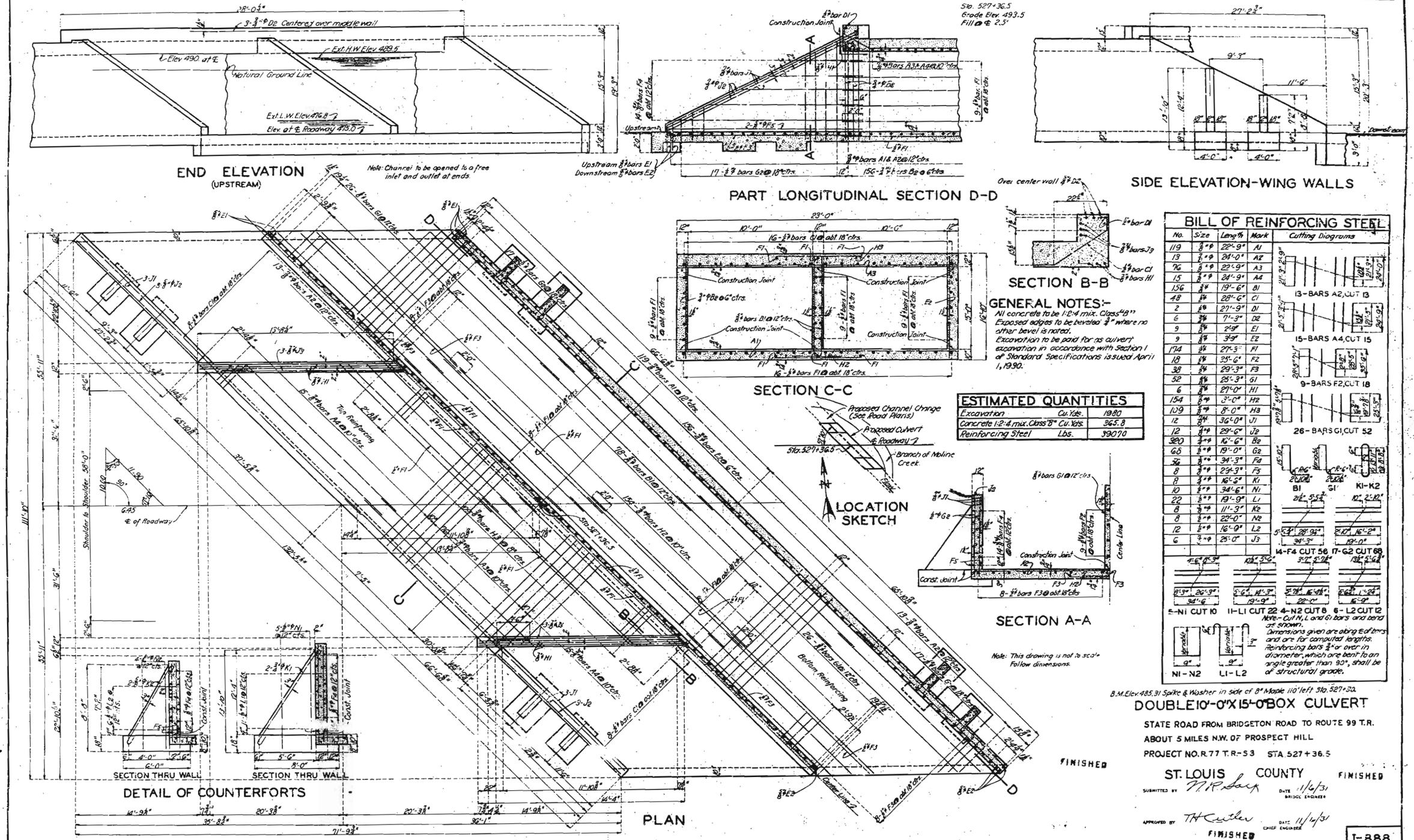
MISSOURI STATE HIGHWAY DEPARTMENT

FED. AID PROJ. NO. & SECT. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	277T-4-53			



BILL OF REINFORCING STEEL

No.	Size	Length	Mark	Cutting Diagrams
119	⅝"φ	22'-9"	A1	
13	⅝"φ	24'-0"	A2	
76	⅝"φ	22'-9"	A3	
15	⅝"φ	24'-9"	A4	
156	⅝"	19'-6"	B1	
48	⅝"	28'-6"	C1	
2	⅝"	27'-9"	D1	
6	⅝"	7'-3"	D2	
9	⅝"	2'-9"	E1	
9	⅝"	3'-9"	E2	
174	⅝"	27'-3"	F1	
18	⅝"	25'-6"	F2	
38	⅝"	29'-3"	F3	
52	⅝"	25'-3"	G1	
6	⅝"	27'-0"	H1	
154	⅝"φ	3'-0"	H2	
109	⅝"φ	8'-0"	H3	
12	⅝"	36'-0"	J1	
12	⅝"φ	29'-6"	J2	
320	½"φ	16'-6"	B2	
68	½"φ	19'-0"	G2	
36	½"φ	34'-3"	F4	
8	½"φ	29'-3"	F5	
8	½"φ	16'-2"	K1	
10	½"φ	34'-6"	N1	
22	½"φ	19'-9"	L1	
8	½"φ	11'-3"	K2	
8	½"φ	22'-0"	N2	
12	½"φ	16'-9"	L2	
6	½"φ	25'-0"	J3	

Cutting Diagrams: 13-BARS A2, CUT 13; 15-BARS A4, CUT 15; 9-BARS F2, CUT 18; 26-BARS G1, CUT 52; B1; G1; K1-K2; 14-F4 CUT 36; 17-G2 CUT 68; 5-N1 CUT 10; 11-L1 CUT 22; 4-N2 CUT 8; 6-L2 CUT 12; N1-N2; L1-L2

Note:- Cut N, L and G bars and bend as shown. Dimensions given are along ℄ of bars and are for computed lengths. Reinforcing bars ½" or over in diameter, which are bent to an angle greater than 90°, shall be of structural grade.

GENERAL NOTES:-

All concrete to be 1:2:4 mix. Class "B"
Exposed edges to be beveled ¾" where no other bevel is noted.
Excavation to be paid for as culvert excavation in accordance with Section 1 of Standard Specifications issued April 1, 1930.

ESTIMATED QUANTITIES

Excavation	Cu. Yds.	1980
Concrete 1:2:4 mix. Class "B"	Cu. Yds.	365.8
Reinforcing Steel	Lbs.	39070

B.M. Elev. 485.31 Spike & Washer in side of 8" Maple 110' left Sta. 527+30.

DOUBLE 10'-0" X 15'-0" BOX CULVERT

STATE ROAD FROM BRIDGETON ROAD TO ROUTE 99 T.R.
ABOUT 5 MILES N.W. OF PROSPECT HILL
PROJECT NO. R 77 T.R.-53 STA. 527+36.5

ST. LOUIS COUNTY

SUBMITTED BY M.R. Lack DATE 11/6/31 BRIDGE ENGINEER

APPROVED BY T.H. Cutler DATE 11/6/31 CHIEF ENGINEER

FINISHED

J-888

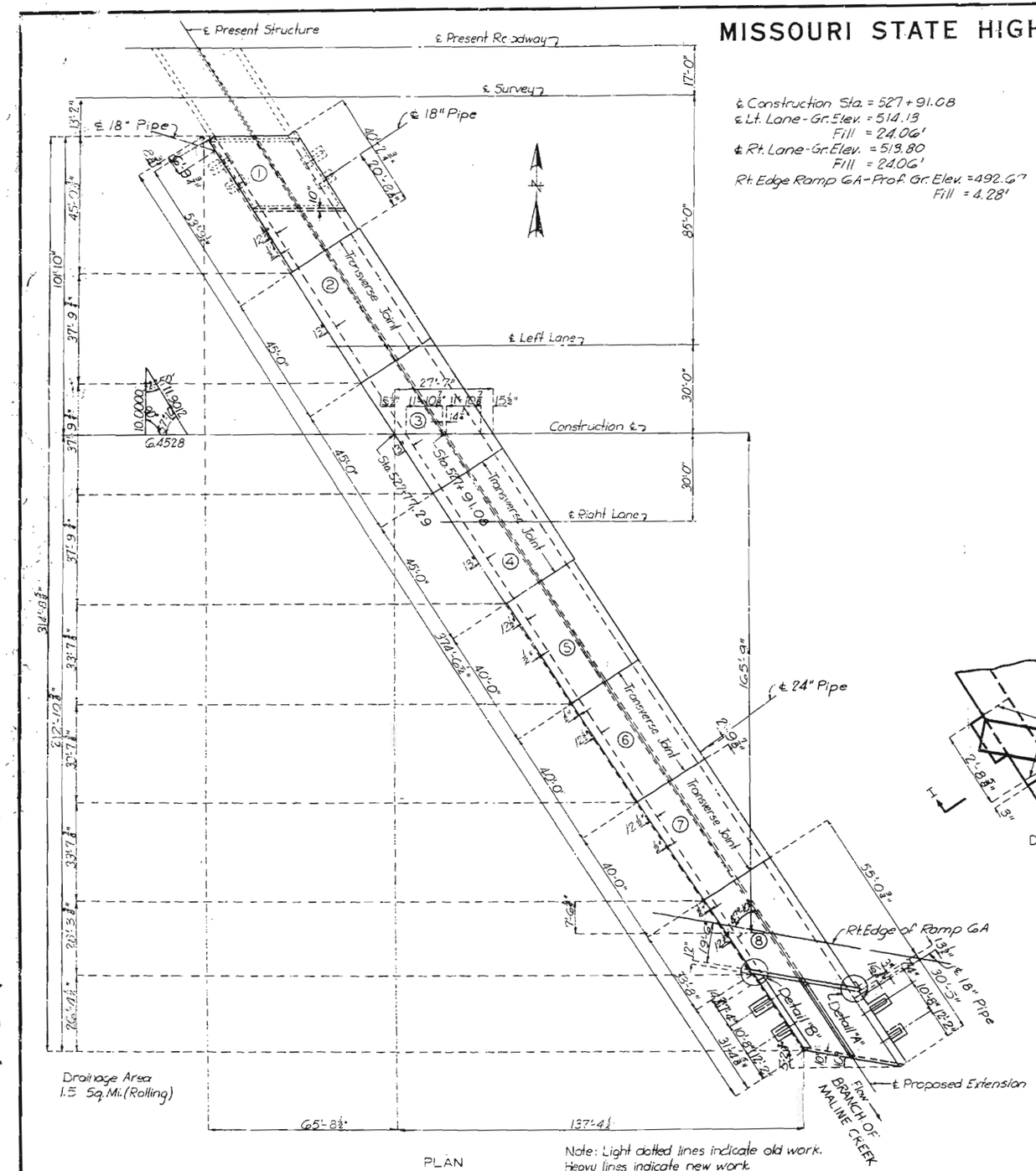
Drawn Jan. 1927 By H.E.M. Checked Jan. 1927 By J.L.P.
Assembled Sept. 1931 by H.E.C. Checked Sept. 1931 By R.F.K.

DOUBLE BOX - SKEWED - C82.

420

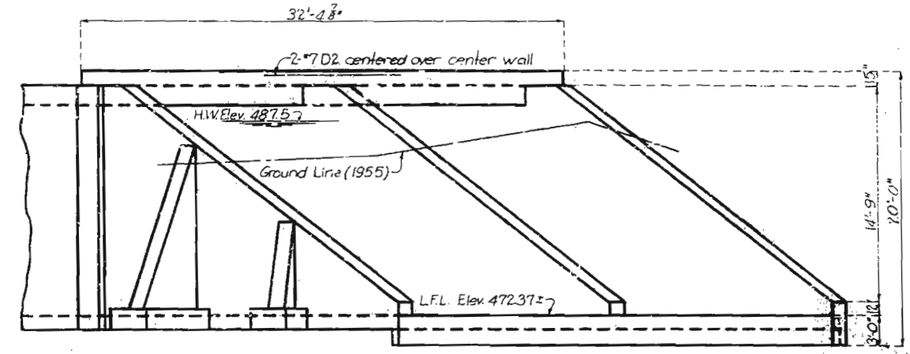
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	72	



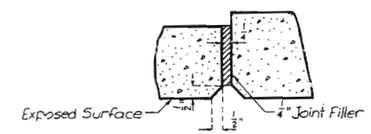
PLAN

Note: Light dotted lines indicate old work.
Heavy lines indicate new work.



END ELEVATION

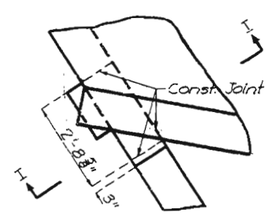
Note: Channel to be opened to a free outlet at downstream end.



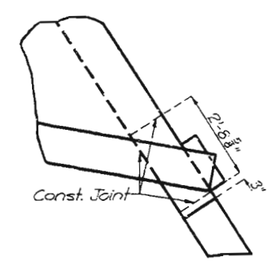
DETAIL OF TRANSVERSE JOINT

GENERAL NOTES:

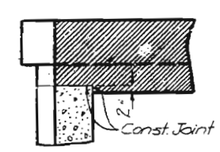
Design Specifications: A.A.S.H.O.-1957
Loading: H20-S16-44
Reinforcing Steel Stress: 20,000 #/□"
Concrete, Class B Stress: 1,200 #/□"
All concrete shall be Class B (Air-Entrained)
Bar supports and spacers required in the top slab.
Where joint filler is specified on the plans, it shall conform with the requirements of Section 1572.5 of the Standard Specifications.



DETAIL "B"



DETAIL "A"



SECTION I-I
(Showing Details of Construction Joint)

B.M. #22A Elev. 492.73 On N.E. corner of Mdwl. Double 10'x5' Box culvert 32'±' S. of Outer Roadway (Dunn Road)

~~B.M. #23 (Rte. 66TR) Elev. 493.52 Chiseled "u" in top Δ Sec. Wing Wall of Culv. 12.4'± East ℄ New Halls Ferry Rd. 34'± North ℄ Rte. 66 Sta. 528+27.0 (U.S.G.S. Datum)~~

ESTIMATED QUANTITIES			Final Quantities
Class 3 Excavation for Structures	Cu. Yds	3100	2221
Class B Concrete	Cu. Yds	1326.4	1326.4
Reinforcing Steel	Lbs.	178,900	178900
Granular Backfill	Tons		549

BRIDGE OVER BRANCH OF MALINE CREEK

STATE ROAD: INTERSTATE ROUTE 270
ABOUT 3.5 MILES N.E. OF FERGUSON
PROJECT NO. I-270-5(38)(RTE. I-270) STA. 527+77.29
ST. LOUIS COUNTY

SUBMITTED BY Leo F. Beckett BRIDGE ENGINEER DATE 1-31-61
APPROVED BY J. J. Corbett Acting Chief Engineer DATE 1-31-61

STD. 54.00
J-6588

Drawn Jan. 1958 by L.G.S.
Checked Aug. 1958 by B.J.H.

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

Sheet No. 1 of 8

FINAL PLANS

421

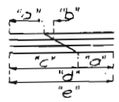
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	73	

COMPLETE BILL OF REINFORCING STEEL

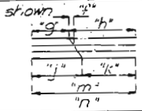
No.	Size	Length	Mark
Section No. 1			
47	#8	22'-9"	A1
7	#8	23'-3"	A2
7	#8	25'-3"	A3
36	#6	4'-3"	B1
28	#6	8'-6"	B2
97	#6	15'-9"	B3
74	#6	17'-0"	B4
8	#4	36'-3"	F1
27	#4	30'-0"	F2
10	#4	17'-0"	F3
40	#4	23'-9"	F4
1	#4	14'-9"	F5
1	#4	15'-9"	F6
1	#4	17'-9"	F7
1	#4	19'-9"	F8
1	#4	20'-9"	F9
3	#4	13'-0"	F10
6	#4	21'-6"	F11
8	#4	28'-6"	F12
3	#4	7'-0"	F13
1	#4	12'-0"	F14
1	#4	14'-6"	F15
1	#4	17'-0"	F16
3	#4	19'-9"	F17
4	#4	20'-6"	F18
5	#4	18'-0"	F19
3	#4	27'-3"	F20
4	#4	27'-3"	F43
34	#9	8'-9"	H1
35	#9	5'-9"	H2
22	#9	8'-3"	H3
106	#6	7'-3"	J1
37	#8	8'-3"	J2
2	#6	9'-3"	U1
16	#6	5'-3"	U2
Sections No. 2,3,4			
270	#9	22'-9"	A5
654	#7	17'-6"	B5
552	#4	22'-9"	F21
133	#9	8'-9"	H1
132	#9	5'-9"	H2
270	#9	8'-3"	H3
324	#8	7'-9"	J3
540	#8	8'-6"	J5
Section No. 5			
96	#8	22'-9"	A1
186	#7	17'-3"	B6
184	#4	20'-3"	F22
37	#9	8'-9"	H1
36	#9	5'-9"	H2
74	#9	8'-3"	H3
160	#6	7'-6"	J4
106	#9	9'-0"	J6
Section No. 6			
188	#6	16'-9"	B7
184	#4	20'-3"	F22
44	#7	8'-6"	H4
43	#7	5'-6"	H5
87	#7	8'-0"	H6
88	#6	6'-9"	J7
138	#6	7'-0"	J8
16	#6	5'-3"	U2

Bending Sketches & Cutting Diagrams

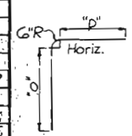


Mark	"a"	"b"	"c"	"d"	"e"
F30	3'-5 3/8"	2'-0 3/8"	30'-0 3/8"	33'-6"	14 Cut 28
F35	2'-5 5/8"	3'-0 3/8"	30'-0 3/8"	32'-6"	10 Cut 10
G2	22 3/8"	5 3/8"	16'-1 3/8"	18'-0"	30 Cut 30
K1	2'-6 3/8"	17 3/8"	11'-5 3/8"	14'-0"	7 Cut 14
K2	6'-2 3/8"	16"	19'-6 3/8"	25'-9"	11 Cut 11 *
G1	2'-6 3/8"	2 3/8"	15'-8 3/8"	18'-3"	19 Cut 38
K3	5'-6 3/8"	22 3/8"	14'-11 3/8"	20'-6"	6 Cut 6
K4	2'-3"	12 3/8"	6'-6"	8'-9"	5 Cut 10

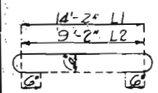
*Bend as shown



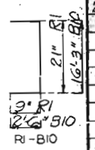
Mark	"f"	"g"	"h"	"j"	"k"	"m"	"n"
A2	18 3/8"	18 3/8"	21'-8 3/8"	10'-10 3/8"	12'-4 3/8"	23'-3"	7 Cut 7
A3	18 3/8"	2'-6 3/8"	22'-8 3/8"	11'-10 3/8"	13'-4 3/8"	25'-3"	7 Cut 7
A5	8"	20"	22'-4"	11'-8"	12'-4"	24'-0"	16 Cut 16
A9	9 3/8"	20 3/8"	22'-3 3/8"	11'-7 3/8"	12'-4 3/8"	24'-0"	14 Cut 14
F1	11 3/8"	10'-10 3/8"	25'-4 3/8"	17'-7 3/8"	18'-7 3/8"	36'-3"	8 Cut 8
F12	11 3/8"	6'-11 3/8"	21'-6 3/8"	13'-9 3/8"	14'-8 3/8"	28'-6"	8 Cut 8
F24	16 3/8"	3'-10 3/8"	24'-10 3/8"	13'-8 3/8"	15'-0 3/8"	28'-9"	8 Cut 8
F26	16 3/8"	2'-7 3/8"	23'-7 3/8"	12'-5 3/8"	13'-9 3/8"	26'-3"	8 Cut 8



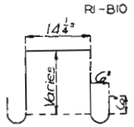
Mark	"o"	"p"
J1	3'-3 3/8"	3'-1 3/8"
J2	4'-5 3/8"	3'-0"
J3	3'-7 3/8"	3'-4"
J4	3'-4 3/8"	3'-4"
J5	4'-8 3/8"	3'-0"
J6	4'-10 3/8"	3'-4 3/8"
J7	2'-11 3/8"	2'-11 3/8"
J8	3'-5"	2'-9 3/8"
J9	2'-10 3/8"	3'-4 3/8"
J10	3'-3 3/8"	2'-7 3/8"
J11	3'-4 3/8"	2'-10 3/8"



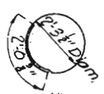
L1-L2



R1-R10



K2-K3



U1

No.	Size	Length	Mark
Section No. 7			
114	#6	22'-9"	A6
164	#6	16'-3"	B8
184	#4	20'-3"	F22
32	#7	8'-6"	H4
31	#7	5'-6"	H5
64	#7	8'-0"	H6
102	#5	7'-0"	J9
108	#6	6'-9"	J10
Section No. 8			
48	#6	22'-9"	A6
104	#5	22'-9"	A7
16	#5	24'-0"	A8
14	#6	24'-0"	A9
188	#6	16'-3"	B9
6	#5	21'-3"	B10
2	#6	32'-0"	D1
2	#7	6'-9"	D2
9	#5	3'-9"	E1
46	#4	31'-6"	F23
8	#4	28'-9"	F24
16	#4	30'-3"	F25
8	#4	26'-3"	F26
2	#4	20'-0"	F27
1	#4	16'-9"	F28
24	#4	28'-9"	F29
28	#5	33'-6"	F30
1	#4	13'-9"	F31
40	#4	23'-6"	F32
4	#4	20'-6"	F33
8	#4	18'-6"	F34
10	#4	32'-6"	F35
20	#4	18'-6"	F36
2	#4	22'-6"	F38
4	#4	24'-6"	F39
4	#4	26'-3"	F40
1	#4	9'-3"	F42
38	#4	18'-3"	G1
30	#5	18'-0"	G2
33	#7	8'-6"	H4
37	#7	5'-6"	H5
161	#6	7'-3"	H7
3	#7	31'-0"	H10
108	#5	7'-0"	J9
216	#6	7'-0"	J11
12	#6	37'-9"	J12
14	#4	14'-0"	K1
11	#4	25'-9"	K2
6	#4	20'-6"	K3
10	#4	8'-9"	K4
6	#6	16'-9"	L1
6	#6	11'-9"	L2
54	#4	3'-9"	M1
4	#4	9'-3"	M2
12	#6	11'-6"	M3
16	#6	9'-3"	M4
4	#4	7'-3"	M5
32	#4	3'-3"	R1
16	#6	5'-3"	U2

BRIDGE OVER BRANCH OF MALINE CREEK

STATE ROAD: INTERSTATE ROUTE 270

ABOUT 3.5 MILES N.E. OF FERGUSON

PROJECT NO. I-270-5(38)XRTEI-270 **STA.** 527+77.29

ST. LOUIS **COUNTY**

Drawn Mar. 1958 by L.G.S.
Checked Aug. 1958 by B.J.P.

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

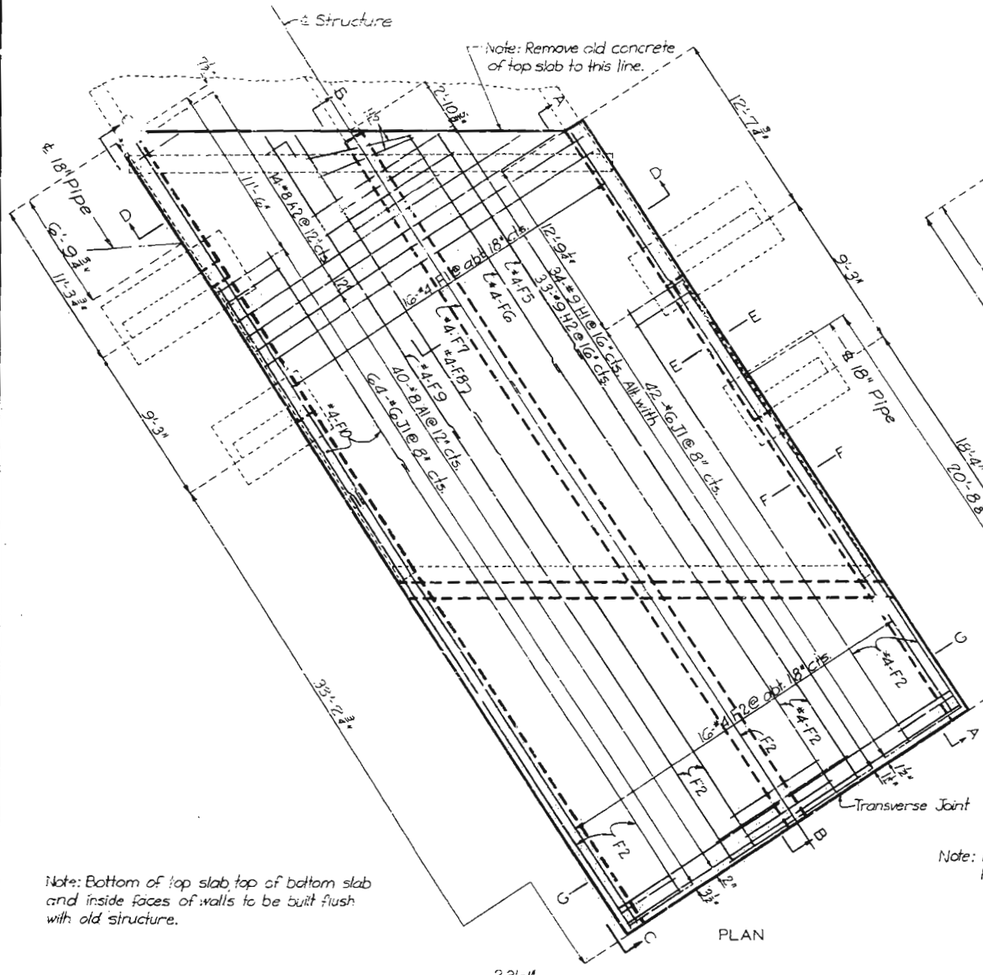
Sheet No. 2 of 3

NO CONSTRUCTION CHANGES

4.22

MISSOURI STATE HIGHWAY DEPARTMENT

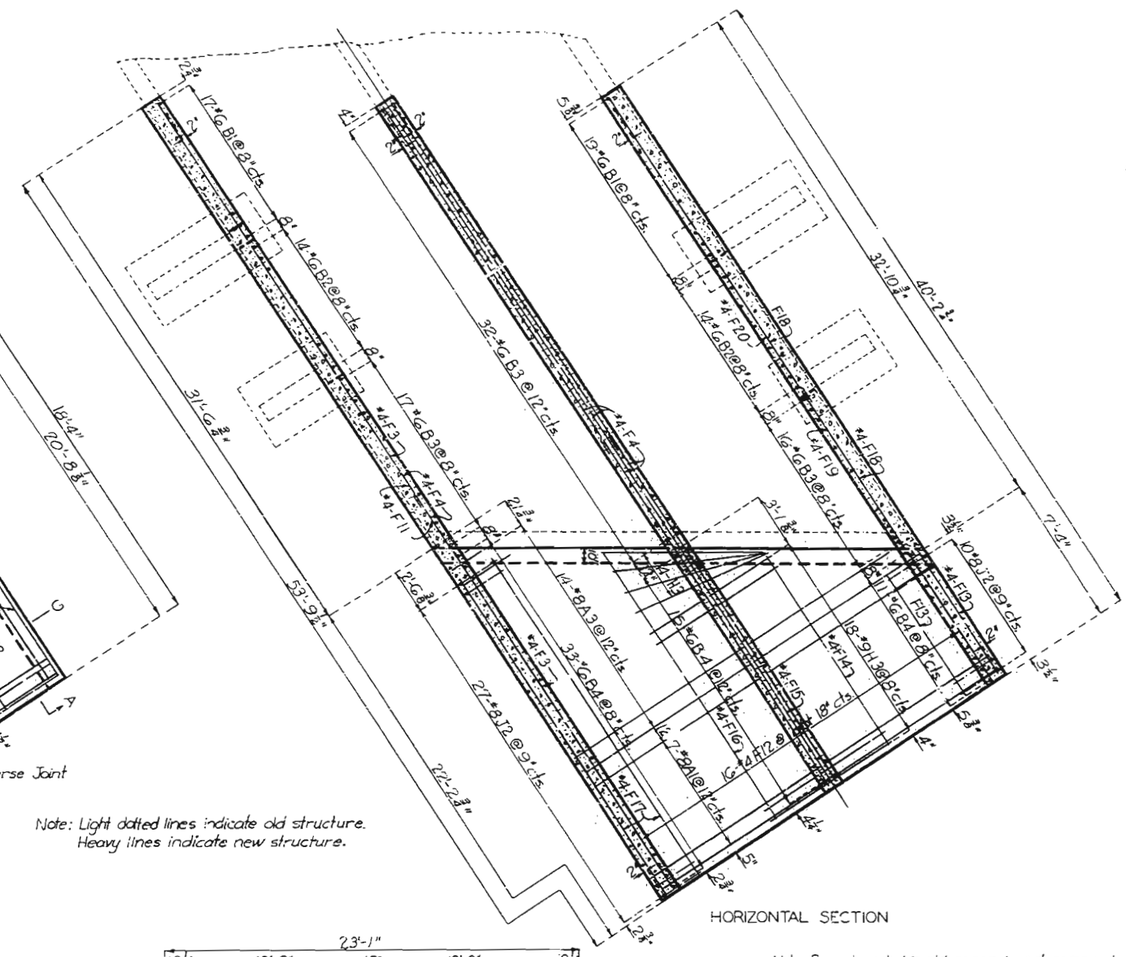
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	74	



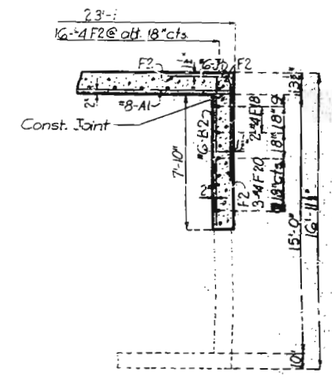
PLAN

Note: Bottom of top slab, top of bottom slab and inside faces of walls to be built flush with old structure.

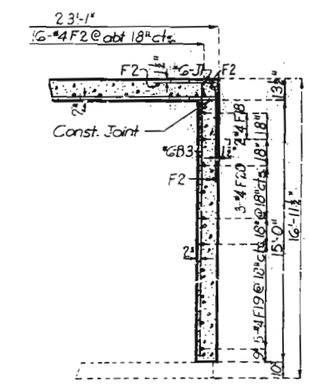
Note: Light dotted lines indicate old structure. Heavy lines indicate new structure.



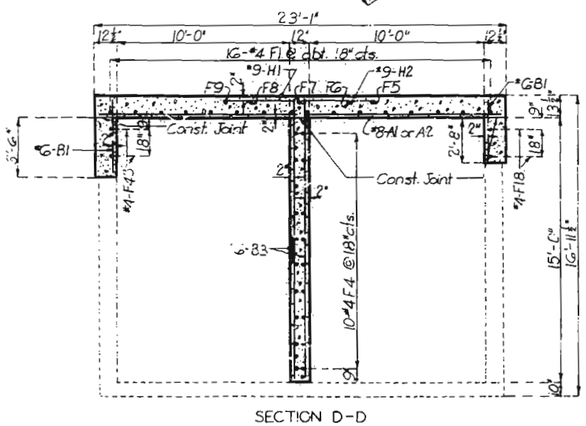
HORIZONTAL SECTION



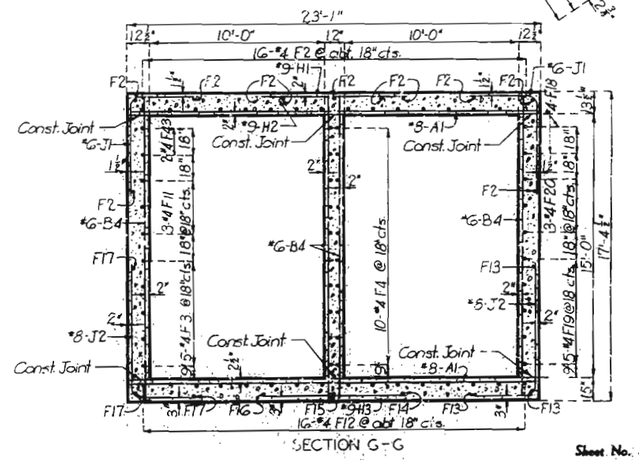
PART SECTION E-E



PART SECTION F-F



SECTION D-D



SECTION G-G

Note: Bars bonded in old concrete not removed shall be cleanly stripped and bent into new concrete where possible. If length is available old bars shall extend into new concrete at least 32 diameters.

Note: See Sheet No. 5 of 8 for details of Sections A-A, B-B & C-C.

DETAILS OF SECTION (1)
(See Sheet 1 of 8)

BRIDGE OVER BRANCH OF MALINE CREEK

STATE ROAD: INTERSTATE ROUTE 270
ABOUT 3.5 MILES N.E. OF FERGUSON
PROJECT NO. I-270-5(38)(RTE I-270) **STA.** 527+77.29

ST. LOUIS COUNTY

Drawn Jan. 1958 by L.G.S.
Checked Aug. 1958 by B.J.P.

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

Sheet No. 3 of 8

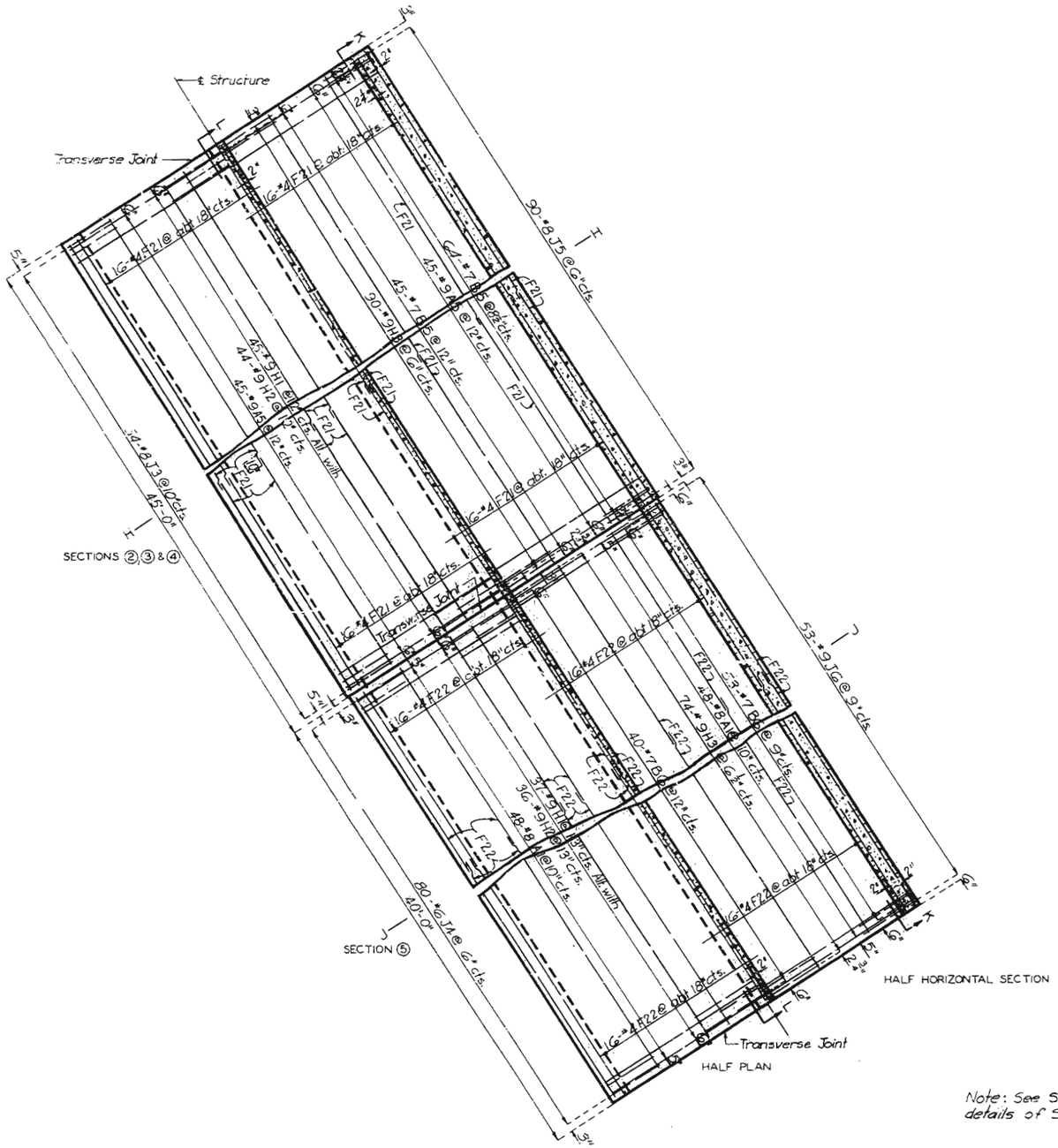
J-8608

423

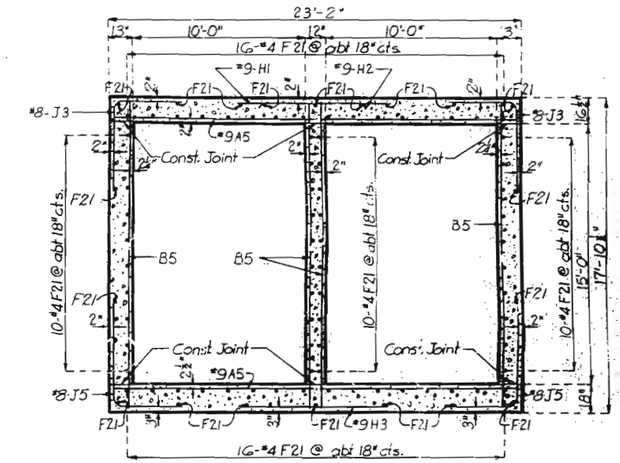
NO CONSTRUCTION CHANGES

MISSOURI STATE HIGHWAY DEPARTMENT

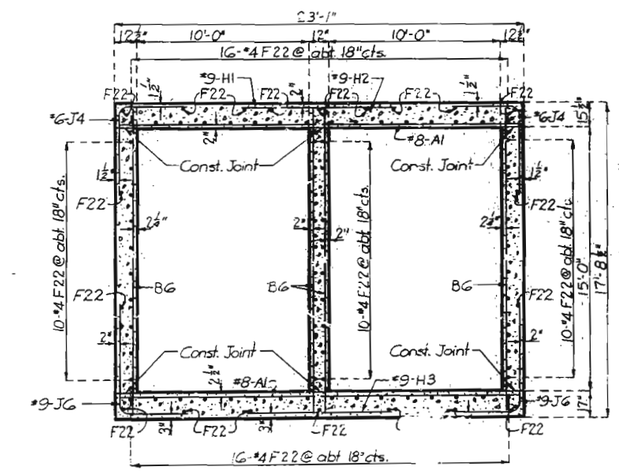
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	75	



DETAILS OF SECTIONS ② ③ ④ & ⑤
(See Sheet 1 of 8)



SECTION H-H



SECTION J-J

Note: See Sheet No. 5 of 8 for details of Sections K-K & L-L.

BRIDGE OVER BRANCH OF MALINE CREEK

STATE ROAD INTERSTATE ROUTE 270
ABOUT 3.5 MILES NE OF FERGUSON
PROJECT NO. I-270-5(38)XRTE.I-270 **STA.** 527+77.29

ST. LOUIS COUNTY

Drawn Jan. 1958 by L.G.S.
Checked Aug. 1958 by B.J.P.

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

Sheet No. 4 of 8

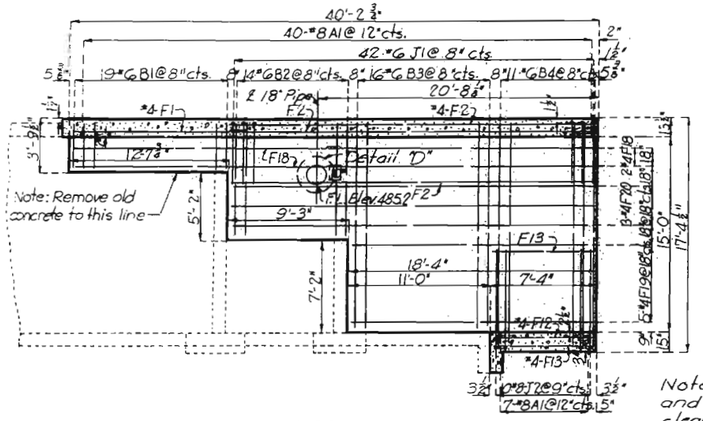
J-[illegible]

NO CONSTRUCTION CHANGES

424

MISSOURI STATE HIGHWAY DEPARTMENT

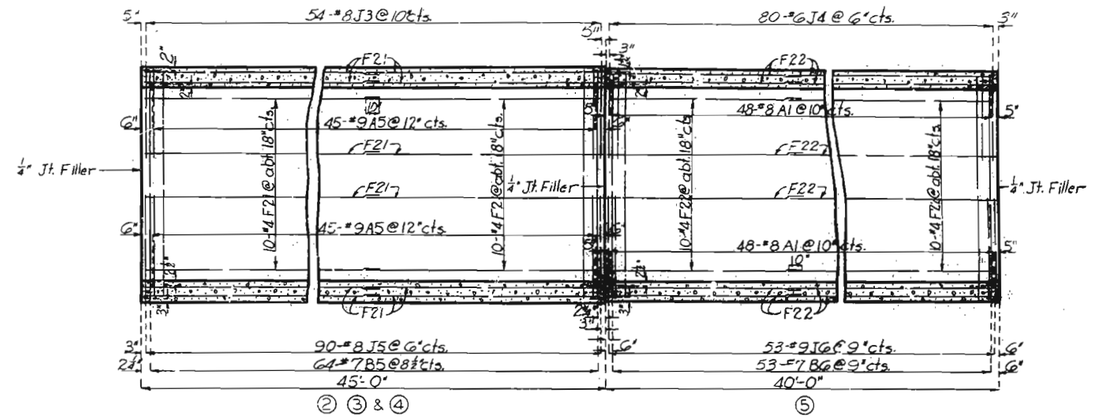
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	76	



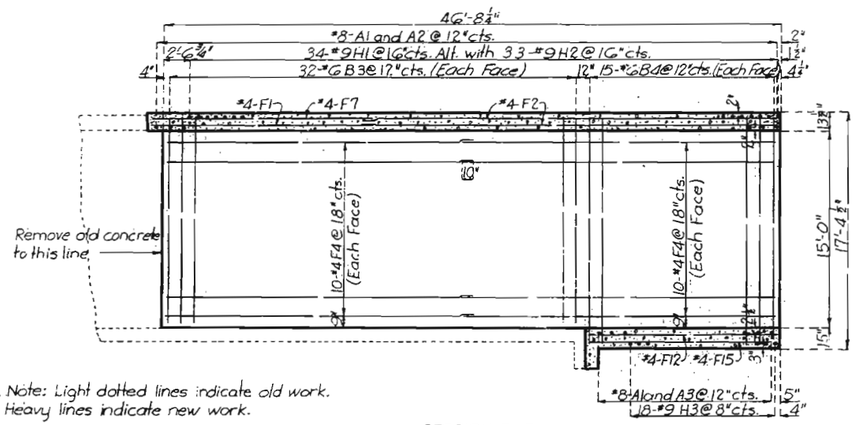
Note: For Detail "D" see Sheet No. 7 of 8.

Note: Cut or bend F-bars and B-bars in field to clear pipe.

SECTION A-A
(From Sheet No. 3)

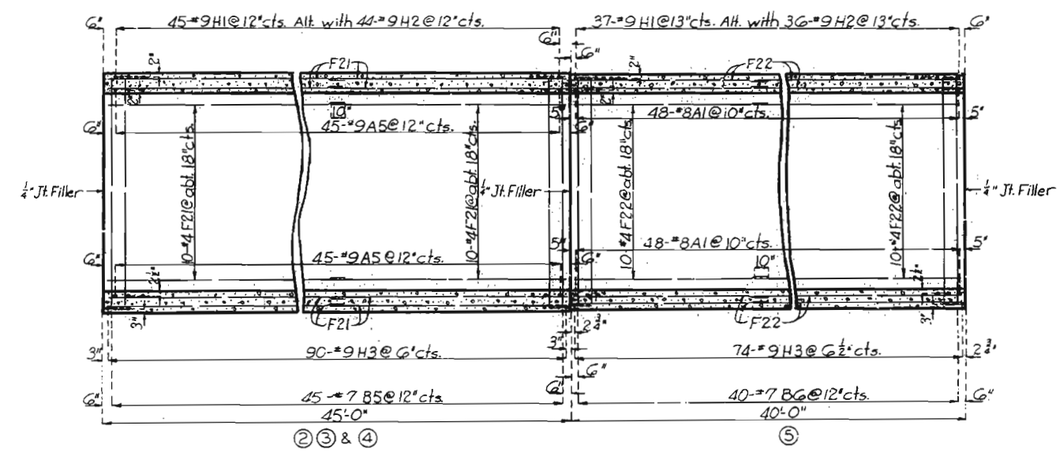


SECTION K-K
(From Sheet No. 4)

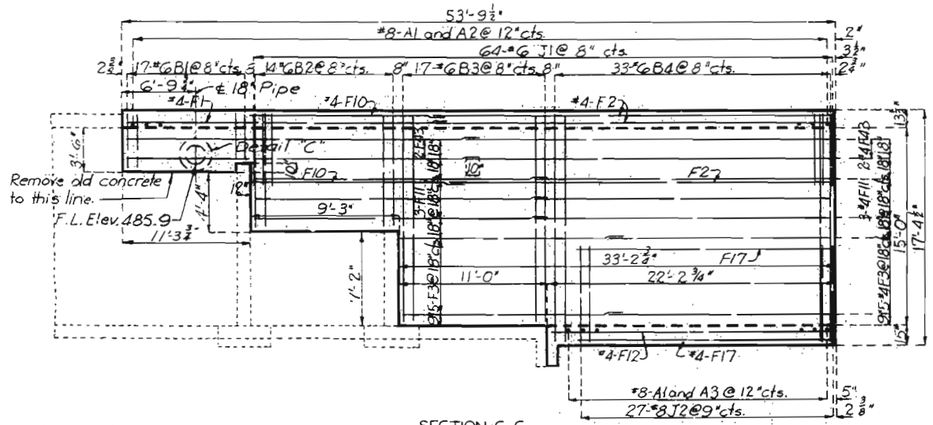


Note: Light dotted lines indicate old work.
Heavy lines indicate new work.

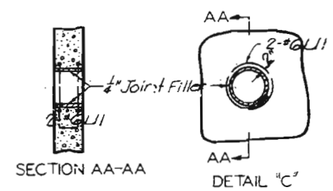
SECTION B-B
(From Sheet No. 3)



SECTION L-L
(From Sheet No. 4)



SECTION C-C
(From Sheet No. 3)



SECTION AA-AA

BRIDGE OVER BRANCH OF MALINE CREEK

STATE ROAD: INTERSTATE ROUTE 270
ABOUT 3.5 MILES NE OF FERGUSON
PROJECT NO. I-270-5(38)(RTE. I-270) **STA.** 527+77.29

ST. LOUIS COUNTY

Drawn Feb. 1973 by L.G.S.
Checked Aug. 1972 by B.J.P.

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

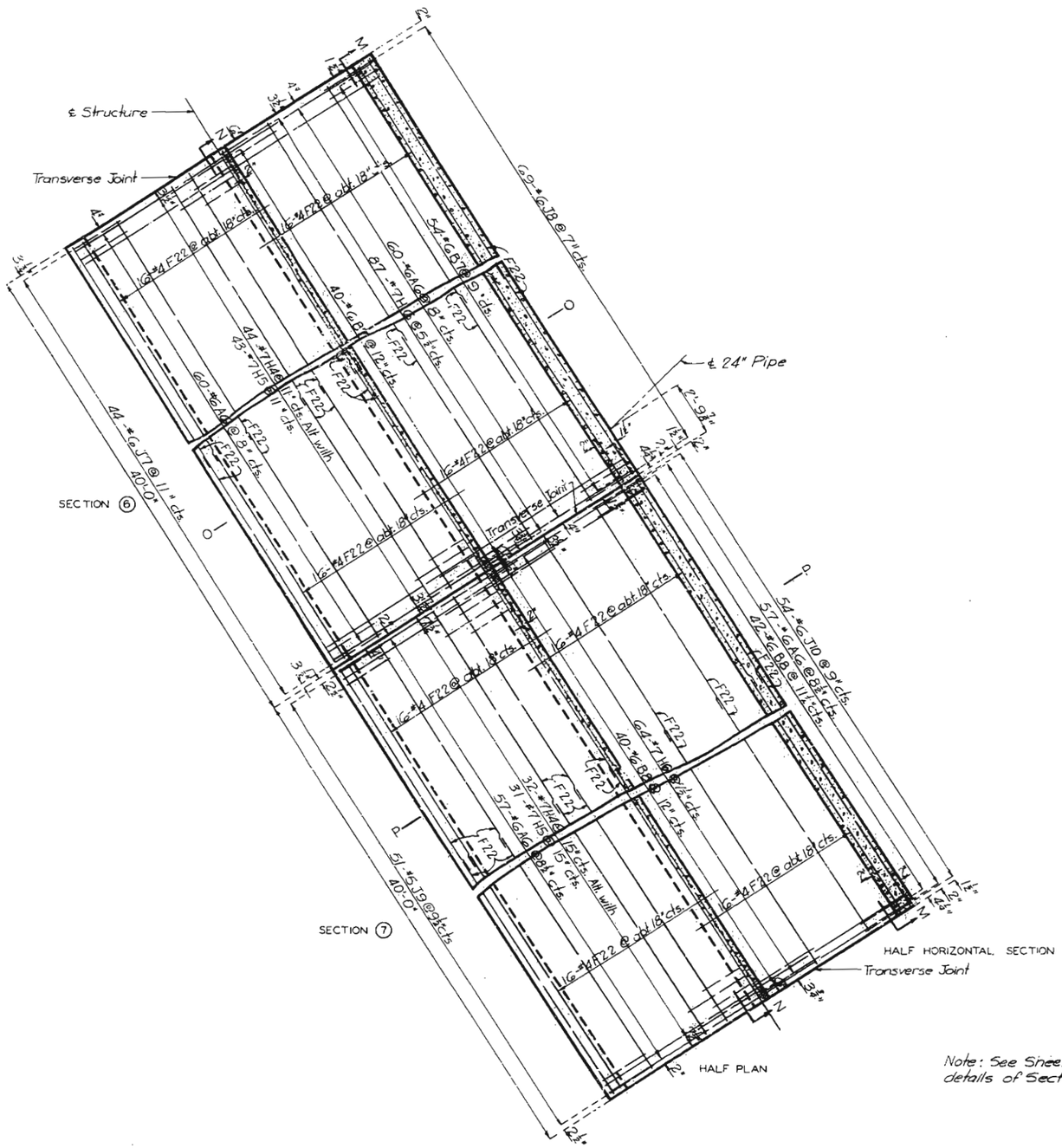
Sheet No. 5 of 8

NO CONSTRUCTION CHANGES

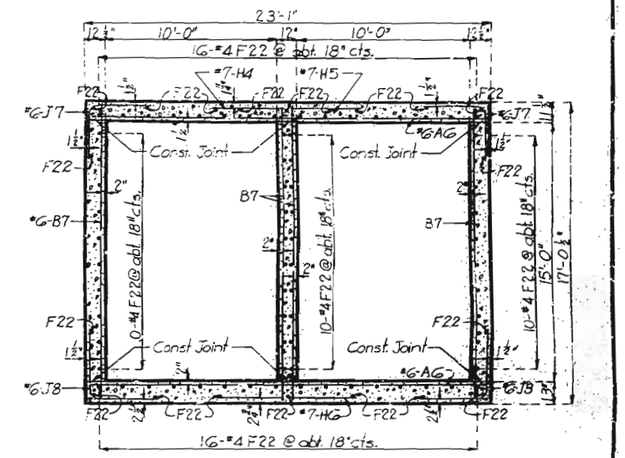
425

MISSOURI STATE HIGHWAY DEPARTMENT

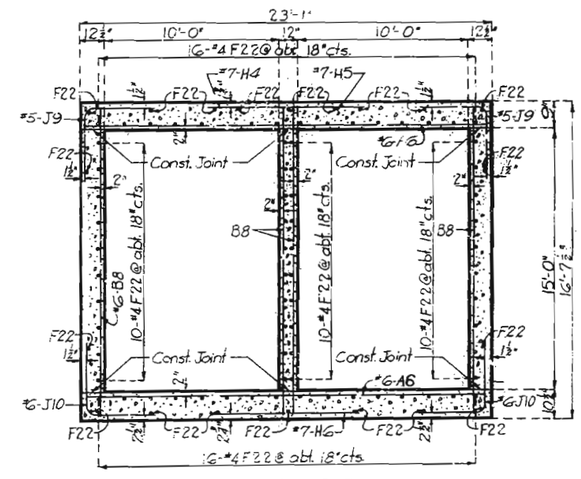
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	77	



DETAILS OF SECTIONS ⑥ & ⑦
(See Sheet 1 of 8)



SECTION O-O



SECTION P-P

Note: See Sheet No. 7 of 8 for details of Sections M-M & N-N.

BRIDGE OVER BRANCH OF MALINE CREEK

STATE ROAD: INTERSTATE ROUTE 270
ABOUT 3.5 MILES N.E. OF FERGUSON
PROJECT NO. I-270-5(38)XRTE.I-270 **STA.** 527 + 77.29

ST. LOUIS **COUNTY**

Drawn Jan. 1958 by L.G.S.
Checked Aug. 1958 by B.J.P.

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

Sheet No. 6 of 8

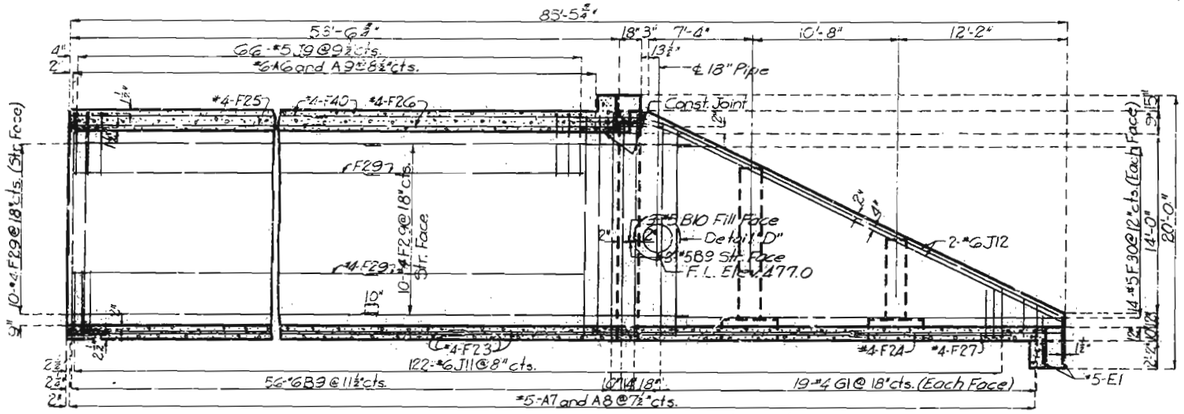
J-886

NO CONSTRUCTION CHANGES

426

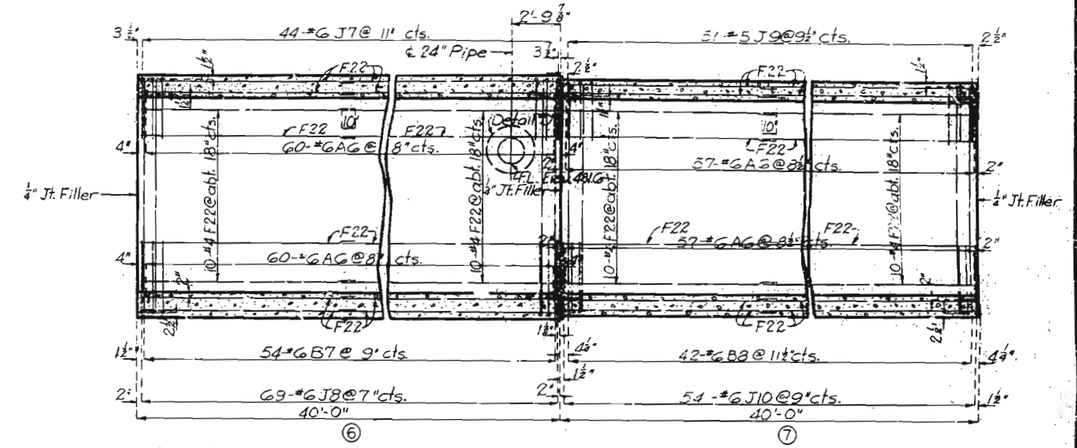
MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	78	



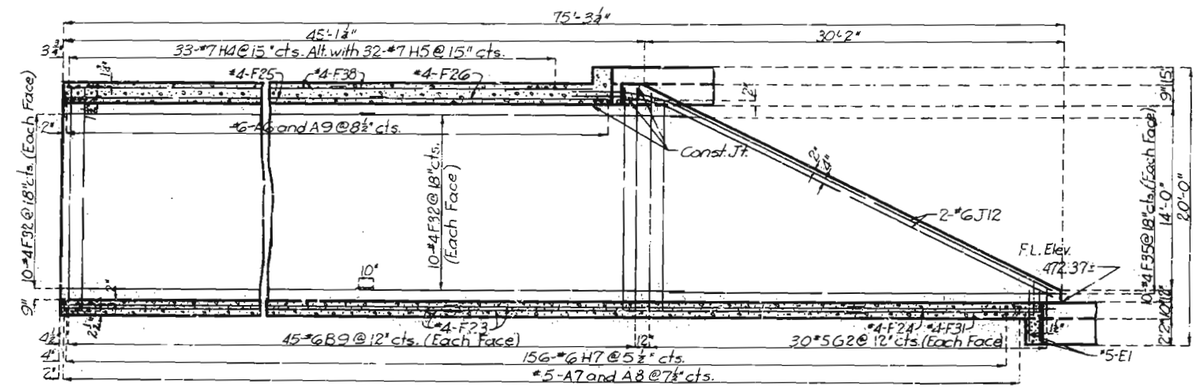
SECTION R-R
(From Sheet No. 8)

Note: Cut or bend F-bars and G-bars in field to clear pipe.

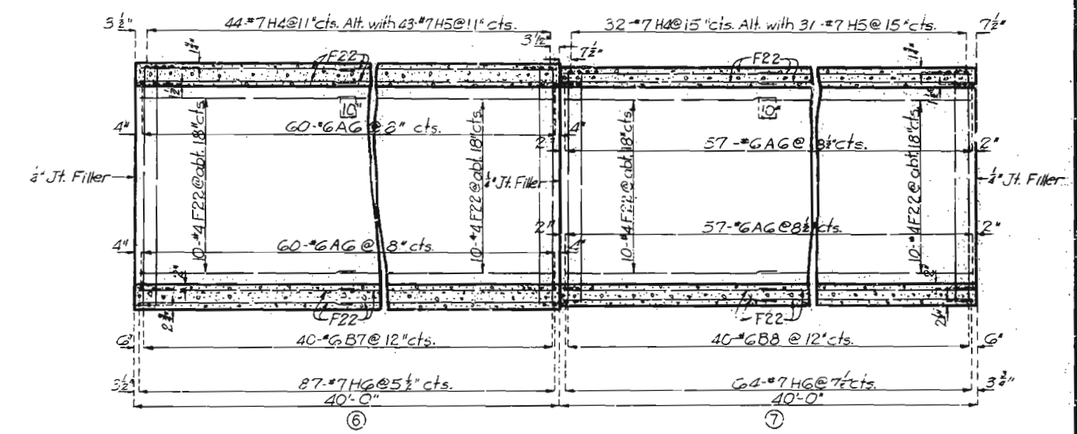


Note: Cut or bend F-bars and B-bars in field to clear pipe.

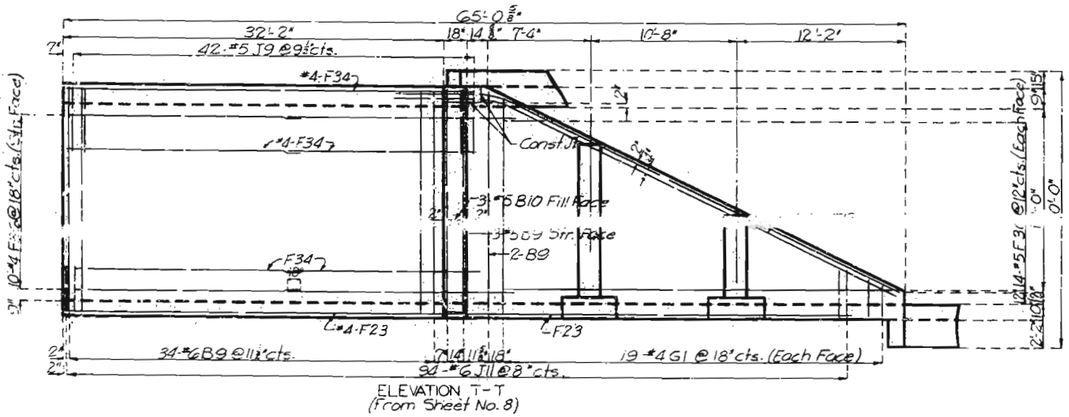
SECTION M-M
(From Sheet No. 6)



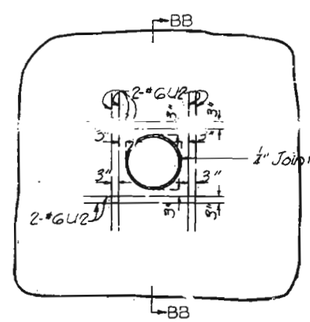
SECTION S-S
(From Sheet No. 8)



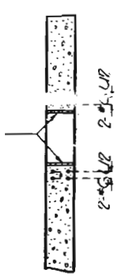
SECTION N-N
(From Sheet No. 6)



ELEVATION T-T
(From Sheet No. 8)



DETAIL "D"



SECTION BB-BB

BRIDGE OVER BRANCH OF MALINE CREEK

STATE ROAD: INTERSTATE ROUTE 270
ABOUT 3.5 MILES NE. OF FERGUSON
PROJECT NO. I-270-5(38)XRTE. I-270 **STA.** 527+77.29

ST. LOUIS COUNTY

Drawn Mar. 1958 by L.G.S.
Checked Aug. 1958 by B.J.P.

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

Sheet No. 7 of 8

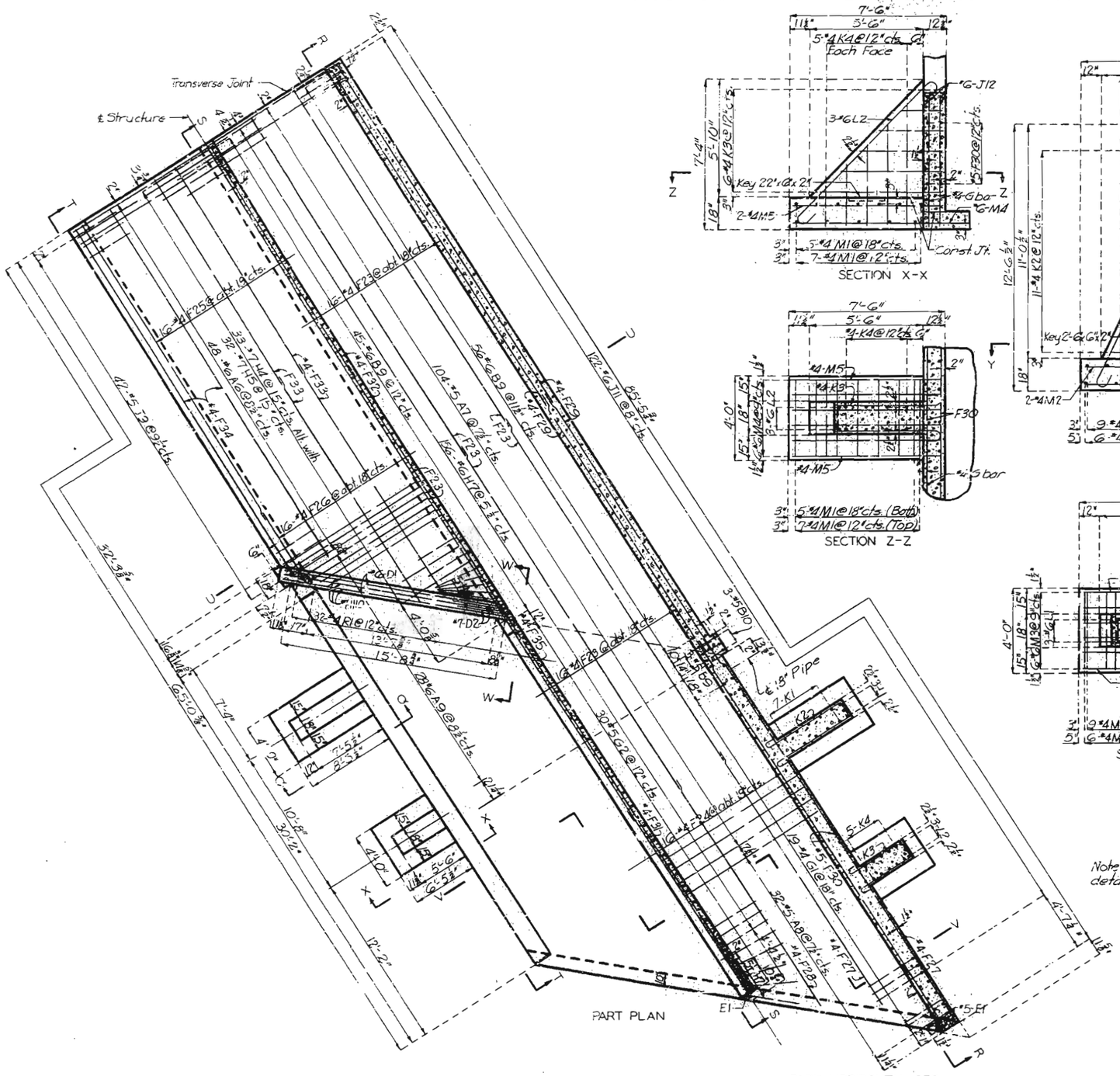
J-5008

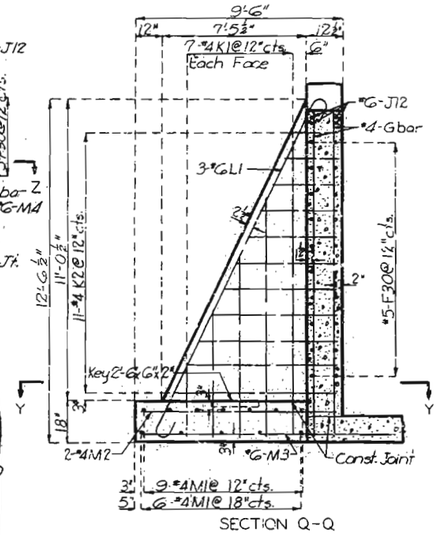
NO CONSTRUCTION CHANGES

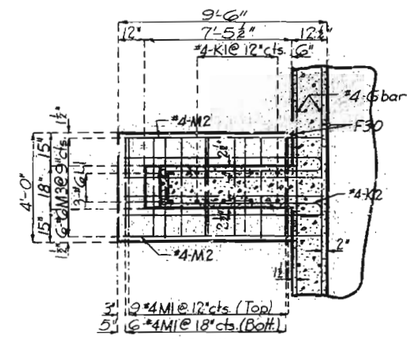
427

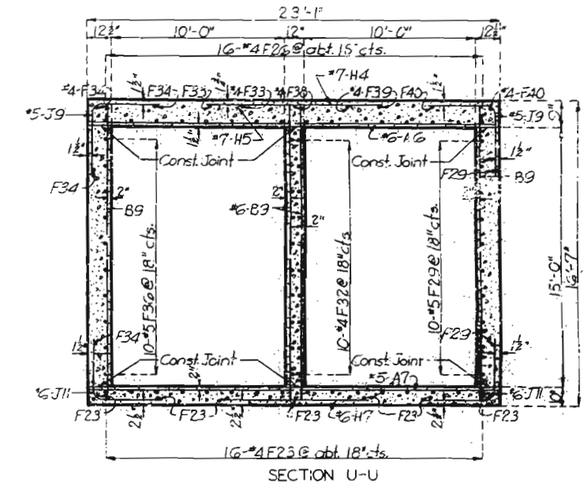
MISSOURI STATE HIGHWAY DEPARTMENT

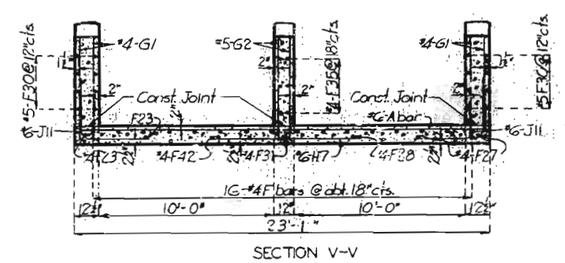
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	79	

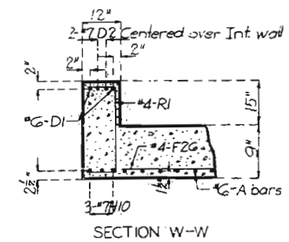












Note: See Sheet No. 7 of 8 for details of Sections R-R, S-S, & T-T.

DETAILS OF SECTION 8
(See Sheet No. 1 of 8)

BRIDGE OVER BRANCH OF MALINE CREEK

STATE ROAD INTERSTATE ROUTE 270
ABOUT 3.5 MILES N.E. OF FERGUSON
PROJECT NO. I-270-5(38)XRTE.I-270 **STA.** 527 + 77.29

ST. LOUIS COUNTY

Drawn Feb. 1958 by L.G.S.
Checked Aug. 1958 by B.J.P.

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

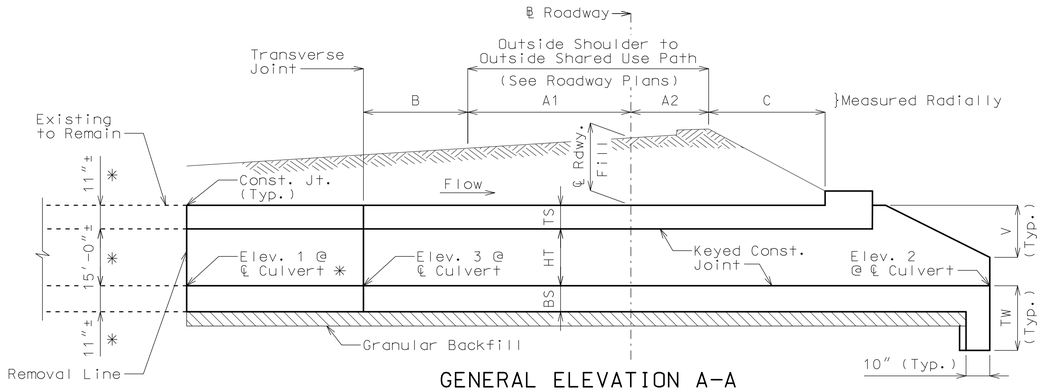
Sheet No. 8 of 8

J-555A

NO CONSTRUCTION CHANGES

428

2(10′x 15′) CONCRETE BOX CULVERT



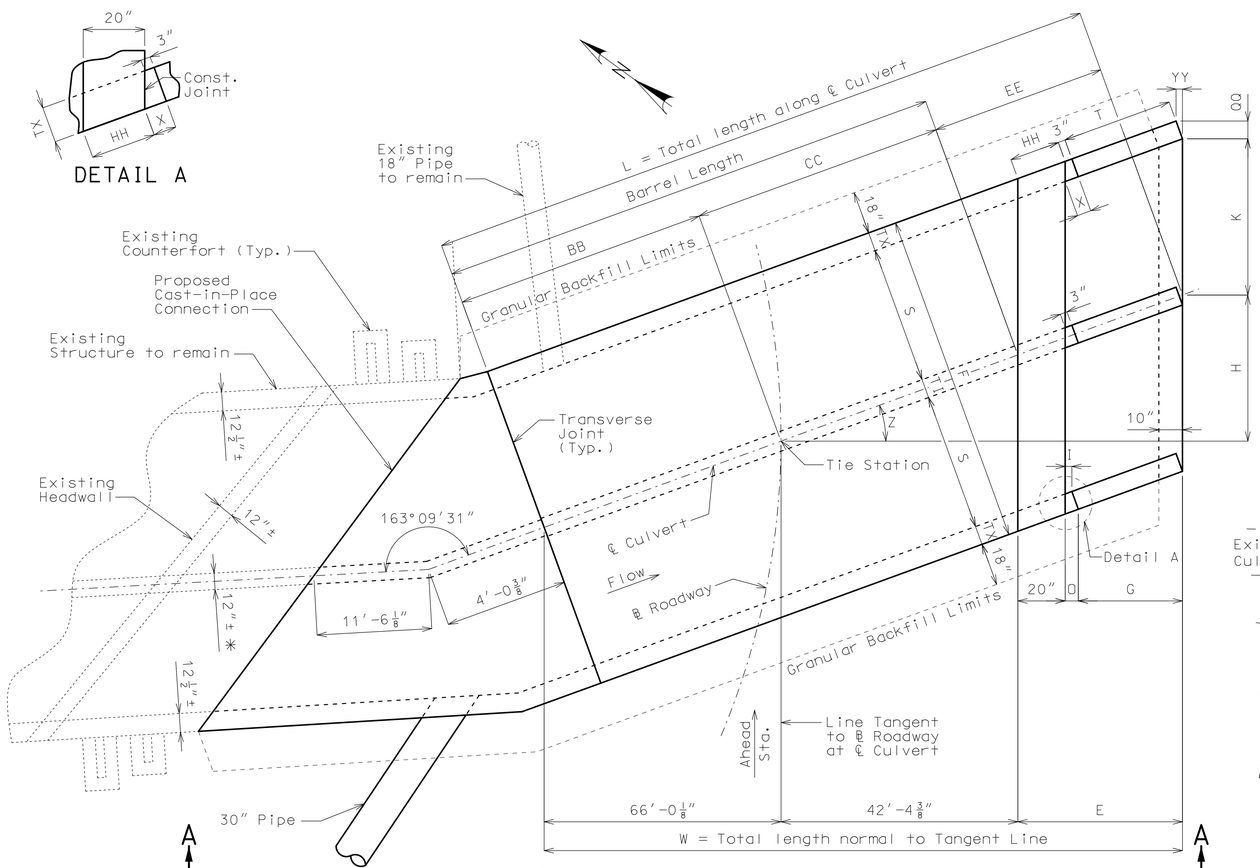
GENERAL ELEVATION A-A

Construction joint key not shown for clarity, see standard plans for details.

If any part of the barrel is exposed, the roadway fill shall be warped to provide 12 inches minimum cover.

If unsuitable material is encountered, excavation of unsuitable material and furnishing and placing of granular backfill shall be in accordance with Sec 206.

DETAIL A



PLAN OF LAYOUT DIMENSIONS

Layout Dimensions					
Var.	Dim.	Var.	Dim.	Var.	Dim.
S	10′-0″	E	49′-4″	W	157′-8 1/2″
HT	15′-0″	F	22′-10″	X	11 3/4″
TS	14″	G	46′-8 3/4″	Z	38°22′00″
BS	11″	H	72′-7 1/8″	BB	84′-2 3/8″
TX	11″	I	2 3/8″	CC	54′-0 3/8″
TI	12″	K	13′-4 3/4″	EE	62′-11″
A1	48′-0″	L	201′-1 3/4″	HH	2′-4″
A2	25′-0″	O	9 1/8″	QQ	8 5/8″
B	15′-1 1/4″	T	59′-7 1/4″	YY	6 7/8″
C	17′-7 1/4″	V	15′-2″	TW	3′-4″

Hydrologic Data
Drainage Area = 1.8 mi²
Design Flood Frequency = 100 years
Design Flood Discharge = 4410 cfs
Design Flood (D.F.) Elevation = 496.8
Base Flood (100-year)
Base Flood Elevation = 496.8
Base Flood Discharge = 4410 cfs
Estimated Backwater = N/A
Outlet Velocity = 14.7 ft/s
Roadway Overtopping
Overtopping Flood Discharge = >5200 cfs
Overtopping Flood Frequency = >500 years
500 Year Flood Elevation = 501.0

Fill Heights
Tie Sta. ℄ Rdwy at ℄ Culvert = 4.33 ft
Design (All units) = 5.00 ft

Elevations
Upstream (Elev. 1) = 472.12 ✳
Downstream (Elev. 2) = 468.67
Elev. 3 = 471.87
Pr. Gr. at Tie Sta. = 491.02

Dimensions are based on end units.
Fill heights are measured from the top of top slab to the top of earth fill or roadway.

Notes:

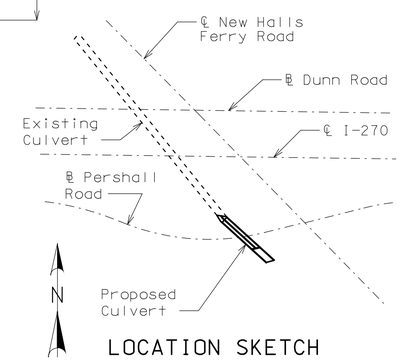
Remove existing counterforts as necessary in order to construct proposed addition as shown in details.

Bars bonded in existing concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, existing bars shall extend into new concrete at least 40 diameters for plain bars and 30 diameters for deformed bars, unless otherwise noted.

Contractor shall verify all dimensions in field before ordering materials.

Bottom of top slab, top of bottom slab, and inside faces of walls shall be built flush with the existing structure.

✳ Field verify existing elevations and dimensions



LOCATION SKETCH

General Notes:

Design Specifications:
2020 AASHTO LRFD Bridge Design Specifications

Design Loading:
Vehicular = HL-93 minus lane load, Earth = 120 lb/cf
Equivalent Fluid Pressure = 30 lb/cf (min.), 60 lb/cf (max.)

Design Unit Stresses:
Class B-1 Concrete (Box Culvert) f′c = 4,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi

Miscellaneous:
MoDOT Construction personnel will indicate the type of box culvert constructed:
☐ Precast Concrete Box used
☐ Cast-in-Place Concrete Box used

When alternate precast concrete box sections are used, the minimum distance from inside face of headwalls to precast sections measured along the shortest wall shall be 3 feet. Reinforcement and dimensions for wings and headwalls shall be in accordance with Missouri Standard Plans.

Channel bottom shall be graded within the right of way for transition of channel bed to culvert openings. Channel banks shall be tapered to match culvert openings.

Traffic Handling:
Structure to be closed during construction.
See roadway plans for traffic control.

STD. 703.37
STD. 703.38
STD. 703.44
STD. 703.46
STD. 703.60
STD. 706.35

CULVERT-BRIDGE: DUNN ROAD, I-270, & PERSHALL ROAD OVER HALLS FERRY CREEK

PERSHALL TIE STA. 538+07.89

STATE OF MISSOURI — PAIGE MARIE GREGORY — NUMBER PE-2015017014 — PROFESSIONAL ENGINEER

DATE PREPARED: 8-FEB-2021
ROUTE: | STATE: MO
DISTRICT: SL | SHEET NO.: BOX03
COUNTY: ST. LOUIS
JOB NO.: J6I3020B
CONTRACT ID.: 191206-F01
PROJECT NO.: I-270-5(352)
BRIDGE NO.: J08882

REV	DATE	DESCRIPTION
0	021221	RU-7A RELEASE FOR CONSTRUCTION

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

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

MoDOT I-270 NORTH DB PROJECT

HORNER SHIFRIN — THE PORTAGE AT MISSOURI BLVD. DIVISION — 401 S. 18th St. Ste. 400, St. Louis, MO 63103 — 314-231-4327 FAX: 314-531-6866 — www.HornerShifrin.com

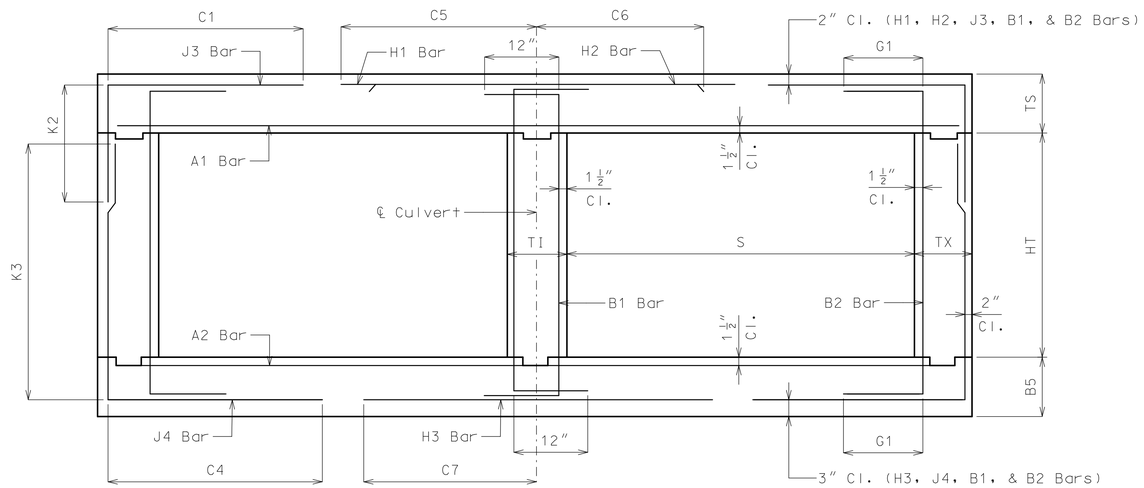
MILLSTONE WEBER

MO STATE CERTIFICATE OF AUTHORITY #000159 ENGINEERING

Designed PMG JAN 2021
Detailed CAB JAN 2021
Checked MAB JAN 2021

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

Sheet No. 1 of 3

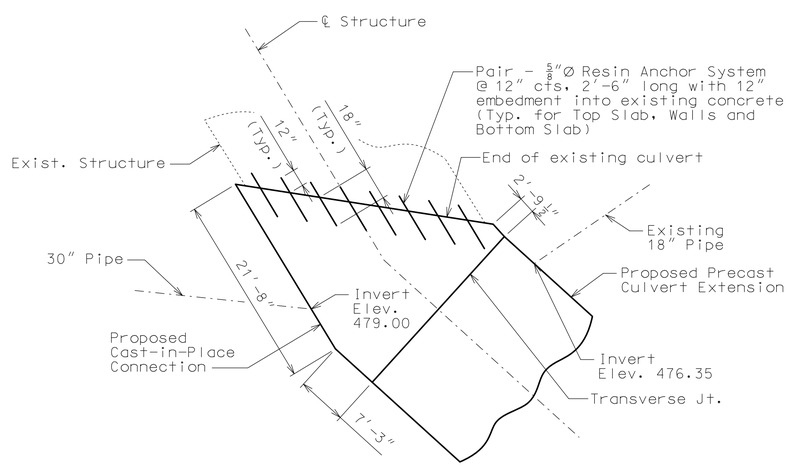


BAR DIMENSIONS DIAGRAM

Note: Symmetrical about ℄ Culvert.

Design Fill	Member Thickness				TOP SLAB BARS												BOTTOM SLAB BARS									WALL BARS				
					A1 Bars		J3 Bars				H1 Bars			H2 Bars			A2 Bars		J4 Bars				H3 Bars			B1 Bars		B2 Bars		
	TS	BS	TX	TI	Size	Spa.	Size	Spa.	C1	K2	Size	Spa.	C5	Size	Spa.	C6	Size	Spa.	Size	Spa.	C4	K3	Size	Spa.	C7	Size	Spa.	Size	Spa.	G1
5 ft	14"	11"	11"	12"	#5	6"	#6	6"	67"	72	#6	12"	102	#6	12"	31	#6	6"	#6	6"	68"	186"	#6	6"	60"	#5	12"	#5	6"	12"

Note: All dimensions are in inches.



PLAN OF OPTIONAL PRECAST BOX CULVERT

Clean and prepare end of existing culvert to be in contact with proposed cast-in-place connection in accordance with Sec 704.

The cast-in-place connection shall be reinforced in accordance with the table above. Bars may be bent, cut, and fanned around the bend to maintain a maximum spacing as required by the table above, but no less than 4".

GENERAL NOTES:

A precast box culvert may be used for the extension of the 2(10'x15') box culvert and shall be in accordance with the details shown.

For details of Transverse Joint, see Missouri Standard Plans.

For details of box culvert extension not shown, see Missouri Standard Plan 703.37, 703.44, 703.46, and 703.60.

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

The minimum embedment depth in concrete with f'c= 4,000 psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 12".

A #5 Grade 60 reinforcing bar 2'-6" long shall be substituted for the 5/8"Ø threaded rod.

Designed PMG JAN 2021
Detailed CAB JAN 2021
Checked MAB JAN 2021

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

Scale No. 2 of 3

STATE OF MISSOURI
PAIGE MARIE GREGORY
NUMBER PE-2015017014
PROFESSIONAL ENGINEER

DATE PREPARED 7-FEB-2021
ROUTE | STATE MO
DISTRICT SL | SHEET NO. BOX04
COUNTY ST. LOUIS
JOB NO. J6I3020B
CONTRACT ID. 191206-F01
PROJECT NO. I-270-5(352)
BRIDGE NO. J08882

REV	DATE	DESCRIPTION
0	021221	RU-7A RELEASE FOR CONSTRUCTION

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

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

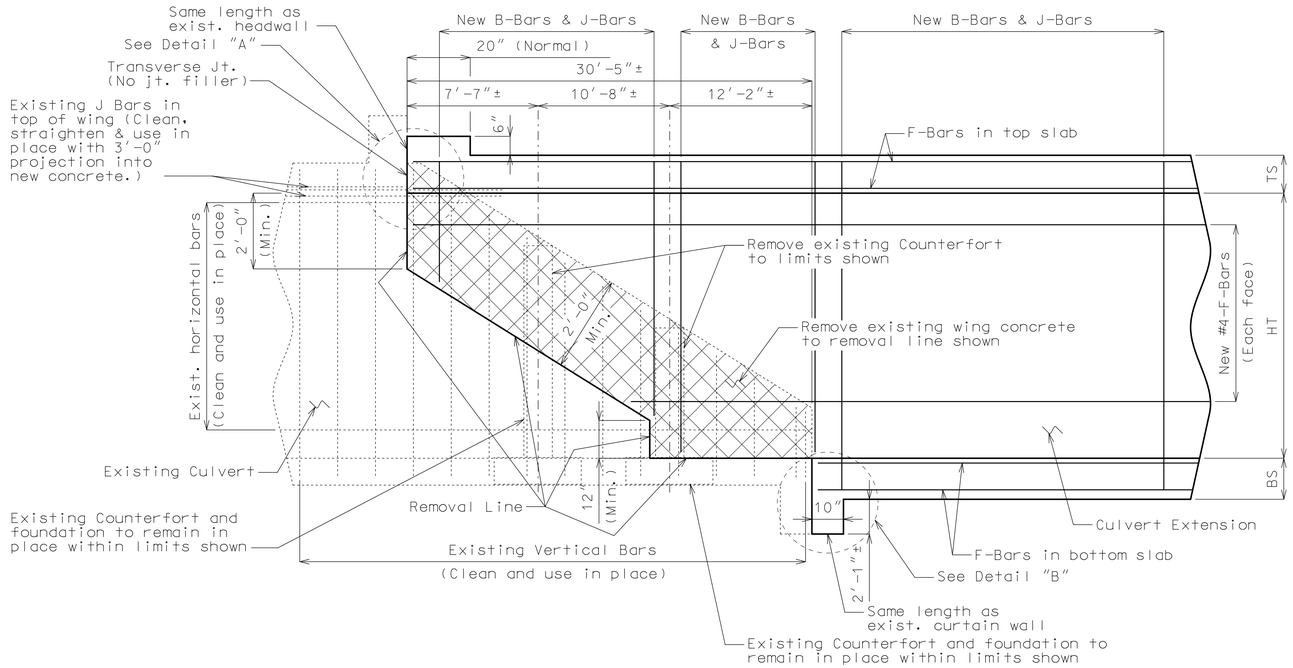
MoDOT I-270 NORTH DB PROJECT

HORNER SHIFRIN
THE POWER OF ENGINEERING DEDICATION
401 S. 18th S. Ste. 400
ST. LOUIS, MO 63103-2596
314-231-4321 FAX: 314-531-6966
www.HornerShifrin.com

MILLSTONE WEBER

MO STATE CERTIFICATE OF AUTHORITY #000159 ENGINEERING

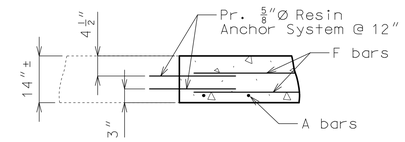
REV.



ELEVATION OF EXTERIOR WING SHOWING CONCRETE REMOVAL OPTION 1

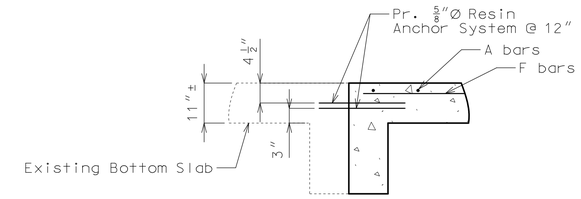
(Interior wings similar)

A-Bars, D-Bars, H-Bars & R-Bars not shown for clarity.

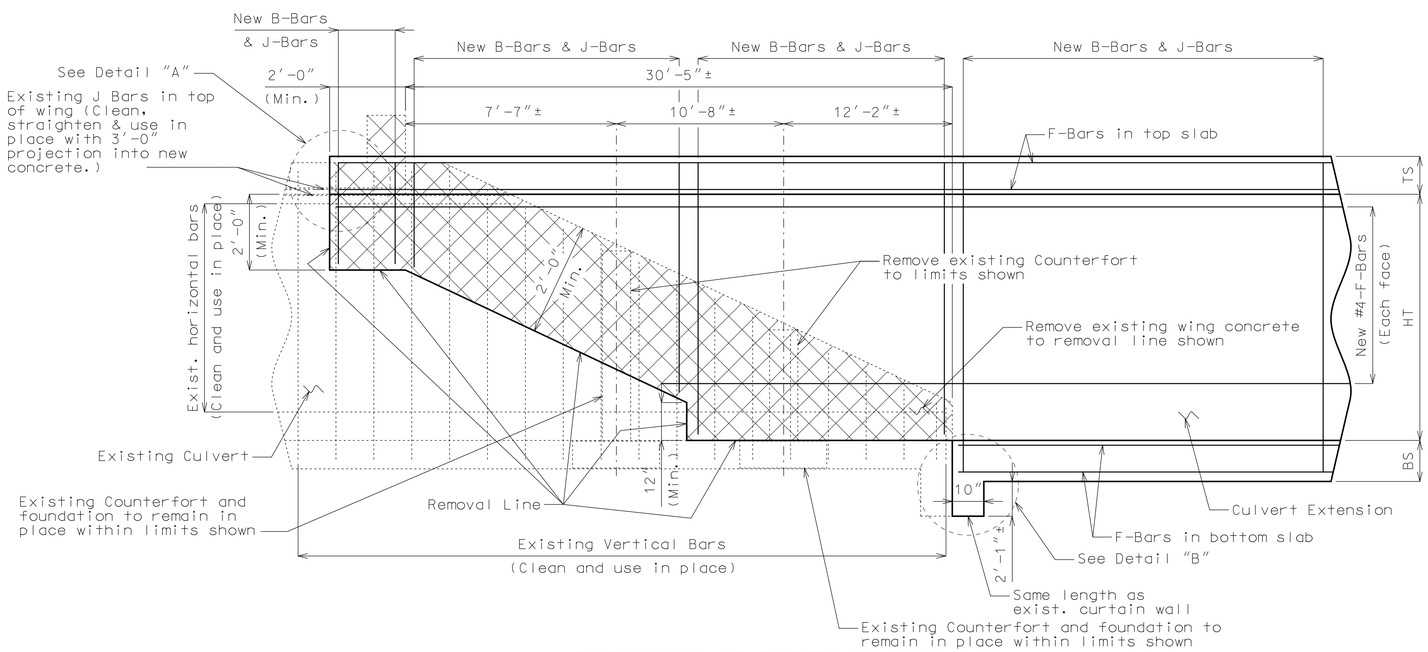


DETAIL "A"

(Headwall not shown)



DETAIL "B"



ELEVATION OF EXTERIOR WING SHOWING CONCRETE REMOVAL OPTION 2

(Interior wings similar)

A-Bars & H-Bars not shown for clarity.

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

Scale No. 3 of 3

General Notes:

For location and size of the structure, see Sheets No. 1 & 2.

Existing reinforcing steel that is damaged shall be replaced with new reinforcing steel attached with resin anchors into existing concrete.

For details of Transverse Joint, see Missouri Standard Plans.

When the headwall is removed, the top slab A-bars and F-bars shall lap the existing bars a minimum of 2'-0".

For details of box culvert extension not shown, see Missouri Standard Plans 703.37, 703.44, 703.46, and 703.60.

The details shown are options in lieu of Missouri Standard Plan 703.38.

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

The minimum embedment depth in concrete with f'c= 4,000 psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 12".

A #5 Grade 60 reinforcing bar 2'-6" long shall be substituted for the 5/8"Ø threaded rod.

Designed	PMG	JAN 2021
Detailed	CAB	JAN 2021
Checked	MAB	JAN 2021

STATE OF MISSOURI — PAIGE MARIE GREGORY — NUMBER PE-2015017014 — PROFESSIONAL ENGINEER

DATE PREPARED	7-FEB-2021
ROUTE	STATE MO
DISTRICT SL	SHEET NO. DDT21
COUNTY	ST. LOUIS
JOB NO.	J6I3020B
CONTRACT ID.	191206-F01
PROJECT NO.	I-270-5(352)
BRIDGE NO.	J08882

REV	DATE	DESCRIPTION
0	021221	RU-TA RELEASE FOR CONSTRUCTION

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

MoDOT I-270 NORTH DB PROJECT

HORNER SHIFRIN — THE POWER OF INTEGRATED DESIGN — 401 S. 18th St. Ste. 400, St. Louis, MO 63103-2296, 314-231-4321 FAX: 314-531-6966, www.HornerShifrin.com

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

REV.