BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V - BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EACH - NUMBER OF BARS OF EACH LENGTH
NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS ARE LISTED FOR FABRICATORS USE (NEAREST INCH).
ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

BENDING DIAGRAMS

David S. Bell
5-21-92

DETAILED JAN. 1992
CHECKED MAR. 1992

413308

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 25 OF 27

CALLAWAY COUNTY

A-3451

FOR INFORMATION ONLY

414 309

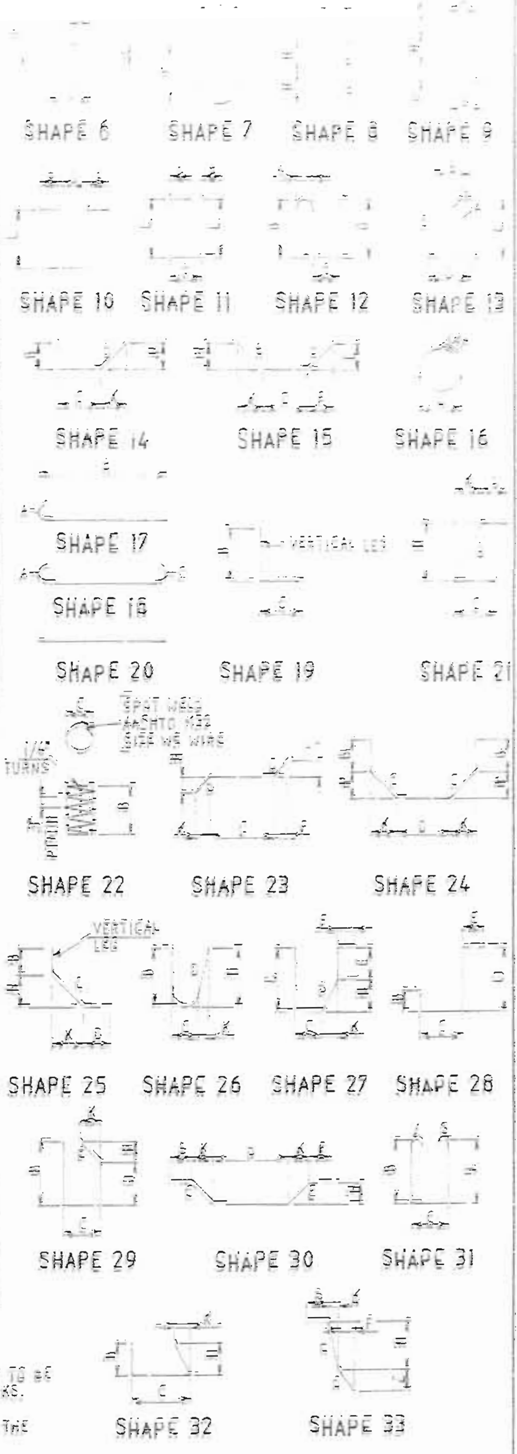
COMPLETE BILL OF REINFORCING STEEL

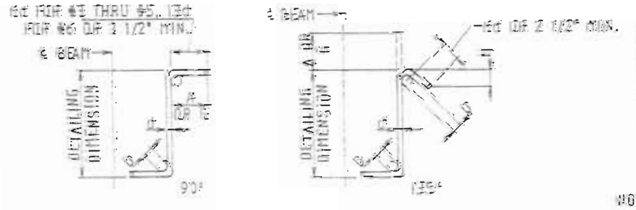
ABUTMENT NO. 2

No.	Mark	Location							B	C	D	E	F	H	K			
2	7H30	APPROACH BEAM		18		X			36 3.000							[illegible]	[illegible]	[illegible]
[illegible]	6H31	APPROACH BEAM		20		X			36 3.000							[illegible]	[illegible]	[illegible]
[illegible]	4H32	APPR. HAUNCH		20		X			33 0.000							[illegible]	[illegible]	[illegible]
[illegible]	6H33	BEARING BEAM		18		X			36 3.000							[illegible]	[illegible]	[illegible]
[illegible]	6H34	BEARING BEAM		20		X			36 3.000							[illegible]	[illegible]	[illegible]
[illegible]	4H35	BACKWALL		20		X			36 3.000							[illegible]	[illegible]	[illegible]
[illegible]	6H36	BACKWALL		20		X			36 3.000							[illegible]	[illegible]	[illegible]
10	6H37	APRON		20		X			36 3.000							[illegible]	[illegible]	[illegible]
4	5H38	WING	E	20		X			10 6.000							[illegible]	[illegible]	[illegible]
4	5H39	WING		20		X			10 6.000							[illegible]	[illegible]	[illegible]
2	5H301	WING		20		X			41 9.000							[illegible]	[illegible]	[illegible]
2	5H302	WING		20		X			38 6.000							[illegible]	[illegible]	[illegible]
2	5H303	WING		20		X			35 7.000							[illegible]	[illegible]	[illegible]
2	5H304	WING		20		X			32 6.000							[illegible]	[illegible]	[illegible]
2	4H305	WING		20		X			26 11.000							[illegible]	[illegible]	[illegible]
2	4H306	WING		20		X			22 4.000							[illegible]	[illegible]	[illegible]
12	4H307	WING		20		X	V	2	21 11.000							[illegible]	[illegible]	[illegible]
		INCR = 42.125 IN							4 4.000							[illegible]	[illegible]	[illegible]
10	4H308	CURTAIN WALL		20		X			3 2.000							[illegible]	[illegible]	[illegible]
5	6H309	APRON & WING		15	S	X			2 0.000	2 0.000				1 11.125	4.250	[illegible]	[illegible]	[illegible]
4	4H310	BRG BEAM & WING		20		X			4 9.000							[illegible]	[illegible]	[illegible]
2	5H311	WING		20		X			41 9.000							[illegible]	[illegible]	[illegible]
2	5H312	WING		20		X			38 7.000							[illegible]	[illegible]	[illegible]
2	5H313	WING		20		X			35 6.000							[illegible]	[illegible]	[illegible]
2	5H314	WING		20		X			32 5.000							[illegible]	[illegible]	[illegible]
2	4H315	WING		20		X			26 9.000							[illegible]	[illegible]	[illegible]
2	4H316	WING		20		X			22 1.000							[illegible]	[illegible]	[illegible]
12	4H317	WING		20		X	V	2	22 5.000							22 5	22 5	[illegible]
		INCR = 42.750 IN							4 7.000							4 7	4 7	108
10	4H318	CURTAIN WALL		20		X			3 8.000							3 8	3 8	24
5	6H319	APRON & WING		21	S	X			2 0.000	2 0.000				1 11.125	4.250	4 0	[illegible]	28
4	4H320	BRG BM & WING		20		X			5 3.000							5 3	5 3	14
2	7T31	WING		15		X			5 8.000	2 4.250				1 9.00	5 4.625	8 0	8 0	33
2	7T32	WING		15		X			43 5.625	1 6.500				41 3.875	13 5.000	45 0	44 11	184
2	7T33	WING		15		X			7 3.000	1 7.375				2 2.625	6 10.750	8 10	8 10	36
2	7T34	WING		15		X			43 4.875	1 6.500				41 3.750	13 3.875	45 0	44 11	184
2	4T35	CURTAIN WALL		19		X			6 0.000	3 1.250						9 1	9 0	12
2	4T36	CURTAIN WALL		19		X			6 0.375	3 7.500						9 8	9 7	13
25	4U31	PILE ENCASEMENT		10	S	X				2 0.000	1 5.000					5 5	5 3	88
20	5U32	BEARING BEAM		13	S	X			3 2.000	4 8.000	4 4.000	4 6.000				17 7	17 3	360
20	4U33	BEARING BEAM		10	S	X				6.000	3 1.000					4 1	3 11	52
28	4U34	APPROACH BEAM		13	S	X			2 4.000	2 6.000	2 4.000	2 6.000				10 5	10 2	190
34	5U35	APPROACH BEAM	E	21	S	X			2 4.000	2 7.375	2 7.000			2 4.000	0.375	7 6	7 4	260
34	4U36	APPR. HAUNCH		10	S	X				1 5.500	6.000					3 5	3 3	74
50	5V30	APRON		20		X			7 6.000							7 6	7 6	391
34	6V31	BACKWALL	E	20		X			7 0.000							7 0	7 0	358
34	5V32	BACKWALL	E	20		X			7 0.000							7 0	7 0	248
4	4V33	CURTAIN WALL		20		X			6 0.000							6 0	6 0	16
4	5V34	WING	E	14		X			2 6.000	1 10.000	2 0.000			1 11.000	7.000	5 10	5 8	24
36	5V35	WING		20		X	V	2	4 10.000							4 10	4 10	
		INCR = 4.000 IN							2 2.000							2 2	2 2	131

COMPLETE BILL OF REINFORCING STEEL

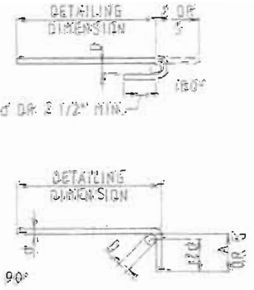
No.	Mark	Location	Shape		B			
		ABUTMENT NO. 2						
69	6S11	SLAB	E20		31 3.000	31 3	31 3	5,757
41	5S12	SLAB	E20		36 3.000	36 3	36 3	1,55[illegible]
20	4S13	SLAB	E20		36 3.000	36 3	36 3	484
24	4S14	SLAB	E20		31 3.000	31 3	31 3	561
		ABUTMENT NO. 3						
69	6S31	SLAB	E20		31 3.000	31 3	31 3	5,757
41	5S32	SLAB	E20		36 3.000	36 3	36 3	1,559
20	4S33	SLAB	E20		36 3.000	36 3	36 3	484
24	4S34	SLAB	E20		31 3.000	31 3	31 3	561
		TEST BARS						
2	4T1	TEST BAR	E20		10 0.00	10 0	10 0	13
2	5T2	TEST BAR	E20		10 0.00	10 0	10 0	21
2	6T3	TEST BAR	E20		10 0.00	10 0	10 0	30
2	8T4	TEST BAR	E20		10 0.00	10 0	10 0	53





STIRRUP HOOK DIMENSIONS				
GRADES 40-50-60 KSI				
BAR SIZE	D	90° HOOK	135° HOOK	
		A OR G	A OR G	APPROX. H
#3	1 1/2"	4"	4"	2 1/2"
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	7 3/4"	4 1/2"

NOTE: UNLESS OTHERWISE NOTED THE DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



BENT HOOK DIMENSIONS				
BAR SIZE	D	180° HOOKS		90° HOOKS
		ALL GRADES		ALL GRADES
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTES:

ALL STANDARD HOOKS AND BENDS OTHER THAN 180° TO BE BENT WITH SAME PROCEDURE AS FOR 90° STD. HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E - EPOXY COATED REINFORCEMENT
S - STIRRUP
X - BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V - BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EACH - NUMBER OF BARS OF EACH LENGTH
NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS ARE LISTED FOR FABRICATORS USE (NEAREST INCH).
ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

BENDING DIAGRAMS

Donald E. Bell
5-21-92

DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 26 OF 27

CALLAWAY COUNTY

A-3451

COMPLETE BILL OF REINFORCING STEEL

MARK NO.	NO.	LOCATION	SIZE	TYPE	A	B	C	D	E	F	H	K	WEIGHT
		CAST-IN-PLACE SLAB TRANSITION SLAB TRAIL OPTION											
	501	SLAB	#5	S	35	3.000							16,508
	502	SLAB	#5	S	21	10.000							
		SHOR + SLOPE TO	#5	S		7.000							937
	503	SLAB	#5	S	43	7.000							11,180
	504	SLAB	#5	S	35	3.000							25,395
	505	SLAB	#5	S	33	1.000							
		SHOR + SLOPE TO	#5	S		7.000							937
	506	SLAB	#5	S	44	0.000							7,985
	507	SLAB	#5	S	37	9.000							9,112
	508	SLAB	#5	S	42	2.000							3,547
		PRECAST PANEL DIAG OPTION											
	509	SLAB	#5	S	43	7.000							11,187
	510	SLAB	#5	S	35	3.000							
	511	SLAB	#5	S	33	1.000							
		SHOR + SLOPE TO	#5	S		7.000							937
	512	SLAB	#5	S	44	0.000							7,985
	513	SLAB	#5	S	37	9.000							9,112
	514	SLAB	#5	S	42	7.000							3,583
	515	SLAB	#5	S	3	8.000							1,234
		SAFETY BARRIER CURB											
640	SR1	BARRIER CURB	E 19	S	1	5.000	6.000						1,234
640	SR2	BARRIER CURB	E 27	S			6.000	11.125	7.000	12.000	9.125	6.375	1,891
736	SR3	BARRIER CURB	E 19	S	2	6.000	3.500						2,047
680	SR4	BARRIER CURB	E 15	S	2	6.125	3.500				2 6.000	3.000	1,986
40	SR5	BARRIER CURB	E 19	S	1	11.750	6.000						161
40	SR6	BARRIER CURB	E 27	S			6.000	11.125	1 2.375		9.125	6.375	134
24	SR7	BARRIER CURB	E 10	S	2	0.000	7.500						111
48	SR8	BARRIER CURB	E 20		5	0.000							250
10	SR9	BARRIER CURB	E 20		35	7.000							371
8	SR10	BARRIER CURB	E 19	S	2	0.000	7.000						21
8	SR11	BARRIER CURB	E 27	S			6.000	8.500	1 4.000		7.000	4.?	21
2	SR12	BARRIER CURB	E 20		36	3.000							78
10	SR13	BARRIER CURB	E 20		39	7.000							413
8	SR14	BARRIER CURB	E 19	S	2	3.000'	4.000						21
24	SR15	BARRIER CURB	E 20		9	7.000							240
2	SR16	BARRIER CURB	E 20		40	3.000							84
72	SR17	BARRIER CURB	E 20		39	10.00							2,991
		END OF BAR LIST											

SHAPE 6 SHAPE 7 SHAPE 8 SHAPE 9

SHAPE 10 SHAPE 11 SHAPE 12 SHAPE 13

SHAPE 14 SHAPE 15 SHAPE 16

SHAPE 17 SHAPE 18 SHAPE 19 SHAPE 20 SHAPE 21

SHAPE 22 SHAPE 23 SHAPE 24

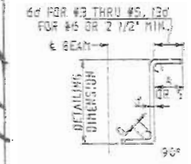
SHAPE 25 SHAPE 26 SHAPE 27 SHAPE 28

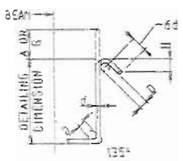
SHAPE 29 SHAPE 30 SHAPE 31

SHAPE 32 SHAPE 33

BENDING DIAGRAMS

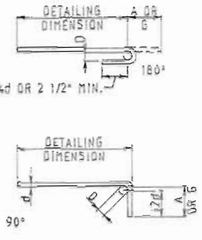
Donald D. Gall 5-21-92





STIRRUP HOOK DIMENSIONS GRADES 40-50-60 KSI				
BAR SIZE	D	90° HOOK A OR G	135° HOOK A OR G	135° HOOK APPROX. J
#3	1 1/2"	4"	4"	2 1/2"
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	7 3/4"	4 1/2"

NOTE: UNLESS OTHERWISE NOTED THE DIAMETER 'D' IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



BENT HOOK DIMENSIONS					
BAR SIZE	D	180° HOOKS ALL GRADES A OR G	180° HOOKS ALL GRADES J	90° HOOKS ALL GRADES A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTES:

ALL STANDARD HOOKS AND BENDS OTHER THAN 180° TO BE BENT WITH SAME PROCEDURE AS FOR 90° STD. HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E - EPOXY COATED REINFORCEMENT
S - STIRRUP
X - BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V - BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EACH - NUMBER OF BARS OF EACH LENGTH
NOMINAL LENGTHS - ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS ARE LISTED FOR FABRICATORS USE NEAREST INCH.
ACTUAL LENGTHS - ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 27 OF 27

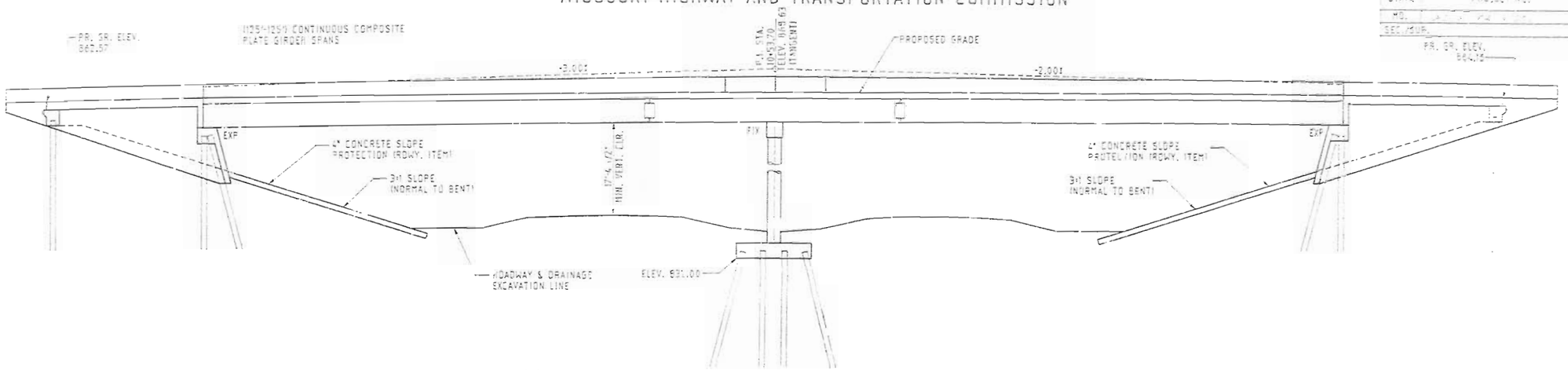
CALLAWAY COUNTY

SEE FINAL PLANS

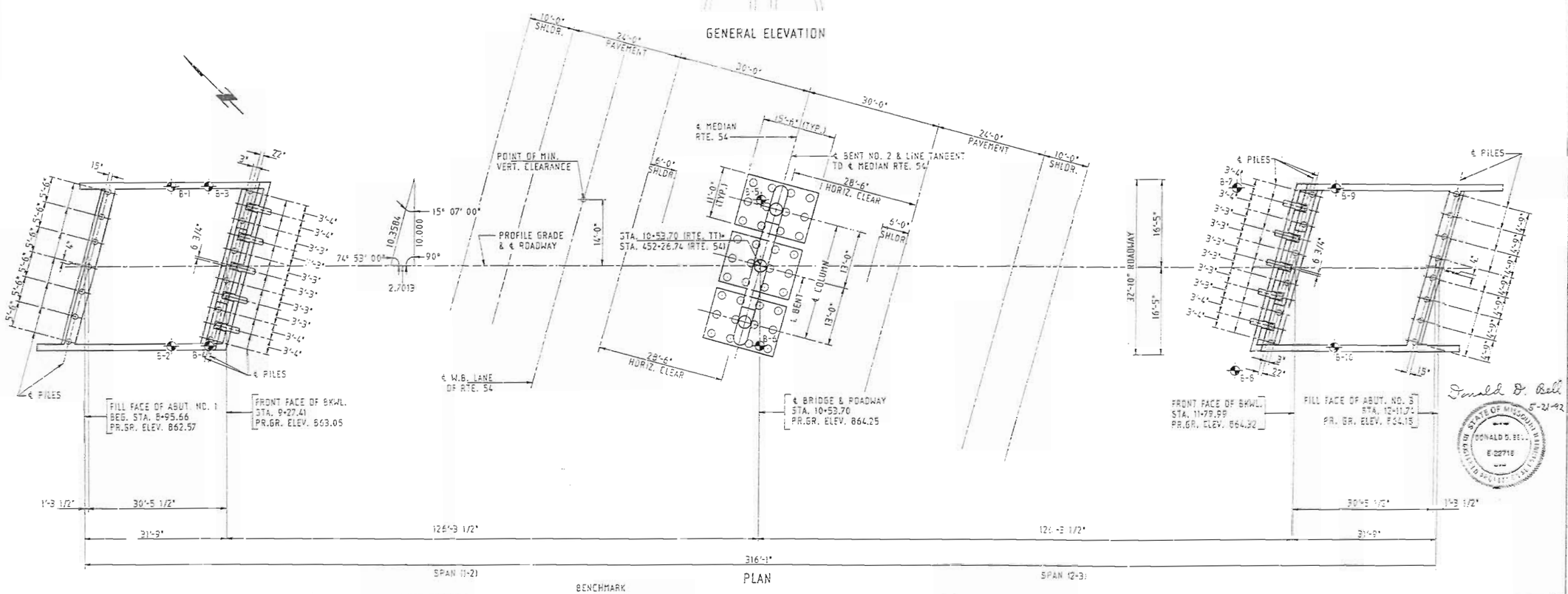
A-3451

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJECT NO.	SHEET NO.
MO.	[illegible]	136
SECTION		



GENERAL ELEVATION



PLAN

BENCHMARK

◆ INDICATES LOCATION OF BORINGS. BORING DATA IS DETAILED ON SHT. NO. 3.

NOTE: FOR GENERAL NOTES, ESTIMATED QUANTITIES, ESTIMATED QUANTITIES FOR ALTERNATE SLABS AND PILE DATA SEE SHEET NO. 2.

Donald D. Bell 5-21-92

DONALD D. BELL — STATE OF MISSOURI — E-22718

DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 1 OF 27

ESE Environmental Science & Engineering, Inc.

BRIDGE: ROUTE TT OVER ROUTE 54
PROJECT NO. STA. 452+26.74
JOB NO. J5P0412B RTE. 54
CALLAWAY COUNTY
DATE 6/8/92

STR. THICKNESS
STR. ADD.
STR. ADD.
STR. THICKNESS
A-3451

2894 416

QUANTITIES

ITEM		SUBSTR.	SUPERSTR.	TOTAL
CLASS 1 EXCAVATION	CU. YDS.			71
CAST-IN-PLACE CONCRETE PILES	LIN. FT.			
PREBORE FOR PILING	LIN. FT.	424		424
CLASS B CONCRETE (SUBSTR.)	CU. YDS	269.7		269.7
SLAB ON STEEL	SQ. YDS.		999	999
SAFETY BARRIER CURB	LIN. FT.		669	669
SLAB ON SEMI-DEEP ABUTMENT	SQ. YDS.		350	350
LAMINATED NEOPRENE BEARING PADS (STEEL STRUCTURES)	EACH		12	12
PREFORMED COMPRESSION EXPANSION JOINT SEAL (3.5 IN.)	LIN. FT.		71	71
REINFORCING STEEL	LBS.	28,500		28,500
REINFORCING STEEL (EPOXY COATED)	LBS.	1,866	120***	1,986
FABRICATED STRUCTURAL CARBON STEEL (PLATE GIRDERS) A-36	LBS.		38,490	38,490
FABRICATED STRUCTURAL LOW ALLOY STEEL (PLATE GIRDERS) A-572	LBS.		240,450	240,450
SLAB DRAINS	EACH		16	16
PAINTING (SYSTEM C) GREEN	TONS		134.6	134.6
LOAD TESTS	EACH	1		1
BRIDGE APPROACH SLABS	SQ.YDS.		140	140

NOTE: ALL CONCRETE AND REINFORCING STEEL BELOW TOP OF SLAB AND ABOVE CONST. JOINT UNDER SLAB IN SEMI-DEEP ABUTMENTS ARE INCLUDED IN SUPERSTRUCTURE QUANTITIES FOR SLAB ON SEMI-DEEP ABUTMENTS.

***EPOXY COATED TEST BARS.

PILE DATA

BENT NO.		APPROACH BEAM ABUT. NO. 1	BEARING BEAM ABUT. NO. 1	INT. BT. NO. 2	BEARING BEAM ABUT. NO. 3	APPROACH BEAM ABUT. NO. 3
PILE TYPE AND SIZE		14"ø C.I.P.	14"ø C.I.P.	14"ø C.I.P.	14"ø C.I.P.	14"ø C.I.P.
NUMBER		7	11	36	11	8
APPROXIMATE LENGTH	FT.	40 - 45	35 - 40	20 - 25	35 - 40	40 - 45
MIN. PILE TIP ELEV.	FT.	814.00	814.00	808.00	805.00	816.00
DESIGN BEARING	TONS	30	39 **	30	39 **	27
HAMMER ENERGY REQUIRED	FT.-LBS.	8,000	8,000	8,000	8,000	8,000

NOTE: MINIMUM ENERGY REQUIREMENT OF HAMMER IS BASED ON PLAN LENGTH & DESIGN BEARING VALUE OF PILES. ALL PILES SHALL BE DRIVEN TO PRACTICAL REFUSAL.

ALL PILES SHALL BE FOUNDATION PILES.

** LOAD TEST, SEE SPECIAL PROVISIONS.

PREBORE FOR PILES AT APPROACH BEAM, BENT #1 TO ELEV. 846.5, BEARING BEAM, BENT #1 TO ELEV. 849.8 & APPROACH BEAM BENT #3 TO ELEV. 853.1.

FINAL QUANTITIES FOR ALTERNATE SLABS

TYPE OF SLABS	SLAB ON STEEL		
	REINF. (LBS.) EPOXY	REINF. (LBS.) PLAIN	CONC. (CU. YD.)
PRECAST PANEL BEAMS	53,770		179.9

NOTE: THE TABLE OF ESTIMATED QUANTITIES FOR ALTERNATE SLABS REPRESENTS THE QUANTITIES USED BY THE STATE IN PREPARING THE COST ESTIMATE FOR CONCRETE SLABS. VARIATIONS MAY BE ENCOUNTERED IN THESE ESTIMATED QUANTITIES BUT THESE VARIATIONS CANNOT BE USED FOR AN ADJUSTMENT IN THE CONTRACT UNIT PRICE PER SQUARE YARD OF ALTERNATE SLAB USED.
SEE SPECIAL PROVISIONS FOR ALTERNATE METHODS OF FORMING SLABS.
* DOES NOT INCLUDE CONCRETE REQUIRED TO FILL CORRUGATIONS OF S.I.P. FORMS.
** DOES NOT INCLUDE REINFORCING BARS USED AS BAR SUPPORTS.
PRECAST PANEL QUANTITIES ARE BASED ON SKEWED END PANELS.

285-417

GENERAL NOTES:

DESIGN SPECIFICATIONS: A.A.S.H.T.O.-1989 & 1991 INTERIM
LOAD FACTOR DESIGN
A.A.S.H.T.O.-1992 BRIDGE DESIGN SPECIFICATIONS PER SECTION 5 SEC.ON. SEISMIC PERFORMANCE CATEGORY A

DESIGN LOADING: HS20-44 MODIFIED 24,000# TANDEM AXLE
35#/SQ. FT. FUTURE WEARING SURFACE
EARTH 120#/CU. FT., EQUIVALENT FLUID PRESSURE 45#/CU. FT.
FATIGUE STRESS - CASE II

DESIGN UNIT STRESSES:

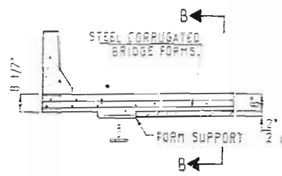
CLASS A CONCRETE (SUBSTRUCTURE)	f'c = 3,000 PSI
CLASS B1 CONCRETE (SAFETY BARRIER CURB)	f'c = 4,000 PSI
CLASS B2 CONCRETE (SUPERSTRUCTURE, EXCEPT SAFETY BARRIER CURB)	f'c = 4,000 PSI
REINFORCING STEEL (GRADE 60)	fy = 60,000 PSI
STRUCTURAL CARBON STEEL	fy = 36,000 PSI
STRUCTURAL STEEL (A.S.T.M. A572) GRADE 50	fy = 50,000 PSI

FABRICATED STEEL CONNECTIONS:
FIELD CONNECTIONS, HIGH STRENGTH BOLTS 3/4"ø, HOLES 13/16"ø, EXCEPT AS NOTED.

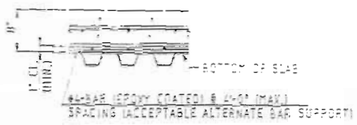
JOINT FILLER:
ALL JOINT FILLER SHALL MET THE REQUIREMENTS OF STD. SPEC. 1051.0.., EXCEPT AS NOTED.

REINFORCING STEEL:
MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1-1/2", UNLESS OTHERWISE SHOWN.

PAINT:
SYSTEM C BY CONTRACTOR IN ACCORDANCE WITH STD. SPEC. 710.10.



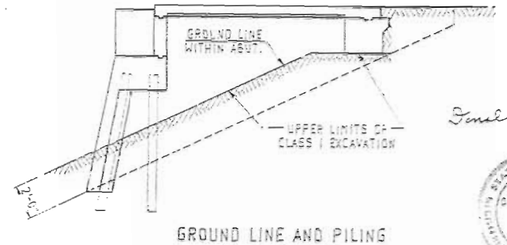
PART SECTION THRU SLAB
SHOWING STAY-IN-PLACE FORMS



LONGITUDINAL SECTION THRU SLAB
(STAY-IN-PLACE FORMS)
SECTION B-B

NOTE: BOTTOM TRANSVERSE REINFORCING STEEL SHALL BE PLACED TO MATCH FORM CORRUGATIONS.

TO DETERMINE HAUNCH FOR THE STAY-IN-PLACE ALTERNATE, ADD 1/2" TO THE HAUNCH FOR THE CAST-IN-PLACE ALTERNATE.



GROUND LINE AND PILING
IN ABUTMENTS

NOTE: IN NO CASE SHALL THE EARTH WITHIN ABUTMENTS NO. 1 AND 3 BE ABOVE THE GROUND LINE SHOWN. FORMS SUPPORTING ABUTMENT SLAB MAY BE LEFT IN PLACE.

THE MAXIMUM VARIATION OF THE HEAD OF THE PILE AND THE BATTERED FACE OF THE PILE FROM THE POSITION SHOWN ON THE PLANS SHALL BE NOT MORE THAN 2" PER PILE UNDER ABUTMENTS NO. 1 AND 3.

EXPOSED STEEL PILE SHELLS WITHIN THE ABUTMENTS SHALL BE COATED WITH A HEAVY COATING OF APPROVED BITUMINOUS PAINT.

Donald D. Bell
5-21-92

STATE OF MISSOURI
DONALD D. BELL
E-20710
REGISTERED ENGINEER

DETAILED JAN. 1992
CHECKED MAR. 1992

STATE	PROJECT NO.	SHEET NO.
MO.	[illegible]	

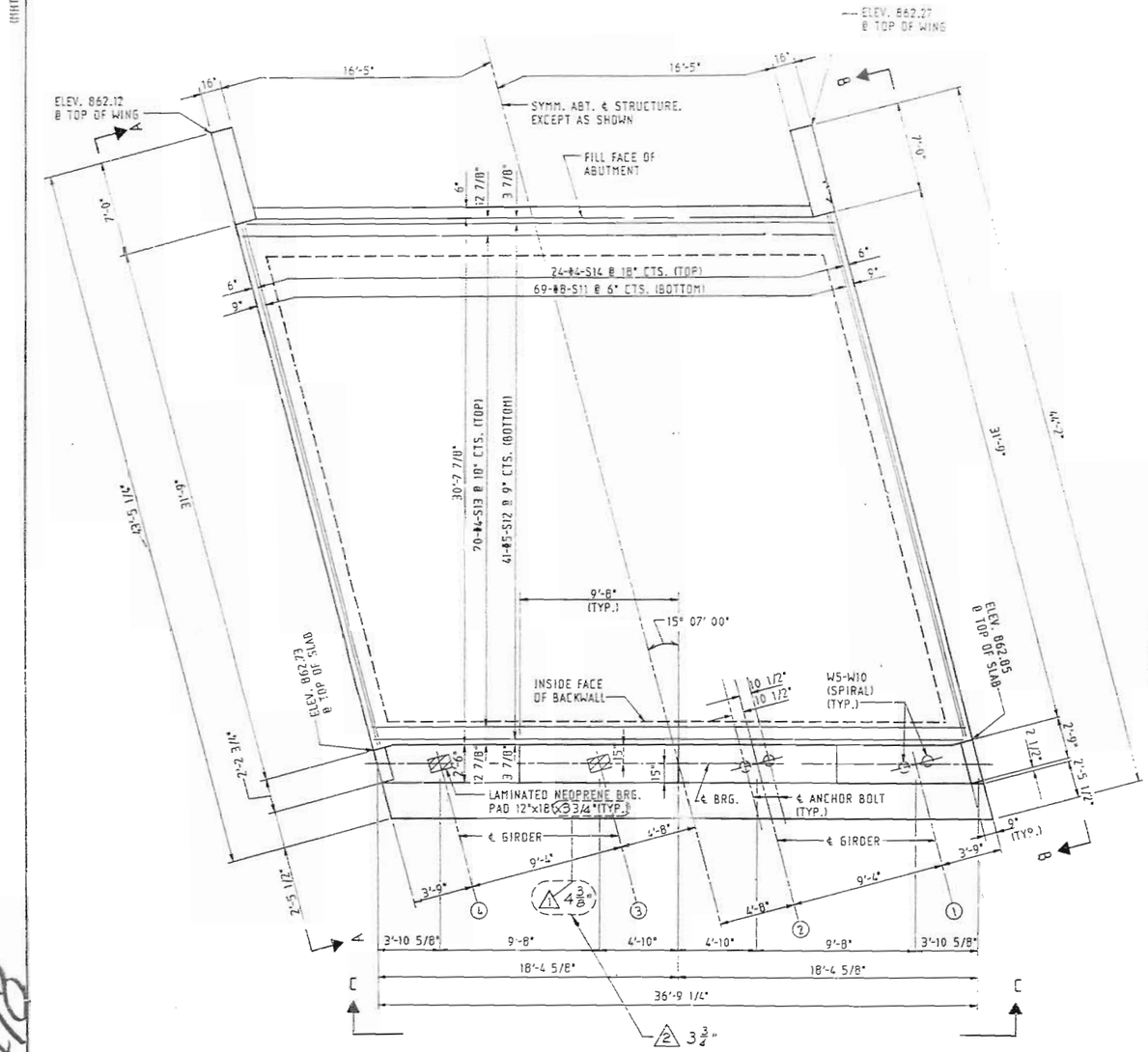
NOTE: TOP OF ABUTMENT SLAB AND EXPANSION DEVICE FOR ABUTMENT NO. 1 SHALL CONFORM TO CROWN OF ROADWAY SLAB. ABUTMENT SLAB ABOVE THE UPPER CONSTRUCTION JOINT SHALL NOT BE POURED UNTIL THE SUPERSTRUCTURE SLAB HAS BEEN POURED IN THE ADJACENT SPAN.

FOR DETAILS OF EXPANSION DEVICE SEE SHEET NO. 19.

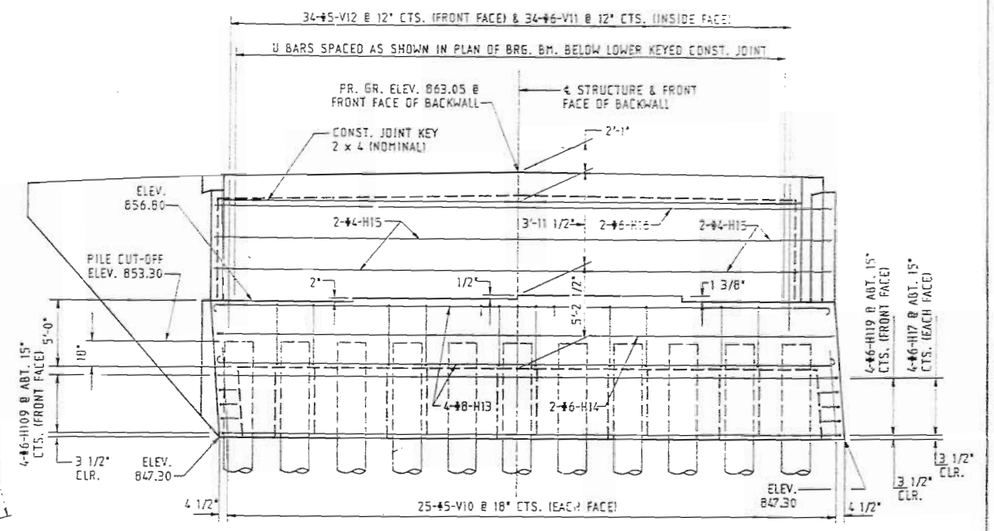
FOR DETAILS OF ANCHOR BOLT WELLS SEE SHEET NO. 14.

FOR ELEVATION A-A, ELEVATION B-B, AND SECTION NEAR ℄ ROADWAY, SEE SHEET NO. 7.

FOR DETAILS OF TIMBER HEADER SEE SHEET NO. 22.



PLAN



ELEVATION C-C

SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 1		
ITEM		QUANTITY
CLASS 1 EXCAVATION	CU. YDS.	56
C.I.P. PILE (14")	LIN. FT.	755
CLASS B CONCRETE (SUBSTRUCTURE)	CU. YDS.	83.1
REINFORCING STEEL	LBS.	5,480
REINFORCING STEEL (EPOXY COATED)	LBS.	930

NOTE: WORK THIS TABLE WITH ESTIMATED QUANTITIES AS SHOWN ON SHEET #2

DETAILS OF ABUTMENT NO. 1

DETAILED JAN. 1992
CHECKED MAR.1992

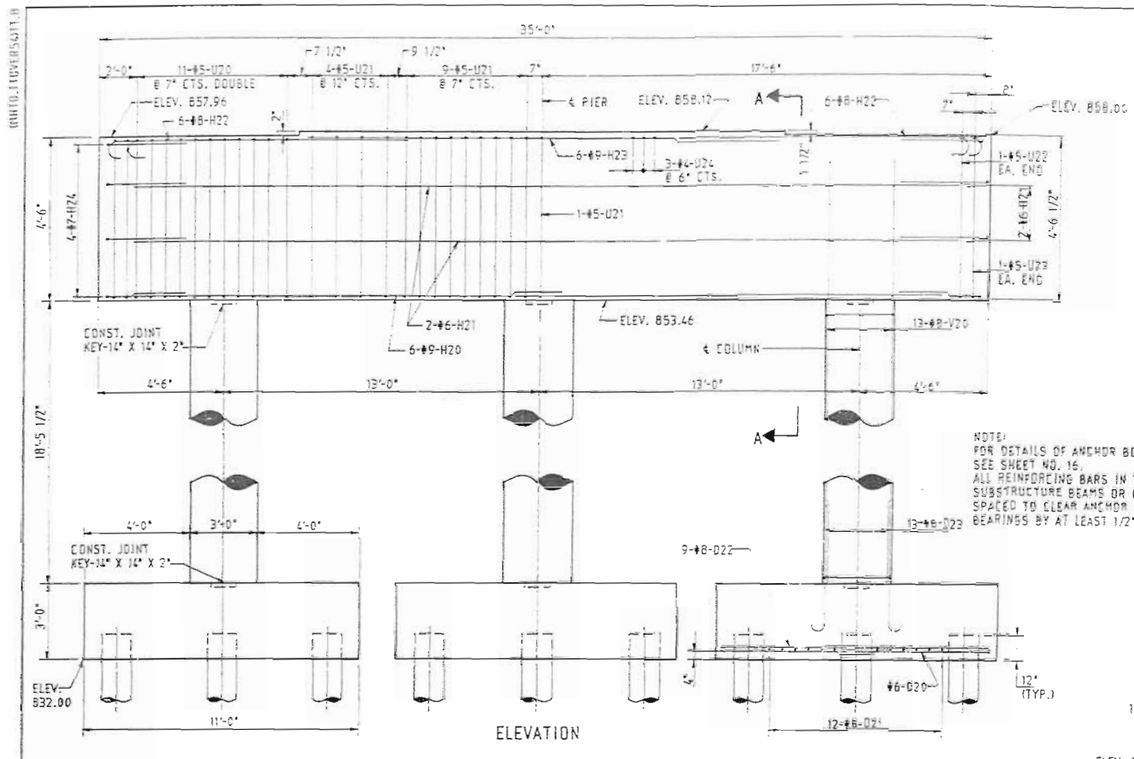
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

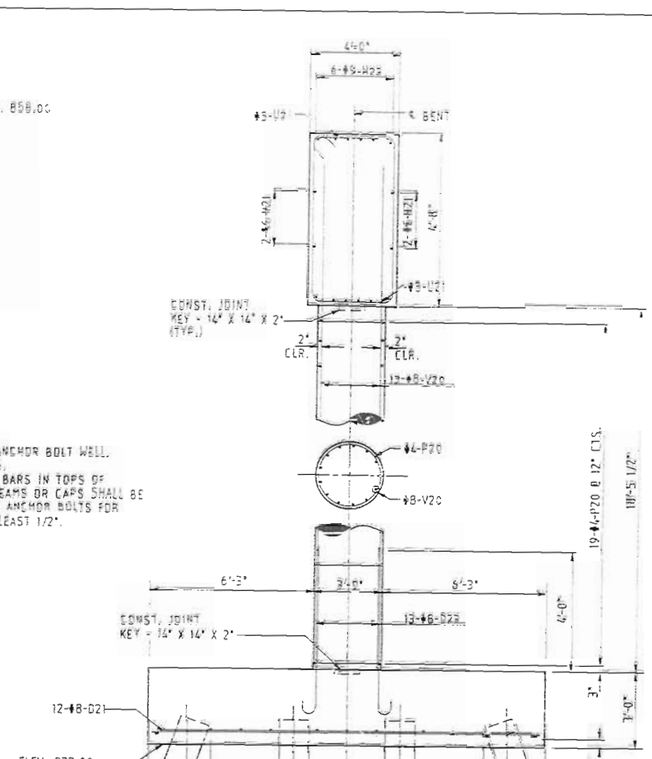
SHEET NO. 4 OF 27

2 Revised 9-29-92
1 REVISED 8-4-92

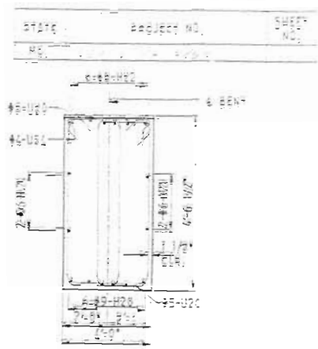
CALLAWAY COUNTY

A-3451



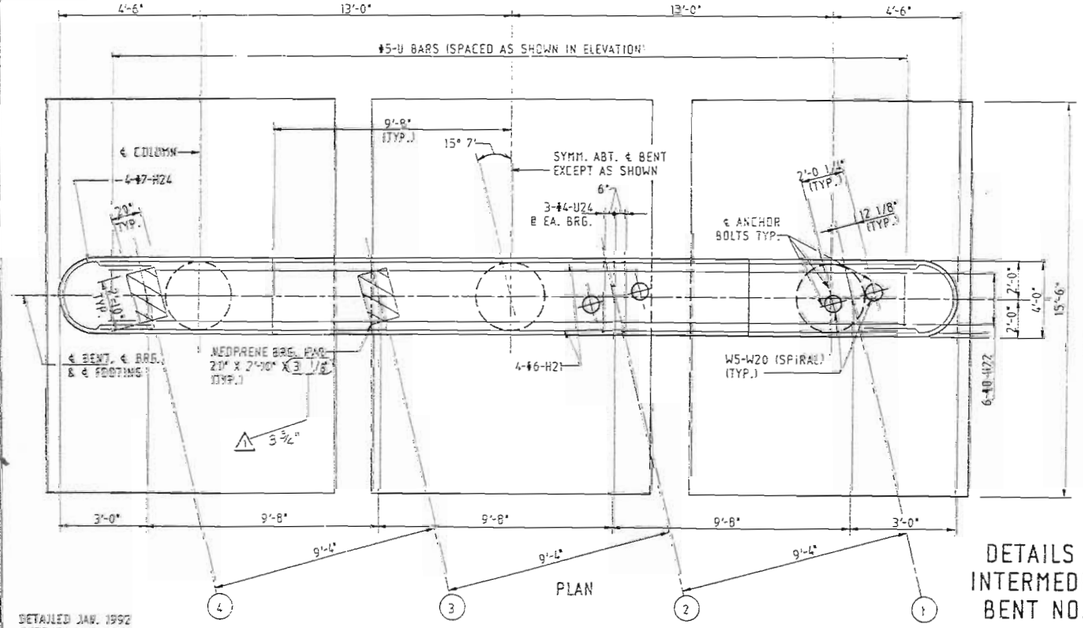


SECTION NEAR ℄ BENT



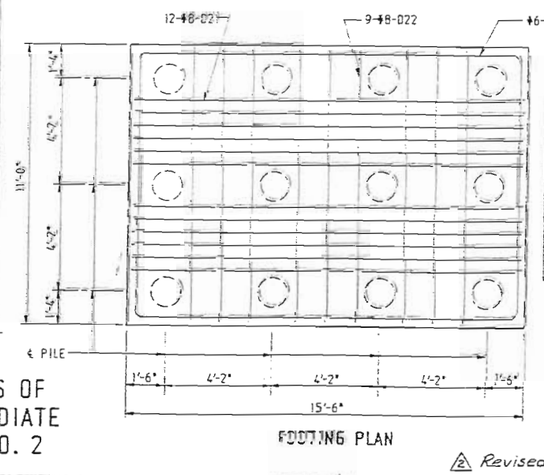
SECTION A-A

△2 Note: Intermediate Bent No.2 is drawn looking back station.



PLAN

DETAILS OF INTERMEDIATE BENT NO. 2



FOOTING PLAN

SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 2		
ITEM		QUANTITY
CLASS 1 EXCAVATION	CU. YDS.	165
C.I.P. PILE (14")	LIN. FT.	900
CLASS B CONCRETE (SUBSTRUCTURE)	CU. YDS.	94.7
REINFORCING STEEL	LBS.	9,610

NOTE: WORK THIS TABLE WITH ESTIMATED QUANTITIES AS SHOWN ON SHEET #2

DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 18 OF 27

△2 Revised 9/29/92
△1 REVISED 8-4-92

CALLAWAY COUNTY

A-3451

STATE	PROJECT NO.	SHEET NO.
MO.		

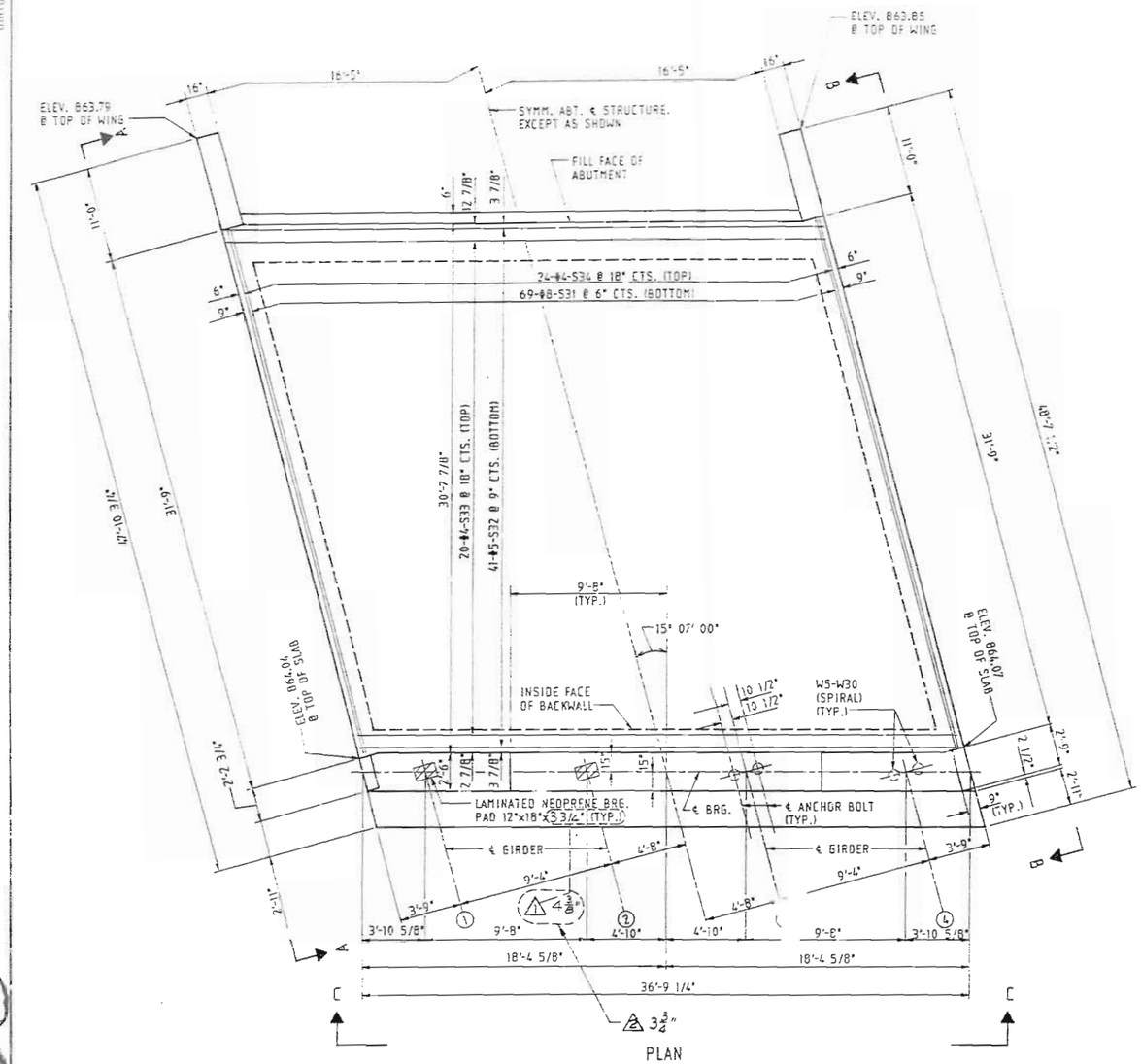
NOTE: TOP OF ABUTMENT SLAB AND EXPANSION DEVICE FOR ABUTMENT NO. 3 SHALL CONFORM TO CROWN OF ROADWAY SLAB. ABUTMENT SLAB ABOVE THE UPPER CONSTRUCTION JOINT SHALL NOT BE POURED UNTIL THE SUPERSTRUCTURE SLAB HAS BEEN POURED IN THE ADJACENT SPAN.

FOR DETAILS OF EXPANSION DEVICE SEE SHEET NO. 19.

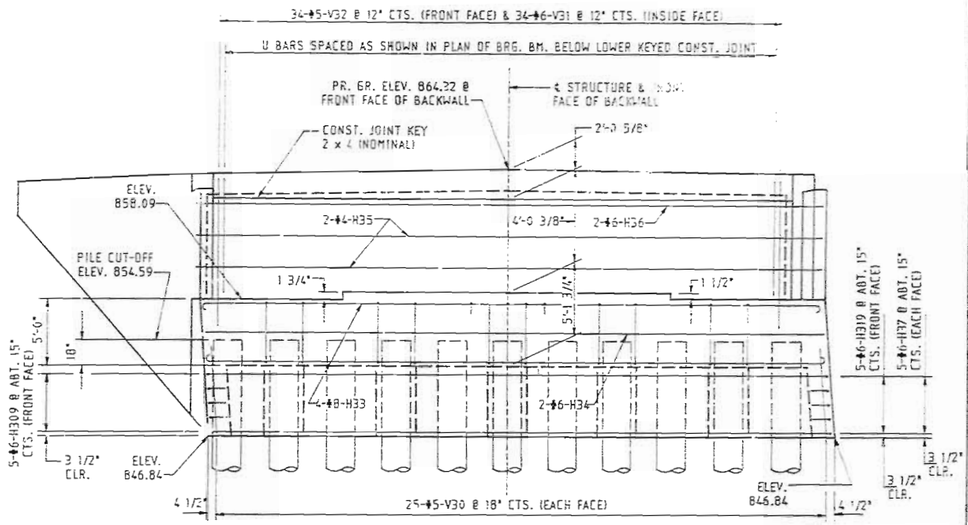
FOR DETAILS OF ANCHOR BOLT WELLS SEE SHEET NO. 16.

FOR ELEVATION A-A, ELEVATION B-B, AND SECTION AT BEARING & ROADWAY, SEE SHEET NO. 12.

FOR DETAILS OF TIMBER HEADER SEE SHEET NO. 22.



PLAN



ELEVATION C-C

SUBSTRUCTURE QUANTITY TABLE FOR BENT NO. 3

ITEM		QUANTITY
CLASS I EXCAVATION	CU. YDS.	56
C.I.P. PILE (14")	LIN. FT.	910
CLASS B CONCRETE (SUBSTRUCTURE)	CU. YDS.	91.9
REINFORCING STEEL	LBS.	6,010
REINFORCING STEEL (EPOXY COATED)	LBS.	930

NOTE: WORK THIS TABLE WITH ESTIMATED QUANTITIES AS SHOWN ON SHEET #2

DETAILS OF ABUTMENT NO. 3

DETAILED JAN. 1992
CHECKED MAR.1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

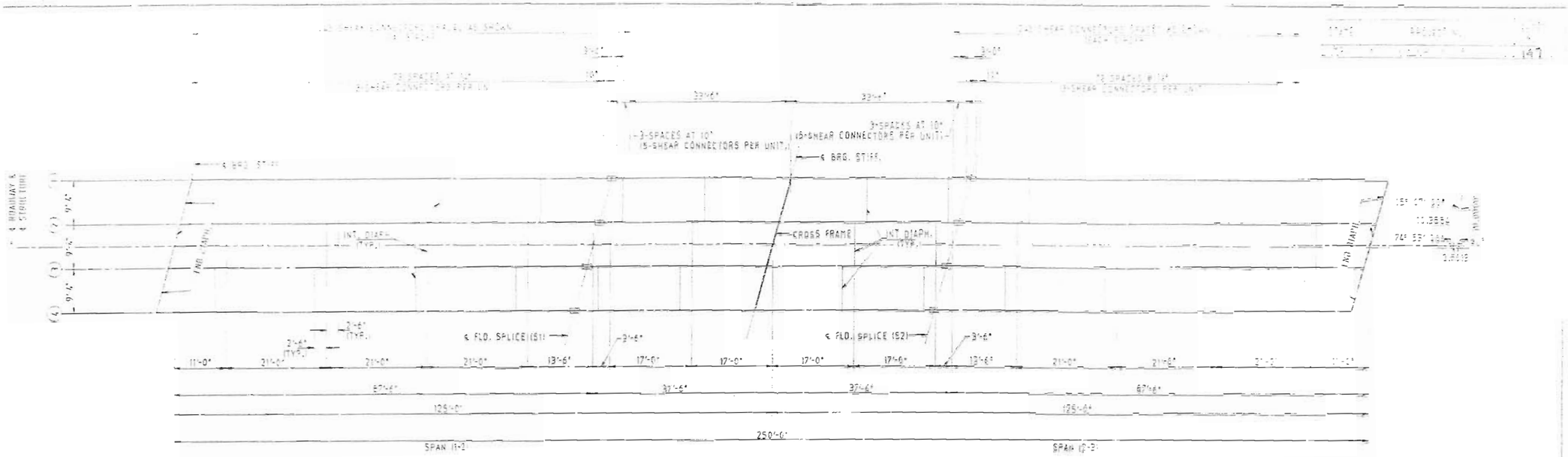
SHEET NO. 9 OF 27

2 Revised 9-29-92
1 REVISED 8-4-92

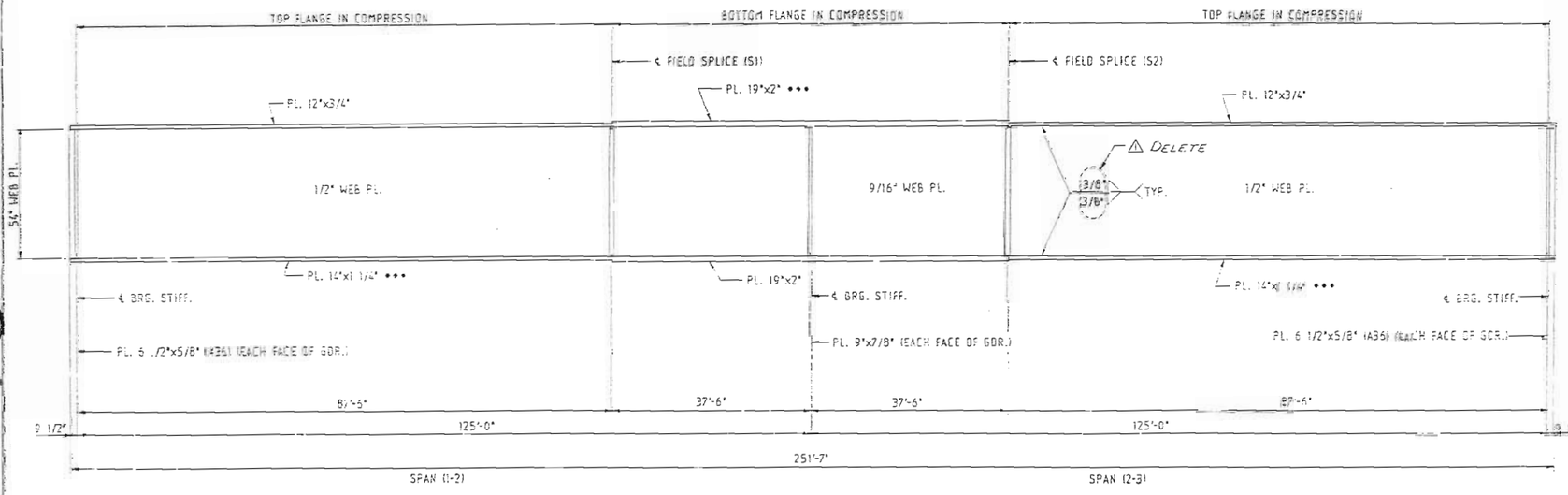
CALLAWAY COUNTY

A-3451

430



PLAN OF STRUCTURAL STEEL



ELEVATION OF GIRDER

NOTE:
LONGITUDINAL DIMENSIONS ARE HORIZONTAL.
FABRICATED STRUCTURAL STEEL SHALL BE A-572, EXCEPT AS NOTED.

••• INDICATES FLANGE PLATES SUBJECT TO NOTCH TOUGHNESS REQUIREMENTS.

PLATE GIRDERS SHALL BE FABRICATED TO CONFORM TO CAMBER DIAGRAM SHOWN ON SHEET NO. 16.

ALL WEB PLATES SHALL BE SUBJECT TO NOTCH TOUGHNESS REQUIREMENTS.

FOR LOCATION OF SLAB GRAINS, SEE SHEET NO. 16.

⚠ REVISED: 8-4-92

Donald D. Bell
5-21-92

DONALD D. BELL
E-26718
REGISTERED PROFESSIONAL ENGINEER
STATE OF MISSOURI

471 375

DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 17 OF 27

CALLAWAY COUNTY

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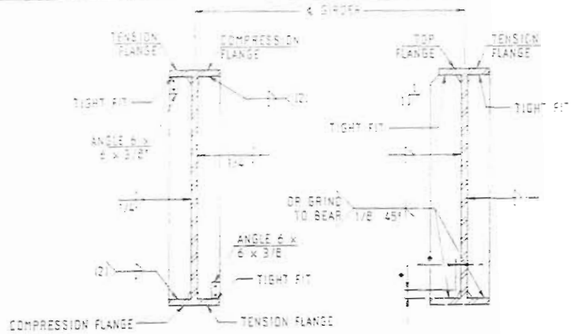
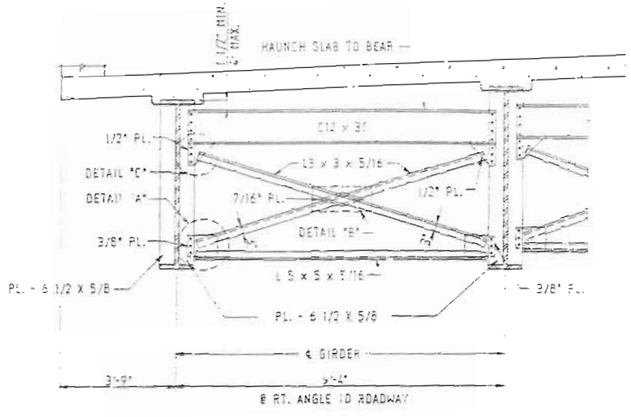


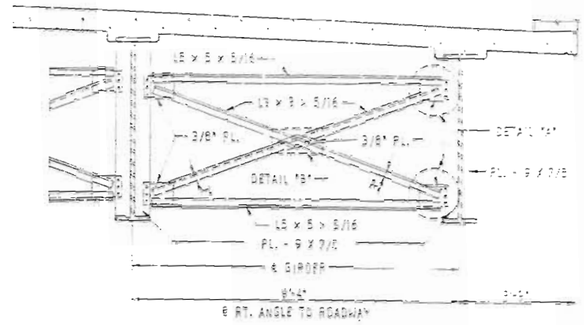
(2) WELD TO COMPRESSION FLANGE AS LOCATED ON ELEVATION OF GIRDER.

• 1'-0" x 1" TYPICAL FOR ALL ... INT. DIAPH. CONN. PL. AND BRG. STIFF..

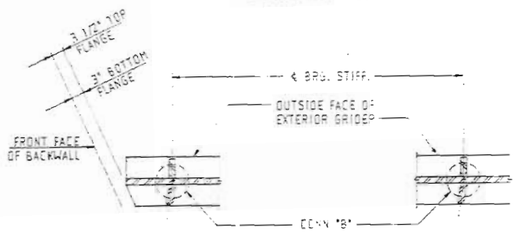
WELDING DETAILS



TYPICAL PART SECTION SHOWING
END DIAPHRAGMS



TYPICAL PART SECTION SHOWING
CROSS FRAMES

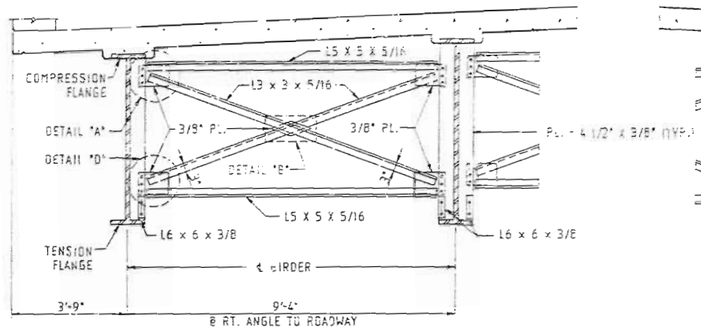


END BRG. STIFF.

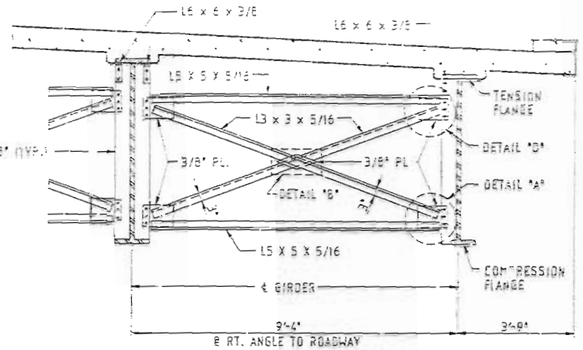
INT. BRG. STIFF.

INT. DIAPH. CONN. PL.

TYPICAL LOCATION DETAILS



TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
BOTTOM FLANGE IN TENSION

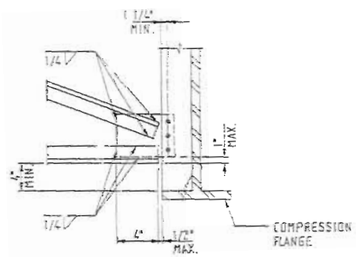


TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
TOP FLANGE IN TENSION

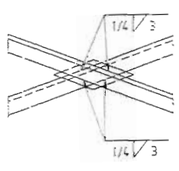
NOTE:
ALL END & INTERMEDIATE DIAPHRAMS INCLUDING CONNECTION PLATES, AND ALL CROSSFRAMES MAY BE A 36 STEEL.

Donald D. Bell
5-21-92

WELDING DETAILS



DETAIL "A"



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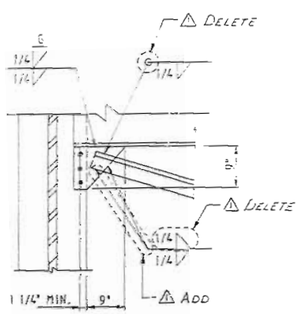
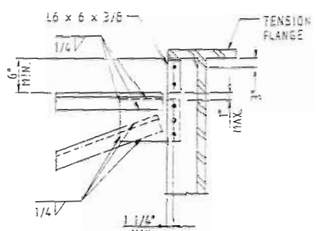
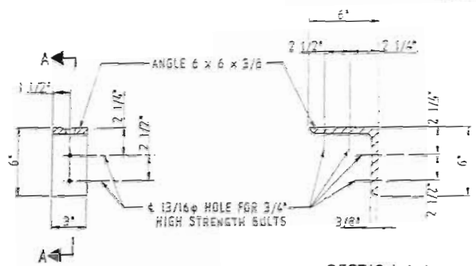


DETAIL "C"



DETAIL "D"



DETAIL OF FLANGE
CONNECTION ANGLE

SECTION A-A

DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

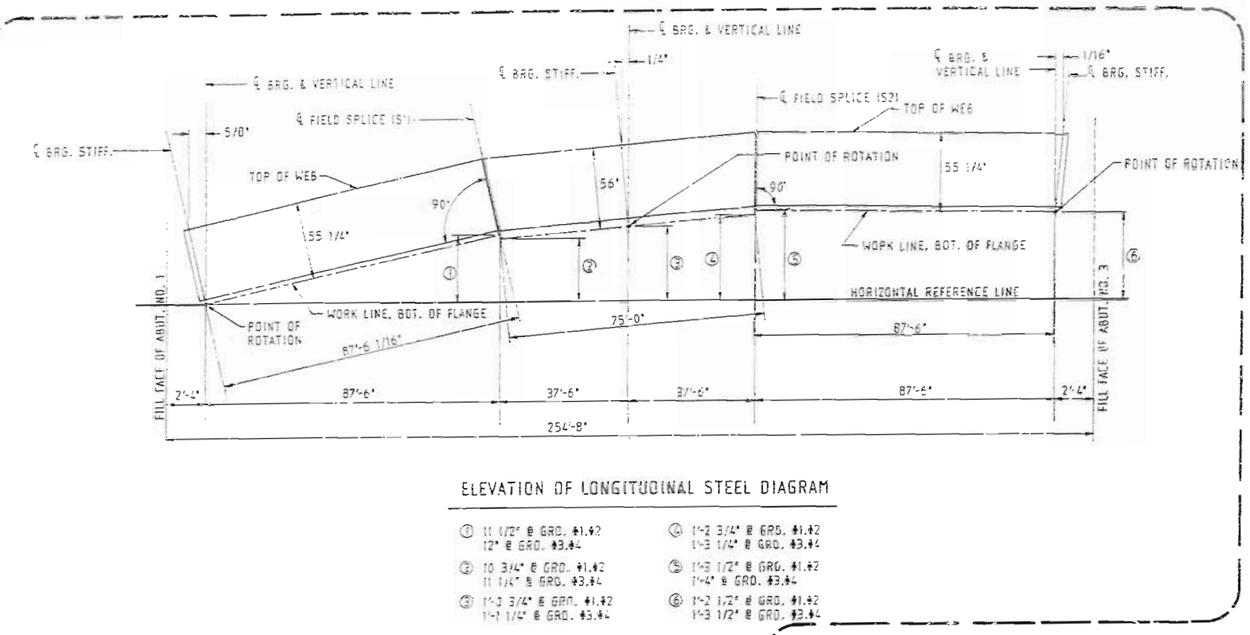
SHEET NO. 14 OF 27

REVISED: 8-4-92

CALLAWAY COUNTY

A-3451

3977 932



ELEVATION OF LONGITUDINAL STEEL DIAGRAM

① 11 1/2" @ GRD. #1,#2
12" @ GRD. #3,#4

② 10 3/4" @ GRD. #1,#2
11 1/4" @ GRD. #3,#4

③ 1'-0 3/4" @ GRD. #1,#2
1'-1 1/4" @ GRD. #3,#4

④ 1'-2 3/4" @ GRD. #1,#2
1'-3 1/4" @ GRD. #3,#4

⑤ 1'-3 1/2" @ GRD. #1,#2
1'-4" @ GRD. #3,#4

⑥ 1'-2 1/2" @ GRD. #1,#2
1'-3 1/2" @ GRD. #3,#4

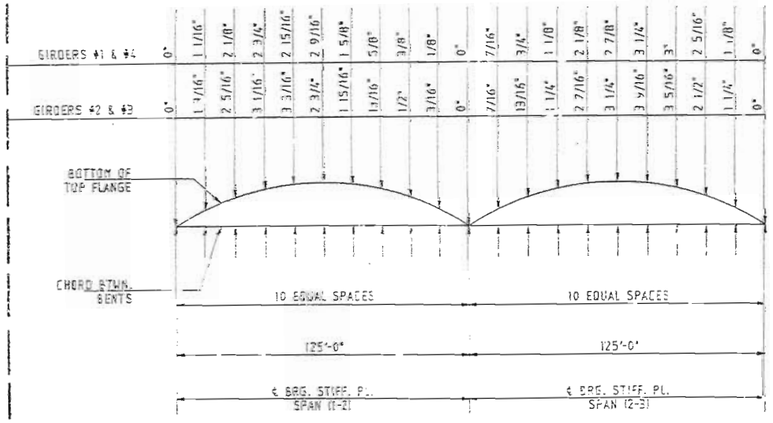


PLATE GIRDER CAMBER DIAGRAM

NOTE: CAMBER INCLUDED ALLOWANCE FOR DEAD LOAD DEFLECTION DUE TO CONCRETE SLAB, CURB AND STRUCTURAL STEEL, AND VERTICAL CURVE.

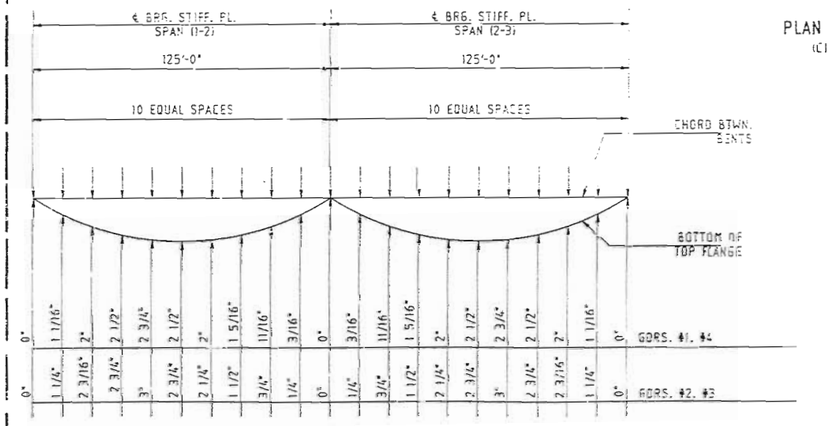
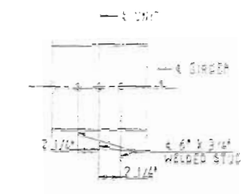


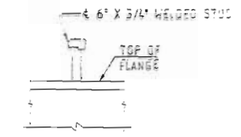
PLATE GIRDER DEAD LOAD DEFLECTION DIAGRAM

NOTE: 17% OF DEAD LOAD DEFLECTION DUE TO WEIGHT OF STRUCTURAL STEEL.

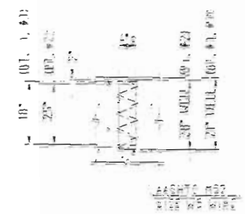
DEFLECTION DUE TO CONCRETE SLAB, CURB, AND STRUCTURAL STEEL.



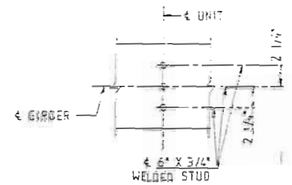
PLAN OF STUD CONN.
(P/C P/S PANEL OPTION)



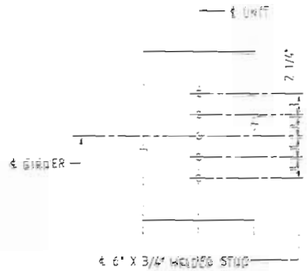
ELEVATION



DETAIL OF ANCHOR BOLT WELL



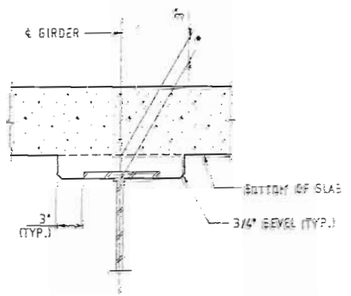
PLAN OF STUD CONN.
(CIP & SIP OPTION)



PLAN OF STUD CONN.
(ALL OPTIONS)

DETAIL OF SHEAR CONNECTOR

NOTE: A WEIGHT OF 1,725 LBS. OF SHEAR CONNECTORS IS INCLUDED IN WEIGHT OF FABRICATED STRUCTURAL CARBON STEEL.



THEORETICAL SLAB HAUNCH

NOTE: * DIMENSION MAY VARY IF THE GIRDER CAMBER AFTER ERECTION DIFFERS FROM PLAN CAMBER BY MORE THAN THE ± OF D.L. DEFLECTION DUE TO THE WEIGHT OF STRUCTURAL STEEL. NO PAYMENT WILL BE MADE FOR ADDITIONAL FORMING OR CONCRETE REQUIRED FOR VARIATION IN HAUNCHING.

Donald D. Bell
5-21-92

STATE OF MISSOURI
DONALD D. BELL
E-22758
REGISTERED PROFESSIONAL ENGINEER

STATE | PROJECT NO. | SHEET NO. 150

493 834

⚠ Omit

⚠ Note: For Plate Girder Camber Diagram and Part Longitudinal Section see sheet No. 16A .

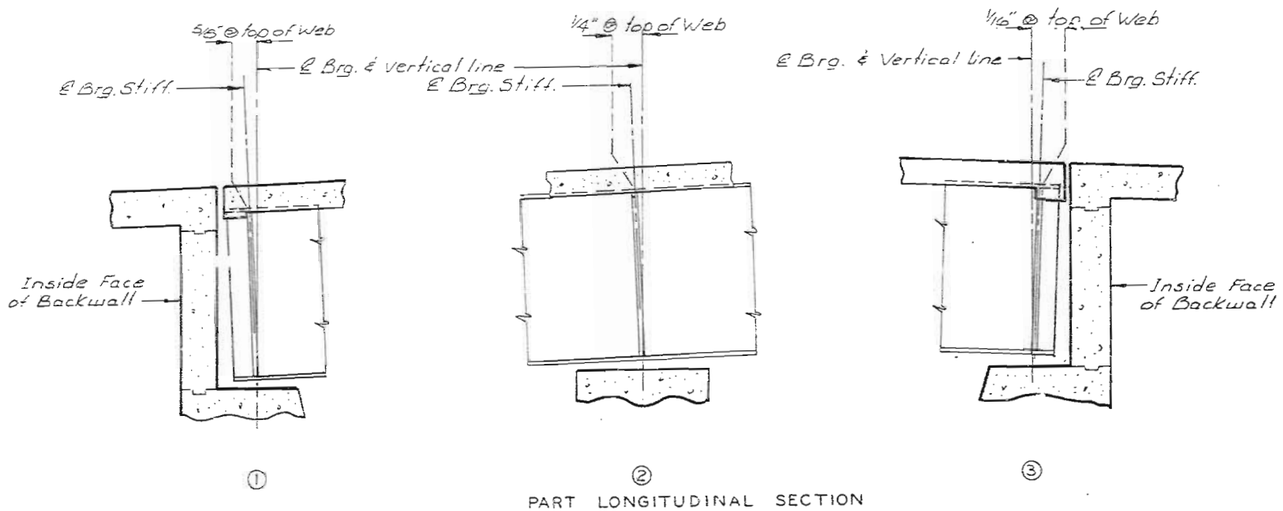
DETAILED JAN. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 16 OF 27 ⚠ Revised 5/29/92

CALLAWAY COUNTY

A-3451



PART LONGITUDINAL SECTION

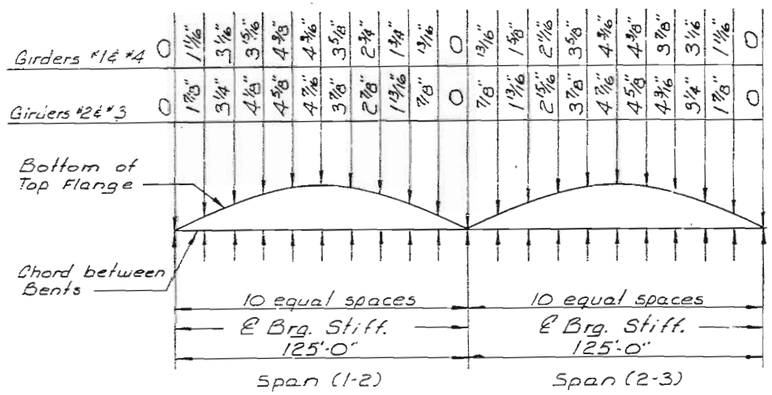


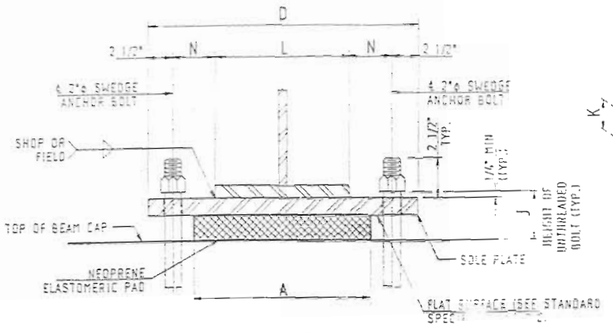
PLATE GIRDER CAMBER DIAGRAM

Note : Camber includes allowance for Vertical curve , Dead Load Deflection due to concrete slab , Curb , and Structural steel .

DETAILED Sept. 1992
CHECKED Sept. 1992

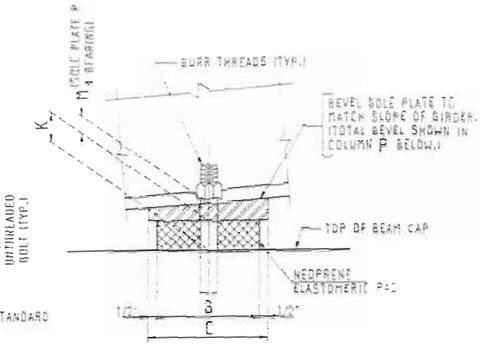
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 16A of 27 ⚠ Revised 9/29/92 CALLAWAY COUNTY A-3451

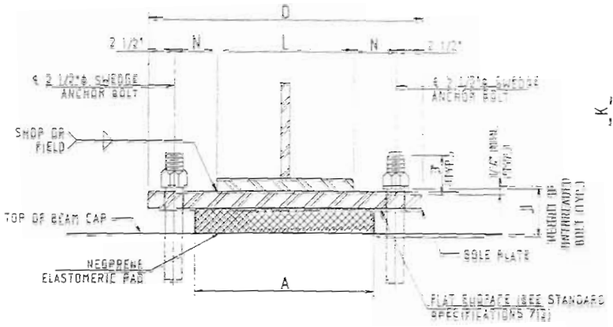


END VIEW

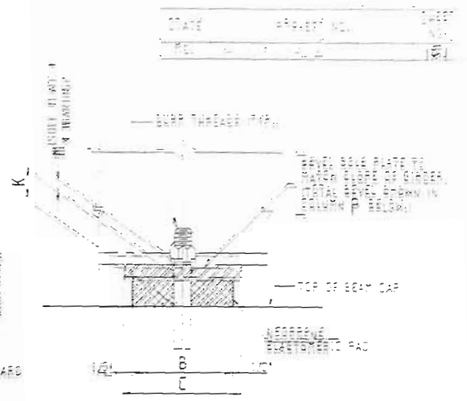
NOTE: THE LOCATION OF ANCHOR BOLTS IN RELATION TO THE SLOTTED HOLES IN THE SOLE PLATE SHALL CORRESPOND WITH THE TEMPERATURE AT THE TIME OF ERECTION. AT 60°F. THE SLOTTED HOLES SHOULD CENTER ON THE ANCHOR BOLTS.



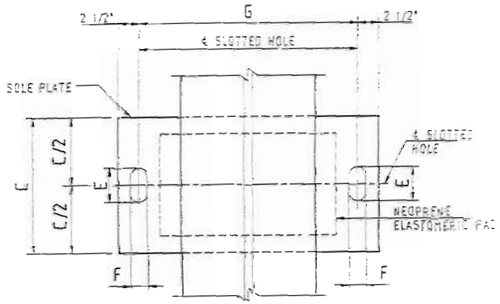
SIDE VIEW



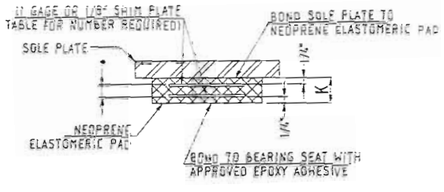
END VIEW



SIDE VIEW

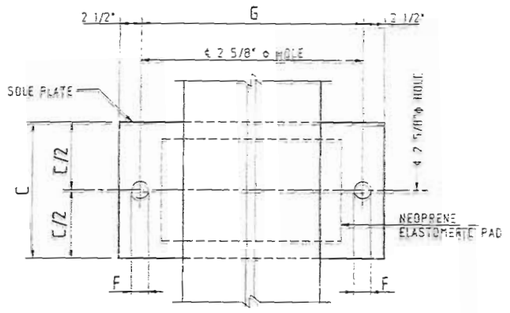


PART PLAN VIEW

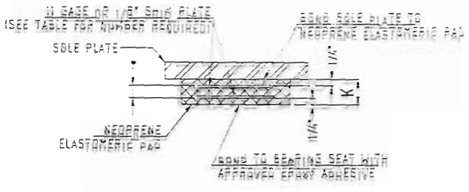


NEOPRENE ELASTOMERIC PAD

- LAYERS OF 1/2" ELASTOMER ALTERNATING WITH 11 GAGE OR 1/8" STEEL SHIM PLATE



PART PLAN VIEW



NEOPRENE ELASTOMERIC PAD

- LAYERS OF 1/2" ELASTOMER ALTERNATING WITH 11 GAGE OR 1/8" STEEL SHIM PLATE

EXPANSION BEARINGS
NUMBER REQUIRED = 6

① 2"ø (BT #1, #3) 2 1/2"ø (BT #2)
② 18' (BT #1, #3) 25' (BT #2)

EXPANSION BEARINGS

BENT	A	B	C	D	E	F	G	J	K	L	M	N	P	NUMBER OF SHIM PLATES*
1	18	12	13	26	5 1/4	2 1/8	21	3 1/2	3/8	14	1 1/2	3 1/2	1/8	7
3	18	12	13	26	5 1/4	2 1/8	21	3 1/2	3/8	14	1 1/2	3 1/2	0	7
								⚠ 5¾"		⚠ 3¾"		⚠ 1¾"		
								5¾"		3¾"		1¾"		

⑥ ⑥

* THE REQUIRED SHIM PLATE SHALL BE PLACED BETWEEN LAYERS OF ELASTOMER AND MOLDED TOGETHER TO FORM AN INTEGRAL UNIT.

GENERAL NOTES:

ANCHOR BOLTS SHALL BE ① A588 STEEL SWEDGED BOLTS AND SHALL EXTEND ② INTO THE CONCRETE WITH A194 - 2, 2H & A563 - C, C3, D, DH, DH3 HEAVY HEXAGON NUTS. ACTUAL MANUFACTURER'S CERTIFIED MILL TEST REPORTS (CHEMICAL AND MECHANICAL) SHALL BE PROVIDED (SWEDGING SHALL BE 1" LESS THAN EXTENSION INTO THE CONCRETE).

ALL STRUCTURAL STEEL FOR THE SOLE PLATE, ANCHOR BOLTS AND HEAVY HEXAGON NUTS SHALL BE PAINTED WITH 2 COATS (5 MILS. MIN.) OF INORGANIC ZINC. WELD AREAS TO BE TOUCHED UP AFTER ASSEMBLY.

NEOPRENE ELASTOMERIC PADS SHALL BE 60 DUROMETER.

THE SOLE PLATE SHALL BE FURNISHED WITH THE BEARING AND FIELD OR SHOP WELDED TO THE STRINGERS OR GIRDERS.

STRUCTURAL STEEL FOR SOLE PLATE SHALL BE A-36.

THE ACCEPTED QUANTITY OF ELASTOMERIC BEARING ASSEMBLIES, COMPLETE-IN-PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR LAMINATED NEOPRENE BEARING PADS (STEEL STRUCTURES) EACH.

FIXED BEARINGS
NUMBER REQUIRED = 4

FIXED BEARINGS

BENT	A	B	C	D	F	G	J	K	L	M	N	P	NUMBER OF SHIM PLATES*
2	20	34	35	29 1/4	2 5/8	24	1/4	4 7/8	3 3/4	19	1 1/2	2 5/8	1/8	6
								⚠ 5½"						

* THE REQUIRED SHIM PLATE SHALL BE PLACED BETWEEN LAYERS OF ELASTOMER AND MOLDED TOGETHER TO FORM AN INTEGRAL UNIT.

Donald D. Bell
5-21-92

DETAILS OF LAMINATED NEOPRENE BEARINGS (STEEL STRUCTURES)

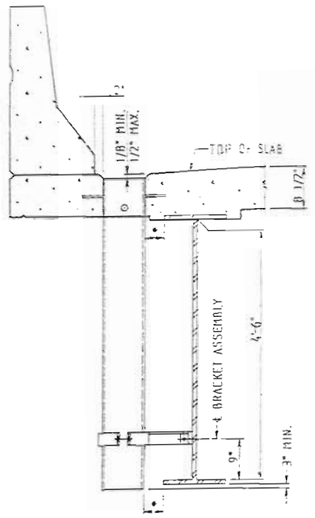
DETAILED JAH. 1992
CHECKED MAR. 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 17 OF 27 SHEETS ⚠ Revised 9/29/92 CALLAWAY COUNTY

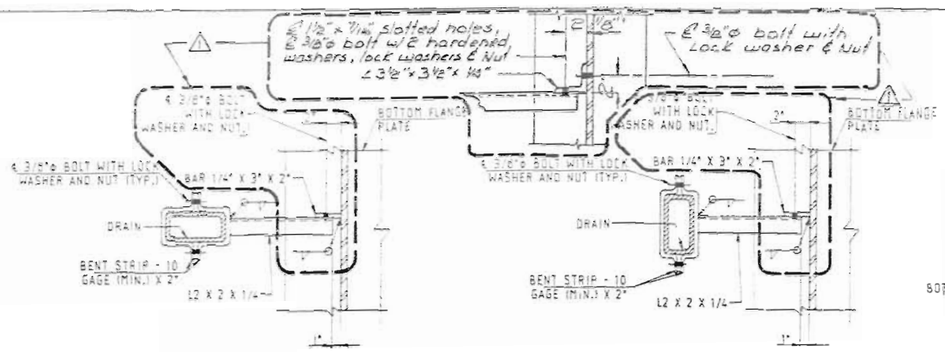
A-7451

300 485

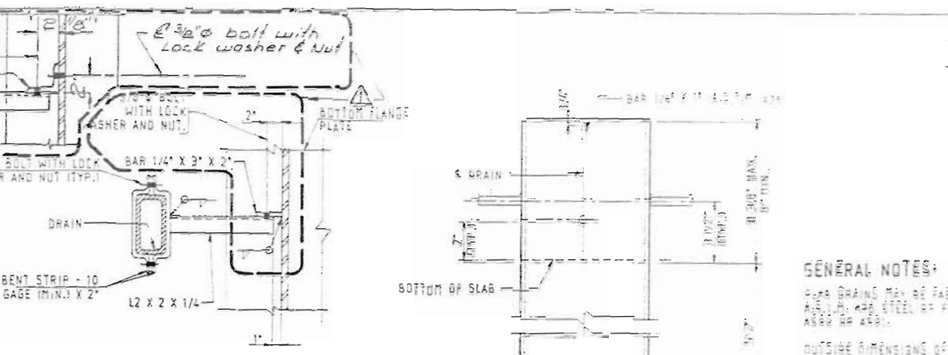


PART ELEVATION OF SLAB AT DRAIN

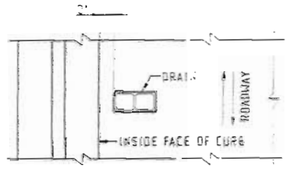
- IF DIMENSION IS LESS THAN 1", DRAINS SHALL BE PLACED PARALLEL TO ROADWAY, OTHERWISE PLACE DRAINS TRANSVERSE TO ROADWAY.



PART SECTION SHOWING BRACKET ASSEMBLY

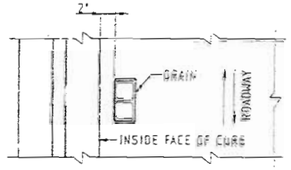


PART SECTION SHOWING BRACKET ASSEMBLY



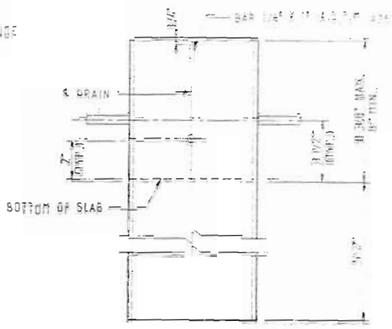
PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS TRANSVERSE TO ROADWAY

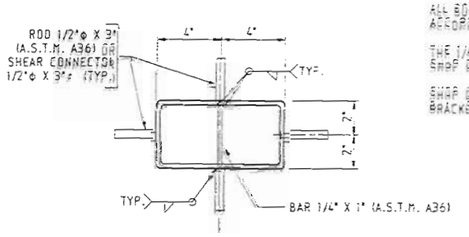


PART PLAN OF SLAB AT DRAIN

DETAILS OF DRAINS PARALLEL TO ROADWAY



ELEVATION OF DRAIN



PLAN OF DRAIN

GENERAL NOTES:

FLOOR DRAINS MAY BE FABRICATED OF EITHER HOT ROLLED STEEL OF ANGLES AND STEEL OR PROFILES OF STRUCTURAL STEEL TUBING WHICH MEET ASTM DESIGNATION A36.

OUTSIDE DIMENSIONS OF DRAINS ARE 8" x 12".

LOCATE DRAINS IN THE SLAB BY DIMENSIONS SHOWN IN THE PART ELEVATION.

SHIFT REINFORCING IN FIELD WHERE NECESSARY TO CLEAR DRAINS.

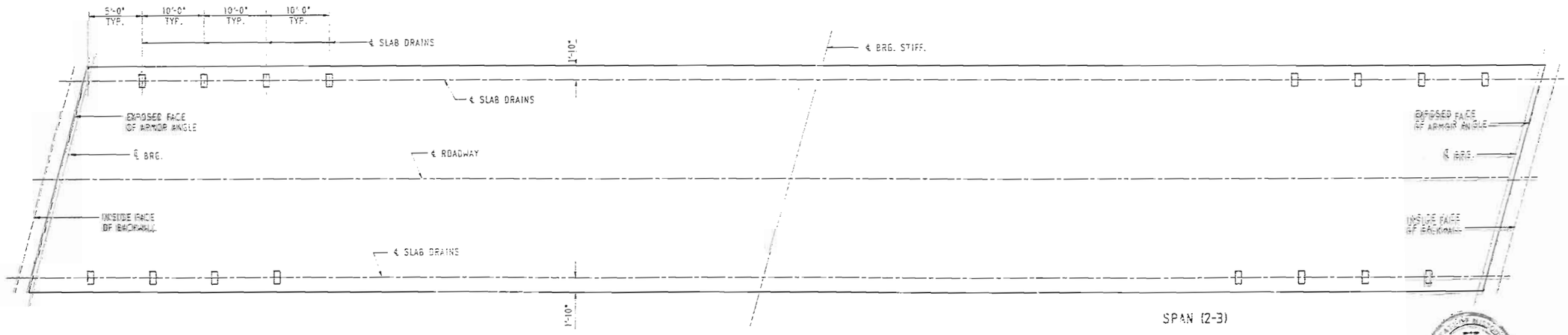
THE DRAINS AND BRACKET ASSEMBLY SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A123.

ALL BOLTS, LOCK WASHERS AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. A153.

THE 1/4" X 3" X 2" BAR SHALL BE LOCATED ON THE PLATE BEFORE SHOP DRAWINGS.

SHOP DRAWINGS WILL NOT BE REQUIRED FOR SLAB DRAINS AND BRACKET ASSEMBLY.

SLAB DRAIN DETAILS



SPAN (1-2)

SPAN (2-3)

PLAN OF SLAB SHOWING LOCATION OF SLAB DRAINS

304 426

DONALD D. HOLT E-27719 REGISTERED PROFESSIONAL ENGINEER

Donald D. Holt 5-21-92

DETAILED JAN., 1992
CHECKED MAR., 1992

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 10 OF 27 ⚠ Revised 5/29/92 CALLAWAY COUNTY

A-3451

PART PLAN SHOWING
PILE NUMBERING FOR RECORDING
"AS BUILT PILE" DATA

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (TONS)	REMARKS

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (TONS)	REMARKS

"AS BUILT PILE" DATA			
PILE NO.	LENGTH IN PLACE (FT.)	COMPUTED BEARING (TONS)	REMARKS

NOTE: INDICATE IN REMARK COLUMN:
A.) IF PILING WERE DRIVEN TO PRACTICAL REFUSAL.
B.) PILE BATTER IF OTHER THAN SHOWN ON BENT DETAIL SHEET.
C.) TYPE OF PILING USED.

NOTE: THIS SHEET TO BE COMPLETED BY MHTD CONSTRUCTION PERSONNEL.

MISC. PILES IN PLACE
MAY 1992

REVISED:

DETAILED 19
CHECKED 19

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 39 OF 57.

COUNTY