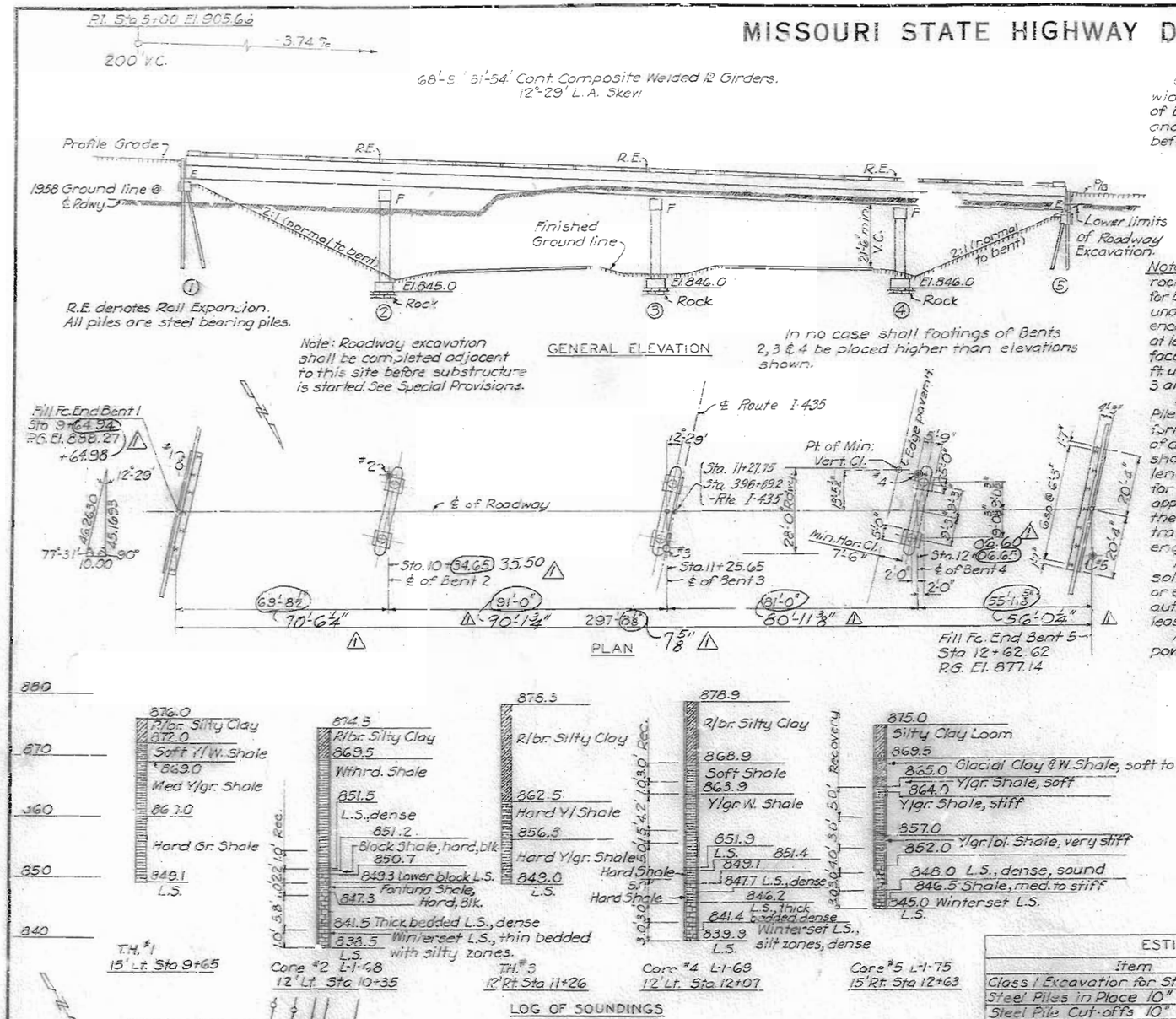
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	88	



Compacted roadway fill (full roadway width) shall be placed up to the elevation of bottom of concrete beam in front of and not less than 25' back of End Bent 1 before driving steel piles for E. Bent 1.

Notes: All loose, shelly or disintegrated rock shall be removed and the footings for Bents 2, 3 and 4 placed on hard, solid undisturbed rock. If soft rock or shale is encountered, the footings shall be carried at least 18" into and cast against vertical faces of same. Bearing of 9.5 ton per sq. ft. used in design of footings for Bents 2, 3 and 4 on rock.

All piling shall be 10" BP42# Bearing Piles and splices if required shall conform to details and notes on Sheet No. 3 of design plans. Estimated quantities shown are based on the following lengths: 7@30'-0" for E. Bent 1; 7@20'-0" for E. Bent 5. These indicated lengths are approximate only. Proper lengths to give the required bearing and/or penetration will be authorized by the engineer.

All piles shall be driven to or into solid rock, cemented gravel, boulders or shale, or to not less than full length authorized and to sustain a load of at least 37 tons per pile.

All piles shall be driven with a power hammer.

GENERAL NOTES

Design Specifications: A.A.S.H.O. 1961.
Loading: H20-44. Design includes 15 psf future wearing surface.
Design Stresses:

Structural Steel	A7 and A373	18,000 psi
Reinforcing Steel		20,000 psi
Class B Concrete		1,200 psi
Class B1 Concrete		1,600 psi

Concrete for superstructure shall be Class B1, air-entrained and for substructure shall be Class B, air-entrained.

Superstructure Deck to be surface sealed. (See Special Provisions)

Rivets $\frac{3}{4}$"φ; holes $\frac{13}{16}$"φ except in splices and as noted.

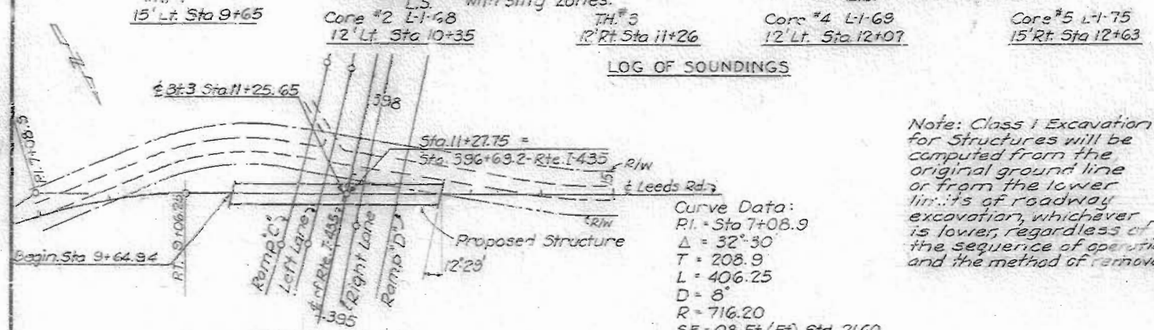
Field connections, except where specifically noted otherwise, may be riveted or bolted with high strength bolts. Final pay weight will be based on the use of field rivets.

Preparation of joints for welding shall be in accordance with A.W.S. Specifications. Details shown are for manual arc welding. See Special Provisions for welding inspection. Qualification of welding operators will be required.

Paint: Shop none; Field, contact surfaces of bolted field connections except where high strength bolts are used, one coat of red lead and surfaces inaccessible after erection, three coats of red lead. All other exposed surfaces, first coat of red lead, second coat brown, third coat aluminum. Payment for paint, cleaning and painting such surfaces will be made under unit price bid for Painting. See Section 82.4.7 of Standard Specifications for required painting of steel piles in end bents.

Joint Filler: Where joint filler is specified on the plans it shall conform to the requirements for Gray Sponge Rubber Compound Joints, Section 157.2.4 of the Standard Specifications.

Permits must be obtained for all truck loads over legal length.



Curve Data:
P.I. = Sta 7+08.9
Δ = 32°-30'
T = 208.9
L = 406.25
D = 8°
R = 716.20
S.E. = .08 Ft/Ft. } Std. 21.60
LT = 150' } 40 M.P.H.
No superelevation on bridge.

Note: Class 1 Excavation for Structures will be computed from the original ground line or from the lower limits of roadway excavation, whichever is lower, regardless of the sequence of operations and the method of removal.

ESTIMATED QUANTITIES

Item		Substruct.	Superstr.	Totals
Class 1 Excavation for Structures	Cu. Yds.	150		150
Steel Piles in Place 10"	Lin. Ft.	308		308
Steel Pile Cut-offs 10"	Lin. Ft.	42		42
Class B Concrete	Cu. Yds.	160.2		160.2
Class B1 Concrete	Cu. Yds.		300.9	300.9
Reinforcing Steel	Lbs.	33,430	89,230	128,660
Fabricated Struct. Steel for Welding	Lbs.		185,540	185,540
Painting	Tons		92.1	92.1
Bridge Rail (Single Tube Type)	Lin. Ft.		573	573

No payment for excavation will be allowed for End Bent 1.
Weight of shear connectors is included in weight of Fabricated Structural Steel for Welding but is not included in Painting.
Concrete in end posts is included with superstructure concrete.

All A7 steel will be included for payment under Fabricated Structural Steel for Welding.

FINISHED

B.M. #37 - El. 839.73 Spike in 24" Cottonwood 105' Lt. Sta. [illegible]
B.M. #38 - El. 900.67 Spike in West PP 195 Lt. Sta. 398+82

BRIDGE: LEEDS ROAD UNDERPASS

STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT NO. I-435-1(24)(RTE. I-435) STA. 396+69.2

JACKSON COUNTY

FINISHED

SUBMITTED BY D.B. Jenkins, Bridge Engineer DATE 7/23/62
APPROVED BY J.J. Lenert, Chief Engineer DATE 7/23/62

HARRINGTON AND CORTELYOU
CONSULTING ENGINEERS KANSAS CITY, MO.

STD. 54.00
A-994

Drawn Jan. 1962 by JER
Checked Feb 1962 by FJD

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

Δ Revised 10-24-63

Sheet No. 1 of 9

SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	247	

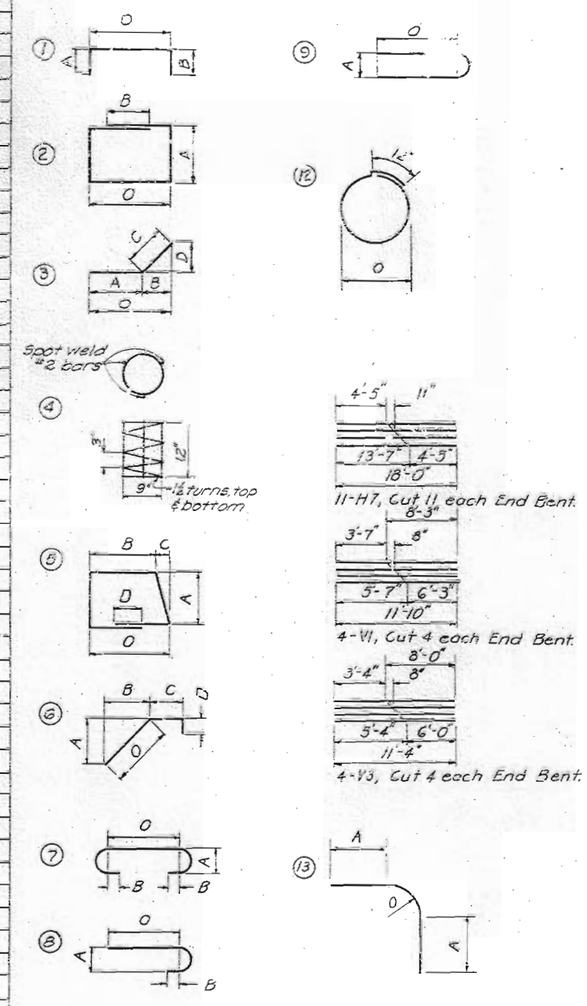
BILL OF REINFORCING STEEL

No.	Size	Length	Mark	Shape	Location	O	A	B	C	D
END BENTS 1 & 5										
Quantities for One Bent (2 requ.)										
12	4	33'-6"	H1	—	Backwall					
2	6	33'-6	H2	—	do					
30	6	21'-2	H3	—	Beam					
4	6	14'-10	H4	3	Wings	13'-5½	11'-9	1'-8½	3'-1"	2'-7
4	6	8'-3	H5	6	do	2-0	1-1	1-8½	3-8	2'-7
12	6	9'-10	H6	—	do					
11	6	#18'-0	H7	—	Wings					
4	4	#11'-10	V1	—	North Wings					
2	4	7'-6	V2	—	Wings					
4	4	#11'-4	V3	—	South Wings					
12	4	8'-3	V4	—	do					
56	4	7'-7	V5	—	Backwall					
40	4	13'-5	T1	5	Beam	3-10	2-8	3-2	8	1-0
12	4	4'-2	U1	1	Beam	2-2	1-0	1-0		
8	2	19'-9	W1	4	Beam					

No.	Size	Length	Mark	Shape	Location	O	A	B	C	D
BENTS 2, 3 & 4										
Quantities for One Bent (3 Reqd.)										
9	5	13'-2"	A1	2	Cap	2'-10	3'-2"	1'-2		
50	5	11'-4	A2	2	do	1-11	3-2	1-2		
2	5	12'-10	A3	2	do	2-8	3-2	1-2		
6	4	4'-10	A4	1	Cap	2-10	1-0	1-0		
4	10	30'-2	B1	7	Cap	26-3½	1-0½	5		
4	10	27'-4	B2	—	do					
14	9	13'-7	B3	8	do	11-10⅝	11¼	4		
5	9	18'-6	B4	—	do					
2	6	27'-4	B5	—	do					
8	7	6'-11	B6	9	do	1-4	2-9			
14	10	9'-10	B7	13	Cap	1-6	3-9			
52	10	6'-11	D1	8	Footing	5-0	1-0½	5		
8	2	19'-9	W1	4	Anch. Bolt Wells					
Variable Reinf. Bent 2										
56	3	9'-4	A6	12	Column	2'-8				
52	10	31'-0	E1	—	Column					
Variable Reinf. Bent 3										
46	3	9'-4	A6	12	Column	2-8				
52	10	26'-7	E2	—	Column					
Variable Reinf. Bent 4										
40	3	9'-4	A6	12	Column	2-8				
52	10	23'-7	E3	—	Column					

No.	Size	Length	Mark	Shape	Location	O	A	B	C	D
SUPERSTRUCTURE										
574	5	6'-0"	C1	1	Parapet	7½	2'-8½	2'-8½		
594	5	4'-3"	C2	1	Curb	2-0	1-1½	1-1½		
8	5	33'-9	C3	—	Parapet, Span 1					
12	5	34'-10	C4	—	Curb Span 1					
30	5	31'-5	C5	—	Par. & Curb, Span 2					
30	5	28'-1	C6	—	do. do. Span 3					
12	5	28'-2	C7	—	Curb, Span 4					
8	5	26'-2	C8	—	Parapet, Span 5					
24	4	3'-9	R1	—	End Post					
20	5	9'-1	R2	1	do	9	4-2	4-2		
102	6	33'-3	S1	—	Slab					
120	5	28'-0	S2	—	do					
328	4	34'-0	S3	—	do					
336	5	34'-4	S4	—	Slab					

CUTTING & BENDING DIAGRAMS



NOTE

All bar dimensions are out to out of bar.
#See cutting diagram.
Bars to be billed and tagged separately for each unit.

FINISHED

BRIDGE LEEDS ROAD UNDERPASS

STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT NO. I-435-1(24)(RTE. I-435) STA. 396+69.2

FINISHED JACKSON COUNTY FINISHED

Drawn Feb. 1962 by J.W.
Checked Feb. 1962 by G.E.G.

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

Sheet No. 2 of 9

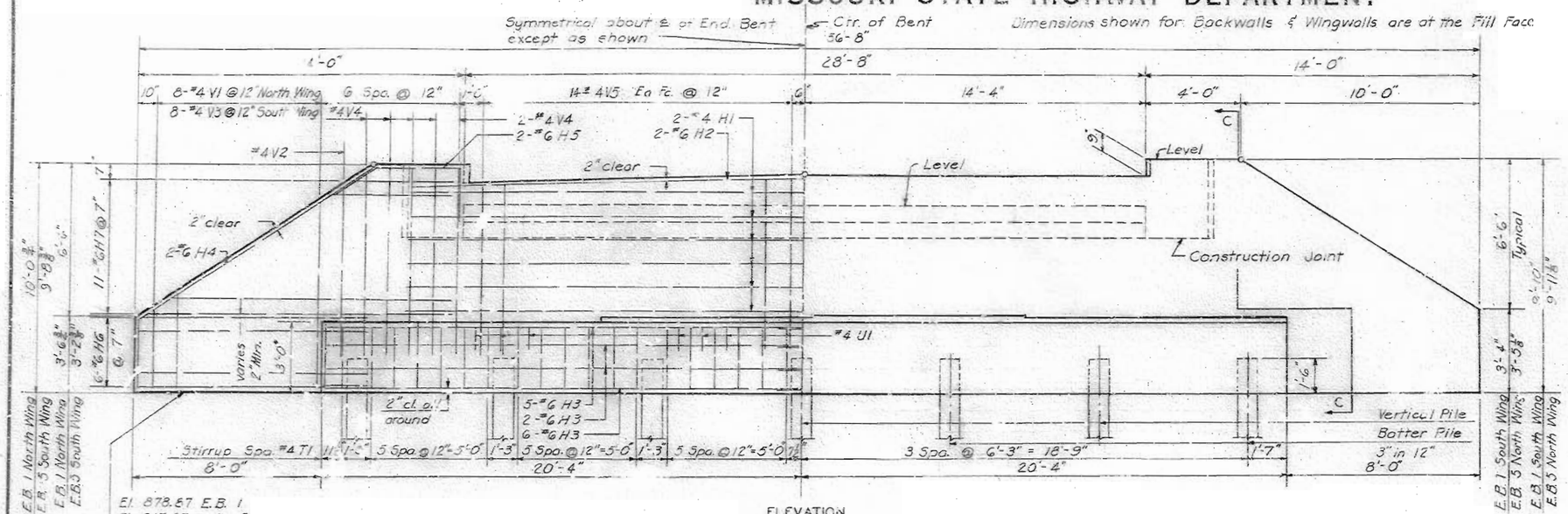
HARRINGTON AND CORTELYOU
CONSULTING ENGINEERS KANSAS CITY, MO.

A-994

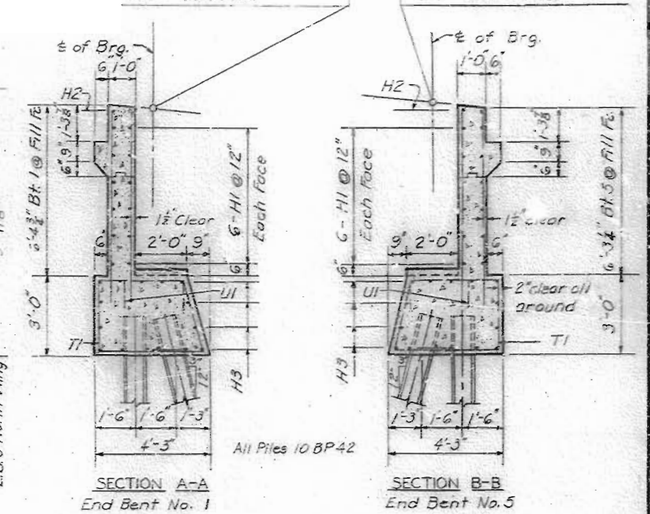
NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	90	

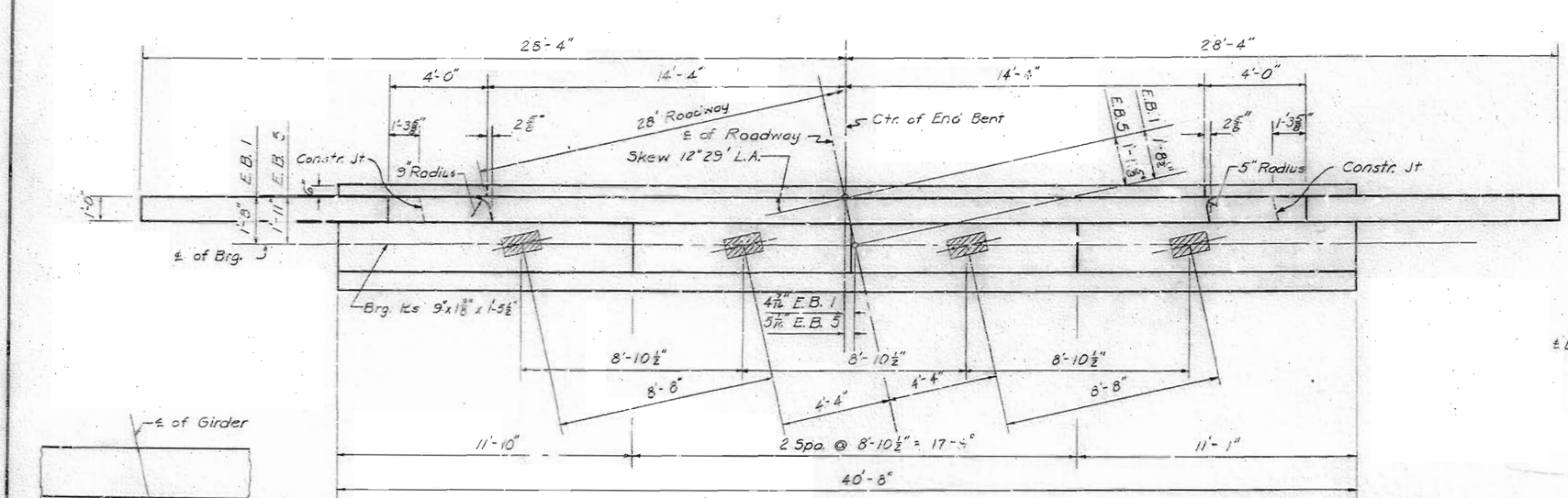


ELEVATION
End Bent No. 5 Shown.
End Bent No. 1 Similar.

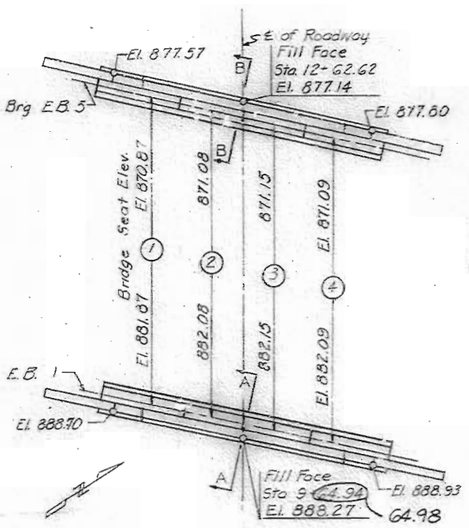


SECTION A-A
End Bent No. 1

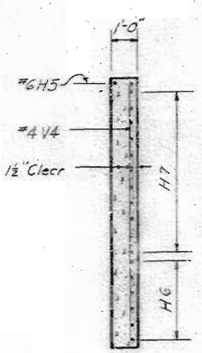
SECTION B-B
End Bent No. 5



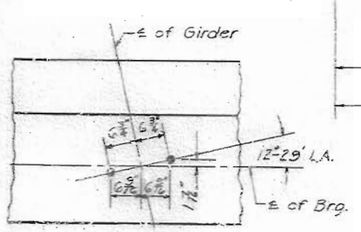
PLAN



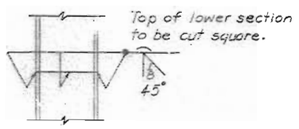
LAYOUT



SECTION C-C



TYPICAL ANCHOR BOLT LAYOUT
For details of spiral around anchor bolts see Sh. No. 7.



PILE SPLICE

Notes: Backwall above construction joint shall not be poured until the structural steel of the expansion device has been installed and slab has been poured in the adjacent span.
Bridge seats shall be sloped to drain between bearing areas.
Reinforcing steel in bridge seats to be placed to clear anchor bolts.
Place U1 bars under bearings, alternate with stirrups to provide a 6" max. spacing under bearing plates.
Top of backwall and expansion device shall conform to crown of roadway slab.

BRIDGE LEEDS ROAD UNDERPASS

STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT NO. I-435-1(24XRTE. I-435) STA. 396+69.2

JACKSON COUNTY

Drawn Jan. 1962 by J.W.
Checked Feb. 1962 by G.E.G.

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

DETAILS OF END BENTS NO. 1 & 5

Sheet No. 3 of 9

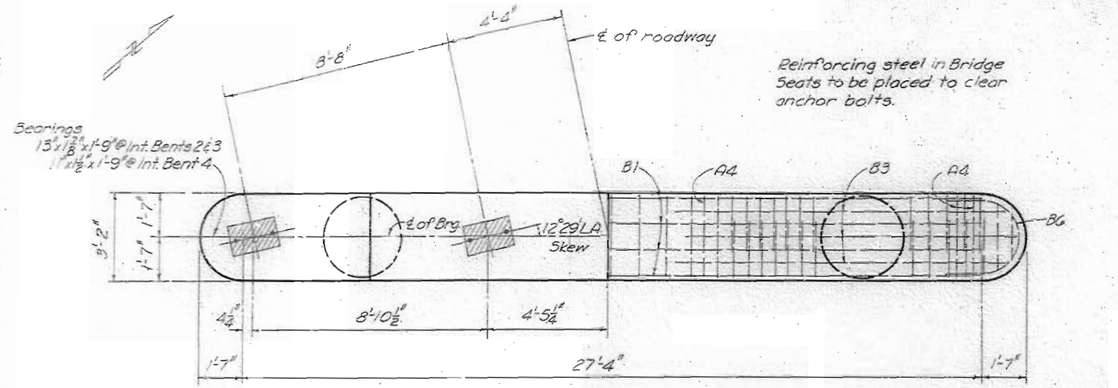
HARRINGTON AND CORTELYOU
CONSULTING ENGINEERS KANSAS CITY, MO.

A-994

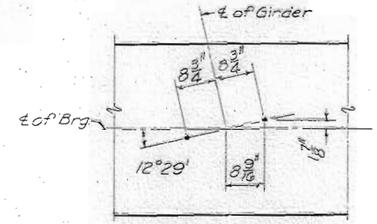
NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

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

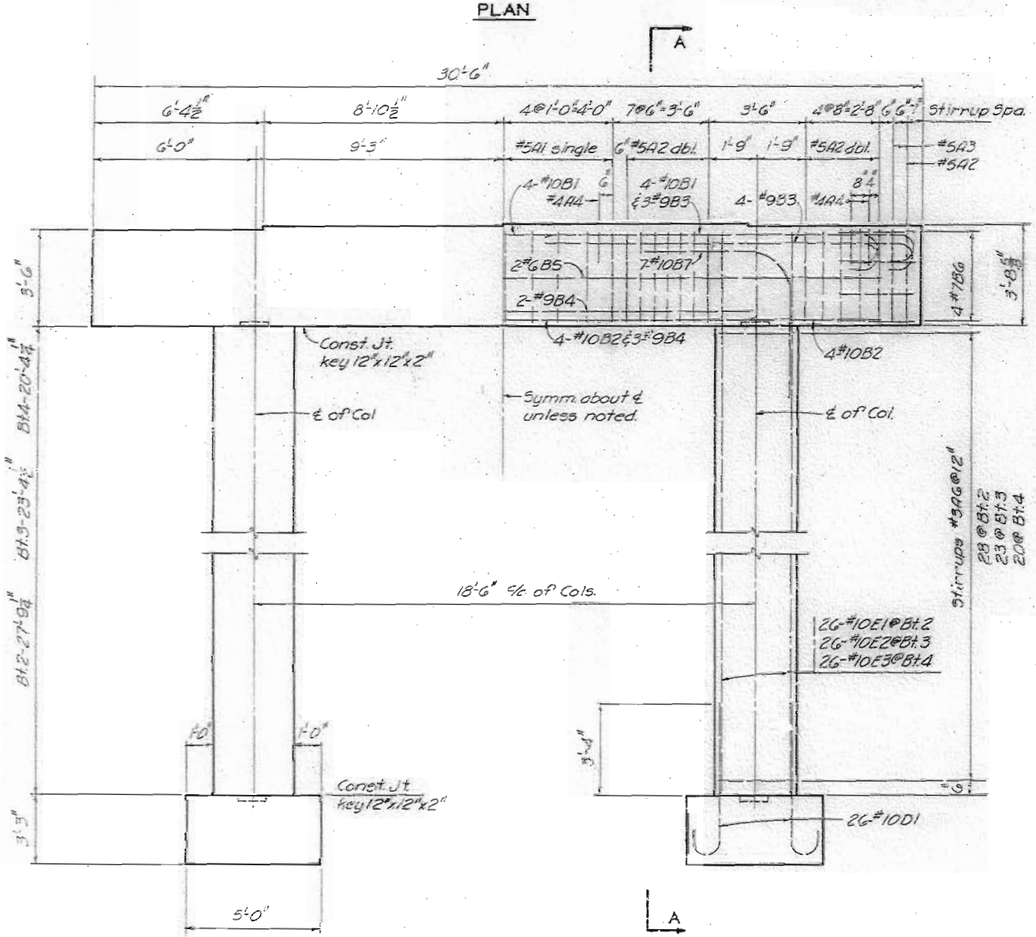


PLAN

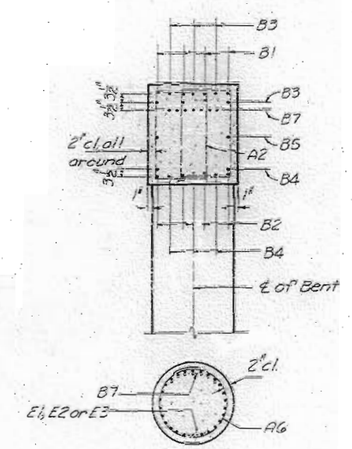


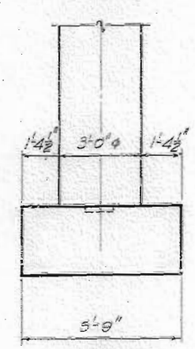
ANCHOR BOLT LAYOUT

For details of spiral around anchor bolts see Sh. No. 7

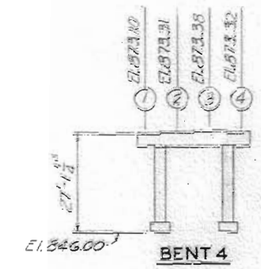


ELEVATION

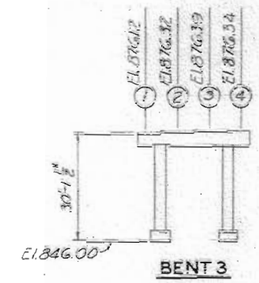




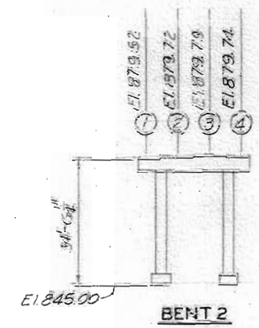
SECTION A-A



BENT 4



BENT 3



BENT 2

BRIDGE LEEDS ROAD UNDERPASS

STATE ROAD INTERSTATE ROUTE 435

FROM ROUTE 40 TO LEEDS ROAD

PROJECT NO. I-435-1(24)(PTE. I-435) STA. 396+69.2

JACKSON COUNTY

DETAILS OF BENTS NO. 2, 3 & 4

Drawn Jan. 1962 by WBH
Checked Feb. 1962 by G.E.G.

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

Sheet No. 4 of 9

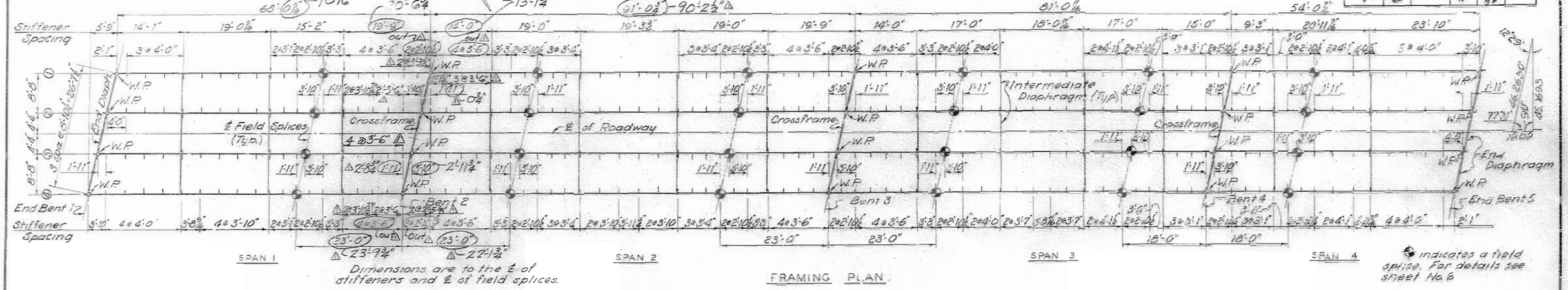
HARRINGTON AND CORTELYOU
CONSULTING ENGINEERS KANSAS CITY, MO.

A-994

NO CONSTRUCTION CHANGES

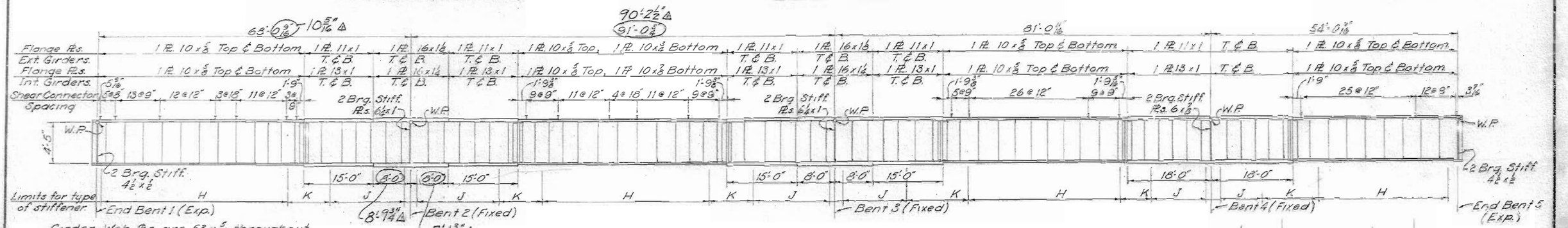
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	47	



FRAMING PLAN

◆ indicates a field splice. For details see sheet No. 6



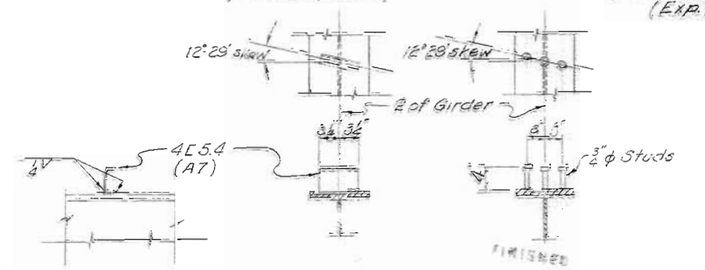
GIRDER ELEVATION

Girder 3 is shown, other girders are the same except as noted.

Girder Web Pls are 53 x 5/16 throughout.
All intermediate stiffeners are Pls. 4 x 5/16 on one side of web only.

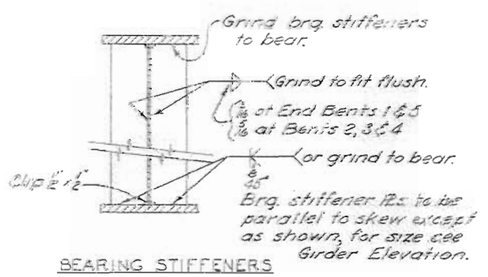
All longitudinal dimensions are along the top of girder web at 60°F. normal temperature under full dead load.
All stiffeners shall be normal to flanges.
Shop web splices may be made at locations approved by the Engineer.
Girder webs, flange plates, and stiffener plates shall be A.S.T.M. A373 and all other steel shall be A.S.T.M. A7-58T except as noted for bearings.

For expansion device details see sheet No. 7
For girder welding and diaphragm details see sheet No. 6

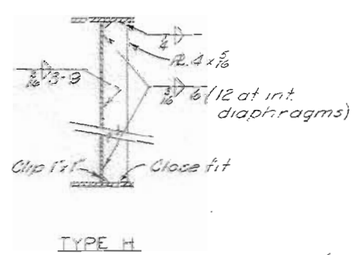


SHEAR CONNECTOR DETAILS

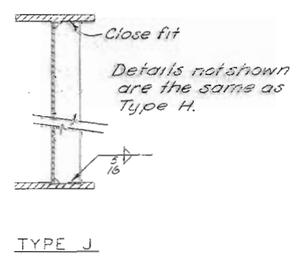
See Special Provisions for shear connectors.
A weight of 1263# for shear connectors (based on studs) is included in the weight of fabricated structural steel for welding.
Pay weight for shear connectors will be based on the weight of the type furnished.
The same shear connector spacing shall be used for either ¾" φ studs or 4 L 5.4's.
Locate channel connectors with backs toward ends of spans.



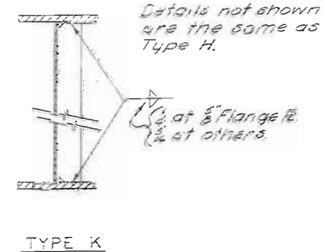
BEARING STIFFENERS



TYPE H



TYPE J



TYPE K

STIFFENER DETAILS

BRIDGE LEEDS ROAD UNDERPASS

STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT NO. I-435-1(24) (RTE. I-435) STA. 396+69.2

JACKSON COUNTY

FINISHED

Drawn Jan. 1962 by DHL
Checked Feb. 1962 by F.I.D

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

Sheet No. 5 of 9 Revised 10-26-63

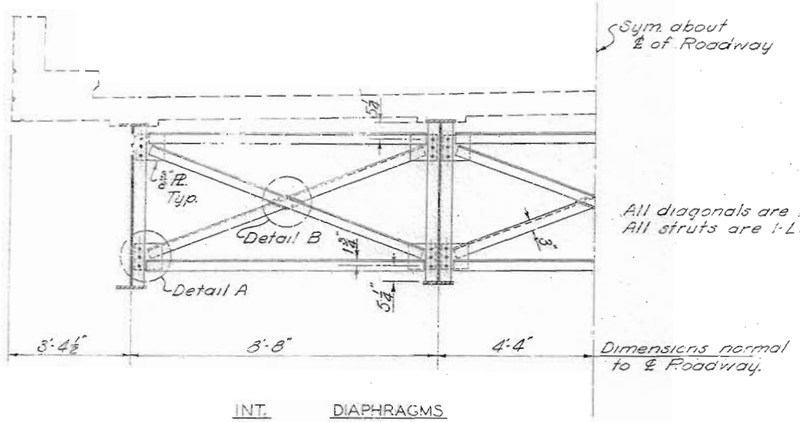
HARRINGTON AND CORTELYOU CONSULTING ENGINEERS KANSAS CITY, MO.

A-994

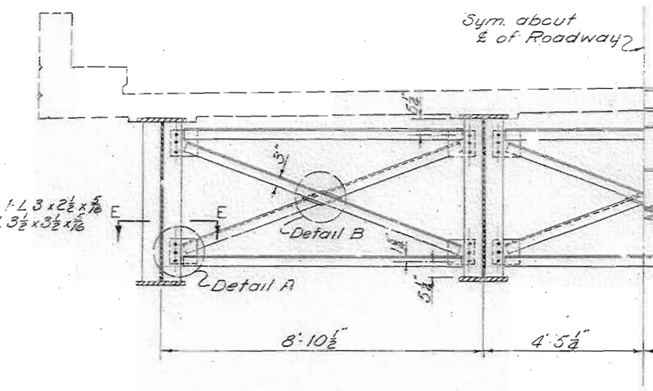
SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

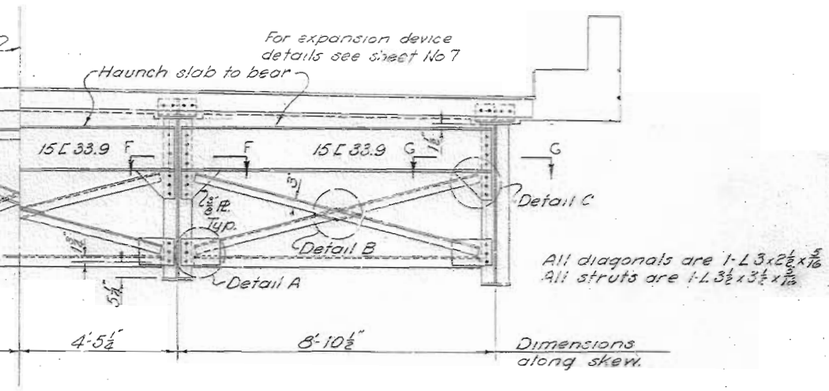
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	93	



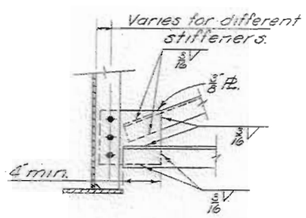
INT. DIAPHRAGMS



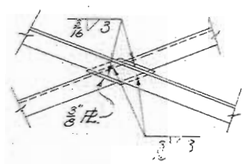
CROSS FRAMES AT INT. BENTS



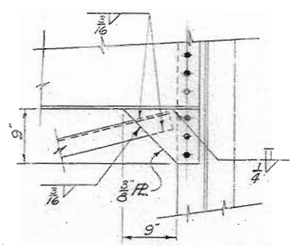
DIAPHRAGMS AT END BENTS



DETAIL A



DETAIL B



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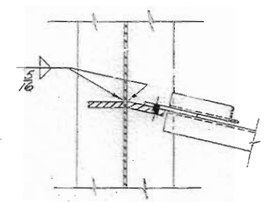
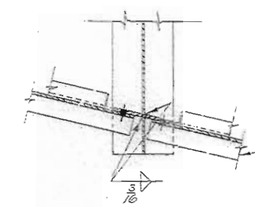


SECTION E-E



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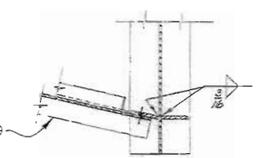
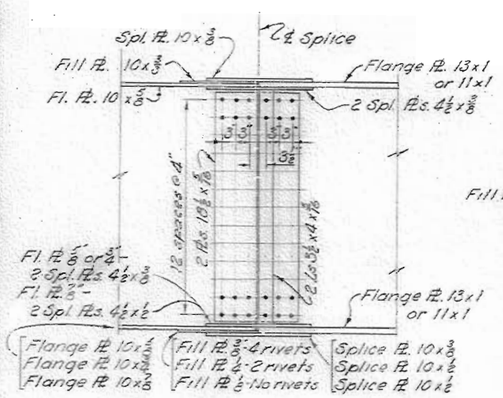
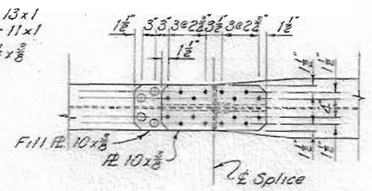


SECTION G-G



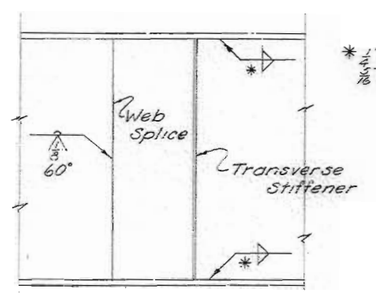
FIELD SPLICE



TOP FLANGE

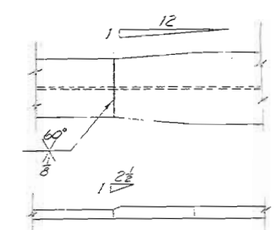
Bottom flange is similar except as noted.

Note:
Holes are 15/16" ϕ for 7/8" ϕ rivets.
Splice material is ASTM A7-55T steel.



* ½" weld for 5/8" Flange Pl.
5/16" weld for all others.

SHOP WEB SPLICE AND GIRDER WELDING



Extension bars shall be used for welded flange splices.

SHOP FLANGE SPLICE

FINISHED

BRIDGE LEEDS ROAD UNDERPASS

STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT NO. I-435-1(24)(RTE. I-435) STA. 396 + 69.2

JACKSON COUNTY

FINISHED FINISHED

Drawn Jan. 1962 by DHL
Checked Feb 1962 by FJD

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

Sheet No. 6 of 9

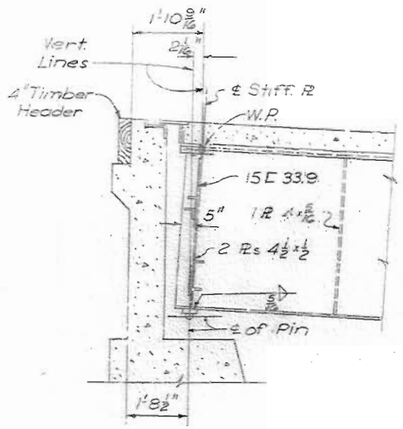
HARRINGTON AND CORTELYOU
CONSULTING ENGINEERS KANSAS CITY, MO.

A-994

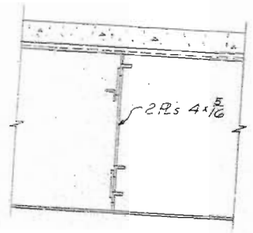
NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

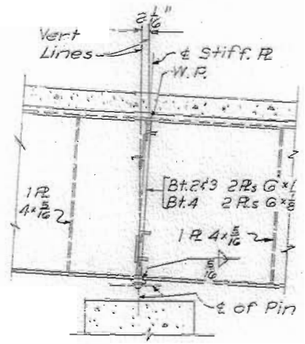
FED. HWY. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	98	



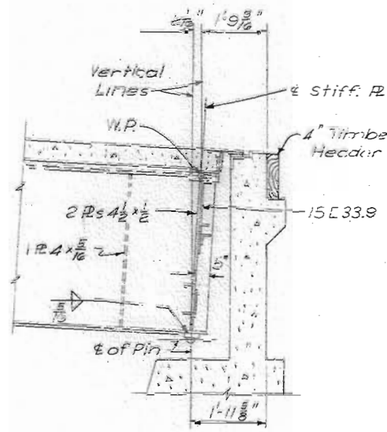
END BENT 1



INTERMEDIATE DIAPHRAGM

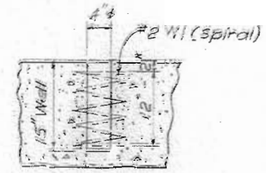


INTERMEDIATE BENTS 2 3 & 4



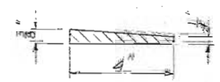
END BENT 5

PART LONGITUDINAL SECTION
(Along ℄ of Roadway)
Girder ℄ shown.

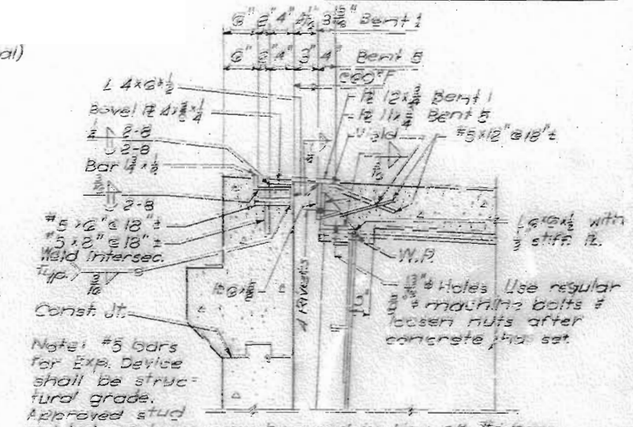


Note: Anchor bolts may be set in wells as shown or in holes drilled into concrete substructure. See Specification 55.4.4 for setting Anchor Bolts.

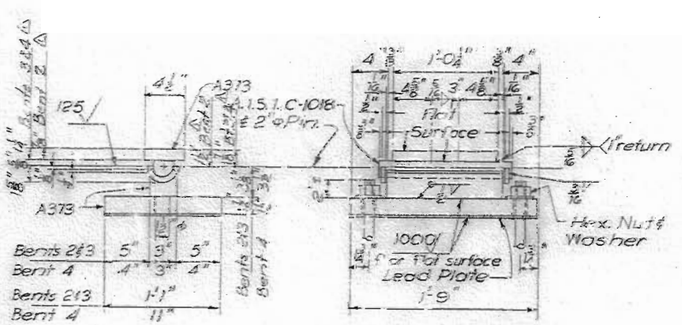
DETAIL OF SPIRAL AROUND ANCHOR BOLTS



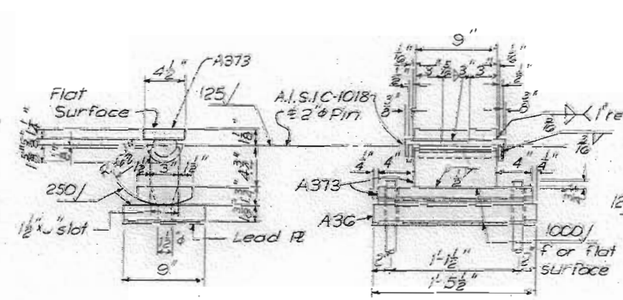
DETAIL OF BEVEL PLATE



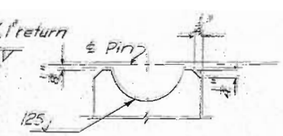
SECTION AT JOINT
Dimensions are normal to End Bents



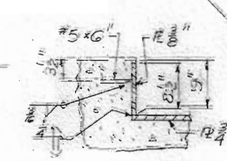
FIXED BENTS 2, 3 & 4
8 Req'd. for Bents 2 & 3
4 Req'd. for Bent 4



EXPANSION END BENTS 1 & 5
8 Required

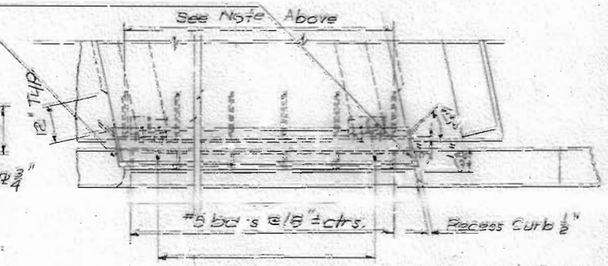


END VIEW OF WEB EXPANSION ROCKER



CURB PLATE DETAIL

2-Layers of 35# Roofing Felt between sliding contact surface of steel and concrete



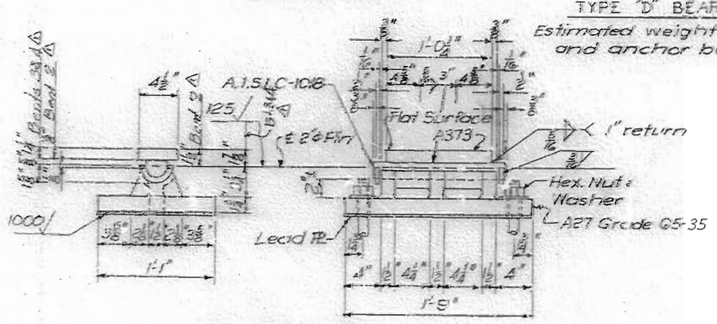
Slotted holes in plates at 6'-0" ctrs. Type L for ¾" ϕ bolts. Remove bolts after concrete has set. (¾" x ¼" slots)

PART PLAN

EXPANSION JOINT DETAILS

TYPE "D" BEARINGS

Estimated weight of bearings, pins and anchor bolts = 3760 Lbs.



FIXED BENTS 2, 3 & 4
12 Required

ALTERNATE TYPE "D" BEARINGS

BEARING NOTES

Material for Type "D" Bearings shall be as noted except ASTM A7 steel meeting the carbon and manganese requirements of A373 may be substituted for A373.

Material for Alternate Type "D" Bearings shall be as noted.

Anchor Bolts shall be ¼" ϕ swedged bolts and shall extend 12" into concrete, with hexagon nuts and plain washers for Fixed Bearings, no nuts for Expansion Bearings.

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.

Alternate Type "D" Bearing may be furnished in place of Type "D" Bearing but will be paid for under the same item and weight of the Type "D" Bearing it is substituted for.

Top plates shall be shop welded to girders.

Material for Bearings will be paid for as fabricated Structural Steel for Welding.

FINISHED

BRIDGE LEEDS ROAD UNDERPASS
STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT NO. I-435-1(24)(RTE I-435) STA. 396+69.2
JACKSON COUNTY

Drawn Jan. 1962 by D.C.C.
Checked Feb. 1962 by F.J.D.

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

Sheet No. 7 of 9 Revised 10-28-63

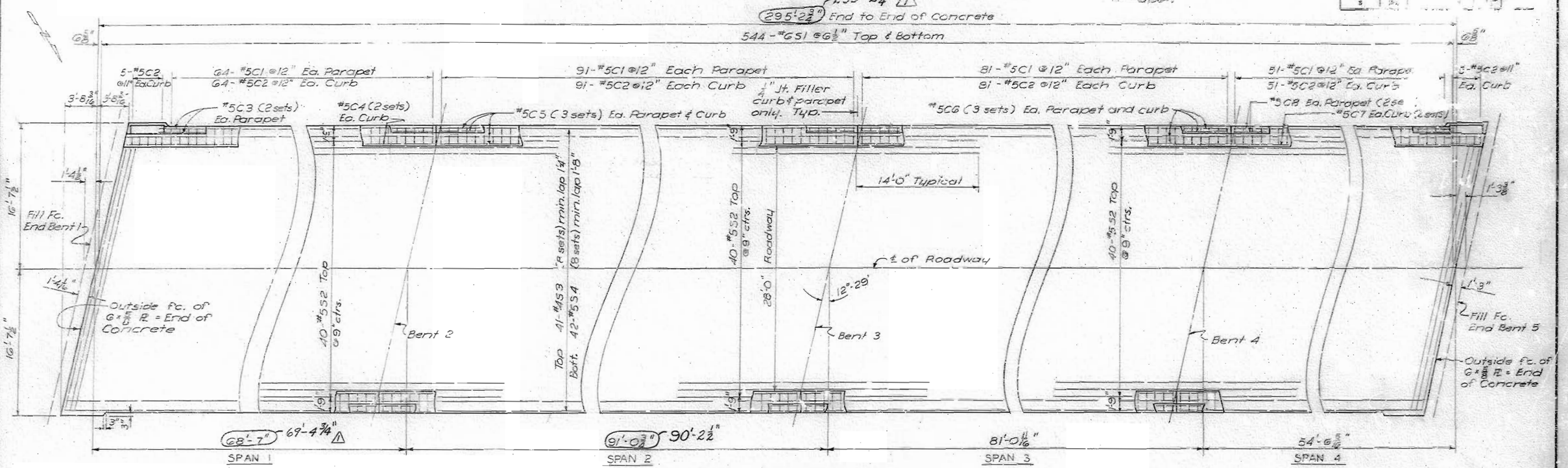
HARRINGTON AND COUTELOU CONSULTING ENGINEERS KANSAS CITY, MO.

A-994

SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

Note: Min. lap 1'-8" for all [illegible] bars in curb [illegible] parapet.

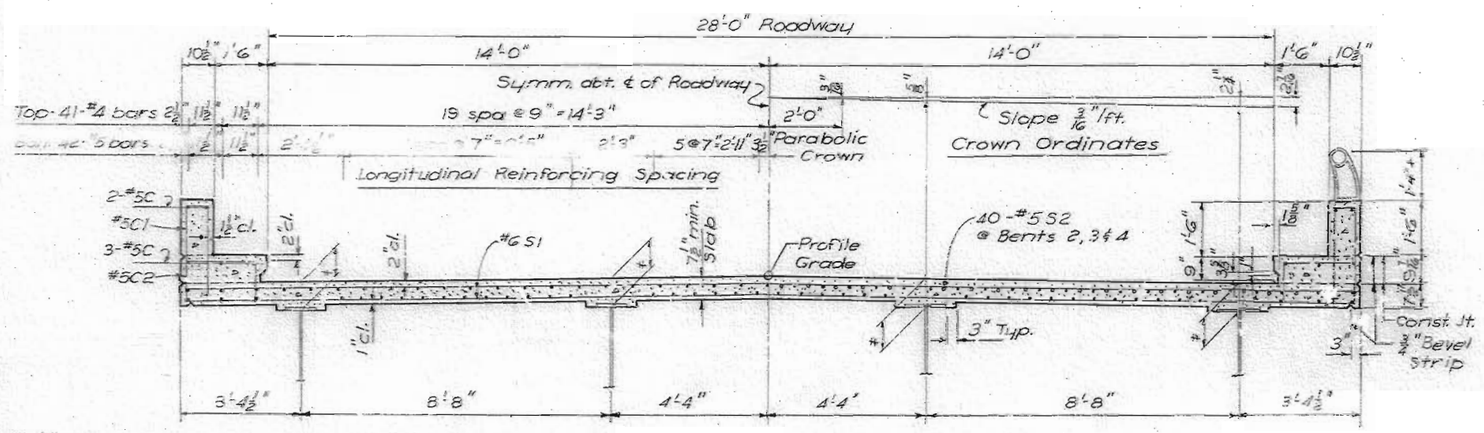


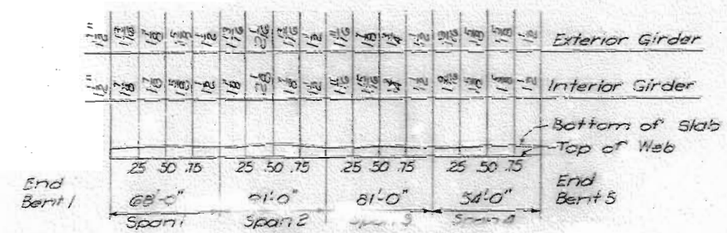
PLAN OF SLAB REINFORCEMENT

Longitudinal dimensions are along top of slab.

For handrail and end post details see Sh. No. 9.

For expansion joint detail see Sh. No. 7.





The slab shall be built parallel to grade and to a minimum thickness of 7½". Dead load deflection (including * % due to weight of structural steel) shall be taken care of by haunching to the bottom of top flange of girder by the dimensions shown. The additional concrete (flange, flange plates, splice plates, etc. excluded) is included in Estimated Quantities.

SLAB HAUNCHING DIAGRAM

* 19% Interior Girder
22% Exterior Girder

* 7½" plus haunch shown in Slab Haunching Diagram. Curbs to be cast independently of slab. Slab to be constructed to a uniform thickness of not less than 7½", or if desired, the bottom of the slab may be built on chords between top of haunches. Haunch slab to bear on end diaphragms.

TYPICAL ROADWAY SECTION

BRIDGE LEEDS ROAD UNDERPASS

STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT NO. I-435-1(24)(RTE. I-435) STA. 396+69.2

JACKSON COUNTY

FINISHED

FINISHED

FINISHED

Drawn Jan. 1962 by O.C.C.
Checked Feb. 1962 by FJD

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

Sheet No. 8 of 9 △ Revised 10-28-63

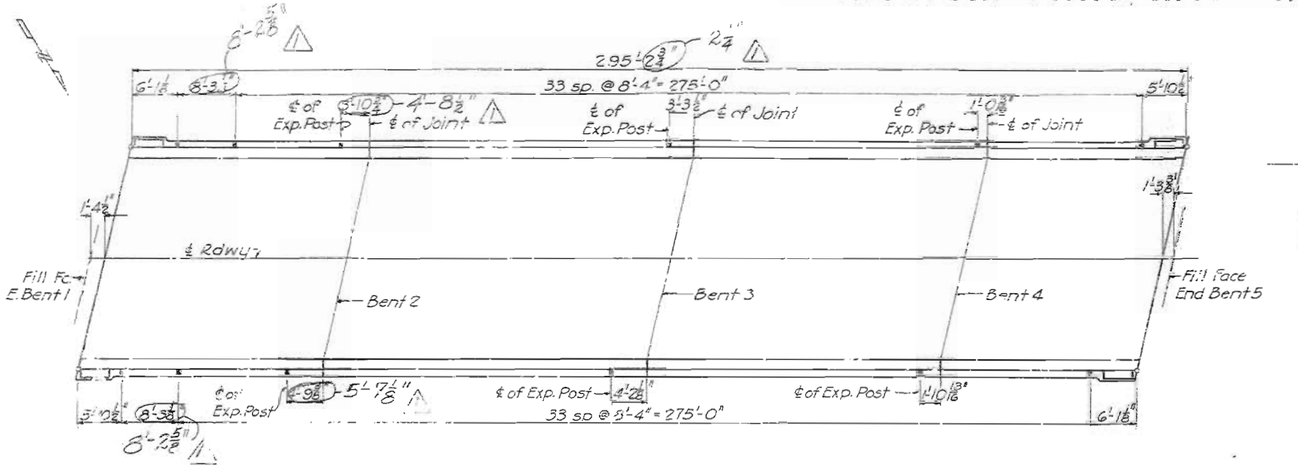
HARRINGTON AND CORTELYOU
CONSULTING ENGINEERS KANSAS CITY, MO.

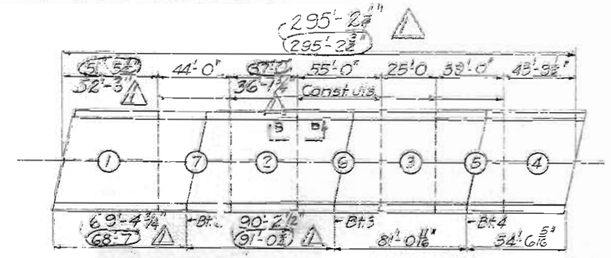
A-994

SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	MO.		19	96	



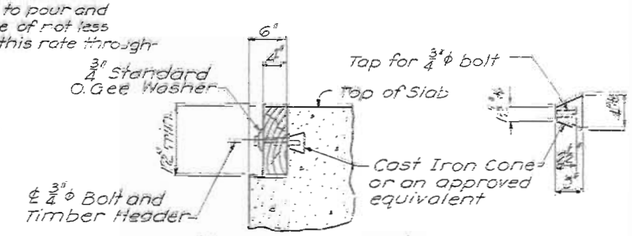


No longitudinal construction joints will be permitted unless shown on plans.

The contractor shall use an approved oscillating screed type, self-propelled mechanical finisher and shall observe the basic pouring sequence unless he can demonstrate to the satisfaction of the engineer that he is equipped to pour and satisfactorily finish the roadway slabs at a rate of not less than 35 cu. yds. per hour and can maintain this rate throughout the alternate pour he elects to use.

	Sequence of Pours						
	Direction						
Basic Sequence	1	2	3	4	5	6	7
	Either Direction						
Alternate "A" Pours	1	7+2		6+3		5+4	
	End Bt. to 7		1 to 6		2 to 5		3 to End Bt.
Alternate "B" Pours	1+7+2		6+3		5+4		
	End Bt. to 6		2 to 5		3 to End Bt.		
Alternate "C" Pours	1+7+2		6+3+5+4				
	End Bent to 6		2 to End Bent				
Alternate "D" Pours	1+7+2+6+3+5+4						
	End Bent to End Bent						

SLAB POURING SEQUENCE



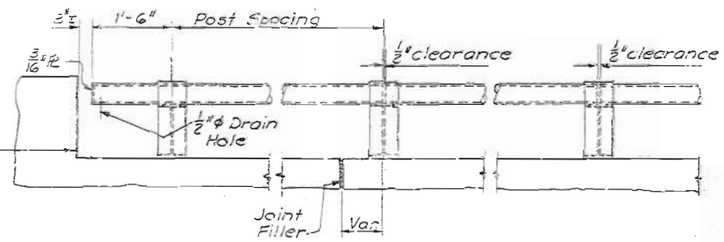
Note: 3/4"φ bolt shall be 9 1/4" long with square head, threaded 3" long and placed at apx. 3'-0" ctrs.

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

DETAILS OF TIMBER HEADER

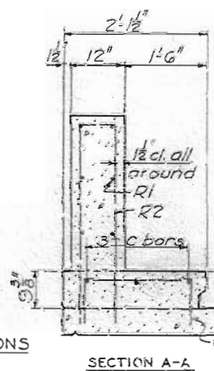
HANDRAIL POST SPACING

Post spacing is at inside face of parapet.
Longitudinal dimensions are along top of parapet.

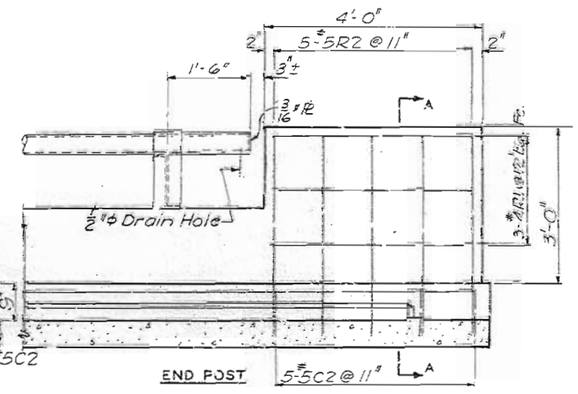


EXPANSION POST SPLICE POST

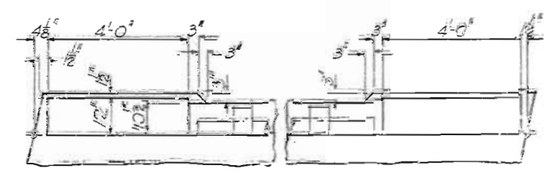
TYPICAL RAIL ELEVATIONS



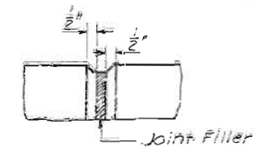
SECTION A-A



END POST

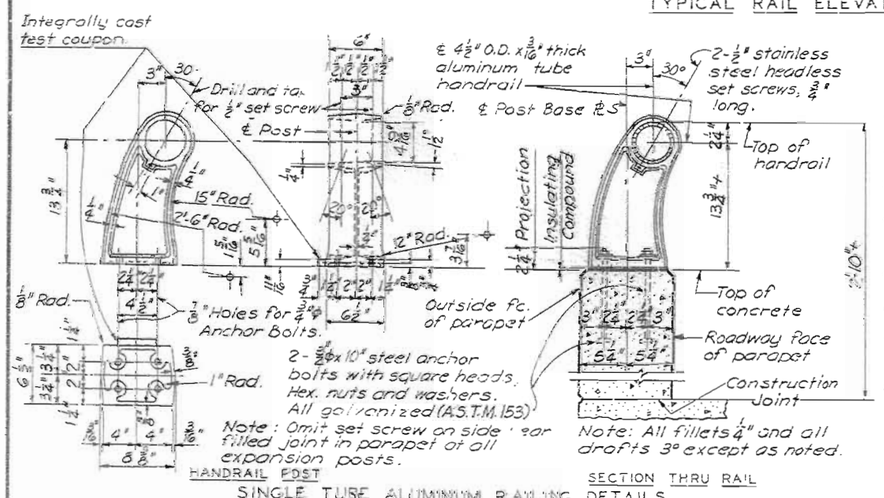


PLAN OF END POSTS



Note: Use bevel as shown for exposed faces of all filled joints.

DETAILS OF BEVEL FOR FILLED JOINTS



HANDRAIL POST SECTION THRU RAIL

SINGLE TUBE ALUMINUM RAILING DETAILS

GENERAL 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.

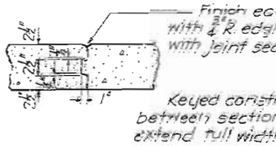
The contract unit price per linear foot of "Bridge Rail (Single Tube Type) shall include furnishing and erecting the handrail complete with anchor bolts, shims and insulating compound.

Pipe rail to be fabricated in two or three panel lengths unless otherwise approved.

Top of curbs and parapets to be built parallel to grade.

Vertical faces of end posts to be vertical.

All exposed edges of end posts and parapets to be beveled 1/2".



SECTION B-B

FINISHED

BRIDGE LEEDS ROAD UNDERPASS

STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT No. I-435-1(24)(R.E.I-435) STA. 395+69.2

JACKSON COUNTY

FINISHED

Drawn Jan. 1962 by JER
Checked Feb. 1962 by FJD

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

Sheet No. 9 of 9 Revised 10-28-68

HARRINGTON AND CORTELYOU
CONSULTING ENGINEERS KANSAS CITY, MO.

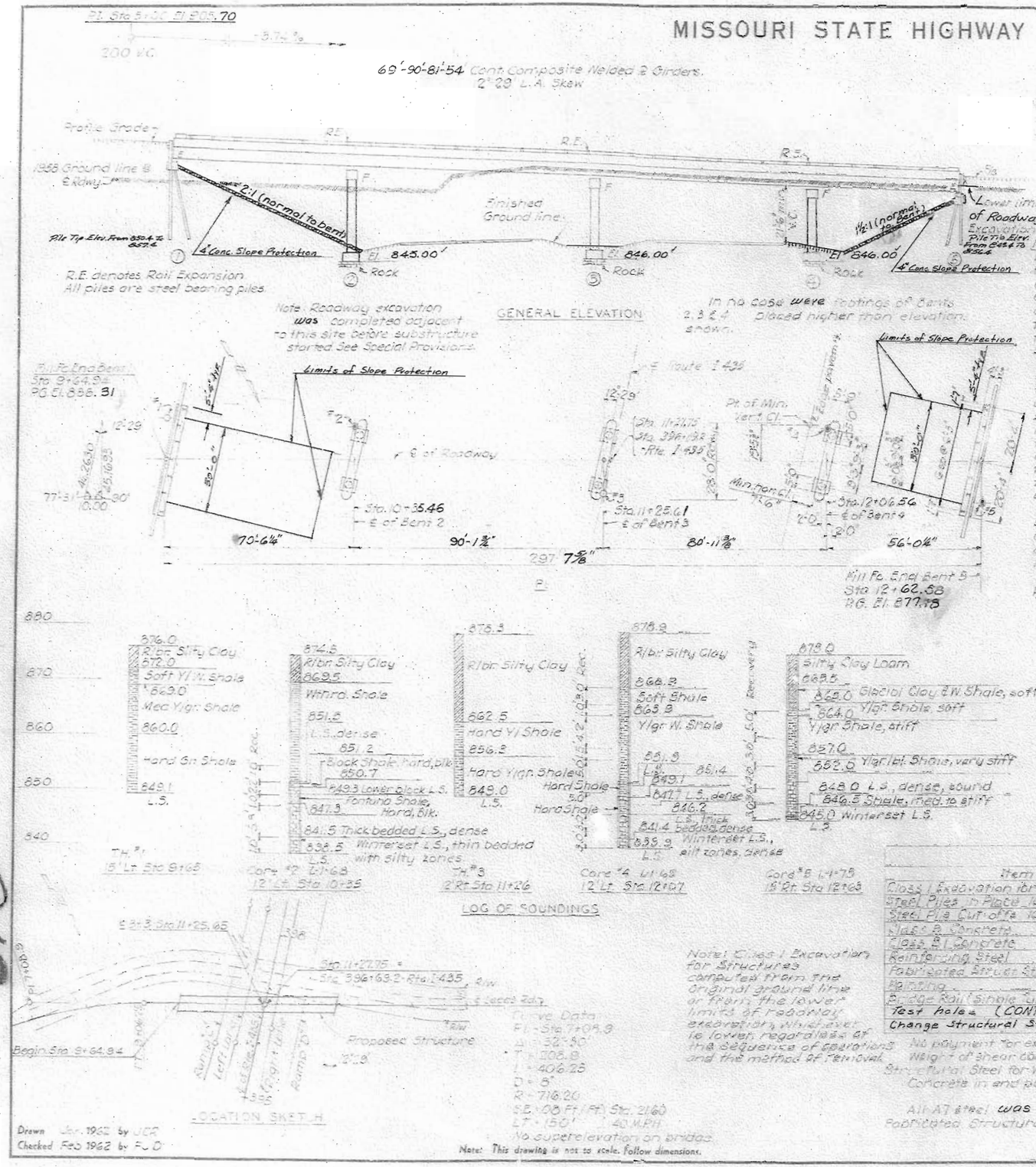
A-994

SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	I-435-1(24)	19	88	

FINAL PLANS



GENERAL NOTES

Design Specifications: A.A.S.H.O. 1961.
Loading: H20-44. Design includes 15 psf future wearing surface.
Design Stresses:

Structural Steel	A7 and 441B	18,000 psi
Reinforcing Steel		20,000 psi
Class A Concrete		1,200 psi
Class B1 Concrete		1,600 psi

Concrete for superstructure was Class B1 air-entrained and for substructure was Class B, air-entrained.

Superstructure Deck surface scaled. (See Special Provisions).

Rivets ¾" shop, ⅞" except in splices and be hot.

Field connections, except where specifically noted otherwise, were bolted with high strength bolts. Final play weight was based on the use of field rivets.

Preparation of joints for welding was in accordance with A.W.S. Specifications. Details shown are for manual arc welding. See Special Provisions for welding inspection. Qualification of welding operators was required.

Paint: Shop primer, field contact surfaces of bolted field connections except where high strength bolts are used, one coat of red lead and surfaces inaccessible after erection, three coats of red lead. All other exposed surfaces, first coat of red lead, second coat brown, third coat aluminum. Payment for paint, cleaning and painting such surfaces was "Incl. under" unit price bid for Painting. See Section 52.4.7 of Standard Specifications for required painting of steel piles in end bents.

Joint Filler: Where joint filler is specified on the plans it did perform to the requirements for Gray Sponge Rubber Compound Joints, Section 1.6.4 of the Standard Specifications.

Permits were obtained for 80 Gross truck loads over legal length.

QUANTITIES

Item		Substruct.	Superstr.	Totals
Class 1 Excavation for Structures	Cu. yds.	86.0		86.0
Steel Piles, in Place, 12"	Lin. Ft.	316.0		316.0
Steel Pile Cut-offs, 10"	Lin. Ft.	34		34
Class A Concrete	Cu. Yds.	160.2		160.2
Class B1 Concrete	Cu. Yds.		302.9	302.9
Reinforcing Steel	Lbs.	39,430	89,640	129,070
Fabricated Structural Steel for Welding	Lbs.		186,340	186,340
Painting	Sq. Yds.		92.2	92.2
Bridge Rail (Single Tube Type)	Lin. Ft.		578	578
Test Holes (CONTINGENT)	Lin. Ft.	24		24
Change Structural Steel (Contingent)	L.P.		1	1

Note: Class 1 Excavation for Structures computed from the original ground line or from the lower limits of roadway excavation, whichever is lower, regardless of the sequence of operations and the method of removal.

No payment for excavation was allowed for End Bent 1.
Weight of shear connectors is included in weight of Fabricated Structural Steel for Welding but is not included in Painting.
Concrete in end posts is included with superstructure concrete.

All A7 steel was included for payment under Fabricated Structural Steel for Welding.

FINISHED

B.M. 888.67 Nail in top N. Wing Bt. #1
B.M. 879.92 Pk. Nail in top N. Wing Bt. #5

FINISHED

BRIDGE: LEEDS ROAD UNDERPASS
STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT NO. I-435-1(24)(RTE. I-435) STA. 396+69.2
JACKSON COUNTY

SUBMITTED BY ____ BRIDGE ENGINEER DATE
APPROVED BY ____ CHIEF ENGINEER DATE

HARRINGTON AND KORTEKOSS
CONSULTING ENGINEERS KANSAS CITY, MO.

STD. 64.00
A-994

Sheet No. 1A of 5

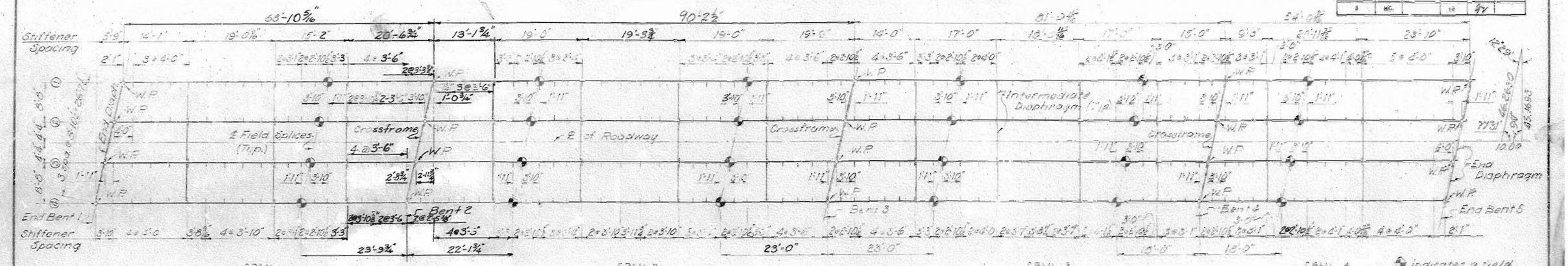
FINAL PLANS

370

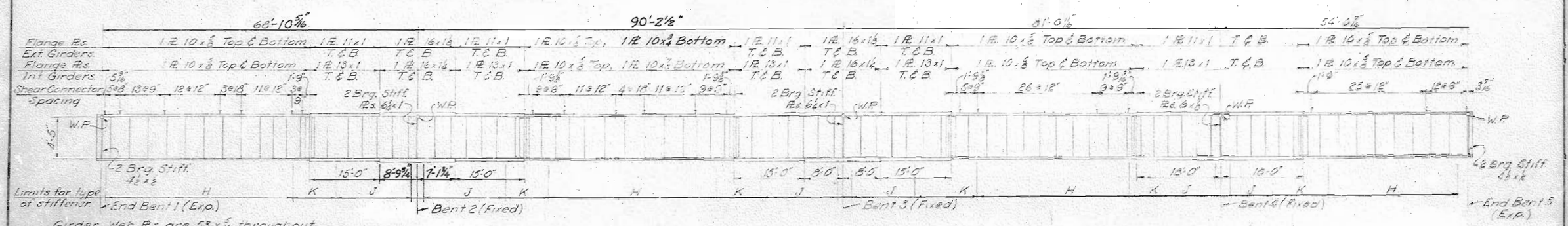
MISSOURI STATE HIGHWAY DEPARTMENT

FINAL PLANS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	47	



FRAMING PLAN



Girder Web Pls are 53 x 5/16 throughout.
All intermediate stiffeners are Pls 4 x 5/16 on one side of web only.

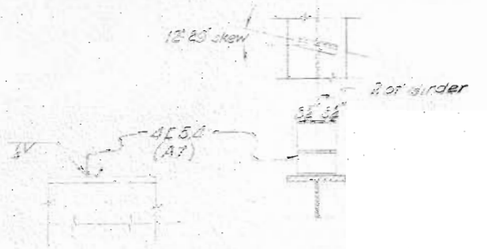
All longitudinal dimensions are along the top of girder web at 60°F. normal temperature under full dead load.
All stiffeners are normal to flanges.

Girder webs, flange plates, and stiffener plates were A.S.T.M. A 373 and all other steel was A.S.T.M. A7-58T except as noted for bearings.

GIRDER ELEVATION

Girder 8 is shown, other girders are the same except as noted.

For expansion device details see sheet No. 7
For girder welding and diaphragm details see sheet No. 6

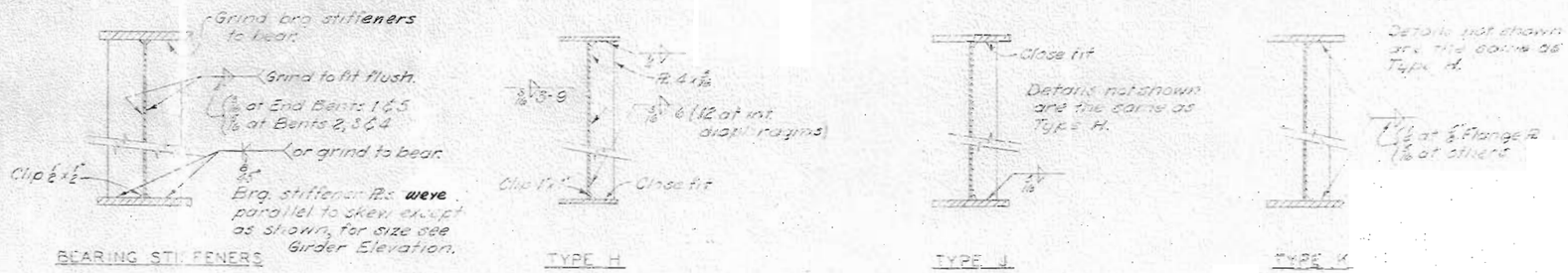


SHEAR CONNECTOR DETAILS

See Special Provisions for shear connectors.
A weight of 1263# for shear connectors (based on studs) is included in the weight of Fabricated Structural Steel for Welding.
Pay weight for shear connectors was based on the weight of the type furnished.

FINISHED

Located channel connectors with backs toward ends of spans.



BEARING STIFFENERS — TYPE H — TYPE J — TYPE K

STIFFENER DETAILS

FINISHED

BRIDGE LEEDS ROAD UNDERPASS

STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT NO. I-435-1(24)(RTE. I-435) STA. 396+69.2

JACKSON COUNTY

FINISHED

Drawn Jan. 1962 by DHL
Checked Feb. 1962 by FJD

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

Sheet No. 5A of 5

HARRINGTON AND CORTELYOU
CONSULTING ENGINEERS KANSAS CITY, MO.

A-994

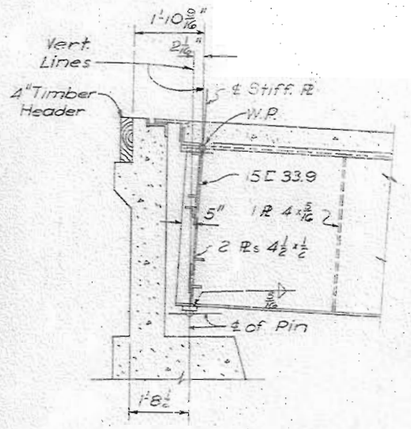
FINAL PLANS

371

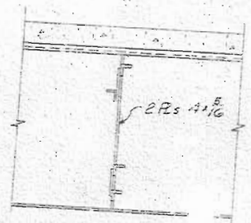
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	74	

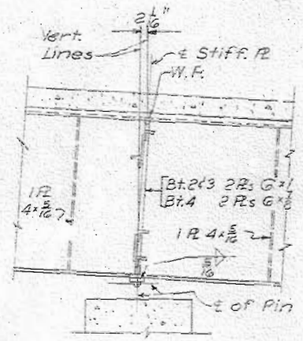
FINAL PLANS



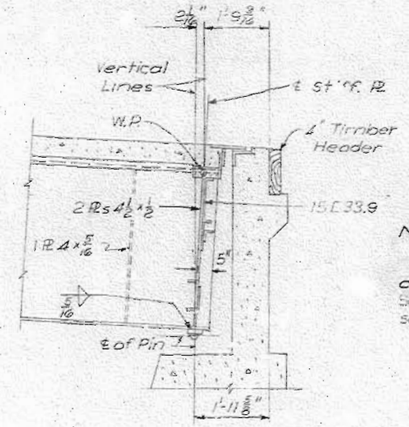
END BENT 1



INTERMEDIATE DIAPHRAGM

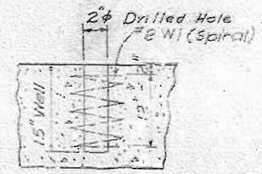


INTERMEDIATE BENTS 2 3 & 4



END BENT 5

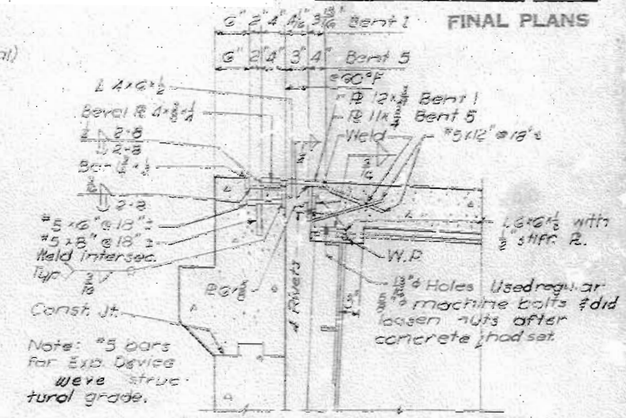
PART LONGITUDINAL SECTION
(Along ℄ of Roadway)
Girder 2 shown.



Note: Anchor bolts were set in holes drilled into concrete substructure. See Specification 55.4.4 for setting Anchor Bolts.

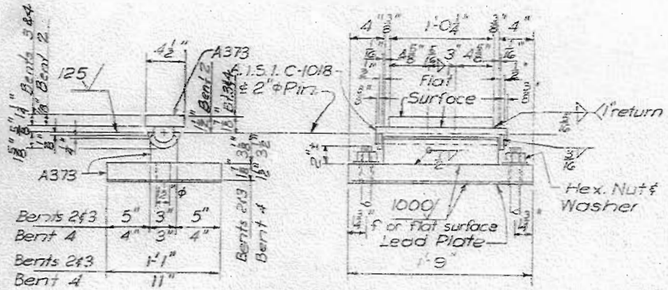
DETAIL OF SPIRAL AROUND ANCHOR BOLTS

DETAIL OF LEVEL PLATE

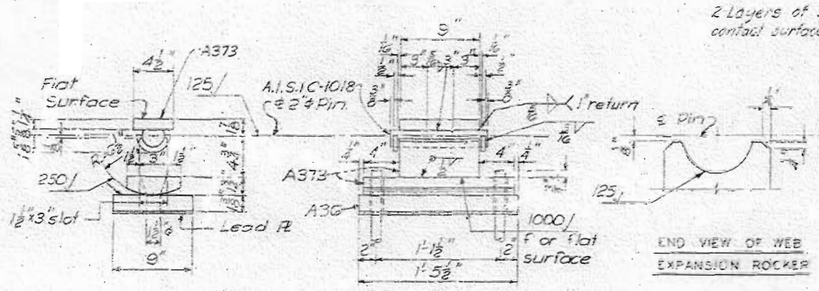


Holes for field rivets were subpunched 11/16"ϕ and reamed to 13/16"ϕ in field. All other o.h. 13/16"ϕ.
Angles, bars and plates were bent to conform to crown of roadway.
Used #5 anchors immediately adjacent to L support over stringers and the remaining anchors at not more than 18" ctrs.
All structural material was ASTM A7-58T.

SECTION AT JOINT
Dimensions are normal to End Bents

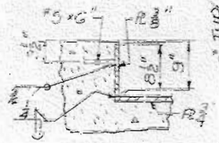


FIXED BENTS 2, 3 & 4
8 Req'd. for Bents 2&3
4 Req'd. for Bent 4

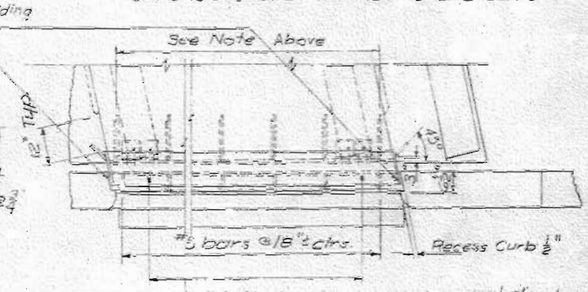


EXPANSION END BENTS 1 & 5
8 Required

END VIEW OF WEB EXPANSION ROCKER



CURB PLATE DETAIL



PART PLAN

EXPANSION JOINT DETAILS

TYPE "D" BEARINGS
Estimated weight of bearings, pins and anchor bolts = 3760 Lbs.

BEARING NOTES
Material for Type "D" Bearings was as noted

Anchor Bolts were 1 1/4"ϕ swedged bolts and were extend 12" into concrete, with hexagon nuts and plain washers for Fixed Bearings, no nuts for Expansion Bearings.
Lead plates under bearings were approximately 1/8" thickness and weigh 8#/sq.ft. Cost of lead plates were included in price bid for other items.

Top plates were shop welded to girders.
Material for Bearings were paid for as fabricated structural Steel for Welding.

FINISHED

FINISHED

BRIDGE LEEDS ROAD UNDERPASS
STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT NO. I-435-1(24)(RTE I-435) STA. 390+59.2
JACKSON COUNTY FINISHED

Drawn Jan. 1962 by O.C.C.
Checked Feb. 1962 by F.J.D.

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

Sheet No. 7A of 5

HARRINGTON AND CONYELYOU
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A-994

372

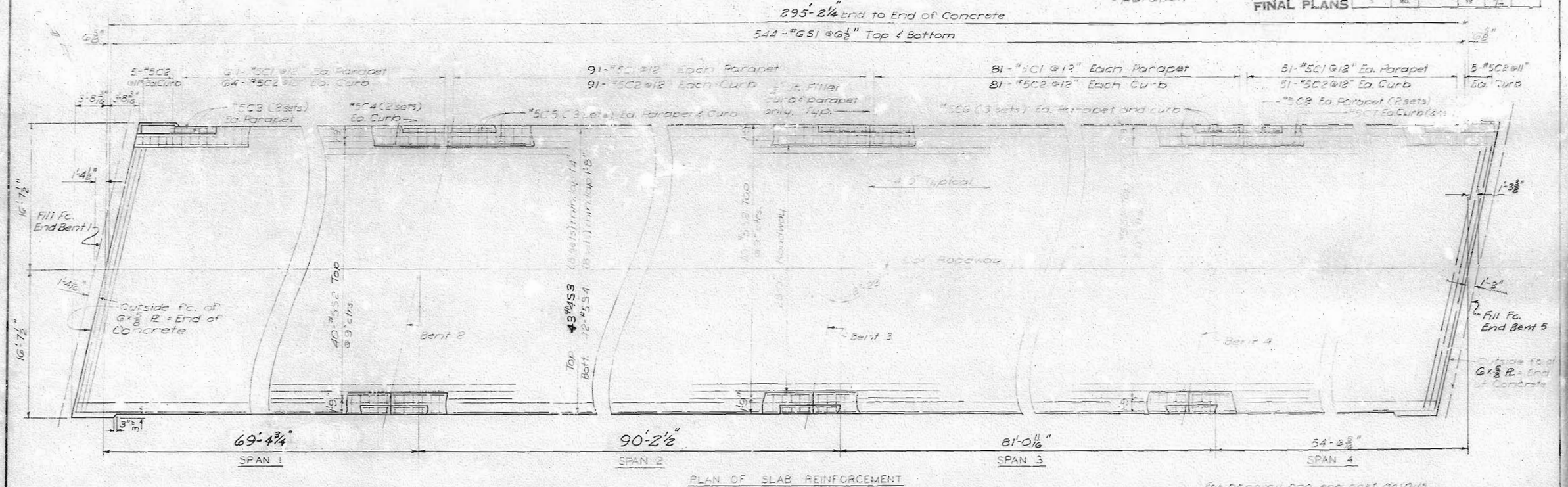
FINAL PLANS

MISSOURI STATE HIGHWAY DEPARTMENT

Note: Min lap 1'-8" for all longit. bars in curb & parapet.

FINAL PLANS

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

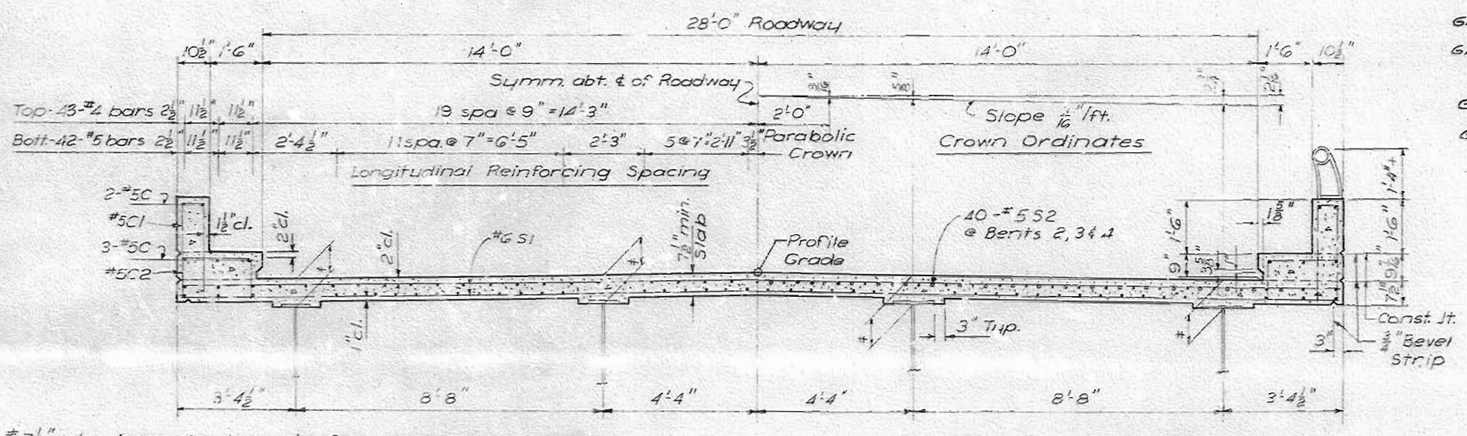


PLAN OF SLAB REINFORCEMENT

Longitudinal dimensions are along top of slab.

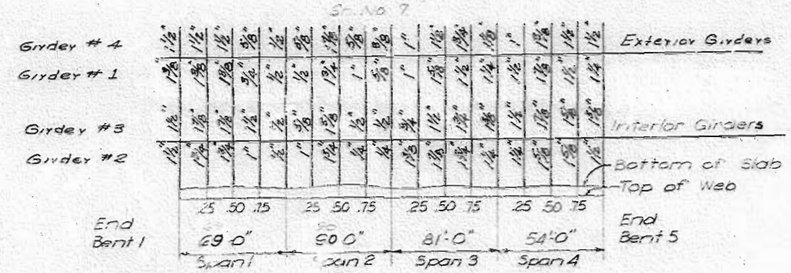
For handrail and end post details see Sh. No. 9

For expansion joint detail see Sh. No. 7



#7½" plus haunch shown in Slab Haunching Diagram. Curbs were cast independently of slab. Slab was constructed to a uniform thickness of not less than 7½", or if desired, the bottom of the slab was built on chords between top of haunches. Haunch slab does bear on end diaphragms.

TYPICAL ROADWAY SECTION



The slab was built parallel to grade and to a minimum thickness of 7½". Dead load deflection (including * % due to weight of structural steel) was taken care of by haunching to the bottom of top flange of girder by the dimensions shown. The additional concrete (flange, flange plates, splice plates, etc. excluded) is included in Estimated Quantities.

SLAB HAUNCHING DIAGRAM

* 19% Interior Girder
22% Exterior Girder

FINISHED

BRIDGE LEEDS ROAD UNDERPASS

STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT NO. I-435-1(24)(RTE. I-435) STA. 396+69.2

JACKSON COUNTY

FINISHED

Drawn Jan. 1962 by O.C.C.
Checked Feb. 1962 by F.J.D.

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

Sheet No. 8A-5

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A-994

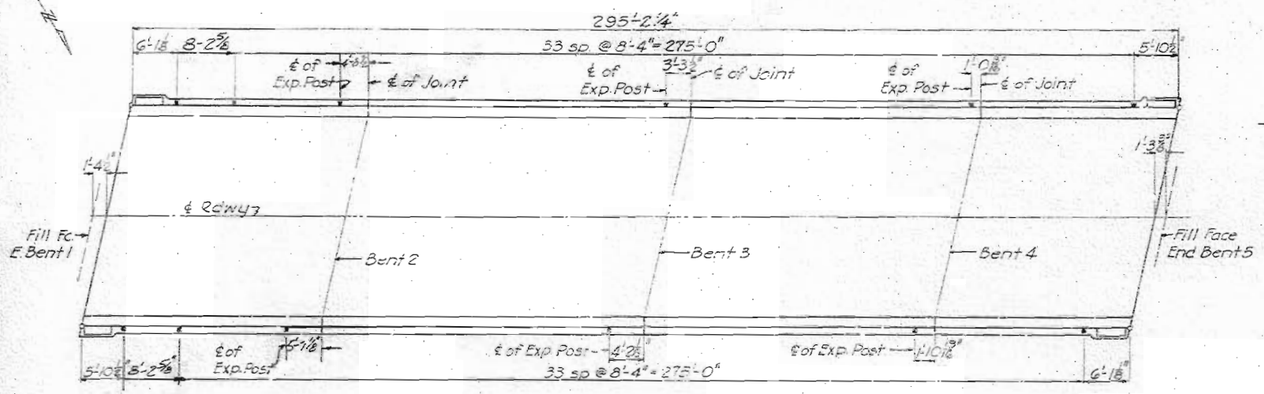
FINAL PLANS

373

MISSOURI STATE HIGHWAY DEPARTMENT

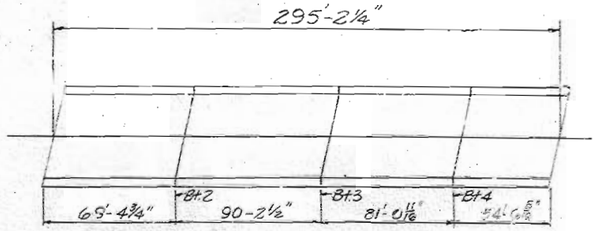
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	9/6	

FINAL PLANS



HANDRAIL POST SPACING

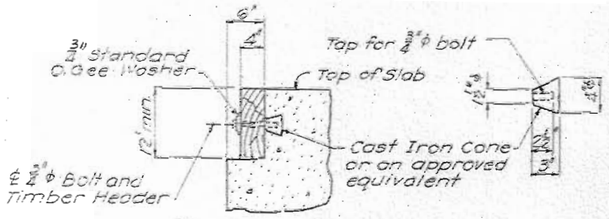
Post spacing is at inside face of parapet.
Longitudinal dimensions are along face of parapet.



No longitudinal construction joints were permitted unless shown on plans.

The contractor may use an approved oscillating screed type, self-propelled mechanical finisher. Deck was poured continuously Bent #1 to Bent #5

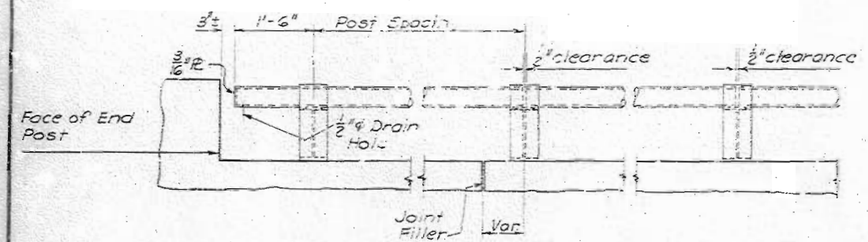
SLAB POURING SEQUENCE



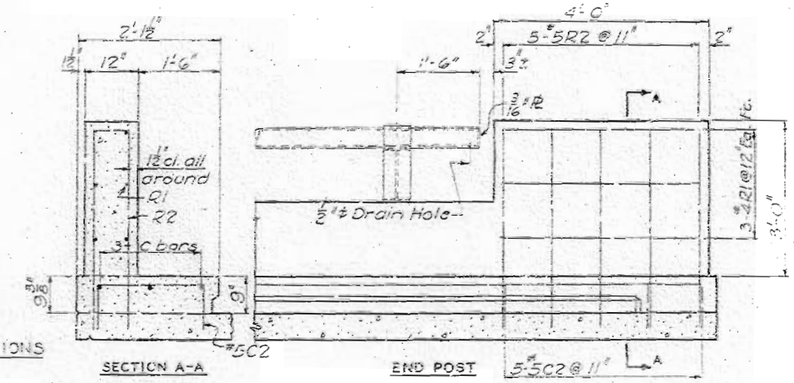
Note: ¾"φ bolt were 6¼" long with square head, threaded 3" long and placed at abt. 2'-0" cts.

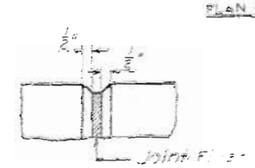
Cost of timber headers complete in place to be included in price bid for concrete.

DETAILS OF TIMBER HEADER



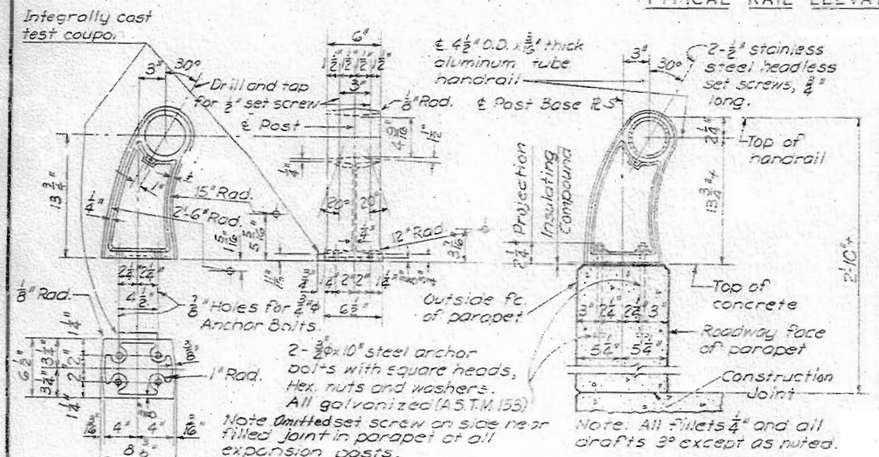
TYPICAL RAIL ELEVATIONS





Note: Use bevel as shown for exposed faces of all filled joints.

DETAILS OF BEVEL FOR FILLED JOINTS



SINGLE TUBE ALUMINUM RAILING DETAILS

GENERAL 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 was ⅜". Where more tilting of post is required for proper alignment, concrete bearing areas were ground down

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

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

Pipe rail was fabricated in two or three panel lengths unless otherwise approved.

Top of curbs and parapets was built parallel to grade.

Vertical faces of end posts are vertical.

All exposed edges of end posts and parapets are beveled ½".

FINISHED

BRIDGE LEEDS ROAD UNDERPASS

STATE ROAD INTERSTATE ROUTE 435
FROM ROUTE 40 TO LEEDS ROAD
PROJECT NO. I-435-1(24)(RTE. I-435) STA. 396+89.2

FINISHED

JACKSON COUNTY

HARRINGTON AND CORTELYOU
CONSULTING ENGINEERS KANSAS CITY, MO.

A-994

Drawn Jan. 1962 by JER
Checked Feb 1962 by FJD

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

Sheet No. 5 of 5

FINAL PLANS

374