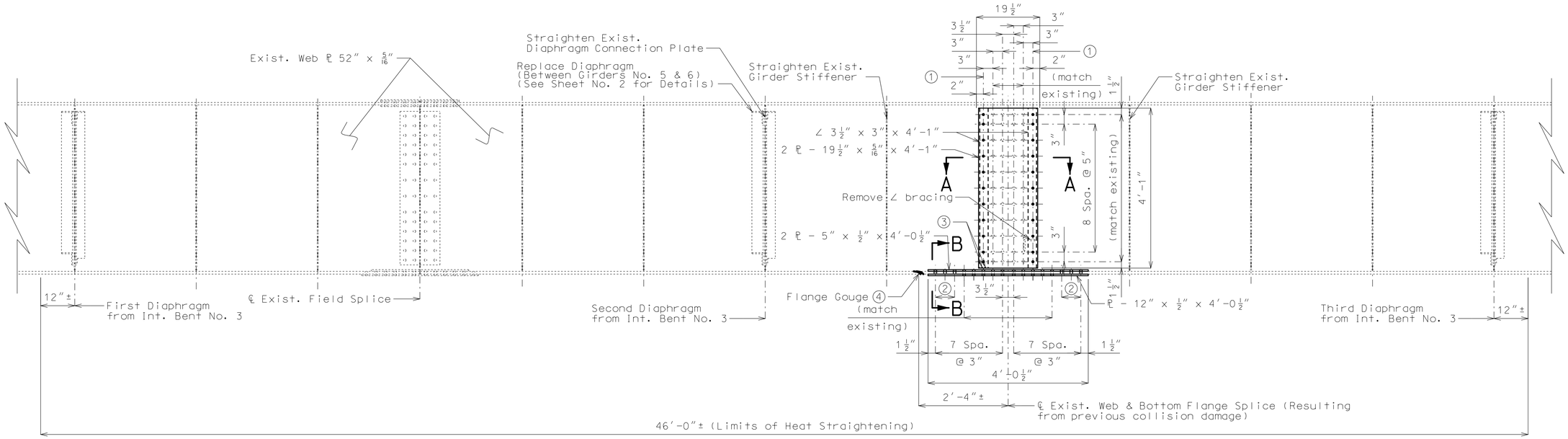
SEC/SUR 18 TWP 47N RGE 9W

REPAIR (36.5′) SIMPLE COMPOSITE WIDE FLANGE, (2.5′-91′-91′-2.5′) CONTINUOUS COMPOSITE PLATE GIRDER, (30.5′) SIMPLE COMPOSITE WIDE FLANGE (20° RA SKEW)



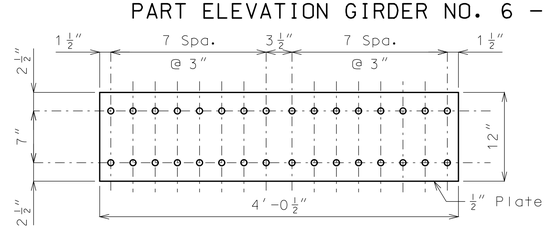
PART ELEVATION GIRDER NO. 6 - MID SPAN (3-4)

① Field drill holes in exist. web

② Field drill holes in exist. bottom flange

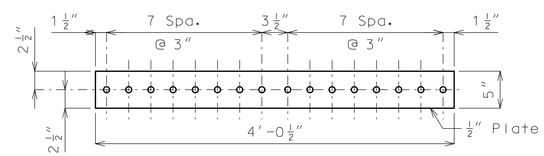
③ Exist. Crack Arrest Holes (See Special Provisions)

④ Grind surface deformities (See Special Provisions)



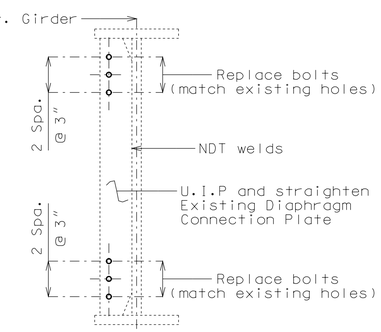
PLAN OF BOTTOM SPLICE - BOTTOM PLATE

(Field Drill) (1 Req'd)



PLAN OF BOTTOM SPLICE - TOP PLATE

(Field Drill) (2 Req'd)



TYPICAL SECTION SHOWING EXISTING DIAPHRAGM CONNECTION PLATE

Notes:

Remove previous repair Strut at splice replacement and fill resulting holes in connection plate with new H.S. bolts with flat washers under the bolt head and nut.

All Girder Stiffener and Connection plates on Girder No. 5 and 6 within Limits of Heat Straightening shall be inspected for damage, and straightened if deformed. All exist. holes the are to be matched with repair work shall be field verified for location since shop drawings were not available for preparation of repair plans.

Use 7/8″Ø high strength bolts, nuts and washers with 15/16″Ø holes for splice plates and angles.

Flange and web splices shall be subject to notch toughness requirements.

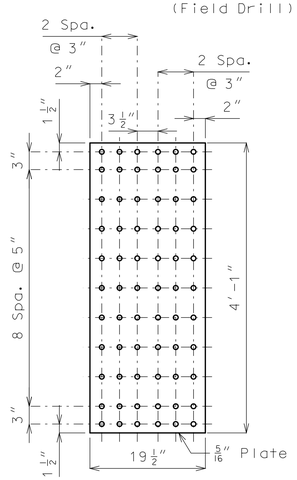
Fabricated structural steel shall be ASTM A709 Grade 50, except as noted.

Remove existing splice plates and replace as shown above.

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

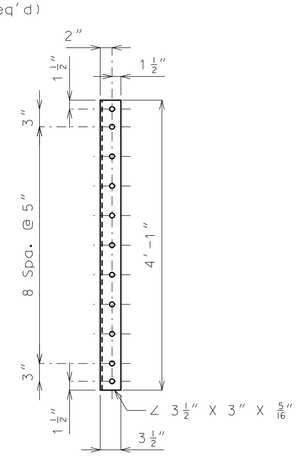
Prime Coat (New Steel): The cost of the prime coat will be considered completely covered by the contract unit price for the fabricated structural steel. Tint of the prime coat for System G shall be similar to the color Gray (Federal Standard #26373).

For Sections A-A & B-B, see Sheet No. 2.



PLAN OF SPLICE PLATE

(Field Drill) (2 Req'd)



PLAN OF SPLICE PLATE STIFFENER

(Field Drill) (2 Req'd)

REPAIRS TO GIRDER NO. 6 - MID SPAN (3-4)

Estimated Quantities

	Item		Total
✱✱	Fabricated Structural Low Alloy Steel (Misc.) A709, Grade 50	pound	710
✱	Heat Straightening	lump sum	1
	Temporary Falsework	lump sum	1
	Non-Destructive Testing	linear foot	72

✱ See Job Special Provisions for Heat Straightening.

✱✱ All bolts, nuts & washers are included in this pay item.

REPAIRS TO
BRIDGE: ROUTE F OVER ROUTE 54

ROUTE F FROM MILLERSBURG TO FULTON
IN FULTON
STA. 506+51.48

Detailed July 2015
Checked July 2015

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

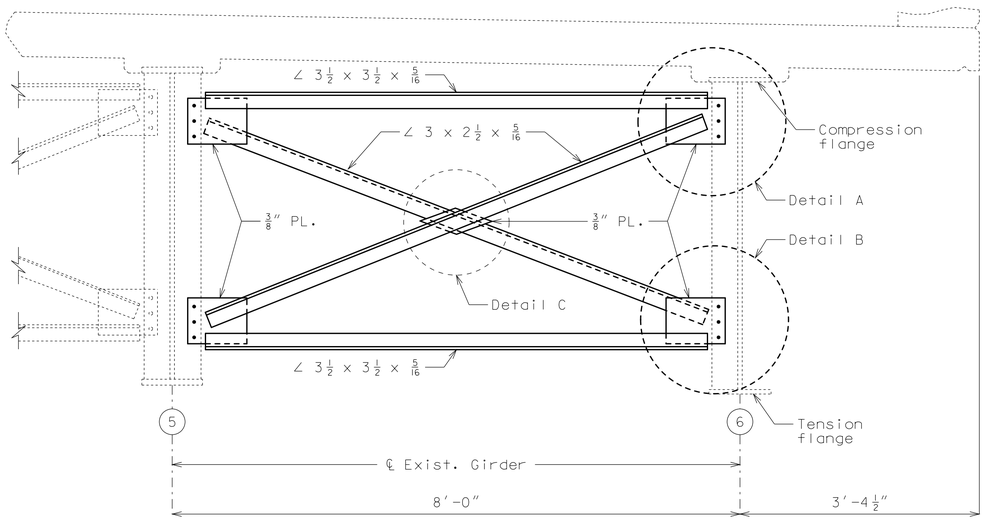
DATE PREPARED	
10/16/2015	
ROUTE F	STATE MO
DISTRICT BR	SHEET NO. 1
COUNTY CALLAWAY	
JOB NO. K15D0928	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A22962	

DESCRIPTION

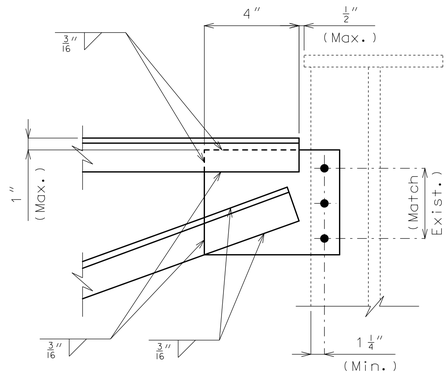
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

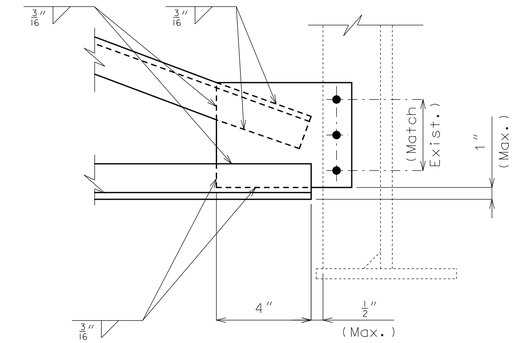
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



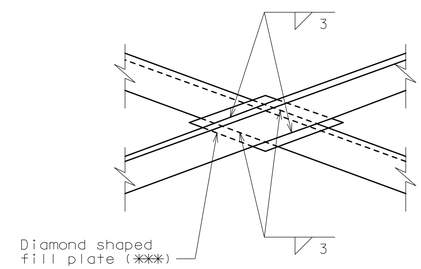
PART SECTION SHOWING MID - SPAN (3-4)
SECOND INTERMEDIATE DIAPHRAGM FROM
INTERMEDIATE BENT NO. 3 REPLACEMENT



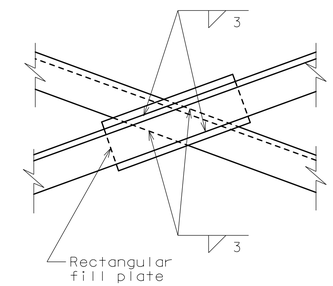
DETAIL A



DETAIL B



DETAIL C

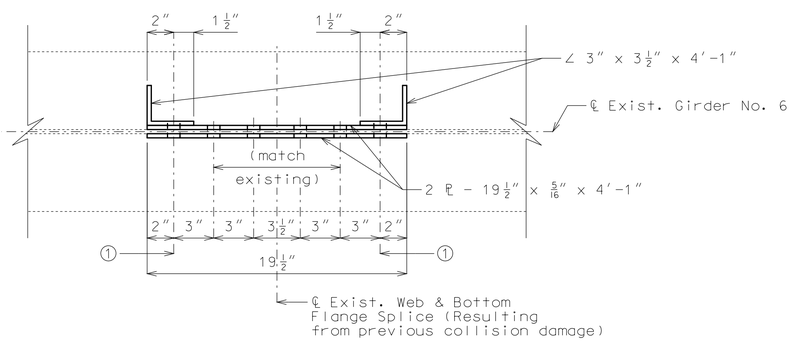


OPTIONAL DETAIL C

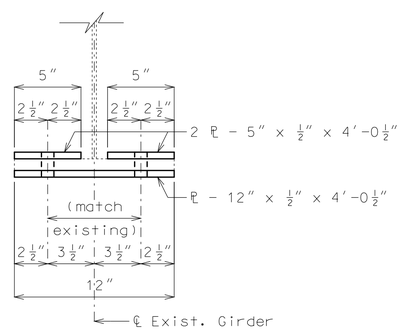
Notes:

The payment for removing and replacing existing diaphragm will be considered completely covered under the contract unit price for Fabricated Structural Low Alloy Steel (Misc.) A709, Grade 50

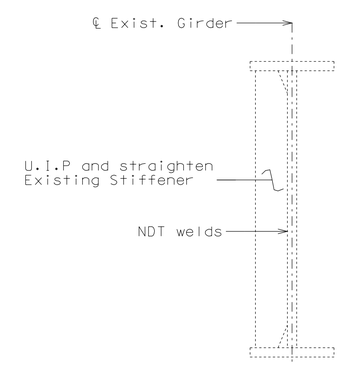
*** At the contractor's option, rectangular fill plates may be used in lieu of diamond fill plates as shown in Optional Detail C.



SECTION A-A



SECTION B-B



TYPICAL DETAIL OF WEB STIFFNENER PLATES

Note:

For location of Sections A-A & B-B, see Sheet No. 1.

1 Field drill holes in exist. web.

DETAILS OF REPAIRS - MID SPAN (3-4)

Detailed July 2015
Checked July 2015

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

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	
10/16/2015	
ROUTE: F	STATE: MO
DISTRICT: BR	SHEET NO.: 2
COUNTY: CALLAWAY	
JOB NO.: K15D0928	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: A22962	

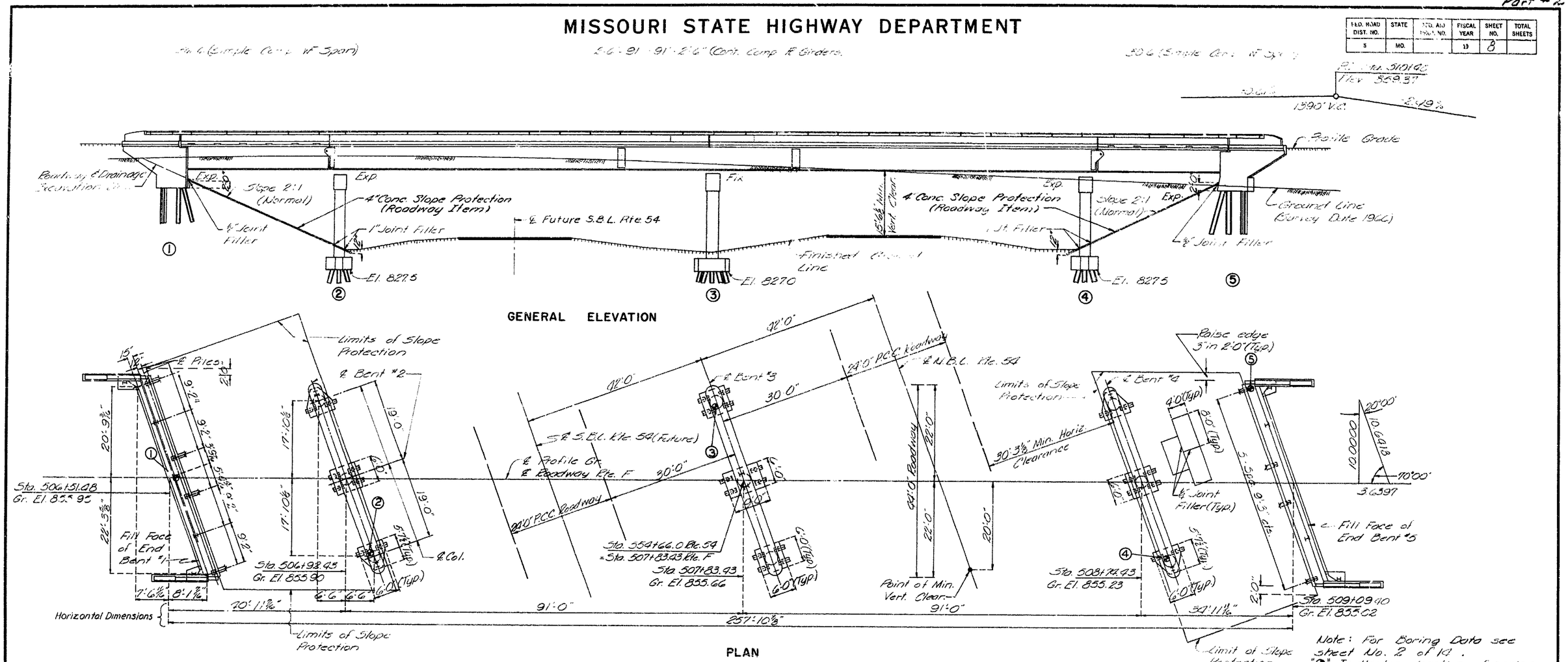
DESCRIPTION	DATE

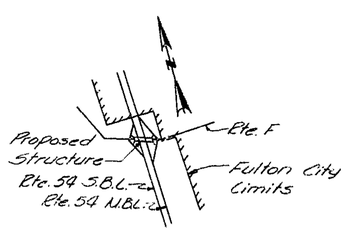
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	8	





LOCATION SKETCH

ESTIMATED QUANTITIES				
ITEM		SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation for Structures	Cu. Yd.	185		185
Steel Piles in Place (70')	Lin. Ft.	1400		1400
Class B Concrete	Cu. Yd.	209.0		209.0
Class B1 Concrete	Cu. Yd.		343.5	343.5
Reinforcing Steel	Lb.	26,970	91,700	118,670
Fabricated Structural Carbon Steel (WF Spans)	Lb.		37,340	37,340
Fabricated Structural Carbon Steel (Rd. Gdr. Spans)	Lb.		212,170	212,170
Painting	Ton		123.8	123.8
Bridge Rail (Single Tube Type)	Lin. Ft.		341	341

Note: All concrete and reinforcement in end posts, parapets and curbs is included with superstructure quantities.

B.M. #12 Elev. 835.70 Boat Spike in West Root of 14" Block Jack 100' Rt. of Sta. 512+75.

BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) **(RTE. F) STA.** 506+51.48

CALLAWAY COUNTY

SUBMITTED BY ..... BRIDGE ENGINEER ..... DATE .....

APPROVED BY ..... CHIEF ENGINEER ..... DATE .....

STD. 54.00

A-2296

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C.D. Albert DETAILED J. Carter
DESIGN CK. J. Scottman DETAIL CK. C.D. Albert

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

Sheet No. 1 of 14.

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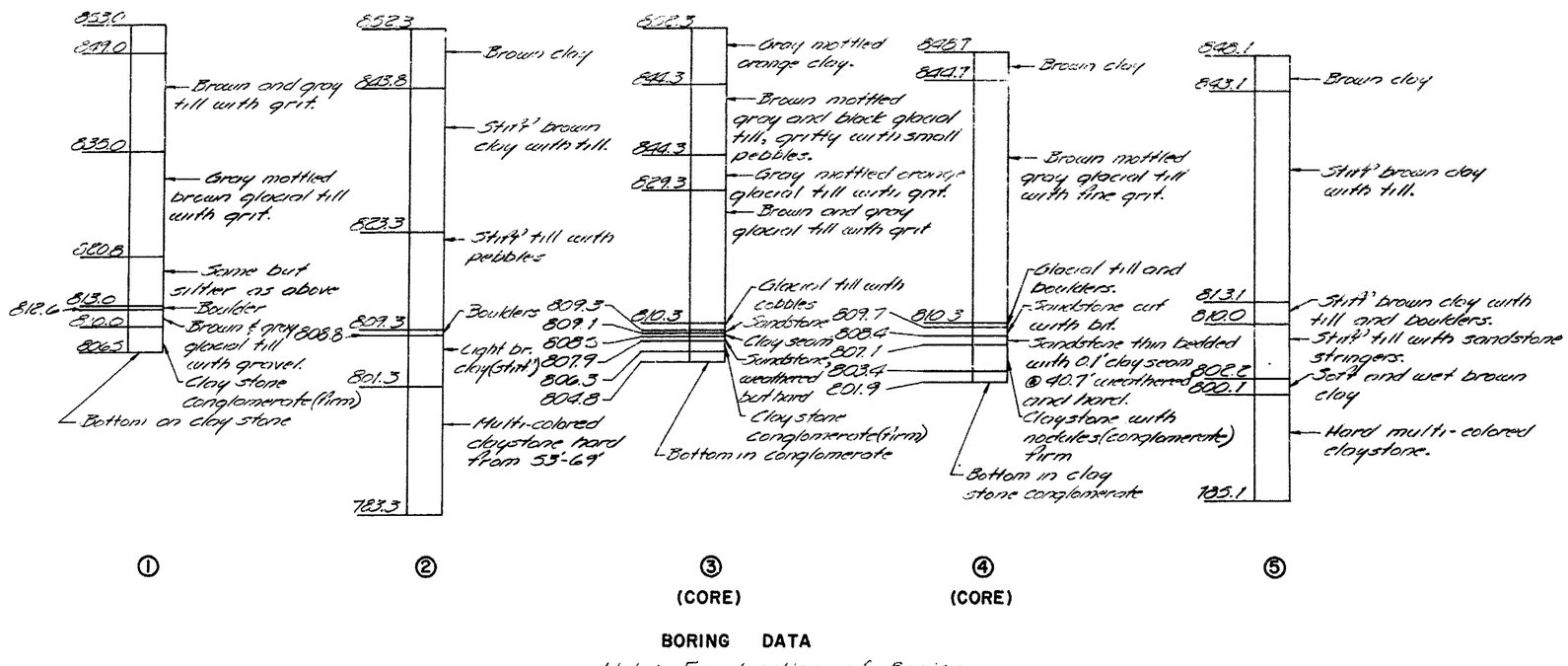
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	9	



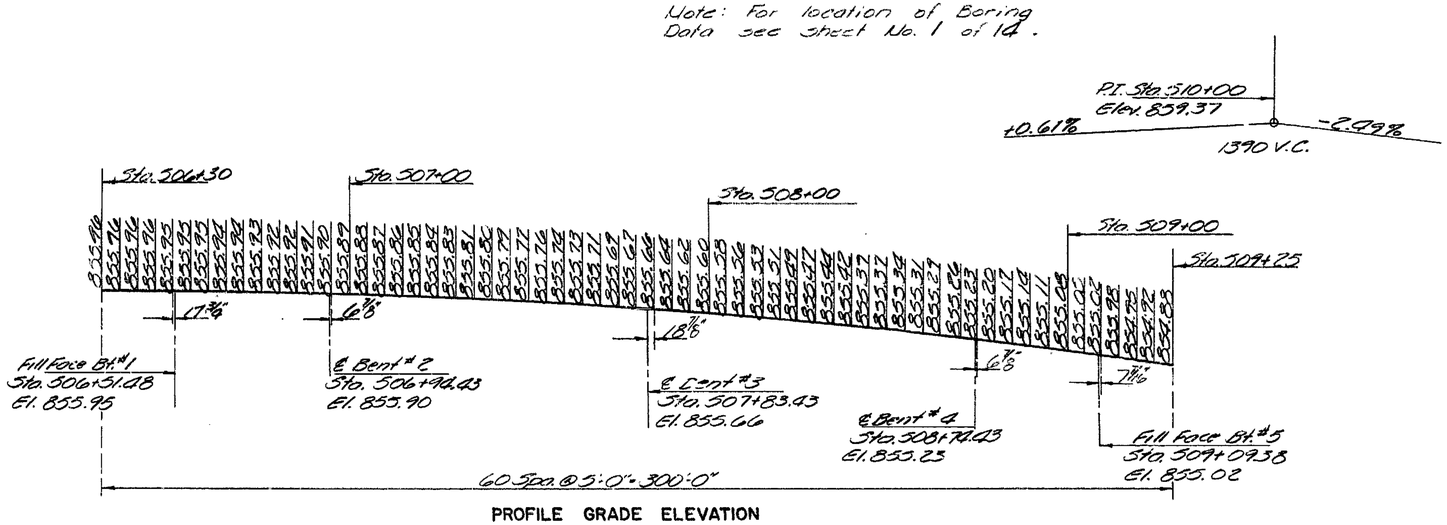
BORING DATA

Note: For location of Boring Data see Sheet No. 1 of 14.

GENERAL NOTE:

Design Specifications: A.A.S.H.O. - 1965
Design Loading: HS20-44
15#/sq. ft. Future Wearing Surface
Earth 120# Equivalent Fluid Pressure 30#
Fatigue Stress Case I
Design Unit Stresses:
Class B Concrete (substructure) f'_c = 1,200 psi
Class B1 Concrete (superstructure) f'_c = 1,600 p.s.i.
Reinforcing Steel f_s = 20,000 p.s.i.
Structural Steel (A.S.T.M. A36-66) f_s = 20,000 p.s.i.
Steel Pile (A.S.T.M. A36-66) f_b = 9,000 p.s.i.

Surface Seal: Superstructure deck to be surface sealed.
"Field connections, High Strength Bolts 7/8"Ø. holes 15/16"Ø except as noted."
Welding: "Details of welded joints shown are for manual arc welding except as noted. "The minimum size of fillet welds shall be in accordance with AWS D2.0-66, Article 217 (b) except the minimum size fillet weld connecting parts carrying primary stress shall be 1/4"."
Painting:
Paint: Shop, none: Field, by contractor in accordance with Std. Spec. 55.4.10.



PROFILE GRADE ELEVATION

PILE DATA					
BENT NO.	1	2	3	4	5
Pile Type and Size	10BP42	10BP42	10BP42	10BP42	10BP42
Number	8	10	14	10	8
Approximate Length Ft.	37	25	25	20	38
Design Bearing Tons	47	41	53	41	47
Hammer Energy required Ft. Lbs.	11,600	9,600	12,500	9,600	11,600

Note: Minimum energy requirement of hammer based on plan length and design bearing value of piles. Increase by the factor (W+w)/2W when the weight of the ram (W) is less than the weight of the pile (w).
All piles shall be driven to practical refusal.

BRIDGE OVER ROUTE 54 N.B.L.
STATE ROAD FROM FULTON WEST
ABOUT 2.0 MILES WEST OF FULTON
PROJECT NO. C014-F(3) (RTE. F) STA. 506+51.48
CALLAWAY COUNTY

BURGWIN & MARTIN
CONSULTING ENGINEERS
DESIGNED C.D. Albert DETAILED J.R. Kettler
DESIGN CK. H.G. Latham DETAIL CK. C.D. Albert

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

Sheet No. 2 of 14.

A-2296

410

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	17	

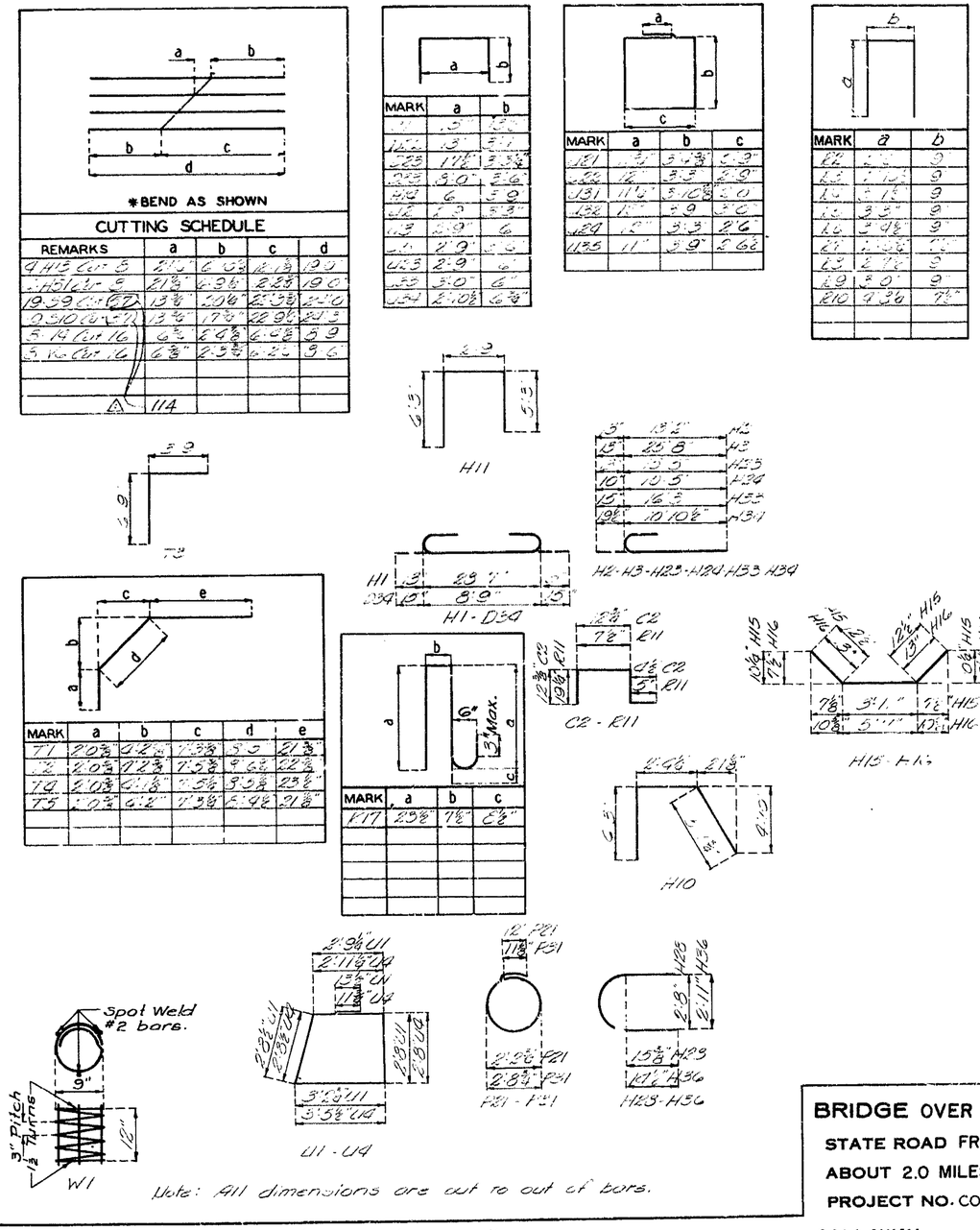
COMPLETE BILL OF REINFORCING STEEL

NO.	SIZE	LENGTH	MARK	LOCATION
END BENT NO. 1				
2	8	33'-3"	H1	Beam
2	7	6'-3"	H2	"
5	8	26'-9"	H3	"
2	7	25'-6"	H4	"
4	6	22'-6"	H5	"
2	6	22'-3"	H6	Back wall
2	7	22'-0"	H7	"
2	8	20'-3"	H8	"
1	6	9'-9"	H9	Bm. Ftg.
5	7	13'-9"	H10	" "
5	7	11'-3"	H11	" "
4	6	12'-9"	H12	Wing
3	6	13'-0"	H13	"
10	4	8'-0"	H14	Wing Wall
2	6	6'-0"	H15	" "
2	5	7'-9"	H16	" "
				△ 32
2	6	12'-3"	T1	Wing
2	6	12'-6"	T2	"
4	6	16'-6"	T3	Bm. Wall
20	4	12'-6"	U1	Beam
20	4	3'-3"	U2	"
12	4	3'-9"	U3	"
1	4	12'-9"	U4	"
36	3	7'-6"	V1	Backwall
36	3	5'-3"	V2	"
20	4	5'-3"	V3	Wing
16	4	8'-9"	V4	"
4	4	6'-3"	V5	Bm. Wall
12	2	19'-9"	W1	A.B. Well
INT. BENT NO. 2 or 4				
27	8	9'-0"	D21	Footing
8	6	7'-3"	D22	"
12	6	8'-0"	D23	"
8	10	16'-0"	H21	Beam
8(4)	8	16'-6"	H24	"
6(3)	7	11'-3"	H25	"
2	6	43'-0"	H26	"
6	9	43'-0"	H27	"
8	"	6'-9"	H28	"
28	3	8'-0"	P21	Col. Bt. #2
25	3	8'-0"	P21	Col. Bt. #4
27	5	13'-3"	U21	Beam
28	5	13'-0"	U22	"
6	4	5'-9"	U23	"
2	5	12'-6"	U24	"
27	8	15'-6"	V21	Col. Bt. #2
27	8	17'-9"	V21	Col. Bt. #4
12	2	19'-9"	W1	A.B. Well

NO.	SIZE	LENGTH	MARK	LOCATION
INT. BENT NO. 3				
(16) △	6	7'-3"	D21	Footing
7	10	5'-0"	D21	"
6	6	5'-9"	D22	"
2	8	15'-0"	D23	"
5	9	11'-3"	D24	"
11	11	15'-0"	H31	Beam
2	6	13'-3"	H32	"
9	9	11'-6"	H33	"
6	10	12'-6"	H34	"
9	10	12'-3"	H35	"
8	7	7'-0"	H36	"
48	3	9'-6"	F31	Column
62	5	12'-9"	U31	Beam
(30)	6	10'-6"	U32	"
10	4	4'-0"	U33	"
2	4	4'-0"	U34	"
2	6	(3'-6")	U35	
		13'-6" △		
32	10	19'-3"	V31	Column
12	2	19'-9"	W1	A.B. Well
END BENT NO. 5				
4	8	30'-9"	H1	Beam
8	3	10'-3"	H2	"
8	8	26'-9"	H3	"
4	6	25'-6"	H4	"
4	6	23'-6"	H5	"
4	6	20'-3"	H6	Back wall
8	4	25'-0"	H7	"
8	4	12'-3"	H8	"
4	6	2'-9"	H9	Bm. Ftg.
5	7	13'-9"	H10	" "
5	7	14'-3"	H11	" "
4	6	12'-9"	H12	Wing
10	4	8'-0"	H13	Wing Wall
5	6	6'-0"	H15	" "
5	6	7'-9"	H16	" "
8	6	19'-0"	H51	Wing
4	6	16'-6"	T3	Bm. Wall
2	6	12'-6"	T4	Wing
2	6	12'-3"	T5	"
49	4	12'-6"	U1	Beam
12	4	3'-9"	U3	"
1	4	12'-9"	U4	"
29	4	9'-9"	U5	"
36	5	7'-6"	V1	Backwall
36	5	5'-3"	V2	"
20	4	8'-3"	V3	Wing
4	4	6'-3"	V5	Bm. Wall
16	4	8'-6"	V6	Wing
12	2	19'-9"	W1	A.B. Well

NO.	SIZE	LENGTH	MARK	LOCATION
SUPERSTRUCTURE				
32	5	5'-3"	C1	Curb
214	5	5'-6"	C2	"
4	6	37'-3"	C3	"
2	6	12'-3"	C4	"
84	5	32'-0"	C5	"
4	6	31'-3"	C6	"
8	5	9'-9"	E1	Lo. Rail
4	5	3'-9"	E2	"
4	5	6'-0"	E3	"
4	5	7'-0"	E4	"
4	5	7'-3"	E5	"
8	5	7'-0"	E6	"
32	5	5'-9"	E7	Pickets
4	5	4'-3"	E8	Top Rail
4	5	6'-3"	E9	"
16	6	10'-3"	E10	"
122	5	5'-3"	E11	Armrest
8	5	37'-3"	E12	"
68	5	28'-6"	E13	"
16	5	9'-9"	E14	"
8	5	31'-3"	E15	"
16	5	5'-9"	E16	"
514	5	5'-3"	E17	"
2216	5	24'-0"	S1	Slab
56	5	31'-3"	S2	"
94	4	19'-3"	S3	"
556	5	32'-3"	S4	"
282	4	5'-0"	S5	"
96	4	16'-0"	S6	"
56	5	31'-3"	S7	"
57	4	31'-3"	S8	"
(57)	5	20'-0"	S9	"
(57)	5	20'-3"	S10	"
(114) △				

BENDING SKETCHES & CUTTING DIAGRAMS



BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) (RTE. F) STA. 506+51.48

CALLAWAY COUNTY

A-2296

No.	Date	Revised
904	Aug. 1963	Dec. 1964

411

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C.D. Albert | DETAILED J. Carter
DESIGN CK. A.G. Loth, Jr. | DETAIL CK. C.D. Albert

△ Revised 3-18-69

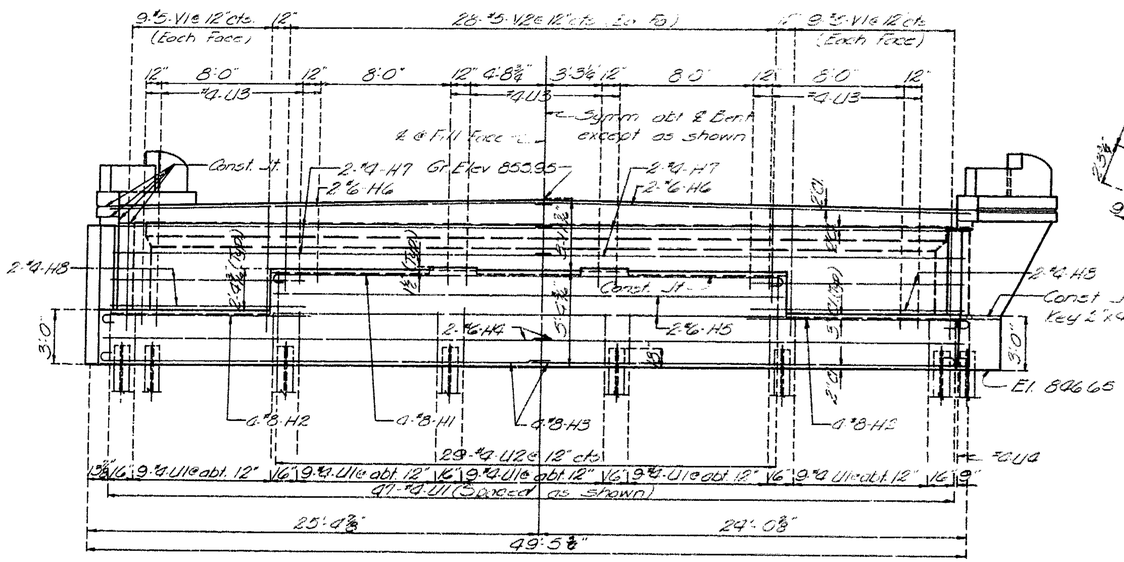
Note: This drawing is not to scale. Follow dimensions.

Hooks and Bends shall be in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Structures (A.C.I. 315-65).

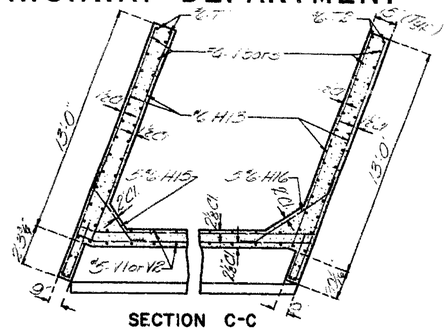
Sheet No. 3 of 14.

MISSOURI STATE HIGHWAY DEPARTMENT

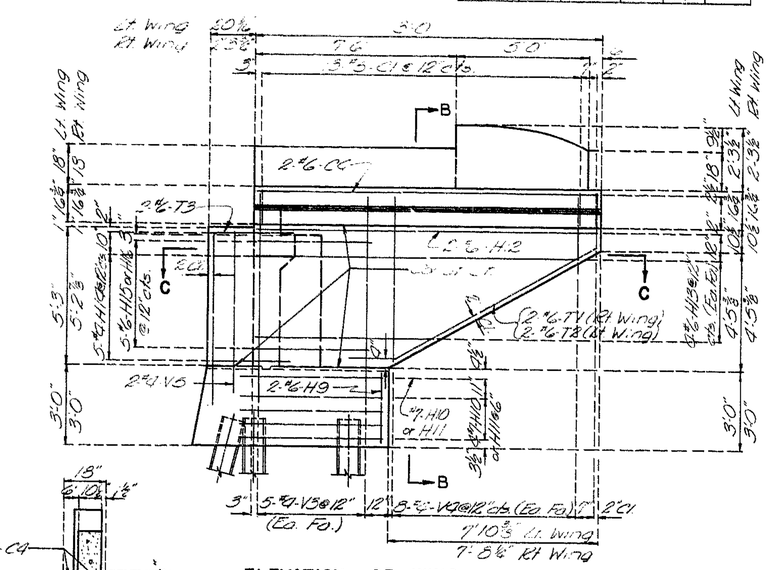
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	11	



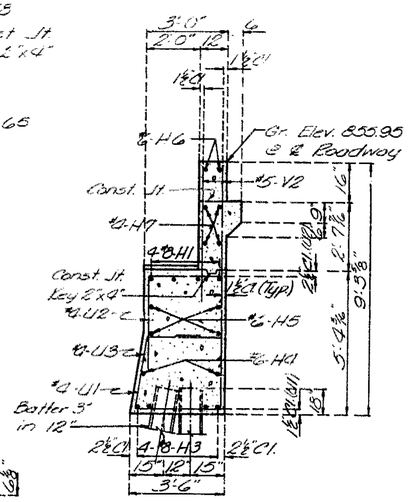
ELEVATION



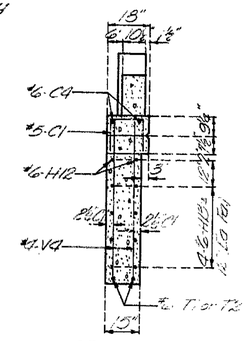
SECTION C-C



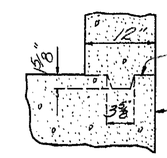
ELEVATION OF WING



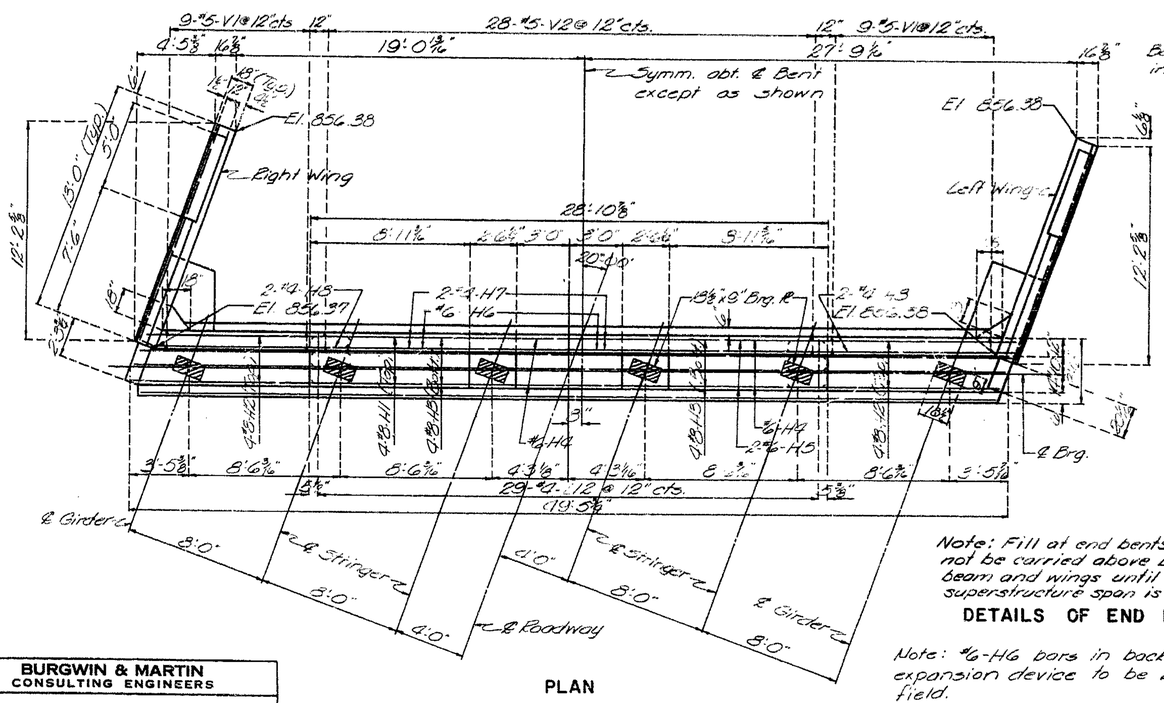
SECTION AT ℄



SECTION B-B



DETAIL OF KEYED CONSTRUCTION JOINT

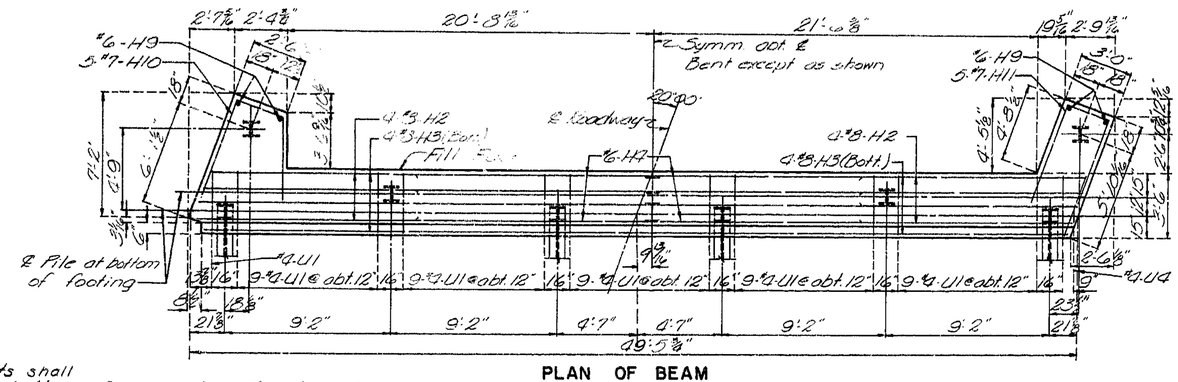


PLAN

Note: Fill at end bents shall not be carried above bottom of beam and wings until adjacent superstructure span is in place.

DETAILS OF END BENT NO. 1

Note: #6-H6 bars in backwall with expansion device to be bent in field.



PLAN OF BEAM

Note: Top of backwall and expansion device for end bent No. 1 ℄ to conform to crown of roadway slab.

Backwall above upper construction joints shall not be poured until the structural steel of the expansion device has been installed and slab has been poured in adjacent span.

BRIDGE OVER ROUTE 54 N.B.L

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) (RTE. F) **STA.** 506+51.48

CALLAWAY **COUNTY**

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C.D. Albert	DETAILED J. Carter
DESIGN CK. J.B. Coatman	DETAIL CK. C.D. Albert

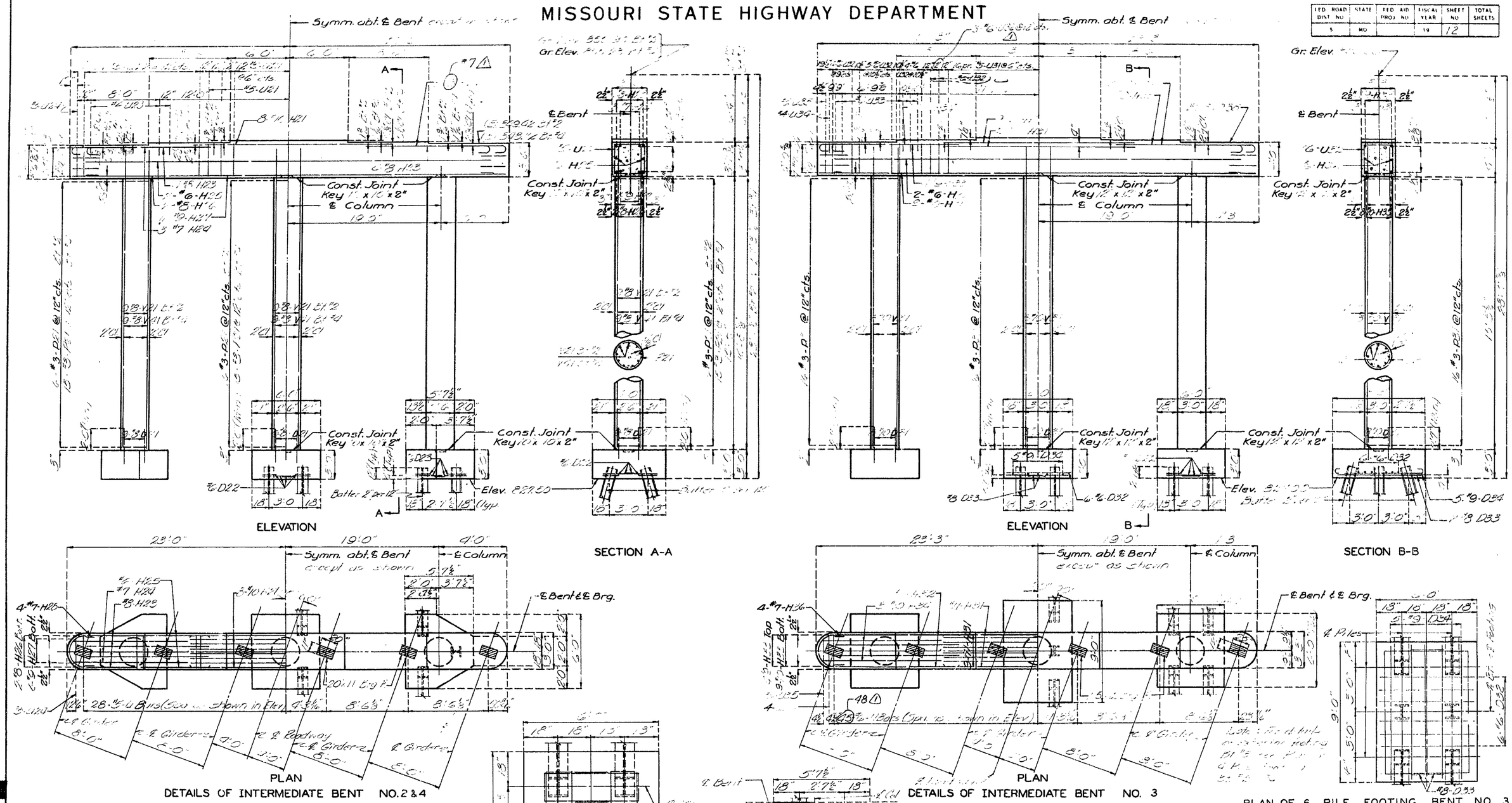
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4 of 10.

A-2296

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	12	



BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) (RTE. F) STA. 506 + 51.48

CALLAWAY COUNTY

△ Revised 3-18-69

Sheet No. 5 of 14

A-2296

Note: This drawing is not to scale. Follow dimensions

BURGWIN & MARTIN
CONSULTING ENGINEERS

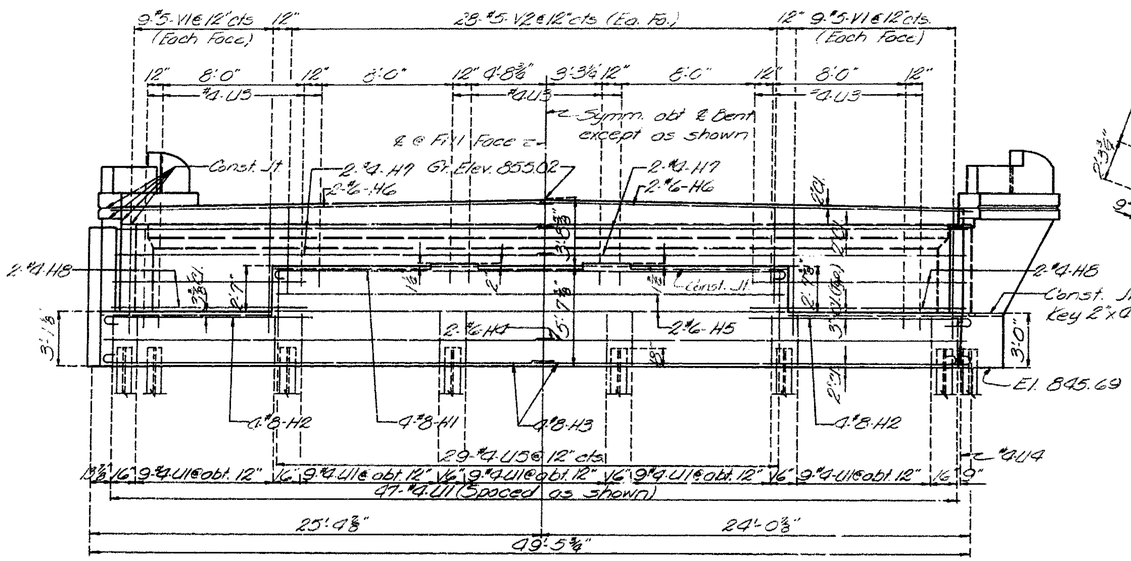
DESIGNED C. D. Albert DETAILED Carter
DESIGN CK. A.C. Latham DETAIL CK. C. D. Albert

No. 19.6 Revised
Sept. 1962 Jan. 1965

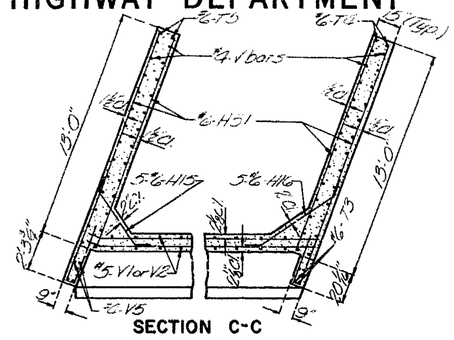
4/3

MISSOURI STATE HIGHWAY DEPARTMENT

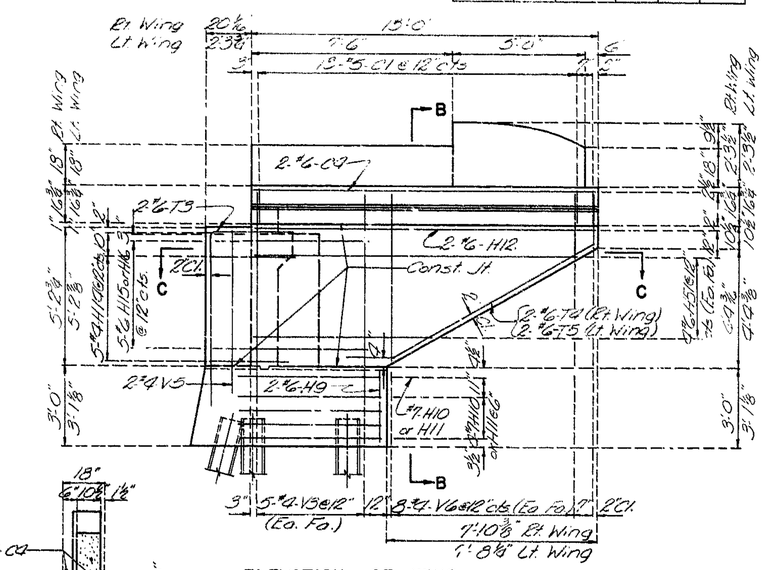
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	13	



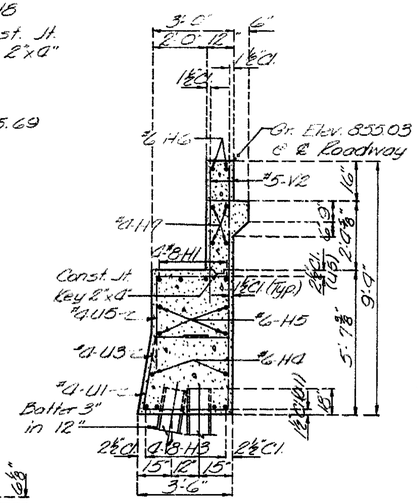
ELEVATION



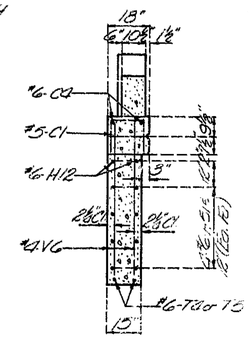
SECTION C-C



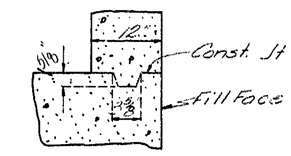
ELEVATION OF WING



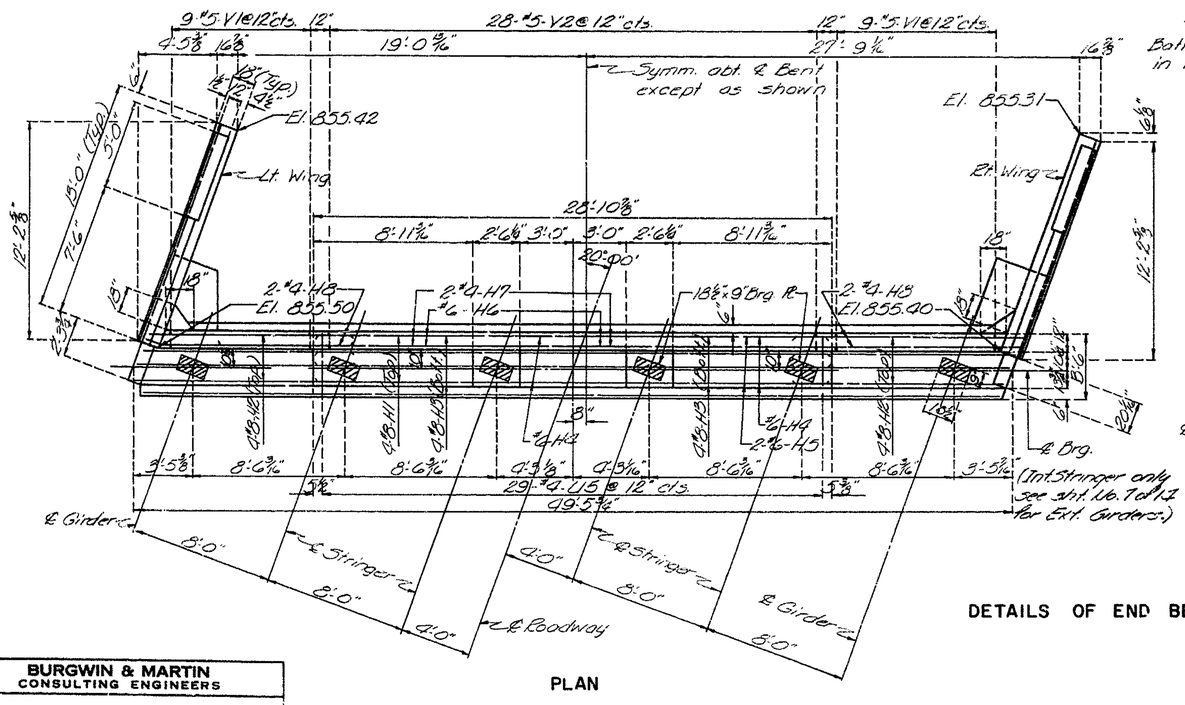
SECTION AT ℄



SECTION B-B

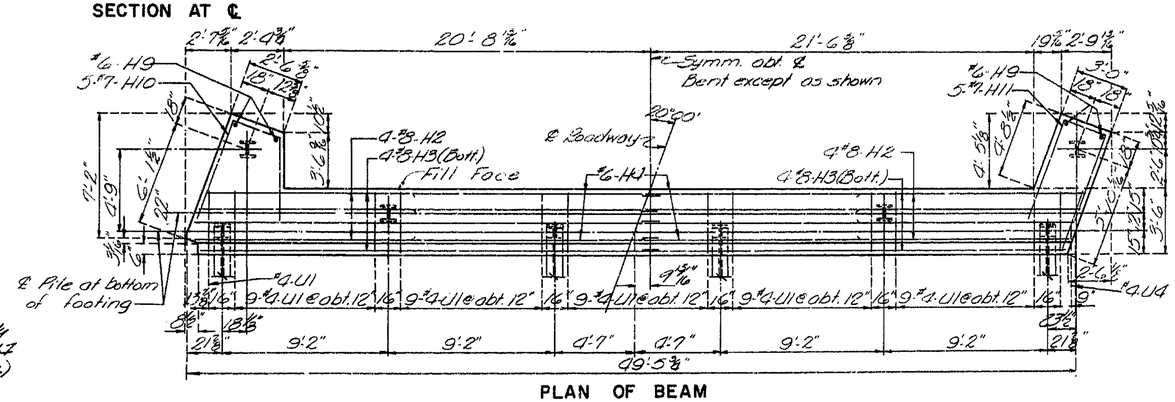


DETAIL OF KEYED CONSTRUCTION JOINT



PLAN

DETAILS OF END BENT NO. 5



PLAN OF BEAM

Note: For Notes see sheet No. 4 of 14.

BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) (RTE. F) **STA.** 506+51.48

CALLAWAY **COUNTY**

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C.D. Albert	DETAILED J. Carter
DESIGN CK. M.B. Lathan	DETAIL CK. C.D. Albert

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

Sheet No. 6 of 14.

A-2296

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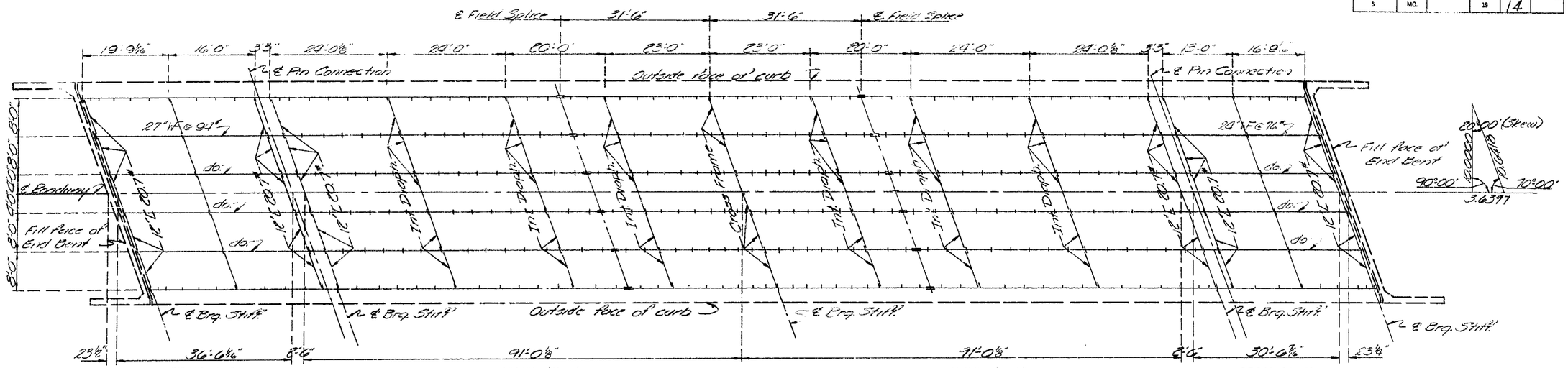
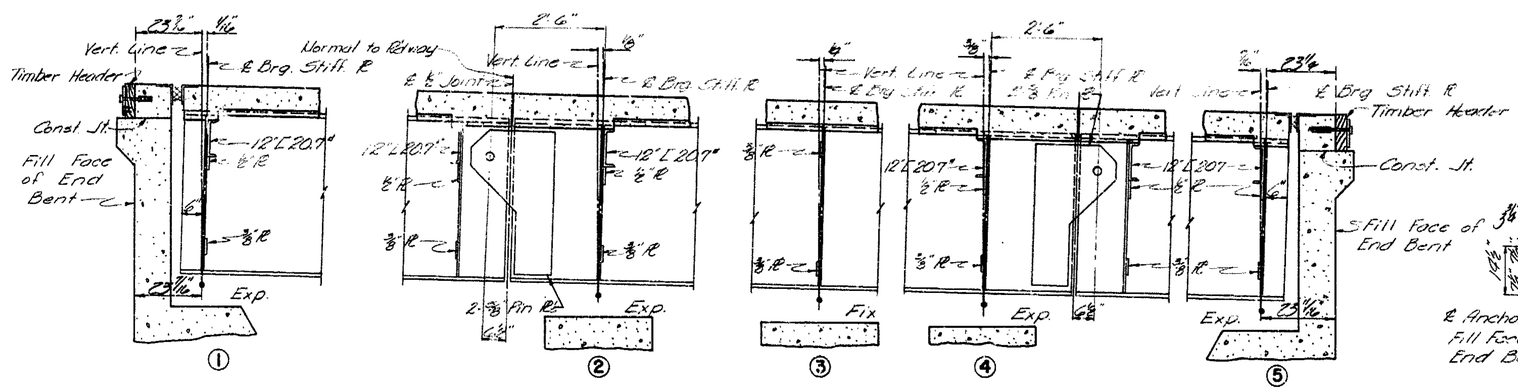
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	14	

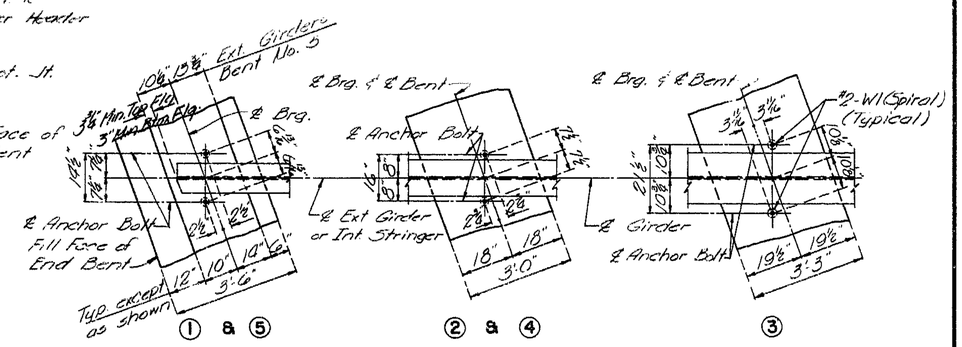


PLAN OF STRUCTURAL STEEL

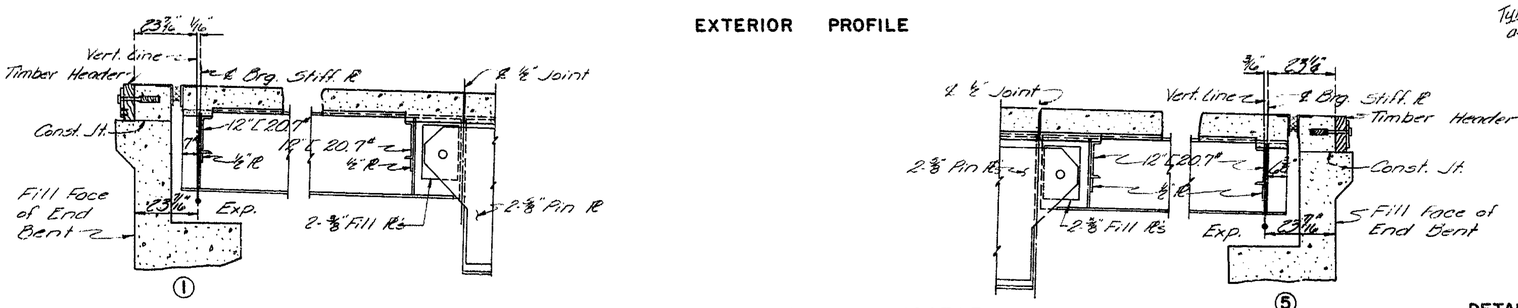
Note: Dimensions shown are parallel to grade at crown of roadway.



EXTERIOR PROFILE

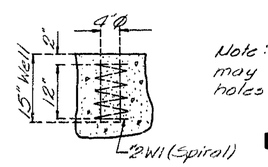


PART ANCHOR BOLT PLAN



PART SECTION INTERIOR PROFILE

PART LONGITUDINAL SECTION



DETAIL OF ANCHOR BOLT WELLS

Note: Anchor bolts for type "D" bearing may be set in wells as shown or in holes drilled into concrete substructure.

Note: See Sheet No. 10 of 14 for Details of Timber Header.

BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO C014-F(3) **(RTE. F) STA. 506+51.48**

CALLAWAY COUNTY

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED J. Albert DETAILED J.R. Kettler
DESIGN CK. R.G. Latham DETAIL CK. C.D. Albert

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

Sheet No. 7 of 14.

A-2296

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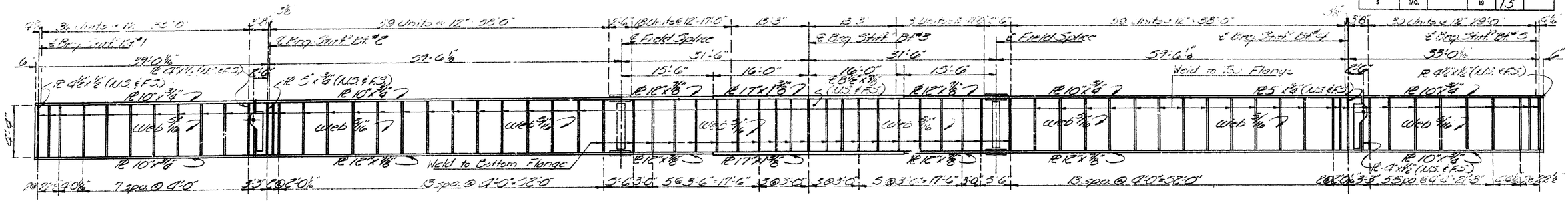
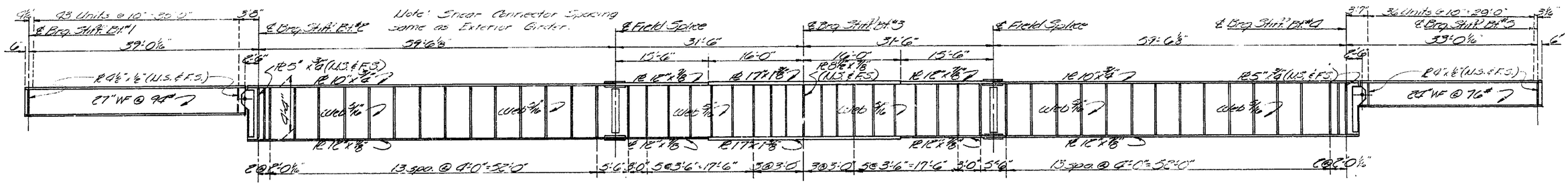
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	15	



EXTERIOR GIRDERS ELEVATION



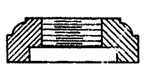
INTERIOR GIRDERS ELEVATION

Note: All intermediate stiffeners are 4½" x 5/16" and are on both sides of interior girders and inside face only of exterior girders.

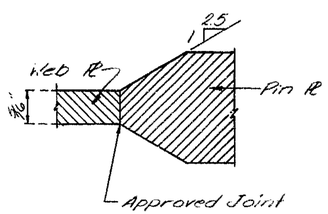
All longitudinal dimensions shown are taken parallel to grade at crown of roadway.

Note: Shop welded web splices may be fabricated by the contractor when detailed on the shop drawings and approved by the Engineer. No additional payment will be made for optional shop welded web splices.

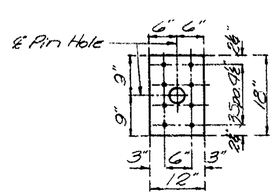
Plate girders for spans (2-3) & (3-4) shall be fabricated to conform with Camber Diagram shown on sheet No. 12 of 14.



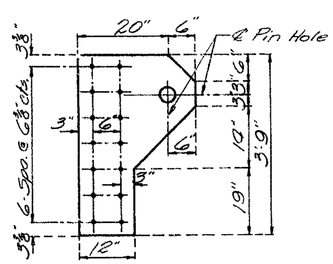
RECESSED PIN NUT
(Cast or Pressed Steel)



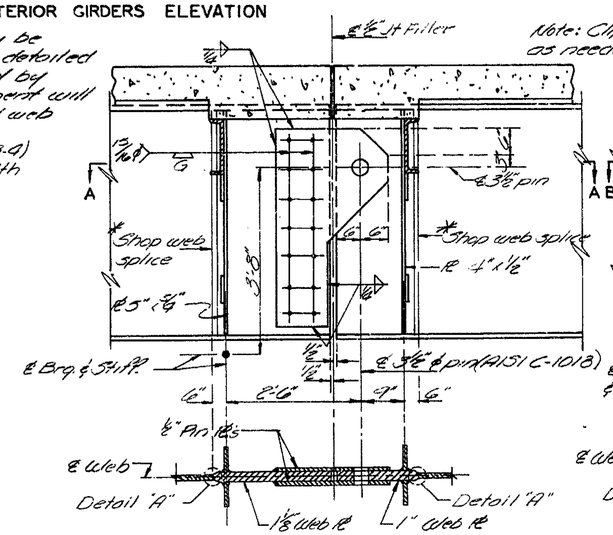
DETAIL "A"



DETAIL OF FILL PLATE

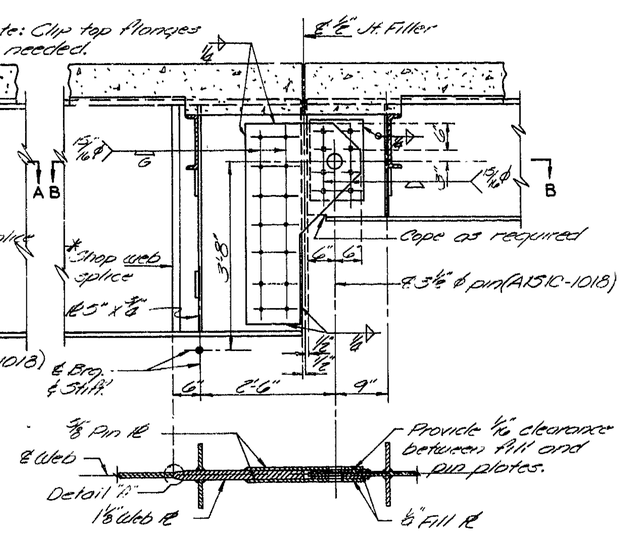


DETAIL OF PIN PLATE



SECTION A-A

HINGE DETAIL GIRDER TO GIRDER



SECTION B-B

HINGE DETAIL GIRDER TO WF BEAM

BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) (RTE. F) **STA.** 506+51.6

CALLAWAY COUNTY

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C.D. Albert	DETAILED J.R. Kettler
DESIGN CK. R.G. Lorman	DETAIL CK. C.D. Albert

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

Sheet No. 8 of 14.

A-2296

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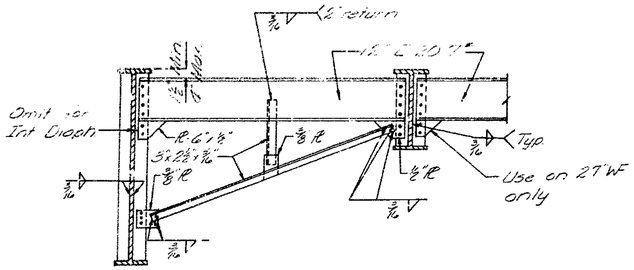
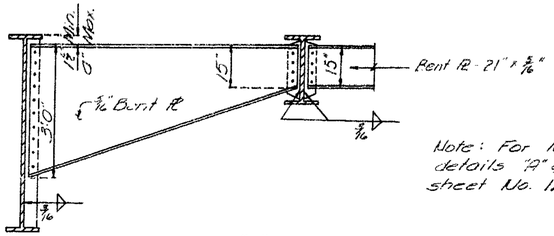
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	16	



DETAIL "A"

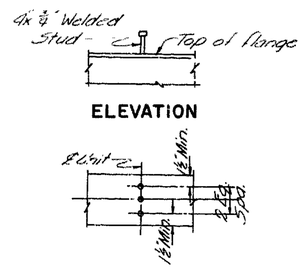


Note: For location of details "A" & "B" see sheet No. 12 & 13 of 14.

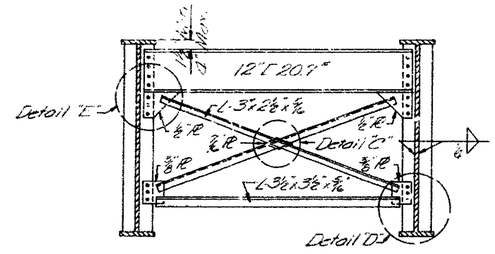
DETAIL "B"

BRG. STIFF. INT. DIAPH.

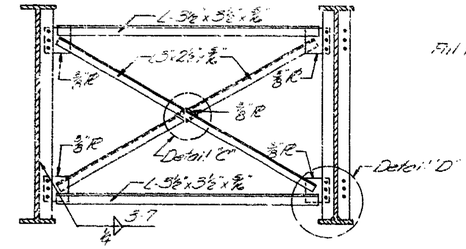
WELDING DETAILS
(WF Beam Spans)



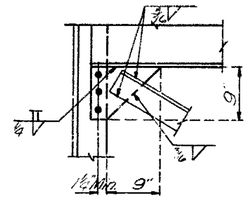
SHEAR CONNECTOR DETAIL



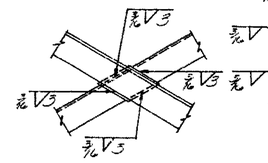
END DIAPHRAGMS



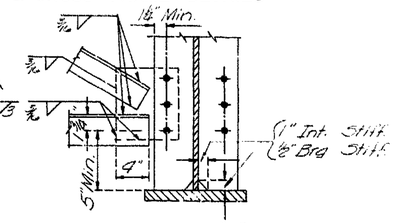
INT. DIAPH. & CROSS FRAME DETAILS



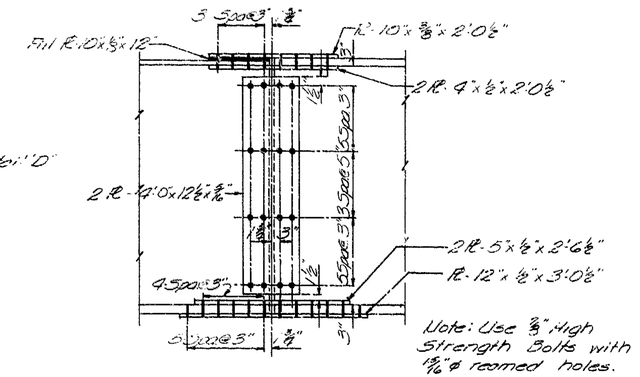
DETAIL "E"

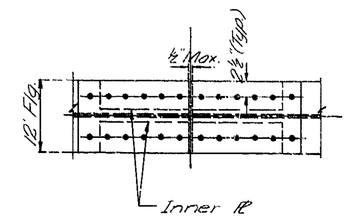


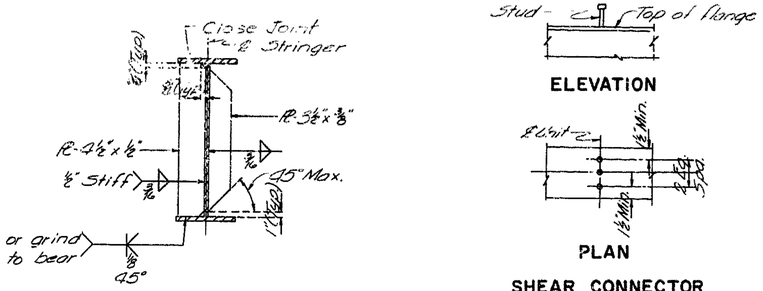
DETAIL "C"

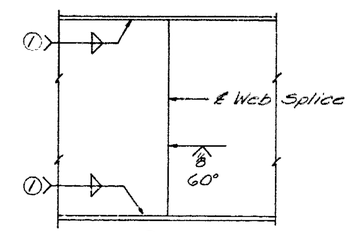


DETAIL "D"





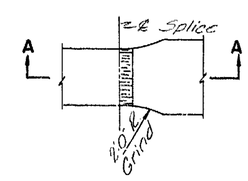




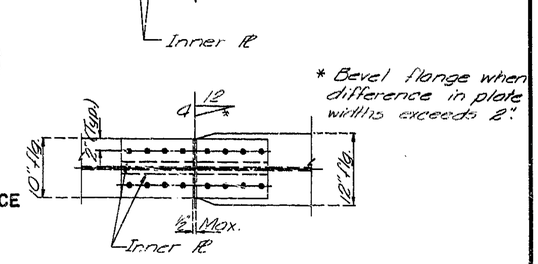
WEB SPLICE

MIN. ALLOWABLE FILLET WELDS	
Material Thickness	Min. Size Fillet Weld
To 3/4" inclusive	5/16 *
Over 3/4" to 3/4"	1/4
Over 3/4" to 1 1/2"	5/16
Over 1 1/2" to 2 1/2"	3/8
Over 2 1/2" to 6"	1/2
Over 6"	5/8

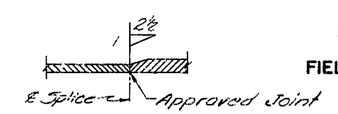
* Members carrying primary stresses shall have a min. fillet weld of 1/4".
Weld size need not exceed the thickness of the thinner part joined.



SHOP FLANGE SPLICE



FIELD SPLICE DETAILS



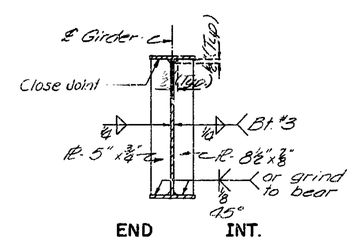
SECTION A-A

ELEVATION

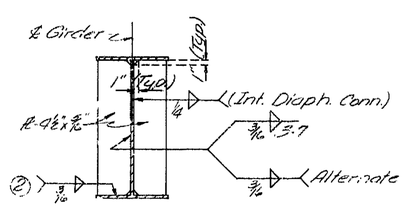
Note: Intermediate web stiffener and diaphragm connection plates shall have a close joint (1/16") top and bottom.

By approval of the engineer the contractor may omit any shop flange splice, if desired, by extending the heavier flange plate and providing approved modifications of details at field flange splices and elsewhere as required. Pay weight in any case will be based on material shown on design plans.

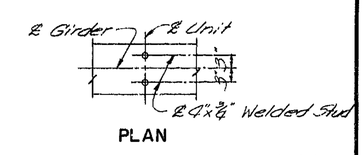
Note: For radiographic and magnetic particle inspection, see special provisions.



END BRG. STIFF. INT. BRG. STIFF.



INT. WEB STIFF. & DIAPH. CONN.



PLAN
SHEAR CONNECTOR DETAIL

WELDING DETAILS
(Girder Spans)

② Weld stiffeners of exterior girders to compression flange only. See sheet No. 8 for location of compression flange.

BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST
ABOUT 2.0 MILES WEST OF FULTON
PROJECT NO. C014-F(3) (RTE. F) STA. 506+51.48
CALLAWAY COUNTY

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED: C.D. Albert | DETAILED: J. Carter
DESIGN CK.: M.G. Carlson | DETAIL CK.: C.D. Albert

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

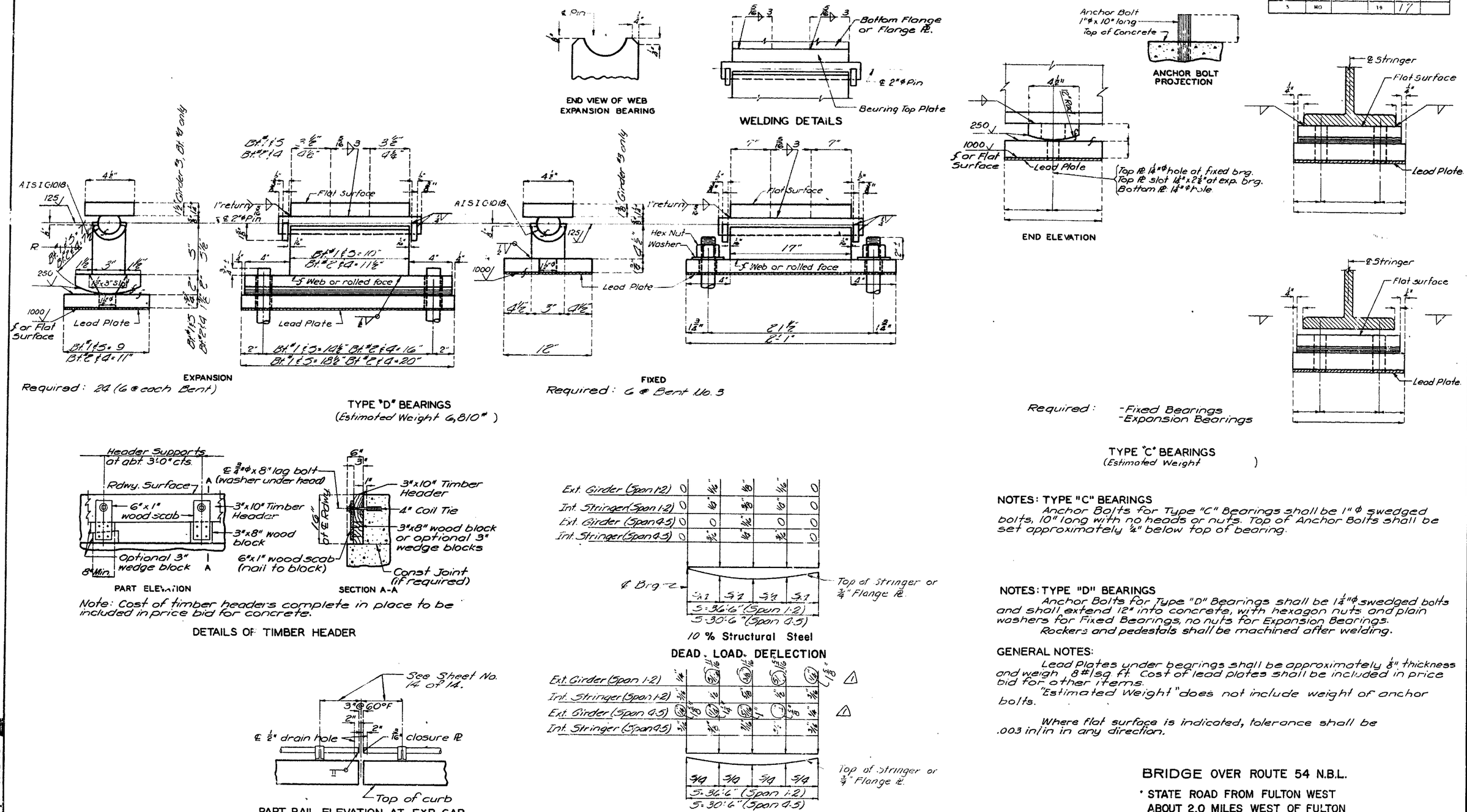
Sheet No. 9 of 14.

A-2296

417

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	17	



Note: Cost of timber headers complete in place to be included in price bid for concrete.

DETAILS OF TIMBER HEADER

PART RAIL ELEVATION AT EXP. GAP

10 % Structural Steel

DEAD LOAD DEFLECTION

THEORETICAL SLAB HAUNCHING DIAGRAM

NOTES: TYPE "C" BEARINGS

Anchor Bolts for Type "C" Bearings shall be 1"φ swedged bolts, 10" long with no heads or nuts. Top of Anchor Bolts shall be set approximately ¼" below top of bearing.

NOTES: TYPE "D" BEARINGS

Anchor Bolts for Type "D" Bearings shall be 1¼"φ swedged bolts and shall extend 12" into concrete, with hexagon nuts and plain washers for Fixed Bearings, no nuts for Expansion Bearings.

Rockers and pedestals shall be machined after welding.

GENERAL NOTES:

Lead Plates under bearings shall be approximately ⅛" thickness and weigh 8#/sq. ft. Cost of lead plates shall be included in price bid for other items.

"Estimated Weight" does not include weight of anchor bolts.

Where flat surface is indicated, tolerance shall be .003 in/in in any direction.

BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST
ABOUT 2.0 MILES WEST OF FULTON
PROJECT NO. C014-F(3) STA. 506+51.48

CALLAWAY COUNTY

No.	Date	Revised
4.1	Dec. 1961	Feb. 1965

418

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C.D. Albert DETAILED J.R. Kettler
DESIGN CK. A.G. Cotham DETAIL CK. C.D. Albert

Note: This drawing is not to scale. Follow dimensions

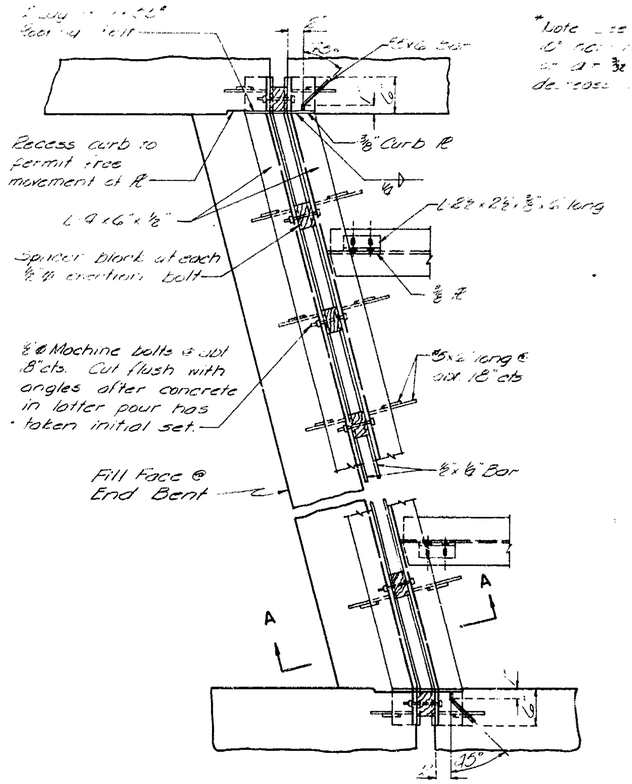
△ Revised 1-21-69

Sheet No. 10 of 14

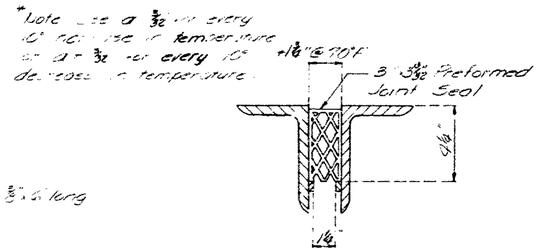
A-2296

MISSOURI STATE HIGHWAY DEPARTMENT

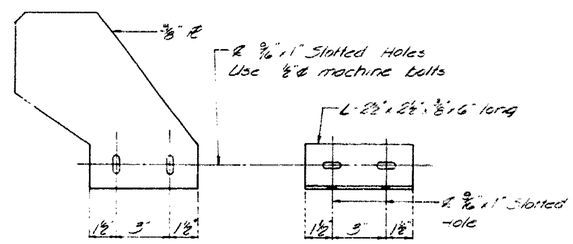
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	18	



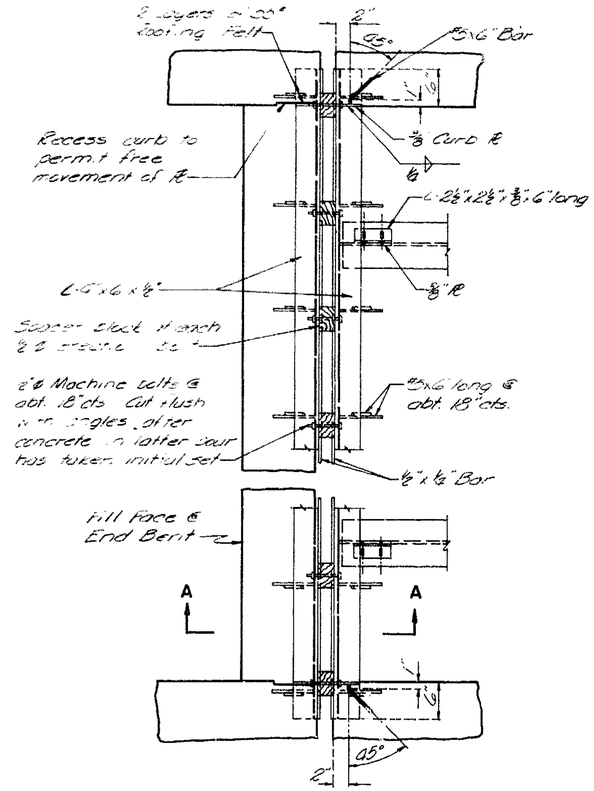
PART PLAN END BENTS NO. 1 & 5



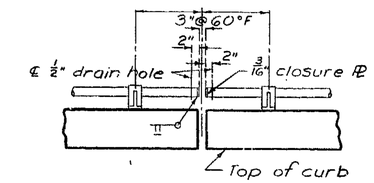
DETAIL JOINT SEAL



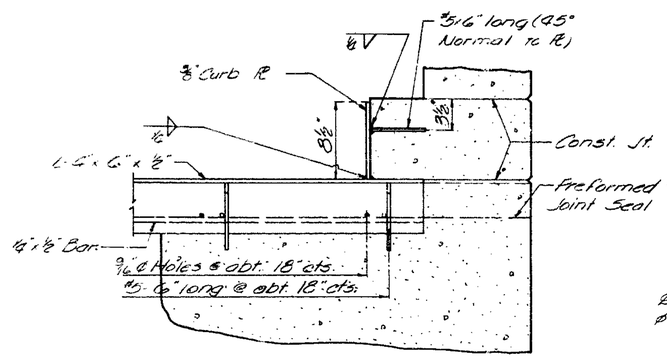
DETAIL "B"



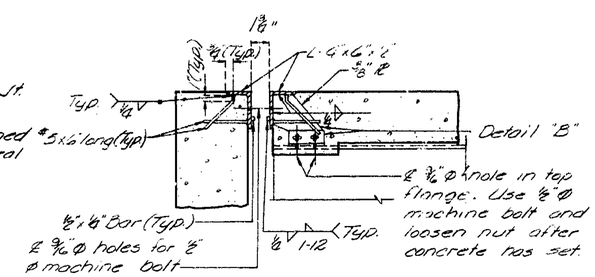
PART PLAN END BENT NO.



PART RAIL ELEVATION AT EXP. GAP



SECTION THRU CURB



SECTION A-A

DETAIL OF ARMORED SEAL EXPANSION JOINT

GENERAL NOTE:

Expansion Device shall be fabricated in one section except that when the length is over 50 feet, splicing is permissible. The expansion device shall be bent to conform to crown and grade of roadway.

No. 5 bars for expansion device shall be structural grade. Approved stud welded anchors may be used in lieu of #5 bars shown.

Payment for furnishing and placing structural steel for expansion device shall be made under price bid for Fabricated Structural Carbon Steel.

Payment for furnishing and placing preformed joint sealer shall be made under price bid for other items. See Special Provisions.

BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) (RTE. F) **STA.** 506 + 51.48

CALLAWAY **COUNTY**

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C.D. Albert	DETAILED J. Carter
DESIGN CK. R.C. Colkin	DETAIL CK. C.D. Albert

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

Sheet No. 11 of 19.

A-2296

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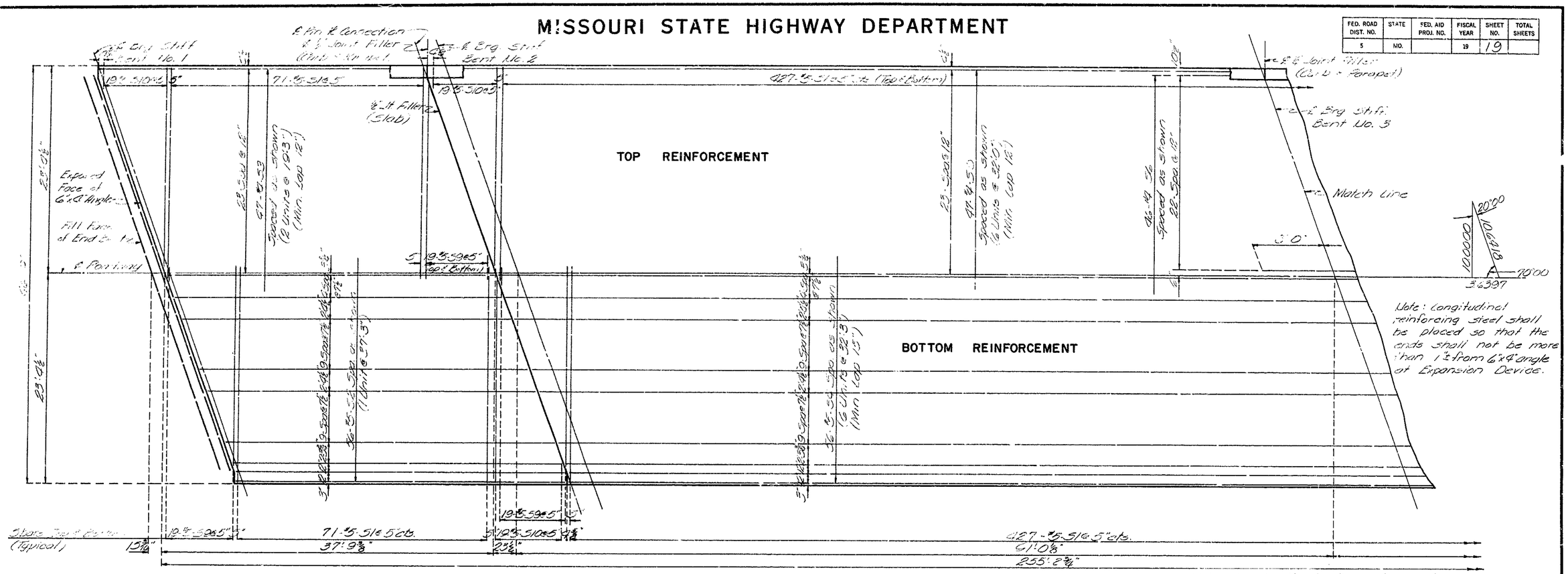
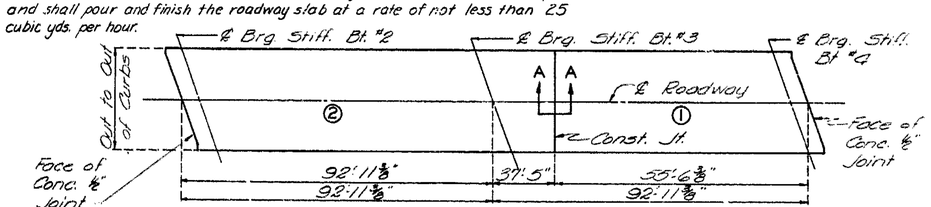
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	19	



Note: Longitudinal dimensions shown are parallel to grade at crown of roadway.

Note: Pour end spans before pouring spans (2-3) & (3-4). The contractor shall use a finishing machine on the end spans and shall pour and finish the roadway slab at a rate of not less than 25 cubic yds. per hour.



PLAN OF SLAB SHOWING REINFORCEMENT

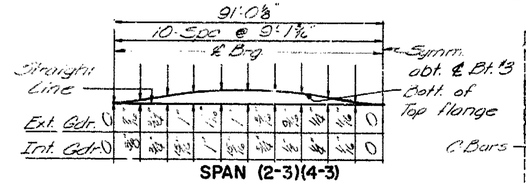
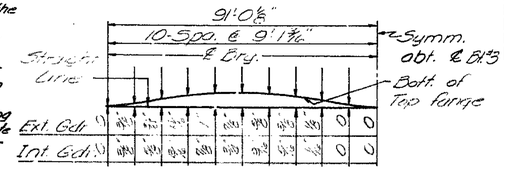


PLATE GIRDER CAMBER DIAGRAM

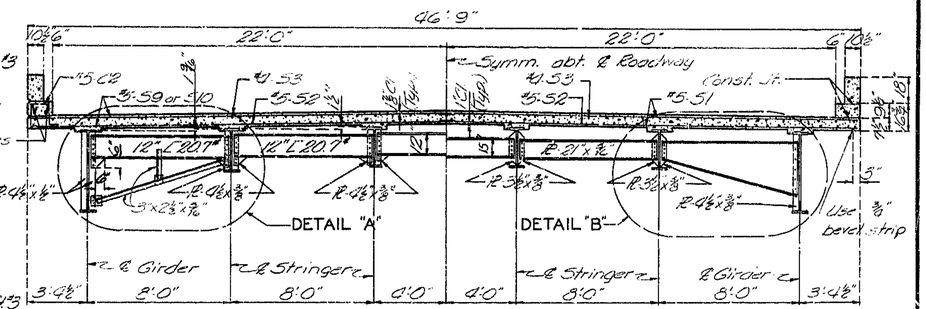


SPAN (2-3)(4-3)

12 % Structural Steel

DEAD LOAD DEFLECTION

Note: For diagram of Dead Load Deflection and Theoretical Slab Haunch, see sheet No. 10 of 14.



SPAN (1-2)

Note: "Camber includes allowance for dead load deflection for concrete slab and structural steel, and vertical curve."

Note: For Detail "A" and "B" see sheet No. 9 of 14.

BRIDGE OVER ROUTE 54 N.B.L.

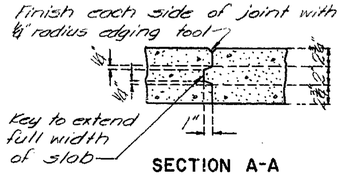
STATE ROAD FROM FULTON WEST ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) (RTE. F) **STA.** 506 + 51.48

CALLAWAY COUNTY

	SEQUENCE OF POURS	
	Direction	
Basic Sequence	1	2
	End To 2	1 To End
Alternate "A" Pours	1 + 2	
	End To End	

The contractor shall use a finishing machine. He shall furnish an approved retarder to retard the set of the concrete to 2.5 hours and shall pour and satisfactorily finish the slab pours at a rate of not less than 30 cubic yards per hour. (See Standard Specification 47.8.1 for payment of retarder). He shall observe the basic pouring sequence unless he can demonstrate to the engineer that he can pour and satisfactorily finish one of the longer alternate pours.



SECTION A-A

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

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED D. Albert | DETAILED J. Carter
DESIGN CK. J.G. Cottrum | DETAIL CK. D. Albert

Sheet No. 12 of 14.

A-2296

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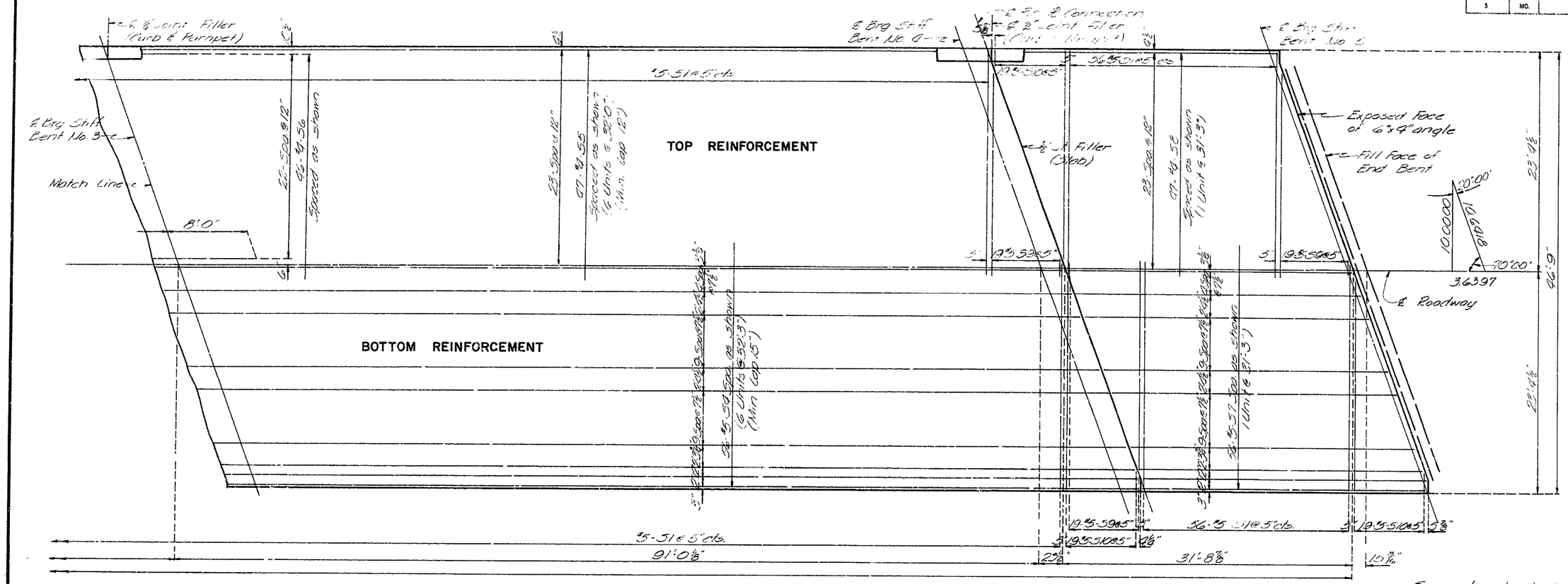
FOR INFORMATION ONLY

A22962, Sht. 15

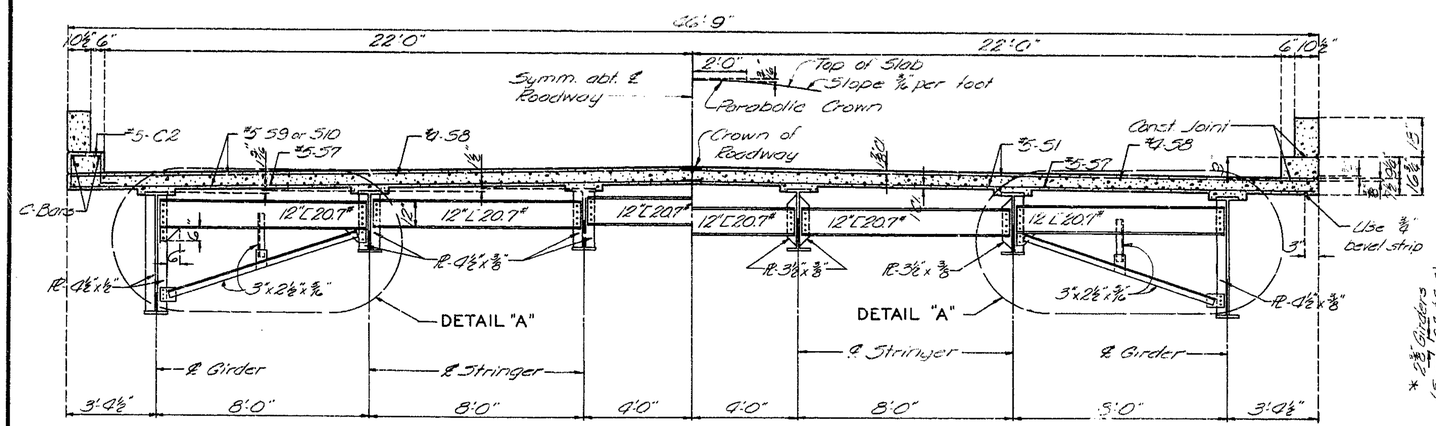
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	20	



See note sheet No. 12 of 14 for pouring of end spans.

PLAN OF SLAB SHOWING REINFORCEMENT



HALF SECTION NEAR END DIAPH.

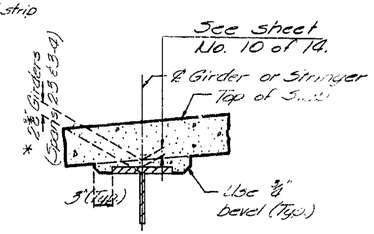
HALF SECTION NEAR INT. DIAPH.

SPAN (4-5)

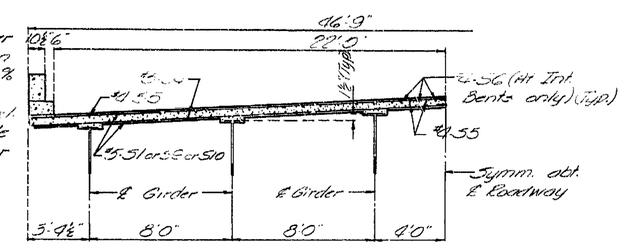
Note: For diagram of Dead Load Deflection and Theoretical Slab Haunch see sheet No. 10 of 14.

Note: For Detail "A" see sheet No. 9 of 14.

* Note: "2 3/8" Dimension may vary if girder camber after erection differs from plan camber by more than the % of D.L. deflection due to weight of structural steel. No payment will be made for additional forming or concrete required for variable haunching."



THEORETICAL SLAB HAUNCH



HALF SECTION NEAR END OR INT. DIAPH. AND AT INT. BENT

SPANS (2-3) & (3-4)

BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) (RTE. F) **STA.** 506 + 51.48

CALLAWAY COUNTY

A-2296

BURGWIN & MARTIN CONSULTING ENGINEERS	
DESIGNED C.D. Albert	DETAILED J. Carter
DESIGN CK. H.G. Lothian	DETAIL CK. C.D. Albert

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

Sheet No. 13 of 14.

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MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO		19	21	

GENERAL HANDRAIL NOTES:

All handrail posts shall be set normal to grade.

Aluminum tube handrail shall be bent to conform to vertical and horizontal alignment of parapet.

Aluminum washer shims between top of parapet and post base may be used for adjusting handrail alignment. Maximum thickness of shims to be 1/8". Where more tilting of post is required for proper alignment, concrete bearing areas shall be ground down.

All parts of handrail, except anchor bolts, nuts, washers, and set screws are to be of aluminum material.

The contract unit price per linear foot of "Bridge Rail" shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulating compound.

All fillets 1/4" except as noted.

All drafts 3° except as noted.

Pipe rail to be fabricated in a minimum of 2 panel lengths.

Omit set screw on side adjacent to filled joint in parapet and curb at all expansion posts.

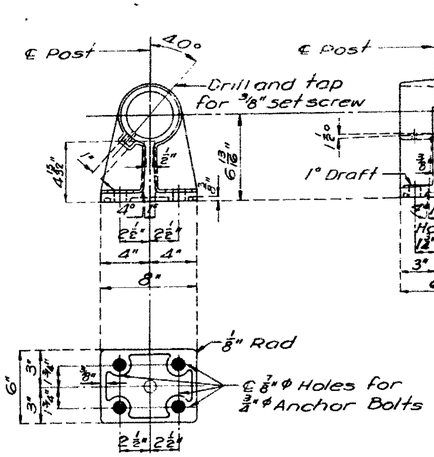
Top of curbs and parapets to be built parallel to grade with curb and parapet joints (except at end bents) normal to grade.

Concrete end posts to be vertical.

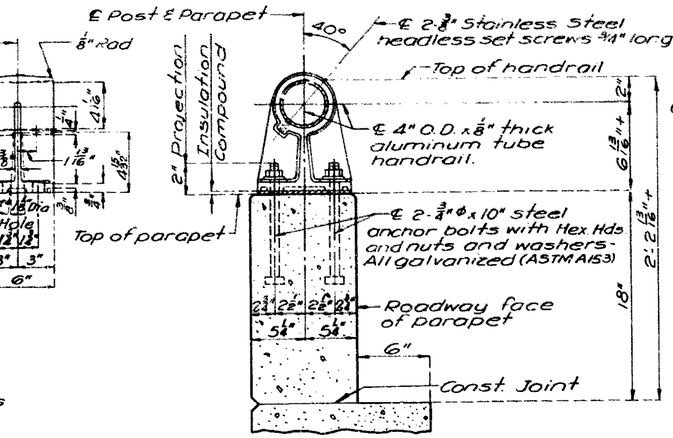
All exposed edges of end posts shall have 1/2" bevel. All exposed edges of curbs and parapets shall have 1/2" radius or 3/8" bevel unless otherwise noted.

If the contractor desires, he may use drive fit cast aluminum end caps in lieu of welded aluminum closure plates.

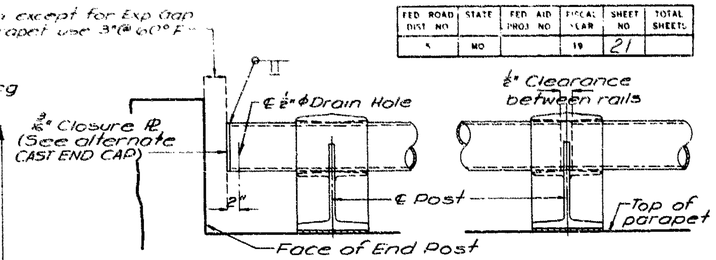
Integrally cast test coupons and a coat of clear lacquer specified in Std. Spec. 56.2.4 and 56.3.5 respectively will not be required for these rail posts.



POST DETAILS



SECTION THRU HANDRAIL

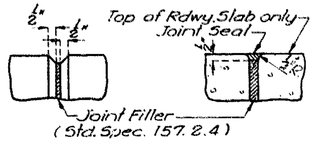


POST — RAIL SPLICE OR EXP.

TYPICAL HANDRAIL DETAILS

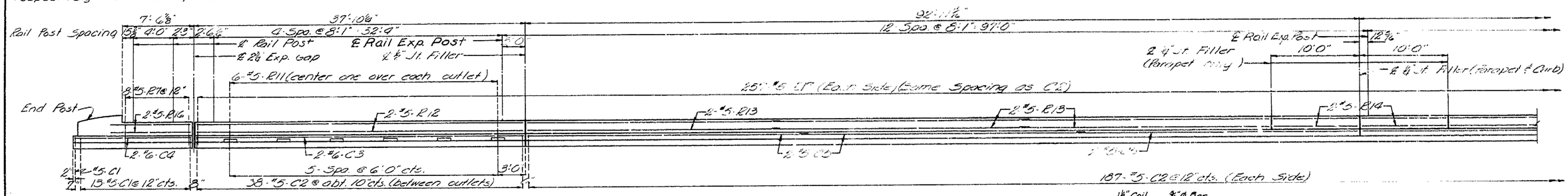
CAST END CAP
(Drive Fit Type)

Note. See sheet 11 of 14 for details of rail expansion gap.



FILLED JOINT DETAILS

SINGLE TUBE ALUMINUM RAILING

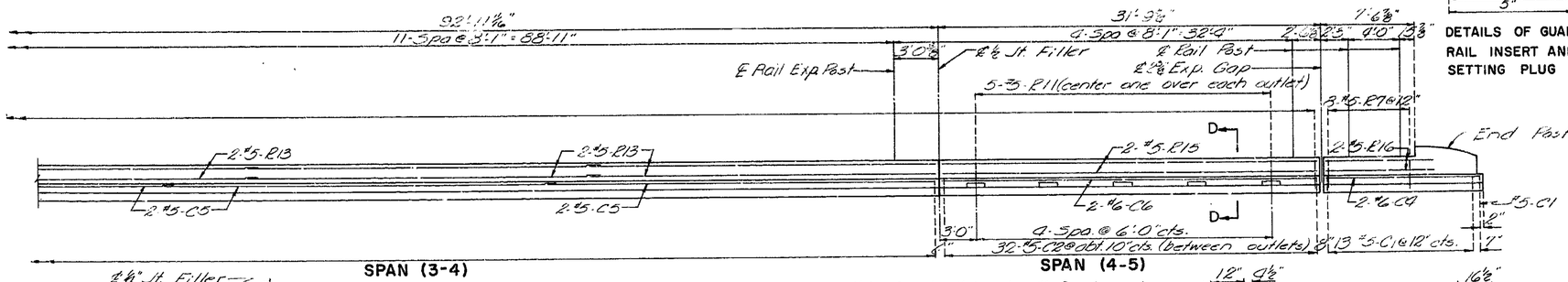


Note: See Sheet No. 10 of 14 for details of Rail Exp. Gap.

SPAN (1-2)

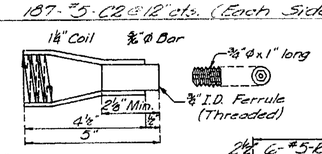
Note: Longitudinal dimensions shown are parallel to grade at top of parapet.

SPAN (2-3)

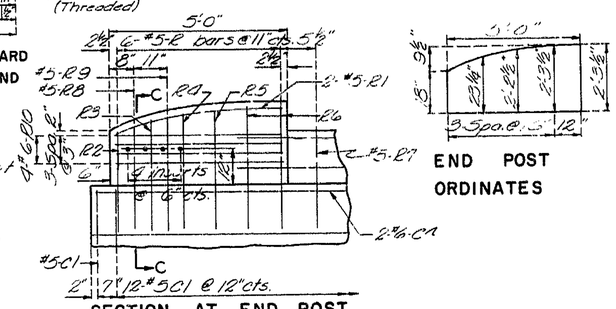


SPAN (3-4)

SPAN (4-5)



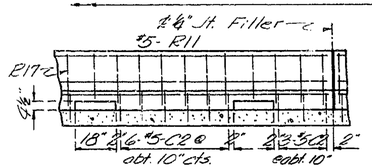
DETAILS OF GUARD RAIL INSERT AND SETTING PLUG



END POST ORDINATES

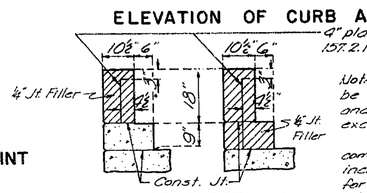
SECTION AT END POST

Note: For horizontal curb and parapet bars use a minimum lap of 15" for #5 and 18" for #6



SECTION AT OUTLETS & EXP. JOINT

ELEVATION OF CURB AND PARAPET



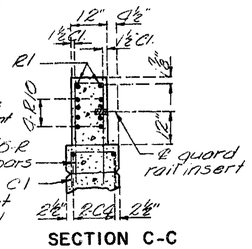
DETAILS OF PLASTIC WATERSTOP

Note: "Plastic waterstop shall be placed in all parapet and curb filled joints, except at end bents."

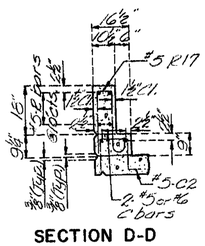
"Cost of plastic waterstop complete in place to be included in unit price bid for concrete."

Note: Guard rail inserts with ferrule and setting plug shall be galvanized and cast in the concrete. The inserts shall have a tensile strength of 20,000 lbs. in 3,000 psi concrete. Setting plugs shall remain in place until guard rail is attached. Payment for furnishing and installing guard rail inserts shall be included in price bid for other items.

Note: [illegible] Sheet [illegible] of guard [illegible]



SECTION C-C



SECTION D-D

Note: Where there are no outlets use #5-C2 @ abt. 12" cts.

Note: This drawing is not to scale. Follow dimensions

Sheet No. 16 of 14.

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C.D. Albert | DETAILED J.O. Carter
DESIGN CK. A.G. Cotham | DETAIL CK. C.D. Albert

STD. 1.5.2 | REVISED JAN. 1967
MAR. 1964

BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) (RTE. F) STA. 506 + 51.48

CALLAWAY COUNTY

A-2296

22

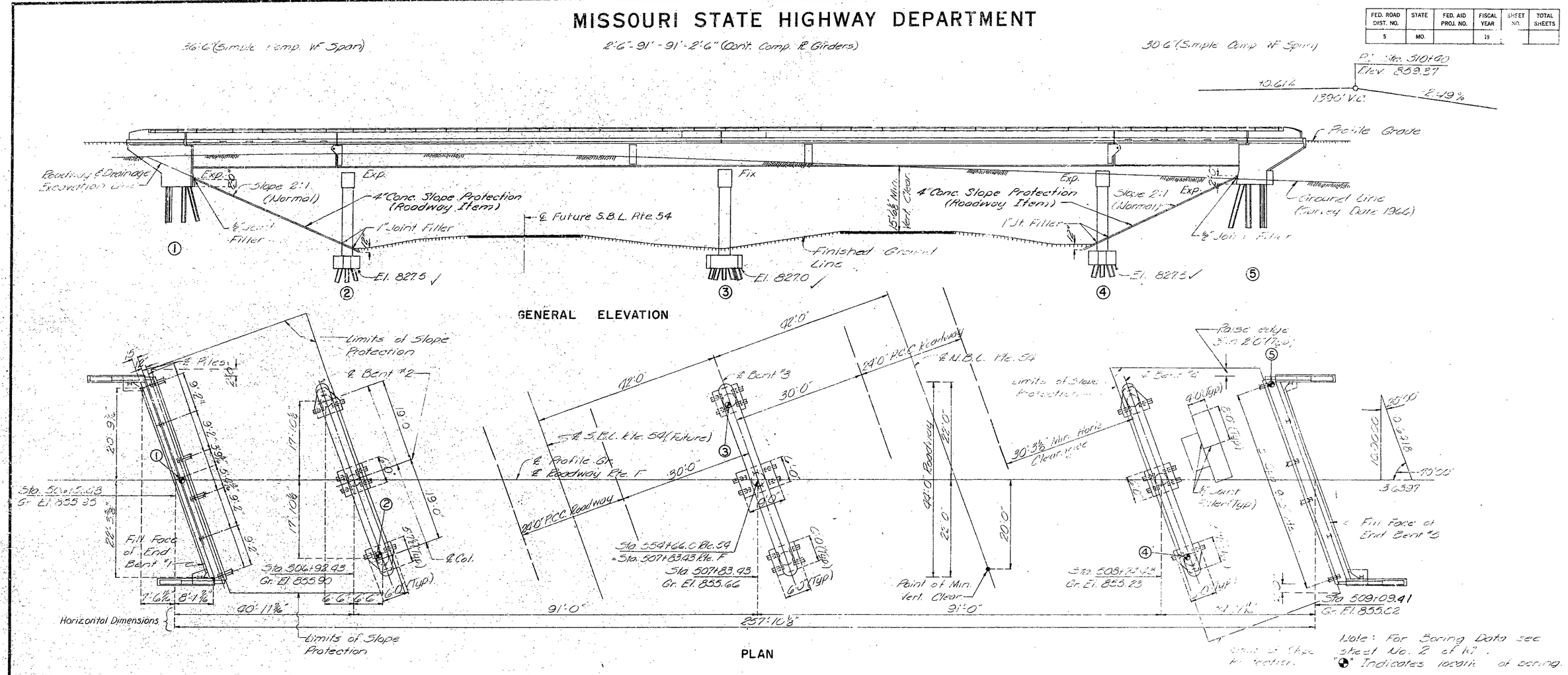
FOR INFORMATION ONLY

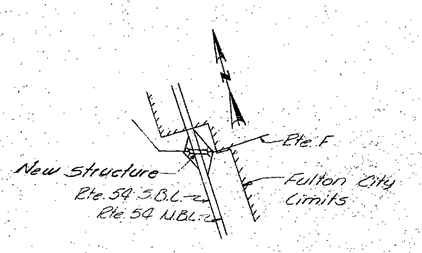
A22962, Sht. 17

Part #2

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19		





LOCATION SKETCH

QUANTITIES			
ITEM	SUBSTR.	SUPERSTR.	TOTAL
Class 1 Excavation for Structures Cu. Yd.	196.0		196.0
Steel Piles in Place (10") Lin. Ft.	139.1		139.1
Class B Concrete Cu. Yd.	209.0		209.0
Class B1 Concrete Cu. Yd.		343.5	343.5
Reinforcing Steel Lb. ~~Cu. Yd.~~	27,490	94,570	122,060
Fabricated Structural Carbon Steel (WF Spans) Lb.		33,290	33,290
Fabricated Structural Carbon Steel (PL Gdr. Spans) Lb.		213,270	213,270
Painting Ton		122.3	122.3
Bridge Rail (Single Tube Type) Lin. Ft.		540	540

Note: All concrete and reinforcement in end posts, parapets and curbs was included with superstructure quantities.

B.M. Elev. 856.50 - □ on S.W. Corner of N. Curb

BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) (RTE. F) **STA.** 506+51.48

CALLAWAY COUNTY

FINISHED

SUBMITTED BY ..... BRIDGE ENGINEER DATE .....

APPROVED BY ..... CHIEF ENGINEER DATE .....

STD. 54.00

A-2296

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C.D. Albert DETAILED J. Carter
DESIGN CK. P.G. Latham DETAIL CK. C.D. Albert

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

FINAL PLANS

Sheet No. 1 of 2

423

MISSOURI STATE HIGHWAY DEPARTMENT

FED ROAD DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
5	MO		19		

GENERAL HANDRAIL NOTES:

All handrail posts were set normal to grade.

Aluminum tube handrail was bent to conform to vertical and horizontal alignment of parapet.

Aluminum washer shims between top of parapet and post base were used for adjusting handrail alignment. Maximum thickness of shims to be 1/8". Where more tilting of post is required for proper alignment, concrete bearing areas were ground down.

All parts of handrail, except [illegible], nuts, washers, and set screws were [illegible] aluminum material.

The contract unit price per linear foot of "Bridge Rail" did include furnishing and erecting the handrail complete with anchor bolts, shims and insulating compound.

All fillets 1/4" except as noted.

All drafts [illegible] except as noted.

Pipe rail were fabricated in a minimum of 2 panel lengths.

Omitted set screw on side adjacent to filled joint in parapet and curb at all expansion posts.

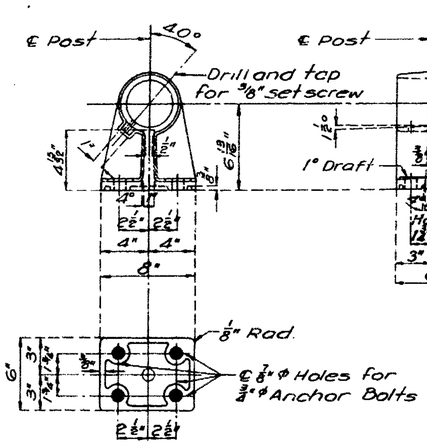
Top of curbs and parapets was built parallel to grade with curb and parapet joints (except at end bents) normal to grade.

Concrete end posts are vertical.

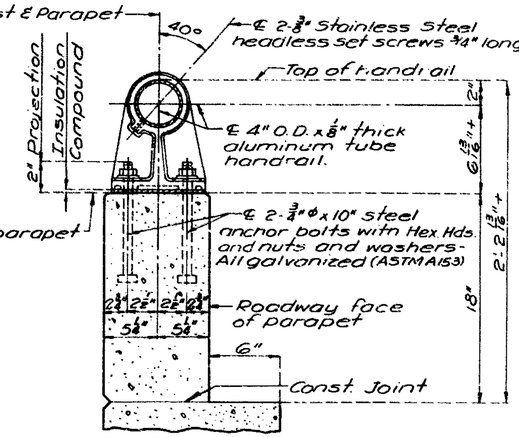
All exposed edges of end posts do have 1/2" bevel. All exposed edges of curbs and parapets do have 1/4" radius or 3/8" bevel unless [illegible]

The contractor used drive fit [illegible] aluminum end caps.

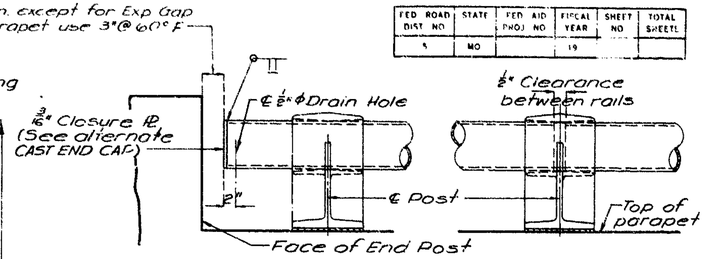
Integral cast test coupons and a coat of clear lacquer specified in Std. Spec. 56.2.4 and 56.3.5 respectively was not required for these rail posts.



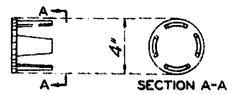
POST DETAILS



SECTION THRU HANDRAIL

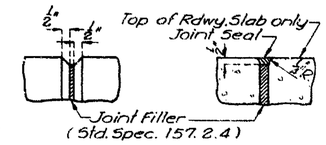


TYPICAL HANDRAIL DETAILS



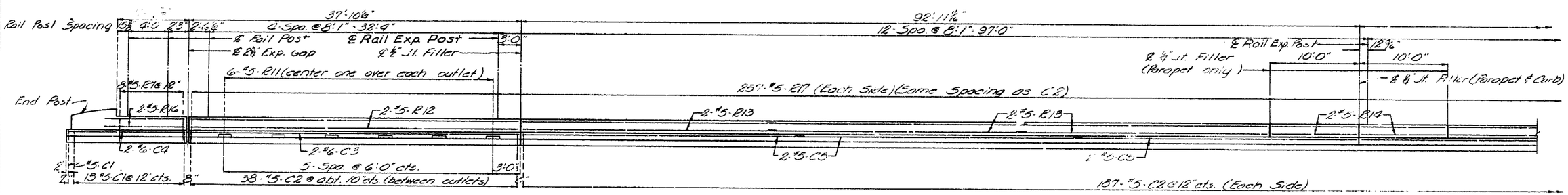
CAST END CAP
(Drive Fit Type)

Note: See sheet 11 of 14 for details of rail expansion gap.



FILLED JOINT DETAILS

SINGLE TUBE ALUMINUM RAILING

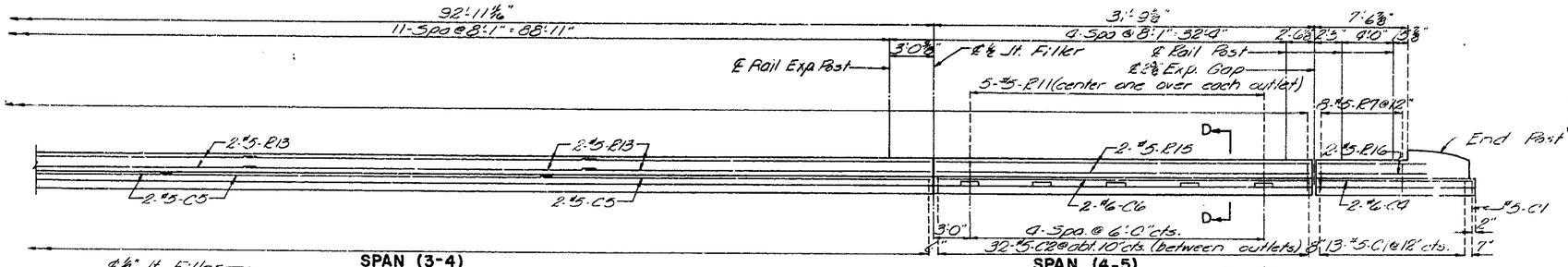


Note: See Sheet No. 10 of 14 for details of Rail Exp. Gap.

SPAN (1-2)

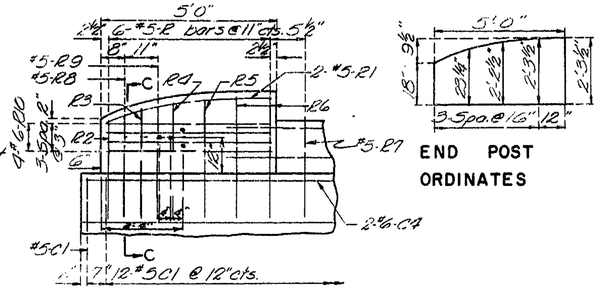
Note: Longitudinal dimensions shown are parallel to grade at top of parapet.

SPAN (2-3)



SPAN (3-4)

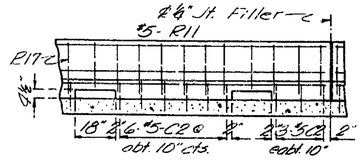
SPAN (4-5)



END POST ORDINATES

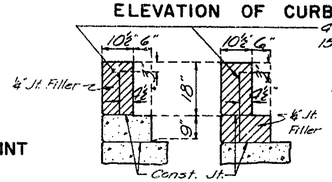
SECTION AT END POST

Note: For horizontal curb and parapet bars use a minimum lap of 15" for #5 and 18" for #6



SECTION AT OUTLETS & EXP. JOINT

ELEVATION OF CURB AND PARAPET



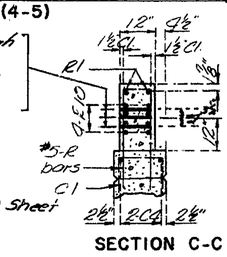
Note: "Plastic waterstop was placed in all parapet and curb filled joints, except at end bents."
"Cost of plastic waterstop complete in place was included in unit price bid for concrete."

DETAILS OF PLASTIC WATERSTOP

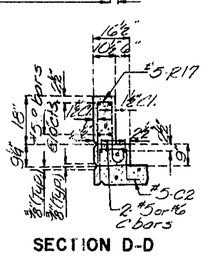
Note: Where there was no outlets used #5 @ abt. 12" cts.

℄ 1" Dia. Holes for 7/8" High Strength Bolts. Washers under heads and nuts, all galvanized.

Note: See Standard 86.00 Sheet 5 of 5 for guard rail attachment.



SECTION C-C



SECTION D-D

BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) (RTE. F) STA. 306 + 51.48

CALLAWAY COUNTY

STD 15.2	REVISED
MAR. 1964	JAN. 1967

BURGWIN & MARTIN
CONSULTING ENGINEERS

DESIGNED C.D. Albert	DETAILED J.O. Carter
DESIGN CK. A.G. Latham	DETAIL CK. C.D. Albert

Note: This drawing is not to scale. Follow dimensions

Sheet No. 14 of 2

A-2296

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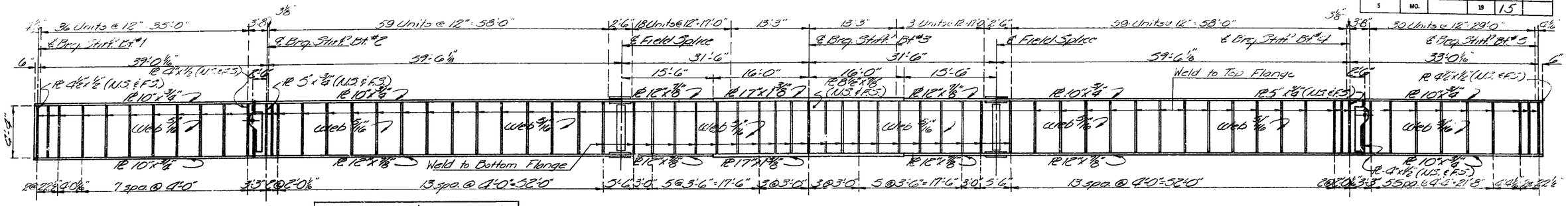
FINAL PLANS

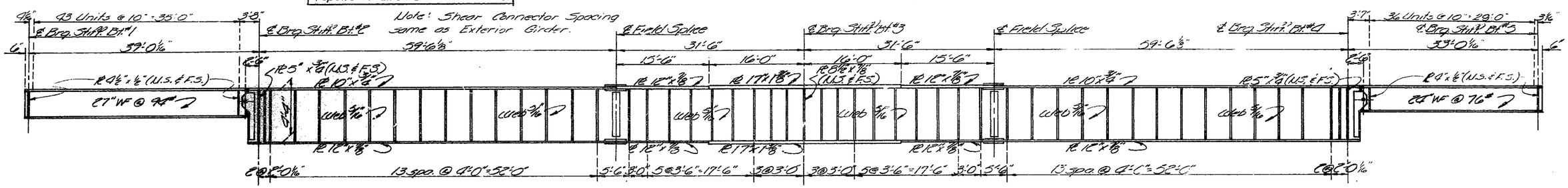
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	15	



EXTERIOR GIRDERS ELEVATION

Note: See Fabrication Drawings for repairs to Girders No. 4 & 5. 12-20-93



Note: Shear Connector Spacing same as Exterior Girder.

INTERIOR GIRDERS ELEVATION

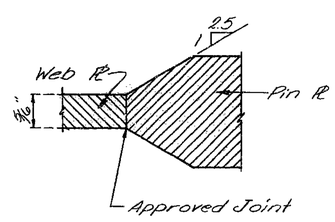
Note: All intermediate stiffeners are 4½" x 5/16" and are on both sides of interior girders and inside face only of exterior girders.

All longitudinal dimensions shown are taken parallel to grade at crown of roadway.

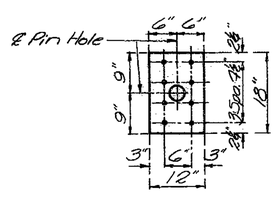
Note: Shop welded web splices may be fabricated by the contractor when detailed on the shop drawings and approved by the Engineer. No additional payment will be made for optional shop welded web splices.

Plate girders for spans (2-3) & (3-4) shall be fabricated to conform with Camber Diagram shown on sheet No. 12 of 14.

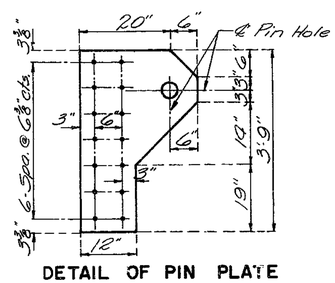
RECESSED PIN NUT
(Cast or Pressed Steel)



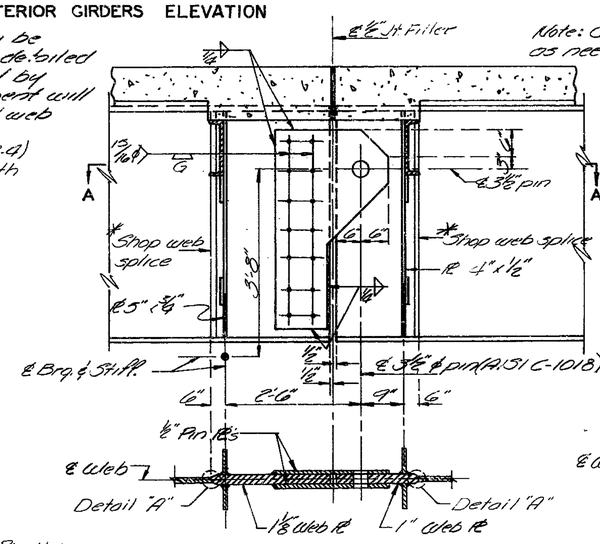
DETAIL "A"



DETAIL OF FILL PLATE

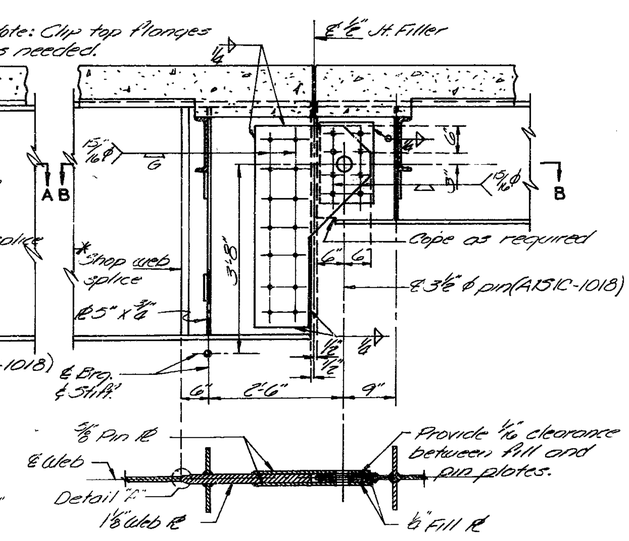


DETAIL OF PIN PLATE



SECTION A-A

HINGE DETAIL GIRDER TO GIRDER



SECTION B-B

HINGE DETAIL GIRDER TO WF BEAM

BRIDGE OVER ROUTE 54 N.B.L.

STATE ROAD FROM FULTON WEST

ABOUT 2.0 MILES WEST OF FULTON

PROJECT NO. C014-F(3) (RTE. F) **STA.** 506+51.6

CALLAWAY COUNTY

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

Sheet No. 8 of 14.

Wreck Repair 1994

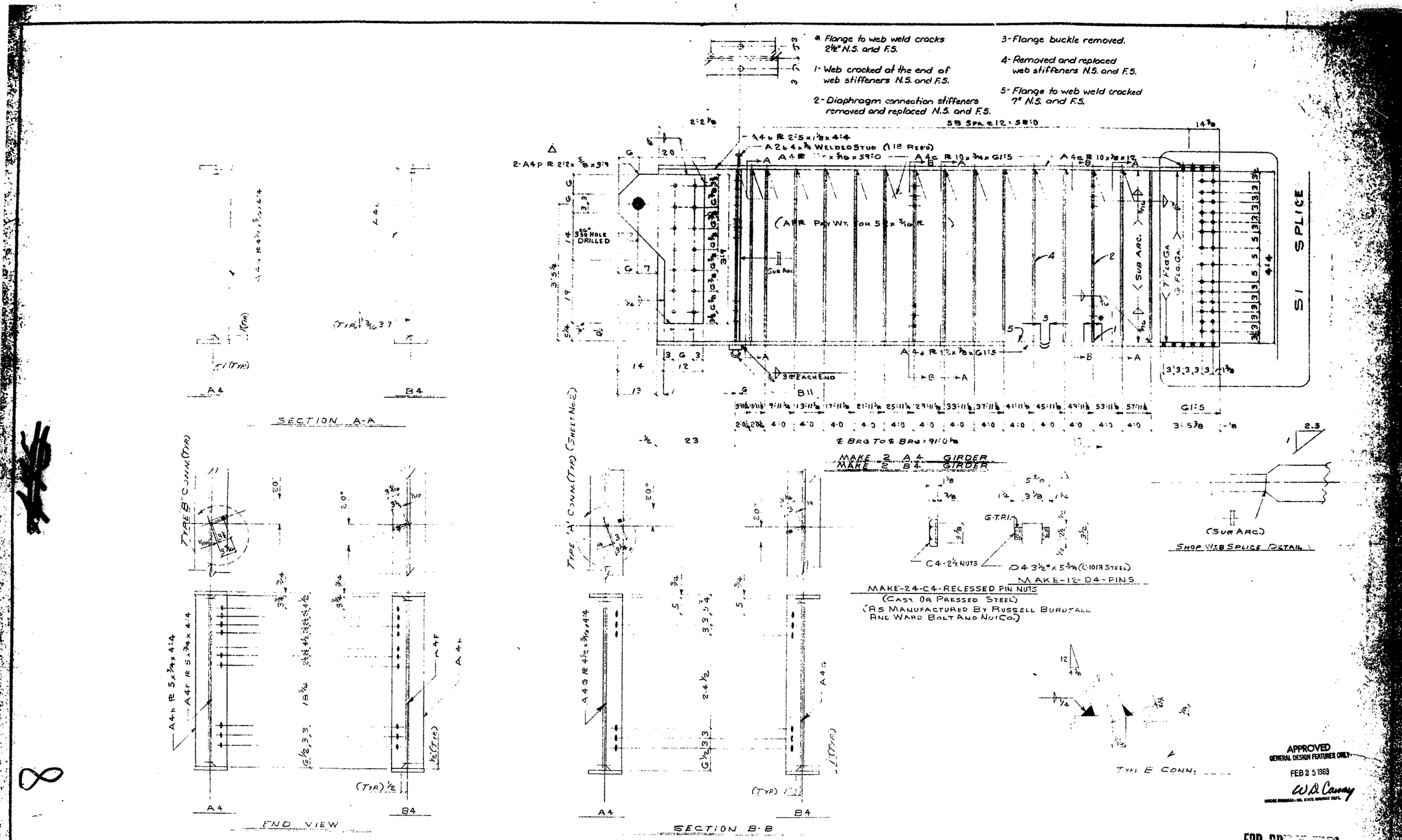
A-2296

BURGMAN & MARTIN
CONSULTING ENGINEERS

DESIGNED C.D. Albert DETAILED J.E. Keller
DESIGN CK. A.G. Latham DETAIL CK. C.D. Albert

FOR INFORMATION ONLY

A22962, Sht. 20



Wreck Repairs 1994

STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN

BEAM & PL. LINTEL — BEAM CONN. — BASE & CAP PLATE H. COL. — ¼ WELD AS SHOWN — PIPE COL.

PAINT: NONE

BOLTS RIVETS: 3/4 UNLESS NTD.

OPEN HLS: 13/16 UNLESS NTD.

PRINT RECORD					
NO.	FOR	DATE	NO.	FOR	DATE
1	CK	11-25-68	4	S	1-17-69
2	H	12-24-68	6	H	2-20-69
6	A	1-14-69			
1	A	1-17-69			

DELONG'S INC.

DIAL 635-6121 — DIX RD. & IND. DR.

JEFFERSON CITY, MISSOURI

DETAILED BY: BURLINGAME

DATE: 11-25-68

CHECKED BY:

DATE:

REVISIONS			
DATE	MK.	BY	REMARKS
2-20-69	A	LB	½ R to 5/8 R 1 PIN to 5 5/8

[redacted] BRIDGE OVER ROUTE 54 N.B.

[redacted] PROJ. NO. C014-F(3)(RTE. F) STA. 506 + 5.88

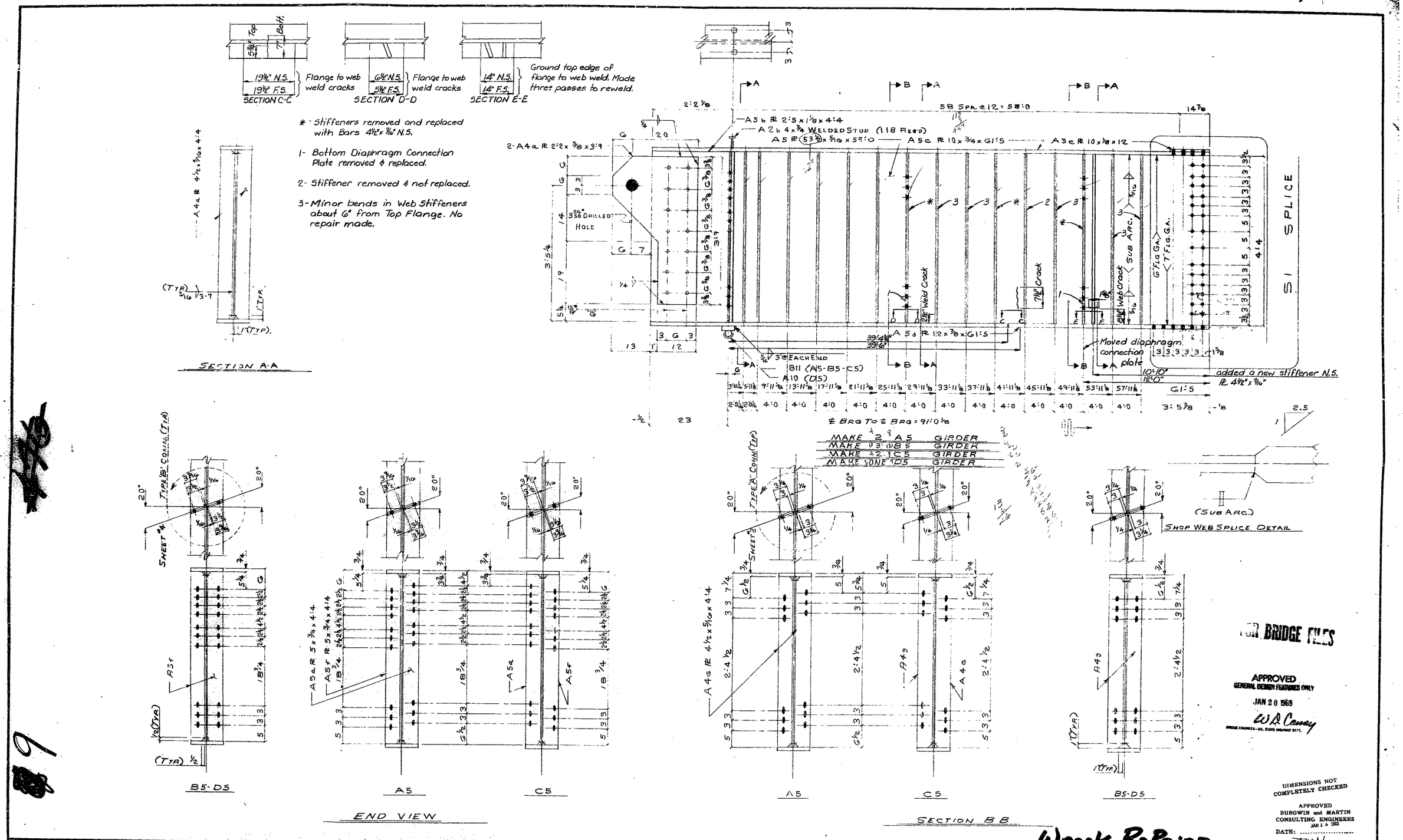
LOCATION: CALLAWAY COUNTY

STRINGER DETAILS

ARCH.-ENGR. BURGWIN & MARTIN

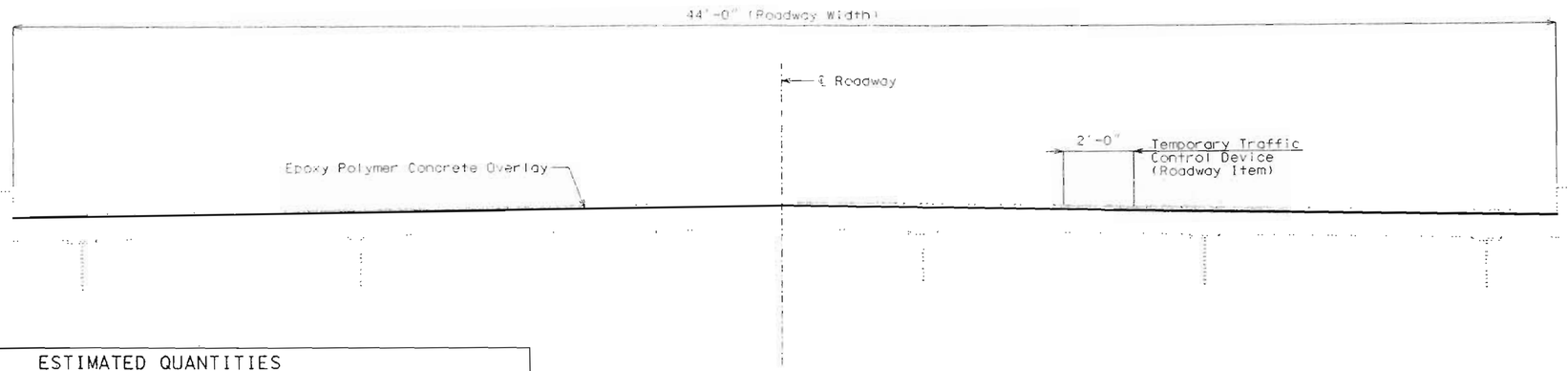
FOR: MO. STATE HIGHWAY DEPT.

A B C D E F G H J K M N P S T U V W X Y Z AA AD AC AD AE AF AG AH AJ AK AM AN AP AS AT AU AV AW AX AY AZ


SECTION C-C
SECTION D-D
SECTION E-E
Flange to web weld cracks
Ground top edge of flange to web weld. Made three passes to reweld.
* - Stiffeners removed and replaced with Bars 4½" x 7/16" N.S.
1- Bottom Diaphragm Connection Plate removed & replaced.
2- Stiffener removed & not replaced.
3- Minor bends in Web Stiffeners about 6" from Top Flange. No repair made.
SECTION A-A
SI SPLICE
Moved diaphragm connection plate
added a new stiffener N.S.
℄ BRG TO ℄ BRG = 91'-0⅛
MAKE 2 A5 GIRDER
MAKE 3 B5 GIRDER
MAKE 2 C5 GIRDER
MAKE ONE D5 GIRDER
SHOP WEB SPLICE DETAIL
B5-D5
A5
C5
END VIEW
SECTION B-B
FOR BRIDGE FILES
APPROVED
GENERAL DESIGN FEATURES ONLY
JAN 20 1969
DIMENSIONS NOT COMPLETELY CHECKED
APPROVED
BURGWIN and MARTIN
CONSULTING ENGINEERS
JAN 16 1969
DATE:
BY:
Wreck Repairs
STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN
BEAM & PL. LINTEL
BEAM CONN.
BASE & CAP PLATE
H. COL.
PIPE COL.
¼ WELD AS SHOWN
PRINT RECORD
NONE
BOLTS RIVETS 3/4 UNLESS NTD.
OPEN HLS. 13/16 UNLESS NTD.
DELONG'S INC.
DIAL 635-6121
DIX RD. & IND. DR.
JEFFERSON CITY, MISSOURI
DETAILED BY BURLINGAME
DATE 11-25-68
CHECKED BY
DATE
REVISIONS
DATE MK. BY REMARKS
BRIDGE OVER ROUTE 54 N.B.L.
PROJ. No. C014-F(3)(RTE. F) STA. 506+51.48
LOCATION CALLAWAY COUNTY
STRINGER DETAILS
ARCH.-ENGR. BURGWIN & MARTIN
FOR: MO. STATE HIGHWAY DEPT.
JOB No. 68-429
BRIDGE NO. A-22962
SHT. No. 5 OF 11

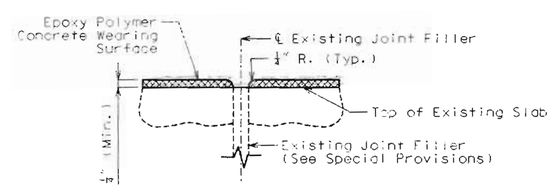
State	Proj. No.	Sheet No.
MO		8H
SEC/SUR 18	TWP 47N	RGE 9W

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION
U.I.P. EXISTING (36.5') SIMPLE COMP. WF, (2.5'-91'-91'-2.5')
CONT. COMP. PL. GIRDER, (30.5') SIMPLE COMP. WF

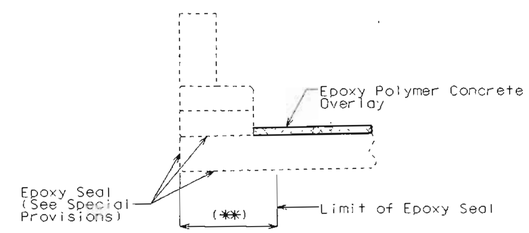


SECTION THRU SLAB

ESTIMATED QUANTITIES		
ITEM		TOTAL
Epoxy Polymer Concrete Overlay	sq. yard	1261



SECTION THRU JOINT



TYPICAL SECTION OF EXISTING CURB SHOWING OUTLET

Note:
(**) 18" or overhang width

General Notes:

Design Specifications:
AASHTO 1996 and Interims thru 2000.

Dimensions:
Drawings are not to scale. Follow dimensions.

Contractor shall verify dimensions in field before ordering materials.

Miscellaneous:
Traffic over structure to be maintained during construction. (See roadway plans for traffic control).

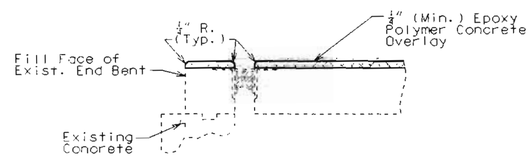
Outline of old work is indicated by dashed lines. Heavy lines indicate new work.

In order to maintain grade and a minimum thickness of overlay as shown on plans it may be necessary to use additional quantities of overlay at various locations throughout the structure.

No payment will be allowed for additional labor, materials or equipment for variations in thickness of overlay.

The contractor shall exercise care to ensure spillage over joint & fill face edges is prevented and that a neat line is obtained along any terminating edge of the epoxy polymer concrete.

All exposed edges of overlay shall have a 1/4" radius, unless otherwise noted.



EPOXY POLYMER CONCRETE WEARING SURFACE

REPAIRS TO BRIDGE OVER RTE. 54

STATE ROAD FROM FULTON WEST
IN FULTON

PROJECT NO.
JOB NO. J5P0794E

STA. 506+51.48± (Match Exist.)
RTE. F

STATE OF MISSOURI
DEAN DAVID FRANKE
NUMBER E-28132
REGISTERED PROFESSIONAL ENGINEER

DATE 11-27-01

CALLAWAY COUNTY

A22961

Designed Aug 2001
Detailed Aug 2001
Checked Aug 2001

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

Sheet No. 1 of 1

Date: 11/28/01

SHOP DRAWINGS FOR STEEL STRUCTURE

Callaway COUNTY BRIDGE NO. A-2296

PROJECT NO. C014-F(3) (Rte. F)

INDEX

ERECTION SHEET NOS. ____ THRU ____

GENERAL MATERIALS SHEET NOS. 1 THRU 11

BOLT LIST SHEET NOS. ____ THRU ____

BEARING DETAILS SHEET NOS. ____ THRU ____

BRIDGE RAILING DETAILS SHEET NOS. 6 THRU ____

PAINT DETAILS SHEET NOS. ____ THRU ____

BLOCKING DIAGRAM SHEET NOS. ____ THRU ____

EXPANSION DEVICE DETAILS SHEET NOS. ____ THRU ____

SHOP WELDED SPLICE DETAILS SHEET NOS. ____ THRU ____

WEB AND FLANGE CUTTING DETAILS SHEETS NOS. ____ THRU ____

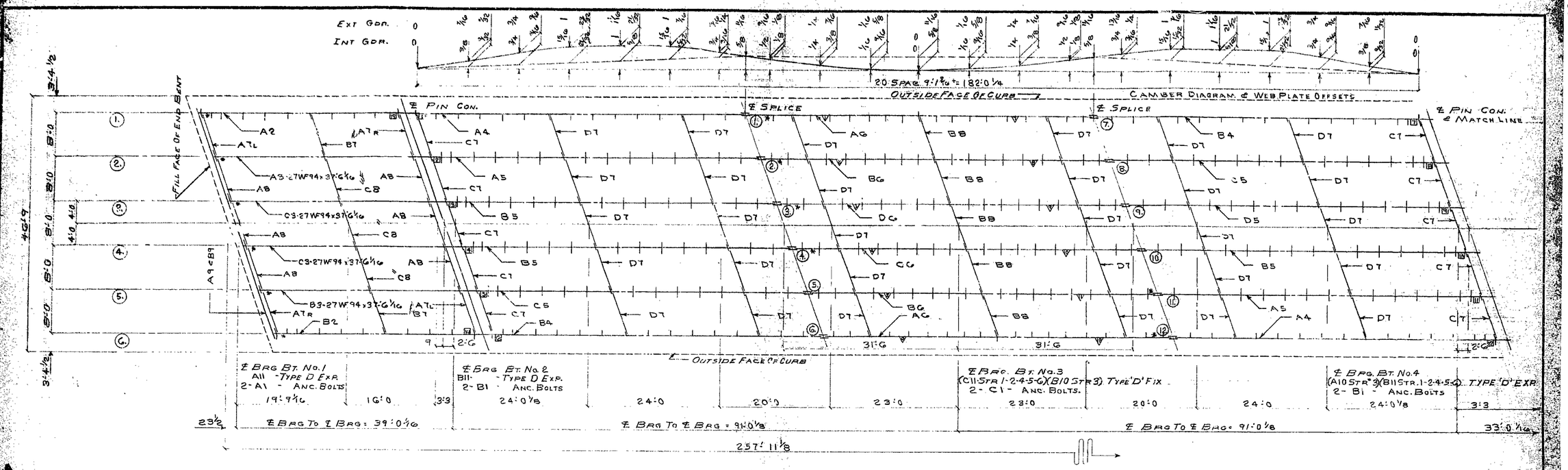
DRAIN DETAILS SHEET NOS. ____ THRU ____

DRAINAGE SYSTEM DETAILS SHEET NOS ____ THRU ____

STEEL GRID FLOORING DETAILS SHEET NOS. ____ THRU ____

PEDESTRIAN FENCE DETAILS SHEET NOS. ____ THRU ____

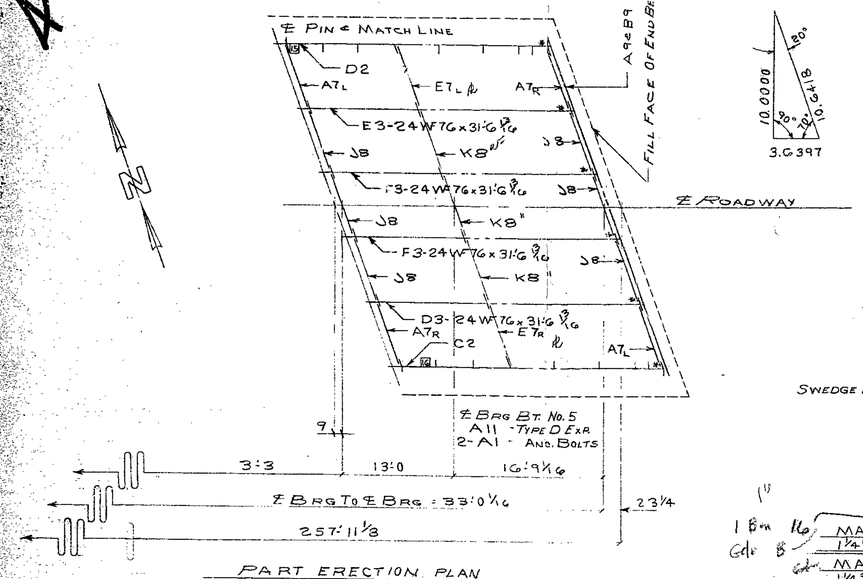
A22



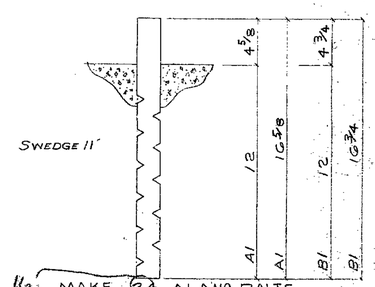
PART ERECTION PLAN

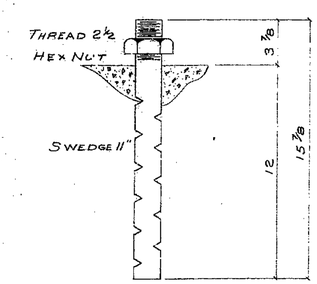
NOTE: LONGITUDINAL DIMENSIONS SHOWN ARE PARALLEL TO GRADE AT CROWN OF ROADWAY.

47-12



PART ERECTION PLAN





MAKE 24 A1 ANC. BOLTS
1 1/4" x 16 5/8 BTS. 1 & 5

MAKE 24 B1 ANC. BOLTS
1 1/4" x 16 3/4 BTS. 2 & 4

MAKE 12 C1 ANC. BOLTS
1 1/4" x 15 1/8 BTS. 3

LEGEND

① — FIELD SPLICE
[1] — SHOP WEB SPLICE
▽ — SHOP FLANGE SPLICE (TOP & BOTTOM)

HIGH TENSILE FIELD BOLTS

SHIP	REQ'D	SIZE	GRIP	LENGTH	HEAD	NUT	WASHER	LOCATION
670	644	3/4	5/8 - 3/16	2	HEX	HEX	1-CARB	A8-C8-J8-B7-D7-E7 To STIFF. ℞
125	120	3/4	1-7/8-13/16	2 1/4	HEX	HEX	1-CARB	A7 To STIFF. ℞
210	200	3/4	1 5/16-1 1/4	2 1/2	HEX	HEX	1-CARB	B8-C7 To STIFF. ℞
200	192	7/8	1 3/4	3	HEX	HEX	1-CARB	E8 To FLG To F8
250	240	7/8	1 7/8	3 1/4	HEX	HEX	1-CARB	G8 To FLG To H8
50	48	7/8	1 3/8	2 3/4	HEX	HEX	1-CARB	G8 To FLG
690	672	7/8	1 5/16	2 1/4	HEX	HEX	1-CARB	D8 To WEB To D8

MACHINE BOLTS

50	48	1/2	1-1 1/16	2	HEX	HEX	1-CUT	EXP. DEVICE CLIP

FIELD WASHER

SHIP	REQ'D	SIZE	WASHER
1005	964	3/4	CARBURIZED
1190	1152	7/8	CARBURIZED
14	12	1 1/4	1-CUT FOR C1
50	48	1/2	1-CUT FOR EXP. DEV.

APPROVED
GENERAL DESIGN FEATURES ONLY.
JAN 30 1969
W. D. Cawley
BRIDGE ENGINEER - MO. STATE HIGHWAY DEPT.

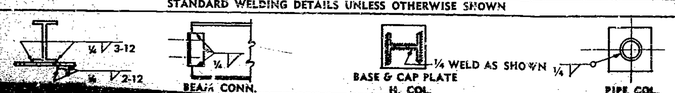
FOR BRIDGE FILES

DIMENSIONS NOT COMPLETELY CHECKED

APPROVED
BURGWIN and MARTIN
CONSULTING ENGINEERS
JAN 14 1969
DATE: .....
BY: TMV

Sept 30 NOTES ON SHEET No. 10

STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN



PAINT: NONE
BOLTS RIVETS ..... UNLESS NTD.
OPEN HOLES ..... UNLESS NTD.

PRINT RECORD					
NO.	FOR	DATE	NO.	FOR	DATE
1	CH	11-7-68			
2	H	12-24-68			
3	A	1-14-69			

DELONG'S INC.
DIAL 635-6121 — DIX RD. & IND. DR.
JEFFERSON CITY, MISSOURI

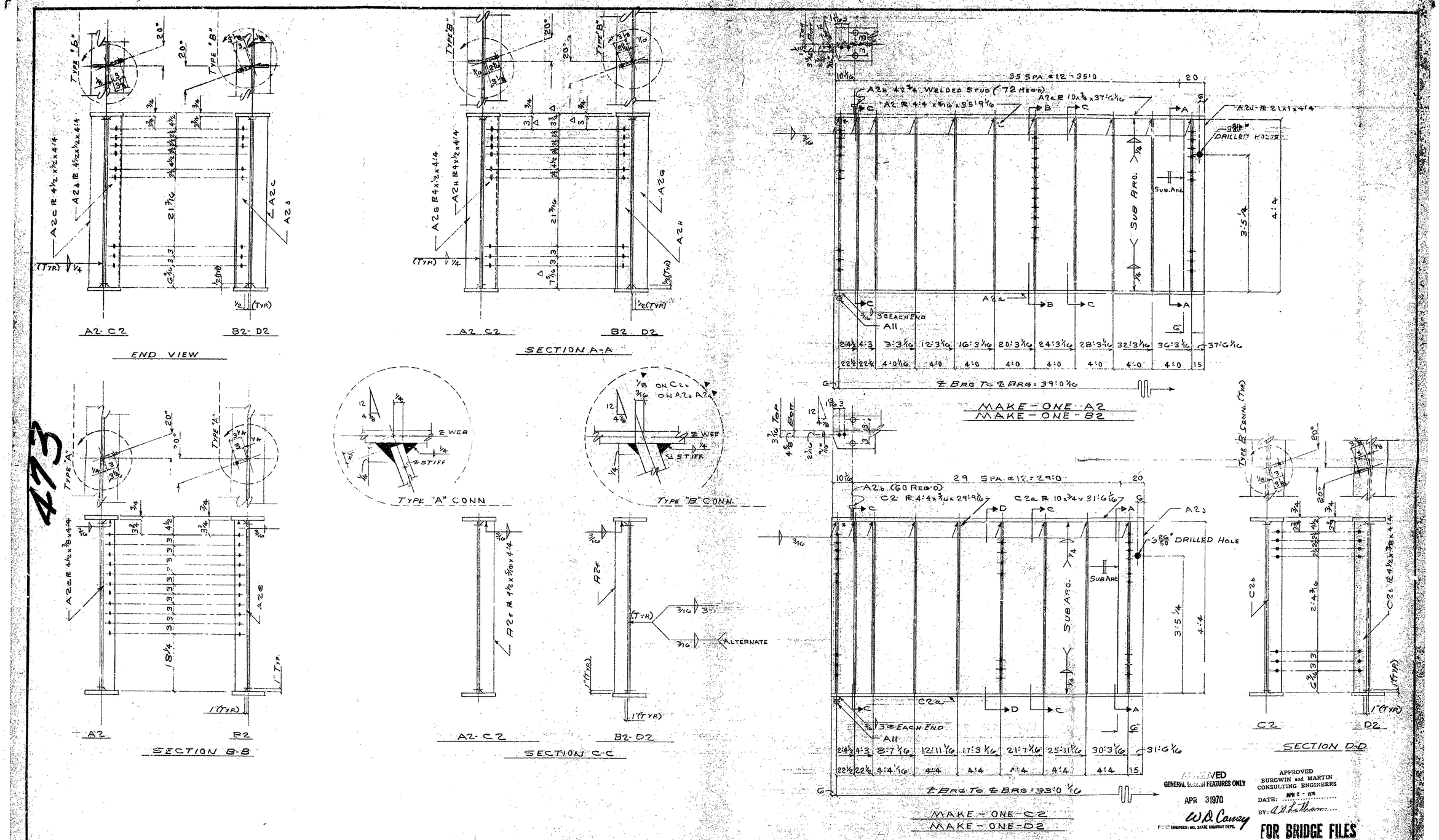
DETAILED BY BURLINGAME
DATE 11-7-68
CHECKED BY BURRAY
DATE 12-24-68

REVISIONS			
DATE	MK.	BY	REMARKS

BRIDGE OVER ROUTE 54 N.B.L.
CUSTOMER HOWARD CONST. CO.
PROJ. No. C014-F(X)(TEF) STA. 306+51.48
LOCATION ABT. 2.0 MI. W. OF FULTON CALLAWAY CO.
ERECTION PLAN - CAMBER DIAGRAM - BOLT LIST
ARCH.-ENGR. BURGWIN & MARTIN
FOR: MISSOURI STATE HIGHWAY DEPT.
JOB No. 68-
BRIDGE No. A22962
SHT. No. 24
OF 24

U V W X Y Z AA AB AC AD AE AF AG AH AJ AK AM AN AP AS AT AU AV AW AX AY AZ

24 10 1



STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN

BEAM & PL LINTEL — BEAM CONN. — BASE & CAP PLATE H. COL. — PIPE COL.

PAINT	NONE	
BOLTS	3/4	UNLESS NTD.
RIVETS		
OPEN HLS	13/16	UNLESS NTD.

PRINT RECORD

NO.	FOR	DATE	NO.	FOR	DATE
1	OK	11-12-68	4	S	1-17-69
2	H	12-24-68	5	A	3-23-70
3	A	1-14-68			
4	A	1-17-69			

DELONG'S INC. DIX RD. & IND. DR. JEFFERSON CITY, MISSOURI DIAL 635-6121

DETAILED BY	DATE	MK.	BY	REVISIONS REMARKS
BURLINGAME	3-23-70	▽	LB	Correct Dim. Dwg. Concr.
CHCKED BY	3-23-70	▶	LB	
DATE 12-24-68				

BRIDGE OVER ROUTE 54 N.B.L.

PROJ. NO. C014-F(3) (RTE F) STA. 506-5+48

LOCATION CALLAWAY CO.

STRINGER DETAILS

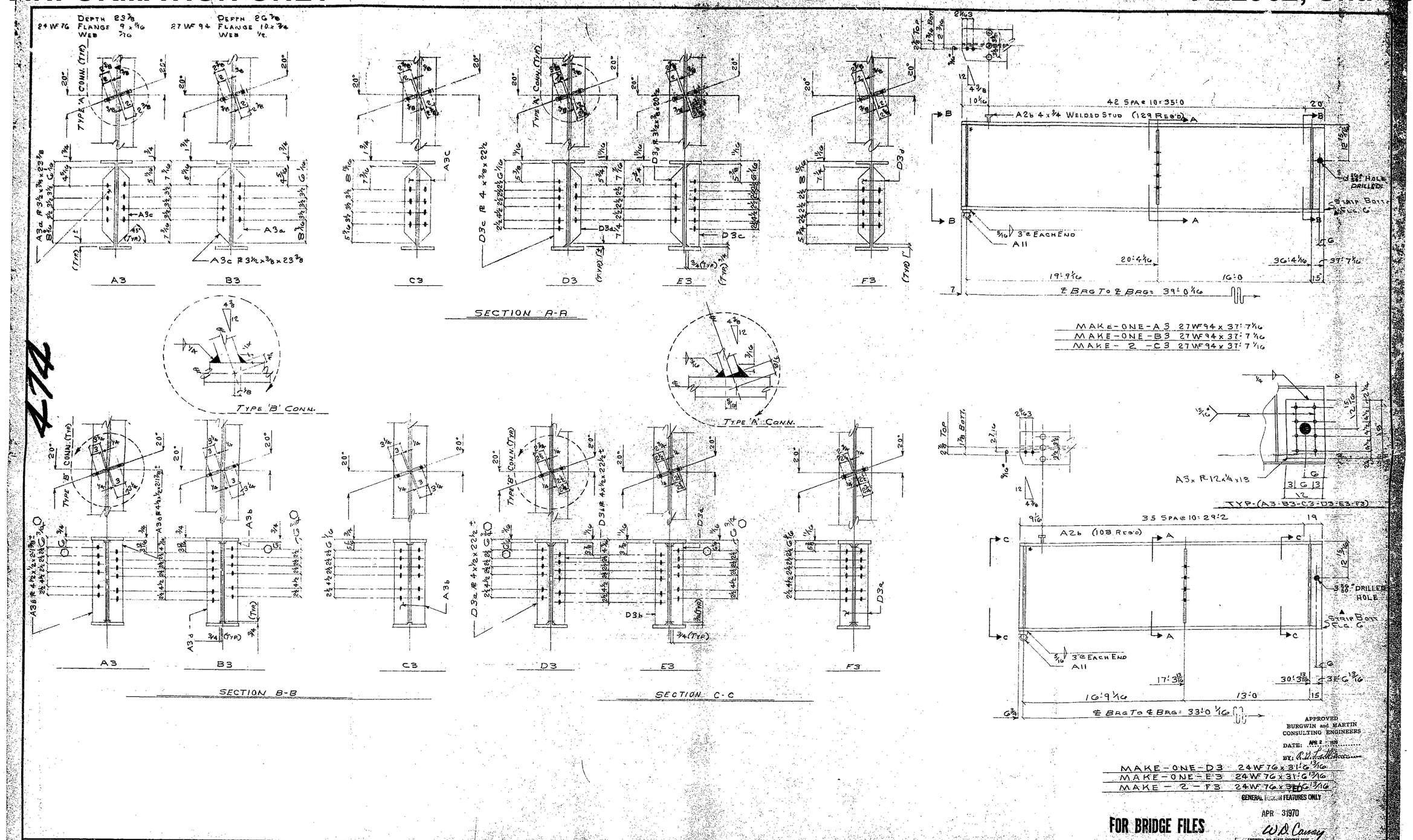
ARCH.-ENGR. BURGWIN & MARTIN

FOR: MO. STATE HIGHWAY DEPT.

JOB No. C014-F(3) BRIDGE NO. A-22962

SHT. No. 25 OF 16

A B C D E F G H J K M N P S T U V W X Y Z AA AB AC AD AE AF AG AH AJ AK AM AN AP AS AT AU AV AW AX AY AZ



APPROVED
BURGWIN and MARTIN
CONSULTING ENGINEERS
DATE: APR 2 - 1970
BY: R. L. Sullivan

MAKE-ONE-D3 24WF76 x 31'-6 13/16
MAKE-ONE-E3 24WF76 x 31'-6 13/16
MAKE-2-F3 24WF76 x 31'-6 13/16

GENERAL DRAWN FEATURES ONLY

APR 3 1970

FOR BRIDGE FILES

W. D. Causey
ENGINEER - MO. STATE HIGHWAY DEPT.

STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN

BEAM & PL LINTEL — BEAM CONN. — BASE & CAP PLATE H. COL. — PIPE COL.

PAINT	NONE
BOLTS RIVETS	3/4 UNLESS NTD.
OPEN HLS.	13/16 UNLESS NTD.

PRINT RECORD

NO.	FOR	DATE	NO.	FOR	DATE
1	GR	11-20-68	4	S	1-17-69
2	N	12-24-68	5	12	3-23-70
3	A	1-16-68			
7	12	1-17-69			

DELONG'S INC. DIX RD. & IND. DR. JEFFERSON CITY, MISSOURI DIAL 635-6121

DETAILED BY BURLINGAME DATE 11-20-68
CHECKED BY GOREY DATE 12-24-68

REVISIONS

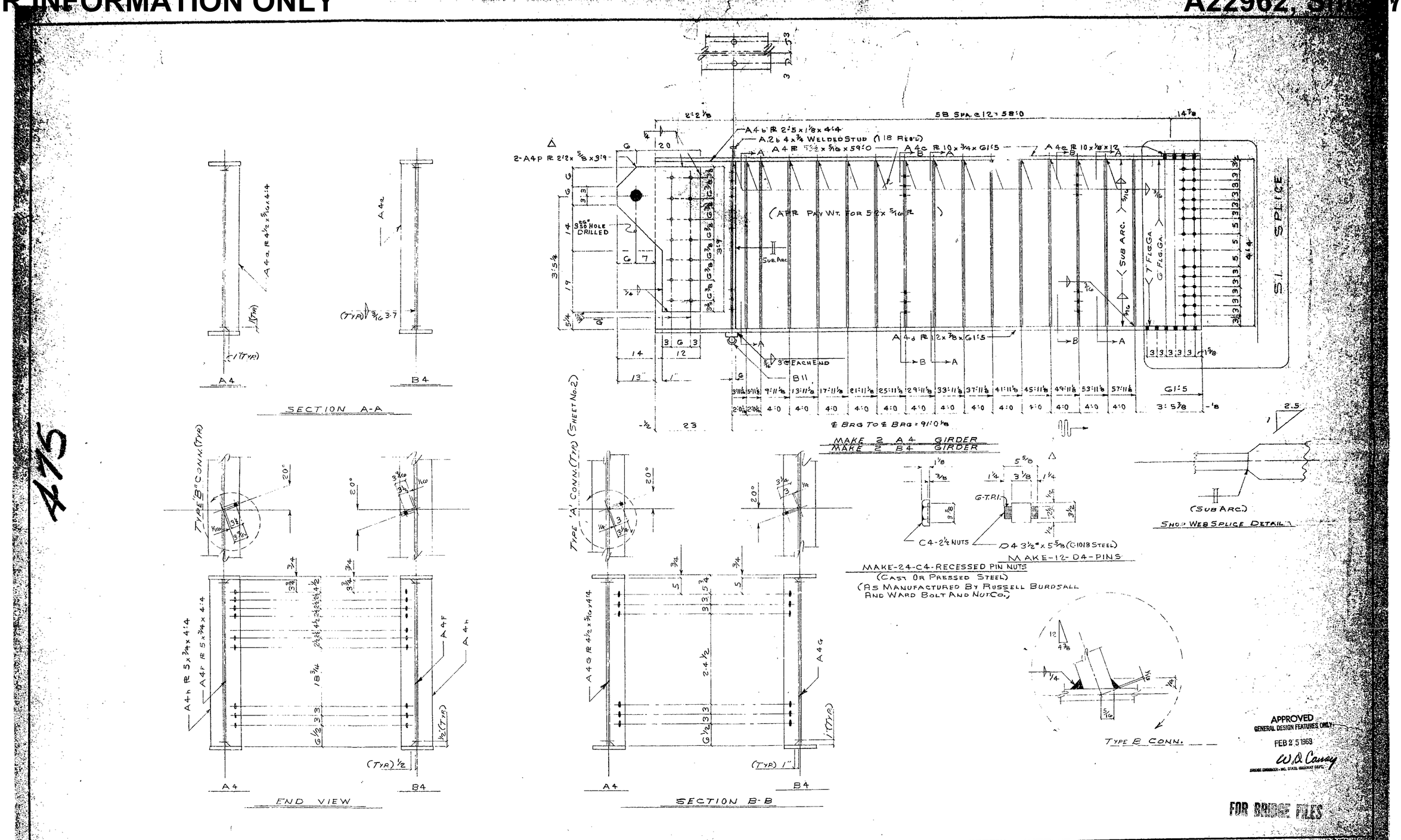
DATE	MK.	BY	REMARKS
3-23-70	△	LB	Detail Of Fill R.
3-23-70	▲	LB	Strip Bott. Elev.
3-23-70	○	LB	Dim. Down To Hole

[redacted] BRIDGE OVER ROUTE 54 [redacted]
PROJ. NO. C014-F(3) (RTE.F) STA. 506+75.48
LOCATION CALLAWAY COUNTY
STRINGER DETAILS
ARCH.-ENGR. BURGWIN & MARTIN
FOR: MO. STATE HIGHWAY DEPT.

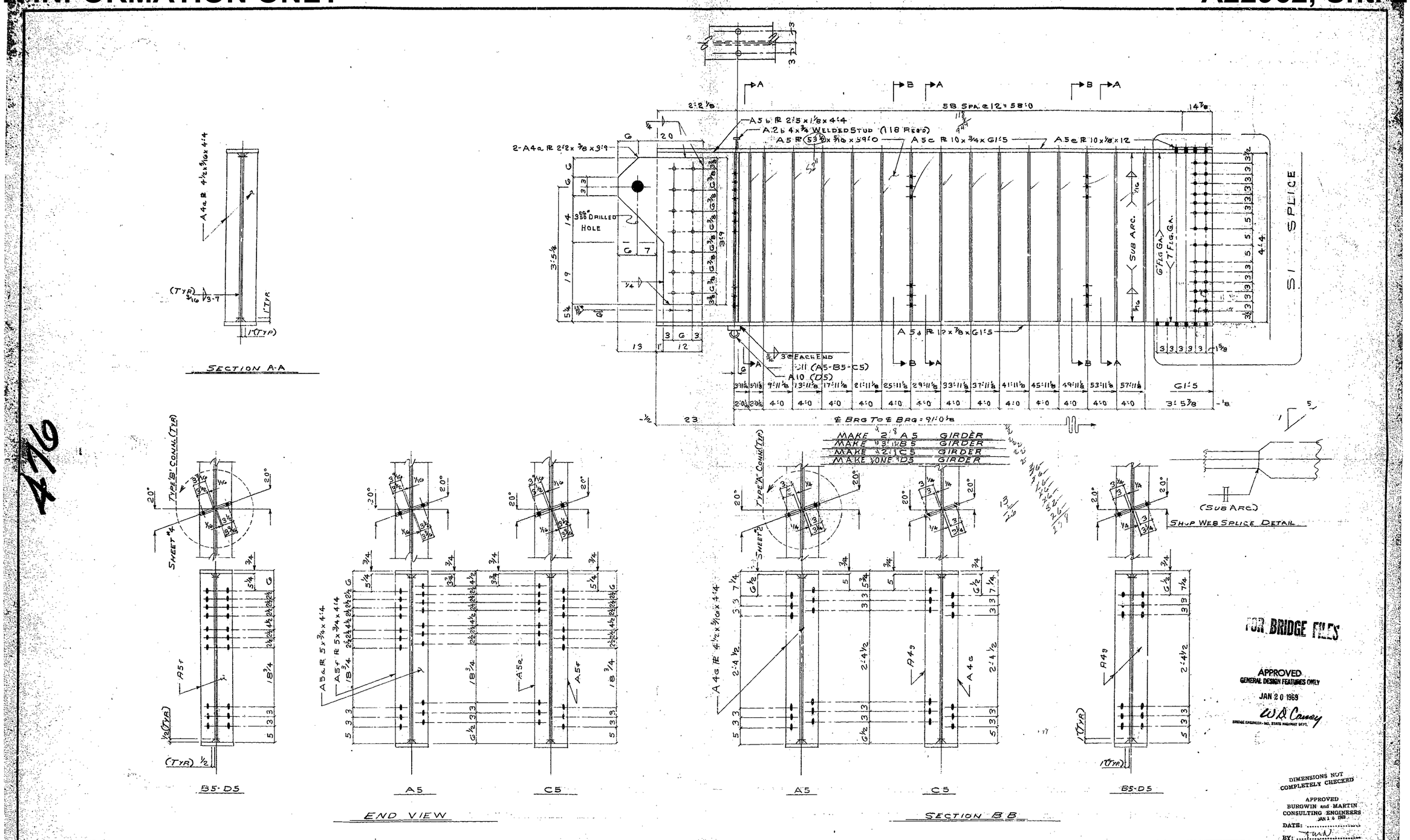
JOB No. 22962
BRIDGE No. A-2962
SHT. No. 26 OF 41

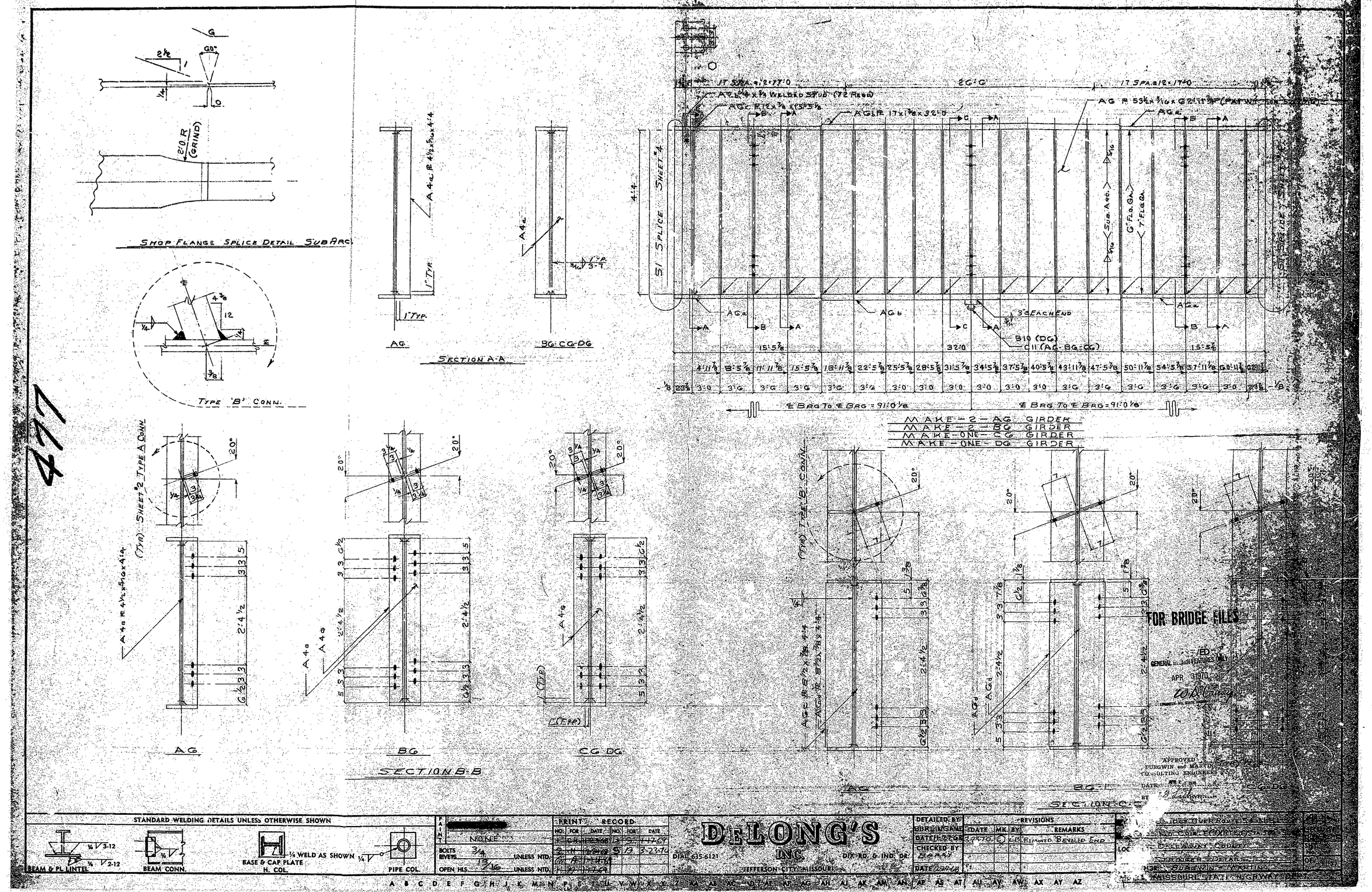
A B C D E F G H J K M N P S T U V W X Y Z AA AB AC AD AE AF AG AH AJ AK AM AN AP AS AT AU AV AW AX AY AZ

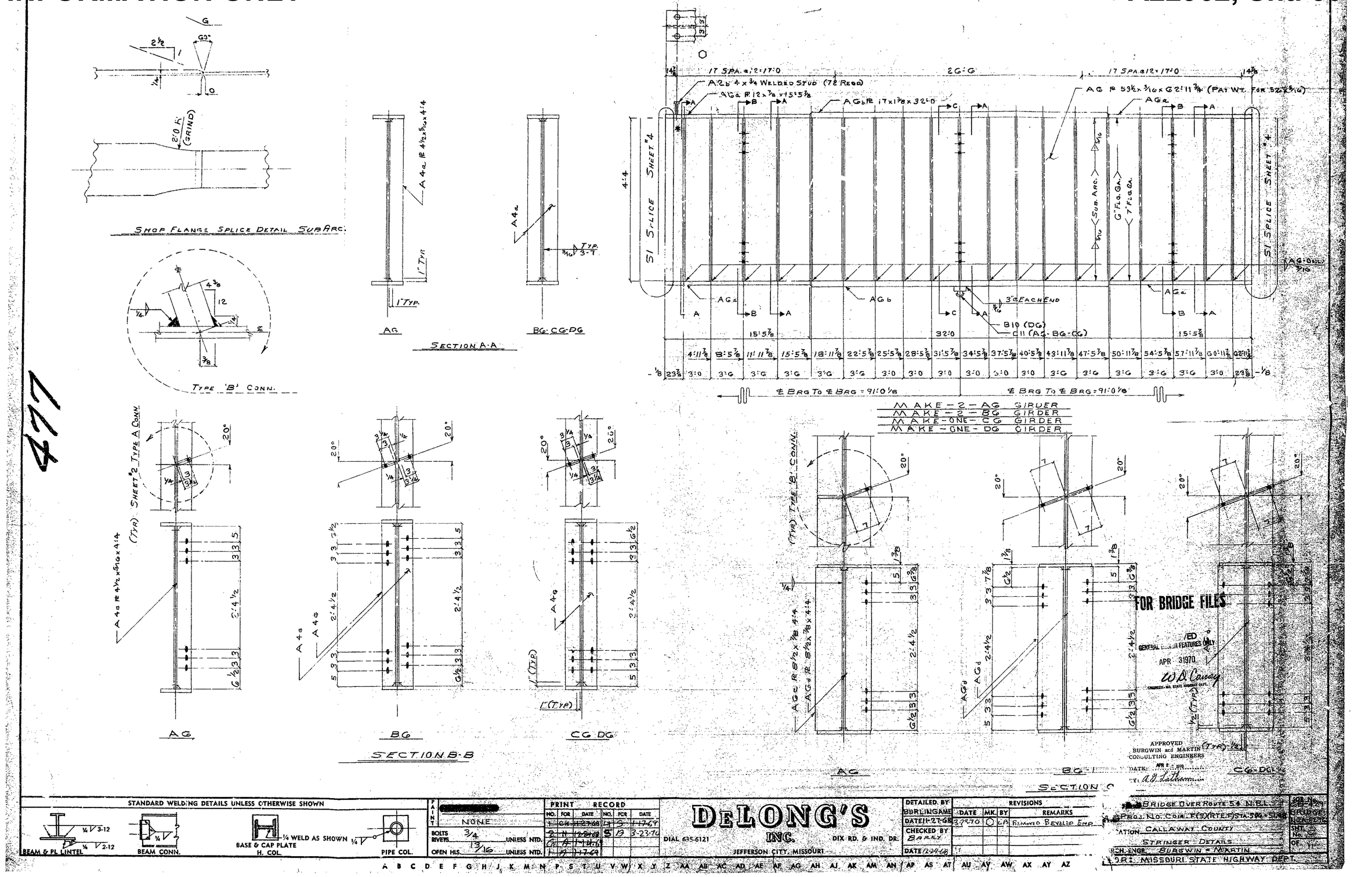
FOR INFORMATION ONLY



921 24 TO 1

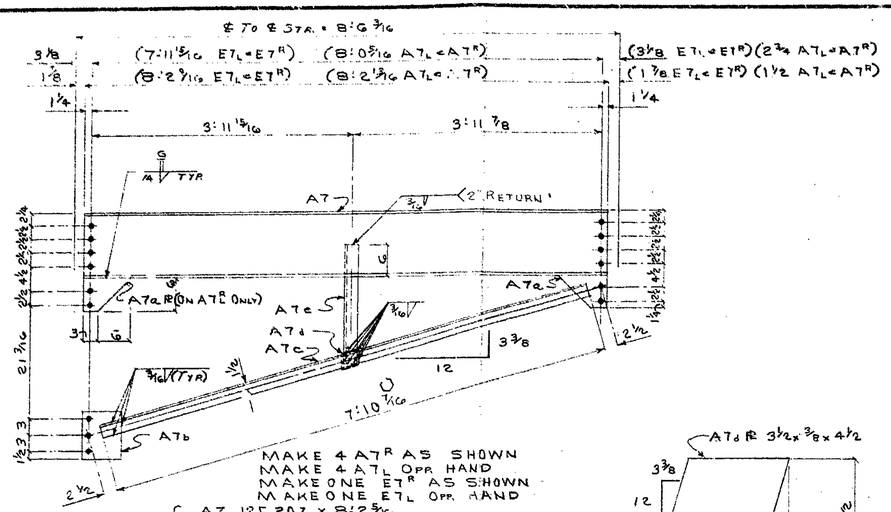

SECTION A-A
SI SPLICE
SUB ARC.
6" FLG. GA.
7" FLG. GA.
3" EACH END
A10 (D5)
MAKE 2 A5 GIRDER
MAKE 3 B5 GIRDER
MAKE 2 C5 GIRDER
MAKE ONE D5 GIRDER
SHOP WEB SPLICE DETAIL
(SUB ARC.)
B5-D5
A5
C5
END VIEW
SECTION B-B
FOR BRIDGE FILES
APPROVED
GENERAL DESIGN FEATURES ONLY
JAN 20 1969
W.A. Carey
BRIDGE ENGINEER - MO. STATE HIGHWAY DEPT.
DIMENSIONS NOT COMPLETELY CHECKED
APPROVED
BURGWIN and MARTIN
CONSULTING ENGINEERS
JAN 16 1969
DATE:
BY: TWN
STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN
BEAM & PL LINTEL
BEAM CONN.
BASE & CAP PLATE
H. COL.
PIPE COL.
¼ WELD AS SHOWN
PAINT [redacted] NONE
BOLTS RIVETS 3/4 UNLESS NTD.
OPEN HLS. 13/16 UNLESS NTD.
PRINT RECORD
DELONG'S INC.
DIAL 635-6121
DIX RD. & IND. DR.
JEFFERSON CITY, MISSOURI
DETAILED BY BURLINGAME
DATE 11-25-68
CHECKED BY BARRY
DATE 12-24-68
REVISIONS
DATE MK. BY REMARKS
[redacted] BRIDGE OVER ROUTE 54 N.B.L.
[redacted] PROJ. No. C014-F(3)(RTE. F) STA. 506+51.48
LOCATION CALLAWAY COUNTY
STRINGER DETAILS
ARCH.-ENGR. BURGWIN & MARTIN
FOR: MO. STATE HIGHWAY DEPT.
JOB No. 68-429
BRIDGE NO. A-22962
SHT. No. 5 OF 11

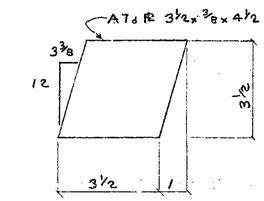

SHOP FLANGE SPLICE DETAIL SUB ARC
TYPE 'B' CONN.
SECTION A-A
AG
BG CG DG
SI SPLICE SHEET #4
MAKE - 2 - AG GIRDER
MAKE - 2 - BG GIRDER
MAKE - ONE - CG GIRDER
MAKE - ONE - DG GIRDER
SECTION B-B
SECTION C-C
FOR BRIDGE FILES
APPROVED
BURGWIN and MARTIN
CONSULTING ENGINEERS
STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN
BEAM & PL LINTEL
BEAM CONN.
BASE & CAP PLATE
H. COL.
PIPE COL.
DELONG'S INC.
JEFFERSON CITY, MISSOURI
DIAL 635-6121
DIX RD. & IND. DR.
REVISIONS
REMARKS
REMOVED BEVELED END
MISSOURI STATE HIGHWAY DEPT.


SHOP FLANGE SPLICE DETAIL SUB ARC.
TYPE 'B' CONN.
SECTION A-A
AG
BG-CG-DG
SECTION B-B
AG
BG
CG DG
SECTION C
MAKE-2-AG GIRDER
MAKE-2-BG GIRDER
MAKE-ONE-CG GIRDER
MAKE-ONE-DG GIRDER
17 SPA. @ 12 = 17'-0
26'-6
17 SPA. @ 12 = 17'-0
SI SPLICE SHEET #4
℄ BRG TO ℄ BRG = 91'-0 1/8
FOR BRIDGE FILES
APPROVED BURGWIN and MARTIN CONSULTING ENGINEERS
STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN
BEAM & PL LINTEL
BEAM CONN.
BASE & CAP PLATE H. COL.
1/4 WELD AS SHOWN
PIPE COL.
PAINT NONE
BOLTS 3/4 UNLESS NTD.
OPEN HLS. 13/16 UNLESS NTD.
PRINT RECORD
DELONG'S INC.
DIAL 635-6121
DIX RD. & IND. DR.
JEFFERSON CITY, MISSOURI
DETAILED BY BURLINGAME
CHECKED BY BARRY
REVISIONS
REMARKS
BRIDGE OVER ROUTE 54 N.B.L.
PROJ. NO. COIR. F(3)(RTE.F) STA. 596+51.48
CALLAWAY COUNTY
STRINGER DETAILS
BURGWIN & MARTIN
MISSOURI STATE HIGHWAY DEPT.

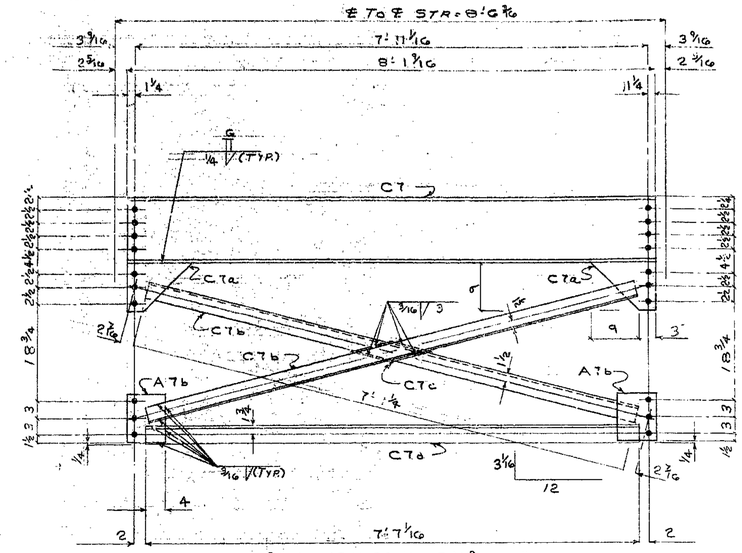
477

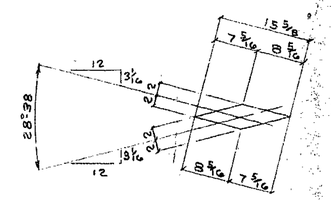
24 TO 1



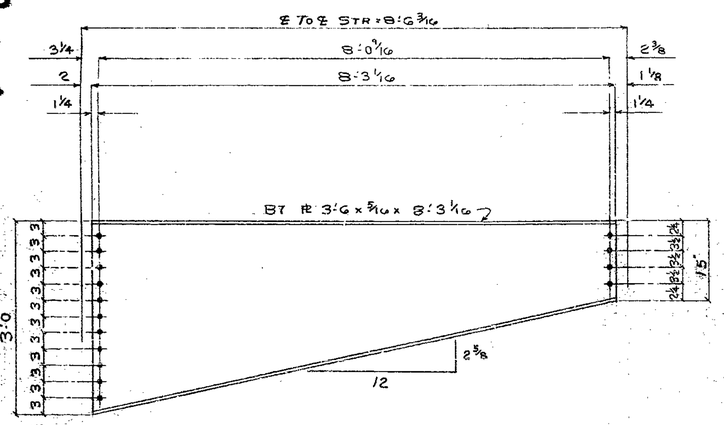


DETAIL OF A7d

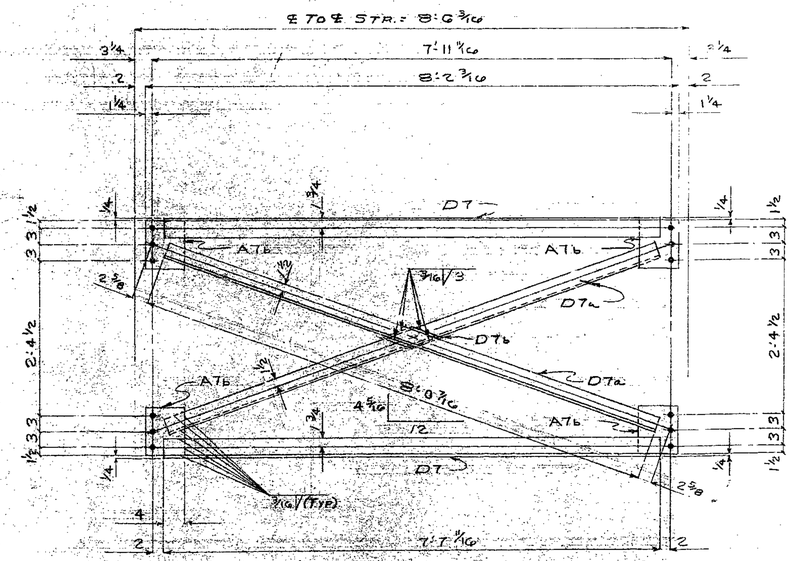


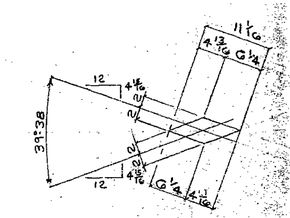


C7c DETAIL
SHOP LAYOUT BEFORE CUTTING



MAKE-2-B7





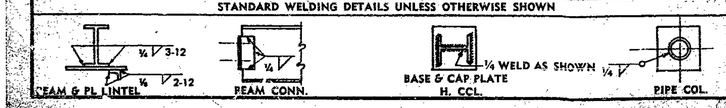
D7b PL DETAIL
SHOP LAYOUT BEFORE CUTTING

GENERAL ... FEATURES ONLY
APR 3 1970
W.D. Cavey
ENGINEER-ND. STATE HIGHWAY DEPT.

APPROVED
BURGWIN and MARTIN
CONSULTING ENGINEERS
DATE: APR 2 - 1970
BY: A.H. Lattmann

FOR BRIDGE FILES

STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN



PAINT: NONE
BOLTS 3/4 UNLESS NTD.
RIVETS
OPEN HLS. 13/16 UNLESS NTD.

PRINT RECORD					
NO.	FOR	DATE	NO.	FOR	DATE
1	[illegible]	[illegible]	5	[illegible]	[illegible]
2	[illegible]	[illegible]	6	[illegible]	3-23-70
3	[illegible]	[illegible]			
4	[illegible]	[illegible]			

DELONG'S INC.
DIAL 635-6121 DIX RD. & IND. DR.
JEFFERSON CITY, MISSOURI

DETAILED BY BURLINGAME
DATE 12-4-68
CHECKED BY BERRY
DATE 12-24-68

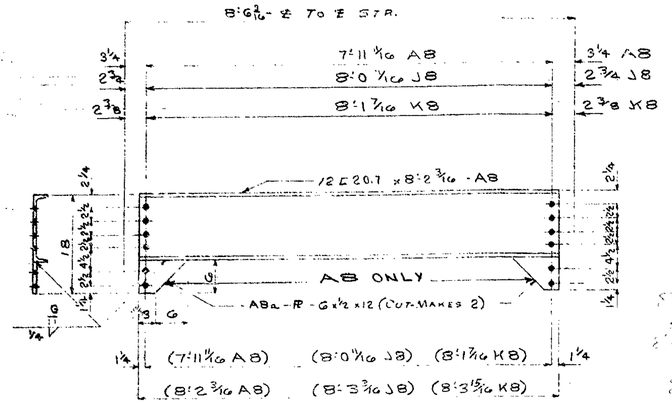
REVISIONS

DATE	MK.	BY	REMARKS
3-23-70	4	GB	A7a PL
3-23-70	5	GB	OVERALL DIM. A7c L

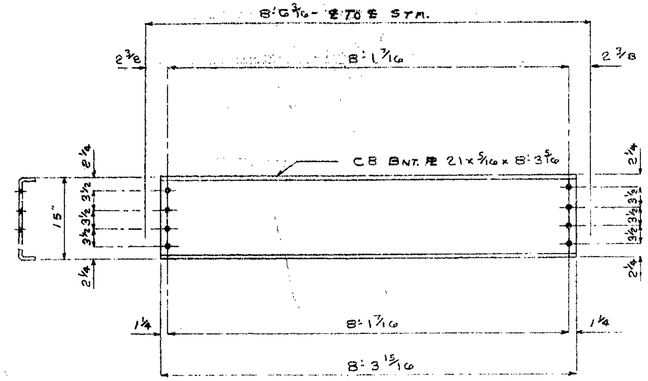
BRIDGE OVER ROUTE 54 N.B.L.
PROJ. NO. C014-1(3)(RTE.1) STA. 506+51.48
LOCATION CALLAWAY CO.
DIAPH'S
ARCH.-ENGR. BURGWIN & MARTIN
FOR MO. STATE HIGHWAY DEPT.

JOB NO. C8-29
BRIDGE NO. A2296
SHT. No. 7 OF 11

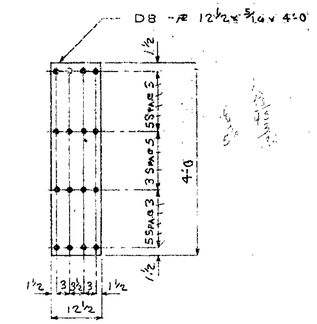
A B C D E F G H J K M N P S T U V W X Y Z AA AB AC AD AE AF AG AH AJ AK AM AN AP AS AT AU AV AW AX AY AZ



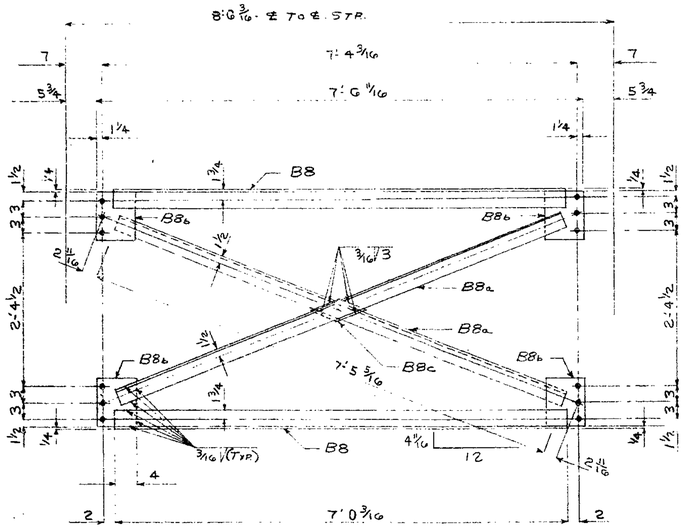
MAKE - 6 - A8
MAKE - 6 - J8
MAKE - 3 - K8



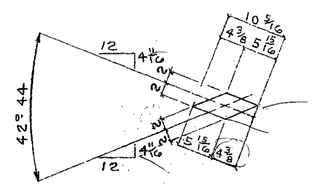
MAKE - 3 - C8



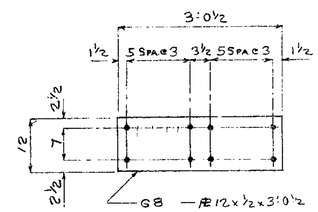
MAKE-24 - D8



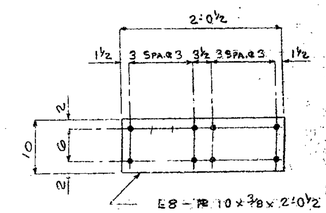
MAKE - 5 - B8 (CROSS FRAMES)



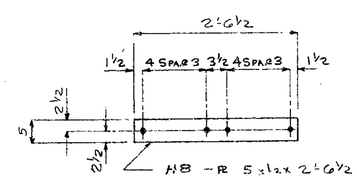
B8 - PL DETAIL
SHOP LAYOUT BEFORE CUTTING



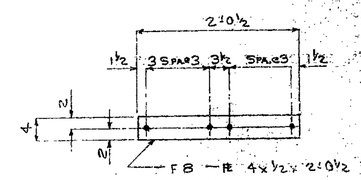
MAKE-12 - G8 (BOTT. FLG.)



MAKE-12 - E8 (TOP FLG.)



MAKE-24 - H8 (BOTT. FLG.)



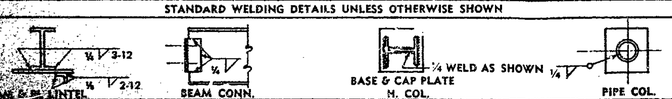
MAKE-24 - F8 (TOP FLG.)

APPROVED
GENERAL DESIGN FEATURES ONLY
JAN 20 1969
W. D. Cassady
BRIDGE ENGINEER - MO. STATE HIGHWAY DEPT.

FOR BRIDGE FILES

DIMENSIONS NOT COMPLETELY CHECKED
APPROVED
BURGWIN and MARTIN
CONSULTING ENGINEERS
DATE: JAN 1 0 '69
BY: [illegible]

STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN



PAINT: NONE
BOLTS 3/4 UNLESS NTD.
RIVETS
OPEN HLS. 13/16 UNLESS NTD.

PRINT RECORD					
NO.	FOR	DATE	NO.	FOR	DATE
1	CK	12-9-68			
2	H	12-20-68			
3	A	1-14-69			

DeLONG'S INC.
DIAL 635-6121 DIX RD. & IND. DR.
JEFFERSON CITY, MISSOURI

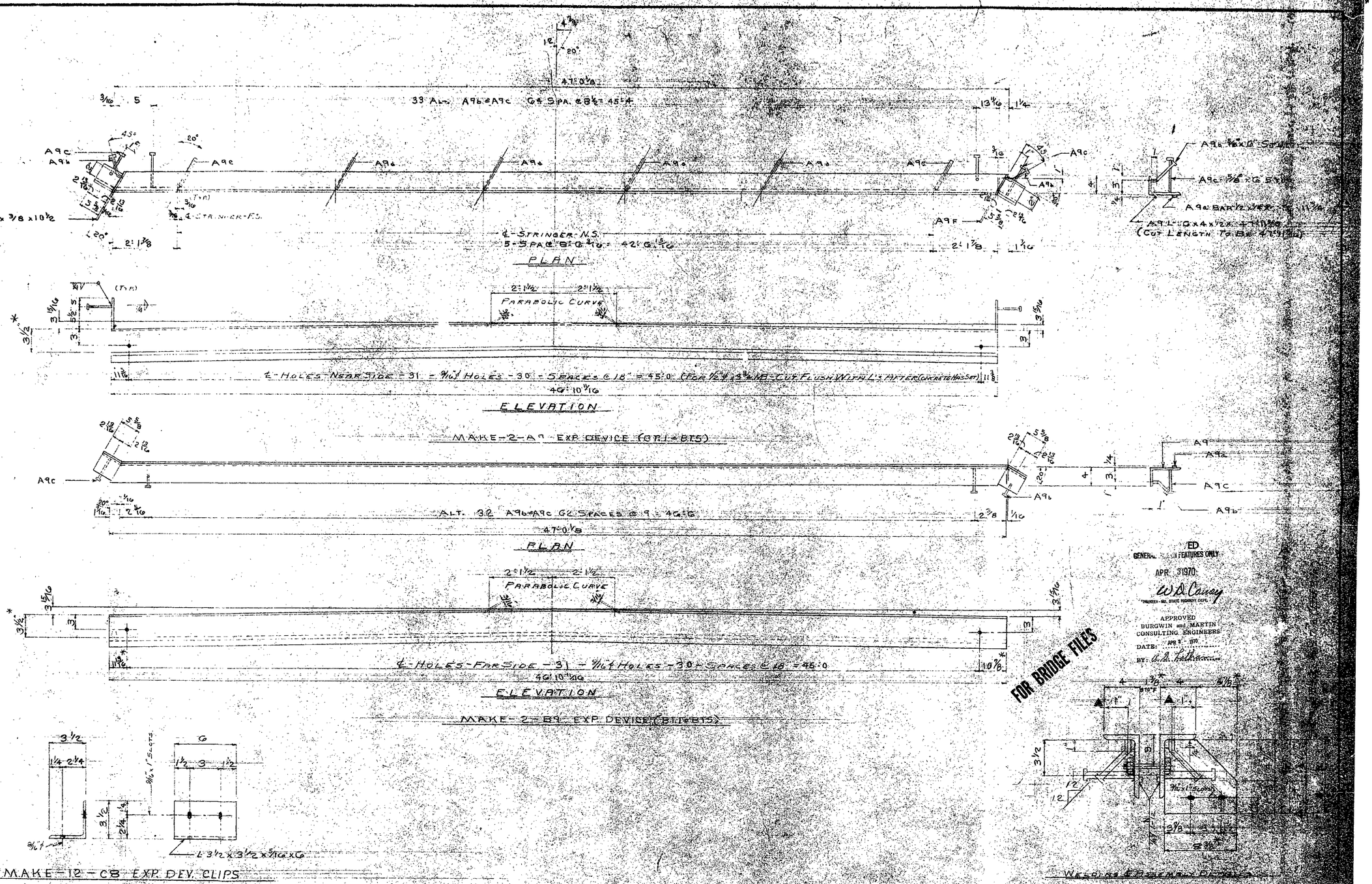
DETAILED BY SURLINGAME
DATE 12-9-68
CHECKED BY BAKER
DATE 1-14-69

REVISIONS			
DATE	MK.	BY	REMARKS

[redacted] BRIDGE OVER ROUTE 54 N.E.
[redacted] PROJ. No. C014-F(3) S.A. S00.15.48
LOCATION CALLAWAY CO.
DIAFRS & SPLICE PL
ARCH. ENGR. BURGWIN & MARTIN
FOR MO. STATE HIGHWAY DEPT.

A B C D E F G H J K M N P S T U V W X Y Z AA AB AC AD AE AF AG AH AJ AK AM AN AP AS AT AU AV AW AX AY AZ

480


33 ALT. A9b & A9c @ 9 SPA. @ 8½ = 45'-4"
A9c
A9b
A9F PL ⅜ x 3/8 x 10½
℄ STRINGER N.S.
5 SPACES @ 8'-6 3/16" = 42'-6 5/16"
PLAN
PARABOLIC CURVE
℄ HOLES NEAR SIDE - 31 - 9/16" HOLES - 30 - SPACES @ 18" = 45'-0" (FOR ½" x 3" MB CUT FLUSH WITH L'S AFTER CONCRETE HAS SET)
40'-10 9/16"
ELEVATION
MAKE - 2 - A9 EXP. DEVICE (BT1 & BT5)
ALT. 32 A9b & A9c @ 9 SPACES @ 9 = 40'-6"
PLAN
℄ HOLES - FAR SIDE - 31 - 9/16" HOLES - 30 - SPACES @ 18" = 45'-0"
ELEVATION
MAKE - 2 - B9 EXP. DEVICE (BT1 & BT5)
L 3½ x 3½ x 5/16 x 6
MAKE - 12 - C8 EXP. DEV. CLIPS
WELDING & FOOTWALK DETAILS
REVISED 1-22-68
STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN
BEAM CONN.
BASE & CAP PLATE H. COL.
PIPE COL.
PAINT NONE
BOLTS RIVETS 3/4 UNLESS NTD.
OPEN HLS. 13/16 UNLESS NTD.
PRINT RECORD
DELONG'S INC.
DIAL 635-6121
JEFFERSON CITY, MISSOURI
DIX RD. & IND. DR.
DETAILED BY
BOB INGANE
DATE 10-10-68
CHECKED BY
REVISIONS
DATE MK. BY REMARKS
5-26-69 X FB CHANGE GRATE VIEW D.S.
BROWN - W-3000 & EXP.
BRIDGE OVER ROUTE 54 NB
R.R. No. 0014-F(G)(14)(B)(5) (Location)
LOCATION CARTHAGE, MO.
EXP. DEVICE
ARCH ENGR.
FOR: MO. STATE HIGHWAY DEPT.
GENERAL FEATURES ONLY
APR 3 1970
W. D. Conley
ENGINEER - MO. STATE HIGHWAY DEPT.
APPROVED
BURGWIN and MARTIN
CONSULTING ENGINEERS
DATE: APR 3 1970
BY: A. A. Fathauer
FOR BRIDGE FILES

480

33 ALT. A9b & A9c @ 5 SPA. @ 8½ = 45:4

A9c
A9b
A9c
A9b
A9F B½ x 3/8 x 10½
℄ STRINGER N.S.
5 SPACES @ 8 3/16 = 42:6 15/16
A9F
A9b 3/8" x 6" STUD
A9c 3/8" x 6" STUD
A9a BAR ½ x 4 x 7'-11 3/4
A9 L 6 x 4 x ½ x 47'-11 3/4
(CUT LENGTH TO BE 47'-11 3/4)

PLAN

PARABOLIC CURVE

℄ HOLES NEAR SIDE - 31 - 9/16" HOLES - 30 - SPACES @ 18" = 45:0 (FOR ½" x 2 3/4" MB CUT FLUSH WITH L'S AFTER CONCRETE HASSET)
46:10 11/16

ELEVATION

MAKE-2-A9 EXP. DEVICE (BT1 & BT5)

A9c
ALT. 32 A9b & A9c 62 SPACES @ 9 = 46:6
47:0 1/8
A9
A9a
A9c
A9b

PLAN

PARABOLIC CURVE

℄ HOLES FAR SIDE - 31 - 9/16" HOLES - 30 - SPACES @ 18" = 45:0
46:10 11/16

ELEVATION

MAKE-2-B9 EXP. DEVICE (BT1 & BT5)

L 3½ x 3½ x 5/16 x 6

MAKE-12-C8 EXP. DEV. CLIPS

FOR BRIDGE FILES

GENERAL FEATURES ONLY
APR 3 1970
W. D. Carey
ENGINEER - MO. STATE HIGHWAY DEPT.

APPROVED
BURGWIN and MARTIN
CONSULTING ENGINEERS
DATE: APR 2 - 1970
BY: A. A. Latham

WELDING & BASEMENT DETAILS

▲ REVISED 1-22-68

STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN

BEAM CT. ½ 3-12 ½ 2-12 BEAM CONN. ¼ WELD AS SHOWN BASE & CAP PLATE H. COL. ¼ PIPE COL.

PAINT NONE
BOLTS 3/4 UNLESS NTD.
RIVETS
OPEN HLS. 13/16 UNLESS NTD.

PRINT RECORD					
NO.	FOR	DATE	NO.	FOR	DATE
1	CK	12-10-68	4	S	1-13-69
2	H	12-24-68	5	S	1-27-69
3	H	1-14-69	6	H	2-7-69
4	A	1-17-69	5	[illegible]	[illegible]

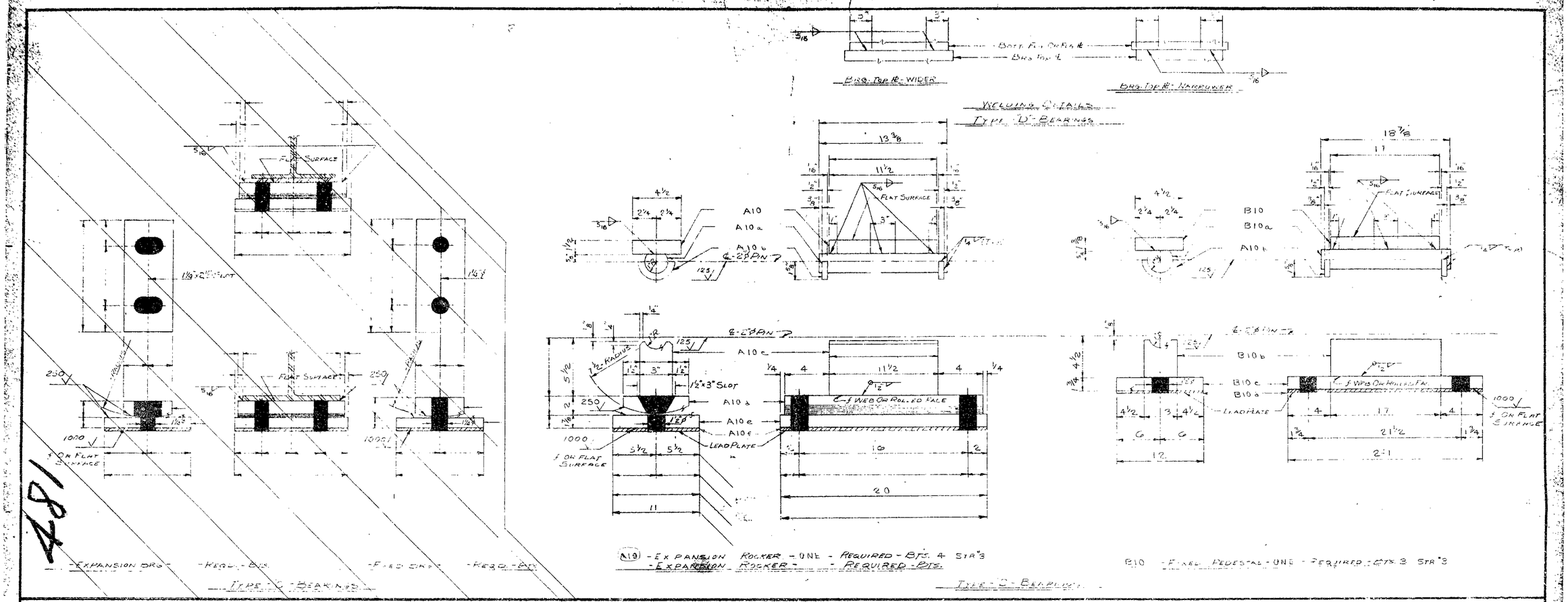
DeLONG'S INC.
DIAL 635-6121 DIX RD. & IND. DR.
JEFFERSON CITY, MISSOURI

DETAILED BY BURLINGAME
DATE 12-10-68
CHECKED BY BARRY
DATE 12-23-68

REVISIONS			
DATE	MK.	BY	REMARKS
5-26-69	*	PD	CHANGE EXP TO VEE D.S.
			BROWN - R-3000 SEAL

BRIDGE OVER ROUTE 54 N.S.
PROJ. NO. C014-F(3)(RTE 5) STA. 506+00.58
LOCATION CALLAWAY CO.
EXP. DEVICE
ARCH. ENGR. BURGWIN & MARTIN
FOR: MO. STATE HIGHWAY DEPT.

A B C D E F G H I K M N P S T U V W X Y Z AA AB AC AD AE AF AG AH AJ AK AM AN AS AT AU AV AW AX AY AZ



481

FOR EACH A10 EXP. BRG.	
A10	TOP PL 4 1/2 x 1 1/2 x 11 1/2
A10a	PIN 2" x 13 3/8 (C1018 STEEL) MACH. DIM.
A10b	PIN COLLAR 3/4 x 1/2 (CUT IN HALF MARK 12)
A10c	WEB PL 5 3/8 x 3 x 11 1/2 MACH. DIM.
A10d	ROCKER PL 6 x 1 1/2 x 19 1/2 MACH. DIM.
A10e	BOTTOM PL 11 x 1 7/8 x 20 MACH. DIM.
A10f	LEAD PL 11 x 7/8 x 20

FOR EACH B10 FIXED BRG.	
B10	TOP PL 4 1/2 x 1 3/8 x 17
B10a	PIN 2" x 18 7/8 (C1018 STEEL) MACH. DIM.
B10b	PIN COLLARS
B10c	WEB PL 4 3/8 x 3 x 17 MACH. DIM.
B10d	BOTTOM PL 12 x 1 3/4 x 21 1/2
B10e	LEAD PL 12 x 7/8 x 21 1/2

BEARING NOTES:

MATERIAL FOR 'C' OR 'D' BEARINGS SHALL BE A.S.T.M.-A36 STEEL.

MATERIAL FOR PINS SHALL BE A.I.S.I.-C1018 STEEL.

PREHEAT IN ACCORDANCE WITH A.W.S.

WHITE LEAD AND TALLOW ALL MACHINED SURFACES AFTER INSPECTION.

WHERE FLAT SURFACE IS INDICATED TOLERANCE SHALL BE 0.010 IN. IN ANY DIRECTION.

ROCKERS AND PEDESTALS SHALL BE MACHINED AFTER WELDING.

GENERAL NOTES:

BEAM OR GIRDER FLANGES SHALL BE SQUARED AT ALL POINTS OF BEARING.

ALL STEEL A.S.T.M.-A36-67T EXCEPT AS NOTED.

HOLES IN GIRDERS OR BEAMS AND PLATES FOR [illegible] TO BE PUNCHED 9/16" AND REAMED ASSEMBLED TO 5/8", OR DRILLED FROM THE SOLID WHILE AS A UNIT, AND MATCH MARKED.

GIRDER OR BEAM BEARING STIFFENER PLATES SHALL BE GROUND TO BEAM TOP AND BOTTOM MEASURE 1/2" BEYOND BEVELS. [illegible] BE FINE STIFFENER PLATES.

GIRDER NOTES:

GIRDER INTERMEDIATE WEB AND FLANGE STIFFENER PLATES SHALL BE FITTED TO FORM A CLOSE JOINT (1/16) TOP AND BOTTOM.

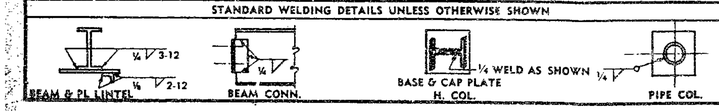
GIRDER SHOP PIECE PLATE ERECTION MARKS TO BE STAMPED WITH 1/2" STEEL STENCIL 4" [illegible] FROM EDGE OF WELD AND APPROX. IN THE MIDDLE OF PLATE WITH 'T' FOR FIELD PIECE 'N' WEEK ON TOP OF TOP FLANGE AND WITH 'B' AND [illegible] NUMBER ON BOTTOM FLANGE. ALL MARKS TO BE ON THE THICKER MATERIAL.

GIRDER WELDING WILL BE SUBJECT TO RADIOGRAPHIC AND MAGNETIC PARTICLE INSPECTION.

FOR BRIDGE FILES
APPROVED
GENERAL DESIGN FEATURES ONLY
JAN 20 1969
W. D. Carney
BRIDGE ENGINEER - MO. STATE HIGHWAY DEPT.

DIMENSIONS NOT COMPLETELY CHECKED
APPROVED
BURGWIN and MARTIN CONSULTING ENGINEERS
DATE: JAN 15 1969
BY: TMA

STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN



PAINT: NONE EXCEPT AS NOTED

BOLTS _____ UNLESS NTD.
RIVETS _____ UNLESS NTD.
OPEN HLS. _____ UNLESS NTD.

PRINT RECORD					
NO.	FOR	DATE	NO.	FOR	DATE
1	OK	12-5-68			
2	H	12-24-68			
1	69	1-14-69			

DELONG'S INC.
DIAL 635-6121 — DIX RD. & IND. DR. — JEFFERSON CITY, MISSOURI

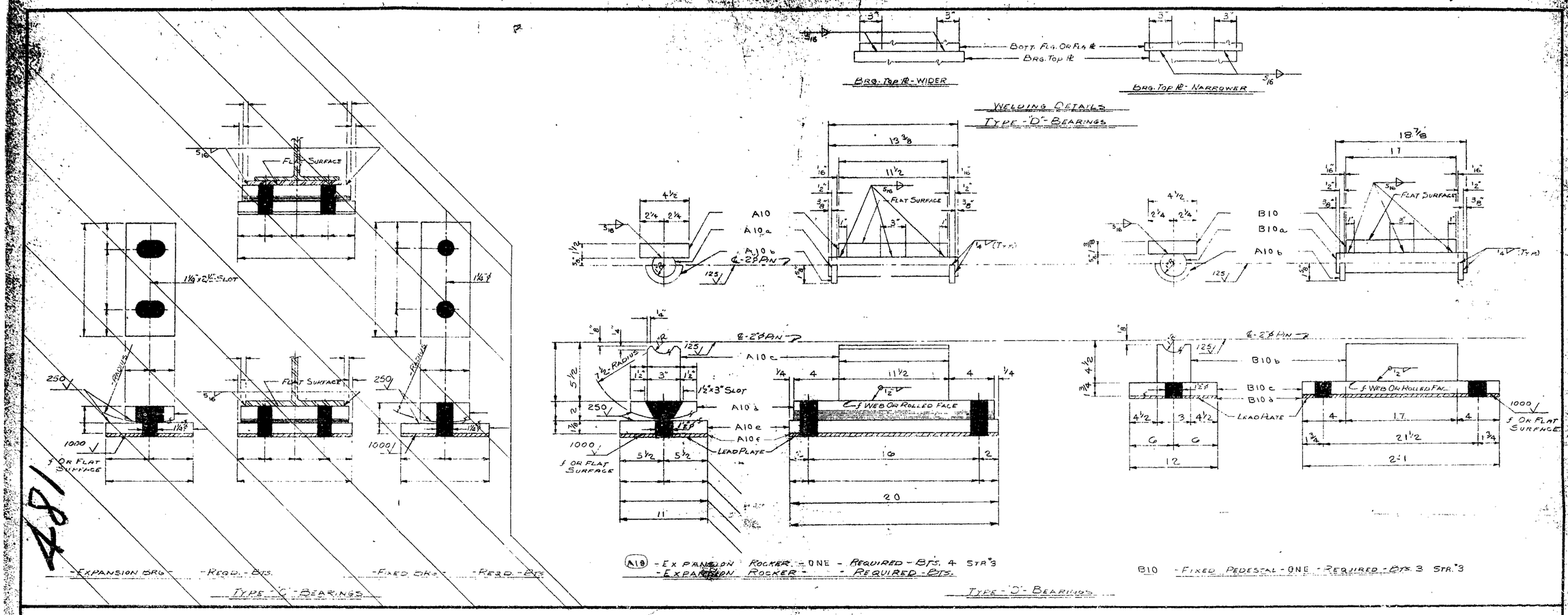
DETAILED BY: BURLINGAME
DATE: 12-5-68
CHECKED BY:
DATE:

REVISIONS			
DATE	MK.	BY	REMARKS

BRIDGE OVER - ROUTE 54 N.B.L.
PROJECT NO. 9014F(3) STA. 506+51.48
LOCATION: CALLAWAY CO.
BEARING DETAILS & NOTES
ARCH.-ENGR. BURGWIN & MARTIN
FOR MO. STATE HIGHWAY DEPT.

JOB No. 99 429
BRIDGE No. A22962
SHT. No. 10 OF 11

A B C D E F G H J K M N P S T U V W X Y Z AA AB AC AD AE AF AG AH AJ AK AM AN AP AS AT AU AV AW AX AY AZ



FOR EACH A10 EXP. BRG.	
A10	TOP PL 4½"x1½"x11½"
A10a	PIN 2" x 13⅜" (C1018 STEEL) MACH. DIM.
A10b	PIN COLLAR ⅜"x½" (CUT IN HALF MAKES 2)
A10c	WEB PL 5⅜"x3"x11½" MACH. DIM.
A10d	ROCKER PL 6"x2"x19½" MACH. DIM.
A10e	BOTTOM PL 11"x1⅛"x20 MACH. DIM.
A10f	LEAD PL 11"x⅛"x20

FOR EACH B10 FIXED BRG.	
B10	TOP PL 4½"x1⅜"x17"
B10a	PIN 2" x 18⅞" (C1018 STEEL) MACH. DIM.
B10b	PIN COLLARS
B10c	WEB PL 4⅜"x3"x17" MACH. DIM.
B10c	BOTTOM PL 12"x1¾"x2'-1"
B10d	LEAD PL 12"x⅛"x2'-1"

BEARING NOTES:

MATERIAL FOR 'C' OR 'D' BEARINGS SHALL BE A.S.T.M.-A36 STEEL.
MATERIAL FOR PINS SHALL BE A.I.S.I.-C1018 STEEL.
PREHEAT IN ACCORDANCE WITH A.W.S.
WHITE LEAD AND TALLOW ALL MACHINED SURFACES AFTER INSPECTION.
WHERE FLAT SURFACE IS INDICATED TOLERANCE SHALL BE .002 IN/IN. IN ANY DIRECTION.
ROCKERS AND PEDESTALS SHALL BE MACHINED AFTER WELDING.

GENERAL NOTES:

BEAM OR GIRDER FLANGES SHALL BE SQUARED UP AT ALL POINTS OF BEARING.
ALL STEEL A.S.T.M.-A36-62T - EXCEPT AS NOTED.
HOLES IN GIRDERS OR BEAMS AND PLATES FOR SPLICES TO BE SUBPUNCHED 1/16" AND REAMED ASSEMBLED TO 1/16", OR DRILLED FROM THE SOLID WHILE ASSEMBLED, AND MATCH MARKED.
GIRDER OR BEAM BEARING STIFFENER PLATES SHALL BE GROUND TO BEAR TOP AND BOTTOM. MEASURE WEBS BEFORE CUTTING BEARING STIFFENER PLATES.

GIRDER NOTES:

GIRDER INTERMEDIATE WEB AND DIAPHRAGM STIFFENER PLATES SHALL BE FITTED TO FORM A CLOSE JOINT, (1/16) TOP AND BOTTOM.
GIRDER SHOP WELDED FLANGE SPLICES ARE TO BE MARKED WITH SILEL STENCIL WITH ALPHABETICAL FROM EDGE OF WELD AND ABOUT IN THE MIDDLE OF FLANGE WITH 'T' AND SHOP SPLICE NUMBER ON TOP OF TOP FLANGE AND WITH 'B' AND SHOP SPLICE NUMBER ON BOTTOM OF BOTTOM FLANGE. ALL MARKS TO BE ON THE THICKER MATERIAL USED.
GIRDER WELDING WILL BE SUBJECT TO RADIOGRAPHIC AND MAGNETIC PARTICLE INSPECTION.

FOR BRIDGE FILES
APPROVED
GENERAL DESIGN FEATURES ONLY
JAN 20 1969
W. D. Conway
BRIDGE ENGINEER - MO. STATE HIGHWAY DEPT.

DIMENSIONS NOT COMPLETELY CHECKED
APPROVED
BURGWIN and MARTIN
CONSULTING ENGINEERS
DATE: JAN 15 1969
BY: W.M.M.

STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN

BEAM & PL LINTEL — BEAM CONN. — BASE & CAP PLATE H. COL. — PIPE COL.

¼ WELD AS SHOWN

PAINT: NONE EXCEPT AS NOTED
BOLTS RIVETS UNLESS NTD.
OPEN HLS. UNLESS NTD.

PRINT RECORD					
NO.	FOR	DATE	NO.	FOR	DATE
1	CK	12-5-68			
2	H	12-24-68			
1	W	1-14-69			

DELONG'S INC.
DIAL 635-6121 — DIX RD. & IND. DR.
JEFFERSON CITY, MISSOURI

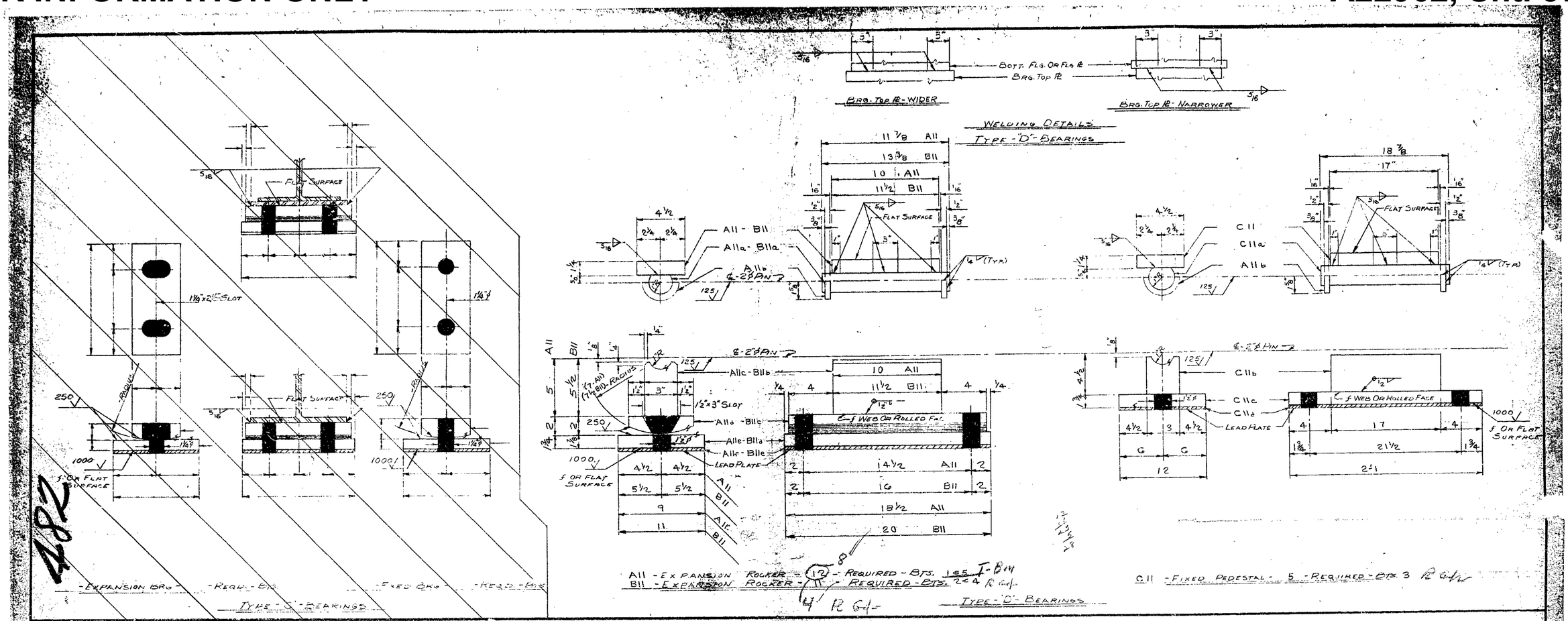
DETAILED BY: BURLINGAME
DATE: 12-5-68
CHECKED BY:
DATE:

REVISIONS			
DATE	MK.	BY	REMARKS

BRIDGE OVER - ROUTE 54 N.B.L.
PROJECT NO. C014-F(3) STA. 506+51.48
LOCATION: CALLAWAY CO.
BEARING DETAILS & NOTES
ARCH.-ENGR. BURGWIN & MARTIN
FOR MO. STATE HIGHWAY DEPT.

JOB No. 68-429
BRIDGE No. A22962
SHT. No. 10
OF 11

A B C D E F G H J K M N P S T U V W X Y Z AA AB AC AD AE AF AG AH AJ AK AM AN AP AS AT AU AV AW AX AY AZ



For Each All Exp. Brg.

All	Top Pl 4½ x 1¼ x 10
Alla	Pin 2" x 11⅞ (C1018 Steel) Mach. Dim.
Allb	Pin Collars 3¼ x ½ (Cut in Half Makes 2)
Allc	Web Pl 4⅞ x 3 x 10 Mach. Dim.
Alld	Rocker Pl 6 x 2 x 18 Mach. Dim.
Alle	Bottom Pl 9 x 1¾ x 18½ Mach. Dim.
Allf	Lead Pl 9 x ⅛ x 18½

For Each Bll Exp. Brg.

Bll	Top Pl 4½ x 1¼ x 11½
Blla	Pin 2" x 13⅜ (C1018 Steel) Mach. Dim.
Allb	Pin Collars
Bllb	Web Pl 5⅜ x 3 x 11½ Mach. Dim.
Bllc	Rocker Pl 6 x 2 x 19½ Mach. Dim.
Blld	Bottom Pl 11 x 1⅞ x 20 Mach. Dim.
Blle	Lead Pl 11 x ⅛ x 20

For Each Cll Fixed Brg.

Cll	Top Pl 4½ x 1¼ x 17
Clla	Pin 2" x 18⅞ (C1018 Steel) Mach. Dim.
Allb	Pin Collars
Cllb	Web Pl 4⅞ x 3 x 17 Mach. Dim.
Cllc	Bottom Pl 12 x 1¾ x 2'-1
Clld	Lead Pl 12 x ⅛ x 2'-1

Bearing Notes:

Material for 'C' or 'D' Bearings shall be A.S.T.M.-A36 Steel.

Material for Pins shall be A.I.S.I.-C1018 Steel.

Preheat in accordance with A.W.S.

White lead and tallow all machined surfaces after inspection.

Where flat surface is indicated tolerance shall be .002 in/in. in any direction.

Rockers and pedestals shall be machined after welding.

General Notes:

Beam or girder flanges shall be squared up at all points of bearing.

All steel A.S.T.M.-A36-63T- except as noted.

Holes in girders or beams and plates for splices to be subpunched 11/16" ϕ and reamed assembled to 11/16" ϕ, or drilled from the solid while assembled, and match marked.

Girder or beam bearing stiffener plates shall be ground to bear top and bottom. Measure w/ beams before cutting bearing stiffener plates.

Girder Notes:

Girder intermediate web and diaphragm stiffener plates shall be fitted to form a close joint, (1/16") top and bottom.

Girder shop welded flange splices are to be marked with steel stencil approximately 1½" from edge of weld and about in the middle of plate with 'T' and shop splice number on top of top flange and with 'B' and shop splice number on bottom of bottom flange. All marks to be on the thicker material joined.

Girder welding will be subject to radiographic and magnetic particle inspection.

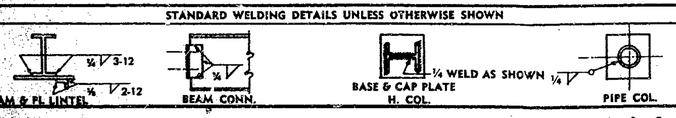
FOR BRIDGE FILES

APPROVED
GENERAL DESIGN FEATURES ONLY
JAN 20 1969
W. D. Carey
BRIDGE ENGINEER - MO. STATE HIGHWAY DEPT.

DIMENSIONS NOT COMPLETELY CHECKED

1/16" = APPROVED
BURGWIN and MARTIN
CONSULTING ENGINEERS
DATE: JAN 16 1969
BY: [illegible]

STANDARD WELDING DETAILS UNLESS OTHERWISE SHOWN



PAINT: None - Except As Noted

BOLTS RIVETS ____ UNLESS NTD.

OPEN HLS ____ UNLESS NTD.

PRINT RECORD					
NO.	FOR	DATE	NO.	FOR	DATE
1	GK	12-5-68			
2	H	12-24-68			
3	A	1-14-69			

DELONG'S INC.
DIX RD. & IND. DR.
JEFFERSON CITY, MISSOURI
DIAL 635-6121

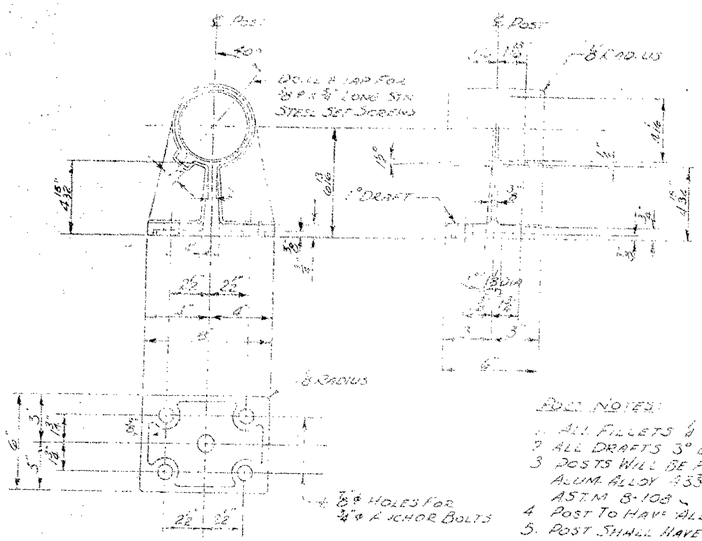
DETAILED BY	Burlingame
DATE	12-5-68
CHECKED BY	Barr
DATE	12-24-68

REVISIONS			
DATE	MK	BY	REMARKS

BRIDGE OVER - ROUTE 54 N.B.L.
PROJECT NO. C014-F(3) STA. 506+51.48
LOCATION CALLAWAY CO.
Bearing Details & Notes
ARCH.-ENGR. BURGWIN & MARTIN
FOR: Mo. State Highway Dept.

JOB No. 68-429
BRIDGE No. A-2296
SHT. No. 11
OF 11

A B C D E F G H J K M N P S T U V W X Y Z AA AB AC AD AE AF AG AH AJ AK AM AN AP AS AT AU AV AW AX AY AZ

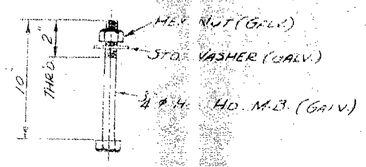


72 - POSTS -

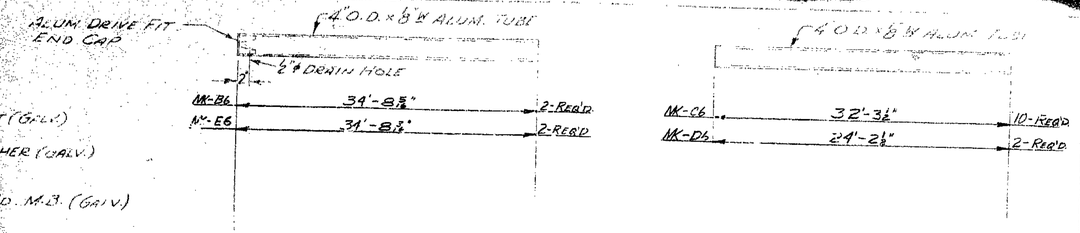
NOTE
E.P. INDICATES EXPANSION POST
OMIT SET SCREWS ON SIDE OF POST
NEAREST PARAPET EXPANSION JOINT

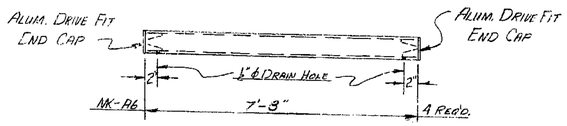
483

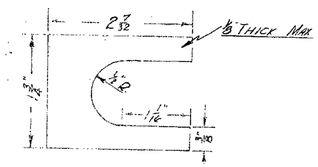
POST NOTES:
1. ALL FILLETS 1/4" EXCEPT AS NOTED
2. ALL DRAFTS 3° UNLESS NOTED
3. POSTS WILL BE PERMANENT MOLD CASTING ALUM. ALLOY 4356 CONDITION T6 PER ASTM B-108
4. POST TO HAVE ALL CASTING IRREGULARITIES REMOVED
5. POST SHALL HAVE #140 BELT GRIT FINISH



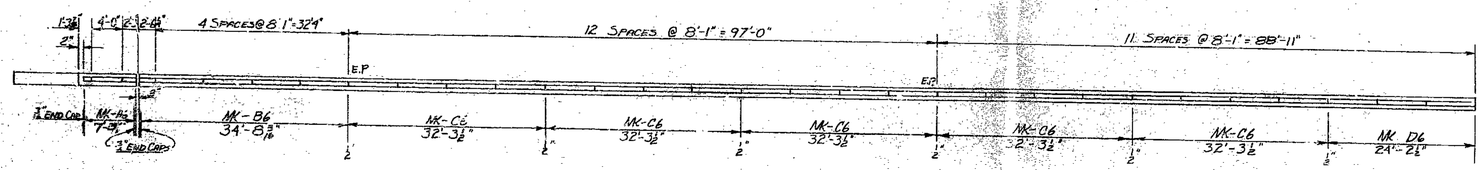
288 - ANCHOR BOLTS
(GALV. PER ASTM A153)

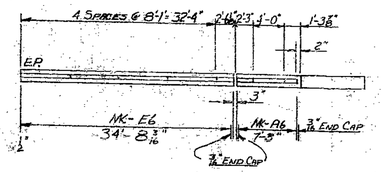






ALUMINUM ALLOY SHIMS
A.S.T.M. B209-58T ALLOY 990A, TEMPER O





PLAN OF ONE RAIL
(BOTH RAILS SAME)

FOR BRIDGE FILES

APPROVED
GENERAL DESIGN FEATURES ONLY
JAN 2 2 1969
BRIDGE ENGINEER ... STATE HIGHWAY ... DEPT.

BILL OF MATERIAL

MARK	QUAN.	DESCRIPTION
	538'-8 3/4"	LIN. FT. 4" O.D. x 1/8" WALL ALUM. TUBE
	72	CAST ALUM. POSTS
	288	3/4 ϕ x 10" HEX HD. M. BOLT (GALV.)
	12	CAST ALUM. DRIVE FIT END CAP
	7	GAL. ALUM. PIGMENTED COMPOUND
	144	STANDARD ALUM. SLOTTED SHIMS

ALUM. TUBING A.S.T.M. B-221 (ALLOY 6061 T6)
(MILL FINISH)
ANCHOR BOLTS TO BE A.S.T.M. [illegible]

BRIDGE No. A-2296

DIMENSIONS NOT COMPLETELY CHECKED
APPROVED
BURGWIN and MARTIN CONSULTING ENGINEERS
JAN 2 1 1969
DATE: .....
BY: W. E. M.

PAY LENGTH - 541'-0"

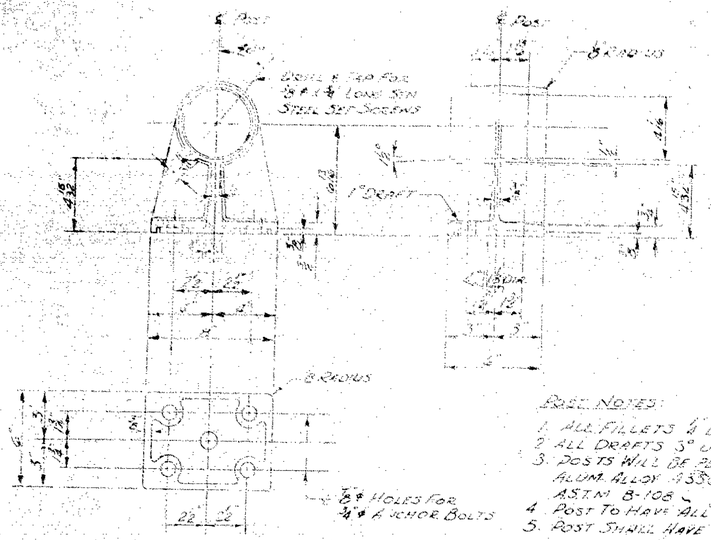
HURTT FABRICATING CORP.
MARCELINE, MISSOURI

DATE: 12-12-68	HURTT JOB NO. HB-108-68	DR. BY: R.L.W.
SCALE:		CHK. BY: C.W.

BRIDGE OVER ROUTE 54 N.B.L. CALLAWAY CO. MO.
PROJECT No. CO14-F(3) (RTE. F) STA. 506+51.48

ALUMINUM BRIDGE RAIL — SHEET NO. 6 OF 6

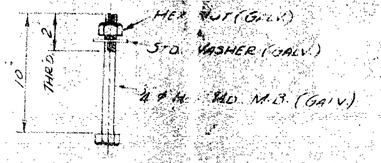
3 - APPROVAL [illegible]
5 - DATE [illegible]



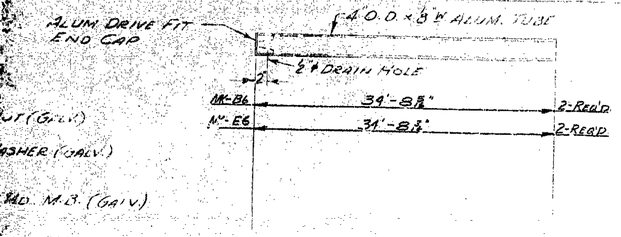
POST NOTES:

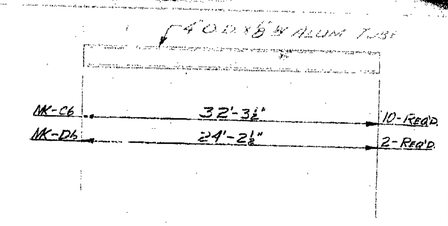
1. ALL FILLETS 1/4" EXCEPT AS NOTED
2. ALL DRAFTS 3° UNLESS NOTED
3. POSTS WILL BE PERMANENT MOLD CASTING ALUM. ALLOY 43S6 CONDITION T6 PER A.S.T.M. B-108
4. POST TO HAVE ALL CASTING IRREGULARITIES REMOVED
5. POST SHALL HAVE #140 BELT GRIT FINISH

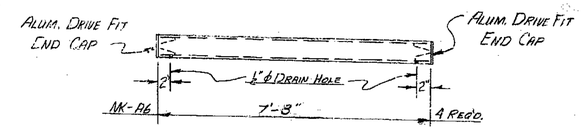
72 - POSTS -

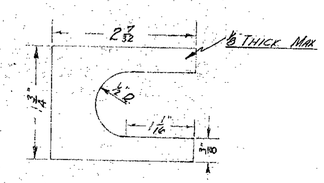


288 - ANCHOR BOLT -
(GALV. PER ASTM A153)



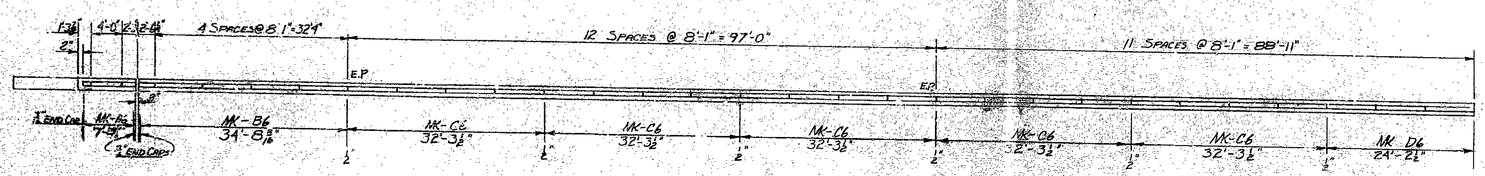


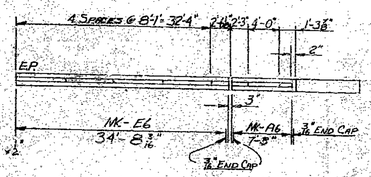




ALUMINUM ALLOY SHIMS
A.S.T.M. B209-50T ALLOY 990A, TEMPER O

NOTE
E.P. INDICATES EXPANSION POST
OMIT SET SCREWS ON SIDE OF POST NEAREST PARAPET EXPANSION JOINT





PLAN OF ONE RAIL
(BOTH RAILS SAME)

FOR BRIDGE FILES

APPROVED
GENERAL DESIGN FEATURES ONLY
JAN 22 1969
L.D. Callaway
BRIDGE ENGINEER

BILL OF MATERIAL

MARK	QUAN.	DESCRIPTION
	538'-8 3/4"	LIN. FT. 4" O.D. x 1/8" WALL ALUM. TUBE
	72	CAST ALUM. POSTS
	288	3/4" ⌀ x 10" HEX HD. M. BOLT (GALV.)
	12	CAST ALUM. DRIVE FIT END CAP
	7	GAL. ALUM. PIGMENTED COMPOUND
	144	STANDARD ALUM. SLOTTED SHIMS

ALUM. TUBING A.S.T.M. B-221 (ALLOY 6061-T6) (MILL FINISH)
ANCHOR BOLTS TO BE A.S.T.M. A 307

BRIDGE No. A-2296

DIMENSIONS NOT COMPLETELY CHECKED
APPROVED
BURGW'N and MARTIN
CONSULTING ENGIN'ERS
JUL 1 1968
DATE: .....
BY: W. E. M.

PAY LENGTH - 541'-0"

HURTT FABRICATING CORP.
MARCELINE, MISSOURI

DATE 12-12-68	HURTT JOB NO. HB-108-68	DR. BY R.L.W.
SCALE		CHK. BY C.W.
BRIDGE OVER ROUTE 54 N.B.L.		CALLAWAY CO. MO.
PROJECT No. BRM-F(3)	(RTE. F)	STA. 506+51.46
ALUMINUM BRIDGE RAIL		SHEET NO. 6 OF 6

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