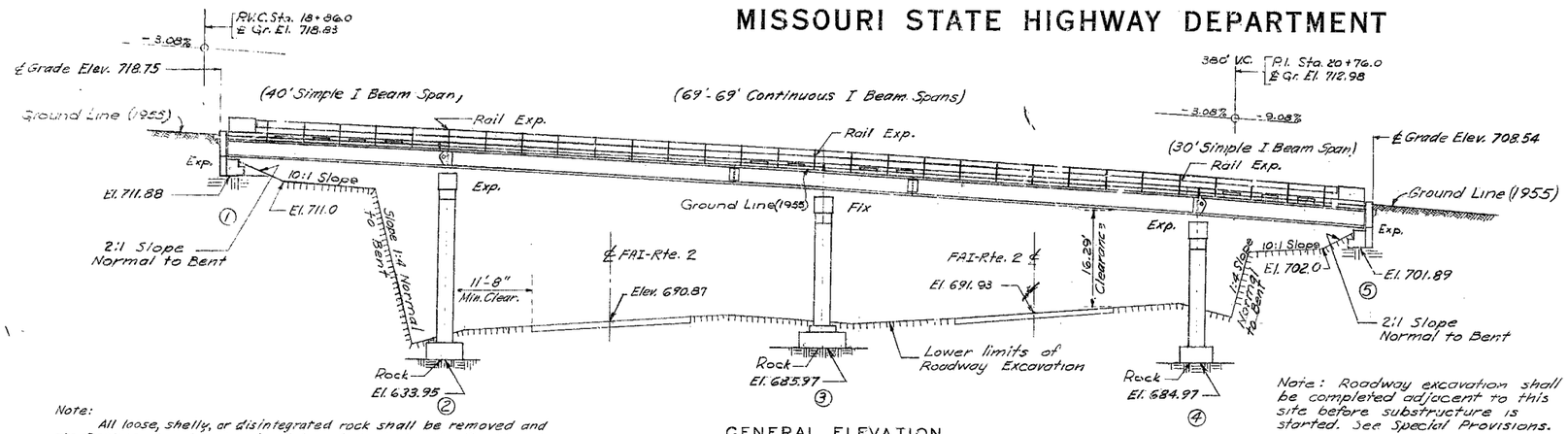
MISSOURI STATE HIGHWAY DEPARTMENT

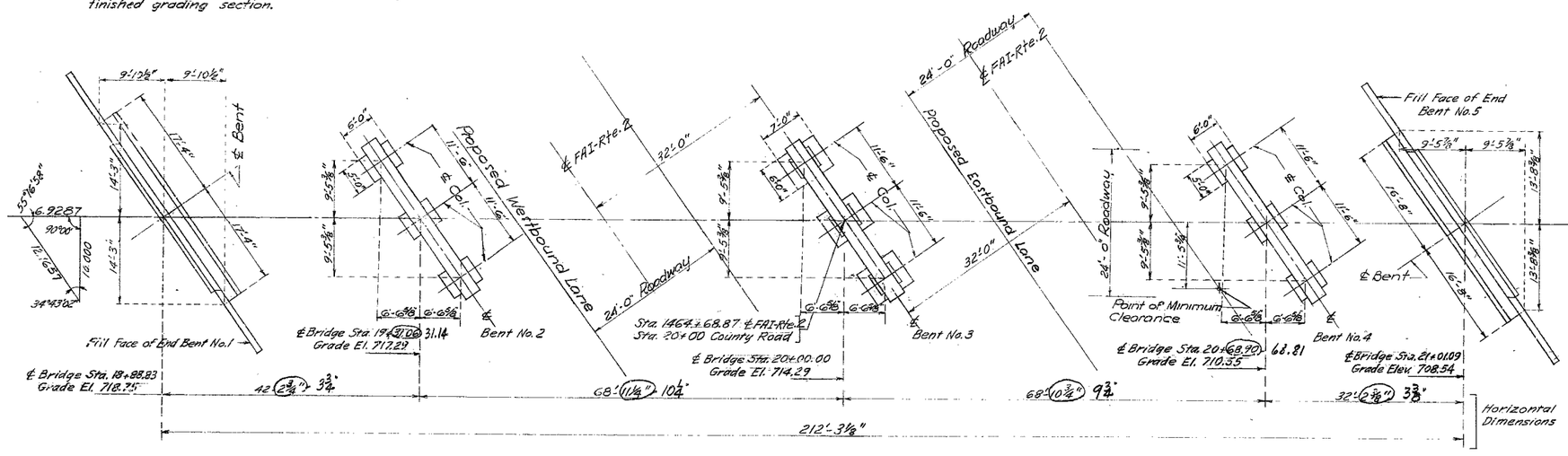
FED. ROAD DIST. NO.	STATE	FED. AID ROJ. NO.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
5	MO.		19		



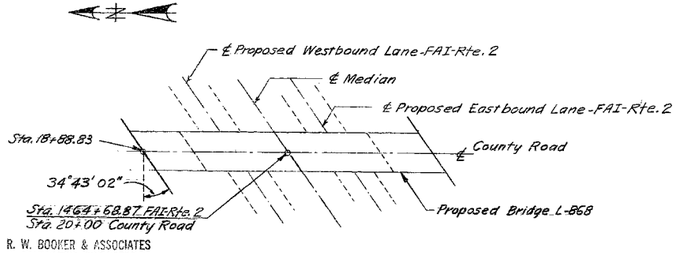
Note:
All loose, shelly, or disintegrated rock shall be removed and the footings placed on hard, solid, undisturbed rock. If soft rock or shale is encountered, the footings shall be carried at least 18" into and cast against vertical faces of same. In no case shall footings of Bents Nos. 2, 3 & 4 be placed higher than 4' below finished grading section.

GENERAL ELEVATION

Note: Roadway excavation shall be completed adjacent to this site before substructure is started. See Special Provisions.



PLAN



LOCATION SKETCH

R. W. BOOKER & ASSOCIATES
CONSULTING ENGINEERS
1722 OLIVE STREET
ST. LOUIS 3, MISSOURI

Drawn Mar. 1957 by K.F.R.
Checked Apr. 1957 by D.C.S

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

GENERAL NOTES:

Design Specifications A.A.S.H.O. - 1953
Loading H-15-44 (Future Wearing Surface 15#/s')
Structural Steel Stress 18,000 #/s"
Reinforcing Steel Stress 20,000 #/s"
Concrete Stress. 1,200 #/s"

Concrete for superstructure shall be Class "B-1" air-entrained (See Special Provisions).

Concrete for substructure shall be Class "B" air-entrained. If contractor desires he may use Class "B-1" in lieu of Class "B" concrete in substructure with payment made on the basis of Class "B" concrete.

A rubbed surface finish will be required on all exposed surfaces of concrete end posts above top of curbs.

Rivets ¾"; holes 13/16" except where otherwise noted.

Field connections shall be riveted except as noted in handrail details or if the contractor desires he may use high tensile steel bolts with conburieed washers in place of rivets.

If high tensile steel bolts are used, they shall be placed in such a manner that the nuts will always be in the least exposed position.

Paint: Shop, none; Field, contact surfaces of bolted field connections except where high tensile steel bolts are used, one coat of red lead, and surfaces inaccessible after erection three coats of red lead. No other paint to be applied by Contractor. Red lead required shall be furnished by the Contractor. Payment for cleaning and painting such surfaces will be included in unit price bid for fabricated Structural Steel.

Where joint filler is specified on plans it shall conform with the requirements for Preformed Material for Filler as given in Section 53-220 of the Standard Specifications.

Qualification of welding operators will be required.

SUBMITTED BY
Clarence C. Palmer
REGISTERED PROFESSIONAL ENGINEER
MISSOURI NO. E-5777

STATE OF MISSOURI
CLARENCE C. PALMER
NUMBER E-5777
REGISTERED PROFESSIONAL ENGINEER

ESTIMATED QUANTITIES

Item		Substr.	Superstr.	Total
Class 1 Excavation	Cu. Yds.	205		205
Class "B" Concrete	Cu. Yds.	142.6		142.6
Reinforcing Steel	Lbs.	12,850	36,950	49,800
* Fabricated Structural Steel	Lbs.		147,550	147,550
Gray Iron Alloy Castings	Lbs.		920	920
Steel Castings	Lbs.		3,880	3,880
Class "B-1" Concrete	Cu. Yds.		141.8	141.8

Note;
Concrete in end posts is included with Superstructure Class "B1" Concrete.
All excavation for bridge to be paid for as Class 1 Excavation for Structures.
Estimated quantities of Class 1 Excavation for structures includes only amount of excavation below limits of Roadway Excavation (See Special Provisions).
* Final pay weight for Fabricated Structural Steel will be based on using field rivets except for bolted connections specified for handrails.
Estimated quantities of Class 1 Excavation for structures includes only amount of excavation below Limits of Roadway Excavation (See Special Provisions.)

Sheet No. 1 of 9

B.M. #17-C Spike in Power Pole West Side of County Road 204' Lt. of Sta. 1466+00 El. 723.06 (U.S.G.S. Datum).

BRIDGE - COUNTY ROAD UNDERPASS FINISHED
STATE ROAD FROM ST. CLAIR TO PACIFIC
ABOUT 3 MILES SOUTHWEST OF GRAY SUMMIT
PROJECT NO. I-258(10)(FAI-RTE.2) **STA.** 1464+68.87
FRANKLIN **COUNTY**

SUBMITTED BY J. A. Williams BRIDGE ENGINEER DATE 1-7-1958
APPROVED BY Rex M. Whitton CHIEF ENGINEER DATE 1-7-1958

FINISHED

Std. R-1
Std. C-110R5
L-868

Rev. 7-31-58

274

SEE FINAL PLANS BROWN-LINES

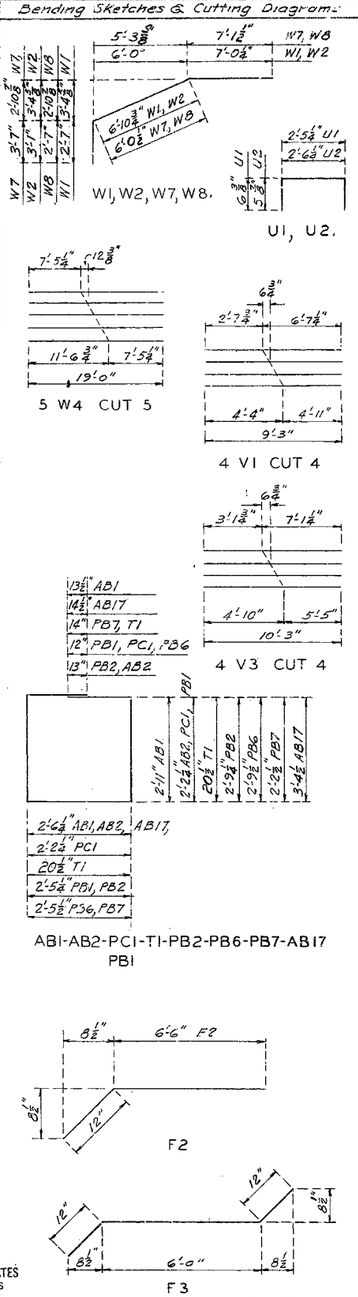
MISSOURI STATE HIGHWAY DEPARTMENT

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

COMPLETE BILL OF REINFORCING STEEL

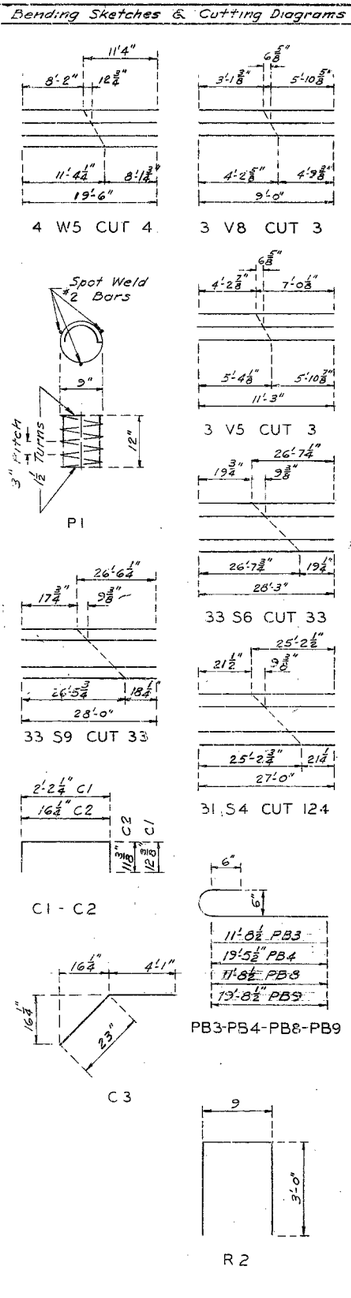
No	Size	Length	Mark	Location
End Bent No 1				
2	#6	16'-6"	W1	Rt. Wing Wall
2	#6	17'-0"	W2	Lt. Wing Wall
11	#6	12'-3"	W3	Wing Wall
5	#6	19'-0"	W4	" "
4	#4	9'-3"	V1	Rt. Wing Wall
2	#4	6'-9"	V2	" "
4	#4	10'-3"	V3	Lt. Wing Wall
2	#4	7'-3"	V4	" "
27	#4	12'-0"	AB1	Beam
7	#4	10'-6"	AB2	"
5	#6	27'-3"	AB3	"
5	#6	8'-9"	AB4	"
5	#6	34'-3"	AB5	"
4	#4	31'-0"	AB6	Backwall
60	#4	5'-0"	AB7	" "
8	#4	5'-6"	AB8	" "
2	#6	31'-0"	AB9	" "
2	#6	34'-3"	AB10	Beam
12	#4	3'-6"	U2	"
8	#2	19'-9"	P1	A.B. Wells
Int. Bent No. 2				
24	#7	4'-9"	D1	Footings
66	#3	9'-9"	PC1	Columns
24	#7	24'-9"	PC2	"
6	#6	7'-6"	F2	Col. Haunch
8	#6	8'-0"	F3	" "
18	#4	10'-3"	PB1	Beam
12	#4	11'-6"	PB2	"
9	#6	13'-0"	PB3	"
9	#6	20'-9"	PB4	"
9	#6	29'-9"	PB5	"
12	#4	3'-6"	U1	"
8	#2	19'-9"	P1	A.B. Wells

Bending Sketches & Cutting Diagrams



No	Size	Length	Mark	Location
Int. Bent No. 3				
24	#7	5'-3"	D2	Footings
48	#3	9'-9"	PC1	Columns
24	#7	19'-3"	PC3	"
16	#6	7'-6"	F2	Col. Haunch
8	#6	8'-0"	F3	" "
2	#6	29'-9"	PB5	Beam
16	#5	11'-6"	PB6	"
21	#5	10'-6"	PB7	"
10	#7	13'-0	PB8	"
10	#7	21'-0"	PB9	"
8	#7	29'-9"	PB10	"
6	#4	3'-6"	U1	"
8	#2	19'-9"	P1	A.B. Wells
Int. Bent No 4				
24	#7	4'-9"	D1	Footings
42	#3	9'-9"	PC1	Columns
24	#7	17'-0"	PC4	"
16	#6	7'-6"	F2	Col. Haunches
8	#6	8'-0"	F3	" "
18	#4	10'-3"	PB1	Beam
12	#4	11'-6"	PB2	"
9	#6	13'-0"	PB3	"
9	#6	20'-9"	PB4	"
9	#6	29'-9"	PB5	"
12	#4	3'-6"	U1	"
8	#2	19'-9"	P1	A.B Wells

Bending Sketches & Cutting Diagrams



No	Size	Length	Mark	Location
End Bent No. 5				
4	#6	19'-6"	W5	Wing Walls
12	#6	11'-9"	W6	" "
2	#6	16'-9"	W7	Rt. Wing Wall
2	#6	15'-9"	W8	Lt. Wing Wall
3	#4	11'-3"	V5	" " "
3	#4	7'-3"	V6	" " "
3	#4	6'-3"	V7	Rt. Wing Wall
3	#4	9'-0"	V8	" " "
5	#6	33'-0"	AB11	Beam
5	#6	17'-6"	AB12	"
5	#6	10'-9"	AB13	"
5	#6	8'-3"	AB14	"
2	#6	33'-0"	AB15	"
2	#6	17'-6"	AB16	"
18	#4	13'-0"	AB17	"
6	#4	12'-0"	AB1	"
9	#4	10'-6"	AB2	"
12	#4	3'-6"	U2	"
4	#4	31'-0"	AB6	Bk. Wall
2	#6	31'-0"	AB9	" "
60	#4	4'-6"	AB18	" "
6	#4	5'-3"	AB19	" "
8	#2	19'-9"	P1	A.B. Wells
Superstructure				
196	#5	36'-0"	S1	Slab
36	#5	16'-0"	S2	"
576	#5	27'-3"	S3	"
124	#5	27'-0"	S4	"
40	#5	14'-9"	S5	"
33	#5	28'-3"	S6	"
98	#5	21'-0"	S7	"
98	#5	15'-9"	S8	"
33	#5	28'-0"	S9	"
20	#5	4'-3"	C1	Curb
339	#5	3'-3"	C2	"
4	#5	6'-0"	C3	"
3	#6	40'-0"	C4	"
3	#6	39'-0"	C5	"
24	#6	35'-6"	C6	"
3	#6	28'-6"	C7	"
3	#6	29'-6"	C8	"
24	#4	3'-9"	R1	End Posts
20	#5	6'-9"	R2	" "

BRIDGE COUNTY ROAD UNDERPASS
STATE ROAD FROM ST. CLAIR TO PACIFIC
ABOUT 3 MILES S.W. OF GRAY SUMMIT
PROJECT NO. I-258(10)(FAI-RTE 2) **STA.** 1464+68.87
FRANKLIN **COUNTY**

FINISHED

L-868

Drawn APR 1957 by H.O.W.
Checked APR 1957 by K.F.R.

R. W. BOOKER & ASSOCIATES
CONSULTING ENGINEERS
1722 OLIVE STREET
ST. LOUIS 3, MISSOURI

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

Sheet No. 2 of 9

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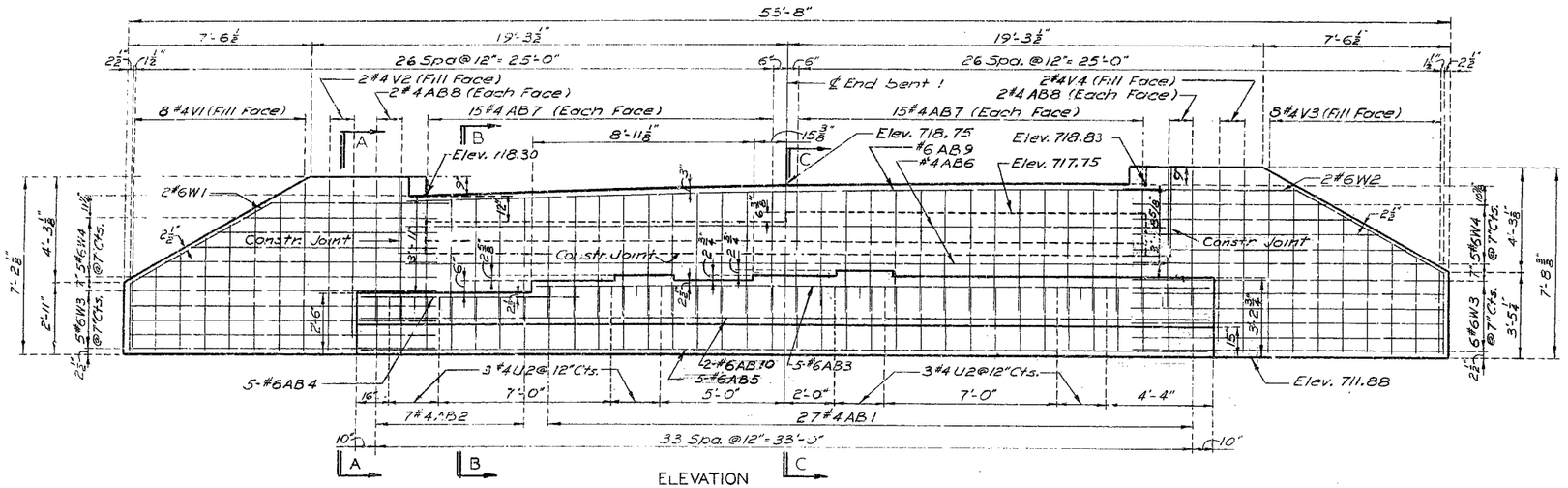
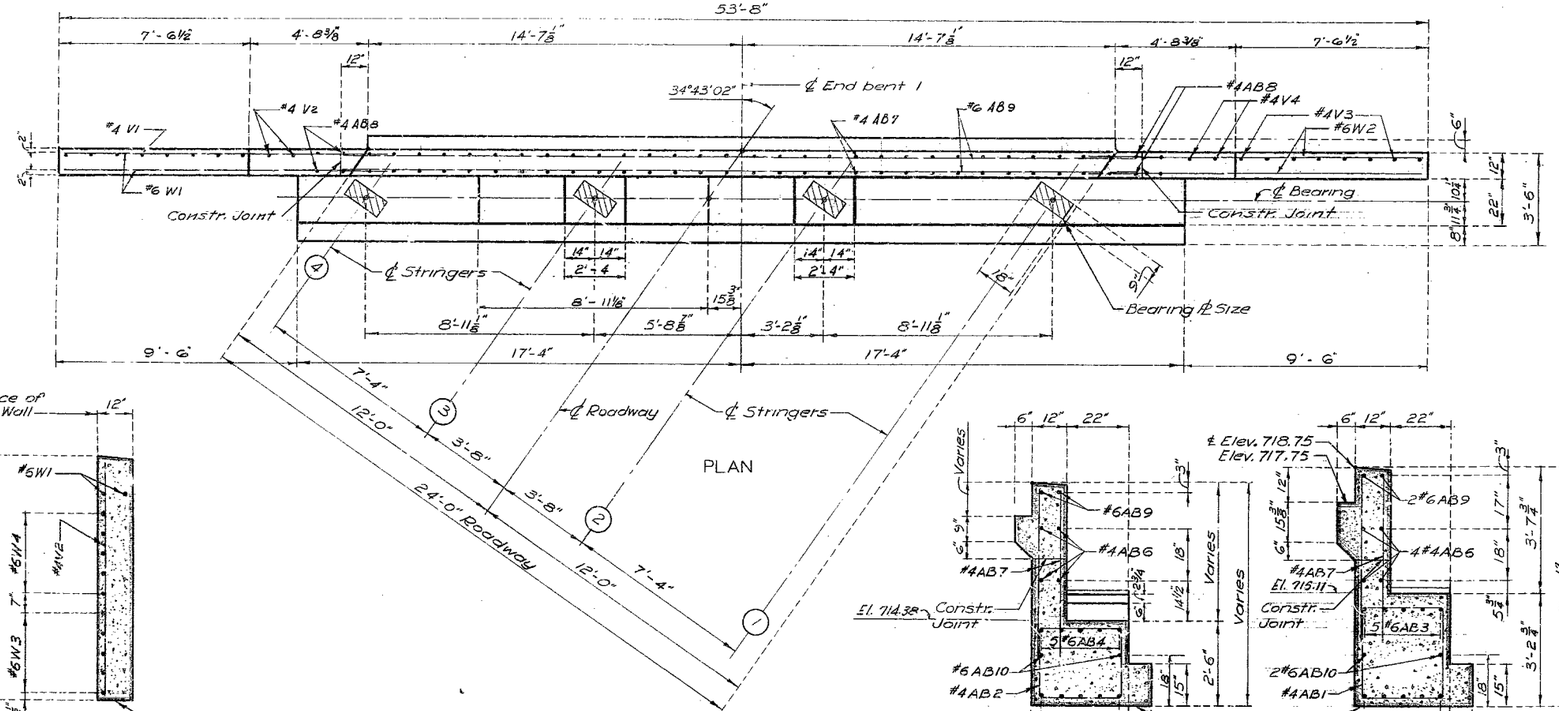
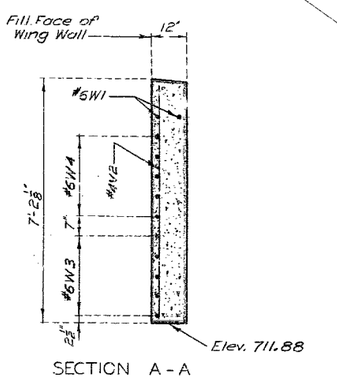
NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

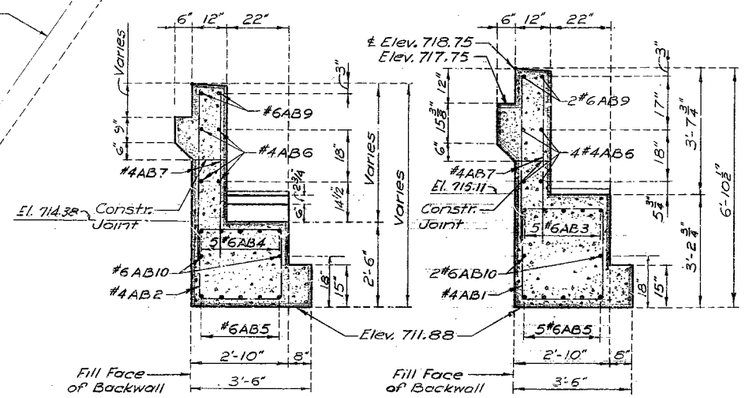
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19		







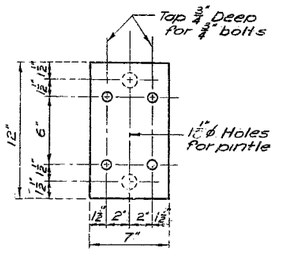
SECTION A - A



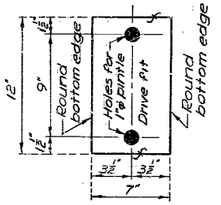
SECTION B - B

SECTION C - C
AT ℄ BENT 1

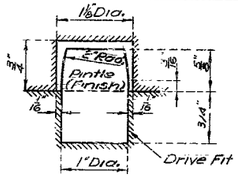
DETAIL OF END BENT ONE



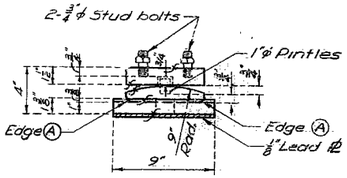
TOP PLATE - EXP.



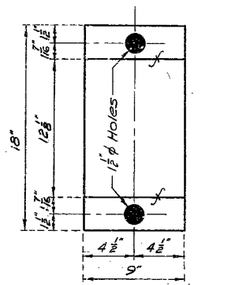
FLOATER PLATE - EXP.



DETAIL OF PINTLE
16 Required



END ELEVATION - EXP.



BOTTOM PLATE - EXP.

DETAIL OF BEARING CASTINGS
Bent #1 4 Sets Required
Bent #5 4 Sets Required

Note:
Finish all surfaces marked ℱ.

Material for bearing castings shall be either gray iron alloy or cast steel but payment will be made as gray iron alloy.

All pins, bolts, nuts, pipe sleeves, rolled steel and pintles shall be paid for as structural steel.

Anchor bolts for bearing castings shall be 1¼" ϕ swedged bolts with Hex. nuts and shall extend 12" into concrete.

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.

Edge Ⓐ to be rounded

Note:
Top of backwall and expansion device to conform to crown of roadway slab.

Holes for all 1¼" ϕ anchor bolts shall be formed in substructure by placing and setting with template 4" ϕ wells of depth as shown in notes for Bearing Devices.

Grout for anchor bolt wells shall contain Iron Oxide. (Embeco or an approved equivalent.)

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

Concrete pedestals for bearings shall be poured monolithically with beam

BRIDGE - COUNTY ROAD UNDERPASS

STATE ROAD FROM ST. CLAIR TO PACIFIC

ABOUT 3 MILES S.W. GRAY SUMMIT

PROJECT NO. I-258(10)KFAI-RTE 2 **STA.** 1464 + 68.87

FRANKLIN **COUNTY**

FINISHED

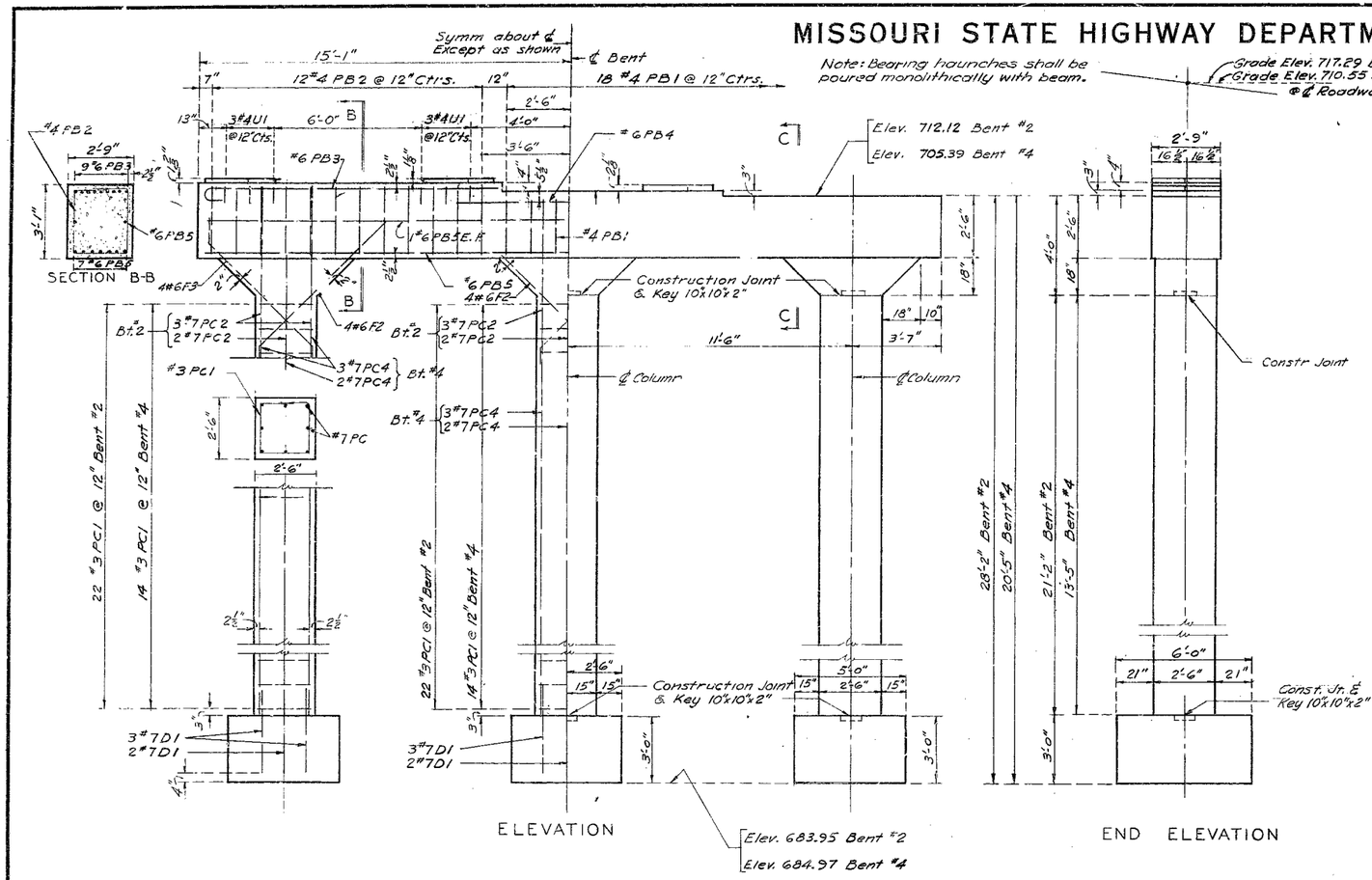
B. W. BOOKER & ASSOCIATES
CONSULTING ENGINEERS
1722 CLIVE STREET
ST. LOUIS 3, MISSOURI

Drawn Mar. 1957 by W.J.H.
Checked Apr. 1957 by D.C.S.

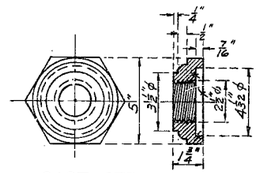
Note: This drawing is not to scale. Follow dimensions.

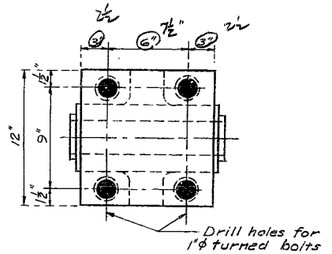
MISSOURI STATE HIGHWAY DEPARTMENT

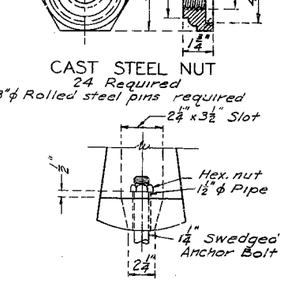
FED. ROAD DIST. NO.	STATE	FED. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
7	MO.		19		

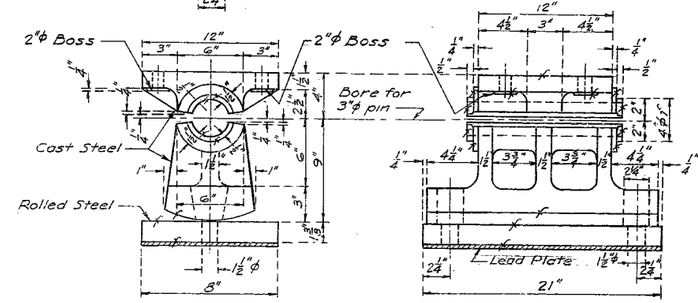


DETAIL OF INTERMEDIATE BENTS 2, & 4

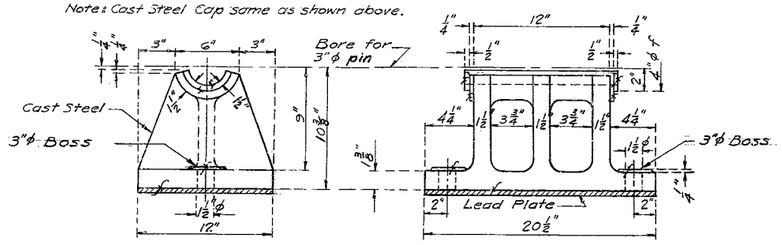








Note: Cast Steel Cap same as shown above.



Note:
Finish all surfaces marked 'f'
All fillets shall have ¾" radius
Material shall be cast steel except as noted
All pins, bolts, nuts, pipe sleeves and rolled steel shall be paid for as structural steel.
Anchor bolts shall be 1¼"℄ swedged bolts with hex. nuts and shall extend 12" into concrete.
Lead plates under bearings shall be approximately ⅛" thickness and weight 8#/sq. ft. Cost of lead plates shall be included in price bid for other items.

DETAILS OF BEARING CASTINGS

BRIDGE COUNTY ROAD UNDERPASS

STATE ROAD - FROM ST. CLAIR TO PACIFIC

ABOUT - 3 MILES S.W. OF GRAY SUMMIT

PROJECT NO. I-258(10)XFAI-RTE. 2 **STA.** 1464+68.87

FRANKLIN **COUNTY**

R. W. BOOKER & ASSOCIATES
CONSULTING ENGINEERS
1722 OLIVE STREET
ST. LOUIS 3, MISSOURI

Drawn MAR 1957 by H.O.W
Checked MAR 1957 by D.C.S.

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

Sheet No. 4 of 9

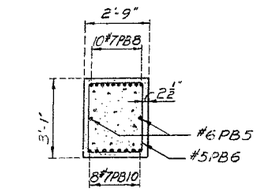
L-868

425

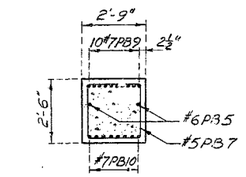
SEE FINAL PLANS BROWN-LINES

MISSOURI STATE HIGHWAY DEPARTMENT

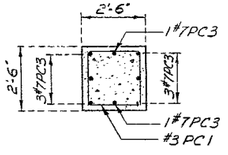
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19		



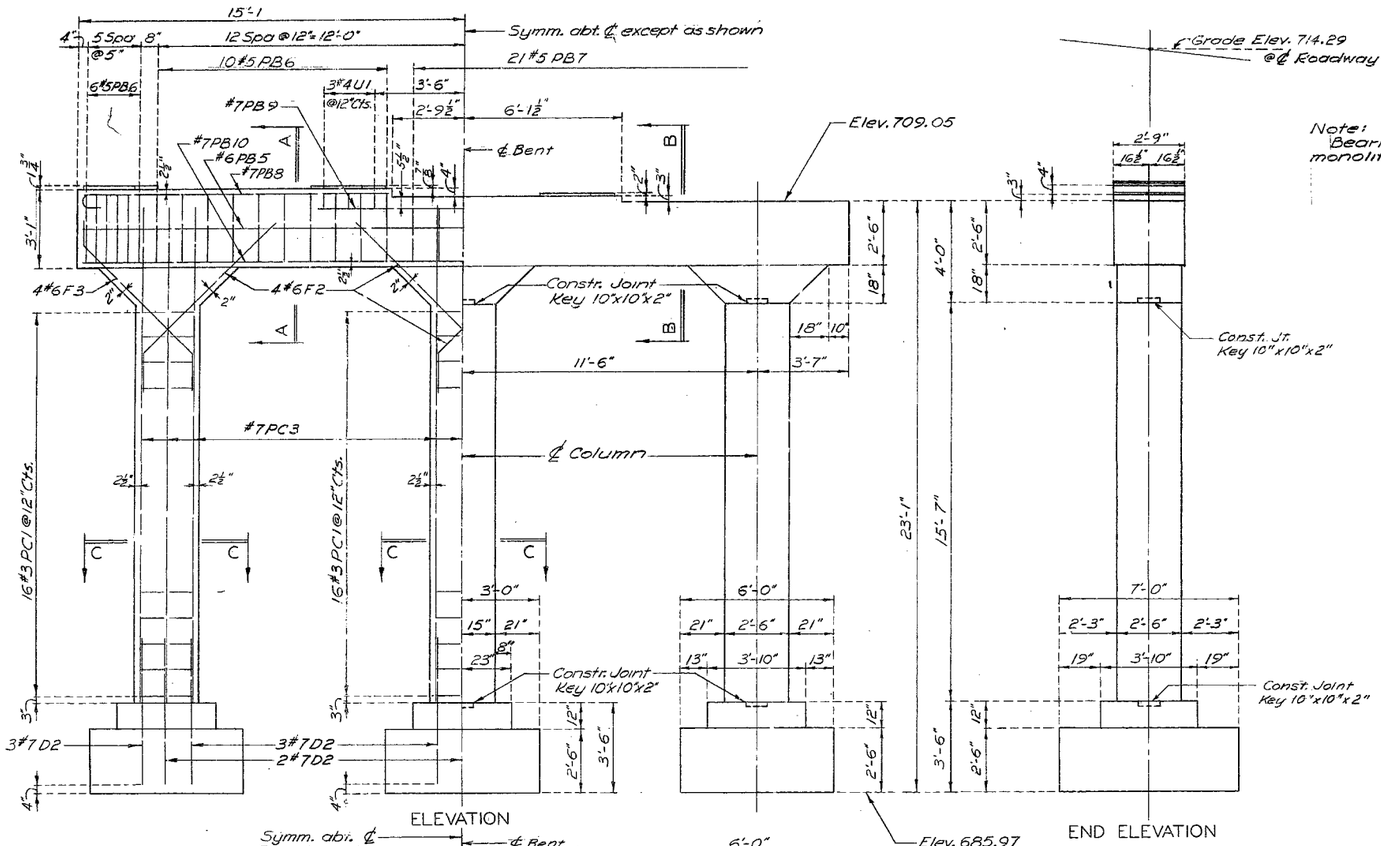
SECTION A - A



SECTION B - B



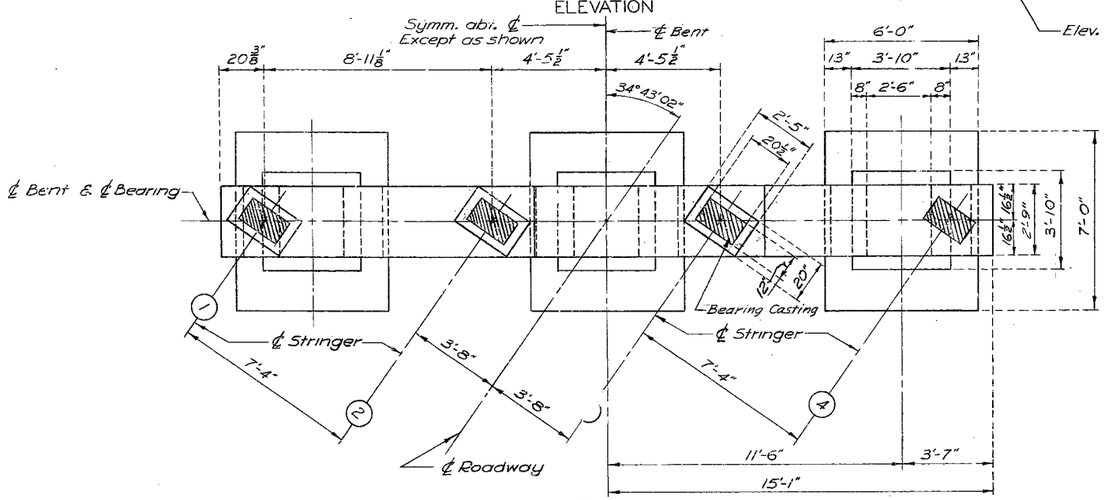
SECTION C - C



ELEVATION

END ELEVATION

Note:
Bearing haunches shall be poured monolithically with beam.



PLAN

DETAIL OF INTERMEDIATE BENT 3

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

R. W. BOOKER & ASSOCIATES
CONSULTING ENGINEERS
1722 OLIVE STREET
ST. LOUIS 3, MISSOURI

Drawn Mar. 1957 by W.J.H.
Checked Apr. 1957 by D.C.S.

BRIDGE - COUNTY ROAD UNDERPASS
STATE ROAD FROM ST. CLAIR TO PACIFIC
ABOUT 3 MILES S.W. OF GRAY SUMMIT
PROJECT NO. I-258(00)FAI-RTE.2) **STA.** 1464+68.87
FRANKLIN **COUNTY**

FINISHED

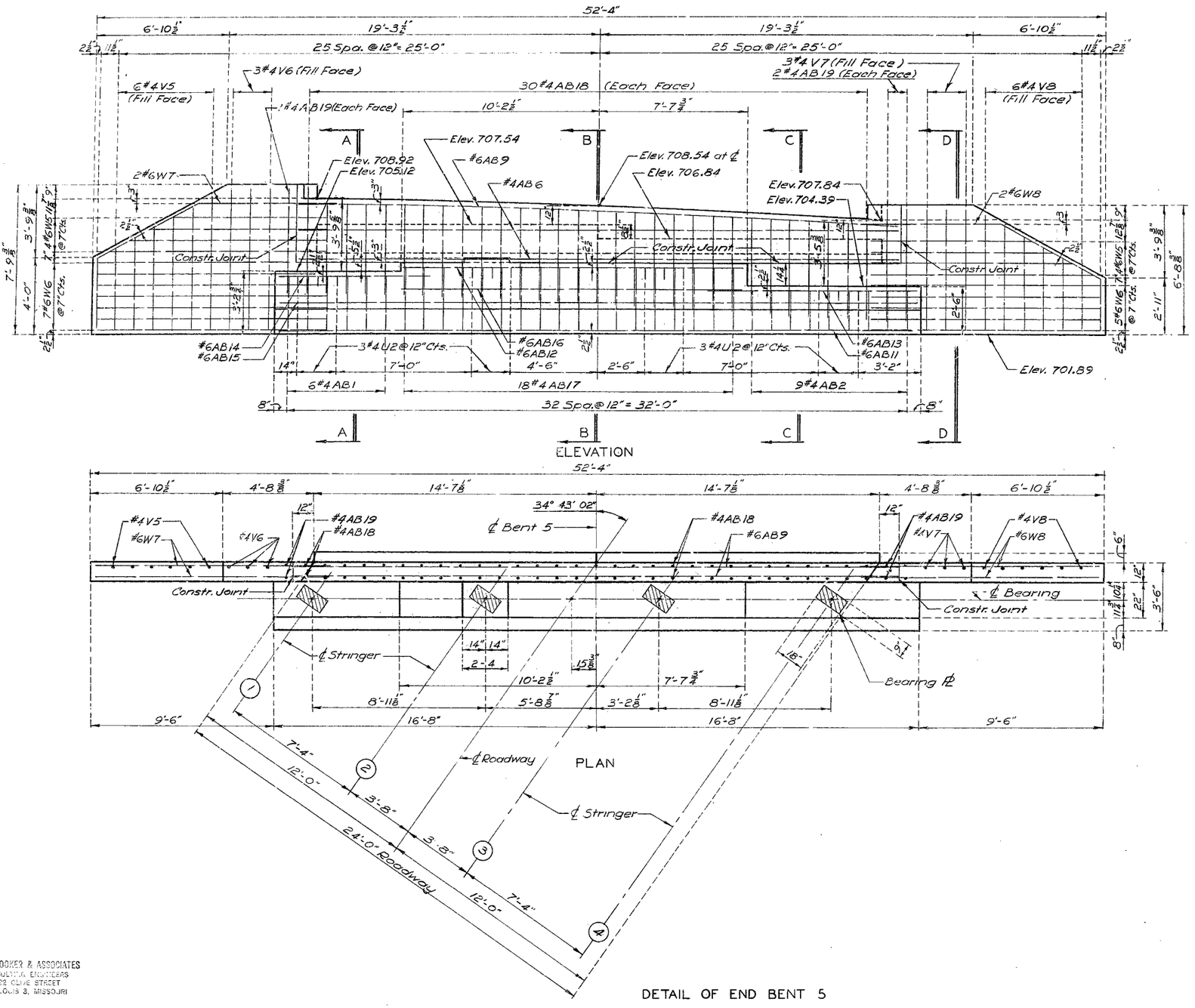
L-868

Sheet No. 5 of 9

SEE FINAL PLANS BROWN-LINES

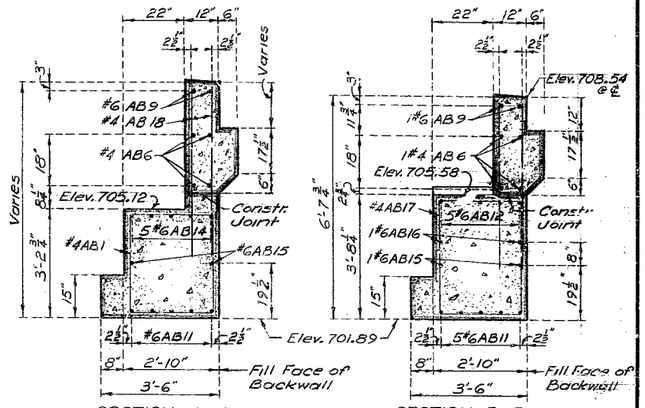
MISSOURI STATE HIGHWAY DEPARTMENT

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



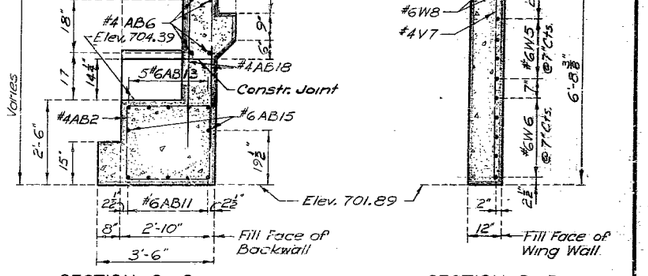
ELEVATION

DETAIL OF END BENT 5



SECTION A-A

SECTION B-B AT ℄ BENT 5



SECTION C-C

SECTION D-D

Note:
Top of backwall and expansion device to conform to crown of roadway slab.

Holes for all 1¼"ø anchor bolts shall be formed in substructure by placing and setting with template 4"ø wells of depth as shown in notes for bearing devices.

Grout for anchor bolt wells shall contain Iron Oxide. (Embeco or an approved equivalent.)

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

Concrete pedestals for bearings shall be poured monolithically with beam.

BRIDGE - COUNTY ROAD UNDERPASS

STATE ROAD FROM ST. CLAIR TO PACIFIC

ABOUT 3 MILES S.W. OF GRAY SUMMIT

PROJECT NO. I-258(10)(FAI-RTE.2) **STA.** 1464+68.87

FRANKLIN **COUNTY**

R. W. BOOKER & ASSOCIATES
CONSULTING ENGINEERS
1722 OLIVE STREET
ST. LOUIS 3, MISSOURI

Drawn Mar. 1957 by W.J.H.
Checked Apr. 1957 by D.C.S.

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

Sheet No. 6 of 9

L-868

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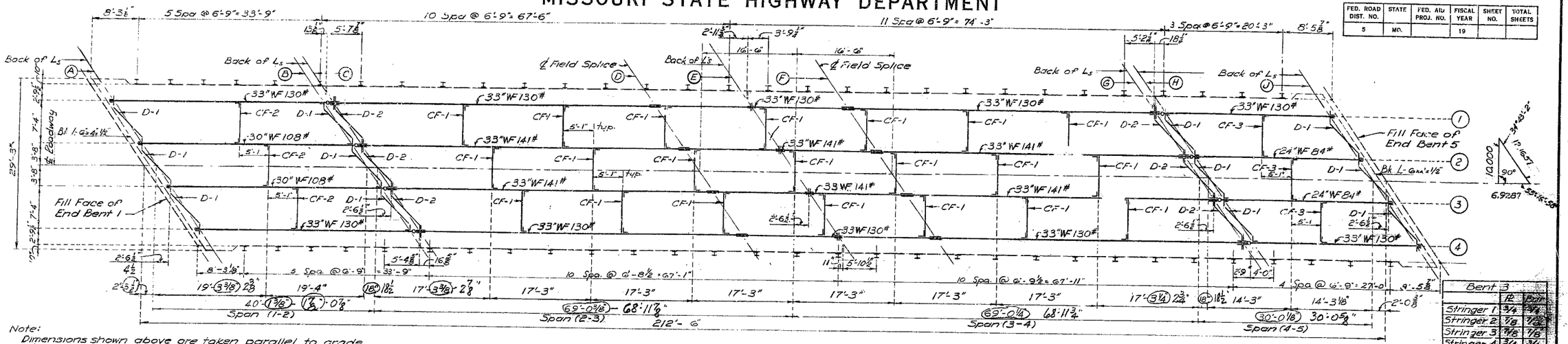
SEE FINAL PLANS BROWN-LINES

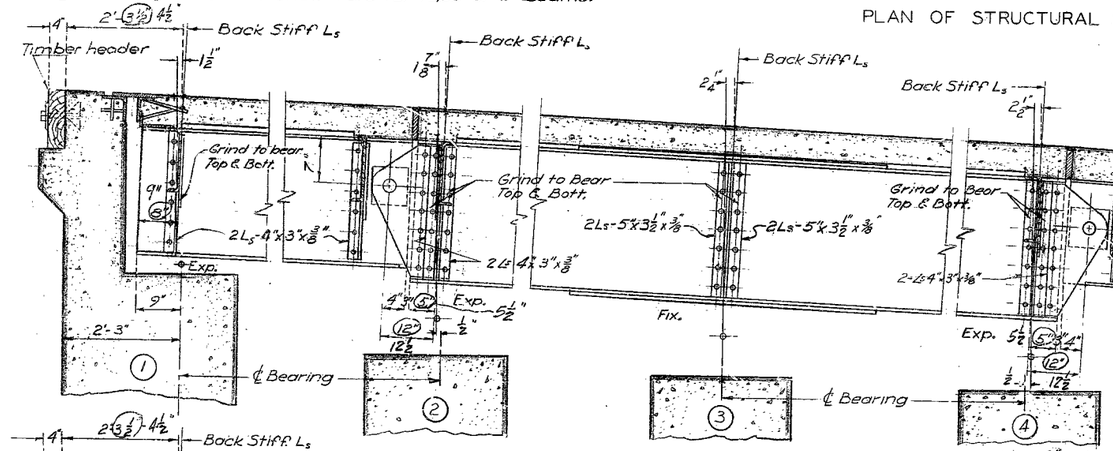
MISSOURI STATE HIGHWAY DEPARTMENT

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

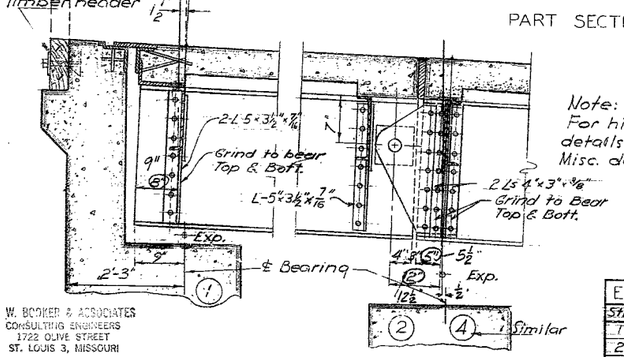


Note:
Dimensions shown above are taken parallel to grade at ℄ Roadway. Elevations shown are for tops of WF Beams.

PLAN OF STRUCTURAL STEEL

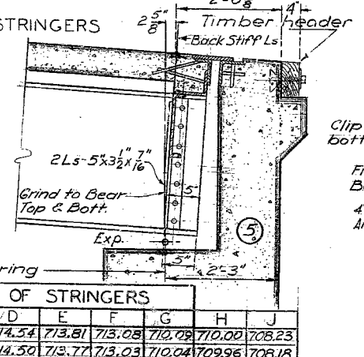


PART SECTION - INTERIOR STRINGERS



PART SECTION - EXTERIOR STRINGERS
STRINGER ONE SHOWN

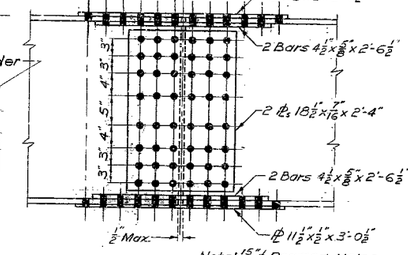
Note:
For hinge and Stiffener details Bent 2 & 4 See Misc. details.

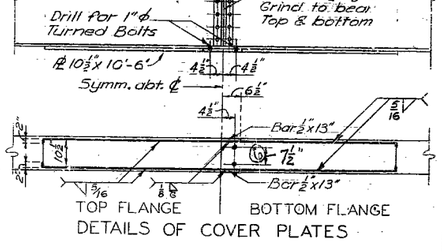


ELEVATIONS AT TOP OF STRINGERS

Str.	A	B	C	D	E	F	G	H	J
1	718.21	716.88	716.82	714.54	713.81	713.08	710.09	710.00	708.23
2	718.17	716.83	716.77	714.50	713.77	713.03	710.04	709.96	708.18
3	717.92	716.59	716.53	714.25	713.52	712.79	709.80	709.71	707.94
4	717.48	716.14	716.08	713.81	713.08	712.34	709.35	709.27	707.49

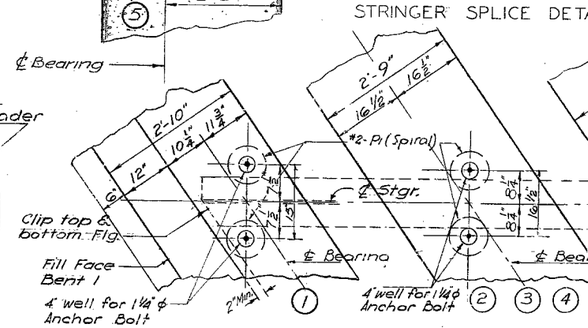
Note: This drawing is not to scale. Follow dimensions.



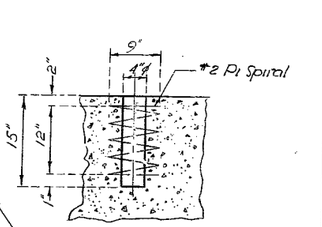


DETAILS OF COVER PLATES

STRINGER SPLICE DETAILS



PART ANCHOR BOLT PLAN



Note:
Holes for all anchor bolts shall be formed in substructure by placing and setting with template 4"ϕ wells of depth shown.
Grout for anchor bolts to contain Iron Oxide (Embeco or an approved equivalent).

BRIDGE - COUNTY ROAD UNDERPASS

STATE ROAD FROM ST. CLAIR TO PACIFIC
ABOUT 3 MILES S.W. OF GRAY SUMMIT
PROJECT NO. I-258(10)XFAI-RTE.2) **STA.** 1464+68.87

FRANKLIN **COUNTY**

Bent 3	℄	Skew
Stringer 1	¾	¾
Stringer 2	⅞	⅞
Stringer 3	⅞	⅞
Stringer 4	¾	¾

COVER ℄ SCHEDULE

R. W. BOOKER & ASSOCIATES
CONSULTING ENGINEERS
1722 OLIVE STREET
ST. LOUIS 3, MISSOURI

Drawn Mar. 1957 by W.J.H.
Checked Apr. 1957 by D.C.S.

Sheet No. 7 of 9

Rev. 7-31-58

L-868

NO CONSTRUCTION CHANGES

428

MISSOURI STATE HIGHWAY DEPARTMENT

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

PLAN OF SLAB SHOWING REINFORCEMENT

Note:
This slab shall be poured in sections of the lengths shown and in the sequence indicated by the numbers ①②③ or as an alternate, by the numbers [1][2][3]. The separate pours shall progress in the direction indicated by the arrows. Longitudinal construction joints will not be permitted.

SLAB POURING DIAGRAM FOR CONTINUOUS SPANS

Stringer 1	0	5/8"	1 5/16"	1 5/16"	9/16"	2 1/4"	2 11/16"	1 15/16"	1 3/4"	2 3/8"	3 11/16"	3 3/4"	2 9/16"	2 7/8"	3 1/16"	3 1/8"	3"
Stringer 2	0	9/16"	7/8"	1 1/16"	3/16"	1 9/16"	1 13/16"	1 15/16"	3/4"	1 1/8"	2 3/16"	2 1/16"	7/8"	1 3/16"	1 3/8"	1 1/4"	1"
Stringer 3	1 1/16"	1 9/16"	1 11/16"	1 7/16"	7/8"	2 1/16"	2 1/8"	1 1/16"	3/4"	1 5/16"	1 13/16"	1 9/16"	3/16"	7/16"	9/16"	3/8"	0
Stringer 4	3"	3 5/16"	3 3/8"	2 13/16"	2 7/16"	3 5/8"	3 9/16"	2 1/4"	1 5/8"	1 3/4"	2 9/16"	2 1/8"	7/16"	9/16"	1/2"	5/16"	0

SLAB HAUNCHING DIAGRAM

Note: Slab shall be built parallel to grade and to a uniform thickness of 6 1/2". Dead load deflections and crown shall be taken care of by haunching to stringers by the amount shown above. This additional concrete is included in Estimated Quantities.

Note:
Curbs to be cast independently of slab. Slab to be constructed to a uniform depth of 6 1/2" or if desired the bottom of slab may be built on chords between tops of haunches at stringers.

HALF SECTION NEAR BENT 3
CROSS FRAME CF-1

HALF SECTION NEAR CROSS FRAME
CF-2 & CF-3 END SPANS

Note:
For complete detail of rail and curb see Standard R-1.
Exposed edges around curb opening on roadway side to be beveled 3/8"

Note:
Use bevel as shown for exposed faces of all filled joints except at top surface of roadway slab.

DETAIL OF BEVEL FOR FILLED JOINTS

DETAIL OF CONSTRUCTION JOINT

DETAIL OF FILLED JOINTS
TOP OF ROADWAY SLAB

BRIDGE - COUNTY ROAD UNDERPASS

STATE ROAD FROM ST. CLAIR TO PACIFIC

ABOUT 3 MILES S.W. GRAY SUMMIT

PROJECT NO. I-258(10)(FAI-RTE.2) **STA.** 1464+68.87

FRANKLIN **COUNTY**

FINISHED

R. W. BOOKER & ASSOCIATES
CONSULTING ENGINEERS
1722 OLIVE STREET
ST. LOUIS 3, MISSOURI

Drawn Mar. 1957 by W.J.H.
Checked Apr. 1957 by D.C.S.

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

Sheet No. 8 of 9

Rev 8-6-58

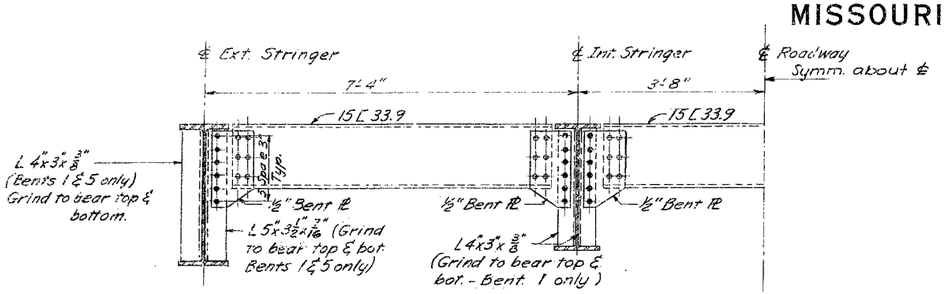
L-868

NO CONSTRUCTION CHANGES

428

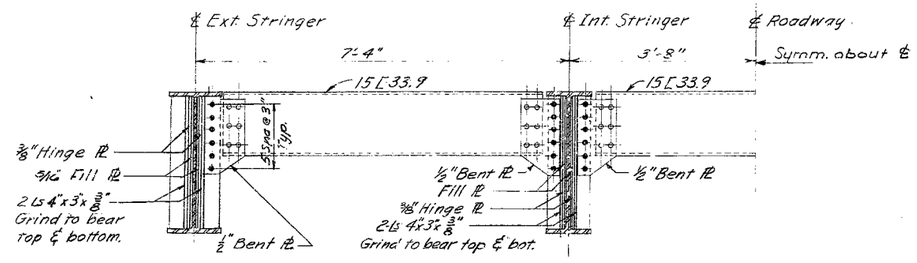
MISSOURI STATE HIGHWAY DEPARTMENT

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

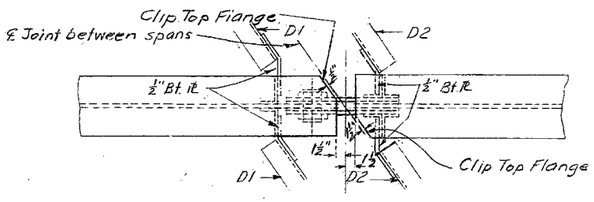


PART SECTION
SHOWING DIAPHRAM D-1

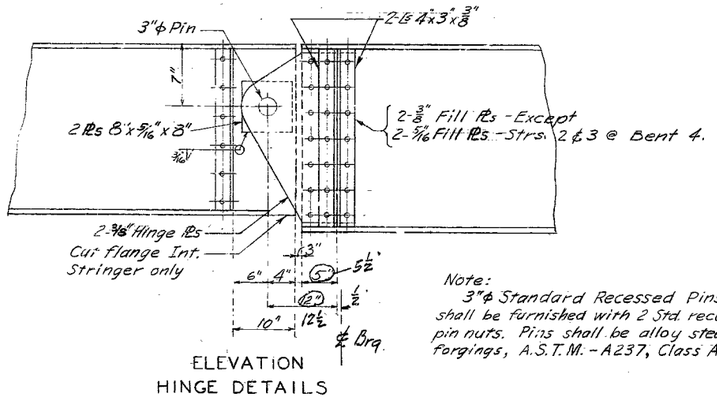
Note: Haunch slab to bear on end diaphragms



PART SECTION
SHOWING DIAPHRAM D-2

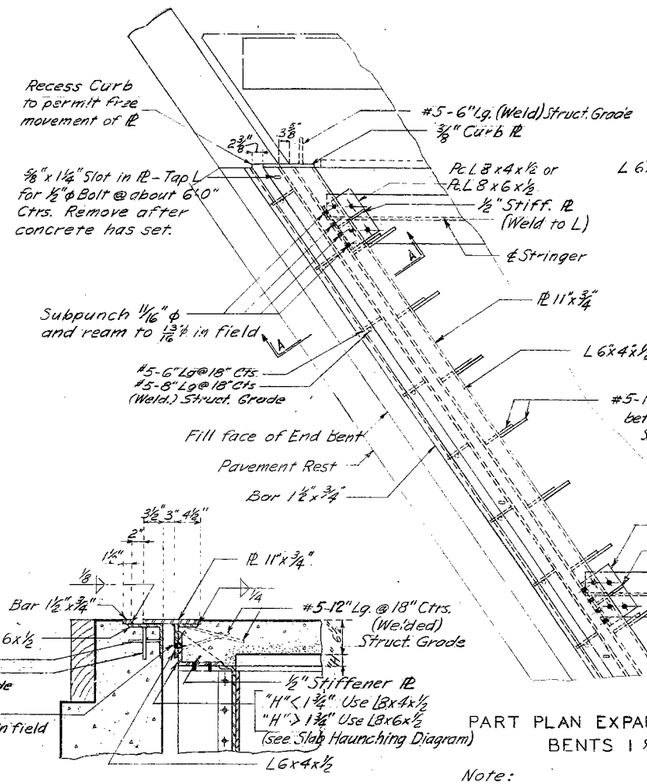


PLAN

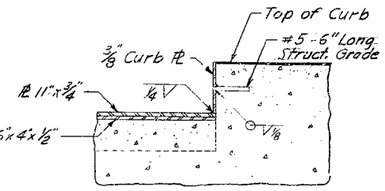


ELEVATION
HINGE DETAILS

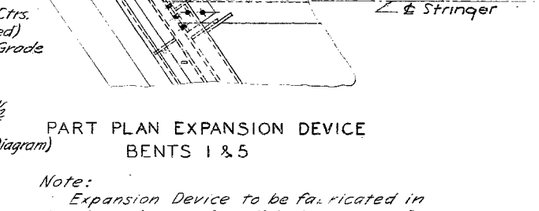
Note:
3"ϕ Standard Recessed Pins shall be furnished with 2 Std. recessed pin nuts. Pins shall be alloy steel forgings, A.S.T.M. - A237, Class A.



SECTION A-A

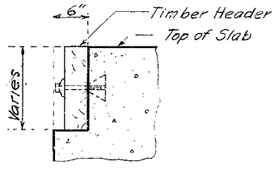


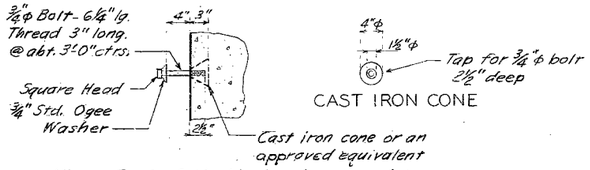
PART SECTION
SHOWING CURB PLATE



PART PLAN EXPANSION DEVICE
BENTS 1 & 5

Note:
Expansion Device to be fabricated in one section and shall be bent to conform to crown of roadway.





CAST IRON CONE

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

DETAILS OF TIMBER HEADER

BRIDGE - COUNTY ROAD UNDERPASS
STATE ROAD FROM ST. CLAIR TO PACIFIC
ABOUT 3 MILES S.W. OF GRAY SUMMIT
PROJECT NO. I-258(10)FAI-RTE.2) **STA.** 1464+68.87
FRANKLIN **COUNTY**

430

R. W. BOOKER & ASSOCIATES
CONSULTING ENGINEERS
1722 OLIVE STREET
ST. LOUIS 3, MISSOURI

Drawn Mar. 1957 by K.F.R.
Checked Apr 1957 by D.C.S.

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

Sheet No. 9 of 9

Rev. 7-31-58

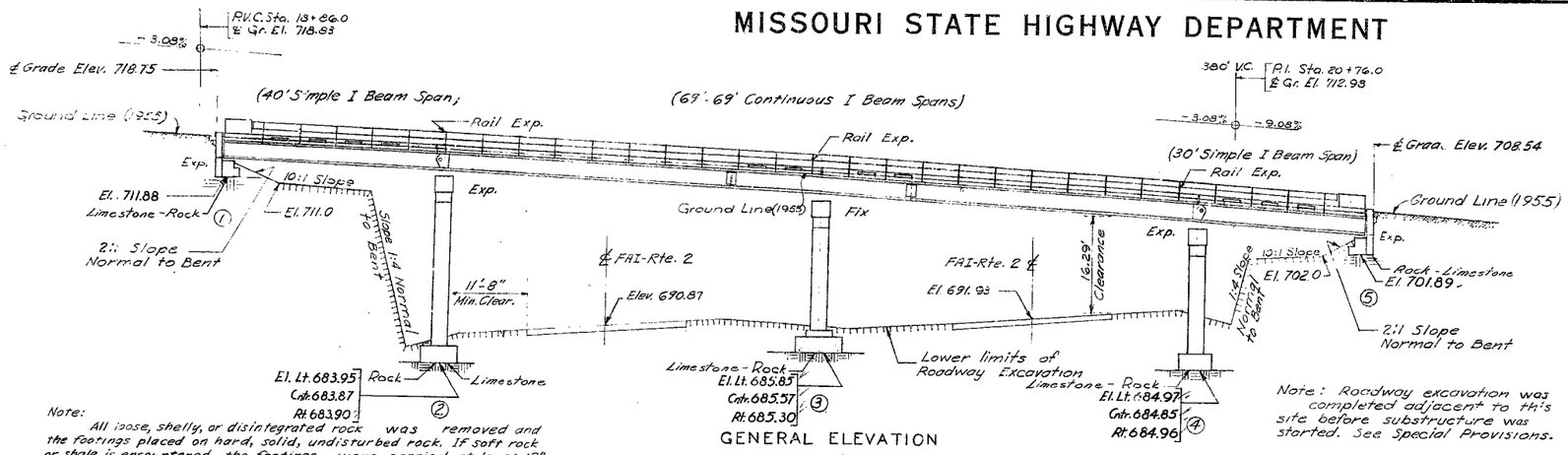
L-868

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		

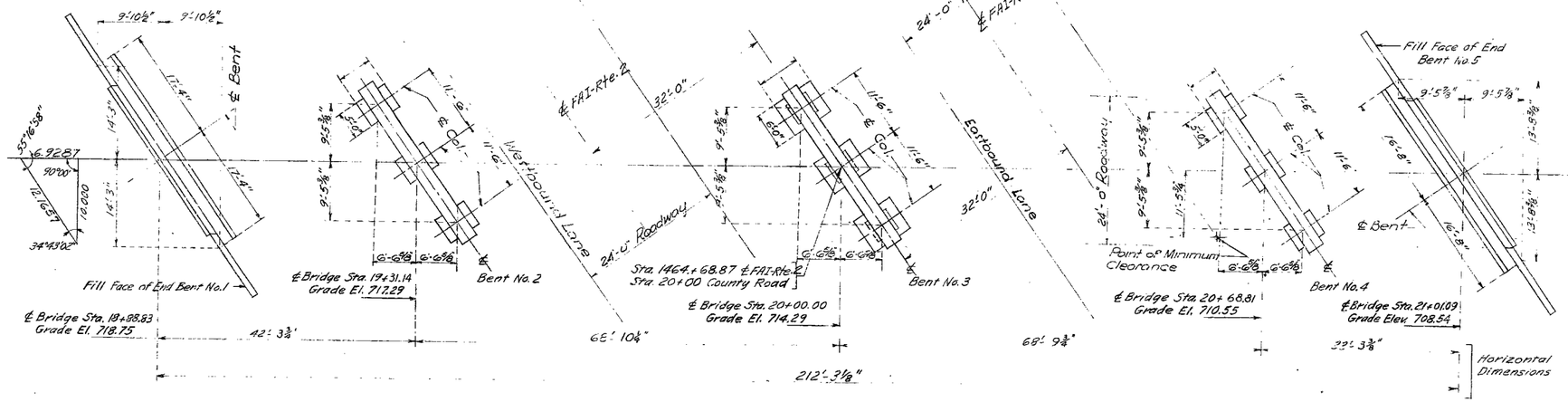
FINAL PLANS



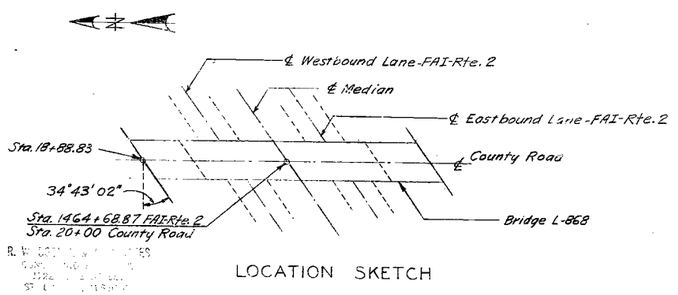
GENERAL ELEVATION

Note: All loose, shelly, or disintegrated rock was removed and the footings placed on hard, solid, undisturbed rock. If soft rock or shale is encountered, the footings were carried at least 18" into and cast against vertical faces of same. In no case were footings of Bents Nos. 2, 3 & 4 placed higher than 4' below finished grading section.

Note: Roadway excavation was completed adjacent to this site before substructure was started. See Special Provisions.



PLAN



LOCATION SKETCH

Drawn Mar. 1957 by K.F.R.
Checked Apr. 1957 by O.C.S

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

GENERAL NOTES:

Design Specifications A.A.S.H.O. - 1953
Loading H-15-44 (Future Wearing Surface 15#/s.f.)
Structural Steel Stress 18,000 #/s.i.
Reinforcing Steel Stress 20,000 #/s.i.
Concrete Stress 1,200 #/s.i.

Concrete for superstructure was Class "B-1" air-entrained (See Special Provisions).

Concrete for substructure was Class "B" air-entrained.

A rubbed surface finish was required on all exposed surfaces of concrete at posts above top of curbs.

Rivets ¾"; holes ⅞" except where otherwise noted.

Field connections were not riveted except as noted in handrail details. As the contractor desired he used high tensile steel bolts with carburized washers in place of rivets.

As high tensile steel bolts were used they were placed in such a manner that the nuts were always in the least exposed position.

Paint: Shop, none; Field, contact surfaces of bolted field connections, except where high tensile steel bolts are used, one coat of red lead, and surfaces inaccessible after erection three coats of red lead. No other paint was applied by the Contractor. Red lead required was furnished by the Contractor. Payment for cleaning and painting such surfaces was included in unit price bid for Fabricated Structural Steel.

Where joint filler is specified on plans it did conform with the requirements for Premolded Material for Filler as given in Section 59-220 of the Standard Specifications.

Qualification of welding operators was required.

SUBMITTED BY

J. Laurence L. Wilson
REGISTERED PROFESSIONAL ENGINEER
MISSOURI NO. E-5777

QUANTITIES				
Item		Substr.	Superstr.	Total
Class 1 Excavation	Cu. Yds.	132		132
Class "B" Concrete	Cu. Yds.	142.9		142.9
Reinforcing Steel	Lbs.	12,850	36,950	49,800
* Fabricated Structural Steel	Lbs.		147,730	147,730
Gray Iron Alloy Castings	Lbs.		920	920
Steel Castings	Lbs.		3,990	3,990
Class "B-1" Concrete	Cu. Yds.		141.8	141.8
Test Holes	Lin. Ft.	36		36
Class 1+25% Excavation	Cu. Yds.	2		2

Note:
Concrete in end posts is included with Superstructure Class "B1" Concrete.
All excavation for bridge was paid for as Class 1 Excavation for Structures.
Quantities of Class 1 Excavation for structures includes only amount of excavation below limits of Roadway Excavation (See Special Provisions).
* Final pay weight for Fabricated Structural Steel was based on using field rivets except for bolted connections specified for handrails.

B.M. #17-C Spike in Power Pole West Side of County Road 204' Lt. of Sta. 1466+00 El. 723.06 (U.S.G.S. Datum)

BRIDGE - COUNTY ROAD UNDERPASS
STATE ROAD FROM ST. CLAIR TO PACIFIC
ABOUT 3 MILES SOUTHWEST OF GRAY SUMMIT
PROJECT NO. I-258(10)(FAI-RTE.2) **STA.** 1464+68.87

FRANKLIN **COUNTY**

FINISHED

SUBMITTED BY J. A. Williams BRIDGE ENGINEER DATE 1-7-1958
APPROVED BY Ex. M. Wilson CHIEF ENGINEER DATE 1-7-1958

Std. R-1
Std. C-110R5

FINAL PLANS

L-868

Sheet No. 1A of 5

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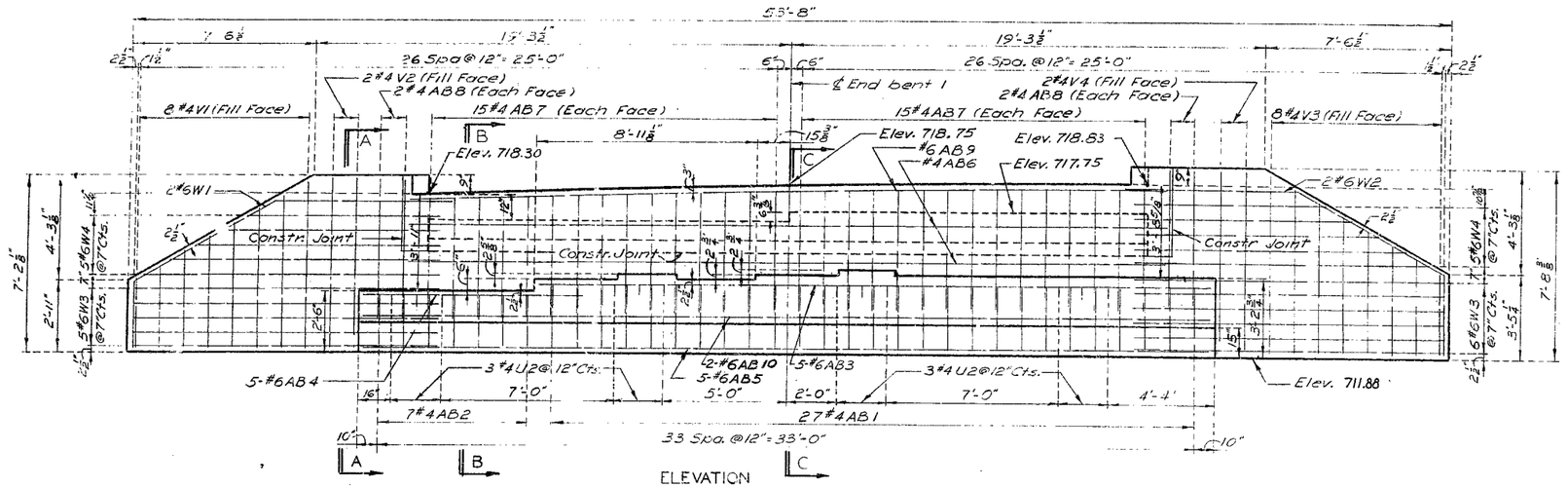
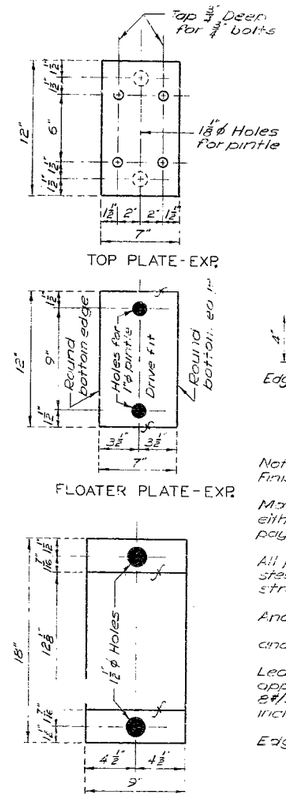
MISSOURI STATE HIGHWAY DEPARTMENT

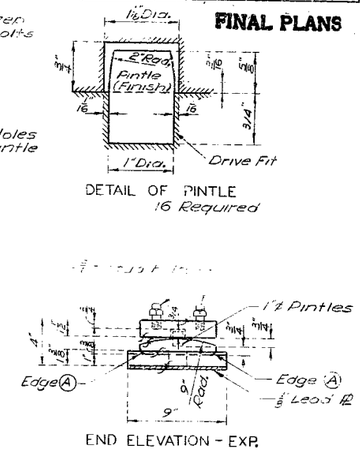
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19		

FINAL PLANS



DETAIL OF END BENT ONE





Note:
Finish all surfaces marked f.

Material for bearing castings were either gray iron alloy or cast steel but payment was made as gray iron alloy

All pins, bolts, nuts, pipe sleeves, rolled steel and pintles were paid for as structural steel.

Anchor bolts for bearing castings were 1¼" ø swedged bolts with Hex. nuts and did extend 12" into concrete.

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

Edge Ⓐ was rounded

DETAIL OF BEARING CASTINGS
Bent #1 4 Sets Required
Bent #5 4 Sets Required

Note:
Top of backwall and expansion device did conform to crown of roadway slab.

Holes for all 1¼" ø anchor bolts were formed in substructure by placing and setting with template 4" ø wells of depth as shown in notes for Bearing Devices.

Grout for anchor bolts were did contain Iron Oxide. (Embeco)

Backwall above construction joint and wingwalls was not poured until the structural steel of the expansion device had been installed and slab had been poured in adjacent spans.

Concrete pedestals for bearings were poured monolithically with beam

BRIDGE - COUNTY ROAD UNDERPASS

STATE ROAD FROM ST. CLAIR TO PACIFIC
ABOUT 3 MILES S.W. GRAY SUMMIT
PROJECT NO. I-258(10)(FAI-RTE.2)STA. 1464 + 68.87

FRANKLIN **COUNTY**

FINAL PLANS

L-868

R. W. BOOKER & ASSOCIATES
CONSULTING ENGINEERS
[illegible]

Drawn Mar. 1957 by W.J.H.
Checked Apr. 1957 by D.C.S.

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

Sheet No. 3A of 5

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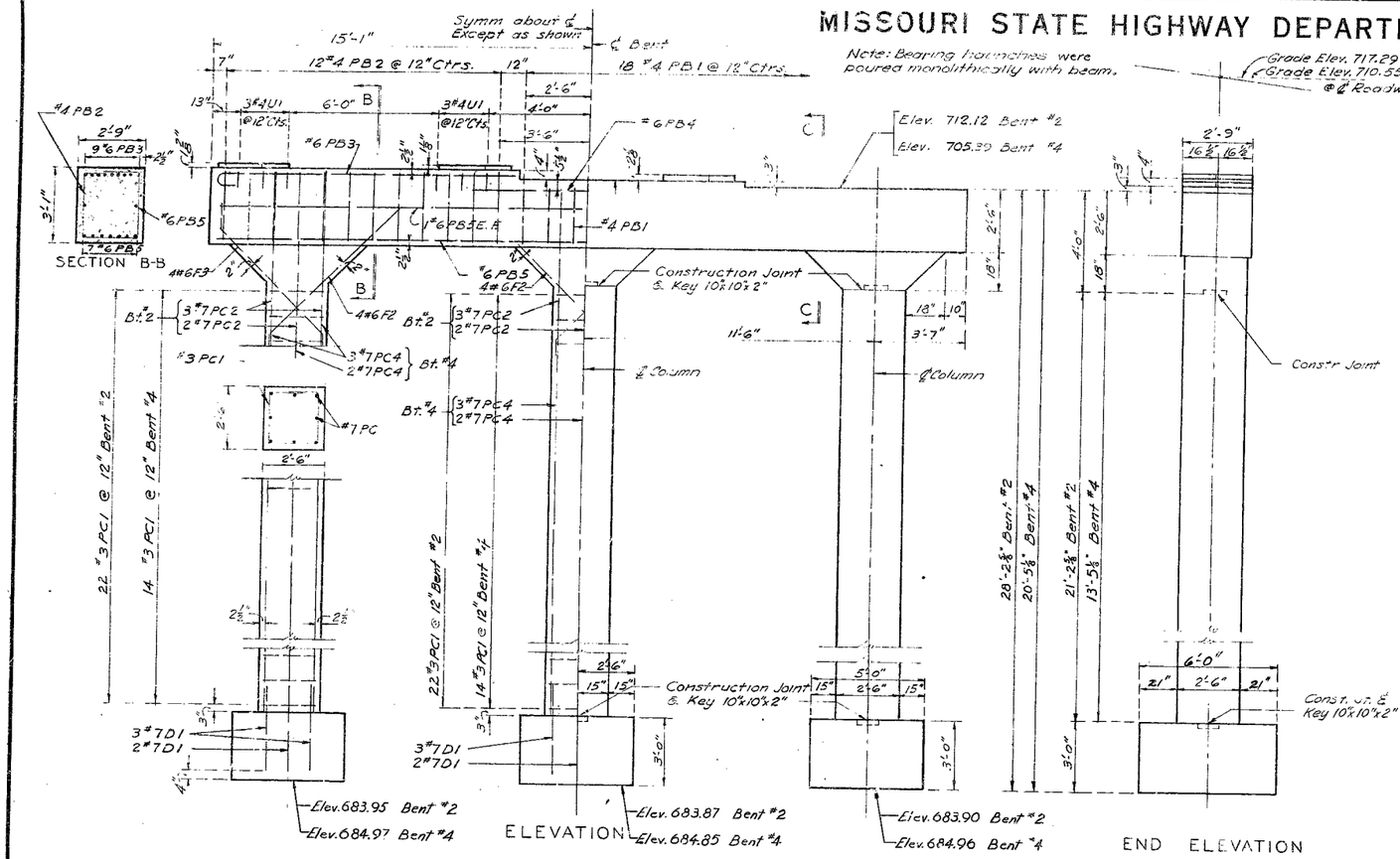
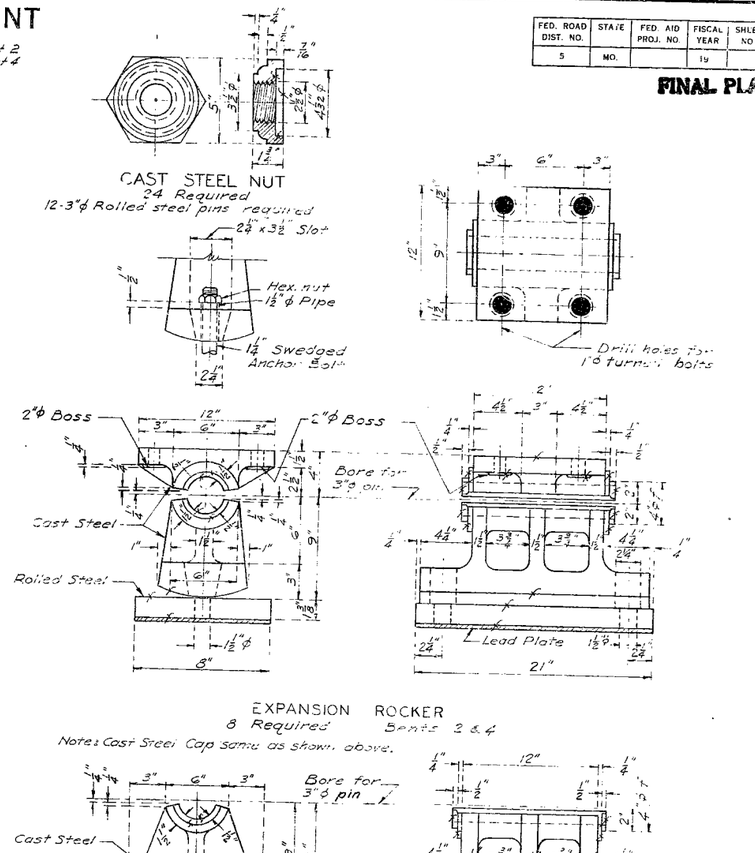
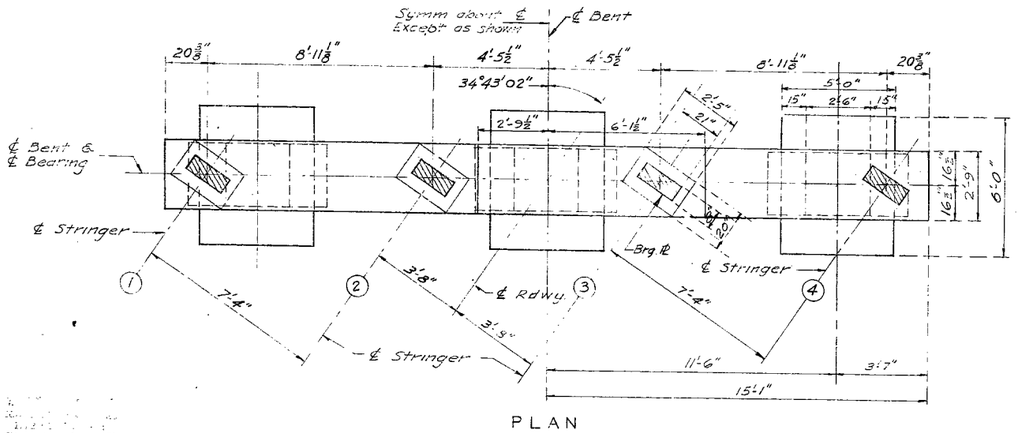
MISSOURI STATE HIGHWAY DEPARTMENT

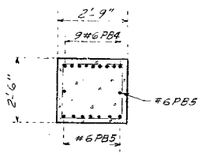
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19		

FINAL PLANS









DETAIL OF INTERMEDIATE BENTS 2, & 4

Note: 3-4'-0" Test Holes Bent #2
3-4'-0" Test Holes Bent #4

Notes:
Finish all surfaces marked 'f'
All fillets were ¾" radius
Material was cast steel except as noted
All pins, bolts, nuts, pipe sleeves and rolled steel were paid for as structural steel.
Anchor bolts were 1½" ϕ swedged bolts with hex. nuts and did extend 12" into concrete.
Lead plates under bearings were approximately ⅛" thickness and weight 8#/sq. ft. Cost of lead plates was included in price bid for other items.

DETAILS OF BEARING CASTINGS

BRIDGE COUNTY ROAD UNDERPASS

STATE ROAD - FROM ST. CLAIR TO PACIFIC

ABOUT 3 MILES S.W. OF GRAY SUMMIT

PROJECT NO. I-258(10)FAI-RTE. 2) **STA.** 1464+68.87

FRANKLIN **COUNTY**

FINAL PLANS

L-868

Drawn MAR 1957 by H.O.W

Checked MAR 1957 by D.C.S

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

Sheet No. 4A of 5

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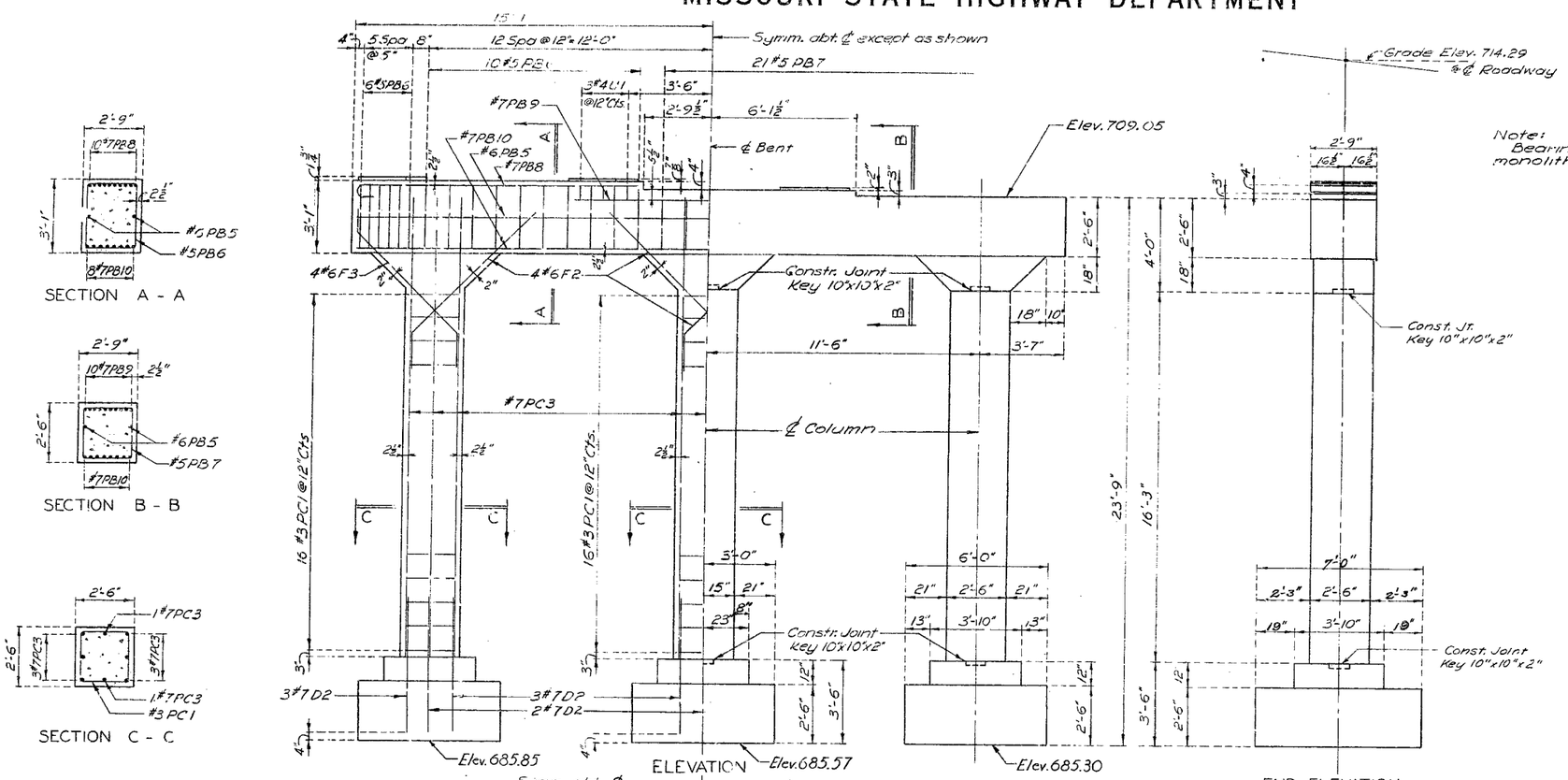
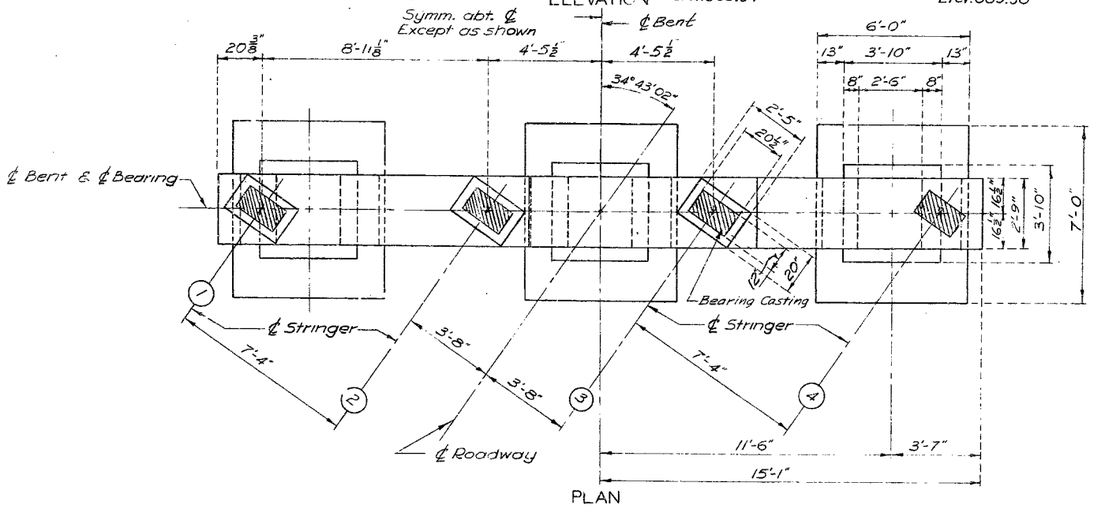
MISSOURI STATE HIGHWAY DEPARTMENT

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

FINAL PLANS



Note: Bearing haunches were poured monolithically with beam.



PLAN

DETAIL OF INTERMEDIATE BENT 3

Note: 3-4'-0" Test Holes Bent #3

BRIDGE - COUNTY ROAD UNDERPASS

STATE ROAD FROM ST. CLAIR TO PACIFIC

ABOUT 3 MILES S.W. OF GRAY SUMMIT

PROJECT NO. I-258(10)FAI-RTE 2) STA. 1464+68.87

FRANKLIN COUNTY

FINAL PLANS

Drawn Mar. 1957 by W.J.H.

Checked Apr. 1957 by D.C.S.

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

Sheet No. 5A of 5

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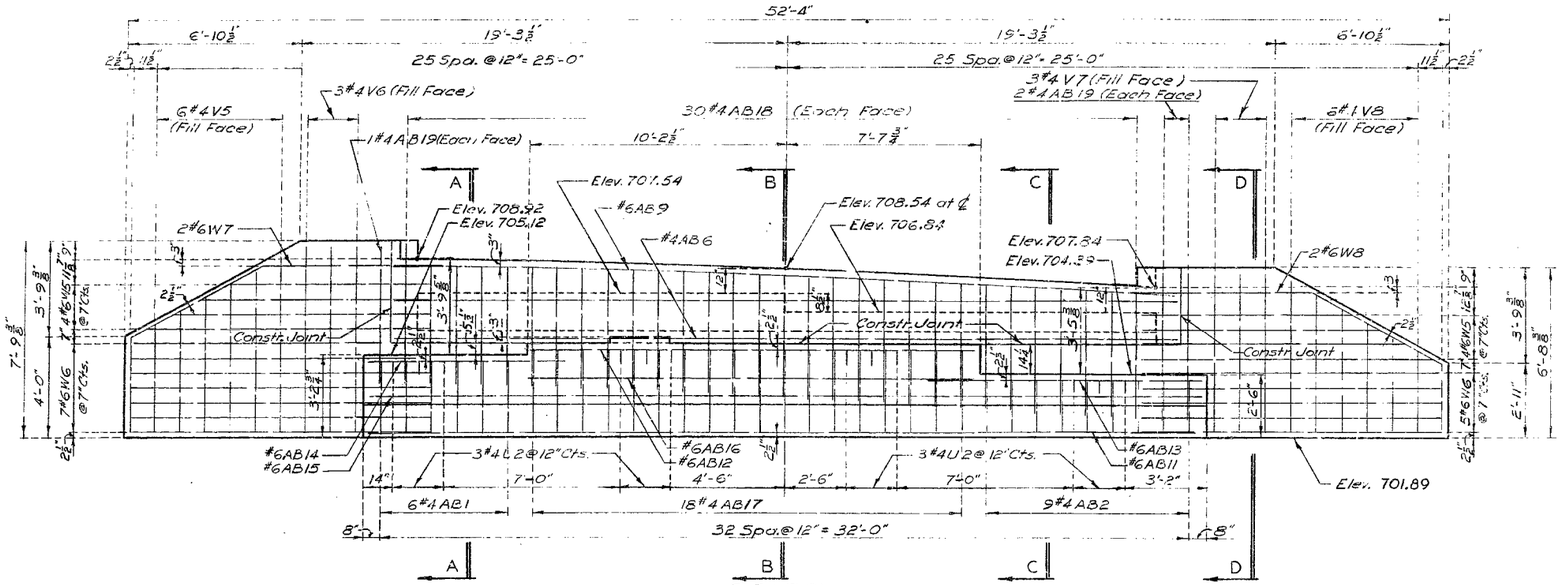
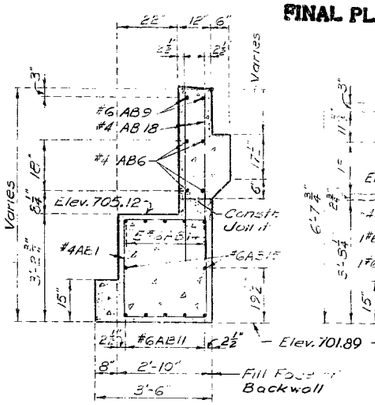
MISSOURI STATE HIGHWAY DEPARTMENT

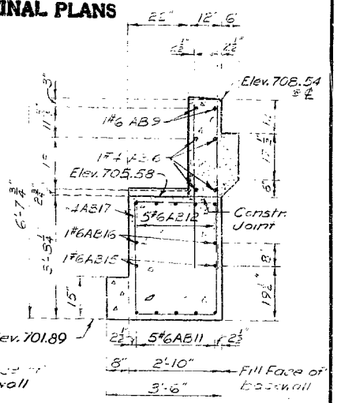
FED. ROAD DIST. NO.	STATE	FED. AID PRJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19		

FINAL PLANS

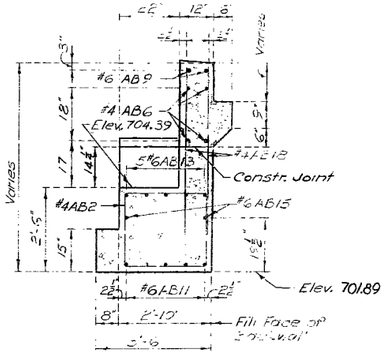




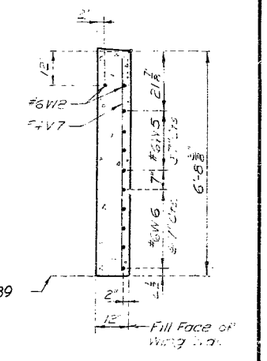
SECTION A-A



SECTION B-B AT ℄ BENT 5



SECTION C-C



SECTION D-D

Note:
Top of backwall and expansion device did conform to crown of roadway slab.

Holes for all 1¼" anchor bolts were formed in substructure by placing and setting with template 4"ø wells of depth as shown in notes for bearing devices.

Grout for anchor bolt wells did contain Iron Oxide. (Embeco)

Backwall above construction joint and wingwalls was not poured until the structural steel of the expansion device had been installed and slab had been poured in adjacent span.

Concrete pedestals for bearings were poured monolithically with beam.

BRIDGE - COUNTY ROAD UNDERPASS

STATE ROAD FROM ST. CLAIR TO PACIFIC

ABOUT 3 MILES S.W. OF GRAY SUMMIT

PROJECT NO. I-258(10)(FAI-RTE 2) **STA.** 1464+69.87 FINISHED

FRANKLIN **COUNTY**

FINAL PLANS

L-868

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Drawn Mar. 1957 by W.J.H.
Checked Apr. 1957 by D.C.S.

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

Sheet No. 6A of 5